Essays on Corporate Finance and Governance:

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ESSAYS ON CORPORATE FINANCE AND GOVERNANCE

a dissertation

by

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ABSTRACT:

In my first essay, I explain the rise of transferable managerial skills in the CEO market. I show that growing competition in the product markets is a key factor driving the increased importance of CEOs' transferable managerial skills, specifically industry-transferable skills. To rule out the endogeneity of CEO-firm matching, I exploit the exogenous shocks of the Canada-United States Free Trade Agreement (FTA) of 1989 and the deregulatory policy in the 1990s. I show that CEOs with these skills outperform in competitive markets and are a good match for firms' innovation-based competition strategy.

In my second essay, we explain why firms in the same board-interlock networks tend to have similar corporate governance practices. Specifically, we utilize a novel instrument based on staggered adoptions of universal demand laws across states to identify causal peer effects in firms' decisions to adopt various governance provisions. We find that a firm's propensity to adopt these provisions increases after other firms in the same board interlock network choose to adopt similar policies. The impact of universal demand laws on the incentives faced by directors as they seek to maximize their career outcomes is a likely mechanism explaining these effects.

In my third essay, I identify the effects of the gender of CEOs' offspring on corporate performance. First, acquisitions, debt and equity offerings made by CEOs with more daughters are better received by the market. Second, CEOs with more daughters are less likely to overpay the targets, and better use newly raised capital. Third, CEOs' daughter(s) decrease(s) corporate litigation risk. In sum, the gender of a child is arguably a random and natural experiment, which shows a clear effect on CEOs' behavior.

ESSAYS ON CORPORATE FINANCE AND GOVERNANCE

VINH Q. NGUYEN

TABLE OF CONTENTS

Chapter 1: CEOs as Jacks of All Trades. Do Executives with Multi-Industry Experience Help Firms Compete?

1 Introduction

This paper explains the rising importance of industry-transferable skills over industry-specific skills in the market for chief executive officers (CEOs) over the last several decades. Top executives today tend to acquire business education, move across firms, and gain experience in multiple industries over the course of their career (Bertrand, 2009; Frydman, 2014). According to Lazear (2005), a chief executive officer should act as "a jack of all trades" who coordinates other employees with specialized skills. To play that role, top managers need transferable managerial skills rather than specific technical skills. Custódio et al. (2013, 2015) show that CEOs possessing transferable skills outperform in managing complex tasks and in generating innovations. Murphy and Zabojnik (2004, 2007) and Frydman and Saks (2010) argue that the rising importance of transferable skills explains the surge in CEO compensation. While this is an important trend, interestingly, no economic explanation has been made according to the best of my knowledge.

In the same period, competition has increased as a result of international trade liberalization (e.g. Tybout, 2003; Bernard et al., 2006), deregulation (e.g. Cetorelli and Strahan, 2006; Irvine and Pontiff, 2009), and lower business operating costs in general. Motivated by previous studies on the impacts of competition on corporate structure and operations (e.g. Guadalupe and Wulf, 2010; Cuñat and Guadalupe, 2009), I ask: Did increased competition induce the rise of industry-transferable skills in the market for CEOs? I find that it does. When competition increases, firms are more likely to retain incumbent CEOs who have greater industry-transferable skills. If companies replace the incumbent CEOs, the incoming CEOs tend to have greater industry-transferable skills than the departing ones. Further, CEOs with these skills outperform when the market becomes more competitive.

Consider Louis Gerstner, IBM's chief executive officer from 1993 to 2002. Gerstner, formerly CEO of RJR Nabisco, was a senior manager at American Express and McKinsey & Company in his earlier career.

In April 1993, Mr. Gerstner took the position of chairperson and CEO at IBM to replace John F. Akers, who had spent his entire career at IBM. The company, once a dominant player in the personal computer (PC) market, faced intense competition from low-cost PC producers. Gerstner first decided to exit the retail desktop PC market and to enter the market of complete IT solutions and system integration. During his tenure, IBM's market capitalization grew from around $30 billion to nearly $200 billion. Coming from unrelated industries, CEOs like Louis Gerstner brought transferable managerial skills, such as leadership, restructuring abilities, financial knowledge, and organizational skills to their new position.

Increased competition could raise the demand for industry-transferable skills for two reasons. First, in a competitive market, innovation allows firms to differentiate their products and services. Studies in economics and industrial organization have identified the link between innovation and the intensity of competition in the product markets. Schumpeter (1912), Aghion et al. (1999), and Knott and Posen (2003) show that innovation is more likely in competitive industries. This growth strategy requires that business leaders have the abilities and willingness to engage in risky but innovative projects. Compared with industry-specific skills, industry-transferable skills provide CEOs with more career outside options and thus both greater abilities and willingness to engage in breakthrough projects (Custódio et al., 2015). Hence, the demand for CEOs with industry-transferable skills would naturally go up when firms face higher product-market competition.

Second, the demand for CEOs' transferable skills could come from the flattened structure of U.S. firms. Guadalupe and Wulf (2010) show that this change in the corporate structure itself came from rising competition in the product markets. To manage flatter corporations, CEOs need to process information from different corporate areas quickly and to coordinate division managers with greater authority and division-specific knowledge. This development requires CEOs to have broad business experience and naturally leads to higher demand for CEOs with transferable managerial skills.

To examine how the market for CEOs responds to increased competition, I exploit three different

settings: firm fixed effects models; within-firm variation models with a quasi-natural experiment (the Canada-United States FTA of 1989); and deregulation policies in the 1990s.

First, I link CEO outcomes to measure of competition in a firm fixed effects setting. My measure for industry competition is based on two Herfindahl-Hirschman Indices (HHI), one calculated using SIC three-digit industries and the other based on the variable industry classification suggested by Hoberg and Phillips (2011). My measure of industry-transferable skills *(Multi-Industry Experience)* equals the number of industries at the SIC three-digit level where a manager worked before taking a CEO position. I find that incumbent CEOs possessing greater industry-transferable skills are less likely to be replaced but that this effect is only strong when competition is high. When competition is one standard deviation below average, an increase of one standard deviation in *Multi-Industry Experience* reduces the propensity of CEO turnovers by 1.9 percentage points. When competition is one standard deviation higher than the mean level, the effects of one standard deviation in *Multi-Industry Experience* increases to 2.9 percentage points. This effect is economically large when compared with the average CEO turnover rate of 8 percent.

When firms in competitive markets decide to replace the current CEOs, executives with greater industry-transferable skills are more likely to be selected. Specifically, when the competition measure increases by one standard deviation, the industry transferable skill measure, *Multi-Industry Experience*, increases from 0.08 to 0.16 of a standard deviation. Moreover, I find some evidence that CEOs who have industry-transferable skills outperform when competition increases.

Executives are not randomly assigned to firms, but matched with firms to maximize the executives' career objectives and the companies' corporate outcomes. This endogeneity is a major obstacle to estimating how CEO skills affect outcomes (see, for example, Bertrand and Schoar, 2003; Fee et al., 2013). For instance, to protect its market position, a firm may increase investment in intellectual properties, raise customer loyalty, and increase customer switching costs. In such a case, the firms' competition strategy could explain both their CEO selection and firms' performance.

To overcome this identification challenge, my second approach combines the within-firm variation of segment data with a quasi-natural experiment, the Canada-United States FTA of 1989. Following the passage of the agreement, all tariff barriers between the two countries were eliminated (Trefler, 2004). Thus, an industry which was protected by a higher tariff rate in the pre-FTA period would face a larger increase in competition in the post-FTA period. This allows me to use the pre-FTA tariff rates as a measure of heterogeneous treatment effects of the FTA on different industries.

Segment data allow me to assess the impacts of CEO's industry-transferable skills on the performance of a more affected segment, relative to his/her effects on the performance of a less affected one *within* the same firm-year. The within-firm variation of segment data enables me to identify the effects by including *firm-year fixed effects* in my models. As the fixed effects absorb all firm and CEO unobservables, my estimation cannot be affected by CEO-firm matching decisions made at the firm level. Chief executives who have greater industry-transferable skills are more successful in maintaining revenue growth and profitability than ones who have lesser industry-transferable skills; and crucially, the effects are stronger in segments which were more exposed to the FTA after the passage of the trade agreement. My results are robust to the inclusion of different fixed effects and control variables for CEO and firm characteristics. Consistent with results in the first setting, I also find that increased international competition causes companies to retain and to recruit CEOs who have greater industry-transferable skills.

Third, I examine the effects of product-market deregulation. I analyze two important deregulations in the 1990s: the National Energy Act of 1992 in the electricity sector and the Telecommunications Act of 1996 in the telecommunications industry (Andrade et al., 2001; London, 2004; Irvine and Pontiff, 2009). Consistent with previous results, CEOs with greater industry-transferable skills are more likely to be retained after deregulation. In the telecommunications sector, CEOs possessing greater industry-transferable skills achieve higher revenue and profit growth in deregulated industries.

In my analysis of the mechanisms, I find that CEOs with greater industry-transferable skills to undertake innovative but risky projects more when market competition increases. CEOs who have

these skills tend to pursue riskier but more innovative projects by investing more in Research and Development (R&D). My analysis further indicates that CEOs' industry-transferable skills positively impact innovative activities by generating more patents and citations. Both effects are stronger in industries facing higher competition.

To the best of my knowledge, this is the first paper explaining the rising trend toward transferable managerial skills in the market for CEOs. The literature has documented the trend but not explained what drive it. Murphy and Zabojnik (2007), and Lazear (2005) suggest that modern-day entrepreneurs tend to possess transferable managerial skills. Custódio et al. (2013, 2015) show that the market compensates more for CEOs who have these skills. Transferable managerial skills have increased in value over the last several decades; firms are more likely to choose external candidates for the CEO position now than they were several decades ago (Huson et al., 2001; Murphy and Zabojnik, 2007; Frydman, 2014). My paper identifies increased competition as a key force behind this movement in the CEO market.

The rest of the paper is structured as follows. In Section 2, I discuss the data, empirical strategy and main results for the firm fixed-effects models. Section 3 discusses the institutional background of the Canada-United States FTA and presents my empirical strategy. Section 4, I discuss the set of tests under the setting of deregulation. I conclude in Section 5.

2 Firm Fixed-Effects Models

The trend toward transferable managerial skills in the market for CEOs has started since at least 30-40 years ago (Bertrand, 2009). In this part, I estimate firm fixed-effects models to examine the role of product-market competition in this trend. To measure variation in competition from various sources, I construct variable, *Competition*, based on the HHI. This index, as a measure of competition, was found in industrial organization theory and is widely used in economic literature (Curry and George, 1983; Tirole, 1988). Moreover, this analysis allows me to generalize findings in this paper by using a recent sample of CEOs from 1999 to 2012.

I first document a trend toward CEOs with greater industry-transferable skills in competitive industries. To illustrate this trend, Figure 1 plots the HHI and CEOs' *Multi-Industry Experience*. Both variables are weighted by total assets. The HHI is calculated using Compustat revenue for non-financial industries at the SIC-three digit level in the period from 1985 to 2012. The graph presents opposite trends in the HHI, lower/higher HHI means higher/lower competition, and CEOs' *Multi-Industry Experience*. These trends were strongest in the 1980s and 1990s reflecting the significant increase in product-market competition as a result of deregulatory policies and trade liberalization in this period. Since early 2000s, the trends in both competition and CEOs' *Multi-Industry Experience* have been weaker. This figure suggests a positive correlation between product-market competition and the demand for CEOs possessing industry-transferable skills.

[Figure 1 about here]

2.1. *Data Description*

Industry Transferable Skills - I choose *Multi-Industry Experience*, the number of industries at the SIC three-digit level in which an executive has experience before taking a CEO position, to be the measure of industry-transferable skills. This measure is constructed using BoardEx database. I start with all directors who have held CEO title according to BoardEx.[1] The database provides directors' biography which contains the name, past positions, start time, and end time for each position. To obtain firms' SIC code, I match companies in the biographies to CRSP using CUSIP. For the firms which are not included in CRSP, I look up their SIC codes in a company information database, `www.buzzfile.com`. As executives can increase their human capital in response to changes in the market for CEOs, reverse causality is a concern in constructing this measure. To minimize this concern, I exclude from the measure all positions such as board seats or advisory positions at other firms after an executive has taken a CEO position. The measure *Multi-Industry Experience*, therefore, is constant during each CEO tenure.

[1] A condititon for CEOs to be reported in BoardEx is that the CEOs must hold positions in public firms in 1999. Analyses using BoardEx for pre-1999 periods is potentially subjected to this survivorship bias. Therefore, my analysis in this part only use the sample of CEOs in the post-1999 period.

For the convenient interpretation of the results, variable *Multi-Industry Experience* is standardized to have mean zero and standard deviation one.

Product Market Competition - In this setting, I define the competition measure, *Competition*, as one minus the HHI. I estimate the HHI using two methods: the Compustat HHI at the SIC three-digit industry level and the TNIC3 HHI suggested by Hoberg and Phillips (2011).[2] For the Compustat HHI, I group firms into industries according to their pre-assigned SIC codes, then, calculate the index using the companies' annual revenue. The Compustat HHI provides a yearly measure of competition intensity. One shortcoming of the Compustat HHI is that companies are rarely reassigned new SIC code when the firms enter a new industry. To overcome this issue, Hoberg and Phillips (2011) suggests classifying firms using the product description taken from firms' SEC filings. According to their method, firms with similar product descriptions are more likely to compete in the same industry. Since firms update the product description in their filings annually, this classification accounts for the movement of a firm across industries. In both methods, the HHI ranges between zero, for most competitive industries, and one, for least competitive industries.

Innovation - I construct two measures for corporate innovation using the NBER Patent Citation database created by Hall et al. (2001). The sample period is from 1999 to 2006. The first measure is the number of patent applications that are filed in a year and eventually granted to a firm. To assess the importance of the patents, the second measure is the number of citations that a company's patents receive each year. These measures are subject to two truncation problems in the NBER database. The first problem arises since the database only reports patent applications after the patents are granted. On average, the lag between patents' application year and grant year is about two years. Hence, patents, applied before 2006 but granted in later years, do not show up in the sample. The second problem arises as a patent may receive citations for many years but the database only reports the citations up to 2006. Follow Hall et al. (2001), I estimate the patent application-grant distribution and the citation-lag distribution to correct for the truncation problems in the number of patents and citations.

[2] I thank Gerard Hoberg and Gordon Phillips for making the index publicly available

Control variables for CEO characteristics such as age, externally versus internally hired, and education are collected from BoardEx. Firm accounting variables are collected from Compustat and winsorized at 1 percent and 99 percent levels. Panel A of Table 1 reports the statistics of the main dependent and independent variables in this setting.

[Table 1 about here]

2.2. *Empirical Analysis and Results*

In the first set of tests, I examine whether increased competition would affect firms' decision to retain incumbent CEOs if the chief executives possess industry-transferable skills. I create a dummy variable, *CEO Turnover*, which equals to one if a CEO is replaced at the end of the financial year and equals to zero, otherwise. In the models, I regress *CEO Turnover* on the competition measure, CEOs' industry-transferable skills, the interaction of the two variables, firm fixed effects, and year fixed effects. The estimated coefficient on the interaction term shows the effects of CEOs' industry-transferable skills on the propensity of CEO turnovers when competition increases. The regression equation is as follows:

$$\begin{aligned} \text{CEO Turnover}_{i,j,t} = {} & \alpha + \beta_1 \text{Competition}_{j,t} \times \text{Multi-Industry Experience}_{i,t} \\ & + \beta_2 \text{Competition}_{j,t} + \beta_3 \text{Multi-Industry Experience}_{i} + \beta_4 \text{CEO Controls}_{i,t} \\ & + \text{FirmFE}_j + \text{YearFE}_t + \epsilon_{i,j,t} \end{aligned} \tag{1}$$

If industry-transferable skills lower the turnover propensity of CEOs in a competitive market, the coefficient on the interaction term should be negative and significant. Table 2 reports the results of these models. In Columns (1) to (2), *Competition* is based on the Compustat HHI; in Columns (3) and (4), the variable is based on the TNIC3 HHI. The coefficient of the interaction term is negative and significant at the 10 percent level in the first model and the 5 percent level in the remaining three models. When competition is one standard deviation below average, an increase of one standard deviation in *Multi-Industry Experience* reduces the propensity of CEO turnovers by 1.9 percentage points (equals to the sum of β_1 and β_3). When competition is one standard deviation higher than the mean level, the effects

of one standard deviation in *Multi-Industry Experience* increases to 2.9 percentage points. Compared with the average CEO turnover rate of 8 percent, these results indicates a large impact of industry-transferable skills and product-market competition on CEOs' turnover propensity.

[Table 2 about here]

Next, I check whether increased competition would make firms choose executives with greater industry-transferable skills when the firms decide to replace the incumbent ones. Specifically, I regress my measure *Multi-Industry Experience* on *Competition*, firm fixed effects, and year fixed effects. A possible concern in this test is that my results could be driven by other CEO characteristics that are correlated with industry-transferable skills. To address this concern, I estimate similar models in which other CEO characteristics are regressed on *Competition*. The concern is negligible if the coefficient on *Competition* is insignificant in these models.

Since most of these CEO characteristics only vary when CEO turnovers happen, the sample for these tests consists of the first year when an executive takes a CEO position. For example, CEO A joint Firm 1 in 2000 and is replaced by CEO B in 2007. In my sample, Firm 1 provides two observations. When I include firm fixed effects, the estimated coefficient of *Multi-Industry Experience* on *Competition* indicates how much the difference in *Multi-Industry Experience* between CEO A and CEO B could be explained by the difference in variable *Competition* of Firm 1 between 2000 and 2007. In the 1999-2012 period, there are 5,464 CEOs in my sample. The coefficient on variable *Competition* should be positive and significant if increased competition drives up the demand for CEOs' industry-transferable skills.

Table 3 reports results of these models. Panels A and B present the results of regression models in which variable *Competition* is based on the Compustat HHI and TNIC3 HHI, respectively. Column (1) of both panels shows that the growth in *Competition* is positively correlated with the increase in CEOs' *Multi-Industry Experience*. The coefficient is positive and significant at the 1 and 5 percent levels. The magnitude of the coefficient is significantly large, one standard deviation increase in industry competition explains from 0.08 to 0.16 standard deviation increase in CEOs' industry-transferable skills.

These results indicate that firms choose executives possessing greater industry-transferable skills when they replace their incumbent CEOs.

In Column (3) of panel A, the coefficient on *Competition* is positive and significant at the 10 percent level. I expect this result since the number of industries and the number of firms that an executive gains experience in are highly correlated. The correlation between these two variables is 0.73 in my sample. However, when *Competition* is measured base on TNIC3 HHI, Column (3) in panel B, the coefficient is insignificant. In the remaining Columns, the coefficient is insignificantly different from zero. These tests indicate that other CEO characteristics are unlikely to drive my results.

[Table 3 about here]

The results in Table 3 show that the intensity of competition could cause firms to select new CEOs who have greater industry-transferable skills. My next set of tests aims at answering why CEOs with industry-transferable skills are preferred in a competitive market. My conjecture is that industry-transferable skills allow CEOs to outperform when competition intensifies. To test this hypothesis, I regress four measures of firm performance the logarithm of revenue, the logarithm of operating profit, return on assets (ROA), and Tobin's Q on *Competition*, *Multi-Industry Experience*, the interaction of the two variables, firm fixed effects, and year fixed effects. If CEOs' industry-transferable skills positively affect firms' performance in a competitive market, the coefficient on the interaction term should be positive and statistically significant. Table 4 reports the results of these regressions. Out of the four models, the estimated coefficient in the models for ROA is positive and significant at the 5 percent level. In an average competition market, greater CEOs' industry-transferable skills, one standard deviation higher in *Multi-Industry Experience*, do not have significant impacts on firms' performance. However, in a high competition market, one standard deviation higher in *Competition*, greater CEOs' industry-transferable skills positively impact firms' performance. One standard deviation higher in *Multi-Industry Experience* is correlated with a 0.4 percentage point increase in ROA. These results suggest that the positive impact of industry-transferable skills on firm performance in a competitive market could be the underlying

reason for the growing demand for CEOs' industry-transferable skills.

[Table 4 about here]

2.3. *Channels of Effects*

When barriers to entry are removed, new entrants supply similar products and services to those offered by existing players and drive down the average profitability of the sector. To maintain monopolistic profit, existing firms need to raise new barriers by achieving technological patents or intellectual properties, investing in brand identity, or increasing customer switching costs. Aghion et al. (2001) indicate that competition could incentivize firms to invest in research and development (R&D) since the incremental profits from innovating are higher in a competitive market. Executives with transferable skills are a good match for the CEO position in such an environment. These skills have been shown to impact firms' innovation outputs positively. Custódio et al. (2015) find that firms led by CEOs with greater transferable skills generate more patents and acquire more patents through mergers and acquisitions. Their patents are also more important, as measured by the number of citations, and more exploratory (i.e., involving riskier research for new technologies) than those of firms led by CEOs with firm-specific skills. The authors suggest that CEOs who have transferable skills could help the firms generate more innovation since these skills reduce career risk and thereby allow them to pursue risker but more breakthrough projects. My results in the previous tests are consistent with this argument: as competition increases, firms tend to retain and to select executives who possess greater industry-transferable skills for the CEO position. To further test this channel of effects, I estimate regression models in which R&D and corporate innovation are regressed on the interaction of *Competition* and *Multi-Industry Experience*.

[Table 5 about here]

Table 5 presents the results for research and development activities. The sample consists of non-financial Compustat firms from 1999 to 2012. In Column (1), R&D, normalized by revenue, is the dependent variable. The results show that CEOs' industry-transferable skills positively impact R&D in a high

competition market. The coefficient on the interaction of *Competition* and *Multi-Industry Experience* is positive and significant at 5 percent level. In a high competition market, an increase of one standard deviation in CEOs' *Multi-Industry Experience* leads to 1.2 percentage point increase in the R&D to revenue ratio. For comparison, in Columns (2) to (4), I estimate similar models in which different measures for corporate risk taking, leverage, cash holdings, and capital expenditure, are the dependent variable. In these models, the coefficient on the interaction term is statistically insignificant. The results indicate that CEOs' industry-transferable skills make the firms invest more in innovative activities rather than just taking more risks in general.

Next, I test the direct effects of CEOs' industry-transferable skills on innovation outputs, measured by the logarithm of the number of patents and the logarithm of the number of citations, is the dependent variable. Table 6 reports the results of these models. In Columns (1) and (2), the coefficient on the interaction term is positive and significant at the 10 and 5 percent levels, respectively. In a high competition market, one standard deviation increase in CEOs' industry-transferable skills is associated with 3.3 percent growth in the number of patents. In the models for citations, Columns (3) and (4), I obtain similar results, one standard deviation increase in CEOs' industry-transferable skills is associated with 6.1 to 6.3 percent growth in the number of citations. In all models, the coefficient is significant at the 5 and 10 percent levels. These results suggest that the corporate innovation channel is one mechanism leading to the rising demand for CEOs' industry-transferable skills in a competitive market.

[Table 6 about here]

Another possible channel of effects is through the changes in corporate structure which require CEOs to have transferable skills. Using a proprietary dataset on the structure of 300 large U.S. firms, Rajan and Wulf (2006) show that firms' organizational structure has been flattened. In that structure, more managers report directly to the CEO, and the CEO delegates more authority to lower-level managers. Guadalupe and Wulf (2010) use the same data and show that market competition plays a major role in that organizational change. The findings in these two papers suggest that modern CEOs must

interact with more divisional employees within their firms and are likely to have a boarder set of skills. Since a similar data on organizational structure is not available for my study, I could not directly test this channel of effects. However, the change in corporate structure in response to increased competition also could be another channel explaining the rising importance of industry-transferable skills in the CEO market.

3 The Canadian-United States Free Trade Agreement

In this section, I discuss the second set of analysis using the Canada-United States FTA to address several identification concerns of firm fixed-effects models. First, the actual HHI is not available for all industries and in all years. The most precise estimate of the index, provided by the Department of Commerce, only covers manufacturing sectors and is released every five years. The Compustat HHI does not include private and foreign companies. The TNIC3 HHI provides better industry classifications but, similar to the Compustat HHI, covers only public firms. Second, firm fixed-effects models cannot address firm time-variant unobservables in CEO-firm matching. This endogeneity is a major challenge in identifying the effects of CEOs' industry-transferable skills on companies' performance.

To overcome these concerns, my second empirical setting takes advantage of the within-firm variation of segment data and an exogenous shock to product-market competition from the unexpected passage of the Canada-United States FTA in 1989.

3.1. *Institutional Background*

I take advantage of the unexpected passage of the Canada-United States FTA in my identification strategy. The trade agreement led to a short period of CEO-firm mismatch allowing me to identify the main questions in this paper.

The Canada-United States FTA in 1989 is the second trade agreement between the United States and another country.[3] In 1985, the idea for a bilateral free-trade agreement was advanced by the Canadian Prime Minister Brian Mulroney and embraced by the US President Ronald Reagan. Negotiations for the

[3]The first FTA was the Israel-United States Free Trade Agreement in 1985

agreement were started in May 1986 and concluded in October 1987. Both countries agreed to phase out most of the tariff barriers over a ten-year period. The Canada-United States Free Trade Agreement substantially increased trade between the two nations (Clausing, 2001; Romalis, 2007). To illustrate the impacts of the agreement on the Canada-US trade, Figure 2 presents the growth of U.S. imports from Canada, grouped based on different tariff levels, and the growth of similar products imported from the other countries. For U.S. imports from Canada, there is a strong positive relationship between the pre-FTA tariff levels and the increase in imports following the passage of the FTA. However, for U.S. imports from the other countries, there is no significant difference in the growth of U.S. imports in each group of products. Moreover, for the group of tariff-free products, there is no significant difference in the growth of U.S. imports from Canada and of those from other countries. The figure evidences that the passage of the agreement positively affected the growth U.S. imports from Canada, particularly for the products in high tariff brackets.

[Figure 2 about here]

In Canada, the negotiated agreement, however, was highly controversial and was not expected to be approved. Two opposition parties, the Liberal Party of Canada and the New Democratic Party, strongly opposed the FTA and used their majority in the Senate to block the trade agreement. The agreement became the most important issue for the election in October 1988. Although a majority of the voters had voted for the two opposition parties, The Progressive Conservative Party of the prime minister won a governing majority allowing the Canadian Senate to pass the agreement into law. The FTA came into effect on January 1^{st}, 1989. The high contest over the Canada-United States FTA and the unexpected outcome are the key features making the agreement a likely exogenous shock to product-market competition in the two countries.

The United States and Canada are the world's largest bilateral trade partners.[4] Given the size of the two economies and the high elasticity of substitution (Head and Ries, 2001), the impacts of the FTA on

[4] https://www.census.gov/foreign-trade/balance/c1220.html

the US economy and Canada's economy were significant. Romalis (2007) shows that for commodities that experienced deepest US tariff cuts, Canada's share of US imports almost doubled in 5 years after the agreement. Trefler (2004) finds that the trade agreement significantly increased the productivity of Canadian firms. Industries, most protected by Canadian tariffs before the agreement, reduced employment by 12 percent and raised labor productivity by 15 percent after the tariffs were phased out. In industries, facing the highest level of US tariffs before the FTA, labor productivity increased 14 percent after the FTA. Guadalupe and Wulf (2010) find that American firms change their organizational structure in response to the growing competition from Canadian products.

The unexpected passage and significant impacts of this trade agreement make it an arguably quasi-natural experiment for my study.

