

Revisiting Family Firms

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Abstract

I propose a novel measure to identify family firms based on the number of family links between high-ranking coworkers. Leveraging this measure, I reexamine previous findings in the literature and derive four novel facts: i) Measures of stock ownership misclassify firms with a large family presence. ii) Family-run firms exhibit value stock characteristics, whereas founder-CEO firms display growth stock characteristics. iii) Family-run firms pay lower costs. iv) Family managers behave myopically. I conclude that failing to consider family links can lead to highly misleading results in the study of family firms.

I. Introduction

Family firms are at the center of numerous ongoing academic and policy debates. However, despite a large body of research, the literature lacks a procedure to systematically identify firms in which family relationships play a critical role. In most papers, the main or only criterion to define family firms is whether the percentage of stocks owned by a single family or individual exceeds an arbitrarily chosen threshold (e.g., Anderson, Duru, and Reeb (2012), Anderson, Reeb, and Zhao (2012), and Kang and Kim (2020)). This empirical approach, however, presents two shortcomings. On the one hand, many firms in which the founder retains a large equity share – such as Google or Facebook – lack any family dimension. On the other hand, several firms that do employ family members in key positions have more fragmented ownership structures.

In this article, I introduce a novel measure of family involvement based on the presence of widespread family relationships among coworkers in top jobs. To that end, I take advantage of a disclosure requirement of publicly traded firms in the United States. Listed firms have to report the presence of family connections among high-ranking individuals to alert investors of potential conflicts of interest. More specifically, I gather information from all publicly available proxy statements filed

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with the U. S. Securities and Exchange Commission (SEC). Then, I process the text in the filings using an algorithm that counts the number of connections by blood, marriage, or adoption. This allows me to identify family-run firms (FFs) as opposed to blockholder-owned firms (BFs).

Leveraging this measure, I reconsider the role of families in family firms. The emphasis on the nexus of family relationships (rather than fractional ownership or voting rights) yields a host of results that offer new insights into family firms and challenge a number of widely accepted notions. I organize my findings around four novel facts that I discuss in light of previous contributions.¹

Fact I establishes that, in the context of U.S. public firms, the presence of a large owner is an imperfect proxy for firms in which family relationships play a central role. This claim is supported by two findings. First, I show that standard approaches fail to classify firms with families as family firms, as only 40% of FFs have a large owner. Second, I find that many firms that are commonly classified as family firms lack any family presence. Specifically, about half of the firms with large blockholders do not employ *any* related individuals. This distinction is not just a matter of semantics but is economically consequential, as family-run and blockholder-owned firms are highly different along several meaningful dimensions.

Fact II shows that family-run firms tend to have *value* stock characteristics, whereas founder-CEO firms exhibit *growth* stock characteristics. Namely, the former display above-average ROA, payout, and product market share, and below-average Tobin's q and R&D spending. By contrast, the latter are characterized by low ROA and payout, and high Tobin's q and R&D spending. A large body of literature documents a "family discount" (premium) in the valuations of family firms, which is commonly explained by the argument that relatives make bad managers, whereas founders are exceptional CEOs (see, e.g., McConnell and Servaes (1990), Villalonga and Amit (2006), and Miller, Le Breton-Miller, Lester, and Cannella (2007)). This claim is empirically supported by the cross-sectional evidence that firms that employ family members (the founder) exhibit significantly lower (higher) q ratios. However, my findings suggest that an explanation based on selection is equally plausible. If family networks are more likely to spread in value firms and founders are more likely to remain at the helm of growth firms, that could explain the documented differences in q ratios.

I then examine whether family-run firms pay higher or lower labor, administrative, and financial costs. From a theoretical perspective, it is possible that family-run firms pay inefficient wages and input costs to earn employees' and suppliers' loyalty (for instance as an attempt to reduce turnover). Alternatively, family managers might be tougher in handling labor relations and negotiations with suppliers (Mueller and Philippon (2011)), thereby compressing total costs. *Fact III* establishes that FFs are able to substantially reduce costs. Specifically, FFs pay a \$21,200 lower cost per employee annually, while hiring workers who are only marginally

¹Notably, I do not revisit all previous findings in the literature on family firms, as that would require far more than one paper. In my selection, I prioritize aspects that are important (as proxied by a large number of papers) and for which the choice of employing a measure based on family links is consequential.

less productive. This lower pay is not balanced by higher job stability, as FFs are more flexible in adjusting their workforce size to product demand shocks by laying off employees in downturns. In addition to lower labor costs, I find that FFs exhibit a 1.0 percentage point lower cost of borrowing, 1.3 percentage points lower administrative expenses, and 26% lower operating costs overall. In sum, my evidence suggests that FFs are run efficiently, which may partially explain the observed higher ROA ratios.

Finally, *Fact IV* establishes that FFs invest less than peer firms. Notably, lower investment levels are not necessarily suboptimal, as FFs have fewer value-creating investment opportunities in the first place. However, I document that FFs also exhibit a lower sensitivity of investment to investment opportunities. This set of findings is important in light of the theoretical work that argues that the presence of family members in family firms foster corporate investment, as they have longer horizons and are less prone to moral hazard (see, e.g., Fama and Jensen (1983), James (1999)). Contrasting with this view, my evidence suggests that family managers might behave myopically.

Importantly, I do not claim that family links cause any of these four facts. As the presence of family managers is endogenous to firm outputs, I cannot establish whether the former shapes the latter. This limitation is common to this field of research, as the high persistence in a firm's "family firm status" does not allow researchers to include firm-fixed effects in their empirical specifications. In turn, this prevents the examination of how proxies for family firms and firm outputs covary within firm over time. It is entirely plausible that the presence of relatives signals that a firm is different along some dimensions that, in turn, determine endogenously family firms' policies. Overall, my evidence neither rules out nor confirms that family links have a causal effect on firm outputs.

This article contributes to a large body of work on family firms. The previous literature provides conflicting evidence as to how the involvement of families in family firms affects firm value, performance, and investment. In a seminal paper, Anderson and Reeb (2003) document that family-owned firms in the S&P 500 index outperform nonfamily firms. This finding has then been challenged by a stream of work that emphasizes the "dark side" of family firms. Villalonga and Amit (2006), Miller et al. (2007), Bertrand, Johnson, Samphantharak, and Schoar (2008), and Lins, Volpin, and Wagner (2013), among many others, argue that the involvement of family members hurts firm profitability and value. Overall, the consensus that emerges from most of the literature is that family ownership is beneficial while the involvement of family members is detrimental to firm performance and value.²

However, standard approaches misclassify firms with large individual blockholders, such as Google or Berkshire Hathaway, as family firms.³ This misclassification is consequential, as firms in which the founder retains a large block of shares tend to be a special class of firms with unique characteristics (Morck,

²See Bertrand and Schoar (2006) for an excellent overview of the literature.

