Human Capital and Decision Making within the Firm

Daniel Metzger

Dissertation submitted for the degree of

Doctor of Philosophy in Economics at

The London School of Economics and Political Science

November 2011

Declaration

I certify that the thesis I have presented for examination for the PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others. The first chapter draws on work that was carried out jointly by Claudia Custodio and me (25% and 75% respectively). The second chapter draws on work that was carried out jointly with equal share by Daniel Ferreira, Tom Kirchmaier, and me.

Daniel Metzger

Abstract

This thesis analyzes the market for executive and non-executive directors of firms with particular emphasis on the role of human capital such as industry expertise.

The first chapter analyzes how the human capital of CEOs affects corporate decision making and ultimately corporate performance. Analyzing diversifying mergers and acquisitions, it shows that CEO characteristics matter for the bidders' performance in takeovers. When the bidding CEO has experience in the target's industry, the abnormal announcement returns are between two and three times higher than those generated by a CEO who is new to that industry. We provide evidence that this performance is mainly driven by an experienced CEO's ability to capture a larger fraction of the surplus. Industry experts redistribute surplus in favor of their shareholders by negotiating better deals and by paying a lower premium. We also find that industry expert CEOs select low surplus deals on average. We argue that this evidence is consistent with industry experts having superior negotiation ability.

The second chapter analyzes the determinants of the board structure (including human capital, such as industry expertise) in banks. We show that country characteristics explain most of the cross-sectional variation in bank board independence. In contrast, country characteristics have little explanatory power for the fraction of outside bank directors with experience in the banking industry. Exploiting the time-series dimension of the sample, we show that changes in bank characteristics are not robustly associated with changes in board independence, while changes in board experience are positively related to changes in bank size and negatively related to changes in performance. The evidence suggests that country-specific laws and regulations affect the composition of boards of banks mainly through requirements for director independence.

The third chapter analyzes the careers of top executive directors. Using a sample of board members of the largest US companies, I provide exhaustive descriptive statistics on several dimensions of their careers. For instance, I am analyzing the career paths of CEOs with respect to their industry experience and their promotion within and between firms. Investigating CEO turnovers in detail, I report several new findings that raise potential questions for future research. Moreover, it also analyzes how changes in the market environment such as shocks to certain industries affect their career progression. I show that individuals whose industries are performing badly are less likely to be promoted to a CEO position. These findings suggest that luck is not only affecting CEO pay but also who is promoted to a CEO position at first. A promising route for future research might be a more rigorous

analysis of the within-firm dynamics of executive careers.

Für meine Eltern, Brigitte und Rolf Metzger

Acknowledgements

Reflecting on whom I want to thank, I come to realise that completing the PhD leaves me indebted to many people. It is a comfortable feeling that so many people have helped and supported me during the past years.

Firstly, I am greatly indebted to my supervisors, Oriana Bandiera and Daniel Ferreira. They have supported me throughout the past years, provided guidance and encouragement when necessary and showed a level of trust and belief in me. I have learned a great deal from them and they have shaped my understanding of our discipline and beyond. I will keep a dear memory of the many discussions and I am grateful for their support. I am also very thankful to Luis Garicano and other participants of our discussion group on 'organizational economics'.

Many individuals have provided feedback and support on the different chapters of this thesis and the PhD in general. First, I would like to thank Ulf Axelson who also supported me on the job market. This thesis also benefitted from many discussions with Vicente Cunat, Dong Lou, Steve Pischke, Andrea Prat, and Daniel Sturm.

My time at LSE has been an extraordinarily inspiring and enjoyable experience. I would also like to thank my colleagues at the Financial Markets Group (FMG) and fellow PhD students and in particular, Miguel Anton, Abhisek Banerjee, Michael Boehm, Nelson Camanho, Claudia Custodio, Tom Kirchmaier, Ana Damas de Matos, Ziad Daoud, Vincent Fardeau, Yoona Lee-Wakiwaka, Alexander Lembcke, Victor Ortego-Marti, Thomas Schelkle, Christian Siegel, Oliver Vanden Eynde, and Yanhui Wu.

Many individuals have provided feedback on the chapters of this thesis. I would like to thank Kenneth Ahern, Jonathan Cohn, Alex Edmans, Miguel A. Ferreira, Denis Gromb, Dirk Jenter, Andy Kim, Ulrike Malmendier, Micah Officer, Antoinette Schoar, David Thesmar, Paolo Volpin, Hannes Wagner, and seminar participants at Western Finance Association 2011, Stockholm, Harvard Business School, UNC Chapel Hill, Amsterdam, HEC Paris, IE, Bocconi, IESE, Copenhagen, Warwick, Bergen, ESMT, FMA doctoral meeting NY 2010, Stanford GSB Accounting and Finance Ph.D. seminar, German Finance Association 2010, the European Finance Association Annual Meeting 2010, Fourth Singapore International Conference on Finance 2010, Oxford Labor and Finance Conference 2010, LBS Transatlantic Conference 2010, ISCTE Business School Annual Finance Conference 2009, PhD Workshop at the German Finance Association Conference 2009, and EEA-ESEM 2009 for useful comments and suggestions.

I gratefully acknowledge financial support during my PhD from the ESRC and the department of economics of LSE.

Most importantly, I am grateful to my parents and my brother for their love, trust, care, and support and to Anna for her love, patience, and understanding.

Contents

List of Figures

List of Tables

Preface

This thesis comprises three independent chapters, spanning the range of my interests.

The first chapter deals with the industry-specific expertise of CEOs and how it affects corporate decision making and ultimately corporate performance. Analyzing diversifying mergers and acquisitions from 1990 to 2007, it shows that CEO characteristics matter for the bidders' performance in takeovers. When the bidding CEO has experience in the target's industry, it finds that the abnormal announcement returns are between two and three times higher than those generated by a CEO who is new to that industry. In dollar terms, this corresponds to a difference of more than $100 million on average. It provides evidence that this performance is mainly driven by an experienced CEO's ability to capture a larger fraction of the surplus. Industry experts redistribute surplus in favor of their shareholders by negotiating better deals and by paying a lower premium. It also finds that industry expert CEOs select low surplus deals on average. This evidence is consistent with industry experts having superior negotiation ability.

The second chapter investigates the human capital of non-executive directors of banks around the world. It shows that country characteristics explain most of the cross-sectional variation in bank board independence. In contrast, country characteristics have little explanatory power for the fraction of outside bank directors with experience in the banking industry. Exploiting the time-series dimension of the sample, it shows that changes in bank characteristics are not robustly associated with changes in board independence, while changes in board experience are positively related to changes in bank size and negatively related to changes in performance. The evidence suggests that country-specific laws and regulations affect the composition of boards of banks mainly through requirements for director independence.

The third chapter provides an empirical analysis of careers of executives in general (and CEOs in particular). Using a sample of board members of the largest US companies, I provide exhaustive descriptive statistics on several dimensions of their careers. For instance, I am analyzing the career paths of CEOs with respect to their industry experience and their promotion within and between firms. Investigating CEO turnovers in detail, I report several new findings that raise potential questions for future research. Moreover, I am making a first attempt to estimate a causal effect of the economic environment on the careers of executives. I show that exogenous shocks (such as industry performance) affect the careers of executives. I find that individuals whose industries are performing badly are less likely to be promoted to a CEO position. My finding suggests that luck is not only affecting CEO pay (see

Bertrand and Mullainathan (2001)) but also who is promoted to a CEO position at first.

1 How do CEOs matter? The Effect of Industry Expertise on Acquisition Returns.[1]

1.1 Introduction

Many studies show that chief executive officers (CEOs) have an impact on corporate policies and corporate value.[2] However, we still know very little about *how* CEOs create value. This paper provides new evidence of how CEOs influence firm performance. Our evidence comes from corporate takeovers. Employing a novel dataset on the career paths of CEOs, we first establish that, in takeovers, CEOs with previous work experience in the industry of the target outperform CEOs who are new to the target industry. We find that the bidders' abnormal announcement returns are between two to three times larger if the CEOs come from the industry of the target. Second, analyzing the mechanism, we differentiate between the CEOs' ability to create higher surplus and their ability to capture a larger fraction of the surplus for their shareholders in the bargaining and price setting process. We provide evidence that CEOs with experience in the target industry perform better mainly because they negotiate better acquisition prices. We also show that industry experts engage in low surplus acquisitions on average. This finding is consistent with CEOs rationally anticipating that they will secure a larger fraction of the surplus during negotiations with the target company.

Scholars in the business strategy literature have attached great importance distinguishing between *value creation* and *value capture* (see for instance, Porter 1980 and Brandenburger 2002). We borrow this terminology and apply it to CEO activity. CEOs can create value by fostering innovation, providing training to employees or optimizing processes. They can also capture value through negotiation. For example, CEOs could negotiate with suppliers for better prices on input goods[3], with

[1] The work in this chapter was carried out jointly with equal share by Claudia Custodio and me.

[2] For instance, Bertrand and Schoar (2003) show that CEOs have different styles regarding corporate policies. Graham, Li, and Qiu (2009) use manager-specific heterogeneity for explaining variation in executive pay. Adams, Almeida, and Ferreira (2005) as well as Bennedsen, Perez-Gonzalez, and Wolfenzon (2007) show that CEOs matter for corporate performance. Malmendier and Tate (2008), Kaplan, Klebanov, and Sorensen (2009) as well as Malmendier, Tate, and Yan (2010) show that CEO characteristics and experience are related to corporate decisions and performance.

[3] Hennessy and Livdan (2009) examine optimal leverage in a customer-supplier setting.

labor[4] for lower wages or with the (local) government for subsidies.[5] Such actions do not necessarily create value overall but change its distribution in favor of the shareholders. Hence, both sets of activities might increase *shareholder value*. We provide evidence that value capture is an important component of shareholder value. Theoretical research has stressed the importance of bargaining and negotiation for economic outcomes (Williamson 1971, Myerson and Satterthwaite 1983). However, we have little evidence on the extent to which top decision makers such as CEOs can affect the bargaining outcomes. Our contribution is to show that experience in the target industry increases the CEO's ability to capture value when bargaining with the target firm. Other things being equal, having a higher bargaining ability allows a CEO to secure a larger fraction of the surplus. Here, we measure bargaining ability directly by analyzing how surplus is split and what price is paid.

Mergers and acquisitions (M&As) provide a suitable setting for our study. First, takeovers typically represent the largest investments that companies will undertake. The market for corporate control is also significant from an economic point of view: U.S. firms spent more than $3.4 trillion on over 12,000 transactions over the last two decades[6], which is about 6.6 percent of US stock market capitalization.[7] Second, many empirical studies document that mergers create surplus. Most of this surplus seems to be captured by the target shareholders. Indeed, the announcement returns to the bidding shareholders are usually around zero on average or even slightly negative.[8] We find a significant amount of CEO-specific variation in merger outcomes.[9] This finding suggests that the bargaining abilities of CEOs vary and that they have an effect on M&A outcomes.

Our analysis proceeds in three steps. First, we establish that industry-specific experience allows CEOs to perform better in diversifying mergers and acquisitions. Second, we develop a theoretical model of two mechanisms - value creation and value capture - that could explain our findings. We show that our findings are consistent with the value capture mechanism by testing the model's predictions directly, using offer premium data and proxies for the value that is created by the acquisition. Third, we show that CEO experience is particularly valuable in situations of high informational asymmetries. For identification, we exploit variation in the industry-

[4]Simintzi, Vig, and Volpin (2010) analyze labor bargaining power on firms' choice of debt.

[5]Spiegel and Spulber (1994) analyze the price, investment strategy, and capital structure of regulated firms where firms use debt and equity strategically.

[6]See Malmendier and Tate (2008).

[7]According to Wilshire Associates, the total U.S. market cap is approximately $15.35 trillion (May 23, 2007).

[8]Betton, Eckbo, and Thorburn (2008) as well as Andrade, Mitchell, and Stafford (2001) provide excellent summaries of the empirical findings.

[9]This is consistent with Ahern (2010) who shows that there is variation in merger outcomes which is related to customer-supplier relationships.

specific experience of the bidding CEOs. Over their lifetime, most CEOs work in different industries. This industry-specific experience may have an impact on how well they perform in M&As. For instance, industry experts might be better at running the combined companies, or at negotiating with the target. The variation in industry-specific experience helps us in three ways. First, industry experience might affect both value creation and value capture. Second, since we observe the complete past experience profile of CEOs, we can differentiate between general cross-industry and industry-specific effects. Third, industry experience also varies within CEOs. This variation allows us to control for unobserved CEO heterogeneity, ruling out many alternative explanations.

First, we start by establishing a novel empirical finding: CEOs with prior work experience in the industry of the target perform significantly better in diversifying M&As. Using U.S. data on 4,844 announcements of acquisitions from 1990 to 2007, we find that the stock market reacts more favorably to diversifying mergers when the bidding CEO has prior work experience in the target industry. After controlling for firm and deal characteristics, as well as for time and industry fixed effects, we find that three-day abnormal announcement returns to the bidder are 1.3 percentage points higher for CEOs with top management experience in the target industry. Given an average abnormal return of 0.5 percentage points for diversifying acquisitions and an average market value of about $8,000M, this effect is large in both relative and absolute dollar terms. There is indirect evidence that industry expertise might be important when buying (or investing into) a company. Professional expert networks such as GLG Research or innosquared match industry experts and corporate clients for mergers and acquisititions. These experts are used to do "more objective diligence of specific acquisition targets. The expert network can quickly and confidentially assess the assumptions behind management teams' presentations and investment bankers' offering memoranda."[10] Moreover, Kaplan and Stromberg (2009, p.132) discuss the role on industry experts in provate equity. They argue that "in addition to hiring dealmakers with financial engineering skills, private equity firms now often hire professionals with operating backgrounds and an industry focus. For example, Lou Gerstner, the former chief executive officer of RJR and IBM is affiliated with Carlyle, while Jack Welch, the former chief executive officer of GE, is affiliated with Clayton Dubilier." Bottazi et al. (2008) also stress the importance of industry experience in the context of venture capital.

A key concern might be that the measure of industry experience is correlated with omitted CEO heterogeneity that biases our findings. To address this concern we exploit the fact that a fraction of the CEOs in our sample engage in multiple acquisitions with (at least) one acquisition in an industry in which they have prior

[10]See http://www.glgresearch.com/ or http://www.innosquared.com/

work experience and (at least) one in an industry that is unknown to them. This allows us to include CEO fixed effects that help us identify the causal effect of industry experience on acquisition performance. We are also concerned about endogenous CEO-firm matching as CEOs and firms are not randomly assigned to each other. Exploiting merger waves and analyzing the timing of the acquisitions, we provide evidence that endogenous matching is not driving our results.

Second, we develop a simple theoretical model of takeovers. The purpose of the model is to derive testable predictions that allow us to get insights into the mechanism through which industry-experience operates. We model a simple two-stage game where, in the first stage, a company gets a random draw of potential targets and decides to whom to make an offer. The surplus is split in the second stage. This framework allows us to model the effect of CEOs' industry experience on company value through two different channels. On the one hand, industry experience might increase the value that is created in a merger. CEOs with experience may be better at integrating assets or at running the merged company. They may also be better at identifying high-surplus targets in the pre-merger stage. On the other hand, industry experience might be advantageous in the bargaining process. For instance, industry insiders might possess information that allows them to estimate the true value of the target more accurately. Moreover, coming from the same industry might also be helpful for assessing the targets' outside options and hence strengthening the bidding CEOs' bargaining positions. Additionally, corporate culture is likely to be different in different industries (for example, in mining vs. in advertising) and that is why industry-specific experience may also affect negotiating styles. The model's predictions on outcome variables for the two competing mechanisms allow us to distinguish them empirically. Moreover, the model illustrates that the two mechanisms have different implications for the welfare. Beyond the direct effect of industry experience on value creation or capture, there is also an indirect effect that has an impact on the composition of acquisitions observed in the economy.[11] We refer to this as the "selection effect". Using the model's predictions, we show that industry experience helps CEOs negotiating better terms. Specifically, industry insiders pay a lower price for the target and get a larger fraction of the surplus. We directly show that industry experts pay a significantly lower premium for the target shareholders' shares - both when measured as offer price premiums as well as final price premiums. We also find that the relative dollar gains of the target are lower if the bidding CEO comes from the target industry. When we look at the value created by the acquisition, we do not find evidence that industry experts perform better. Instead, we find a weak negative effect. We use combined abnormal announcement returns to bidders

[11] Note that the ability of creating a higher surplus would change the composition of mergers as well. However, it does not necessarily change the realized surplus of an average deal.

and targets as a proxy for synergies. As abnormal returns reflect the expectations of the market, we also look at an ex-post measure of profitability: return-on-assets (ROA). In line with results on the combined announcement returns, we do not find that experienced CEOs perform better in terms of profitability as we find a negative effect. These findings suggest that industry experts do better when negotiating with the target, allowing them to secure a greater fraction of the surplus or to pay less. Moreover, bargaining also explains the – at first sight – counter-intuitive finding of a negative effect of industry experience on surplus creation. Having a stronger position in the bargaining stage directly affects the sharing rule of the surplus between bidder and target. In addition, it indirectly affects the composition of deals that are announced, and are therefore in our sample. In other words, the negative effect is likely not causal but due to selection. CEOs who anticipate securing a larger fraction of the surplus are willing to engage in acquisitions with a lower total surplus at first. Indeed, the returns to bidding shareholders increase -other things being equal- both in the surplus and in the fraction they can secure. CEOs therefore substitute higher surplus with higher bargaining power. The selection effect also shows that bargaining ability impacts the allocation of resources, like corporate control, within the economy.

Third, in the last part of our analysis, we aim to provide further evidence for the bargaining channel by identifying situations or environments in which industry experience is likely to affect the bargaining power of CEOs. As suggested, one potential explanation for industry experience increasing bargaining ability is information based. Being an industry insider might help to better estimate the true value of the takeover which might strengthen the bargaining position of the bidder. Following this intuition, we expect the value of being an industry insider to be higher in scenarios with greater informational asymmetries. We, first compare public and private targets. Private companies face less obligations to disclose information and consequently, information asymmetries are arguably higher between such companies and potential buyers. Exploiting the variation of interaction between CEO industry experience and the public status of the target, we find that experienced CEOs are able to generate about 2.9 percentage point higher abnormal returns if the target is a private company. This evidence supports our interpretation of experienced CEOs being better at bargaining. Moreover, we exploit heterogeneity across target industries. Using different proxies for informational asymmetries at the industry level such as R&D intensive industries and industries with a high level of intangibles, we confirm our prior findings. Experience is particularly valuable in settings of high information asymmetries (1.7 percentage points to 1.9 percentage points higher).

The main contributions of this paper are threefold. First, analyzing M&As, we

investigate what CEOs do and how they add to shareholder value. We show that CEOs, and in particular CEO industry experience, matter for M&As. Moreover, we show that the industry experience helps bidding CEOs to capture value in the bargaining and price setting process. Our findings suggest that value capture is an important dimension of CEO activity. This finding has wider implications as the existing literature on CEOs either explicitly or implicitly assumes that CEOs create value (e.g. Gabaix and Landier 2008, Edmans and Gabaix 2011). We also contribute to the literature on CEO characteristics (e.g. Malmendier and Tate 2008, Kaplan, Klebanov, and Sorensen 2009, and Malmendier, Tate, and Yan 2010) by showing that CEOs differ in their ability to bargain and that this ability might depend on the CEO's history. Second, we add to the literature on mergers and acquisitions by highlighting the importance of the bargaining process in general and CEOs' bargaining ability in particular. Third, our results are complementary to results in empirical industrial organization literature on bargaining (e.g. Ho 2009 and Grennan 2010). Using a different and non-structural approach, we confirm the finding that parties differ in their bargaining abilities.

Our study is related to three strands of literature. First, we contribute to the literature on what CEOs do and how they generate shareholder value. Second, our findings are closely related to empirical research on the performance of M&As. Third, we contribute to the empirical literature that analyzes bargaining power.

First, it is now well established that CEOs matter and that they affect corporate performance (for example, Bertrand and Schoar 2003, Adams, Almeida, and Ferreira 2005, Bennedsen, Perez-Gonzalez, and Wolfenzon 2007, Malmendier and Tate 2008, and Graham et al. 2009). However, we still do not know much about how CEOs generate shareholder value. There are two strands of literature that attempt to shed some light on this: (i) Bandiera, Guiso, Prat, and Sadun (2010), analyzing the time diaries of Italian top executives, measure how much time CEOs devote to internal and external activities and how these activities are related to firm and CEO characteristics. While we do not analyze individual tasks of CEOs, we look at the activities of CEOs on an aggregate level. We differentiate between value capture and value creation, and show that capturing value when bargaining with different parties is an important dimension of CEO activity. This finding has also implications for the theoretical work that usually explicitly (or implicitly) assumes that CEOs generate value. (ii) We relate to a rising field that analyzes CEO characteristics and corporate performance. Bertrand and Schoar (2003) as well as Graham, Li, and Qiu (2009) show that CEOs have different styles. Malmendier and Tate relate overconfidence of CEOs to corporate performance in a series of papers (2005, 2008). Kaplan, Klebanov, and Sorensen (2011) analyze more than 30 different char-

acteristics of CEO candidates in LBO and VC transactions. Ang, de Jong, and Van der Poel (2008) as well as Huang (2010) show that CEOs are more likely to divest divisions they are less familiar with. Xuan (2009) analyzing the career paths across companies' divisions and Malmendier, Tate, and Yan (2011) looking at Depression experience or military experience, show that past experience affects corporate decisions. Our findings are complementary. We show that industry-specific experience in general, and bargaining power in particular are important determinants for corporate performance and corporate decision making. Our findings also speak to the current debate on general vs. specialist CEOs. Lazear (2002, 2004), Murphy and Zabojnik (2007), and Frydman (2007) document an increased importance of general skills. Cremers and Grinstein (2011), however, show that managerial talent pools are industry-specific, suggesting that industry-specific experience is important to firms. Industry-specific bargaining ability can be interpreted as one dimension of industry-specific skills. Our results are consistent with both views. We show that industry experience affects corporate performance. However, we do not find evidence that industry experience creates higher value in acquisitions; it directly affects how the surplus is split between the bidder and the target.

A broader implication of our analysis is that CEO skills and characteristics affect the way resources like corporate control, are allocated in the economy. We show that CEO bargaining power affects the set of acquisitions that are implemented in the economy. Our findings suggest that selection itself is of interest, and that the way in which selection affects outcomes is important, even beyond interpreting correlations. This interpretation is consistent with results in related studies that document similar effects for other CEO characteristics - though not explicitly stated. For instance, Bertrand and Schoar (2003) show that CEOs differ in their taste for diversifying acquisitions, and Malmendier and Tate (2008) show that overconfident CEOs engage in more acquisitions.

Second, we contribute to the empirical research on M&As. Our findings provide new insights into the determinants of acquisition success.[12] (i) We show that CEOs in general, and their bargaining abilities in particular, are key drivers of the success of M&As. This is consistent with Malmendier and Tate (2008) who provide evidence that overconfident CEOs do worse acquisitions. Aktas, de Bodt, Bollaert, and Roll (2010) also show that narcissism has an impact on many dimensions of the takeover process, such as performance, or who is initiating an acquisition. Yim (2009) shows that young CEOs are more likely to announce acquisitions and perform worse. This might be due to lower quality of the acquisitions, also reflected in a lower likelihood of closing the deals. Our results might also provide a different

[12]See Andrade, Mitchell, and Stafford (2001) as well as Betton, Eckbo, and Thorburn (2010) for summaries of the literature.

explanation for Yim's findings as on average young CEOs are less experienced than older ones. Our paper is also complementary to Ishii and Xuan (2010) who look at social ties between acquirers and targets. They find that if the boards of the bidder and the target are connected, decision making is poorer and lower shareholder value is created. In contrast, we find a positive effect of industry-specific experience. This suggests that we do not proxy for board connections with our measure. However, we are generally sympathetic to the idea that being connected or knowing the right people is an important dimension of a CEOs' human capital. (ii) We show that the stage at which prices are determined and negotiation is carried out, is important for the performance of an acquisition. This is consistent with recent research on merger bidding by Betton, Eckbo, Thorburn (2009) as well as Aktas, de Bodt, and Roll (2010) who highlight the importance of the negotiation process. Pan, Baker, and Wurgler (2009) stress the existence of anchor points (a 52-week high) for the valuation of the target, emphasizing the importance of the price setting mechanism. Moreover, Ahern (2010) shows that there is significant variation in the division of takeover gains and that customer-supplier relations partly explain this division in vertical mergers. Our findings are consistent and complementary as first, we also find variation in the division of the gains and second, we show that this division is related to the bargaining ability of the bidding CEO.

Third, our study is related to a body of research mainly in empirical industrial organization that uses structural models in order to analyze how surplus is split and how prices are negotiated. Our question is most similar to Ho (2009) who shows that some types of hospitals are able to capture higher mark-ups when bargaining with health insurers. Grennan (2010) estimates bargaining abilities in the context of the medical devices industry. Our results are consistent with their findings in the sense that they also document that parties differ in their bargaining abilities. Our study is complementary from a methodological point of view. Ho and Grennan both use structural models for first estimating the surplus to share and then the bargaining abilities. We use a direct measure for the surplus created in the process of bargaining.

The paper proceeds as follows. Section 2 describes the data and presents summary statistics. Section 3 establishes the importance of CEO industry experience for the success of acquisitions. Section 4 examines the mechanism that allows experienced CEOs to perform better. Section 5 identifies environments in which industry experience is particularly important. We interpret our findings in Section 6. Section 7 concludes.

1.2 Data and Key Variables

We are interested in identifying the effect of CEOs' industry experience on different outcome measures of M&As. Our key explanatory variable is therefore the industry experience profile of the bidding CEOs in relation to the industry of the target. Our dependent variables are either market measures for merger performance (abnormal announcement returns), real measures for the profitability, or the premium paid to the target.

1.2.1 CEO Data

We construct a manager-firm matched panel that allows us to observe a CEOs' employment history. Our initial sample is the Executive Compensation database (COMPUSTAT ExecuComp) with over 2500 companies. The universe of firms covers the S&P 1500 from 1992 onwards, including companies that were once part of that index. For each firm-year, ExecuComp reports the identity of up to 9 executives and their positions, allowing us to identify the current CEO. We are interested in the employment history of this CEO. As ExecuComp keeps track of S&P 1500 companies and the highest paid executives only, we supplement the data with information from the BoardEx database. This database collects information on job history (including company roles and positions), age, and other activities (for instance social activities) of top executives and non-executives in the US and Europe, which allows us to track the complete work history of CEOs.

We merge the two datasets by CEO name, company, position/role and year, and construct a CEO-firm-year panel. Due to different spellings and abbreviations, we manually validate the entire panel. To construct measures of experience, we are interested in characteristics of the previous positions of the CEOs. These characteristics include the firms' industries, the role, and the exact period of each position. To identify the firms' industries, we match the list of CEOs' past companies with different data sources that file information on their lines of business. We obtain information on quoted firms from COMPUSTAT and information on private firms from ICARUS.[13]

We construct our key explanatory variable of interest, the industry experience of a CEO, as follows: for a given deal, we identify the industries of the bidder and the target, as well as the identity of the CEO. In our analysis, we want to ensure that we separate the experience of the CEO and the business expertise of his company;

[13]Sometimes company names are spelled differently in the datasets or the company in the BoardEx database refers to a subsidiary or a financial shell of the company. A simple example is 'Microsoft Corp' and 'Microsoft Inc'. Therefore, we 1) use a string matching algorithm, and 2) manually verify every single match afterwards. Companies that we could not match by this routine are manually researched using COMPUSTAT, ICARUS, and online data resources (such as www.manta.com and www.alacra.com). Overall, we verified more than 100k potential matches.

that is, we want to make sure that an acquisition is really diversifying. Therefore, we use a very broad classification (Fama-French 12) in order to define a diversifying acquisition. We then compare the CEO's previous industry experience with the industry of the target. We set a dummy variable $ExpTA$ ("experience in the target industry") equal to 1 if the CEO has worked in at least one company in that industry. As the provision of segment level data varies across data sources, we restrict our analysis of the past positions to the primary industry of the company.[14] Note that this approach is conservative as, by using this broad classification, we might only add noise to our measure when classifying unrelated experience as relevant. We refine this broad measure of experience by taking the previous roles of the CEO into account. We define a measure of top management experience that is equal to 1 if the CEO worked in at least one company in the target's industry as a top manager. Top management positions/roles include CEO, CFO, COO, Chairman, President, Division CEO, Division CFO, Division Chairman, Division COO, Division President, Head of Division, Regional CEO, Regional CFO, and Regional President. We expect top experience to matter more, as non-top level experience might also include positions that are unrelated to a firm's line of business (for example, being a web programmer in the automotive industry), or positions that do not allow the worker to obtain industry-specific skills or knowledge.

1.2.2 M&A Data

The M&A data come from the Thomson Financial SDC Platinum database. The initial sample contains all completed M&As in the US stock market over 1990 - 2008. A deal has to meet the following criteria to be included in our final sample:

- (Shares Acquired) We only include transactions in which the control is transferred. Specifically, the share of the acquirer in the target firm has to be below 50 percent before the transaction and above 50 percent after it. Alternatively, the acquirer has to buy 50 percent of the shares outstanding during the merger process.