3.2. *Sample Construction*

Segment Data - The sample for my main hypothesis tests starts with all segment-years reported in Compustat's Historical Segments during the period from 1984 to 1994. Since 1976, the Statement of Financial Accounting Standards No. 14 (FAS 14) of the Financial Accounting Standard Board (FASB) has required firms to report information about segments of which sales, assets, or profits account for over 10 percent of consolidated totals. While 10 percent is the threshold for reporting requirement, firms often continue disclosing information when sales or profit of a business segment falls below 10 percent of the totals. Following previous studies, I include those firm-segments in my sample. Compustat's Historical Segments identifies firms using Global Company Key (GVKEY) and one unique identification number (SID) for a segment of the company. GVKEY is the identification that I use to match segment data with other datasets for firm-level variables. Combining GVKEY and SID, I can track different segments within a firm over my sample period. Since I am only interested in business segments, I exclude other types of reported segments such as geographical segments, operating segments, and state segments. Following Hoechle et al. (2012) and others, I exclude firms in the financial industries (SIC code 6000-6999) and American Depository Receipts (ADR) from my sample. I impose two additional filters to ensure that the sample is appropriate for my empirical strategy and to reduce the hand-collecting requirement

to construct the measure of industry-transferable skill. First, each segment must be reported in, at least, two years before 1989 and two years after 1989. I exclude all segments which do not meet this requirement. Second, for a firm-year to be included in the sample, it must have at least two reported segments. After applying these filters, I match the data with the CEO data constructed in the next step.

Treatment Effect - The effects of the FTA on each business segment are measured by the pre-1989 tariff level applicable to Canadian imports in that segment. Because the tariff phase-out process for each sector varies from zero to ten years, the choice of the phase-out time may be endogenously affected by factors such as lobbying, negotiations, and the relative importance of each sector in the US economy. To address this concern, I follow Guadalupe and Wulf (2010) in constructing variable *Tariffs_89* which is the three-year average tariff rate on Canadian imports by the segment's SIC four-digit code in the pre-FTA period from 1986 to 1988. I calculate the US tariffs on Canadian imports by dividing duty by customs value. The yearly values of duty and customs are available on the website of the Center for International Data at the University of California at Davis. *Tariffs_89* is matched with firm and segment data using SIC codes. This measure quantifies treatment effects of the FTA on US companies and segments. Within my sample, the variable ranges from zero to 21 percent. For convenient interpretation of results, I standardize this variable to have mean zero and standard deviation one. I create dummy variable *Post* indicating 1989 and following years in the sample period.

Industry-Transferable Skills - As in the previous part, the measure of CEOs' industry-transferable skills is *Multi-Industry Experience*, the number of industries at the SIC three-digit level in which an executive has experienced before taking a CEO position, to be the measure of industry-transferable skills. This variable is also standardized to have mean zero and standard deviation one. A condition for CEOs to be reported in BoardEx is that the executives must hold positions in notable firms in 1999. Therefore, analyses using BoardEx for pre-1999 periods are potentially subjected to this survivorship bias (Custódio et al., 2013). My identification strategy based on three differences could partly mitigate this concern. Specifically, the survivorship bias could affect my estimation only if the probability of being included in BoardEx is correlated with all three differences: the passage of the FTA, CEOs' industry-transferable

skills, and the pre-1989 tariff levels. Moreover, to address this concern directly, I hand-collect a sample of 262 CEOs of my sample firms who cannot be identified in BoardEx.[5] I first estimate all regression models on the sample of 696 CEOs from BoardEx, then, re-estimate the models on a combined sample of hand-collected CEOs and CEOs from BoardEx. If the difference between the estimation from the two sample is negligible, the effect of this survivorship bias is likely to be insignificant.

I use other CEO characteristics such as age, gender, tenure, and education background as control variables. After merging this CEO data with the segment data, I end up with a sample of 15,483 CEO-segment-year observations. The statistics of the main dependent and independent variables are presented in Panel B of Table 1.

3.3. *Empirical Strategy and Results*

To determine whether there is a causal relation between market competition and the demand for CEOs' industry-transferable skills, I first investigate the change in the CEO market following the passage of the FTA. If increased competition from international trade liberalization contributes to the value increase of industry-transferable skills in the market for CEOs, executives with greater *Multi-Industry Experience* will be more preferred than executives with lesser *Multi-Industry Experience* following this trade agreement. Firms should try to retain incumbent CEOs who have greater industry-transferable skills. To test this in a differences-in-differences framework, I subdivide my CEO sample into high industry-transferable skills and low industry-transferable skills, based on whether a CEO's *Multi-Industry Experience* is greater than the median value of 2. I then estimate the following specification on each sample:

$$\text{CEO Turnover}_{j,t} = \alpha + \beta_1 \text{Post}_t \times \textit{Weighted Tariffs\_89}_j + \text{CEOControls}_{j,t} + \text{FirmFE}_j + \text{YearFE}_t + \epsilon_{j,t} \quad (2)$$

where $\text{CEO Turnover}_{j,t}$ indicates whether the CEO is replaced by the end of the year; $\textit{Post}_t$ indicates 1989 and subsequent years; $\textit{Weighted Tariffs\_89}_j$ is the segment-revenue-weighted tariff rate of the firm

[5] The information about the biography of these CEOs come from the combination of SEC filings, International Directory of Company Histories, Marquis Who's Who, and article search.

from 1986 to 1988; *CEO Controls*$_{j,t}$ is a vector of control variables for CEO characteristics; *FirmFE*$_j$ are firm fixed effects; and *YearFE*$_j$ are year fixed effects.

[Table 7 about here]

Table 7 presents the results of this set of tests. Columns (1) and (3) report the estimated coefficients for the sample of executives who could be identified in BoardEx database. In Column (1), the test on the subsample of chief executives who have worked in two or fewer industries indicates that the passage of the FTA increases the turnover propensity. The coefficient on the interaction term is positive and significant at the 10 percent level. After the passage of the FTA, one standard deviation higher in the tariff rates is correlated with 1.7 percentage point increase in the turnover propensity. Likewise, for the subsample of CEOs who have worked in more than two industries, the passage of the FTA has insignificant effects on the turnover propensity. I obtain similar results for the test on the combined sample of BoardEx data and hand-collected data. In Column (2), the coefficient on the interaction of Post dummy and *Weighted Tariffs_89* is positive and significant at the 5 percent level. CEOs in firms which were protected from Canadian imports before 1989 face a higher chance of turnovers following the passage of the FTA. After the passage of the FTA, one standard deviation higher in the tariff rates is correlated with 2.0 percentage point increase in the CEO turnover rate. For the group of CEOs with experience in more than two industries, Column (4), the passage of the Canada-United State FTA does not have a significant impact on the propensity of CEO turnovers. These results indicate that when product markets become more competitive, firms are more likely to retain the chief executives who possess greater industry-transferable skills than ones who have lesser industry-transferable skills.

So far, I have shown that companies are less likely to replace CEOs with industry-transferable skills when product-market competition increases. To further test the impacts of product-market competition on the CEO market, I check whether firms choose executives with greater industry-transferable skills for the CEO position when competition increases. I estimate a differences-in-differences model in which *Multi-Industry Experience*$_{j,t}$ is regressed on the interaction term of *Weighted Tariffs_89*$_j$ and

$Post_t$, firm fixed effects, and year fixed effects. As in firm fixed-effects models, I use a sample of CEO positions rather than the full panel data. Table 8 reports the results of different regression specifications for this test. In all specifications, the coefficient on the interaction term is positive and statistically significant at the 5 percent level. A positive coefficient of the interaction term indicates that firms choose executives with greater industry-transferable skills for the CEO position after the FTA removed the tariff protection. Specifically, after the passage of the FTA, a firm with one standard deviation higher in the pre-FTA tariff level selects a new CEO who has 0.16 to 0.19 standard deviation higher in *Multi-Industry Experience*.

[Table 8 about here]

The purpose of the next set of tests is to examine whether CEOs who have industry-transferable skills are preferred because they can deliver higher performance in competitive environment. A major challenge in making a causal inference about the relationship between CEO characteristics and firms' performance is the endogeneity of CEO-firm matching. The early seminal work of Bertrand and Schoar (2003) recognized this important empirical problem. The firm fixed effects or differences-in-differences approach using firm-level data only address endogenous matching based on time-invariant firm characteristics. To address this empirical challenge, I rely on the with-in firm variation of segment data and the exogenous shock to product-market competition from the passage of the Canadian-United State FTA. The intuition for these segment-level tests is that in a conglomerate with two business segments, the CEO is selected as the ultimate decision makers for both segments. Since each segment within the firm has a different level of exposure to the FTA, the CEO's performance in the more affected segment could be compared to his/her owner performance in the less affected segment. The segment data also allow me to include *firm-year fixed effects* which absorb almost all CEO and firm unobservables. Because both segments are in one firm-year and managed by the same CEO, the endogenous CEO-firm matching does not affect my estimation. My identifying assumption is that without the Canada-United States FTA, the growth, before and after 1989, in the performance of all segments are insignificantly

different.

I first use differences-in-differences models to test the impacts of CEOs' industry-transferable skills on segments' performance after the passage of the FTA. As in the earlier tests, I split my sample into one for CEOs with *Multi-Industry Experience* of 2 and under and the other for CEOs with *Multi-Industry Experience* of over 2. On each subsample, I then test the following regression model:

$$\begin{aligned} \text{Segment Outcomes}_{i,j,t} = \ & \alpha + \beta_1 \text{Post}_t \times \text{Tariffs\_89}_{i,j} + \beta_2 \text{Tariffs\_89}_{i,j} \\ & + \text{Firm-YearFE}_{j,t} + \epsilon_{i,j,t} \end{aligned} \tag{3}$$

where *i*,*j* and *t* denote segment *i*, firm *j*, and year *t*. *Segment Outcomes*$_{i,j,t}$ are the segment-level outcomes of interest; *Post*$_t$ is a dummy which is equal to 1 for 1989 and subsequent years and zero, otherwise; *Tariffs_89*$_{i,j}$ is the average tariff rate of the segment *i* in firm *j* from 1986 to 1988; *Firm-Year FE*$_{j,t}$ is a series of fixed effects for each pair of firm-year. The coefficient of interest β_1 estimates the impacts of the trade agreement on a more affected segment relative to the impacts on a less affected segment in the same firm-year.

Two available measures for segment performance are the logarithm of segment revenue, variable SALES in Compustat's Historical Segments data, and segment return on assets (ROA), measured as the ratio of OPS to IAS. Table 9 reports the results of these tests. For the subsample of CEOs with *Multi-Industry Experience* of 2 and under, the coefficient on $\text{Post}_t \times \text{Tariffs\_89}_{i,j}$ is negative and statistically significant for the segment ROA models. Specifically, one standard deviation higher in tariff protection against Canadian imports is associated with a 1.6 to 2.5 percentage point drop in segment ROA after the tariffs are phased out. On the other side, the passage of the FTA seems to have no significant impact on the ROA and revenue of segments managed by CEOs with *Multi-Industry Experience* of over 2. These results indicate that CEOs with greater industry-transferable skills are more successful in maintaining segment profitability than those with lesser industry-transferable skills when competition increases.

[Table 9 about here]

I then use a differences-in-differences-in-difference method to formally test the results in Table 9. The regression equation is as follows:

$$\begin{aligned} \text{Segment Outcomes}_{i,j,t} = \alpha &+ \beta_1 \text{Multi} - \text{Industry Experience}_{j,t} \times \text{Post}_t \times \text{Tariffs\_89}_{i,j} \\ &+ \beta_2 \text{Multi} - \text{IndustryExperience}_{j,t} \times \text{Tariffs\_89}_{i,j} \\ &+ \beta_3 \text{Post}_t \times \text{Tariffs\_89}_{i,j} + \beta_4 \text{Tariffs\_89}_{i,j} + \text{Firm-Year FE}_{j,t} + \epsilon_{i,j,t} \end{aligned} \tag{4}$$

The coefficient of interest is on the interaction of $\text{Multi-Industry Experience}_{j,t}$, Post_t and $\text{Tariffs\_89}_{i,j}$. The estimated coefficients are reported in Table 10. In both segment revenue models and segment ROA models, the estimated coefficient on the interaction term is positive and statistically significant. A positive coefficient indicates that CEOs who have greater industry-transferable skills are more successful in growing revenue and operating profits in segments which were more affected by the FTA passage. One standard deviation higher in *Multi-Industry Experience* and *Tariffs_89* leads to a 4.2 percent to 5.6 percent increase in segment revenue and a 0.9 to 2.3 percentage point increase in segment ROA.

[Table 10 about here]

The results are robust to the inclusion of *firm fixed effects* and control variables, Columns (1), (3), (5) and (7). When *firm-year fixed effects* are included, Columns (2), (4), (6) and (8), the interaction coefficient becomes larger and more significant. My results from the BoardEx sample and the combined sample indicate that the possible survivorship bias does not seem to affect my estimation. The estimated coefficient on the interaction term has similar magnitude and significance in both samples.

An important assumption in my triple difference analysis is that the performances of a more affected segment and a less affected segment followed parallel trends prior to the adoption of the FTA. To validate this assumption, I first use graphs to check whether there are pre-trends in segment performance prior to the passage of the FTA. I replace the $Post_t$ in the equation (4) with dummy variables,

Year Dummy$_t$, indicating each year during the sample. Then, I estimate the models for segment revenue and segment ROA and plot the coefficients on the interaction term of *Multi-Industry Experience*$_{j,t}$, *Tariffs_89*$_{i,j}$, and *Year Dummy*$_t$ for each year in the sample period. If the parallel condition is satisfied, the graphs will show a clear jump around the passage of the FTA. Figure 3 plots the estimated coefficients and their 95 percent intervals. Both segment revenue and ROA graphs show a clear jump around the event year. The figures indicate that my results are not explained by possible pre-trends in segment performance.

[Figure 3 about here]

Second, I directly test the parallel trend condition by including in my models a dummy variable, *False Post*$_t$, which equals to one in the period 1987-1992, and zero in other years. In the each model, I estimate the coefficient on *Post*$_t$ $\times$ *Multi-Industry Experience*$_{j,t}$ $\times$ *Tariffs_89*$_{i,j}$, and the coefficient on *False Post*$_t$ $\times$ *Multi-Industry Experience*$_{j,t}$ $\times$ *Tariffs_89*$_{i,j}$. If the condition is satisfied, the former coefficient should be similar to that in Table 10; the later coefficient should be insignificantly different from zero. As shown in Table A3, the coefficients of *False Post*$_t$ and its interaction terms are statistically insignificant in both models, the coefficients of interest are significant and mostly unchanged. This test suggests that pre-existing trends are not a concern in my empirical strategy.

4 Deregulation

Besides international trade agreements, different waves of deregulation in major industries have changed the competition environment in the US over the last several decades. I use these policy changes to confirm that increased competition induces higher demand for industry-transferable skills in the CEO market. There were two major deregulations in the 1990s: the National Energy Policy Act of 1992 that opened the energy distribution market and the Telecommunications Act of 1996 that opened the telecommunications industry.

4.1. *Institutional Background*

The National Energy Policy Act of 1992 (EPACT) directly change the competition environment of the electric utility industry. This act affected the competition in the electricity distribution sector in two ways. First, EPACT directed the Federal Energy Regulatory Commission (FERC) to order electric utilities to transmit electricity generated by other suppliers to the US power transmission grid at just and reasonable rates. This change opened the distribution market, which used to be accessible exclusively to transmission-owning electric utilities, for all electricity suppliers. Second, the Act removed corporate ownership and geographical regulations imposed by the Public Utility Holding Company Act of 1935 (PUHCA) that restrained the use of certain electric power generators. This change enabled non-utility wholesale power generators to compete without being constrained by regulations designed for utility companies. This Act created a new category of independent power generators, called "exempt wholesale generators." As a result, EPACT has considerably increased the level of competition in the electric utility industry.

The Telecommunications Act of 1996 was the most significant change in the telecommunications law since the Communications Act of 1934. Although telecommunications had traditionally been considered a natural monopoly and regulated sector, the sector has evolved significantly following technological breakthroughs in transmission and the breakup of AT&T. In passing the Telecommunications Act of 1996, Congress aimed to clear the way for necessary changes with the main goal to "let anyone enter any communications business -to let any communications business compete in any market against any other."[6] The Act prevented companies from becoming monopolies and eliminated old regulations that had kept businesses in the industry from competing.

4.2. *Sample Construction*

To test for the impact of deregulation in the electricity sector, I use the sample of Compustat non-financial firms from 1988, four years before deregulation, to 1995, four years after deregulation. As in Section 2, my measure of CEOs' industry-transferable skills, variable *Multi-Industry Experience*, is constructed as the number of industries at the SIC three-digit level of CRSP firms where a manager had

[6] https://transition.fcc.gov/telecom.html

worked before taking a CEO position. Variable *Post Deregulation* indicates 1992 and the subsequent years in the sample period. *Deregulated* is a dummy variable which equals to one for electricity firms (SIC codes: 4910, 4911, 4931) and zero for firms with other SIC codes. In 1992, there were 17 companies in the deregulated sector which have data for all variables.

In the tests for the telecommunications deregulation, the sample is Compustat non-financial firms from 1992 to 1999. Since this sample overlaps with the sample for the telecom deregulation, all electricity firms (SIC codes: 4910, 4911, 4931) are excluded. Variable *Multi-Industry Experience* is constructed using the similar method in Section 2. In these tests, variable *Post Deregulation* indicates 1996 and the subsequent years in the sample period. *Deregulated* is a dummy variable which equals to one for telecommunications firms (SIC codes: 4800 to 4899) and zero, otherwise. In 1996, there were 39 telecommunications companies which have data for all variables.

I collect control variables for CEO characteristics from BoardEx. Accounting variables are obtained from Compustat and winsorized at 1 percent and 99 percent levels. The statistics of the main dependent and independent variables are presented in Panel C of Table 1.

4.3. *Empirical Analysis and Results*

As in the previous sections, I examine the impact of deregulation on the increased importance of industry-transferable skills in the CEO market. I then test whether CEOs with greater industry-transferable skills outperform in deregulated industries after the passage of the deregulation. To verify the impact on CEO retaining decision, I estimate the following regression model:

$$\begin{aligned} Y_{j,t} =& \alpha + \beta_1 \text{Multi} - \text{Industry Experience}_{j,t} \times \text{Post Deregulation}_t \times \text{Deregulated}_j \\ &+ \beta_2 \text{Multi} - \text{Industry Experience}_{j,t} \times \text{Post Deregulation}_t \\ &+ \beta_3 \text{Post Deregulation}_t \times \text{Deregulated}_j \\ &+ \beta_4 \text{Multi} - \text{Industry Experience}_{j,t} \times \text{Deregulated}_j \\ &+ \beta_5 \text{Multi} - \text{Industry Experience}_{j,t} + \beta_6 \text{CEO\&FirmControls}_{j,t} \\ &+ \text{FirmFE}_j + \text{YearFE}_t + \epsilon_{j,t} \end{aligned} \tag{5}$$

where $Y_{j,t}$ is a dummy variable indicating whether the incumbent CEO of firm j is replaced at the end of year t; *Multi-Industry Experience*$_{j,t}$ is the measure of CEOs' industry-transferable skills; *Post Deregulation*$_t$ equals to one for the year in which the deregulation came into effect and subsequent years; *Deregulated*$_j$ indicates firms in the deregulated industries; *CEO& Firm Controls*$_{j,t}$ is a vector of CEO and firm control variables; *FirmFE*$_j$ are firm fixed effects; *YearFE*$_t$ are year fixed effects. The coefficient on the interaction term of *Multi-Industry Experience*$_{j,t}$, *Post Deregulation*$_t$, and *Deregulated*$_j$ estimates the marginal impact of industry-transferable skills on firms' propensity to retain the CEOs.

Table 11 reports the results of these tests. In Columns (1) and (2), the triple difference coefficient shows that for an electricity firm after the deregulation, one standard deviation higher in CEOs' industry-transferable skills reduce the propensity of CEO turnovers by 2.3 percentage points. The coefficient is significant at 1 percent level. CEOs' industry-transferable skills also reduce the propensity of CEO turnovers when the telecommunications sector was deregulated. In Columns (3) and (4), the coefficient on the interaction of *Multi-Industry Experience*$_{j,t}$, *Post Deregulation*$_t$, and *Deregulated*$_j$ is economically large and statistically significant at the 5 percent level. For a CEO of a telecommunication company, one standard deviation higher in industry-transferable skills reduces the propensity of CEO turnovers by 4.1 percentage points. These results are consistent with those in Section 2.

[Table 11 about here]

Because of the size of the treatment groups in both deregulation shocks, I could not estimate the models for CEO selection decision as in the previous two settings. Therefore, I continue my analysis by examining whether CEOs who have greater industry-transferable skills would perform better in deregulated industries. To test this hypothesis, I use regression equation (5) with dependent variables, the logarithm of firm revenue and firm ROA. The coefficient of interest is on the interaction of *Multi-Industry Experience*$_{j,t}$, *Post Deregulation*$_t$, and *Deregulated*$_j$. Table 12 presents the results of this test. Regarding the electricity deregulation, Columns (1) and (2), the coefficient on the interaction is insignificant in both models. For the telecommunications deregulation, Columns (3) and (4), the coef-

ficient is positive and significant at 1 percent level in both models. One standard deviation higher in CEOs' industry-transferable skills leads to 3.3 percent growth in firm revenue and 2.5 percentage points higher in ROA.

[Table 12 about here]

The results in this section support my proposed hypotheses in this paper. Increased competition, resulted from deregulation, leads to higher demand for CEOs with greater industry-transferable skills. In deregulated industries, CEOs with greater industry-transferable skills outperform CEOs with lesser industry-transferable skills.

5 Conclusion

As Bertrand (2009) discusses, CEOs are "the key decision-makers in corporations that account for most of the economic activity in modern economies." Over the past several decades, the CEO market has evolved significantly and presents major questions for studies in the CEO literature. This paper addresses one of those questions: Why would the importance of transferable managerial skills have increased so much over the last 30-40 years? (Bertrand, 2009)

Studying the CEO market in three different empirical settings, I identify increased competition in the product markets as a driving force behind the rising importance of transferable managerial skills, specifically industry-transferable skills. When competition increases, firms tend to retain incumbent chief executives with greater industry-transferable skills and to select new ones who have these skills. CEOs with greater industry-transferable skills are preferred in a competitive market since these executives have positive impacts on revenue growth and profitability. My analysis identifies corporate innovation as one channel of effects. CEOs with greater industry-transferable skills are more likely to undertake risker but more innovative projects when the firms face with increased competition pressure. As companies need these projects to differentiate from new market entrants, this explains the rising demand for CEOs who possess these skills.

This study highlights the role of product-market competition in the rising importance of chief executives' industry-transferable skills. Other transferable skills such as leadership, business education, restructuring abilities, organizational skills, have also become more and more valuable in the labor market for top executives. Firms' increased dependence on external financing, rising role of public relation, and waves of mergers and acquisitions may be among the economic forces that drive the demand for those managerial qualities. Future research could shed light on how those processes impact the executive market.

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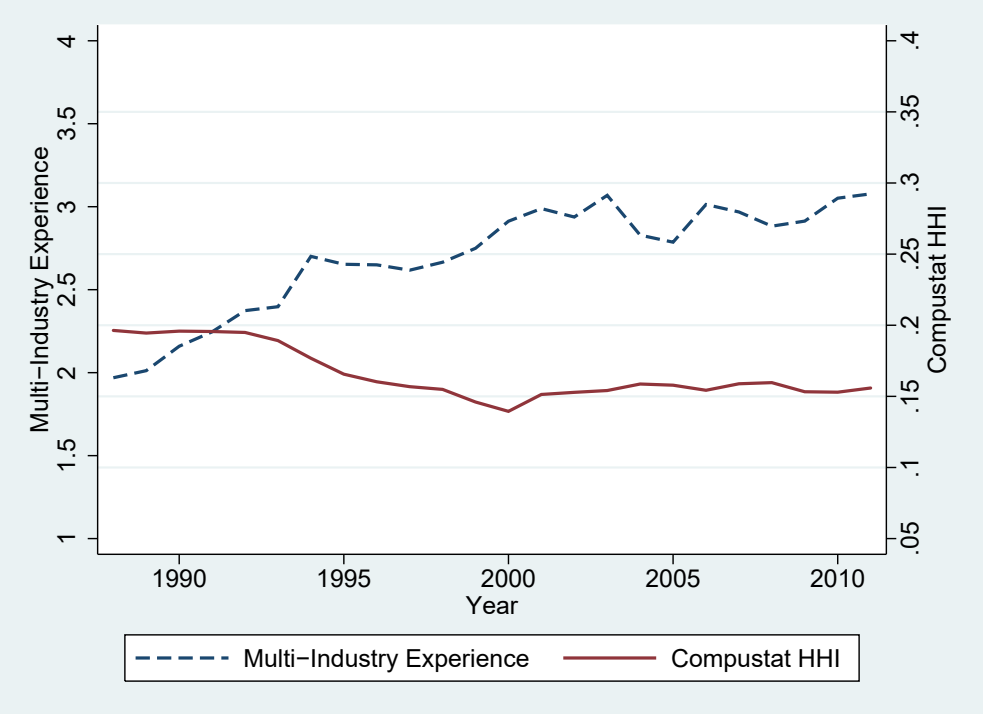

Figure 1: Market Competition and Multi-Industry CEOs

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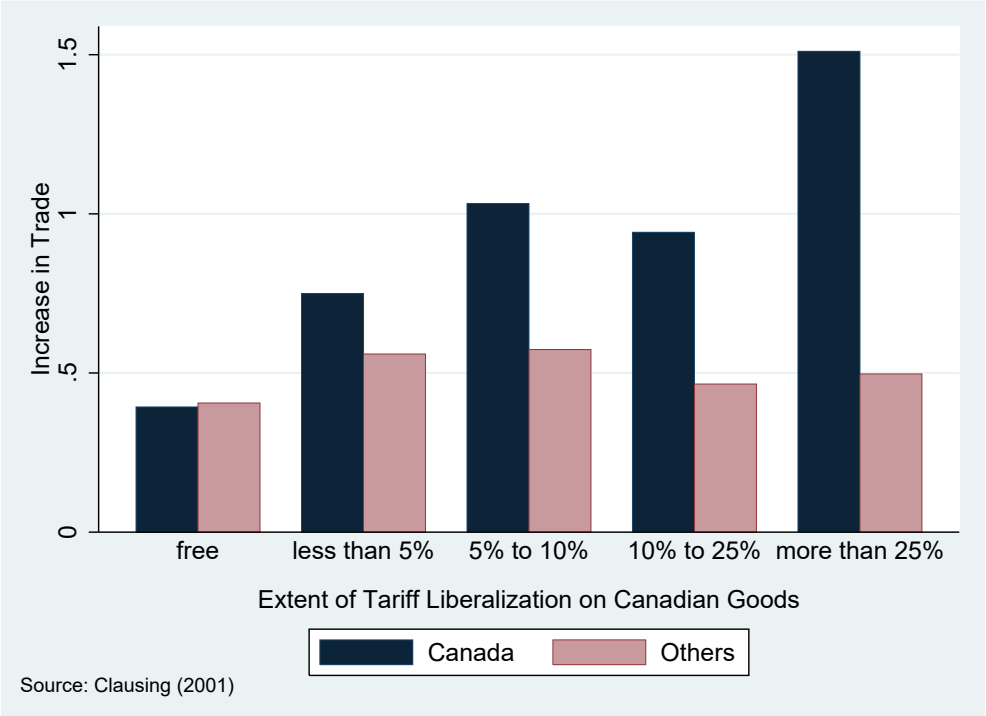