³A nonexhaustive list of papers that consider the share of stocks or votes held by families or individuals in family firms includes Holderness and Sheehan (1988), La Porta, Silanes, and Shleifer (1999), Claessens, Djankov, and Lang (2000), Faccio and Lang (2002), Anderson and Reeb (2003), Maury (2006), Sraer and Thesmar (2007), Anderson, Duru, and Reeb (2009), (2012), Mueller and Philippon (2011), Anderson, Reeb, and Zhao (2012), Lins et al. (2013), and Kang and Kim (2020).

Shleifer, and Vishny (1988)). Further exacerbating this issue, previous papers focus on highly selected samples of firms, such as Forbes 500 or S&P 1500 firms. Yet, firms need to be uncommonly successful to make it to such elite sets while the founder is still alive. This, in turn, raises the concern that the documented superior performance of family firms might be the effect of endogenous sample selection. Although these issues are known in the literature (see, e.g., Miller et al. (2007)), the approach of identifying family firms based on ownership was arguably the best option given the data available when the methodology was first developed. The measure I introduce in this article exploits new data to sidestep the problems discussed above, as i) it is based on actual family links rather than stock ownership and ii) it is computable for *all* U.S.-listed firms.

Importantly, my article does not dispute the finding that family-run firms do comparatively worse when descendants of the founder are appointed as CEOs (see, e.g., Pérez-González (2006), Bennedsen, Nielsen, Pérez-González, and Wolfenzon (2007), Bloom and Van Reenen (2007), and Adams, Almeida, and Ferreira (2009)). In my empirical analysis, I cannot differentiate relatives appointed as CEOs from the majority of relatives who are hired in a variety of other roles. More importantly, in most FFs in my sample, firm's control *cannot be passed down to the heirs*, as family members do not own a controlling share. Hence, generational turnover plays a limited role in the setting of my article.

Finally, my article adds to a small literature on family connections and nepotism. Corak and Piraino (2011) find that between 6% and 9% of young Canadians have the same employer as their fathers, and Gagliarducci and Manacorda (2020) show that, in Italy, family connections to politicians influence individuals' labor market outcomes. In the finance literature, Chuprinin and Sosyura (2018) find that mutual fund managers from poor families are promoted only if they out-perform, whereas those from rich families are promoted regardless of performance. From a theoretical perspective, Goldberg (1982) shows that nepotism can lead to long-run wage differentials within firms and Prendergast and Topel (1996) analyze the conditions under which favoritism is costly to organizations.

Overall, the overwhelming majority of work warns against the presence of relatives in the same organization. A notable exception is Mehrotra, Morck, Shim, and Wiwattanakantang (2013) who find that family firms passed down to heirs outperform in Japan. However, this finding is driven by features that are unique to the Japanese setting and do not apply to other countries. Similarly, my findings that family ties are associated with higher ROA and payouts might be influenced by the fact that U.S. public firms are heavily scrutinized and activist investors can easily intervene to force out unqualified relatives in top jobs. Therefore, my findings do not necessarily apply to other countries where governance mechanisms are weaker. Notably, a number of results in my article are in line with the findings of Sraer and Thesmar (2007) for family-owned French firms. This is likely due to the fact that, in France, there is a greater overlap between firms with largely concentrated ownership and firms that employ relatives, whereas this appears to be less the case in the United States. In all likelihood, proxies of family firms based on ownership are more reliable in contexts in which there are relatively fewer tech firms held by large owners and descendants of the founders tend to retain control of the firm.

II. Data Description and Summary Statistics

My analysis relies on the following variables:

A. Blockholder-Owned Firms

Following the standard definition of family firms used in the literature, I classify a firm as a blockholder-owned firm (BF) if 20% or more of the shares are held by a single individual or family.⁴ This translates to about 18% of family-owned firms in my sample.

B. Family-Run Firms

I extract information on the presence of family links among executives, directors, and top managers of public firms in the United States from the proxy statements available from EDGAR (form DEF 14A). Regulation S-K (items 401a-f) requires public firms to disclose in proxy statements the presence of any relationships by blood, marriage, or adoption, not more remote than first cousin when such relationships can create a conflict of interests. This definition identifies as relatives of any child, stepchild, parent, step-parent, spouse, ex-spouse, sibling, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law, or sister-in-law, and any person sharing the same household.

I employ textual analysis to count the number of family links disclosed in the proxy statements. Specifically, I develop an algorithm that analyzes the content of each proxy statement, accounting for possible “false positives” and extracting all reported links (the procedure is described in detail in Section A of the Supplementary Material). Specifically, I count any links of executives and directors with other significant employees including appointed and nominated executives, directors, and persons such as production managers, sales managers, or research scientists “who are not executive officers but who make or are expected to make significant contributions to the business.” Note that the presence of a family relationship between employees without strategic responsibilities is not disclosed in the filings (as it does not create a conflict of interest) and, as a consequence, is not considered in the analysis. Links are mostly disclosed from the perspective of the highest-ranking individual. For example, if the CEO of a firm hires his son in a managerial position, a “son connection” is usually reported but *not* a “father connection.” As a consequence, family relationships are not necessarily even and reciprocal. In fact, most of the disclosed relationships in my sample are asymmetrical, that is, there are more children (sons and daughters) than parents (fathers and mothers) and more wives than husbands. This is because in my sample, fathers, mothers, and husbands are on average higher up in the hierarchy of the firm than sons, daughters, and wives. Importantly, before counting the relevant family links, I exclude from the

⁴Examples of papers that set the threshold of equity ownership exactly at 20% of the shares or the voting rights include Sraer and Thesmar (2007) and Mueller and Philippon (2011). Other thresholds that have been used in the literature are 5% (e.g., Anderson, Duru, and Reeb (2012), Kang and Kim (2020)), 10% (e.g., La Porta et al. (1999)), 25% (e.g., Lins et al. (2013)), and 50% (e.g., Ding, Levine, Lin, and Xie (2021)).

proxy statements all sentences including family links that disclose stock ownership rather than employment (see details in Section A of the Supplementary Material).