- (Absolute Transactions Size) Following Harford (2005) the transaction value of the merger has to be at least US$50M.

- (Region) Both the acquirer and the target firm are US corporations. Moreover, the acquirer is listed on the US stock exchanges. We exclude international (Item MATYPE IMA) and overseas mergers.

[14] For roles that were in consulting, we do not assign a particular industry as industry experience is likely to vary across projects. As a robustness check we drop these CEOs from our sample as well as define a "consultant" dummy as a control.

- (Price and Accounting Data) The stock price and accounting data must be available in the Center for Research in Security Prices (CRSP) and in COMPUSTAT in the year before the merger.

We classify a merger to be diversifying using a dummy variable if the acquirer and target differ in their Fama-French 12-Industries (FF12) classification. Using this broad classification ensures that industries of the two companies in diversifying mergers are unrelated.

1.2.3 Outcome Data

Our main measure of performance is the abnormal announcement returns to the bidders' shareholders. We use the Fama-French 3-factor model as the return-generating process to estimate cumulative abnormal returns (CAR). We estimate the model over a 255-day estimation window ending twenty-one days prior to the announcement date, using the CRSP value-weighted index as our market proxy. In most specifications we report the CARs to the acquiring firm's stock over a symmetric three-day window around the announcements. Moreover, we also analyze a longer event window (eleven days) considering potential information leakage. We obtain data on the offer price premium as well as on the final agreed price premium from SDC. The offer price premium is defined as the ratio of the price that is initially offered to the stock price of the target one day (or one week) before the announcement. We define the final price premiums accordingly. Note that the premiums are only available for publicly listed targets. Officer (2007) estimates premiums for unlisted targets by building portfolios of comparable acquisitions of publicly traded targets. As we are interested in the idiosyncratic component of the premium (the effect of the bidding CEO's experience), we cannot apply this method here.

The ratio of earnings before interest and taxes to total assets (EBIT/assets) is used as a measure of operating performance (ROA). Since the ROA may be affected by industry-wide factors, it is industry-adjusted by subtracting the median value of the same measure for all firms in the same primary Fama-French 12 industry as the bidding firm. We then estimate an AR(1) model using the post-merger industry-adjusted three-year average ROA as the left-hand-side variable, with the pre-merger corresponding measure as the right-hand-side variable. The AR(1) model takes the possibility into account that pre-merger operating performance may predict post-merger operating performance. The residual from the above regression is our measure of the abnormal change in ROA (ΔROA).

1.2.4 Control Variables

We supplement the data with various financial items from the COMPUSTAT database.[15] Following Masulis, Wang, and Xie (2007), a transaction is defined to be a "stock deal" with a dummy variable if the acquirer pays a positive fraction of the transaction value with its stocks. If the transaction is fully paid in cash we set the "all cash" dummy equal to 1. Public target, private target and subsidiary target are dummies that classify the public status of the target company. In order to include an intercept we choose subsidiary targets as our base category in the regression analysis. We measure the relative size of acquirer and the target as the ratio of the deal value to the market capitalization of the acquirer.[16] Finally, we measure the age (in years) of CEOs at the announcement of the merger as well as their tenure in the current company (in years).

1.2.5 Summary Statistics

After combining the CEO-company panel with the deal sample, we obtain a final data sample of 4,844 M&As between 1990 and 2007. The takeovers are conducted by 1,854 different CEOs. Table 1 shows summary statistics. Panel A summarizes CEO statistics. We observe that most CEOs undertake multiple acquisitions. The average number of deals per CEO is 2.61, with a median of 2. We will later exploit this fact in order to exclude some alternative explanations by estimating CEO fixed effecs. The key variable in our analysis is industry experience. In our sample, the average CEO has worked for 2.61 different companies in a top management position before joining his current company (the bidder), on average. Analyzing the industry experience of CEOs, we find that a CEO worked in 1.67 different industries (using the Fama-French 12 classification) on average. The very large majority of CEOs in our sample is male (more than 99 percent) - that is why we take the liberty of using "he" when referring to a CEO. The average age is 62 years (as of 2008) and the average tenure 13.8 years within the company.

Panel B presents descriptive statistics for implemented deals. The fraction of diversifying mergers remains quite stable over the years (about 75 percent non-diversifying and 25 percent diversifying). Panel C shows that out of all diversifying acquisitions, about 16.5 percent are conducted by CEOs who have previously worked in the industry of the target.[17] We observe most of the companies buying other companies multiple times (panel D).

Panel E presents summary statistics on deal specific characteristics. In most cases the relative size of the target is less than 9 percent of the acquirer's size

[15] See data appendix for the definition of all variables.

[16] A large fraction of the targets is private and data on market value are not available.

[17] Considering all positions (not only top-management positions), about 35 percent of the CEOs have worked in the industry of the target before joining the acquiring company.

measured as market capitalization (on average about 24 percent). The fraction of the target's public status (public, private, and subsidiary) is about even for these categories. About 40 percent of the bids are considered to be stock deals, that is, payments where some equity was used to pay off the target. About one third (30 percent) of the deals were exclusively paid in cash.

More detailed information on financial information on the buyer is provided in table 18 in the appendix.

1.3 CEO Industry Experience and Merger Performance

1.3.1 Identification Strategy

In our analysis, we compare diversifying acquisitions where the CEO has prior experience in the industry of the target with diversifying acquisitions where a CEO is new to the industry of the target. We exploit variations in the industry-specific experience of bidding CEOs. Most CEOs in our sample work in more than one industry over their careers. A CEO's industry-specific experience may impact his performance in M&As. For instance, industry experts might be better at running the combined companies, or negotiating with the target. We will discuss potential channels in detail in Section 1.4. The variation in industry-specific experience helps us in three ways. First, industry experience might affect both value creation and value capture in the merger process. Second, as we observe the full past experience profile of the CEOs, we can differentiate between general cross-industry effects and industry-specific effects. Third, industry experience also varies within CEOs. This allows us to control for unobserved CEO heterogeneity and to rule out many alternative explanations.

As we only observe mergers that are announced, the estimated effect of CEO industry experience on merger performance could be due to selection. This means, that CEOs with experience might choose only "good" targets for instance. Indeed, industry experience not only has a direct but also an indirect effect on the outcome of the acquisitions. These two effects are part of our analysis and explicitly integrated in our framework. In our analysis, we show that industry experience affects the composition of deals that are implemented.

Research studying the effect of CEOs on corporate decisions suffers from selection concerns. Rather than matched randomly with companies, CEOs are chosen by the board of directors. Industry experience might be a criterion for the appointment of a particular CEO. In the case of acquisitions, one concern is that a firm with acquisition opportunities in a particular industry might hire a CEO with expertise in that industry. In that case, endogenous matching could potentially explain our results or at least bias the findings. However, we provide several pieces of evidence supporting the view that endogenous matching is not driving our results.

1.3.2 Baseline Results. Do Industry Experts Perform Better?

Analyzing diversifying acquisitions by CEOs with and without top-level experience shows that experienced CEOs perform better on average (0.012 vs. 0.004) though the CARs are only weakly statistically different from each other (at the 10% level). Most of the control variables are not statistically distinguishable for the two groups. Exceptions are the performance measure, stock payment, the relative deal size, and the tenure of the CEO. Bidders with CEOs that are experienced in the target's industry tend to have a lower profitability (0.291 vs. 0.359). They tend to use more stock payment (36.9% vs. 29.2%) and the targets are relatively larger (33.1% vs. 19.0%). In addition, the CEOs' tenures in their current positions are shorter (5.85 years vs. 14.84 years).

We start our multivariate analysis by investigating whether industry experience helps CEOs perform better when diversifying. Specifically, we compare the average abnormal returns of diversifying acquisitions for CEOs with prior work experience in the industry of the target with the average abnormal returns of otherwise similar acquisitions where the CEO has no experience in the target industry. In order to assess the effect of CEOs' industry experience, we estimate the following regression equation:

$$CAR_{ijk} = \alpha_1 + \alpha_2 ExpTA_{ik} * div_{jk} + \alpha_3 div_{jk} + \alpha_4 X_{jk} + \alpha_5 Y_{jk} + \alpha_6 Z_{ijk} + \varepsilon_{ijk}, \quad (1)$$

CAR_{ijk} stands for the three-day cumulative abnormal returns[18] of the merger between bidder j and target k conducted by CEO i. The dummy div is equal to 1 if the transaction is diversifying and $ExpTA$ is the measure of experience in the target's industry defined above. Note that by construction $ExpTa$ is only defined for diversifying mergers. Therefore, we only include $ExpTa$ for diversifying mergers in our regression equation by interacting it with the dummy for diversifying acquisitions. This also means that we cannot include the main effect of experience in our regression as it is perfectly collinear to the constant, the diversification dummy, and $ExpTA$.

The coefficient of interest is the interaction term α_2 between diversifying mergers and experience. If industry-specific experience in the target's industry is beneficial for diversifying mergers, we expect the coefficient to be positive.

We retain non-diversifying acquisitions in our analysis as they help us estimate

[18] In table 16 in the appendix, we conduct a robustness check by using a larger event window of eleven days.

the coefficients of the control variables.[19] The variables X_{jk}, Y_{jk}, Z_{ijk} used in cross sectional merger analyses are deal, company, and CEO-related controls respectively. The set of controls X_{jk} includes the relative size of the acquirer and the target, method of payment, as well as the public status of the target. Firm specific characteristics Y_{jk} control for the size of the acquirer, Tobin's Q, free cash flow, leverage, and profitability. Since experience is correlated with age, we control for age, age squared, tenure, and tenure squared in the set of variables Z_{ijk} as in the empirical literature on wages. Harford (2005) shows that mergers occur in waves and they are clustered within industries. Therefore, we include year, industry, and year-industry dummies in all of our specifications. Finally, we account for cross-sectional correlation of stock returns by allowing for clustering at the level of the announcement date.

In column (1) of table 2, we estimate the model without any controls. The difference between acquisitions with and without top-management experience in the target industry is 0.7 percentage points.[20] In column (2) we include only year-industry dummies but no further controls. Having a CEO with top management experience in the target's industry is associated with 1.2 percentage points higher abnormal returns on average compared to a CEO without experience in the target's industry. The coefficient on the experience-diversifying interacted term is significant at a 10% level. The coefficient on diversifying is small and not different from zero. In column (3) we repeat this exercise by including bidder, deal, and CEO controls. The effect of experience is slightly higher (1.3 percentage points) and significant at a 5% level. Given an average abnormal return of 0.5 percentage points for diversifying acquisitions and an average market value of about \$8,000M, this effect is large both in relative and in absolute terms. The controls in the cross-sectional analysis have expected signs but most of them are not significantly different from zero (confirming earlier studies). The three consistently significant controls are the type of payment, size, leverage, and having a publicly listed target. Paying with equity and being large are, on average, viewed less favorably by the market. These results are consistent with previous empirical studies.[21]

1.3.3 Identification Concern I: CEO Unobserved Heterogeneity

In our analysis, we are interested in the causal effect of industry experience on merger performance. Ideally, we would like to compare outcomes for the same CEO, once

[19] In table 17 in the appendix, we conduct a robustness check by using a sub-sample of only diversifying acquisitions. In section A.3, we also estimate the models for specialized firms and conglomerates separately in order to address misclassification concerns.

[20] The coefficient is of similar size as an unreported univariate comparison of only diversifying acquisitions with a difference of 0.8 percentage points.

[21] Shleifer and Vishny (2003) build a model where overvalued bidders lock in real assets which is empirically tested by Ang and Chen (2006). Moeller, Schlingemann, and Stulz (2005) find that small companies outperform large ones in mergers.

with and once without experience in the target industry. Our closest counterfactual is to observe the same CEO undertaking two acquisitions: one acquisition without experience in the target industry, and one with experience. This allows us to include CEO fixed effects controlling for some unobserved CEO heterogeneity and hence, to rule out many alternatives. A key concern might be that the measure of industry experience is correlated with omitted CEO characteristics that bias our findings. For instance, only CEOs who are less talented might buy companies in industries in which they never worked before. Moreover, having industry experience in the target industry when diversifying means that the CEO has worked in at least one other sector before. Hence, we might capture the effect of general skills. By this we understand skills that are transferable across different industries, but not specific to the industry of the target. Both alternative hypotheses would imply that we might just capture a spurious effect in our analysis or estimate a biased effect.

CEO Fixed Effects An advantage of our setting is that we are able to observe within-CEO variation. This means, we observe CEOs acquiring multiple firms, some in industries in which they have prior work experience in, and others from industries that are unknown to them. This allows us to include manager fixed effects that help identify the causal effect of industry experience on acquisition performance. Indeed, the fixed effects control for unobserved but fixed heterogeneity across CEOs such as general ability, generic managerial skills or the talent for diversifying acquisitions. In order to absorb unobserved CEO characteristics that might be correlated with experience we estimate a model where CEO-specific effects f_i measure unobserved CEO heterogeneity:

$$CAR_{ijk} = \alpha_1 + \alpha_2 ExpTA_{ik} * div_{jk} + \alpha_3 div_{jk} + \alpha_4 X_{jk} + \alpha_5 Y_{jk} + \alpha_6 Z_{ijk} + f_i + \varepsilon_{ijk}, \quad (2)$$

Note that the CEO related variables in Z_{ijk}, namely, age at the day of the announcement and tenure in the current firm, are time-varying and therefore not dropped in this estimation. We restrict our sample to CEOs who conducted at least two diversifying acquisitions. Further, we require that the CEOs have experience in the target industry in one of the acquisitions, but not in the other. Applying these filters narrows the sample to 470 acquisitions conducted by 213 different CEOs. Table 3 column(1) presents the results of our regression analysis.

The effect of having top-level experience is positive (3.1 percentage points) and significant at a 5% level. These results are not driven by unobserved CEO characteristics correlated with industry-experience itself, and provide further confidence for a causal interpretation of our findings. Absorbing unobserved CEO heterogeneity helps exclude various competing explanations that might bias our estimated effect of industry experience. These alternative explanations include CEO ability, general

management skills, and the ability to run diversifying companies as discussed in the motivation for this fixed effect specification. Moreover, it also addresses the concern that CEOs with experience in the industry of the target have a higher general talent for diversifying acquisitions or better financial experience that allows them to perform better. Running the fixed effects regression is the closest substitute for an experimental setting and therefore, it is the test that gives us the highest confidence. A drawback of this test is that it restricts the sample size as it allows us to run the test only on a subsample.

However, in the following paragraphs we aim to exclude some of the competing explanations exploiting the complete sample. We test for general management skills (across industries and firms).

General Cross-Industry Skills The positive effect of experience in the target industry may merely be capturing the effect of having work experience in multiple industries. Being experienced in the target industry in a diversifying merger necessarily means that the CEO has worked in at least two different industries including the current one. Skills beneficial for successfully diversifying might be therefore related to general cross-industry skills and not necessarily to the industry of the target. In order to discriminate between the benefits of experience related to the target industry and general experience in different industries, we estimate two alternative models. First, we analyze whether experience in any other industry has a similar positive impact on abnormal returns for acquiring shareholders. Second, we include experience in any other industry to our original regression as a further control (equation 2) and check whether the effects of experience in the target's industry persist. Table 3 presents the results.

Column (2) shows the sole effect of having top-level experience in multiple industries when undergoing a diversifying merger. The effect is small in absolute terms and it is statistically not distinguishable from zero. This means that work experience in industries unrelated to the target industry does not explain our results. In column (3) we add the variable top experience in the target industry as a further control. The effect of having experience in the target industry on the acquisition performance is still large and consistent with the previous results. The average abnormal return of a CEO with experience in the target's industry compared to a CEO who is generally experienced in different industries is 1.6 percentage points. The effect is significant at a 5% level. Overall, these results suggest that it is experience in the particular industry of the target that matters for the performance and not more general cross-industry experience.

We repeat this analysis by considering experience in other companies instead of other industries. Column (4) presents the results of the model using experience in any other company, irrespective of the industry. We find no evidence that working

for other companies in the past generates abnormal returns for the acquirer. Column (5) shows the results for top experience in the target's industry as a further control. Similarly to our main specification, industry experience increases cumulative abnormal returns around the merger announcement by approximately 1.3 percentage points. The coefficients are precisely estimated (at a 5% level) and are similar to the effects when controlling for general industry experience.

1.3.4 Identification Concern II: Endogenous CEO-company Matching

CEOs and companies are not matched randomly. Instead, CEOs are chosen by the board of directors. Industry experience might be a criterion for the appointment of a particular CEO. A concern is that endogenous matching could potentially explain our results or at least bias the findings. In the following, we provide several pieces of evidence supporting the view that endogenous matching is *not* driving our findings. The main arguments can be summarized as follows: First, we exploit the fact that mergers occur in waves clustered by industry. We use merger waves as quasi-exogenous events triggering acquisitions (see table 4). Second, under the selection hypothesis one would expect the transaction to occur shortly following the CEO's appointment. We do not find that the likelihood of a CEO with experience in the target industry doing an acquisition is higher for more recently hired CEOs (see table 5). We also find no evidence that recently hired CEOs outperform CEOs who have been in a company for longer (see table 6).

Merger Waves as Exogenous Shocks Previous research by Mitchell and Mulherin (1996) and Harford (2005) shows that mergers and acquisitions occur in waves, and within a wave they cluster strongly by industry. These waves might be triggered for instance, by technological innovation or supply shocks. Assuming that these shocks and the need to acquire are less likely to be foreseen by the board of directors when appointing a new CEO, we build a subsample of mergers where the bidder comes from an industry that is hit by a merger wave at the date of the announcement. We define an acquisition being part of a merger wave if the announcement date of the merger is between 6 months before and 6 months after the date of a merger wave and the industry of the bidder corresponds to the affected industry (as identified by Harford (2005)). We further exclude waves that are due to deregulation as these waves are likely to be expected by the firms. By applying this definition we identify 677 mergers that are involved in a merger wave. Table 4 presents the results. Experience of the CEOs is positive and significant (at a 10% level) for top-level experience within and outside merger waves supporting the view that it is not selection that is driving our results. Moreover, the effect s is stronger

within a wave (2.4 vs. 1.1 percentage points) suggesting that experience is more valuable in unexpected situations.

Timing and Acquisitions with Experience If a company hires an experienced CEO to conduct an acquisition, we would expect an announcement about the intent to acquire shortly after the appointment. We therefore estimate the probability of making a diversified acquisition and having an experienced CEO as a function of CEO tenure. The dependent variable is a dummy that is equal to 1 if the CEO has previous experience in the target's industry. Our covariates consist of a set of dummy variables for different years of the CEO's tenure. If companies appoint experienced CEOs in order to execute an acquisition for them we would expect to observe higher coefficients on the dummies for recent hires. We use OLS as well as probit estimation. Column (1) and (2) of table 5 present the results using OLS and probit respectively. There is no monotonic relationship between the probability of observing an experienced acquisition and the appointment of the experienced CEO. These findings support the view that industry-experience in connection with acquisitions considerations play a minor role when appointing a CEO.

Timing and Returns As a further robustness check we analyze returns directly. If selection is driving the results we would expect the positive abnormal returns to be generated by recently appointed CEOs. We therefore interact the experience measure with dummies reflecting the relative year of the appointment. Table 6 shows that there is no monotonic relationship between the appointment of experienced CEOs and abnormal returns. When precisely estimated, the returns are positive and at similar levels (between 2.7 and 3.9 percentage points for CEOs appointed 3, 6, or 8 years before the acquisition). The coefficients on other years are not statistically different from zero. Overall, the findings suggest that selection cannot explain the positive returns of experienced CEOs, reinforcing the view that industry experience is generating them.

1.3.5 Alternative Specifications

We also test alternative specifications of industry experience. The main findings can be summarized as follows. First, the effect of industry experience on merger performance is larger for experience that is more closely related to the industry of the target (in terms of industry classification, see table 7). Second, top-management experience is more important than low-ranked experience (see table 8). Third, experience that was acquired more recently is more beneficial (see table 9). Fourth, the effect CEOs' experience is higher in firms that are more specialized, suggesting that the CEO experience is more valuable if it is more "exclusive" (see table 15).

Relatedness of the Industry In our baseline setting, we use the same level of industry classification (Fama French 12) to define diversifying acquisitions and industry experience of the bidding CEOs. While we would like to have a very broad measure to classify a diversifying takeover, we actually want to have a precise measure for experience. However, using the broad classification on experience delivers a fraction about 16 percent of the deals where the CEOs are experienced. The narrower we are when defining experience, the smaller the number of observations of acquisitions conducted by industry expert CEOs. Consequently, we do not observe enough variation anymore. We therefore define a weighted measure of experience as follows:

$$ExpTA(weigthed) = \begin{cases} 4, & \text{for CEO has experience in the same FF48 industry} \\ 3, & \text{for CEO has experience in the same FF30 industry} \\ 2, & \text{for CEO has experience in the same FF17 industry} \\ 1, & \text{for CEO has experience in the same FF12 industry} \\ 0, & \text{for CEO has no experience in the target industry} \end{cases} \quad (3)$$

The results of the corresponding regression are reported in table 7. In line with our previous results, the coefficient is positive (0.8%) and significant. The magnitudes are similar to our previous findings and suggest an effect of 0.8-3.2 percentage points depending on the narrowness of experience.

Relevance of the Position Managers might have better opportunities to accumulate industry-specific skills and knowledge in high level positions compared to low-ranked positions. A possible explanation is better access to information and involvement in strategic tasks. In table 8 we analyze broader measures of experience. In specification (1) we consider all previous positions in the target industry, irrespective of the level. As expected, in that specification, the effect is smaller (1.0 percentage points), though still significant. Moreover, we run a placebo test where we analyze the impact of experience that is likely to be unrelated with the industry in the firm. Examples are low-ranked jobs like office workers or interns as well as non-business positions (for example, web programmer working for a car maker). Experience that is unrelated to the business, or carries a lower level of decision-making power or less information access does not help to perform better when acquiring a new segment. The effect is 0.4 percentage points and not distinguishable from zero. However, we might also capture only a time effect as most of the low-ranked experience probably comes from the early stage of the career (see our alternative measure of experience that accounts for the recentness of the experience). In this setting we are notable to differentiate these two effects.

Recent Experience and Tenure As industries adapt to technology or changes in the market, it is interesting to analyze how the value of experience changes with the recentness of experience. Therefore, we look at two alternative measures of experience that incorporate a time component. We consider an experience to be 'recent' if it was gained in the last 10 years before the merger was announced, and to be 'old' otherwise. Second, we refine this measure by sub-classifying the recent experience into experience gained within the last 5 years and experience gained between 6 and 10 years before the announcement of the acquisition. Table 9 reports the results. Columns (1) and (2) show the effect of top-level experience for the two alternative measures. The results suggest that experience diminishes over time and only rather recently gained experience helps to perform better when diversifying. The first specification shows very strong and statistically significant effects of having experience (2.0 percentage points) in the 10 years before the acquisition. The coefficient of old experience is small and not distinguishable from zero. The finer measure of recentness in specification (2) yields similar results. Recent experience matters more; the impact peaks for experience gained between 5 and 10 years before the acquisition. However, the two coefficients on recent experience are not statistically distinguishable from each other. In column (3) we are interested in whether having more experience (in terms of tenure) matters. We split the experience dummy by tenure, distinguishing between tenure of less than 5 years and more than 5 years. The estimated coefficient are exactly of the same magnitude (1.3 percentage points) suggesting that there is no linear effect in tenure.

1.4 Value Capture or Value Creation?

1.4.1 Potential Channels

When buying a company, relevant industry experience of a CEO may add value in different ways.

1. Target selection: In the selection process of a potential target, an experienced CEO might have a superior overview of the market environment including competitors, customers, and suppliers. Moreover, industry-specific knowledge of financial statements, being important inputs to the decision making process, might be important.

2. Negotiation: The access to information, the processing of those, or other advantages of being an industry expert might be valuable when negotiating with the target. Since one party has an informational advantage in an acquisition, the informed party (the target) has an incentive to cheat the uninformed party (the acquirer) into believing that the available surplus is smaller than it really

is. Here, the level of experience might affect the bargaining power of both parties.

3. Integration: Experience might be beneficial in the post-deal stage when integrating and running the two companies. This is particularly true if the organizational design and the operations are specific to each of the industries. Knowledge of both industries could facilitate coordination of the two organizational designs. Moreover, experience in the target's industry might be beneficial for running the company in case management is partly industry-specific.

We formalize these mechanisms through which industry-specific experience potentially operates. We differentiate between two main channels: value creation and value capture. We aim to derive testable hypotheses that allow us to discriminate between the different mechanisms of how industry experts add value for their shareholders. We employ a simple two-stage game theoretic framework that captures the main steps of the acquisition process: the choice of the target and the bargaining between bidder and target. We nest the two channels through which experience might operate within our model. We show that these channels lead to different predictions for the effect of industry experience on announcement returns to different shareholders (bidder and bidder-target combined), and the size of the premium paid.

In our regression analysis, we look at the impact of CEO industry experience on the performance of acquisitions. We compare the returns (that go to different shareholders) of acquisitions where the CEOs has experience in the target industry with those of acquisitions where the CEO is new to the target industry. In other words, we look at the difference between the averages of acquisitions with and without CEO experience in the target industry. In the analysis, using the analytical framework, we aim to reproduce the regression setting. Therefore, we define the differences in the returns between industry expert CEOs and CEOs that are new to the target industry to the acquiring (AC) shareholders Δ_{AC}, to the target (TA) shareholders Δ_{TA}, and to both acquiring plus target shareholders (AC+TA) as Δ_{AC+TA}.

Theorem 1 *Consider that industry experience is operating through V and β, i.e. V and β are increasing functions of $ExpTA$.*

1. Δ_{AC} *is positive and* increasing *in the value creation ability V and in the value capturing ability β of an industry expert CEO.*

2. Δ_{TA} *is* increasing *(*decreasing*) in the value creation ability V (value capturing ability β) of an industry expert CEO.*

3. Δ_{AC+TA} *is* increasing *(*decreasing*) in the value creation ability (value capturing ability β) of an industry expert CEO.*

Intuition First, both value creation and value capture ability are beneficial for the bidding company. However, depending on the draws from the two groups, it might be still beneficial to go for a company that does not come from the set of expertise of the CEO. This means that we observe both, acquisitions with and without CEO experience in the target industry.

Second, both value capture and value creation have non-negative effects for the acquiring shareholders. This is trivially given as in both cases the bidding CEO is maximizing shareholder value of the acquirer.

Third, the negative effect of experience on the average surplus is non-causal but due to the selection of a different set of deals. Having a stronger position in the bargaining stage directly affects the sharing rule of the surplus between bidder and target, but it also indirectly affects the composition of deals that are announced, and which are therefore in our sample. CEOs who anticipate securing a higher fraction of the surplus are willing to engage in acquisitions with a lower total surplus. Indeed, the returns to bidding shareholders increase -other things equal- both in the surplus and in the fraction they can secure. The CEOs therefore substitute higher surplus with higher bargaining power. Value creation also leads to a different set of implemented acquisitions. However, as the CEO adds value, there is no negative net-effect.

1.4.2 Premiums Paid to the Target and Relative Gains

About one third of the targets in our sample are publicly listed companies, allowing us to analyze the mechanism by looking directly at the premium paid. The offer premium is defined as the premium of the offer price over the share price of the target one day or one week before the announcement. In most cases the final price corresponds to the offer price but in some cases the price has to be adjusted. We therefore also look at the final price premium which is the premium of the final paid price.[22]

Table 10 shows the results. The effect of experience on the premiums is negative. In all of our four specifications we observe a significant negative effect of experience on the premium between 7.4 percent and 9.7 percent. This effect is large as the average premiums are between 34 percent and 39 percent. This means that a CEO with industry experience is paying a lower premium compared to a CEO who is new to the industry. This finding is consistent with allowing industry experts to extract a larger fraction of the surplus. Part of this effect might be also attributed to experienced CEOs undergoing lower value acquisitions on average.

Last, we analyze directly the relative gain of the target versus the acquirer for

[22]Note that Officer (2007) proxies for the premium/discount for unlisted targets by approximating it with the premium of otherwise similar public transactions. However, we cannot use his method as we are interested in the idiosyncratic part of the return or premium.

each dollar of the market value. We would like to compare the percentages of the total dollar returns of an experienced CEO with a CEO who is new to the industry. As announcement returns can be negative, we follow Ahern (2010) and construct the measure as follows. We calculate the difference in dollar gains between the target and the bidder, normalized by the sum of the acquirer's and target's market cap 50 trading days before the announcement date. Column (3) shows that the target's relative gains relative to the acquirer decrease with the industry experience of the bidding CEO. This finding is consistent with the hypothesis that experienced CEOs bargain better and secure a larger fraction of the surplus for their shareholders than CEOs who are new to the target industry.