Figure 2: Growth in U.S. imports from Canada and the rest of the world, 1989-1994

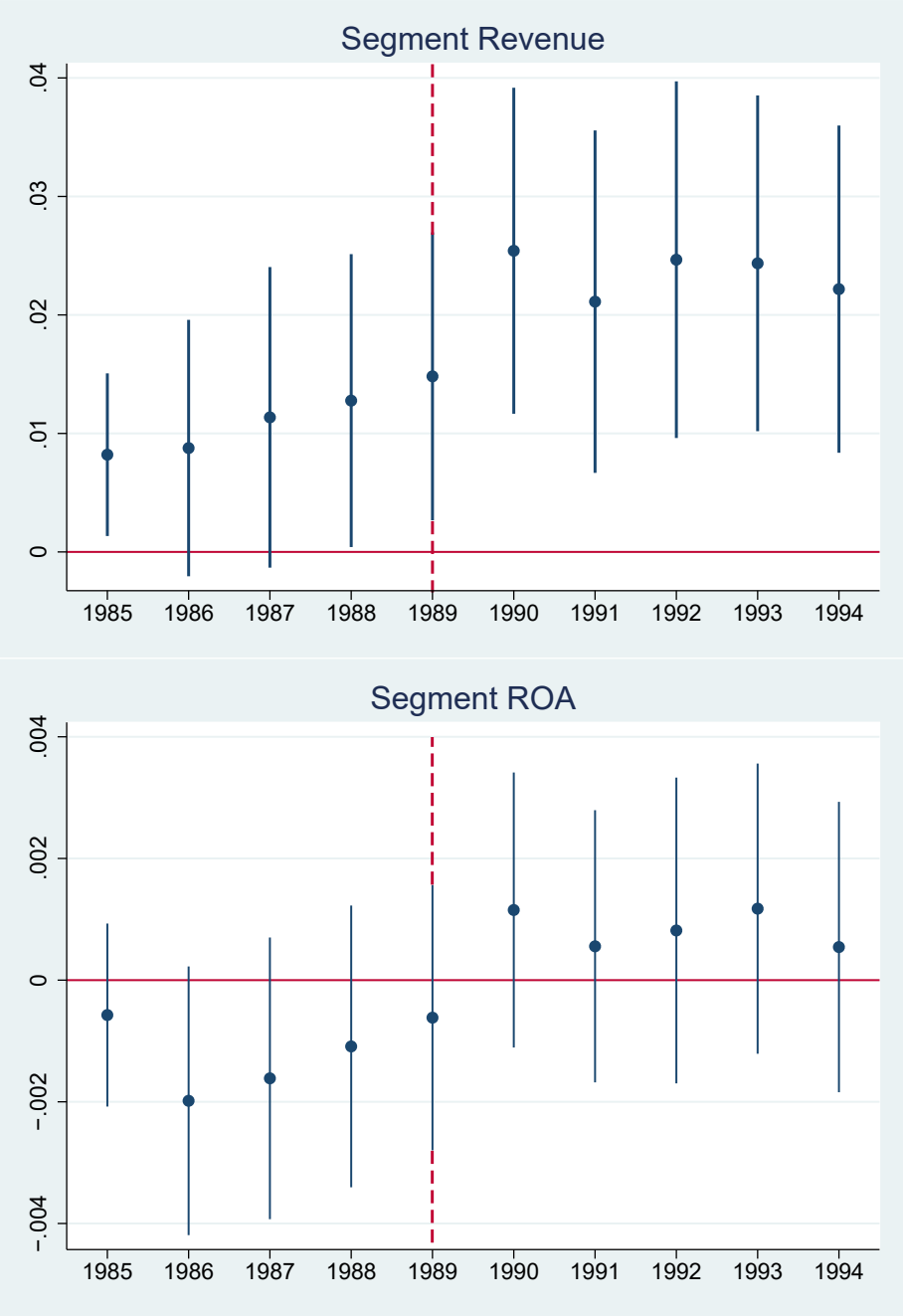

Figure 3: Parallel Trend Analysis
This figure presents the point estimate and the 95% confidence interval of interaction coefficients of $Multi-IndustryExperience_{j,t} \times Year\ Dummy_t \times Tariffs\_89_{i,j}$ estimated in this model

$$\begin{aligned} Segment\ Outcomes_{i,j,t} = \alpha &+ \beta_1 Multi\text{-}Industry\ Experience_{j,t} \times Year\ Dummyt \times Tariffs\_89_{i,j} \\ &+ \beta_2 YearDummy_t \times Tariffs\_89_{i,j} + \beta_3 Multi\text{-}Industry \quad Experience_{j,t} \times Tariffs\_89_{i,j} \\ &+ \beta_4 Tariffs\_89_{i,j} + Firm\text{-}YearFE_{j,t} + \epsilon_{i,j,t} \end{aligned}$$

Table 1: Summary Statistics

Panel A: Firm Fixed-Effects Models

	Mean	p10	p50	p90	S.D.	N
Multi-Industry Experience	2.34	1.00	2.00	4.00	1.34	32,840
HHI	0.16	0.05	0.12	0.32	0.15	32,840
TNIC3 HHI	0.24	0.06	0.16	0.55	0.22	32,840
CEO Turnover	0.08	0.00	0.00	0.00	0.27	32,840
Revenue ($mil)	2,343.95	20.55	338.01	5,121.65	6,787.70	32,840
Profit ($mil)	247.02	-16.41	22.47	517.20	834.04	32,840
ROA	0.02	-0.18	0.07	0.18	0.24	32,840
Tobin's Q	2.13	0.91	1.52	3.75	2.64	32,840
R&D/Sale	0.32	0.00	0.00	0.27	1.68	32,840
Patent	19.90	0.00	0.00	25.44	119.02	11,253
Citation	164.14	0.00	0.00	148.61	1,487.17	11,253

Panel B: The Canada-United States Free Trade Agreement

	Mean	p10	p50	p90	S.D.	N
Multi-Industry Experience	2.36	1.00	2.00	4.00	1.50	5,859
CEO Turnover	0.06	0.00	0.00	0.00	0.23	5,859
Weighted Tariff_89	1.03	0.00	0.00	3.75	2.14	5,859
Tariffs_89	1.83	0.00	0.29	4.79	2.84	15,483
Segment Revenue ($mil)	1,057.20	7.70	194.08	2,364.53	4,109.59	15,483
Segment ROA	0.12	-0.04	0.11	0.30	0.16	15,483
Segment CaPex/Total Capex	0.39	0.02	0.25	0.93	0.67	15,483

Panel C: Deregulations

	Mean	p10	p50	p90	S.D.	N
Electricity						
Multi-Industry Experience	1.92	1.00	2.00	3.00	1.24	9,011
CEO Turnover	0.05	0.00	0.00	0.00	0.23	9,011
Revenue ($mil)	1,455.74	9.99	191.80	4,034.04	3,301.26	9,011
ROA	0.02	-0.07	0.04	0.13	0.26	9,011
Telecommunications						
Multi-Industry Experience	2.00	1.00	2.00	4.00	1.22	15,881
CEO Turnover	0.08	0.00	0.00	0.00	0.27	15,881
Revenue ($mil)	1,342.51	10.25	168.15	3,304.45	3,288.77	15,881
ROA	0.00	-0.14	0.04	0.13	0.21	15,881

Details about variable construction as in Appendix A1

Table 2: Product Market Competition, CEOs' Industry Transferable Skills, and CEO Turnovers

This table reports the results of firm fixed-effects models examining the impact of product-market competition and CEOs' industry-transferable skills on the propensity of CEO turnovers. The dependent variable is *CEO Turnover* which equals to 1 if the CEO is replaced at the end of the financial year in the sample period from 1999 to 2012. *Multi-Industry Experience* is the number of industries at the SIC three-digit level in which an executive had experienced before becoming CEO. *Competition* is defined as one minus the Herfindahl-Hirschman Index. The index ranges from zero to one and is constructed using Compustat sale at the SIC three-digit code level, Columns (1) and (2), or the Text Based Industry Classifications, Columns (3) and (4), suggested by Hoberg and Phillips (2010). Variables *Multi-Industry Experience* and *Competition* are standardized to have mean zero and standard deviation one. Standard errors are clustered at the SIC three-digit level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\begin{aligned}\text{CEO Turnover}_{i,j,t} =& \alpha + \beta_1 \text{Competition}_{j,t} \times \text{Multi-Industry Experience}_{i,t} + \beta_2 \text{Competition}_{j,t} \\ &+ \beta_3 \text{Multi-Industry Experience}_i + \beta_4 \text{CEO Controls}_{i,t} + \text{FirmFE}_j + \text{YearFE}_t + \epsilon_{i,j,t}\end{aligned}$$

	Compustat HHI		TNIC3 HHI	
	(1)	(2)	(3)	(4)
Competition × Multi-Industry Experience	-0.005*	-0.006**	-0.005**	-0.005**
	(0.003)	(0.003)	(0.002)	(0.002)
Competition	0.006	0.011**	0.007***	0.005*
	(0.004)	(0.005)	(0.003)	(0.003)
Multi-Industry Experience	-0.024***	-0.006	-0.023***	-0.006
	(0.004)	(0.004)	(0.003)	(0.004)
CEO Age		0.006***		0.006***
		(0.001)		(0.001)
Male CEO		0.013		0.013
		(0.023)		(0.022)
CEO Tenure		0.012***		0.012***
		(0.001)		(0.001)
Externally Hired CEO		-0.026**		-0.027**
		(0.011)		(0.011)
CEO is the chairperson		0.004		0.008
		(0.008)		(0.009)
CEO has an MBA degree		-0.073***		-0.071***
		(0.011)		(0.012)
CEO has an Ivy League degree		-0.033***		-0.034***
		(0.009)		(0.010)
Firm Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Firm Years	37,418	37,288	33,931	33,868
Adj. R-Square	0.009	0.066	0.009	0.068

Table 3: Product Market Competition and Demand for CEOs' Industry Transferable Skills

This table presents the results of firm fixed-effects models examining the impacts of product-market competition on the level of industry-transferable skills of incoming CEOs. The dependent variables in these models are different measures for CEO characteristics. The sample consists of first-year CEO positions from 1999 to 2012. *Competition* is defined as one minus the Herfindahl-Hirschman Index. The index ranges from zero to one and is constructed using Compustat sale at the SIC three-digit code level, Panel A, or the Text Based Industry Classifications, Panel B, suggested by Hoberg and Phillips (2010). Standard errors are clustered at the SIC three-digit level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\text{CEO Characteristics}_{i,t} = \alpha + \beta_1 \text{Competition}_{j,t} + \text{FirmFE}_j + \text{YearFE}_t + \epsilon_{i,j,t}$$

Panel A: Compustat HHI

	(1) Multi-Industry Experience	(2) Number of Positions	(3) Number of Firms	(4) Prior CEO Experience	(5) Conglomerate Experience	(6) CEO Age	(7) Externally Hired CEO	(8) MBA	(9) Ivy League
Competition	**0.162****	**0.045**	**0.121***	**0.032**	**-0.029**	**0.148**	**-0.045**	**-0.049**	**-0.008**
	(0.070)	**(0.064)**	**(0.069)**	**(0.047)**	**(0.034)**	**(0.786)**	**(0.040)**	**(0.042)**	**(0.033)**
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firm-CEOs	5,465	5,451	5,451	5,451	5,451	5,418	5,465	5,465	5,465
Adj. R-Square	0.035	0.071	0.043	0.007	0.048	0.003	0.025	0.002	0.008

Panel B: TNIC3 HHI

	(1) Multi-Industry Experience	(2) Number of Positions	(3) Number of Firms	(4) Prior CEO Experience	(5) Conglomerate Experience	(6) CEO Age	(7) Externally Hired CEO	(8) MBA	(9) Ivy League
Competition	**0.083*****	**0.035**	**0.021**	**-0.002**	**-0.001**	**0.225**	**-0.028**	**-0.008**	**0.005**
	(0.030)	**(0.032)**	**(0.036)**	**(0.019)**	**(0.015)**	**(0.260)**	**(0.027)**	**(0.017)**	**(0.012)**
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firm-CEOs	4,325	4,319	4,319	4,319	4,319	4,296	4,325	4,325	4,325
Adj. R-Square	0.028	0.059	0.038	0.005	0.018	0.007	0.024	0.001	0.008

Table 4: Product Market Competition, CEOs' Industry Transferable Skills and Firm Performance

This table presents the results of firm fixed-effects models examining the impacts of product-market competition on firm performance. The dependent variables in these models are the logarithm of revenue, the logarithm of profit, ROA and Tobin's Q in the 1999-2012 period. *Multi-Industry Experience* is is the number of industries at the SIC three-digit level in which an executive had experienced before becoming CEO. *Competition* is defined as one minus the Herfindahl-Hirschman Index. The index ranges from zero to one and is constructed using Compustat sale at the SIC three-digit code level. Variables *Multi-Industry Experience* and *Competition* are standardized to have mean zero and standard deviation one. Standard errors are clustered at the SIC three-digit level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\begin{aligned}\text{Firm Outcomes}_{i,j,t} =& \alpha + \beta_1 \text{Competition}_{j,t} \times \text{Multi-Industry Experience}_{i,t} + \beta_2 \text{Competition}_{j,t} \\ &+ \beta_3 \text{Multi-Industry Experience}_{i,t} + \beta_4 \text{CEO Controls}_{i,t} + \text{FirmFE}_j + \text{YearFE}_t + \epsilon_{i,j,t}\end{aligned}$$

	(1) Revenue	(2) Profit	(3) ROA	(4) Tobin's Q
Competition ×	0.002	0.019	0.004**	-0.022
Multi-Industry Experience	(0.012)	(0.012)	(0.002)	(0.043)
Competition	0.072**	0.067	0.008	-0.244*
	(0.034)	(0.044)	(0.007)	(0.136)
Multi-Industry Experience	0.014	-0.016	-0.000	-0.064
	(0.011)	(0.014)	(0.002)	(0.073)
CEO Age	0.001	0.000	0.001	-0.012
	(0.002)	(0.002)	(0.000)	(0.008)
Male CEO	0.116*	0.216**	0.013	-0.025
	(0.066)	(0.100)	(0.009)	(0.188)
CEO Tenure	0.013***	0.011***	0.001	-0.001
	(0.001)	(0.003)	(0.001)	(0.006)
Externally Hired CEO	0.021	-0.037	-0.000	-0.255***
	(0.032)	(0.031)	(0.007)	(0.079)
CEO is the chairperson	-0.056*	-0.040	-0.008	0.180
	(0.031)	(0.029)	(0.006)	(0.179)
CEO has an MBA degree	-0.023	0.003	-0.003	0.190***
	(0.019)	(0.030)	(0.007)	(0.066)
CEO has an Ivy League degree	-0.003	0.025	-0.011**	0.162
	(0.029)	(0.044)	(0.005)	(0.138)
Firm Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Firm Years	37,288	27,393	37,278	34,757
Adj. R-Square	0.251	0.138	0.013	0.029

Table 5: Product Market Competition, CEOs' Industry Transferable Skills, and Innovative Activities

This table reports the results of firm fixed-effects models examining the impacts of product-market competition and CEOs' industry-transferable skills on firms' innovative activities. The dependent variables in these models are the R&D to revenue, book leverage, cash holdings to total assets, and capital expenditure to total assets in the 1999-2012 period. *Multi-Industry Experience* is the number of industries at the SIC three-digit level in which an executive had experienced before becoming CEO. *Competition* is defined as one minus the Herfindahl-Hirschman Index. The index ranges from zero to one and is constructed using Compustat sale at the SIC three-digit code level. Variables *Multi-Industry Experience* and *Competition* are standardized to have mean zero and standard deviation one. Standard errors are clustered at the SIC three-digit level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\begin{aligned}\text{R\&D}_{i,j,t} =& \alpha + \beta_1 \text{Competition}_{j,t} \times \text{Multi-Industry Experience}_{i,t} + \beta_2 \text{Competition}_{j,t} \\ &+ \beta_3 \text{Multi-Industry Experience}_{i,t} + \beta_4 \text{CEO Controls}_{i,t} + \text{FirmFE}_j + \text{YearFE}_t + \epsilon_{i,j,t}\end{aligned}$$

	(1) R&D	(2) Leverage	(3) Cash	(4) CaPex
Competition × Multi-Industry Experience	0.016**	0.005	-0.001	0.000
	(0.008)	(0.007)	(0.002)	(0.000)
Competition	0.003	-0.010	-0.001	-0.001
	(0.023)	(0.013)	(0.004)	(0.002)
Multi-Industry Experience	0.019*	-0.007	-0.000	0.000
	(0.010)	(0.008)	(0.002)	(0.001)
CEO Age	0.001	-0.000	-0.000	-0.000***
	(0.002)	(0.002)	(0.000)	(0.000)
Male CEO	-0.165*	0.318	-0.012	-0.001
	(0.088)	(0.311)	(0.009)	(0.003)
CEO Tenure	0.008*	0.001	0.000	0.000*
	(0.004)	(0.002)	(0.000)	(0.000)
Externally Hired CEO	-0.065	0.046	-0.003	0.002
	(0.044)	(0.059)	(0.002)	(0.001)
CEO is the chairperson	0.014	0.003	0.002	-0.001
	(0.016)	(0.016)	(0.004)	(0.002)
CEO has an MBA degree	0.015	0.073	-0.001	0.001
	(0.043)	(0.058)	(0.004)	(0.001)
CEO has an Ivy League degree	0.045**	-0.012	-0.005	-0.003**
	(0.022)	(0.013)	(0.003)	(0.001)
Firm Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Firm Years	36,290	36,290	36,290	36,290
Adj. R-Square	0.376	0.001	0.063	0.048

Table 6: CEOs' Industry Transferable Skills, Product Market Competition and Corporate Innovation

This table reports the results of firm fixed-effects models examining the impacts of product-market competition and CEOs' industry-transferable skills on firms' innovation outputs. The dependent variables in these models are the logarithm of the number of patents, Columns (1) and (2), and the logarithm of the number of citations in the 1999-2006 period. *Multi-Industry Experience* is the number of industries at the SIC three-digit level in which an executive had experienced before becoming CEO. *Competition* is defined as one minus the Herfindahl-Hirschman Index. The index ranges from zero to one and is constructed using Compustat sale at the SIC three-digit code level. Variables *Multi-Industry Experience* and *Competition* are standardized to have mean zero and standard deviation one. Standard errors are clustered at the SIC three-digit level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\begin{aligned}\text{Innovation}_{i,j,t} =& \alpha + \beta_1 \text{Competition}_{j,t} \times \text{Multi-Industry Experience}_{i,t} + \beta_2 \text{Competition}_{j,t} \\ &+ \beta_3 \text{Multi-Industry Experience}_{i,t} + \beta_4 \text{CEO Controls}_{i,t} + \text{FirmFE}_j + \text{YearFE}_t + \epsilon_{i,j,t}\end{aligned}$$

	(1) Log(Patent+1)	(2) Log(Patent+1)	(3) Log(Citation+1)	(4) Log(Citation+1)
Competition ×	0.033**	0.034**	0.063*	0.061*
Multi-Industry Experience	(0.017)	(0.017)	(0.035)	(0.035)
Competition	-0.009	-0.008	-0.117	-0.111
	(0.048)	(0.047)	(0.123)	(0.123)
Multi-Industry Experience	-0.005	-0.001	-0.001	0.004
	(0.022)	(0.025)	(0.035)	(0.041)
CEO Age		0.003		0.015**
		(0.003)		(0.006)
Male CEO		0.224*		0.228
		(0.131)		(0.354)
CEO Tenure		0.001		0.001
		(0.004)		(0.010)
Externally Hired CEO		-0.010		-0.041
		(0.039)		(0.086)
CEO is the chairperson		-0.066*		-0.108
		(0.034)		(0.086)
CEO has an MBA degree		-0.025		-0.091
		(0.035)		(0.089)
CEO has an Ivy League degree		-0.033		-0.125
		(0.046)		(0.109)
Firm Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Firm-Years	11,253	11,239	11,253	11,239
Adj. R-Square	0.283	0.283	0.388	0.390

Table 7: The Canada-United States FTA, Industry Transferable Skills, and CEO Turnover
This table presents the results of differences-in-differences regression examining the impact of the passage of the FTA on the propensity of CEO turnovers. The dependent variable is an indicator which equals to 1 if the CEO is replaced by the end of the year. The sample is Compustat firm-years from 1984 to 1994. *Multi-Industry Experience* is the number of SIC three-digit codes that the executive had experienced before becoming CEO. *Post* is an indicator which equals to 1 for years after the US-Canada FTA in 1989 and equals to 0 otherwise; *Weighted Tariffs_89* is the segment-revenue-weighted tariff rate on Canadian imports from 1986 to 1988. Standard errors are clustered at the SIC three-digit level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\text{CEO Turnover}_{j,t} = \alpha + \beta_1 \text{Post}_t \times \text{Weighted Tariffs\_89}_j + \text{CEOControls}_{j,t} + \text{FirmFE}_j + \text{YearFE}_t + \epsilon_{j,t}$$

	Multi-Industry Experience $\leqslant 2$		Multi-Industry Experience > 2	
	(1) BoardEx	(2) Combined	(3) BoardEx	(4) Combined
Post × Weighted Tariff_89	0.017*	0.020**	-0.004	-0.006
	(0.009)	(0.010)	(0.009)	(0.009)
CEO Age	0.011***	0.009***	0.020***	0.018***
	(0.004)	(0.003)	(0.007)	(0.006)
CEO Tenure	0.003	0.004*	0.002	0.003
	(0.003)	(0.002)	(0.004)	(0.003)
CEO First Year	-0.045***	-0.039***	-0.046**	-0.039**
	(0.016)	(0.012)	(0.019)	(0.016)
Externally Hired CEO	0.038	0.050	0.008	0.001
	(0.040)	(0.037)	(0.035)	(0.034)
CEO is the chairperson	-0.176***	-0.160***	-0.169***	-0.166***
	(0.034)	(0.034)	(0.051)	(0.048)
CEO has an MBA degree	-0.073	-0.085	-0.072	-0.074
	(0.069)	(0.059)	(0.131)	(0.132)
CEO has an Ivy League degree	0.018	0.014	0.095	0.089
	(0.064)	(0.065)	(0.078)	(0.078)
Male CEO	-	-	0.082	0.116
	-	-	(0.198)	(0.171)
Firm Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Segment-Years	2,598	3,805	1,698	2,058
Adj. R-Square	0.053	0.053	0.054	0.055

Table 8: Demand for CEOs' Industry Transferable Skills
This table presents the results of differences-in-differences regression models examining the impact of the passage of the FTA on the level of industry-transferable skills of incoming CEOs. The dependent variables are *Multi-Industry Experience*, measured as the number of SIC three-digit code that the manager had experienced before becoming CEO. *Post* is an indicator which equals to 1 for years after the US-Canada FTA in 1989 and equals to 0 otherwise; *Weighted Tariffs_89* is the segment-revenue-weighted tariff rate on Canadian imports from 1986 to 1988. Standard errors are clustered at the SIC three-digit level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\text{Multi-Industry Experience}_{j,t} = \alpha + \beta_1 \text{Post}_t \times \text{Weighted Tariffs\_89}_j + \text{FirmFE}_j + \text{YearFE}_t + \epsilon_{j,t}$$

	BoardEx Sample		Combined Sample	
	(1)	(2)	(3)	(4)
Post × Weighted Tariff_89	0.188**	0.164**	0.178***	0.186***
	(0.090)	(0.083)	(0.063)	(0.064)
CEO Age		0.019		0.018
		(0.016)		(0.012)
Male CEO		0.778		0.802
		(0.635)		(0.523)
CEO Tenure		-0.020		-0.024*
		(0.020)		(0.014)
Externally Hired CEO		0.524**		0.504***
		(0.202)		(0.176)
CEO is the chairperson		-0.077		-0.042
		(0.276)		(0.214)
CEO has an MBA degree		0.184		0.147
		(0.331)		(0.326)
CEO has an Ivy League degree		0.371		0.357
		(0.289)		(0.261)
Firm Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of CEOs	696	684	959	918
Adj. R-Square	0.156	0.272	0.137	0.231

Table 9: Segment Performance and CEOs' Industry Transferable Skills
This table reports the results of differences-in-differences regression models examining the impact of the passage of the FTA on the performance of business segments. The dependent variables are segment revenue and segment ROA. The sample is from 1984 to 1994. *Multi-Industry Experience* is number of SIC three-digit code that the manager had experienced before becoming CEO. *Tariffs_89* is the average tariff rate of the segment from 1986 to 1988. *Post* is a dummy variable which is equals to 1 for years from 1989 to 1994. Standard errors are clustered at the segment SIC-code level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\text{Segment Outcomes}_{i,j,t} = \alpha + \beta_1 \text{Post}_t \times \text{Tariffs\_89}_{i,j} + \beta_2 \text{Tariffs\_89}_{i,j} + \text{Firm-YearFE}_{j,t} + \epsilon_{i,j,t}$$

Panel A: BoardEx Sample

	Multi-Industry Experience $\leqslant 2$		**Multi-Industry Experience > 2**	
	(1) Segment Revenue	(2) Segment ROA	(3) Segment Revenue	(4) Segment ROA
Post × Tariffs_89	**-0.045**	**-0.025*****	**0.103**	**0.023**
	(0.062)	**(0.008)**	**(0.074)**	**(0.014)**
Tariffs_89	0.005	0.024**	0.078	-0.003
	(0.060)	(0.010)	(0.059)	(0.012)
Firm Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Segment-Years	5,298	4,904	4,219	4,070
Adj. R-Square	0.701	0.140	0.658	0.134

Panel B: Combined Sample

	Multi-Industry Experience $\leqslant 2$		**Multi-Industry Experience > 2**	
	(1) Segment Revenue	(2) Segment ROA	(3) Segment Revenue	(4) Segment ROA
Post × Tariffs_89	**-0.013**	**-0.016****	**0.110***	**0.019**
	(0.041)	**(0.008)**	**(0.065)**	**(0.012)**
Tariffs_89	0.025	0.015**	0.045	-0.004
	(0.043)	(0.007)	(0.057)	(0.011)
Firm Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Segment-Years	9,911	9,516	5,328	5,175
Adj. R-Square	0.687	0.135	0.660	0.105

Table 10: Segment Outcomes and CEOs' Industry Transferable Skills

This table presents the results of differences-in-differences-in-differences regression models examining the impact of the passage of the FTA and CEOs' industry-transferable skills on the performance of business segments. The dependent variables are segment revenue and segment ROA. The sample is from 1984 to 1994. *Multi-Industry Experience* is number of SIC three-digit code that the manager had experienced before becoming CEO. *Tariffs_89* is the average tariff rate of the segment from 1986 to 1988. *Post* is a dummy variable which is equals to 1 for years from 1989 to 1994. Standard errors are clustered at the segment SIC-code level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\begin{aligned}\text{Segment Outcomes}_{i,j,t} = \alpha &+ \beta_1 \text{Multi-Industry Experience}_{j,t} \times \text{Post}_t \times \text{Tariffs\_89}_{i,j} + \beta_2 \text{Post}_t \times \text{Tariffs\_89}_{i,j} \\ &+ \beta_3 \text{Multi-Industry Experience}_{j,t} \times \text{Tariffs\_89}_{i,j} + \beta_4 \text{Tariffs\_89}_{i,j} + \text{Firm-YearFE}_{j,t} + \epsilon_{i,j,t}\end{aligned}$$

