

Founder-CEOs, Investment Decisions, and Stock Market Performance

Rüdiger Fahlenbrach*

The Ohio State University

Fisher College of Business

Columbus, OH 43210-1144

E-mail: rudi@cob.osu.edu

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Abstract

Eleven percent of the largest public U.S. firms are headed by the CEO who founded the firm. Founder-CEO firms differ systematically from successor-CEO firms. Founder-CEO firms invest more in R&D, have higher capital expenditures, and make more focused mergers and acquisitions. They have a higher firm valuation. Moreover, an equal-weighted investment strategy that had invested in founder-CEO firms from 1993–2002 would have earned a benchmark-adjusted return of 8.3% annually. A value-weighted investment strategy would have earned an abnormal return of 10.7%. The excess return is robust; after controlling for a wide variety of firm characteristics, CEO characteristics, and industry affiliation, the abnormal return is still 4.4% annually.

Keywords: Founder-CEOs, Managerial Characteristics, Corporate Behavior, Performance

JEL classification: G32, G34

1 Introduction

Eleven percent of the largest public U.S. firms are still headed by a founder. Do these “founder-CEOs” differ from “successor-CEOs”? If so, does this organizational difference translate into differences in firm behavior, valuation, and performance?

Recent research suggests that firms in which the founding family continues to be involved in management have a higher valuation than other firms (e.g., Adams et al. (2006), Anderson and Reeb (2003), Palia and Ravid (2003), and Villalonga and Amit (2006)). Using a novel dataset, I examine the link between the investment decisions made by founder-CEOs and the valuation and stock market performance of their firms, and relate the findings to the characteristics of founders. An analysis of the investment decisions of founder-CEO led firms contributes to our understanding of why and through what channels founder-CEO firms achieve a higher valuation.

Founder-CEOs differ from successor-CEOs in several aspects. Founder CEOs are less likely to be removed from office than other CEOs. Founder-CEOs often consider their firm as their life’s achievement. This intrinsic motivation and long-term approach encourages founder-CEOs to pursue the optimal shareholder-value maximizing strategy instead of concentrating on short-term actions or instead of “enjoying the quiet life.” Founder-CEOs may have more organization-specific skills. Thanks to their equity stake and their entrepreneur status, founder-CEOs are likely to have more influence and decision-making power. The considerable equity stakes founders hold can potentially reduce the principal-agent problem. Founder-CEOs may also have a different attitude towards risk than successor-CEOs, leading to different investment decisions.¹

¹see, e.g., Stein (1989) (short term actions), Bertrand and Mullainathan (2003) (“the quiet life”), Fama and Jensen (1983) (organization-specific skills), Shleifer and Vishny (1997), and Burkhart, Pa-

Moreover, founder-CEOs have shaped their organizations from inception, and thus the impact of differences in managerial characteristics on corporate behavior and performance should be particularly strong in founder-CEO firms.

To carry out my analysis, I construct a sample of 2,327 large, publicly listed U.S. firms during the 1992–2002 period (14,000 firm-years) and identify 361 sample firms that were run by the original founder or co-founder of the firm during 1,468 firm-years.

I study the stock market performance of founder-CEO firms. I find that a value-weighted (equal-weighted) investment strategy that bought founder-CEO firms would have earned an abnormal return of 10.7% (8.3%) annually in excess of a benchmark four factor model. The excess return remains sizable at 4.4% annually when I control for tenure, fractional CEO ownership, industry and firm age, and when I include all of the firm characteristics identified by Brennan, Chordia, and Subrahmanyam (1998).

The investment behavior of founder-CEO firms differs. They invest more in R&D, have higher capital expenditures, and make more focused mergers and acquisitions. The economic effect is large; founder-CEO firms spend 20% more on R&D and 38% more on capital expenditures than non-founder firms. I confirm the evidence found in prior studies that there are systematic differences between founder-CEO and non-founder-CEO firms with respect to firm valuation (e.g., Adams, Almeida, and Ferreira (2006), Morck, Shleifer, and Vishny (1988), Palia and Ravid (2003), and Villalonga and Amit (2006)). My larger sample of firms and founders allows me to provide additional evidence by estimating firm-fixed effects regressions that identify the effect

nunzi, and Shleifer (2003) (influence on successions), Adams, Almeida, and Ferreira (2005) (decision-making power), and Begley and Boyd (1987), Kihlstrom and Laffont (1979), and McClelland (1965) (attitudes towards risk). A considerable amount of research in the management and small business literature discusses additional characteristics of entrepreneurs and their impact on the firm (for an overview, see Low and MacMillan (1988), and Shane and Venkataraman (2000); other examples include Begley (1995), Daily and Dalton (1992), Evans and Leighton (1989), Reuber and Fischer (1999), and Willard, Krueger, and Feeser (1992)).

of the founder-CEOs only from a comparison with their successors in the same firm.

Taken together, my findings suggest that founder-CEOs make different investment decisions that have a positive impact on firm valuation and performance.

The relationship between firm valuation and investment decisions and founder-CEO status is potentially endogenous. For example, good expected future performance could potentially lead the founder to stay put, or unobservable firm characteristics could cause both the different investment decisions and the founder-CEO status. In the valuation and investment regressions, I therefore use an instrumental variables approach.

My paper is related to the research in quantitative organizational behavior that uses financial measures. Bertrand and Mullainathan (2003), Bertrand and Schoar (2003), Chevalier and Ellison (1999), and Malmendier and Tate (2005) all investigate whether and how managerial characteristics affect corporate behavior and performance. Data constraints usually limit the managerial characteristics that can be examined in large cross-sectional studies, and measures such as educational background, test scores, or age cohort are conjectured to proxy for managerial characteristics such as knowledge, ability, or risk-taking behavior. I contribute to this literature by using founder-CEO status as a uniquely quantifiable aspect of corporate management.

My paper is also related to the literature that seeks to understand the performance consequences of organizational forms with strong insider ownership. Denis and Denis (1994) and Holderness and Sheehan (1988) analyze firms in which an inside blockholder holds more than 50% of common equity. Anderson and Reeb (2003) find that S&P 500 family-firms have a higher firm valuation, measured by Tobin's Q, and a higher ROA. Villalonga and Amit (2006) study ownership, control and management

of family Fortune 500 companies and find that family firms have a higher firm valuation. I contribute to this literature by analyzing the investment behavior and stock market performance of these firms, and by offering a possible explanation of the valuation effects. Jayaraman, et al. (2000) study the stock market performance of 47 large publicly traded founder-CEO firms from 1980–1991, and do not find an overall effect of founder-CEOs. Differences in sample size, sample period and econometric methodology may explain why I obtain different results.

The remainder of the paper is organized as follows. Section 2 deals with sample selection, choice and construction of instrumental variables and offers summary statistics of the data. Section 3 shows the valuation and stock market results. Section 4 discusses the investment behavior of founder-CEOs and relates it to characteristics of entrepreneurs. Section 5 concludes.

2 Data

2.1 Data Sources

My initial sample consists of firms that are listed in any of the five Investor Responsibility Research Center (IRRC) publications (Rosenbaum 1990, 1993, 1995, 1998, and 2000), and that have filed proxy statements with the SEC between July 1992 and June 2002. I use the IRRC database, because the IRRC collects a comprehensive set of governance data. The IRRC's sample is drawn from the S&P 500, and the annual lists of the largest corporations in *Fortune*, *Forbes*, and *BusinessWeek*.

I obtain information on the firms' CEOs from two sources. S&P's ExecuComp database provides information on CEO identity, characteristics, and compensation for 11,968 firm-year observations, or 86% of the sample. I retrieve the remaining CEO

information by looking up proxy statements of the respective firms, which yields an additional 1,913 firm-years. My total raw sample contains 13,881 firm-years, representing 2,327 unique firms and 3,633 unique CEOs.