1.4.3 Combined Announcement Returns

For publicly listed targets, we can analyze the effect of experience on the returns of both the acquirer and the target. We collect prices and data on the market capitalization of the target from CRSP. We obtain the announcement return (CAR) on the combined companies by calculating the market-cap weighted average of the individual announcement returns of acquirer and target. The combined CAR can be interpreted as a measure for the surplus created by the acquisition - or in other words, for the perceived synergies by the market. As before, we regress the CARs of the combined company on the experience of the CEO with further controls. Table 11 presents the results. The dummy on whether an acquisition is diversifying for the combined company in column (1) is large and negative (-2.2 percentage points). This supports the view that diversifying mergers and acquisitions create fewer surpluses on average. Interestingly, we do not find evidence that experienced CEOs are better at creating surplus. The effect of industry experience on the combined return is large and negative but not precisely estimated. In line with the model, our interpretation of this coefficient is as follows. Being stronger in the bargaining stage has not only a direct but also an indirect effect on merger performance. While it directly affects the sharing rule of the surplus between bidder and target, it also affects the composition of deals that are announced, and which are therefore in our sample. A CEO who anticipates securing a higher fraction of the surplus is willing to engage in acquisitions with a lower total surplus. Indeed, the returns to bidding shareholders increase both in the surplus and in the fraction they can secure. The CEOs therefore substitute higher surplus with higher bargaining power. As we are restricting our sample to public targets only, we want to ensure first that our sample is comparable to the full sample. Column (2) shows that the returns to the acquirer are very similar if the CEO has top-management experience (2.0 percentage points).

1.4.4 Accounting Performance

As announcement returns only reflect expectations of the market we also look at an ex-post measure of performance. The ratio of earnings before interest and taxes to total assets (EBIT/assets) is used as a measure of operating performance (ROA). Since the ROA may be affected by industry-wide factors, it is industry-adjusted by subtracting the median value of the same measure for all firms in the same primary Fama-French F12 industry as the bidding firm. We then estimate an AR(1) model using the post-merger industry-adjusted three-year average ROA as the left-hand-side variable, with the pre-merger corresponding measure as the right-hand-side variable. The AR(1) model takes into account the possibility that pre-merger operating performance may predict post-merger operating performance. The residual from the above regression is our measure of the abnormal change in ROA (ΔROA). As reported in table 11 in column (3) we find the effect of experience on the profitability to be (weakly) negative. The negative coefficient is of a similar magnitude as the coefficient on the combined returns though not significant again.

1.4.5 Interpretation

The analytical framework shows that returns to both bidder and bidder plus target are increasing in the value creation ability. However, this is no longer true for the value capturing ability. While the returns to the bidder are increasing in β, the combined returns are decreasing in the bargaining power. We conclude that the existence of value capturing is necessary for explaining our findings.

In general, the effects of value capture and value creation are not mutually exclusive. It is possible that experienced CEOs increase surplus and, at the same time, negotiate better terms. However, by analyzing the combined return to bidder and target, as well as accounting performance, we do not find evidence that experienced CEOs are better at creating surplus. Instead, the average effects are negative. Moreover, we find that experienced CEOs pay a smaller premium.

Bargaining also provides a rationale for the - at first sight - counter-intuitive finding of the negative effect of industry experience on the proxies for the surplus creation. Anticipating securing a higher fraction of the surplus makes an experienced CEO to engage in acquisitions with a lower total surplus at first.

Overall, our results suggest that experienced CEOs bargain better, as they secure a higher fraction of the surplus for their shareholders. We cannot exclude that experienced CEOs do also create more value. However, we find that there must be a bargaining effect and that this effect is relatively large compared to the value creation effect.

1.5 Heterogenous Effects

In this section, we would like to provide further supportive evidence for the bargaining channel. We do so by identifying situations or environments where industry experience is more likely to affect the bargaining power of CEOs but less their ability to create value. Exploiting heterogeneity along that dimension we then analyze whether industry experience is indeed more valuable in these situations. As already suggested, one potential reason why industry experience increases bargaining ability is based on information. Being an industry insider helps to better estimate the true value of the takeover. Following this intuition, we expect the value of being an industry insider to be higher in scenarios where informational asymmetries would be high otherwise. First, we compare public and private targets. Private companies have to disclose less information, and information asymmetries are arguably higher between these companies and potential buyers. We exploit the variation of the interaction between CEO industry experience and target public status. Second, we exploit heterogeneity across targets' industries. We use different proxies for informational asymmetries at the industry level (R&D intense industries and industries with a high level of intangibles). Moreover, we also analze whether the value of experience depends on the way the target is sold. We differentiate between bilaterial negotiations and auctions.

1.5.1 Public Status

One source of information asymmetries is the public status of the target. We differentiate between three different types of targets: publicly listed companies, private companies, and subsidiaries. Private companies have to disclose less, and information asymmetries are arguably higher between these companies and potential buyers. If industry-specific experience is valuable for bargaining, we expect experience to be relatively more important in environments with high informational asymmetries. This is supported by our findings in table 12. Column (1) shows that experienced CEOs are able to generate 2.9 percentage points higher abnormal returns compared to non-experienced managers if the target is a private company. The effect of experience is positive but smaller and less precisely estimated for public and subsidiary targets, suggesting that the advantage of experience is smaller (or even nonexistent) when information is easily accessible and available.

1.5.2 R&D Intensive Industries and Intangibles

We employ additional proxies for information asymmetries between the target and potential buyers. In the columns (2) and (3) of table 12 we split the industries of the target along high vs. low R&D and high vs. low intangibles industries. These dimensions have been frequently used in the literature to proxy for informational

asymmetries.[23] We calculate average R&D expenditures and intangibles across industries over the full horizon (1990-2007) of our sample and split the industries along the median in high and low R&D / intangible industries. Confirming the results from our previous analysis (public status of the target), experienced CEOs are able to generate large and positive CARs if the target is from an industry with arguably higher informational asymmetries. The effect is about 1.9 percentage points and 1.7 percentage points for high R&D and high intangibles industry targets.

1.5.3 Auction vs. Bargaining

As measured by the number of bidders that publicly attempt to acquire a target, the takeover arena appears noncompetitive. Boone and Mulherin (2007), however, provide novel data on the pre-public, private takeover process that indicates that half of the targets are auctioned among multiple bidders, while the remainder negotiate with a single bidder. We expect CEOs' bargaining skills to matter more in one-to-one negotiations with the target company. In auctions, where the idendity of the competitors is unknown, it is unclear if a CEO is able to benefit from his expertise as bidding a lower price (i.e. less overpaying) is likely to decrease the probability to win the auction. We employ data on the selling-process of the target company which are generously provided to us by Aktas et al. (2010). They follow Boone and Mulherin(2007) and analzye the merger background section of the SEC filings 14A and S-4 for mergers and 14D for tender offers: A merger is classified an auction if multiple potential bidders are mentioned and a negotiation when there is only a single buyer.

We then analye the effect of CEO industry experience on bidders' CARs in auctions and negotiations in table 13. We only have information on the selling process available on 1,014 mergers. We therefore run our baseline regression on this subsample. Column (1) reports the result. The coefficient on experience is very similar (1.7%) to our baseline regression though less precisely estimated. In column (2), we include the dummy variable and its interactions on whether the merger was negotiated. Consisten with our hypothesis, we find that industry expertise greatly matters if the merger is negotiated in a one-to-one setting. If there is a bargaining between bidder and target the estimated coefficient is 4.6%, while it is literally zero in auctions.

[23] See Abody and Lev 2000 for instance.

1.6 Interpretation of the Findings

1.6.1 Summary

In the previous sections, we have shown that industry-experts CEOs are able to generate higher abnormal returns for their shareholders. We provided evidence that industry expertise allows the bidding CEOs the secure a larger fraction of the surplus that is created in the merger. They pay a lower premium and they engage in lower surplus deals on average. We argued that this is consistent with industry experts being able to negotiate better deals. Anticipating that they will be able to secure a larger part of the surplus, they are willing to accept lower value deals on average. We also showed that industry expertise is particularly valuable in scenarios of high-information asymmetries and when deals are negotiated one-to-one (in contrast to auctions).

1.6.2 Ex-ante vs. Ex-post Effect

We argue that our empirical analysis provides evidence for 'value capturing' as the channel through which industry experience operates. However, we can not differentiate between ex-ante and ex-post effects. This means that our findings are consistent with both of the following explanations. i) Industry-experts are better at bargaining per se, i.e. for a given potential merger, they are better at negotiating terms. ii) Industry-experts are better at identifying weak bargaining partners (e.g. partners with less outside options).

1.6.3 Experience: Knowledge vs. Connections

Working in a certain industry might affect the industry-specific human capital of an executive in different ways. First, it can directly affect his understanding of a certain industry ('*knowledge*'). He might gain superior, industry-specific insights that are related to the market environment, business models, competitors, suppliers, valuation, capital structure, etc. Secondly, work experience in a certain industry does also affect the connections to an industry of a CEO. For instance, an industry insider might have worked for the target company or he might have appointed executive or non-executive directors that have links ('*connections*') to the target company who are beneficial when implementing a deal.

Both '*knowledge*' and '*connections*' are part of the human capital of a CEO and it is not clear if (or why) we should differentiate between these two different dimensions of the human capital. However, we have several pieces of direct and indirect evidence that speak in favor of the knowledge-dimension of the human capital.

We observe 5 cases where the CEO has personal connecttions with the target company as he is a former employee of that company. As we do not observe enough variation along this dimension we can not apply rigorous econometric methods for a further analysis. However, just comparing the means we do not find evidence that these 5 cases are more favorable for the bidding shareholders. Moreover, excluding these cases leaves our main analysis completely unchanged.

Social ties between the acquirer and target might be correlated with the industry experience of the CEO. For instance, a CEO might appoint his old business partners from his former industry as executive or non-executive directors. These directors might be beneficial for negotiating terms of the deal in case of acquisitions. However, we present two pieces of evidence that speak against this hypothesis as they both document *negative* effects of connections between bidder and target on the returns to the bidder. Ishii and Xuan (2010) investigate the effect of social ties between acquirers and targets on merger performance. Using data on educational background and past employment, they find that between-firm social ties have a significantly *negative* effect on the abnormal returns to the acquirer. Similarly, Rousseau and Stroup (2011) show that historical interlocks between bidder and target do not affect excess returns accruing to the acquirer, but this is not the case for contemporaneous interlocks, which are associated with returns that are 2.6 percent lower. They argue that this is consistent with market participants associating contemporaneous interlocks with an increase in the potential for conflicts of interest.

1.7 Conclusion and Outlook

Analyzing mergers and acquisitions, we show that value capture is an important dimension of CEO activity and that the ability to bargain differ amongst CEOs and situations. We find that this ability is correlated to the specific experience profile of the bidding CEO. In particular, we show that CEOs who previously worked in the industry of the target generate two to three times higher abnormal announcement returns for their shareholders compared to CEOs who are new to the target industry. Moreover, we provide evidence that capturing a bigger fraction of the surplus (rather than creating more surplus) is an important determinant for explaining our findings. Experienced CEOs pay a lower premium and they engage in low value acquisitions on average. This is optimal for them as they rationally expect to capture a larger fraction of the surplus when bargaining with the target. Moreover, the value of being an industry insider is particularly high in environments of high information asymmetries. We also show that the benefits of industry expertise on the bargaining outcomes are higher in bilateral negotiations (compared to auctions).

Though there is evidence that bargaining is important for other corporate deci-

sions[24], there is not yet further evidence that the CEO dimension matters in other situations as well. Hence, it might be interesting to analyze related scenarios. For instance, using the experience profiles of CEOs (as we do in this study) in combination with input-output tables, one could analyze how CEO experience affects the rent-sharing with customers and suppliers.

[24](See Simintzi, Vig, and Volpin 2010) and Hennessy and Livdan (2009) for instance.

A Appendix

A.1 Tables

Table 1: Descriptive Statistics

Panel A shows the experience and characteristics of CEOs. Age is measured in Dec. 2008. The variable work experience counts the number of different companies and industries for which CEOs worked in a top management position (CEO, CFO, COO, Chairman, President, Division CEO, Division CFO, Division Chairman, Division COO, Division President, Head of Division, Regional CEO, Regional CFO, Regional President). Merger experience is the number of mergers that are conducted by a CEO within our sample.
Panel B displays the distribution of all acquisitions and diversifying ones over time. We define an acquisition to be diversifying if acquirer and targer are from different Fama-French 12 industries.
Panel C shows the fraction of diversifying acquisitions where the bidding CEO has prior work experience in the industry of the target. *Panel D* presents the number of acquisitions that are undertaken by an average company in the sample.
Panel E illustrates deal characteristics. The transaction value (TV) is the total value of consideration excluding fees and expenses. The public status of the target can take values (private, public, subsidiary). The relative size is the ratio of deal value and the market cap of the bidder. Stock deal is a dummy equal to 1 if there are stocks in the consideration package, and all-cash deal is equal to 1 if the whole acquisition is paid in cash. Percentage Cash/Stocks/Others denote the respective fraction on the consideration. Contested bid is a dummy equal to 1 if there is at least one company challenging the bidder.

Panel A: CEOs

	mean	**median**	**N**
Age	61.89	62	1854
Male	96.61%		1854
# Industries	1.67	1	1854
# Companies	2.61	2	1854
# Mergers	2.61	2	1854

Panel B: Mergers

Years	**All**	**div.**	**Frac.**
1990-1994	618	151	24.43%
1995-1999	1722	427	24.80%
2000-2004	1622	382	23.55%
2005-2007	882	233	26.42%
1990-2007	4844	1193	24.63%

Panel C: Mergers and Industry Experience

	mean	**N**
Mergers with exp.	16.51%	1193

Panel D: Company Experience

	mean	**median**	**N**
# Mergers	3.37	2	1438

Panel E: Deal Characteristics

	mean	**median**
Transaction value	970.08	200.00
Relative Size	23.75%	8.83%
TV/Assets	13.76%	4.75%
TV/Equity	23.75%	8.82%
Private Target	32.11%	
Public Target	35.59%	
Subsidiary T.	31.68%	
Stock Deal	40.95%	
All-Cash Deal	30.07%	
Percentage Cash	39.31%	
Percentage Stocks	32.56%	
Percentage Other	28.42%	

Table 2: Experience in Target's Industry - Effects on Diversification

This table shows the regression of the mergers' cumulative abnormal stock price returns of the bidder (CAR) on different manager, deal, and company characteristics. The cumulative abnormal returns come from an event study using the Fama-French three-factor model and an event window from one day before the announcement until one day afterwards. TOP experience is a dummy that is equal to 1 if the CEO worked in a TOP position in the target's industry. Bidder and deal characteristics are in the appendix. All regressions include age, age squared, tenure, and tenure squared of the CEO at the date of the announcement of the merger. All standard errors are clustered by event date to account for cross-sectional correlation of stock returns. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variables	*Dependent Variable*		
	CAR		
	(1)	**(2)**	**(3)**
TOP-experience x diversifying	0.007	0.012*	0.013**
	[1.235]	[1.906]	[2.220]
Diversifying	0.004	-0.000	-0.003
	[1.587]	[-0.040]	[-1.109]
Acquiror's size			-0.003***
			[-3.694]
Tobin's q			-0.000
			[-0.887]
Free cash flow			-0.002
			[-0.079]
Cash flow measure			-0.004
			[-0.584]
Leverage			0.030***
			[2.973]
Relative deal size			-0.007
			[-1.529]
Stock deal			-0.007**
			[-2.402]
All-cash deal			0.005**
			[2.011]
Public target			-0.020***
			[-7.192]
Private target			0.001
			[0.264]
Age			-0.002
			[-1.258]
Age square			0.000
			[1.321]
Tenure			-0.000
			[-0.837]
Tenure square			0.000
			[0.860]
Observations	4,844	4,844	4,844
Year x Industry dummies (AC)	No	Yes	Yes
R^2	0.001	0.064	0.097

*** p< 0.01, ** p< 0.05, * p< 0.1

Table 3: CEO Fixed Effects and General Cross-Industry Experience

The table shows the regression of the mergers' cumulative abnormal stock price returns of the bidder (CAR) on different manager, deal, and company characteristics. The cumulative abnormal returns come from an event study using the Fama-French three-factor model and an event window from one day before the announcement until one day afterwards. The analysis on column (1) is only based on a subsample of acquisitions of CEOs who made at least two diversifying acquisitions whereas he is experienced in one industry and inexperienced in the other. This allows us to include CEO fixed effects. In columns (2) and (3) two different measures of experience are presented: TOP experience (TA) is a dummy that is equal to 1 if the CEO worked in a TOP position in the target's industry. TOP experience (other industry) are dummy variables equal to 1 if the CEO has experience in any other industry but the current one (industry of the acquirer). TOP experience (other companies) are dummy variables equal to 1 if the CEO has experience in any other company but the current one. Bidder and deal characteristics are in the appendix. All regressions include age, age squared, tenure, and tenure squared of the CEO at the date of the announcement of the merger. All standard errors are clustered by event date to account for cross-sectional correlation of stock returns. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variables	*Dependent Variable*				
			CAR		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
TOP-exp. (TARGET) x div.	0.031**		0.016**		
	[2.327]		[2.461]		
TOP-exp. (other Ind.) x div.		0.002	-0.004		
		[0.593]	[-0.993]		
TOP-exp. (TARGET) x div.					0.013**
					[2.188]
TOP-exp. (other comp.) x div.				0.003	-0.001
				[0.734]	[-0.217]
Diversifying		-0.001	-0.001	-0.002	-0.002
		[-0.490]	[-0.535]	[-0.642]	[-0.671]
Observations	470	4844	4844	4844	4844
CEO fixed effects	213	No	No	No	No
Year and Industry dummies (AC)	Yes	Yes	Yes	Yes	Yes
Deal and Firm Controls	Yes	Yes	Yes	Yes	Yes
R^2	0.367	0.096	0.097	0.096	0.097

*** p< 0.01, ** p< 0.05, * p< 0.1

Table 4: Merger Waves

This subsample consists only of mergers that were announced during a merger wave. Harford (2005) provides a measure of clustered merger activity that specifies year, month and industry of a merger wave. We define a merger being part of a merger wave if it the acquirer belongs to the affected industry and the merger was announced any time in between 6 months before and 6 months after the date that is identified by Harford. We exclude waves that are due to deregulation. The table shows the regression of the mergers' cumulative abnormal stock price returns of the bidder (CAR) on different manager, deal, and company characteristics. The cumulative abnormal returns come from an event study using the Fama-French three-factor model and an event window from 1 day before the announcement until 1 day afterwards. TOP experience is a dummy that is equal to 1 if the CEO worked in a TOP position in the target's industry. Bidder and deal characteristics are in the appendix. All regressions include age, age squared, tenure, and tenure squared of the CEO at the date of the announcement of the merger. All standard errors are clustered by event date to account for cross-sectional correlation of stock returns. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variables	*Dependent Variable*
	CAR
	(1)
Within Wave: TOP-experience x diversifying	0.024*
	[1.704]
Outside Wave: TOP-experience x diversifying	0.011*
	[1.836]
Observations	4844
Year and Industry dummies (AC)	Yes
Deal and Firm Controls	Yes
R^2	0.097

*** p< 0.01, ** p< 0.05, * p< 0.1

Table 5: Probability of Experienced Merger by Appointment Date

The table shows the regression of the a dummy that is equal to 1 if the merger is by a CEO that is experienced on the appointment of the CEO, different manager, deal, and company characteristics. The cumulative abnormal returns come from an event study using the Fama-French three-factor model and an event window from 1 day before the announcement until 1 day afterwards. TOP experience is a dummy that is equal to 1 if the CEO worked in a TOP position in the target's industry. Bidder and deal characteristics are in the appendix. All regressions include age, age squared, tenure, and tenure squared of the CEO at the date of the announcement of the merger. All standard errors are clustered by event date to account for cross-sectional correlation of stock returns. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variables	*Dependent Variable*	
	P[experience]	
	(1) (LPM)	**(2) (Probit)**
Appointment in t = 0	0.241***	0.896***
	[2.805]	[2.859]
Appointment in t = -1	0.108**	0.486***
	[2.377]	[2.629]
Appointment in t = -2	0.151***	0.630***
	[3.323]	[3.533]
Appointment in t = -3	0.211***	0.812***
	[5.181]	[5.201]
Appointment in t = -4	0.202***	0.786***
	[4.396]	[4.487]
Appointment in t = -5	0.141***	0.599***
	[2.903]	[3.125]
Appointment in t = -6	0.090*	0.419**
	[1.924]	[2.168]
Appointment in t = -7	0.046	0.237
	[0.926]	[1.093]
Appointment in t = -8	0.152***	0.633***
	[2.616]	[2.813]
Appointment in t = -9	0.074	0.360
	[1.208]	[1.392]
Appointment in t = -10	0.060	0.300
	[1.091]	[1.273]
Observations	1240	1240
Year and Industry dummies (AC)	Yes	Yes
Deal and Firm Controls	Yes	Yes
R^2	0.046	.

*** p< 0.01, ** p< 0.05, * p< 0.1

Table 6: Merger Performance by Appointment Date

The table shows the regression of the mergers' cumulative abnormal stock price returns of the bidder (CAR) on the appointment of the CEO, different manager, deal, and company characteristics. The cumulative abnormal returns come from an event study using the Fama-French three-factor model and an event window from 1 day before the announcement until 1 day afterwards. TOP experience is a dummy that is equal to 1 if the CEO worked in a TOP position in the target's industry. Bidder and deal characteristics are in the appendix. All regressions include age, age squared, tenure, and tenure squared of the CEO at the date of the announcement of the merger. All standard errors are clustered by event date to account for cross-sectional correlation of stock returns. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variables	*Dependent Variable*
	CAR
	(1)
Appointment in t=-1 & Top exp. x div.	0.025
	[0.918]
Appointment in t=-2 & Top exp. x div.	0.022
	[1.488]
Appointment in t=-3 & Top exp. x div.	0.032
	[1.578]
Appointment in t=-4 & Top exp. x div.	0.007
	[0.551]
Appointment in t=-5 & Top exp. x div.	-0.010
	[-0.731]
Appointment in t=-6 & Top exp. x div.	0.020
	[1.136]
Appointment in t=-7 & Top exp. x div.	0.011
	[0.529]
Appointment in t=-8 & Top exp. x div.	0.045**
	[2.128]
Appointment in t=-9 & Top exp. x div.	0.014
	[0.372]
Appointment in t=-10 & Top exp. x div.	0.009
	[0.344]
Diversifying	-0.003
	[-1.065]
Observations	4711
Year and Industry dummies (AC)	Yes
Deal and Firm Controls	Yes
R^2	0.102

*** p< 0.01, ** p< 0.05, * p< 0.1

Table 7: Relatedness of the Industry

This table shows the regression of the mergers' cumulative abnormal stock price returns of the bidder (CAR) on different manager, deal, and company characteristics. The cumulative abnormal returns come from an event study using the Fama-French three-factor model and an event window from 1 day before the announcement until 1 day afterwards. TOP experience is a discrete variable that is equal to 4 if the CEO worked in a TOP position in the same Fama-French 48 target's industry, equal to 3 if the CEO worked in a TOP position in the same Fama-French 30 target's industry, equal to 2 if the CEO worked in a TOP position in the same Fama-French 17 target's industry, equal to 1 if the CEO worked in a TOP position in the same Fama-French 12 target's industry, and zero otherwise. Bidder and deal characteristics are in the appendix. All regressions include age, age squared, tenure, and tenure squared of the CEO at the date of the announcement of the merger. All standard errors are clustered by event date to account for cross-sectional correlation of stock returns. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variables	*Dependent Variable*
	CAR
	(1)
TOP-experience (weighted) x diversifying	0.008**
	[2.138]
Diversifying	-0.003
	[-1.186]
Observations	4,844
Year x Industry dummies (AC)	Yes
Industry dummies (TA)	No
Controls available	Yes
R^2	0.097

*** p< 0.01, ** p< 0.05, * p< 0.1

Table 8: Relevance of the Position

In this sample we analyze experience of low hierarchy levels or experience that is unrelated to the actual business of an company. Examples are internships in a particular industry or working as a web programmer in the automotive industry. The table shows the regression of the mergers' cumulative abnormal stock price returns of the bidder (CAR) on different manager, deal, and company characteristics. The cumulative abnormal returns come from an event study using the Fama-French three-factor model and an event window from 1 day before the announcement until 1 day afterwards. Experience in target's industry is a dummy that is 1 if the CEO has experience in the target's industry. Unrelated experience is a dummy that is equal to 1 if the CEO worked in a position that is likely to be unrelated with the industry in the firm. Examples are low-ranked jobs like office workers or interns as well as non-business positions in the target's industry. Bidder and deal characteristics are in the appendix. All regressions include age, age squared, tenure, and tenure squared of the CEO at the date of the announcement of the merger. All standard errors are clustered by event date to account for cross-sectional correlation of stock returns. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variables	*Dependent Variable*	
	CAR	
	(1)	**(2)**
Any experience x diversifying	0.010**	
	[2.369]	
Unrelated experience x diversifying		0.004
		[0.684]
Diversifying	-0.004	-0.001
	[-1.532]	[-0.513]
Observations	4844	4844
Year and Industry dummies (AC)	Yes	Yes
Deal and Firm Controls	Yes	Yes
R^2	0.091	0.086

*** p< 0.01, ** p< 0.05, * p< 0.1

Table 9: Recency and Tenure

This table analyzes the different effect of the recency of the experience on the performance. We make two different splits of the experience by recency. The experience was obtained i) less than 10 years ago vs. more than 10 years ago and ii) less then 5 years ago vs. between 5 and 10 years ago vs. more than 10 years ago. The table shows the regression of the mergers' cumulative abnormal stock price returns of the bidder (CAR) on different manager, deal, and company characteristics. The cumulative abnormal returns come from an event study using the Fama-French three-factor model and an event window from 1 day before the announcement until 1 day afterwards. TOP experience is a dummy that is equal to 1 if the CEO worked in a TOP position in the target's industry. Bidder and deal characteristics are in the appendix. All regressions include age, age squared, tenure, and tenure squared of the CEO at the date of the announcement of the merger. All standard errors are clustered by event date to account for cross-sectional correlation of stock returns. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variables	*Dependent Variable*		
	CAR		
	(1)	**(2)**	**(3)**
TOP-exp. (less than 10 years ago) x div.	0.020***		
	[2.624]		
TOP-exp. (more than 10 years ago) x div.	-0.003		
	[-0.259]		
TOP-exp. (less than 5 years ago) x div.		0.009	
		[0.892]	
TOP-exp. (between 5 and 10 years ago) x div.		0.032***	
		[2.921]	
TOP-exp. (more than 10 years ago) x div.		-0.003	
		[-0.253]	
TOP-exp. (tenure of less than 5 years) x div.			0.013*
			[1.654]
TOP-exp. (tenure of more than 5 years) x div.			0.013*
			[1.729]
Diversifying	-0.002	-0.002	-0.003
	[-0.915]	[-0.922]	[-1.096]
Observations	4711	4711	4711
Year and Industry dummies (AC)	Yes	Yes	Yes
Deal and Firm Controls	Yes	Yes	Yes
R^2	0.101	0.102	0.097

*** p< 0.01, ** p< 0.05, * p< 0.1

Table 10: Mechanism Results I: Premium

This regression analyzes only public targets. This conseqently decreases the sample size to 1,644 observations. The table shows the regression of the offer price premiums and final price premiums on different manager, deal, and company characteristics. The offer (final) price premium is defined as the ratio of the initially offered price per share (finale agreed price per share) over the price per share of the target 1 day or 1 week before the announcement. The relative gains by the target are calculated as the difference in dollar gains between the target and the bidder, normalized by the sum of the acquirer's and target's market cap 50 trading days before the announcement date. TOP experience is a dummy that is equal to 1 if the CEO worked in a TOP position within the target's industry. Bidder and deal characteristics are in the appendix. All regressions include age, age squared, tenure, and tenure squared of the CEO at the date of the announcement of the merger. All standard errors are clustered by event date to account for cross-sectional correlation of stock returns. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variables	*Dependent Variable*				
	Offer premium 1d	**Offer premium 1w**	**Final premium 1d**	**Final Premium 1w**	**Rel. gains**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
TOP-experience x diversifying	-0.075*	-0.091**	-0.082**	-0.098**	-0.028**
	[-1.862]	[-2.101]	[-1.966]	[-2.175]	[-2.151]
Diversifying	0.019	0.032	0.018	0.032	-0.001
	[0.687]	[1.129]	[0.684]	[1.126]	[-0.097]
Observations	1,644	1,644	1,644	1,644	1,644
Year and Industry dummies (AC)	Yes	Yes	Yes	Yes	Yes
Deal and Firm Controls	Yes	Yes	Yes	Yes	Yes
R^2	0.149	0.185	0.148	0.184	0.218

*** p< 0.01, ** p< 0.05, * p< 0.1

Table 11: Mechanism Results II: Synergies

This regression analyzes only public targets. This decreases the sample size to 1,644 observations. The table shows the regression of the mergers' cumulative abnormal stock price returns of the bidder (AC), of the combined firm (AC+TA: weighted by market cap), and of profitability changes (ROA) on different manager, deal, and company characteristics. The cumulative abnormal returns come from an event study using the Fama-French three-factor model and an event window from 1 day before the announcement until 1 day afterwards. TOP experience is a dummy that is equal to 1 if the CEO worked in a TOP position in the target's industry. Bidder and deal characteristics are in the appendix. All regressions include age, age squared, tenure, and tenure squared of the CEO at the date of the announcement of the merger. All standard errors are clustered by event date to account for cross-sectional correlation of stock returns. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variables	*Dependent Variable*		
	CAR (AC+TA)	**CAR (AC)**	**ΔROA (AC+TA)**
	(1)	**(2)**	**(3)**
TOP-experience x diversifying	-0.023	0.020*	-0.024
	[-0.643]	[1.866]	[-0.668]
Diversifying	-0.022**	-0.004	0.011
	[-2.033]	[-0.742]	[0.812]
Observations	1644	1644	1239
Year and Industry dummies (AC)	Yes	Yes	Yes
Deal and Firm Controls	Yes	Yes	Yes
R^2	0.531	0.233	0.190

*** p< 0.01, ** p< 0.05, * p< 0.1

Table 12: Informational Asymmetries

In specification (1) the public status (public, private, subsidiary) is analyzed. In specification (2) we split industries along the median value of the average R&D spending in high and low R&D industries. In specification (3) we split industries along the median value of the average intangibles in high and low intangibles industries. The table shows the regression of the mergers' cumulative abnormal stock price returns of the bidder (CAR) on different manager, deal, and company characteristics. The cumulative abnormal returns come from an event study using the Fama-French three-factor model and an event window from 1 day before the announcement until 1 day afterwards. TOP experience is a dummy that is equal to 1 if the CEO worked in a TOP position in the target's industry. Bidder and deal characteristics are in the appendix. All regressions include age, age squared, tenure, and tenure squared of the CEO at the date of the announcement of the merger. All standard errors are clustered by event date to account for cross-sectional correlation of stock returns. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variables	*Dependent Variable*		
	CAR		
	(1)	**(2)**	**(3)**
Public - TOP-experience x diversifying	0.006		
	[0.711]		
Private - TOP-experience x diversifying	0.029***		
	[2.649]		
Subsidiary - TOP-experience x diversifying	0.005		
	[0.534]		
R&D high - TOP-experience x diversifying		0.019***	
		[2.723]	
R&D low - TOP-experience x diversifying		0.002	
		[0.236]	
Intangibles high - TOP-experience x diversifying			0.017**
			[1.987]
Intangibles low - TOP-experience x diversifying			0.010
			[1.433]
Observations	4844	4844	4844
Year and Industry dummies (AC)	Yes	Yes	Yes
Deal and Firm Controls	Yes	Yes	Yes
R^2	0.096	0.097	0.096

*** p< 0.01, ** p< 0.05, * p< 0.1

Table 13: Auction vs. Bargaining

In this sample we analyze the selling procedure of targets. Negotiation is a dummy variable equal to 1 if only one buyer is mentioned in the SEC filings. The table shows the regression of the mergers' cumulative abnormal stock price returns of the bidder (CAR) on different manager, deal, and company characteristics. The cumulative abnormal returns come from an event study using the Fama-French three-factor model and an event window from 1 day before the announcement until 1 day afterwards. Experience in target's industry is a dummy that is 1 if the CEO has experience in the target's industry. Unrelated experience is a dummy that is equal to 1 if the CEO worked in a position that is likely to be unrelated with the industry in the firm. Examples are low-ranked jobs like office workers or interns as well as non-business positions in the target's industry. Bidder and deal characteristics are in the appendix. All regressions include age, age squared, tenure, and tenure squared of the CEO at the date of the announcement of the merger. All standard errors are clustered by event date to account for cross-sectional correlation of stock returns. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variables	*Dependent Variable*	
	CAR	
	(1)	**(2)**
TOP-experience x diversifying	0.017	-0.003
	[1.298]	[-0.194]
Diversifying	-0.006	-0.003
	[-1.040]	[-0.426]
Negotiation		-0.002
		[-0.438]
Negotiation x diversifying		-0.006
		[-0.546]
Negotiation x TOP-exp. x div.		0.046*
		[1.910]
Observations	1,014	1,014
Year x Industry dummies (AC)	Yes	Yes
Deal and Firm Controls	Yes	Yes
R^2	0.245	0.248

*** p< 0.01, ** p< 0.05, * p< 0.1

A.2 Data

The following table describes the variables that are used in the analysis.