	Segment Revenue				Segment ROA			
	(1) BoardEx	(2) BoardEx	(3) Combined	(4) Combined	(5) BoardEx	(6) BoardEx	(7) Combined	(8) Combined
Multi-Industry Experience × Post × Tariffs_89	0.048**	0.056**	0.042**	0.053**	0.009**	0.023**	0.007*	0.020***
	(0.022)	(0.027)	(0.018)	(0.023)	(0.004)	(0.009)	(0.004)	(0.007)
Multi-Industry Experience	0.014	-	0.005	-	0.001	-	-0.001	-
	(0.048)	-	(0.041)	-	(0.006)	-	(0.006)	-
Multi-Industry Experience × Post	-0.039	-	-0.018	-	0.002	-	0.001	-
	(0.029)	-	(0.026)	-	(0.004)	-	(0.004)	-
Tariffs_89	0.037	0.027	0.042*	0.038*	0.012**	0.016**	0.008*	0.008
	(0.033)	(0.026)	(0.024)	(0.020)	(0.005)	(0.008)	(0.005)	(0.006)
Multi-Industry Experience × Tariffs_89	0.024	0.034	0.017	0.012	-0.006	-0.014*	-0.005	-0.012*
	(0.025)	(0.021)	(0.021)	(0.018)	(0.004)	(0.008)	(0.004)	(0.006)
Post × Tariffs_89	0.010	0.013	0.022	0.039	-0.006	-0.009	-0.002	-0.003
	(0.025)	(0.032)	(0.022)	(0.025)	(0.005)	(0.008)	(0.004)	(0.007)
Firm Fixed-Effects	Yes	No	Yes	No	Yes	No	Yes	No
Firm Year Fixed-Effects	No	Yes	No	Yes	No	Yes	No	Yes
Year Fixed-Effects	Yes	No	Yes	No	Yes	No	Yes	No
CEO-Segment Controls	Yes	No	Yes	No	Yes	No	Yes	No
Number of Segment-Years	9,681	10,667	14,659	16,483	9,671	10,112	14,639	15,830
Adj. R-Square	0.803	0.693	0.785	0.671	0.279	0.122	0.247	0.113

Table 11: Deregulations, CEOs' Industry Transferable Skills, and CEO Turnover
This table reports the results of differences-in-differences-in-differences regression models examining the impact of the passage of deregulatory policies and CEOs' industry-transferable skills on the propensity of CEO turnovers. The dependent variable is an indicator which equals to 1 if the CEO in year t is replaced by the end of the financial year. In Columns (1) and (2), the sample is Compustat non-financial firms from 1988 to 1995. In Columns (3) and (4), the sample is Compustat non-financial and non-electricity firms from 1992 to 1999. *Multi-Industry Experience* is the number of industries at the three-digit SIC level that the manager had experienced before becoming CEO. Variable *Post Deregulation* indicates the deregulation year and the subsequent years in the sample period. In Columns (1) and (2), *Deregulated* is a dummy variable which equals to one for electricity firms (SIC codes: 4910, 4911, 4931) and to zero firms with other SIC codes. *Deregulated* is a dummy variable which equals to one for telecommunications firms (SIC codes: 4800 to 4899) and to zero, otherwise. Standard errors are clustered at the SIC three-digit level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\begin{aligned}\text{CEO Turnover}_{j,t} =& \alpha + \beta_1 \text{Multi} - \text{Industry Experience}_{j,t} \times \text{Post Deregulation}_t \times \text{Deregulated}_j \\ &+ \beta_2 \text{Multi} - \text{Industry Experience}_{j,t} \times \text{Post Deregulation}_t \\ &+ \beta_3 \text{Post Deregulation}_t \times \text{Deregulated}_j \\ &+ \beta_4 \text{Multi} - \text{Industry Experience}_{j,t} \times \text{Deregulated}_j \\ &+ \beta_5 \text{Multi} - \text{Industry Experience}_{j,t} + \beta_6 \text{Post Deregulation}_t \\ &+ \beta_7 \text{Deregulated}_j + \text{FirmFE}_j + \text{YearFE}_t + \epsilon_{j,t}\end{aligned}$$

	(1) Electricity	(2) Electricity	(3) Telecom	(4) Telecom
Multi-Industry Experience	-0.023***	-0.023***	-0.041**	-0.041**
× Post Deregulation × Deregulated	(0.009)	(0.009)	(0.016)	(0.016)
Multi-Industry Experience	-0.013	-0.014	-0.003	-0.002
	(0.012)	(0.012)	(0.009)	(0.009)
Multi-Industry Experience	0.010	0.010	0.006	0.006
× Post Deregulation	(0.007)	(0.007)	(0.006)	(0.006)
Post Deregulation ×	-0.022	-0.022	-0.014	-0.015
Deregulated	(0.014)	(0.014)	(0.034)	(0.034)
Multi-Industry Experience	-	-	-0.075***	-0.075***
× Deregulated	-	-	(0.028)	(0.028)
Firm Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	No	Yes	No	Yes
CEO-Firm Characteristics	Yes	Yes	Yes	Yes
Number of Firm-Years	11,751	11,751	20,162	20,162
Adj. R-Square	0.053	0.054	0.061	0.061

Table 12: Deregulation, CEOs' Industry Transferable Skills, and Firm Performance
This table presents the results of differences-in-differences-in-differences regression models examining the impact of the passage of deregulatory policies and CEOs' industry-transferable skills on firm performance. The dependent variables are logarithm of revenue and logarithm of operating profit. In Columns (1) and (2), the sample is Compustat non-financial firms from 1988 to 1995. In Columns (3) and (4), the sample is Compustat non-financial and non-electricity firms from 1992 to 1999. *MultiIndustry Experience* is the number of industries at the three-digit SIC level that the manager had experienced before becoming CEO. Variable *Post Deregulation* indicates the deregulation year and the subsequent years in the sample period. In Columns (1) and (2), *Deregulated* is a dummy variable which equals to one for electricity firms (SIC codes: 4910, 4911, 4931) and to zero firms with other SIC codes. *Deregulated* is a dummy variable which equals to one for telecommunications firms (SIC codes: 4800 to 4899) and to zero, otherwise. Standard errors are clustered at the SIC three-digit level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\begin{aligned}\text{Firm Performance}_{j,t} =& \alpha + \beta_1 \text{Multi} - \text{Industry Experience}_{j,t} \times \text{Post Deregulation}_t \times \text{Deregulated}_j \\ &+ \beta_2 \text{Multi} - \text{Industry Experience}_{j,t} \times \text{Post Deregulation}_t \\ &+ \beta_3 \text{Post Deregulation}_t \times \text{Deregulated}_j \\ &+ \beta_4 \text{Multi} - \text{Industry Experience}_{j,t} \times \text{Deregulated}_j \\ &+ \beta_5 \text{Multi} - \text{Industry Experience}_{j,t} + \beta_6 \text{Post Deregulation}_t \\ &+ \beta_7 \text{Deregulated}_j + \text{FirmFE}_j + \text{YearFE}_t + \epsilon_{j,t}\end{aligned}$$

	Electricity		Telecom	
	(1) Revenue	(2) ROA	(3) Revenue	(4) ROA
Multi-Industry Experience	-0.012	-0.001	0.033***	0.025**
× Post Deregulation × Deregulated	(0.013)	(0.001)	(0.008)	(0.012)
Multi-Industry Experience	-0.012	0.003	-0.008	-0.002
	(0.022)	(0.003)	(0.013)	(0.002)
Multi-Industry Experience	0.006	0.002	0.016*	0.003*
× Post Deregulation	(0.013)	(0.001)	(0.009)	(0.002)
Post Deregulation ×	-0.018	-0.006	-0.038***	-0.022*
Deregulated	(0.017)	(0.005)	(0.011)	(0.013)
Multi-Industry Experience	-	-	-0.062***	-0.003
× Deregulated	-	-	(0.015)	(0.014)
Firm Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes
CEO-Firm Controls	Yes	Yes	Yes	Yes
Number of Firm-Years	9,073	9,006	15,927	16,097
Adj. R-Square	0.620	0.051	0.683	-0.228

Appendices

Table A1: Variable Description

Variable	Definition
Tariffs_89	The three-year average tariff rate on Canadian imports by the segment's four-digit SIC code in the pre-FTA period from 1986 to 1988
Weighted Tariffs_89	The segment-revenue-weighted tariff rate on Canadian imports from 1986 to 1988
Segment Revenue	The logarithm of variable SALES in Compustat's Historical Segments
Segment ROA	The ratio of variable OPS to variable IAS in Compustat's Historical Segments
Multi-Industry Experience	The number of industries at the SIC three-digit level in which an executive has gained experience before taking a CEO position
CEO Turnover	A dummy variable indicating whether the incumbent CEO of a firm is replaced by the end of the year
CEO Age	CEO's age measured by the difference between the sample year and CEOs' birth year
Male CEO	A dummy variable indicating male CEOs
CEO Tenure	The number of years in which a CEO has been in the position
CEO First Year	A dummy variable indicating whether a CEO in their first year at the position
Externally Hired CEO	A dummy variable indicating whether a CEO is selected from outside the firms
Inside-Industry	A dummy variable indicating whether a CEO is selected from another firm in the same SIC three-digit industry

Table A2: Variable Description (cont'd.)

Variable	Definition
CEO is the chairperson	A dummy variable indicating whether a CEO is also the chairperson
CEO has an MBA degree	A dummy variable indicating whether a CEO has an MBA degree
CEO has an Ivy League degree	A dummy variable indicating whether a CEO has a degree from an Ivy League school
Firm Age	The difference between the sample year and the first year in which the firm is reported in Compustat
Total Assets	Compustat variable AT
Patent	The adjusted number of patents
Citation	The adjusted number of citations
Originality	One minus the Herfindahl index of the citations made by a patent (Trajtenberg et al., 1997). A patent is considered more original if it cites patents in a wider range of technology classes.
Generality	One minus the Herfindahl index of patents that cite the patent of interest (Trajtenberg et al., 1997). A patent is considered more general if it is cited by patents in a wider range of technology classes.
Competition	The measure for competition which equals to one minus the HHI
Post Deregulation	A dummy variable indicating the year in which the deregulation came into effect and subsequent years
Deregulated	A dummy variable indicating firms in the deregulated industries

Table A3: Falsification Test

The table reports results of the falsification tests for the regressions in Table 10. The dependent variables are the logarithm of revenue and the logarithm of operating profit of business segments in Compustat Historical Segments. False Post dummy variable is equal to 1 in the period 1987-1992. Standard errors are clustered at the segment SIC-code level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1) Segment Revenue	(2) Segment ROA
Multi-Industry Experience × Post × Tariffs_89	0.011*	0.007***
	(0.006)	(0.002)
Multi-Industry Experience × False Post × Tariffs_89	0.004	0.003
	(0.006)	(0.002)
Tariffs_89	-0.000	0.014***
	(0.021)	(0.006)
Multi-Industry Experience × Tariffs_89	0.007	-0.004***
	(0.006)	(0.002)
Post × Tariffs_89	-0.023	-0.021***
	(0.021)	(0.007)
False Post × Tariffs_89	-0.019	-0.007
	(0.020)	(0.007)
Firm Year Fixed-Effects	Yes	Yes
Year Fixed-Effects	No	No
CEO-Segment Controls	No	No
Number of Segment-Years	10,745	10,112
Adj. R-Square	0.003	0.001

Table A4: Product Market Competition and Demand for CEOs' Industry Transferable Skills
The dependent variable is CEOs' *Multi-Industry Experience*, the number of SIC three-digit code that the manager had experienced before becoming CEO. The sample is from 1999 to 2012. *Competition* is defined as one minus the Herfindahl-Hirschman Index. The index ranges from zero to one and is constructed using Compustat sale at the SIC three-digit code level, Columns (1) and (2), or the Text Based Industry Classifications, Columns (3) and (4), suggested by Hoberg and Phillips (2010). Variables *Multi-Industry Experience* and *Competition* are standardized to have mean zero and standard deviation one. Standard errors are clustered at the SIC three-digit level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\text{Multi-Industry Experience}_{i,t} = \alpha + \beta_1 \text{Competition}_{j,t} + \beta_2 \text{CEO Controls}_{i,t} + \text{FirmFE}_j + \text{YearFE}_t + \epsilon_{i,j,t}$$

	Compustat HHI		TNIC3 HHI	
	(1)	(2)	(3)	(4)
Competition	0.162**	0.154**	0.083**	0.082***
	(0.070)	(0.073)	(0.037)	(0.031)
CEO Age		0.027***		0.024***
		(0.003)		(0.004)
Male CEO		-0.260*		-0.304*
		(0.153)		(0.183)
CEO Tenure		-0.060***		-0.043
		(0.017)		(0.039)
Externally Hired CEO		-0.083*		-0.102
		(0.050)		(0.063)
CEO is the chairperson		0.154**		0.227***
		(0.064)		(0.087)
CEO has an MBA degree		0.109**		0.166***
		(0.055)		(0.060)
CEO has an Ivy League degree		0.221***		0.077
		(0.080)		(0.086)
Firm Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of CEO positions	5,465	5,418	4,325	4,296
Adj. R-Square	0.035	0.090	0.028	0.077

Table A5: CEOs' Industry Transferable Skills, Product Market Competition and Corporate Innovation

This table reports estimates of ordinary least squares panel regressions examining the impact of product-market competition and CEOs' industry-transferable skills on the originality of firms' patents. The dependent variables in these models are *Originality* and *Scaled Originality*. *Multi-Industry Experience* is the number of industries at the SIC three-digit level in which an executive had experienced before becoming CEO. *Competition* is defined as one minus the Herfindahl-Hirschman Index. The index ranges from zero to one and is constructed using Compustat sale at the SIC three-digit code level. Variables *Multi-Industry Experience* and *Competition* are standardized to have mean zero and standard deviation one. Standard errors are clustered at the SIC three-digit level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\begin{aligned}\text{Originality}_{i,j,t} =& \alpha + \beta_1 \text{Competition}_{j,t} \times \text{Multi-Industry Experience}_{i,t} + \beta_2 \text{Competition}_{j,t} \\ &+ \beta_3 \text{Multi-Industry Experience}_{i,t} + \beta_4 \text{CEO Controls}_{i,t} + \text{Industry} - \text{YearFE}_{j,t} + \epsilon_{i,j,t}\end{aligned}$$

	(1) Originality	(2) Originality	(3) Scaled Originality	(4) Scaled Originality
Multi-Industry Experience × Competition	0.004*	0.004*	0.010**	0.010**
	(0.002)	(0.002)	(0.004)	(0.004)
Multi-Industry Experience	0.004*	0.006**	0.007	0.007
	(0.002)	(0.003)	(0.006)	(0.007)
CEO Age		-0.000		-0.001
		(0.001)		(0.001)
Male CEO		-0.003		-0.005
		(0.017)		(0.033)
CEO Tenure		0.001*		0.001
		(0.001)		(0.001)
Externally Hired CEO		0.000		-0.016
		(0.010)		(0.015)
CEO is the chairperson		0.004		0.005
		(0.009)		(0.020)
CEO has an MBA degree		0.004		0.007
		(0.009)		(0.015)
CEO has an Ivy League degree		0.002		0.017
		(0.011)		(0.024)
Industry-Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Firm-Years	5,384	5,374	5,384	5,374
Adj. R-Square	0.091	0.091	0.026	0.026

Table A6: CEOs' Industry Transferable Skills, Product Market Competition and Corporate Innovation

This table reports estimates of ordinary least squares panel regressions examining the impact of product-market competition and CEOs' industry-transferable skills on the generality of firms' patents. The dependent variables in these models are *Generality* and *Scaled Generality*. *Multi-Industry Experience* is the number of industries at the SIC three-digit level in which an executive had experienced before becoming CEO. *Competition* is defined as one minus the Herfindahl-Hirschman Index. The index ranges from zero to one and is constructed using Compustat sale at the SIC three-digit code level. Variables *Multi-Industry Experience* and *Competition* are standardized to have mean zero and standard deviation one. Standard errors are clustered at the SIC three-digit level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\begin{aligned}\text{Generality}_{i,j,t} =& \alpha + \beta_1 \text{Competition}_{j,t} \times \text{Multi-Industry Experience}_{i,t} + \beta_2 \text{Competition}_{j,t} \\ &+ \beta_3 \text{Multi-Industry Experience}_{i,t} + \beta_4 \text{CEO Controls}_{i,t} + \text{Industry} - \text{YearFE}_{j,t} + \epsilon_{i,j,t}\end{aligned}$$

	(1) Generality	(2) Generality	(3) Scaled Generality	(4) Scaled Generality
Multi-Industry Experience × Competition	-0.005	-0.004	-0.011	-0.011
	(0.006)	(0.006)	(0.011)	(0.011)
Multi-Industry Experience	0.002	-0.000	-0.001	-0.007
	(0.005)	(0.005)	(0.011)	(0.014)
CEO Age		-0.001		-0.001
		(0.001)		(0.002)
Male CEO		-0.011		0.001
		(0.042)		(0.082)
CEO Tenure		-0.001		-0.003
		(0.001)		(0.003)
Externally Hired CEO		0.012		-0.001
		(0.016)		(0.035)
CEO is the chairperson		0.014		0.025
		(0.016)		(0.033)
CEO has an MBA degree		0.001		-0.003
		(0.016)		(0.031)
CEO has an Ivy League degree		0.026		0.055
		(0.020)		(0.035)
Industry-Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Firm-Years	2,755	2,753	2,736	2,734
Adj. R-Square	0.052	0.052	0.002	0.001

Table A7: CEOs' Industry Transferable Skills, Product Market Competition and CEOs' Compensation

This table reports estimates of ordinary least squares panel regressions examining the impact of product-market competition and CEOs' industry-transferable skills on CEOs' total compensation. The dependent variables are *Log_TDC1*, the logarithm of EXECUCOMP TDC1, and *Log_TDC1*, the logarithm of EXECUCOMP TDC2. *Multi-Industry Experience* is the number of industries at the SIC three-digit level in which an executive had experienced before becoming CEO. *Competition* is defined as one minus the Herfindahl-Hirschman Index. The index ranges from zero to one and is constructed using Compustat sale at the SIC three-digit code level. Variables *Multi-Industry Experience* and *Competition* are standardized to have mean zero and standard deviation one. Standard errors are clustered at the SIC three-digit level and shown in the paratheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\begin{aligned}\text{Total Compensation}_{i,j,t} = \alpha + \beta_1 \text{Competition}_{j,t} \times \text{Multi-Industry Experience}_{i,t} + \beta_2 \text{Competition}_{j,t} \\ + \beta_3 \text{Multi-Industry Experience}_{i,t} + \beta_4 \text{CEO Controls}_{i,t} + \text{Industry} - \text{YearFE}_{j,t} + \epsilon_{i,j,t}\end{aligned}$$

	(1) Log_TDC1	(2) Log_TDC1	(3) Log_TDC2	(4) Log_TDC2
Competition × Multi-Industry Experience	0.038**	0.038**	0.033*	0.034*
	(0.017)	(0.017)	(0.019)	(0.018)
Competition	-0.071*	-0.069	-0.089**	-0.092**
	(0.043)	(0.043)	(0.045)	(0.044)
Multi-Industry Experience	0.139***	0.119***	0.099***	0.096***
	(0.015)	(0.017)	(0.017)	(0.018)
CEO Age		0.005		0.010***
		(0.003)		(0.003)
Male CEO		0.088		0.118
		(0.091)		(0.079)
CEO Tenure		-0.007		0.007
		(0.004)		(0.004)
Externally Hired CEO		-0.098**		-0.154***
		(0.045)		(0.048)
CEO is the chairperson		0.124***		0.086*
		(0.041)		(0.045)
CEO has an MBA degree		0.005		0.050
		(0.052)		(0.052)
CEO has an Ivy League degree		0.161***		0.130***
		(0.040)		(0.044)
Industry-Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Firm Years	15,007	14,976	15,062	15,031
Adj. R-Square	0.038	0.047	0.074	0.090

Chapter 2: Peer Effects in Corporate Governance Practices: Evidence from Universal Demand Laws

1 Introduction

The impact of peers on firms' and managers' decisions has been the subject of a growing body of research in the economic and finance literatures. Peer practices and decisions can convey information or cause changes in the market environment that motivate firms and individuals to undertake similar actions. Theoretical studies present different frameworks in which social interactions may influence individual decisions (see, for example, Ellison and Fudenberg, 1995; DeMarzo et al., 2003). However, because the composition of peer groups and managerial decisions are endogenously determined, estimation of peer effects is a major challenge for empirical studies in this literature (Manski, 1993).

In this paper, we propose a novel method to identify peer effects in the area of corporate governance. We address two broad questions. First, do peer effects acting through board interlock networks influence firms' decisions to adopt particular governance provisions? Second, can we identify the incentives that underlie the propagation of governance practices across firms?

Board directors have an important role in passing and repealing governance provisions (Bebchuk, 2005; Ertimur et al., 2010). Davis (1991) and Davis and Greve (1997) show that firms tend to adopt poison pills and golden parachutes when other firms in their board interlock networks have adopted similar provisions. Bouwman (2011) finds a link between board interlocks and the convergence of governance practices such as board size, outside directors, CEO duality, and compensation.[1] However, while peer effects may induce firms to adopt similar practices, Bouwman suggests that these empirical associations could alternatively arise from firms' decisions to select directors who are board members at firms with similar governance preferences. A clean identification strategy is required to establish a direct impact of peer groups on governance practice.

In order to estimate peer effects, the identification strategy needs to deal with the possibility of reverse causality and omitted variables that may confound the estimation. Bouwman (2011) notes that reverse causality will arise when board-interlock networks are endogenously formed by firms with similar governance philosophies. Moreover, omitted variable bias can result from an unobserved common shock that causes all firms in a board interlock network to adopt similar practices. To overcome these concerns, we

[1] Barzuza and Curtis (2014) provide a thorough review of studies on board interlocks and corporate governance.

require an exogenous instrument for the propensity of firms to adopt specific governance provisions that is orthogonal to both board interlock formations and common factors affecting all firms in a particular network.

Our proposed instrument is the staggered passage of universal demand (UD) laws that govern only firms incorporated in the affected states. In the period 1989-2005, 23 states passed UD laws requiring the board's approval for shareholders' derivative litigation against directors and officers. This staggered passage is a relevant instrumental variable: Appel (2014) shows that after the passage of these laws, firms increasingly adopted management- (as opposed to shareholder-) friendly governance provisions such as poison pills, supermajority voting requirements, and classified boards. We find that firms incorporated in other states, but linked to affected companies through a *pre-existing* interlock network, are also more likely to adopt such governance provisions, even when their states of incorporation have not themselves adopted UD laws.

Figure 1 illustrates our method. UD laws were passed in Georgia in 1989 and in Virginia in 1992. Consider two firms, Firm G in Georgia and Firm V in Virginia. Firms G and V are interlocked by two board members; one is Ms. X, who was elected to *both* firms before 1989. This pre-existing interlock, therefore, is presumably exogenous to the passage of the UD law in either state. However, once Ms. X is exposed to new governance policies made feasible or preferable by the passage of the UD law in Georgia, her newly gained experience may influence her incentives and inform her actions on the board of Firm V, on which she also serves. Crucially, because Ms. X was elected to both boards before UD laws were passed in either state, a chain of influence traceable to her would constitute evidence for a direct peer effect, not contaminated by group self-selection.

[Figure 1 near here]

In contrast, Mr. Y was elected to both firms between 1989 and 1992. It is possible that Mr. Y's selection by Firm G may have been related in part to Georgia's passage of the UD law. Therefore, to identify peer effects, we wish to measure only Ms. X's influence as the transmission mechanism. We therefore focus primarily on interlocks established before either state has a UD law in place. While we may use Mr. Y's inclusion on the board of Firm V as a control variable in explaining firms' governance choices, the key question will be how Ms. X's experience in one state affects the decisions of firms in the other states on

which she serves.

The passage of UD laws addresses endogeneity concerns in several ways. First, UD laws are ratified by state legislators and are likely to be independent of board interlock networks. Moreover, for each pair of firms, we carefully select the interlocks that are already in place before the passage of a UD law affects either firm in the pair. As illustrated in Figure 1, this procedure addresses the reverse causality concern in which board interlocks are established by firms with common governance practices. Second, to deal with unobserved common factors, we investigate peer effects in firm pairs where one firm is incorporated in a state with a UD law and the other is incorporated in a different state without a UD law. By isolating spillovers to the component that can be attributed to joint board members, we should eliminate the effects of common shocks that potentially could affect both firms. Finally, the remaining concern is that we will detect another effect (e.g., institutional investments) that is also triggered by the UD laws and flows through director networks, thus leading to correlation with the adoption of governance provisions at both firms. Although this mechanism is unlikely to generate our findings, we will include a range of firm-level control variables that are known to be correlated with the adoption of governance provisions to mitigate this concern.

Our analysis produces several findings. Our structural, 2SLS model shows that the projection of peer governance practices onto the prior UD law experience of a firm's interlocked directors is able to predict the firm's own governance practices. This projection is, by design, independent of potential self-selection effects, and thus provides evidence in support of causal peer effects. Consistent with this structural model, reduced form estimates confirm that firms with more board members who have experienced the passage of UD laws through their membership in other boards are significantly more likely to adopt several pro-management governance provisions; when the portion of these directors in the board increases from zero to 50 percent, firms' entrenchment index (E-Index; Bebchuk et al., 2009) increases on average by 0.22 points, a substantial impact in the context of mean and median values of 2. The effect of board interlocks is most significant for poison pills, classified boards, and limits-to-change bylaws. Increasing the portion of directors who have UD law experience by 50 percent raises firms' propensities to adopt a poison pill by 9.8 percent, a classified board by 6.9 percent, and limits-to-change bylaws by 6.5 percent.

Next, we investigate the underlying mechanism for the spillover effects of governance practices among board-interlocked firms. One channel for spillover effects could come from the impact of UD laws on direc-

tors' incentives. Levit and Malenko (2015) demonstrate the possibility of multiple governance equilibria. In a "strong governance" equilibrium, value-maximizing and shareholder-friendly policies will enhance the value of directors' human capital. But in a "weak governance" equilibrium, that value will be enhanced through management-friendly policies. When states pass UD laws, they ease the way for management-friendly policies, and risk tilting the equilibrium toward the weak governance outcome. In this event, affected firms are more likely to hire directors who are known for maintaining good relationships with managers, and potential directors will signal their value by demonstrating an affinity for management-friendly governance provisions. Consistent with these dynamics, we find that after the passage of a UD law, firms in the affected states are increasingly prone to recruit directors who have experience in firms with management-friendly governance. Further, our results suggest that interlocked board members who sit on a board of a firm incorporated in a state that has passed a UD law are significant actors in the adoption of these governance provisions. Our empirical evidence for this transmission channel supports the Levit-Malenko model.

This channel is also consistent with our findings for the within-firm governance environment. We show that in the process of adopting governance provisions, directors seem to consider relative power across the board of directors, management, and shareholders as it affects their directorship outcomes. Firms with more powerful shareholders should be less influenced by the UD law experience of interlocked directors when making decisions affecting shareholders' ability to discipline entrenched management. Consistent with this expectation, we find that the effect of board experience with UD law is significant for firms with low institutional ownership, but insignificant in the presence of high institutional ownership. Likewise, firms that employ governance provisions protecting management from takeover threats should exhibit stronger effects of UD law experience. Using CEO duality as a proxy for management power, we find that the UD law experience of interlocked directors affects only firms for which CEOs are also the board chairperson.