Importantly, my algorithm counts the number of *links*, not the number of relatives. For instance, if a significant employee is the *son* of a director I count one link, if he is the *son* of a director and the *husband* of another director, I count two links. Notably, I cannot extract the exact job title of the relative, her background information, or her pay (even when this information is disclosed in the statements). This is because the information on the relatives is disclosed in different sections, with different wording, and in different detail from one proxy statement to the other, which makes it difficult to extract it in a systematic way. I examine manually a number of randomly selected statements to obtain a better insight into the role of the relatives. I find that almost all disclosed links involve individuals who hold top jobs (e.g., managers, directors, or heads of divisions). In all likelihood, firms do not disclose relationships between, for example, an executive and a low-ranking relative because there is no obligation to disclose connections that do not create a conflict of interest that shareholders should be aware of. Furthermore, executives and directors appear to be less likely to appoint relatives to low-ranking positions in the first place.

Inevitably, my measure contains some noise. For instance, I cannot rule out the possibility that my algorithm sometimes counts the same link twice due to repetitions in the proxy statements (I discuss in the Supplementary Material the procedure that I adopt to minimize these occurrences). Similarly, I cannot address the entire universe of “false positives.” For example, in a sentence disclosing one director’s previous affiliation with “Lehman *Brothers*,” my algorithm originally mistakenly reported a “*brother* link.” I manually checked and improved the accuracy of the algorithm by iterating the procedure several times and adjusting it to address common sources of misclassification (a number of examples are discussed in Section B of the Supplementary Material). However, some errors have inevitably gone unnoticed. Importantly, there is no reason why miscounting due to occasional misclassification by my algorithm should be correlated with firm outputs. Therefore, the presence of noise presumably works against finding a significant relationship between family links and firm-level variables.

Table 1 reports the frequency of each family link as a percentage of the total number of links counted by the algorithm. The most common family links in my sample are “son,” “brother,” and “wife.” Sons are 4 times more common than daughters, which is consistent with previous evidence indicating that parents are more likely to hire their sons; see Bennedsen et al. (2007).⁵ By contrast, firms in my sample disclose few uncles (1.26%), nephews (2.08%), and ex-wives (0.04%).

Overall, family links between top employees are quite common in U.S. public firms: around 33% of the companies in my sample disclose at least one family relationship, and the average U.S. public firm discloses one relationship every 10 directors. Both the number of links and the percentage of firms with family involvement are highly stable over time (see Figure 1). I report the sample

⁵In the table, I do not distinguish between “sons” and “sons-in-law,” between “daughters” and “daughters-in-law,” between “son” and “stepson,” and so on.

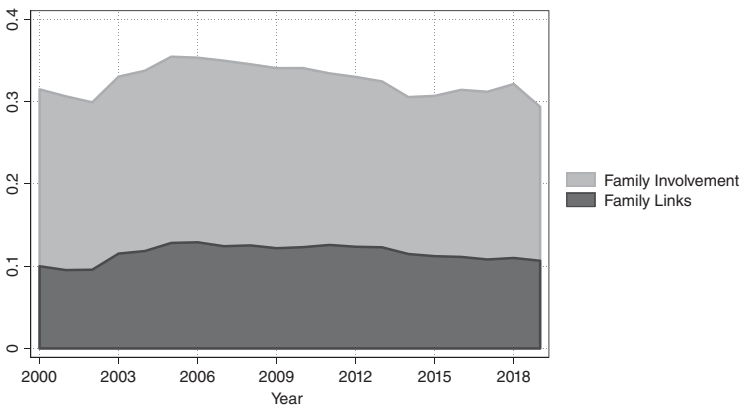
TABLE 1
Which Relatives?

Table 1 reports detailed information on the 51,997 links disclosed by U.S. public firms in the period of 2000 to 2019. The number of links and the type of family relationship are obtained from the proxy statements filed by U.S. public firms with the SEC and available through EDGAR. If multiple proxy statements are filed during the same year, I consider the most recent. In most cases, family links are disclosed from the perspective of the highest-ranking individual and, therefore, are not even and reciprocal. The methodology to extract and clean the data is described in Section II and further detailed in Section A of the Supplementary Material.

	% of All Links
Sisters	5.57
Brothers	24.55
Mothers	2.21
Fathers	10.76
Wives	11.50
Husbands	3.16
Daughters	6.71
Sons	27.83
Uncles	1.26
Cousins	4.33
Nephews	2.08
Ex-wives	0.04

FIGURE 1
Links over Time

Figure 1 illustrates the percentage of firms that disclose at least one family link out of all U.S. public firms (in light gray) and the average number of family links scaled by the number of directors in the full sample of U.S. public firms (in dark gray). The sample period is 2000–2019.



distribution of the number of family links per director in Figure A.1 in the Supplementary Material.

An issue with counting family links is that the number of *possible* links grows with the number of executives and directors. For example, a firm employing only two high-ranking employees can disclose at most *one* link between them. By contrast, a firm with 4 high-ranking employees could disclose up to 6 connections. This implies that larger firms will have more family connections simply because they employ more directors. I therefore scale the number of family links by the number of possible links among directors. I measure the number of possible links with the number of possible pairwise combinations of directors, *plinks*, defined as

$\text{plinks} = \frac{n!}{2^{n-2}}$, where n is the number of directors from BoardEx.⁶ Notably, plinks is a lower bound for the number of possible connections, as proxy statements disclose also links with significant employees who are not directors.

In the Supplementary Material, I confirm the robustness of the result by scaling the number of family links by the number of directors (rather than by the potential number of links). This latter approach however is potentially problematic. In fact, previous papers document a strong negative relation between board size and q (Wintoki, Linck, and Netter (2012), Jenter, Schmid, and Urban (2019)), which, in turn, could mechanically induce a positive correlation between family links scaled by board size and q . The main scaling variable I consider in my analysis sidesteps this issue, as I find no correlation between potential family links and a firm's q (see Table A.2 in the Supplementary Material).

I define a firm as family-run (FF) if the number of family links scaled by the number of possible connections, links/plinks , is in the top 20% of the annual sample distribution, for symmetry with the definition of BFs. My approach allows me to compare firms that have the highest number of family links with firms that disclose few or no family links. Summing up, the procedure to identify family-run firms involves the following five steps:

- Download all U.S. public firms' proxy statements (form DEF 14A) from EDGAR.
- Clean each form by retaining only sentences in written English and erasing common "false positives" and repetitions (see Section A of the Supplementary Material for details).
- Exclude sentences that disclose a family member's stock ownership or financial transactions rather than her employment.
- Count the number of times each family link is disclosed in the remaining document.
- Scale the total number of family links by the number of possible links, and define the firms that rank in the top 20% of the annual sample distribution as family run.

