

Are family firms really superior performers? ☆

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Abstract

Although international evidence suggests that families may be unhelpful to firm performance, recent analyses of U.S. public companies indicate that family firms outperform. This study probes these contrasting findings by investigating more fine-grained measures of family business in the U.S. Specifically, it makes a fundamental but neglected distinction between lone founder businesses in which no relatives of a founder are involved, and true family businesses that do include multiple family members as major owners or managers. The research also seeks to overcome issues of endogeneity and selection bias by examining both *Fortune* 1000 firms and a random sample of 100 much smaller public companies. The results show that findings are indeed highly sensitive both to the way in which family businesses are defined and to the nature of the sample. *Fortune* 1000 firms that include relatives as owners or managers never outperform in market valuation, even during the first generation. Only businesses with a lone founder outperform. Moreover neither lone founder nor family firms exhibited superior valuations within a randomly drawn sample of companies. Our results confirm the difficulty of attributing superior performance to a particular governance variable.

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1. Introduction

A central issue in research on corporate finance is the effect of governance on the performance of a business. Much of the early research focused on the effects of ownership concentration (Demsetz and Lehn, 1985; Morck et al., 1988), while more recent work has considered other governance variables such as the size and composition of the board of directors as well as the distribution of voting rights within the firm (Claessens et al., 2002; Villalonga and Amit, 2006a,b; Dalton et al., 1998).

The research on corporate governance contains two distinct strands. One direction initiated by Berle and Means (1932) is to seek a causal effect on corporate performance from governance variables such as management ownership. By contrast, research by Demsetz (1983), Demsetz and Lehn (1985) and Demsetz and Villalonga (2001) has sought to explain how ownership and other governance variables endogenously respond to firm and industry characteristics without necessarily inducing a causal effect of governance on performance.

Within this research on corporate governance, a growing body of analysis has focused on the impact of family firms on corporate performance (Anderson and Reeb, 2003; Ang et al., 2000; Bennedsen et al., in press; McConaughy et al., 1998; Cronqvist and Nilsson, 2003; Maury, 2006; Villalonga and Amit, 2006b). Family firms often have concentrated ownership and/or voting rights that, in the vein of Berle and Means (1932) and Jensen and Meckling (1976), might enhance performance. Yet the typical portrayal of a family firm suggests that these organizations suffer from capital restrictions, inter-generational squabbles, executive entrenchment, and nepotism, all of which may detract from performance (Allen and Panian, 1982; Chandler, 1990; Gomez-Mejia et al., 2003; Perez-Gonzalez, 2006; Schulze et al., 2001, 2003). Hence, it is an empirical question as to the effects of family ownership on performance. Moreover this empirical question must be approached carefully due to the endogeneity in ownership modeled by Demsetz and Lehn (1985).

Recent research in the U.S. has produced evidence that family firms offer superior performance vis-à-vis other major corporations. In studies of the S&P 500, *Business Week* 1000, and *Fortune* 500 samples, respectively, Anderson and Reeb (2003, 2004), McConaughy et al. (1998) and Villalonga and Amit (2006b) report that the Tobin's q of family firms is greater than that of other corporations. However, Villalonga and Amit (2006a) find that superior performance within family firms is less prevalent within firms that have disproportionate voting rights.

The positive results for family firms in the U.S. are somewhat surprising. For one, they appear to contrast with the performance evidence from Europe and Asia (Claessens et al., 2002; Cronqvist and Nilsson, 2003; Maury, 2006; Bennedsen et al., in press), also with scholars examining more inclusive samples of smaller firms (Holderness and Sheehan, 1988), and with authors who find family involvement to be associated with lower productivity (Barth et al., 2005), family utility maximization as opposed to firm value maximization (Bertrand and Schoar, 2006), and executive entrenchment (Allen and Panian, 1982; Gomez-Mejia et al., 2001). More generally, the apparent superiority of family firms in the U.S. raises the question as to why they are not a more predominant organizational form. If family ownership is indeed a superior organizational form, why does it not vastly outnumber other types of public corporations (Alchian, 1950; Demsetz, 1983; Demsetz and Lehn, 1985)?

In this paper, we address the apparently puzzling evidence on the performance of family firms in the U.S. Much of our contribution is methodological. We consider in depth the definition of a

family firm and assess the sensitivity of performance results to the nature of different firm classifications and control samples. We also consider how the results in the prior studies are tied to sample selection by analyzing a broad universe of corporations in addition to the *Fortune* 500 firms that have been the emphasis of prior research.

Our results indicate that the superiority of family firm performance is indeed sensitive to the definition of a family firm and the source of the data. The results are especially sensitive to the distinction between “lone founder” businesses like Microsoft with no family of the founder in the business — which do outperform, and businesses like Comcast that have founders present with other family members serving as owners or managers — which do not outperform. This distinction has been blurred in prior research that places lone founders and family founders in the same category. Moreover, we find no superior performance of family firms within a random sample from a broader universe of firms than have been considered in prior research. Our results confirm the difficulty in attributing superior performance to a particular governance variable.

2. What is a family firm?

2.1. Family firms in the literature

The literature on family business is wide-ranging and it is difficult to find consensus on the exact definition of a family firm. However, the typical family business has been characterized as an organization controlled and usually managed by multiple family members (Shanker and Astrachan, 1996; Lansberg, 1999), often from multiple generations (Anderson and Reeb, 2003; Gomez-Mejia et al., in press). Table 1 shows the definitions of family firms that have been used in various studies around the world. It suggests that there are indeed a wide variety of types that face a corresponding variety of conditions, and therefore there may be great variations in how such businesses perform. For example, McConaughy et al. (1998) count as a family firm any company run by a founder or member of the founding family. Similarly, Anderson and Reeb (2003), Cronqvist and Nilsson (2003), Faccio and Lang (2002), La Porta et al. (1999), Smith and Amoako-Adu (1999), Barth et al. (2005) and others count as family businesses any firm in which a founding family *or founding individual* own a fraction of the company or serve on the board (the hurdles for these ownership fractions vary). Villalonga and Amit (2006b) examine a wide variety of definitions, encompassing different levels and generations of individual- or family-ownership and/ or management. Other studies ensure involvement by multiple members of the same family, at least over time, by counting as family businesses only those in which there are several family members involved in owning or managing the business. Bennedsen et al. (in press) and Perez-Gonzalez (2006), for example, focus on later generation businesses in which a blood relation of the founder or a major owner serves as the chief executive of the company. Gomez-Mejia et al. (in press) insist on multiple family members being involved in owning and operating the business (although their focus was not firm performance). It should be noted that the above studies examine different countries, governance regimes, types of companies, conduct and outcomes.

One of the more curious aspects of Table 1 is that virtually all studies of performance count as family businesses companies in which there is only involvement of a lone founder, but no involvement by any other family members as owners or managers. The studies blend lone founder and family founder categories, making it impossible to separate the performance

Table 1
Family firms as defined in the literature

#	Author(s)	Study time line	Data source	Data location	Family firm definition(s) employed
1	Allen and Panian (1982)	1971–1980	250 largest firms in terms of sales for 1974 or 1975	U.S.	Family firm whenever the members of a descendent group and their affines owned or controlled at least 5 percent of the voting stock in a corporation and were represented on board of directors. Other definitions employed: Direct family control when the CEO is a member of the controlling family.
2	Anderson and Reeb (2003)	1992–1999	1992 S&P 500	U.S.	Family firm if there exists fractional equity ownership of the founding family and / or the presence of family members serving on the board of directors. Other definitions employed: Ratio of board seats held by family members to board seats held by independent directors / CEO founder indicates a founding family firm when the CEO is the founder of the firm / CEO descendent indicates a founding family firm when the CEO is a descendent of the founder during the past decade.
3	Anderson and Reeb (2004)	1992–1999	1992 S&P 500	U.S.	Family firm if there exists fractional equity ownership of the founding family and/or the presence of family members serving on the board of directors. Other definitions employed: Ratio of board seats held by family members to board seats held by independent directors/If family board control exceeds independent director control.
4	Anderson, Mansi, and Reeb (2003)	1993–1998	Firms in both the Lehman Brothers Bond Database and the S&P 500	U.S.	Family firm if there exists fractional equity ownership of the founder and his/her immediate family. Other definitions employed: Fractional equity ownership of the founder and his/her immediate family & board of directors membership/ Fractional equity ownership of the founder and his/her immediate family and size of the family's ownership stake relative to other block holders/Fractional equity ownership of the founder and his/her immediate family and family equity holdings as a fraction of outstanding shares.
5	Ang, Cole, and Lin (2000)	1992	Federal Reserve Board's National Survey of Small Business Finances	U.S.	Family firm when a single family controls more than 50% of the firm's shares.
6	Barontini and Caprio (2005)	1999	Large publicly traded firms greater than 300 million euros in assets. 675 firms.	Continental Europe (11 countries)	Family firm if the largest shareholder owns at least 10% of ownership rights and either family or largest shareholder controls more than 51% of direct voting rights or controls more than the double of the direct voting rights of the second largest shareholder. Other definitions employed: Firm run by family COO/Firm run by non family COO but one family member is on board/Family firm when founder or descendent of founder runs firm.

7	Barth et al. (2005)	1996	Survey of firms associated with the Confederation of Norwegian Business and Industry	Norway	Family firm if at least 33% of the shares of the firm are owned by one person or one family.
8	Bennedsen et al. (in press)	1994–2002	Limited liability public and private firms which underwent a CEO succession	Denmark	Family firm whenever an incoming CEO is related by blood or marriage to the outgoing CEO.
9	Claessens et al. (2000)	1996	WorldScope	9 East Asian Countries	Family groups are those that control more than 5% of the company's votes. Family group is identified through published family trees in each country and may consist of one family or a group of families.
10	Claessens et al. (2002)	1996	WorldScope	8 East Asian Countries	Family firm when there is the presence of a group of people related by blood or marriage with large ownership stakes.
11	Cronqvist and Nilsson (2003)	1991–1997	Stockholm Stock Exchange	Sweden	Founder families may include only a single individual or a closely knit group of individuals who do not belong to the same family. Other definitions employed: Founder family ownership is ownership by the founder or descendants of the founder and families/individuals affiliated with the founder.
12	Denis and Denis (1994)	1985	Value Line Investment Survey	U.S.	Family firm if 2 or more family members are present as officers/directors or if founders are officers.
13	Faccio and Lang (2002)	1996–1999	WorldScope plus various country specific reference data bases	13 Western European countries	Family firm if a family or an individual or unlisted firm on any stock exchange is considered as the ultimate owner (greater than 20% of either cash flow or control rights).
14	Fahlenbrach (2006)	1992–2002	2327 publicly traded firms listed in IRCC for all years, firms drawn from S&P 500, Fortune, Forbes, Business Week	US	Family firm if the CEO is the founder or co-founder.
15	Gomez-Mejia et al. (in press)	1944–1998	Spanish government registry	Spain	Family firm if the company is owned and operated by the founding family. Other definitions employed: Owned and operated by non-founding extended family/Owned and operated by non-founding extended family members but managed by hired professionals.
16	Gomez-Mejia et al. (2003)	1995–1998	Random sample culled from Compustat	U.S.	Family controlled firm under two conditions: two or more directors had a family relationship, and family members owned or controlled at least 5% of the voting stock. Family relationship included father, mother, sister, brother, son, daughter,