Our paper is related to two important strands of the corporate finance literature: the impact of peer effects on corporate decisions, and the labor market for directors. The literature on peer effects in corporations is relatively new and emerging. Recent studies have highlighted peer associations relating to firms' capital structure (Leary and Roberts, 2014), dividend payout (Popadak, 2014), and financial misconduct (Parsons et al., 2014). However, clean identification of a causal relationship is a major challenge for

studies in this literature (Manski, 1993). As peer effects are not directly observable and are distinct from other industry and location factors, firm fixed-effects models cannot mitigate major concerns about reverse causality and omitted variables. The identification challenge is tackled in previous studies using statistical methods (Leary and Roberts, 2014; Popadak, 2014)[2] or by controlled experiments (Shue, 2013; Ahern et al., 2014). The advantage of employing state-level policy changes in our identification strategy is that it can be executed for large samples of firms and for several different corporate decisions. Our findings regarding the role of board experience and the interaction among the board, management, and shareholders provide further understanding of the underlying mechanism for peer effects.

Our paper also contributes to the literature investigating the role of reputation in the labor market for directors. Directors presumably wish to build reputations regarding corporate governance so as to maximize their career prospects. But as the Levit and Malenko (2015) model shows, multiple equilibria are possible, and either management- or shareholder-friendly reputations may be optimal in different circumstances. One group of papers concludes that directors who are known as management-friendly are rewarded by the market through seating in more boards. For instance, Helland (2006) concludes that directors supporting weak governance actually enjoy a more successful career path. Using a sample of boardroom disputes, Marshall (2010) finds that directors who resign in dissent from one board are not rewarded by the market and suffer higher probabilities of losing other positions in the five years following their resignation. However, another group of papers finds that a reputation for being shareholder friendly is a valuable asset for directors. Fos et al. (2016) show that the closer directors of a board are to the end of their directorship term, the more likely they are to act in favor of shareholders. Facing shareholder class action lawsuits (Fich and Shivdasani, 2007) and proxy contests (Fos and Tsoutsoura, 2014) hurts a director's reputation and the likelihood of being selected for a directorship. Jiang et al. (2015) find that dissention from the board is rewarded in the form of outside directorships. Lel and Miller (2015) present cross-country evidence that the labor market provides incentives for directors to monitor managers, particularly, in countries with strong investor protection. Our instrument allows us to demonstrate the potential impact of the legal framework on the equilibrium in the market for directors' services. Our results on the apparent shift toward a weak-governance equilibrium after passage of UD laws are new evidence on the importance of this determinant of corporate governance.

[2]To identify peer effects, Leary and Roberts (2014) use idiosyncratic equity returns as an exogenous variation to peer firms' capital structure. Popadak (2014) identifies the effects using three separate methods: excess-variance, instrumental variable, and partial identification strategies.

The rest of the paper is structured as follows. In Section 2, we discuss the institutional background of UD laws and their impact on corporations. In Section 3, we describe our data and empirical strategy. In Section 4, we develop our main hypotheses and in Section 5, we discuss the results of our tests. We conclude in Section 6.

2 Institutional Background

2.1. *Derivative Litigation*

The importance of shareholder legal rights for corporate governance is well established (Shleifer and Vishny, 1997). A shareholder derivative lawsuit can be brought by a shareholder or group of shareholders to reclaim value lost due to inappropriate management actions. As opposed to class action lawsuits in which the plaintiff is a subset of shareholders, the plaintiff in derivative lawsuits represents the interests of all shareholders. Therefore, derivative litigation can be a distinct legal mechanism to address agency problems in public firms (Ferris et al., 2007; Appel, 2014).

A shareholder group can sue management only when the corporation has a valid cause of action, but has refused to use it. This failure often emerges when the defendant in the suit is someone close to the company, for example, a director or a corporate officer. In such a case, the plaintiff will be the suing shareholder(s) and the corporation, and the defendant will be the management or directors. In the suit, the plaintiff shareholder(s) must prove that the management or directors have breached their fiduciary duties either by performing or failing to perform certain actions. A key feature of this type of lawsuit is that if it is successful, the proceeds go to the corporation, not to the shareholders who brought the suit. They benefit in part by the damages awarded to the firm, but more importantly, by effecting a change in policy.

Shareholder derivative litigation has become increasingly common in merger and acquisition transactions. For example, shareholders in Bank of America, led by two pension funds, the Louisiana Municipal Police Employees' Retirement System and the Hollywood Police Officers' Retirement System in Florida, sued the bank's directors and former CEO, Kenneth Lewis, for misleading shareholders in the bank's acquisition of Merrill Lynch & Co. The shareholders claimed that the management and directors did not fully disclose that Merrill's losses totalled $15.84 billion in the fourth quarter of 2008 and that Merrill was still paying $3.6 billion in bonuses in that quarter. The lawsuit was resolved with a settlement of $62.5 million paid to the bank and a $20 million cash payout to shareholders for attorney's fees.

As discussed, payouts in derivative lawsuits go to the corporation and are typically covered by the

liability insurance of the firms' directors. In some cases, however, the managers or directors will pay the settlement to a separate entity with their own money. For instance, a derivative lawsuit was brought against Lawrence J. Ellison, Oracle Corporation's chief executive officer, for insider trading in 2001. Mr. Ellison was accused of selling Oracle shares worth approximately $894 million before disclosing that Oracle would miss its earnings target. The stock dropped 45 percent after the news release. After four years of litigation, Mr. Ellison agreed to pay with his own money a settlement of $100 million and $22 million in legal fees. Since Mr. Ellison owned 24.5 percent of the firm, a direct payment to Oracle would benefit Mr. Ellison himself. Therefore, the settlement was paid in form of a charitable donation under Oracle's name to a charity chosen by the firm.

2.2. *Universal Demand Laws*

Although derivative litigation is intended to protect the interests of all shareholders, these lawsuits have been criticized for primarily serving the narrow interests of the suing shareholders. Some studies argue that derivative litigation is a means for the plaintiffs to extract settlement fees rather than to improve corporate governance. In response to this criticism, 23 states passed Universal Demand (UD) laws between 1989 and 2005 to regulate shareholder derivative lawsuits. Table A1 (see Appendix) reports a full list of states passing UD laws as well as the years in which those laws became effective.

Before commencing a derivative action against a purported wrongdoing, UD laws require shareholders to first make a written demand that the board of directors take corrective measures, but the board may argue that such action would result in irreparable damage to the firm. The courts will dismiss a derivative action that is initiated before the board has responded to the demand unless the board fails to respond within a reasonable time.

As board directors are usually among the defendants in the derivative litigation, it is almost inevitable that the board will decide against the action. Hence, UD laws have become a major roadblock for shareholder derivative lawsuits in the affected states. Appel (2014) shows that after states pass UD laws, the average number of derivative lawsuits drops by a third.

3 Data and Methodology

The most important part of our identification strategy is the construction of the main explanatory variable, *UD Law Experience of Existing Board*. Our goal is to construct a variable that captures the propagation through overlapping director networks of the effects of UD laws on the governance of firms in

other, unaffected states. There are three steps in constructing this variable: determining each firm's state of incorporation and headquarters, identifying board interlock networks, and constructing the firm-level variable, *UD Law Experience of Existing Board*.

3.1. *State of Incorporation and State of Headquarter*

To deal with the potential for unobserved common factors to affect governance decisions, we track decisions that derive from board interlocks across firms incorporated in different states. Since the passage of UD laws in one state is unlikely to be correlated with an unobserved factor affecting firms in another state, we mitigate concern about omitted variables. To collect each firm's historical state of incorporation and state of corporate headquarters, we use a web crawler to extract the relevant data from SEC filings archived on the EDGAR server.[3] As EDGAR contains filings only since 1994, we must use 1994 data to fill in missing entries for previous years. We merge the data on state of incorporation and state of headquarters with Compustat using the Central Index Key (CIK); for firms with missing CIK, we match using IRS employer number. We then create a dummy variable equal to 1 for state-years in which UD laws were passed as well as for following years. There are no cases in our sample where a UD law was later reversed by a state that had passed one in earlier years.

3.2. *Board Interlocks*

We use BoardEx as the main data source for constructing board interlock networks. BoardEx started collecting data on top managers and directors holding positions in public firms in 1999. The data were backfilled for managers' and directors' past positions, educational background, and other activities. Earliest positions reported on BoardEx date back to the 1920s. The data contain a unique identification number for each director, allowing us to identify interlock directors who sit on the boards of different firms. The data also contain the start date and end date of each board position. This allows us to build a panel in which each observation is a firm-director-position-year.

3.3. *UD Law Experience*

Next, we merge the board interlock data with data about the state of incorporation and the state of corporate headquarters. Finally, *UD Law Experience of Existing Board* is constructed as follows. First, we build an experience variable that shows whether each director has experienced a UD shock during the life

[3] Compustat reports only the current state of incorporation and current state of headquarters. This does not allow us to track firms that have been incorporated and reincorporated in different states during our sample period.

of her directorship. We give an initial value of 1 to this variable if a person is a board member of a firm incorporated in a state that passes a UD law. In Figure 1, if Ms. X is a board member of firm G in Georgia in 1989 or thereafter, her experience variable for 1989 is set equal to one. However, we depreciate the experience variable using an exponential decay function that depends on the time gap between the year of each observation and the year in which the UD law was passed. In our example, assuming it is 1992 and Ms. X experienced the passage of the UD law in 1989 in Georgia, then using a depreciation rate of 0.15, the experience variable for Ms. X would equal $exp(-.15 * 3) = 0.64$.[4] Next, we sum the UD experience values that each director receives from directorships in different firms in each year and truncate his or her total value at a maximum value of one. Finally, we sum the experience value across the board members of each firm to build an experience variable at the firm level. Therefore, if there are two board members of Firm V in Virginia during 1992, and both of them experienced the passage of UD law in 1989 in Georgia, then using a depreciation rate of .15, the experience value of Firm V in this year is set equal to 0.64 + 0.64 = 1.28. Note that variable *UD Law Experience of Existing Board* only considers board interlocks that are in place before a UD law is passed in either firm's home state. This minimizes any concern that our results are driven by selection effects, i.e., firms' decisions to appoint directors who already have prior UD law experience.

The effects of board members who have already experienced UD law passage before joining the firm in question are captured in the variable *UD Law Experience of New Board Members*. This variable is constructed similarly to *UD Law Experience of Existing Board*. In Figure 1, the UD experience of Mr. Y would be measured by this variable. We normalize both of these variables, *UD Law Experience of Existing Board* and *UD Law Experience of New Board Members*, by the total number of board members.

3.4. *Corporate Governance*

The data source for firms' governance provisions is the Institutional Shareholder Services (ISS), formerly known as Riskmetrics, database. Since these data are available only every other year, we follow the standard practice in the literature of filling in missing years with data from the previous year. We focus on the E-Index and its six component provisions: poison pills, golden parachute, supermajority voting, classified boards, limits-to-change bylaws, and limits-to-change charter. We use ExecuComp to find

[4] The proper depreciation rate is largely a matter of guess-work. We choose 0.15 to give a half-life of 5 years. In the robustness check Table A4, we try a 0.25 depreciation rate and obtain similar results. In Table A5, we do not use a depreciation rate but instead employ a dummy variable set equal to 1 in the year when UD law is passed and the four subsequent years, and set equal to zero, otherwise. We obtain similar results in this specification as well.

CEO/Chairman duality for each firm-year.

Our sample begins in 1990. As in the rest of the literature (see for example, Knyazeva et al., 2013; Appel, 2014; Appel et al., 2016), the sample ends in 2006. This ending date is chosen because the format of the ISS governance database in the post-2006 period is inconsistent with that of the database in the period from 1990 to 2006.

3.5. *Control Variables*

Our main control variable is *Neighbor States UD Law Status* which equals the number of neighboring state(s) (based on the firm's headquarters) that have passed a UD law. We include this control variable to account for the possibility that the UD law status of neighboring states could influence both the formation of board interlocks and firms' governance practices (John and Kadyrzhanova, 2008). Other control variables for firms' characteristics are derived from Compustat and CRSP. These include: total assets, leverage ratio, R&D expenditures, free cash flow, ROA, and firm age. The data appendix provides detail on the construction of these variables. We winsorize all accounting variables at the 2/98% levels.

Our final sample consists of 11,814 firm-years from 1990 to 2006. Table **??** reports the mean, median, standard deviation, top decile and bottom decile of each variable used in our analysis.

[Table 1 about here]

3.6. *Univariate Relations*

Before presenting formal hypotheses and tests, we present some univariate relations to motivate the analysis that follows. Table 2 shows some simple difference-in-difference statistics. In each case, the treatment group comprises firms whose directors are exposed to adoptions of UD laws because of their directorship positions in other firms in affected states. The control group comprises firms with similar asset size and initial E-index, but without directors exposed to such changes. We would expect the treatment group to exhibit no systematic differences in governance practices compared to the control group in the pre-UD five-year period, but a greater proclivity for management-friendly policies in the post-UD five-year period. Column (3) shows that the difference in the E-index between the two groups increases by 0.098 in the post-UD period, statistically significant at 5 percent. The difference in each individual component of the E-index also increases, but given the greater noise in the components, only one of the changes is statistically significant.

[Table 2 about here]

Figure 2 examines the time trend of the E-index following adoption of UD laws in states connected to the treatment group through a director network. The adoption of the law takes place sometime in the first fiscal-event-year, which in Figure 1 is between time -1 and time 0. The evolution of the E-index of the treatment firms can be contrasted with that of several control groups. The various controls in the four panels of the figure are formed by alternative matching criteria, including firm size in year 0, the initial E-index in earlier years (either 3 or 5 years prior to the passage of the UD law), and/or industry SIC code. For all matching criteria, the figure shows that the difference in the E-index between the treatment and control group noticeably rises in years 1 and 2 before generally leveling out.

[Figure 2 about here]

It appears that the passage of UD laws in one state affects the governance of firms in unaffected states, at least when there is a connection through interlocked directors. However, more formal analysis is required to pin down the transmission mechanism.

4 Empirical Strategy and Results

The main hypothesis that we wish to test is whether (and how) existing director networks influence firms' propensities to mimic the governance provisions of connected firms. This is expressed in the following formal hypothesis.

- *Hypothesis 1: Firms that share directors with other firms that have experienced the passage of UD Laws are more likely to adopt similar management-friendly governance provisions.*

Our hypotheses will be tested in a regression framework in which adoption of various governance provisions, or the E-Index summarizing several of these provisions, is the dependent variable. While our hypotheses deal with the impact of UD laws on the propagation of governance practice, we will begin with a simple specification, similar to those already in the literature, showing that board interlocks predict similarity of governance provisions. This regression simply allows us to compare the associations in our sample with those documented in previous studies (Davis, 1991; Davis and Greve, 1997; Bouwman, 2011). As in these studies, we construct a sample comprising all firms that themselves are not subject to UD laws,

but which have a connection through interlocked directors to firms that are subject to such laws. We estimate the following regression model:

$$\text{Firm Governance}_{i,s,t+1} = \beta_1 \text{Peer Governance}_{i,t} + \theta_i + \gamma_{s,t} + \sigma_{i,s,t+1} \quad (1)$$

where *Firm Governance*$_{i,s,t+1}$ in various specifications denotes either the E-Index or a specific governance provision of firm i in state of incorporation s, and year $t+1$. *Peer Governance*$_{i,t}$ is the average value of that particular governance provision in other firms at which interlocked directors have board seats. θ_i is the firm fixed-effect, and $\gamma_{s,t}$ is the state-year fixed effect.

Table 3 reports firm fixed-effects regressions, without instruments and with control variables included. The results are similar to those presented elsewhere in the literature. Each dependent variable is a governance practice, or the E-Index of each firm, and the explanatory variables are the average value of those same practices for firms with interlocked boards. The coefficients of E-Index, Classified Board, Bylaw Limits, and Charter Limits are positive and statistically significant at levels ranging from 1 percent to 10 percent, confirming a peer correlation in governance patterns across firms. While most of these results simply confirm prior findings, some differ. For example, we find that golden parachutes are less likely to spread through board interlock networks. One potential explanation for this difference is that our sample differs, including more firm-year observations. Moreover, as noted, these tests cannot distinguish between causal peer effects versus selection effects of directors across like-minded firms.

[Table 3 about here]

4.1. *UD Law-Based Estimates*

As discussed above, endogeneity issues call into question the results in Table 3. Using the staggered passage of universal demand (UD) laws as an exogenous instrument affecting adoption of governance provisions, we are able address these concerns and disentangle peer effects from other mechanisms that might explain these results. Appel (2014) documents that firms in UD law states are systematically more management friendly, as evidenced by their higher E-Indexes and higher propensities to adopt component provisions. We replicate the tests in Appel (2014) and report these results in Table A3 in the Appendix. The passage of UD laws appears correlated with management-friendly governance provisions and meets the relevance condition for the instrument in our analysis.

The structural equation we wish to estimate is essentially the same as Equation 1. However, to deal with the likely endogeneity of the *Peer Governance* variable, we re-estimate the equation in an IV-2SLS framework. In the first stage, we fit Peer Governance onto our instrumental variable, *UD Law Experience of Existing Board*, and then use the fitted value of this variable in the second-stage regression.

Therefore the first-stage regression is:

$$\begin{aligned}\text{Peer Governance}_{i,s,t} = \beta_1 \text{UD Law Experience of Existing Board}_{i,t} \\ + \theta_i + \gamma_{s,t} + \sigma_{i,s,t}\end{aligned} \tag{2}$$

In the second-stage regression, we replace Peer Governance with its fitted value from equation 2 and thus estimate equation 3:

$$\begin{aligned}\text{Firm Governance}_{i,s,t+1} = \beta_1 \text{Instrumented Peer Governance}_{i,s,t} \\ + \text{Firm Controls}_{i,s,t} + \theta_i + \gamma_{s,t} + \sigma_{i,s,t+1}\end{aligned} \tag{3}$$

where *Firm Controls*$_{i,s,t}$ is a vector of control variables for firm characteristics, θ_i is the firm fixed effect, and $\gamma_{s,t}$ is the state-year fixed effect. The 2SLS procedure ensures that the portion of peer governance that can be attributed to UD law experience, but not the portion due to self-selection, is allowed to influence governance in the treatment firms in the second-stage regression.

Table 4 reports estimates of the first-stage equation 2, which is the relation between interlocked directors' UD Law experience, *UD Law Experience of Existing Members*$_{i,t}$, and interlocked directors' governance experience at peer firms, *Peer Governance*$_{i,s,t}$. Interlocked directors' UD Law experience is strongly predictive of management-friendly governance provisions at peer firms. The results hold with the inclusion of firm fixed-effects, state-year fixed-effects, and firm controls. Specifically, when the portion of board directors with UD Law experience increases from zero to 50 percent, the average E-Index of peer firms increases by 0.62 points, and the propensities of passing Poison Pill, Classified Board, Golden Parachute, and Supermajority Voting provisions increase respectively by 19.4 percent, 13 percent, 21.9 percent, and 4.1 percent. Except for the Supermajority Voting model, the coefficients are statistically significant at the 1 percent level. Moreover, the Cragg-Donald Wald F statistic, which is 12.1 for Classified Board and greater than 20 for E-Index, Poison Pill, Golden Parachute, suggests that *UD Law Experience of Existing Board* is unlikely to be a weak instrument. Our first-stage results indicate that interlocked directors' UD Law experience is a strong predictor of interlocked directors' governance experience at peer firms.

[Table 4 about here]

Table 5 reports estimates of the second-stage regression, Equation 3. The coefficients on the instrumented peer firms' governance are positive and statistically significant at the 1 percent level in the models for E-Index, Poison Pill, and Classified Board. A one point increase in the instrumented E-Index of peer firms leads to an increase of 0.34 point in E-Index of the firm of interest. Poison Pill and Classified Board are the two component provisions that contribute the most to the detected effect. If the portion of peer firms which have poison pill and classified board provisions in place each increase from zero to 50 percent, the firm of interest is 28.3 percent more likely to adopt a poison pill provision and 25.6 percent more likely to adopt a classified board provision.

[Table 5 about here]

As an alternative to the 2SLS estimation, we also estimate a reduced form version of our model, in which we specify governance practice as a function of *UD Law Experience of Existing Board* as well as *UD Law Experience of New Board Members*. The specific regression equation is:

$$\begin{aligned}\text{Firm Governance}_{i,s,t+1} &= \beta_1 \text{UD Law Experience of Existing Board}_{i,t} \\ &+ \beta_2 \text{UD Law Experience of New Board Members}_{i,t} + \theta_i + \gamma_{s,t} + \sigma_{i,s,t+1}\end{aligned} \tag{4}$$

where *Firm Governance*$_{i,j,k,s,t+1}$ is either the E-Index or each governance provision of firm i, in state of incorporation s, in year t+1. We emphasize that the sample period for this regression includes only years in which the second firm's state has not yet adopted a UD law. Therefore, a convergence of governance practices is presumably due only to the two firms' common, interlocked directors, and cannot be a common response to similar changes in their regulatory environments. The coefficient of *UD Law Experience of Existing Board*$_{i,t}$, described in Section 2, is our main coefficient of interest. This coefficient tests the impact of those interlocked board members who were appointed before either state put in place a UD law.

UD Law Experience of New Board Members$_{i,t}$, described in Section 2, is a control for the impact of directors appointed after the passage of a UD law in one state, but its coefficient may also reflect endogenous peer-group formation effects. θ_i is the firm fixed-effect and $\gamma_{j,t}$ is the state-year fixed effect. To ensure that time-varying characteristics are not driving the results, we control for the number of neighboring states that have already passed a UD Law, as well as total assets, firm age, book leverage, R&D, free cash flow, and return on assets.

Table 6 reports the estimation for regression equation 4. The results reported in Panel A, which does not control for firm characteristics (but does include both firm- and state-year fixed effects), suggest that firms are more likely to adopt management-friendly governance provisions when other firms in their director networks have experienced the passage of UD laws. The coefficient of primary interest, *UD Law Experience of Existing Board*, is positive and statistically significant at the 1 percent level for the E-Index. It also is positive and statistically significant at the 1 percent level for Poison Pills, Classified Board, and Bylaw Limits. If the portion of the board directors who have UD Law experience through interlocked boards increases from zero to 50 percent, E-Index rises on average by 0.22 points, an increase equivalent to 11 percent of the mean and median values of the E-Index of 2. Regarding component governance provisions, increasing the portion of directors who have UD law experience by 50 percent raises a firm's propensity to adopt a poison pill by 9.8 percent, a classified board by 6.9 percent, and limits-to-change bylaws by 6.5 percent.

Panel B of the table reports results where other time-varying firm controls are also included. Specifically, we control for the number of neighboring states that already passed UD Law, total assets, firm age, book leverage, R&D expenditures, free cash flow, and return on assets. The economic and statistical significance of β_1, the coefficient on the *UD Law Experience of Existing Board Members* (i.e., members appointed to both boards before either state passed a UD law), are mostly unchanged. The coefficients on the experience of new board members (those appointed *after* the first state implemented a UD law) are generally larger than the coefficient on our instrumental variable. This highlights the potential importance of endogeneity biases. It is likely that the higher point estimates for the impact of the new directors reflects at least in part selection and matching biases. In Panel B, it is notable that the coefficient on *UD Law Experience of Existing Board* is negative in the model for Charter Limits. However, the impact is only significant at the 10 percent level and is economically small, reducing firms' propensity to adopt the provision by only 2.4 percent.

[Table 6 about here]

To conclude, our empirical strategy using UD Law as an instrument cleanly identifies governance practices of peer firms as an important factor explaining firms' decisions to adopt corporate governance provisions. Both the structural and reduced-form versions of the model tell a consistent story. In the next part of the paper, we provide further analysis to suggest that the reaction of interlocked directors

to the change in the governance environment is a likely channel through which governance practices are propagated among interlocked firms.

4.2. *Director Reputation and the Market for Director Services*

Directors' desire to optimize their career outcomes could explain peer-effects in governance practices. In the Levit and Malenko (2015) model, regulatory changes may help determine whether the economy settles on a strong- or weak-governance equilibrium. In a weak-governance equilibrium, a management-friendly environment can engender higher *demand* by corporations for directors with management-friendly reputations. On the supply side, to maximize their directorship prospects, directors may choose to act in favor of shareholders [in a strong-governance equilibrium] or management [in a weak-governance equilibrium] to signal that they are of the director type preferred by the market. The passage of UD laws, which favors a weak-governance equilibrium, offers an opportunity to test this model. Therefore, we pose the following hypothesis:

•*Hypothesis 2: The demand for experienced management-friendly directors rises after states pass UD laws.*

To test this hypothesis, we estimate a regression equation in which each observation corresponds to a firm-year in which new directors are elected to a board. The dependent variable is the reputation of the appointees to each firm's board, as measured by the average value of the E-Index of the firms for which they have previously served (or by the average value of a specific component of the E-Index). The explanatory variable is an indicator variable for whether the firm's state of incorporation has ratified a UD law. We hypothesize that firms in UD-law states are more likely to hire directors from firms with more management-friendly governance practices.

The results in Table 7 confirm that passage of UD law favors the recruitment of management-friendly directors. In the model for the E-Index (column 1), the coefficient on the post-UD law dummy is positive and highly significant at better than the 1 percent level. Similarly, the coefficients on the Post-UD Law dummy are significant in explaining two of the components of the E-Index.[5] The results indicate that the passage of a UD law makes directors who have served on management-friendly boards in other states more attractive to the firm. As such, it supports the Levit and Malenko (2015) proposition that regulatory changes can tilt the system toward a weak-governance equilibrium.

[Table 7 about here]

[5] In another specification, we replace state fixed-effects with firm fixed-effects. The coefficient on *Post UD Law* is significant at the 5 percent level and has similar economic magnitude. The results of this specification are reported in Table A7.

The results in Table 7 show that the demand for directors with management-friendly reputation increases when the legal environment encourages a "weak governance" equilibrium. In the following step, we examine the response of interlocked directors to the increased incentives they face to demonstrate a management-friendly orientation. Specifically, we test whether the passage of a UD law in a state where interlocked directors have board seats makes them more likely to adopt management-friendly governance provisions at firms in other states where UD laws are not in place.

- *Hypothesis 3: After one state has passed UD laws, interlocked directors who have board seats at firms in that state are more likely to adopt management-friendly governance provisions for their firms in other states where UD laws have not been passed.*

We use the following model to test this hypothesis, for each director-year (utilizing directors of firms in states that have passed UD laws):

$$\begin{aligned}\text{Firm Governance}_{j,i,s,t+1} = \beta_1 \text{Directors' UD Law Dummy}_{j,t} + \text{Firm Controls}_{i,s,t} \\ + \omega_j + \gamma_{s,t} + \sigma_{j,i,s,t+1}\end{aligned} \tag{5}$$

where j, i, s and t denote director j, firm i, state of incorporation s, and year t. The dependent variable is the E-Index or one of its six component governance provisions of a firm in a state that has not been affected by a change in the UD Laws (but which may have directors that have been affected via their other directorship). The independent variable, *Directors' UD Law Dummy*$_{j,t}$, is a dummy variable indicating whether the directors have board seats in a state where UD laws have been passed. ω_i is the firm fixed-effect, $\gamma_{s,t}$ is the state-year fixed effect. Our initial sample is all board position-years of interlocked directors. Then, we remove all the position-years after UD laws come into effect since we are only interested in firms in states where UD laws have not yet been passed.