Table 14: Definition of variables

Variable	Definition
Panel A: CEO Characteristics	
Age	Age (in years) of the CEOs is measured at the announcement of the merger.
Tenure	The tenure of the CEOs in the current company (in years).
Industry experience	A dummy variable that is equal to 1 if the bidding CEO has worked in the industry of the target in a top-management position. (Main specification).
Panel B: Bidder Characteristics	
Leverage	Book value of debts over market value of total assets.
Tobin's Q	Ratio of market value of assets to book value of assets. The marketvalue of total assets is defined as the book value of total assets plus market capitalization minus book value of equity. The market capitalization is computed as common shares outstanding times the fiscal year closing price. The book value of equity is defined as stockholders' equity minus preferred stock liquidating value plus balance sheet deferred taxes and investment credit minus post-retirement assets.
Size	Logarithm of the book value of total assets.
Free Cash Flow	Operating income before depreciation minus interest expense minus income taxes minus capital expenditures, scaled by book value of total assets.
Cash Flow / TA	Operating cash flows (sales minus costs of good sold minus selling and administrative expenses plus depreciation and goodwill expenses) over total assets.
Panel C: Deal Characteristics	
Stock Deal	A dummy that is equal to 1 if the bidder pays a positive fraction of the transaction value with its stocks.
All-cash Deal	A dummy that is equal to 1 if the transaction is 100% paid with cash.
Relative Deal Size	Ratio of the deal value and the market capitalization of the bidder.
Public Target	Status of the target is 'public company'.
Private Target	Status of the target is 'private company'.
Subsidiary Target	Company is a subsidiary of a company.
Diversifying	A merger is classified to be diversifying if bidder and target differ in their Fama-French 12-Industries (FF12) classification.
Panel D: Performance Measures	
CARs	Three-day (eleven-day) cumulative abnormal return (in percentage points) calculated using the Fama-French 3-factor model. The market model parameters are estimated using the return data for the period (-270,-21).
Premium	The offer (final) price per share that is paid to the target shareholders over the price per share of the target stock 1 day and 1 week before the announcement.
ΔROA	Change in the three-year average industry-adjusted ROA before and after the acquisition. We allow for predictability by estimating a AR(1) model.

A.3 Robustness

Exclusion of Conglomerates Some companies are multi-segment firms, operating in different industries.[25] In our previous specifications we only consider the biggest segment of the acquiring firm when defining its industry. A concern might be that our results are purely driven by companies with large secondary segments in the industry of the target. For instance there may be a concern that mergers are not really diversifying and the positive effect of CEO experience is driven by potential synergies. We therefore restrict our sample to firms that report either only one business segment (according to COMPUSTAT segments) or where the largest business segment is accountable for at least 90 percent of the sales. In column (1) of table 15 only single segment firms are considered. The effect of experience is still positive and even higher than compared to our baseline specification (3.7 percentage points). The results for companies with the largest segment accounting for at least 90 percent of sales (column (2)) are similar, though a bit smaller (3.2 percentage points) and not distinguishable from zero when considering all levels of experience. Overall, the results seem to suggest that experience is more valuable when specialized firms diversify.

Alternative Event Window In our previous specifications we compute cumulative abnormal returns for three consecutive days, starting 1 day before the announcement and ending 1 day after. We test for the robustness of previous results bu using an alternative window of time (from 5 days before the announcement to 5 days after). This approach allows us to account for possible leaks in information about the acquisition before the public announcement. If this is the case, some of the abnormal returns driven by the event would be realized before the announcement. The result is shown in table 16. The effect of top management experience, confirming our previous results, is large (1.3 percentage points) and significant. Overall, the result is consistent with our previous results though they are a bit weaker. However, by increasing the length of the event window we also increase the likelihood that unrelated events to the merger are affecting abnormal returns.

Diversifying Acquisitions only By looking only at diversifying acquisitions we allow the covariates to have different slope coefficients for diversifying and non-diversifying acquisitions. The restriction limits the sample to 1,189 acquisitions. We then replicate our analysis by regressing abnormal returns on the CEO industry experience and firm and deal characteristics as well as year and industry fixed effects. The results in table 17 support our previous findings: CEOs who have experience in the industry of the target perform better on average. Experienced CEOs are able

[25] Maksimovic and Phillips (2002) show that conglomerates might also differ from single-segment firms when responding to industry shocks for instance.

to generate 1.0 percentage points abnormal return if they worked in the industry of the target. This effect is significant at a 5% level. The finding shows that results also hold for the smaller sample. However, the bigger sample helps to estimate the other coefficients leading to more precise estimates.

Table 15: Conglomerates

In this sample we exclude conglomerates from our analysis. Column (1) reports regression results of firms that have business in only one segment according to the COMPUSTAT segment data. In column (2) we consider only firms where the biggest segment is accountable for at least 90% of the total sales. The table shows the regression of the mergers' cumulative abnormal stock price returns of the bidder (CAR) on different manager, deal, and company characteristics. The cumulative abnormal returns come from an event study using the Fama-French three-factor model and an event window from 1 day before the announcement until 1 day afterwards. TOP experience (TA) is a dummy that is equal to 1 if the CEO worked in a TOP position in the target's industry. Bidder and deal characteristics are in the appendix. All regressions include age, age squared, tenure, and tenure squared of the CEO at the date of the announcement of the merger. All standard errors are clustered by event date to account for cross-sectional correlation of stock returns. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variables	*Dependent Variable*	
	CAR	
	(1)	**(2)**
Conglomerate - TOP-experience x diversifying	0.012	0.010
	[1.591]	[1.319]
Focussed firm - TOP-experience x diversifying	0.038**	0.034***
	[2.485]	[2.625]
Diversifying	-0.005	-0.005
	[-1.512]	[-1.523]
Observations	1336	1549
Year and Industry dummies (AC)	Yes	Yes
Deal and Firm Controls	Yes	Yes
R^2	0.210	0.186

*** p< 0.01, ** p< 0.05, * p< 0.1

Table 16: 11 Days Event Window

The table shows the regression of the mergers' cumulative abnormal stock price returns of the bidder (CAR) on different manager, deal, and company characteristics. The cumulative abnormal returns come from an event study using the Fama-French three-factor model and an event window from 5 day before the announcement until 5 day afterwards. TOP experience is a dummy that is equal to 1 if the CEO worked in a TOP position in the target's industry. Bidder and deal characteristics are in the appendix. All regressions include age, age squared, tenure, and tenure squared of the CEO at the date of the announcement of the merger. All standard errors are clustered by event date to account for cross-sectional correlation of stock returns. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variables	*Dependent Variable*
	CAR
	(1)
TOP-experience	0.013**
	[2.220]
Diversifying	-0.003
	[-1.109]
Observations	4844
Year and Industry dummies (AC)	Yes
Deal and Firm Controls	Yes
R^2	0.097

*** p< 0.01, ** p< 0.05, * p< 0.1

Table 17: Diversifying Acquisitions

This subsample consists only of diversifying acquisitions. The table shows the regression of the mergers' cumulative abnormal stock price returns of the bidder (CAR) on different manager, deal, and company characteristics. The cumulative abnormal returns come from an event study using the Fama-French three-factor model and an event window from 1 day before the announcement until 1 day afterwards. TOP experience is a dummy that is equal to 1 if the CEO worked in a TOP position in the target's industry. Bidder and deal characteristics are in the appendix. All regressions include age, age squared, tenure, and tenure squared of the CEO at the date of the announcement of the merger. All standard errors are clustered by event date to account for cross-sectional correlation of stock returns. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variables	*Dependent Variable*
	CAR
	(1)
TOP-experience	0.010**
	[2.004]
Observations	1189
Year and Industry dummies (AC)	Yes
Deal and Firm Controls	Yes
R^2	0.236

*** p< 0.01, ** p< 0.05, * p< 0.1

Table 18: Descriptive Statistics: Companies

Panel A shows data on corporate size, profitability and growth opportunities of the acquirer. The market value of equity (market capitalization in millions of US-$) is computed as common shares outstanding times the fiscal year closing price. Cash and debt are normalized by the book value of total assets. Tobin's Q is the market value of total assets divided by the book value of total assets and book-to-market (BM) is defined as the ratio of book value of equity and market cap. Profitability is measured as the ratio of operating cash flows divided by the market value of total assets.

Panel A: Financial Data

	Acquirer		COMPUSTAT	
	Mean	Median	Mean	Median
Assets (book)	12,560.25	1,634.30	1,303.15	74.31
Market capitalization	7,146.63	1,816.75	1,376.95	64.87
Cashassets (book)	0.146	0.068	0.167	0.082
Debtassets (book)	0.189	0.161	0.176	0.112
Debtassets (market)	0.129	0.095	0.132	0.071
Tobin's q	2.48	1.68	2.106	1.41
BM (equity)	0.483	0.439	0.684	0.517
OCF/assets (book)	0.349	0.327	0.264	0.275

A.4 Mechanism - Analytical Framework

Setup For a given CEO we split the economy into two sets according to his industry experience. We define set "E" as the group consisting of all companies in industries where the CEO has worked in. Group "N" is the complement to group "E", i.e. it consists of all companies in industries that are new to the CEO.

The game is modeled as a simple two-stage game. In the first stage, the acquirer (AC) gets a random draw of two potential targets (TA), of which is one from group E and one from the other group N. The draws represent the net synergies that are generated by an acquisition. We assume that the draws are identical independently distributed (iid) from a uniform distribution with support $[0, 1]$. This means that all acquisitions create value and the CEO only decides among the two targets. We assume that the bidding CEO maximizes shareholder value of his company.[26] Once he has decided which target to buy, he negotiates the price in the second stage. We model the price agreement process as a generalized Nash bargaining procedure where the walk-away option of both companies is the value of the stand-alones.

Impact of Industry Experience We allow industry-experience to affect this process in two ways. First, industry experience might allow CEOs to add value V to the deal. The magnitude of this value creation potentially depends on whether the CEO has experience in the industry of the target or not. Second, having experience in the industry of the target might help to capture a larger fraction of the surplus. In other words, other things being equal, a CEO who worked in the industry of the target before, is able to extract more of the surplus. We model this by the bargaining power, denoted by β.

Key Parameters The key parameters are as follows:

- Synergies $S \in \{S_E, S_N\}$: The synergy levels of the deal, i.e. the value that is created in the acquisitions that is independent of the CEO.
- Value creation abilities $V \in \{V_E, V_N\}$ with $V_E \geq V_N$: The ability to create value in the acquisition. For simplicity, we normalize $V_N = 0$.
- Value capture abilities $\tilde{\beta} \in \{\beta_E, \beta_N\}$ with $\beta_E \geq \beta_N$: The ability to capture value in the acquisition. We define $\beta \equiv \frac{\beta_E}{\beta_N} \geq 1$.

[26] The results also hold when we assume that the bidding CEO is maximizing his own payoff which consists of the returns to his equity share plus private benefits of control of running a larger company.

Analysis In the following, we solve the game by backwards induction before calculating the expected payoffs to different shareholders for deals in each of the two groups, conditional on their implementation. In the last step, we calculate the expected difference of the payoffs for the two groups, mimicking the structure of our regression analysis.

Second Stage: Bargaining Outcome Let V_{AC}, V_{TA} denote the stand-alone values of acquirer and target respectively. If the takeover goes through, the value of of the combined entity is $V_{AC} + V_{TA} + S + V$. Bidder and target bargain over the price X in a generalized Nash bargaining setting. The payoffs, conditional on completion of the deal, are given as follows:

- Bidder: $[V_{AC} + V_{TA} + S + V] - X$
- Target: X

The walk-away payoffs are the stand-alone values, i.e. V_{AC} for the bidder and V_{TA} for the target. The two parties maximize the joint surplus by setting X accordingly to the Nash bargaining solution.

$$X = argmax \left\{[(V_{AC} + V_{TA} + S + V) - X] - V_{AC}\right\}^{\beta} \left\{X - V_{TA}\right\}^{(1-\beta)}$$

The solution to this maximization problem is the well-known Nash solution where the surplus $S + V$ is split accordingly to the bargaining power of the two parties. This means that the price for the target is given by

$$X = V_{TA} + (1 - \beta)(S + V)$$

First Stage: Choice between the two groups We assume that the bidding CEOs get one draw each of potential merger targets from the two groups. We further assume that the synergy levels $S_E, S_N \overset{iid}{\sim} U[0, 1]$. Given the sharing rule in the second stage, the CEOs compare the payoffs of the two potential acquisitions. They prefer to buy from group E if $\beta_E(S_E + V_E) > \beta_N(S_N + V_N)$ and from group N otherwise. This means that they prefer group E if $\beta(S_E + V) > S_N$.

Comparative Statics In our regression analysis, we look at the impact of CEO industry experience on the performance of acquisitions. We compare the returns (that go to different shareholders) of acquisitions where the CEOs has experience in the target industry with those of acquisitions where the CEO is new to the target industry. In other words, we look at the difference between the averages of acquisitions with and without CEO experience in the target industry. In the analysis, using the analytical framework, we aim to reproduce the regression setting.

Therefore, we define the differences in the returns between industry expert CEOs and CEOs that are new to the target industry to the acquiring (AC) shareholders, to the target shareholders (TA), and to both acquiring plus target shareholders (AC+TA).

$$\begin{aligned}
\Delta_{AC} &= \beta_E E[S_E|\text{target E} \succ \text{target N}] - \beta_N E[S_N|\text{target N} \succ \text{target E}] \\
\Delta_{TA} &= (1-\beta_E) E[S_E|\text{target E} \succ \text{target N}] - (1-\beta_N) E[S_N|\text{target N} \succ \text{target E}] \\
\Delta_{AC+TA} &= E[S_E|\text{target E} \succ \text{target N}] - E[S_N|\text{target N} \succ \text{target E}]
\end{aligned}$$

Theorem 2 *Consider that industry experience is operating through V and β, i.e. V and β are increasing functions of $ExpTA$.*

1. Δ_{AC} *is positive and* increasing *in the value creation ability V and in the value capturing ability β of an industry expert CEO.*

2. Δ_{TA} *is* increasing *(*decreasing*) in the value creation ability V (value capturing ability β) of an industry expert CEO.*

3. Δ_{AC+TA} *is* increasing *(*decreasing*) in the value creation ability (value capturing ability β) of an industry expert CEO.*

Derivations

Expected value of deals from sector E: We first calculated the conditional density of a deal value S_E conditional on its implementation.

$$\begin{aligned}
P(S_E \wedge \text{target E} \succ \text{target N}) &= P(S_E \wedge \beta(S_E+V) > S_N) \\
&= \begin{cases} \beta(S_E+V), & \text{for } S_E \leq \frac{1}{\beta} - V \\ 1, & \text{for } S_E > \frac{1}{\beta} - V \end{cases}
\end{aligned}$$

The total probability that the bidding CEO prefers a target of sector E over a target of sector N is therefore given by:

$$\begin{aligned}
\mathbf{P} &\equiv P[\text{target E} \succ \text{target N}] = P[\beta(S_E+V) > S_N] \\
&= \int_{S_E=0}^{1/\beta - V} \int_{S_N=0}^{\beta(S_E+V)} 1 dS_N dS_E + \int_{S_E=1/\beta-V}^{1} \int_{S_N=0}^{1} 1 dS_N dS_E \\
&= 1 + V - \frac{1}{2b} + \frac{bV^2}{2}
\end{aligned}$$

The conditional density $P(S_E|\text{target E} \succ \text{target N})$ is given by $P(S_E|\text{target E} \succ$

target N) $= \frac{P(S_E \wedge \text{target E} \succ \text{target N})}{P(\text{target E} \succ \text{target N})}$. In the last step, we calculate the expected synergy level of an implemented acquisition from sector A.

$$E[S_E + V|\text{target E} \succ \text{target N}] = \frac{1 - 3\,\beta^2\ V^2 + 2\,\beta^3\ V^3 - 6\ V\,\beta^2 - 3\,\beta^2}{3\,\beta\,(1 - 2\,\beta\ V + \beta^2\ V^2 - 2\,\beta)}$$

Expected value of deals from sector N: We first calculated the conditional density of a deal value V_N conditional on its implementation.

$$\begin{aligned} P(S_N \wedge \text{target N} \succ \text{target E}) &= P(S_N \wedge \beta(S_E + V) < S_N) \\ &= \begin{cases} 0, & \text{for } S_N < \beta V \\ \frac{S_N}{\beta} - V, & \text{for } S_N > \beta V \end{cases} \end{aligned}$$

The total probability that the bidding CEO prefers a target of sector N over a target of sector E is therefore given by:

$$\mathbf{P} \equiv P[\text{target E} \succ \text{target N}] = \frac{1 - 2\,\beta\ V + \beta^2\ V^2}{2\,\beta}$$

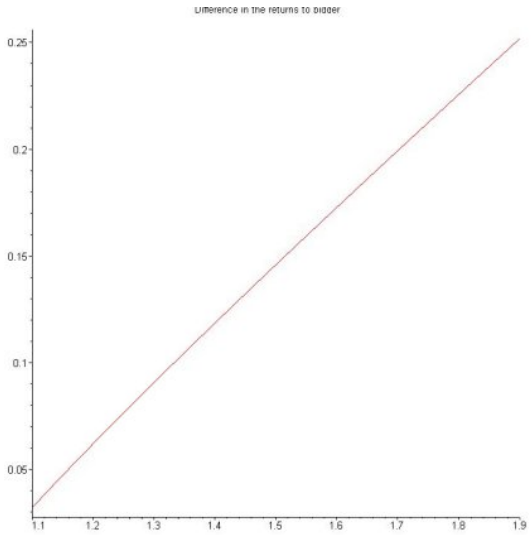
The expected synergy level of an implemented acquisition from sector N:

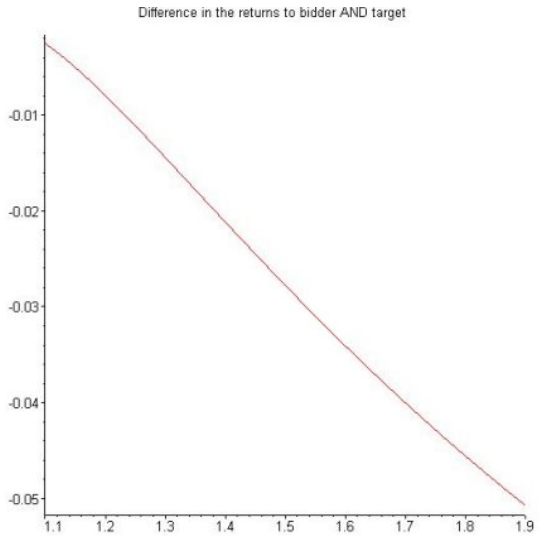
$$E[S_N|\text{target N} \succ \text{target E}] = \frac{\beta\ V}{3} + \frac{2}{3}$$

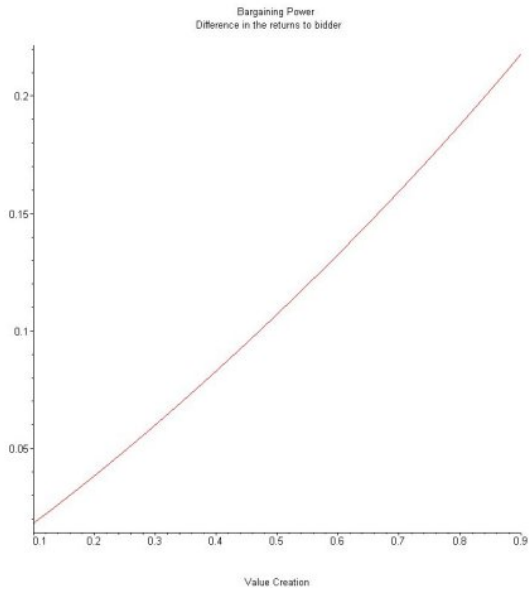
Relative performance of the two sectors In our analysis we are interested in the relative performance of acquisitions with and without experience. Moreover, we differentiate between the return to the bidding shareholders and to the bidding plus target shareholders as a proxy for the surplus creation:

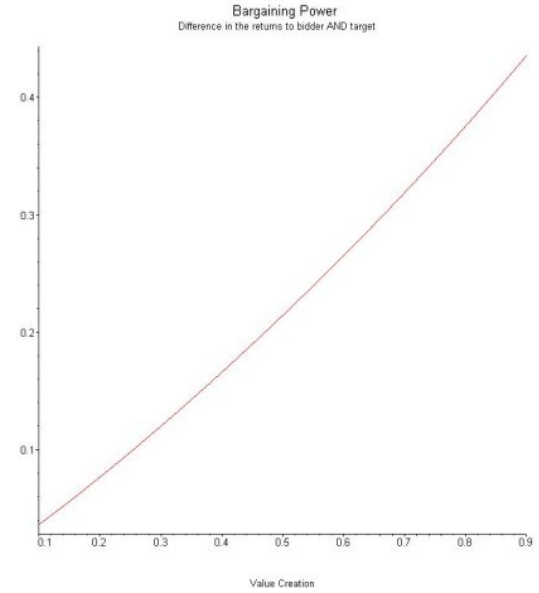
$$\begin{aligned} \Delta_{AC} &= \beta_E E[S_E|\text{target E} \succ \text{target N}] - \beta_N E[S_N|\text{target N} \succ \text{target E}] \\ \Delta_{AC+TA} &= E[S_E|\text{target E} \succ \text{target N}] - E[S_N|\text{target N} \succ \text{target E}] \end{aligned}$$

We are interested in the comparative statics result. As illustration we plot the partial derivatives of Δ_{AC} and Δ_{AC+TA} with respect to V and β.


Difference in the returns to bidder
0.25
0.2
0.15
0.1
0.05
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9


Difference in the returns to bidder AND target
-0.01
-0.02
-0.03
-0.04
-0.05
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9


Bargaining Power
Difference in the returns to bidder
0.2
0.15
0.1
0.05
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
Value Creation


Bargaining Power
Difference in the returns to bidder AND target
0.4
0.3
0.2
0.1
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
Value Creation

2 Boards of Banks[27]

2.1 Introduction

The recent global financial crisis has brought bank governance into the spotlight. Regulatory proposals in the aftermath of the crisis have singled out boards of banks as one of their main targets (Kirkpatrick (2009); Walker (2009); and European Commission (2010)). These calls for regulation are mostly based on circumstantial and anecdotal evidence, as we currently know little about the characteristics of boards of banks and their relation to firm and country characteristics. We also do not know how existing regulations shape the structure of bank boards.

In this paper we study the characteristics of boards of banks around the world. We have two goals. The first one is to provide the most comprehensive and detailed analysis to date of the determinants of bank board characteristics. The second goal is to assess the extent to which regulation affects bank board composition.

Our focus is on two characteristics of outside (nonexecutive) bank directors: independence (from management) and experience (in the banking industry). We take no stand on whether director independence and director experience are good or bad. That is, we do not equate either independence or experience with good governance. We are interested in these variables because of their policy relevance. For example, some recent reform-minded reports identify insufficient director independence from managers and directors' lack of banking expertise as two of the main causes of the governance failures that contributed to the 2007-09 banking crisis (Kirkpatrick (2009); Walker (2009); and European Commission (2010)).

Our evidence suggests that board independence and board experience are determined in significantly different ways. In the cross-section, the variation in bank board independence is mostly explained by country characteristics, suggesting that regulation and other institutional features are more important than bank-specific and idiosyncratic factors. In contrast, neither country nor bank characteristics explain much of the cross-sectional variation in board experience. In the time-series, we find that year effects are important, and that independence and experience evolve in opposite directions, especially in the US. Once we factor out aggregate trends and time-invariant bank characteristics, we find that changes in bank characteristics have no statistically robust impact on board independence, which is consistent with the view that bank-specific characteristics have little influence on board independence. In contrast, bank characteristics matter substantially for board experience. We find some robust evidence that changes in board experience are positively related to changes in bank size and negatively related to changes in bank performance.

[27]The work in this chapter was carried out jointly with equal share by Daniel Ferreira, Tom Kirchmaier, and me.

A possible explanation for our findings is as follows. Regulation (both direct and indirect) and business practices (often reflected in governance codes) vary substantially across countries. This variation may explain the importance of country effects for board composition. But regulation is likely to affect board independence more than board experience. Director independence has been on the top of the agenda of regulators and governance activists for some time. For example, director independence featured prominently in the cluster of governance reforms associated with the Sarbanes-Oxley Act of 2002. In contrast, director expertise has only recently been considered an important issue, mainly in the context of the role of banks in the financial crisis (e.g. Walker (2009)). Thus, if banks have little freedom in choosing their board independence levels, country effects should be the main determinant of board independence. By the same logic, if regulation plays a minor role in determining bank directors' expertise, country effects should be irrelevant for board experience. Furthermore, if banks actively change their boards in response to changes in the business environment, changes in board experience could occur in tandem with changes in some other bank characteristics.

Our results raise some important questions. For example, would banks benefit from being less regulated, allowing them to tailor board independence to their specific needs? Or is regulation actually preventing them from choosing inferior governance structures? Although answering these questions is beyond the scope of this paper, the evidence in this paper underscores their importance.

Our study exploits a unique dataset of director characteristics that we construct by collecting detailed biographic data for a sample of 12,010 directors working for 740 publicly-listed banks. The sample spans 9 years (2000-2008) and includes banks from 41 countries. We collect data on four board/director characteristics: director independence, previous banking experience, board size, and director busyness. We match our director data with data on bank and country characteristics.

