

The Family behind the Family Firm: Evidence from CEO Transitions*

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Abstract: Economists have long acknowledged that the structure of the family (number of offspring, marital status, etc.) plays a crucial role in important economic decisions (e.g., labor supply, demand patterns, portfolio choice, educational attainment). In this paper we investigate the link between family structure and corporate decisions of family firms. Even though there is considerable anecdotal evidence on this link, there is no systematic study. This paper fills this gap. To this end, we assembled a unique dataset with accounting information from 1995 to 2002 of the universe of privately held firms in Denmark. Our dataset includes the family trees of the owners as well as personal information about all family members. This information allows us to identify family firms among privately held firms. We find that, using a 50% definition of control, 89% of privately held firms are family firms. We focus on the decision whether to choose a family member or an outsider as the next CEO. We show that the larger the pool of potential heirs, the higher the probability of family transition. Also we document that this probability is significantly lower when all offspring are female. Finally, family conflicts (proxied by divorce or multiple marriages) reduce the probability of family transition. In a robustness check we show that there is a causal effect from family structure to corporate decisions. We do this by instrumenting the number of children with sibling sex composition and by restricting the sample to one in which founders had their last child years before founding the firm.

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1. Introduction

Economists have long acknowledged that the structure of the family plays a crucial role in important economic decisions. There is a vast literature documenting that family size (number of children) affects, among other things, demand patterns, labor supply, portfolio choices, and the demand for housing (for a summary, see Browning, 1992). Parent's divorce has been linked to offspring's lower levels of school achievement and participation in the labor market (for a summary see Del Boca, 2003). Furthermore, sibling sex composition has been shown to affect educational attainment and earnings (Butcher and Case, 1994).

The corporate decisions in "family firms" also seem to be driven to a large extent by family structure. Family firm scholars consider the family side of business decisions to be as important as economic considerations (see Ward, 1987, and Gersick, Davis, McCollom, and Lansberg, 1997).¹ Gersick et al.(1997) provide the following examples.

An estate planning attorney may be puzzle by a client's reluctance to implement the most rational distribution plan, until she considers the client's conflicts between his desires as a parent (to treat each offspring equally) and as a business owner (to consolidate control in one successor). Similarly, an apparently illogical expansion strategy for a growing company may make sense only when one understands the needs of co-owners siblings to keep their divisions equal size, no matter what. (Page 5)

¹ Ward (1987) writes "This reflects a fourth basic truth that we will return to again and again, namely, that family circumstances critically influence the choice of business strategy" (page 8).

A different example is the case of S.C. Johnson & Company, which was divided, in three legally independent firms and each was given to one of the three offsprings of Samuel Curtis Johnson, the controlling owner (The New York Times, August 22, 1999).

Even though these examples are suggestive of a link between family structure and corporate decisions in family firms, there is no systematic study on the causal effect of family characteristics on corporate decision of family firms. Understanding of this link is important for a number of reasons. First, family firms constitute a large fraction of the economy of every country. La Porta, Lopez de Silanes and Shleifer (1999) document that, using a strict definition of control, 30% of the largest publicly traded firms in the 27 countries in their sample are controlled by a family. Using a less strict definition of control and focusing on medium-sized publicly traded firms, the fraction of family controlled firms is 53%.² In the U.S. Anderson and Reeb (2003) and Perez-Gonzales (2002) document that approximately a third of the S&P 500 firms are family firms. The prevalence of family firms among private firms is presumably higher. Second, if a causal link between family structure and corporate decisions is established, it can shed light into cross country differences and changes over time in the prevalence of family firms.³

² Similar results about the prevalence of family firms are reported by Claessens, Fan and Lang (2000) and Faccio and Lang (2002).

³Family firm scholars argue that cross country differences in the prevalence of family firms can be traced back to family circumstances: “*Stronger family traditions* and limited competing career opportunities have made Europe and Latin America amore fertile ground for [family firms with cousins-owners]. In the United States, with its strong emphasis on entrepreneurship, independence, mobility and *focus on the nuclear rather than the extended family*, the bulk of family firms that survive past the first generation are more likely to subdivide and recycle to [firms with a single owner] and [firms with sibling-owners” Gersick *et al.* 1997, page 53, emphasis added).

The purpose of this paper is to fill this void. To this end, we assembled a dataset that includes the universe of privately held corporations registered in Denmark. Our dataset includes balance sheet and income statement figures for all firms from 1995 to 2002. It also contains the names and, in many cases, the stakes of all owners. What makes our dataset unique is that we were able to obtain the family tree of each owner together with personal information about all family members. The family tree allows us to identify family firms. In addition, we use the family information --number and gender of children and marital status, e.g., divorced, multiple marriages-- to test specific theories about the relation between family structure and corporate decisions.

Because no other dataset with such comprehensive data on privately held family firms and the families that control them exist, the first contribution of the paper is simple to establish some stylized facts about privately held family firms.⁴ For example, using a definition of control of 50%, we find that approximately 75% of all privately held firms are family controlled. Other estimates of the prevalence of family firms either relate only to publicly traded firms or are simply guesses.⁵

We focus on a single corporate decision: the decision whether to name a family member or an outsider as the new CEO. We choose this decision to illustrate the role of family consideration on corporate decisions because both economic and family considerations seem to be at play.

⁴ Gersick *et al.* (1997) writes: "A truly reliable data base that will give specific demographic information about the number and type of family firms has yet to be developed." (page 25)

⁵In fact, talking about estimates of the number of family firms, Shanker and Astrachan (1996) write: "Closer analysis of these statistics reveals that a large portion of these family business "facts" have been cited so often that original sources cannot be located... We then traced statistics to their origin. The majority of statistics identified were not rooted in formal research." (page 107)

The first potential effect from family structure to CEO transition relates to the potential pool of family candidates. The higher the number of children, the more likely that one of them will have the necessary abilities to run the firm. There is, however, a potential countervailing effect. As the number of children is increased, conflicts among them are more likely. To avoid family conflict, the owner might choose to bypass his/her offspring and to favor an outsider.

A second way by which family structure can affect the identity of the new CEO is through the gender of the potential heirs. It might be that controlling owners prefer to choose male descendants to female ones. At least for the U.S., there is evidence that women are discriminated in family firms, although this has started to change. This evidence comes from a survey conducted by MassMutual (2003). We test whether this discrimination is present in a large sample of firms.

Third, a potential reason why an owner might decide to bypass their offspring is in cases in which there is family conflict. We use the fact that the controlling owner is divorced, or have had multiple marriages as a proxy for conflict.

In multivariate regressions we find that the family variables are significant. The number of children significantly increases the probability of a family transition (although there is some evidence that the effect is nonlinear and that, after three children the probability decreases). The probability of family transition is significant lower when none of the offspring are men. Also, our proxy for family conflict is significantly negatively correlated with the probability of transition. Interestingly, when we include some economic variables as controls (size and profitability of the firm, and industry

concentration) they are sometimes significant and sometimes they are not. Taken together these results attest to the importance of family considerations.

There is a long tradition in economics about the underlying economic reasons for many family decisions (Becker, 1991). This raises the concern that our family variables are endogenous. To mitigate this concern, we proceed as follows. First, following Angrist and Evans (1998), we instrument for the number of children by using the sibling sex composition of the first two children. It has been shown, that parents have a preference for having offspring of both gender, and this preference leads to a higher probability of a third child when the first two are of the same sex. However, there is a problem in using these instruments for number of children in the context of family organization and that is that we have shown that sex composition in it self does have an impact on firm organization. This motivates our second approach, which is to focus on firms that are founded long time after the founder lasts child was born. Using both methods, our results are significant and robust.