Table 8 presents the results of this specification. The coefficient on *Directors' UD Law Dummy* is positively and statistically significant at the 1 percent and 5 percent levels for the E-Index and three component provisions. When an interlocked director experiences the passage of UD laws at one firm, the E-Index of other firms where he/she has a board seat increase by 0.09 point. The effect derives largely from the increased propensity to adopt poison pill, 3.7 percent, classified board, 3.6 percent, and limit-to-change bylaws, 0.7 percent.

[Table 8 about here]

In sum, the test results for Hypothesis 2 and Hypothesis 3 indicate that interlocked board members' incentive to maximize their career prospects is a plausible channel through which governance practices are propagated among boards of directors.

4.3. *Within-Firm Governance Environment*

We expand our analysis further by investigating the within-firm governance environment. If directors attempt to foster their career prospects as we hypothesize, the spillover effect in provision adoption is likely to be affected by the relative power of shareholders and management. When shareholders are more powerful, the directors will presumably refrain from the adoption of governance provisions that serve to entrench management. Conversely, when managers are more powerful, the directors will be more inclined to adopt these provisions to maximize their career outcomes. We use both the level of institutional ownership and CEO duality as indicators of shareholders' power. Therefore, Hypotheses 4A and 4B are:

- *Hypothesis 4A: Firms with less institutional ownership that share director networks with firms that have experienced the passage of UD Laws are more likely to adopt similar governance provisions.*
- *Hypothesis 4B: Firms with CEO duality that share director networks with firms that have experienced the passage of UD Laws are more likely to adopt similar governance provisions.*

We expect the coefficient on *UD Law Experience of Existing Board* to be greater for firms with less powerful management. Therefore, we expect that β_1 in equation (4) for firms in the lowest quartile of institutional ownership will be positive and significant but will not necessarily significantly differ from zero for firms in the fourth quartile. Hypothesis 4B is similar, except that it uses CEO duality as a measure of management power. In firms with duality, the CEO has more power, and board members are more prone to act in his or her favor when considering governance provisions. Therefore, β_1 will be higher for firms with CEO duality: Interlocked members with UD backgrounds may use their experience with other firms to help management in the process of adopting these provisions.

Table 9 reports results for firms stratified by level of institutional ownership. For the firm in the lowest quartile of institutional ownership (Panel A), the coefficient on the UD experience of existing board members is positive and statistically significant at the 5 percent level in explaining the E-Index and at the 1 percent to 10 percent levels in explaining three component provisions.[6] In contrast, the coefficient on

[6] Like Table 6, this table and the next use data only from before the adoption of a UD law in the second state. This ensures that any changes in governance cannot be attributed to the adoption of a UD law in that state. This regression design assures that the only transmission mechanism can be through the interlocked directors who have gained UD law experience in their other directorships.

UD Law experience is near zero and is not significantly different from zero for the high institutional ownership quartile. Similarly, none of the models for individual components of the E-Index generally produce statistically significant coefficients.

[Table 9 about here]

Table 10 reports tests of Hypothesis 4B where CEO duality is used as a measure of management power. For firms with CEO duality, the coefficient on UD Law experience is significant at 1 percent in explaining the E-Index (Panel A), but that coefficient is not significant for firms without CEO duality (Panel B). Turning to the component governance provisions of the E-Index for firms with CEO duality (Panel A), the Classified Board and Bylaw Limits models show positive and statistically significant coefficients on UD law experience at the 1 percent level, but for firms without CEO duality (Panel B), only the Bylaw Limits model has a positive and significant coefficient. These results are consistent with our expectation that more powerful shareholders would weaken the spillover effect of provision adoption through director networks while more powerful management would enhance the effect.

[Table 10 about here]

5 Conclusion

While convergence of governance practices among firms linked through board interlocks has long been noted, the source of that convergence is extremely difficult to ascertain. It may be attributable to peer effects, whereby directors on one board are influenced by the experience and preferences of their peers. On the other hand, apparent convergence also would be observed simply through selection effects, in which firms with similar governance preferences recruit directors with similar preferences.

To tease out peer effects, one requires an instrument that is related to governance practice, but is unrelated to selection effects. The staggered adoption of Universal Demand laws across states provides just such an instrument. We find that after the passage of such laws, firms in affected states increasingly adopt management-friendly governance provisions. We also show that the management-friendly policies adopted by a firm governed by a UD law tend to be mimicked by other firms within that interlocked director network. Crucially, by restricting the sample to networks formed by appointments to boards of firm pairs prior to the adoption of a UD law by the state of either firm, we can be confident that this apparent propagation of policy cannot be due to selection effects.

One transmission mechanism seems to work through the market for director services. In a strong-governance equilibrium, directors will increase the value of their human capital by signaling a proclivity for shareholder-friendly governance. But in a weak-governance equilibrium, a management-friendly reputation will be optimal. Universal Demand laws, which make it harder to sue directors for dereliction of their duties toward shareholders, can tilt the equilibrium toward the weak-governance outcome. We find that after passage of such laws, firms are more likely to recruit directors currently serving on other management-friendly boards; interlocked directors are thus incentivized to signal that they are management-friendly. Moreover, directors' career considerations seem to respond to the balance of power among directors, management, and shareholders. Directors in firms with fewer strong shareholders are more prone to respond to UD laws with management-friendly governance provisions. Similarly, they are more inclined to adopt such provisions when the CEO is stronger.

We conclude that regulation can affect the nature of the equilibrium in the market for directors' services by changing the incentives faced by directors in dealing with conflicts of interest between managers and shareholders.

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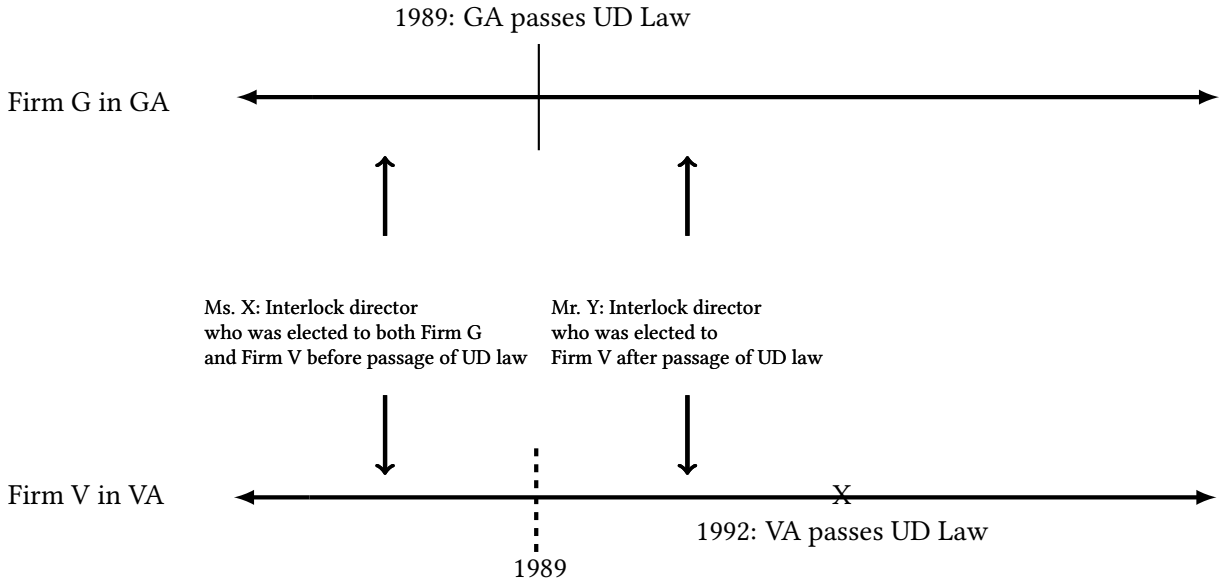
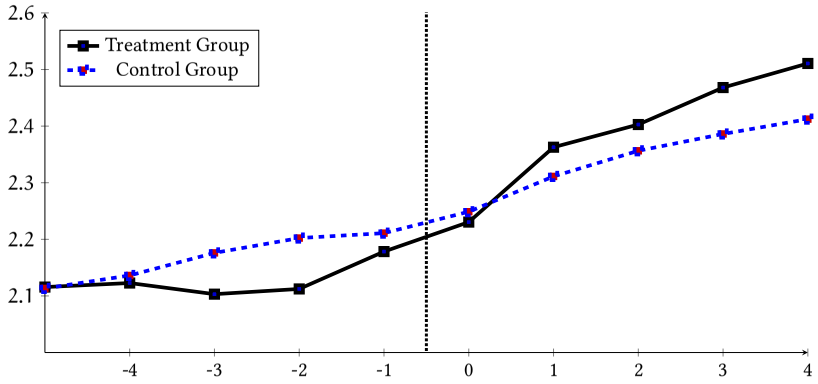
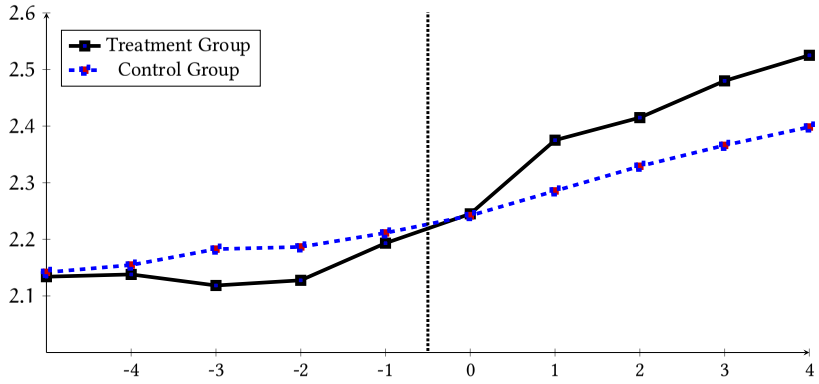


Figure 1: Hypothetical Timeline for Adoption of Universal Demand Laws

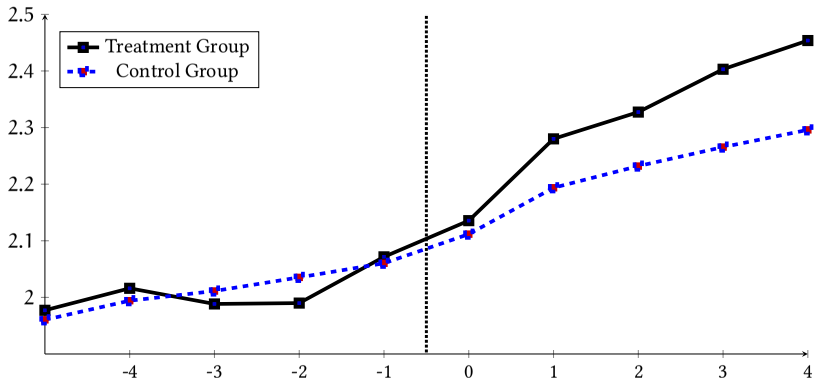
Time line showing hypothetical adoption of UD laws in two states and the appointment of board members of two firms in those states. Georgia adopts UD laws in 1989 and Virginia in 1992. Ms. X is appointed to both boards before the adoption of UD laws in either state. However, Mr. Y is appointed to both boards sometime between 1989 and 1992.



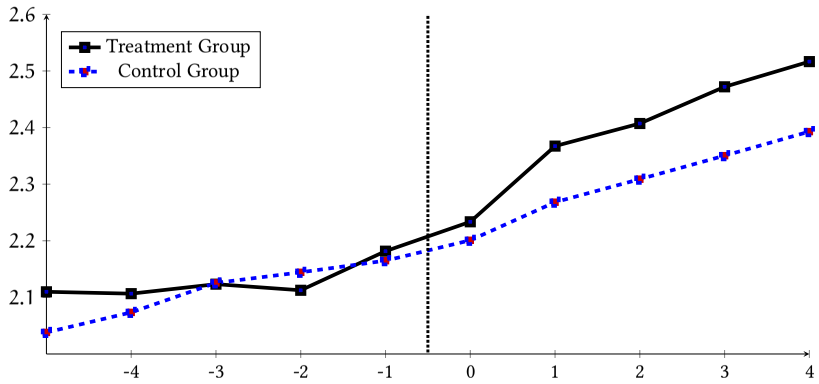
(a) Control sample is matched to treatment firms according to the size decile in year 0 (based on total assets) as well as the E-index in year -5.



(b) Control sample is matched to treatment firms according to the size quartile in year 0 (based on total assets) as well as the E-index in year -5.



(c) Control sample is matched to treatment firms according to the 2-digit SIC code in year 0 as well as the E-index in year -5.



(d) Control sample is matched to treatment firms according to the size decile in year 0 (based on total assets) as well as the E-index in year -3.

Figure 2: Evolution of E-index for firms linked to other firms that have experienced a change in UD laws compared to alternative control groups.

Table 1: Descriptive Statistics

	Mean	p10	p50	p90	S.D.	N
UD Law Experience of Existing Board	0.02	0.00	0.00	0.07	0.05	11,814
UD Law Experience of New Board Members	0.01	0.00	0.00	0.04	0.03	11,814
E-Index	2.07	0.00	2.00	4.00	1.31	11,814
Poison Pill	0.55	0.00	1.00	1.00	0.50	11,814
Classified Board	0.57	0.00	1.00	1.00	0.49	11,814
Golden Parachute	0.59	0.00	1.00	1.00	0.49	11,814
Supermajority	0.16	0.00	0.00	1.00	0.36	11,814
Limits to Amend Bylaws	0.18	0.00	0.00	1.00	0.38	11,814
Limits to Amend Charter	0.02	0.00	0.00	0.00	0.13	11,814
Neighbour States UD Law Status	1.54	0.00	1.00	3.00	1.21	11,814
Total Assets	7.22	5.47	7.07	9.29	1.45	11,814
Book Leverage	0.37	0.00	0.36	0.73	0.31	11,814
R&D to Assets	0.04	0.00	0.00	0.12	0.07	11,814
Free Cash Flow	0.21	0.02	0.18	0.43	0.21	11,814
Return on Assets	0.11	0.01	0.10	0.23	0.12	11,814
Firm Age	26.79	8.00	26.00	48.00	15.26	11,814
New Directors' Reputation						
E-Index Reputation	2.19	1.00	2.00	3.50	1.09	2,200
Poison Pill Reputation	0.58	0.00	0.67	1.00	0.42	2,200
Classified Board Reputation	0.59	0.00	0.67	1.00	0.42	2,200
Golden Parachute Reputation	0.66	0.00	1.00	1.00	0.41	2,200
Supermajority Voting Reputation	0.15	0.00	0.00	0.50	0.31	2,200
Charter Limits Reputation	0.02	0.00	0.00	0.00	0.12	2,200
Bylaw Limits Reputation	0.19	0.00	0.00	1.00	0.33	2,200

Details about variable contruction as in Appendix **??**

Table 2: Univariate Analysis

In this table, we examine the effect of a change in board members' experience of passing Universal Demand laws in other states on governance practices in place. The sample consists of firm-year observations between 1995 and 2001. This sample includes firms that experience the change in this period, the treatment group, and firms that do not experience the change, the control group. The first two columns show the difference of governance provisions before the change in the experience of board members and after the change in the experience. The third column shows the difference between the differences before and after the change in experience, and the t-stat of the difference shown in the parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1) Pre-UD Experience	(2) Post-UD Experience	(3) Pre-Post Difference	
E-Index	0.264	0.386	0.098**	(2.151)
Poison Pill	0.067	0.078	0.002	(0.063)
Classified Board	0.093	0.101	0.002	(0.151)
Golden Parachute	0.013	0.088	0.073***	(2.755)
Supermajority Voting	0.012	0.031	0.013	(1.131)
Charter Limits	-0.003	0.006	0.008	(1.348)
Bylaw Limits	0.082	0.083	0.001	(0.082)

Table 3: Board Interlocks and Adoption of Governance Provisions

The dependent variables are E-Index and each of the six provisions contained in the index. Governance data are from ISS from 1990 to 2006. The main independent variable is average value of the governance practice of other firms at which interlocked directors have board seats. Firm fixed-effects and state of incorporation-year fixed-effects are included in all specifications. Standard errors are clustered at the state of incorporation-year level and shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\text{Firm Governance}_{ist} = \beta_1 \text{Peer Governance}_{it} + \theta_i + \gamma_{st} + \sigma_{ist}$$

	(1) E-Index	(2) Poison Pill	(3) Classified Board	(4) Golden Parachute	(5) Supermajority Voting	(6) Bylaw Limits	(7) Charter Limits
E-Index	0.023***						
	(0.006)						
Poison Pill		0.013					
		(0.010)					
Classified Board			0.019***				
			(0.005)				
Golden Parachute				0.012			
				(0.012)			
Supermajority Voting					-0.005		
					(0.008)		
Bylaw Limits						0.018**	
						(0.008)	
Charter Limits							0.014*
							(0.008)
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firm-Years	12,278	12,278	12,278	12,278	12,278	12,278	12,278
Adj. R-Square	0.861	0.747	0.917	0.681	0.886	0.885	0.846

Table 4: UD Law Experience and Governance Provision Adoption - IV-2SLS First Stage
The dependent variables are E-Index and each of the six provisions contained in the index. Governance data are from ISS from 1990 to 2006. Firm fixed-effects, state-year fixed-effects and firm characteristics are included in all specifications. Standard errors are clustered at the state of incorporation-year level and shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\text{Peer Governance}_{i,s,t} = \beta_1 \text{UD Law Experience of Existing Board}_{i,t} + \theta_i + \gamma_{s,t} + \sigma_{i,s,t}$$

Peer Firms:	(1) E-Index	(2) Poison Pill	(3) Classified Board	(4) Golden Parachute	(5) Supermajority Voting	(6) Bylaw Limits	(7) Charter Limits
UD Law Experience of Existing Board	1.238*** (0.247)	0.387*** (0.070)	0.260*** (0.051)	0.437*** (0.114)	0.082 (0.059)	0.084** (0.040)	-0.012 (0.032)
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firm-Years	10,540	10,540	10,540	10,540	10,540	10,540	10,540
Adj. R-Square	0.580	0.522	0.563	0.568	0.511	0.495	0.416
F-statistic	30.0	25.1	12.1	32.7	2.9	2.7	0.5

Table 5: UD Law Experience and Governance Provision Adoption - IV-2SLS Second Stage
The dependent variables are E-Index and each of the six provisions contained in the index. Governance data are from ISS from 1990 to 2006. Firm fixed-effects, state-year fixed-effects and firm characteristics are included in all specifications. Standard errors are clustered at the state of incorporation-year level and shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\text{Firm Governance}_{i,s,t+1} = \beta_1 \text{Instrumented Peer Governance}_{i,s,t} + \text{Firm Controls}_{i,s,t} + \theta_i + \gamma_{s,t} + \sigma_{i,s,t+1}$$

	(1) E-Index	(2) Poison Pill	(3) Classified Board	(4) Golden Parachute	(5) Supermajority Voting	(6) Bylaw Limits	(7) Charter Limits
Instrumented Peer E-Index	0.338***						
	(0.115)						
Instrumented Peer Poison Pill		0.486**					
		(0.212)					
Instrumented Peer Classified Board			0.512***				
			(0.186)				
Instrumented Peer Golden Parachute				0.001			
				(0.206)			
Instrumented Peer Supermajority					-0.049		
					(0.707)		
Instrumented Peer Bylaws Limits						1.483*	
						(0.837)	
Instrumented Peer Charter Limits							2.007
							(5.768)
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firm-Years	10,540	10,540	10,540	10,540	10,540	10,540	10,540
Adj. R-Square	0.832	0.688	0.860	0.691	0.884	0.468	-0.035

Table 6: UD Law Experience and Governance Provision Adoption - Reduced-Form Model
The dependent variables are E-Index and each of the six provisions contained in the index. Governance data are from ISS from 1990 to 2006. Firm fixed-effects, state-year fixed-effects and firm characteristics are included in all specifications. Standard errors are clustered at the state of incorporation-year level and shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\text{Firm Governance}_{ist} = \beta_1 \text{UD Law Experience of Existing Board}_{it} + \beta_2 \text{UD Law Experience of New Board Members}_{it} + \theta_i + \gamma_{st} + \sigma_{ist}$$

	Panel A: No Control Variables						
	E-Index	Poison Pill	Classified Board	Golden Parachute	Supermajority Voting	Bylaw Limits	Charter Limits
UD Law Experience of Existing Board	0.443***	0.196***	0.137***	0.006	-0.005	0.129***	-0.021
	(0.132)	(0.070)	(0.037)	(0.091)	(0.058)	(0.034)	(0.015)
UD Law Experience of New Board Members	0.813**	0.366**	0.183*	-0.161	0.269**	0.266***	-0.105***
	(0.344)	(0.164)	(0.109)	(0.181)	(0.118)	(0.084)	(0.032)
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firm-Years	10,459	10,563	10,563	10,563	10,563	10,563	10,563
Adj. R-Square	0.864	0.748	0.920	0.691	0.884	0.883	0.792
	Panel B: With Control Variables						
	E-Index	Poison Pill	Classified Board	Golden Parachute	Supermajority Voting	Bylaw Limits	Charter Limits
UD Law Experience of Existing Board	0.419***	0.188***	0.133***	0.000	-0.004	0.125***	-0.024*
	(0.132)	(0.071)	(0.037)	(0.090)	(0.058)	(0.034)	(0.014)
UD Law Experience of New Board Members	0.811**	0.352**	0.177	-0.149	0.264**	0.251***	-0.085***
	(0.342)	(0.166)	(0.109)	(0.182)	(0.117)	(0.088)	(0.029)
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firm-Years	10,540	10,540	10,540	10,540	10,540	10,540	10,540
Adj. R-Square	0.864	0.748	0.921	0.691	0.884	0.883	0.800

Table 7: UD Laws and Newly Elected Directors' Reputation in Governance

The dependent variables are the average of newly elected directors' reputation based on the E-Index and each of its component provisions at the other firms at which the director has served. *Post UD Law* is an indicator for whether the firms' state of incorporation has a UD law. The sample is the firm-years, from 1990 to 2006, when new directors are added to the boards. Standard errors are clustered at the state of incorporation-year level and shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\text{New Directors' Reputation}_{ist} = \beta_1 \text{Post UD Law}_{st} + \gamma_s + \sigma_{ist}$$

	(1) E-Index Reputation	(2) Poison Pill Reputation	(3) Classified Board Reputation	(4) Golden Parachute Reputation	(5) Supermajority Voting Reputation	(6) Bylaw Limits Reputation	(7) Charter Limits Reputation
Post UD Law	0.686***	0.103	0.191**	0.099	0.196***	0.006	0.090
	(0.208)	(0.076)	(0.079)	(0.093)	(0.065)	(0.016)	(0.055)
State Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	2,192	2,192	2,192	2,192	2,192	2,192	2,192
Adj. R-Square	0.027	-0.001	0.015	0.106	0.015	0.013	0.013

Table 8: Interlocked Directors and Weak Governance Environment

The dependent variables are E-Index and each of the six provisions contained in the index. Governance data are from ISS from 1990 to 2006. $\mathit{Directors'\ UD\ Law\ Dummy}$ is a dummy variable indicating whether the directors have board seats in a state where UD laws have been passed. The sample is all director-position-years, from 1990 to 2006, at firms incorporated in states where UD laws are not in place. Standard errors are clustered at the state of incorporation-year level and shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\mathit{Firm\ Governance}_{j,i,s,t+1} = \beta_1 \mathit{Directors'\ UD\ Law\ Dummy}_{j,t} + \mathit{Firm\ Controls}_{i,s,t} + \omega_j + \gamma_{s,t} + \sigma_{j,i,s,t+1}$$

	Panel A: No Control Variables						
	E-Index	Poison Pill	Classified Board	Golden Parachute	Supermajority Voting	Bylaw Limits	Charter Limits
Director's UD Law Dummy	0.085***	0.037***	0.036***	-0.003	0.008	0.007**	0.001
	(0.028)	(0.014)	(0.011)	(0.011)	(0.008)	(0.003)	(0.008)
Director Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	34,914	34,914	34,914	34,914	34,914	34,914	34,914
Adj. R-Square	0.547	0.475	0.560	0.490	0.511	0.488	0.515
	Panel B: With Control Variables						
	E-Index	Poison Pill	Classified Board	Golden Parachute	Supermajority Voting	Bylaw Limits	Charter Limits
Director's UD Law Dummy	0.087***	0.037***	0.037***	-0.003	0.009	0.007**	-0.000
	(0.027)	(0.014)	(0.011)	(0.011)	(0.008)	(0.003)	(0.008)
Director Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	34,841	34,841	34,841	34,841	34,841	34,841	34,841
Adj. R-Square	0.553	0.485	0.562	0.494	0.517	0.491	0.521

Table 9: UD Law Experience, Institutional Ownership, and Governance Provision Adoption

The table reports regression results for two different firm groups, one firm group which has institutional ownership in the first (lowest) quartile, and one firm group which has institutional ownership in the fourth (highest) quartile. The dependent variables are E-Index, poison pill, classifed board, and golden parachute. Governance data are from ISS from 1990 to 2006. Firm fixed-effects, state-year fixed-effects and firm characteristics are included in all specifications. Standard errors are clustered at the state of incorporation-year level and shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Panel A: Institutional Ownership - 1st Quartile						
	E-Index	Poison Pill	Classified Board	Golden Parachute	Supermajority Voting	Bylaw Limits	Charter Limits
UD Law Experience of Existing Board	0.801**	-0.121	0.222*	0.160	0.239**	0.308***	-0.006
	(0.382)	(0.092)	(0.132)	(0.154)	(0.097)	(0.082)	(0.012)
UD Law Experience of New Board Members	-2.563*	-1.266**	-0.401	-1.587***	0.501*	0.327	-0.137
	(1.317)	(0.569)	(0.409)	(0.608)	(0.260)	(0.292)	(0.130)
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firm-Years	1,718	1,718	1,718	1,718	1,718	1,718	1,718
Adj. R-Square	0.847	0.757	0.910	0.700	0.863	0.866	0.831
	Panel B: Institutional Ownership - 4th Quartile						
	E-Index	Poison Pill	Classified Board	Golden Parachute	Supermajority Voting	Bylaw Limits	Charter Limits
UD Law Experience of Existing Board	-0.177	0.282	-0.055	-0.232	-0.160	0.016	-0.027
	(0.273)	(0.195)	(0.075)	(0.189)	(0.179)	(0.106)	(0.042)
UD Law Experience of New Board Members	1.481**	0.266	0.218	0.357	0.560**	0.117	-0.037
	(0.600)	(0.434)	(0.258)	(0.424)	(0.256)	(0.168)	(0.031)
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firm-Years	2,545	2,545	2,545	2,545	2,545	2,545	2,545
Adj. R-Square	0.875	0.757	0.945	0.684	0.890	0.856	0.787