A reliable and meaningful measure of board independence is difficult to obtain. Some previous studies consider the proportion of outside directors on the board as a proxy for independence. This is a crude approximation, but it might be the only alternative when working with samples that span periods for which better data are not available (see e.g., Linck, Netter, and Yang (2009); and Ferreira, Ferreira, and Raposo (2011)). Some papers use finer proxies for independence (e.g., Adams (2009); and Duchin, Matsusaka and Ozbas (2010)), such as the RiskMetrics (previously known as IRRC) classification, which considers a director independent if he or she is not an employee, a former executive, a relative of a current corporate executive, or someone who has business relations with the company.[28] However, even these improved measures of independence are imprecise. In the particular case

[28]The RiskMetrics director database only covers US firms and thus cannot be used for international comparisons.

of banks, this problem is complicated by the fact that some outside directors are representatives of the bank's best clients, and that this information is difficult to obtain. According to Adams (2010, p. 14), "customer-directors are likely to have different incentives and motivations than other outside directors. To correctly measure board independence requires identifying them but this is virtually impossible." Another difficulty is the fact that the formal definition of independence varies across countries.

We are able to construct a reliable measure of board independence because we have data on bank directors' employment histories, as well as a comprehensive record of fees paid to banks by their corporate clients. We consider a director to be formally independent if he or she (i) is not a current or former employee of the bank, (ii) is not a representative of the bank's employees, (iii) does not represent a firm that has a significant commercial relationship with the bank, and (iv) is classified as independent by the bank. Our definition of independence is a proxy for the alignment of directors' interests with those of shareholders.

Off-the-shelf data on directors' banking experience do not exist; we need to construct them from directors' curriculum vitas. We consider an outside director to have banking experience if the director has held at least one managerial or top-executive position in a bank. From the employment histories of the outside directors in our sample, we obtain a list of previous employers for each director. We match these employers with company identifiers from a number of different datasets. We are then able to infer the industrial classification for most of these companies.

We examine the cross-sectional and time-series dimensions of our sample separately. To make sure that our results are not specific to what happened to banks during the 2007-09 crisis, we use 2006 as our benchmark year in the cross-sectional analysis, but we also check for robustness to alternative years. All of our results are unaffected by the crisis period. Our main findings are as follows.

Countries explain more of the cross-sectional variation in bank board independence than bank characteristics do. While bank-specific characteristics alone explain about 10% of the variation in bank board independence, country dummies alone can explain up to 54% of the observed variation. After controlling for country characteristics, the incremental explanatory power of bank-specific variables is just 3%. These results are very robust; they are not explained by year effects, outlying countries, or by the oversampling of US banks. In stark contrast, we find that bank-specific characteristics alone explain 7% and that country dummies alone explain only 3% of the cross-sectional variation in bank board experience. That is, most of the cross-sectional variation in board experience is bank specific or idiosyncratic.

Our results lead naturally to the question of why countries matter so much for bank board independence, but not so much for bank board experience. Country characteristics could be related to board characteristics because laws, regula-

tions and institutions can either complement or substitute for internal governance (Doidge, Karolyi, and Stulz (2007); and Aggarwal, Erel, Stulz, and Williamson (2009)). Additionally, the direct and indirect regulation of bank board appointments could also explain why bank board independence varies so much across countries. To investigate these possibilities, we consider three sets of country-specific variables: board regulations, proxies for financial and economic development, and legal-environment variables.

The data provide some support for the importance of board regulations. Although it is not surprising that board regulations can have an effect on board composition, to the best of our knowledge, ours is the first paper that shows evidence linking specific board regulations to board independence across countries.

Countries differ in the extent to which courts can remove directors during the reorganization of troubled banks. In countries where bank directors are less powerful, it should be more difficult or costly to hire outside directors, especially independent ones. Consistent with this view, we find that banks have less independent boards in countries where courts have the right to remove bank directors in reorganizations.

Another one of the few board regulations that can be compared across countries is the requirement that firms are run by a single board, as in the United States, or by two different boards, as in Germany. In the two-tiered structure, the advising and monitoring functions of boards are formally separated into a management and a supervisory board (see Adams and Ferreira (2007)). We find strong evidence that banks in countries with mandatory one-tiered structures have boards that are on average more independent.[29]

When considering other country characteristics, we find strong evidence that bank board independence is a 'normal' good: countries with higher per capita GDP have banks with more independent boards. However, we do not find robust evidence that financial development and investor protection foster board independence. Thus, there is no clear evidence that banks adjust their board independence levels to reflect the country-wide quality of external governance.

We then turn to the time-series dimension of our sample. We start by showing that bank board independence monotonically increases over time in the pre-crisis period (2000-2006), with the largest increases occurring around 2002-03 for US banks, and with one year delay for banks outside the US. While independent directors already held 51% of the board seats in US banks in 2000, in non-US banks the average level of independence was 25 percentage points lower.. The respective figures for 2006 are 74% and 40%. While independent directors now hold an overwhelming majority of board seats in US banks, independent directors are still in the minority in some other parts of the world.

[29]We see the rules on one-tiered and two-tiered board structures as a proxy for the overall governance system of a country.

Although it is not possible to determine the exact causes of these dramatic changes over such a short time period, we note that banks, like all firms, were likely affected by the increase in regulatory pressure on governance issues that culminated in the Sarbanes-Oxley Act (SOX) of 2002. Consistent with this explanation, the increase in board independence over the 2002-03 period is less pronounced for non-US banks, many of which are not directly subjected to SOX regulations. But overall, both US and non-US banks exhibit similar time trends in board independence.

The evolution of the aggregate levels of bank board experience is the mirror image of that of board independence, with average experience decreasing sharply from 28% in 2002 to 21% in 2006. Experience then increases slightly in the crisis years to about 24% in 2008 (similarly, independence falls from 2006 to 2008). As in the case of board independence, these aggregate patterns in board experience are mostly driven by US banks. In terms of economic significance, the over-time changes in average experience are small: In the US, the largest changes occurred between 2002 and 2005, when experience drops from 22% to 17%. In non-US banks, experience stays relatively flat throughout the whole period at about 37%.

Lastly, we run firm fixed-effects regressions to control for time-invariant omitted variables and get a more reliable picture of the relationship between bank characteristics and board structure. We consider a set of bank variables that proxy for size, performance, capital structure, and ownership structure. We find that yearly changes in bank characteristics are not related to changes in board independence in a statistically significant way. These results are consistent with the hypothesis that bank-specific characteristics have little impact on board independence. In contrast, we find that changes in firm size (as measured by assets) are robustly and positively related to changes in bank board experience. Another robust finding is that changes in performance variables such as market-to-book and operating performance display a negative relation with changes in board experience.

Overall, the evidence is consistent with the view that banks adjust the composition of their boards to their particular conditions, but only if regulations allow them the freedom to do so. This interpretation of the evidence suggests that board structure can have real consequences for bank performance, as regulation may push banks away from their privately optimal board structures. We believe that our findings can help explain some of the evidence uncovered by a number of recent papers that investigate the link between board characteristics and bank performance during the crisis.[30] Adams (2009) is the first to find suggestive evidence that board independence is positively related to bank bailouts. Minton, Taillard, and Williamson (2010) provide more systematic evidence that board independence - but not finan-

[30] A possibly incomplete list includes Adams (2009), Beltratti and Stulz (2009), Erkens, Hung, and Matos (2010), Chesney, Stromberg, and Wagner (2010), and Minton, Taillard, and Williamson (2010).

cial expertise - predicts the bailouts of financial institutions. Our main contribution is to provide a coherent explanation for why board independence, but not board experience, seems to matter for bank outcomes. By showing that regulation has a substantial impact on independence, but not on experience, we believe that our paper provides a compelling explanation for why the existing evidence linking bank board independence and bank performance is so robust.

Our discussion of the determinants of board structure is limited by the difficulties in establishing causal relations between the variables in our dataset. As we are interested in examining the extent to which board structure is correlated with observable firm and country-specific variables, determining the ultimate source of such correlations is not our first order concern. In addition, reverse causation is not really a concern in the case of country-specific variables. Although such variables could proxy for omitted ones, these omitted variables must also be country-specific, and thus our conclusions are unchanged.

The remainder of the paper is organized as follows. After reviewing the related literature in Section 2, we describe the data and present summary statistics in Section 3. In Section 4 we analyze the cross-section of board structure. In Section 5 we exploit the time-series dimension of the sample and we investigate more closely the role of bank characteristics in explaining board structure. We conclude in Section 6.

2.2 Related literature

Our findings are consistent with some of the existing evidence collected by the international corporate governance literature, such as the finding that most of the cross-sectional variation in governance variables is explained by country characteristics. Using samples of mostly non-financial firms, Doidge, Karolyi, and Stulz (2007) and Aggarwal, Erel, Stulz, and Williamson (2009) find evidence that the quality of firm-level governance is increasing in a country's level of economic and financial development and of investor protection. Such empirical relations strongly suggest that country-level governance and firm-level governance are complements. Our results are similar as they highlight the importance of countries for the governance of banks.

Our work complements the empirical literature on (non-financial) corporate board structures. This literature shows that the composition of boards is related to a number of firm characteristics such as size, growth opportunities, leverage, and proxies for information asymmetry, among others (Boone, Field, Karpoff, and Raheja (2007); Coles, Daniel, and Naveen (2008); Linck, Netter, and Yang (2008); Lehn, Patro, and Zhao (2009); and Ferreira, Ferreira, and Raposo (2011)). There is also evidence that boards of banks are different from those of non-financial firms

(Adams and Mehran (2003) and (2008)). Boards of banks may play a more central role in the governance framework. As banks are more opaque than non-financial firms (Morgan (2002)), outsiders could face difficulties in assessing risks and properly valuing banks. Under such conditions, external governance mechanisms may not work well, putting additional pressure on the board.

Although our focus is on the potential determinants of board structure, a natural question is whether board structure, and in particular director independence, matters for firm policies and performance. In the context of non-financial firms, there is robust evidence that board composition affects important firm outcomes, such as CEO turnover (Weisbach (1988); Adams and Ferreira (2009); and Jenter and Lewellen (2010)). In banks, there is some evidence linking board governance and risk taking (Laeven and Levine (2009)).

Research on the role of bank directors during the recent global financial crisis reveals some surprising results. Adams (2009) finds that US banks with more independent directors were more likely to receive Troubled Asset Relief Program (TARP) money. Minton, Taillard, and Williamson (2010) provide ample evidence that board characteristics in financial institutions are related to a number of performance measures during the crisis. Similarly, Beltratti and Stulz (2009) find that banks with more pro-shareholder boards performed worse, and Erkens, Hung, and Matos (2010) find that financial firms with more independent boards experienced larger losses.

This literature suggests that bank governance does indeed matter, but not necessarily in obvious ways. Fahlenbrach and Stulz (2010) find that banks run by CEOs with large ownership stakes, if anything, performed worse than those with low CEO ownership stakes during the 2007-08 crisis. Cheng, Hong, and Scheinkman (2009) present evidence that a culture of short-term compensation leads to more risk-taking in financial firms, but they argue that such risk taking is consistent with shareholders' goals. This explanation is compatible with findings by Laeven and Levine (2009) that banks with more shareholder-oriented governance structures take more risks.

More generally, the last generation of papers on board structure and firm performance has brought board composition back into the spotlight. These papers use innovative empirical designs to circumvent the endogeneity problems that plague earlier studies. Duchin, Matsusaka and Ozbas (2010) use regulations associated with the Sarbanes-Oxley Act of 2002 as an exogenous source of variation in board independence. In a difference-in-differences estimation, they find that increases in director independence improve performance in those firms in which the costs of obtaining information are low, while performance worsens in firms in which information costs are high.[31] Adams and Ferreira (2009) use instrumental variables methods to

[31] Analyzing the direct effect of the 2002 governance rules, Chhaochharia and Grinstein (2007) also find heterogeneous effects of governance rules on firm value.

estimate the causal effect of board gender diversity on performance. They find that gender diversity improves performance only in firms with many takeover defenses. They also provide evidence that more diverse boards are tougher monitors of managers, validating the use of gender diversity as a proxy for independence. Nguyen and Nielsen (2009) use director sudden deaths as a natural experiment to identify the market value of independent directors. They also find that the value of independent directors varies with firm characteristics and director functions. Overall, all these papers show remarkably consistent results. Director independence matters for firm performance, but its effects are not homogeneous across different companies. To identify such effects, it is necessary to use exogenous sources of variation in board independence and to allow for heterogeneous effects.

The most recent literature provides strong evidence of the importance of board composition. Understanding the determinants of board composition thus merits special attention. We believe that we can only make sense of the evidence that links boards to firm outcomes after a thorough investigation of the determinants of board composition. The evidence is this paper is a step in this direction.

2.3 Data and Sample

Our initial sample consists of an unbalanced panel of 740 publicly-listed banks in 41 countries for the nine-year period from 2000 to 2008.[32] We have a complete set of director-level biographical data for all of our 4,081 bank-year observations. We source our director data from BoardEx. The entire BoardEx database gives us a total of 49,665 director-year observations for 12,010 unique directors who have served on the boards of our sample banks between 2000 and 2008.

We define banks as those companies that held a banking license at the end of 2008. Our sample includes all US investment banks that obtained a banking license as part of the 2008 bailout. We validate our definition of banks by cross-checking it with regulatory listings; we include only those firms that operate within the 60 two-digit SIC code. Our unit of analysis is a bank holding company. Boards of fully-owned subsidiaries are not included.[33]

Table 19 gives an overview of the distribution of our sample by year and country. The sample is skewed towards both US banks and more recent observations. We have complete data for banks in 31 countries for 2006, which is our benchmark year

[32]Our sample is based on all banks available in the BoardEx database, which only includes banks with some public securities. These securities are not necessarily common equity. For an example, of the six Austrian banks in our sample, one (Osterreichische Volksbanken AG) only has non-voting preference shares that are publicly traded.

[33]We treat banks that are part of banking groups as individual companies as long as they issue their own public securities. For example, in Austria we consider each of the banks of the 3 Banken Gruppe as individual banks, because they are listed separately. We use data on ownership structure to control for some of the possible effects of such variables on our results.

in the cross-sectional analysis. We use data from 41 countries in 2008. We perform a number of robustness checks to make sure that our results are not driven by these sample imbalances.

(Table 19 about here)

BoardEx provides standard biographical information such as age, nationality, and gender for all board members, as well as information about their current and past board positions, including the company's name and director tenure at each position. It also provides information on directors' past non-board positions, income, and educational background (albeit at times incomplete). To construct the banking experience variable, we identified 27,773 companies and non-profit organizations that employed at least one of the 12,010 directors in our sample at some point. We matched the names of these companies with more detailed company-specific information from various alternative databases. To do so, we developed an algorithm that allowed us to match the names from BoardEx with the population of company names in Compustat. We then manually verified each of the automatic matches, and where applicable linked subsidiaries to the respective parent company. We repeated this process several times with other company databases such as Amadeus, Icarus, Orbis, and Oriana, allowing us to match ever smaller companies. This procedure yields a company identifier for most firms, enabling us to extract a wealth of financial and non-financial data. After internet-researching the remaining firms, we obtain SIC codes for more than 95% of our sample.

We obtain information on whether directors are also representatives of the banks' most important customers from the Deals Analysis option in the Thomson One Banker database. We downloaded all available information in the M&A, Equity, Bonds and Loans sections and matched the company names from Thomson One Banker to those in our dataset.

We use these data to construct our director-level variables. Our independence variable classifies a director as independent if all of the following four criteria are met: (1) the director has never been employed by the bank, (2) the director does not represent a firm that has a significant commercial relationship with the bank, (3) the director is not a representative of the bank's employees, and (4) the bank classifies the director as independent.[34]

We construct a banking experience indicator variable that equals one if the director had a prior managerial or top-executive position in any bank. We construct a

[34]In the case of Germany, we do not use criterion (4), as German banks - like all other German companies - do not report the independence of outside directors (Aufsichtsratsmitglieder). This procedure implicitly overstates independence levels, as some unobserved dimensions of independence cannot be taken into account.

director busyness variable by counting board positions of each director at each year. We measure board size by the count of all directors per bank-year.

To obtain bank financial data, we merge our sample with Worldscope. We use book assets and sales as proxies for bank size.[35] To control for the various dimensions of bank performance, we use Market-to-Book and Return on Assets (ROA). We calculate market-to-book as the market value of shares over common equity[36] and ROA as net income over assets. We follow the standard practice in the banking literature of measuring leverage as assets over common equity (e.g. Adrian and Shin (2010)). We obtain share price data from Thomson One Banker.

Previous research finds that the ownership structure of banks matters for bank governance and performance (Caprio, Laeven, and Levine (2007); and Morck, Yavuz, and Yueng (2010)). We collect detailed data on ownership structure. The prime data source of bank ownership data is Bankscope, which has ownership data for 687 banks. For other 12 banks we were able to collect ownership data from Thomson One Banker. This gives us ownership data for 3,905 bank-year observations; 3,870 based on Bankscope data and 35 on data from Thomson One Banker. We have no ownership data for 294 bank-year observations.

Bankscope reports ownership changes on investor level, which give us 101,409 records. We classify the investor type categories reported by Bankscope into the following groups: Employee, Family, Government, Institutional Investor, Financial Institution, and Others. We then fill in the missing observations for those years when no change occurred. We spent considerable time cleaning the data, first on bank-year-investor level and then on bank-year level. One of the problems that we faced was that ownership stakes of business groups are reported multiple times. In this case we use the stake that is attached to the highest level in the group. For better handling of the data, we also exclude ownership stakes of less than 3%. We use the ownership thresholds of 10%, 20%, 50% and 100%. We include the 100% threshold to separate firms that were taken over, which typically also correspond to the last year of the bank in the sample. For each for the bank-year observation, we construct dummy variables indicating the existence of an ownership block for each of these ownership thresholds. We also create similar indicator variables that discriminate among different types of owners.[37] We collect many country-specific variables. In line with Doidge, Karolyi, and Stulz (2007), we construct a variable measuring the quality of investor protection (which we call Antidirector) by multiplying the anti-director rights index (the DLLS index) constructed by Djankov et al. (2008) by

[35]Our base currency for assets as well as all other accounting variables is the US dollar (USD). All non-USD denominated values were converted into USD at market exchange rates on the day of announcement. We do not correct assets for inflation as it is unnecessary given that we use the log of assets in the regressions, so that year dummies implicitly capture the effects of inflation.

[36]WS Code 03501.

[37]For an analysis of bank ownership around the world, see Morck, Yavuz, and Yueng (2010).

the rule of law index reported by La Porta et al. (1998). As a robustness check, we construct an alternative investor protection variable by multiplying the anti-director rights index developed by Spamann (2010) by the rule of law index. We do not report results using this alternative measure in the tables, but where appropriate we discuss them in the text. We also collect the credit market regulation index used in Giannone, Lenza, and Reichlin (2010), which we use only in robustness checks.

We use GDP per capita[38] from the World Bank's World Development Indicators as a proxy for economic development and stock market capitalization over GDP from Euromonitor as a measure of financial development. Our dummy indicating the right of courts to remove board directors in reorganizations comes from the World Bank database on bank regulation and supervisory practices developed by Barth, Caprio and Levine (2008). We also hand-collected data from many sources to construct a dummy variable indicating whether a country has a compulsory one-tiered board structure.

Table 20 depicts the summary statistics for all variables over the period 2000 to 2008. The unit of observation is a bank-year. There is considerable variability in bank board characteristics. We observe boards of banks without independent directors, or without any outside director with banking experience, while on the other hand we see boards that are staffed fully with independent directors, and also some in which all outside directors have some banking background. Similarly, there is substantial variation in board size, ranging from four to 35 members. The spectrum for the average number of board appointments is equally wide, ranging from no other appointment to a board-level average of 15.8 board seats.

(Table 20 about here)

In our cross-sectional analysis we focus on data from 2006, which is the last year prior to the financial crisis. For that year, our sample contains data from 622 banks and 31 countries. Table 21 gives a detailed overview of the board structure variables by country. There is considerable variation in board characteristics across countries. In 2006, the minimum board size in our sample is four (a US bank) and the maximum is 34 (a Russian bank). The equally-weighted average of board size across all countries is 15.6; the average board size in the US is 10.7, 12.4 in the UK, and 21.3 in Germany, to give a few examples. Among developed countries, France and Switzerland have very low levels of independence. In contrast, Australia, Canada, and the US exhibit comparatively high levels of director independence.

The equally-weighted cross-country average of the ratio of outside directors with banking experience is 36%. This average however overestimates the number of

[38]GDP per capita, PPP (constant 2005 international USD). WB code NY.GDP.PCAP.PP.KD.

outside directors with banking experience, as in the US (where most of our sample banks are located) this proportion is just 18%.[39]

Some of the countries with high levels of bank board independence - such as Australia, Canada, and the US - exhibit relatively low banking experience ratios. In our sample, 142 banks (23% of the total) have no outside director with banking experience on their boards. Two banks are fully staffed with outside directors with prior experience in banking and 60 banks (about 10% of the total) have a majority of such directors. In terms of busyness (the average number of board appointments held by outside directors), we observe values ranging from no other board appointment (in US banks) to 13.6 additional board appointments on average (in one Italian bank). The equally-weighted average across all countries is 4.4 board appointments.

(Table 21 about here)

2.4 The Cross-Section of Board Independence and Board Experience

In this section we focus on the cross-sectional variation in board structure. As we have nine years of bank-level data, we focus initially on a representative year. We choose the year of 2006 as the benchmark because the years after the crisis could be atypical, as board structure may have changed as a consequence of the crisis. The crisis period is unusual in that there are sudden changes in bank ownership, widespread financial distress, and ad hoc government intervention. However, we find that the crisis period does not significantly affect the key results.

2.4.1 Explaining Variation in Bank Board Structure: Countries versus Firm Characteristics

How much of the cross-sectional variation in board structure is explained by country effects and firm characteristics? Methodologically, we follow the approach of Doidge, Karolyi, and Stulz (2007) and run linear regressions of board structure variables (independence and experience) on firm characteristics and country dummies. We then compare the incremental (adjusted) R^2 of each set of explanatory variables.[40]

[39] A natural question is whether the current level of banking experience among bank directors is inefficiently low. Regulators and policy-makers have recently emphasized the importance of banking experience and financial expertise for outside directors; an example is the Walker (2009) review in the UK. Hau and Thum (2009) find that measures of board competence, including previous banking experience, are positively related to the performance of German banks during the crisis. Cuñat and Garicano (2010) find that chairmen's human capital crucially affected the performance of Spanish savings banks during the crisis.

[40] Rauh and Sufi (2010) employ a similar approach in their investigation of the role of measurement errors in explaining the poor explanatory power of firm and industry characteristics in the cross-section of capital structure.

Specifically, we estimate the following models:

$$\begin{aligned} y_{ij} &= \alpha + x'_{ij}\beta + u_{ij} \\ y_{ij} &= d'_j\theta + u_{ij} \\ y_{ij} &= x'_{ij}\beta + d'_j\theta + u_{ij} \end{aligned}$$

where y_{ij} is the board structure variable of bank i in country j, α is a constant, x_{ij} is a vector of bank characteristics, d_j is a vector of country dummies, β and θ are vectors of parameters to be estimated, and u_{ij} is the error term. Our goal in this section is not make inferences about the estimated parameters but to compare the explanatory power, or goodness of fit, of these three models.

Our main variables of interest are either the fraction of independent directors or the fraction of outside directors with banking experience. As these variables are bounded between zero and one, we use a logistic transformation (also known as the log odds ratio) of the original variable z_{ij} as our dependent variable: $y_{ij} = ln[(z_{ij})/((1 - z_{ij}))]$.[41]

We report the results in Tables 22 and 23. The first three columns of each table show results for board independence regressions and the last three show results for board experience regressions. Because the missing data on ownership variables substantially reduce the 2006 sample size from 609 to 572 banks, we report results both without and with the block holder dummy among the set of controls (Tables 22 and 23 respectively). Column (a) in Table 22 shows results for model 1.a, i.e. a regression of board independence on a vector of five firm characteristics: (log) assets, (log) sales, (log) market to book, return on assets, and (log) leverage. In that regression, only ROA displays a statistically significant (at 10%) relation with board independence. Overall, these five bank characteristics explain 10% of the total variation in the sample (using the adjusted R^2 as the metric). Including additional bank-specific variables (e.g. alternative measures of capital strength, such as the tier 1 capital ratio, or performance, such as sales growth) does not alter the results qualitatively. We choose a parsimonious model specification in order not to lose too many observations due to missing data.

At first sight, bank variables seem to explain only a small fraction of the heterogeneity in board independence. A natural question is whether this is a feature of our empirical design. For example, there could be other bank-specific variables with stronger explanatory power that are omitted from our specification. To put our results into perspective, we compare them with those found in other papers on board independence in non-financial firms. In regressions of board independence

[41] In practice, this transformation has no important consequences for our results. We transform all bounded dependent variables because not doing so may lead to implausible estimates of marginal effects.

on a much larger set of firm-level controls, Linck, Netter, and Yang (2008) report a maximum R^2 of 17%. Ferreira, Ferreira, and Raposo (2011) report R^2's varying from 14% to 16%, using up to 18 firm-specific variables as regressors. Thus, the relatively low R^2's in board independence regressions on firm-specific variables is a well-established regularity. It seems unlikely that by adding more firm-specific controls we could increase the joint explanatory power of the regressors by much. Column (b) shows results for model 1.b, i.e. a regression of board independence on a set of country dummies (all dummy coefficients are omitted from the table). This exercise reveals that country dummies alone can explain 54% of the observed variation in board independence.

(Table 22 about here)

Finally, in column (c) we include both bank characteristics and country dummies. The incremental explanatory power of bank characteristics is quite small; the R^2 increases by 3 percentage points when moving from (b) to (c). This is in contrast with the large incremental R^2 for country dummies: moving from (a) to (c), the R^2 increases by 47 percentage points. Country effects can explain much of the observed variation in bank board independence.

A natural question is whether the high R^2 associated with country dummies is mechanically driven by the fact that some countries only have a few banks in the sample. This is not the case. Even if we drop from the sample all countries with fewer than 5 banks, we still obtain an adjusted R^2 of 41% for model 1.b. This is a very conservative approach, as it leaves us with only 12 country dummies for 581 observations. On the other extreme, dropping the US leaves us with only 116 observations and an adjusted R^2 of 28% for model 1.b.[42] Instead of dropping all US banks, we also run a regression in which we keep only 15 randomly selected US banks. This regression yields an adjusted R^2 of 34% for model 1.b. Thus, homogeneity among US banks seems to be more important for the high explanatory power of country dummies than the presence of small outlying countries. We thus conclude that the importance of countries for board independence is real; it is not just a feature of how the sample is constructed.

We also find very similar results if we consider alternative years. For example, if we use the year 2008 (620 banks from 41 countries), we obtain an adjusted R^2 the models 1.a to 1.c of 12%, 53%, and 52% respectively. Overall, our results suggest that while bank characteristics can explain little of the observed variation

[42]Adjusted R^2's are not comparable across samples of substantially different sizes because the ad hoc penalty for adding more regressors is relatively more important when the sample is small. For example, the non-adjusted R^2 for model 1.b when the US is dropped is 47%, while it is 56% in the full sample. Adjusting the R^2 yields a penalty of 20 percentage points in the former case but only a 2 percentage point penalty in the latter case.

in board independence, country-specific characteristics account for a large fraction of that variation. We now address the question of whether the same applies to board experience. In Table 22, columns (d)-(f), we report the results of estimating models 1.a-c for the (logistic transformation of the) percentage of outside directors with banking industry experience. These results are in sharp contrast with those of board independence. Bank characteristics can explain only 7% of the total variation in board experience, while country dummies alone account for just 3%. From column (f) we conclude that most of the variation in the proportion of directors with banking experience cannot be explained by variation in observed characteristics; the adjusted R^2 for the model 1.c regression is only 5%. While there is substantial variation in director banking experience, this variation is not explained by countries or by some of the most salient bank-specific characteristics, with the notable exception of firm size.[43]

Our independence variable is comparable across countries because most of the criteria that we use to define independence are not country-specific. Although we never consider a director independent simply because the bank has classified them as such, we do consider a director as non-independent if the bank does not classify the director as independent. We believe that our approach is conservative, as banks are more likely to overstate independence rather than understate it. However, this approach has potential drawbacks, because bank self-reporting of independence could be country specific. In particular, in some countries, directors are not considered independent if they are representatives of some of the bank's major shareholders. Thus, differences in ownership structures across countries could explain our results, as countries with large block holders could display low levels of independence. We thus need to investigate the effect of ownership structures on board independence.

Ownership variables feature prominently in previous papers on banks around the world (Caprio, Laeven, and Levine (2007); and Morck, Yavuz, and Yueng (2010)). As a first step to investigate the importance of ownership variables, in Table 23 we redo the analysis above including the block holder ownership dummy (using the 10% threshold) in the set of controls. Despite the loss of 37 observations, the results are basically the same: country dummies matter substantially for board independence, but not for board experience. The presence of a block holder is associated with less independence, but this association is not statistically significant once country dummies are included in the regression. Block holders are also associated with lower banking experience.

In unreported regressions, we also analyze the importance of ownership structures in more detail by replacing the block holder dummy with a set of six dummies describing the type of the largest block holder (if there is one): Financial institu-

[43]We obtain similar results if we measure experience in the financial services industry more broadly.

tions, institutional shareholders, governments, families, employees, and others. Of these variables, only block ownership by either families or employees are robustly (negatively) related to board experience. None of the block holder type dummies is robustly related to board independence. We conclude that countries are more important for understanding the cross-section of board independence than are bank characteristics. In contrast, neither country characteristics nor observed bank characteristics are good predictors of banking industry experience of outside directors. The potential links between ownership concentration and board independence cannot explain the importance of country effects for board independence.