To identify founder-CEOs, I read the proxy section on key executive personnel for each firm-CEO combination that appears in the database. To qualify as founder-CEO, a CEO must either be a founder, a co-founder, or a member of the group that founded the company. A CEO who took over the company through a management or leverage buy-out, or a CEO who belongs to the second or older generation of a family-firm does not qualify as a founder-CEO. When the proxy does not provide information about the CEO's employment history from which I can infer whether he founded the firm, I use Hoover's report on the company's history. For the rare cases in which Hoover does not mention the company's founder, I use a Dow Jones Interactive Service news search to verify the founder status of the CEO.²

Table 1, Panel A summarizes the founder classification of my sample companies by firms, CEOs, and firm-years. I identify 372 CEOs as founder- or co-founder-CEOs. There are fewer founder-CEO firms, because 11 companies were led subsequently by two different co-founders (e.g., Bed, Bath & Beyond's Leonard Feinstein and Warren Eisenberg). I classify 1,468 firm-years as observations in which the current CEO is either the founder or co-founder of the company (10.6% of the total firm-years). All

²Berkshire Hathaway illustrates an interesting example of my founder classification scheme. Warren Buffett founded the Buffett Partnership in 1956 and bought Berkshire Hathaway, a textile company, nine years later. He dissolved the Buffett partnership in 1969, but used the Berkshire Hathaway name to continue to acquire companies. Since Warren Buffet fundamentally transformed Berkshire Hathaway from a textile to a holdings and investment company, I classify him as a founder. Another example is the Loews Corp. Larry and Bob Tisch founded Tisch Hotels in the late 1940s and in 1960 gained control of MGM's Loews' Theaters. The Tisch Brothers demolished most of the Loew's center city theaters and sold off the land to developers. It was not until 1971 that they changed the name of their by then diversified conglomerate holdings company to Loews. I therefore classify them as founders of Loews. Fewer than 10 firms have such a subjective classification, and all results hold when I remove these firms from my sample.

summary statistics and the sample description are based on these numbers. Table 1, Panel B, breaks up the firm-years by fiscal year.³ The percentage of founder firm-years does not vary much across calendar years 1992–1997 but is higher for 1998–2000. The IRRC added several smaller companies to its list of tracked firms, and about 20% of these companies are headed by a founder-CEO.⁴

Financial information for the sample firms is obtained from Compustat, and market value and stock returns are obtained from the monthly CRSP files. Following the recommendation of Kahle and Walkling (1996), I obtain SIC codes from Compustat. I also retrieve information on the governance index of Gompers, Ishii, and Metrick (2003) from the IRRC database. I use the Securities Data Company (SDC) platinum database to identify all completed corporate mergers and acquisitions during the sample period. The institutional holdings data come from SEC Form 13F quarterly filings, provided by Thomson Financial.

2.2 Choice and Construction of Instrumental Variables

In all but the stock market return regressions, I instrument founder-CEO status. The founder-CEO status is potentially endogenous because past success and the anticipation of future success and attractive investment opportunities can make it more likely for the founder-CEO to remain in office. Such an endogenous setting makes a causal interpretation of a founder-CEO effect on performance and investment behavior more challenging and needs to be taken into account using appropriate instrumental variable techniques.

³A company is classified as fiscal year t if its fiscal year ends between June year t and May year $t + 1$. I use the August 2002 version of the ExecuComp database, which contains companies that have a fiscal year ending on or before May 31st, 2002 and filed proxies before July 2002. The latter requirement explains the smaller number of observations for fiscal year 2001.

⁴I have re-estimated the principal regressions by removing these smaller firms from the sample and find quantitatively and qualitatively similar results for the impact of founder-CEOs.

A valid instrumental variable needs to fulfill two conditions. First, the instrument needs to be exogenous in the principal equation of interest. Second, the coefficient of the instrument must be non-zero in a linear projection of the endogenous variable onto all explanatory variables. I instrument founder-CEO status with an indicator variable that is one if the firm name at the initial public offering is related to the personal name of the founder.⁵ The instrument satisfies the first condition: There is no reason to suspect that the name of a corporation at the IPO is related to its current performance and investment decisions. Concerning the second condition, I expect a positive correlation between the instrument and founder-CEO status: It seems more likely that the corporation bears the name, or is related to the name, of the founder(s) of the firm at the IPO if the founder is still present, and it is more likely that an adjustment in the name of a corporation is made after a founder steps down (e.g., out of respect for the achievement of the founder). Indeed, in all linear projections of founder-CEO status on instruments and all other explanatory variables (the first stage regressions), the coefficient of “personal” name is, consistent with the intuition, positive and highly statistically significant, with R-squares of the first-stage regressions being above 25%.

In my sample, choosing a firm name related to the personal name is very common

⁵Three examples show the general procedure of classifying the name of the firm as a personal name related to the founder of the firm: Dell Computer Corporation, P&G, and Ann Taylor. The most straightforward case of a personal name is the first example, Dell Computer Corporation. Michael Dell, founder of the firm, chose his last name as part of the firm’s name. Whenever a firm’s name contains an abbreviation such as P&G, the second example, I searched Hoover’s, factiva, and the company’s website to determine whether the abbreviation stood for a personal name related to the founder or for a product or technology. Hoover’s states that “*Candle maker William Procter and soap maker James Gamble merged their small Cincinnati businesses in 1837, creating The Procter & Gamble Company (P&G)*”. Therefore P&G would be classified as a personal name. The third example, Ann Taylor, would not be classified as a firm with a personal name related to the founder, although the founder chose the name. Consider the following information from Hoover’s: “*Ann Taylor Stores started out in 1954 as a shop on Chapel Street in New Haven, Connecticut. Founder Robert Liebskind targeted women who would later be called “preppie”, using the conservative (and fictitious) Ann Taylor name*”.

for companies incorporated prior to world war II. In the last fifty years, it was more common to name the firm after a product or the principal business (e.g., United Healthcare Corporation), or to give it an invented name (e.g., Microsoft). I expect the incidence of personal firm names to be higher for founder-firms than for non-founder firms in every decade. However, the incidence of founder-firms itself is by definition restricted to younger firms. Therefore, I use as additional instruments the decade of incorporation. I look up the year of incorporation for every company in my sample, using publicly available information.

Table 1, Panel C shows the incidence of personal names by decade of incorporation and by founder-CEO status for all 2,327 sample firms. The table confirms that founder-CEO firms have a statistically significantly higher frequency of personal names in all decades with the exception of the first and last, where few founder-CEO firms were established. It also shows that the overall incidence of personal names decreased through time.

2.2.1 Instrumental variable regression framework

I use three different instrumental variable estimation techniques in the empirical part of the paper. I estimate a standard two stage least squares model. In the first stage, I regress founder-CEO status on the instruments and all other explanatory variables, and in the second stage the fitted values for the founder-CEO status are used as a right-hand-side variable. I also estimate a dummy endogenous variable model, because the potentially endogenous variable of interest, founder-CEO status, is an indicator variable. Heckman (1978) has developed the dummy endogenous variable model that takes into account the binary nature of the endogenous variable and estimates a binary response model in the first stage. When I study the investment

behavior of founder-CEOs in section 4.2.2, I examine the number of acquisitions a firm makes each year. I estimate Terza's (1998) full information maximum likelihood endogenous switching model for count data, which also allows for the binary nature of the endogenous variable. In all IV regression tables, I only report the results of the second stage using the instrumented founder variable to conserve on space.

2.3 Sample Description

Table 2 reports the attrition of my sample of founder-CEOs, based on the Center for Research in Security Prices (CRSP) delisting codes and on CEO successions. Of the 372 founder-CEOs of my sample, 41% of the founders are still identified as CEOs in the most recent proxy statement available. In about one-third of my sample of founder-CEOs, a succession event from a founder-CEO to a non-founder-CEO takes place. Founder-CEOs leave the sample in 19% of all cases, because their companies were acquired or merged. An additional 4% of all firms led by founder-CEOs go bankrupt.

I divide the sample into 48 industries, based on the classification of Fama and French (1997), but using the up-to-date classification scheme from Kenneth French's website.⁶ Founder-CEO firms are present in 38 out of the 48 industries (80%). While founder-CEO firms have wide industry dispersion, some industries have a high representation of founder-CEO firms. Founder-CEO firms represent 26.4% of all firm-year observations in the Electronic Equipment category, 25% of all observations in Healthcare, and 22.2% in the Computer category. The largest number of founder firm-years per industry are in Business Services, Retail, and Electronic Equipment.