There is a growing body of literature in economics about family firms; however, no paper so far has established the connection between family composition and corporate decisions. Burkart, Panuzi and Shleifer (2003) show that when there are non-transferable private benefits due to weak investor protection families may choose to choose management successors from within the family even when family members have lower ability than potential outside managers. Family owners may prefer CEOs from within the family if they have altruistic motives and trust their descendants (Chami 2001). Children invest relation-specific human capital in the firm during their upbringing, which may be an advantage that can be exploited in managing the firm later on in their life

(Bhattacharya and Ravikumar 2001). The latter paper together with Casselli and Gennaioli (2003) also point to that the presence of capital market imperfections may favor within family management relative to outside managers. We acknowledge that there may be many factors that explain the choice of management in family business; however, we focus our empirical study below on family organization and non-transferable private benefits.

Related to our study is a series of empirical papers that estimate the consequences of family and/or founder controlled firms. The evidence on the impact of family control on firm performance is mixed. Anderson and Reeb (2003) find a positive performance effect when family members serve as CEOs relative to outside CEOs. Adams, Almeida and Ferreira (2003) support this insight using an instrumental variable approach. Perez-Gonzales (2002) finds a large and negative impact of firm value when the CEO position is inherited within a family. McConaughy, Matthews and Mistra (1998), McConaughy, Henerson and Mistra (2001) and Palia and Ravid (2002) find a positive impact on market value and performance of having firms managed by their founders. All these studies are done on large publicly traded US firms. Nelson (2003) studies founder influence at initial public offerings and finds that the stock market pays a higher price for founder-managed firms. Finally, the Johnson *et al.* (1985) study of sudden executive deaths finds that there is a significant positive stock price reaction to a sudden death of a founding executive manager. In the present paper we focus on the determinants of the choice between a family member and an outsider as a potential CEO rather than on the economic consequences of this choice.

Finally, There is a large literature on family firms in business organization. Many contributions owe to the classic studies of family firms by Levinson (1971) and transition of power in family firms by Barnes and Hershon (1976). Recent books by Gersick *et al.* (1997), Lansberg (1999) and Ward (1987) provide rich discussions and insightful cases of the many challenges that family firms have during a generational transition. This literature focuses on family organization and family development as key factors in determining how family businesses develop. Interestingly enough, this literature almost take for granted that family firms continue as such unless there are specific circumstances in the organization of the family that make family control less desirable. One important circumstance is indeed the amount of potential conflict among family members. Our aim in the present analysis is to bring these contributions into traditional economic analysis, through testing ideas in a systematic way.

The paper proceeds as follows. The next section describes the data. Section 3 provides some stylized facts about privately held family firms. Section 4 contains the statistical analyses and section 5 concludes.

2. Data description

We assemble a dataset with accounting information about firms and personal information about the families who own them. We use three sources for firm specific data. The first source is Købmandsstandens Oplysningsbureau's (KOB) dataset, which contains accounting and ownership information of all registered firms in Denmark. (app. 80,000 limited liability firms). The dataset is compiled from annual reports that all Danish firms with limited liability are required to file with the Ministry of Economics and

Business Affairs. This data are available in electronic format for the years 1995 to 2002. Firms are required to provide some items from the income statement (e.g. sales, profits) and from the balance sheet (e.g. assets, book debt, book equity). Firms are also required to furnish the Ministry of Economic and Business Affairs with ownership information. Although the official requirement is that firms list the names of shareholders with an equity stake above 5%, many firms also include the actual stakes of the large shareholders. In fact, in 29.6% of the firms with two or more shareholders, we can account for 90% or more of the voting rights.

The second source of firm level information is the E&S dataset. This dataset contains the names of all board members (current and past), the CEO (current and past) and the founders of the firm. Under the Danish company law all firms with limited liability are required within 2 weeks to file any change in the CEO and board positions with the Ministry of Economic and Business Affairs. This data is administered by the agency Erhvervs- and Selskabsstyrelsen (E&S) under the Ministry of Economic and Business Affairs. In addition, to the names, the E&S dataset includes the CPR number, a personal identification number similar to the Social Security number in the United States. We were able to get the CPR numbers, although for privacy reasons, these numbers are not available to the public.

The third and final source of firm level data is the answers to a survey of Danish family firms carried out by Greens Analyseinstitut in 2003. This questionnaire was sent out to 12,000 Danish family owned corporations out of which 2,165 responded. 14 pct. of these firms responded that they do not consider themselves a family firm and were therefore deleted from the sample. Hence, 1,840 firms answered 33 questions related to

characterization of the firm and the business in which it operates; thoughts and plans with respect to generational transition; the involvement of the family in the business; and attitudes toward the family and the business. It is worth emphasizing that all of these firms also are in our dataset. The subset that answered the questionnaire is not a representative subset of our family firms, since in general they are relative large and old compared to the average firm. However, the survey provides some qualitative insight to some of our register-based findings below, which are unique to the present analysis.

The CPR number we have obtained from the E&S source allows us to access personal information about individuals related to the firms. The CPR agency in the ministry of interior, the government department that administers the CPR numbers, provides us with the marital status, date of birth, date of death, date of marriage and divorce of all marriages, and family relations including name and CPR number of all spouses (current and past), parents, children and siblings of the individual whose CPR number we submit. In total we have submitted almost 352.000 CPR numbers and received information back on average 3.2 individuals per CPR number.

We restrict our sample to closely held firms that are both in the KOB and E&S datasets. Thus, our basic data include the Danish population of active firms with limited liability in each year from 1995 to 2002. We use consolidated accounting information for firms with 100% owned subsidiaries.

As we discuss in details in the next section, we use an ownership based criteria for our definition of family firms. To implement such a definition we must group owners into families. The KOB dataset contains the name of the owners, but unfortunately, it does not contain their CPR number, which is the key to the family information. To solve

this problem, we rely on the fact that, in most small business, there is a significant overlap between owners on the one hand and, CEO, board members and founders on the other. We obtain the names of current and all past CEOs, current and all past board members, and founders from the E&S dataset. In addition, because the E&S dataset includes the CPR number of these individuals, we also get a list of their family members (parents, siblings, spouses, and children) from the CPR agency. Then, firm by firm, we match the name of the owners to the names of CEOs, board members, founders and their families.⁶ From the E&S dataset we get the CPR number of all the owners we are able to match. In about 87.2% of the firms, we are able to match at least one owner. Finally, with the CPR number, we gain access to the family information of the owner.

Conditional on getting the CPR number, our methodology to identify family members is more precise than using the last name as previous studies have done (references**). For example, our method can capture daughters that have changed their last name and their spouses as well as cousins with different last names. However, for firms in which we are not able to get the CPR numbers for the owners, we use the last name to group owners into families.

Finally, when other corporations hold stakes, we go back to the ultimate owners. Since we have the entire universe of Danish firms with limited liability in our dataset, the

⁶ It is important to get family information for CEO and board members before matching owners to increase the efficiency of the marching procedure. It is common, for example, for a parent to retain ownership but to have his children run the firm. In this case, the children but not the father appears in the E&S database. However, because we obtain the name and CPR number of all people with family relations to persons in E&S, we will be able to match the father.

corporate owner of a firm in our sample is very likely to be in our sample as well.⁷ Consequently, we are able to identify the ultimate owners of each firm in our sample. We assume that the voting rights are proportional to the share of voting rights that each ultimate owner holds through the chain of the pyramidal ownership. We do so because the typical pyramidal ownership structure is a holding company that is owned by a single owner.

We classify a firm as a non-family firm when no family holds more than a given threshold value. For example, these firms can have a widely held firm, a foundation, a foreign corporation or the State as their majority shareholder. In many cases, however, the owners of these firms are all individuals that have no family relations among them. We only classify firms with personal owners as non-family firms when we can check, using the family tree information provided by the CPR agency, that the owners are not family members. When we do not have the complete family tree for all shareholders (for example because we were not able to match the name of the owner with the E&S dataset) we classify the firm as undecided. In this category we also include firms for which we do not have the actual distribution of ownership stakes of the owners and firms where the control contest is tied.