2.4.2 Estimating Country Effects

Given that countries matter so much for board independence, a natural question is: Which countries have high levels of board independence? Table 21 shows the average board independence levels for the 31 countries in our 2006 sample. There is substantial variation in board independence across countries. While countries such as the US and Canada display levels of bank board independence at about 74%, countries such as Spain, Sweden and the UK have independence levels in the 40-50% range, and countries such as Argentina, Denmark and France are in the 10-30% range.

These numbers are interesting but difficult to interpret because for most countries our sample size is small. In fact, US banks represent 80% of the whole sample in 2006. This sample imbalance creates two problems. First, with few observations per country, country effects cannot be estimated with much precision. Second, differences in bank characteristics across countries may explain some of the cross-country variation in board independence.

There is nothing we can do with respect to the first problem, as it is simply a limitation of the available data. The small sample sizes in most countries other than the US are not just a consequence of better availability of US data; they are mainly due to the fact that most countries have few publicly-traded banks. As our goal here is to describe the data given our sample, the small sample sizes in some countries only mean that we should attach less confidence to their estimated country effects.

The second problem is more important. For example, comparing the average board independence in Belgian banks with the average board independence in US banks can be seriously misleading if the three Belgian banks in our 2006 sample are very different from the typical US bank. Any observed differences in independence could be attributed to Belgian banks being different rather than to the location of these banks in Belgium. One solution is to estimate country effects as the coefficients on the country dummies in regressions that include firm controls, as the ones in Table 22. The problem is that, with few observations per country, country effects are likely

to be overestimated for those countries with few banks in the sample.[44] To address this problem, we use an alternative approach. We estimate country-specific effects by means of a matching procedure in which non-US banks are matched with US banks that have similar observable characteristics.

Our procedure is as follows. Let $j \in \{1, \ldots, N\}$ index the N countries in our sample, with the convention that $j = 1$ denotes the US. Let z_{ij} be the board structure variable for bank i in country j and let x_{ij} be a vector of observable bank characteristics (covariates). We match each bank i from country $j \neq 1$ with a US bank with observable characteristics similar to x_{ij}. We then compute the effect of country $j \neq 1$ as

$$c_j = \overline{z}_j - \overline{y}_{jm} \tag{4}$$

where $\overline{z}_j$ is the average level of the board characteristic (independence or experience) in country j and $\overline{z}_{jm}$ is the respective average among matching US banks. This matching approach allows us to make meaningful comparisons by benchmarking non-US banks against observationally similar US banks. Such an approach is implementable even when country samples are small, which is an important concern in our application. If the assumptions underlying the matching procedure hold, we can estimate meaningful country effects even for countries with only one bank. As these estimates can be imprecise, we refrain from making strong statements about their importance.

We implement this method by matching banks on propensity score.[45] Using the full sample, we first estimate the parameters of a Probit model as in

$$p(x_{ij}) \equiv Prob(Y_{ij} = 1 | x_{ij}) = \Phi(x'_{ij}\beta) \tag{5}$$

where Y_{ij} is a 'treatment' variable that takes the value of 1 if bank i is from the US (i.e. if $j = 1$), β is a vector of parameters to be estimated, and Φ is the standardized normal cumulative distribution function. The probability of receiving treatment conditional on the covariates is the propensity score, $p(x_{ij})$. We then match each non-US bank with a US bank on the basis of their estimated propensity scores.

We use five bank characteristics in the matching procedure: (log) assets, (log) sales, (log) market to book, return on assets, and (log) leverage. For each non-US bank, we define the matching bank as the US bank whose propensity score is the

[44] To see this intuitively, consider the extreme case in which there is only one bank per country. In such a case, the country dummy in a cross-sectional regression explains the independence level perfectly. Our matching approach allows us to circumvent this problem and produce meaningful estimates of country effects even when there is only one bank in a country. Obviously, this approach relies on somewhat strong assumptions.

[45] This is similar to the approach of Aggarwal, Erel, Stulz, and Williamson (2009).

closest (in absolute terms) to that of the non-US bank.[46] To obtain an estimate of (2), we calculate the difference between the board structure variable of each non-US bank and their matched US bank, and then average this difference by country.[47]

We call the difference between the average of country i's independence levels and those in the matching sample the independence gap of country i. A negative gap means that the country has a lower level of board independence than what is observed in similar US banks (by construction, the US has an independence gap of zero). In Table 24, for each country we present four estimates of their independence gap: columns (a) and (b) report gaps obtained after banks are matched on their characteristics and columns (c) and (d) report results obtained by a naive approach (no matching). In columns (b) and (d), we use self-reported levels of independence rather than our independence measure.

(Table 24 about here)

Table 24 shows many interesting results. First, comparisons between columns (a) and (c) reveal that matching may either reduce (in 18 cases) or increase (in 12 cases) the differences in board independence between US and non-US banks. A second finding is that there is much cross-country variation in bank board independence. Notably, only Canada appears to have a substantial edge over the US; in Canada, boards are more independent than those in similar US banks by 21 percentage points. This effect arises because the matching procedure benchmarks Canadian banks against a group of US banks that have very low independence levels, which highlights the importance of matching on bank characteristics. At the other end of the spectrum, there are many countries with bank board independence gaps of -40% or less, including France (-67%), Greece (-46%), Brazil (-67%), Russia (-79%), and Switzerland (-42%), among others.

A third important finding is that, overall, most countries display an independence deficit with respect to the US. In all but three cases (Austria, Canada, and Puerto Rico), measured gaps (in column (a)) are negative. Although the small sample sizes in most countries do not allow for testing each country effect in isolation, we can test for whether there is a significant US effect. Using the whole sample of non-US and matched US banks, we find that the US effect is about 26%, an effect that is both statistically and economically significant. This number suggests that a randomly

[46] As a robustness check, we also match each non-US bank with the two US banks with propensity scores that are the closest from above and below (provided both exist). The results using this alternative procedure are qualitatively similar from the ones obtained with the simpler closest neighbor approach.

[47] This approach can be formally justified under the assumption that a non-US bank, if it was located in the US, would have the same expected level of the board structure variable as a US bank with similar characteristics. This is a version of what Imbens and Wooldrige (2009) call unconfoundedness assumption.

chosen non-US bank from our sample would have its independence level increased by 26 percentage points on average if it was to move its headquarters to the US. This large US effect - being net of observable bank characteristics - strongly suggests that the institutional and business environments in the US differ markedly from those in other countries.

A final lesson from this analysis is the importance of using a measure of independence that is not based only on self-reporting by banks. In columns (b) and (d), Table 24, we report the estimated independence gaps using the self-reported independence levels. We find that the US banks in the matching sample have lower levels of independence on average if we use our definition of independence instead. For example, using the self-reported independence variable, Canadian banks display a gap of only 4%; this gap jumps to 21% if we use our measure of independence. In sum, when estimating the effects of countries on bank board independence, it is important: (1) to take bank characteristics into account and (2) to use a definition of independence that is (more) consistent across countries. Once both issues are considered, the measured independence gap between US and non-US banks falls, but it is still quite large at about 26%. A fair amount of heterogeneity across countries is hidden behind this average effect, with independence gaps varying from 21% to -87%.

For completeness, we also estimate country effects for board experience, despite the fact that our previous results reveal that these effects can only explain a trivial part of the cross-sectional variation in board experience. Table 25 reports the results of a matching procedure similar to the one reported in Table 24. Only six countries display negative experience gaps with respect to the US; in most countries, directors with banking experience represent a larger fraction of outside directors than they do in US banks. The average experience gap between non-US and US banks is 17%.

(Table 25 about here)

2.4.3 Why do countries matter so much for bank board independence?

Our results suggest that countries have a substantial influence on bank board structure and that their importance is disproportionately higher for independence than they are for experience. In this section we address the question of why countries matter so much for bank board independence.

One possibility is that stronger governance at the bank level is complementary to stronger investor protection at the country level. Using samples of mostly non-financial firms, Doidge, Karolyi, and Stulz (2007) and Aggarwal, Erel, Stulz, and Williamson (2009) find evidence of such complementary effects: the quality of firm-level governance is increasing in a country's level of investor protection.

Related to the previous point is the possibility that board independence is higher in countries with more developed capital markets. This effect could again be a consequence of complementarities between internal governance and country-level governance, as financial development is likely to be associated with better investor protection. Independent directors could also be easier to find in countries with more publicly-listed firms.

Other possible explanations for the importance of countries include idiosyncrasies in business practices across countries (e.g. business culture) and differences in laws and regulations. Laws and regulations can have direct effects on board composition. For example, the Sarbanes-Oxley Act of 2002 has effectively increased the demand for independent directors by requiring audit committees to be entirely composed of independent directors.[48] Laws and regulations can also affect board composition indirectly, for example by redefining directors' fiduciary duties and liabilities. These duties and liabilities can affect companies' perceptions of the costs associated with hiring independent directors.

To test these explanations, we use country-specific variables that capture some of these possibilities. We note however that none of these explanations are mutually exclusive. We estimate the following model:

$$y_{ijt} = x'_{ijt}\beta + h'_j\delta + p'_t\gamma + u_{ijt} \tag{6}$$

where y_{ijt} is the board structure variable for bank i in country j in year t, x_{ijt} is a vector of bank characteristics, h_j is a vector of country characteristics, p_t is a vector of year dummies, β, δ and γ are vectors of parameters to be estimated, and u_{ijt} is the error term. Because our goal is to make inferences about the estimated parameters, in particular δ, to facilitate the comparison with previous results we choose to work both with the 2006 sample only with clustered standard errors by country and with the whole sample up to and including 2008, in which case we estimate (5) by pooled OLS. We include year dummies to account for year effects.

To proxy for the quality of investor protection, in the vector of country characteristics h_j we include the anti-director index times the rule of law index. We choose this variable to facilitate the comparison with the existing literature, in particular with Doidge, Karolyi, and Stulz (2007) and Aggarwal, Erel, Stulz, and Williamson (2009). To proxy for the level of financial development, we use the country's stock market capitalization over GDP. We use per capita GDP to proxy for the level of economic development. We also include dummies indicating three different legal origins: English (the omitted dummy), German, and French.

To address whether regulation affects board composition more directly, we use two variables that are particularly relevant for board structure. The first one is

[48]This rule has been in place for NYSE and Nasdaq listed firms since 1999.

an indicator of whether courts are allowed to remove directors from the boards of banks, in cases of reorganization. Although in virtually all countries in our sample (Germany is the exception) regulators have the right to remove bank directors, whether courts enjoy the same right shows more variation across countries. We hypothesize that this variable captures the extent to which bank board composition can be influenced by courts. This is the only variable we are aware of that is specific to the board composition of banks and widely available. Our second board regulation variable is a dummy indicating whether a country has a mandatory one-tiered board structure. This is a regulation that affects board structures directly. We note however that this variable indicates the requirement of a one-tiered board for all companies, not only banks.

Table 26 displays the results. As before, we report regressions with and without ownership dummies. Results are very similar in both cases, thus we focus on the regressions that do not include ownership variables, as these are run in a larger sample. In columns (a) and (b), we report the results for regressions that use the (logistic transformation of the) fraction of independent directors as the dependent variable. We first note that, although replacing country dummies with country characteristics expectedly reduces the adjusted R^2, the country characteristics model in (5) does a reasonably good job in fitting the data, with an adjusted R^2 of 42%.

Table 26 shows that a reliable association between bank board independence and investor protection does not exist. Thus, we find no evidence of complementarities between bank board independence and country-level governance. This interpretation is strengthened by the lack of a statistically robust relation between French Civil Law legal origin and board independence. Previous works on legal origins usually find that French legal origin countries have lower levels of investor protection.

(Table 26 about here)

Spamann (2010) develops an alternative measure of anti-director rights and argue that the DLLS measure (the one that we use in Table 26) is flawed in important ways. To investigate whether our results are driven by the choice of investor protection variable, we redo our analysis using Spamann's index. We find virtually identical results, thus we omit the tables to save space.[49]

If board independence was complementary to country-level governance, we would expect to find a positive relation between financial development and board indepen-

[49]Because the Spamman index is missing for six countries in our 2006 sample, we fill in the missing data with the DLLS index. We re-scale the Spamman index to the DLLS scale. Using this measure, the investor protection variable enters with a positive coefficient in both specifications, with low t-statistics below 0.8. We conclude that, at least in our case, the lack of a robust association between investor protection and bank board independence is not driven by the particular choice of investor protection indices.

dence. For example, Aggarwal, Erel, Stulz, and Williamson (2009) document positive correlations between financial development and firm-level governance, while Doidge, Karolyi, and Stulz (2007) find similar but weaker results. Table 26 reveals that financial development seems to be negatively related to bank board independence, but this association is not statistically robust. Overall, our evidence suggests that the importance of countries for bank board independence is not driven by a complementarity (nor a substitution) effect between internal and external governance.

In contrast to financial development, economic development (measured by per capita GDP) is positively related to board independence in a statistically robust manner. The mechanism linking economic development to board independence is not clear. One possibility is that the business and regulatory environments of countries in similar stages of economic development share common features.

Our most original results concern the board regulation variables. Bank board independence is lower in countries where courts are legally allowed to remove bank directors during reorganization procedures. Bank board independence is significantly higher in countries with mandatory one-tiered board structures.[50] Statistical significance alone cannot tell us whether the effects of these regulation variables are large enough to explain the country effects. In Subsection 3.2, we estimate an average independence gap of 26%. From Table 21, we see that changes of 50 percentage points in average independence between two countries are not uncommon. Thus, country-specific variables must be able to explain changes in independence ratios of similar magnitudes if they are to explain the large R^2 found in Subsection 3.1.

The economic significance of the regulation variables is substantial. Column (a) shows that countries with empowered courts have independence log odds ratios that are 1.45 lower than countries without empowered courts. To translate this effect into a change in independence ratios we need to choose an initial independence level, as the marginal effects are not constant. For example, a bank with 67% independence (the overall average in 2006) has a log odds ratio of 0.71. An increase of 1.4 in the log odds ratio brings this bank close to 90% independence, while a decrease of the same magnitude yields an independence ratio of 33%. An independence ratio of 67% may be a reasonable benchmark for North America but is too high for most countries. If we use a benchmark of 50% independence (about the average value for Holland), an increase of 1.4 amounts to 81% independence, while a decrease of the same magnitude amounts to 20% independence. As the estimated coefficients

[50] In recent work, Giannone, Lenza, and Reichlin (2010) report that an index of credit market regulation seems to be the key predictor of country performance during the crisis. In unreported results, we include this index among the set of country characteristics. This index is negatively correlated with both board independence and board experience, but these correlations are never statistically significant; the t-statistics are always below 0.8. Including this index reduces the sample due to missing data but does not change the results qualitatively.

for the one-tier dummy are larger (in the 2.2 to 3.1 range), their effects are even stronger.[51]

In sum, we find no evidence that bank board independence is chosen so that it complements external governance at the national level. In contrast, we find direct evidence that board independence is related to board regulations that vary across countries. The magnitude of these effects is substantial. Thus, our tentative conclusion is that laws and regulations that are specifically targeted to board structures can partly explain the large country effect on bank board independence.

For director experience, only financial development and the legal origin variables appear to matter in a robust manner. There is also some weak evidence that countries with one-tiered board structures have boards with less banking expertise.

We conclude that countries matter so much for bank board independence in part because there are some board regulations that vary across countries. These regulations seem to have an important effect on bank board independence, but somewhat relatively less so on director banking expertise. For board experience, country effects are relatively less important.

2.5 The Evolution of Board Structures

In this section we exploit the time-series dimension of our data to understand the evolution of bank board structures. We first look at the aggregate trends and then we consider how banks change their boards when bank characteristics change.

2.5.1 Trends in Board Independence and Experience: The Importance of Year Effects

Inspection of the time series trend for our key variables reveals that, around 2002 and 2003, the fraction of independent directors considerably increases, while the fraction of outside directors with banking experience decreases (see Figure 1).

(Figure 1 about here)

Especially for board independence, these changes are substantial: independence levels increase from about 40% in 2000 to a plateau of about 67% in 2004-2006. We see a small decline in board independence in the crisis years (2007-08). In Figure 2, we normalize both variables to 100 in the year 2000. We can then see even more clearly the magnitude of the relative changes occurring around 2002. These changes are indeed substantial for both variables, but they are particularly dramatic for

[51] The incremental R^2 of the two board regulation variables is about 5%.

independence: in 2006, average independence is 70% higher than it was in 2000.[52]

(Figure 2 about here)

We do not know why bank board independence increases so much and so quickly. We note however that changes in the regulatory environment such as the Sarbanes-Oxley Act (SOX) of 2002 coincide with the period of the most dramatic changes in board structure.[53] Figures 3 and 4 show that the increase in board independence over the 2002-03 period is less pronounced for non-US banks, but also that both US and non-US banks exhibit similar time trends in independence and size.

(Figure 3 about here)

(Figure 4 about here)

The evolution of aggregate levels of bank board experience is the mirror image of that of board independence, with average experience decreasing sharply from 28% in 2002 to 21% in 2006. Experience then increases slightly in the crisis years to about 24% in 2008. Figures 3 and 4 show that year effects in board experience are mostly driven by US banks. In non-US banks, experience stays relatively flat throughout the whole period at about 37%.

The data suggest that year effects are important and can explain much of the evolution of board independence and board experience. Aggregate levels of board independence and experience are negatively correlated and appear to be affected by shocks such as the Sarbanes-Oxley Act of 2002 and the financial crisis of 2007-08.

2.5.2 Changes in Bank Characteristics and Changes in Board Structure

If regulation is an important determinant of board independence, one may wonder whether board composition in banks is set optimally. Although there is no empirical design that can satisfactorily address this issue, we can investigate the link between bank characteristics and board structures in more detail. One possibility is that regulatory effects are so important that bank characteristics become irrelevant for board structure. Or it could also be that regulations affect banks differently depending on bank characteristics.

[52]Our trend figures use the whole sample, which is unbalanced. The pattern that we observe is not due to composition effects though; we find basically the same results if we use only data for those banks for which data are available for all years.

[53]NYSE and Nasdaq implemented changes in their listing requirements between 1999 and 2003 which, together with SOX regulations, were likely to affect the demand for independent directors.

To shed some light on these issues and to provide a broader picture of the bank-level determinants of board structure, we estimate the following model:

$$y_{ijt} = x'_{ijt}\beta + p'_t\gamma + f_{ij} + u_{ijt} \tag{7}$$

where y_{ijt} is the board structure variable for bank i in country j in year t, x_{ijt} is a vector of bank characteristics, p_t is a vector of year dummies, β and γ are vectors of parameters to be estimated, f_{ij} is a unobservable time-invariant bank-specific effect, and u_{ijt} is the error term. We estimate (6) by fixed-effects methods. We used our whole panel (2000 to 2008) to exploit fully the times-series and cross-sectional variation in our sample. The fixed effects eliminate the impact of time-invariant bank characteristics, including country-specific effects. One possible concern is that year effects are important. To estimate (6), our identifying assumption is that, as long as the underlying relationship between bank characteristics and board structure remains stable over time, year dummies can capture the effects of the crisis and other year effects. To check whether this assumption is reasonable, we also estimate (6) using the 2000-2006 sample. We find very similar results, thus we omit the tables for brevity.[54]

Table 27 displays the results of the fixed-effects regressions. In column (a) we report the results for a regression that uses the (logistic transformation of the) fraction of independent directors as the dependent variable. We find no statistically reliable evidence that within-bank changes in observable characteristics are related to changes in bank board independence. The high R^2's in all these regressions are mostly due to the inclusion of bank fixed effects.

This evidence does not imply that board independence does not change over time. We know from the previous subsection that board independence does change substantially over time in our sample; these changes are captured by the year dummies. But these yearly changes in board independence do not appear to be driven by changes in bank characteristics. Rather, they seem to be a response to changes in the institutional environment that affects all banks similarly.

(Table 27 about here)

The results for bank experience are again different. Column (b) shows that, as banks become larger (as measured by assets), board banking experience increases, a result that is very robust. Additionally, as market-to-book ratios decrease, board experience increases. In columns (c) and (d), the block holder dummy is added to the set of regressors. There is no important effect driven by this variable (as it

[54]When using the 2000-2006 sample we find similar estimated coefficients but often higher standard errors (with few exceptions), which is to be expected due to the smaller sample.

does not change much over time), but there are some minor effects on the results due to the change in the sample. The effect of assets is about the same. The effect of market-to-book is virtually unchanged (the absolute value of the point estimate falls from 0.365 to 0.301), although it becomes significant only at 10% in the smaller sample. ROA now seems to matter, again consistent with the hypothesis that more experienced directors are more likely to be added (or retained) after poor performance. Finally, we find that leverage is negatively related to board experience in the smaller sample.

Overall, we find that there is sufficient over-time variation in board experience, and that this variation is associated with changes in observable bank characteristics, especially size and performance. These results contrast with the relative insensitivity of board independence to changes in bank characteristics.

2.6 Final remarks

We assemble the most complete data set on boards of banks to date. Our data allow us to draw a detailed picture of bank board composition up to and including the crisis period. The data reveal a number of new empirical facts. Our evidence suggests that bank board independence around the world is mostly determined by regulatory pressure and by factors external to banks. In contrast, the level of previous banking experience among outside bank directors is mostly explained by bank characteristics. Overall, our findings raise the question of whether board regulation helps or hinders bank governance. We see this as a promising agenda for future research.

A Appendix

A.1 Tables

Table 19: Number of Observations per Country over Time

This table shows the number of banks available for each country-year.

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2000-2008
Argentina	0	0	0	1	1	2	2	2	2	10
Australia	0	0	0	2	8	8	8	8	7	41
Austria	1	1	1	1	1	2	2	6	6	21
Belgium	3	4	4	4	3	3	3	3	3	30
Belize	1	1	1	1	1	1	1	1	1	9
Brazil	0	0	0	0	0	1	1	2	2	6
Canada	0	0	0	5	5	6	8	9	9	42
Chile	0	0	0	0	0	1	1	1	1	4
China	0	0	0	0	0	0	0	3	3	6
Czech Republic	0	0	0	0	0	0	0	1	1	2
Denmark	1	2	2	2	2	3	3	3	3	21
Egypt	0	0	0	0	0	0	0	1	1	2
Finland	0	0	0	0	0	0	0	1	1	2
France	4	5	5	4	4	5	5	5	5	42
Germany	8	8	9	10	10	10	10	9	9	83
Greece	4	5	5	5	6	6	7	7	7	52
Hong Kong	0	0	0	0	0	0	0	1	1	2
Hungary	0	0	0	0	0	0	0	1	1	2
India	0	0	0	0	0	1	2	5	15	23
Italy	10	12	12	14	16	14	12	13	13	116
Japan	0	0	0	0	0	0	0	0	2	2
Liechtenstein	2	2	2	2	2	2	2	2	2	18
Luxembourg	0	0	0	0	0	0	1	1	1	3
Malaysia	0	0	0	0	0	0	0	0	1	1
Morocco	0	0	0	0	0	1	1	1	1	4
Netherlands	2	3	3	3	3	4	4	4	3	29
Nigeria	0	0	0	0	0	0	1	2	4	7
Norway	1	1	1	2	1	1	1	1	1	10
Poland	1	1	1	1	1	1	1	5	5	17
Portugal	2	2	2	2	2	3	3	4	4	24
Puerto Rico	3	4	4	5	6	6	6	4	4	42
Ireland	2	2	2	2	2	2	2	2	2	18
Russia	0	0	0	0	0	1	1	3	3	8
Spain	5	6	6	6	6	6	8	8	8	59
Sweden	4	5	5	5	5	5	5	5	5	44
Switzerland	4	4	4	4	4	5	5	5	5	40
Taiwan	0	0	0	0	0	0	0	1	1	2
Turkey	0	0	0	0	0	0	0	5	5	10
United Arab Emirates	0	0	0	0	0	0	1	0	0	1
United Kingdom	11	11	11	13	14	13	15	14	14	116
United States	108	123	126	341	455	492	500	483	478	3106
All countries	177	202	206	435	558	605	622	632	640	4077

Table 20: Summary Statistics

The sample consists of an unbalanced panel of 4,205 bank level observations from 718 banks for the period 2000-2008. Director data are from the BoardEx database. We obtain additional financial information from Worldscope and Bankscope, and country information from Djankov et al. (2008), La Porta et al. (1998), Euromonitor, and the World Bank Database. Independence is the ratio of independent outside directors over board size. Board size is the number of directors on the board. Banking Experience is the ratio of outside directors with prior managerial or top-executive experience in banking over all outside directors. Busyness is the average number of commercial and non-commercial outside director appointments of all outside directors. Assets is the book value of total assets (in billions of USD). Sales growth is the annual change in sales over the previous year's sales volume. Market-to-book is market value of equity over book common equity. ROA (return on assets) is net income over assets. Leverage is assets over common equity. Block ownership is a dummy that is equal to one if an owner holds a block of at least 10% of the shares. The variable Antidirector is obtained by multiplying the anti-director rights index constructed by Djankov et al. (2008) with the rule of law index reported by La Porta et al. (1998). GDP per capita (PPP adjusted, in thousands of 2005 international USD) is sourced from the World Bank's World Development Indicators, and market capitalization over GDP (a measure of financial development) is provided by Euromonitor. Removal of directors by courts is a dummy variable that equals 1 if courts are allowed to remove bank directors; this variable is taken from the revised World Bank database on bank regulation and supervisory practices developed by Caprio, Levine and Barth (2008). One-tier board is a dummy variable that equals 1 if boards are required to have a unitary board structure; this variable was hand-collected from various sources.

Variable	mean	st. dev.	min	max	count
			Board Characteristics		
Independence	0.622	0.239	0.000	0.955	4076
Banking Experience	0.232	0.198	0.000	1.000	4076
Board Size	12.235	4.804	4.000	35.000	4076
Busyness	2.998	1.554	1.000	15.800	4074
			Firm Characteristics		
Assets	75.698	266.783	0.020	3765.035	4064
Sales	4.829	15.756	0.003	173.617	4055
Market-to-Book	1.823	0.928	0.091	14.303	4035
ROA	0.008	0.017	-0.488	0.301	4062
Leverage	13.980	9.245	0.956	165.227	4059
Block ownership	0.335	0.472	0.000	1.000	3799
			Country Characteristics		
Antidirector	17.946	2.961	3.583	25.714	4038
GDP per capita (2006)	39.990	8.949	1.795	122.100	4076
Market cap over GDP (2006)	1.369	0.354	0.000	4.714	4076
Removal of directors by courts	0.855	0.352	0.000	1.000	4075
One-tier board	0.877	0.328	0.000	1.000	4076

Table 21: Summary Statistics of Bank Board Characteristics in 2006

This table shows summary statistics of four bank board characteristics across countries in 2006. Independence is the ratio of independent directors over board size. Banking Experience is the ratio of outside directors with prior managerial or top-executive experience in banking over all outside directors. Board size is the number of directors on the board. Busyness is the average number of commercial and non-commercial outside director appointments of all outside directors.

