

Family Control of Firms and Industries

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Abstract

Using a large sample of U.S. corporations, we test theories that explain family control of firms and industries. We find that family control is more likely when the efficient scale is small, the need to monitor managers and other employees is high, the firm's amenity potential is high, profit horizons are long, and there is dual-class stock. We also find that family firms are less sensitive to both positive and negative profit shocks. The results suggest that families retain control only when doing so gives the firm a competitive advantage, but they also appropriate private benefits of control at the expense of non-family shareholders

Family-controlled firms dominate the corporate landscape around the world (La Porta et al. (1999); Faccio and Lang, 2002; Claessens et al. (2000)). In fact, entire industries are dominated by family firms. The global beer industry is one example: InBev, Anheuser-Busch, SABMiller, Heineken, FEMSA, Carlsberg, and many smaller companies are still controlled by their founding families or related foundations. In the United States, six of the seven largest cable system operators, including Comcast, Cox, Cablevision, and Charter Communications, are controlled and actively managed by their founders or the founder's heirs.¹ Eleven out of the 12 largest publicly traded newspaper companies are also family-controlled.²

These facts raise the question that is the subject of this paper: What explains family control of firms and industries?

Theories of family control can be classified into two broad explanations, which we refer to as “competitive advantage” and “private benefits of control.” The key difference between the two is the group of shareholders for whom value is maximized. Under the competitive advantage hypothesis, value is maximized for both family and non-family shareholders. Under the private benefits of control hypothesis, value is maximized only for the family, who expropriates non-family investors.

Theoretical predictors of family control under the competitive advantage umbrella include firms and industries' value-maximizing size, control potential, and “amenity potential” (Demsetz and Lehn, 1985), as well as investor horizons. Predictors based on a private benefits of

¹ The exception is Time Warner, where Ted Turner owns 0.8% of its equity since the acquisition of Turner Broadcasting, and has a seat on the board, but does not manage the company. In Comcast, CEO Brian Roberts and his father Ralph, who founded the company, own over a third of the votes. The Cox family took Cox Communications private in 2004, and the Dolan family is in the process of doing the same at Cablevision. The founding families in the remaining companies all control a majority of the votes and 100% of the board through dual-class stock. See Gilson and Villalonga (2007) for details.

² The exception is Gannett (see Villalonga and Hartman, 2007). Three of the other 11 companies have experienced changes in control in the past year after being run by their founding families for over a century, but remain family-controlled: Knight-Ridder (now owned by rival McClatchy), Tribune (now owned by Samuel Zell), and Dow Jones (now owned by Rupert Murdoch's NewsCorp).

control explanation include the use of control-enhancing mechanisms, minority shareholder protection, information asymmetries, and the free cash flow available to family shareholders (Burkart et al., 2003).

The two broad explanations are not mutually exclusive, however. Both could be true, not just across a wide cross-section of firms but even within a given firm or industry. For instance, Botticelli and Barnes (1997) and Eisenmann's (2000) chronicles of the history of U.S. newspapers and cable television suggest that family firms came to have a competitive advantage in both industries as a result of two factors: the amenity potential these businesses offered to their founding families, and the longer horizons these families had relative to other investors. Nevertheless, almost all of these families set up dual-class structures early in their firms' financing histories, which helped them retain control over the years and appropriate private benefits at the expense of public shareholders (Gilson and Villalonga; 2007; Villalonga and Hartman, 2007).

While the question of what explains family control of firms and industries has not been directly addressed from an empirical standpoint, the evidence about the prevalence of family control across countries and its effects on corporate performance seems consistent with both explanations. The positive effect of family ownership on firm value documented by Anderson and Reeb (2003) and Villalonga and Amit (2006), as well as the founder-CEO premium found by Fahlenbrach (2005) and others, are consistent with a competitive advantage explanation. Several other findings seem consistent with a private benefits of control explanation, including the relation between the prevalence of family firms and minority investor protection across countries (La Porta et al, 1999); the premium of super-voting shares in firms with dual-class stock, which are largely family-controlled (Zingales, 1995; Nenova, 2003); the tunneling practices of family

business groups in emerging markets (Bertrand et al., 2002); and the negative effects on firm value of families' excess control over ownership (Claessens et al., 2002; Villalonga and Amit, 2006), and of descendant-CEOs (Pérez-González, 2006).

In this paper we take a different approach to answer this question more directly. We use the variation in the prevalence of family control within and across industries in the United States to test the two broad explanations and identify which characteristics distinguish family-controlled firms and industries from their non-family counterparts. Our empirical focus on a single legal regime ensures that legal investor protection will not swamp other candidate explanations and thus bias our results in favor of the private benefits of control view. In contrast, inter-industry variation in family control within a given country is unlikely to create a similar bias, and is comparable in magnitude to the variation across countries. The standard deviation of the percentage of family firms in an industry across the 254 three-digit industries in our 8,104-firm sample is 23%, or 17% across 66 two-digit industries. By way of comparison, the standard deviation of the same variable across the 27 countries in La Porta et al.'s (1999) large-firms and small-firms samples is 23% and 25%, respectively. The standard deviation in Claessens et al. (2000) East Asian sample ranges between 18% and 23% (depending on the measure of family control), and that in Faccio and Lang's (2002) Western European sample ranges between 10 and 18%. Figure 1 shows histograms of the distribution of family control across industries for both two and three-digit level industries in our sample.

We find that, just like in the cable and newspaper industries, the combination of competitive advantage and private benefits explanations to family control is the norm across our sample. Consistent with the competitive advantage hypothesis, firms and industries are more likely to remain under family control when their efficient scale and capital intensity are smaller

(the value-maximizing size argument), when the environment is more noisy (the control potential argument), when their industry-adjusted PAC contributions are higher (the amenity potential / political connections argument), and when the difference between long and short-term profitability is larger (the investment horizon argument). Consistent with the private benefits of control hypothesis, families are more likely to stay in control when there is dual-class stock in their firms.

We construct two additional tests of the two broad explanations. First, we estimate a propensity-score matching model of the effect of family control on the family premium (the excess value of family firms relative to non-family firms in each industry). We use this model to test whether family firms dominate where they are valued the most (as a competitive advantage explanation would suggest) or the least (as a private benefits explanation would suggest). Second, we analyze the relative sensitivity of family and non-family firms to industry profit shocks. As in Bertrand et al. (2002), a lower sensitivity of family control to positive shocks would be consistent with a tunneling (i.e., private benefits appropriation) explanation. On the other hand, a lower sensitivity to negative shocks would suggest that family firms enjoy a competitive advantage in their industries. Based on the results of these two tests, we are unable to rule out either of the two explanations. The implication is that family control results in net value creation for all of the firm's shareholders, and not in a sheer transfer of value from non-family shareholders to the founding family.

The paper is structured as follows. Section I describes our data. Section II examines what determines family control of firms and industries. In section III we analyze the sensitivity of family control to profitability shocks. Section IV concludes.

I. Data

A. Sample

We examine the question of family control of firms and industries using a sample of publicly traded U.S. firms and the industries in which they operate. We begin by selecting as broad a sample of industries as possible, by extracting from Compustat all companies that were active in year 2000 and reported data for one or more business segments. There were 8,148 such firms, excluding 528 foreign firms that only trade in the U.S. in the form of American Depositary Receipts (ADRs). We then aggregate all segment data within firms at the three-digit SIC level, whenever possible. The 8,148 firms are present in 12,069 “three-digit segments” from 289 different industries, from which we eliminate two that are in fact at the one-digit level, and one that corresponds to “non-classifiable establishments” (SIC code 9990). We also eliminate all industries with less than five firms operating in them. This leaves us with 8,104 firms with 11,930 segments in 259 industries, of which 11,854 segments from 254 industries (and 8,093 firms) are at the three-digit level and 76 segments from 5 different industries (and 11 firms) are at the two-digit level. Aggregating all segments within firms at the two-digit level, there are 11,008 segments spanning 66 two-digit industries.

We use the 8,104-firm sample to compute industry averages of firm and segment characteristics, which we use in some of our analyses. We also use other data sources to construct additional independent variables. The sources include the Occupational Employment Survey of the Bureau of Labor Statistics, Political Action Committees (PAC) data from the Center for Responsive Politics, corporate governance data from the Investor Responsibility Research Center, and stock returns data from the Center for Research in Security Prices (CRSP).

Following Anderson and Reeb (2003) and Villalonga and Amit (2006; 2007), family firms are defined as those in which the founder or a member of the founder's family by either blood or marriage is an officer, director, or blockholder, either individually or as a group.³ In order to determine whether a U.S. company is a family firm or not, ownership data needed to be collected manually from proxy statements filed with the Securities and Exchange Commission (SEC). These data were complemented with corporate histories extracted from Hoover's, company websites, and/or internet searches to determine who the founder was and verify family relationships among shareholders. Because this is a very time-consuming process, we only collected these data for a subsample of 2,110 firms, or about 26% of the 8,104-firm sample. Altogether, the 2,110 firms have 3,968 segments, or about 33% of the 11,854 segments in the sample, and span the whole spectrum of 254 three-digit industries and 66 two-digit industries in the full sample.

Table I depicts the representativeness of the sample. To ensure a minimum degree of representation for each industry, we randomize within industries by selecting a minimum of two firms or 20% of all firms in the industry, whichever is higher. This threshold results in the minimum percentage of all firms in an industry represented by our sample being 20% for three-digit level industries, and 25% for two-digit level industries. Because of these thresholds and the fact that each firm typically operates in more than one industry, the average percentage of all firms in an industry represented by our sample is actually higher—39% (15.5 firms) for three-digit level industries, and 40% (60 firms) for two-digit level industries. The maximum

³ Villalonga and Amit (2006) consider eight alternative definitions that impose additional conditions for family firms to qualify as such, including a minimum family control threshold of 20% of the votes, that the family be the largest shareholder or voteholder, that there be family officers or directors, or that the firm be in second or later generation. In this paper we use the broader definition given above because it is more consistent with existing theories of family control, such as Burkart et al.'s (2003), which do not require any of those conditions.

percentage at both industry levels is 83%. Sample firms account for 58% of industry aggregate sales at the three-digit level, and 60% at the two-digit level.

Fifty-five percent of the 2,110 firms (1,158 firms) are family firms, and they cover 51% of all segments. Anderson and Reeb (2003) find that founding families are present in one third of the S&P 500; Villalonga and Amit (2006, 2007) find that, among Fortune-500 firms, the percentage is as high as 40%. Anderson et al. (2007) document an even higher percentage (48%) among the largest 2,000 U.S. firms. Our finding of a 55% fraction of family firms in a more random sample of U.S. corporations thus confirms the conventional wisdom that family ownership is significantly more prevalent among smaller firms, and suggests that it would be even higher if the entire population of U.S. firms—public and private—were considered.