I present results using four alternative measures to ensure that my results are not driven by the scaling variable or by the arbitrary cut-off threshold at 20%. Namely, I consider i) the number of family links scaled by the number of directors, ii) a dummy variable that takes a value of 1 if there is at least one family link disclosed, iii) the number of family links (without scaling them), and iv) a more restrictive dummy variable that takes a value of 1 if links/plinks is in the top 10% (rather than 20%) of the annual sample distribution. Results remain qualitatively similar (see Table A.1 in the Supplementary Material).

A couple of examples highlight the importance of distinguishing FFs and BFs. For instance, Molson Coors Beverage Company discloses more than 1 family link per director. However, in the period covered by my sample, insiders own 16% of shares, whereas institutional investors hold more than 80%. While papers that set the relevant threshold at 20% of the shares would not consider Molson Coors a

⁶This normalization poses however another challenge, since BoardEx does not cover the full population of U.S. public firms (specifically, it does not cover 26% of the observations in my sample). To overcome this problem, I replaced missing values for the number of directors with the average number of directors of firms in the same industry and in the same decile of size.

family firm (as the family owns less than 20% of the shares), the company still retains a significant family identity and presence. At the opposing end, Warren Buffett owns 36% of Berkshire Hathaway's shares. Yet, most people would probably not consider Berkshire Hathaway a family firm, as only one family member serves as director and the possibility of passing the company down to the heirs has been explicitly ruled out. Similarly, although the founders of Google-Alphabet own a large fraction of the shares and the majority of the votes, none of their family members hold top jobs in the company. According to their proxy statements, the firms with the most family links in my sample are John B. Sanfilippo & Son, Nordstrom, and MSG Networks.

Notably, for simplicity and consistency with the previous literature, I refer to a firm as a *blockholder-owned firm* regardless of whether the blockholder is the founder or a family. Likewise, I refer to firms that disclose widespread family links as *family run* regardless of whether family members are mostly appointed as managers, directors, chief scientists, or other top roles.

C. Other Variables

All accounting variables are from COMPUSTAT. They are constructed as reported in the [Appendix](#) and winsorized at the 1% level to mitigate the impact of misreporting and outliers.

D. Sample Selection

I consider only firms that I can match between COMPUSTAT and EDGAR filings. I exclude observations for which the filings downloaded from EDGAR do not contain a valid identifier. I also exclude firms for which I cannot retrieve the corresponding proxy statements from EDGAR. Furthermore, filings for which I could not identify a unique match are excluded from the sample. Finally, I exclude banks and financial firms. My sample is free of survivorship bias, as I have information for both existing and defunct firms. Importantly, my sample is also free of selection bias, as all listed firms are obligated to disclose the presence of potential conflicts of interest arising from the presence of family links. The time series spans the years 2000 through 2019.

III. Four Facts About Families in Family Firms

A. Fact I: Measures of Stock Ownership Misclassify Firms with a Large Family Presence

Family firms are the focus of a large literature spanning finance, economics, and management. However, there is no universal definition of what constitutes a "family firm." Many studies rely solely on the criterion of large ownership by a family or individual, often using a fixed ownership threshold. Others have attempted to supplement measures based on stock ownership with information on individual involvement in the firm, but these efforts have relied on hand-collected data, resulting in ad hoc solutions and inconsistencies in how firms are classified.

TABLE 2
Summary Statistics

Table 2 reports summary statistics for the full sample of U.S. public firms (columns 1–3); family-run firms (FFs), defined as firms that disclose a number of links over the number of possible links in the top 20% of the annual distribution (column 4); blockholder-owned firms (BFs), defined as firms with family or individual stock ownership equal to or above 20% following the standard definition of family firms used in the literature (column 5); and for the subset of firms that are blockholder owned but are not family run (column 6). All accounting variables are defined in the Appendix and winsorized at the 1% level. † indicates that FFs are excluded.

	Full Sample			FFs	BFs	BFs [†]
	No. of Obs.	Mean	Std. Dev.	Mean	Mean	Mean
	1	2	3	4	5	6
FF	55,672	0.209	0.406	1.000	0.403	0.000
BF	55,672	0.181	0.385	0.350	1.000	1.000
ROA	55,672	-0.040	0.253	-0.015	-0.068	-0.106
ROE	55,672	-0.045	0.758	-0.006	-0.100	-0.155
SIZE	55,672	6.211	2.057	5.969	5.342	5.106
PAYOUT	55,672	0.011	0.027	0.013	0.013	0.012
MKT_SHARE	55,672	0.012	0.033	0.012	0.008	0.006
AGE	55,672	18.563	14.018	18.967	16.883	15.111
<i>q</i>	55,672	2.084	1.574	1.961	1.984	2.086
TANGIBILITY	55,672	0.250	0.234	0.272	0.247	0.226
LEVERAGE	55,672	0.226	0.225	0.223	0.218	0.212
CASH	55,672	0.214	0.232	0.180	0.214	0.244
COGS	55,672	1.189	3.709	0.999	1.236	1.511
FOUNDER_CEO	35,647	0.091	0.287	0.135	0.141	0.159
R&D	35,403	0.105	0.153	0.075	0.101	0.124
INVESTMENT	52,185	0.296	0.323	0.275	0.282	0.305
COST_PER_WORKER	55,233	2.718	3.973	2.577	2.437	2.570
LABOR_PRODUCTIVITY	55,233	4.027	5.274	3.884	3.571	3.635
SG&A	49,345	0.339	0.289	0.345	0.390	0.405
COST_OF_DEBT	43,489	0.121	0.298	0.120	0.131	0.147

In Table 2, I compare blockholder firms with family-run firms in the full population of U.S. public firms. Columns 1–3 show values for all firms in my sample. Column 4 for family-run firms, column 5 for blockholder firms, and column 6 for the subset of blockholder-owned firms that I do not classify as family-run because they either disclose no family links or report a number of links scaled by the potential number of links below the 80th percentile. There are two key takeaways from the table. First, only 40% of family-run firms are held in large part by individual or family blockholders. Second, 65% of blockholder firms do not meet the requirement, in terms of density of family links, to be classified as “family run” and 50% do not disclose *any* family relationships at all (this number is unreported in the table). Overall, the standard approach of identifying family firms on the basis of ownership appears imperfect. About half of the firms that are commonly classified as family firms do not report any family presence, whereas more than half of the firms that disclose widespread family links are not classified as family firms.