(continued on next page)

Table 1 (continued)

#	Author(s)	Study time line	Data source	Data location	Family firm definition(s) employed
					spouse, in-laws, aunt, uncle, niece, nephew, cousin. Other definitions employed: Family controlled and CEO is family member/Percentage of family equity ownership/Family controlled and family member(s) are on the compensation committee.
17	Gomez-Mejia et al. (2001)	1966–1993	Registry of Newspapers, Media Guide of Spain, Oficina de Justificacion de la Difusion—All daily newspapers	Spain	Family firm if in this newspaper sample there were family ties between the newspaper's CEO and editor.
18	Holderness and Sheehan (1988)	1980–1984	114 randomly chosen publicly traded firms — data source Spectrum 5	US	Family firm if an individual majority shareholder or entity owns at least 50.1% of the stock: may include trusts and foundations.
19	La Porta et al. (1999)	1995–1997	World scope-27 countries represented	Worldwide	Family firm if a person is the controlling shareholder (ultimate owner) whose direct and indirect voting rights exceed 20%.
20	Luo and Chung (2005)	1973–1996	Directory business groups in Taiwan	Taiwan	Firm created by entrepreneurs. Other definitions employed: Firm's key leader has inner circle members who are immediate family members/Firm's key leader has inner circle members with prior social relationships — distant relatives, in-laws, friends, classmates, colleagues, business partners.
21	Maury (2006)	1996–2003	Faccio and Lang, 2002 data plus WorldScope 2003	13 Western European countries	Family firm if the largest controlling shareholder who holds at least 10% of the voting rights is a family, an individual, or an unlisted firm (unlisted firms are often closely held and therefore considered under family control). Other definitions employed: The controlling shareholder is from an unlisted firm/The largest controlling shareholder is an identified family or individual/The controlling shareholder is a family or an individual holding the title of CEO, Honorary Chairman, Chairman, or Vice Chairman.
22	McConaughy et al. (1998)	1987	<i>Business Week</i> CEO 1000	U.S.	Family founder controlled firm — A public corporation whose CEO is either the founder or a member of the founder's family.

23	Morck et al. (1988)	1980	Fortune 500	U.S.	Family firm if a member of the founding family is among the top two officers.
24	Perez-Gonzalez (2006)	1980–2001	Compustat 1994	U.S.	Sample firms met the following requirements: (1) founded prior to 1971; (2) exhibited at least one of the following (a) two or more individuals related by blood were directors, officers, or shareholders (b) an individual had at least 5% ownership (c) a founder was an executive or director, and (3) a CEO change occurred during the time window. Further a family succession was coded within this sample of firms when the new CEO was related by blood or marriage to : (1) the departing CEO, (2) the founder, or (3) a large shareholder.
25	Schulze et al. (2001)	1995	Survey of American family businesses conducted by the Arthur Anderson Center for Family Business.	U.S.	Family firm if privately held, greater than \$5 m annual sales, and listed by Arthur Anderson as a family business.
26	Schulze et al. (2003)	1995	Survey of American family businesses conducted by the Arthur Anderson Center for Family Business.	U.S.	Family firm if privately held, greater than \$5 m annual sales and listed by Arthur Anderson as a family business.
27	Smith and Amoako-Adu (1999)	1962–1996	Toronto Stock Exchange companies	Canada	Family firm if a person or a group related by family ties holds the largest voting block and at least 10% of the total votes.
28	Villalonga and Amit (2006b)	1994–2000	Fortune 500	U.S.	Family firm if the founder or a member of the family is officer, director or owns >5% of the firm's equity. Other definitions employed: 1 or more family members are officers directors or block holders/At least 1 family officer and 1 family director/Family is largest vote holder/Family is largest shareholder/1 or more family members from 2nd generation or later are officers, directors, or block holders / Family is largest vote holder and has at least one family officer and 1 family director/Family is largest shareholder and has at least 20% of the votes/1 or more family members are directors or block holders but there are no family officers/Family is largest vote holder, has at least 20% of votes, one family officer and 1 family director and is in 2nd or later generation.

This table represents studies identified by searching top tier finance and management journals between 1996 to 2006 (e.g. *Academy of Management Journal* – *Administrative Science Quarterly* – *Journal of Corporate Finance* – *Journal of Financial Economics* – *Quarterly Journal of Economics* – *Review of Financial Economics* – *The Journal of Finance*) for titles or abstracts that used the term “family firm”. Using the ancestral approach we were also able to identify other sources. The list above is intended to be representative of the major contributions to the field of empirical family business research published in the last decade.

effects of the two. Given their freedom from family succession issues and kinship squabbles, these lone founder businesses may be the types of organizations least apt to have performance disadvantages¹.

2.2. Revised definition and proposed analyses

We define a family firm as one in which multiple members of the same family are involved as major owners or managers, either contemporaneously or over time. This allows for a number of variations: in the level of ownership and voting control, in the managerial roles played by family members, and in the family generation of key family members. Unlike previous studies, we distinguish “lone founder” businesses in which there are one or more founders, who have no relatives in the business, with “family” businesses in which there are multiple major owners or executives over time or contemporaneously from the same family. More specifically, we stipulate the defining conditions of lone founder businesses and family businesses as follows: (1) A dummy variable for the presence of a lone founder-owner or family-owner. (2) The percentage of shares owned by the lone founder or the family. (3) A dummy variable assessing whether the lone founder or family is the biggest shareholder. (4) A dummy variable assessing whether the lone founder or family is the biggest shareholder and serves as CEO. Dummy variables assessing whether a lone founder or family member serves as (5) CEO, (6) Chairman, or (7) CEO and Chairman (see Table 2).

We used these revised definitions to explore the sensitivity of the prior research. As we will see, we are able to replicate the major results of the [Anderson and Reeb \(2003\)](#) and [Villalonga and Amit \(2006b\)](#) studies. However, we find that when we distinguish such lone founder businesses in the sample, no other definitions of family business show superior market valuations. Moreover, in order to counter problems of selection bias and establish the generality of the results, this study goes beyond the examination of *Fortune* 1000 companies to also gather a sample from a randomly-selected set of firms.

The balance of the paper is structured as follows. Section 3 describes our sample, data and proposed analyses. Section 4 then presents our findings: Section 4.1 provides a replication of the previous work, and Section 4.2 shows how the earlier results are sensitive to the definition of a family firm — specifically, superior family business market valuations disappear for all definitions; only lone founder businesses outperform. Section 4.3 then presents a matched firm analysis to determine just where family business superiority seems to manifest: such superiority appears only rarely in our matched sample. Section 4.4 establishes the robustness of the results by presenting Heckman treatment regressions and panel data models. Finally, Section 4.5 addresses the selection bias issue that arises from a focus on large *Fortune* 1000 firms by

¹ Studies showing family businesses to outperform are those of businesses that are younger (first generation in [Villalonga and Amit, 2006b](#); [Anderson and Reeb, 2003](#)), where a founder is present and continues to manage the firm ([Anderson and Reeb, 2003](#); [Fahlenbrach, 2005](#); [Villalonga and Amit, 2006b](#)), and where the legal infrastructure or corporate tax system discourages pyramidal holding structures (the U.S. is unique in doing so, see [Morck, 2003](#)). Because [Anderson and Reeb \(2003\)](#), [Villalonga and Amit \(2006b\)](#) and [Fahlenbrach \(2005\)](#) place lone founders and first generation family firms within the same category, it is not clear whether any family members besides a founder are associated with superior performance. Indeed it may be that superior performance disappears the moment a relative of a lone founder or major owner takes on a significant ownership or management role.

Table 2
Variable definitions

Variable	Definition
1 Family firm	Family firm is a binary variable, 1 indicates presence of family. Firms in this category have multiple family members as insiders (officers or directors) or large owners (5% or more of the firm's equity) at the same time or over the life of the company as family descendants. Source: Firm proxy.
2 Family firm 1st Gen	A binary variable, 1 indicates a family firm with family members present from the first generation only. Family firms in this category have multiple family members present with none beyond the first generation. Source: Firm Proxy, biographies, Hoovers, firm webs.
3 Family firm 2nd Gen	A binary variable, 1 indicates a family firm with family members present from multiple generations. Family firms in this category have multiple family members present with at least one beyond the first generation. Source: Firm Proxy, biographies, Hoovers, firm webs.
4 Lone founder firm	A binary variable, 1 indicates a lone founder's involvement. Lone founder firms are defined as those in which an individual is one of the company's founders with no other family members involved, and is also an insider (officer or director) or a large owner (5% or more of the firm's equity). Firms where the founder is present alongside other family members are categorized as family firms. Thus a lone founder firm, by our definition, cannot be a family firm, nor vice versa.
5 Combined firms	A binary variable, 1 indicates the firm is either a family or lone founder firm.
6 Largest owner	A binary variable, 1 indicates that the family or the lone founder is the largest shareholder in the firm. Source: Compact Disclosure; Firm Proxy.
7 Largest owner and CEO	A binary variable, 1 indicates that the family or the lone founder is the largest shareholder in the firm and also that either a family member or the lone founder serves as the firm's CEO. Source: Compact Disclosure; Firm Proxy.
8 Shares owned %	The total share holdings expressed as a percentage of total outstanding shares accumulated across all share categories. Source: Compustat; Compact Disclosure; Firm Proxy.
9 Shares owned % ²	Represents the squared term from the variable Shares Owned %.
10 CEO	A binary variable, 1 indicates that any family member or the lone founder holds the title of chief executive officer (CEO). Source: Compact Disclosure; Firm Proxy.
11 CH	A binary variable, 1 indicates that any family member or the lone founder holds the title of chairman of the board (CH). Source: Compact Disclosure; Firm Proxy.
12 CEOCH	A binary variable, 1 indicates that any family member or the lone founder holds the titles of chief executive officer (CEO) and chairman of the board (CH). Source: Compact Disclosure; Firm Proxy.
13 Tobin's q	Tobin's q is the ratio of the firm's market value to book value and is calculated as follows: ((common shares outstanding * calendar year closing price) + (current liabilities - current assets) + (long term debt) + (the liquidating value of preferred stock)) divided by (total assets). Source: Compustat.
14 Industry Tobin's q	Industry Tobin's q is calculated for all firms listed in Compustat at a two digit SIC. Source: Compustat.
15 Industry Adjusted Tobin's q	Calculated as firm Tobin's q minus median industry Tobin's q, at a 2 digit SIC. Source: Compustat
16 Research & Development	Research and development ratio is calculated as research and development expense divided by total sales. Firms with missing data were coded=0. Source: Compustat.
17 Advertising	Advertising expense ratio is calculated as advertising expense divided by total sales. Firms with missing data were coded=0. Source: Compustat.
18 Investment	Investment ratio is calculated as capital expenditures divided by plant property and equipment. Firms with missing data were coded=0. Source: Compustat.