⁷ Except when the corporate owner is a non-Danish corporation or in the very few cases in which the corporate owner have not complied with the law and has not filed an annual report with the Ministry of Economic and Business Affairs.

3. Characterization of family firms and management transitions

The literature on family firms has not been able to provide comprehensive large scale data on privately held family firms (see the illustrative quotations in Footnote 4 and 5 above). Hence, before we address the question of why family firms choose management within the family, we find it useful to present some facts about family firms.

Definition and classification of family firms

There is no generally agreed definition on what characterize a family firm. Scholars of family business have used a number of definitions that can be classified into three broad groups (Handler 1989): First, family firms can be defined from the aggregated amount of ownership that a family own in a given firm (e.g. Barry 1975, Lansberg, Perrow and Rogosky 1993, La Porta, Lopez-de-Silanes and Shleifer 1999 a.o.). Second, family firms can be defined as firms where there is an overlap between family and firm, i.e. where family members participate in firm activities (e.g. Davis 1983). Third, a business is a family business when it is transferred through generations (e.g. Ward 1987). In addition some scholars have defined family business using a combination of these criteria (e.g. Rosenblatt, de Mik, Anderson and Johnson 1985).

In the present analysis we define a family firm as a firm in which members of a family hold strictly more than 50% of the equity. In these firms, the family has formal control of the firm. Among the economic studies that have used a strict ownership definition, there has been a tendency to use a lower threshold to infer control. La Porta, Lopez-de-Silanes, and Shliefer (1999), Claessens, Fan and Lang (2000) and Faccio and

Lang (2002) use both 10% and 20% levels. However, these studies focus on large publicly held corporations where small shareholders hold a large fraction of the equity. In those corporations, control can be exercised with a small fraction of the votes due to the well-known free rider problem (Grossman and Hart, 1980). In contrast, we study closely held firms characterized by having a small number of shareholders (the average number of shareholders in our sample is 1.73 and the median is 1). Because of the small number of shareholders, it is easy to form a coalition of shareholders with more than 50% of the votes to oust a shareholder with less than 50% who is trying to impose its will on the corporation (Bennedsen and Wolfenzon, 2000). Thus, a 50% threshold is more reasonable for closely held corporations. For this reason we require that a family owns strictly more than 50% of the votes to classify the firm as a family firm. Even though exactly 50% of the votes might seem sufficient to control a firm, this is not the case in closely held corporation, since in many case the other 50% is held by only one or two shareholders.

Anderson and Reeb (2003) and Anderson, Sattar and Reeb (2003) define family firms as firms in which the founding family still retains an equity stake or managerial position in the firm (thus this definition is more related to the second group of definitions above). Again, this definition is better suited for large publicly held firms. In these firms, the combination of a moderate-sized block and the authority of being a founder likely translate into effective control.

Fact 1: Using a strict ownership definition, the faction of family firms among privately held firms is 89 pct.

Whereas it is broadly recognized that family ownership is a typical ownership structure among publicly traded and closely held corporations around the world, there are few estimates of the actual frequencies of family ownership. Because of the difficulty in collecting data on private firms and in particularly on the families of the owners, current estimates of the fraction of privately held family firms are not very precise. Dreux (1990) estimates that the share of family ownership is between 65 and 80 pct., evidence that is supported by Gersick *et al.* (1997), Lansberg (1999) and Ward (1987). These conjectures are based on small samples of firms in a few countries. As noticed above, we have not found any large sample estimates of the frequency of family ownership.

Table 1 presents our best estimate of the number of family firms among the population of closely held firms in Denmark when we use our 50 pct. ownership criteria. We have solved for ultimate ownership and eliminated all subsidiaries and firms that are not active. Hence, in 2002 we end up with 47,355 firms, which we categorize into family firms (with a single or multiple family members), non-family firms and undecided. We observe that there are 30,147 single family member firms, and 6,529 multiple family member firms, i.e. in total at least 77.7 pct. of all firms are family owned. In addition there are 8,047 multiple owners' firms that we are not able to categorize. Hence, the upper limit for the frequency of family firms is 77.7 pct. plus the 17 pct. undecided firms, which in total yields 94.7 pct. A more precise estimate can be extracted when we assume that the fraction of family firms in the undecided group is the same as in the group of multiple owners, where we can identify whether it is a family firm or not. In the latter group the fraction of family firms is $6,529 / (2,632 + 6,529) = 71.3$ pct, hence the imputed number of family firms in the undecided group is $0.713 * 8,047 = 5,541$. This implies that

our best estimate of the fraction of family firms among all firms in Denmark is $(30,147+6,529+5,541)/47,355 = 89.2$ pct.

To what extent can we assume that these frequencies are general for firms in other countries? On one hand there the organization of small and medium sized closely held corporations to a large extent is very similar across countries, which indicates that it is a fair guess that that the for most Western countries, the share of firms that are family owned is between 77.7 to 94.7 pct. On the other hand, the insight of the present paper is that the organization of family firms is influenced by the organization of the family behind the firm. Issues like fertility rates, divorce frequencies and lengths of marriages do vary across countries. Hence there is reason to believe that there can be some cross country variation in the frequency and the organization of family firms.

Our estimated frequency of family firms is slightly higher than the previous estimate based on small samples of firms (Dreux 1990, Gersick *et al.* 1997 and Ward 1987). We believe this is due to that we have data on the complete population of firms, including the smallest incorporations that are less likely to be included in surveys. Previous small sample studies have often left out the smallest firms. From Panel A in Table 1 we notice that the frequency of family firms is significantly higher in small firms: Among the smallest quintile of the Danish firms the frequency of family firms is somewhere between 82.5 pct. and 95.9 pct. Contrary to this we see that the frequency of family firms among the largest twenty percentages lies somewhere between 67.0 pct. and 90.1 pct.

Panel B shows the distribution of family and non-family firms on firm age. Notice that family firms are more frequent among older firms. In particular, the presence of multiple family members firms is higher for the oldest 20 pct. of the firms.

We conjecture that if we had used criteria based on either multiple family members involved in the business or realized or planned inter family generational transition it would significantly decrease the number of firms in our sample. The reason is that by using a strict family ownership criterion, we include a potential large number of entrepreneurial firms founded by a single person that plan to sell the firm to outsiders at some point. It is difficult to draw the line between family and non-family entrepreneurial firms using register data alone. However, our ownership-based definition does induce a selection bias into our sample. The main idea we are testing below is that the organization of the family behind the firm has a causal impact on firm decisions. This is almost as a definition not likely to be the case in non family entrepreneurial firms where the founder has no interest in inter family transition. Hence, by including these firms we are apriori making it more difficult to establish the causal link between family and firm organization.

We conclude this fact by underlining that the data show that family ownership is the most typical kind of ownership of closely held corporations, both for small and large firms and for young and old firms.

Fact 2: The fraction of CEOs in single owner family firms that are family members is 91 pct., whereas the family CEOs in multiple owner family firms is 95 pct.

We use all family firms in 2002 and calculate the fraction of firms where the CEO is in family with the family owners of the single and multiple owner family firms, respectively. Table 2 reveals that in single owner family firms 90.7 pct. of the CEOs belonged to the family behind the family firm and 9 pct. were outsiders. This high number may obviously reflect that many of these firms are very small. Thus, it is more

surprising that 95.0 pct. of the CEOs belonged to the family in multiple owner family firms and only 5 pct. were outsiders. Hence, our data shows that most privately held family firms do have inside managers. This partially reflects that most of our firms are young and may not yet have experienced any transition in management.