Table II provides further detail into the ownership and management of our sample firms by their founding families. Sixty-three percent of family firms (or 34% of all firms) are not just family-owned but also family-managed: 591 firms have a founder-CEO and 128 have a descendant-CEO, while 439 family firms are managed by a non-family CEO.

The table also shows the distribution of family ownership and management across generations, where a firm's generation refers to the latest generation of family members that are active in the firm as officers, directors, or blockholders, relative to the founder's generation, which would be the first. Seventy-three percent of family firms (838 firms) are still in their first generation, including 533 where the founder is the CEO and 305 where he or she exercises a non-executive role (including that of chairman of the board). The remaining 58 firms with a founder-CEO are all in their second generation, as are 74 of the firms with a descendant (and hence second-generation) CEO, and 90 family firms that are not family-managed, for a total of 222 second-generation firms, or 19% of all family firms. As can be expected, there is

considerable attrition in the number of family firms in subsequent generations. Only 74 firms or 6% of all family firms are in their third generation, 19 firms (1.6%) are in their fourth generation, and five firms (0.4%) are in their fifth generation. Slightly over half of these later-generation firms are family-managed.

Table III shows the distribution of family firms across industries. Panel A shows that the mean and median degree of family control in the sample industries is 50% in terms of the proportion of family firms in the industry. In terms of family firms' combined market share, the mean is 43–44% and the median is 38%. The average proportion of firms in the industry that are led by their founder is 21–22%, while 9% are led by their descendants. There is high variation in these figures across industries, however: The standard deviation of the proportion of family firms in the industry is 17% among two-digit industries, and 23% among three-digit industries.

Panel B illustrates this variation by reporting these figures for each of the 66 two-digit industries in the sample. Family control ranges between zero (in Railroad Transportation, SIC 4000), and 100% (in Livestock Production, SIC 200). Leaving out these two extreme examples, the minimum degree of family control is 14% in “Mining, Quarry, Nonmetallic Minerals” (SIC 1400) and the maximum is 86% in Automotive Dealers & Service Stations (SIC 5500).

II. What determines family control of firms and industries?

Theoretical determinants of family control can be grouped into two broad sets of explanations: those in which family control is the optimal structure for both family and non-family shareholders, and those in which family control is only optimal for family shareholders. Both groups of theories are consistent with economic efficiency, but only under the first one does firm performance (value or profitability) reflect the full benefits to all shareholders. We label the first group “competitive advantage,” and the second “private benefits of control.”

A. Competitive advantage

In their seminal paper about ownership concentration and firm performance, Demsetz and Lehn (1985) propose four determinants of ownership concentration that fall under the “competitive advantage” category: value-maximizing size, control potential, “amenity potential” of a firm’s output, and regulation. In this paper we focus on the first three, which are particularly relevant for individual and family shareholders. We do not include regulation among our candidate explanations for family control because the general trend toward deregulation in the U.S. economy is likely to have made this explanation less powerful since the time of Demsetz and Lehn’s study. However, we include market competition among the variables that characterize a firm’s control potential.

A.1. Value-Maximizing Size

One fundamental determinant of family control is a firm’s value-maximizing size or efficient scale—the size a firm needs to reach to compete successfully in any given industry. The larger this size, the more costly it is to own any given fraction of the firm and concentrate ownership in the hands of a few shareholders—what Demsetz and Lehn refer to as the risk-neutral effect of size. Moreover, as they also argue, risk aversion will reinforce this effect, since in order to control a larger firm, investors need to commit a larger fraction of their wealth and forgo the benefits of diversification or demand compensation for them. Both arguments are of special relevance to individual and family owners who, unlike corporate and institutional shareholders, are the ultimate capital providers and are typically less diversified.

We use the log of segment sales—the firm’s sales in any given industry—to measure the efficient scale in that industry. Our measure thus allows for the fact that a firm may be diversified across industries in which the efficient scale is different. In addition, we use the

firm's capital intensity, measured by the ratio of property, plant and equipment (PPE) to total assets, to proxy for the external financing needs that dilute family ownership as the firm grows to achieve its value-maximizing size.

A.2. Control Potential

The second explanation builds on the conflict of interest between owners and managers—the classic agency theory of Berle and Means (1932) and Jensen and Meckling (1976). Ownership concentration mitigates this conflict by bringing about greater alignment of incentives (if ownership is concentrated in the hands of managers themselves) or improved monitoring (if it is concentrated in the hands of outside shareholders). The monitoring argument particularly applies to individuals and families who, unlike institutional shareholders such as banks or mutual funds, have their personal fortunes at stake and no additional layers of agency between the monitor and its ultimate owners. Thus, the greater the need for large-shareholder monitoring in any firm or industry—what Demsetz and Lehn refer to as “control potential”—, the more likely it is to be family-controlled.

Demsetz and Lehn focus on one element of a firm's environment that is positively associated to its control potential: uncertainty, or noisiness, which they measure in three different ways—profit variability, market risk (beta), and firm-specific risk in stock returns. We use the latter two measures, which they find to be the most significant, to test for this explanation. Table IV provides details on how these and other measures are constructed in this paper.

Another factor affecting the need for large-shareholder monitoring is competition. Product-market competition disciplines managers and other employees, thus reducing the control potential—and the likelihood of family control—of firms and industries. We use two different

measures of an industry's degree of competition: a Herfindahl index of market concentration, and the number of firms in the industry.

Independently of competition, employees are likely to require less monitoring the more skilled they are, partly because they face higher costs if they are caught shirking, and partly because of their greater intrinsic motivation, as argued by Becker and Stigler (1974) and by Rebitzer (1995). In our empirical analyses, we measure skilled employment by the percentage of total industry employment represented by the following categories in the Bureau of Labor Statistics' Occupational Employment Survey (from which we obtain these data): managers, computer and mathematical, architecture and engineering, and scientific.

A.3. Amenity Potential

Demsetz (1983) points to some individuals' preference for "on-the-job consumption" (over maximizing profits on the job and consuming them at home) as a candidate explanation to ownership concentration. The concept includes both known consumption by owner-managers, which reflects personal tastes, and unknown consumption by managers, which reflects a positive monitoring cost. Building on the former, Demsetz and Lehn coin the term "amenity potential" to describe "the utility consequences of being able to influence the type of goods produced by the firm, not the utility derived from providing general leadership to the firm" (1985, p. 1161).

Like the other two explanations discussed above, these non-pecuniary benefits of control seem particularly relevant for individual and family owners. Indeed, the two industries that Demsetz and Lehn use to proxy for this theory, professional sports clubs and mass media, are among the most family-dominated ones.

In their theoretical model of family control, Burkart et al. (2003) formalize the notion of "amenity potential" and contrast it with private benefits of control—the key difference being that

the latter come at the expense of profits accruing to non-family investors. They also mention, but do not explicitly incorporate in their model, a third broad theory of the benefits to a family of preserving control: the reputational benefits associated with a traditional family name and/or with political or economic connections. We view this latter theory as a specific form of amenity potential, and thus as part of our “competitive advantage” group of explanations.

To measure amenity potential across firms and industries, we use the dollar contributions to Political Action Committees (PACs) made by our sample firms in year 2000. PACs are groups that seek to promote their members’ interests by raising funds that are contributed to the campaign of political candidates who support the group’s interests. PACs can be independent or affiliated with corporations, labor unions, or trade associations. Corporate PACs can solicit contributions from their shareholders and employees, and their families, and can seek support for a variety of causes such as ideological, ethnic, religious, environmental, or industrial. Thus, firms’ total dollar contributions to PACs proxy for multiple forms of amenity potential.

PAC contributions provide a useful measure of amenity potential because both family and non-family shareholders can voluntarily contribute to these PACs and derive utility (or even corporate profits) from it. Hence, the measure is available for both family and non-family firms. In contrast, other candidate measures such as the presence of the family name in the firm’s name (e.g. Ford, or Wrigley) or the employment of family members in the firm, are only meaningful and available for family firms, and thus cannot be used as predictors of family control, as they perfectly predetermine the outcome.

A.4. Long-Term Profit Maximization

A fourth explanation to family control is the differential profit horizon that families have relative to other shareholders. Founding families often see themselves as stewards of the family

business for future generations (see, e.g. Villalonga and Amit, 2005). As a result, these firms have long-term horizons, often spanning multiple decades, and sometimes even centuries. For instance, Tuttle Farm in New Hampshire has been under the same family's control since it was founded in 1635; Corning since 1851; Anheuser Busch since 1860.⁴ Even family firms that are at the founder stage tend to stay invested for several years; the founders in our sample have retained ownership in their companies for an average period of nine years after going public.

In contrast, public investors and managers have much shorter horizons, for which they are often criticized. In the New York Stock Exchange, for instance, the average shareholding period has been declining steadily over the past few decades, and is less than one year since 2002. Because the payback period of positive-NPV investments in many industries is far longer than that, firms with patient capital such as that provided by families will be more inclined to sacrifice short-term profits in order to pursue such value-creating projects, and thus may enjoy a competitive advantage over firms that cater to more myopic investors or that are run by myopic managers as in Stein (1989).

To proxy for the long-vs.-short profit horizon of each industry, we measure the difference between the compound average industry Return on Assets (ROA) over the last ten years and the current ROA. ROA is measured as the ratio of Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA) to total assets.

B. Private Benefits of Control

The term “private benefits of control” was coined by Grossman and Hart (1980) to refer to the benefits that can be appropriated by controlling shareholders or managers at the expense of minority shareholders. Depending on who appropriates those private benefits, they can be considered, respectively, the centerpiece of the agency problem between large and small

⁴ “America’s oldest family companies,” <http://www.familybusinessmagazine.com/oldestcos.html>

shareholders, or of that between owners and managers. In this paper we restrict the term to what has become its more frequent use in the literature, namely the benefits appropriated by large (in our case, family) shareholders at the expense of public (non-family) shareholders. Accordingly, we include under this label all theoretical determinants of family control that share the prediction that family control will only be optimal for family shareholders. We acknowledge that, as shown by Burkart et al. (2003), the potential appropriation by managers of private benefits of control is also a fundamental determinant of family control; this is exactly what we refer to, following Demsetz and Lehn (1985), as “control potential.” We just restrict the term “private benefits of control” to those appropriated by family shareholders, to avoid confusion.