Country	Independence					Banking Experience					Board Size					Busyness				
	mean	s.d.	min	max	count	mean	s.d.	min	max	count	mean	s.d.	min	max	count	mean	s.d.	min	max	count
Argentina	0.297	0.016	0.286	0.308	2	0.414	0.020	0.400	0.429	2	10.000	4.243	7	13	2	5.143	2.626	3.286	7.000	2
Australia	0.760	0.110	0.625	0.900	8	0.186	0.165	0.000	0.500	8	9.250	1.832	7	13	8	4.100	0.559	3.167	5.000	8
Austria	0.479	0.029	0.458	0.500	2	0.750	0.354	0.500	1.000	2	18.000	8.485	12	24	2	4.444	2.200	2.889	6.000	2
Belgium	0.192	0.213	0.000	0.421	3	0.215	0.238	0.000	0.471	3	18.000	8.544	9	26	3	4.896	2.795	1.800	7.235	3
Belize	0.000	0	0.000	0.000	1	0.200	0	0	0.200	1	6.000	0	6	6	1	4.400	0	4	4.400	1
Brazil	0.063	0	0.063	0.063	1	0.786	0	1	0.786	1	16.000	0	16	16	1	2.000	0	2	2.000	1
Canada	0.745	0.230	0.200	0.889	8	0.110	0.137	0.000	0.375	8	15.375	3.114	9	19	8	4.135	0.584	3.250	5.133	8
Chile	0.133	0	0.133	0.133	1	0.692	0	1	0.692	1	15.000	0	15	15	1	2.615	0	3	2.615	1
Denmark	0.175	0.304	0.000	0.526	3	0.389	0.096	0.333	0.500	3	15.667	3.055	13	19	3	3.367	1.082	2.167	4.267	3
France	0.122	0.095	0.000	0.250	5	0.563	0.108	0.385	0.650	5	21.000	5.568	14	26	5	8.473	3.664	4.571	13.700	5
Germany	0.383	0.123	0.160	0.545	10	0.559	0.234	0.300	1.000	10	21.300	7.319	8	29	10	4.833	1.048	3.250	6.450	10
Greece	0.211	0.172	0.000	0.563	7	0.396	0.245	0.083	0.778	7	14.286	2.215	11	17	7	2.335	0.853	1.250	3.333	7
India	0.622	0.118	0.538	0.706	2	0.292	0.295	0.083	0.500	2	15.000	2.828	13	17	2	8.758	4.467	5.600	11.917	2
Ireland	0.655	0.017	0.643	0.667	2	0.125	0.059	0.083	0.167	2	14.500	0.707	14	15	2	4.875	2.062	3.417	6.333	2
Italy	0.395	0.339	0.000	0.955	12	0.401	0.130	0.200	0.722	12	17.583	4.337	10	24	12	5.605	3.379	1.444	13.615	12
Liechtenstein	0.292	0.412	0.000	0.583	2	0.286	0.000	0.286	0.286	2	11.000	1.414	10	12	2	3.286	0.606	2.857	3.714	2
Luxembourg	0.261	0	0.261	0.261	1	0.526	0	1	0.526	1	23.000	0	23	23	1	8.632	0	9	8.632	1
Morocco	0.000	0	0.000	0.000	1	0.500	0	1	0.500	1	13.000	0	13	13	1	4.000	0	4	4.000	1
Netherlands	0.519	0.181	0.250	0.643	4	0.263	0.090	0.167	0.385	4	14.000	4.320	10	20	4	6.557	1.564	5.125	8.667	4
Nigeria	0.000	0	0.000	0.000	1	0.167	0	0	0.167	1	11.000	0	11	11	1	2.333	0	2	2.333	1
Norway	0.240	0	0.240	0.240	1	0.250	0	0	0.250	1	25.000	0	25	25	1	3.125	0	3	3.125	1
Poland	0.000	0	0.000	0.000	1	0.444	0	0	0.444	1	17.000	0	17	17	1	4.333	0	4	4.333	1
Portugal	0.258	0.108	0.161	0.375	3	0.579	0.084	0.500	0.667	3	25.333	5.132	21	31	3	8.175	3.246	4.429	10.167	3
Puerto Rico	0.711	0.094	0.571	0.800	6	0.189	0.221	0.000	0.600	6	8.333	1.211	7	10	6	3.006	0.969	2.000	4.750	6
Russia	0.000	0	0.000	0.000	1	0.429	0	0	0.429	1	34.000	0	34	34	1	1.929	0	2	1.929	1
Spain	0.401	0.219	0.000	0.667	8	0.482	0.220	0.222	0.800	8	13.625	3.249	10	19	8	3.121	1.175	2.100	5.714	8
Sweden	0.442	0.078	0.333	0.533	5	0.275	0.102	0.111	0.357	5	13.200	2.168	10	15	5	4.975	0.936	3.900	6.000	5
Switzerland	0.105	0.143	0.000	0.273	5	0.261	0.102	0.100	0.375	5	17.600	5.595	10	24	5	3.404	1.912	1.818	6.077	5
UAE	0.000	0	0.000	0.000	1	0.000	0	0	0.000	1	8.000	0	8	8	1	1.143	0	1	1.143	1
United Kingdom	0.449	0.183	0.000	0.643	15	0.364	0.130	0.188	0.667	15	12.400	4.067	6	19	15	5.032	1.142	3.400	7.625	15
United States	0.738	0.129	0.000	0.938	500	0.178	0.160	0.000	0.750	500	10.742	3.326	4	23	500	2.478	0.712	1.000	6.000	500

Table 22: Regressions of Board Characteristics on Bank Characteristics and Country Dummies in 2006

This table shows ordinary least squares regressions of two board characteristics on bank characteristics and country dummies in 2006. The dependent variable in columns (a)-(c) is the logistic transformation of board independence. The dependent variable in columns (d)-(f) is the logistic transformation of board experience. See Table II for the definition of variables. Robust t-statistics (clustered by country) are in brackets. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variable	*Dependent Variable*					
	Independence			**Banking Experience**		
	(a)	(b)	(c)	(d)	(e)	(f)
Log(Assets)	-0.322		0.229	-0.435		-0.609**
	[-0.451]		[0.659]	[-1.132]		[-2.259]
Log(Sales)	0.045		-0.170	0.935**		1.020***
	[0.070]		[-0.417]	[2.379]		[2.914]
Log(Market-to-Book)	-0.342		0.003	0.460		0.130
	[-0.546]		[0.013]	[0.791]		[0.384]
ROA	16.088*		12.939**	0.155		2.421
	[1.814]		[2.161]	[0.039]		[0.976]
Log(Leverage)	0.162		0.377	-0.069		-0.050
	[0.407]		[1.613]	[-0.208]		[-0.158]
Observations	609	609	609	609	609	609
Number of Countries	31	31	31	31	31	31
Adjusted R^2	0.104	0.538	0.570	0.068	0.027	0.051
Country dummies	No	Yes	Yes	No	Yes	Yes

TABLE 23: REGRESSIONS OF BOARD CHARACTERISTICS ON BANK CHARACTERISTICS AND COUNTRY DUMMIES IN 2006, WITH OWNERSHIP CONTROLS

This table shows ordinary least squares regressions of two board characteristics on bank characteristics and country dummies in 2006. The dependent variable in columns (a)-(c) is the logistic transformation of board independence. The dependent variable in columns (d)-(f) is the logistic transformation of board experience. See Table II for the definition of variables. Robust t-statistics (clustered by country) are in brackets. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels

Independent Variable	*Dependent Variable*					
	Independence			**Banking Experience**		
	(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**
Log(Assets)	-1.556		-0.638	-0.362		-0.830**
	[-1.513]		[-1.147]	[-0.671]		[-2.459]
Log(Sales)	1.338		0.707	0.903		1.215***
	[1.361]		[1.121]	[1.650]		[3.618]
Log(Market-to-Book)	-0.198		0.072	0.740		0.315
	[-0.332]		[0.267]	[0.968]		[0.604]
ROA	-29.313		-17.563	-21.811		-18.548
	[-1.012]		[-1.045]	[-1.426]		[-1.398]
Log(Leverage)	-0.212		0.059	0.050		-0.089
	[-0.476]		[0.243]	[0.090]		[-0.145]
Block holder	-0.712**		-0.163	-0.195		-0.748*
	[-2.123]		[-1.002]	[-0.252]		[-1.915]
Observations	572	572	572	572	572	572
Number of Countries	31	31	31	31	31	31
Adjusted R^2	0.125	0.566	0.571	0.074	0.056	0.079
Country dummies	No	Yes	Yes	No	Yes	Yes

Table 24: Bank Board Independence Gaps in 2006

This table shows the average difference in board independence between non-US banks and matched US banks. A negative gap means that the country has a lower level of board independence than what is observed in similar US banks (by construction, the US has an independence gap of zero). In columns (a) and (b) banks are matched on five characteristics (assets, sales, market-to-book, ROA, and leverage) using the nearest neighbor propensity matching procedure. In columns (c) and (d) country averages are compared with the US average, without matching on characteristics. Columns (b) and (d) use banks' self-reported independence classifications, while columns (a) and (c) use our independence variable, which is corrected for internally appointed directors, client-directors, and employee representatives.

	Independence gap				
	Matched sample		No matching		
Country	Corrected	Self-reported	Corrected	Self-reported	count
	(a)	(b)	(c)	(d)	
Argentina	-0.429	-0.465	-0.441	-0.464	2
Austria	0.017	-0.032	0.023	0.053	8
Australia	-0.096	-0.260	-0.259	-0.136	2
Belgium	-0.352	-0.666	-0.546	-0.569	3
Brazil	-0.667	-0.667	-0.738	-0.761	1
Belize	-0.820	-0.820	-0.675	-0.699	1
Canada	0.210	0.037	0.007	0.036	8
Switzerland	-0.415	-0.603	-0.633	-0.588	5
Chile	-0.700	-0.700	-0.605	-0.628	1
Germany	-0.285	-0.804	-0.355	-0.743	10
Denmark	-0.237	-0.394	-0.562	-0.498	3
Spain	-0.383	-0.356	-0.337	-0.274	8
France	-0.668	-0.531	-0.616	-0.502	5
United Kingdom	-0.164	-0.280	-0.289	-0.286	15
Greece	-0.458	-0.631	-0.527	-0.542	7
India	-0.245	-0.245	-0.116	-0.139	2
Ireland	-0.051	-0.176	-0.083	-0.106	2
Italy	-0.303	-0.326	-0.343	-0.325	12
Liechtenstein	-0.337	-0.337	-0.446	-0.469	2
Luxembourg	-0.364	-0.614	-0.477	-0.500	1
Morocco	-0.867	-0.867	-0.738	-0.761	1
Nigeria	-0.667	-0.667	-0.738	-0.761	1
Netherlands	-0.023	-0.140	-0.219	-0.096	4
Norway	-0.546	-0.546	-0.498	-0.521	1
Poland	-0.667	-0.667	-0.738	-0.761	1
Puerto Rico	0.015	-0.017	-0.027	-0.033	6
Portugal	-0.524	-0.533	-0.480	-0.389	3
Russia	-0.786	-0.786	-0.738	-0.761	1
Sweden	-0.313	-0.305	-0.295	-0.211	5

Table 25: Bank Board Experience Gaps in 2006

This table shows the average difference in board experience between non-US banks and matched US banks. A negative gap means that the country has a lower level of board experience than what is observed in similar US banks (by construction, the US has an experience gap of zero). In column I banks are matched on five characteristics (assets, sales, market-to-book, ROA, and leverage) using the nearest neighbor propensity matching procedure. In column (b) country averages are compared with the US average, without matching on characteristics.

	Experience gap		
Country	Matched sample	No matching	count
	(a)	(b)	
Argentina	0.188	0.236	2
Austria	-0.034	0.008	8
Australia	0.620	0.572	2
Belgium	0.075	0.037	3
Brazil	-0.300	0.022	1
Belize	0.661	0.608	1
Canada	-0.081	-0.067	8
Switzerland	0.018	0.083	5
Chile	0.601	0.514	1
Germany	0.373	0.381	10
Denmark	0.292	0.211	3
Spain	0.295	0.304	8
France	0.379	0.386	5
United Kingdom	0.138	0.186	15
Greece	0.194	0.218	7
India	0.059	0.114	2
Ireland	0.015	-0.053	2
Italy	0.222	0.224	12
Liechtenstein	-0.046	0.108	2
Luxembourg	0.383	0.348	1
Morocco	0.500	0.322	1
Nigeria	-0.083	-0.011	1
Netherlands	0.030	0.085	4
Norway	0.173	0.072	1
Poland	0.244	0.267	1
Puerto Rico	-0.064	0.011	6
Portugal	0.432	0.402	3
Russia	0.352	0.251	1
Sweden	0.128	0.097	5

Table 26: Regressions of Board Characteristics on Bank Characteristics and Country Characteristics

This table shows ordinary least squares regressions of two board characteristics on bank characteristics and country characteristics in 2006 and for the 2000-2008 period. The dependent variable in columns (a)-(b) and (e)-(f) is the logistic transformation of board independence. The dependent variable in columns (c)-(d) and (g)-(h) is the logistic transformation of board experience. See Table II for the definition of variables. Robust t-statistics (clustered by country) are in brackets. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

Independent Variable	*Dependent Variable*							
	Independence		**Banking Experience**		**Independence**		**Banking Experience**	
	(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	**(h)**
Log(Assets)	0.213	-0.327	-0.916***	-0.394	-0.762	-0.902	-1.190***	-0.130
	[0.637]	[-0.593]	[-3.224]	[-1.149]	[-1.280]	[-1.359]	[-2.943]	[-0.222]
Log(Sales)	-0.198	0.331	1.261***	0.704**	0.800	0.893	1.537***	0.442
	[-0.562]	[0.579]	[3.716]	[2.325]	[1.281]	[1.300]	[4.303]	[0.859]
Log(Market-to-Book)	0.179	0.130	0.396	0.049	0.302	0.262	0.459	0.111
	[0.400]	[0.416]	[0.836]	[0.113]	[0.603]	[0.789]	[0.878]	[0.230]
ROA	12.472*	4.109	2.708**	-0.832	-31.163	-10.101	-22.494	-6.669
	[1.947]	[0.520]	[2.072]	[-0.194]	[-1.270]	[-1.207]	[-1.615]	[-0.814]
Log(Leverage)	0.367	0.384	-0.459	-0.497	0.020	0.274	-0.352	-0.492
	[1.537]	[1.119]	[-1.085]	[-1.481]	[0.073]	[0.670]	[-0.584]	[-1.162]
Legal Origin - French	-0.784	-1.202	2.018***	2.007***	-0.575	-0.824	2.323***	1.911***
	[-0.867]	[-1.465]	[2.840]	[3.313]	[-0.656]	[-0.987]	[3.348]	[3.038]
Legal Origin - German	-2.055**	-2.509***	2.386**	1.716**	-1.625*	-2.251**	2.827**	1.704**
	[-2.359]	[-2.810]	[2.322]	[2.256]	[-1.834]	[-2.554]	[2.752]	[2.254]
Antidirector	0.002	-0.013	0.046	0.062	0.020	0.009	0.030	0.057
	[0.025]	[-0.166]	[0.459]	[0.812]	[0.248]	[0.105]	[0.261]	[0.669]
GDP per capita (2006)	0.165***	0.154***	-0.016	-0.007	0.169***	0.151***	-0.023	-0.012
	[3.735]	[3.776]	[-0.467]	[-0.222]	[3.828]	[3.843]	[-0.665]	[-0.380]
Market cap over GDP (2006)	-1.417*	-0.761	-0.808*	-0.978***	-1.430*	-0.789	-0.758*	-0.973***
	[-1.776]	[-0.817]	[-1.907]	[-3.146]	[-1.821]	[-0.826]	[-1.811]	[-3.010]
Removal of directors by courts	-1.451*	-1.557**	0.643	0.663	-1.442*	-1.388*	0.629	0.648
	[-1.925]	[-2.150]	[0.866]	[1.269]	[-1.921]	[-1.958]	[0.837]	[1.209]
One-tier board	3.108***	2.217*	-1.096	-1.324*	3.111***	2.338**	-0.805	-1.329
	[3.171]	[2.055]	[-1.043]	[-1.725]	[3.107]	[2.144]	[-0.676]	[-1.597]
Block holder					-0.143	-0.124	-0.621	-0.063
					[-0.692]	[-0.613]	[-1.238]	[-0.236]
Observations	609	3,701	609	3,701	572	3,476	572	3,476
Sample	2006	2000-08	2006	2000-08	2006	2000-08	2006	2000-08
Number of Countries	31	31	31	31	31	31	31	31
Adjusted R^2	0.424	0.384	0.094	0.099	0.423	0.398	0.096	0.099
Year dummies	No	Yes	No	Yes	No	Yes	No	Yes

Table 27: Bank Fixed Effects Regressions of Board Characteristics on Bank Characteristics

The sample consists of panel data of banks between 2000 and 2008. The dependent variable in columns (a) and (c) is the logistic transformation of board independence. The dependent variable in columns (b) and (d) is the logistic transformation of board experience. See Table II for the definition of variables. Robust t-statistics (clustered by country) are in brackets. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels. Reported R2's include the effect of bank dummies.

Independent Variable	*Dependent Variable*			
	Independence	**Banking Experience**	**Independence**	**Banking Experience**
	(a)	**(b)**	**(c)**	**(d)**
Log(Assets)	-0.035	0.764***	-0.027	0.904***
	[-0.262]	[7.753]	[-0.190]	[6.726]
Log(Sales)	0.227	0.042	0.240	0.135
	[1.158]	[0.385]	[1.070]	[0.998]
Log(Market-to-Book)	-0.088	-0.365***	-0.097	-0.301*
	[-1.209]	[-2.745]	[-1.183]	[-1.805]
ROA	-0.133	-0.529	-0.290	-8.073***
	[-0.193]	[-0.279]	[-0.178]	[-3.837]
Log(Leverage)	0.152	-0.345	0.133	-0.521**
	[0.668]	[-1.140]	[0.549]	[-2.068]
Block holder			-0.063	0.005
			[-1.132]	[0.054]
Observations	4,000	4,000	3,737	3,737
Number of Countries	31	31	31	31
Adjusted R^2	0.919	0.703	0.917	0.703
Year dummies	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes

A.2 Figures

FIGURE 1: TIME TRENDS IN BOARD CHARACTERISTICS - 2000-2008, FULL SAMPLE

This figure shows average board independence and banking experience for all banks in the sample. Board independence is measured as a fraction of board size while banking experience is measured as a fraction of the number of independent directors.

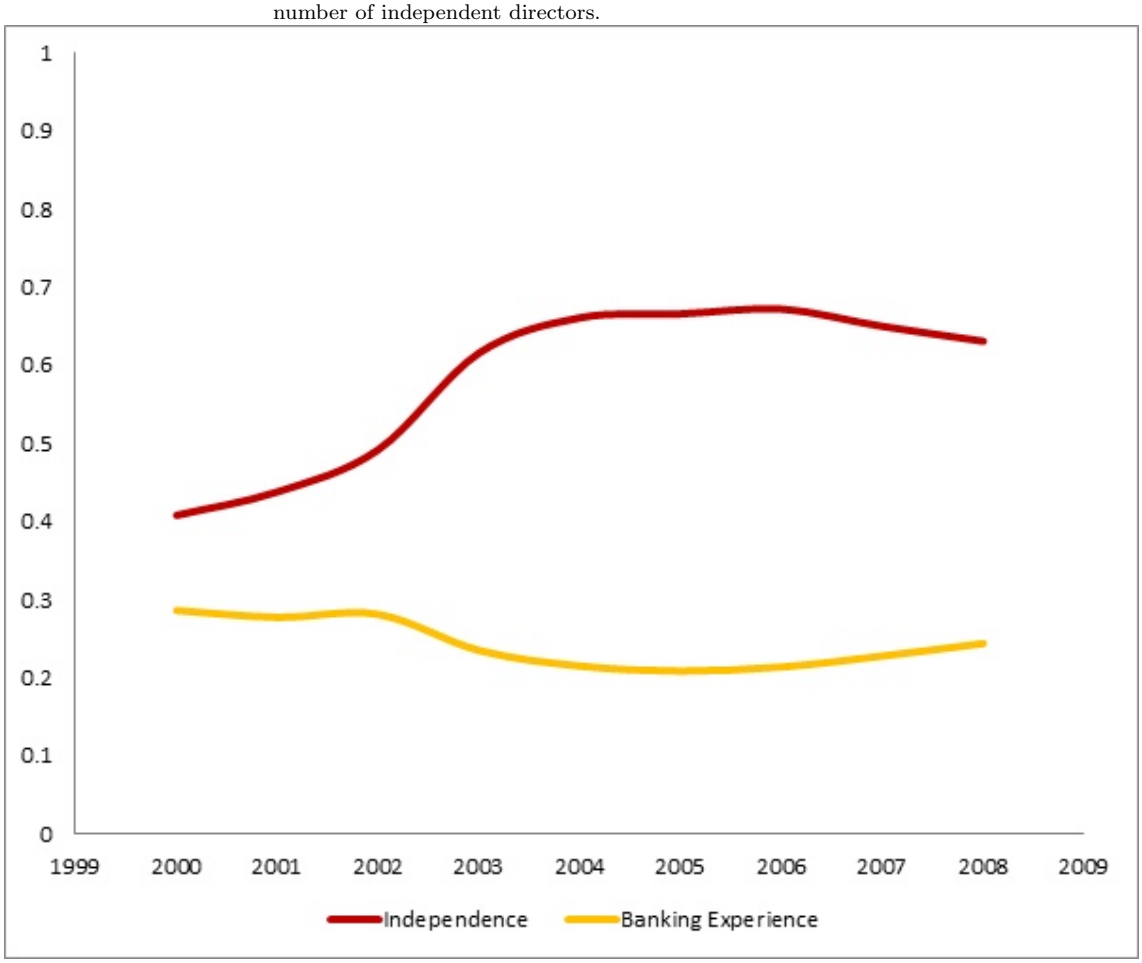


FIGURE 2: TIME TRENDS IN BOARD CHARACTERISTICS IN PERCENTAGES- 2000-2008, FULL SAMPLE

This figure shows average board independence and banking experience for all banks in the sample. Board independence is measured as a fraction of board size while banking experience is measured as a fraction of the number of independent directors. All values are expressed as a percentage of their 2000 levels (year 2000 = 100).

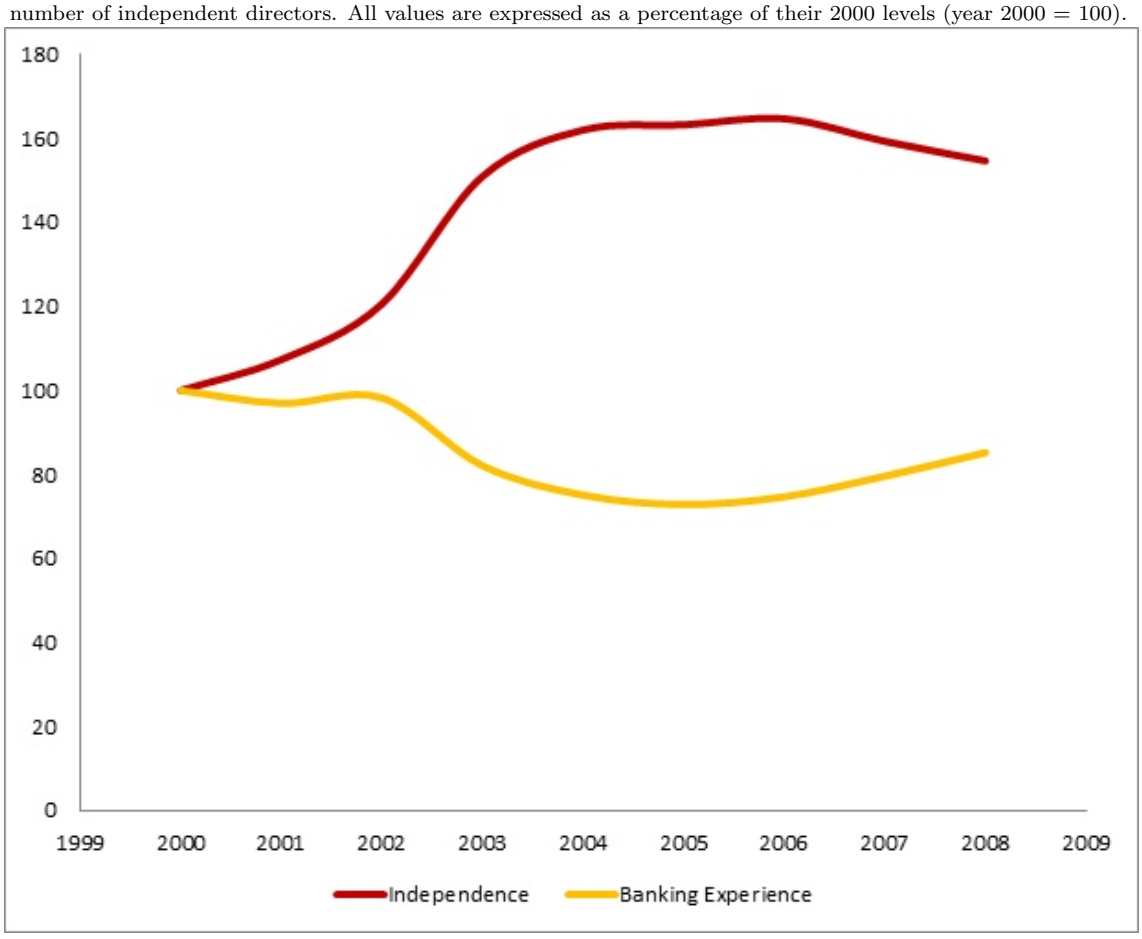


FIGURE 3: TIME TRENDS IN BOARD CHARACTERISTICS - 2000-2008, US BANKS ONLY

This figure shows average board independence and banking experience for all US banks in the sample. Board independence is measured as a fraction of board size while banking experience is measured as a fraction of the number of independent directors. All values are expressed as a percentage of their 2000 levels (year 2000 = 100).

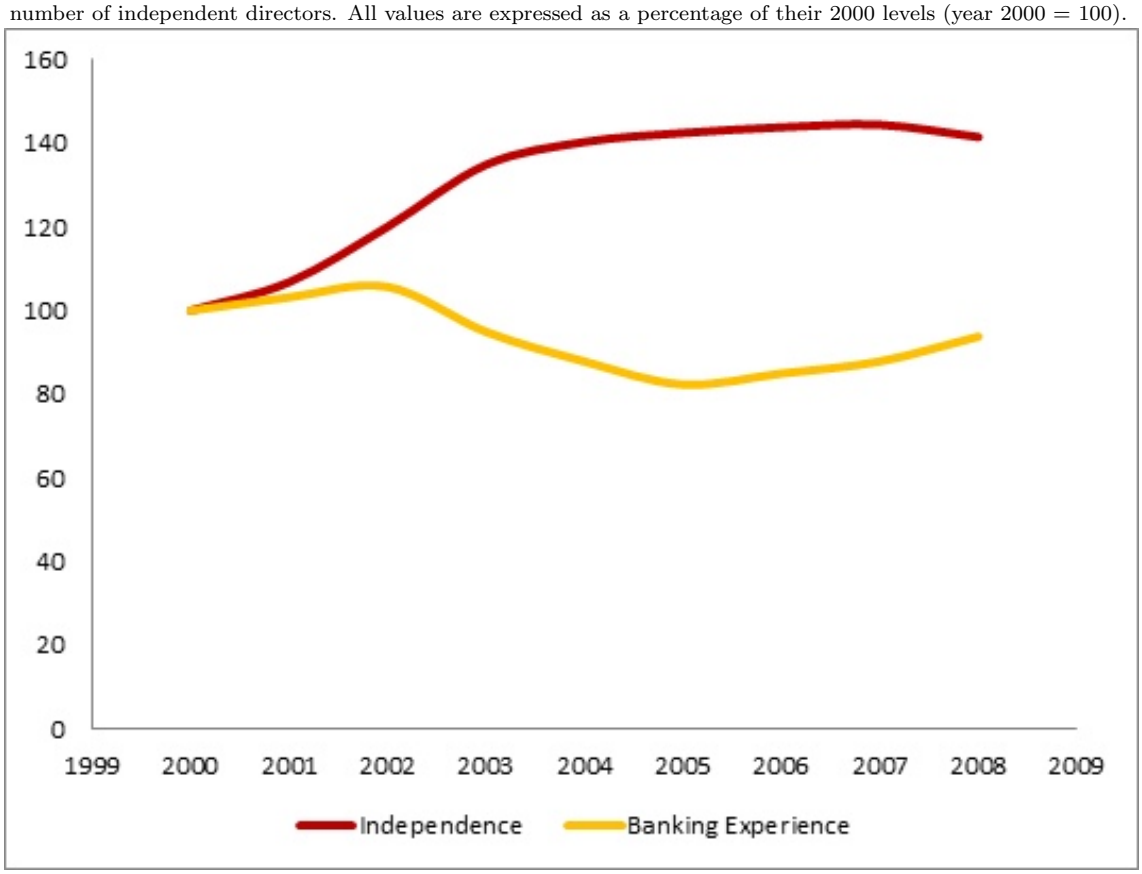
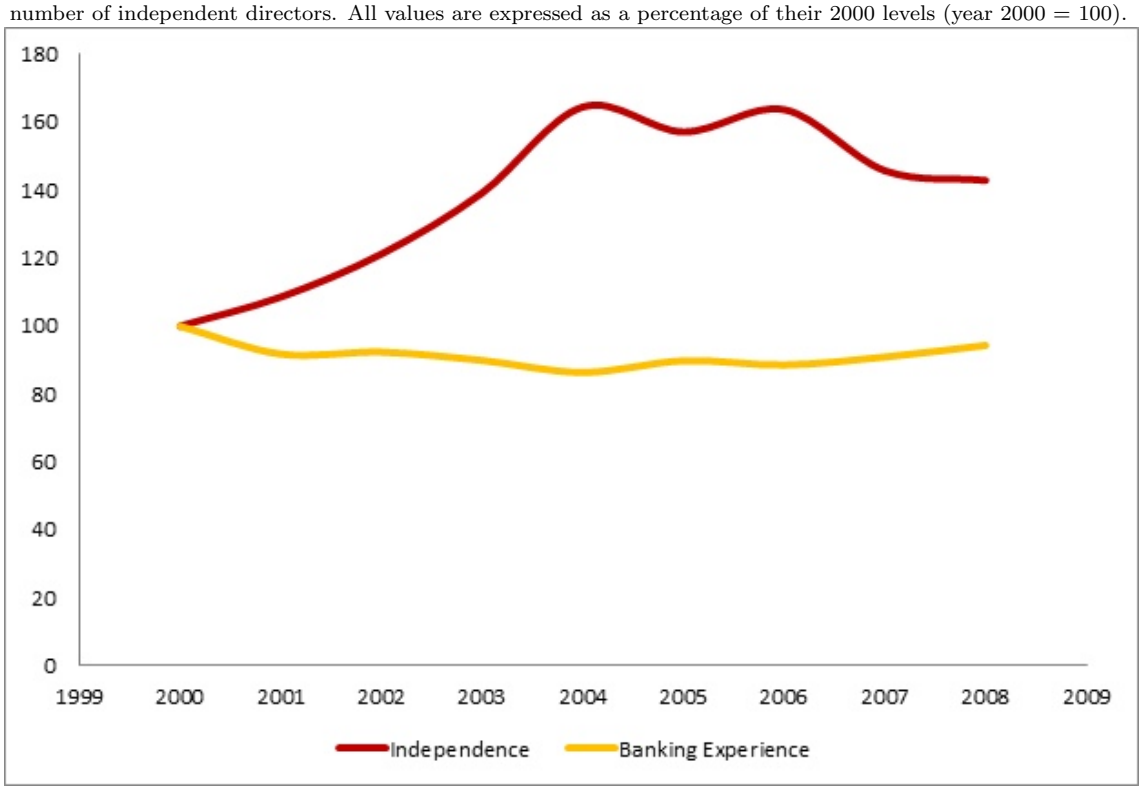


FIGURE 4: TIME TRENDS IN BOARD CHARACTERISTICS - 2000-2008, NON-US BANKS ONLY

This figure shows average board independence and banking experience for all non-US banks in the sample. Board independence is measured as a fraction of board size while banking experience is measured as a fraction of the number of independent directors. All values are expressed as a percentage of their 2000 levels (year 2000 = 100).



