The Origins and Real Effects of the Gender Gap: Evidence from CEOs' Formative Years*

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Abstract

CEOs allocate more investment capital to male managers than to female managers in the same divisions. Using data from individual Census records, we find that this gender gap is driven by CEOs who grew up in male-dominated families—those where the father was the only income earner and had more education than the mother. The gender gap also increases for CEOs who attended all-male high schools and grew up in neighborhoods with greater gender inequality. The effect of gender on capital budgeting introduces frictions and erodes investment efficiency. Overall, the gender gap originates in CEO preferences developed during formative years and produces significant real effects.

Key words: internal capital markets, conglomerates, division managers, gender, family descent

JEL Codes: G30, G31, G40, J16, J71, H31

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1. Introduction

Optimal allocation of resources across agents is critical for economic outcomes, both at the level of an individual firm and the entire economy. An ongoing debate in the literature revolves around the claim that male managers obtain more resources, such as capital or pay, than their female counterparts, a pattern labeled the gender gap. If such a gap exists, it remains unclear whether it reflects a potential bias of the decision makers or results from economic factors correlated with gender, such as agents' productivity or risk aversion. Similarly, the real effects on economic outcomes are not fully understood.

These two open questions—the origins and real effects of the gender gap—are the primary focus of this paper. An answer to them matters both for firm outcomes and economic policy. In particular, many proposed policy responses aimed at narrowing the alleged gender gap, which range from disclosure to governance, assume that it reflects a personal bias of the decision maker, such as the CEO, which introduces market frictions. Yet, this fundamental premise is difficult to test because it requires eliciting CEO preferences and making a reliable connection between resource allocations and subsequent outcomes.

This paper makes a step toward addressing both challenges. We study the allocations of capital budgets to male and female division managers at U.S. conglomerates, using hand-collected data on division managers and their characteristics. In this setting, the decision-making authority rests with the CEO (Xuan 2009; Graham, Harvey, and Puri 2015), division managers are peers in the firm hierarchy, and we can observe their annual capital allocations and subsequent outcomes. Because conglomerates account for over 60% of investment in the S&P 1500, this decision has important economic consequences.

To elicit CEO preferences, we rely on the evidence in social economics that an individual's views on gender issues are heavily influenced by familial, environmental, and educational factors experienced until early adulthood, a period commonly referred to as formative years (see Epstein and Ward 2011 for a review). In particular, individuals form an outlook on gender roles by observing the responsibilities of their parents and the norms on gender equity in the local community and at school (Mischel 1966; Leve and Fagot 1997; Martin et al. 2002, among others).

To study CEOs' formative years, we hand-collect data on the households and communities where CEOs grew up by examining individual census records compiled by the National Archives. These records provide detailed information on each parent's employment, education, income, and other characteristics, as

well as the address of the home where the CEO grew up. To study the role of educational factors, we also construct a novel dataset on CEOs' high schools.

We begin by providing the first descriptive evidence on the family descent of U.S. CEOs. We document that CEOs come from well-to-do families where the father is the primary wage earner, has more education, and earns a higher income than the mother. These within-family socioeconomic differences between CEOs' parents typically exceed those in the general population. The median CEO father has 4.1 more years of education than the median adult male. Over two-thirds of CEOs' fathers hold white-collar jobs, and 35% are managers or business owners. The median income of CEOs' fathers is at the 75th national percentile. CEOs' mothers are less likely to work outside their home (21%) than women nationwide (42%). When they do, the median income of CEOs' mothers is at the 57th national percentile. About 14% of CEOs grew up in families with female servants, compared with only 2% nationwide. Finally, CEOs are more likely to attend all-male high schools (16.4%) and all-male colleges (9.9%) compared with other students.

Our first finding is that female division managers obtain about 50-70 basis points less in annual capital expenditures than male managers, an economically important difference of $14.4 to $20.2 million per year for the average division. This analysis controls for managers' education, age, experience, performance record, social connections, and external influence, as well as division and firm characteristics.

By exploiting within-firm variation in the decision maker on capital budgets, we find that the gender gap in capital allocations is driven by CEO characteristics. We identify important treatment effects of familial, educational, and environmental factors from CEOs' formative years. Among these factors, the CEO's immediate family has the strongest effects. The gender gap in capital allocations is driven by CEOs who grew up in male-dominated families where the father was the only income earner and had more education than the mother and who have no female children. We show that incorporating the said familial factors helps explain most of the gap in capital allocations.

Educational factors also have important mediating effects. The gender gap in capital budgets is greater for CEOs who attended all-male high schools. Similarly, using variation in the gender composition of colleges resulting from the opening of many U.S. colleges to women, we show that the gender gap is higher for CEOs who attended same-gender rather than coeducational colleges.

Environmental factors—proxies for gender equity in the county where the CEO grew up—have meaningful independent effects, but are dominated by familial and educational factors. The gap in capital budgets between male and female division managers expands if the CEO grew up in a community with larger differences in labor force participation, education, and income between male and female residents of working age. However, when these factors are included jointly with CEO family characteristics and educational backgrounds, their effect is subsumed by the familial and educational factors. This suggests that the community where the CEO grew up has a similar, albeit weaker, effect as the family and educational environments. Put differently, families choose to live in communities that broadly match their family characteristics and educational choices.

Taken together, the effect of familial, educational, and environmental factors from CEOs' formative years explains up to 70% of the economic gap in capital allocations between male and female division managers. As an external validation of the factors extracted from CEOs' formative years, we show that they are significantly correlated with CEO policies on gender issues, such as promotion of women and women contracting, measured by an independent research firm KLD Research & Analytics. Since our analysis exploits within-firm variation, these gender policies are specific to CEOs and cannot be explained by time-persistent firm attributes, such as industry, business complexity, firm hierarchy, or geographic location.

We identify two economic mechanisms that contribute to the gender gap in capital budgeting: (i) appointment of male managers to capital-rich divisions (the appointment channel) and (ii) extra capital allocations after the appointment (the capital allocation channel). In the analysis of appointment events of division managers, we find that male managers are assigned to divisions that historically receive more capital and some evidence that male managers are assigned to larger divisions. To disentangle the capital allocation channel from the appointment channel, we exploit CEO turnovers and focus on the change in capital allocations when CEO characteristics change, but the assignment of managers to divisions remains constant. This approach controls for unobservable, time-persistent characteristics of divisions (such as complexity and capital intensity) and division managers (such as risk-aversion, expertise, and productivity). We find that a change in the decision maker in the capital budgeting process is associated with a change in

capital allocations to male and female division managers predicted by the familial, environmental, and educational factors extracted from the CEO's formative years.

In our final analysis, we study the consequences of the gender gap on economic outcomes. The effect of a CEO's gender attitudes on the allocation of investment funds introduces frictions in capital budgeting and weakens the responsiveness of investment to growth opportunities, as measured by the sensitivity of investment to Tobin's Q. These frictions erode corporate performance. Using within-firm variation in CEOs, we show that a given firm achieves weaker operating performance when it is managed by a CEO with less egalitarian gender attitudes, as proxied by formative experiences. For example, an increase of 50 percentiles in the index of the CEO's exposure to gender imbalances within the family is associated with a 3.5% decline in ROA and a 0.066 decline in Tobin's Q.

Further, a larger gender gap in capital allocations, unexplained by division and manager characteristics, erodes operating performance. A one standard deviation increase in the intra-firm gender gap in capital allocations is associated with a 38 basis point decline in the annual ROA. This result is consistent with survey evidence that the CEO's personal attitude to division managers has profound real effects. For example, in a study of financial decision making at S&P 500 firms, Graham, Harvey, and Puri (2015) find that the CEO's opinion of a division manager is the second most important factor in capital budgeting after the NPV rule.

In summary, our evidence suggests that the gender gap in resource allocation is related to the decision maker's gender attitudes, whether conscious or subconscious, and that the origins of such attitudes can be traced to one's formative years. This effect has large implications for capital investment and introduces frictions in financial decisions. In contrast, our evidence is inconsistent with the view that lower resource allocations to female agents can be entirely explained by their economic characteristics correlated with gender and that such under-allocations are value-enhancing.

The central contribution of this article is to provide the first evidence on the family descent of U.S. CEOs and to demonstrate that the origins of gender effects in financial policies are linked to CEO experiences during formative years. Our findings contribute to research on (i) the origins of managerial preferences, (ii) the role of gender in financial policies, and (iii) the operation of internal capital markets.

A small number of recent papers underscore the importance of early-life experiences for shaping CEO's financial policies. Malmendier, Tate, and Yan (2011) find that CEOs who grew up during the Great Depression are averse to taking on debt and lean excessively on internal finance. Benmelech and Frydman (2015) show that CEOs with military experience pursue more conservative corporate policies. Cronqvist and Yu (2017) provide evidence that CEOs who experience the birth of a daughter tend to increase spending on corporate social responsibility. Yet, despite the importance of early-life experiences for financial decision making, we know little about CEOs' personal backgrounds before their professional career. Our paper seeks to provide the first systematic evidence on CEOs' family backgrounds, home communities, and early schooling in an effort to achieve a more complete view of CEOs' formative years. This approach allows us to study jointly the effects of familial, educational, and environmental factors and compare their relative importance.

Our evidence adds to the literature on gender effects in financial policies. Prior work documents that male agents are responsible for top financial decisions at the overwhelming majority of U.S. firms (e.g., Huang and Kisgen 2013). In this setting, female agents appear to receive fewer economic resources and promotion opportunities, albeit the reasons for these patterns remain a subject of debate (e.g., Newton and Simutin 2010; see Bertrand, Goldin, and Katz 2010 for a recent review). Our paper is one of the first to show that the origins of gender effects in financial decisions are linked to the decision maker's early-life exposure to gender inequality in the family, community, and school. We demonstrate that these factors affect both managerial appointments and resource allocations between male and female agents and produce significant real effects.

Finally, we contribute to the literature on internal capital markets. Prior work finds evidence of inefficiencies in capital budgeting at U.S. conglomerates (Servaes 1996; Denis, Denis, and Yost 2002; Ozbas and Scharfstein 2010). Yet, in the analysis of capital allocations, most of this prior work examines corporate divisions without considering the role of their managers. Our paper extends this research by demonstrating that the characteristics of division managers matter for capital allocations and that the effect of division managers' demographics serves as one source of frictions inside conglomerates.

2. Gender influences in formative years: Theory, evidence, and measurement

2.1. The role of early-life experiences

Prior work in the social sciences demonstrates that an individual's early-life experiences—from childhood through early parenthood—play a key role in shaping personal traits, including gender attitudes. The personal traits developed early in life remain remarkably consistent decades later. For example, in a survey of research on personal traits, McCrae and Costa (1994) document that within-individual correlations between personal traits measured during (i) early adulthood and (ii) late career (up to thirty years thereafter) range from 0.60 to 0.80 and conclude that "individual differences in personality traits … are essentially fixed by age 30." (p. 173). Similarly, in a survey of 152 empirical studies on personality traits, Roberts and DelVecchio (2000) identify two important patterns. First, an individual's personality traits are most actively shaped early in life, and the rapid formation of such traits plateaus around the age of parenthood. Second, personality traits acquired from early-life experiences predict an individual's behavior several decades later.

Research in financial economics has demonstrated that early-life experiences have a long-lasting effect on sophisticated corporate executives. Prior work has established significant relationships between CEOs' formative experiences and their firm's financial policies, such as risk-taking (Graham and Narasimhan 2005), research and development (Benmelech and Frydman 2015), and capital structure (Bernile, Bhagwat, and Rau 2017). The effects of CEOs' formative experiences on financial policies persist at large and closely-monitored firms but need not be value improving (Malmendier, Tate, and Yan 2011).

The effect of early-life experiences on gender attitudes has received less attention despite its strong theoretical underpinning and extensive validation in other fields. The role of early-life experiences in the formation of gender attitudes is formalized in the theory of social learning, introduced by Mischel (1966), developed in Bandura (1977, 1986), and expanded into the social-cognitive theory by Bussey and Bandura (1999). This theory posits that individuals form their gender attitudes at an early age by observing the typical behavior of men and women, as well as male–female interactions, in their immediate surrounding: in their family, community, and school. Empirical work (reviewed below) has documented the importance of such social influences on the development of gender stereotypes and in-group gender biases.

2.2. Family characteristics

Parents play a pivotal role in developing an individual's gender attitudes. The social learning theory posits that "parents are likely the most influential figures … when it comes to modeling gender through both implicit and explicit cues" (Halpern and Perry-Jenkins 2016). In particular, children and adolescents absorb subtle cues from their parents—such as the parents' relative social status, breadwinner rights, and division of labor—and extrapolate these inferences to develop views about the traditional roles and relative successes of men and women in the labor force. As a result, children brought up in families where the father has a significantly higher social status than the mother tend to adopt less egalitarian gender views and are more likely to develop gender biases.

These predictions have received wide empirical support. For example, individuals brought up in families where the mother does not hold paid employment are more likely to develop stereotyped gender attitudes (e.g., Gold and Andres 1978; Cordua, McGraw, and Drabman 1979; Weinraub et al., 1984; Levy 1989; Huston and Alvarez 1990; Lerner 1994, among others). Similarly, individuals brought up in families where the mother has less formal education are more likely to develop biased, rather than egalitarian, gender attitudes (Vanfossen, 1977; Martin et al., 1980; Herzog and Bachman, 1982; Thornton et al., 1983). More generally, research has shown that gender attitudes within the home are strongly correlated with labor market outcomes for women, such as compensation rates (Fortin 2005).

Motivated by prior evidence, we introduce two measures of the relative social status of a CEO's parents as a source of variation in the CEO's gender attitudes. The first variable, *Working mother*, is an indicator that equals one if the CEO's mother holds paid employment during the first 18 years of a CEO's life. The second variable, *Parents' education imbalance* is the difference between the number of education years for the CEO's father and the CEO's mother, where higher values indicate families with a higher educational attainment of the father. Detailed variable definitions appear in Appendix A.

Theoretical and empirical research on the role of familial factors also emphasizes the reciprocal effects on gender attitudes in parent-child relationships. While parents play a key role in shaping the gender attitudes of their children, the birth of a child itself produces meaningful shifts in the gender attitudes of its parents. Research demonstrates theoretically and empirically that the parenting of daughters (rather than sons) shifts an individual's gender attitudes toward more egalitarian views. Warner (1991) contends that an

individual's self-interest can be extended to include one's children, and this assumption generates a prediction that having a daughter makes the father more sensitive to gender equality, since it benefits his female children's career prospects. Cronqvist and Yu (2017) develop a theoretical framework where the CEO internalizes the utility of his children. The resulting prediction is that the parenting of a daughter will lead the CEO to adopt more egalitarian gender attitudes.

Empirical work has compiled extensive evidence in support of the above predictions. Early studies show that fathers with female children demonstrate more egalitarian gender attitudes (Warner 1991; Warner and Steel 1999). Subsequent work finds that the effect of daughters on gender attitudes is causal and driven entirely by the change in the attitudes of their fathers (Shafer and Malhotra 2011). Most recently, several studies show that parenting daughters affects the gender attitudes of sophisticated and closely-monitored economic agents, such as Congress members (Washington 2008), judges (Glynn and Sen 2015), venture capitalists (Gompers and Wang 2017), and CEOs (Dahl, Dezso, and Ross 2012; Cronqvist and Yu 2017).

To study the effect of parenting daughters, we define the variable *Children's gender imbalance* as the difference between the CEO's number of sons and daughters, normalized by the total number of children. This definition accounts for cross-sectional differences in the number of children across CEOs and focuses on the fraction of daughters following prior work (Washington 2008; Glynn and Sen 2015).

In summary, our set of three familial factors concentrates on arguably the closest personal relationships—those between parents and children—which have been shown to produce strong and monotonic treatment effects on gender attitudes. While there could be other familial effects, such as those of siblings, cousins, or spouses, their empirical support is scarcer and less consistent. Thus, our methodological choice is guided by an effort to generate a reliable source of variation in gender attitudes from validated familial factors.

2.3. Community characteristics

The social learning theory postulates that gender attitudes are strongly influenced by the social norms in the community where individuals spend their formative years (e.g., Mischel 1966; Bandura 1977, 1986). In particular, individuals develop gender stereotypes by inferring the relative social status of men and women in the local community, extrapolating from such cues as labor force participation, traditional occupations, and representation in prestigious jobs and positions of authority.

In a review of 58 empirical studies on the topic, Swim and Sanna (1996) conclude that when men are perceived to have a higher economic status in a society, the identical performance of male and female agents is more likely to be attributed to skill for men and more likely to be attributed to luck for women. These differences in performance attributions increase for professional activities viewed as more masculine, such as corporate management (Heilman, Block, and Martell 1995; Swim and Sanna 1996).