The distinction above has a host of material implications as family-run firms and blockholder firms are different along several economically relevant dimensions. Column 4 reports that the average FF is large and old, exhibits a low *q* ratio, little R&D spending, and a high share of tangible assets. By contrast, I find that most of the BFs that disclose few or no family links are young and small, with high *q* ratios, a high share of R&D spending, and a low share of tangible assets (see column 6). Notably, an extensive literature explores how family firms perform (e.g., Anderson and Reeb (2003), Eddleston, Kellermanns, and Sarathy (2008)), invest

(e.g., Anderson, Duru, and Reeb (2012)), handle labor relations (Mueller and Philippon (2011)), withstand crises (e.g., Lins et al. (2013), Ding et al. (2021)), avoid taxes (e.g., Chen, Chen, Cheng, and Shevlin (2010)), and innovate (e.g., Duran, Kammerlander, Van Essen, and Zellweger (2016)). However, many of these firm outputs are, at least to some degree, affected by market valuations. Incorrectly classifying a large share of high- q firms as family firms leads to misleading inference, as it erroneously conflates the implications of family control with those of having superior growth opportunities. I explore the economic implications in greater detail in the next section.

B. Fact II: Family-Run Firms Exhibit Value Stock Characteristics, Whereas Founder-CEO Firms Display Growth Stock Characteristics

Family firms are the focus of dozens of papers. In a seminal contribution, Anderson and Reeb (2003) find that S&P 500 family-owned firms perform better than nonfamily-owned firms. This finding has, however, been challenged by several papers that find that family firms under-perform (e.g., Claessens, Djankov, Fan, and Lang (2002), Cronqvist and Nilsson (2003), Bennedsen et al. (2007), Miller et al. (2007), and Bertrand et al. (2008)).

Furthermore, a branch of the literature investigates the cross-sectional correlation between proxies of family firms and Tobin's q documenting a valuation discount for firms that employ relatives of the founder and a valuation premium for firms in which the founder acts as CEO (e.g., McConnell and Servaes (1990), Villalonga and Amit (2006), and Miller et al. (2007)). Notably, a separate stream of literature establishes a causal effect on q ratios when the descendants of the founder are appointed as CEO (e.g., Pérez-González (2006)).

The traditional approach of classifying firms on the basis of ownership leads to label as family firms both firms with a substantial family presence and firms in which the founder-CEO retains a large ownership stake but there is no family involvement (such as Amazon or Google). Given the findings presented in Fact I, it is interesting to consider whether firms that employ family members and firms that are run by the founder-CEO exhibit distinct core characteristics that, in turn, may explain differences in valuation and profitability. I explore this hypothesis by running the regression below:

$$(1) \quad y_{i,t} = \beta F_{i,t} + \gamma \mathbf{X}_{i,t} + \lambda_t + \lambda_s + \varepsilon_{i,t},$$

where $y_{i,t}$ is firm's i corporate policy in year t and $F_{i,t} \in \{\text{FF}_{i,t}, \text{FCEO}_{i,t}\}$ is a dummy that takes a value of 1 if the firm is run by a family ($\text{FF}_{i,t}$) or by the founder-CEO ($\text{FCEO}_{i,t}$). $y_{i,t}$ includes a selection of firm characteristics that tend to differentiate value from growth firms. Namely, ROA, q , R&D, PAYOUT, and MKT_SHARE. $\mathbf{X}_{i,t}$ is a vector of firm covariates that includes SIZE, TANGIBILITY, and LEVERAGE. λ_t and λ_s are year and sector fixed effects, respectively. Including year and sector fixed effects is important in my setting to ensure that I am not simply capturing differences in firm characteristics between industries or over time. Notably, as $\text{FF}_{i,t}$ is highly persistent, I cannot include firm fixed effects in this specification (similar to papers on family ownership). In turn, this limitation prevents any

TABLE 3
Do Family-Run Firms Have *Value* Stock Characteristics?

Table 3 shows regressions of firm characteristics on FF. FF is a dummy variable that takes a value of 1 if the number of disclosed family links scaled by the number of possible links is in the top 20% of the annual distribution. Firm characteristics are ROA, q , R&D, PAYOUT, and MKT_SHARE. Control variables include SIZE, TANGIBILITY, and LEVERAGE. All accounting variables are winsorized at the 1% level and defined in the Appendix. The bottom row reports the mean of the dependent variable. Standard errors are clustered at the firm level and reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	ROA	q	R&D	PAYOUT (%)	MKT_SHARE (%)
	1	2	3	4	5
FF	0.044*** (0.004)	-0.157*** (0.034)	-0.027*** (0.004)	0.191*** (0.062)	0.214** (0.093)
Controls	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	55,672	55,672	35,403	55,672	55,672
Adj. R^2	0.233	0.109	0.305	0.022	0.211
Mean D. Var.	-0.040	2.084	0.105	1.147	1.179

TABLE 4
Do Founder-CEO Firms Have *Growth* Stock Characteristics?

Table 4 shows regressions of firm characteristics on FCEO. FCEO is a dummy variable that takes a value of 1 if the founder is the current CEO. Firm characteristics are ROA, q , R&D, PAYOUT, and MKT_SHARE. Control variables include SIZE, TANGIBILITY, and LEVERAGE. All accounting variables are winsorized at the 1% level and defined in the Appendix. The bottom row reports the mean of the dependent variable. Standard errors are clustered at the firm level and reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	ROA	q	R&D	PAYOUT (%)	MKT_SHARE (%)
	1	2	3	4	5
FCEO	-0.021** (0.008)	0.224*** (0.066)	0.029*** (0.007)	-0.261*** (0.097)	-0.115 (0.129)
Controls	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	35,647	35,647	22,557	35,647	35,647
Adj. R^2	0.182	0.142	0.319	0.035	0.229
Mean D. Var.	-0.040	2.084	0.105	1.147	1.179

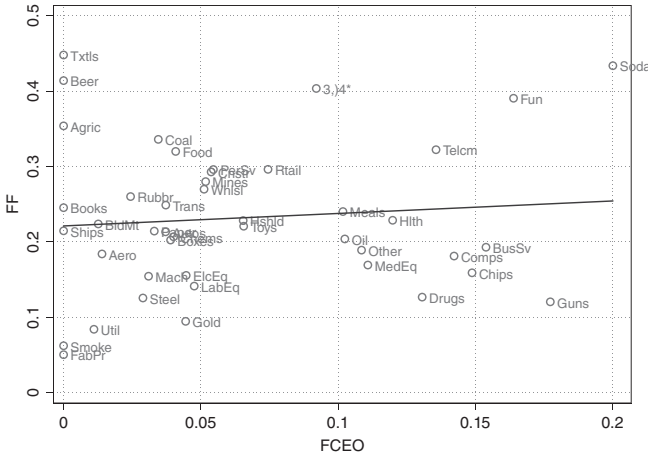
type of causal interpretation of the findings: all coefficients discussed below can only be interpreted as correlations.