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Table 2 (continued)

	Variable	Definition
19	Beta (Market Risk)	Beta is the average value-weighted return whereby the firm's daily returns are regressed against the returns of the overall market. Source: CRSP.
20	Debt to Equity Ratio	Debt to equity ratio is calculated as the values of long term plus short term debt divided by the market value of common equity. Source: Compustat.
21	5% Owner	The ownership percentage of all non-family or non-lone founder blockholders who hold a 5% or greater ownership stake. Created by summing the non-family or non-lone founder 5% or greater ownership stakes and dividing this by the firm's total shares outstanding. Source: Compact Disclosure; Compustat; Firm Proxy.
22	Supershares	A dummy variable set to equal 1 when a firm has a vehicle in place which creates a differential source of power. Example: differential voting over various classes of stock. Source: Compact Disclosure; Firm Proxy.
23	Sales	Measured as total net sales. Source: Compustat.
24	Sales Growth	Represents the percentage change in sales for the 5 year period 1996–2000 and is calculated as (net sales year 2000- net sales year 1996) / net sales year 1996. Source: Compustat.
25	Firm Age	Calculated in years as the difference between the year 2000 and the firm's founding year. Source: Firm Proxy; Firm website; Lexus-Nexis; Hoovers.
26	Firm Size	The natural log of annual net sales. Source: Compustat.

studying a random sample of 100 smaller public companies. Section 5 presents our discussion and conclusions.

3. Method and data

3.1. Sample

Our sample consists of the *Fortune* 1000 (500 industrials and 500 service firms). We analyzed data on 896 companies as we restrict the sample to firms with publicly accessible data for the years 1996 to 2000. For some of our analyses we used five year averages and include only firms whose governance status did not change during that five year period. We also examined a random sample of 100 smaller public U.S. companies to investigate the potential for selection bias.

3.2. Variables and sources of data

Variables were measured at two levels and in two phases. We first compiled data on individual officers and directors, 5% blockholders, and large institutional investors. Information on share ownership, vote control, lone founder or family positions as officers and board members, use of supershares, etc. were obtained from at least three sources for each company: Compact Disclosure, individual proxies (which were the primary and definitive source of data given the many inaccuracies within Compact Disclosure (Dlugosz et al., 2006), Hoover's, and company web-sites. Where the proxies contained insufficient information on the familial relationships between board members and managers, or officers' relationships with a founder, we approached companies directly. Because some families controlled their firms via their ownership of banks or other organizations, and because of the personal name changes brought about by marriage, one to two weeks of training at coding were required for all research assistants.

Consistent with Villalonga and Amit (2006b), we took as the focal family the one with the most votes. In totaling family shareholdings we included shares of co-trustees of family trusts

who were directly employed by the family. Whereas Villalonga and Amit (2006b) consider firms such as Microsoft as first generation family businesses, we do not consider them so since there is no family involvement. Rather we count them as lone founder businesses. Firms such as Comcast and Qualcomm are considered family businesses as there are multiple members of the Roberts and Jacobs families, respectively, serving as major owners or officers.

Lone founder firms are those in which an individual is one of the company's founders with no other family members involved, and is also an insider (officer or director) or a large owner (5% or more of the firm's equity). Owners taking control through leveraged buyouts were not counted as founders. Non-institutional shareholders also were not considered founders if they accumulated their shares through compensation. Neither were large mutual fund companies such as Fidelity or Vanguard or venture capital funds that controlled large blocks of shares.

Data on individuals were aggregated to the firm level, at which we could also collect information on strategy, governance and market performance. Accounting data are drawn from COMPUSTAT, and market performance data were obtained from the Center for Research on Security Prices (CRSP). Our variables are listed and defined in Table 2, along with their sources; Table 3 provides an industry breakdown of our sample of family, lone founder and other (non-family, non-lone-founder) firms; while descriptive statistics are presented in Table 4. The simple bivariate means comparisons of Table 4 indicate that lone founder and family firms differ in some aspects of their demographics, conduct and performance. The former are younger, enjoy superior market valuations and more rapid rates of revenue growth, and they tend to spend more on R&D and capital investment. Lone founders also own fewer shares than the typical family. Such potential differences in the nature of these businesses make it imperative that findings be scrutinized for endogeneity.

3.3. Analyses

We employed Tobin's q (market value to assets as computed by Chung and Pruitt, 1994) as the measure of market based performance. As predictors we used the seven previously defined indicators of lone founder and family ownership and management (see Section 2.2). Each model controls for industry at the two-digit SIC level using industry averages of the dependent variable as a control for each firm. To assess robustness we also used the Fama-French 49 industry portfolio dummies (Fama and French, 1997); there was no material change in results. Our selection of other control variables follows Anderson and Reeb (2003), Bertrand and Schoar (2003), and Villalonga and Amit (2006b). Our models incorporate the advertising to sales ratio, R&D to sales (missing values for both variables were coded as 0, as firms are required by law to report significant expenditures), and new investment in plant and equipment. We also incorporate debt/equity ratios, the volatility of company returns (beta), total ownership of outside >5% blockholders, special voting shares (a dummy), firm age, and the natural log of firm sales. Annual data are used for all panel analyses, and 3 and 5 year averages, respectively, are used for the OLS and two-step treatment regressions.

Following Greene (2003: pp. 787–790, and personal communication) and Villalonga and Amit (2006b) we corrected for endogeneity using treatment effect regressions for all our indicators of lone founder- and family-ownership and management (see also Maddala, 1983). We used the *treareg* (Heckman two-step option) subroutine of the Stata package (version 8.2 SE). The first stage of the procedure is a probit analysis that regresses the firm governance indicator

Table 3
 Number and percent of firms classified as family, lone founder, or all others by two digit SIC Code

SIC Code	Industry Description	Firms	Non-Family / Non-Lone founder	Family Firms	Lone Founder Firms	% Family Firms in Industry	% Lone Founder Firms in Industry
1	Agricultural Production	2	1	1		50%	0%
7	Agricultural Services	1		1		100%	0%
10	Metal Mining	1	1			0%	0%
13	Oil and Gas Extraction	18	12	5	1	28%	11%
14	Mining and Quarrying of Nonmetallic Minerals, Except Fuels	2	2			0%	0%
15	General Building Contractors	11	3	3	5	27%	45%
16	Heavy Construction, Except Buildings	5	2	3		60%	0%
17	Special Trade Contractors	3	3			0%	33%
20	Food And Kindred Products	34	14	19	1	56%	3%
21	Tobacco Products	2	2			0%	0%
22	Textile Mill Products	5	2	2	1	40%	20%
23	Apparel And Other Finished Products Made From Fabrics	10	5	3	2	30%	40%
24	Lumber And Wood Products, Except Furniture	10	6	3	1	30%	30%
25	Furniture And Fixtures	9	4	5		56%	0%
26	Paper And Allied Products	17	9	8		47%	0%
27	Printing, Publishing, And Allied Industries	19	4	13	2	68%	11%
28	Chemicals And Allied Products	49	35	10	4	20%	10%
29	Petroleum Refining And Related Industries	12	8	4		33%	0%
30	Rubber And Miscellaneous Plastics Products	8	5	2	1	25%	13%
31	Leather And Leather Products	1	1			0%	0%
32	Stone, Clay, Glass, And Concrete Products	4	2	1	1	25%	25%
33	Primary Metal Industries	16	12	3	1	19%	13%
34	Fabricated Metal Products, Except Machinery And Trans. Equipment	10	6	3	1	33%	11%
35	Industrial And Commercial Machinery And Computer Equipment	52	32	11	9	21%	17%
36	Electronic (non computer) And Other Electrical Equip	45	17	14	14	31%	33%
37	Transportation Equipment	33	20	10	3	30%	12%
38	Measuring, Analyzing, And Controlling Instruments; Photographic	19	12	5	2	26%	11%
39	Miscellaneous Manufacturing Industries	2	1	1		50%	0%
40	Railroad Transportation	4	4			0%	25%
42	Motor Freight Transportation And Warehousing	10	4	5	1	50%	10%
45	Transportation By Air	12	9		3	0%	33%
46	Pipelines, Except Natural Gas	1			1	0%	100%

Table 3 (continued)

SIC Code	Industry Description	Firms	Non-Family / Non-Lone founder	Family Firms	Lone Founder Firms	% Family Firms in Industry	% Lone Founder Firms in Industry
47	Transportation Services	6	4	2		33%	17%
48	Communications	24	6	14	4	58%	17%
49	Electric, Gas, And Sanitary Services	68	60	4	4	6%	6%
50	Wholesale Trade—durable Goods	26	10	8	8	31%	38%
51	Wholesale Trade—non-durable Goods	20	11	5	4	25%	25%
52	Building Materials, Hardware, Garden Supply, And Mobile Home	5	3	1	1	20%	20%
53	General Merchandise Stores	20	11	8	1	40%	5%
54	Food Stores	14	6	7	1	50%	7%
55	Automotive Dealers And Gasoline Service Stations	8	2	4	2	50%	25%
56	Apparel And Accessory Stores	13	6	6	1	46%	8%
57	Home Furniture, Furnishings, And Equipment Stores	8	3	2	3	25%	38%
58	Eating And Drinking Places	10	5	2	3	22%	44%
59	Miscellaneous Retail	26	8	10	8	38%	35%
60	Depository Institutions	48	35	12	1	24%	2%
61	Non-depository Credit Institutions	9	6	1	2	11%	22%
62	Security And Commodity Brokers, Dealers, Exchanges, And Services	13	6	4	3	31%	31%
63	Insurance Carriers	47	25	15	7	31%	14%
64	Insurance Agents, Brokers, And Service	4	2	2		50%	0%
65	Real Estate	1	1			0%	100%
67	Holding And Other Investment Offices	4	1	1	2	25%	75%
70	Hotels, Rooming Houses, Camps, And Other Lodging Places	5		2	3	40%	60%
72	Personal Services	3	1	2		67%	0%
73	Business Services	47	21	9	17	20%	41%
75	Automotive Repair, Services, And Parking	4	3	1		25%	25%
78	Motion Pictures	2			2	0%	100%
79	Amusement And Recreation Services	4	1		3	0%	75%
80	Health Services	19	9	4	6	21%	32%
87	Engineering and Management Services	6	5		1	0%	33%
99	Non Classifiable Establishments	5	3	2		40%	0%
n		896	492	263	141	29%	18%

Number and percent of firms are classified by their two digit SIC code. Family firms are defined as those in which multiple family members are insiders (officers or directors) or large owners (5% or more of the firm's equity) at the same time or over the life of the company as family descendants. Lone founder firms are defined as those in which an individual is one of the company's founders with no other family members involved, and is also an insider (officer or director) or is a large owner (5% or more of the firm's equity). The sample of firms originated using the *Fortune* 1000 listing of 2001. Lone founder and family categories are mutually exclusive. % family/lone founder firms in industry are calculated as the number of family/lone founder firms divided by all firms.

dummies (for family or lone founder ownership or management) against the same controls used for the OLS and panel analyses, plus five other variables shown to distinguish among lone founder, family, and other businesses. These variables are unsystematic risk (Anderson and Reeb, 2003), cash holdings (Miller and Le Breton-Miller, 2005) the average age of directors