If such a pattern in managerial evaluation extends to our empirical setting, it could represent one mechanism through which a CEO's gender attitudes affect the allocation of resources to male and female division managers. In other words, even if the performance of male agents is indistinguishable from that of females, the differences in performance attribution may lead to a subconscious perception of a greater skill for male over female agents, resulting in larger capital allocations to the former.

As a source of variation in gender attitudes based on social norms, we introduce three measures that capture the relative economic status of men and women in the community where the CEO grew up. These measures exploit both cross-sectional variation (across counties in the U.S.) and time-series variation (across CEOs' age cohorts). The community characteristics capture the differences between local men and women of working age (18-45) along three dimensions: (i) labor force participation, (ii) annual income, and (iii) education. These characteristics are measured for the county where the CEO went to high school, and the measurement is as of the national census year closest to the year when the CEO reaches age 18. For a given county-year, the variables are defined as follows. *Labor force participation gender imbalance* is the difference in labor force participation rate between men and women. *Income gender imbalance* is the difference between the average annual income (in thousands of dollars) of men and women. *Education gender imbalance* is the difference between the number of education years of men and women.

2.4. Educational characteristics

Our final set of attributes exploits variation in CEOs' early education, focusing on whether the CEOs attended co-educational or single-gender high schools and colleges. This focus is grounded in theories that demonstrate that single-gender schooling augments gender stereotypes and increases in-group biases by endorsing gender segregation and limiting cross-gender socialization. Bigler and Liben (2006, 2007) show analytically that social factors that foster gender-based segregation, such as single-sex schooling, lead to

greater gender stereotyping. Similarly, the contact theory of Allport (1954) predicts that the segregation of groups according to a salient characteristic, such as gender, reinforces in-group biases, while the mixing of the groups produces the opposite effect.

Empirical evidence supports the prediction that single-gender schooling increases gender stereotypes, mostly among males (e.g., Delamont 1990; Brutsaert 2006). Recent work in economics has shown that the effect of gender segregation on in-group biases is causal and extends beyond the academic setting (Dahl, Kotsadam, and Rooth 2018).

It is also possible that the choice of attending a single-gender college reflects a pre-existing gender attitude. For example, individuals with stronger gender stereotypes are more likely to self-select into single-gender schools. Both of these scenarios are acceptable for our identification strategy that seeks to elicit a CEO's gender attitudes from early-life experiences.

To measure the effect of education characteristics, we introduce two variables. *High school gender imbalance* is defined as an indicator variable that equals 1 if the CEO attended a single-sex high school and zero otherwise. *University gender imbalance* is defined as the average fraction of female students in the university that the CEO attended as an undergraduate student. Both variables are measured as of the dates of CEO attendance of the respective educational institutions.

In summary, our empirical design is grounded in prior evidence on the formation of gender attitudes. It relies on theoretically motivated and empirically validated factors—from childhood through early parenthood—that have been shown to shape gender attitudes. While building on prior work, we also introduce several unique features. First, we provide novel evidence on the family descent of U.S. CEOs and their secondary education, the important formative experiences that have not been explored in prior work. Second, while prior studies have focused on a single formative experience, we provide a comprehensive analysis of familial, communal, and educational factors, and this holistic approach allows us to estimate their joint influence and compare their relative importance. Third, we provide direct evidence on the allocation of resources between male and female managers at some of the most economically important U.S. firms and study both the origins of these patterns and their real consequences.

3. Data and summary statistics

3.1. Firms and divisions

We begin our sample construction with the universe of industrial conglomerates included in the S&P 1500 index in 2000–2008.[1] Industrial conglomerates comprise firms that report at least two operating segments on Compustat and operate in industries other than financial services and utilities (one-digit SIC codes 6 and 4, respectively).[2] The universe of conglomerates that meet these criteria comprises 806 firms.

Next, we manually go through each firm's organization structure, as reported in quarterly and annual reports, proxy statements, and information prospectuses, to identify the sample of firms with divisional organization structures where managers oversee specific operating segments. This filter ensures a clean one-to-one match between managers and divisions. Given this sample criterion, we alert the reader that our analysis applies only to firms with such organization structures.

We exclude firms with organization structures that lack a clear correspondence between managers and divisions (396 firms). The excluded firms usually use a functional organization structure where managers are assigned on the basis of their functional roles (e.g., vice president of manufacturing), so that each manager supervises an entire functional area across all divisions. Some of the excluded firms have a geographic organization structure where managers are assigned on the basis of regional markets (e.g., vice president – Northwest), so that each manager oversees a target market across all divisions.

To identify the division manager responsible for each business segment, we read biographical sketches of the firms' executives in annual reports, proxy statements, and management directories. We consider a manager to be in charge of a division if he or she is the highest-level executive directly responsible for the business segment during a given time period.

Next, we collect the starting and ending dates of each division manager's tenure. To obtain them, we supplement corporate disclosure with executive biographies from the Forbes Executive Directory, Reuters, Marquis's Who's Who, and Notable Names Database, as well as firms' press releases which

[1] Our sample begins in 2000 because data coverage in BoardEx is sparse before 2000. Our sample ends at the end of 2008 because the hand-collected data on division managers are available for this period from Duchin, Goldberg, and Sosyura (2017).
[2] Operating segments exclude corporate accounts, allocation adjustments, and divisions with zero or negative sales.

provide appointment dates. We are able to identify all division managers for 91.5% of the firms that meet our sample criteria, and we exclude the remaining 35 firms with missing data on division managers.

In the resulting sample of 375 firms, only nine are led by women. Such a small fraction of female-run firms limits our ability to exploit differences in CEO gender, and we exclude firms headed by women. We emphasize that we exploit female leadership as a source of variation in a different context: via their positions as board chairs, which women are approximately four times more likely to occupy than the CEO positions (8% vs 2%).

Finally, we exclude 8 firms run by CEOs for whom no formative year information can be reliably identified. After imposing this filter, we arrive at our main sample that comprises 358 firms. In Appendix Table A1, Panel A, we summarize the sequence of sample selection criteria and, at each step, provide the number of firms, divisions, and observations retained after each filter.

Table 1, Panel A reports summary statistics for our sample firms and their divisions. The conglomerates in our sample are large firms. The average (median) conglomerate has a book value of assets of $13.5 ($3.6) billion, consists of 4.1 (4.0) divisions, earns an annual revenue of $8.0 (3.4) billion, and generates an annual return on assets of 4.3% (5.3%). The firms in our sample account for over 70% of book assets and market equity of all industrial conglomerates in the S&P 1500.

Appendix Table A1, Panel B compares our final sample to the rest of the industrial conglomerates in the S&P 1500 index across the main firm characteristics examined in our study, including earnings per share, stock return, free cash flow, profitability, capital investment, market-to-book ratio, and firm size. This comparison reveals that our sample is statistically indistinguishable from the rest of the universe of industrial conglomerates in the S&P 1500 across all characteristics examined, except for firm size. In particular, the average firm in our sample is significantly larger. This distinction is explained by the fact that larger firms provide more disclosure about their divisional managers, and hence are less likely to be dropped due to data limitations.

The divisions in our sample represent economically important operating units. The average (median) division operates assets with a book value of $3.1 ($0.8) billion, produces $3.2 ($1.1) billion in sales, and earns a net profit equal to 14.7% (12.8%) of the sales revenue. The average division obtains $147.2 million per year in investment funds, an amount equivalent to 5.1% of its book assets.

3.2. CEOs and division managers

After linking divisions to managers, we collect data on the characteristics of CEOs and division managers. We retrieve appointment dates for CEOs and division managers from Execucomp and press releases, respectively. Next, we hand-match CEOs and managers to BoardEx, where we obtain information on their education, employment history, board memberships, and affiliations with nonprofit organizations. We cross-check and supplement BoardEx data with managerial biographies in corporate disclosures (biographical sketches in press releases, annual reports, and proxy statements) and the executive databases discussed above. We also collect governance data from BoardEx and RiskMetrics, including information on individual directors and board structures.

We obtain demographic information (such as age and gender) for CEOs, division managers, and directors from the Lexis Nexis Public Records database (LNPR), which aggregates data on over 500 million U.S. individuals (both alive and deceased) from sources such as birth and death records, property tax assessment records, and voting records. Prior work has used this database to obtain personal data on executives (Cronqvist, Makhija, and Yonker 2012; Yermack 2014), fund managers (Pool, Stoffman, and Yonker 2012; Chuprinin and Sosyura 2018), and financial journalists (Ahern and Sosyura 2015). All records in the database are linked to an individual's social security number (observable with the exception of the last four digits) and are assigned a unique ID. We manually verify our matches to LNPR using the combination of an individual's full name and employment record (verified against the employment locator LNPR).

Our sample comprises 5,679 individuals: 596 CEOs, 1,819 division managers, and 3,264 directors. Table 1, Panel B shows summary statistics for CEOs and division managers. As discussed earlier, all CEOs in our sample are male. On average, they are 56 years old and have tenure of 14.5 years. Nearly 62% of CEOs have graduate degrees, the majority of which are MBAs. The dominant majority of CEOs serve on the boards of other companies, and the median CEO holds two external board seats.

In comparison with CEOs, division managers are younger and significantly more diverse. The average manager is 50 years old with 10.8 years of tenure, and about 8% are female. Compared with CEOs, division managers are more likely hold specialized graduate degrees (79%) and less likely to hold MBA degrees (39%). Division managers are also significantly less likely to hold external board seats.

3.3. Family descent and formative years

We collect a comprehensive set of characteristics on the immediate family, early education, and local community for the CEOs in our sample and describe our data in that order. We focus on CEOs because they are the main decision makers in the allocation of capital across divisions. Prior work demonstrates this decision authority both analytically (Rajan, Servaes, and Zingales 2000; Scharfstein and Stein 2000) and empirically (Xuan 2009; Ozbas and Scharfstein 2010; Duchin and Sosyura 2013). Direct survey evidence from CEOs of S&P 500 firms confirms this conclusion and shows that CEOs are unlikely to delegate this decision authority to other agents (Graham, Harvey, and Puri 2015).

Family characteristics

To obtain information on CEOs' families, we use multiple data sources, including federal and state census records, state records of birth, marriage and death, digital archives of white page directories, and obituaries. We briefly describe these data here and provide examples in Appendix B.

We follow a three-step algorithm to identify the CEO's household in the federal and state censuses by sequentially checking three types of state records—birth, marriage, and death—for the CEO and his relatives. To ensure a reliable match to the census, we require establishing the CEO's parents and, in some cases, siblings. This criterion nearly eliminates the possibility of a spurious match, because the census record identified in this process contains the unique combination of the CEO's parents and siblings.

We obtain the image file of the family's records in the federal and state censuses from the digital archive maintained by the U.S. National Archives and Records Administration. Figure A1 of the Appendix shows a blank federal census form. The federal census form in our sample provides 41 standardized variables on each member of the household, including education (in years), occupation, employment status, the number of weeks worked during the year, annual income, and place of birth, among others. The census form also provides a number of characteristics for the entire household, including the exact residential address, home ownership status (rent or own), and the estimated value of the home or monthly rental payments.

We alert the reader to an important data constraint. Access to census data with personally identifiable information is restricted by the U.S. public law, and the latest state and federal census records with personally identifiable information are available for the years 1945 and 1940, respectively, as well as

for any previous years. To overcome this constraint, we complement our census data with additional information from two other digital archives: (i) historical city directories (obtained from the family search service Ancestry.com) and (ii) state death records and obituaries (collected from the digital archive of state records on Ancestry.com and the newspaper archive service Newspapers.com, respectively). These records allow us to obtain the same information on the employment status, education, and occupations of the CEO's parents for younger CEOs born after 1945. For overlapping observations, we cross-check the information obtained from city directories and death and obituary announcements against the information provided in the census and find that the two sources provide very similar information. In particular, city directories show the residential address of the household and the occupation status of each parent, while the obituaries for CEOs' parents give extensive detail on their education, careers, and family. At the time of writing, the overwhelming majority of CEOs' parents are deceased, and their obituaries are available.

We collect information on CEOs' children from the personal background data compiled by the executive intelligence firm Boardroom Insiders and the personal background databases Prabook and Notable Names. We cross-check and supplement these data with information obtained from LNPR (which lists the members of the CEO's household and provides their age) and obituaries for CEOs' parents (which often list the CEO's children as the surviving family members).

High school and college education

We construct the first dataset of CEO high schools by using the digital archives of high school yearbooks maintained by Ancestry.com and Classmates.com. We compare high school photographs in the yearbooks with publicly available recent photographs of the CEOs to ensure accuracy in matching. Figure A6 of the Appendix provides an example. We supplement these resources with data from Boardroom Insiders, CEO biographies, and high school publications that identify notable alumni. When high school information is missing from the above sources, we contact the registrar of the university attended by the CEO and request this information in writing. We record the following characteristics for each CEO's high school: address, gender composition status (same-gender or co-educational), religious affiliation (if any), and private/public status. For each high school, we record this information for the period of the CEO's attendance (ages 14-18), using the history section of the high school's website.

Figure 1 illustrates the geographical distribution of high schools attended by the CEOs. The CEOs in our sample hail from every state in the continental U.S., except for South Dakota. Forty-four high schools graduated more than one CEO-to-be, with New Trier High School in Winnetka, IL graduating five.[3]

For each CEO, we also record the gender composition of the college where he earned his undergraduate degree by computing the average fraction of female students during the period of CEO attendance (ages 18-22). We obtain this information from the U.S. Department of Education.

Community characteristics

To study the effect of community norms, we obtain information on gender-related demographic variables in the county where the CEO grew up. We identify the CEO's home county based on the location of his high school and his parents' home address in the census. For each CEO, we collect the following information for his home county from summary census records: (i) the labor force participation rate for adult males and females, (ii) the annual income for employed males and females, (iii) the number of years of education for males and females, and (iv) the unemployment rate for males and females of working age. These data come from the Integrated Public Use Microdata Series (IPUMS)—the anonymized set of household census records (Ruggles et al. 2017). We measure the above community characteristics as of the decennial census year closest to year when the CEO reaches the age of 18. For example, for a CEO born in 1944 (who reaches the age of 18 in 1962), we use the community characteristics from the 1960 decennial federal census.

4. Descriptive evidence: Which families and communities do CEOs come from?

Before proceeding with a formal analysis, we provide descriptive evidence on the family descent of CEOs, their early education, and communities where they grew up. To offer a comparative perspective, we juxtapose, where possible, their family characteristics with those of other households in the same census.

Table 2, Panel A shows summary statistics for the immediate families of CEOs, focusing on their parents and children. Three main conclusions emerge from these statistics. First, CEOs' parents are well-educated. The father and mother of the median CEO have 14 and 12 years of formal education, respectively,

[3] With the 2016 per capital income of over $100,000, the village of Winnetka is the wealthiest census-designated place in Illinois and one of the wealthiest in the country.

almost four years more than the median males and females in the general population in the same census. Figure 2 shows that the contrast in education between the CEOs' families and the general population is stark. For example, approximately half of CEOs' parents (56% of CEOs' fathers and 43% of CEOs' mothers) attended college, while the fraction of individuals with college education in the general population in the same census is just over 10%.

Second, CEOs come from well-to-do families with white-collar occupations. Over 71% of CEOs' fathers hold white-collar jobs. Figure 3, which summarizes occupations of CEOs' parents, shows that 35% fathers are managers or business owners. Other frequent professions among CEOs' fathers are sales (9%), engineering (8%), and academia (5%). These occupations put the median CEO father in the top quartile of the national income distribution. Moreover, a sizable fraction (16%) of CEOs grew up in ultra-wealthy families with incomes in the top 1% of the national distribution. Figure 4 corroborates this evidence by showing that by two measures of wealth – house value and combined incomes of both parents – CEOs come from households that are considerably richer than the national average.

Third, CEOs' fathers typically have a higher economic status than CEOs' mothers, and these within-family differences exceed those in the general population. The father is the primary income earner in the dominant majority of CEOs' families. In contrast, CEOs' mothers are less likely to work outside their home (21%) than women nationwide (42%). When they do, their median income is approximately one half (45%) of that of the CEO's father. Fathers are also considerably more likely to attend college than mothers and on average attain 0.6 years more of education. In contrast, females in the general population complete on average 0.3 years more schooling than males. The differences in education are even more striking when examining the medians. The median father has two more years of education than the median mother, whereas in the general population this difference is zero.

The bottom rows of Panel A provide information on CEOs' children. The median CEO has 3 children (mean = 2.8), slightly more than the number of children for the average male of the same age (2.0), as expected for wealthy families. These statistics align closely with the data on CEOs' children in Cronqvist

and Yu (2017). As expected, the fractions of male and female children in CEOs' own families are approximately equal.

Table 2, Panel B provides summary statistics on CEOs' education. Compared with the general population, CEOs are more likely to attend private educational institutions designated only for men. The top rows of Panel B show that approximately one quarter of CEOs attend private high schools, and 16.4% of CEOs attend all-male high schools. The bottom rows show that 49% of CEOs attend private colleges, and 9.9% attend colleges restricted to male students at the time of attendance.