Table 10: UD Law Experience, CEO Duality, and Governance Provision Adoption

The table reports regression results for two different firm groups, one with institutional ownership in the first (lowest) quartile, and one with institutional ownership in the fourth (highest) quartile. The dependent variables are supermajority voting, limits to amend bylaws, and limits to amend charter. Governance data are from ISS from 1990 to 2006. Firm fixed-effects, state-year fixed-effects and firm characteristics are included in all specifications. Standard errors are clustered at the state of incorporation-year level and shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Panel A: CEO Duality						
	E-Index	Poison Pill	Classified Board	Golden Parachute	Supermajority Voting	Bylaw Limits	Charter Limits
UD Law Experience of Existing Board	0.624***	0.149	0.192***	0.108	-0.028	0.203***	-0.001
	(0.200)	(0.101)	(0.057)	(0.112)	(0.068)	(0.061)	(0.016)
UD Law Experience of New Board Members	1.888***	0.487**	0.296***	0.401*	0.428***	0.346***	-0.071*
	(0.474)	(0.198)	(0.086)	(0.227)	(0.148)	(0.110)	(0.042)
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firm-Years	5,412	5,412	5,412	5,412	5,412	5,412	5,412
Adj. R-Square	0.886	0.765	0.935	0.729	0.906	0.892	0.826
	Panel B: Non CEO Duality						
	E-Index	Poison Pill	Classified Board	Golden Parachute	Supermajority Voting	Bylaw Limits	Charter Limits
UD Law Experience of Existing Board	0.378	-0.283	0.137	0.186	0.089	0.323***	-0.074
	(0.435)	(0.259)	(0.158)	(0.253)	(0.255)	(0.114)	(0.065)
UD Law Experience of New Board Members	1.137	0.650	0.229	-0.440	0.380	0.465**	-0.148*
	(1.060)	(0.589)	(0.285)	(0.563)	(0.458)	(0.216)	(0.086)
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firm-Years	2,440	2,440	2,440	2,440	2,440	2,440	2,440
Adj. R-Square	0.877	0.786	0.933	0.720	0.898	0.905	0.798

Table A1: Universal Demand Legislation

This table lists the states of incorporation with universal demand (UD) laws and the corresponding effective year and statute reference. The final column reports the number of firm-year observations in the sample. Source: Appel (2014)

Year	State	Citation
1989	GA	Ga. Code Ann. § 14-2-742
	MI	Mich. Comp. Laws Ann. § 450.1493a
1990	FL	Fla. Stat. Ann. § 607.07401
1991	WI	Wis. Stat. Ann. § 180.742
1992	MT	Mont. Code. Ann. § 35-1-543
	VA	Va. Code Ann § 13.1-672.1B
	UT	Utah Code. Ann. § 16-10a-740(3)
1993	NH	N.H. Rev. Stat. Ann. § 293-A:7.42
	MS	Miss. Code Ann. § 79-4-7.42
1995	NC	N.C. Gen. Stat. § 55-7-42
1996	AZ	Ariz. Rev. Stat. Ann. § 10-742
	NE	Neb. Rev. Stat. § 21-2072
1997	CT	Conn. Gen. Stat. Ann. § 33-722
	ME	Me. Rev. Stat. Ann. 13-C, § 753
	PA	Cuker v. Mikalauskas (547 Pa. 600, 692 A.2d 1042)
	TX	Tex. Bus. Org. Code. Ann. 607.07401
	WY	Wyo. Stat. § 17-16-742
1998	ID	Idaho Code § 30-1-742
2001	HI	Haw. Rev. Stat. § 414-173
2003	IA	Iowa Code Ann. § 490.742
2004	MA	Mass. Gen. Laws. Ann. Ch. 156D, § 7.42
2005	RI	R.I. Gen. Laws. § 7-1.2-710(C)
	SD	S.D. Codified Laws 47-1A-742

Table A2: Variable Description

Variable	Definition
UD Law Experience of Existing Board	Experience of board interlocks that are in place before a UD law is passed in either firm's home state
UD Law Experience of New Board Members	Experience of board interlocks who join the firm after a UD law is passed in either firm's home state
Neighbor States UD Law Status	A dummy variable that is equal to one if one of the neighbor states has passed UD law.
New Directors' Reputation	Average governance practices of the firms in which an interlock director has served as a board member in the five years prior to joining a new firm
Logarithm of Total Assets	Logarithm of lagged asset value in COMPUSTAT
Book Leverage	Book value of debt(long-term debt + current liabilities) divided by the sum of book value of debt and book value of equity
R&D to Assets	R&D expenses in COMPUSTAT divided by lagged asset value
Free Cash Flow	Operating activities net cash flow minus investing activities net cash flow divided by lagged asset value
Return on Assets	Earnings before interest and tax divided by lagged asset value

Table A3: UD Law and Governance Provision Adoption

The dependent variables are E-Index and each of the six provisions contained in the index. Governance data are from ISS from 1990 to 2006. Firm fixed-effects, state of headquarter-year fixed-effects and industry-year are included in all specifications. Standard errors are clustered at the state of incorporation-year level and shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\text{Firm Governance}_{ijkst} = \beta_1 \text{UDLaw}_{st} + \theta_i + \gamma_{jt} + \lambda_{kt} + \sigma_{ijkst}$$

	(1) E-Index	(2) Poison Pill	(3) Classified Board	(4) Golden Parachute	(5) Supermajority Voting	(6) Bylaw Limits	(7) Charter Limits
UD Law	0.142***	0.012	0.026**	0.051**	0.028**	0.006	0.020**
	(0.046)	(0.023)	(0.013)	(0.024)	(0.014)	(0.011)	(0.009)
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firm-Years	18,575	18,575	18,575	18,575	18,575	18,575	18,575
Adj. R-Square	0.879	0.784	0.923	0.711	0.890	0.882	0.836

Table A4: Robustness Check

This table reports the robustness check for our main results in Table 6. The rates of 0.25 is used to depreciate interlocked directors' UD law experience. In Panel B, interlocked directors' UD law experience is constructed as a dummy variable which equals to 1 for The dependent variables are E-Index and each of the six provisions contained in the index. Governance data are from ISS from 1990 to 2006. Firm fixed-effects, state-year fixed-effects and firm characteristics are included in all specifications. Standard errors are clustered at the state of incorporation-year level and shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\text{Firm Governance}_{ist} = \beta_1 \text{UD Law Experience of Existing Board}_{it} + \beta_2 \text{UD Law Experience of New Board Members}_{it} + \theta_i + \gamma_{st} + \sigma_{ist}$$

	(1) E-Index	(2) Poison Pill	(3) Classified Board	(4) Golden Parachute	(5) Supermajority Voting	(6) Bylaw Limits	(7) Charter Limits
UD Law Experience of Existing Board	0.408***	0.158*	0.131***	0.024	-0.029	0.151***	-0.027*
	(0.141)	(0.082)	(0.039)	(0.095)	(0.067)	(0.035)	(0.015)
UD Law Experience of New Board Members	1.187***	0.425*	0.196	0.040	0.345***	0.264***	-0.083***
	(0.409)	(0.237)	(0.140)	(0.234)	(0.127)	(0.091)	(0.031)
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firm-Years	10,540	10,540	10,540	10,540	10,540	10,540	10,540
Adj. R-Square	0.864	0.748	0.921	0.691	0.884	0.883	0.800

Table A5: Robustness Check (cont)

This table reports the robustness check for our main results in Table 6. Interlocked directors' UD law experience is constructed as a dummy variable which equals to 1 in the year when UD law is passed and four subsequent years, and equals to zero, otherwise. The dependent variables are E-Index and each of the six provisions contained in the index. Governance data are from ISS from 1990 to 2006. Firm fixed-effects, state-year fixed-effects and firm characteristics are included in all specifications. Standard errors are clustered at the state of incorporation-year level and shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\text{Firm Governance}_{ist} = \beta_1 \text{UD Law Experience of Existing Board}_{it} + \beta_2 \text{UD Law Experience of New Board Members}_{it} + \theta_i + \gamma_{st} + \sigma_{ist}$$

	(1) E-Index	(2) Poison Pill	(3) Classified Board	(4) Golden Parachute	(5) Supermajority Voting	(6) Bylaw Limits	(7) Charter Limits
UD Law Experience of Existing Board	0.418***	0.169***	0.114***	-0.040	0.108***	0.091***	-0.024**
	(0.120)	(0.061)	(0.029)	(0.075)	(0.041)	(0.026)	(0.012)
UD Law Experience of New Board Members	0.122	0.168**	0.014	-0.146	0.032	0.113**	-0.059***
	(0.186)	(0.077)	(0.057)	(0.103)	(0.065)	(0.051)	(0.015)
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firm-Years	10,540	10,540	10,540	10,540	10,540	10,540	10,540
Adj. R-Square	0.864	0.748	0.921	0.691	0.884	0.883	0.800

Table A6: Robustness Check (cont)

The dependent variables are E-Index and each of the six provisions contained in the index. Governance data are from ISS from 1990 to 2006. Firm fixed-effects, state-year fixed-effects and firm characteristics are included in all specifications. Standard errors are clustered at the state of incorporation-year level and shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\text{Firm Governance}_{ist} = \beta_1 \text{UD Law Experience of Existing Board}_{it} + \theta_i + \gamma_{st} + \sigma_{ist}$$

	(1) E-Index	(2) Poison Pill	(3) Classified Board	(4) Golden Parachute	(5) Supermajority Voting	(6) Bylaw Limits	(7) Charter Limits
UD Law Experience of Existing Board	0.425***	0.188***	0.133***	0.010	-0.011	0.123***	-0.019
	(0.131)	(0.070)	(0.037)	(0.091)	(0.060)	(0.033)	(0.015)
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firm-Years	10,459	10,563	10,563	10,563	10,563	10,563	10,563
Adj. R-Square	0.864	0.748	0.920	0.691	0.884	0.883	0.792

Table A7: UD Laws and Newly Elected Directors' Reputation in Governance

The dependent variables are the average of newly elected directors' reputation based on the E-Index and each of its component provisions at the other firms at which the director has served. *Post UD Law* is an indicator for whether the firms' state of incorporation has a UD law. The sample is the firm-years, from 1990 to 2006, when new directors are added to the boards. Standard errors are clustered at the state of incorporation-year level and shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

$$\text{New Directors' Reputation}_{ist} = \beta_1 \text{Post UD Law}_{st} + \gamma_s + \sigma_{ist}$$

	(1) E-Index Reputation	(2) Poison Pill Reputation	(3) Classified Board Reputation	(4) Golden Parachute Reputation	(5) Supermajority Voting Reputation	(6) Bylaw Limits Reputation	(7) Charter Limits Reputation
Post UD Law	0.686**	0.156	0.207*	0.142	0.151	0.041	-0.012
	(0.344)	(0.113)	(0.112)	(0.142)	(0.107)	(0.030)	(0.108)
Firm Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	1,885	1,885	1,885	1,885	1,885	1,885	1,885
Adj. R-Square	0.089	0.064	0.031	0.126	0.031	-0.029	0.072

Chapter 3: Does Your Daughter Make You a Better CEO?

1. Introduction

Behavioral differences in gender have attracted considerable attention in economics, psychology, and other fields. These literatures commonly find that females are associated with many positive economic and social outcomes (Duflo 2012, Doepke, Tertilt and Voena 2012). In investments, Barber and Odean (2001) find that female investors outperform male counterparts because they are less subject to overconfidence. In corporate settings, female managers have been shown to execute more prudent corporate decisions (Huang and Kisgen 2013). These lead the next big question: since females have many such better characteristics like, do they have a positive influence on the performance of people around? If yes, this has very important implication because then females have a spreading impact beyond their own performance. If so, we would think that in a company where there is a high female representation, they may have a positive influence on the (even male) CEO behavior and corporate outcomes. However, it would be difficult to separate channels of effect in such a setting.

To address the question, this paper takes advantage of a natural experiment, offspring gender mix, which randomly changes the interaction of CEOs with females but is unrelated to corporate policies. Other literatures have shown that within a family of a given size, the gender mix of the children is random (Bogan 2013). Therefore, after controlling for the number of children, CEOs' daughter parenting experience is exogenous. If females have spreading impact, I expect that CEOs with more daughters to outperform their counterparts with fewer daughters. This paper aims to test this premise.

My analysis leads to several findings. I find that corporate decisions made by CEOs with more daughters are better received by the market. Acquisitions made by a CEO with one more

daughter have 0.27 percentage point higher announcement returns. This reward comes from the lower tendency of the CEO to overpay the targets. One more daughter is associated with 2.93 percentage point decrease in acquisition premium. Debt issuance and equity issuance also enjoy 0.55 and 0.25 percent higher announcement returns, respectively. I find that CEOs with more daughters manage to have stronger profitability after raising capital. Moreover, I show that CEOs' daughter(s) increase(s) firm value through lowering corporate litigation. One more daughter is associated with 0.14 to 0.24 fewer social related lawsuits per annum. This result is consistent with sociology literature which shows that daughters cause parents to adopt more progressive views on equality, labor relations, environment, health, energy.

The effects of CEO's daughter parenting experience on firm policies can act through two channels. First, CEOs' daughter parenting experience makes the CEOs more prudent in deciding corporate policies. Second, well-performing firms are endogenously matched with CEOs who have more daughters. However, both show that CEOs with daughter(s) are perceived as having valuable characteristics. I find evidence supporting the first implication of these results. Huang and Kisgen (2013) indicate that female managers outperform because they are less likely to be overconfident. Using CEOs' stock option exercises to assess CEOs' confidence level, I show that CEOs with more daughters are also less likely to be overconfident. One more daughter decreases the average moneyness of CEOs' option portfolio by 36.62 percentage points. This result is evident that daughter parenting experience helps CEOs make better corporate decisions.

Since CEOs are not randomly assigned to firms, the endogenous matching between companies and CEOs can be another interpretation. A possible omitted variable may determine both the CEO selection and firm performance. I employ fixed-effect models to minimize potential bias induced by unobserved time-invariant factors. Moreover, if there are unobserved time-variant

factors that drive the results, daughter parenting experience is still a factor contributing to the CEO's ability to implement outcomes detected in this paper. Nevertheless, I directly test whether CEOs' daughter(s) are an important factor in the CEO-firm matching. My hypothesis is that on the one hand if firms intentionally choose managers with a desirable characteristic to implement new policies, the companies should pay a premium to attract the managers. On the other hand, if managers choose firms which match their preferences, there should be a discount in compensations to reflect the additional benefit to the managers. Using first-year compensations to measure the possible premium, I do not find any significant relationship between CEOs' daughter(s) and the compensations. This is evident that CEOs' daughter(s) do(es) not play an important role in matching CEOs and firms.

To my best knowledge, this paper is the first study examining the effects of offspring on managers' managing styles in U.S. corporations. My findings contribute to the literature on the relationship between managing styles and corporate outcomes. There are growing anecdotal and academic evidence that managing styles, skills, and preferences affect the managers' corporate decisions and firm outcomes. High-profile CEOs such as Jack Welch and Steve Jobs are recognized for transforming their firms into leaders in the industry. The rise of private equity and leverage buy-out activities is evident that management does matter for creating firm value.

Bertrand and Schoar (2003) find that CEO fixed-effects are significant in companies' investment decisions, financial decisions, organizational strategy, and performance. Other papers disentangle different managing styles and characteristics which affect firm outcomes. Cain and McKeon (2014) and Bernile et al. (2014) show that CEOs' risk aversion is associated with firm risks. Cheng et al. (2014), Masulis and Reza (2015) find the link between CEOs' charity preference and firms' philanthropy engagement. Other papers identify the impact of inherent traits such as

managers' gender and appearance on corporate policies (Huang and Kisgen 2013, Graham et al. 2014). Managers' peer interactions affect firms' decisions in a range of policies including executive compensation, acquisitions strategy, investment, and financial policy (Shue 2013). Custodio and Metzger (2014) find that CEOs' financial expertise significantly affects firms' financial policy. My paper contributes to this literature by showing that CEOs' daughter parenting experience can impact firm policies.

My paper is also related to the literature on the effects of experiences on financial decisions. Neoclassical and behavioral economics hold different views about the effects of experience on individual's risk preference. According to neoclassical view, individuals' risk preference is stable and unaltered by experiences (Malmendier and Nagel 2011). However, economics and psychology literatures have shown that experiences can cause individuals to make decisions that differ from those predicted by the expected utility theory (e.g. Nisbett and Ross 1980; Weber et al. 1993; Hertwig et al. 2004; Hertwig and Erev 2009). In finance literature, there is also evidence that individual experiences affect both individual (Kaustia and Knupfer 2008) and corporate financial decisions (Dittmar and Duchin 2014). My paper highlights the role of experience in corporate decisions.

The rest of the paper is structured as follows. In Section 2, I develop main hypotheses in this paper; in Section 3, I describe the data; in Section 4, I provide the main empirical strategy and findings; and in Section 5, I conclude.

2. Main Hypotheses

I start by examining the impact of daughters on firm value through important corporate decisions: acquisitions, debt issuance, and equity issuance. Mergers and acquisitions provide an ideal setting to test the impact of CEOs' preferences on corporate policies. First, acquisition transactions are usually large and externally observable. Second, CEOs have extensive discretion throughout the merger and acquisition process which can be used for their benefits (Jensen and Meckling 1976) Third, the market reaction around acquisition-related events provides a fair opinion about CEO quality (Jacobsen 2014) and the transaction quality (Huang and Kisgen 2013). Debt and equity offerings are also important decisions where more information about the firm's growth prospects is revealed through required filings and inferred by the market through the choice of debt or equity (Myer and Majluf 1984)

Hypothesis 1: *Firms where CEOs have more daughters have higher abnormal announcement returns than firms where CEOs have fewer daughters.*

There are several ways through which CEOs' daughter increase firm value in acquisitions, debt issuance, and equity issuance. For acquisitions, CEOs' daughter(s) can increase firm value in acquisitions by decreasing the likelihood that the acquirers overpay the targets. Roll (1986) suggests that overconfident managers try to maximize value, but overestimate the value of the target firm and overpay. Jacobsen (2014) find that the market rewards CEOs who withdraw from acquisitions when the price becomes increasingly expensive. Therefore, CEOs' daughter(s) can increase firm value by reducing CEOs' tendency to overpay the targets. To test this proposition, I examine the premium paid for the targets in my acquisition sample.

Hypothesis 1a: *Firms where CEOs have more daughters offer lower acquisition premium than firms where CEOs have fewer daughters.*

For debt and equity offerings, the companies' ability to pursue positive-NPV projects determines whether the issuances are well received by the market. CEOs with daughter(s) can create firm value by making more prudent investment decisions. In this test, I examine whether firms where CEOs have daughters deliver better post-issuance profitability, measured by Return on Assets (ROA) and Return on Equity (ROE).

Hypothesis 1b: *Firms where CEOs have more daughters deliver higher post-issuance profitability than firms where CEOs have fewer daughters.*

Next, I investigate the impact of daughters on corporate litigation. The literature on corporate litigation has established that there is a significant loss in firm value when a company is subject to lawsuits. The loss in firm value comes not only from direct costs, such as legal penalties and fees but also from indirect costs, such as reputational damage, increased costs of contracting with suppliers, creditors, and employees (Karpoff and Lott 1993; Karpoff et al. 2008) Daughters have been shown to cause parents, especially their father, to adopt social-friendly views. Washington (2008) show that legislators who have daughter(s) hold(s) more liberal views on a number of social issues such as energy, environment, labor, health, and labor. Therefore, I expect that CEOs' daughter(s) can reduce corporate litigation risk though lowering social related lawsuits.

Hypothesis 2: *Firms where CEOs have more daughters are less susceptive to social related corporate litigation then firms where CEOs have fewer daughters.*

Finally, I ask whether daughter parenting affects CEOs' stock option exercises. I expect that CEOs with more daughters will exercise in-the-money options earlier than CEOs with fewer daughters. The purpose of this test is to identify whether the change in CEOs' confidence in firms' prospect is one channel through which CEOs' daughter(s) affect(s) firm decisions.

Hypothesis 3: *CEOs who have more daughters exercise their in-the-money options earlier than firms CEOs who have fewer daughters.*

3. Data and Sample Construction

To identify whether daughter parenting experience affects CEO corporate decisions, I construct a CEO-firm matched panel data set. I start with the CEO sample of non-financial firms in ExecuComp database which gives 6,392 distinct CEOs from 2,827 companies. From ExecuComp, I obtain the names, gender, company joining and leaving dates, current age, and full title of the CEOs. To obtain information on CEOs' family background, I search for biographical information in Marquis Biographies Online using different combinations of first name, last name, and company's name. Marquis Biographies Online provides access to biographies of individuals who are listed in any Marquis Who's Who title since 1985. A typical Who's who biography contains information on the individual's education, career, civil activities, awards and achievements, and family. In the family category, names of parents, spouse, children, and marriage/divorce years are listed. When a CEO is not found in Marquis Biographies Online, I complement this source by using information from Notable Name Database, company websites, SEC filings, and article search. Returned records from the search are verified with CEOs' title, age, joining and leaving dates from ExecuComp. To avoid bias from CEOs who do not reveal their family information, I only include in my sample CEOs who reveal to have at least one child. My sample of CEOs consists of 1,437 executives from 1,139 firms. For most CEOs in my sample, the gender of children is not clearly stated by the data source. To identify gender, I use the website, www.babynamewizard.com, to look up for the gender commonly associated with each first name. In most cases, only one gender is associated with a first name. However, when a first name is used for both males and females, I assign the gender that more commonly uses the first name to the child.

This dataset of CEOs' children is re-matched with ExecuComp for CEOs' compensation information. I then use GVKEY to match this data with Compustat in the period 1990-2012 for financial statement information. My final sample consists of 12,755 firm-year observations for which

CEOs' number of children and their gender are available. I use Securities Data Company (SDC) Platinum M&A Database and SDC Platinum New Issues Database to collect information about acquisitions, debt and equity offerings made by the sample firms in the period 1990-2012. The data source for corporate litigation is from AuditAnalytics. Table 1 reports the summary statistics of all variables used in this paper.

[Table 1 about here]

The sample means for the variables used in my analysis are shown in Table 1. The first column reports the means; the next four columns present values for the 10^{th}, 50^{th}, 90^{th} percentiles and standard deviations. The last two columns show the number of observations and measure unit for each variable. All firm variables are winsorized at 2^{nd} and 98^{th} percentiles to eliminate potential outliers.

4. Empirical Strategy

Omitted variables are a major concern in the literature on managers' characteristics. In this paper, as CEOs who have (a) daughter(s) are not randomly assigned to firms, I need to account for endogeneity issues in my empirical strategy. There are several ways that unobserved firms' and CEOs' heterogeneity can bias the estimation of the CEO characteristics on firm policies. First, there might be some omitted variables on the CEO level that affect both CEOs' managing ability and the propensity of having (a) daughter(s). This concern is insignificant in this study partly because few American parents control the gender of their child(ren) (McClintock 2013). Also, I include dummy variables for the number of children in all my models to account for parents' choice of family size which is positively correlated with the possibility of having (a) daughter(s). Conditional on the number of children, the gender composition of children in a family can be regarded as exogenous

(Bogan 2013). Moreover, using dummy variables help control for potential nonlinear effects of the total number of children on corporate outcomes and avoid the problem of collinearity between the number of children and number of daughters.

Second, the matching between CEOs and firms is endogenous; companies and CEOs choose each other to match their strategy and preferences. I include firm fixed-effects to account for time-invariant characteristics on the firm level that may induce the firms to select CEOs with more or fewer daughters. I also include year fixed-effects that account for country-wide shocks that may bias the estimation. My results are significant with the inclusion of all these fixed-effects. The remaining concern comes from time-variant characteristics that are not accounted for by the fixed-effects. I address this concern by adding to my regressions variables that control for firms' heterogeneity in profitability, leverage, sale growth, asset growth and other CEO characteristics such as age and tenure. The equation of my regressions is as follows:

$$Y_{i,t} = \beta_1 Daughter_{i,t} + \theta X_{i,t} + \delta Children_{i,t} + \gamma_i + \tau_t + \varepsilon_{i,t} \qquad (1)$$

where i indexes the firm, t denotes the year; $Y_{i,t}$ is the corporate outcome of interest; $Daughter_{i,t}$ is the (logarithm) number of CEOs' daughters; $X_{i,t}$is a vector of control variables for CEO, firm, and transaction characteristics (age, tenure, size, market to book, free cash flow, friendly, stock deal, stock return volatility, share turnover…); $Children_{i,t}$ is number of children dummy variables, γ_i are firm fixed-effects, τ_t are year fixed-effects.

4.1. Announcement returns for major corporate decisions

Hypothesis 1 states that firms with more daughters have higher abnormal announcement returns than firms with fewer daughters.

[Table 2 about here]

Table 2 reports results of the regressions where cumulative abnormal returns (CAR) of acquisition announcements are the dependent variable. The CARs are calculated using Fama-French three-factor model in the period from day -1 to day +1 and from day 0 to day +1. There are 6,654 acquisitions for my sample firms in the period 1990-2012. I include firm fixed-effects, year fixed-effects, and dummies for the number of children in all specifications. Standard errors are clustered at the firm level. The results show that CEOs' daughter(s) positively impact the announcement returns of acquisitions. The coefficients are statistically significant at the 1 percent and 5 percent levels. An additional daughter increases the CARs by 0.40 and 0.27 percentage points. Compared with the mean returns of 0.45 and 0.46 percent, these coefficients are economically significant. This finding indicates that the market considers acquisitions made by CEOs with more daughters more value creating than those made by CEOs with fewer daughters.

[Table 3 about here]

I next examine announcement returns around debt issuance and equity issuance. Table 3 reports results of the regressions for equity issuance. There are 707 seasoned equity offerings in my sample. The regressions have the same equation as formula (1). The results indicate that equity offerings are better received by the market if the CEO has more daughters. The impact for CEOs' daughter(s) on announcement returns is considerable. One more daughter increases the announcement returns of equity offerings by 2.87 to 2.45 percentage points. The coefficients are significant at 5 percent level.

[Table 4 about here]

Table 4 presents results of similar regressions for debt issuance. There are 2,241 debt offerings by firms in my sample. When the dependent variable is CAR in the period (0, +1), columns 2 and 4, the coefficients of CEOs' daughter(s) are positive and statistically significant at 1 percent level. However, when the dependent variable is CAR in the period (-1, +1), columns 1 and 3, the coefficients of CEOs' daughter(s) are indifferent from zero. Most of my results by far support the premise that CEOs' daughter(s) increase(s) firm value in the main corporate decisions.

4.2. Acquisition premium and post-issuance performance

Hypothesis 1a states that firms where CEOs have more daughters offer lower acquisition premium than firms where CEOs have fewer daughters. For acquisitions, I propose that daughters increase firm value by reducing the likelihood that acquirers overpay the targets. To test this proposition, I regress the acquisition premium offered by companies in my sample on acquiring CEOs' daughter(s), firm characteristics, and acquisition characteristics.

[Table 5 about here]

Results from these regressions are reported in Table 5. When acquisition characteristics are not controlled for, columns 1 and 2, the coefficients for acquiring CEOs' daughter(s) are negative and significant at 5 percent level. An additional daughter decreases acquisition premium by 2.93 percentage points. The results are significant when firm fixed-effects, year fixed-effects, and the dummies for the number of children are included. In columns 3 and 4, where acquisition characteristics are included in my regressions, the coefficients for acquiring CEOs' daughter(s) are still negative but insignificantly different from zero. This result is not surprising because CEOs' daughter(s) may affect other aspects of an acquisition such as deal attitude, payment methods, and acquisition purpose. These effects are then reflected in the premium which can be viewed as the price of a transaction. In average, the results in this table indicate that an acquiring CEO with more

daughters offer a lower premium than an acquiring CEO with fewer daughters. This result is evident that daughters increase firm value in acquisitions by reducing the likelihood that acquirers overpay the targets.

Hypothesis 1b states that firms where CEOs have more daughters deliver higher post-issuance profitability than firm where CEOs have fewer daughters. To test this proposition, I aggregate all proceeds from debt and equity offerings to find the total proceeds in each firm-year. Then, I regress the three-year average of post-issuance ROA and ROE on CEOs' daughter(s), logarithms of the total proceeds, the interaction of the two previous terms, CEO and firm characteristics, and fixed-effects. The coefficient of the interaction term indicates whether CEOs with more daughters deliver higher profitability when companies offer new debts or equity.