Table 3 presents summary statistics of the sample. It reports cross-sectional means

⁶http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

and medians of firm time-series averages. Columns 1 and 2 show firm characteristics of the companies that were never headed by a founder-CEO during the entire sample period, and columns 3 and 4 show the means and medians of firm characteristics for founder-CEO firms. I use a non-parametric Wilcoxon rank sum test to test the equality of medians of the firm characteristics for the founder and non-founder subsamples. With the exception of ROA and market capitalization, all medians of the firm characteristics of Table 3 are statistically different for founder-CEO and non-founder-CEO firms at less than the 5% level.

While my database contains approximately four to eight times as many firms and significantly more smaller firms than previous studies (e.g., Adams et al. (2006), Villalonga and Amit (2006)), my sample firms are still large firms: non-founder-CEO firms have a mean (median) market value of \$4.4 billion (\$1 billion) and mean (median) total assets of \$8.3 billion (\$1.4 billion). Founder-CEO firms are smaller than the average non-founder firm, both in terms of total assets and net sales. Founder-CEO firms have a different capital structure: the mean and median financial leverage, measured as long-term debt over total assets, is smaller for founder-CEO firms than for non-founder-CEO firms.

Differences in two ratios between founder-CEO firms and their non-founder counterparts suggest that founder-CEO firms are more growth-oriented: their higher ratio of capital expenditures to assets and their higher ratio of research and development expenditures to assets. Some of these differences might be explained by the fact that non-founder-CEO firms are older than founder-CEO firms: the median non-founder-CEO firm was incorporated 42 years ago, compared with an average time since incorporation of 20 years for the founder firms.

Founder-CEO firms, not controlling for other factors, seem to be valued higher

and perform better. They have on average a 42% higher Tobin's Q than non-founder firms, and both the mean and median annualized 1-year and 3-year stock market returns of founder-CEO firms exceed those of the other firms. However, stock returns of founder-CEO firms are more volatile than the returns of non-founder-CEO firms.

Founder-CEOs on average are slightly older and have a substantially longer tenure than hired CEOs (16.4 years vs. 6.4 years). Founder-CEOs still hold a substantial fraction of the equity of their firms. The mean (median) stock ownership of founder-CEOs is 11.1% (6.7%), while non-founder-CEOs have a mean (median) ownership of 2.1% (0.4%). Of all founder-CEOs, 13.6% hold more than 25% of the outstanding shares of their firms. Founder-CEOs receive a smaller share of their annual total compensation (salary, bonus, option grants, restricted stock grants and other annual payments) in equity-based compensation than non-founder-CEOs, although the percentage difference of 3.5% is small, considering the large difference in shares owned.

3 Founder-CEOs and Performance

In this section, I examine differences in performance and firm valuation between firms led by founder-CEOs and by non-founder-CEOs. In 3.1, I study firm valuation. In 3.2, I study the difference in stock returns and factor loadings between sample firms that are still run by their founder-CEOs and firms that are run by non-founder-CEOs.

3.1 Firm Valuation

Firm value is measured by a proxy for Tobin's Q. I approximate Q by the ratio of the market value of assets to the book value of assets. The market value is calculated as the sum of the book value of assets and the market value of common stock less

the book value of common stock and deferred taxes. The market value of equity is measured at the end of the current calendar year, and the accounting variables are measured in the current fiscal year. The variable measuring the influence of the founder-CEO is an indicator variable that is one if the CEO of the firm could be classified as founder at the beginning of the fiscal year, and zero otherwise.

My large sample of founders contains 123 succession events, and allows me to use – besides the instrumental variable models – an additional regression setup that can control for unobserved, firm-specific characteristics, an advantage over previous studies with smaller samples: I estimate a firm-fixed effects model that identifies the coefficient of the founder dummy uniquely through firms in which the CEO changes from founder to non-founder.

In the instrumental variable and treatment effect models, founder-CEO status is instrumented with “personal” firm name and decade of incorporation. The log of sales is used to control for size. I follow Shin and Stulz (2000) and include the log of firm age as of December of year t . Daines (2001) finds that Q is different for Delaware and non-Delaware firms, so I also include a Delaware dummy as a control. Morck and Yang (2002) show that S&P 500 inclusion has a positive impact on Q , which increased during the 1990s. In separate regressions, I also control for CEO specific characteristics such as ownership, CEO age, and CEO tenure. Both regressions include year and the 48 Fama and French (1997) industry dummies, and standard errors are corrected using the Huber-White-Sandwich estimator that takes firm-level clustering into account (Rogers (1993), Petersen (2005)).

Columns 1 and 2 of table 4 show the results of the second stage of the two-stage least squares instrumental variable regressions. The first-stage regression of the founder-CEO dummy on the instruments and all other explanatory variables (not

reported) has an R^2 above 30% and yields coefficients on personal name and decade of incorporation that are highly significant.⁷ The instrumented founder-CEO coefficient in column 1 is significantly positive. The inclusion of CEO-specific characteristics in column 2 does not change the significance of the results. Founder-CEOs continue to have a sizeable positive and statistically significant impact on firm value as measured by Q, which is consistent with the results of Adams, Almeida, and Ferreira (2006), Anderson and Reeb (2003), and Palia and Ravid (2003). Columns 3 and 4 of table 4 show the results of the endogenous treatment effects model. Founder-CEO status has a positive coefficient that is highly statistically and economically significant. The coefficient in the fully specified regression of column 4 is 0.403, which suggests that Tobin’s Q in founder-CEO firms is 21.55% higher than in non-founder-CEO firms.⁸

The founder dummy remains economically and statistically significant when I use the firm fixed effects model (column 5 of table 4). Q is 12.7% higher when the founder is CEO, providing new evidence that the effect is indeed a founder-CEO, and not a firm-fixed effect.⁹ Note that the estimated coefficients in columns 1 to 4 of table 4 are close to the effects estimated by Adams et al. (2006), and their sample is restricted to the more selective group of larger Fortune 500 firms with only 50 founders. My results suggest that the statistically and economically significant founder effect is not merely driven by sample selection.

⁷E.g., in the regression of column 1, the instrument “personal name” has a coefficient of 0.09 with an associated (cluster-adjusted) t-stat of 14.18, and all decade dummies have t-stats that are highly significant. The R^2 of the regression is 31.8%.

⁸The effect is calculated by dividing the coefficient of 0.403 by the sample average Tobin’s Q of 1.82.

⁹After a founder-CEO steps down after a long tenure, the book value of assets might be reset to current market values, generating a large decrease in Tobin’s Q and leading to the fixed effects regression results. To assess the validity of this argument, I calculate the change in book value of assets in the last year of the founder-CEO and compare it with the change in book value for the first year of the new CEO. These two values are almost identical, with the median change for the founder being 11.19%, and the median change for the successor being 11.67%.

3.2 Stock Market Returns

3.2.1 Portfolio Construction

The Securities Exchange Act of 1934 (Reg. §240.14a) requires a firm to send to its shareholders a proxy statement that provides material facts concerning matters on which the shareholders will vote, as well as data on the last fiscal year's five highest paid officers and their compensation. Each proxy statement must contain the date on which the document was filed with the SEC; therefore, by studying a proxy statement, one can determine when the statement was made publicly available. Proxy statements are usually filed three months after the end of the fiscal year and one to two months before the annual meeting. The executive compensation information in S&P's ExecuComp database is collected from proxy statements, and the proxy filing date is reported as part of the ExecuComp database in the field SRCDATE.

Each July, starting in 1993 and up to 2002, I form a portfolio by buying all firms whose proxy statements were filed between July of year $t - 1$ and June of year t , and whose CEO could be identified as a founder. The portfolio is updated annually. If a firm is delisted in any month between July and June, I include the delisting return from CRSP for the respective firm. In some cases, firms file their proxy statements in July of year $t - 1$ and in the following year in June. In such cases, I discard the July $t - 1$ observation to avoid duplicating the same firm in the founder portfolio. The investment strategy I use is fully implementable: at the time the portfolio is constructed, the classification into founder-CEO and non-founder-CEO firms is based upon publicly available information. In addition, this investment strategy is very conservative. If founder-CEO firms have higher returns, the investment strategy can likely be improved by updating the portfolio more frequently and by removing from

the founder sample all firms whose founder-CEO has stepped down. With my current investment strategy, a founder-CEO might have stepped down in August of year $t - 1$, yet that firm would still be classified as a founder-CEO firm from July t until June $t + 1$.