B.1. Use of Control-Enhancing Mechanisms

Empirical studies of ultimate ownership and control have shown that families and other controlling shareholders from all parts of the world frequently use mechanisms like dual-class stock and pyramidal ownership to enhance their control rights relative to their cash flow rights (La Porta et al., 1999; Claessens et al., 2000; Faccio and Lang, 2002; Villalonga and Amit, 2007). The use of such mechanisms has been found to reduce profits or market value, which is taken as evidence of private benefits appropriation by controlling shareholders (La Porta et al., 2002; Bertrand et al., 2002; Claessens et al., 2002; Gompers et al., 2006; Villalonga and Amit, 2006).

Moreover, some researchers have come up with specific measures of the size of these private benefits, such as the premium at which superior-voting shares trade relative to the inferior-voting shares in companies with at least two publicly traded classes of common stock (Zingales, 1995, Nenova, 2003), or the differential sensitivity to profit shocks of firms in pyramidal business groups (Bertrand et al., 2002).

Villalonga and Amit (2007) find that, in the United States, the main control-enhancing mechanisms used in publicly traded family firms are dual-class stock and disproportional board representation, but not pyramids. Moreover, only dual-class stock has a significantly negative association with market value; the use of pyramids is in fact positively related to value, as is that of voting agreements—another mechanism used by U.S. families.

We therefore focus on dual-class stock and use a dummy variable to indicate whether a firm has two or more classes of common stock (regardless of whether more than one class is traded). Nenova (2001) and Villalonga and Amit (2007) show that the primary beneficiaries of dual-class stock are founding families. As with all other “determinants” considered in this paper, we cannot and do not make any causality claims; all we are saying is that we expect the presence of dual-class stock to be associated with the probability of a firm being under family control. But dual-class stock is endogenously chosen by families just as much as the presence of dual-class stock, once established, helps perpetuate family control across subsequent generations.

B.2. Minority shareholder protection

Burkart et al. (2003) propose a model of succession in a firm owned and managed by its founder where the founder’s decision is critically shaped by the degree of legal protection of outside shareholders from expropriation (or tunneling) by the insiders—the founder and his family or a successor manager. In their model, the founder maximizes his welfare, which is equal to the sum of the value of the shares he retains in the firm, the revenues from selling shares to investors, and any amenity potential associated to retaining control. Their model thus belongs in our second group of theories, as the objective function is to maximize the founding family’s welfare, regardless of whether the outcome maximizes other shareholders’ welfare as well or not.

Burkart et al. (2003) show that, when legal protection of outside investors is good, the best arrangement is a widely held, professionally managed firm. Conversely, when investor protection is weak, family control becomes optimal, at least for the founder and his family. The model therefore predicts a positive association between investor protection and family control, which is consistent with the evidence observed across countries (La Porta et al, 1999). In this paper we use Gompers et al.'s (2003) governance index to measure investor protection within a single country.

B.3. Information Asymmetries

If families seek to appropriate private benefits of control, they will prefer to own firms or operate in industries with relatively large information asymmetries between them and non-family shareholders. Indeed, Anderson et al. (2007) document that, in the United States, family firms are significantly more opaque than non-family firms.

Following Durnev et al. (2003, 2004), we use firm-specific stock return variation to proxy for firm transparency, and a similarly constructed measure at the industry level to proxy for industry transparency (see Table IV for details). Durnev et al. (2003) provide evidence to support Roll's (1988) conjecture that low firm-specific variation relative to total stock return variation (i.e., low R^2 statistics from a market model that includes an industry factor in addition to the market factor), signals private information, as opposed to just noise. Consistent with the interpretation of firm-specific relative stock return variation as a measure of corporate transparency, Durnev et al. (2004) find this variable to be associated with more efficient corporate investment in the United States. The evidence across countries provides further support for this interpretation: Morck et al. (2000) find an association between firm-specific relative stock return variation and legal investor protection, Wurgler (2000) finds it to be positively

related to the quality of capital allocation, and Bushman et al. (2002) find it to be associated with more developed financial analysis industries and with a freer press.

B.4. Free Cash Flow

The presence of debt in the firm's capital structure limits family shareholders' ability to expropriate public shareholders. As argued by Jensen (1986) with respect to managers, the obligation to make fixed debt payments reduces the cash flow available to undertake projects that are only NPV-positive for the family, but not for other shareholders. Hence, to the extent that families seek to appropriate private benefits of control, we would expect family firms to have a lower leverage than non-family firms.

Table V summarizes the theoretical predictions associated with each determinant of family control.

C. Empirical Determinants of Family Control

Tables VI through VIII show the results of our empirical analysis of what determines family control; Tables VI and VII display univariate results at the firm and industry levels, respectively, while Table VIII shows the results of multivariate probit models estimated at the segment level. In addition to the theoretical determinants discussed above, we include three control variables in all of our analyses: ROA, log of firm age, and sales growth. Because the distribution of ROA exhibits some extreme values in its left tail, we winsorize that tail by making all observations that are lower than -100% equal to -100%. The compound annual ten-year average we use to proxy for families' long term horizon is computed after this winsorization of the annual ROAs.

C.1. Univariate Analyses

Table VI shows means, standard deviations, and tests of differences in means between family firms and non-family firms. The reported segment sales and EBITDA are unweighted averages across all segments within a firm, i.e. they are not added up to construct firm characteristics; hence they should be interpreted as what they are—segment characteristics.

Consistent with the value-maximizing size argument, family firms have smaller segments and lower PPE/assets than non-family firms. They also have higher risk, both systematic and idiosyncratic, which supports Demsetz and Lehn's (1985) arguments and findings about the relation between the noisiness of the environment, control potential, and ownership concentration—which we show particularly applies to family shareholders. Family firms make PAC contributions that are on average 27% higher than those of non-family firms (\$106 million vs. \$83 million). This result is consistent with the notion that families hang on to businesses with higher amenity potential; yet the difference is not statistically significant. Nevertheless, the differences in the means of these five firm characteristics provide strong support for the view that families choose to remain in control of the firms that they or their ancestors founded whenever such control gives the firm a competitive advantage over their peers.

We find considerably less support for the alternative explanation of private benefits of control. Family firms have a significantly lower governance index, which is indicative of better investor protection in those firms, rather than worse, as a private benefits story would suggest. Moreover, family firms have significantly higher, not lower, transparency, which is also contrary to the theoretical prediction. Firm leverage has the negative sign predicted by the theory, but it is non-significant.

Still, we cannot rule out the private benefits explanation. Consistent with earlier findings by Nenova (2001) and Villalonga and Amit (2007), we find that, in our larger and more random sample, dual-class stock is also significantly more prevalent among family firms than among non-family firms.

With respect to the three control variables, family firms are significantly less profitable, younger, and with higher sales growth than non-family firms. We must note, however, that these results are driven by the inclusion of founder-controlled firms among family firms.

Table VII shows a similar univariate analysis, but of industry characteristics. The tests are therefore of differences in means between the groups of family- and non-family-controlled industries. Industries are ascribed to either group depending on whether they are above or below the median percentage of family firms in the industry which, as shown in Table II, is exactly 50%. Industries whose degree of family control is at the median are included in the non-family-controlled group in all the analyses whose results are reported in this paper. However, the results are robust to including them in the family-controlled group instead, and to excluding them altogether. We show the results of the analysis on the 254 three-digit industries, but note that the results are similar for the 66 two-digit industries.

The industry-level tests are performed not only on industry characteristics but also on unweighted industry averages of firm and segment characteristics. These averages are estimated using the larger sample of 11,854 segments from 8,104 firms. The sign and significance of the coefficients of firm and segment characteristics are all as in the firm-level analysis, except for the PAC contributions and sales growth, which are significantly higher in family-controlled industries than in non-family controlled industries. This suggests that part of the rationale for these variables' significance may be attributable to the characteristics of the business itself,

rather than to firm-specific characteristics. For instance, risk and amenity potential, while measured at the firm level, are likely to be quite correlated among firms in the same industry.

On the other hand, the results on the actual industry characteristics throw little additional light onto the question of which of the two broad explanations of family control is more powerful. The only statistically significant variable is the number of firms in the industry, but its positive sign is contrary to the prediction that the degree of competition in an industry reduces its control potential, making family control less likely.

C.2. Multivariate Analyses

Table VIII shows the results of probit models of the probability of a segment belonging to a family firm on the firm, industry, and segment characteristics analyzed in the previous section. The first column shows the results of using as industry characteristics only those for which we do not have firm-level measures, otherwise we include the variable as a firm characteristic. There are two exceptions, however: the governance index, and the difference between the compound average ROA over the last ten years and the current ROA, which is our measure of differential profit horizon. We use the industry average governance index because the index is missing for a large number of firms in our 2,110-firm sample, so including it at the firm level would reduce the generalizability of our multivariate results. We measure the differential profit horizon by first computing the industry average ROA for each year and then compounding over time within each industry. We do not compound firms' ROA because many firms in our sample have been public for less than ten years, which would make the firm-level measure not comparable across observations.

The results broadly confirm and complement those of the univariate analyses. Segments that are larger in size or that belong to capital-intensive firms are less likely to remain under

family control, which is consistent with the value-maximizing size argument. The control potential argument is supported by the finding that families are more likely to be present in firms with a higher beta, and in industries where employees are generally less skilled and thus in greater need of large-shareholder monitoring. Families are also significantly more prevalent in industries where the compound annual average ROA over the past ten years exceeds current profits, which suggests a greater concern for maximizing long-term profits regardless of short-term profitability (although, in the multivariate analysis, family firms are also associated with higher short-term profits). Unlike in the univariate analyses, the latter two coefficients are now statistically significant, adding to the overall support for the competitive advantage theory of family control.

Dual-class stock and the governance index are still significantly associated with the likelihood of family control, but, as before, the negative sign of the governance index runs against the predictions of the private benefits theory. One possible explanation for this finding is that family firms wish to send a positive signal to the market to partially offset the adverse effect on value of a control-enhancing mechanism. The coefficients of all other theoretical predictors are not statistically significant in the multivariate probit.

In order to ascertain the extent to which our findings are driven by firm or industry characteristics, we estimate a second probit model where we split each firm characteristic into an industry component and a firm-specific (or industry-adjusted) component. The industry component is the average of the firm characteristic across the industry of the segment that constitutes an observation in this analysis. We use the full sample of 8,104 firms and their 11,854 three-digit segments to compute these industry averages. The firm-specific component is the difference between the firm characteristic and the industry component. We do the same for the

only segment characteristic in the model, the log of segment sales, which is likewise split into an industry component and a segment-specific component.