Table 4
Descriptive data and test of means for family, lone founder, and all other firms

Variable	[a]		[b]		[c]		[d]		[e]		[f]		t-stat.		
	All Others		Combined [c] + [f]		Family		Family 1st Gen		Family 2nd Gen		Lone Founder		[c] – [a]	[f] – [a]	[c] – [f]
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.			
Tobin's q	1.759	1.122	2.166	1.686	1.869	1.154	2.010	1.475	1.806	.976	2.720	2.284	1.31	6.70***	-4.98***
Industry Tobin's q	1.132	.730	1.226	.679	1.192	.654	1.210	.652	1.184	.657	1.306	.722	1.11	2.51*	-1.62
Ind Adjusted Tobin's q	.085	.769	.363	1.226	.181	.857	.307	1.246	.144	.658	.638	1.629	1.72	6.08***	-3.91***
R&D/Sales	.016	.035	.017	.047	.011	.029	.011	.037	.010	.025	.030	.067	-1.75	3.63***	-4.16***
Advertising/Sales	.008	.022	.011	.033	.012	.033	.007	.015	.014	.039	.010	.027	2.14*	1.13	.57
CAPX/PPE (Investment)	.189	.143	.266	.209	.228	.137	.283	.163	.204	.116	.321	.239	3.96***	8.21***	-3.94***
Beta (Market Risk)	.717	.796	.933	.716	.826	.479	.996	.596	.751	.395	1.130	.989	2.02*	5.09***	-4.11***
Debt/Mkt Value Equity	1.030	2.771	.809	2.586	.707	2.142	.725	1.537	.530	.928	1.000	3.259	-1.66	-.11	-1.08
Outside Blockholders	.242	.252	.185	.171	.175	.161	.191	.154	.169	.163	.203	.184	-4.12***	-1.83	-1.61
Supershares	.031	.176	.198	.399	.213	.410	.222	.418	.209	.408	.170	.377	8.51***	6.17***	1.02
Sales (\$mm)	9.596	18.225	6.485	14.505	7.215	17.194	5.704	70.468	7.878	20.076	5.115	6.963	-1.73	-2.83**	1.37
Sales Growth	.265	.358	.370	.411	.301	.347	.492	.475	.217	.228	.499	.486	1.26	6.20***	-4.71***
Firm Age	72.375	46.504	52.353	38.398	66.973	38.831	35.432	22.233	81.011	36.343	25.085	16.490	-1.61	-11.86***	12.22***
Largest Owner			.514	.500	.574	.495	.617	.489	.555	.498	.404	.492		5.71***	
Largest Owner & CEO			.297	.457	.342	.475	.506	.503	.269	.445	.212	.411		4.76***	
Shares Owned %			.165	.191	.188	.195	.204	.196	.181	.195	.121	.176		4.95***	
Shares Owned ²			.048	.108	.074	.128	.080	.133	.071	.126	.045	.115		2.67**	
CEO			.509	.500	.506	.501	.494	.503	.418	.495	.517	.501		2.96**	
CH			.509	.500	.662	.474	.728	.448	.588	.494	.716	.452		2.91**	
CEO-CH			.485	.500	.483	.501	.457	.501	.396	.490	.489	.501		2.82**	
# firms	492		404		263		81		182		141				

This table reports means, standard deviations, and tests between means for the categories represented by (a) all firms not categorized as family or lone founder; (c) family firms are defined as those in which multiple family members are insiders (officers or directors) or large owners (5% or more of the firm's equity) at the same time or over the life of the company as family descendants; (d) family 1st Gen indicates family firms with only first generation involvement; (e) family 2nd Gen indicates family firms with second or later generation involvement; (f) lone founder firms are defined as those in which an individual is one of the company's founders with no other family members involved, and is also an insider (officer or director) or is a large owner (5% or more of the firm's equity). The sample of firms originated using the *Fortune* 1000 listing of 2001. Complete data were available for 896 of these firms for the years 1996–2000. Except for the panel data analyses, we retained only those 863 firms in which the family or the lone founder were present in the firm from 1996–2000 inclusive. All figures used are five year averages for the years 1996 to 2000 (we also ran 3 year averages 1998–2000 & 1996–1998, with no significant change in results). RoA is measured as income before extraordinary items divided by total assets; Tobin's q is measured as the ratio of the firm's market value to total assets; industry performance for both ROA and Tobin's q is aggregated at a two digit SIC code. Other measures include R&D/sales; advertising/sales; CAPX/PPE (investment); beta (market risk); debt/market value of equity; outside blockholders (ownership percentage of all major (>5%) non-family or non-lone founder owners); supershares, a dummy variable indicating the presence of control enhancing mechanisms. Sales are the firms annual net sales; sales growth represents the percentage growth using firm annual net sales from 1996 to 2000; firm age is 2000 minus the firm year founded; largest owner is a dummy indicating that the family or lone founder is the largest shareholder in the firm; largest owner & CEO indicates the family or lone founder is the largest shareholder and holds the title of CEO; shares owned % is the percentage of shares owned by the family or lone founder expressed against the total outstanding shares; shares owned² is the squared term of shares owned %; CEO is a dummy indicating that a family member or lone founder holds the title of CEO; CH is a dummy indicating that a family member or the lone founder holds the title of Board Chair; CEO-CH is a dummy indicating that a family member or the lone founder holds the titles of CEO and Board Chair. *t*-statistics are calculated with *n* - 1 degrees of freedom and tests for *u* = *u*o. Asterisks represent statistical significance at 0.1% (***), <1% (**), <5% (*) respectively.

Table 5
Regressions of market based measures of performance on family and lone founder firms

Variable	Tobin's q			
	Model 1	Model 2	Model 3	Model 4
Combined		.173* (2.04)		
Family			.026 (.29)	
Lone founder			.478*** (3.94)	.491*** (3.96)
Family 1st Gen				.088 (.56)
Family 2nd Gen				.004 (.04)
Industry Tobin's q	.348*** (5.77)	.346*** (5.74)	.348*** (5.83)	.349*** (5.83)
R&D/sales	14.133*** (13.74)	14.242*** (13.84)	13.865*** (13.50)	13.881*** (13.51)
Advertising/sales	7.599*** (5.30)	7.500*** (5.23)	7.459*** (5.24)	7.494*** (5.26)
CAPX/PPE (investment)	1.499*** (6.36)	1.445*** (6.09)	1.398*** (5.92)	1.385*** (5.83)
Beta (market risk)	.106* (2.02)	.092 (1.74)	.080 (1.52)	.079 (1.49)
Debt/market value of equity	-.055** (-3.35)	-.052** (-3.15)	-.055** (-3.30)	-.054** (-3.30)
Outside blockholders	-.676*** (-3.74)	-.612** (-3.34)	-.617** (-3.39)	-.617** (-3.38)
Supershares	-.125 (-.99)	-.190 (-1.45)	-.170 (-1.31)	-.171 (-1.32)
Firm size	.101 (2.57)	.109** (2.78)	.108** (2.76)	.108** (2.76)
Firm age	-.083 (-1.96)	-.075 (-1.77)	-.031 (-.71)	-.026 (-.59)
Constant	.302 (.86)	.151 (.42)	.118 (.33)	.029 (.08)
R ²	.428	.431	.438	.439
F	63.83***	58.62***	55.45***	51.16***
N	863	863	863	863

Results reported are from OLS regressions of firm performance on categorical variables denoting family firm, family firm in first generation, family firm in second or later generation or lone founder firm. The sample of firms originated using the Fortune 1000 listing of 2001. We retained only those firms in which the family or the lone founder were present in the firm from 1996–2000. Firms in which status changed during our observation window were deleted from these analyses ($N=863$). Family-firms are defined as those in which multiple family members are insiders (officers or directors) or large owners (5% or more of the firm's equity) at the same time or over the life of the company as family descendants. Lone founder firms are defined as those in which an individual is one of the company's founders with no other family members involved, and is also an insider (officer or director) or a large owner (5% or more of the firm's equity). Family 1st Gen indicates family firms with only first generation involvement. Family 2nd Gen indicates family firms with second or later generation involvement. All figures used are five year averages for the years 1996 to 2000 (we also ran 3 year averages 1998–2000 & 1996–1998, with no significant change in results). Tobin's q is the firm market value divided by total assets. Control variables are as follows: industry performance (Tobin's q) is aggregated at a two digit SIC code (using instead the 49 Fama-French industry portfolio produced no material change in results); R&D/sales; advertising/sales; CAPX/PPE (investment); beta (market risk); debt/market value of equity; outside blockholders (ownership percentage of all major (>5%) non-family or non-lone founder owners); supershares, a dummy variable indicating the presence of control enhancing mechanisms; firm size as the natural log of annual net sales, and firm age as the natural log of firm years since founding. Model 1 lists only controls. Model 2 compares all family and lone founder firms combined vs. all others; Model 3 compares family firms and lone founder firms vs. all others; and Model 4 compares family first generation, family second generation, and lone founder firms vs. all others. t-statistics are displayed in parentheses and asterisks represent statistical significance at less than <0.1% (***), <1% (**), <5% (*), respectively.

Table 6

Summary OLS results for market based measures of performance for various classifications of family / lone founder status

	Tobin's q				
	Combined	Family	Lone Founder	Family 1st Gen	Family 2nd Gen
Dummy	.173* (2.04)	.031 (.33)	.478*** (3.94)	.084 (.59)	-.009 (.09)
Shares owned %	1.866** (2.62)	.270 (.34)	6.718*** (5.28)	-.636 (.52)	.786 (.82)
Shares owned % ²	-3.198** (2.72)	-.627 (.47)	-10.732*** (4.97)	.678 (.31)	-1.376 (.83)
Largest owner	.320** (3.17)	.110 (.98)	.871*** (5.21)	.114 (.63)	.108 (.84)
Largest owner and CEO	.083 (.67)	-.161 (1.19)	.421** (2.71)	-.161 (.82)	-.165 (.94)
CEO	-.015 (.16)	-.177 (1.57)	.311* (2.05)	-.022 (.11)	.239 (1.83)
CH	.008 (.08)	-.006 (.06)	.574*** (4.34)	.073 (.45)	-.045 (.37)
CEO and CH	.053 (.54)	-.175 (1.55)	.377** (2.74)	.007 (.04)	-.226 (1.71)
N	863	863	863	863	863

Reported above are summary results of OLS regressions of Tobin's q on various classifications of family and lone founder status (35 separate regressions, 7 per column). The sample of firms originated using the *Fortune* 1000 listing of 2001. We retained only those firms in which the family or the lone founder were present in the firm from 1996–2000. Firms in which status changed during our observation window were deleted from these analyses ($N=863$). Tobin's q is the ratio of the firm's market value to its total asset value. The dummy variables represent our different firm definitions. The combined column dummy represents both family and lone founder firms in total. Family firms are defined as those in which multiple family members are insiders (officers or directors) or large owners (5% or more of the firm's equity) at the same time or over the life of the company as family descendants. Lone founder firms are defined as those in which an individual is one of the company's founders with no other family members involved, and is also an insider (officer or director) or a large owner (5% or more of the firm's equity). Family 1st Gen indicates family firms with only first generation involvement. Family 2nd Gen indicates family firms with second or later generation involvement. Other firm status indicators follow: shares owned % is the percentage of shares owned by the family or lone founder expressed against the total outstanding shares; shares owned %² is the squared term of shares owned %; largest owner is a dummy indicating that the family or lone founder is the largest shareholder in the firm; largest owner & CEO indicates the family or lone founder is the largest shareholder and holds the title of CEO; CEO is a dummy indicating that a family member or lone founder holds the title of CEO; CH is a dummy indicating that a family member or lone founder holds the title of Board Chair; CEO-CH is a dummy indicating that a family member or lone founder holds the title of CEO and Board Chair. Not shown but included in each regression are the control variables of Table 4. All figures used are five year averages for the years 1996 to 2000 (we also ran 3 year averages 1998–2000 & 1996–1998, with no significant change in results). Industry performance for Tobin's q is aggregated at a two digit SIC code (using instead the 49 Fama-French industry portfolio produced no material change in results). Other controls include R&D/sales; advertising/sales; CAPX/PPE (investment); beta (market risk); debt/market value of equity; outside blockholders (ownership percentage of all major (>5%) non-family or non-lone founder owners); supershares, a dummy variable indicating the presence of control enhancing mechanisms; firm size as the natural log of annual net sales; and firm age as the natural log of firm years since founding. All models are significant at <.000. Average R^2 for the models is approximately .45. t -statistics are displayed in parentheses and asterisks represent statistical significance at less than 0.1% (***), <1% (**), <5% (*), respectively.