The following additional data requirements reduce the original sample size by 4.9%. I exclude 473 firm-years (3.4%) from the sample due to missing Compustat and CRSP data. I remove all ExecuComp firms that are missing the proxy filing date, and I do not use firms that filed their proxies before June 1992 and after July 2002. These two steps remove 85 firm-years (0.6%) from my sample. The avoidance of double-counting reduces the sample size by 132 firm-years. My final sample—the one I use in all return regressions—consists of 13,192 firm-years, of which 1,409 (10.7%) are classified as founder firm-years. It contains 2,270 different firms.

3.2.2 Empirical Results

An equal-weighted (value-weighted) investment in the founder-CEO portfolio in July 1993 with one rebalancing period per year would have yielded an average annual raw return of 16.34% (13.87%) in December 2002, while the equal-weighted (value-weighted) market return over the same period was 9.99% (8.48%).

One possible explanation of this performance difference is that several equity characteristics of founder-CEO firms differ from those of other firms, namely, their exposure to the market factor, market capitalization, book-to-market ratio, and immediate past returns - all characteristics that have been shown to be significant in forecasting future returns (see, e.g., Banz (1981), Fama and French (1992), and Jegadeesh and Titman (1993)). To analyze whether these differences in characteristics can explain the differences in returns, I estimate a four-factor model that consists of the three

Fama-French factors (Fama and French (1993)) and a momentum factor (Carhart (1997)). I do not engage in the ongoing debate about whether these factors are proxies for risk; I simply view the model as a method of performance attribution and interpret the estimated intercept coefficient as the abnormal return in excess of what could have been achieved by an investment in these factors.

My founder-CEO sample contains some of the largest and most successful firms of the 1990s, including Berkshire Hathaway, Charles Schwab, Comcast, Computer Associates International, Dell, Home Depot, Microsoft, Oracle, Sun, and Toys 'R' Us. I thus estimate both value- and equal-weighted return regressions to see whether my results are primarily driven by a few large firms.

The two first rows of Table 5 show that a value-weighted portfolio of founder-CEO firms yields a monthly alpha of 89 basis points, which corresponds to an annual rate of 10.68%. An equal-weighted investment in the founder-CEO portfolio yields a monthly alpha of 69 basis points, or an annual rate of 8.28%. This result demonstrates that the excess performance is not driven by the success of a few large firms. It is interesting to note that the factor loadings of HML are significant for both the value- and equal-weighted portfolio but that they change sign. The value-weighted portfolio invests more in growth firms, whereas the equal-weighted portfolio is geared toward a value investment style. The bottom part of Table 5 shows the results of a four-factor return regression on a portfolio of all non-founder-CEO firms. Both the value- and equal-weighted alpha of the non-founder-CEO portfolio are economically small and statistically indistinguishable from zero.

Table 6 shows the alphas of four-factor model regressions when using alternative specifications that control for various sample characteristics. The first characteristic I control for is the presence of technology firms, which did extraordinarily well in

the 1990s, the period from which the majority of my firm-years are taken, and which are over-represented among founder-CEO firms. I repeat the analysis of Table 5, but follow Anderson and Reeb (2003) and exclude firms whose two-digit SIC code is either 35 (Industrial machinery and equipment), 36 (Electronic and other electrical equipment), 38 (Instruments and related products), or 73 (Business Services). While the filter is an approximation, as technology firms operate in a wide array of SIC codes, it removes, e.g., America Online, Apple, Dell, Gateway, Microsoft, Oracle, Peoplesoft, and Sun from the founder-CEO portfolio. The results are in the first row of Table 6. The monthly alpha is reduced for both the value-weighted and equal-weighted regression, but it is still economically and statistically significant. The alpha for the value-weighted portfolio of founder-CEO firms (69 basis points per month) corresponds to an annual rate of 8.28%; the alpha for an equal-weighted investment in the portfolio of founder-CEO firms (48 basis points per month) corresponds to an annual rate of 5.76%. I conclude from this analysis that the presence of technology firms is not the main driver of the excess performance over the four-factor mimicking portfolios.

Although the founder-CEO portfolio has wide industry dispersion, the uneven distribution of founder-CEO and successor-CEO firms within the different industries suggests that industry affiliation plays an important role. I re-estimate the four-factor model by using industry-adjusted returns. I derive a time series of industry-adjusted returns by subtracting the monthly industry return from the raw returns of my sample firms.¹⁰ The value-weighted monthly alpha is 53 basis points (an annual rate of 6.36%) and the equal-weighted monthly alpha is 44 basis points (an annual rate of 5.28%), and both alphas remain highly statistically significant, at less than the 1% level.

¹⁰The reported results use equal-weighted industry returns. The result is robust to using value-weighted industry returns.

The third and fourth rows of Table 6 show that the excess performance is not a function of the particular sample period chosen, and alleviate concerns that the increase in sample size in 1998 could be the main driver of the return results. When I divide the sample into two periods of equal length, the value-weighted and equal-weighted portfolios show positive and statistically significant excess performance both in the early and late sample periods. The later subperiod has a considerably higher equal-weighted alpha but a stable value-weighted alpha compared to the earlier sample period. The IRRC started coverage of some smaller firms in February 1998. These small founder-CEO firms did well during 1998–2002, moving the alpha of the equal-weighted regression, but they are too small to influence the value-weighted regressions.

To control for a variety of equity characteristics other than exposure to the market, size, book-to-market ratio, and momentum, I also conduct cross-sectional Fama-MacBeth (1973) regressions. I use the extensive list of characteristics in Brennan, Chordia, and Subrahmanyam (1998), as well as institutional ownership (Gompers and Metrick (2001)), inclusion in the S&P 500 (Morck and Yang (2002)), an index of the strength of shareholder rights (Gompers, Ishii, and Metrick (2003)), and CEO ownership. For each month in the sample period, I estimate an equal-weighted cross-sectional regression of the industry-adjusted return on a vector of explanatory control variables and the founder dummy and then calculate the mean and time-series standard deviation of the 118 monthly (March 1993 – December 2002) coefficients.

For each firm, the founder dummy variable is updated during the month following the proxy filing date. CEO tenure is the number of months since the CEO took office. CEO ownership is measured as the percentage of common equity held by the CEO at the end of the prior fiscal year. Institutional ownership is measured as shares held by institutions (aggregated over all five types collected by Thomson Financial)

divided by total shares outstanding. I use the most recent quarter as of the end of month $t - 1$, with shares outstanding measured on the same date. I include a dummy variable indicating membership in the S&P 500 as of the end of month $t - 1$. All other explanatory variables are calculated as described in Brennan, Chordia, and Subrahmanyam (1998).

Table 7 reports the results. The first model includes control variables designed to compare the Fama-MacBeth results to the four-factor regressions. The coefficient on the founder dummy has a value of 36 basis points and is statistically significant at the 2% level. The parameter value is close to the corresponding alpha of 44 basis points in the industry-adjusted, equal-weighted four-factor regression of Table 6.

The second model uses all explanatory variables as controls. The coefficient of the founder dummy is economically and statistically significant, at 37 basis points monthly (an annual rate of 4.44%). During my sample period, among the other firm characteristics, only size and one of the momentum factors (the compounded gross return from month -7 to -12) are positive and statistically significant.

In summary, the coefficient on the founder dummy remains economically and statistically significant in the Fama-MacBeth regressions. Founder-CEO firms outperform other firms in a statistically and economically significant way. As an additional robustness check, I have formed long-short portfolios matched through two-way sorts by key characteristics (e.g., firm age and size, firm age and CEO tenure) where I go long the founder-portfolio and short the matched non-founder portfolio. The returns to these portfolios are strongly positively significant.

4 Characteristics of Entrepreneurs and Investment Behavior

The performance and valuation results are strongly significant after controlling for managerial ownership, suggesting a role of the founder-CEO beyond an incentive alignment through his equity stake. I now examine the investment behavior and M&A activities of founder-CEO firms, and discuss how the findings are related to characteristics commonly attributed to founders.