The second column of Table VIII shows the results of this analysis, where the industry averages are measured at the three-digit level. As a robustness check, we also estimate the model using two-digit level averages, and report the results in the third column of the same table.

The decomposition of firm characteristics throws additional light onto some of our earlier results. For instance, we can now see that the positive impact of PAC contributions on the likelihood of family control is entirely driven by its firm-specific component, which is statistically significant in both the three-digit and two-digit models. The industry average contribution has in fact a negative coefficient that is significant in the two-digit model. This finding suggests that it is not the amenity potential of the industry itself which makes founders or their families more inclined to retain control; rather, what matters to these individuals is the extent to which the firm's amenity potential exceeds that of other firms in the same industry.

On the other hand, the negative sign and significance of value-maximizing size is attributable to both firm and industry factors, as is the use of dual-class stock. The latter finding is consistent with the evidence from case studies that certain industries, like cable and newspapers, are dominated by dual-class firms, and that this dominance further entrenches the controlling families (Gilson and Villalonga, 2007; Villalonga and Hartman, 2007).

D. Effect of Family Control on Industries' Family Premium or Discount

Our analysis of what determines the propensity of firms and industries to be family-controlled suggests that neither of the two major explanations, competitive advantage or private benefits of control, can be ruled out. Another way to test the two broad theories is by examining whether the industries where family firms dominate are also where these firms are valued the

most. If they are, such a finding would be consistent with the competitive advantage explanation. If they are not, it would be consistent with a private benefits story, where the appropriation of such benefits by the controlling family is reflected in a discounted market value for these firms relative to their non-family counterparts.

To implement this test, we construct a measure of the excess value (Tobin's q) of family firms relative to non-family firms in each industry, $(q_F - q_{NF}) / q_{NF}$, which we refer to as the "family premium or discount." Prior to averaging Tobin's q across firms, however, we winsorize the variable by making it equal to 10 for all observations for which it is greater than 10. This adjustments controls for the fact that our sample year, 2000, was at the height of the technology bubble, and so a disproportionate number of firms had very high q 's as a result of having very high market values with very few assets. For those three-digit industries where either all or none of the firms are family-controlled (which are 17 and 10, respectively), and hence for which our measure cannot be computed, we use the family premium of the corresponding two-digit industry (which is available for all except two three-digit industries, one family-controlled (Animal Specialties, SIC 270) and another non-family-controlled (Railroads, SIC 4010)).

Table VII shows (in the last row of the group of industry characteristics) that, on average across the entire sample of 254 three-digit industries, family firms trade at an 18% premium relative to non-family firms. A simple univariate test of the difference between family- and non-family-controlled industries in this measure suggests that families are not more prevalent where they are valued the most. In fact, the average premium in family-controlled industries is 17%, lower than that in non-family controlled industries, which is 18%. Yet the difference (1.4%) is not statistically significant.

To formalize the test in a multivariate context, we estimate a propensity-score-matched regression of industries’ family premium on family control (see Dehejia and Wahba (1999) for details on the methodology). We specify a two-stage model where the first stage is a probit model of an industry’s propensity to be family-controlled:

$$\Pr(FCI_i = 1) = \alpha + \beta_X(X_i) + \varepsilon_i, \quad (1)$$

where X_i is a vector of control variables, similar to those in the previous section but at the industry level.

The second stage is an OLS regression of each industry’s family premium or discount on a dummy indicating whether the industry is family-controlled or not and, as additional independent variables, the same variables included in the first stage:

$$FamPremium_i = \alpha + \beta(FCI_i) + \gamma_X(X_i) + \varepsilon_i, \quad (2)$$

We use the propensity scores (the predicted values from the probit analysis) as a summary measure on which we match family-controlled and non-family controlled industries (the “treated” and “control” groups, respectively) to correct for self-selection in family control at the second-stage. Following Dehejia and Wahba (1999), the matching is done by blocks (i.e., the stratification algorithm). The region of common support includes 237 industries: the 110 family-controlled industries plus 107 non-family controlled industries whose propensity scores are above the minimum propensity score of the treated group (0.09). The final number of blocks that satisfies the balancing property—that there are no significant differences within blocks between the treated and control groups in any of the variables included in the analysis—is five.

The results of the propensity-score model estimation at both stages are shown in Table IX. The estimated effect of family control on the family premium of family-controlled industries (the so-called “treatment effect on the treated” that is the outcome of propensity-score matching

estimators) is much larger than the univariate estimate (-16% instead of -1.4%), but remains statistically non-significant.

In summary, our analysis of industries' family premium or discount, albeit directionally consistent with a private benefits theory of family control, does not allow us to rule out the alternative explanation of competitive advantage.

III. Sensitivity of family control to profitability shocks

The evidence we provide in the previous section suggests that firms and industries are family-controlled due to a combination of factors that is consistent with both the competitive advantage and private benefits of control explanations. A different approach to testing whether either of these two broad explanations dominates the other is to look at the differential response of family and non-family firms to earnings shocks. More specifically, positive earnings shocks provide a good research laboratory to test whether families maintain control of their firms to appropriate private benefits; if this is the case, we would expect family firms to be less sensitive to unpredicted increases in profitability, because part of the profit windfall would be tunneled away by the family. Negative earnings shocks, in turn, can be used to test whether family firms enjoy a competitive advantage over non-family firms; if this is the case, we would expect family firms to be more resilient, i.e., less affected by the downturn than non-family firms in the same industries. If both explanations hold true, or if the evidence against one of them is not significant enough to offset the other in the aggregate, we would expect family firms (in general, and in particular within family-controlled industries) to be less sensitive to earnings shocks as a whole.

This test builds on the methodology of Bertrand et al. (2002). Following their approach, we rely on within-firm, over-time variation in predicted EBITDA to isolate earnings shocks, and construct predicted EBITDA for each firm as the product of its assets by its predicted Return on

Assets (ROA). Each firm's predicted ROA is the asset-weighted average ROA of all firms in its industry excluding the firm itself, and ROA is the ratio of EBITDA to total assets.

We then estimate the following fixed-effects regression, similar to the one used by Bertrand et al. (2002) to estimate the sensitivity of group-affiliated firms to industry shocks:

$$EBITDA_{it} = \alpha + \beta(predEBITDA_{it}) + \gamma(family_i \times predEBITDA_{it}) + \delta_x(X_{it}) + \varepsilon_{it}, \quad (3)$$

where X_{it} is a vector of control variables, including the log of firm assets, book leverage (debt-to-equity), and the ratio of capital expenditures to sales.

The coefficient of interest to us is that of the interaction between the family firm dummy and predicted EBITDA, γ , which measures the differential response of family firms to industry shocks. If family firms are less sensitive to these shocks, γ should be negative.

To break down our analysis into positive and negative industry shocks, we subtract firm-specific means from each variable in (1) and re-estimate two separate OLS regressions on the de-meaned variables: one of the subsample of firm-years for which the de-meaned predicted EBITDA is positive, and another one on the subsample for which it is negative. (Note that estimating the OLS regression on the de-meaned variables for the full sample of shocks yields the same coefficients as the fixed effects estimation of (1), except for the constant's). We use clustered standard errors on all three regressions.

Table X shows the results of estimating the model on our 2,110-firm sample, for which we collect additional financial data going back to 1998. This time extension yields an enlarged sample of 5,629 firm-years from 2,003 firms with non-missing data on the variables required for the analysis.

The results confirm that family firms are indeed less sensitive to industry profit shocks. As shown in the first column, a one-dollar change in predicted EBITDA leads to an 86c. change

in the same direction in the actual EBITDA of non-family firms, but only to a 30c. change for family firms.

The second and third columns in the table provide more insight about what is driving these results. Family firms are less sensitive than non-family firms to *both* positive and negative shocks. For each one-dollar *increase* in predicted EBITDA, actual EBITDA increases by 89c. in non-family firms, but only by 27c. in family firms. This difference suggests that capital providers to family firms (including non-family shareholders as well as family shareholders and creditors) are somehow losing 62c., or over two thirds, of the predicted profit increase. While this profit dissipation per se does not constitute evidence of tunneling by family shareholders (it could also be attributed to organizational inefficiencies), it is consistent with a private benefits story.

On the flip side, the results in the third column show that, a one-dollar *decrease* in predicted EBITDA leads to an 83c. decrease in actual EBITDA for non-family firms, but only a 35c. decrease for family firms. This result is consistent with the view that family firms enjoy a competitive advantage relative to non-family firms. Indirectly, this finding also provides support for the interpretation of the “missing 62c.” in positive shocks as evidence of tunneling.

We repeat the analyses on the subsample of family-controlled industries, which comprises 3,425 years from 1,431 different firms. Table XI shows that the results are very similar, although the differential sensitivity of family firms is somewhat less pronounced, particularly with respect to positive shocks.

In the analyses reported in Tables X and XI, each firm is ascribed to a single industry, that of its largest segment as measured by sales. To verify the robustness of our results to this assumption, we ascribe each firm to all the industries in which it operates and re-run the analyses at the segment level. We use segment EBITDA (which is generally available from Compustat)

and measure all other characteristics at the firm level. There are 10,417 segment-year observations from 4,147 different segments in this sample. Table XII shows that our results are robust to this variation.

Based on our analysis of the sensitivity of family firms to earnings shocks, we are once again unable to rule out either the competitive advantage or the private benefits of control theories of family control.

IV. Conclusion

In this paper we test two broad groups of theories that explain family control of firms and industries. The first group, which we label “competitive advantage,” encompasses value-maximizing size, control potential, “amenity potential,” and investment horizons, which share the testable implication that firm value will be maximized for all of the firm’s shareholders. The second group, “private benefits of control,” includes the use of control-enhancing mechanisms, minority shareholder protection, information asymmetries, and the free cash flow available to family shareholders, which share the implication that value will be maximized only for the family, but not for non-family investors.

Using a range of univariate and multivariate tests on a large sample of publicly traded U.S. firms, we find that both the competitive advantage and the private benefits of control theories explain the propensity of firms and industries to be family-controlled. This finding implies that while some of the value created by family-firms is being appropriated by families at the expense of non-family shareholders, non-family shareholders in those firms are still better off than they would have been had the same firms not been family-controlled.

We also find that family firms are less sensitive than non-family firms to industry profit shocks, a result that applies to both positive and negative shocks. The implication is that family

firms constitute a low-risk, low-return investment for public shareholders and debtholders: non-family investors are protected from downside risk by virtue of these firms' competitive advantage, but their potential upside is also limited, by the family's ability to appropriate more than their pro-rata share of windfall profits.