(Ward, 2004), sales growth (Villalonga and Amit, 2006b), and firm age (Anderson and Reeb, 2003).

The advantage of two-stage treatment regression over full information structural approaches such as GMM, full information maximum likelihood, or three-stage least squares, is its lesser

susceptibility to the proliferation of specification error and distortion (Greene, 2003: 411–415 and personal communication).

3.4. Robustness and tests of selection bias

A number of measures were employed to establish the robustness of our results. Three time periods (one 5 year, and two distinct 3 year periods, as well as annual panel data analyses) and seven indicators for lone founder and family ownership and management were used. We also replaced % of family/ lone-founder votes by % of family/ lone founder ownership with no material change in results. Moreover, we systematically varied our sets of control variables: specifically, firm size, advertising expenses, investment, beta and director vote control, were individually added and deleted. Both Fama-French and 2-digit SIC code dummies were used as alternatives for industry controls. Finally, we controlled for industry in our regressions by subtracting industry (2-digit SIC median) q from the dependent variable (Table 8, models 5 to 8).

In addition to the traditional panel data approaches used by other studies, we used the more conservative, smaller sample, cross sectional analyses based on two 3-year averages (1996 to 1998 and 1998 to 2000) and one 5-year average (1996 to 2000) of firms that did not change governance status. Also, treatment regressions were run to control for selection bias. We replicated all of the analysis of Tables 4–7 on the *Fortune* 500 part of our *Fortune* 1000 data (these analyses are available from the authors).

Our findings were highly consistent across time intervals (panel vs. 3- vs. 5-year averages), across virtually all definitions of lone-founder businesses and family businesses, across the three types of industry controls, across the different sets control variables, across different types of analyses (OLS, panel, and treatment regressions), and across both the *Fortune* 500 and *Fortune* 1000 data. Any material differences are presented in our results and discussed. Additional tests, reported below, were conducted to determine and eliminate selection bias.

4. Findings

4.1. Replication of prior work

Table 3 shows the *Fortune* 1000 industry breakdowns by 2-digit SIC codes. The columns present the numbers of family, lone-founder and other firms in the *Fortune* 1000. When the family and lone-founder columns are summed, the results for industry representation by firm type are comparable to those presented by Anderson and Reeb (2003) and Villalonga and Amit (2006b) in their studies of the S&P 500 and *Fortune* 500, respectively.

Table 4 provides descriptive statistics, broken down by firm classifications, where family 1st Gen represents first generation family firms and family 2nd Gen represents second and later generation family firms. Tobin's q is clearly much higher in lone-founder businesses than in family businesses. Again our results for the combined lone-founder plus family sample are comparable to those of Anderson and Reeb (2003) and Villalonga and Amit (2006b).

Tables 5 and 6 present OLS regressions based on 5-year averages of those companies that did not change their ownership status over the 5-year interval. The row labeled “combined” in Table 5 and the “combined” column of Table 6 replicate the findings of Anderson and Reeb (2003) and Villalonga and Amit (2006b). These results indicate that when we combine family and lone-founder classifications, as did these previous authors, that aggregate group does indeed appear to manifest superior market valuations.

Table 7
Matched sample comparing ownership status - summary statistics

SIC code	Industry description	# in each category	Tobin's q			Annual Sales \$(000)			Examples of Matched Firms		
			Fmly	Lone Fndr	Other	Fmly	Lone Fndr	Other	Family	Lone Founder	Other
13	Oil and gas extraction	1	1.58	1.37	1.20	2784.10	29445.00	13574.00	Devon Energy Corp	Dynegy Inc	Occidental Petroleum
15	General building contractors	3	1.29	1.19	1.01	1811.11	1796.37	2331.65	Toll Brothers Inc	M D C Holdings Inc	Ryland Group Inc A
20	Food and kindred products	1	2.34	4.43	1.15	2123.50	2169.22	2524.91	McCormick & Co	Starbucks Corp	International Multifoods
22	Textile mill products	1	1.10	1.10	1.72	1217.58	1283.95	1280.41	Russell Corp	Interface Inc	Unifi Inc
23	Apparel	2	3.19	2.49	1.72	3954.29	3184.24	2677.04	V F Corp	Jones Apparel Gp	Liz Claiborne Inc
24	Lumber and wood products	1	1.76	1.08	1.04	1293.35	2448.00	2194.83	Clayton Homes Inc	Maxxam Inc	Nortek Holdings Inc
27	Printing, publishing, and allied industries	2	1.26	1.49	1.72	2053.81	2058.08	1565.24	American Greetings	Mail Well Inc	Wallace Computer Services
28	Chemicals and allied products	3	1.48	2.69	1.62	1517.00	1566.25	1562.43	Cabot Corp	Allergan Inc	Grace (W R) & Co
30	Rubber and miscellaneous plastics	1	1.96	2.69	1.32	6934.75	9488.80	14417.10	Newell Rubbermaid	Nike Inc	Goodyear Tire & Rubber Co
32	Stone, clay, glass, and concrete	1	1.07	1.64	1.45	1278.60	3781.00	4940.00	Texas Industries	U S G Corp	Owens Corning
33	Primary metal industries	2	2.37	1.36	1.28	4493.90	2760.17	3080.25	Coming Inc	Nucor Corp	A K Steel Holding Corp
34	Fabricated metal products	1	1.89	1.37	1.21	1491.19	1877.50	2531.95	Crane Co	Silgan Holdings Inc	Tower Automotive Inc
35	Industrial and commercial machinery	10	2.11	4.13	1.45	9411.23	9343.31	9904.94	Nacco Industries	3Com Corp	Pentair Inc
36	Electronic (non computer) other electronic	15	2.88	3.55	1.62	5062.74	5215.16	3810.73	Jabil Circuit Inc	Advanced Micro Devices	Cooper Industries Ltd
37	Transportation equipment	3	1.20	1.83	0.99	1729.22	1824.32	2064.06	Fleetwood Enterprises	Dura Automotive Sys	Borgwarner Inc
38	Measuring, analyzing, and controlling	2	3.45	8.11	2.04	3220.89	4050.25	4588.26	Boston Scientific	Guidant Corp	Thermo Electron Corp
42	Motor freight transportation	1	2.02	1.72	0.98	1258.67	1418.49	2352.37	Swift Transportation	Landstar System Inc	Consolidated Freightways
48	Communications	4	1.74	1.42	2.56	6172.96	10477.06	9869.05	Adelphia Comm.	Charter Comm	Cincinnati Bell Inc
49	Electric, gas, and sanitary services	4	1.25	1.37	1.06	4714.07	4481.29	4442.44	Williams Cos	A E S Corp	Oneok Inc
50	Wholesale trade-durable goods	7	1.29	1.40	1.25	4576.09	3434.26	2973.01	Tech Data Corp	Arrow Electronics Inc	Avnet Inc

51	Wholesale trade—non-durable goods	4	0.97	1.27	0.91	4015.54	1736.98	1489.96	Nash Finch	Central Garden & Pet	Dimon Inc
52	Building materials, hardware, garden	1	2.70	6.18	1.78	18778.56	45738.00	5211.62	Lowes Companies	Home Depot Inc	Sherwin Williams Co
53	General merchandise stores	1	1.01	5.85	1.60	1550.00	1688.11	3277.09	Service Merchandise	Dollar Tree Stores Inc	Big Lots Inc
54	Food stores	1	1.01	2.69	0.98	1932.09	1838.63	2525.31	Ingles Markets	Whole Foods Market Inc	Penn Traffic Co
55	Automotive dealers, gasoline service	2	1.89	1.23	1.16	2967.40	3261.23	2799.53	C S K Auto Corp	Caseys General St	Pantry Inc
56	Apparel and accessory stores	1	1.16	2.48	1.98	2400.29	2709.04	2948.40	Burlington Coat	Ross Stores Inc	Payless Shoesource Inc
57	Home furniture, furnishings	3	2.74	3.45	2.35	4705.67	6379.27	2600.18	Williams Sonoma	Bed Bath & Beyond Inc	Linens N Things Inc
58	Eating and drinking places	3	1.69	2.16	1.73	2767.72	2100.93	1633.31	C K E Restaurants	Brinker International Inc	Jack In The Box Inc
59	Miscellaneous retail	6	1.31	3.89	1.69	4689.31	4224.45	4222.65	Michaels Stores	Amazon Com Inc	Borders Group Inc
60	Depository institutions	1	1.07	1.09	1.12	3957.36	3867.47	3761.72	Golden West Fin.	Southtrust Corp	Amsouth Bancorporation
61	Non-depository credit institutions	2	1.69	1.06	1.28	1438.57	3198.06	3202.69	Metris Cos	Countrywide Fin	Capital One Financial Cor
62	Security, commodity brokers, dealers	3	2.30	2.51	5.07	2180.10	1594.53	1212.33	Franklin Resources	E Trade Fin	T Rowe Price Group Inc
63	Insurance carriers	7	1.28	1.39	1.04	10201.66	5330.07	5002.97	Progressive Corp	Chubb Corp	Safeco Corp
67	Holding and other investment offices	2	1.23	1.48	1.52	1473.00	3489.75	242.32	Host Marriott	Cendant Corp	Vencor Inc
73	Business services	18	1.87	4.50	2.96	2775.55	4401.87	4215.44	Comdisco	Administaff Inc	Spherion Corp
80	Health services	6	1.74	1.59	1.44	2280.48	4809.70	4006.19	Laboratory Corp Am.	Community Health	Triad Hospitals Inc
	Total and means	126	1.85	2.81	1.76	4406.53	5006.13	4226.68			
	Grand mean			2.14			4546.45				
	S.D.			1.61			6476.11				

The table compares a matched sample of firms originating with the 2001 Fortune 1000. Matches were identified based on the lone founder category as it was the smallest n ($n=141$). We sorted our firms by SIC using a two digit categorization and eliminated any SIC in which each firm ownership category (family, lone founder, other) was not represented by at least one member. This left a matched sample of 126 lone founder firms representing 36 SIC two digit categories from which the closest family and other firm in terms of sales was identified. The column labeled “# in each category” represents the number of each category matched. For example for SIC code 15 the 3 indicates that there are 3 family firms, 3 lone founder firms, and 3 other firms, each matched with its closest two digit SIC in annual sales. The Tobin’s q reported is the five year firm average; one year and three year averages produced very consistent results.