Table 2, Panel C shows the characteristics of neighborhoods where CEOs in our sample grew up. As discussed, these community characteristics are measured approximately as of the time when a CEO reaches the age of 18. The data reveal a large difference in the labor force participation between male residents (94%) and female residents of working age (42%) in the CEOs' home communities. For working adults, the average annual income of men ($60,155 in 2016 dollars) is more than twice as large as that of women ($29,902). For those seeking employment, the average unemployment rate is lower for men (4.8%) than for women (5.5%). Interpreted together, these statistics suggest that CEOs grow up in communities where, at the time of their formative years, males are more likely to hold outside employment, and when they do, they earn higher incomes and face lower unemployment than do their female counterparts.

In summary, the first three panels of Table 2 show that CEOs come from white-collar, well-educated families with the typical incomes in the top quartile of the national distribution. In the majority of CEOs' families, the father is the only income earner and the more educated spouse. Similar, albeit smaller, differences in the socioeconomic status of men and women are observed in the communities where the CEOs spend their adolescence.

To capture the overall effect of gender imbalances in CEOs' families, education experiences, and communities, we construct three corresponding indices and summarizes their moments in Panel D of Table 2. Each index is computed as the average within-sample percentile rank of the respective attributes and ranges from 0 to 1, where higher values indicate early-life exposure to gender imbalances and low female socialization. For example, we calculate a comprehensive *Family gender imbalance index* as the average between the percentile rankings of each CEO's *Working mother*, *Parents' education imbalance*, and *Children's gender imbalance* values in the sample. The remaining two indexes are constructed in the same

way as averages of percentile rankings. We observe significant differences in the values of the indices across our sample of CEOs. For example, a quarter of CEOs grew up in a family with the gender imbalance index of 0.373 or less, whereas for another quarter the index was at least 0.620. In the analysis that follows, we exploit this rich variation to understand the origins and real effects of the gender gap.

5. CEO characteristics and the allocation of capital to male and female managers

5.1. Evidence on investment funds

Table 3 provides regression evidence on the allocation of capital to male and female division managers. The unit of observation is a division-year, and the dependent variable is the ratio of division-level capital expenditure to book assets. The main independent variable of interest is the binary indicator *Female division manager*, which tests for the effect of a division manager's gender on the allocation of capital, over and above the effect of other managerial characteristics included as controls. These managerial controls include education, performance record, age, tenure with the firm, busyness (external directorships), and measures of formal and informal influence within the firm—namely, internal board representation and social connections to the CEO, respectively. In addition to the division managers' characteristics, control variables include the characteristics of the division, firm, and CEO that have been shown to affect capital budgeting in prior work (e.g., Rajan, Servaes, and Zignales 2000; Ozbas and Scharfstein 2010). These characteristics are measured at the beginning of the year, when capital budgets are set, and are therefore lagged by one year relative to the dependent variable.

Column 1 augments the control variables with year fixed effects, which account for the time trend in the availability of capital and investment opportunities in the economy, as well as any market-wide trends toward a greater inclusion of women in management positions. Column 2 adds industry fixed effects, which capture industry-level investment drivers, such as capital intensity, competition, and technological shocks. Column 3 augments the previous specifications with firm fixed effects, which absorb the effect of firm characteristics that remain invariant during our sample period, such as geographic location, industry mix, and diversification. Standard errors are clustered by firm to allow for firm-level residual dependence in capital allocation decisions.

The results show that female division managers obtain less investment capital. This conclusion holds across all specifications, as indicated by the negative and statistically significant coefficient on the indicator *Female division manager*. The point estimates suggest a sizable economic effect. According to columns 1-3, female managers obtain approximately 50 to 70 basis points less in annual capital budgets relative to their male counterparts. Given the average capital investment for a division of 5.1 percent of book assets (or $147.2 million) per year, this difference amounts to 9.8% to 13.7% of the average investment budget or $14.4 to $20.2 million per year. The results in column 3 demonstrate that this conclusion holds robustly (significant at 1%) when we compare the allocations of male and female managers inside the same firm, focusing only on within-firm variation.

The results from other control variables are consistent with survey evidence that CEOs view division managers as key factors when allocating capital to divisions (Graham, Harvey, and Puri 2015). CEOs allocate greater capital budgets to division managers with stronger performance records (measured by the trailing industry-adjusted ROA) and longer tenure with the firm. Also, CEOs provide more investment funds to managers with whom they share social connections via alumni networks, prior employment, or membership in non-profit organizations.

Finally, the evidence from firm- and division-level control variables reveals expected patterns. Profitable firms with higher valuations tend to invest more, and a larger fraction of these funds goes to divisions with high trailing performance (ROA) and better investment opportunities (industry Tobin's Q for the division).

Table 4 investigates the role of CEOs' attributes in the allocation of capital to male and female division managers, controlling for the same manager, division and firm characteristics as in Table 3. The unit of observation is a division-year, and the dependent variable is the ratio of division-level capital expenditure to book assets. All regressions include year, industry, and firm fixed effects.

Table 4, Panel A tests the relation between CEOs' formative experiences related to gender attitudes and the allocation of capital to female division managers. This analysis augments our baseline specification in Table 3 with measures of CEOs' exposure to gender imbalances and female socialization in the family (columns 1-3), at school (columns 4-5), and in the community (columns 6-8). The main variable of interest

is the interaction term of gender-related CEOs' formative experiences and the indicator *Female division manager*.

Panel A shows that female division managers obtain significantly less capital in firms run by CEOs with early-life exposure to gender inequity and low female socialization. The coefficients on the interaction terms between these measures and the indicator *Female division manager* have negative signs across all specifications and are statistically significant in six of the eight columns. Among the three groups of factors, family-related factors have a somewhat higher statistical significance, with the interaction terms being statistically significant for all the family proxies.

The effects of formative experiences are economically important. For example, the point estimate on the main interaction term in column 1 (coefficient = -0.004) indicates that CEOs who grew up in families with a stay-home mother allocate approximately 40 basis points less in annual capital expenditures to female division managers than to their male counterparts with similar characteristics at the same firm. Given the average amount of a division's annual investment (5.1 percent of book assets), this point estimate amounts to a reduction of 7.8% in the annual capital expenditure.

Table 4, Panel B investigates the joint effect of gender-related formative experiences acquired in the family (columns 1-2), at school (columns 3-4), and in the community (columns 5-6), focusing on the aggregate indices for each group of attributes. Each index is constructed as the average within-sample percentile rank of the respective attributes and ranges from 0 to 1, where higher values indicate early-life exposure to gender imbalances and low female socialization. The even and odd columns in Panel B report regression estimates from specifications with and without firm fixed effects, respectively.

Columns 1-6 in Panel B show that the interaction term *Female division manager x CEO index* is negative and statistically significant at conventional levels across all three indices. These results suggest that female division managers obtain less capital at firms run by CEOs who spent their formative years in environments linked to less egalitarian gender attitudes. The point estimates suggest significant economic effects. For example, a change of 0.5 (or 50 percentiles) in the community index is equivalent to a move from a county in the 25th percentile rank to the 75th percentile rank according to the gender gap in labor force participation, income, and unemployment for local residents of working age. According to the point estimate on the interaction term between *CEO community index* and *Female division manager* (coefficient

= -0.004), CEOs who grew up in communities with more gender inequality (75th percentile) allocate approximately 20 basis points less (-0.004*0.5 = 0.20) in annual capital expenditure to female division managers than to their male counterparts, as compared to CEOs who grew up in communities with less gender inequality (25th percentile). For the average division, this difference is equivalent to 3.9% of annual capital expenditures or $5.6 million per year.

Columns 7-8 include all of the indices jointly in the same regression. In these specifications, the effect of family and education characteristics remains reliably negative and statistically significant. The joint inclusion of all gender-related formative experiences appears to explain the majority of the gender gap in capital allocations. For example, when the baseline specification of capital allocations (column 3 in Table 3) is augmented with measures of CEOs' formative experiences (column 8 in Table 4), most of the effect of the gender gap is explained by the interaction terms of formative experiences with the female manager indicator. Furthermore, the point estimate on the indicator *Female division manager* shrinks from -0.007 to -0.002 and becomes statistically indistinguishable from zero (*t*-statistic = 1.32). This result indicates that the differences in capital budgets between male and female division managers largely disappear at firms run by CEOs with early-life exposure to gender equity and female socialization.

Columns 7-8 also speak to the relative importance of the family, community, and education characteristics. In particular, the joint inclusion of family and education characteristics drives out the effect of community attributes. In columns 7-8, the point estimates on the interaction term of the community index with the female manager indicator remain negative, but become economically small and statistically insignificant. This pattern suggests that the gender norms from the community are captured by the gender roles within the family and the educational choices. In other words, families choose to live in communities that broadly match their gender attitudes, family characteristics and educational choices.

In summary, female division managers obtain less investment capital than their male counterparts at the same firm. This gap in capital allocations is strongly related to the CEO's early-life exposure to gender imbalances in the family, at school, and in the community. The joint effect of these factors explains most of the economic gap in capital allocations between male and female managers.

5.2. Robustness and external validity

This section examines the robustness and external validity of the interpretation that the gender gap in capital budgets is related to CEOs' gender attitudes.

Table 5, Panel A compares male and female division managers across a broad set of managerial characteristics that could explain the difference in capital budgets, such as the level of education (graduate degree), experience (number of years at the firm), prior performance record (industry-adjusted division ROA), busyness (external board commitments), social connections to the CEO, and age. Panel A tests for the differences between male and female division managers along these characteristics in a regression setting with firm fixed effects. This within-firm analysis matches the within-firm comparisons between divisions and managers in capital allocation decisions.

The results show that male and female division managers working in the same conglomerates are statistically indistinguishable across measures of education, experience, and skill. The only difference we can identify (significant at 10%) is that female managers are slightly younger than their male counterparts in the same firm. This difference in age appears to be economically small. According to the point estimate in column 6, female division managers are about one year younger than their male counterparts.

Overall, we do not detect significant economic differences between male and female division managers of the same conglomerates across a broad range of characteristics. Yet, these two groups may differ on important unobservable characteristics relevant for capital budgeting, such as risk aversion, leadership, and execution skills. In Section 6, we examine the role of these unobservable factors.

Table 5, Panel B examines the external validity of our proxies for CEOs' gender attitudes constructed from formative years. In this table, we test for correlation between the CEOs' formative experiences and independent assessments of CEOs' gender policies provided by the research firm KLD Research & Analytics (henceforth, KLD). The annual assessment scores by KLD are based on the analysis of corporate policies, employee interviews, and a review of pending litigation. Prior research demonstrates that KLD assessment scores provide informed signals about CEO policies on employee relations, diversity, and social responsibility (Chatterji, Levine, and Toffel 2009; Cheng, Hong, and Shue 2016) and that KLD assessment scores align well with CEOs' liberal or conservative attitudes (DiGiuli and Kostovetsky 2014).

We focus on three categories of KLD scores that characterize the CEO's gender issues: (i) promotion of women and minorities, (ii) work-life benefits, and (iii) women and minority contracting. The first category evaluates promotion opportunities for women in positions with profit-and-loss responsibilities. The second category examines the CEO's policies in accommodating working mothers in terms of the provision of childcare and family benefits. The third category examines the allocation of a firm's purchasing contracts to businesses owned or operated by women and minorities.

Table 5, Panel B shows that CEOs' exposure to gender imbalances during formative years is strongly correlated with their policies on gender issues in the firm. This relation is particularly strong for CEOs' family and community characteristics. In particular, the CEOs' family and community imbalance indexes are reliably negatively correlated (significant at least at 5%) with KLD assessment scores on all of the three categories of women-friendly policies: promotion, work-life benefits, and contracting. In other words, CEOs with exposure to gender imbalances in their immediate family and home community are significantly less likely to adopt women-friendly policies inside the firm. A directionally similar, but statistically weaker effect arises for CEOs' exposure to gender imbalances at school (columns 2, 5, and 8).

In summary, male and female division managers in the same firm are observationally similar according to measures of education, experience, and past performance. The difference in capital budgets allocated to male and female managers is related to proxies for CEOs' gender attitudes constructed from their formative years. These proxies are strongly correlated with independent assessments of intra-firm policies aimed at promoting female managers and allocating resources to female contractors.

6. Economic mechanisms

This section studies two non-mutually exclusive mechanisms that may contribute to the gender gap in capital budgets: (i) the appointment channel and (ii) the capital allocation channel. The first channel posits that male managers get extra capital by being appointed to capital-rich divisions. The second channel captures the additional allocations to male managers, while holding constant their assignment to divisions. The section concludes with a discussion of the economic mechanism that links the CEO's gender attitudes and the firm's capital allocation policies.

6.1. The appointment channel

To capture the effect of the appointment channel, we investigate the relation between division managers' attributes and observable characteristics of the divisions to which they are appointed. To test this relation, we focus on division-year observations in which the division manager has changed (new appointments) but the CEO has not. In this analysis, the dependent variable is one of the division's characteristics measured during the year preceding the manager's appointment. Division characteristics include capital investment, size, profitability, and the core status within the firm (an indicator equal to one if the division operates in the conglomerate's core industry proxied by the three-digit SIC code). As before, all regressions include firm, industry, and year fixed effects and use standard errors clustered by firm.

Columns 1-4 in Table 6, Panel A show that female managers are less likely to be appointed to divisions that historically receive larger capital allocations and that this tilt in managerial appointments is related to CEOs' formative experiences related to gender attitudes. The effect of CEOs' formative years on managerial appointments is captured by the interaction terms of the CEOs' gender imbalance indexes with the indicator *Female division manager*. This interaction term is consistently negative, suggesting that a CEO's exposure to formative experiences linked to less egalitarian gender attitudes is associated with a lower probability of female appointments to capital-rich divisions. This effect is statistically significant for the CEOs' family and education characteristics (columns 2-3), but insignificant at conventional levels for community characteristics.

Columns 5-8 in Table 6, Panel A test for similar effects in the appointment of women to larger divisions. The dependent variable in this setting is division size (book assets) in the year preceding the appointment. The evidence on female appointments to larger divisions is statistically weaker. While we observe directionally similar relations that CEOs' exposure to gender inequality during formative years is negatively associated with the likelihood of appointing female managers to larger divisions, these relations fall short of being statistically significant (*t*-statistics = 0.55 to 1.60).

Panel B studies the determinants of managerial appointments to more profitable divisions (measured by the ratio of the division's net income to book assets, columns 1-4) and core divisions of the firm (columns 5-8). The evidence in both panes of Panel B suggests that CEOs' exposure to gender imbalances is negatively related to the likelihood of appointing female managers to more profitable

divisions and to core divisions of the firm. For both division characteristics, these effects are stronger for CEOs' family and education attributes (columns 2-3 and 6-7), whose interaction terms are significant at least at 10% across all specifications with these variables.

Our specification in Table 6 is based on the assumption that appointments of division managers are based on historical characteristics of divisions. It is also possible that appointments of division managers incorporate forward-looking information about divisions. For example, male managers may be appointed to divisions that are expected to receive more capital in the future. In this case, our estimates of the economic magnitude of the appointment channel likely represent a lower bound for its economic importance.

In summary, the appointment channel appears operative in our setting. CEOs with exposure to gender imbalances in their formative years are less likely to appoint female division managers to important and capital-rich divisions, as proxied by divisions' profitability, historical capital allocations, and core status within the firm.

6.2. The capital allocation channel

To capture the effect of the capital allocation channel incremental to the appointment channel, we focus on CEO turnovers, a setting in which a manager's assignment to a division remains constant but the CEO's gender attitudes experience a shock as a result of the CEO turnover.

Table 7 reports estimates from first-difference regressions in which the dependent variable is the annual change in the division's capital expenditures for division-year observations in which the CEO has changed from the previous year but the division manager has not. This specification mitigates the effect of omitted or unobservable characteristics correlated with a division manager's gender. To the extent that these characteristics—such as intellect, risk aversion, and leadership—remain constant within a short time window around the CEO turnover, this approach captures the effect of a change in the CEO's gender attitudes while controlling for all time-invariant attributes of division managers.

The results in Table 7 suggest that an increase in a CEO's exposure to gender imbalances during formative years is associated with lower capital allocations to female managers. These results are statistically significant for all three indexes of gender imbalances at least at 10%, despite the large reduction in sample size in the analysis of CEO turnovers. Since the division manager remains unchanged and the new CEO is unlikely to have influenced the appointment of the division manager (which occurred well

before the new CEO's arrival), these results indicate that the CEO's gender attitudes affect capital allocation over and above the appointment channel.