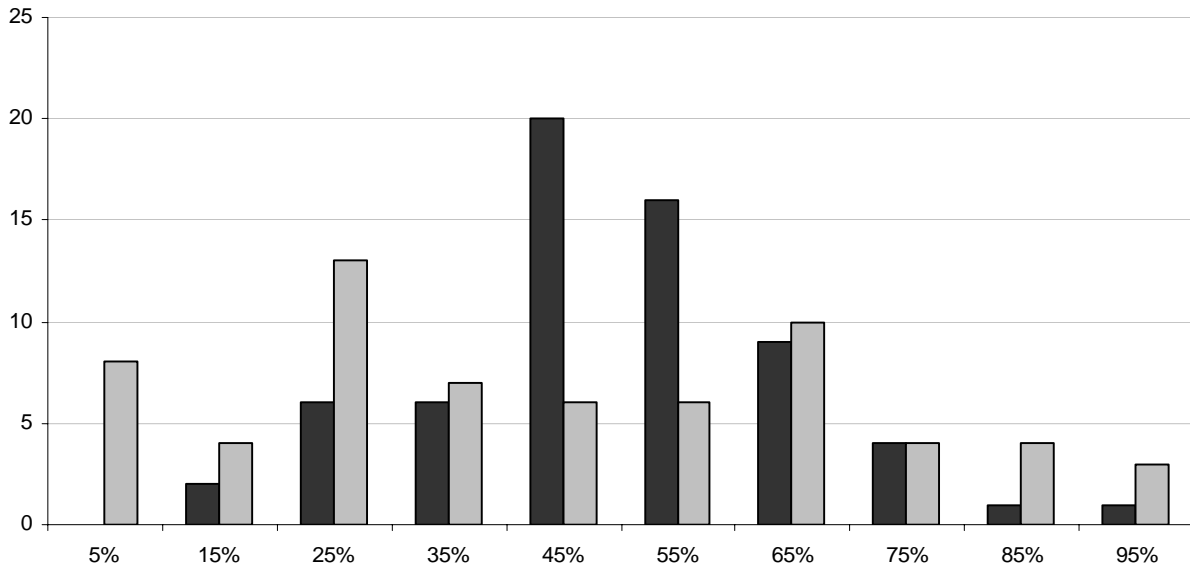
REFERENCES

- Anderson, Ronald and David Reeb, 2003, Founding family ownership and firm performance: Evidence from the S&P 500, *Journal of Finance* 58, 1301–1329.
- Anderson, Ronald, Augustine Duru, and David Reeb, 2007, Family ownership and corporate opacity in the U.S., Working paper, American University.
- Becker, Gary, and George Stigler, 1974, Law enforcement, malfeasance, and. compensation of enforcers, *Journal of Legal Studies* 3, 1–18.
- Berle, Adolph, and Gardiner Means, 1932, *The Modern Corporation and Private Property*. Harcourt, Brace, & World, New York, NY.
- Bertrand, Marianne, Paras Mehta, and Sendhil Mullainathan, 2002, Ferreting out tunnelling: An application to Indian business groups, *Quarterly Journal of Economics* 117, 1047–1073.
- Botticelli, Peter, and Louis Barnes, 1997, Family firms in the newspaper industry, *Harvard Business School Case* 898-075. Boston: Harvard Business School Publishing.
- Burkart, Mike, Fausto Panunzi, and Andrei Shleifer, 2003, Family firms, *Journal of Finance* 58, 2167–2202.
- Bushman, Robert, Joe Piotroski, and Abbie Smith, 2002, Financial accounting information and corporate governance,” *Journal of Accounting and Economics* 32 237–333.
- Claessens, Stijn, Simeon Djankov, and Larry Lang, 2000, Separation of ownership from control of East Asian firms, *Journal of Financial Economics* 58, 81–112.
- Claessens, Stijn, Simeon Djankov, Joseph Fan, and Larry Lang, 2002, Disentangling the incentive and entrenchment effects of large shareholdings, *Journal of Finance* 57, 2741–2772.
- Dehejia, Rajeev, and Sadek Wahba, 1999, Causal effects in nonexperimental studies: Re-evaluation the evaluation of training programs, *Journal of the American Statistical Association* 94, 1053–1062.
- Demsetz, Harold, 1983, The structure of ownership and the theory of the firm, *Journal of Law and Economics* 26, 375–390.
- Demsetz, Harold, and Kenneth Lehn, 1985, The structure of corporate ownership: Causes and consequences, *Journal of Political Economy* 93, 1155–1177.
- Durnev, Artyom, Randall Morck, and Bernard Yeung, 2004, Value-enhancing capital budgeting and firm-specific stock returns variation *Journal of Finance* 59, 65–106.
- Durnev, Artyom, Randall Morck, Bernard Yeung, and Paul Zarowin, 2003, Does greater firm-specific return variation mean more or less informed stock pricing? *Journal of Accounting Research* 41, 797–836.
- Eisenmann, Thomas, 2000, The U.S. cable television industry, 1948–1995: Managerial capitalism in eclipse, *Business History Review* 74, 1–40.
- Faccio, Mara, and Larry Lang, 2002, The ultimate ownership of Western European corporations, *Journal of Financial Economics* 65, 365–395.

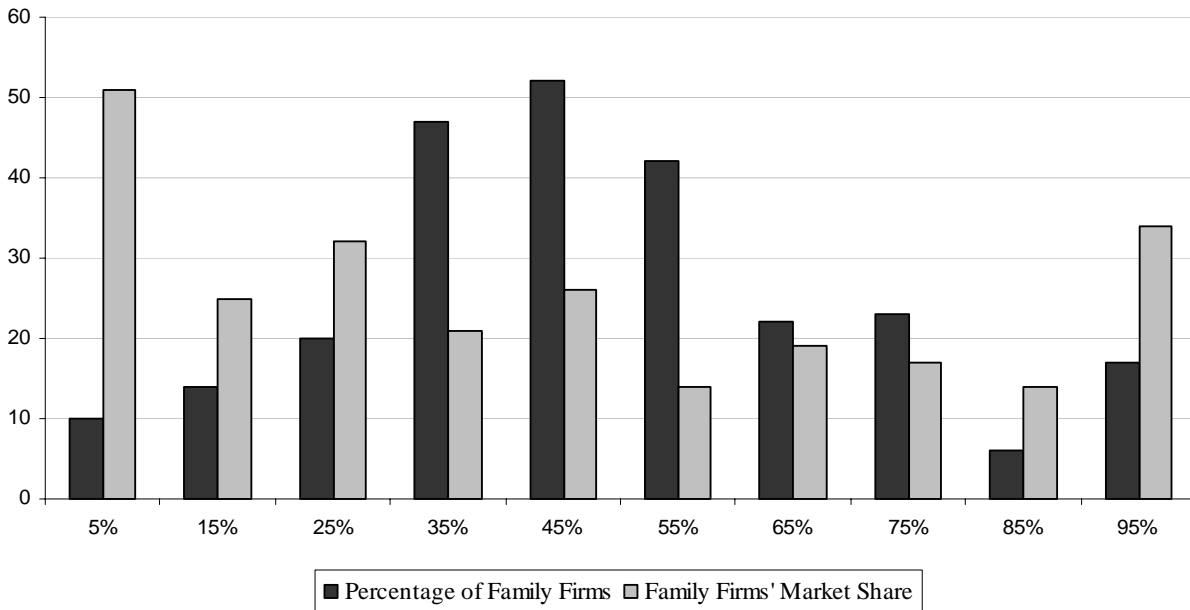
- Fahlenbrach, Rüdiger, 2005. Founder-CEOs, investment decisions, and stock market performance, Working Paper, Ohio State University.
- Gilson, Stuart, and Belén Villalonga, 2007, Adelphia Communications Corp.'s Bankruptcy, *Harvard Business School Case* 207-080. Boston: Harvard Business School Publishing.
- Gompers, Paul, Joy Ishii, and Andrew Metrick, 2003, Corporate governance and equity prices, *Quarterly Journal of Economics* 118, 107–155.
- Gompers, Paul, Joy Ishii, and Andrew Metrick, 2006, Extreme governance: An Analysis of dual-class firms in the United States, working paper, Harvard Business School, Stanford Graduate School of Business, and Wharton School.
- Grossman, Sanford, and Oliver Hart, 1980, Takeover bids, the free rider problem, and the theory of the corporation, *Bell Journal of Economics* 11, 42–69.
- Jensen, Michael, 1986, Agency costs of free cash flow, corporate finance, and takeovers, *American Economic Review* 76, 2, 323–329.
- Jensen, Michael, and William Meckling, 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3, 305–360.
- La Porta, Rafael, Florencio López De Silanes, and Andrei Shleifer, 1999, Corporate ownership around the world, *Journal of Finance* 54, 471–517.
- La Porta, Rafael, Florencio López De Silanes, Andrei Shleifer, and Robert Vishny, 2002, Investor protection and corporate valuation, *Journal of Finance* 57, 1147–1170.
- Morck, Randall, Bernard Yeung, and Wayne Yu, 2000, The information content of stock markets: Why do emerging markets have synchronous stock price movements? *Journal of Financial Economics* 58, 215–260.
- Nenova, Tatiana, 2001, How to dominate a firm with valuable control: Regulation, security-voting structure, and ownership patterns of dual-class firms, Working Paper, Harvard University.
- Nenova, Tatiana, 2003, The value of corporate voting rights and control: A cross-country analysis, *Journal of Financial Economics* 68, 325–351.
- Pérez-González, Francisco, 2006, Inherited control and firm performance, *American Economic Review* 96, 1559–1588.
- Rebitzer, James, 1995, Is there a trade-off between supervision and wages? An empirical test of efficiency wage theory, *Journal of Economic Behavior and Organization* 28, 107–129.
- Roll, Richard, 1988, R^2 , *Journal of Finance* 43, 541–566.
- Stein, Jeremy, 1989, Efficient capital markets, inefficient firms: A model of myopic corporate behavior, *Quarterly Journal of Economics* 103, 655–669.
- Villalonga, Belén, and Raphael Amit, 2005, Kohler Co. (A), *Harvard Business School Case* 205-034. Boston: Harvard Business School Publishing.
- Villalonga, Belén, and Raphael Amit, 2006, How do family ownership, control, and management affect firm value, *Journal of Financial Economics* 80, 385–417.
- Villalonga, Belén, and Raphael Amit, 2007, How are U.S. family firms controlled?, Working Paper, Harvard Business School and Wharton School.