Fact 3: Among the single owner family firms that change CEO 24 pct. pick the new CEO from within the family and 76 pct. pick an outside CEO. In multiple owners family firms that change CEO 86 pct. pick a family member and 14 pct. an outsider.

Table 4 yields insight into if family firms hire insiders or outsiders when they transfer management control. It provides the share of the new CEOs that belongs to the family during our seven years of observations. In the single family member firms this share is 24.4 pct. One explanation behind that only one quarter of the new managers are from within the family could be that we have relatively many small firms, which are set up by a professional, which sell out when retire and never have had any intention of leaving the firm to the family afterwards.

In family firms with multiple family members we have that 86 pct. of the firms pick new managers from the family.⁸ Hence, we observe that multiple family firms are very different from single family firms in the sense that the family plays a much bigger role in the former.

Fact 4: The relationship of the new family CEOs to the owner in single member family firms is: 50.8 pct. are spouses, 39.5 pct. are offsprings, 6.9 pct. are parents and 2.7 pct.

⁸ To save space we have not reported this number in the appendix.

are siblings. In multiple owner family firms 43 pct. of the new family CEOs are from a younger generation than the old CEO, whereas 57 pct. are lateral transfers.

Table 4 also provides the identity of the new CEO. Surprisingly 50.8 pct of all family transitions happens between spouses. In addition in multiple family firms 6 out of 10 transition are within the same generation.⁹ Hence, most management transitions in family firms are not generational transitions. In single owner family firms the most typical control transfer seem to be guided by optimal resource allocation between spouses that work together in the firm. In multiple family firms transfers between spouses and siblings are the most frequent once.

Most studies of the subject have taken for granted that CEO transitions inside families happen from older to younger generations. To our knowledge, there is no previous documentation showing that half of the management transition in family firms happens between spouses and it is an interesting question why this happens; is it an interim CEO that are in place until the next generation is ready or is it a real power change between the (family-) partners? Our accompanying survey from Greens Analyseinstitut (2003) asks the business owners if their spouses are employed in the firm or not. According to the answers almost half of the spouses (48.3 pct) are employed within the firm. Hence, this may provide weak evidence for that transferring CEO position to spouses is a real promotion of the spouse and thus a real transfer of control within the family firm. We leave this interesting subject for future research.

To sum up, we have provided evidence for that family ownership is the dominant ownership type in closely held corporations, that families play a crucial role in family

⁹ Again, this number is not reported in the appendix.

business and that control transition in family firms is equally distributed on inter-generational and intra-generational transition. The numbers also reveal that there are significant organizational differences between the single owned family firm and family firms owned by two or more family members.

4 The impact of family organization on CEO transition.

The distinctive feature of a family firm is that family organization; ownership and control organization and business organization are closely interwoven.¹⁰ The structure of the family organization affects ownership and control issues in at least two fundamental ways: It provides the stock of potential candidates for future owners and/or future CEOs in the family firm and it shapes the potential conflicts among family members that can be carried over to the business ownership and management sphere. In this section we provide evidence for how these two components of family organization affect the CEO transition in family firms. To highlight our insight we start out by showing some partial correlations, before we analyze the causality link in multivariate regressions. We restrict ourselves to analyze the 3,169 single-family member firms where we identify the family of owners and that changed CEO between 1995 and 2002 (see Table 3 for details).

¹⁰ See Gersick *et al.* (1997) and Lansberg (1999) for a throughout analysis of the three dimensional family firm.

4.1 Correlation between family organization and CEO transition

4.1.1. The impact of the number of children on the decision to choose a CEO from the family. The more children a family owner has the more potential future management candidates there are within the family. Hence, the expected maximum ability of the offsprings increases, which everything equal should make it more attractive to choose a new CEO inside the family. Table 5 provides the first evidence into this relationship. In the left column of Panel A we analyze the frequency of CEO transition to family members in relation to the number of offsprings the single owner has. We observe that the probability of family transition is only 10.2 pct. when the owner has no children, it increases in the number of children reaching a maximum at 31.0 pct. when the owner has 3 children and falls slightly to 28.8 pct when there are more than 3 children. If we restrict the focus to family transitions to the next generation, we see the same relationship evolve in the right column of Panel A, even though the frequencies obviously are smaller.

It may be relevant to argue that perhaps it is not the total number of offsprings that are relevant, but the number of children that are ready to be active in management at the day of transition. To capture this point, we restrict the analysis to children aged 20 or above in Panel B. We notice that in general the inside transition frequencies are higher, however, the pattern is very similar to Panel A: the inside transition frequency increases up to the third child and slightly decreases with additional children.

Thus, at first glance there appear to be strong correlation between the number of children an owner has and the decision to pick a new CEO from the family. Below we will analyze if this is also a causal relationship.

4.1.2 Family conflicts and transition. Family members may conflict and these conflicts can be carried over to the business sphere in a destructive way. Thus, it is reasonable to assume that in families with many internal conflicts there is an added cost of choosing family transition, which may make outside managers more attractive. This may be one explanation for the decrease in family transition we observed after the third child in Table 5. However, it is significantly more visible when we use divorce as a proxy for family conflicts and analyze its impact in family transition.

Table 7 yields the family transition frequencies for our single member family firms based on if the owner is married, divorced or having multiple marriages and controlling for the number of children. The results are rather striking: Whereas divorce does not affect the decision to pick other family members as CEOs whenever there are no children, it lowers significantly the frequency of family transition when there are one or more children. The differences in the family transition frequency raises considerably in the number of children. For families with three children we see that when the owner is in a single marriage the frequency of family transition is almost 50 pct., whereas if an owner has three children in multiple marriages or is divorced then the frequency is only 20 pct.

In Panel B we again focus only on family transition to the next generation and the differences are very large for owners with many children: The frequency of inside transfers for owners in their first marriage with three children is almost 40 pct. The similar frequency when owners are divorced or having multiple marriages is only 12 pct. Hence, there appear to be a striking correlation between marital status and CEO family transition in general and family transition to the next generation in particular. We will

pursue the issue of the impact of conflicts within families on transition in family firms more generally below.

4.1.3. Gender and family transition. Does the gender composition affect the outcome of transition in family firms? In theory, there may be a number of reasons why this could be the case. First, parents could impose their values on their children in their upbringing, i.e. some parents may bring up sons and daughters differently, which may affect the occupational choices these take later in life. Second, strong business owners may sometimes have preferences on that only one or the other gender can successfully continue the family firm.

Third, the gender composition may affect the organization of the family and the amount of conflicts that evolve and affect the family business. Psychologists have emphasized that men and woman may live through different personal dreams at different stages of life (a classical reference is Levinson 1978, 1996). Lansberg (1999) suggests that these personal dreams will interact and conflict with the family dream in families that are involved in family business. These family dreams are most often expressed by the heirs, which are the ones that control the family firms. It is likely that men and woman react differently in such clashes between the personal dreams and the family business dream and through this channel the gender composition, therefore, may have an impact on CEO transition in family firms.

Table 6 provides some insight to these issues from an empirical perspective. Table 6a shows that family transition is lower in families where all children are females. This is particular the case when we focus on family transition to the next generation: in families with at least one male offspring the inside transition frequency is close to 15 pct.,

whereas in families where all children are female we observe only 1 pct. family transition. In Panel B we restrict our analysis to children above 20 years. This does not change the result significantly.

Table 6b illustrates the gender issue from another angle and condition on the firms with a family transition to the next generation. In this table we look at the gender of the new CEO controlling for family composition and focusing on offsprings older than 20 years. In the 77 families with one offspring of each sex, the male offspring became the new CEO in almost 82 pct. of the cases and the female offspring in only 18 pct. of the cases. The picture is even stronger when we look at the 88 families with three offsprings above 20 years. In 47 of these families there were two female offsprings and in these firms the new CEO was the male offspring in 85 pct. of the cases and one of the female offsprings were the new CEO in the remaining 15 pct. of the cases. In the 44 families with two male offsprings and one female, the male offspring became the new CEO in almost 93 pct. of the cases. Hence, there seem to be a clear gender effects of who the new CEO is, which indicates that gender issues may have an impact on family transition in general.