In summary, the capital allocation channel contributes to the gender gap in capital budgeting. Holding constant the assignment of managers to divisions, an increase in a CEO's early-life exposure to experiences linked to less egalitarian gender attitudes is associated with lower capital allocations to female managers. Since this research design accounts for the effect of division managers' characteristics which remain constant around CEO changes, it demonstrates that the gender gap in capital allocations is unlikely to be explained by unobservable characteristics of division managers correlated with gender.

6.3. CEO style or endogenous CEO-firm matching?

The section discusses the mechanism that underlies the association between the CEO's gender attitudes and the firm's capital budgeting policies. We alert the reader to two sources of endogeneity in the relationship between CEO attitudes and firm policies: (i) simultaneity (reverse causality) and (ii) omitted variables, including the endogenous matching of CEOs to firms and the matching of managers to divisions.

The first issue—simultaneity—refers to the possibility that the firm's culture affects a CEO's gender attitudes, rather than the other way around. Our research design shuts down this channel by using early-life experiences as a source of variation in CEOs' gender attitudes. Because these experiences long predate the CEO's tenure at the firm, this approach relies on the component of the CEO's preferences free from the influence of firm policies.

The second issue—omitted variables—may arise because a missing variable could drive the gap in capital allocations between male and female managers, while being correlated with CEOs' characteristics. If so, the correlation between measures of CEOs' preferences and firm outcomes is explained by the endogenous matching between CEOs and firms on some omitted characteristic that drives both CEO selection and firm outcomes. For example, suppose that firms headquartered in more conservative states tend to have less female-friendly policies, and CEOs with more conservative gender attitudes are more likely to join firms located in conservative states. In this case, the observed correlation between CEOs' gender attitudes and lower capital allocations to female managers would be explained by the endogenous matching of CEOs to firms based on an omitted firm characteristic—namely, geographic location. Similar arguments can be made for the endogenous matching of CEOs to firms based on other characteristics, such

as the firm's industry. For example, CEOs with more conservative gender attitudes may choose to join firms in male-dominated industries with greater gender gaps.

We address the omitted variable concern in several ways. First, we include firm fixed effects in all of the main specifications. This approach relies exclusively on within-firm variation in CEOs for identification, while holding constant all time-invariant firm-level factors. The evidence from this analysis indicates that the relationship between CEOs' gender attitudes and firm policies cannot be explained by any firm characteristics that remain unchanged during our sample period, such as geographic location, industry, business complexity, or diversification. Second, we provide evidence from CEO turnovers that demonstrates that a change in the CEO's characteristics produces a significant shift in capital allocations between male and female division managers precisely in the direction predicted by the CEO's formative experiences. The evidence from CEO turnovers sets a high bar for a potential omitted variable. In particular, such a variable has to operate precisely at the time of CEO turnovers, shift the capital allocations to male and female division managers in the ways predicted by CEOs' formative experiences, and be economically unrelated to such formative experiences.

Yet, CEO turnovers are not random events. Instead, boards of directors hire and replace CEOs with an intent to change firm policies. For example, it is possible that the board of directors decides to replace the CEO, at least in part, because of his unsatisfactory gender policies that introduce frictions or increase the likelihood of litigation. In such a case, the board may selectively search for a new CEO with more egalitarian gender attitudes in order to increase gender equity in the firm. This scenario is consistent with our interpretation that the gender gap in resource allocations is related to the CEOs' gender attitudes. In other words, in order to change a firm's gender policies, a CEO with stereotypical gender attitudes must be replaced by the one with more egalitarian views. The next section provides more detailed evidence on the role of the board of directors in the monitoring of firm policies.

In summary, our evidence is consistent with the interpretation that CEOs' gender attitudes play an important role in the allocation of capital between male and female managers, albeit this evidence should not be viewed as causal. Our focus on CEOs' early life experiences speaks against the possibility of reverse causality, a scenario in which a CEO's gender attitudes are affected by firm policies. The evidence from CEO turnovers demonstrates that for a given firm, a change in its CEO's gender attitudes is associated with

quick and significant changes in capital allocations between male and female managers, while the majority of firm and division manager characteristics are held constant around these events. Overall, our evidence is more consistent the findings in prior work that CEOs' personal characteristics influence corporate policies (e.g., Malmendier and Tate 2008; Kaplan, Klebanov, and Sorensen 2012; Cronqvist, Makhija, and Yonker 2012; Graham, Harvey, and Puri 2013).

7. Governance, investment efficiency, and value

This section studies the association between the role of CEOs' formative experiences in capital budgeting and firm outcomes. The goal of this analysis is to understand whether the link between the CEO's gender attitudes and capital allocations is positively or negatively associated with firm outcomes and whether such effects are amplified or attenuated by corporate governance characteristics. Because corporate outcomes are affected by a variety of correlated factors, this analysis seeks to understand the associations rather than to provide causal inferences.

If the link between CEOs' gender attitudes and capital allocations reflects a subjective preference or an unconscious bias, it should be attenuated in the presence of governance mechanisms unaffected by similar subjective judgments. On the other hand, if the relation between the CEOs' gender attitudes and capital allocations reflects an optimal firm policy, it should be magnified (or at least unaffected) in the presence of strong corporate governance.

Table 8 studies whether the relation between CEOs' formative experiences and capital allocations to female managers varies in the presence of female leadership on the board of directors. To test this effect, we introduce a binary indicator *Female board chair* and interact it with the indices of CEOs' formative experiences. The dependent variable is the capital allocation to a division, and the main variable of interest is the triple interaction term *Female division manager * CEO gender index * Female board chair*.

Table 8 reports the results of this analysis, focusing on the triple interaction terms. The double interaction terms of the female chair indicator are included in all specifications, but some estimates are suppressed for brevity. The results show that the relationship between CEOs' gender attitudes and capital allocations is attenuated in the presence of a woman in the chief monitoring role. This effect is consistent across all measures of CEOs' formative experiences, and its magnitude is substantial. For example,

according to column 1, the effect of CEOs' family factors on capital allocations is reduced by approximately 40% when the firm's board of directors is chaired by a woman. This can be seen by comparing the coefficients on the interaction terms *Female division manager * CEO family index* (-0.005) and *Female division manager * CEO family index * Female board chair*. The attenuation effects comparable for CEOs' education and community factors (29% and 33%, respectively), as shown in columns 2-3. This evidence is consistent with the findings from venture capital that the presence of women in a monitoring capacity curbs the gender biases of senior male executives in investment and hiring decisions (Gompers and Wang 2017).

In our final set of analyses, we study how the relation between CEOs' formative experiences and the gender gap in capital budgeting is associated with firm outcomes. Table 9 focuses on investment efficiency. Following the literature on internal capital markets (Shin and Stulz 1998; Ozbas and Scharfstein 2010), we examine the sensitivity of capital investment to its marginal product, using industry Q as a proxy for the marginal product of capital in a given division. If the gender gap in capital allocations between male and female division managers reflects optimal redistributions of capital to its most productive use, it should be associated with a higher investment efficiency, as in the models of efficient redistribution across divisions (e.g., Stein 1997). If, on the other hand, the effect of CEOs' gender attitudes on capital allocations reflects a personal bias, it will introduce frictions in the internal capital market and weaken the link between capital investment and its marginal product, consistent with the models of CEOs' agency issues in capital budgeting (e.g., Rajan, Servaes, and Zingales 2000).

Table 9 shows that the effect of CEOs' gender attitudes on the allocation of capital weakens the link between division investment and the marginal product of capital. This result is captured by the negative coefficient on the interaction term of the CEO indices of formative experiences and industry Q across all specifications. These effects are statistically significant at 10% for family and education characteristics, but fall short of being statistically significant at conventional levels for community variables. Overall, the evidence in this table suggests that the effect of a division manager's gender on investment allocations introduces frictions in capital budgeting and reduces the sensitivity of capital investment to its marginal product.

Table 10 tests how the effect of CEOs' gender attitudes on capital investment decisions is associated with three firm outcomes: operating performance, Tobin's Q, and stock returns. In columns 1–

3, the dependent variable is firm-level return on assets (ROA). In columns 4–6, the dependent variable is firm-level Tobin's Q, which approximates the ratio of the firm's market value to its book value. In columns 7–9, the dependent variable is the one-year market-adjusted return on the company's stock. The unit of analysis is a firm-year pair, and all regressions include year and firm fixed effects.

The results in Table 10 indicate that the CEO's who grew up in environments with greater gender imbalances and lower female socialization are associated with weaker firm performance. Because these regressions include firm fixed effects, this empirical pattern is driven entirely by the variation in CEOs' characteristics for the same firm. In other words, a given firm appears to perform worse when it is managed by a CEO with less egalitarian gender attitudes. These effects are statistically significant at 5% for family-related gender experiences across all specifications and have meaningful economic effects. For example, an increase of 0.5 (equivalent to a move from the 25th to the 75h percentile) in the index of exposure to gender imbalances within the family is associated with a 15 bps (or 3.5%) decline in ROA and a 0.066 decline in Tobin's Q. The effects of education-based experiences are directionally similar, with comparable point estimates. In contrast, the relation between exposure to gender imbalances in the community and firm outcomes is statistically and economically weak, consistent with our prior evidence that the effect of community characteristics appears to be less economically important.

The evidence in Table 10 indicates that the effect of CEOs' gender attitudes on capital budgeting does not appear to be value-improving. This results parallels the evidence in prior work that CEOs' personal attitudes and formative experiences may introduce frictions in important and easy-to-observe corporate policies, such as mergers and acquisitions (Malmendier, Tate, Yan 2011) and capital structure (Cronqvist, Makhija, and Yonker 2012).

In summary, the relation between a CEO's early-life exposure to gender diversity and capital allocations weakens in the presence of women in the top monitoring role as board chairs. The incremental effect of a manager's gender on capital allocations over and above the effect of economic characteristics is associated with lower investment efficiency and weaker performance. Overall, a CEO's gender attitudes introduce subjective tilts in capital allocations which do not appear to be value improving.

8. Conclusion

This article has studied the origins and real effects of the gender gap in resource allocations between male and female agents in the internal capital markets of U.S. conglomerates. We find that male managers obtain more investment capital than female managers in the same divisions of the same firm. Our evidence suggests that the gender gap in resource allocations reflects the decision maker's personal gender attitudes, whose origins can be traced to one's formative years. When such personal attitudes influence the allocation of capital over and above the effect of economic factors, they introduce frictions in investment decisions.

Recent work suggests that our findings may extend to other economic settings. In contemporaneous work on venture capital firms, Gompers and Wang (2017) find that a decision maker's parenting of daughters leads to an increased propensity to hire female partners, resulting in better performance outcomes. The authors conclude that a gender bias in venture capital introduces value-reducing frictions even when the decision makers are financial experts with strong performance incentives.

Other evidence suggests that similar effects influence the allocation of resources at the macro level by affecting national legislation and federal courts. Washington (2008) finds that U.S. Congressmen's exposure to gender diversity via parenting daughters increases their propensity to support policies on women's rights. Glynn and Sen (2015) show that Federal Court judges with more daughters are more likely to support women's issues in their case decisions.

Taken together, this evidence underscores the importance of an agent's familial factors for decision-making across a variety of contexts with profound economic implications. In financial economics, we know very little about the personal backgrounds of the key decision makers at U.S. firms. In complement to prior work that has focused on the role of one familial factor, such as parenting daughters, we consider an extended set of formative experiences and evaluate their relative importance. Our paper makes a step towards compiling systematic evidence on the family descent, early education, and home environments of U.S. CEOs and understanding their role in financial policies. We hope that the growing interest in the role of agents' formative experiences will continue to yield novel insights into their financial decisions.

References

Ahern, K., Sosyura, D., 2015. Rumor has it: Sensationalism in financial media. *Review of Financial Studies* 28, 2050–2093.

Allport, G., 1954. The Nature of Prejudice. Reading: Addison-Wesley.

Bandura, A., 1977. *Social learning theory*. Englewood Cliffs, NJ: PrenticeHall.

Bandura, A., 1986. *Social foundations of thought and action: A social-cognitive theory.* Englewood Cliffs, NJ: Prentice Hall.

Bigler, R., Liben, L, 2006. A developmental intergroup theory of social stereotypes and prejudice. *Advances in Child Development and Behavior* 34, 39–89.

Bigler, R., Liben, L., 2007. Developmental intergroup theory: Explaining and reducing children's stereotyping and prejudice. *Current Directions in Psychological Science* 16, 162–166.

Benmelech, E., Frydman, C., 2015. Military CEOs. *Journal of Financial Economics* 117, 43–59.

Bernile, G., Bhagwat, V., Rau, R. 2017. What doesn't kill you will only make you more risk-loving: Early-life disasters and CEO behavior. *Journal of Finance* 72, 167–206

Bertrand, M., Goldin, C., Katz, L., 2010. Dynamics of the gender gap for young professionals in the financial and corporate sectors. *American Economic Journal: Applied Economics* 2, 228–255.

Brutsaert, H., 2006. Gender-role identity and perceived peer group acceptance among early adolescents in Belgian mixed and single-sex schools. *Gender and Education* 18, 635–649.

Bussey, K., Bandura, A., 1999. Social–cognitive theory of gender development and differentiation. *Psychological Review* 106, 676–713.

Chatterji, A., Levine, D., Toffel, M., 2009. How well do social ratings actually measure corporate social responsibility? *Journal of Economics & Management Strategy* 18, 125–169.

Cheng, I., Hong, H., Shue, K., 2016. Do managers do good with other people's money? Working paper.

Chetty, R., Friedman, J., Hilger, N., Saez, E., Schanzenbach, D., Yagan, D., 2011. How does your kindergarten classroom affect your earnings? Evidence from Project STAR. *Quarterly Journal of Economics* 126, 1593–1660.

Chuprinin, O., Sosyura, D., 2018. Family descent as a signal of managerial quality: Evidence from mutual funds. *Review of Financial Studies*, forthcoming.

Cordua, G., McGraw, K., and Drabman, R., 1979. Doctor or nurse: Children's perception of sex typed occupations. *Child Development* 50, 590–593.

Cronqvist, H., Makhija, A., Yonker, S., 2012. Behavioral consistency in corporate finance: CEO personal and corporate leverage. *Journal of Financial Economics* 103, 20–40.

Cronqvist, H., Yu, F., 2017. Shaped by their daughters: Executives, female socialization, and corporate social responsibility. *Journal of Financial Economics* 126, 543–562.

Dahl, M., Dezso, C., Ross, D., 2012. Fatherhood and managerial style: How a male CEO's children affect the wages of his employees, *Administrative Science Quarterly* 57, 669–693.

Dahl, G., Kotsadam, A., Rooth, D., 2018. Does integration change gender attitudes? The effect of randomly assigning women to traditionally male teams. Working paper.

Delamont, S., 1990. Sex roles and the school, London: Routledge.

Denis, D., Denis, D., Yost, K. 2002. Global diversification, industrial diversification, and firm value. *Journal of Finance* 57, 1951–1980.

Di Giuli, A., Kostovetsky, L., 2014. Are red or blue companies more likely to go green? Politics and corporate social responsibility. *Journal of Financial Economics* 111, 158–180.

Duchin, R., Goldberg, A., Sosyura, D., 2017. Spillovers inside conglomerates: Incentives and capital. *Review of Financial Studies* 30, 1696–1743.

Duchin, R., Sosyura, D., 2013. Divisional managers and internal capital markets, *Journal of Finance* 68, 387–429.

Epstein, M., Ward, L., 2011. Exploring parent-adolescent communication about gender: Results from adolescent and emerging adult samples. *Sex Roles* 65,108–118.

Fortin, N., 2005. Gender role attitudes and the labor-market outcomes of women across OECD countries. *Oxford Review of Economic Policy* 21, 416–438.

Halpern, H., Perry-Jenkins, M., 2016. Parents' gender ideology and gendered behavior as predictors of children's gender-role attitudes: A longitudinal exploration. *Sex Roles* 74, 527–542.

Heilman, M., Block, C., Martell, R., 1995. Sex stereotypes: Do they influence perceptions of managers? *Journal of Social Behavior and Personality* 10, 237–52.

Herzog, A., Bachman, J., 1982. Sex role attitudes among high school seniors: Views about work and family roles. University of Michigan, Institute for Social Research, Ann Arbor, MI.

Huang, J., Kisgen, D., 2013. Gender and corporate finance: Are male executives overconfident relative to female executives? *Journal of Financial Economics* 108, 822–839.

Huston, A., Alvarez, M., 1990. The socialization context of gender role development in early adolescence. In R. Montemayor, G. R. Adams, and T. P. Gullotta (Eds.), From childhood to adolescence: A transitional period? (pp. 156–179). Newbury Park, CA: Sage.

Glynn, A., Sen, M., 2015. Identifying judicial empathy: Does having daughters cause judges to rule for women's issues? *American Journal of Political Science* 59, 37–54.