Table 3 shows that firms run by families exhibit typical value stock characteristics. Specifically, FFs earn 4.4 percentage points higher ROA (18% of 1 standard deviation), pay 19 basis points higher dividends (7% of 1 standard deviation), and have a 22 basis points larger product market share (6% of 1 standard deviation). However, these firms exhibit 16 percentage points lower Tobin's q (10% of 1 standard deviation) and spend 2.7 percentage points less in R&D (18% of 1 standard deviation). Notably, all coefficients are statistically significant and economically large. Table A.1 in the Supplementary Material shows qualitatively similar results for alternative definitions of family-run firms.

I then turn to firms run by their founders. The coefficients reported in Table 4 indicate that founder-CEO firms are more likely to exhibit growth stock characteristics. Namely, these firms earn 2.1 percentage points lower ROA (8% of 1 standard deviation) and pay 0.26 percentage points lower dividends (10% of 1

FIGURE 2
Family-Run Firms Versus Founder-CEO Firms by Industry

Figure 2 illustrates the percentage of FFs and founder-CEO firms in different industries. Industries are defined using the Fama and French 48-industry classification. FFs are firms for which the number of disclosed family links scaled by the number of directors is in the top 20% of the annual distribution. Founder-CEO firms are firms in which the founder is the current CEO. The black tendency line represents the slope of a regression of FF on FCEO at the industry-year level.



standard deviation). However, founder CEOs spend 2.9 percentage points more in R&D (19% of 1 standard deviation) and their firms' stocks trade at a 22 percentage points premium over the book value on average (14% of 1 standard deviation).

Figure 2 illustrates the distribution of FFs by industry. I find that firms with a large family presence are present in all industries. Yet, low-tech/low-margin industries (which mostly comprise *value* firms) include a comparatively higher percentage of FFs, and a low percentage of founder-CEO firms (e.g., Textile, Agriculture, Alcoholic Drinks, Retail, Food Products, Clothing, Coal, Mining, and Shipping). By contrast, many firms in high-tech/high-margin industries (which typically include *growth* firms) are run by their founders and employ few or no family members (e.g., Pharmaceutical, Business Services, Weapons, Computers, Telecommunications, and Medical Equipment). Finally, a number of industries appear to include either a low (e.g., Tobacco and Utilities) or a high percentage (e.g., Soft Drinks) of both FFs and Founder-CEO firms. Notably, matching treatment and control observations by age and industry greatly reduces the differences between firms outlined in Tables 3 and 4, further highlighting the importance of considering the firm's sector (see Table A.5 in the Supplementary Material).

Overall, the results presented in this section indicate that FFs exhibit typical characteristics of value stocks, whereas a large number of founder-CEO firms are growth firms. However, the current empirical design does not allow to disentangle whether the correlations above indicate a causal relation. To give an example, my finding that FFs display higher ROA ratios might be a consequence of the fact that family managers implement specific policies to boost ROA or it could signify that high ROA firms are more likely to appoint family managers. Specifically, I cannot determine whether family links cause enterprises to become value rather than

growth firms or whether value firm characteristics increase the chances that families occupy top positions. Similarly, I cannot distinguish whether it is easier for founders to retain control in growth firms or whether the founders who retain control are more likely to direct firms toward growth rather than value. Future research is needed to establish the direction of causality.

C. Fact III: Family-Run Firms Pay Lower Costs

1. Costs in Family-Run Firms

In this section, I test whether widespread family links among coworkers are associated to lower costs. The hypothesis that FFs pay lower costs follows from previous research that establishes that family-owned firms borrow at lower rates (Anderson, Mansi, and Reeb (2003)) and employ cheaper labor (Sraer and Thesmar (2007)). Furthermore, family managers may conduct tougher bargains with workers who are less likely to go on strike or unionize (Mueller and Philippon (2011), Bach and Serrano-Velarde (2015)). I consider three components of the overall cost of running a firm: direct costs (including labor costs), administrative costs, and borrowing costs.

My empirical evidence supports the argument that FFs are more cost-efficient. Column 1 of Table 5 shows that FFs pay 31 percentage points lower costs (COGS) (26% lower with respect to the baseline). This relation is statistically significant at 1% and economically large. In terms of cost per worker, this means that FFs pay annually \$21,200 lower COGS per employee (see column 2).⁷ This is, however, an imprecise proxy of labor costs, as COGS include also nonlabor-related direct expenses, for example, raw materials or distribution costs. COMPUSTAT provides information on exact staff expenses only for a small selection of firms (499 firms in

TABLE 5
Do Family-Run Firms Pay Lower Costs?

	Direct Costs			Admin. Costs	Funding Costs
	COGS	COST_PER_WORKER	PRODUCTIVITY	SG&A	COST_OF_DEBT
	1	2	3	4	5
FF	-0.310*** (0.065)	-0.212** (0.095)	-0.172 (0.129)	-0.013* (0.007)	-0.010** (0.005)
Controls	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	55,672	55,233	55,233	49,345	43,489
Adj. R^2	0.093	0.133	0.179	0.320	0.067
Mean D. Var.	1.189	2.718	4.027	0.339	0.121

⁷Notably, the finding that these firms pay lower wages at an aggregate level does not imply that they pay lower wages to appointed relatives too. Given that the number of family members is in all cases only a fraction of the whole workforce, I cannot rule out that relatives are overpaid, whereas workers without family connections are underpaid.

my sample, for a total of 3,443 observations). A t -test on the selection of firms for which I have precise salary information indicates that FFs pay annually a \$9,400 lower salary per worker, that is, 44% of the lower direct costs, statistically significant at the 1% level (see Table A.3 in the Supplementary Material). A back-of-the-envelope calculation suggests that the corresponding savings are sizeable: as the average firm in my sample employs 11,486 workers, FFs save about \$108 million per year or 2.4% of the book value of the average firm in my sample. However, the selection of firms that report staff expenses is in all likelihood nonrandom, which prevents me from generalizing this result to all firms. Importantly, FFs employ workers who, while cheaper, exhibit only marginally lower labor productivity (see column 3).⁸

When looking at other costs, I find evidence that FFs pay 1.3 percentage points lower administrative expenses and 1.0 percentage point lower borrowing costs (see columns 4 and 5 of Table 5). However, I cannot disentangle whether it is the perceived stability of family managers, who are unlikely to be replaced or leave, that allows them to negotiate better deals, or such better borrowing conditions reflect specific firms characteristics that decrease risk for the lenders (as, for instance, FFs have more tangible assets that can be pledged as collateral). Considering the results above together, my evidence suggests that family managers are better negotiators, as they obtain better deals overall.