Two traits of entrepreneurs that potentially relate to investment behavior are attitude towards risk and the handling of ambiguous situations. For example, Sarasvathy, Simon, and Lave (1998) find that entrepreneurs and bankers manage and perceive risks very differently. Budner (1962) defines intolerance for ambiguity as “a tendency to perceive ambiguous situations as sources of threat”, and Begley and Boyd (1987) find that entrepreneurs handle ambiguous situations better.

The productivity surge during my sample period of the 1990s generated new opportunities that founder-CEOs may have been more willing to seize. I study this hypothesis by examining whether founder-CEOs make different expenditure and M&A decisions.

4.1 Research and Development and Capital Expenditures

I study whether firms have different expenditure patterns by examining capital expenditures and research and development expenditures, relative to the total assets of the firm.

Table 8 shows the results of instrumental variables, endogenous treatment effects, and firm-fixed effects models that include both firm-specific and CEO-specific control

variables. The R&D regressions only include firm-year observations for which Compustat reports data (6,300 observations). Both R&D and capital expenditures are scaled by the average of contemporaneous and lagged book value of assets.¹¹

Throughout all three specifications, the coefficient of R&D is statistically significant at 1% level. The effect of founder-CEOs appears economically large. Firms with founder-CEOs spend up to 8.4% more on research and development than non-founder firms. When I control for unobservable firm-specific characteristics in the firm-fixed effects regressions, and measure the effect of founder-CEOs only against their successors in the same firm, founders spend 1.2 percentage points more on R&D. Relative to the sample mean of 5.3%, this corresponds to 22.6% more expenditures for research and development.

The average founder-CEO firm has higher capital expenditures than non-founder firms. The increase in capital expenditures is robust through all three specifications. Relative to the average capital expenditure of 6.2% in the sample, the firm-fixed effects coefficient (column 6) corresponds to a 38% higher capital expenditures.

Overall, founder-CEO firms seem to have higher discretionary expenditures. The large coefficients of the firm-fixed effects regressions for both R&D and capex suggest that it is indeed a founder-CEO effect driving the results of R&D and capital expenditures, and not merely a growth firm effect. Furthermore, the use of instrumental variable techniques alleviates concerns that the founder only stays as CEO if the firm is doing well and can afford to grow rapidly.

This evidence, together with the evidence of higher firm valuation, is consistent with founder-CEOs having identified a larger set of new opportunities, which they

¹¹The results are robust to scaling by lagged book value of assets, lagged sales, or lagged properties, plant, and equipment.

were more willing to embrace and which they were more successful to implement.

4.2 Mergers and Acquisitions

I study the completed U.S corporate merger and acquisition activities of founder-CEO and non-founder-CEO firms during my sample period. The M&A activities of founder-CEO firms may be different from non-founder CEOs for at least two reasons.

A manager's risk preferences may be associated with takeover decisions (e.g., Amihud and Lev (1981), and May (1995)). For example, May (1995) studies the acquisition behavior of different groups of CEOs and finds evidence that diversifying merger activity is influenced by managerial objectives and preferences. The above mentioned literature suggests that founders have higher risk bearing capacities than non-founders. Founder-CEO led firms may therefore be less prone to making potentially value-destroying diversifying acquisitions. Jensen (1993) has conjectured that an executive can use acquisition activity not to buy targets that are strategic and enhance the firm's value, but rather to waste corporate resources and to build an empire. Founder-CEOs might be less prone to such inefficient empire building, because they have a higher equity stake and a longer planning horizon. I examine the number of acquisitions per year as well as the value of the total annual acquisitions relative to firm size to test this hypothesis.

4.2.1 Deal Characteristics

I use the SDC Platinum database to identify all completed acquisitions by sample firms of private, public, and subsidiary targets from January 1992 to December 2002.

Table 9 shows summary statistics of the data. The 2,327 sample firms make a

total of 8,138 acquisitions during the sample period. Non-founder-CEO firms undertake 7,070, and founder-CEO firms undertake 1,068 acquisitions. SDC reports complete transaction data for approximately 47% of all acquisitions. I classify an acquisition as non-diversifying if the target's main business line is operating in the same Fama-French (1997) industry as the acquiror's. Non-founder-CEO firms made 3,765 non-diversifying acquisitions, which corresponds to 53.3% of all acquisitions they made. The univariate statistics show that founder-CEO firms undertook more non-diversifying acquisitions (60.9% of all activity). The majority of all target companies are private companies for both non-founder and founder-CEO firms, followed by subsidiary and finally public targets. The incidence of private targets is at 60.2% significantly higher for founder-CEO firms than for non-founder-CEO firms (48.9%). At the same time, the incidence of public targets is significantly lower for founder-CEO firms. Given that Moeller, Schlingemann, and Stulz (2004) and Masulis, Wang, and Xie (2006) find on average positive acquirer announcement returns for private targets and negative returns for public targets, the frequencies of table 9 can be interpreted as suggestive evidence for better acquisitions by founder-CEO led firms.

Panel B of table 9 shows the statistics for all mergers and acquisitions for which SDC provides details on transaction price and method of payment. The statistics on diversifying acquisitions and type of target are similar to the overall sample. Non-founder-CEO firms tend to make more cash-only acquisitions, and the overall percentage of cash in deals is significantly higher for non-founder-CEO firms (61.6%) than for founder-CEO firms (56.4%).

4.2.2 Acquisition Count and Acquisition Ratios

I use two measures to identify acquisition activity. Following Gompers, Ishii, and Metrick (2003), I count the number of acquisitions per firm-year (acquisition count). To gauge the acquisition activity in relation to the size of the firm, I also calculate an acquisition ratio as the sum of the prices of all acquisitions in each calendar year, divided by the firms' average market capitalization for the first day and last day of the year. The latter statistic requires recorded transaction prices, and thus uses only 3,280 and 502 observations for non-founder-CEO firms and founder-CEO firms, respectively. The mean transaction volume by firm-year is \$596 million (median \$65 million).

Table 10 summarizes the results of regressions for both the acquisition count and the acquisition ratio. For the acquisition count, I estimate a full information maximum likelihood endogenous switching model for count data (Terza (1998)) to address the issue of endogeneity of founder-CEO status. In this model, the dummy variable for the treatment group (founder-CEO) is instrumented with personal name and decade of incorporation dummies. The first three columns of Table 10 present the results for the acquisition count on the instrumented founder dummy, the natural logarithm of Q , the natural logarithm of market capitalization, firm age, and operating cash flow, all measured in December $t - 1$. Andrade and Stafford (2003) document that there is industry clustering for acquiring firms during the 1970–1994 period. Therefore, I include the 48 Fama-French industry dummies and year dummies in the regression.

Columns four to six present the results of instrumental variable Tobit regressions of the acquisition ratio on the same explanatory variables and instruments. I estimate a Tobit regression because 53% of the sample firm-years have a value of zero dollars

as dependent variable.

Table 10, column one demonstrates that larger, older firms with higher market values acquire more firms per year. Firms that are headed by founder-CEOs do not make more acquisitions per year than non-founder-CEO firms after controlling for CEO-characteristics. CEO ownership enters the regression with a negative effect, and CEO tenure has a positive effect. Table 10, columns two and three split the sample into non-diversifying and diversifying acquisitions and show a clear pattern: Founder-CEOs make considerably more non-diversifying acquisitions than non-founder-CEOs, i.e., they invest in firms that are in the same industry.¹² This result is consistent with the conjectures of Fama and Jensen (1983) about organization-specific skills of entrepreneurs and the evidence of May (1995) who shows that entrepreneurs are specialists who acquire firms that correspond to their specific skill set.

Table 10, columns 4-6 show the results of an instrumental variable tobit regression of relative acquisition size on explanatory variables and founder status. The results suggest that founder-CEOs are not different from other firms' CEOs with respect to the overall acquisition dollar volume relative to the market valuation. Firm characteristics with the exception of size do not seem to influence firms' dollar acquisition activity relative to their market valuations. It is interesting to note that younger CEOs who have smaller equity ownership make both more acquisitions and acquisitions of a higher relative value. Their behavior is consistent with an empire building hypothesis, in which young CEOs with little exposure to firm's stock market performance are particularly prone to empire building.

Columns 1 to 3 show that founders make more acquisitions per year, and columns

¹²The results of columns 1 to 3 hold when I condition on having price and type of payment information available before I count the number of acquisitions.