Gompers, P., Wang, S., 2017. And the children shall lead: Gender diversity and performance in venture capital. Working paper.

Gold, D., Andres, D., 1978. Developmental comparisons between ten-year-old children with employed and nonemployed mothers. *Child Development* 49, 75–84.

Graham, J., Harvey, C., Puri, M., 2013. Managerial attitudes and corporate actions. *Journal of Financial Economics* 109, 103–21.

Graham, J., Harvey, c., Puri, M. 2015. Capital allocation and delegation of decision-making authority within firms. *Journal of Financial Economics* 115, 449–470.

Graham, J., Narasimhan, K., 2005, Corporate survival and managerial experiences during the Great Depression. Working paper.

Kaplan, S., Klebanov, M., Sorensen, M., 2012. Which CEO characteristics and abilities matter? *Journal of Finance* 67, 973–1007.

Leve, L., Fagot, B., 1997. Gender-role socialization and discipline processes in one- and two-parent families. *Sex Roles* 36, 1–21.

Lerner, J., 1994. Maternal employment and children's socioemotional development. In J. V. Lerner (Ed.), Working women and their families (pp. 54–86). Thousand Oaks, CA: Sage.

Levy, G., 1989. Relations among aspects of children's social environments, gender schematization, gender role knowledge, and flexibility. *Sex Roles* 21, 803–823.

Malmendier, U., Tate, G., 2008. Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics* 89, 20–43.

Malmendier, U., Tate, G., Yan, J., 2011. Overconfidence and early-life experiences: The effect of managerial traits on corporate financial policies. *Journal of Finance* 66, 1687–1733.

Martin C., Ruble, D. Szkrybalo, J., 2002. Cognitive theories of early gender development. *Psychological Bulletin* 128, 903–933.

Martin, P., Withersosmond, M., Hesselbart, S., Wood, M., 1980. The significance of gender as a social and demographic correlate of sex role attitudes. *Sociological Focus* 13, 383–396.

Mason, K., Czajka, J., Arber, S., 1976. Change in U.S. women's sex-role attitudes, 1964–1974. *American Sociological Review* 41, 573–596.

McCrae, R., Costa, P., 1994. The stability of personality: Observations and evaluations. *Current Directions in Psychological Science* 3, 173-175.

Mischel, W., 1966. A social-learning view of sex differences in behavior. In: Maccoby E.E., Ed. The development of sex differences. Stanford University Press, Stanford, 57–81.

Newton, D., Simutin, M., 2014. Of age, sex, and money: Insights from corporate officer compensation on the wage inequality between genders. *Management Science* 61, 2355–2375.

Ozbas, O., Scharfstein, D., 2010. Evidence on the dark side of internal capital markets. *Review of Financial Studies* 23, 581–599.

Pool, V., Stoffman, N., Yonker, S., 2012. No place like home: Familiarity in mutual fund manager portfolio choice. *Review of Financial Studies* 25, 2563–2599.

Rajan, R., Servaes, H., Zingales, L., 2000. The cost of diversity: The diversification discount and inefficient investment. *Journal of Finance* 55, 35–80.

Roberts, B., DelVecchio, W., 2000.The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies. *Psychological Bulletin* 126, 3–25.

Ruggles, S., Genadek, K., Goeken, R., Grover, J., Sobek, M., 2017. Integrated Public Use Microdata Series: Version 7. Minneapolis, MN: University of Minnesota, 2017.

Scharfstein, D., Stein, J., 2000. The dark side of internal capital markets: Division rent-seeking and inefficient investment. *Journal of Finance* 55, 2537–2564.

Shafer, E., Malhotra, N., 2011. The effect of a child's sex on support for traditional gender roles. *Social Forces* 90, 209–222.

Shin, H., Stulz., R. 1998. Are internal capital markets efficient? *Quarterly Journal of Economics* 113, 531–52.

Servaes, H., 1996. The value of diversification during the conglomerate merger wave. *Journal of Finance* 51, 1201–1225.

Stein, J. 1997. Internal capital markets and the competition for corporate resources. *Journal of Finance* 52, 111–133.

Swim, J., Sanna, L., 1996. He's skilled, she's lucky: A meta-analysis of observer's attributions for women's and men's successes and failures. *Personality and Social Psychology Bulletin* 22, 507–19.

Thornton, A., Alwin, D., Camburn, D. 1983. Causes and consequences of sex-role attitudes and attitude change. *American Sociological Review* 48, 211–227.

Vanfossen, B., 1977. Sexual stratification and sex role socialization. *Journal of Marriage and the Family* 39, 563–574.

Warner, R., 1991. Does the sex of your children matter? Support for feminism among women and men in the United States and Canada. *Journal of Marriage and the Family* 53, 1051–1056.

Warner, R., Steel, B., 1999. Child rearing as a mechanism for social change: The relationship of child gender to parents' commitment to gender equity. *Gender and Society* 13, 503–517.

Washington, E., 2008. Female socialization: How daughters affect their legislator fathers' voting on women's issues. *American Economic Review* 98, 311–332.

Weinraub, M., Clemens, L., Sockloff, A., Ethridge, R., Gracely, E., and Myers, B., 1984. The development of sex role stereotypes in the third year: Relationships to gender labeling, gender

identity, sex-typed toy preferences, and family characteristics. *Child Development* 55, 1493–1503.

Xuan, Y., 2009. Empire-building or bridge-building? Evidence from new CEOs' internal capital allocation decisions. *Review of Financial Studies* 22, 4919–4948.

Yermack, D., 2014. Tailspotting: Identifying and profiting from CEO vacation trips. *Journal of Financial Economics* 113, 252–269.

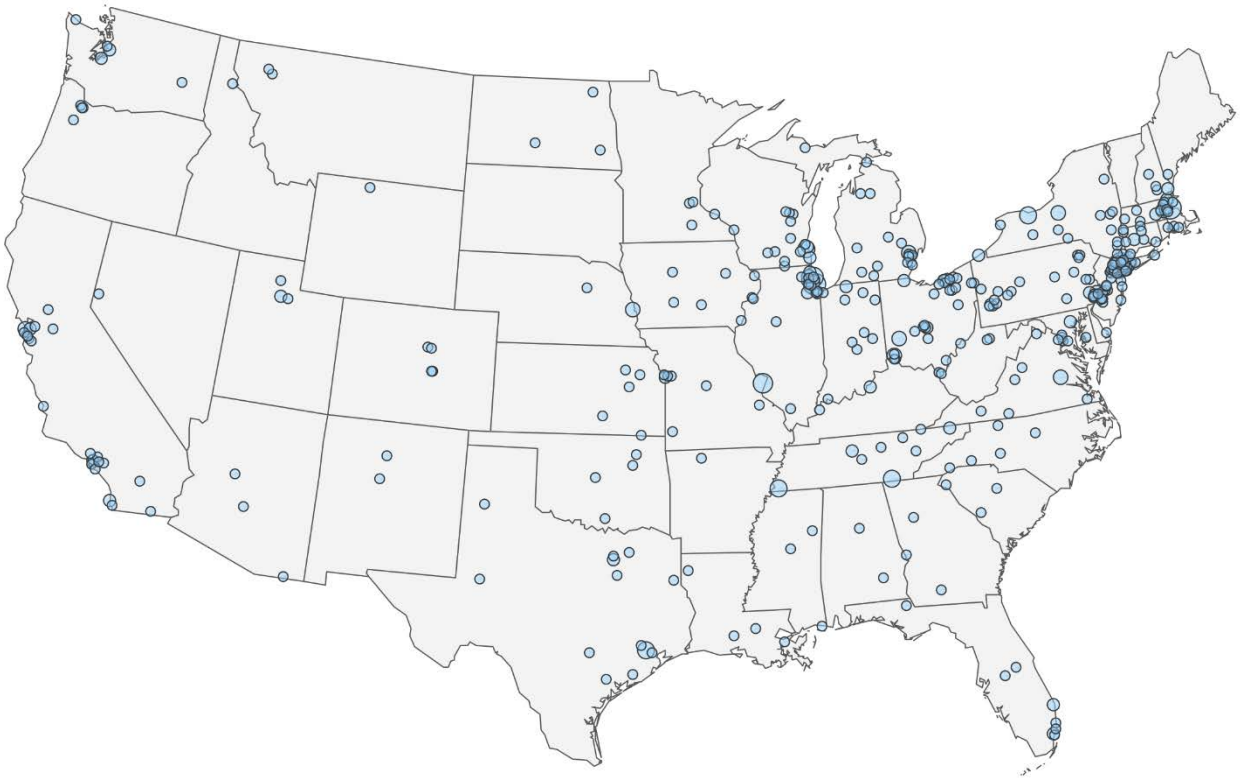


Figure 1
The geographical distribution of high schools attended by the CEOs
The circles in this figure map high schools attended by the CEOs. The area of circle increases proportionately with the number of CEOs who attended the corresponding school. All CEOs in the sample attended high schools in the continental states, hence Alaska and Hawaii are not shown.

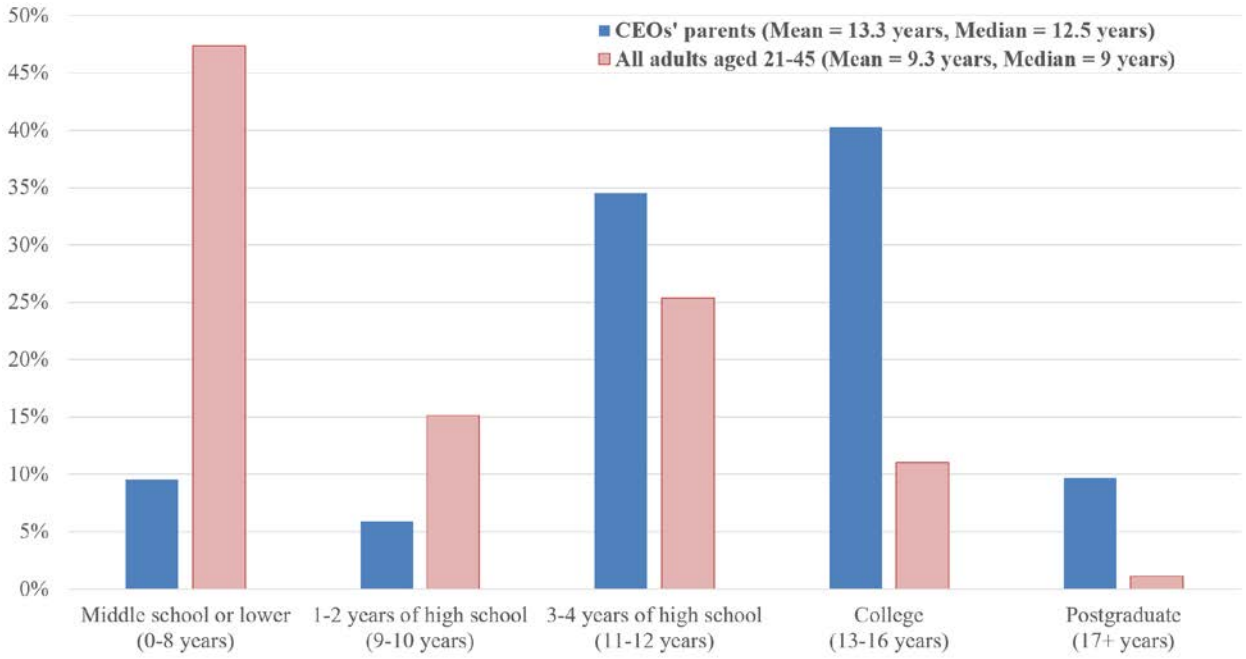


Figure 2
The distribution of education attainment of CEOs' parents and the general population
This figure compares the years of education attained by parents of CEOs and by all adults between 21 and 45 years of age. The data are obtained from the 1940 decennial federal census.

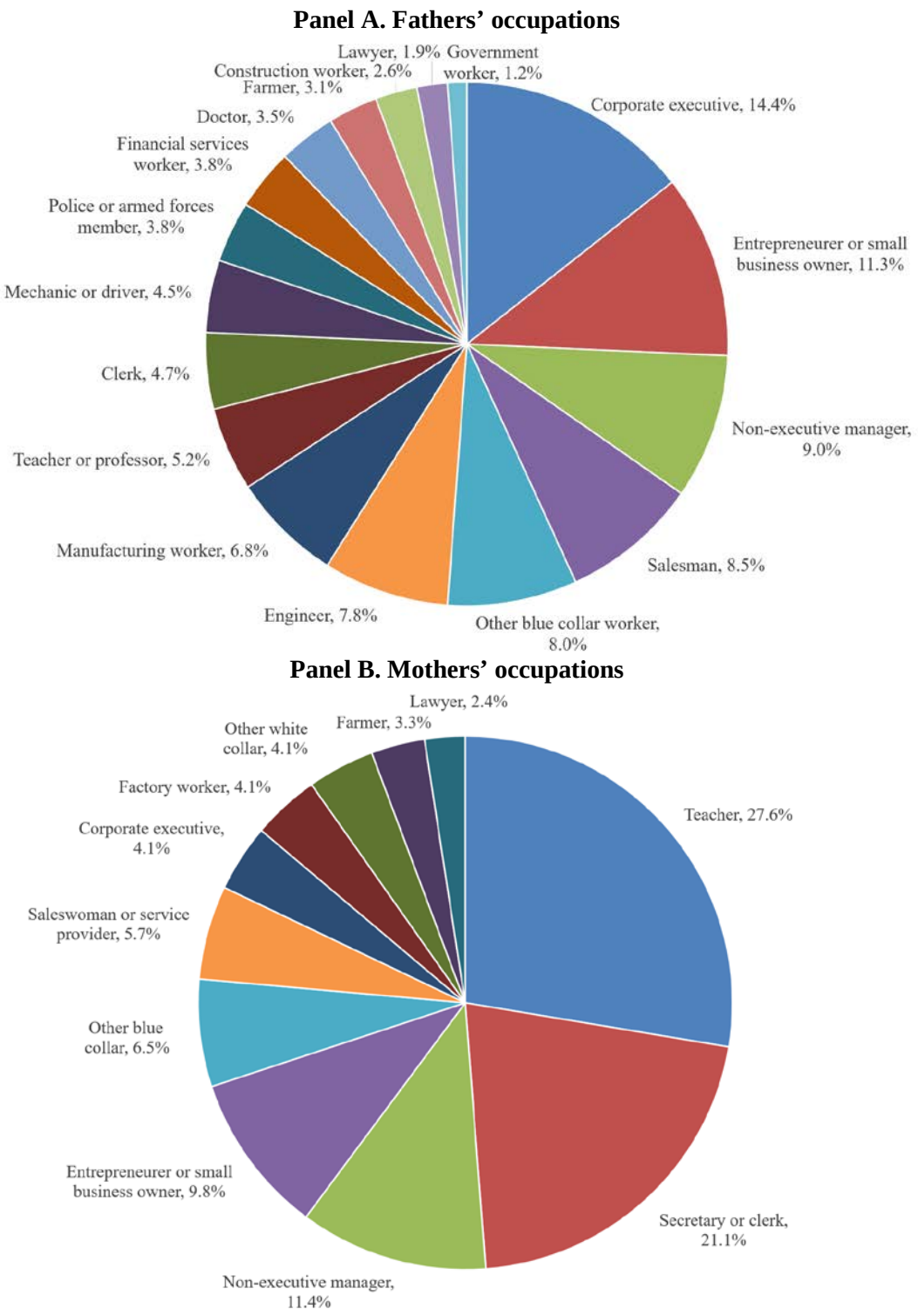


Figure 3
Professional occupations of CEOs' parents
This figure shows occupations of CEOs' fathers (Panel A) and mothers (Panel B). For mothers, occupations are provided for those working outside the home. The data are obtained from the 1940 decennial federal census, obituaries, newspaper articles, and other public sources summarized in Section 3.3 and Appendix B.

Figure 4
The distribution of house values and incomes of CEOs' parents and the general population
Panel A compares the values of houses owned by CEOs' parents and by adults between 21 and 45 years of age. Panel B compares incomes of the two groups. The data are obtained from the 1940 decennial federal census. House prices are scaled by the ratio of the median December 2016 sale price reported by Zillow to the median house price in the 1940 census. Incomes are scaled by the ratio of the median household income in 2016 as reported by the Census Bureau to the median household income in the 1940 census.

TABLE 1

Summary Statistics

This table reports summary statistics. The sample consists of multi-divisional firms in the S&P 1500 index, excluding financials and utilities, and firms with functional organizational structure. The values reported are time-series averages over the sample period. The sample period is from January 2000 to December 2008. Variable definitions appear in Appendix A.