- Villalonga, Belén, and Christopher Hartman, 2007, The New York Times Co., *Harvard Business School Case* 207-113. Boston: Harvard Business School Publishing.
- Wurgler, Jeffrey, 2000, Financial markets and the allocation of capital, *Journal of Financial Economics* 58, 187–214
- Zingales, Luigi, 1995, What determines the value of corporate votes?, *Quarterly Journal of Economics* 110, 1047–1073.

2-Digit SIC Industries



3-Digit SIC Industries



■ Percentage of Family Firms □ Family Firms' Market Share

Figure 1. Distribution of Family Control across Industries

Family firms are defined as those in which the founder or a member of the founder's family by either blood or marriage is an officer, director, or blockholder, either individually or as a group. The sample comprises the 8,104 publicly traded U.S. firms in year 2000 that have segment data at the four- three-, or two-digit SIC level. These firms have 11,854 segments in 254 three-digit industries, or 11,008 unique two-digit segments in the 66 two-digit industries listed in the table. Family control of industries is measured using a random subsample of 2,110 firms for which we collect ownership data. These firms have 3,968 segments representing an average of 39% of all firms (and a minimum of 20%) in each of the 254 three-digit industries, and 3,511 unique two-digit segments representing an average of 40% (and a minimum of 25%) of all firms in each of the 66 two-digit industries in the full sample.

Table I
Sample Representativeness Within Industries

The full sample comprises the 8,104 publicly traded U.S. firms in year 2000 that have segment data at the four-three-, or two-digit SIC level. These firms have 11,854 segments in 254 three-digit industries, or 11,008 unique two-digit segments in the 66 two-digit industries shown in the table. The subsample refers to the 2,110 firms for which we collect ownership data. These firms have 3,968 segments representing an average of 39% of all firms (and a minimum of 20%) in each of the 254 three-digit industries, and 3,511 unique two-digit segments representing an average of 40% (and a minimum of 25%) of all firms in each of the 66 two-digit industries in the full sample.

	Mean	Median	Std. Dev.	Min.	Max.
<i>Two-Digit Industries</i>					
No. of Firms in Subsample	60.1	28.0	77.8	2.0	480
Subsample Firms as Percentage of All Firms	40%	38%	10%	25%	83%
Subsample Sales as Percentage of All Sales	56%	64%	19%	8%	100%
<i>Three-Digit Industries</i>					
No. of Firms in Subsample	15.5	8.0	26.8	2.0	345
Subsample Firms as Percentage of All Firms	39%	37%	12%	20%	83%
Subsample Sales as Percentage of All Sales	58%	59%	24%	3%	100%

Table II
Distribution of Family Ownership and Management Across Generations

Family firms are defined as those in which the founder or a member of the founder's family by either blood or marriage is an officer, director, or blockholder, either individually or as a group. Each firm's CEO is classified as founder, descendant, or non-family member. A firm's generation refers to the latest generation of family members that are active in the firm as officers, directors or blockholders, relative to the founder's generation, which is the first. The sample comprises the 8,104 publicly traded U.S. firms in year 2000 that have segment data at the four-three-, or two-digit SIC level. Family control of industries is measured using a random subsample of 2,110 firms for which we collect ownership data, and includes the 1,158 family firms on which this table is based.

Family Management	Family Firm's Generation					Total
	First	Second	Third	Fourth	Fifth	
Founder-CEO	533	58	0	0	0	591
Descendant-CEO	0	74	41	10	3	128
Non-Family CEO	305	90	33	9	2	439
Total	838	222	74	19	5	1,158

Table III
Family Control of Industries

Family control is measured by the proportion of family firms in the industry, or by family firms' combined market share. Family firms are defined as those in which the founder or a member of the founder's family by either blood or marriage is an officer, director, or blockholder, either individually or as a group. The sample comprises the 8,104 publicly traded U.S. firms in year 2000 that have segment data at the four-, three-, or two-digit SIC level. These firms have 11,854 segments in 254 three-digit industries, or 11,008 unique two-digit segments in the 66 two-digit industries listed in the table. Family control of industries is measured using a random subsample of 2,110 firms for which we collect ownership data. These firms have 3,968 segments representing an average of 39% of all firms (and a minimum of 20%) in each of the 254 three-digit industries, and 3,511 unique two-digit segments representing an average of 40% (and a minimum of 25%) of all firms in each of the 66 two-digit industries in the full sample.

		Percentage of Family Firms	Family Firms' Market Share	Percentage of Founder- CEO Firms	Percentage of Descendant- CEO Firms
<i>A. Sample Statistics</i>					
All 2-digit	Mean	50%	43%	21%	9%
All 2-digit	Median	50%	38%	21%	7%
All 2-digit	Std. Dev.	17%	27%	13%	10%
All 3-digit	Mean	50%	44%	22%	9%
All 3-digit	Median	50%	38%	20%	3%
All 3-digit	Std. Dev.	23%	32%	19%	14%
<i>B. Two-Digit SIC Codes</i>					
100	Agricultural Production--Crops	29%	23%	14%	0%
200	Agricultural Production--Livestock	100%	100%	50%	50%
800	Forestry	50%	51%	0%	50%
1000	Metal Mining	21%	14%	14%	0%
1200	Coal Mining	22%	7%	0%	22%
1300	Oil And Gas Extraction	43%	24%	23%	8%
1400	Mining, Quarry, Nonmetallic Minerals	14%	5%	0%	0%
1500	General Building Contractors	52%	51%	21%	14%
1600	Heavy Construction, not Building Constr.	43%	51%	21%	0%
1700	Construction, Special Trade	45%	8%	25%	0%
2000	Food And Kindred Products	49%	30%	13%	1%
2100	Tobacco Products	40%	12%	20%	0%
2200	Textile Mill Products	50%	47%	6%	25%
2300	Apparel And Other Textile Products	61%	67%	32%	3%
2400	Lumber And Wood Products	50%	44%	9%	18%
2500	Furniture and Fixtures	68%	50%	26%	21%
2600	Paper And Allied Products	30%	23%	7%	11%
2700	Printing And Publishing	72%	62%	29%	16%
2800	Chemicals And Allied Products	43%	30%	18%	2%
2900	Petroleum Refining and Related Industries	26%	10%	4%	9%
3000	Rubber And Misc. Plastics Products	32%	22%	15%	2%
3100	Leather And Leather Products	50%	26%	20%	10%
3200	Stone, Clay, And Glass Products	47%	21%	3%	25%
3300	Primary Metal Industries	49%	27%	15%	7%

Table III
Family Control of Industries—Continued

SIC Code	Description	Percentage of Family Firms	Family Firms' Market Share	Percentage of Founder-CEO Firms	Percentage of Descendant-CEO Firms
3400	Fabricated Metal Products	44%	29%	13%	7%
3500	Industrial Machinery And Equipment	45%	36%	17%	0%
3600	Electronic & Other Electric Equipment	53%	30%	24%	6%
3700	Transportation Equipment	37%	33%	5%	8%
3800	Instruments And Related Products	55%	29%	22%	4%
3900	Miscellaneous Manufacturing Industries	59%	66%	27%	14%
4000	Railroad Transportation	0%	0%	0%	0%
4200	Trucking And Warehousing	58%	13%	42%	8%
4400	Water Transportation	62%	67%	8%	23%
4500	Transportation By Air	25%	30%	17%	4%
4600	Pipelines, Except Natural Gas	43%	1%	14%	0%
4700	Transportation Services	43%	25%	22%	13%
4800	Communication	61%	28%	33%	6%
4900	Electric, Gas, And Sanitary Services	17%	7%	11%	1%
5000	Wholesale Trade--Durable Goods	58%	54%	31%	12%
5100	Wholesale Trade--Nondurable Goods	40%	47%	21%	4%
5200	Building Materials & Garden Supplies	57%	69%	29%	0%
5300	General Merchandise Stores	38%	60%	17%	8%
5400	Food Stores	42%	40%	11%	11%
5500	Automotive Dealers & Service Stations	86%	88%	43%	0%
5600	Apparel And Accessory Stores	59%	68%	29%	9%
5700	Furniture And Homefurnishings Stores	59%	83%	24%	6%
5800	Eating And Drinking Places	58%	24%	35%	3%
5900	Miscellaneous Retail	60%	72%	37%	8%
6000	Depository Institutions	27%	4%	18%	0%
6100	Nondepository Institutions	45%	18%	19%	11%
6200	Security And Commodity Brokers	51%	9%	32%	5%
6300	Insurance Carriers	39%	30%	18%	8%
6400	Insurance Agents, Brokers, & Service	59%	73%	30%	11%
6500	Real Estate	52%	51%	24%	11%
6700	Holding And Other Investment Offices	58%	75%	33%	3%
7000	Hotels And Other Lodging Places	77%	79%	27%	18%
7200	Personal Services	58%	61%	8%	25%
7300	Business Services	64%	35%	39%	3%
7500	Auto Repair, Services, Parking	50%	46%	8%	8%
7600	Miscellaneous Repair Services	50%	91%	0%	25%
7800	Motion Pictures	70%	95%	33%	19%
7900	Amusement & Recreation Services	74%	84%	48%	10%
8000	Health Services	65%	59%	37%	4%
8200	Educational Services	61%	88%	39%	6%
8300	Social Services	63%	63%	38%	0%
8700	Engineering & Management Services	68%	64%	37%	2%

Table IV
Variable Definitions

The analyses reported in Tables VI through IX include, as industry characteristics, averages of the firm or segment characteristics defined in this table, calculated as unweighted averages at the three-digit or two-digit SIC industry level. The analyses reported in Table VIII include, in addition to industry characteristics or averages, firm-specific (industry-adjusted) characteristics. These are measured as the difference between the firm's characteristic and the industry average, except for Firm Transparency, which is industry-adjusted by construction. The source for all variables is Compustat unless otherwise indicated in this table.