4.1 Multivariate analysis.

4.2.1. Simple probit regressions. Tables 8-12 provide evidence of the relationship between the organization of the family behind the family firm and CEO transition. First we show the results from our multivariate probit regressions without controlling for endogeneity. In the following subsection we provide more evidence of the causal link between family and firm organization through addressing taking the potential endogeneity problems in family organization.

Table 8 shows the result of probit regressions of family transition. Our dependent variable takes the value 1 if the new CEO is from the same family as the owner of the single-member family firm and zero otherwise. Thus, the dependent variable includes both inter- and intra- generational transfers of control.

Our explanatory variables capture the three topics analyzed partially above. *Number of adult children* is the number of children of the controlling family member that was aged 20 at the time of the transition. *Divorced* is a dummy taking the value 1 if the controlling family member was divorced at least 5 years before the time of transition. *All adult children are females* is a dummy taking the value 1 if all adult children are females.

We control for a number of firm characteristics. *Firm size* is book value of assets measured in million Danish kroner (equivalent to 135,000 €). *Firm age* is measured as number of years since the firm was established. *Profitability* is industry adjusted returns on assets, defined as operating profit over book value of assets minus the mean 2-digit SIC industry return on assets. *Industry competition* is the Herfindahl-Index, which sums the squares of each firm's market share within the industry. In all tables we report the t-statistics.

We present the result for two samples. The first cover all 3,169 firms in which we have identified the owners' CPR number and there has been a transition in the period from 1995-2002. In the second subset we leave our families with no children to check how sensible our results about the gender of the child are to that we include families with no children. Within each sub sample we present the regressions with and without control variables.

The probit regressions show that the number of adult children has a positive effect on family transition. Families with more children are more likely to pick a CEO from within the family. This effect is numerically large and very significant even at a 1 pct. level. Hence, we confirm the insight from the partial analysis above.

The second insight from Table 8 is that marital status has an impact on family transition. We measure this by including two dummies: one which takes the value 1 if the business owner never married and one that takes the value 1 if the business owner has been divorced. Since bigamy is illegal in Denmark, this dummy thus includes all business owners that have been married multiple times. Both dummies are negative and significant at a 1-pct level. Hence, relative to being married with the same spouse until the control transition in the family firm, the divorce decision significantly decreases the frequency of transferring control within the family.

Similarly, business owners that never have been married are less likely to transfer control to family members even when we control for the number of children. We do not wish to draw too strong conclusions from this finding, however, because the group of non-married firm owners is very heterogeneous. For example it covers a potentially large group of owners who live in very stable relationships with partners of opposite or same sex, who for some reasons never have been married. It is worth mentioning that if partners of same sex wish to be married in Denmark, they can and it will show up in our data. However, most homosexual couples do not register as married and such business owners will be in our group of never married.

We believe that the results in Table 8 are consistent with the argument that divorce tends to increase conflicts within families and this has a negative impact on the

decision to keep the family in operating control in the family firm. More generally we see that potential conflicts within families may affect the choice of how to allocate future control in the family firm.

The third insight from Table 8 is the impact of gender composition on family transition. There are many ways to measure the ratio of female offsprings to the total number of offsprings. We measure this as simple as possible through a dummy that takes the value 1 when all children are females. This dummy is negative and significant on a 1 pct. level in the absence of our control variables and on a 5 pct. level when we include our control variables. This method of measuring the relative frequency of female offsprings can be biased from that we include all owners with no children, since we do not distinguish between owners that have one or more male offsprings and owners who do not have any children. Hence, in the right columns of Table 8 we present the regressions again on a sub sample of firms in which the owners have at least one child. The results are very similar. The coefficient for our gender variable is slightly higher and even more significant. We have also run the regressions changing the gender variable to all children are females, i.e. with no age requirement. The results of this change are similar to the presented ones.

Table 9 confirms the above insight when we analyze transition to children only. Again we observe that family transition is increasing in the number of children, decreasing in the divorce dummy and decreasing if all children are females.

4.2.2 The endogeneity of family size. In Table 8 and 9 we assumed that the number of children is exogenous relative to the decision of transferring power in the family firm. However, it is likely that business owners choose to have more children if

they plan to make generational transition within the family, thus the family size might be endogenous. We have two approaches to cater for this potential problem.

First, we follow the Angrist and Evans (1998) approach and instrument the number of children using the observation that when families have two children of the same gender, they are significantly more likely to have a third child. Sex-composition of a given number of children is not affected by future decision to transfer control. We therefore instrument number of children with a dummy, *Same gender*, for whether the first two children have the same gender. Following Angrist and Evans (1998) we construct a sample of married single family owners with at least two adult children and use *Same gender* as instrument for a dummy for *More than 2 children* in Panel A and the *Number of additional* children in Panel B of Table 10, respectively.¹¹ Table 10 shows that our results on number of children and gender composition are significant at a one percent level when we use the approach suggested by Angrist and Evans (1998).

The strict application of the Angrist and Evans (1998) method is, however, problematic in our setting. The reason is that we have shown that sex-composition of the first two children do affect the outcome of the transition process. More daughters do lower the likelihood of inside transition. Hence, if the number of children is endogenous, then the decision to have more children after having two daughters may as well be affected by the desire to transfer the control inside the family later on. We recognize this potential problem even though the fraction of family owners that get an additional child

¹¹ For simplicity we only use single family owners where all children were adults at the time of transition.

is 4% higher when the first two children are male compared to female.¹² Thus, there seems to be no evidence in the data for a parental preference for boys in the fertility decision among family owners. The validity of the sibling-sex composition instrument is therefore only affected by the direct effect on the family transition by the random assignment of gender.

Second, to cater for the potential problem in applying Angrist and Evan's method we create an additional test where the family size is exogenous. We look at a sub sample of firms where the firm was founded at least 10 years after the last child was born. We believe that families do not choose the number of children today because of a firm they may plan to start up 10 years later and may want one or more of the children to take over after two or three decades. Table 11 shows the results for this sample of firms. We observe that all three effects are still large and significant at a 1 pct. level.

4.2.3 The endogeneity of family conflicts. We argue above that family conflicts do have an impact on the organization of the family firm. However, we cannot a priori exclude that the decision to transfer control inside or outside the family has an impact on these conflicts. An illustrative picture of this may be a spouse that realizes that the firm's his or her offspring is not likely to be the future controlling manager of the family firm and therefore decide to divorce the firm owner.

We have already catered to this problem by defining the divorce variable in all regressions such that we only measure divorces that have happened at least 5 years before the transition of control in the firm. Thus, the time lag insures that the effect from divorce

¹² We similarly find that the fraction of family owners that get more than one child is 89% and independent of the gender of the first child

on CEO transition is causal. We introduce the time lag on basis of the actual date of divorce, i.e. the date from which couples legally are considered divorced. The date of divorce is included in the data from the CPR agency, which administers all changes in marital status. We have repeated these exercises (unreported) using 3 and 10 years lags. The results are robust to these changes. This confirms our previous insight into the impact of family conflicts on firm organization.

4.2.4 Additional robustness checks

In addition to controlling for the potential endogeneity of family size and family conflicts we have performed a number of standard robustness checks. The results reported throughout section 4 are robust to the exclusion of the smallest 10 and 20 pct. of the firms. The results are also robust to whether we exclude firms where the old CEO was an outsider, thus the reported results are not an artefact of the presence of two types of family firms; one that always chooses a family CEO and one that does not.