Because Anderson and Reeb (2003) and Villalonga and Amit (2006b) studied the S&P 500 and *Fortune* 500, respectively, we also ran the combined lone-founder plus family group on the *Fortune* 500 subsample of our *Fortune* 1000 data (all *Fortune* 500 results are available from the authors). Our results became even more similar to those of the prior studies. Specifically, compared to our *Fortune* 1000 results, those for our *Fortune* 500 sample show *higher* levels of significance for the combined lone-founder business plus family business group for the dummies of Tables 5 and 6, and for the dummy, large owner, large owner plus CEO, CEO/Chairman, and Chairman categories. Combined results for the *Fortune* 500 remained non-significant only in panel analyses for firms with family or lone-founder CEOs or Chairmen. But even these findings became significant when we adjusted for endogeneity (in the manner of Table 10). Thus the results of those previous studies are replicated robustly when we combine family and lone-founder into a single category.

4.2. Extension of prior work

Tables 5 and 6 show that when we differentiate between lone founder businesses and family businesses, the superior performance holds only for the former group, and does not emerge even for family firms in the first generation. This contrasts with the findings of Anderson and Reeb (2003) and Villalonga and Amit (2006b) who employed broader definitions of first generation family businesses that blend family founder firms with lone founders. The findings of Table 5 indicate that lone-founders do significantly better than other firms in Tobin's q , whereas family businesses never do so. When analyses were run for 3 year averages, these findings did not change, except that in the first three-year period family firms in general displayed a very marginal advantage in Tobin's q ($p < 0.10$), while second generation family firms showed a marginal disadvantage ($p < 0.10$).

Table 6 documents the range of the findings by examining more refined divisions of the family and lone-founder categories (% shares owned, lone-founder or family serving as largest owner, CEO, chairman, etc.). The results are most consistent with Table 5. Family businesses, however defined, never outperform in Tobin's q . These results do not improve when only first generation family businesses are analyzed, again contrasting with the findings of Anderson and Reeb (2003) and Villalonga and Amit (2006b). On the other hand, firms in all lone-founder ownership and management classifications significantly out-perform (the inflection point for lone-founder ownership being 31%, as calculated by partial derivative). In short, market performance is highly sensitive to the definition of a family firm, even within a specific generation.

4.3. Matched firms analysis

As another way of controlling for industry and establishing the range of our results, we conducted a matched pair analysis of our firms (Table 7). Thirty-six distinct two-digit SIC groups were identified that included at least one firm from each firm type (lone-founder firm, family firm, and other firm), yielding a total sample of 378 firms. Within each SIC category, we matched each lone-founder firm with a family and other firm that was closest in sales volume, and then compared the types for Tobin's q .

Table 7 indicates that the family column of firms shows superiority in Tobin's q in 10 industries (constituting a total of 21 family firms vs. 42 non-family firms), whereas the lone-founder firms show superiority in 20 industries (constituting 92 lone-founder firms vs. 184 non-

lone-founder firms). The regressions performed on this matched sample are presented in Table 8, models 1 to 4. Again the combined sample of lone-founder and family business shows superior valuations, as does the lone-founder sample; the family sample does not, either in the first or the second generation. Thus our earlier findings on the sensitivity of performance to family business definitions are upheld in this matched sample comparison.

Table 8
OLS regressions using matched firms and industry adjusted market measures of performance

Variable	Firm match by SIC and annual sales				Industry adjusted measure of performance			
	Tobin's q				Industry adjusted Tobin's q			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Combined		.264* (2.14)				.163* (2.50)		
Family			.043 (.36)				.073 (1.11)	
Lone Founder			.552** (3.22)	.517** (2.99)			.355** (3.08)	.354** (3.07)
Family 1st Gen				-.225 (-1.43)				-.061 (.52)
Family 2nd Gen				.227 (1.64)				.078 (1.18)
Industry Tobin's q	.251** (3.10)	.264** (3.20)	.289*** (3.55)	.396*** (3.62)				
R&D/sales	13.081*** (5.86)	13.063*** (5.86)	12.606*** (5.73)	12.622*** (5.70)	4.862** (3.14)	4.968** (3.23)	4.755** (3.11)	4.751** (3.10)
Advertising/sales	10.145** (2.86)	10.121** (2.78)	9.309* (2.43)	9.456* (2.49)	2.043 (1.37)	1.957 (1.30)	1.934 (1.27)	1.926 (1.26)
CAPX/PPE (investment)	1.843* (2.50)	1.846*** (2.47)	1.770* (2.31)	1.755*** (2.31)	1.019** (3.68)	.955** (3.49)	.922** (3.40)	.925** (3.40)
Beta (market risk)	.149 (1.30)	.116 (1.00)	.093 (.84)	.123 (1.11)	.092* (2.33)	.081* (2.09)	.072 (1.91)	.073 (1.91)
Debt/market value of equity	-.032 (-1.75)	-.029 (-1.49)	-.030 (-1.51)	-.029 (-1.53)	-.037** (-3.39)	-.034** (-3.24)	-.035** (-3.33)	-.035** (-3.34)
Outside blockholders	-.509* (-2.06)	-.380 (-1.50)	-.400 (-1.62)	-.371 (-1.50)	-.330* (-2.44)	-.270* (-1.97)	-.276 (-2.04)	-.276* (-2.04)
Supershares	-.413** (-3.00)	-.493** (-3.40)	-.483** (-3.39)	-.484** (-3.34)	-.110 (-1.17)	-.176 (-1.77)	-.163 (-1.64)	-.163 (-1.63)
Firm size	.0248* (2.45)	.248* (2.46)	.227* (2.36)	.217* (2.23)	.094** (2.76)	.104** (2.94)	.102** (2.96)	.102** (2.95)
Firm age	-.087 (-1.32)	-.067 (-1.03)	-.003 (-.04)	-.042 (-.58)	-.078* (-2.49)	-.070* (-2.34)	-.042 (-1.41)	-.043 (-1.43)
Constant	-.695 (-.85)	-.950 (-1.11)	-.992 (-1.19)	-.808 (-.96)	-.498 (-1.80)	-.666* (-2.27)	-.750* (-2.54)	-.747* (-2.51)
R ²	.442	.446	.461	.466	.175	.182	.190	.190
F	12.45***	11.33***	10.48***	10.14***	7.10***	6.76***	6.30***	5.91***
n	369	369	369	369	863	863	863	863

Results reported in Models 1–4 use a matched sample obtained from the original *Fortune* 1000 in 2001 ($N=896$ after missing data). The sample was drawn by pairing each lone founder firm in its industry with its closest match in annual sales for family firms and others. We were able to match 126 lone founder firms with corresponding family and other firms for a data set consisting of 378 firms. To replicate Table 5, Models 5–7 utilize the full *Fortune* 1000 data set except that the dependent variable is adjusted by subtracting the median Tobin's q of the relevant two digit SIC. t-statistics are displayed in parentheses and asterisks represent statistical significance at $<0.1\%$ (***), $<1\%$ (**), $<5\%$ (*), respectively.

4.4. Robustness: panel and treatment effects analyses

We assessed the robustness of our findings by examining five years of panel data and also by performing Heckman treatment regressions. Table 9 presents the results from variance component (random effects) analyses employing five years of annual panel data, now including firms whose ownership status varies from 1996 to 2000. Separate models are presented showing the impact on Tobin's q of a base model, of lone founder businesses and family businesses combined, of each individually, and of first and second generation family businesses, individually. A significant Hausman test suggested correlation between the unobserved random effects and some of the covariates. As a result we used Hausman–Taylor (1981) estimation, specifying different subsets of covariates that were to be treated as endogenous (firm age, unsystematic risk, investment, advertising, R&D, debt and supershares). We ran models incorporating random combinations of 4, 5 and 6 of these covariates, and virtually all models replicated the random effects findings. Again, family businesses did not outperform while lone founder businesses did.

We also ran random effects models using as predictors family and lone-founder as chairman and CEO. These analyses again disclosed non-significant associations with Tobin's q for the family predictors, and significant and positive associations with Tobin's q for the lone-founder predictors (these analyses are available from the authors).

It has been argued that not only may governance influence performance, performance may influence governance (Demsetz, 1983; Demsetz and Lehn, 1985). It is important, therefore, to check our analyses for endogeneity, and adjust for it where it is significant. We did this by employing the Heckman two-step procedure which first regresses the ownership category of a firm against a set of independent variables to generate an instrument; the instrument is then included in a regression with performance as the dependent variable. The instrumental variable corrects for omitted variables bias in the second regression (see Greene, 2003).

Table 10 presents treatment effects models using the Heckman two-step method (Greene, 2003: 787–790; Maddala, 1983), along with lambda coefficients that assess selection bias in the original models. The rows of the table show coefficients and Z-statistics (in brackets) for lambda selection parameters and treatment effects, respectively, for our six different governance conditions. The last five columns of Table 10 show the different firm-type sub-samples being compared to a residual group. Although significant lambdas do indicate the presence of endogeneity in the original analyses, our adjusted results did not change materially from the originals. Specifically, the findings for the treatment effects coefficients of Table 10 correspond closely to the parallel results reported on Table 6. Once again our earlier findings are confirmed: neither first nor subsequent generation family businesses outperform other businesses, while lone-founder businesses do outperform under virtually all ownership and management status definitions. Moreover, the “combined” column reproduced the results of Anderson and Reeb (2003) and Villalonga and Amit (2006b).

The evidence in Table 10 further confirms the importance of distinguishing between lone-founder and family businesses in predicting the market-based premium. Specifically, family businesses have a non-significant difference in Tobin's q vis-à-vis other public corporations whereas lone-founder businesses enjoy a 21.5% premium. Where the lone-founder is also the CEO, lone-founder businesses have a 94.4% premium vis-à-vis other public corporations whereas family businesses with a family member as CEO have an 11.5% market valuation disadvantage vis-à-vis other public corporations. Moreover, contrary to previous studies, the differences in performance between the types are not attributable to differences in generation. As before, the sensitivity of our results to the definition of family business is upheld, now in panel analyses and in those incorporating endogeneity.