Variable	Description
<i>Firm Characteristics</i>	
1 PPE/Assets	Ratio of property, plant and equipment to total assets.
2 Market Risk (Beta)	Slope from a market model in which the firm's monthly returns over the past five years are regressed on the CRSP value-weighted index monthly returns. Source: CRSP.
3 Idiosyncratic Risk	Standard error of estimate from market model in which the firm's monthly returns over the past five years are regressed on the CRSP value-weighted index monthly returns. Source: CRSP.
4 PAC Contributions	Firm's total annual donations to Political Action Committees. Source: Center for Responsive Politics
5 Dual-Class Firm	Dummy, =1 if the firm has dual-class stock. Source: Gompers, Ishii, and Metrick (2007)
6 Governance index	Number of shareholder rights-reducing governance provisions in the firm's charter, bylaws, or SEC filings. Source: Investor Responsibility Research Center.
7 Firm Transparency	Firm-specific relative stock return variation, measured as the residual sum of squares relative to total sum of squares (i.e., $1 - R^2$) from regressions of firms' daily stock returns on market (CRSP value-weighted) returns and 3 or 2-digit industry value-weighted portfolio returns. Each firm is excluded from its own industry portfolio. Source: CRSP and Compustat.
8 Debt/MV Equity	Ratio of the book value of total debt to the market value of equity.
9 ROA	Ratio of operating income after depreciation (EBITDA) to total assets.
10 Age	Number of years that the firm has been trading for on a U.S. stock market. Source: CRSP.
11 Sales Growth	Simple average of the firm's annual growth rate in sales over the past three years.
<i>Industry Characteristics</i>	
12 Industry Concentration	Herfindahl index (i.e., sum of squared market shares), estimated using segment sales at the two-digit or three-digit SIC level.
13 Number of firms	Number of segments from different firms in the industry.
14 Skilled Employment	Percentage of all industry employment represented by the following occupational categories during 1999 and 2000: Management; architecture and engineering; computer and mathematical; life, physical, and social science. Source: Bureau of Labor Statistics.
15 Compound ROA, Last 10 Years	Compound Average Industry ROA over the period 1991–2000, where each year's industry ROA is the unweighted average ROA of all firms for which the industry is their principal one.
16 Industry Transparency	Industry-specific relative stock return variation, measured as the value-weighted average of the difference, for each firm in the industry, between (a) the residual sum of squares relative to total sum of squares (i.e., $1 - R^2$) from regressions of the firm's daily stock returns on market (CRSP value-weighted) returns, and (b) its firm-specific relative stock return variation (defined above). Source: CRSP and Compustat.
<i>Segment Characteristics</i>	
17 Segment Sales	Firm's sales in a specific industry, defined at the 3 or 2-digit level.
18 EBITDA	Segment's operating income before depreciation.

Table V
Theoretical Determinants of Family Control

Theoretical Explanation	Variable	Predicted Sign
<i>A. Competitive Advantage</i>		
A.1. Value-maximizing size		
A.1.1. Efficient scale	Log of Segment Sales	–
A.1.2. External financing needs	Firm’s PPE/Assets	–
A.2. Control potential		
A.2.1. Risk	Firm’s Market Risk (Beta)	+
	Firm’s Idiosyncratic Risk	+
A.2.2. Competition	Industry Concentration	+
	Industry’s Number of Firms	–
A.2.3. Employees’ intrinsic motivation	Industry Skilled Employment	–
A.3. Amenity potential	Firm’s PAC Contributions	+
A.4. Long-term profit maximization	Industry’s 10-Year Minus Current ROA	+
<i>B. Private Benefits of Control</i>		
B.1. Use of control-enhancing mechanisms	Firm’s Dual-Class Status	+
B.2. Minority shareholder protection	Firm’s Governance Index	+
B.3. Information asymmetries	Firm and Industry Transparency	–
B.4. Free cash flow	Firm’s Debt/Market Value of Equity	–

Table VI
Propensity of Firms to be Family-Controlled: Univariate Tests

Means, standard deviations, and tests of differences in means between family firms and non-family -firms. Family firms are defined as those in which the founder or a member of the founder's family by either blood or marriage is an officer, director, or blockholder, either individually or as a group. The sample for this analysis comprises the 2,110 for which we collect ownership data as of year 2000. These firms are a random subsample of the sample of 8,104 firms that have segment data at the four- three-, or two-digit SIC level in 2000. The 2,110 firms have 3,968 segments, representing an average of 39% of all firms (and a minimum of 20%) in each of the 254 three-digit industries in the larger sample. All variables are described in Table IV. Asterisks denote statistical significance at the 1% (***) , 5% (**), or 10% (*) level, respectively.

Variable	Mean All Firms	Std. Dev.	Mean Family Firms (1)	Mean Non-Fam Firms (2)	Difference in Means (1) – (2)	<i>t</i> -stat
<i>Firm Characteristics</i>						
PPE/Assets	0.26	0.23	0.24	0.29	-0.04	-4.53 ***
Market Risk (Beta)	1.07	1.10	1.21	0.91	0.30	5.87 ***
Idiosyncratic Risk	0.58	0.57	0.67	0.48	0.19	7.22 ***
PAC Contributions	91.3	145.0	106.2	83.3	22.9	1.02
Dual-Class Status	0.09	0.28	0.11	0.06	0.06	4.70 ***
Governance Index	9.38	2.70	8.67	9.88	-1.20	-6.32 ***
Firm Transparency	0.78	0.21	0.76	0.74	0.03	2.47 **
Debt/Market Value of Equity	1.66	12.23	1.62	1.70	-0.08	-0.15
ROA	-0.03	0.28	-0.05	0.00	-0.05	-4.41 ***
Age	15.74	13.14	12.52	19.42	-6.90	-11.39 ***
Sales Growth	2.17	48.67	1.12	3.44	-2.32	-1.08
<i>Segment Characteristics</i>						
Sales	1,397	4,104	1,009	1,869	-861	-4.82 ***
EBITDA	305	1,208	165	470	-305	-5.57 ***
Number of Industries	2,110		1,158	952		

Table VII
Propensity of Industries to be Family-Controlled: Univariate Tests

Means, standard deviations, and tests of differences in means between family-controlled industries (FCI) and non-family-controlled industries (NFCI). FCI and NFCI are the two groups of three-digit SIC code industry-year observations that are, respectively, above and below the median percentage of family firms in industry. Family firms are defined as those in which the founder or a member of the founder's family by either blood or marriage is an officer, director, or blockholder, either individually or as a group. The sample comprises the 8,104 publicly traded U.S. firms in year 2000 that have segment data at the four-, three-, or two-digit SIC level. These firms have 11,854 segments in 254 three-digit industries. Family control of industries is measured using a random subsample of 2,110 firms for which we collect ownership data. These firms have 3,968 segments representing an average of 39% of all firms (and a minimum of 20%) in each of the 254 three-digit industries. All variables are described in Table IV. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level, respectively.

Variable	Mean	Std. Dev.	Mean FCI (1)	Mean NFCI (2)	Difference in Means (1) – (2)	<i>t</i> -stat
<i>Firm Characteristics</i>						
PPE/Assets	0.32	0.17	0.28	0.34	-0.06	-2.84 ***
Market Risk (Beta)	0.82	0.35	0.91	0.76	0.15	3.38 ***
Idiosyncratic Risk	0.48	0.18	0.55	0.43	0.12	5.48 ***
PAC Contributions	5.54	10.34	6.62	4.13	2.49	1.91 *
Dual-Class Status	0.09	0.10	0.12	0.07	0.04	3.59 ***
Governance Index	9.3	1.7	8.7	9.7	-1.0	-4.93 ***
Debt/Market Value of Equity	59	603	8.9	98	-89	-1.16
ROA	0.01	0.09	-0.01	0.02	-0.03	-2.87 ***
Age	16.1	5.9	12.8	18.6	-5.8	-8.80 ***
Sales Growth	0.52	1.50	0.81	0.30	0.51	2.69 ***
<i>Industry Characteristics</i>						
Industry Concentration	0.22	0.15	0.21	0.23	-0.02	-0.97
Number of Firms	47	102	67	31	36	2.79 ***
Skilled Employment	3.8	5.3	3.4	4.2	-0.8	-1.17
Compound Annual ROA, Last 10 Years	-0.08	0.32	-0.04	-0.10	0.06	1.51
Industry Transparency	0.44	0.19	0.42	0.44	-0.02	-0.80
Percent of Family Firms in Industry	0.51	0.23	0.71	0.35	0.36	18.68 ***
Family Firms Combined Market Share	0.44	0.33	0.66	0.27	0.38	11.29 ***
Family Premium (Discount)	0.18	0.83	0.17	0.18	-0.01	-0.14
<i>Segment Characteristics</i>						
Sales	1,029	3,041	1,413	736	677	-1.77 *
EBITDA	204	425	127	262	-136	-2.55 ***
Number of Industries	254		110	144		

Table VIII
Propensity of Business Segments to be Family-Controlled: Multivariate Probit Models

Probit regressions of the probability of a segment belonging to a family firm on industry, firm, and segment characteristics. The model shown in the second and third columns separates firm characteristics into industry averages and firm-specific (industry-adjusted) characteristics. Family firms are defined as those in which the founder or a member of the founder's family by either blood or marriage is an officer, director, or blockholder, either individually or as a group. The sample comprises the 3,422 segments that have no missing data on any of the variables included in these models, out of a total of 3,968 three-digit segments from 2,110 firms for which we collect ownership data. All variables are described in Table I. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level, respectively.

	Firm and 3-Digit Industry Characteristics		Firm-Specific Characteristics and 3-Digit Industry Averages		Firm-Specific Characteristics and 2-Digit Industry Averages	
	Coef.	<i>t</i> -stat	Coef.	<i>t</i> -stat	Coef.	<i>t</i> -stat
Ln (Segment Sales)	-0.08	-5.27 ***	-0.06	-4.16 ***	-0.07	-4.63 ***
Ind. Avge. Ln (Segment Sales)			-0.14	-4.18 ***	-0.12	-2.48 **
Firm's PPE/Assets	-0.24	-2.23 **	-0.14	-1.04	-0.29	-2.21 **
Ind. Avge. PPE/Assets			-0.17	-0.98	0.09	0.40
Firm's Market Risk (Beta)	0.08	2.09 **	0.08	2.15 **	0.09	2.41 **
Firm's Idiosyncratic Risk	0.06	0.53	0.08	0.75	0.06	0.59
Industry Concentration (Herfindahl)	-0.03	-0.12	-0.15	-0.62	-0.13	-0.34
Industry's Number of Firms	0.00	1.63	0.00	1.46	0.00	-0.18
Industry Skilled Employment	-0.01	-1.73 *	-0.01	-1.56	0.00	-0.25
Firm's PAC Contributions	0.00	1.53	0.00	1.74 *	0.00	2.13 **
Ind. Avge. PAC Contributions			0.00	-0.67	0.00	-1.88 *
Industry's 10-Year Minus Current ROA	0.29	3.85 ***	0.20	2.49 **	0.19	2.31 **
Firm's Dual-Class Status	0.64	8.20 ***	0.57	6.88 ***	0.63	7.82 ***
Industry's Percent of Dual-Class Firms			1.71	4.80 ***	1.64	2.38 **
Ind. Avge. Governance Index	-0.11	-5.39 ***	-0.05	-2.24 **	0.00	-0.01
Firm Transparency	0.22	1.28	0.39	2.15 **	-0.18	-0.69
Industry Transparency	0.04	0.26	0.06	0.42	0.16	0.86
Firm's Debt/Market Value of Equity	0.00	0.00	0.00	-0.06	0.00	-0.09
Ind. Avge. Debt/Market Value of Equity			0.00	-0.06	0.00	-0.16
Firm's ROA	0.26	1.80 *	0.21	1.43	0.22	1.50
Ind. Avge. ROA			0.80	2.38 **	1.02	2.18 **
Firm's Ln (Age)	-0.19	-7.22 ***	-0.17	-6.14 ***	-0.18	-6.61 ***
Ind. Avge. Ln (Age)			-0.57	-5.55 ***	-0.73	-4.61 ***
Firm's Sales Growth	0.00	-1.53	0.00	-1.40	0.00	-1.35
Ind. Avge. Sales Growth			-0.02	-1.53	-0.02	-1.40
Constant	1.82	6.18 ***	2.59	6.83 ***	2.50	4.30 ***
Pseudo- R^2	0.09		0.10		0.10	
Number of Observations (Segments)	3,424		3,424		3,424	