We sum up this section by concluding that the number of children has a positive and very significant impact on family transition, that divorce has a negative and very significant impact on family transition and, finally, that gender composition has a significant impact on family transition. It supports the general theme of the present analysis: family organization affects family business positively by providing the stock of potential future controllers and negatively by creating conflicts that may be carried over into the family firm sphere.

5 Discussion

The main contribution of our study is to establish a causal link from family organization to the organization of family firms. In particular, we show that the choice of a new CEO, one of the most important decisions in any firm, is significantly influenced by two opposing forces within any given family: the potential supply of qualified candidates and the potential degree of conflicts. We believe this insight has a number of implications both for how to understand national and cross-country variations in the frequency and organization of these firms and for how political initiatives towards the organization of families can affect the organization of family firms:

First, many authors have shown that family control is a typical form of firm organization among the biggest firms and constitute a large fraction of the economy of every country. However, our study is the first to establish a systematic dataset for a whole population of firms through which simple facts about the frequencies and organization of closely held family firms could be analyzed.

Second, we provide new insight to the distinctive features of different types of family firms. In particular we distinguish between the single owner family firm and the multiple owner family firm.¹³ We provide evidence for that there is a significant difference between these firm types. Multiple owner family firms hire to a larger extent CEOs from within the family and more frequently from the next generation in a family.

¹³ Family firm scholars provide a more detailed taxonomy, which tend to mirror the development of the family firms across generations. Typically, there is a distinction between controlling owner firms, firms where the owners are siblings and older firms where owners are (distinctive) cousins. See Lansberg 1999 for a development of this taxonomy.

Third, our study indicates a new way of looking at cross-country variation in family firms. We have established a causal link from the organization of the family that control the business to the organization of the business itself. Family organization varies across countries and cultures. The average number of children is lower in Scandinavia than in most Asian countries, the frequency of divorces and multiple marriages may be higher in most Western countries than in Japan. Female labour participation rates vary across countries and do affect the organization of families. Hence, our study suggests that cross country variations in the frequency and organization of family firms is shaped among other things by variations in population demographics, e.g. birth frequency, life expectancy, frequency of divorces and expected length of marriages.¹⁴

Fourth, our study also suggests that the organization of family firms changes over time both within countries and across countries. In the Scandinavian countries, female labour supply has increased over the last 30 years to a level that matches the male labour supply. Birth rates have declined, expected duration of marriages has decreased and the frequency of multiple marriages during a single person's lifespan has increased. Given our established causal link between family organization and the organization of family

¹⁴Family firm scholars argue that cross country differences in the prevalence of family firms can be traced back to family circumstances: “*Stronger family traditions* and limited competing career opportunities have made Europe and Latin America amore fertile ground for [family firms with cousins-owners]. In the United States, with its strong emphasis on entrepreneurship, independence, mobility and *focus on the nuclear rather than the extended family*, the bulk of family firms that survive past the first generation are more likely to subdivide and recycle to [firms with a single owner] and [firms with sibling-owners]” (Davis et al. 1997, page 53, emphasis added).

firms, we predict that these demographic and welfare developments will have an impact of the economic role and the organization of family firms.

Fifth, our analysis also provides some policy implications. In general a policy that affects demographic composition and family organization will also affect the frequency and organization of family firms. One suggestive example is the political induced decrease in the average number of children per family in China. Our analysis indicates that such drastic changes in family organization should have significant impact on the organization of family business. Another speculative policy implication is that social, welfare and gender policy that make families more stable and therefore reduce the number of divorces and other family conflicts may improve the importance of family controlled firms in the future, since it would increase the role of the family in the organization of the firm.

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Table 1, Distribution of Family Firms in 2002

We define *family firms* as firms that are controlled by a single family who holds a majority of the voting rights and distinguish between two types of family firms; *single family member* and *multiple family member* firms. Single family member firms are controlled by a single person with no family relation to other owners of the firm. Multiple family member firms are characterized by having at least two family members that control the firm. *Not family firm* are firms without a controlling family and *undecided* are firms with multiple owners that we could not classify due to tied ownership (i.e. two families owning 50 pct. of the votes each) or firms that did not report the distribution of votes.

	Family firms		Not family firms	Undecided
	Single family member	Multiple family members		
N, firms (total = 47.355)	30,147	6,529	2,632	8,047
Panel A, Quintiles by book value of assets				
1	75.0	7.5	4.1	13.4
2	72.4	9.8	3.6	14.2
3	65.9	13.7	4.5	15.9
4	59.3	16.6	5.6	18.5
5	45.8	21.2	9.9	23.0
All	63.7	13.8	5.5	17.0
Panel B, Quintiles by firm age				
1	64.5	10.2	7.1	18.2
2	64.1	11.6	5.8	18.4
3	65.3	11.5	5.1	18.2
4	65.9	14.6	4.1	15.4
5	58.4	21.6	5.4	14.7
All	63.7	13.8	5.5	17.0

Table 2, Firm Characteristics in 2002

This table reports mean and (median) descriptive statistics of *family firms*, *not family firms* and *undecided*. We define *family firms* as firms that are controlled by a single family who holds a majority of the voting rights and distinguish between two types of family firms; *single family member* and *multiple family member* firms. Single family member firms are controlled by a single person with no family relation to other owners of the firm. Multiple family member firms are characterized by having at least two family members that control the firm. *Not family firm* are firms without a controlling family and *undecided* are firms with multiple owners that we could not classify due to tied ownership (i.e. two families owning 50 pct. of the votes each) or firms that did not report the distribution of votes.

	Family firms		Not family firms	Undecided
	Single family member	Multiple family members		
Book value of assets in 1,000 €	1,162 (261)	3,296 (587)	24,587 (652)	3,148 (467)
Firm age	13.1 (11.0)	17.7 (13.0)	14.0 (8.0)	13.2 (9.0)
Return on assets	0.057 (0.039)	0.046 (0.035)	0.052 (0.034)	0.052 (0.041)
Number of owners	1.03 (1.00)	2.54 (2.00)	3.52 (3.00)	3.12 (2.00)
Fraction of family CEO	90.7	95.0		
N, firms (total = 47.355)	30,147	6,529	2,632	8,047

Table 3, CEO Transition in Family Firms, 1995-2002

This table shows the number of CEO transitions that occurred in Danish family firms from 1995 to 2002. We define *family firms* as firms that are controlled by a single family who holds a majority of the voting rights and distinguish between two types of family firms; *single family member* and *multiple family member* firms. Single family member firms are controlled by a single person with no family relation to other owners of the firm. Multiple family member firms are characterized by having at least two family members that control the firm.

Panel A includes all family firms with a CEO transition between 1995 and 2002, whereas Panel B includes the sub sample where we were able to identify the family members' social security number and thereby obtain the family structure.

	1995 to 1996	1996 to 1997	1997 to 1998	1998 to 1999	1999 to 2000	2000 to 2001	2001 to 2002	Total
Panel A: All family firms								
Single family member	772	763	544	304	250	552	472	3,657
Multiple family members	133	179	129	70	64	147	114	836
Panel B: Family Firms where we identify the family members' social security numbers and family structure								
Single family member	686	639	459	261	221	493	410	3,169
Multiple family members	81	99	74	45	39	96	80	514

Table 4, The Family Behind the Family Firm by Type of Transition

This table shows some descriptive statistics on family firms with a single family member with a CEO transition between 1995 and 2002 for which we were able to identify the social security number of the single family member (see Table 3 and Section 2 for further details). We define *family transition* as transitions to the *next generation* (children), *same generation* (spouse and siblings) and to the *previous generation* (parents). Transitions to non family members are classified as transitions to an *outsider*. All family statistics relate to the family of the single family member.