Table 9
Panel data regressions of market based measures of performance on family and lone founder firm status

Variable	Tobin's q			
	Model 1	Model 2	Model 3	Model 4
Combined		.127 (1.85)		
Family			.049 (.60)	
Lone founder			.245** (2.60)	.247** (2.62)
Family 1st Gen				.055 (.43)
Family 2nd Gen				.054 (.61)
Industry Tobin's q	.991*** (49.15)	.991*** (49.11)	.987*** (48.81)	.987*** (48.85)
R&D/sales	-.793 (.93)	-.746 (.88)	-.842 (.99)	-.834 (.98)
Advertising/sales	1.275 (.98)	1.210 (.93)	1.222 (.94)	1.220 (.94)
CAPX/PPE (investment)	.752*** (4.89)	.724*** (4.68)	.717*** (4.63)	.714*** (4.61)
Beta (market risk)	.032* (2.18)	.031* (2.11)	.030* (2.06)	.030* (2.06)
Debt/market value of equity	-.026* (2.18)	-.025* (-2.10)	-.026* (2.12)	-.025* (2.12)
Outside blockholders	-.354* (2.22)	-.310 (1.93)	-.320* (2.00)	-.319* (1.99)
Supershares	-.120 (1.10)	-.172 (1.53)	-.160 (1.42)	-.161 (-1.44)
Firm size	.013 (.48)	.019 (.69)	.019 (.69)	.019 (.70)
Firm age	-.042 (1.33)	-.035 (1.09)	-.018 (.54)	-.018 (.55)
Constant	-.006 (.02)	-.138 (.55)	-.188 (.74)	-.189 (.74)
R ²	.537	.538	.540	.540
F	3105.52***	3113.04***	3115.08***	3119.69***
N (firm year observations)	4152	4152	4141	4148
# Firms	892	892	892	892

Results reported are from autoregressive random effects models on panel data. Tobin's q was regressed on firm status for the years 1996–2000 inclusive. The sample of firms originated using the *Fortune* 1000 listing of 2001 and represents 892 firms after accounting for missing data. Family firms are defined as those in which multiple family members are insiders (officers or directors) or large owners (5% or more of the firm's equity) at the same time or over the life of the company as family descendants; family 1st Gen indicates family firms with only first generation involvement; family 2nd Gen indicates family firms with second or later generation involvement; and lone founder firms are defined as those in which an individual is one of the company's founders with no other family members involved, and is also an insider (officer or director) or is a large owner (5% or more of the firm's equity). Tobin's q is firm market value divided by total assets. Industry measures are aggregated at a two digit SIC code. Other controls are as follows: R&D/sales; advertising/sales; CAPX/PPE (investment); beta (market risk); debt/market value of equity; outside blockholders (ownership percentage of all major (>5%) non-family or non-lone founder owners); supershares, a dummy variable indicating the presence of control enhancing mechanisms; firm size is the natural log of annual net sales; firm age is the natural log of firm years since founding. Analyses were random effects linear models with AR(1) disturbance. Model 1 lists only controls, Model 2 compares all family and lone founder firms combined vs. all others; Model 3 compares family firms and lone founder firms vs. all others; and Model 4 compares family first generation, family second generation, and lone founder firms vs. all others. Additional analyses were run using dummies for SIC two digit code as well as the 49 categories of the Fama-French industry portfolio with no significant change in results. *t*-statistics are displayed in parentheses and asterisks represent statistical significance at <0.1% (***), <1% (**), <5% (*), respectively.

Table 10
Treatment effects regressions of performance on family or lone founder status

		Tobin's q					
		Variable	Combined	Lone founder	Family	Family 1	Family 2
Selection parameter (λ) from treatment effects model	Dummy	-.377*	-.274	.041	-.191	.071	
		(2.76)	(1.68)	(.33)	(.88)	(.46)	
Treatment effects		0.818**	.929**	-.029	.415	-.106	
		(3.12)	(3.30)	(.35)	(1.07)	(.42)	
Selection parameter (λ) from treatment effects model	Large owner	-.244	-.275	.109	-.130	.186	
		(.93)	(1.06)	(.67)	(.47)	(.88)	
Treatment effects		.889*	1.408**	-.076	.363	-.230	
		(1.98)	(2.77)	(.27)	(.67)	(.60)	
Selection parameter (λ) from treatment effects model	Large Owner & CEO	-.535	-.820*	-.060	-.240	.058	
		(1.78)	(2.69)	(.27)	(.83)	(.15)	
Treatment effects		1.089	2.150***	-.066	.299	-.301	
		(1.93)	(3.56)	(.16)	(.52)	(.38)	
Selection parameter (λ) from treatment effect model	CEO	-.500*	-.774**	-.092	-.373	-.077	
		(2.07)	(3.35)	(.55)	(1.39)	(.34)	
Treatment effects		.675	1.690***	.030	.659	-.114	
		(1.67)	(3.62)	(.11)	(1.29)	(.28)	
Selection Parameter (λ) from treatment Effects Model	CH	-.398*	-.543**	.011	-.236	.083	
		(2.38)	(2.65)	(.08)	(1.02)	(.42)	
Treatment Effects		.772**	1.500***	-.021	.481	-.187	
		(1.91)	(4.11)	(.09)	(1.15)	(.54)	
Selection parameter (λ) from treatment effects model	CEO/CH	-.566**	-.830**	-.099	-.366	-.673	
		(2.82)	(3.35)	(.58)	(1.34)	(.29)	
Treatment effects		.854*	1.92***	.000	.671	-.116	
		(2.54)	(4.10)	(.00)	(1.27)	(.27)	
N		863	863	863	863	863	

Results reported are the dummy variable and lambda coefficients from 30 treatment effects regressions of Tobin's q. They incorporate bases of comparisons denoted by the column heads. A complement category is compared to lone founder and family firms combined, lone founder firms, family firms, family firms 1st generation, and family firms 2nd and later generations. The sample of firms originated using the *Fortune* 1000 listing of 2001. We retained only those firms in which the family or the lone founder were present in the firm from 1996–2000. Firms in which status changed during our observation window were deleted from these analyses ($N=863$). The analyses encompass different family or lone founder statuses: as a dummy variable, as ownership (family or lone founder as the biggest owner), as manager and owner (family or lone founder as the biggest owner and CEO), and for different management positions (CEO, chairman, CEO and chairman). Tobin's q is measured as the ratio of the firm's market value to its total asset value. Family firms are defined as those in which multiple family members are insiders (officers or directors) or large owners (5% or more of the firm's equity) at the same time or over the life of the company as family descendants. Lone founder firms are defined as those in which an individual is one of the company's founders with no other family members involved, and is also an insider (officer or director) or is a large owner (5% or more of the firm's equity). All variables are averaged for the years 1996 to 2000 (we also ran 3 year averages 1998–2000 and 1996–1998, with no significant change in results) and the treatment effects regressions are estimated, using Heckman's two-step consistent estimator. The first stage model includes variables which instrument for family or lone founder status: cash holdings; sales growth; director tenure; and unsystematic risk, plus all control variables of the second stage. The second stage regression controls for the following: R&D/sales; advertising/sales; CAPX/PPE (investment); debt/market value of equity; beta (market risk); outside blockholders (ownership percentage of all major (>5%) non-family or non-lone founder owners); ratio of inside directors to outside directors; supershares, a dummy variable indicating the presence of control enhancing mechanisms; firm size as the natural log of annual net sales; and firm age as the natural log of firm years since founding. Regressions also include industry controls at a 2 digit SIC code. Dummies using a two digit SIC code or the 49 Fama-French industry portfolio were run with no material change in results. *t*-statistics appear in parentheses. All models are significant at beyond the 0.001 level. Asterisks denote statistical significance at <0.1% (***), <1% (**), <5% (*), respectively.

4.5. Selection bias and a more inclusive random sample

Prior research on family firms in the U.S. has focused on firms in major indices such as the *Fortune* 500 or a broader index such as the *Fortune* 1000, which has been the focus of our analysis. One concern is that the family or lone founder firms that become part of such indices may not be representative of all such types of firms, possibly imparting a selection bias in the general mode of analysis of family firms. We therefore perform a number of tests to address such potential biases.

Selection biases: Several methods were used to assess selection bias, the first two pertaining to the *Fortune* 1000, the last to a sample of much smaller firms that we have gathered and analyzed. First, we compared a firm's Tobin's q before and after it made the *Fortune* 1000 list to determine the effect on q of firms in each ownership category being included on the list. We compared q values for all firms in the years before and after they made the list for the period 1980 to 2004. We found that in 53% of the cases ($N=552$) the Tobin's q increased; but because the value of the declines exceeded that of the gains, the average q fell by 0.46. Moreover, for the years for which we had collected ownership data, we examined the annual change in q upon making the list for each ownership category. The findings were as follows: for family businesses q increased 51% of the time upon making the list ($N=46$), for lone-founder businesses q increased only 39% of the time ($N=36$), and for other firms q increased 47% of the time ($N=83$); all ownership categories showing average declines in Tobin's q of 0.32, 0.54, and 0.26, respectively. Thus we concluded that Tobin's q was not inflated simply by a firm's inclusion in the *Fortune* 1000 sample.

In order to establish whether it was merely the youthfulness of *Fortune* 1000 lone-founder businesses that accounted for their superior valuations, we stratified our sample based upon time since founding into 10-year tiers: 0 to 10 years, 11 to 20 years, 21 to 30 years, 31 to 40 years, 41 to 50 years, and more than 50 years. The lone-founder firms continued to have significantly higher Tobin's q than either family or other firms in all but one age category: firms of 41 to 50 years of age. This last result was likely due to the small sample size ($N=10$) for lone-founder firms in the 41 to 50 age category. We also found that all categories of firms had spent a significant period as a *Fortune* 1000 company. Of the firms reporting non-zero sales in Compustat from 1981 (Compustat's start) to 2001, our family firms appeared on the *Fortune* 1000 list 52% of the time, while lone-founder and public corporations appeared 32% and 62% of the time.

A "Random 100" sample: It was important to determine whether superior valuations among lone-founder firms would generalize beyond the *Fortune* 1000. Therefore we drew a random sample of firms from the Compustat database that reported positive revenues in the year 2000 and that traded on NASDAQ, AMEX or NYSE. The latter provided a universe of 4850 firms, to which we assigned a random number and then chose the first 100 from a ranked sorting. Table 11 provides summary statistics and means tests comparing this "Random 100" sample to the *Fortune* 1000. According to simple means comparisons, lone-founders do not differ in Tobin's q between the *Fortune* and Random samples, and thus lone-founder businesses on the *Fortune* 1000 do not appear to have inflated q 's (indeed, industry adjusted q 's are actually higher for lone-founders in the Random 100 sample than those in the *Fortune* 1000). The *Fortune* 1000 and Random 100 samples are quite different however in that the latter is comprised of far younger and smaller firms, with higher levels of capital investment, less market risk, fewer outside blockholders, and more concentrated ownership. Family and other firms also show higher q 's for the Random sample.