Panel A: Companies and Divisions

Variable	Mean	25th percentile	Median	75th percentile	Standard deviation
Company level					
Market value, $millions	14,913.530	1,203.458	3,473.617	11,064.310	38,867.420
Book assets, $millions	13,547.820	1,544.500	3,625.700	10,480.200	50,750.520
Sales, $millions	7,988.040	1,461.052	3,448.000	8,871.000	10,377.130
Capital expenditure, $millions	487.262	44.900	123.440	360.000	1,293.958
Capital expenditure/assets	0.042	0.022	0.033	0.051	0.033
Number of divisions	4.108	3.000	4.000	5.000	1.374
Earnings per share (EPS)	1.663	0.612	1.591	2.879	3.231
Return on assets (ROA)	0.043	0.020	0.053	0.087	0.113
Tobin's Q	1.858	1.273	1.598	2.105	0.913
Division level					
Book assets, $millions	3197.990	284.000	856.000	2440.000	14938.790
Sales, $millions	3175.857	382.237	1117.200	2951.900	6963.144
Capital expenditure, $millions	147.166	7.991	31.206	100.000	588.484
Capital expenditure/assets	0.051	0.019	0.037	0.064	0.056
Profitability	0.147	0.070	0.128	0.206	0.163
Industry Tobin's Q	1.593	1.245	1.480	1.845	0.475
Core division indicator	0.545	0.000	1.000	1.000	0.498

Panel B: CEOs, Directors and Divisional Managers

Variable	Mean	25th percentile	Median	75th percentile	Standard deviation
CEOs					
Age	55.906	51.000	56.000	60.000	6.510
Male indicator	1.000	1.000	1.000	1.000	0.000
Tenure with the firm	14.528	5.099	11.609	18.079	10.836
Graduate degree indicator	0.617	0.000	1.000	1.000	0.486
MBA indicator	0.413	0.000	0.000	1.000	0.492
External board seats	2.172	1.000	2.000	3.000	1.268
Directors					
Board size	9.663	8.000	10.000	11.000	2.919
Number of female directors	1.267	1.000	1.000	2.000	0.934
Fraction of female directors	0.123	0.077	0.111	0.182	0.090
Female board chair indicator	0.084	0.000	0.000	0.000	0.277
Divisional managers					
Age	50.573	48.000	50.356	54.000	5.544
Male indicator	0.924	1.000	1.000	1.000	0.265
Tenure with the firm	10.778	3.000	8.000	16.000	9.754
Graduate degree indicator	0.787	1.000	1.000	1.000	0.410
MBA indicator	0.390	0.000	0.000	1.000	0.487
External board seats	0.216	0.000	0.000	0.000	0.412
Social connections to CEO	0.005	-0.158	0.000	0.138	0.337
Performance record (division profitability)	0.151	0.070	0.127	0.205	0.265

TABLE 2

CEO Family Characteristics and Formative Years

This table describes the familial and community background of CEOs. The sample consists of multi-divisional firms in the S&P 1500 index, excluding financials and utilities, and firms with functional organizational structure. Community characteristics in Panel C are measured for the county where the CEO went to high school, and the measurement is as of the national census year closest to the year when the CEO reaches age 18. Incomes are scaled by the ratio of the median household income in 2016 to the median household income reported in the corresponding census. The sample period is from January 2000 to December 2008. Variable definitions appear in Appendix A.

Panel A: Family Characteristics

Variable	**Mean**	**25th percentile**	**Median**	**75th percentile**	**Standard deviation**
Parents					
Father education (years)	13.544	12.000	14.000	16.000	3.250
Father attended college, indicator	0.559	0.000	1.000	1.000	0.497
Mother education (years)	12.945	12.000	12.000	16.000	2.641
Mother attended college, indicator	0.431	0.000	0.000	1.000	0.496
Father white-collar job**,** indicator	0.711	0.000	1.000	1.000	0.454
Working mother, indicator	0.211	0.000	0.000	0.000	0.408
Mother income (2016 dollars)	40,155	23,616	35,817	51,167	25,635
Father income (2016 dollars)	91,545	51,167	78,719	118,078	57,575
Children					
Number of children	2.784	2.000	2.000	3.000	1.345
Number of sons	1.339	1.000	1.000	2.000	1.112
Number of daughters	1.298	1.000	1.000	2.000	1.057
Children's gender imbalance	0.041	-1.000	0.000	1.000	1.845

Panel B: Education Characteristics

Variable	**Mean**	**25th percentile**	**Median**	**75th percentile**	**Standard deviation**
High school					
Private indicator	0.254	0.000	0.000	1.000	0.436
All-male indicator	0.164	0.000	0.000	0.000	0.371
Religious	0.182	0.000	0.000	0.000	0.386
University					
Private indicator	0.488	0.000	0.000	1.000	0.500
All-male indicator	0.099	0.000	0.000	0.000	0.298
Fraction of females in student body	0.346	0.280	0.381	0.444	0.163

Panel C: Community Characteristics

Variable	**Mean**	**25th percentile**	**Median**	**75th percentile**	**Standard deviation**
Labor force participation rate, males	0.940	0.928	0.944	0.958	0.035
Labor force participation rate, females	0.419	0.360	0.413	0.452	0.106
Labor force participation gender imbalance	0.522	0.469	0.538	0.595	0.114
Income for employed males (2016 dollars)	60,155	31,998	56,903	70,606	41,896
Income for employed females (2016 dollars)	29,902	18,555	28,692	32,225	20,121
Income gap between employed males and females	30,253	13,564	29,380	38,951	22,539
Male education (years)	11.307	10.592	11.373	12.130	1.328
Female education (years)	11.139	10.615	11.266	11.795	1.087
Education gender imbalance	0.168	0.025	0.241	0.379	0.356
Unemployment rate, males	0.048	0.028	0.039	0.061	0.029
Unemployment rate, females	0.055	0.039	0.054	0.066	0.024
Employment gender imbalance	-0.007	-0.018	-0.009	0.005	0.020

Panel D: Gender Imbalance Indexes

Variable	**Mean**	**25th percentile**	**Median**	**75th percentile**	**Standard deviation**
Family gender imbalance index	0.506	0.373	0.599	0.620	0.179
Education gender imbalance index	0.503	0.340	0.487	0.644	0.203
Community gender imbalance index	0.501	0.408	0.503	0.583	0.134

TABLE 3

Allocation of Capital between Male and Female Division Managers

This table studies the allocation of investment capital between male and female division managers. The dependent variable is the ratio of segment-level capital expenditure to book assets. The sample consists of industrial conglomerates in the S&P 1500 index with available data on capital expenditures, book assets, division managers, and CEO backgrounds. The sample period is from 2000 to 2008. All variable definitions are given in Appendix A. The regressions include year, year and industry, or year, industry and firm fixed effects. The t-statistics (in brackets) are based on standard errors that are heteroskedasticity consistent and clustered at the division level. Significance levels are indicated as follows: * = 10%, ** = 5%, *** = 1%.

Model	(1)	(2)	(3)
Female division manager	-0.005**	-0.005***	-0.007***
	[2.218]	[3.463]	[3.709]
Firm level			
Return on assets (ROA)	-0.012	-0.015	-0.020
	[0.770]	[1.009]	[1.330]
Earnings per share (EPS)	0.001***	0.001***	0.001**
	[2.902]	[2.671]	[2.293]
Size (log assets)	-0.001	-0.002**	-0.007*
	[0.909]	[2.338]	[1.734]
Number of divisions	-0.002**	-0.002**	-0.001
	[2.414]	[2.314]	[0.514]
Tobin's Q	0.007***	0.008***	0.009***
	[5.266]	[5.602]	[4.185]
CEO controls			
Age	-0.010	-0.013	-0.016*
	[1.229]	[1.593]	[1.732]
External board seats	-0.002**	-0.001	0.001
	[2.514]	[1.547]	[0.074]
Graduate degree	-0.004*	-0.002	0.003
	[1.934]	[1.313]	[0.816]
Tenure with the firm	0.008***	0.007***	0.001
	[7.921]	[7.030]	[0.972]
Log network size	0.002*	0.002*	0.005***
	[1.677]	[1.757]	[2.765]
Division controls			
Industry Tobin's Q	0.006***	0.006***	0.007***
	[3.901]	[3.984]	[3.262]
Return on assets (ROA)	0.042***	0.040***	0.025***
	[7.320]	[7.357]	[4.144]
Size (log assets)	-0.001*	-0.002***	-0.002
	[1.694]	[4.408]	[1.554]
Core division	0.003*	0.001	-0.001
	[1.654]	[0.247]	[0.536]
Division manager controls			
External board seats	-0.003	-0.003	-0.006*
	[0.904]	[0.913]	[1.830]
Graduate degree	0.001	0.001	0.002
	[0.136]	[0.272]	[0.661]
Tenure	0.005***	0.004*	0.002
	[2.617]	[1.889]	[0.799]
Performance record	0.004**	0.002*	0.004**
	[2.229]	[1.749]	[2.160]
Social connections to CEO	0.009***	0.012***	0.011***
	[2.911]	[2.853]	[2.892]
Board member	0.004	0.002	0.001
	[1.205]	[0.637]	[0.105]
Age	0.001	0.001	0.001
	[1.090]	[0.040]	[1.005]
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	No	Yes	Yes
Firm fixed effects	No	No	Yes
R^2	0.062	0.294	0.575
N_obs	3,904	3,904	3,904

TABLE 4

CEO Background

This table studies how CEO characteristics affect the allocation of capital between male and female division managers. The dependent variable is the ratio of segment-level capital expenditure to book assets. The sample consists of industrial conglomerates in the S&P 1500 index with available data on capital expenditures, book assets, division managers, and CEO backgrounds. The sample period is from 2000 to 2008. Control variables include the same characteristics of the firm, division, CEO, and division manager as in Table 2. All variable definitions are given in Appendix A. All the regressions include year, industry, and firm fixed effects. The t-statistics (in brackets) are based on standard errors that are heteroskedasticity consistent and clustered at the division level. Significance levels are indicated as follows: * = 10%, ** = 5%, *** = 1%.

Panel A: Individual Measures of Gender Imbalance

Background	Family			Education			Community	
Measure of CEO gender imbalance	Working mother	Parents education imbalance	Children's gender imbalance	High school gender imbalance	University gender imbalance	Labor force participation gender imbalance	Income gender imbalance	Education gender imbalance
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female division manager	-0.003 [1.461]	-0.004** [2.268]	-0.003 [1.445]	-0.004** [2.283]	-0.006** [2.361]	-0.004** [2.089]	-0.003 [1.572]	-0.004** [2.298]
CEO gender imbalance	0.002* [1.931]	0.003** [2.096]	0.004** [2.143]	0.003** [1.995]	0.005** [2.087]	0.002** [2.063]	0.003** [2.241]	0.001** [2.075]
Female division manager x CEO gender imbalance	-0.004** [2.106]	-0.002* [1.831]	-0.004** [2.074]	-0.005** [2.146]	-0.003 [1.492]	-0.002 [1.546]	-0.001** [2.197]	-0.002* [1.859]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.579	0.573	0.582	0.580	0.579	0.574	0.580	0.576
N_obs	3,904	3,904	3,904	3,904	3,904	3,904	3,904	3,904

Panel B: Pooled Indices of Gender Imbalance

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female division manager	-0.002 [1.582]	-0.003 [1.473]	-0.002* [1.769]	-0.003* [1.819]	-0.004** [2.114]	-0.004** [2.072]	-0.002 [1.547]	-0.002 [1.320]
CEO family index	0.003** [2.368]	0.004** [2.296]					0.003** [2.574]	0.004** [2.418]
Female division manager x CEO family index	-0.005** [2.215]	-0.004** [2.163]					-0.004** [2.307]	-0.004** [2.226]
CEO education index			0.004** [2.187]	0.003** [2.049]			0.003** [2.017]	0.003* [1.903]
Female division manager x CEO education index			-0.006** [2.409]	-0.004** 2.303]			-0.004** [2.352]	-0.004** 2.447]
CEO community index					0.006* [1.766]	0.004* [1.883]	0.002 [1.395]	0.003 [1.461]
Female division manager x CEO community index					-0.005* [1.837]	-0.004* [1.735]	-0.002 [1.573]	-0.001 [1.466]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
R^2	0.336	0.584	0.329	0.580	0.327	0.578	0.346	0.592
N_obs	3,904	3,904	3,904	3,904	3,904	3,904	3,904	3,904

TABLE 5

Division Managers' Attributes and Firms' Social Ratings

Panel A studies how managerial attributes vary between male and female division managers. Panel B studies how CEO characteristics affect firm-specific practices reported by the KLD social ratings database. The sample consists of industrial conglomerates in the S&P 1500 index with available data on capital expenditures, book assets, division managers, and CEO backgrounds. The sample period is from 2000 to 2008. All variable definitions are given in Appendix A. All the regressions include firm fixed effects. The t-statistics (in brackets) are based on standard errors that are heteroskedasticity consistent and clustered at the division level. Significance levels are indicated as follows: * = 10%, ** = 5%, *** = 1%.

Panel A: Division managers' attributes

Division manager attribute	Busy manager (external board seats)	Graduate degree	Ln(1+Tenure)	Performance record	Social connections to CEO	Ln(Age)
Model	(1)	(2)	(3)	(4)	(5)	(6)
Female division manager	-0.001 [0.009]	0.037 [0.604]	-0.091 [0.815]	-0.066 [0.576]	-0.070 [1.289]	-0.030* [1.830]
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.527	0.378	0.424	0.499	0.480	0.339
N_obs	3,954	3,954	3,954	3,954	3,954	3,954

Panel B: Firms' social ratings

Dependent variable	Promotion of women and minorities			Outstanding work/life benefits			Women & Minority contracting		
CEO imbalance index	Family	Education	Community	Family	Education	Community	Family	Education	Community
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
CEO imbalance index	-0.372*** [2.766]	-0.084 [1.069]	-0.102** [2.131]	-0.323** [2.420]	-0.141 [1.163]	-0.154** [2.087]	-0.212** [2.010]	-0.154* [1.767]	-0.078** [2.460]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.200	0.203	0.208	0.181	0.159	0.163	0.129	0.139	0.136
N_obs	1,314	1,241	1,228	1,314	1,241	1,228	1,314	1,241	1,228

TABLE 6

The Appointment of Male and Female Managers to Divisions

This table studies how CEO characteristics are associated with the appointment of male and female managers to divisions. The dependent variable is the characteristic of a division to which a particular manager is assigned at the time of turnover. Characteristics of divisions are measured in the year immediately preceding the year of division managers' appointments. In Panel A, divisions' characteristics include capital investment (columns 1-4) and division size, measured by book assets (columns 5-8). In Panel B, divisions' characteristics include profitability, measured by the division's return on assets (columns 1-4), and the core segment dummy, defined as an indicator that equals one if the division operates in the conglomerate's core industry (columns 5-8). The base sample consists of industrial conglomerates in the S&P 1500 index with available data on capital expenditures, book assets, division managers, and CEO backgrounds. The sample period is from 2000 to 2008. All variable definitions are given in Appendix A. All regressions include year, industry, and firm fixed effects. The t-statistics (in brackets) are based on standard errors that are heteroscedasticity consistent and clustered at the division level. Significance levels are indicated as follows: * = 10%, ** = 5%, *** = 1%.

Panel A: Capital investment and division size

Dependent variable	Division characteristics in the year preceding division manager's appointment							
	Division CapEx				Division size			
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female division manager	-0.007 [0.481]	0.005 [0.622]	-0.024 [0.807]	-0.02 [1.012]	-0.488 [1.205]	-0.455 [0.996]	-0.556 [0.874]	-0.388 [0.968]
CEO family index		-0.009 [0.859]				0.129 [1.598]		
Female division manager x CEO family index		-0.0017** [2.102]				-0.045 [0.552]		
CEO education index			-0.008 [0.630]				0.155 [1.599]	
Female division manager x CEO education index			-0.015* [1.874]				-0.037 [0.240]	
CEO community index				-0.005 [1.363]				0.102 [1.064]
Female division manager x CEO community index				-0.004 [1.521]				-0.026 [1.382]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.554	0.557	0.558	0.554	0.871	0.873	0.867	0.866
N_obs	492	492	470	478	517	517	495	503

Panel B: Profitability and core division

Dependent variable	Division characteristics in the year preceding division manager's appointment							
	Division profitability				Core division indicator			
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female division manager	-0.251 [0.675]	-0.274 [0.780]	-0.347 [0.528]	-0.262 [0.419]	-0.076 [1.338]	-0.076 [1.338]	-0.072 [1.433]	-0.051 1.226]
CEO family index		-0.089 [0.075]				-0.040 [0.083]		
Female division manager x CEO family index		-0.134* [1.665]				-0.056** [2.206]		
CEO education index			-0.094 [0.299]				-0.069 [1.196]	
Female division manager x CEO education index			-0.191* [1.734]				-0.037** [1.971]	
CEO community index				-0.062 [0.573]				-0.039 [0.745]
Female division manager x CEO community index				-0.122 [1.259]				-0.016 [1.358]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.791	0.795	0.798	0.790	0.652	0.652	0.655	0.658
N_obs	516	516	494	501	621	621	587	606

TABLE 7

The Capital Allocation Channel: CEO Turnover

This table studies how changes in CEO characteristics at the time of CEO turnover affect the allocation of capital to male and female managers, while holding constant their appointments to divisions. It presents estimates from first-difference regressions, in which the dependent variable is the annual change in the ratio of segment-level capital expenditure to book assets, for segment-year observations where the CEO has changed from the previous year but the division manager has not changed. The base sample consists of industrial conglomerates in the S&P 1500 index with available data on capital expenditures, book assets, division managers, and CEO backgrounds. The sample period is from 2000 to 2008. Control variables include first-differences in the same characteristics of the firm, division, CEO, and division manager as in Table 2. All variable definitions are given in Appendix A. The regressions include year, industry, and firm fixed effects. The t-statistics (in brackets) are based on standard errors that are heteroscedasticity consistent and clustered at the division level. Significance levels are indicated as follows: * = 10%, ** = 5%, *** = 1%.