Transition to	Family			Previous generation	Outsider
	Next generation	Same generation			
		Spouse	Sibling		
N	307	395	21	54	2,394
Share of total family transitions (%)	39.5	50.8	2.7	6.9	
Retiring CEO in family (%)	96.1	97.2	90.5	92.6	76.1
CEO death around change (%)	25.7	37.0	0.0	3.7	7.7
Age of retiring CEO	60.7	53.7	38.4	34.6	50.5
Age of new CEO	34.0	52.0	33.3	58.2	46.2
Age of owner	62.0	53.8	33.3	31.1	50.9
Owner divorced (%)	8.1	12.7	0.0	1.9	10.9
Number of children	2.46	2.14	0.95	0.98	1.74
Number of adult children	2.38	1.61	0.00	0.00	1.24
Number of female children	0.95	0.99	0.38	0.50	0.87
Number of adult female children	0.99	0.75	0.00	0.00	0.62

Table 5, Family Transition and Number of Children

This table shows the frequency of family transitions in single family member firms with a CEO transition as a function of the number of children. The frequency of family transition (*%FT*) is the number of firms with family transition over the number of firms with family plus outside transition. *Family transition to all generations* includes family transitions to children, spouse, siblings and parents, whereas *Family transition to next generation* only includes family transitions to the next generation (children), thus firms with transitions to spouse, siblings and parents are excluded in the latter.

Panel A focuses on *All children*, whereas Panel B only include *Adult children*, i.e. children that were aged 20 or above at the time of the transition.

Number of children	Family transition to all generations		Family transition to next generation	
	N	%FT	N	%FT
Panel A, All children				
0	604	10.1	543	0.0
1	413	22.5	349	8.3
2	1,295	27.7	1,077	13.1
3	648	31.5	552	19.6
4+	209	28.7	178	16.3
All	3,169	24.5	2,699	11.4
Panel B, Adult children (aged above 20 at time of transition)				
0	1,426	13.7	1,233	0.2
1	445	20.0	387	8.0
2	831	34.9	684	20.9
3	376	43.6	322	34.2
4+	91	41.8	73	27.4
All	3,169	24.5	2,699	11.4

Table 6A, Gender of Children

This table shows the frequency of family transitions in single family member firms with a CEO transition as a function of the gender of the children. The frequency of family transition (*%FT*) is the number of firms with family transition over the number of firms with family plus outside transition. *Family transition to all generations* includes family transitions to children, spouse, siblings and parents, whereas *Family transition to next generation* only includes family transitions to the next generation (children), thus firms with transitions to spouse, siblings and parents are excluded in the latter.

Panel A focuses on *Gender of all children*, whereas Panel B only include *Gender of adult children*, i.e. children that were aged 20 or above at the time of the transition.

	Family transition to all generations		Family transition to next generation	
	N	%FT	N	%FT
Panel A, Gender of all children				
At least one male	2,003	29.9	1,681	16.5
All children are females	562	20.8	475	6.3
All	2,565	27.9	2,156	14.3
Panel B, Gender of adult children (aged above 20 at time of transition)				
At least one male	1,309	36.8	1,103	25.0
All children are females	434	22.8	363	7.7
All	1,713	33.3	1,466	20.7

Table 6B, Gender of Children Conditional on Family Transition to Next Generation

This table shows to whom the CEO position was transferred for firms that choose a family transition to the next generation as a function of the gender composition. *%Men* and *%Female* are the percentage of firms that transferred the CEO position to a male and female, respectively.

Panel A focuses on firms where the single family member has two adult children and one of each gender, whereas Panel B includes firms where the single family member has three adult children and at least one of each gender.

Gender composition	Family transition to whom?		
	N	% Male	% Female
Panel A, Single family member with two adult children			
One male, One female	71	81.3	19.7
Panel B, Single family member with three adult children			
One male, two females	43	83.7	16.3
Two males, one female	38	92.1	7.9

Table 6C, Age of Children Conditional on Family Transition to Next Generation

This table shows to whom the CEO position was transferred for firms that choose a family transition to the next generation as a function of the number of adult children. *%Oldest child* is the percentage of firms that transferred the CEO position to the oldest child.

Number of adult children	Family transition to whom?	
	N	% Oldest child
2	145	59.3
3	113	32.7
4+	20	28.6
All	278	46.0

Table 7, Family Transition and Marital Status

This table shows the frequency of family transitions in single family member firms with a CEO transition as a function of the number of the children and the marital status. The frequency of family transition (%FT) is the number of firms with family transition over the number of firms with family plus outside transition. *Family transition to all generations* includes family transitions to children, spouse, siblings and parents, whereas *Family transition to next generation* only includes family transitions to the next generation (children), thus firms with transitions to spouse, siblings and parents are excluded in the latter.

Number of adult children	Family transition to all generations						Family transition to next generation					
	Never married		Married		Divorced or multiple marriages		Never married		Married		Divorced or multiple marriages	
	N	%FT	N	%FT	N	%FT	N	%FT	N	%FT	N	%FT
0	460	8.2	890	16.2	76	18.4	422	0.0	749	0.4	62	0.0
1	11	0.0	342	20.8	92	19.6	11	0.0	294	7.8	82	9.8
2	2	0.0	720	36.4	109	25.7	2	0.0	591	22.5	91	11.0
3	0	n.a.	331	45.9	45	26.7	0	n.a.	283	36.7	39	15.4
4+	0	n.a.	76	44.7	15	26.7	0	n.a.	61	31.1	12	8.3
All	473	8.0	2,359	28.1	337	22.6	435	0.0	1,978	14.3	286	8.7

Table 8, Determinants of Family Transition

Family transition is the dependent variable, defined as a dummy taking the value 1 when the CEO position is transferred to all generations. *Number of adult children* is the number of children of the single family member that was aged 20 at the time of the transition. *Divorced* is a dummy taking the value 1 if the single family member was divorced at least 5 years before the time of transition. *All adult children are females* is a dummy taking the value 1 if all adult children are females. *Firm size* is book value of assets measured in million Danish kroner (equivalent to 135,000 €). *Firm age* is measured as number of years since the firm was established. *Profitability* is industry adjusted returns on assets, defined as operating profit over book value of assets minus the mean 2-digit SIC industry return on assets. *Industry competition* is the Herfindahl-Index, which sums the squares of each firm's market share within the industry. t-statistics are reported in parenthesis.

***, ** and * denote significance at the 1, 5 and 10 percent level, respectively.

Estimation method	Family transition to all generations			
	All single family members		Single family members w/ children	
	Probit	Probit	Probit	Probit
Number of adult children	0.260*** (12.0)	0.260*** (10.8)	0.245*** (10.6)	0.242*** (9.39)
Never married	-0.492*** (-5.24)	-0.488*** (-4.70)	-0.499*** (-3.02)	-0.388** (-2.23)
Divorced	-0.214*** (-2.62)	-0.189** (-2.09)	-0.248*** (-2.92)	-0.230** (-2.44)
All adult children are females	-0.222*** (-3.03)	-0.174** (-2.16)	-0.237*** (-3.23)	-0.194** (-2.39)
Firm size		-0.007*** (-4.00)		-0.008*** (-4.05)
Firm age		0.001 (0.66)		0.002 (1.19)
Profitability		0.328** (2.32)		0.359** (2.31)
Industry competition		9E-05*** (3.34)		1E-04*** (3.85)
Constant	-0.916*** (-21.1)	-0.918*** (-15.7)	-0.870*** (-18.2)	-0.897*** (-14.2)
Pseudo-R ²	0.07	0.08	0.05	0.07
N	3,169	2,613	2,565	2,125

Table 9, Determinants of Family Transition

Family transition is the dependent variable, defined as a dummy taking the value 1 when the CEO position is transferred to all generations and to the next generation, respectively. *Number of adult children* is the number of children of the single family member that was aged 20 at the time of the transition. *Divorced* is a dummy taking the value 1 if the single family member was divorced at least 5 years before the time of transition. *All adult children are females* is a dummy taking the value 1 if all adult children are females. *Firm size* is book value of assets measured in million Danish kroner (equivalent to 135,000 €). *Firm age* is measured as number of years since the firm was established. *Profitability* is industry adjusted returns on assets, defined as operating profit over book value of assets minus the mean 2-digit SIC industry return on assets. *Industry competition* is the Herfindahl-Index, which sums the squares of each firm's market share within the industry. t-statistics are reported in parenthesis.