Table IX

Propensity-Score-Matched Regressions of Industries' Family Premium on Family Control

Probit model of an industry's propensity to be family-controlled, and propensity-score-matched estimates of the effect of family control on the industry's family premium or discount. The matching is done by blocks (stratification algorithm). Family control is measured by the proportion of family firms in the industry. Family premium or discount is the difference between the average Tobin's q of family firms and non-family firms in an industry, relative to the q on non-family firms. Family firms are defined as those in which the founder or a member of the founder's family by either blood or marriage is an officer, director, or blockholder, individually or as a group. The sample comprises the 254 three-digit industries, or the 66 two-digit industries that are home to the 8,104 publicly traded U.S. firms that have segment data at the four- three-, or two-digit SIC level. Family control of industries is measured using a random subsample of 2,110 firms for which we collect ownership data. These firms have 3,968 three-digit (3,511 two-digit) segments representing an average of 39% (40%) and a minimum of 20% (25%) of all firms in each industry. All variables are described in Table I. t -statistics are shown in parentheses. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level, respectively.

	Coef.	t -stat
<i>A. First Stage Probit: Industries' Propensity to be Family-Controlled</i>		
Ind. Avge. Ln (Segment Sales)	-0.20	-1.80 *
Ind. Avge. PPE/Assets	-0.95	-1.56
Ind. Avge. Market Risk (Beta)	-0.16	-0.40
Ind. Avge. Idiosyncratic Risk	0.01	0.01
Industry Concentration (Herfindahl)	-0.02	-0.03
Industry's Number of Firms	0.01	2.77 ***
Industry Skilled Employment	-0.07	-2.69 ***
Ind. Avge. PAC Contributions	0.00	0.46
Industry's 10-Year Minus Current ROA	0.45	1.42
Industry's Percent of Dual-Class Firms	2.74	2.81 ***
Ind. Avge. Governance Index	-0.13	-2.07 **
Industry Transparency	0.74	1.19
Ind. Avge. Debt/Market Value of Equity	0.00	-0.99
Ind. Avge. ROA	1.17	0.81
Ind. Avge. Ln (Age)	-1.33	-4.17 ***
Ind. Avge. Sales Growth	0.09	1.00
Constant	5.82	3.98 ***
Adjusted R^2	0.30	
Number of Observations (Industries)	254	254
<i>B. Effect of Family Control on Industries' Family Premium</i>		
Average Treatment Effect on the Treated	-0.16	-0.86
Number of Obs. in the Common Support Region	237	237

Table X
Sensitivity of Family and Non-Family Firms to Profitability Shocks

Fixed-effects regression of firms' Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) on predicted EBITDA and several control variables. The positive and negative shocks regressions are OLS regressions where firm-specific means (over the full "all shocks" sample) have been subtracted from each variable's. These regressions are then estimated on the subsamples of observations for which the de-meaned predicted EBITDA is positive or negative, respectively. A firm's predicted EBITDA is the sum of the predicted EBITDAs of its segments. A segment's predicted EBITDA is the product of the segment's assets by the asset-weighted average return on assets of all segments in the industry excluding the segment in question. Family firms are defined as those in which the founder or a member of the founder's family by either blood or marriage is an officer, director, or blockholder, either individually or as a group. The model is estimated on the 5,629 firm-years from 2,003 firms that have no missing data on any of the variables included, out of a total of 6,330 firm-years from 2,110 firms for which we collect ownership data. The 2,110 firms were selected randomly within industries out of a larger sample of 8,104 publicly traded U.S. firms in year 2000 that have segment data at the four-, three-, or two-digit SIC level. The industry average profitability measures are estimated on the 11,854 segments belonging to the full sample of 8,104 firms. Standard errors are clustered by firm. Asterisks denote statistical significance at the 1% (***) , 5% (**), or 10% (*) level, respectively.

Variable	All Shocks	Positive Shocks	Negative Shocks
Firm's Predicted EBITDA	0.86 ***	0.89 ***	0.83 ***
	13.21	9.83	16.43
Family Firm × Firm's Predicted EBITDA	-0.56 ***	-0.62 ***	-0.48 ***
	-6.17	-5.79	-5.41
Ln(Firm Assets)	9.78 *	11.96 *	12.01 **
	1.69	1.79	1.98
Firm's Debt / Book Value of Equity	-0.23	0.01	-0.67
	-0.68	0.09	-1.04
Firm's Capex / Sales	0.08 ***	0.18 ***	0.06 ***
	8.92	4.69	10.79
Constant	116.0 ***	-4.02	1.52
	4.11	-0.98	0.47
Number of Observations (Firm-Years)	5,629	2,634	2,900
Number of Clusters (Firms)	2,003	1,902	1,896
R-Squared (Within)	0.65	0.65	0.63

Table XI
Sensitivity of Firms in Family-Controlled Industries to Profitability Shocks

Fixed-effects regression of firms' Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) on predicted EBITDA and several control variables. The positive and negative shocks regressions are OLS regressions where firm-specific means (over the full "all shocks" sample) have been subtracted from each variable's. These regressions are then estimated on the subsamples of observations for which the de-meaned predicted EBITDA is positive or negative, respectively. A firm's predicted EBITDA is the sum of the predicted EBITDAs of its segments. A segment's predicted EBITDA is the product of the segment's assets by the asset-weighted average return on assets of all segments in the industry excluding the segment in question. Family firms are defined as those in which the founder or a member of the founder's family by either blood or marriage is an officer, director, or blockholder, either individually or as a group. Family-controlled industries (which in this table refers to the industry of each firm's largest segment) are those above the median percentage of family firms in each industry. The model is estimated on the 5,629 firm-years from 2,003 firms that have no missing data on any of the variables included, out of a total of 6,330 firm-years from 2,110 firms for which we collect ownership data. The 2,110 firms were selected randomly within industries out of a larger sample of 8,104 publicly traded U.S. firms in year 2000 that have segment data at the four- three-, or two-digit SIC level. The industry average profitability measures are estimated on the 11,854 segments belonging to the full sample of 8,104 firms. Standard errors are clustered by firm. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level, respectively.

Variable	All Shocks	Positive Shocks	Negative Shocks
Firm's Predicted EBITDA	0.86 ***	0.72 ***	0.87 ***
	8.0	4.2	7.3
Family Firm × Firm's Predicted EBITDA	-0.51 ***	-0.40 *	-0.46 ***
	-2.78	-1.74	-3.01
Ln(Firm Assets)	7.98	13.22 *	7.78
	1.38	1.82	1.45
Firm's Debt / Book Value of Equity	-0.21	0.03	-0.78
	-0.61	0.47	-1.01
Firm's Capex / Sales	0.09 ***	0.21 **	0.07 ***
	4.22	2.53	8.72
Constant	87.7 ***	-3.46	1.23
	3.47	-0.64	0.32
Number of Observations (Firm-Years)	3,425	1,626	1,736
Number of Clusters (Firms)	1,431	1,239	1,227
R-Squared (Within)	0.69	0.54	0.60

Table XII
Sensitivity of Family and Non-Family-Owned Segments to Profitability Shocks

Fixed-effects regression of segments' Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) on predicted EBITDA and several control variables. The positive and negative shocks regressions are OLS regressions where segment-specific means (over the full "all shocks" sample) have been subtracted from each variable's. These regressions are then estimated on the subsamples of observations for which the de-measured predicted EBITDA is positive or negative, respectively. A segment's predicted EBITDA is the product of the segment's assets by the asset-weighted average return on assets of all segments in the industry excluding the segment in question. Family firms are defined as those in which the founder or a member of the founder's family by either blood or marriage is an officer, director, or blockholder, either individually or as a group. Family-controlled industries (which in this table refers to the industry of each firm's largest segment) are those above the median percentage of family firms in each industry. The model is estimated on the 5,629 firm-years from 2,003 firms that have no missing data on any of the variables included, out of a total of 6,330 firm-years from 2,110 firms for which we collect ownership data. The 2,110 firms were selected randomly within industries out of a larger sample of 8,104 publicly traded U.S. firms in year 2000 that have segment data at the four- three-, or two-digit SIC level. The industry average profitability measures are estimated on the 11,854 segments belonging to the full sample of 8,104 firms. Standard errors are clustered by firm. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level, respectively.

Variable	All Shocks	Positive Shocks	Negative Shocks
Segment's Predicted EBITDA	1.06 ***	1.06 ***	1.06 ***
	12.4	11.8	12.9
Family Firm × Segment's Predicted EBITDA	-0.35 **	-0.36 **	-0.33 **
	-2.32	-2.20	-2.32
Ln(Firm Assets)	-9.34	-9.08	4.26
	-0.79	-0.56	0.47
Firm's Debt / Book Value of Equity	-0.44	-0.30	-0.66 **
	-1.32	-0.95	-2.21
Firm's Capex / Sales	0.14 ***	0.36 ***	0.09 ***
	7.78	3.97	10.61
Constant	79.5	-5.54	9.13 **
	1.57	-1.07	2.54
Number of Observations (Segment-Years)	10,437	4,784	5,067
Number of Clusters (Segments)	4,147	3,554	3,499
R-Squared (Within)	0.89	0.90	0.87