Dependent variable	ΔCapEx			
Model	(1)	(2)	(3)	(4)
Female division manager	-0.010 [0.627]	0.005 [0.805]	-0.004 [0.674]	0.001 [0.417]
ΔCEO family index		0.013* [1.753]		
Female division manager x ΔCEO family index		-0.023* [1.883]		
ΔCEO education index			0.017** [2.148]	
Female division manager x ΔCEO education index			-0.028** [2.267]	
ΔCEO community index				0.015* [1.680]
Female division manager x ΔCEO community index				-0.023** [1.994]
Controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
R^2	0.742	0.753	0.757	0.755
N_obs	512	512	512	512

TABLE 8

Gender Composition of the Board

This table studies how CEO characteristics affect the allocation of capital between male and female division managers. The dependent variable is the ratio of segment-level capital expenditure to book assets. The sample consists of industrial conglomerates in the S&P 1500 index with available data on capital expenditures, book assets, division managers, and CEO backgrounds. The sample period is from 2000 to 2008. Control variables include the same characteristics of the firm, division, CEO, and division manager as in Table 2. All variable definitions are given in Appendix A. All the regressions include year and industry fixed effects. The t-statistics (in brackets) are based on standard errors that are heteroskedasticity consistent and clustered at the division level. Significance levels are indicated as follows: * = 10%, ** = 5%, *** = 1%.

Model	(1)	(2)	(3)
Female division manager	-0.002 [1.559]	-0.002* [1.845]	-0.003** [2.286]
Female division manager x CEO family index	-0.005** [2.243]		
Female division manager x CEO family index x Female board chair	0.002* [1.858]		
Female division manager x CEO education index		-0.007** [2.538]	
Female division manager x CEO education index x Female board chair		0.002* [1.907]	
Female division manager x CEO community index			-0.006** [1.984]
Female division manager x CEO community index x Female board chair			0.002** [2.052]
Controls	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
R^2	0.344	0.339	0.337
N_obs	3,904	3,904	3,904

TABLE 9

Capital Allocation Efficiency

This table studies how the CEO's exposure to gender imbalance affects the efficiency of capital investment, measured as the sensitivity of division CapEx to Tobin's Q in the division's industry. It presents estimates from panel regressions, in which the dependent variable is the capital allocation of a division. The sample consists of industrial conglomerates in the S&P 1500 index with available data on capital expenditures, book assets, division managers, and CEO backgrounds. The sample period is from 2000 to 2008. All variable definitions are given in Appendix A. The t-statistics (in brackets) are based on standard errors that are heteroscedasticity consistent and clustered at the division level. Significance levels are indicated as follows: * = 10%, ** = 5%, *** = 1%.

Index type	Family	Education	Community
Model	(1)	(2)	(3)
CEO imbalance index	-0.036** [2.051]	-0.014* [1.759]	-0.028* [1.855]
Tobin's Q	0.010** [2.355]	0.008** [2.229]	0.007** [2.148]
CEO imbalance index x Tobin's Q	-0.006* [1.860]	-0.004* [1.735]	-0.005 [1.364]
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
R^2	0.328	0.323	0.331
N_obs	3,893	3,684	3,734

TABLE 10

Firm Performance

This table studies how the CEO's exposure to gender imbalance affects the value of the firm. It presents estimates from panel regressions, in which the dependent variable is the performance of a firm, as measured by the return on assets (Columns 1-3), Tobin's Q (Columns 4-6), and annual stock returns (Columns 7-9). The sample consists of industrial conglomerates in the S&P 1500 index with available data on capital expenditures, book assets, division managers, and CEO backgrounds. The sample period is from 2000 to 2008. All variable definitions are given in Appendix A. The t-statistics (in brackets) are based on standard errors that are heteroscedasticity consistent and clustered at the division level. Significance levels are indicated as follows: * = 10%, ** = 5%, *** = 1%.

Performance measure	ROA			Tobin's Q			Stock returns		
Index type	Family	Education	Community	Family	Education	Community	Family	Education	Community
Model number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
CEO imbalance index	-0.003** [2.408]	-0.002* [1.833]	0.006 [0.568]	-0.132** [2.309]	-0.119* [1.855]	-0.081* [1.720]	-0.012** [2.264]	-0.015** [2.325]	-0.001 [1.253]
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.458	0.476	0.471	0.792	0.795	0.791	0.398	0.402	0.400
N_obs	1,431	1,337	1,346	1,423	1,329	1,358	1,404	1,311	1,330

Appendix A. Variables Definitions

Variable name	Description
Working mother	An indicator that equals one if the CEO's mother holds paid employment during the first 18 years of a CEO's life.
Parents' education imbalance	The difference between the number of education years for the CEO's father and the CEO's mother, where higher values indicate families with a higher educational attainment of the father.
Children's gender imbalance	The difference between the CEO's number of sons and daughters, normalized by the total number of children.
Labor force participation gender imbalance	The difference in labor force participation rate between men and women in the county where the CEO went to high school. The measurement is as of the national census year closest to the year when the CEO reaches age 18.
Income gender imbalance	The difference between the average annual income (in thousands of dollars) of men and women in the county where the CEO went to high school. The measurement is as of the national census year closest to the year when the CEO reaches age 18.
Education gender imbalance	The difference between the number of education years of men and women in the county where the CEO went to high school. The measurement is as of the national census year closest to the year when the CEO reaches age 18.
High school gender imbalance	An indicator variable that equals 1 if the CEO attended a single-sex high school and zero otherwise. The variable is measured as of the dates of CEO attendance of the high school.
University gender imbalance	The average fraction of female students in the university that the CEO attended as an undergraduate student. The variable is measured as of the dates of CEO attendance of the university.

Appendix B. Identifying CEOs' Family Descent

We begin by obtaining CEO names and age from the Execucomp database. We fill in all missing observation by consulting SEC filings of the firms, which report CEO age in DEF 14A and other forms. The age allows us to estimate CEO birth year, which we use alongside his name to identify the executive in the Lexis Nexis Public Records database (LNPR). We are able to locate all CEOs in our sample in the database, and verify the accuracy of the match by ensuring that the person's employer, work email address, and occupation correspond to the firm that the CEO headed. As a useful additional check, we compare the zip codes of the CEOs' home addresses in LNPR against zip codes disclosed by the CEOs when they made political contributions. Many CEOs make personal political donations, and this data is publicly available (e.g., via city-data.com).

For each CEO, we collect from LNPR the full name including the middle name, month and year of birth, and the state issuing the social security number. LNPR also provides a list of "potential relatives", including parents and children, which serve as an additional lead to determine members of their families. Armed with this information, we follow the multi-step process described in Chuprinin and Sosyura (2018) to identify a CEO's family in the census.

In the first step, we use the CEO's name, date of birth, and the state issuing the social security number to search for the birth record of the CEO on the genealogy research service ancestry.com. The availability of birth records and the level of information available in them differ across states and over time. Figure A1 offers an example of the birth certificate of one of the CEOs in our sample. It identifies both parents, their ages, employment, and residence, all of which we record.

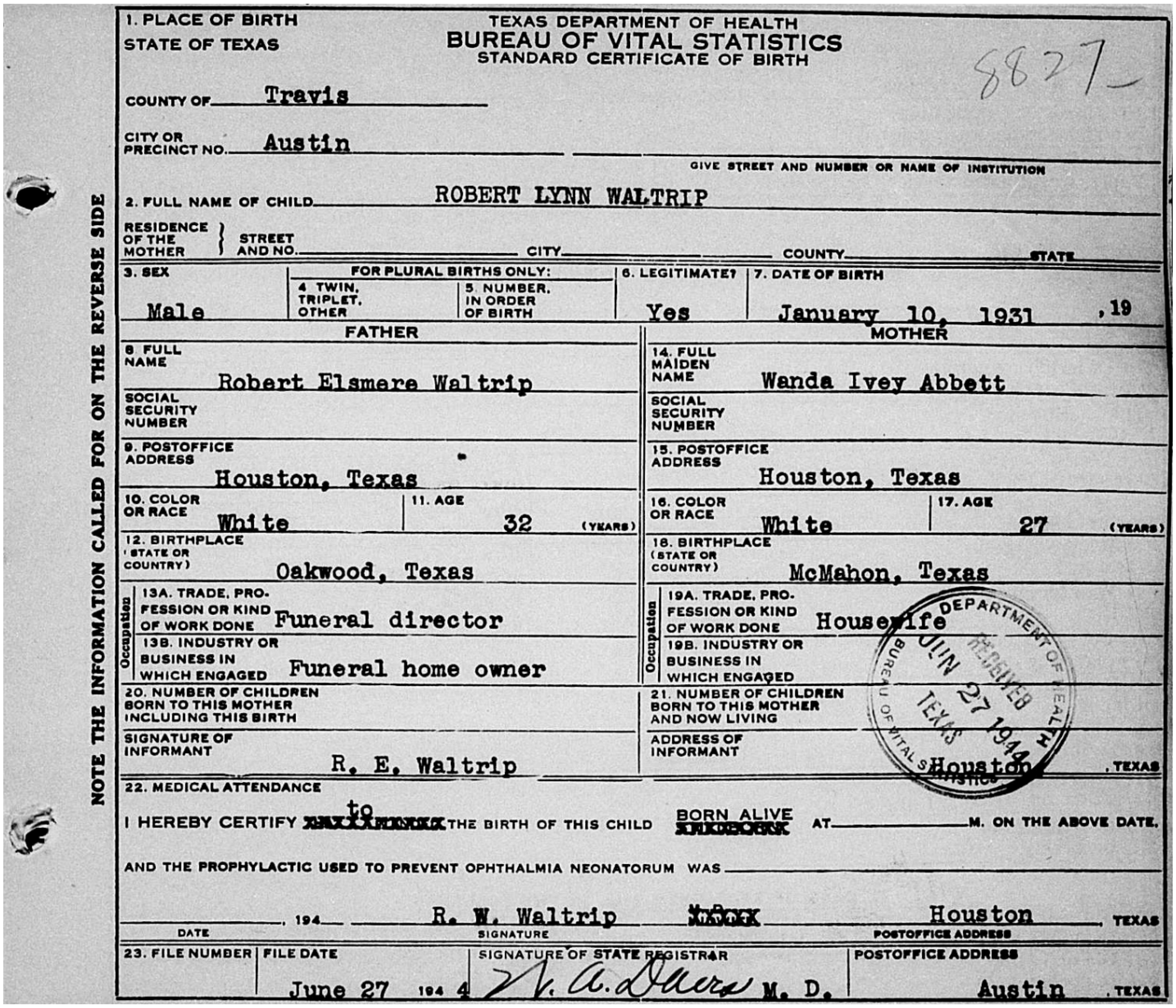
If we are unable to identify CEOs' parents from the birth records, we move to the second step, searching ancestry.com for marriage records of the CEO. Availability of these also varies by state and over time, and when we cannot locate them, we turn to newspapers.com, a service that contains copies of thousands of publications, including small local newspapers. We search this service for marriage announcements, which in the vast majority of the cases contain information on the parents of the CEO. Figure A2 provides an illustration of one such announcement.

For CEOs for whom the first two steps do not identify the parents, we turn to death records and obituaries, available through ancestry.com, legacy.com, and newspapers.com. Obituaries often provide detailed information on parents, children, and extended family members. Lastly, we search CEO biographies, interviews, and records publicly available on the internet to identify parents of those CEOs for whom birth, marriage, and death records did not yield any information on parents.

Using names and ages of the parents, we search for their records in the federal decennial census forms and the state census forms. These can be accessed for free at familysearch.org and achives.gov, and with subscription at ancestry.com. The sources differ in the census vintages they cover and in outcomes of the optical character recognition. In some cases, particularly when the handwriting of the census taker is hard to read, the searchable text of the same census form may be somewhat different on the websites.

Census forms offer a wealth of information. We show a blank form in Figure A3 and a completed form for the family of one of the CEOs in the sample in Figure A4. In addition to giving the family composition, the form allows us to determine the address of the household, the value of the house or the rent paid, as well as parents' age, education, employment, and income.

When we are unable to find CEOs' parents in the census, we again turn to searching for their obituaries. Parents of most CEOs are deceased, and we are able to locate obituaries for most parents. In addition to identifying family members, obituaries also provide education and employment of the parents, and often mention the place of residence of parents during various stages of their lives, all of which we record. We provide an example of an obituary of the father of one of the CEOs in our sample in Figure A5.



NOTE THE INFORMATION CALLED FOR ON THE REVERSE SIDE

1. PLACE OF BIRTH
STATE OF TEXAS

TEXAS DEPARTMENT OF HEALTH
BUREAU OF VITAL STATISTICS
STANDARD CERTIFICATE OF BIRTH

8827

COUNTY OF Travis

CITY OR PRECINCT NO. Austin

GIVE STREET AND NUMBER OR NAME OF INSTITUTION

2. FULL NAME OF CHILD ROBERT LYNN WALTRIP

RESIDENCE OF THE MOTHER { STREET AND NO. CITY COUNTY STATE

3. SEX Male | FOR PLURAL BIRTHS ONLY: 4. TWIN, TRIPLET, OTHER | 5. NUMBER, IN ORDER OF BIRTH | 6. LEGITIMATE? Yes | 7. DATE OF BIRTH January 10, 1931, 19

FATHER	MOTHER
8. FULL NAME Robert Elsmere Waltrip	14. FULL MAIDEN NAME Wanda Ivey Abbett
SOCIAL SECURITY NUMBER	SOCIAL SECURITY NUMBER
9. POSTOFFICE ADDRESS Houston, Texas	15. POSTOFFICE ADDRESS Houston, Texas
10. COLOR OR RACE White; 11. AGE 32 (YEARS)	16. COLOR OR RACE White; 17. AGE 27 (YEARS)
12. BIRTHPLACE (STATE OR COUNTRY) Oakwood, Texas	18. BIRTHPLACE (STATE OR COUNTRY) McMahon, Texas
Occupation 13A. TRADE, PROFESSION OR KIND OF WORK DONE Funeral director	Occupation 19A. TRADE, PROFESSION OR KIND OF WORK DONE Housewife
13B. INDUSTRY OR BUSINESS IN WHICH ENGAGED Funeral home owner	19B. INDUSTRY OR BUSINESS IN WHICH ENGAGED
20. NUMBER OF CHILDREN BORN TO THIS MOTHER INCLUDING THIS BIRTH	21. NUMBER OF CHILDREN BORN TO THIS MOTHER AND NOW LIVING
SIGNATURE OF INFORMANT R. E. Waltrip	ADDRESS OF INFORMANT Houston, TEXAS

DEPARTMENT OF HEALTH BUREAU OF VITAL STATISTICS RECEIVED JUN 27 1944 TEXAS

22. MEDICAL ATTENDANCE
I HEREBY CERTIFY to THE BIRTH OF THIS CHILD BORN ALIVE AT ______ M. ON THE ABOVE DATE.

AND THE PROPHYLACTIC USED TO PREVENT OPHTHALMIA NEONATORUM WAS ______

______, 194__ R. W. Waltrip Houston, TEXAS
DATE SIGNATURE POSTOFFICE ADDRESS

23. FILE NUMBER | FILE DATE June 27 1944 | SIGNATURE OF STATE REGISTRAR W. A. Davis M. D. | POSTOFFICE ADDRESS Austin, TEXAS

Figure A1
Example of birth certificate
This figure shows the birth certificate of one of the CEOs in our sample. In addition to the date and location of birth, it identifies parents, their ages, occupations, and city of residence.

MISS JOAN ABBOTT BECOMES FIANCEE

Alumna of Rosemont College Will Be Married to John V. Faraci, Former Officer

Special to THE NEW YORK TIMES.