2. Scalability of the Workforce in Response to Shocks in Product Demand

In this section, I explore the hypothesis that FFs are better able at scaling down (up) labor in response to a contraction (expansion) in product demand. On the one hand, this could be because it is easier to dismiss redundant workers in downturns, as family managers are tougher in handling labor relations and their workers are less likely to unionize (Mueller and Philippon (2011)). On the other, greater job stability may compensate workers for a lower pay, thereby allowing FFs to hire equally skilled workers at a lower cost. Notably, the ability to expand and contract the workforce as needed creates a competitive advantage. In fact, businesses that cannot downsize in bad times are forced to retain on payroll costly and unnecessary workers. Symmetrically, firms that cannot scale up production to meet a sudden increase in demand leave potential clients to the competition. I follow the empirical approach of Sraer and Thesmar (2007) and estimate the sensitivity of firm employment to industry sales shocks as follows:

$$(2) \quad \log(\text{EMP}_{i,t}) = \alpha_i + \lambda_t + \beta \log(\text{SALES}_{s,t}) + \gamma \mathbf{X}_{i,t} + \varepsilon_{i,t},$$

where $\log(\text{EMP}_{i,t})$ is the log of the number of firm i 's employees in year t , and $\log(\text{SALES}_{s,t})$ is the log of the average firm sales in the industry s in which firm i operates, weighted by each firm size at the beginning of the year. α_i are firm fixed effects and λ_t are time fixed effects. The coefficient β measures how firm employment changes in response to industry-level demand shocks.

⁸The finding that workers in FFs are marginally less productive provides a possible explanation of why they are employed there, that is, they lack the necessary skills to secure employment at nonfamily-run firms that offer better working conditions. However, other explanations are also plausible (e.g., a strong geographical preference for the location of the family-run firm).

TABLE 6
Sensitivity of Employment to Industry Sales

Table 6 shows regressions of firm $\log(\text{EMP})$ on industry $\log(\text{SALES})$. $\log(\text{EMP})$ is the log of firm employees; $\log(\text{SALES})$ is the log of the weighted average of industry sales where the weights are given by each firm's size at the beginning of the year. FF is a dummy variable that takes a value of 1 if the number of disclosed family links scaled by the number of possible links is in the top 20% of the annual distribution. BF is a dummy variable that takes a value of 1 if a single family or individual owns 20% or more of firm's shares. Control variables include SIZE, TANGIBILITY, LEVERAGE, FF (only columns 1 and 3), and BF (only columns 2 and 3). All accounting variables are winsorized at the 1% level and defined in the Appendix. The bottom row reports the mean of the dependent variable. Standard errors are clustered at the firm level and reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	$\log(\text{EMP})$		
	1	2	3
$\log(\text{SALES}) \times \text{FF}$	0.005*** (0.001)		0.005*** (0.001)
$\log(\text{SALES}) \times \text{BF}$		0.000 (0.002)	-0.001 (0.002)
$\log(\text{SALES})$	0.038*** (0.004)	0.039*** (0.004)	0.038*** (0.004)
Controls	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
No. of obs.	54,361	54,361	54,361
Adj. R^2	0.974	0.974	0.974
Mean D. Var.	1.325	1.325	1.325

Column 1 of Table 6 shows that FFs exhibit a significantly higher sensitivity of employment to product demand. This finding indicates that FFs have greater workforce scalability and helps to explain their comparative advantage in achieving cost-efficiency. In sum, firms run by families employ cheaper and more flexible labor. In an attempt to separate the effects of family ownership and that of family control, I consider in columns 2 and 3 the sensitivity of labor to industry shocks in blockholder-owned firms (rather than FFs). I find that family ownership does not have an effect on the likelihood of adjusting employment to industry sales. Sraer and Thesmar (2007) find that French family firms establish implicit labor contracts whereby workers accept lower wages in exchange for protection against layoffs during economic downturns. However, I do not find evidence of comparable implicit contracts in American family-run or blockholder-owned firms. Overall, my results indicate that family-run firms offer worse employment conditions, as workers are paid lower wages and are more likely to be laid off in downturns.

D. Fact IV: Family Managers Behave Myopically

Existing theories derive conflicting predictions as to whether families foster corporate investments. On the one hand, the stability of the family at the helm of the corporation should be beneficial, as it promotes long-horizon corporate policies. This should limit the under-investment problem and reduce the scope for managerial short-termism (James (1999)). Furthermore, the reduced separation between ownership and control should limit moral hazard and incentivize family managers to exert effort (Fama and Jensen (1983)). On the other hand, families may be reluctant to fund investments by issuing new stocks, as that dilutes their holdings and increases the risk of losing control of the firm (Amihud, Lev, and Travlos (1990)). Furthermore, the presence of family links among coworkers may

exacerbate opportunistic behaviors. For example, family links between supervisors and underlings may give rise to favoritism, thereby resulting in ineffective monitoring and suboptimal effort (Prendergast and Topel (1996)). One of the main concerns with appointing relatives of directors to top positions is that they may enjoy “special treatment,” such as undeserved promotions or protection from firing when results are poor. This can be the case because parents derive utility from helping their children to succeed (e.g., Becker and Tomes (1986)) or because firing a spouse may decrease the joint income of the household or lead to family conflicts. Protection from the risk of being fired, in turn, could incentivize family managers to enjoy a “quiet life,” slacking off instead of pursuing value-increasing investment opportunities (Bertrand and Mullainathan (2003)). Previous research has examined investment in family firms both theoretically and empirically with mixed findings (e.g., Ellul, Pagano, and Panunzi (2010), Anderson, Duru, and Reeb (2012), Lins et al. (2013), Tsoutsoura (2015), Duran et al. (2016), Amore and Minichilli (2018), and Kang and Kim (2020)).