4 to 6 demonstrate that the aggregate value of these acquisitions is not different from those made by other CEOs. Overall, it can therefore be concluded that the average value per acquisition is smaller for founder-CEO firms.

Taken together, the results of Table 10 demonstrate that founder-CEO firms are active in the acquisition market, but that they buy targets that are operating in their industry of knowledge and that are smaller in size. The results are consistent with founder-CEOs buying strategic, value-enhancing targets and being less concerned with diversification motives.

5 Conclusion

Eleven percent of the largest public U.S. firms are led by founder-CEOs. Founder-CEO firms differ systematically from successor-CEO firms. Founder-CEO led firms have a higher firm valuation than non-founder-CEO firms, controlling for industry, firm age, CEO ownership and firm size. My investment regression results suggest a possible explanation for the higher valuation of firms with founder involvement: During the 1990s, founder-CEO firms embraced an expanded investment opportunity set. Founder-CEO firms invested more, had higher R&D expenditures, and engaged in more focused mergers and acquisitions. This investment behavior is consistent with the characteristics ascribed to founder-CEOs in the literature and suggests that founder-CEOs play a particular role in their organizations. I alleviate endogeneity concerns of the valuation and investment results by using instrumental variable approaches, instrumenting the founder-status by a variable that verifies whether the name of the firm at the initial public offering is related to the personal name of the founder.

An equal-weighted (value-weighted) investment strategy that invested in founder-CEO firms from 1993–2002 would have earned an abnormal return of 8.3% (10.7%) annually in excess of what could have been achieved by a passive investment in the four factors described in Fama and French (1993) and Carhart (1997). The excess return is persistent after the removal of technology firms, and occurs in both the earlier and later sample period.

Is the excess performance of founder-CEO firms restricted to larger public firms with founder-CEOs who have proven themselves in both the entrepreneurial world and the managerial world, or might we observe an even stronger performance of smaller founder-CEO firms, because the contribution of the founder-CEO decreases when the organization becomes more complex? Is the excess performance a particularity of my sample period of exceptional stock market performance? Answers to these questions could shed further light on the importance of founder-CEOs and help derive recommendations for shareholders and directors who are concerned about the strong position of a founder-CEO within the firm.

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Table 1: Sample of Firms and Frequency of Founder-CEO Observations

The table describes simple summary statistics for the frequency of founder-CEO observations for a sample of 13,881 firm-years from 1992 to 2002. The sample is described in section 2. Founder-CEOs are CEOs who could be classified as either the founder or co-founder of the firm in any of the sample years. Panel A shows the number of firms, firm-year observations and CEOs, Panel B shows the time-series distribution of founder-CEOs, and Panel C shows the frequency of firms that have names related to the name of the founder-CEO, by decade of incorporation. Statistically significant differences at the 1%, 5%, and 10% level between the incidence of personal names in Panel C are indicated by ***, **, and *, respectively.

Panel A - Full sample, 1992–2001

	Total	No. of Founder-CEOs	Frequency [%]
Firms	2,327	361	15.5
CEOs	3,633	372	10.2
Firm-years	13,881	1,468	10.6

Panel B - Firm-years by fiscal year-end groups

Fiscal Year	Total	No. of Founder-CEOs	Frequency [%]
1992	1,129	108	9.6
1993	1,322	132	10.0
1994	1,303	120	9.2
1995	1,354	127	9.4
1996	1,325	119	9.0
1997	1,336	133	10.0
1998	1,767	224	12.7
1999	1,691	216	12.8
2000	1,513	169	11.2
2001	1,141	120	10.5

Panel C - Firm-years by decade of incorporation and frequency of firms with personal name

year of incorporation	Non-founder firms		Founder-CEO firms		p-value for difference
	No. obs.	% personal	No. obs.	% personal	
1940 or prior	752	41.0	1	100.0	0.23
1941 to 1950	136	39.0	9	66.7	0.09*
1951 to 1960	197	19.3	25	40.0	0.02**
1961 to 1970	298	10.4	62	30.6	< 0.01***
1971 to 1980	273	7.3	127	31.5	< 0.01***
1981 to 1990	248	4.8	132	15.9	< 0.01***
1991 to 2000	52	9.6	15	13.3	0.68

Table 2: Sample Attrition of Founder-CEOs

Founder-CEOs are CEOs who could be classified as either the founder or co-founder of the firm in any of the sample years. *Remaining in sample* signifies that the founder-CEO is still heading the firm at the end of my sample period. *Succession* documents a succession from a founder-CEO to either another co-founder or a non-founder-CEO. *Merged or acquired* signifies that the founder-CEO firm left the sample due to an acquisition or merger during the sample period, and *Delisted by exchange* signifies a delisting of the founder-CEO firm due to a violation of listing requirements or bankruptcy.

Event	Founder-CEO	
	No. Obs.	Freq. [%]
Remaining in sample	153	41.13
Succession to non-founder	123	33.06
Merged or acquired	71	19.09
Delisted by exchange	14	3.76
Succession to co-founder	11	2.96
TOTAL	372	100.00

Table 3: Firm and CEO Characteristics

The Table presents summary statistics of sample firm and CEO characteristics. The sample period is 1992–2001. The total sample consists of the largest publicly listed U.S. firms, a total of 2,327 unique firms. The Table contains cross-sectional means and medians of firm time-series averages. Founder firms are firms that in any of the sample years were headed by a CEO who was the original founder or co-founder of the firm. For the calculation of columns 3 and 4, only the years in which the founder was CEO of the firm were included in the time-series. A statistically significant difference in medians between founder-CEO and non-founder-CEO firms at the 1% and 5% significance levels is indicated by ** and *, respectively (based a non-parametric Wilcoxon test).

	Other firms ($N = 1966$)		Founder firms ($N = 361$)	
	Mean	Median	Mean	Median
Firm Characteristics				
Market Value [MM\$]	4,377.90	1,037.01	3,819.84	845.60
Assets - Total [MM\$]	8,257.43	1,359.59	2,154.79	660.59 **
Net Sales [MM\$]	3,351.83	1,045.47	1,462.27	618.89 **
Common Equity [MM\$]	1,374.45	445.55	802.49	299.71 **
Firm Age [years]	53.60	42.25	22.14	20.00 **
Long-term Debt / Assets	0.22	0.20	0.19	0.12 **
Capex / Assets	0.06	0.05	0.07	0.06 **
R&D / Assets	0.05	0.02	0.07	0.04 *
No R&D reported [%]	50.57	—	40.05	—
Cashflow [%]	6.75	7.53	7.41	8.15 *
Valuation and Performance				
Proxy for Tobin's Q	1.76	1.32	2.50	1.79 **
Return on Assets [%]	3.41	3.65	3.70	4.21
1-year stock return [%]	8.63	10.22	13.20	14.47 **
3-year stock return [%]	10.45	11.58	15.15	16.15 **
Volatility [%]	38.40	33.50	49.78	46.22 **
CEO Characteristics				
CEO Age	55.12	55.50	57.16	56.50 **
CEO Tenure [years]	6.36	4.75	16.38	14.25 **
CEO stock ownership [%]	2.14	0.36	11.13	6.71 **
CEO owns $\geq 25\%$ [%]	1.85	—	13.56	—
Equity pay / total pay [%]	38.96	37.67	35.50	35.88 *

Table 4: Tobin's Q and Founder-CEOs

The Table shows the results of regressions of a proxy for Tobin's Q on a founder dummy variable and control variables. In columns one and two, results from the second stage of a two stage least squares instrumental variable regression are reported. Columns three and four report the results from the second stage of an endogenous treatment effects model. In columns 1 through 4, Founder-CEO status is instrumented with decade of incorporation and with an indicator variable that is equal to one if the name of the firm at the IPO contains a personal name related to the founder. Column five reports the results of a firm-fixed effects model, in which the founder-CEO variable is identified through firms in which the CEO changes from founder to successor. Q is approximated as the ratio of the market value of assets to the book value of assets, less the industry's median Q (using the 48 Fama-French (1997) industries). The market value is calculated as the sum of the book value of assets and the market value of common stock less the book value of common stock and deferred taxes. The market value of equity is measured at the end of the current calendar year, and the accounting variables are measured in the current fiscal year. The founder dummy variable is one if the CEO could be classified as founder or co-founder of the firm at the beginning of the fiscal year, and zero otherwise. The regressions of columns 1 through 5 include year dummy variables to control for time effects. The standard errors of the coefficients in columns 1 through 5 are corrected for serial correlation on a firm level and for heteroscedasticity using the Huber-White-Sandwich estimator. Standard errors are reported in parentheses, and significance at the 1%, 5%, and 10% level is indicated by ***, ** and *, respectively.