SUMMIT, N. J., Oct. 4 — Announcement has been made by Mr. and Mrs. Edward P. Abbott of the engagement of their daughter, Joan, to John V. Faraci, son of Mr. and Mrs. Marion C. Faraci of New York.

The prospective bride attended the Kent Place School here, and the Convent of the Sacred Heart in Noroton, Conn. She was graduated from Rosemont (Pa.) College.

Mr. Faraci was graduated from Villanova College. A former lieutenant, he served in the Army for three years, including duty in the Philippines. He is president of the American Mica Insulation Company.

Figure A2
Example of marriage announcement
This figure shows an announcement in the October 5, 1948 issue of The New York Times of the marriage of one of the CEOs in the sample. The announcement identifies the bride and the groom, their parents, and the groom's education and employment.

STATE

COUNTY

TOWNSHIP OR OTHER DIVISION OF COUNTY

INCORPORATED PLACE

WARD OF CITY

1940 Federal Census

ENUMERATION DISTRICT NO.

SUPERVISOR'S DISTRICT NO.

SHEET NO.

ENUMERATED BY ME ON , 1940

, ENUMERATOR

BLOCK NO.

UNINCORPORATED PLACE

INSTITUTION

Line No.	LOCATION: Street, Avenue, road, etc.	LOCATION: House Number	HOUSEHOLD DATA: No. of Household in order of visitation	HOUSEHOLD DATA: Home owned (O) or rented (R)	HOUSEHOLD DATA: Value of home or Monthly rental if rented.	HOUSEHOLD DATA: Farm? (Yes or No)	NAME: Name of each person whose *usual* place of residence on April 1, 1940, was in this household. BE SURE TO INCLUDE: 1. Persons temporarily absent from household. Write "Ab" after names of such persons. 2. Children under 1 year of age. Write "Infant" if child has not been given a first name. Enter (X) after name of person furnishing information.	RELATION: Relationship of this person to the head of the household, as wife, daughter, father, mother-in-law, grandson, lodger, lodger's wife, servant, hired hand, etc.	CODE (Leave Blank)	PERSONAL DESCRIPTION: Sex	PERSONAL DESCRIPTION: Color or Race	PERSONAL DESCRIPTION: Age at Last Birthday	PERSONAL DESCRIPTION: Marital Status	EDUCATION: Attended school or college at any time since March 1, 1940?	EDUCATION: Highest grade of school completed	CODE (Leave Blank)	PLACE OF BIRTH: If born in U.S. give state, territory or possession. If foreign born, give country in which birthplace was situated on Jan. 1, 1937. Distinguish: Canada-French from Canada-English and Irish Free State from Northern Ireland.	CODE (Leave Blank)	CITIZENSHIP: Citizenship of the foreign born	RESIDENCE, APRIL 1, 1935: In what place did this person live on April 1, 1935? For a person who lived in a different place, enter city or town, county, and State. City, town, or village having 2,600 or more inhabitants If less, enter "R."	RESIDENCE, APRIL 1, 1935: County	RESIDENCE, APRIL 1, 1935: State (or Territory or foreign country)	RESIDENCE, APRIL 1, 1935: On a Farm? (Y or N)	RESIDENCE, APRIL 1, 1935: CODE (Leave Blank)
	1	2	3	4	5	6	7	8	A	9	10	11	12	13	14	B	15	C	16	17	18	19	20	D
1.																								
2.																								
3.																								
4.																								
5.																								
6.																								
7.																								

PERSONS 14 YEARS OLD AND OVER – EMPLOYMENT STATUS

Line No.	Was this person AT WORK for pay or profit in private or nonemergency Govt. work during week of March 24-30? (Y or N)	If not, was he at work on, or assigned to, public EMERGENCY WORK (WPA, NYA, CCC, etc.) during week of March 24-30? (Y or N)	If neither at work nor assigned to public emergency work. ("No" in cols. 21 & 22): Was this person SEEKING WORK? (Y or N)	If neither at work nor assigned to public emergency work. ("No" in cols. 21 & 22): If not seeking work, did he HAVE A JOB, business, etc.? (Y or N)	For persons answering "No" to questions 21-24. Indicate whether engaged in home housework (H), in school (S), unable to work (U), or other (Oth).	CODE	If at private or nonemergency Govt. work. "Yes" in col. 21: Number of hours worked during week of March 24-30, 1940.	If seeking work or assigned to public emergency work. "Yes" in col. 22 or 23: Duration of unemployment up to March 30, 1940 – in weeks.	OCCUPATION, INDUSTRY, AND CLASS OF WORKER. For a person at work, assigned to public emergency work, or with a job ("Yes" in col. 21, 22, or 24), enter present occupation, industry, and class of worker. For a person seeking work ("Yes" in col. 23): (a) if he has previous work experience, enter last occupation, industry, and class of worker; or (b) if he does not have previous work experience, enter "New worker" in Col. 28, and leave Cols. 29-30 blank. OCCUPATION: Trade, profession, or particular kind of work, as – *Frame spinner, Salesman, Laborer, Rivet heater, Music teacher*	OCCUPATION, INDUSTRY, AND CLASS OF WORKER. INDUSTRY: Industry or business, as— *Cotton mill, Retail grocery, Farm, Shipyard, Public school*	Class of Worker	CODE (leave blank)	Number of weeks worked in 1939 (Equivalent full-time weeks)	INCOME IN 1939 (12 months ending Dec. 31, 1939.): Amount of money, wages or salary received (including commissions)	INCOME IN 1939 (12 months ending Dec. 31, 1939.): Did this person receive income of $50 or more from sources other than money wages or salary (Y or N)	Number of Farm Schedule
	21	22	23	24	25	E	26	27	28	29	30	F.	31	32	33	34
1.																
2.																
3.																
4.																
5.																
6.																
7.																

Figure A3
Blank 1940 decennial federal census form
This figure shows the blank form with the first 34 questions of the 1940 federal census. The remaining 16 questions are not pertinent to our analysis.

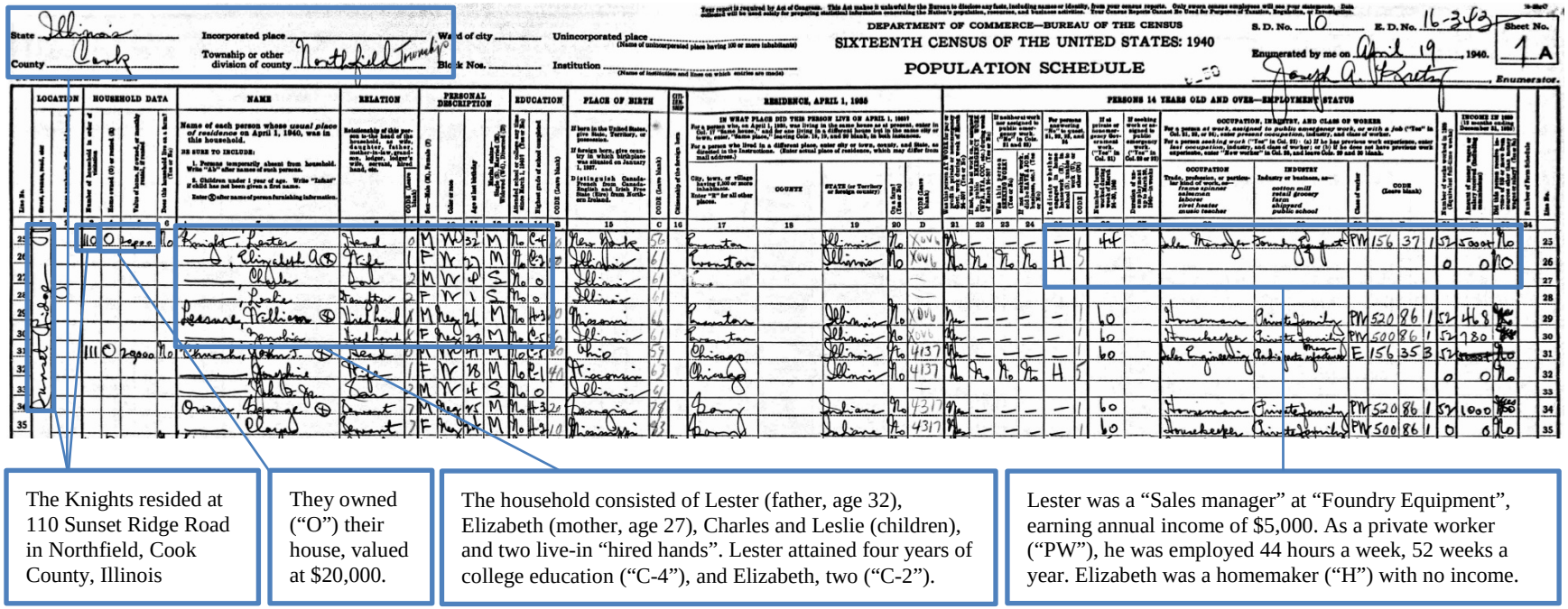
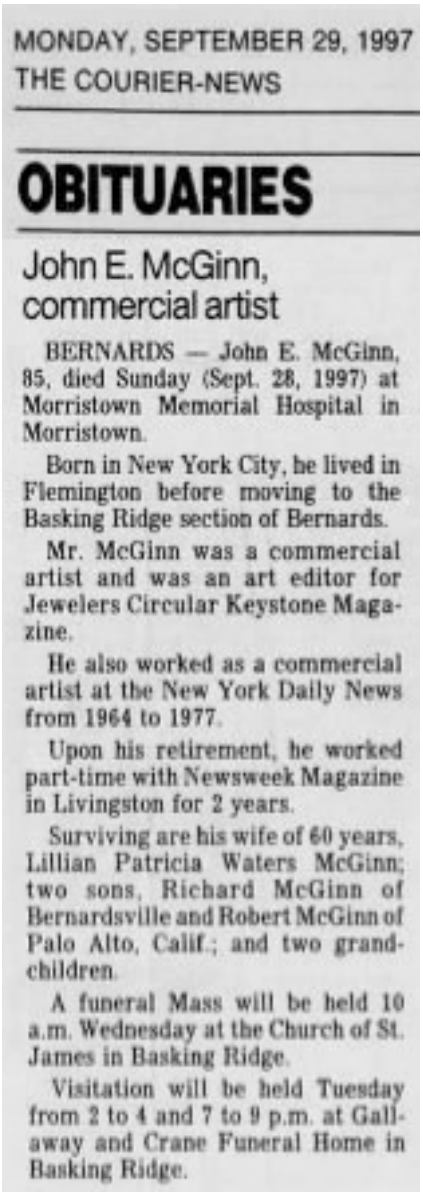


Figure A4
Example of a filled out 1940 decennial federal census form
This figure shows the filled out 1940 census form for the family of Lester and Elizabeth Knight, whose son, Charles F. Knight, grew up to become the CEO of Emerson Electric.



MONDAY, SEPTEMBER 29, 1997
THE COURIER-NEWS

OBITUARIES

John E. McGinn, commercial artist

BERNARDS — John E. McGinn, 85, died Sunday (Sept. 28, 1997) at Morristown Memorial Hospital in Morristown.

Born in New York City, he lived in Flemington before moving to the Basking Ridge section of Bernards.

Mr. McGinn was a commercial artist and was an art editor for Jewelers Circular Keystone Magazine.

He also worked as a commercial artist at the New York Daily News from 1964 to 1977.

Upon his retirement, he worked part-time with Newsweek Magazine in Livingston for 2 years.

Surviving are his wife of 60 years, Lillian Patricia Waters McGinn; two sons, Richard McGinn of Bernardsville and Robert McGinn of Palo Alto, Calif.; and two grandchildren.

A funeral Mass will be held 10 a.m. Wednesday at the Church of St. James in Basking Ridge.

Visitation will be held Tuesday from 2 to 4 and 7 to 9 p.m. at Gallaway and Crane Funeral Home in Basking Ridge.

Figure A5
Example of an obituary
This figure shows an obituary of the father of one of the CEOs in the sample. It identifies his work, places of residence, wife, children and extended family. The obituary was published in the September 29, 1997 issue of The Courier-News of Bridgewater, New Jersey.

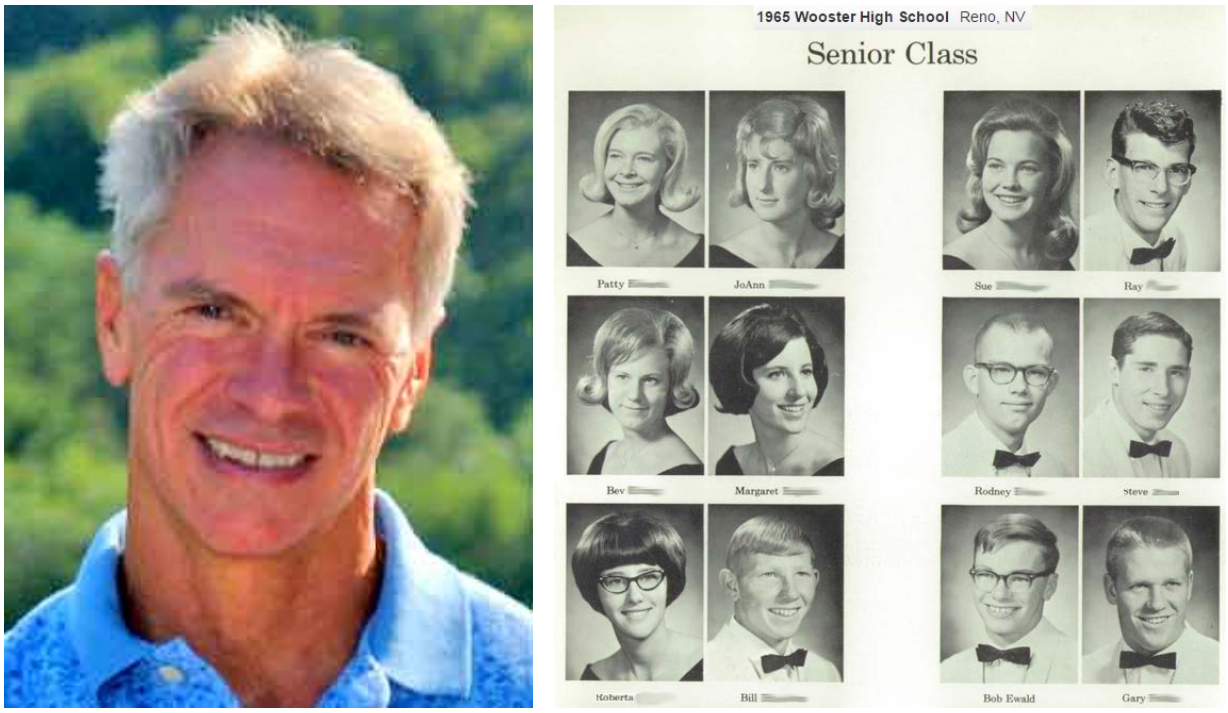


Figure A6
Example of using yearbooks to identify high schools attended by CEOs
This figure shows in the left panel the photograph of Robert H. Ewald, CEO of Silicon Graphics (source: http://lonerganpartners.com/placement/silicon-graphics/bo-ewald). Scans of yearbooks available from classmates.com allow identifying him as a 1965 graduate of Wooster High School in Reno, Nevada. His high school photograph is the third in the bottom row of the image in the right panel.

APPENDIX TABLE A1

Sample Construction and Characteristics

This table describes the construction of the main sample, which consists of industrial conglomerates in the S&P 1500 index, excluding firms with functional organizational structure and firms with missing data on divisional managers or CEO background. The sample period is from January 2000 to December 2008. Panel A shows sample selection criteria and provides the number of firms screened out by each sample filter. Panel B compares the characteristics of firms in the main sample with the characteristics of all other industrial conglomerates in the S&P 1500 index that are excluded by sample filters. The values reported are time-series averages over the sample period. In Panel B, statistical significance levels for the test of the difference in means are indicated as follows: *=10%, **=5%, ***=1%.

Panel A: Sample Construction

Sample	# Firms	# Divisions	# Observations
S&P 1500 industrial firms with at least 2 divisions	806	3,024	12,282
- Firms with non-divisional organizational structure	396	1,706	7,491
- Firms with incomplete data on all divisional managers	35	127	566
- Firms with female CEOs	9	30	73
- Firms with missing data on CEO background	8	51	198
= Final Sample	**358**	**1,110**	**3,954**

Panel B: Comparison of Sample Characteristics

Variable	Our sample	Other S&P 1500 conglomerates	Difference	t-statistic
Earnings per share (EPS)	1.764	1.728	0.036	0.335
Stock return	0.069	0.058	0.011	0.892
Cash holdings	0.108	0.108	0.001	0.182
Profitability	0.044	0.042	0.002	0.390
Capital expenditures	0.041	0.040	0.001	1.108
Market-to-book	1.854	1.820	0.034	1.182
Size (log assets)	8.605	8.260	0.345***	7.041