I explore the relation between investment and family links in Table 7. Column 1 shows that FFs invest 1.8 percentage points less than peer firms (6% less than the average investment of 0.30). In columns 2 and 3, I explore the hypothesis that family managers who own a large block of shares actively avoid dilution by underinvesting. Specifically, I interact the variable FF alternatively with BF and a dummy that takes a value of 1 if the founder still holds a position in the firm (FOUNDER_IN), as employed heirs of the founders might be reluctant to issue new shares to fund investments after the founder left. While both interaction coefficients have a negative sign, they are statistically insignificant. Furthermore, the coefficient of FF remains negative and significant, thereby suggesting that the negative effect on investment is not driven by an attempt to avoid dilution. To evaluate whether lower investment levels are the result of a lower sensitivity to investment opportunities, I estimate the following equation:

$$(3) \quad \text{INVESTMENT}_{i,t+1} = \lambda_i + \lambda_t + \lambda_s + \beta \text{FF}_{i,t} \times q_{i,t} + \delta \text{FF}_{i,t} + \gamma \mathbf{X}_{i,t} + \varepsilon_{i,t},$$

where a higher β would indicate that FFs are more responsive to changes in investment opportunities proxied by $q_{i,t}$.

Column 4 shows that FFs exhibit *lower* sensitivity to investment opportunities, which is consistent with the hypothesis that family managers pass up valuable opportunities for instance because they lack the ability to take advantage of them or because they lead a quiet life. However, as with previous results, I cannot pin down the channel, as the lower sensitivity to investment opportunity may simply be a consequence of the fact that FFs tend to have value stock characteristics.⁹

Summing up, my findings are consistent with the fact that family-run firms are traditional value firms operating in low- q industries and with a limited emphasis on creating value in the long run through innovation and investment. This appears to be

⁹Notably, a potential issue with my empirical approach is that q is measured with error. This is because the correct proxy for investment opportunities is the (unobservable) marginal q rather than the average q that I use in my regressions, and the two coincide only under stringent conditions (Hayashi (1982)).

TABLE 7
Investment

Table 7 shows regressions of capital investment on FF (column 1) and FF interacted with BF, FOUNDER_IN, and q (columns 2–4). FF is a dummy variable that takes a value of 1 if the number of disclosed family links scaled by the number of possible links is in the top 20% of the annual distribution. BF is a dummy variable that takes a value of 1 if a single family or individual owns 20% or more of firm's shares. FOUNDER_IN is a dummy variable that takes a value of 1 if the founder holds a position in the firm. Control variables include SIZE, q , TANGIBILITY, and LEVERAGE. All accounting variables are winsorized at the 1% level and defined in the Appendix. Standard errors are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Investment			
	Baseline	Dilution		Inv. Opportunities
	1	2	3	4
FF	-0.018*** (0.005)	-0.012** (0.005)	-0.022*** (0.006)	0.009 (0.009)
FF × BF		-0.003 (0.011)		
BF		-0.025*** (0.007)		
FF × FOUNDER_IN			-0.011 (0.013)	
FOUNDER_IN			0.035*** (0.008)	
FF × q				-0.008* (0.005)
Controls	Yes	Yes	Yes	Yes
Firm FE	No	No	No	Yes
Sector FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
No. of obs.	52,185	52,185	34,369	51,379
Adj. R^2	0.205	0.206	0.243	0.384
Mean D. Var.	0.296	0.296	0.296	0.296

the case regardless of whether the founder still holds a position in the firm or not (see Table A.4 in the Supplementary Material).

IV. Conclusions

Family firms are the backbone of the U.S. economy. Despite their importance, the academic literature lacks a systematic approach to identify firms that employ family members as opposed to firms held by large owners but with no relatives involved (such as, e.g., Google, Oracle, or Moderna). This article has two goals. First, it proposes a novel approach to identify firms with widespread family links among high-ranking coworkers for *all* U.S. public firms. Second, it leverages this measure to reassess widely accepted notions about family firms.

I structure my findings around four facts. First, the prevalent approach that defines family firms on the basis of stock ownership leads to misclassify a large number of firms. In the U.S., the presence of a large owner is neither a necessary nor a sufficient condition for a firm to disclose widespread family connections. Second, blockholder-owned firms include both firms run by families and founder-CEO firms. However, the former exhibit characteristics that are typical of value stocks, whereas the latter display growth stock characteristics. Third, family-run firms are more cost-efficient, as they pay lower costs for labor and nonlabor inputs and borrow at lower rates. This is partially achieved through family managers being

tougher negotiators. In fact, I find that workers in family-run firms are paid less and are more likely to be laid off in downturns. Fourth, family managers under-invest. My results suggest that the documented lower investment levels are the effect of managerial myopia rather than of concerns about dilution.

Overall, my findings challenge a number of commonly accepted facts about family firms. However, three disclaimers are in order. First, the evidence in the article is not causal. For instance, I do not claim that family managers *cause* firms to have value stock characteristics. The aim of my article is mainly descriptive. Second, my findings only apply to U.S. public firms. It is entirely possible that the presence of family members has more negative consequences in settings characterized by weaker governance and institutions, or where activist investors cannot unseat unproductive family members. Third, I do not claim that previous results in the literature are “wrong.” Most findings from papers that focus on firms held by large owners are still valid and important to evaluate the implications of blockholding. My findings, however, stress the importance of distinguishing between stock ownership and family involvement, especially in countries like the United States, where the two do not necessarily coincide.

Appendix. Variable Definitions

COGS: The ratio of the cost of goods sold[CMT5] and firm’s sales.

COST_OF_DEBT: The ratio of the total expense for interests and total debt.

COST_PER_WORKER: The ratio of the cost of goods sold and the number of employees.

FCEO: A dummy that takes a value of 1 if the founder is the current CEO.

INVESTMENT: The ratio of future capital expenditures and current property, plant, and equipment.

LABOR_PRODUCTIVITY: The ratio of dollar sales and the number of employees.

LEVERAGE: The ratio of total debt (debt in current liabilities plus long-term debt) and total assets.

MKT_SHARE: The ratio of the firm’s sales and the total sales in the firm’s industry.

PAYOUT: The ratio of dividends and lagged total assets.

q : The ratio of a firm’s market value of assets (market value of equity and debt) and total book assets.

R&D: The ratio of R&D expenses and lagged total assets.

ROA: The ratio of net income and lagged total assets.

ROE: The ratio of income before extraordinary items and lagged common equity.

SIZE: The logarithm of firm’s total assets.

TANGIBILITY: The ratio of property, plant, and equipment and total assets.

Supplementary Material

To view supplementary material for this article, please visit <http://doi.org/10.1017/S0022109023000996>.

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