	IV Regression		Treatment effects		Fixed Effects
Constant	1.540 ** (0.708)	2.075 *** (0.576)	2.038 *** (0.211)	2.609 *** (0.246)	2.299 *** (0.262)
Founder Dummy (<i>instrumented</i>)	0.998 * (0.561)	1.459 ** (0.705)	0.494 *** (0.167)	0.403 ** (0.177)	
Founder Dummy					0.318 *** (0.092)
Log (firm age)	-0.152 (0.099)	-0.090 (0.108)	-0.222 *** (0.030)	-0.228 *** (0.031)	
Log (sales)	-0.109 *** (0.023)	-0.092 *** (0.025)	-0.111 *** (0.012)	-0.098 *** (0.013)	-0.234 *** (0.035)
Delaware dummy	0.086 (0.054)	0.099 * (0.057)	0.082 *** (0.028)	0.090 *** (0.029)	
S&P 500 dummy	0.653 *** (0.079)	0.624 *** (0.092)	0.657 *** (0.038)	0.661 *** (0.041)	
CEO Ownership		-0.009 (0.010)		0.003 * (0.002)	0.004 (0.004)
CEO Age		-0.020 *** (0.004)		-0.018 *** (0.003)	-0.006 ** (0.002)
Log (CEO Tenure)		0.017 (0.057)		0.088 *** (0.016)	2.609 (0.246)
Year-fixed eff.	Yes	Yes	Yes	Yes	Yes
Industry-fixed eff.	Yes	Yes	Yes	Yes	No
Firm-fixed eff.	No	No	No	No	Yes
R^2	0.21	0.21	—	—	0.03

Table 5: Performance-Attribution Regressions for the Founder Portfolio

I estimate a regression based on a four-factor model for a portfolio of firms in which the founder or co-founder is still the CEO. Both value- and equal-weighted monthly return regressions are estimated. The portfolio is reset each July. The dependent variable is the monthly return in excess of the T-bill rate from either a value- or equal-weighted investment in the founder-CEO portfolio. The explanatory variables are RMRF, SMB, HML and Momentum. These variables are the returns to zero-investment portfolios designed to capture market, size, book-to-market, and momentum effects, respectively. Fama and French (1993) and Carhart (1997) provide details on how to construct these factors. The sample period is July 1993 to December 2002. Standard errors are in parentheses, and significance at the 1% and 5% levels is indicated by ** and *, respectively.

	Monthly alpha [%]	RMRF	SMB	HML	Momen- tum	Adjusted R-Squared
Founder-CEO Portfolio						
Value-Weighted	0.890 ** (0.280)	1.043 ** (0.075)	-0.190 * (0.074)	-0.713 ** (0.096)	-0.074 (0.039)	0.851
Equal-Weighted	0.690 ** (0.166)	1.153 ** (0.044)	0.573 ** (0.044)	0.226 ** (0.057)	-0.199 ** (0.023)	0.928
Non-Founder-CEO Portfolio						
Value-Weighted	0.051 (0.056)	0.969 ** (0.015)	-0.142 ** (0.015)	0.168 ** (0.019)	-0.015 (0.008)	0.982
Equal-Weighted	0.123 (0.121)	1.058 ** (0.032)	0.401 ** (0.032)	0.648 ** (0.042)	-0.122 ** (0.017)	0.926

Table 6: Performance-Attribution Regressions for the Founder Portfolio for Alternative Specifications

I estimate regressions based on a four-factor model for a portfolio of firms in which the original founder or co-founder is still the CEO. Both value- and equal-weighted monthly return regressions are estimated. The portfolio is reset each July. The explanatory variables are RMRF, SMB, HML and Momentum. These variables are the returns to zero-investment portfolios designed to capture market, size, book-to-market, and momentum effects, respectively. Fama and French (1993) and Carhart (1997) provide details on how to construct these factors. The sample period is July 1993 to December 2002. The first row shows the performance alpha when firms whose two-digit SIC code is 35 (Industrial machinery and equipment), 36 (Electronic and other electrical equipment), 38 (Instruments and related products), and 73 (Business Services) are excluded from the sample. The second regression estimates the four-factor model with industry-adjusted returns as the dependent variable. The third and fourth row show the portfolio alphas when the sample period is split in half. Standard errors are in parentheses, and significance at the 1% and 5% levels is indicated by ** and *, respectively.

	Monthly four-factor alphas [%]	
	Value-weighted	Equal-weighted
No technology firms	0.688 * (0.293)	0.476 * (0.177)
Industry-adjusted returns	0.528 ** (0.169)	0.444 ** (0.132)
July 1993 - March 1998	1.010 ** (0.344)	0.390 * (0.184)
April 1998 - December 2002	0.954 * (0.456)	1.060 ** (0.255)

Table 7: Fama-MacBeth Month by Month Regressions of Stock Returns on Founder Dummy and Control Variables

The Table presents the average coefficients and time-series standard errors for 118 cross-sectional regressions for each month from March 1993 to December 2002. The dependent variable is the industry-adjusted stock return for month t . Industry adjustment is done by subtracting the appropriate Fama-French (1997) industry return each month from each firm's stock return. Firms are assigned to be founder-CEO firms if the CEO mentioned in the annual proxy statement is identifiable as founder or co-founder of the firm. For each firm, the *founder dummy* variable is updated the month following the proxy filing date. Book equity is the book value of common equity plus balance-sheet deferred taxes and is calculated for each firm's latest fiscal year ending in calendar year $t - 1$. The *book-to-market* ratio is calculated using market equity in December of year $t - 1$. *Market value* is measured in month $t - 1$. *Firm age* is the number of months passed since the firm was first listed on a U.S. exchange. *Return x_y* is the compounded gross return for months $t - y$ to $t - x$. *CEO tenure* is the months passed since the CEO took office. *CEO ownership* is the number of shares held by the CEO divided by the number of shares outstanding. *G-score* is the shareholder rights index of Gompers, et al. (2003). *Price* is the closing price of the stock at the end of month $t - 2$. *NASDAQ volume (NYSE-AMEX volume)* is the dollar volume of trading in month $t - 2$ for stocks that trade on the Nasdaq (NYSE and AMEX). It is approximated as stock price at the end of month $t - 2$ multiplied by share volume in month $t - 2$. For New York Stock Exchange (NYSE) and American Stock Exchange (AMEX) stocks, NASDAQ volume equals zero. For Nasdaq stocks, NYSE-AMEX volume equals zero. *Dividend Yield* is the ratio of dividends in the previous fiscal year (Compustat item 21) to market capitalization measured at calendar year end. *Nasdaq dummy* is a dummy variable equal to one if the firm traded on the Nasdaq Stock Market at the beginning of month t , and zero otherwise. *S&P 500* is a dummy variable indicating membership in the S&P 500 as of the end of month $t - 1$. *Institutional ownership* is measured as shares held by institutions divided by total shares outstanding. I use the most recent quarter as of the end of month $t - 1$, with shares outstanding measured on the same date. In the regressions, the values of the accounting variables are matched with industry-adjusted returns from July of year t to June of year $t + 1$. Standard errors are reported in parentheses, and significance at the 1% and 5% levels is indicated by ** and *, respectively.