***, ** and * denote significance at the 1, 5 and 10 percent level, respectively.

Estimation method	Family transition to all generations		Family transition to next generation	
	Probit	Probit	Probit	Probit
Number of adult children	0.261*** (11.6)	0.255*** (10.2)	0.256*** (5.54)	0.212*** (4.15)
Divorced	-0.232*** (-2.74)	-0.218** (-2.32)	-0.423*** (-3.52)	-0.344*** (-2.66)
All adult children are females	-0.226*** (-3.06)	-0.184** (-2.27)	-0.597*** (-5.44)	-0.643*** (-5.18)
Firm size		-0.008*** (-4.06)		-0.007** (-2.78)
Firm age		0.003 (1.22)		0.008*** (3.15)
Profitability		0.366** (2.36)		0.299 (1.26)
Industry competition		1E-04*** (3.90)		8E-05* (1.84)
Constant	-0.917*** (-20.0)	-0.936*** (-15.4)	-1.204*** (-10.4)	-1.223*** (-8.81)
Pseudo-R ²	0.05	0.06	0.07	0.08
N	2,565	2,125	1,466	1,200

Table 10, Family Transition with Exogenous Variation in Family Size

Following Angrist and Evans (1998) we construct sample of married single family owners with at least two adult children and where all children were adult at the time of the CEO transition. Family transition is the dependent variable, defined as a dummy taking the value 1 when the CEO position is transferred to all generations and to the next generation, respectively. The instrumented variable is *More than 2 children* in Panel A and *Number of additional children* in Panel B, respectively. *More than 2 children* is a dummy taking the value 1 if the single family member has more than 2 adult children. *Number of additional children* is the number of children in excess of 2 of the single family member. The instrument is *Same gender*, defined as a dummy taking the value 1 if the two first children have same gender. *All adult children are females* is a dummy taking the value 1 if all adult children are female. *Firm size* is book value of assets measured in million Danish kroner (equivalent to 135,000 €). *Firm age* is measured as number of years since the firm was established. *Profitability* is industry adjusted returns on assets, defined as operating profit over book value of assets minus the mean 2-digit SIC industry return on assets. *Industry competition* is the Herfindahl-Index, which sums the squares of each firm's market share within the industry. t-statistics are reported in parenthesis. We only report the t-statistic on the instrument, *Same gender*, from the first stage regression at the bottom of each panel.

***, ** and * denotes significant at the 1, 5 and 10 percent level, respectively.

Estimation method	Family transition to all generations				Family transition to next generation			
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
Panel A: <i>Same gender</i> dummy as instrument for <i>More than 2 children</i>								
More than 2 children	0.096*** (2.90)	1.291*** (2.86)	0.084** (2.30)	1.247** (2.47)	0.066*** (2.75)	1.223*** (2.91)	0.114*** (3.04)	1.109** (2.39)
All adult children are females	-0.130*** (-2.97)	0.134 (1.12)	-0.120** (-2.48)	0.131 (1.00)	-0.183*** (-4.06)	0.041 (0.38)	-0.190*** (-3.78)	0.002 (0.02)
Firm size			-3E-04* (-1.68)	-9E-06 (-0.03)			-2E-04 (-1.24)	5E-05 (0.16)
Firm age			0.001 (0.51)	-0.002 (-0.88)			0.001 (1.30)	-0.001 (-0.63)
Profitability			0.124 (1.30)	-0.007 (0.05)			0.079 (0.84)	-0.035 (-0.24)
Industry competition			5E-05*** (3.10)	4E-05* (1.76)			1E-06 (0.71)	3E-05 (1.11)
Constant	0.412*** (18.7)	-0.078 (-0.56)	0.383*** (11.2)	-0.048 (-0.25)	0.166*** (2.61)	-0.169 (-0.97)	0.258*** (7.45)	-0.103 (-0.59)
t-statistic on instrument		(3.52)		(3.08)		(3.45)		(3.00)
N	951	951	794	794	778	778	642	642
Panel B: <i>Same gender</i> dummy as instrument for <i>Number of additional children</i>								
Estimation method	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
Number of additional children	0.055** (2.35)	0.729*** (3.23)	0.045* (1.71)	0.726** (2.60)	0.066*** (2.75)	0.726*** (3.18)	0.051* (1.84)	0.732** (2.44)
All adult children are females	-0.133*** (-3.03)	0.089 (0.93)	-0.124*** (-2.54)	0.122 (1.00)	-0.183*** (-4.06)	0.018 (0.20)	-0.197*** (-3.89)	0.008 (0.07)
Firm size			-3E-04* (-1.73)	-1E-04 (-0.33)			-2E-04 (-1.32)	-2E-06 (0.08)
Firm age			0.001 (0.50)	-0.002 (-1.25)			0.002 (1.33)	-0.002 (-0.98)
Profitability			0.127 (1.33)	0.012 (0.09)			0.087 (0.92)	0.018 (0.13)
Industry competition			5E-05*** (3.09)	4E-05* (1.66)			1E-05 (0.67)	3E-05 (1.09)
Constant	0.424*** (19.9)	0.075 (0.63)	0.395*** (11.8)	0.069 (0.49)	0.299*** (13.8)	-0.042 (-0.35)	0.278*** (8.20)	-0.012 (-0.09)
t-statistic on instrument		(4.44)		(3.44)		(4.18)		(3.27)
N	951	951	794	794	778	778	642	642

Table 11, Family Transition in Firms with Exogenous Family Size

We construct a sample of firms that was founded 10 years after the last child was born. Family transition is the dependent variable, defined as a dummy taking the value 1 when the CEO position is transferred to all generations and to the next generation, respectively. *Number of adult children* is the number of children of the single family member that was aged 20 at the time of the transition. *Divorced* is a dummy taking the value 1 if the single family member was divorced at least 5 years before the time of transition. *All adult children are females* is a dummy taking the value 1 if all adult children are females. *Firm size* is book value of assets measured in million Danish kroner (equivalent to 135,000 €). *Firm age* is measured as number of years since the firm was established. *Profitability* is industry adjusted returns on assets, defined as operating profit over book value of assets minus the mean 2-digit SIC industry return on assets. *Industry competition* is the Herfindahl-Index, which sums the squares of each firm's market share within the industry. t-statistics are reported in parenthesis.

***, ** and * denote significance at the 1, 5 and 10 percent level, respectively.

Estimation method	Family transition to all generations		Family transition to next generation	
	Probit	Probit	Probit	Probit
Number of adult children	0.226*** (3.74)	0.202*** (2.95)	0.394*** (5.21)	0.378*** (4.32)
Divorced	-0.468*** (-3.28)	-0.537*** (-3.35)	-0.590** (-3.09)	-0.495** (-2.40)
All adult children are females	-0.241* (-1.84)	-0.281* (-1.92)	-0.607*** (-3.17)	-0.737*** (-3.20)
Firm size		-0.009*** (-2.89)		-0.013** (-2.45)
Firm age		-0.002 (-0.65)		0.003 (0.85)
Profitability		0.162 (0.45)		0.157 (0.34)
Industry competition		9E-05 (1.44)		-2E-05 (-0.20)
Constant	-0.814*** (-5.21)	-0.582*** (-3.14)	-1.568*** (-7.83)	-1.446*** (-6.06)
Pseudo-R ²	0.04	0.06	0.11	0.13
N	692	611	581	470