[Table 6 about here]

Table 6 reports results of the regression. The coefficients of *Log(Total Proceeds)* are negative in all four specifications. The coefficient indicates that firms need time to ramp up operations and to generate profit from the newly raised capital. However, the coefficients of the interaction between *Log(Total Proceeds)* and CEOs' daughter(s) are positive and significant for ROA in both three-year horizon and five-year horizon. For ROE, the coefficients are positive and significant at 10 percent level for three-year horizon and insignificant for five-year horizon. These results indicate that CEOs with more daughters can provide better post-issuance profitability.

4.3. Corporate Litigation

Hypothesis 3 states that CEOs' daughter(s) reduce(s) the likelihood that the firms are involved in social related corporate litigation. I use data on corporate litigation from AuditAnalytics to test this hypothesis. The data provides detailed case-level information on civil litigation filed in federal district court. Each case belongs to one of 99 different categories indicating the subject of

the lawsuit. I assign cases from 39 categories such as civil rights, employment, disability law, environment law, and labor standards as social-related corporate litigation. Then, I construct two measures for corporate litigation: 1) New Cases is the number of new cases incurred in the firm year; 2) Net Cases is the net change in the total number of cases in the firm year.

[Table 7 about here]

Table 7 reports results from the regressions where social related corporate litigation is the dependent variable. There are 1,975 firm years in the period 1990-2012. In all specifications, CEOs' daughter(s) have negative and significant effects on both measures of social related corporate litigation. The coefficients are significant at 5 percent level when firm fixed-effects, year fixed-effects, dummies for the number of children, firm characteristics and CEO characteristics are included. An additional daughter decreases the number of new cases by 0.24 and the total number of cases by 0.14. These results support Hypothesis 3 that CEOs' daughter(s) reduce(s) the likelihood that the firms are involved in social related corporate litigation.

4.4. Stock Option Exercise

Hypothesis 5 states that CEOs with more daughters exercise their in-the-money options earlier than CEOs with fewer daughters. So far, I have shown that CEOs' daughter(s) increase(s) firm value and decease(s) social related corporate litigation. Next, I propose that CEOs' changed risk preference is one channel through which CEOs' daughter(s) cause(s) the differences in corporate outcomes. Follow Malmendier and Tate (2005) and Huang and Kisgen (2013), I examine CEOs' stock option exercises to make inference about their confidence level. The underlying assumption for this measure is that if a CEO wants to be exposed to the firm's idiosyncratic risk, he or she is likely to be confident about the company's growth prospects. Both papers find that overconfident CEOs hold in-the-money options longer.

Since I do not have detailed data on CEOs' stock option portfolio as Malmendier and Tate (2005), I follow Campbell et al. (2011) in calculating the average moneyness of CEOs' options for each year using ExecuComp data. I first find the average realizable value per option by dividing the total realizable value of the options, ExecuComp variable OPT_UNEX_EXER_EST_VAL, by the number of exercisable options, OPT_UNEX_EXER_NUM. To find the average exercise price of the options, I subtract the average value per option from end-of-fiscal-year stock price, Compustat variable PRCCF. The estimated average moneyness of the option portfolio equals the average realizable value per option divided by the average exercise price. Rather than using 67% moneyness threshold as an indicator of high/low confidence level per Malmendier and Tate (2005), I use the estimated average moneyness directly as the dependent variable in the regression. By doing this, I have more variation in CEOs' option exercise to estimate the effect.

[Table 8 about here]

Table 8 reports the results from the regressions for CEOs' stock option exercises. There are 558 firm-years in my sample for this test. I choose the sample period 2004-2010 to eliminate possible inconsistency in the reporting of option value prior to the implementation of FAS 123R. The coefficients for CEOs' daughter(s) are negative and statistically significant at 5 percent level. One more daughter is associated with 36.62 percent decrease in the average moneyness of the CEO's options. This is evident that daughter parenting experience makes CEOs less susceptive to overconfidence in their personal investment decisions.

4.5. CEO-firm endogenous matching

So far, I use firm fixed-effect models to account for the possibility that CEOs with daughters can be selected into well-performing companies. In this part of the paper, I provide

further evidence that the results are not driven by the endogenous matching between CEOs and companies. This test is based on the argument that if firms intentionally choose managers with a desirable characteristic, the firms should pay a premium for the characteristic. As CEOs' first year compensation, especially cash compensation, is contracted before the starting date of the position, this premium can be observed in the first year compensation. Therefore, if firms choose CEOs with more daughters, there should be a positive correlation between the number of daughters and the first-year compensation. Nevertheless, if managers choose companies which match their preferences, their compensation should be discounted to reflect the additional benefit to the managers. In this case, there should be a negative correlation between the number of daughters and the first year compensation. To test this hypothesis, I regress CEOs' first-year total compensation and cash compensation on CEOs' daughter(s). I expect that the coefficients for CEOs' daughter(s) are statistically insignificantly.

[Table 9 about here]

Results from these regressions are reported in Table 5. In columns 1 and 2, the coefficients for CEOs' daughter(s) are insignificantly different from zero. The results indicate that CEOs' daughter(s) are not an important factor when CEOs are matched with firms. In columns 3 and 4, I take a step further to test whether CEOs' daughter(s) impact(s) CEOs' year four compensations. The coefficients are positive and significant at 5 and 1 percent levels. These estimated coefficients suggest that rather than affecting CEO selection, CEOs' daughter(s) affect(s) the CEOs' actual performance at the firms. These results support my hypotheses that CEOs' daughter parenting experience creates firm value.

5. Conclusion

Behavioral differences between genders have been shown to impact investments and corporate decisions. This study examines genders from a new angle which is the spreading effects of positive female characteristics in the corporate setting. Using offspring gender mix as a natural experiment, I show that daughter parenting experience makes CEOs more prudent in making corporate decisions.

I investigate the impact of CEOs' daughter(s) in various important corporate decisions. In acquisition setting, CEOs with more daughters enjoy better announcement returns than CEOs with fewer daughters. I find that the market rewards acquiring CEOs with more daughters because they are less likely to overpay the targets. When CEOs with more daughters decide to offer debt or equity, the market also better receives the decisions. A possible reason for the favorable market reaction is that these firms deliver higher post-issuance profitability. Besides financial decisions, I find that CEOs' daughter(s) lower(s) corporate litigation risk by reducing the number of social related lawsuits. This finding is consistent with the impact of daughters on parents' social-political views documented in sociology and political science literatures. Lastly, I test whether parenting daughters make CEOs less likely to be overconfident in their personal wealth decisions. I find that CEOs with more daughters exercise their in-the-money options earlier than their counterparts. These findings are most consistent with the hypothesis that parenting daughter(s) helps managers avoid excessive risks and makes more prudent corporate decisions.

The limitations of my study should be noted. First, I do not have a randomized or natural experiment to assign CEOs to firms so that the effects can be estimated precisely. The endogenous matching between CEOs and companies make result inference challenging. Although fixed-effect models account for firms' time-invariant heterogeneity, I cannot completely rule out possible omitted time-variant firm or CEO factors which determine both CEO selection and corporate

outcomes of interest. However, if it is the case, daughter parenting experience is still a factor contributing to the CEO's ability to implement policies with positive outcomes. Second, my analysis cannot cover every possible corporate outcome on which the daughter parenting experience may impact. It is possible that CEOs with more daughters outperform in some decisions but underperform other decisions. Future studies could contribute stronger identification and further understanding about other impacts of gender factors on corporate decisions.

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Table 1:
Summary Statistics

The sample is CEOs of over 50 year old and covers a period from 1990 to 2012. *CAR* is the cumulative abnormal announcement return from day -1 to day +1 and from day 0 to day +1. *Acquisition Premium* is the difference between acquirers' offer price and the targets' stock price before the announcements divided by targets' stock price before the announcements. *Toehold* is a dummy that equals 1 if the acquirer holds a minority interest position (less than 50%) in the target's stock before the announcement. *Stock Deal* is a dummy variable that equals 1 if the fraction of equity value as a payment method in the deal exceeds 50%. *Public Target* is a dummy variable that equals 1 if the target is a publicly listed firm. *Diversifying* is a dummy variable that equals 1 if the acquirer and the target are not from the same SIC industry. *Hostile, Contested, Tender,* and *Merger of Equals* are dummy variables that equal 1 if the takeover is unsolicited or unfriendly, has multiple bidders, is a tender offer, and is classified as merger of equals by SDC, respectively.

Statistics	Mean	10th %	50th %	90th %	S.D.	N	Unit
CEO Characteristics:							
Age	59.06	52.00	58.00	67.00	6.11	1437	Years
Tenure	9.06	1.00	6.00	21.00	8.73	1437	Years
Male	0.99	1.00	1.00	1.00	0.11	1437	
Number of Daughters	1.40	0.00	1.00	3.00	1.07	1437	Child
Number of Children	2.88	2.00	3.00	4.00	1.21	1437	Child
Acquisition:							
CAR (-1,+1)	0.45%	-4.06%	0.27%	5.33%	4.84%	6854	
CAR (0,1)	0.46%	-3.32%	0.25%	4.70%	4.26%	6854	
Acquisition Premium	16.00%	-6.11%	3.15%	55.50%	38.80%	1239	
Friendly	0.78	0.00	1.00	1.00	0.42	6854	
Toehold	0.66	0.00	1.00	1.00	0.47	6854	
Stock Deal	0.06	0.00	0.00	0.00	0.23	6854	
Public Target	0.30	0.00	0.00	1.00	0.46	6854	
Diversify	0.59	0.00	1.00	1.00	0.49	6854	
Contested	0.01	0.00	0.00	0.00	0.11	6854	
Tender	0.04	0.00	0.00	0.00	0.19	6854	
Merge of Equals	0.00	0.00	0.00	0.00	0.02	6854	
Debt and Equity Issuance:							
Equity Return Volatility	0.03	0.02	0.03	0.05	0.02		
Share Turnover	0.01	0.00	0.01	0.02	0.01		
Net Proceeds (Equity)	276	17	125	700	518	782	US$ million
Net Proceeds (Debt)	727	20	249	1,450	2,560	2717	US$ million
Firm Characteristics:							
Market Value	9,074	239	1,890	22,495	24,012	8203	US$ million
Market to Book	1.63	0.64	1.17	3.01	1.84	8194	
Free Cash Flow	0.22	0.03	0.19	0.44	0.18	7918	US$ million
Sales Growth	1.13	0.91	1.07	1.34	0.69	7905	
Leverage	0.38	0.01	0.37	0.69	0.27	8432	
Cash to Assets	0.10	0.01	0.05	0.27	0.13	8432	
PPE	1,989	28	394	5,916	3,865	8482	US$ million
CaPex to Asset	0.07	0.02	0.05	0.15	0.06	7918	
Asset Growth	1.14	0.92	1.06	1.37	0.42	7909	

Table 2:
Announcement returns for acquisitions

The dependent variable is the cumulative abnormal announcement return (CAR). The sample is CEOs of over 50 year old and covers a period from 1990 to 2012. *Toehold* is a dummy that equals 1 if the acquirer holds a minority interest position (less than 50%) in the target's stock before the announcement. *Stock Deal* is a dummy variable that equals 1 if the fraction of equity value as a payment method in the deal exceeds 50%. *Public Target* is a dummy variable that equals 1 if the target is a publicly listed firm. *Diversifying* is a dummy variable that equals 1 if the acquirer and the target are not from the same SIC industry. *Hostile, Contested, Tender*, and *Merger of Equals* are dummy variables that equal 1 if the takeover is unsolicited or unfriendly, has multiple bidders, is a tender offer, and is classified as merger of equals by SDC, respectively. Standard errors are clustered at the firm level and shown in the blankets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	CAR (-1,+1)	CAR (0,1)	CAR (-1,+1)	CAR (0,1)
Number of Daughters	**0.0040*** **	**0.0027** **		
	(0.001)	**(0.001)**		
Log(number of daughters)			**0.0125*** **	**0.0083** **
			(0.004)	**(0.004)**
Age	-0.0003	-0.0003	-0.0003	-0.0003
	(0.000)	(0.000)	(0.000)	(0.000)
Tenure	0.0003	0.0003	0.0003	0.0003
	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.0001	0.0001	0.0070	0.0070
	(0.006)	(0.006)	(0.006)	(0.006)
Size	-0.0008	-0.0008	0.0004	0.0004
	(0.002)	(0.002)	(0.002)	(0.002)
Market to Book	0.0002	0.0002	-0.0006	-0.0006
	(0.001)	(0.001)	(0.001)	(0.001)
Free Cash Flow	0.0130**	0.0130**	0.0124**	0.0124**
	(0.006)	(0.006)	(0.005)	(0.005)
Sales Growth	-0.0022	-0.0022	-0.0022	-0.0022
	(0.004)	(0.004)	(0.004)	(0.004)
Friendly	-0.0089***	-0.0089***	-0.0089***	-0.0089***
	(0.003)	(0.003)	(0.002)	(0.002)
Toehold	-0.0002	-0.0002	-0.0008	-0.0008
	(0.001)	(0.001)	(0.001)	(0.001)
Stock Deal	-0.0080**	-0.0080**	-0.0101***	-0.0101***
	(0.004)	(0.004)	(0.004)	(0.004)
Public Target	-0.0034	-0.0034	-0.0022	-0.0022
	(0.002)	(0.002)	(0.002)	(0.002)
Diversifying	-0.0021	-0.0021	-0.0027*	-0.0027*
	(0.002)	(0.002)	(0.001)	(0.001)
Contested	-0.0113*	-0.0113*	-0.0072	-0.0072
	(0.006)	(0.006)	(0.006)	(0.006)
Tender	0.0083**	0.0083**	0.0056	0.0056
	(0.004)	(0.004)	(0.004)	(0.004)
Merge of Equals	0.0262	0.0262	0.0173	0.0173
	(0.026)	(0.026)	(0.014)	(0.014)
Firm Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Children Dummie	Yes	Yes	Yes	Yes
Observations	6,654	6,654	6,654	6,654
Number of gvkey	655	655	655	655
Adj. R-squared	0.0095	0.0132	0.0095	0.0132

Table 3:
Announcement returns for debt issuance

The dependent variable is the cumulative abnormal announcement return (CAR). The sample is CEOs of over 50 year old and covers a period from 1990 to 2012. *Equity Return Volatility* is the standard deviation of daily stock return during the trading period (-90, -11) prior to the announcement date (trading day 0). *Share Turnover* is the ratio of average daily share trading volume during the trading period (-90, -11) prior to the announcement date (trading day 0) divided by pre-issuance total shares outstanding. Standard errors are clustered at the firm level and shown in the blankets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	CAR (-1,+1)	CAR (0,+1)	CAR (-1,+1)	CAR (0,+1)
Number of Daughters	**-0.0018**	**0.0055*** **		
	(0.002)	**(0.002)**		
Log(number of daughters)			**-0.0050**	**0.0154*** **
			(0.005)	**(0.006)**
Age	-0.0001	-0.0004	-0.0001	-0.0004
	(0.000)	(0.000)	(0.000)	(0.000)
Tenure	0.0000	0.0003	0.0000	0.0003
	(0.000)	(0.000)	(0.000)	(0.000)
Male	-0.0085	0.0023	-0.0085	0.0023
	(0.014)	(0.014)	(0.014)	(0.014)
Size	0.0018	0.0010	0.0018	0.0010
	(0.004)	(0.004)	(0.004)	(0.004)
Market to Book	-0.0006	0.0028	-0.0006	0.0028
	(0.002)	(0.002)	(0.002)	(0.002)
Free Cash Flow	0.0111	0.0221*	0.0111	0.0221*
	(0.011)	(0.013)	(0.011)	(0.013)
Sales Growth	0.0125*	0.0185**	0.0125*	0.0185**
	(0.007)	(0.008)	(0.007)	(0.008)
ROA	-0.0332	-0.0676	-0.0332	-0.0676
	(0.039)	(0.044)	(0.039)	(0.044)
PPE	0.0003	-0.0129	0.0003	-0.0129
	(0.018)	(0.017)	(0.018)	(0.017)
Equity Return Volatility	0.2733	-0.1002	0.2733	-0.1002
	(0.271)	(0.197)	(0.271)	(0.197)
Share Turnover	0.3369	0.7533	0.3369	0.7533
	(0.422)	(0.511)	(0.422)	(0.511)
Log(Net Proceeds)	0.0001	0.0006	0.0001	0.0006
	(0.001)	(0.001)	(0.001)	(0.001)
Firm Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Children Dummie	Yes	Yes	Yes	Yes
Observations	2,241	2,241	2,241	2,241
Number of gvkey	409	409	409	409
Adj. R-squared	0.0052	0.0077	0.0052	0.0077

Table 4:
Announcement returns for equity issuance

The dependent variable is the cumulative abnormal announcement return (CAR). The sample is CEOs of over 50 year old and covers a period from 1990 to 2012. *Equity Return Volatility* is the standard deviation of daily stock return during the trading period (-90, -11) prior to the announcement date (trading day 0). *Share Turnover* is the ratio of average daily share trading volume during the trading period (-90, -11) prior to the announcement date (trading day 0) divided by pre-issuance total shares outstanding. Standard errors are clustered at the firm level and shown in the blankets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	CAR (-1,+1)	CAR (0,+1)	CAR (-1,+1)	CAR (0,+1)
Number of Daughters	**0.0287****	**0.0245****		
	(0.012)	**(0.010)**		
Log(number of daughters)			**0.0714****	**0.0609****
			(0.030)	**(0.024)**
Age	-0.0016	-0.0020*	-0.0016	-0.0020*
	(0.001)	(0.001)	(0.001)	(0.001)
Tenure	-0.0014	-0.0008	-0.0014	-0.0008
	(0.001)	(0.001)	(0.001)	(0.001)
Male	0.0092	-0.0190	0.0092	-0.0190
	(0.042)	(0.025)	(0.042)	(0.025)
Size	0.0162	0.0142	0.0162	0.0142
	(0.012)	(0.010)	(0.012)	(0.010)
Market to Book	0.0023	-0.0038	0.0023	-0.0038
	(0.006)	(0.005)	(0.006)	(0.005)
Free Cash Flow	-0.0352	-0.0216	-0.0352	-0.0216
	(0.024)	(0.016)	(0.024)	(0.016)
Sales Growth	0.0225	0.0051	0.0225	0.0051
	(0.016)	(0.008)	(0.016)	(0.008)
ROA	0.1037	0.1247*	0.1037	0.1247*
	(0.094)	(0.069)	(0.094)	(0.069)
PPE	-0.0406	-0.0015	-0.0406	-0.0015
	(0.041)	(0.036)	(0.041)	(0.036)
Equity Return Volatility	-0.0709	-0.1754	-0.0709	-0.1754
	(0.410)	(0.389)	(0.410)	(0.389)
Share Turnover	-0.9064	0.0055	-0.9064	0.0055
	(1.027)	(0.707)	(1.027)	(0.707)
Log(Net Proceeds)	-0.0018	-0.0027	-0.0018	-0.0027
	(0.004)	(0.003)	(0.004)	(0.003)
Firm Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Children Dummie	Yes	Yes	Yes	Yes
Observations	707	707	707	707
Number of gvkey	322	322	322	322
Adj. R-squared	0.1240	0.1447	0.1240	0.1447

Table 5:
Acquisition Premium

The dependent variable in the regressions is the acquisition premium. The sample is CEOs of over 50 year old and covers a period from 1990 to 2012. Toehold is a dummy that equals 1 if the acquirer holds a minority interest position (less than 50%) in the target's stock before the announcement. Stock Deal is a dummy variable that equals 1 if the fraction of equity value as a payment method in the deal exceeds 50%. Public Target is a dummy variable that equals 1 if the target is a publicly listed firm. Diversifying is a dummy variable that equals 1 if the acquirer and the target are not from the same SIC industry. Hostile, Contested, Tender, and Merger of Equals are dummy variables that equal 1 if the takeover is unsolicited or unfriendly, has multiple bidders, is a tender offer, and is classified as merger of equals by SDC, respectively. Standard errors are clustered at the firm level and shown in the blankets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	Acquisition Premium	Acquisition Premium	Acquisition Premium	Acquisition Premium
Number of Daughters	**-0.0270****		**-0.0112**	
	(0.013)		**(0.011)**	
Log(number of daughters)		**-0.0629***		**-0.0302**
		(0.032)		**(0.026)**
Age	-0.0021	-0.0021	-0.0009	-0.0009
	(0.001)	(0.001)	(0.001)	(0.001)
Tenure	0.0006	0.0006	-0.0002	-0.0002
	(0.001)	(0.001)	(0.001)	(0.001)
Male	0.0377	0.0421	0.0600	0.0628
	(0.053)	(0.052)	(0.050)	(0.049)
Size	0.0188*	0.0191*	-0.0179*	-0.0178*
	(0.010)	(0.010)	(0.010)	(0.010)
Market to Book	-0.0031	-0.0032	-0.0001	-0.0003
	(0.008)	(0.008)	(0.006)	(0.006)
Sales Growth	0.0183	0.0169	-0.0056	-0.0065
	(0.036)	(0.036)	(0.024)	(0.024)
Friendly			0.2071***	0.2066***
			(0.046)	(0.046)
Stock Deal			0.0139	0.0139
			(0.027)	(0.027)
Public Target			0.0343	0.0349
			(0.044)	(0.044)
Diversifying			0.0793	0.0782
			(0.166)	(0.165)
Contested			0.1395***	0.1393***
			(0.042)	(0.042)
Tender			0.1526**	0.1526**
			(0.069)	(0.069)
Merge of Equals			0.1400***	0.1400***
			(0.035)	(0.035)
Industry Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Children Dummies	Yes	Yes	Yes	Yes
Observations	1,367	1,367	1,367	1,367
Adj. R-squared	0.0800	0.0806	0.2406	0.2409

Table 6:

Post-Issuance Performance

The dependent variable is the 3-year and 5-year average of Return on Assets and Return on Equity after debt issuance. The sample is CEOs of over 50 year old and covers firms that issue debt or equity in the period from 1990 to 2012. *Log(Total Proceeds)* is the total proceeds from debt and equity offerings aggregated in each firm year. Standard errors are clustered at the firm level and shown in the blankets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	ROA (t+1,t+3)	ROA (t+1,t+5)	ROE (t+1,t+3)	ROE (t+1,t+5)
Daughters × Log(Total Proceeds	**0.0014****	**0.0025*****	**0.0064***	**0.0040**
	(0.001)	**(0.001)**	**(0.003)**	**(0.003)**
Daughters	-0.0061	-0.0118	-0.0238	-0.1379
	(0.006)	(0.012)	(0.026)	(0.100)
Log(Total Proceeds)	-0.0029***	-0.0041**	-0.0074*	-0.0045
	(0.001)	(0.002)	(0.004)	(0.004)
Age	-0.0060***	-0.0048	-0.0036	0.0535
	(0.002)	(0.005)	(0.006)	(0.057)
Tenure	0.0066***	0.0081*	0.0023	-0.0607
	(0.002)	(0.005)	(0.010)	(0.065)
Male	0.0702***	-0.1124***	0.0792	-0.3378
	(0.018)	(0.034)	(0.078)	(0.215)
Size	0.0031	-0.0084	-0.0144	-0.0287*
	(0.010)	(0.008)	(0.018)	(0.017)
Firm Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Children Dummies	Yes	Yes	Yes	Yes
Observations	1,118	1,118	1,116	1,116
Number of gvkey	223	223	223	223
Adj. R-squared	0.0384	0.0401	0.0366	0.0417

Table 7:

Social Related Corporate Litigation

The dependent variable is the number of new civil lawsuits, and the net change in civil lawsuits. The sample is CEOs of over 50 year old and covers a period from 1990 to 2012. Standard errors are clustered at the firm level and shown in the blankets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	New Civil Lawsuits	New Civil Lawsuits	Net Civil Lawsuits	Net Civil Lawsuits
Number of Daughters	**-0.2414****		**-0.1378****	
	(0.094)		**(0.066)**	
Log(number of daughters)		**-0.4927****		**-0.2787****
		(0.194)		**(0.122)**
Age	-0.3952	-0.4047	-0.6796*	-0.6848*
	(0.409)	(0.409)	(0.356)	(0.356)
Tenure	-0.0866	-0.0865	0.0392	0.0391
	(0.063)	(0.064)	(0.060)	(0.061)
Male	0.0066	0.0070	0.0134	0.0137
	(0.022)	(0.022)	(0.020)	(0.020)
Size	0.1677***	0.1690***	-0.0075	-0.0068
	(0.064)	(0.065)	(0.057)	(0.057)
Market to Book	0.6301	0.6512	0.6642	0.6777
	(0.652)	(0.650)	(0.657)	(0.657)
PP&E	-0.0209	-0.0206	-0.0003	-0.0002
	(0.023)	(0.022)	(0.014)	(0.014)
CaPex to Assets	0.0215	0.0203	0.0076	0.0070
	(0.022)	(0.021)	(0.014)	(0.014)
Firm Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Children Dummies	Yes	Yes	Yes	Yes
Observations	1,975	1,975	1,975	1,975
Number of gvkey	512	512	512	512
Adj. R-squared	0.0805	0.0802	0.0469	0.0468

Table 8:
Stock Option Exercise

The dependent variable is the average moneyness of CEOs' stock options. The sample is CEOs of over 50 year old and covers a period from 2004 to 2010. Standard errors are clustered at the firm level and shown in the blankets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	Average Moneyness	Average Moneyness
Number of Daughters	**-0.3662****	
	(0.162)	
Log(number of daughters)		**-0.7573****
		(0.334)
Age	0.0898***	0.0639***
	(0.022)	(0.016)
Tenure	-0.0962***	-0.0619***
	(0.016)	(0.016)
Male	2.7968**	2.7968**
	(1.185)	(1.185)
Sales Growth	-0.0699	-0.0699
	(0.083)	(0.083)
Size	0.8607***	0.8607***
	(0.313)	(0.313)
Market to Book	0.2374	0.2374
	(0.159)	(0.159)
PPE	-0.3982**	-0.3982**
	(0.177)	(0.177)
CaPex to Assets	0.6675	0.6675
	(1.352)	(1.352)
Constant	-8.8236***	-7.6584***
	(2.216)	(1.785)
Firm Fixed-Effects	Yes	Yes
Year Fixed-Effects	Yes	Yes
Number of Children Dummies	Yes	Yes
Observations	558	558
Number of Gvkey	189	189
Adj. R-squared	0.4490	0.4490

Table 9:
Offspring gender in CEO-Firm Matching

The dependent variable is the total compensation and cash compensation in year 1 and year 4 of the CEO tenure. *Total Compensation* is the logarithms of total cash and stock-based compensation, variable tdc1 in ExecuComp. *Cash Compensation* is the logarithms of salary and bonus, variable total_curr in ExecuComp. The sample is CEOs of over 50 year old and covers a period from 1992 to 2012. Standard errors are clustered at the firm level and shown in the blankets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	Total Compensation Year 1	Cash Compensation Year 1	Total Compensation Year 4	Cash Compensation Year 4
Number of Daughters	**0.0815**	**0.1780**	**0.2144****	**0.3097*****
	(0.265)	**(0.214)**	**(0.103)**	**(0.097)**
Age	-0.1136***	-0.0572	-0.0311	-0.0213
	(0.042)	(0.035)	(0.021)	(0.022)
Firm Fixed-Effects	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes
Number of Children Dummies	Yes	Yes	Yes	Yes
Observations	326	332	417	419
Number of gvkey	295	302	375	377
Adj. R-squared	0.7950	0.8654	0.8786	0.8971