Table 7, continued

	Model 1	Model 2
Intercept	0.22 (1.12)	-0.94 (1.21)
Founder dummy	0.36 * (0.14)	0.37 * (0.17)
log (book-to-market)	0.09 (0.08)	0.09 (0.07)
log (market value)	0.00 (0.07)	0.38 * (0.17)
Return 2_3	0.54 (0.63)	0.63 (0.58)
Return 4_6	0.52 (0.49)	0.72 (0.48)
Return 7_12	1.02 ** (0.33)	1.07 ** (0.30)
log (firm age) (in months)		-0.06 (0.06)
log (CEO tenure) (in months)		0.04 (0.04)
CEO ownership		-1.18 (0.65)
G-score		0.00 (0.01)
Price		-0.26 (0.14)
NYSE-AMEX Volume		-0.25 (0.15)
NASDAQ Volume		-0.26 (0.16)
Dividend Yield		-0.90 (1.84)
Nasdaq dummy		0.59 (0.97)
S&P 500		-0.17 (0.17)
Institutional Ownership		0.06 (0.34)

Table 8: R&D and Capital Expenditures

The table shows the results of regressions of research and development and capital expenditures on a founder indicator variable and control variables. Columns one and two report the results of the second stage of a two stage least squares instrumental variable regression, and columns three and four show the results of the second stage of a two-stage endogenous treatment effects model. Founder-CEO status is instrumented with decade of incorporation and with an indicator variable that is equal to one if the name of the firm at the IPO contains a personal name related to the founder. Columns five and six report the results of a firm-fixed effects model, in which the founder-CEO variable is identified through firms in which the CEO changes from founder to successor. Capex is capital expenditures divided by the average of current and past year's assets. R&D ratio is R&D expenditures divided by the average of current and past year's assets. The founder dummy variable is one if the CEO could be classified as founder or co-founder of the firm at the beginning of the fiscal year, and zero otherwise. Regressions in columns one through four include year and 48 Fama-French (1997) industry dummy variables to control for time and industry, and the standard errors of the coefficients are corrected for serial correlation on a firm level and for heteroscedasticity using the Huber-White-Sandwich estimator. Standard errors are reported in parentheses, and significance at the 1%, 5%, and 10% levels is indicated by ***, ** and *, respectively.

	IV Regressions		Treatment effects		Fixed Effects	
	R&D	Capex	R&D	Capex	R&D	Capex
Constant	0.214 *** (0.027)	0.244 (0.148)	0.133 *** (0.034)	0.178 ** (0.053)	0.105 *** (0.017)	0.126 ** (0.055)
Founder Dummy <i>(instrumented)</i>	0.084 *** (0.018)	0.184 *** (0.028)	0.053 *** (0.007)	0.121 *** (0.014)		
Founder Dummy					0.011 *** (0.003)	0.024 * (0.013)
Log (sales)	-0.009 *** (0.002)	-0.004 ** (0.002)	-0.008 *** (0.001)	-0.004 *** (0.001)	-0.009 *** (0.002)	0.009 * (0.005)
Q	0.003 *** (0.001)	0.029 *** (0.002)	0.004 *** (0.001)	0.031 *** (0.001)	0.001*** (0.003)	0.029 *** (0.002)
CEO Ownership	-0.001 *** (0.000)	-0.002 *** (0.000)	-0.001 *** (0.000)	-0.001 ** (0.001)	-0.001 (0.001)	-0.001 (0.001)
CEO Age	-0.001 *** (0.000)	-0.002 *** (0.000)	-0.001 *** (0.000)	-0.002 *** (0.001)	-0.001 (0.002)	-0.001 *** (0.000)
Log (Tenure)	-0.006 ** (0.002)	-0.004 (0.003)	0.002 * (0.001)	0.008 *** (0.002)		
Year-fixed eff.	Yes	Yes	Yes	Yes	Yes	Yes
Industry-fixed eff.	Yes	Yes	Yes	Yes	No	No
Firm-fixed eff.	No	No	No	No	Yes	Yes
R^2	0.369	0.291	—	—	0.154	0.137

Table 9: Mergers and Acquisitions — Summary Statistics

Panel A of the table presents the number and characteristics of all completed mergers and acquisitions of private, public, and subsidiary targets made by sample firms during the sample period. Panel B shows the number and characteristics of mergers and acquisitions for which a transaction price and method of payment were recorded by SDC. The first two columns show statistics for non-founder-CEO firm-years, the last two columns show statistics for founder-CEO firm-years. A statistically significant difference in the means for founder- and non-founder firms at the 1% and 5% levels is indicated by ** and *, respectively.

	Non-founder firm-years		Founder firm-years	
	No. Obs.	% of total	No. Obs.	% of total
Panel A — All mergers and acquisitions				
Total Number of Acq.	7,070	100.00	1,068	100.00
Total Number of Acq. with transaction prices	3,280	46.39	502	47.00
Non-diversifying Acq.	3,765	53.25	650	60.86**
Diversifying Acq.	3,305	46.75	418	39.14**
Private Target	3,459	48.92	643	60.21**
Public Target	1,257	17.78	145	13.58**
Subsidiary Target	2,354	33.30	280	26.22**
Panel B — M&A with recorded transaction prices				
Total Number of Acq.	3,280	100.00	502	100.00
Non-diversifying Acq.	1,906	58.11	320	63.75*
Diversifying Acq.	1,374	41.89	182	36.25*
Private Target	1,228	37.44	247	49.20**
Public Target	930	28.35	107	21.31**
Subsidiary Target	1,122	34.21	148	29.48*
Cash Only Acq.	1,567	47.77	212	42.23*
Average % paid with cash	61.58%		56.44%**	
Average % paid with stock	33.63%		38.87%**	
Average % paid differently	4.79%		4.69%	

Table 10: Mergers and Acquisition Activity of Sample Firms

The first three columns present results from a pooled time-series poisson regression that allows for endogenous treatment effects. The dependent variable is the number of acquisitions per firm per year, the dependent variables include the natural logarithms of book to market ratio, firm age, and market capitalization, as well as cash-flow, shares owned by the CEO, CEO age, and CEO tenure, all measured in December $t - 1$. The founder dummy variable is instrumented by personal name and decade of incorporation dummies. Additionally, I include year and the 48 Fama-French industry dummy variables to control for time and industry clustering (not reported). The first column reports the overall results, and the second and third column split the sample into diversifying and non-diversifying acquisitions. The fourth through sixth columns present the results of an instrumental variable Tobit regression of the acquisition ratio on the same explanatory variables, using the same instruments for founder-CEO status. Acquisition ratio is defined as the sum of the value of all corporate acquisitions during a year scaled by the average of market value at the beginning and end of the year the acquisition occurred. Standard errors are reported in parentheses, and significance at the 1% and 5% levels is indicated by ** and *, respectively. The sample period is 1992–2002.

	Acquisition Count			Acquisition Ratio		
	all	diver.	non-diver.	all	diver.	non-diver.
Intercept	-3.10 ** (0.26)	-5.11 ** (0.36)	-3.04 ** (0.33)	-0.40 (0.32)	-0.40 (0.29)	-0.57 ** (0.12)
Founder Dummy (<i>instrumented</i>)	0.08 (0.13)	-0.12 (0.15)	0.44 ** (0.15)	0.16 (0.12)	0.04 (0.13)	0.26 (0.16)
Log (Q)	0.13 ** (0.03)	0.16 ** (0.05)	0.15 ** (0.04)	0.006 (0.01)	0.01 (0.01)	0.01 (0.01)
Log (Market Cap)	0.22 ** (0.01)	0.24 ** (0.02)	0.20 ** (0.02)	0.010 * (0.005)	0.02 ** (0.01)	0.01 * (0.01)
Log (Firm age)	0.07 * (0.03)	0.11 * (0.04)	0.005 (0.04)	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)
Cash Flow	0.30 (0.23)	0.12 (0.32)	0.33 (0.29)	0.08 (0.07)	0.08 (0.07)	-0.03 (0.09)
CEO Age	-0.01 ** (0.00)	-0.004 (0.004)	-0.019 ** (0.003)	-0.004 ** (0.001)	-0.003 ** (0.001)	-0.004 ** (0.001)
CEO ownership [%]	-0.01 ** (0.00)	-0.006 (0.004)	-0.019 ** (0.004)	-0.007 ** (0.002)	-0.004 * (0.002)	-0.009 ** (0.002)
CEO tenure	0.07 ** (0.02)	0.04 (0.03)	0.09 ** (0.03)	-0.003 (0.01)	0.01 (0.01)	0.00 (0.02)
Year-fixed eff.	Yes	Yes	Yes	Yes	Yes	Yes
Industry-fixed eff.	Yes	Yes	Yes	Yes	Yes	Yes