Table 12 presents regressions of Tobin's q on ownership structure and our control variables. These show that in the Random 100 sample, lone-founder firms continue to significantly

Table 11

Descriptive data and tests of means for family, lone founder, and all other firms comparisons between the *Fortune* 1000 and a random sample of 100 firms

Variable		[a]		[b]		[c]	
		All others		Family		Lone founder	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
Tobin's q	<i>Fortune</i> 1000	1.759	1.122	1.869	1.154	2.720	2.284
	Random 100	2.070	2.103	2.517	2.054	2.372	1.618
	<i>t</i> -stat.	-1.634		-2.305*		.712	
Industry adjusted Tobin's q	<i>Fortune</i> 1000	1.046	.351	1.113	.438	1.283	.631
	Random 100	1.316	1.237	1.834	1.518	1.448	.200
	<i>t</i> -stat.	3.654***		5.445***		1.083	
R&D/sales	<i>Fortune</i> 1000	.016	.035	.011	.029	.030	.067
	Random 100	0.121	0.411	.017	.043	0.421	1.2
	<i>t</i> -stat.	-5.626***		-.884		-3.885***	
Advertising/sales	<i>Fortune</i> 1000	.008	.022	.012	.035	.010	.027
	Random 100	.020	.057	.006	.014	.027	.126
	<i>t</i> -stat.	3.086**		.802		1.449	
CAPX/PPE (investment)	<i>Fortune</i> 1000	.189	.143	.228	.137	.321	.239
	Random 100	.261	.249	.371	.445	.392	.232
	<i>t</i> -stat.	-3.123**		-2.779**		-1.360	
Beta (market risk)	<i>Fortune</i> 1000	.717	.796	.826	.479	1.130	.989
	Random 100	.401	.751	.575	.665	.541	.782
	<i>t</i> -stat.	2.689**		2.239*		2.769**	
Debt/market value of equity	<i>Fortune</i> 1000	1.030	2.771	.707	2.142	1.000	3.259
	Random 100	.915	1.547	.339	.510	.236	.641
	<i>t</i> -stat.	.296		.784		1.143	
Outside blockholders	<i>Fortune</i> 1000	.242	.252	.175	.161	.203	.184
	Random 100	.165	.165	.126	.147	.173	.143
	<i>t</i> -stat.	2.295*		1.359		.791	
Supershares	<i>Fortune</i> 1000	.031	.176	.213	.410	.170	.377
	Random 100	.075	.267	.190	.402	.000	.000
	<i>t</i> -stat.	-1.621		.242		2.251*	
Sales (\$mm)	<i>Fortune</i> 1000	9.596	18.225	7.215	17.194	5.115	6.963
	Random 100	1.142	2.835	1.881	4.255	.448	.789
	<i>t</i> -stat.	3.273**		1.416		3.271**	
Sales growth	<i>Fortune</i> 1000	.265	.358	.301	.347	.499	.486
	Random 100	.203	.454	.227	.309	.342	.456
	<i>t</i> -stat.	1.164		.937		1.485	
Firm age	<i>Fortune</i> 1000	72.375	46.504	66.973	38.831	25.085	16.490
	Random 100	28.833	30.165	35.904	28.226	13.840	10.892
	<i>t</i> -stat.	6.727***		3.589***		3.281**	
Shares owned	<i>Fortune</i> 1000			.188	.195	.121	.176
	Random 100			.273	.248	.200	.227
	<i>t</i> -stat.			-1.859		-1.965	
# Firms (% of total)	<i>Fortune</i> 1000	492 (54.9%)		263 (29.4%)		141 (15.7%)	
	Random 100	54 (54%)		21 (21%)		25 (25%)	

This table compares the *Fortune* 1000 data set of 896 firms with a randomly selected set of 100 firms drawn from Compustat. The firms were drawn from the Compustat universe ($N=4850$) for fiscal year 2000 for which there were positive sales and trading on a major US stock exchange. *t*-statistics are computed between categories and indicate the difference between the *Fortune* category and its peer from the Random 100 sample. *t*-statistics are in parentheses and asterisks represent statistical significance at <0.1% (***), <1% (**), <5% (*), respectively.

outperform other *Fortune* 1000 companies. In fact, all our categories from the Random 100 sample outperform the non-family, non-lone-founder categories of the *Fortune* 1000. This is consistent with the fact that the smaller companies in the random sample tend to have greater growth opportunities than the *Fortune* 1000 firms.

Table 12

OLS regressions using market based measures of performance on a random sample

Variable	Randomly selected sample of 100 firms		Fortune 1000 plus a randomly selected sample of 100 firms	
	Tobin's q	Industry adjusted Tobin's q	Tobin's q	Industry adjusted Tobin's q
	Model 1	Model 2	Model 3	Model 4
Family (random 100)	.041 (.448)	.281 (.297)	.938*** (.258)	.754*** (.129)
Lone founder (random 100)	-.507 (.427)	-.277 (.289)	0.516* (.253)	0.366** (.132)
Other (random 100)			0.514** (.195)	0.321** (.100)
Family (fortune 1000)			.045 (.088)	.037 (.044)
Lone founder (fortune 1000)			.318** (.116)	.114* (.057)
Industry Tobin's q	.014 (.062)		1.071*** (.044)	
R&D/sales	.004 (.253)	-.123 (.171)	.140 (.166)	.014 (.083)
Advertising/sales	.773 (2.501)	-.277 (1.632)	-1.135 (1.015)	-.451 (.499)
CAPX/PPE (investment)	.941 (.625)	.682 (.413)	1.136*** (.195)	.544*** (.096)
Beta (market risk)	1.544*** (.258)	.823*** (.173)	.239*** (.047)	.125*** (.023)
Debt/market value of equity	-.0480** (.147)	-.0256* (.096)	-.046** (.016)	-.026** (.008)
Outside blockholders	-.849 (1.162)	-.372 (.782)	-.487** (.168)	-.202* (.084)
Supershares	-.863 (.626)	-.566 (.424)	-.213 (.118)	-.129* (.059)
Firm size	.000 (.000)	.000 (.000)	.087** (.031)	.035* (.016)
Firm age	-.005 (.008)	-.005 (.005)	-.059 (.040)	-.023 (.020)
Constant	1.933*** (.499)	1.278*** (.284)	-.737 (.306)	-.745*** (.149)
R ²	.442	.354	.527	.164
F	5.35***	4.08***	70.06***	13.22***
n	95	95	958	958

Results reported in Models 1–2 utilize a data set of 100 firms randomly drawn among all firms in Compustat ($n=4,850$) in fiscal year 2000. After adjusting for missing data, analyses were run on 95 firms. Models 3–4 utilize a combined data set of both the *Fortune* 1000 data ($n=863$) and the random 100 data ($n=95$). The dependent variable in Models 1 and 3 is firm Tobin's q while Models 2 and 4 use firm Tobin's q adjusted by subtracting the median q of the relevant two digit SIC. The omitted category in Models 1 and 2 is the random 100 data category of "other" firms while the omitted category for Models 3 and 4 is the *Fortune* 1000 "other" category, which is consistent with our previous analysis. *t*-statistics are displayed in parentheses and asterisks represent statistical significance at $<0.1\%$ (***), $<1\%$ (**), $<5\%$ (*), respectively.

Moreover, when we analyzed the Random 100 sample alone, neither family nor lone-founder firms outperformed the “other” category. These results are consistent with research by [Holderness and Sheehan \(1988\)](#). Thus prior results using S&P 500, *Fortune* 500, *Fortune* 1000 and other collections of large firms may not hold for smaller companies. It is important therefore not to overgeneralize findings based on the analyses of very large firms.

Limitations of the Research: We must raise several cautionary notes. First, notwithstanding the care we have taken to rule out problems of endogeneity and selection bias, it is hazardous to draw causal connections between firm performance and ownership structure. Ownership may be considered an endogenous outcome reflecting the preferences and behavior of shareholders and stock traders ([Demsetz, 1983](#); [Demsetz and Lehn, 1985](#)). Moreover, there can be mutual influence between the market valuation of a firm and ownership: the market price of a business may influence whether it is sold, and the probability of sale may in turn be influenced by the nature of the owner.

Second, Tobin’s q is an imperfect measure of performance linked to investor perceptions and expectations which may be off the mark. The measure does not directly assess the actual returns of a stock, nor its risk. Moreover, q can both influence and be influenced by ownership structure. Thus it is critical to specify models as fully as possible and assess endogeneity.

Finally, our period of analysis was largely a bull market. Therefore further research should be done to establish whether these findings will apply to less favorable market environments. It may be too that outside the U.S., powerful family businesses with longstanding political and social connections to governments can outperform by virtue of their protection from competition ([Bertrand and Schoar, 2006](#); [Claessens et al., 2002](#); [Morck and Yeung, 2003](#)).

5. Discussion and conclusion

Prior international research has questioned the ability of family businesses to perform well, and has identified reasons as well as evidence for mediocre performance ([Bertrand and Schoar, 2006](#); [Bennedsen et al., in press](#); [Claessens et al., 2002](#); [Cronqvist and Nilsson, 2003](#); [Maury, 2006](#)). Recent studies of large, publicly traded U.S. family businesses, however, have contradicted this research, claiming that family businesses enjoy higher market valuations, especially in the first generation ([Anderson and Reeb, 2003](#); [McConaughy et al., 1998](#); [Villalonga and Amit, 2006b](#)). To address this puzzle, we used more exacting definitions of family business. We also took unusual care to address issues of endogeneity and selection bias.

We found that the out-performance of family business was a result of how these businesses were defined — specifically, as including companies with large personal owners who *do not* have relatives associated with their firms. This is an important distinction, both conceptually and empirically. Conceptually, because family businesses with multiple family members serving as owners or managers may, regardless of generation, confront more encumbered governance conditions than lone-founders without kinship ties in the business ([Bertrand and Schoar, 2006](#); [Schulze et al., 2001, 2003](#)). Empirically, because when we remove lone-founder businesses from the family business category, there is no longer any evidence of superior market valuations. Indeed, the mere classification of lone-founder firms as family firms, so common among previous studies, is puzzling given the absence of any family involvement.

As a group, large U.S. family businesses did not outperform in their market valuations — not in any of the OLS, panel or treatment effects models for any of our numerous measures of family involvement, nor for different family generations. By contrast, lone founder businesses outperformed in their market valuations in all of these analyses, and across definitions including those of dummy

variable, share ownership, large share ownership combined with lone-founder management, and lone-founder serving as CEO, Chairman, or both. Our *Fortune* 1000 analyses were shown not to be sensitive to the age cohorts of the firm nor to firms' elevation to the *Fortune* list.

More importantly, our analyses of a random sample of much smaller publicly traded U.S. companies disclosed that family businesses also did not outperform other firms within that random sample, although lone-founder, family and other businesses in the random sample outperformed other *Fortune* 1000 businesses. Clearly, it may be hazardous to generalize results from very large publicly traded companies to smaller public firms.

This research illustrates the importance of determining the range and robustness of results. It demonstrates that firm performance varies greatly depending on the definition of family business, as well as the nature of the sample being examined. Assiduous specification and empirical modeling is critical in examining the performance of family business. It has also been shown to be similarly critical in treating broad topics such as ownership and performance (Demsetz and Lehn, 1985), diversification (Martin and Sayrak, 2003), and corporate governance (Gillan, 2006).

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