3 The Labour Market for Executives

3.1 Introduction

In this chapter, I analyse the careers of executives in general and the careers and turnover of CEOs in particular.

Research on CEOs is usually centred around three main questions: 1) How are CEOs paid and do CEOs perform for pay?, 2) Are CEOs fired for bad performance? 3) What is the relation between CEO characteristics and corporate performance? However, less is known about the careers of the individuals who made it to a CEO position. Moreover, we do not understand well how firms select their CEOs and what determines whether a certain executive becomes CEO or not in his career.

The purpose of this paper is twofold. First, it provides an exhaustive analysis of the careers of people who make it to a CEO position and it is centred on three questions: i) How does the career of a CEO look like before he was promoted?, ii) What are the details of his promotion, i.e. how does the turnover look like (e.g. internal vs. external turnover)?, iii) What do former CEOs do after they leave a certain CEO position? Second, it aims to give a first (and partial) answer to the question whether luck, i.e. being in the right place at the right time, plays a role for individuals becoming CEOs.

I start my analysis by providing new and detailed descriptive insights in several aspects of the careers of CEOs. Some dimensions (e.g. insider vs. outsider hires) have been analysed before; in these cases, this paper is extending the time series to the 2000-2008 period. Moreover, using a single dataset (in both the cross-section and over time) as well as coherent definitions of variables, it makes it possible to relate different variables of interest to each other or to analyse them jointly. Other dimensions, such as the future career of managers after they leave a certain CEO position, have not been documented before (to the best of my knowledge). In particular, some results of my analysis raise further questions on earlier research results. For instance,

1. How shall we classify insider vs. outsider hires? The data reveals that only a minority of insider CEOs had already been with the company for a substantial part of their career (e.g. 50% or more than 10 years). About 25% have only been with the company for less than 3 years and were likely to be hired in order to replace the CEO. This observation leads to the question how should we think about a classification in insider and outsider turnovers? Which (and why) industries or companies hire executives a few years before promoting

them?

2. Some research exploits variation in the background of a newly hired CEO in order to evaluate the importance of industry specific skills (e.g. Cremers et al. (2011)) in different sectors. Moreover, Eisfeldt and Kuhnen (2011) develop a competitive assignment model in which CEOs and firms are matched based on multiple characteristics. They argue that, if industry conditions change, another set of CEO skills might be required which leads to CEO turnover and more precisely to a turnover with an industry-outsider. In their empirical analysis, Cremers et al. as well as Eisfeldt and Kuhnen only consider the last position of the CEO. However, results by Custodio and Metzger (2011 a,b) as well as by analysing the backgrounds of CEOs within this sample suggest that considering the full employment history (not only the last position) makes a difference and neglecting important parts of the CEOs' human capital might lead to wrong conclusions.

3. Career concern models explicitly and the market for corporate control implicitly assumes that a forced turnover comes at some costs for the dismissed CEO. Moreover, Peters and Wagner (2009) argue that CEOs receive a turnover risk premium that compensates them for the risk of a turnover. However, it is not clear how much bite these mechanisms have in reality. There is evidence that dismissed CEOs or laid off investment bankers are not heavily punished by the market and able to get access to good positions again. To the best of my knowledge, the destination of leaving CEOs has not been analysed before. I find preliminary evidence that a substantial fraction of leaving CEOs get a new CEO position in future. Interestingly, classifying turnovers into voluntary and forced ones, I document that CEOs classified as dismissed are actually more likely to get a new CEO position in future.

In the second part of the paper, I am making a first attempt to estimate a causal effect of the economic environment (such as recessions) on the careers of executives. When analysing the determinants of successful CEO careers for instance, the key issue is to identify the right counterfactual. Inferences based on a comparison between CEOs are potentially to be biased as executives who already made it to a CEO position are likely to be the wrong "population at risk". Using a broader definition and exploiting exogenous variation, I show that exogenous shocks (such as industry performance) affect the careers of executives. I follow cohorts who enter the board of companies as executive directors over time. I observe whether the industries of these individuals are hit by negative shocks. I show that individuals whose industries are performing badly are less likely to be promoted to a CEO position. This finding suggests that luck is not only affecting CEO pay (see Bertrand and Mullainathan

(2001)) but also who is promoted to a CEO position at first.

The paper proceeds as follows. The next section briefly surveys related literature. Section 3 describes the data. Section 4 presents descriptive statistics of CEO careers. Section 5 analyses the impact of changes in the economic environment on the careers of executives. Section 6 concludes.

3.2 Literature Survey

This paper is related to three different aspects of the literature on CEOs. First, it relates to research that analyses characteristics and experience of managers and their impact on firm performance. Second, it relates to questions on CEO turnover and how CEOs are replaced. Third, it contributes to the literature that is interested in how CEOs are selected.

3.2.1 CEO Characteristics and Experience

It it is now well established that CEOs matter and that they affect corporate performance (for example, Bertrand and Schoar 2003, Adams, Almeida, and Ferreira 2005, Bennedsen, Perez-Gonzalez, and Wolfenzon 2008, Malmendier and Tate 2008, and Graham et al. 2009). Moreover, there is one strand of research that relates CEO characteristics (such as overconfidence (Malmendier and Tate (2008)) to management style. Kaplan, Klebanov, and Sorensen (2011) study individual characteristics of CEO candidates for venture capital. They show that subsequent performance is positively related to general ability and execution skills. Other research relates (early) experience of the CEOs to corporate decision making. Custodio and Metzger (2011 a,b) show how industry-specific human capital that was accumulated over the career of the CEOs affects corporate performance. They show that CEOs who have experience in the industry of the target perform better in mergers and acquisitions by negotiating a better price with the target. Moreover, they find that CEOs with experience in the financial sector manage corporate cash differently. Financial experts hold less cash on average but react more dynamically when times are tight. Malmendier et al. (2011) show that early-life experiences of CEOs their style: "CEOs who grew up during the Great Depression are averse to debt and lean excessively on internal finance". Moreover, "CEOs with military experience pursue more aggressive policies, including heightened leverage". Schoar and Zuo (2011) show the effect of graduating in a recession on the careers of CEOs and ultimately on their management style. They document that these so-called 'recession CEOs' spend less in capital expenditures and R&D, have lower leverage, are more diversified across segments, and show more concerns about cost effectiveness.

3.2.2 Turnover

There is substantial literature on CEO turnover in general and on voluntary vs. forced and outside vs. inside turnover (e.g. see Parrino (1997), Huson et al. (2001), Huson et al. (2004)) in particular. Moreover, there is also more recent literature being concerned with the sensitivity of firm performance and turnover. Jenter and Lewellen (2010) find that boards aggressively fire CEOs for poor performance, and that the turnover-performance sensitivity increases substantially with board quality. Jenter and Kanaan (2010) show that CEOs are also fired after bad firm performance caused by factors beyond their control. They document that CEOs are significantly more likely to be dismissed from their jobs after bad industry or bad market performance. Eisfeld and Kuhnen (2011) explain this somehow puzzling result from Jenter and Kanaan by showing that both absolute and relative performance driven turnover can be natural and efficient outcomes of a competitive assignment model in which CEOs and firms form matches based on multiple characteristics. One of their empirical predictions is that firms are more likely to hire an industry outsider if a turnover is triggered by bad industry performance. They interpret industry shocks as shocks to firms' skill demands and CEOs with other skill sets might improve the firm-CEO match quality.

3.2.3 Careers

Though we know something about the careers general histories of CEOs (e.g. Frydman and Saks (2010), Schoar and Zuo (2011), Murphy and Zabojnik (2007), Custodio and Metzger (2011,a,b)), there is little evidence on how firms select CEOs and why certain individuals become CEOs at first. However, there are a few notable exceptions. Kaplan et al. (2011) study the characteristics of CEO candidates in venture capital transactions. In a theoretical work, Goel et al. (2008) show that an overconfident manager has a higher likelihood than a rational manager of being deliberately promoted to CEO under "value-maximizing" corporate governance. In similar spirit, Kaniel et al. (2010) use a longitudinal data set that tracks the job search performance of MBA students in order to analyse the effect of optimism on careers. They find that "dispositional optimists experience significantly better job search outcomes than pessimists with similar skills. During the job search process, they spend less effort searching and are offered jobs more quickly. They are choosier and are more likely to be promoted than others." Schoar and Zuo (2011) relate early career experience (such as starting in a recession) to the career progression of CEOs. However, as I elaborate in more detail in section 3.5.1, due to the nature of the data, it is very difficult to establish a causal effect in their analysis. Bender and von Wachter (2006), analysing young workers in a German context, show that workers "who are in the right place at the wrong time" suffer persistent losses. In

related work, Kuhnen (2011) analyses how MBA students "search and compete for jobs." She finds "that candidates search harder if they have lower ability or worse outside options, the job sought is more valuable, or if firms are more likely to hire. Candidates self-select into positions for which they are better qualified and higher ability types choose to compete for better paying jobs, such as those in the financial industry."

3.3 Data

3.3.1 Data Sources

My initial sample is the BoardEx database which contains detailed information on the complete board (executive directors (EDs) and non-executive directors (NEDs)) of listed US companies. I merge this database with the Executive Compensation database (COMPUSTAT ExecuComp) that covers over 2500 companies. This merged universe of firms covers the S&P 1500 from 2000 onwards, including companies that were once part of that index. For each firm-year, BoardEx classifies the position of all directors, allowing me to identify the current CEO as well as other executive and non-executive positions.

In many questions of this paper, I am interested in the various aspects of the employment history as well as future positions of these executives and non-executive directors. BoardEx does not only provide information on the identity of current board members, it also collects information on their complete employment history (including company roles and positions), education, and other activities (such as social activities). To construct measures of experience, I am interested in characteristics of the previous and future positions of the CEOs. These characteristics include the firms' industries, the role, and the exact tenure in each position. To learn more about these firms (such as the firms' industries), I match the list of the executives' past and future companies with different data sources that file information on their lines of business. I obtain information on quoted firms from COMPUSTAT and information on private firms from ICARUS.[55]

I also obtain basic demographic information such as gender and date of birth from the BoardEx database. BoardEx is also providing information of the education of the CEOs which allows me to identify whether an executive has participated in a MBA program or not. I obtain basic information on compensation such as total pay in a given year from BoardEx as well.

Accounting and stock price information for this set of companies as well as for the whole CRSP universe (when constructing industry benchmarks) is taken from

[55]Sometimes company names are spelled differently in the datasets or the company in the BoardEx database refers to a subsidiary or a financial shell of the company. A simple example is 'Microsoft Corp' and 'Microsoft.

the CRSP-COMPUSTAT files. Last, several parts of the upcoming analysis compare the outcomes of interest between different sectors. In order to classify industries, I rely on a definition of different sectors. I use the Fama-French 12 (48) sectors classification from Fama's webpage.

3.3.2 Construction of Variables

Number of firms a CEO has worked in I obtain the previous position of the CEO from BoardEx and I merge the corresponding firms with COMPUSTAT and ICARUS as describe in the section before. For each CEO I compute the number of unique firms he was working in before becoming CEO in the current company. Positions at these firms include all sorts of roles.

Number of industries a CEO has worked in In order to understand in how many different industries a certain CEO has worked in before. I obtain information on the primary SIC code that is obtained from the firms the CEO was working in before from COMPUSTAT and ICARUS (as described in 3.2.1). I use the translation table provided on Fama's webpage in order to get the corresponding SIC12 and SIC48 industry classification. I then compute the number of unique industries a CEO was working in before becoming CEO at the current company.

Age when become CEO I obtain the date of birth, year of birth, or age from the BoardEx files (depending on the level of detail of the provided information) allowing me to compute the age of the executive when he became CEO.

Education I use the education filings of BoardEx in order to obtain information on the education of a CEO. I define a dummy variable that is equal to 1 if the CEO graduated from a MBA program and information on his education is non-missing, and equal to 0 if information of the education of a CEO is non-missing but he did not participate in a MBA program. If information on education is not available, I code the MBA dummy as missing.

Wage I use BoardEx information on directors' compensation to construct a very basic measure of their remuneration. Please note that the quality of the data on compensation is less detailed as in ExecuComp. However, BoardEx provides basic information on compensation such as salary, bonus, equity, and options. I use the total annual compensation (i.e. the value of the sum of all compensation components) as my main measure of compensation. I also use the total annual income as a metric in order to rank executive and non-executive directors within a firm in every year. I.e. the director with the highest annual income is ranked first, the one with

the second highest income is ranked second etc. I am going to use this rank in order to analyse within firm promotions.

Roles BoardEx provides information on each position of a director has throughout his career. It classifies each position into an executive or non-executive position. Moreover, it also provides the title of each position (as a string variable). I analyse each position and classify it into the following roles:

- Non-Executive Director (Score = 10)
- Board member (Score = 20)
- Director (Score = 30)
- Vice Chairman (Score = 40)
- Executive Director (Score = 50)
- Vice President (Score = 60)
- Regional CEO, Division CEO (Score = 70)
- Chairman (Score = 80)
- Non-executive Chairman (Score = 90)
- Chief Technology Officer (Score = 100)
- Executive Chairman (Score = 110)
- President (Score = 120)
- Executive Vice President (Score = 130)
- Chief Financial Officer (Score = 140)
- Chief Operating Officer (Score = 150)
- Interim CEO (Score = 180)
- CEO (Score = 200)

Please note that the roles are not conclusive. For example, a CEO is usually an executive director as well. Therefore, I obtain the highest position for each individual, for each company and year by using the scoring as illustrated above.

I use the roles as an alternative measure in order to establish a ranking among executive directors.

Founder I separately code whether an individual was an entrepreneur and founded a company.

Business Expertise For the segments 'finance', 'consulting', and 'auditing' I construct separate dummies.

Finance I classify a company as a financial company if its FF12 classification is '11' - Finance .

Banking I classify a company as a bank if its SIC classification is '60XX' or '61XX'.

Auditing I am interested in current and former top-tier auditing companies. I define a dummy variable 'auditing' that is equal to 1 if the CEO has worked in at least one company out of the following list : Pricewaterhouse, Deloitte, Ernst and Young, KPMG, Arthur Anderson, Coopers, Peat Marwick, Touche Ross

Consulting I am interested in current and former top-tier consulting companies. I define a dummy variable 'consulting' that is equal to 1 if the CEO previously worked for at least one of the following companies : McKinsey, Boston Consulting Group, Bain & Company, Booz & Company, Deloitte Consulting, Monitor Group, PricewaterhouseCoopers, Mercer, Ernst & Young, Oliver Wyman, Accenture, KPMG, AT Kearny, Cambridge Group, Analysis Group, LEK Consulting, Roland Berger, Cap Gemini, Arthur D. Little, Hewitt Associates, Mitchell Madison Group, Huron Consulting Group, Slalom Consulting

Tenure I use the start date and the end date of each role in order to calculate the tenure for each individual and role. I compute the tenure within a firm as the sum of non-overlapping tenure periods of all roles by an individual and firm.

Recession I use the NBER classification in order to classify a certain year into a 'recession year' or not.

3.4 CEO backgrounds and Turnover

3.4.1 Companies

Table 28 provides the distribution of firms within this sample across industries. There are 2,192 companies in the sample. The dominant sectors are Manufacturing, Business Equipment, Wholesale, and Finance with more than 10% of the firms in each sector (11% - 19%).

(Table 28 about here)

3.4.2 CEO backgrounds

Demographic Statistics and Career Paths I observe 3,773 different CEOs working in 2192 different large US companies (ExecuComp universe) between 2000 and 2008. Table 1 shows basic demographic statistics. CEOs are mainly male (about 97%) and they get promoted to the CEO position of an ExecuComp firm at the age of almost 49 years on average. About one third of the CEOs participated in a MBA program during his career. Murphy and Zabojnik (2007) do a similar analysis on Forbes companies over an earlier time period. They report an average age of 53.9 years at CEO appointment and a fraction of 28.7% holding a MBA in sample over the period from 1990-2000. Comparing the gender of CEOs in my sample with earlier studies, I find a slightly higher fraction of female CEOs. Bertrand and Hallock (2001) report only a fraction of 0.5% of female CEOs for a large number of U.S. firms for the years 1992-1997 and Chairman and Wolfers (2006) 1.3% of female CEOs between 1992 and 2004 .

(Table 29 about here)

Table 29 describes the career paths of these managers before being appointed CEO. Throughout their career, CEOs worked in 5.52 different firms in 2.29 different industries on average (using the Fama-French 12 industries classification). They worked mainly in executive positions and in unlisted firms (or subsidiaries) before becoming CEO of a listed ExecuComp firm. Next, I analyse specific industry exposure that have been suggested to matter for executive careers such as finance or consulting experience. A substantial fraction of CEOs has prior work experience in the financial industry (40.9% considering all positions, 32.0% considering only executive positions). Restricting the finance experience to banking experience only, 21.9% (15.1%) have experience in banks. Less than 10% have experience in consulting or auditing firms. These magnitudes are very similar to numbers presented by Schoar and Zuo (2011), though there are a few notable differences. Schoar and Zuo (2011) report a slightly smaller number of firms (2.57), less cross-industry experience (1.91) and less experience in consulting and banking. These differences are likely to arise from a better quality (in terms of completeness) of the BoardEx dataset but could also originate from trends over time.

(Table 30 about here)

(Table 31 about here)

Tables 30 and 31 present descriptive statistics on the average tenure of the future CEOs in different firms and roles. In my analysis, I can only include roles where the start date and end date of a specific position are not missing. When analysing executive positions, CEOs stay on average almost 8 years in each firm before switching companies. Within a firm they stay almost 4 years in a position before changing roles (and they have 2 different positions within one firm on average). Schoar and Zuo (2011) reports slightly longer shorter of 3.15 years in a certain positions (she does not analyse firm tenure).

Initial Position Scholars in labour economics but also in the finance literature have stressed the importance of early career choices and working conditions for the future career of workers / executives. Von Wachter (2010, 2011) shows the initial economic conditions early in the career have long-lasting effects for the career of workers. Oyer (2008) shows that MBA students who graduate in a bad Wall Street year are less likely to become investment bankers and earn approximately $1.5 million to 5.0$ million less throughout their careers. Schoar and Zuo (2011) and Malmendier et al. (2011) analyse the effect of early life experiences and first positions on careers and CEO style. For instance, Schoar and Zuo (2011) shows that "economic conditions at the beginning of a manager's career have lasting effects on the career path". Malmendier et al. (2011) show that early life experiences of CEOs help to explain corporate financing decisions. They show that CEOs "who grew up during the Great Depression are averse to debt and lean excessively on internal finance" and "CEOs with military experience pursue more aggressive policies, including heightened leverage".

Table 32 shows descriptive statistics on the first position of future CEOs in this sample. Column (1) exploits the full sample and includes also CEOs with positions where the starting date is missing. About half of the future CEOs starts their career in public firms, half in private firms. About 4.0% of the CEOs started their career as entrepreneurs and about 3% start in a consulting or auditing firm. About 14% of the CEOs move first to a firm in the financial sector (7% in banking). About 17% of the future CEOs enters the labour market in a recession year (as defined by the NBER).

(Table 32 about here)

As some positions are reported without a starting date, there is the concern that these observations include also the first observation (in which we are mainly interested in). Therefore, analyse a subsample of CEOs with complete information

about the positions, i.e. I drop all CEOs who report at least one position without a valid starting date. Column (2) reports these results. The numbers are very similar. The average starting date is slightly lower (27.5 years) and less people started in finance or founded their own company. The drop in entrepreneurship can actually be explained be the fact that the starting date for entrepreneurial positions is relatively often missing - which might be due to the fact that a starting date is often not well defined - anecdotal evidence reveals that some entrepreneurs start their business in a garage, parallel to college.

Some studies that aim to estimate causal effects of early life market conditions on the career paths and management styles of CEOs. For instance, Schoar and Zuo (2011) exploit variation in the market conditions (starting the first job in a recession or in a normal year). She argues that a recession is arguably exogenous but she is concerned that the entry in the working life is not, i.e. smart individuals might defer the entry into the labour market until conditions have improved. Therefore, she instruments the entry into the labour market with the individual's birth year. While this strategy is taking care of some aspects of identification concerns, it is still problematic to draw any causal conclusions from this analysis. The problem being that such an analysis is already selecting on outcomes, i.e. we only observe individuals conditional he made it to a CEO position. Section 3.5.1 is addressing this problem in detail and provides a very simple example why an analysis based on that identification strategy fails to estimate a causal effect. I also suggest a definition of a different population at risk that does not suffer from this biased and allows me to identify the effect of changes in the economic environment (such as recessions) on executive careers.

3.4.3 CEO Turnover

In the next step of my analysis, I am interested in CEO turnovers. First, I am going to analyse where new CEOs are coming from. I investigate this question with respect to internal/external firm hires, industry insiders/outsiders as well to the last position new CEOs had before their promotion. This analysis might also lead to a definition of a well-defined population at risk for the position of a CEO which is necessary for doing some analyses on the factors that impacts future CEO career paths.

Turnovers As a first step, I am interested in the distributions of turnovers in this sample. Overall, I observe 1,187 turnovers between 2001 and 2008. Table 33 shows the distribution of these turnovers across industries and time.

(Table 33 about here)

The turnovers are relatively even allocated across time (between about 8%-18%). However, there is huge variation across industries which can be partly explained by the distribution of the firms across these different sectors.

Where do CEOs come from? A turnover is classified as 'internal' if the incoming CEO had already a position within the firm with a starting date before the CEO appointment date. The remaining turnovers are classified 'external'. I also differentiate between CEOs who had ED or NED positions within the firm as well as between different levels of tenure.

Table 34 shows the distribution of internal and external hires across industries and time. About 75% of CEO successions are internal when considering both ED and NED positions. The number drops to about 70% if I only consider ED positions. The distribution stays quite stable over time and ranges from 62%-72% over 2001 to 2008. The numbers are quite similar to results by Murphy and Zabojnik (2006) who find that the fraction of externally hired CEOs is about 26.5% 1990-2000. Cremers and Grinstein (2011) report a fraction of 32% external CEO turnovers for 1993-2005. However, they do consider internal promotions of CEOs who are less than 2 years with the company as external hires as well. As I discuss in table 9 there is actually a substantial fraction of only recently hired CEOs. If I treat them as externally hired as well, the number of external hires increases and exceed Cremer and Grinstein's 32%. Together with the earlier period of Murphy and Zabojnik (2007), the results suggest that there is a trend towards more externally hired CEOs in the long run.

(Table 34 about here)

Panel B shows that the variation across industries is large, reaching from about 67% insiders in telecommunication sector to about 84% in energy. Considering only ED positions, this picture does not change qualitatively; the numbers are slightly smaller though ranging from 59% to 81% of insiders.

One interesting question to ask is when the CEOs, who are promoted internally, joined the company at first. The majority of research conducted in this area considers a turnover be external if the new CEO did not have a position in the firm in the last 1-2 years before the turnover (e.g. Parrino (1997) or Cremers and Grinstein (2011)). Table 35 presents the descriptive statistics on the whole distribution of firm tenure.

(Table 35 about here)

Columns (1) and (2) show the results for CEOs who had an ED positions in the firm before becoming CEO, while in columns (3) and (4) the equivalent results of

NED insiders are shown. Interestingly, about 16% of the insiders with an executive positions where hired within the last 2 years before the succession (and about 37% within the last 5 years). The average tenure of insider CEOs is almost 11 year for EDs and almost 5 years for NED insiders. This number is smaller than the 14.1 years reported by Murphy and Zabojnik (2007) for 1990-2000 but it is well in line with the declining trend which is documented by the same authors (1970-1979: 18.2 years, 1980-1989: 17.2 years, 1990-2000: 14.1 years).

This is very interesting as the common view on internal CEO turnovers is that these CEOs are have generally been with the company for most time of their career, having gone through several positions. From a theoretical as well as from an empirical point of view, it is not clear where to make the cut and existing empirical results are likely to depend on whether CEOs with 1-2 years of tenure are considered internal hires or not (for instance). For future research, it might be interesting to analyse which type of companies and under which circumstances hire a potential future CEOs some years in advance.

In the next step, I analyse the last position of the incoming CEOs. Table 36 presents the results. Column (1) shows the fraction of CEOs that had a board position within the BoardEx sample. Almost 70% of the newly hired CEOs had an ED position. Including also NED positions this number increases to almost 80%. This is an important observation as this sample might actually represent a promising population at risk for analysing executive careers. I return to this question in section 5 in more detail. If I consider all ED and NED positions in ExecuComp companies (including also non-board positions as well as companies that are not covered in the main BoardEx about 90% had an executive position (going up to 93% if including non-executive positions as well).

(Table 36 about here)

In table 37, I am differentiating between internal hires (i.e. CEOs who had an ED position within the same firm before being promoted to CEO) and external hires (completely external and managers who had a NED position within the same firm). Note that many executives hold several positions at the same time (e.g. being COO and president). Internal CEOs are usually recruited from COO/Presidents (about 48%), from COO (about 12%), President (about 16%); this means that about 75% of the internal recruited CEOs were either COO or President before being promoted. In a large number of external turnovers the new CEO is directly hired from a CEO position in another company (about 33%) or from a President position (about 24%). Interestingly, the COO position does not seem to play a huge role for external hires.

(Table 37 about here)

Focussing on the external turnovers, I also analyse the movements across different industries. Here I am concentrating on incoming CEOs who are coming from a different company and have an ED position within that company. Table 38 presents the results. A first observation is that a large fraction of the external new CEOs are actually coming from the same industry. Secondly, all industries hire from different industries too; they also send executives to different industries.

(Table 38 about here)

Table 39 analyses the sender/receiver behaviour of the different industries in more detail. As discussed before, all industries receive CEOs from outside the own industry but they also send executives to CEO positions in other industries. In order to understand whether some industries are primary sending or primary receiving CEOs from other industries, I define net sender as the difference between the number of executives sent to other industries and the number of executives hired as CEO coming from other industries. Apparently, for most industries the two quantities are almost cancelling out. Net sender as a fraction of all movements in a certain industry is about 15% on average across all industries, i.e. streams are cancelling out. Interestingly, the likelihood but also the propensity of exchange of executives between certain industries seems to be quite symmetric , i.e. two industries producing and receiving CEOs for/from each other. For instance, there does not seem to be much evidence that industry A is producing CEOs for industry B but receiving CEOs from industry C. The results are rather suggesting that the acquired and required skills of an ED or CEO are similar between certain industries and hence CEOs from these different industries might be considered as substitutes.

(Table 39 about here)

Table 38 is already indicating that firms have the tendency to hire within their own industry when appointing a new CEO externally. This finding might speak in favour of the presence of some industry-specific skills that cannot easily be transferred across industries. Indeed, Custodio and Metzger (2011 a,b) show direct evidence of the presence of industry-specific skills by analysing the impact of industry-specific experience on merger outcomes. They show that industry-experts add more shareholder value by negotiating better terms. However, Custodio and Metzger (2011a) do not only consider the last position but they also show that industry-specific experience that was accumulated throughout their career (e.g. in other top management positions) is beneficial when negotiating with the targets.

Therefore, I analyse the industry-specific experience of new CEOs in more detail in table 40. Column (2) summarizes the fraction of new CEOs who's highest

ED position before becoming CEO in the new firm was in the same industry. This includes internally recruited CEOs as well as executives from other firms in the same industry. On average, about 81% of the incoming CEOs had their highest position within the same industry. There is considerable variation across industries though. While only about 68% of the new CEOs come from inside the industry in the Durables sector, more than 93% are within-industry hires in the Energy sector. As some executives have several positions at the time just before being hired as a CEO, I am considering all positions that an incoming CEO possessed before he was recruited in column (3). This broader definition of industry experience does not change the results qualitatively. However, the fraction of industry-insiders goes slightly up though (3% on average). In the last column (4) I consider all past ED positions (not only positions that were hold just before the manager was promoted CEO). This measure of industry experience is similar to the one used in Custodio and Metzger (2011a). Using this broader classification of industry experience increases the average industry experience by more than 8% to almost 90% on average suggesting including past ED industry experience makes a substantial difference. Moreover, the standard variation of the insider fractions goes down quite some bit, suggesting that industries -after correcting for past experience- do not look that differently anymore.

(Table 40 about here)

Where do CEOs go to? Though there has been some evidence in the literature where CEOs are coming from (as discussed in the last section), we know only very little about what CEOs who leave their position do afterwards. In this part I analyse where former CEOs move to after they are replaced by somebody else. The first observation is that about 90% still stay in the sample, i.e. they move to a different ED and NED board position within this set of companies which allows me to continue following their careers. The set of CEOs who leaves the sample are of lower age on average. This is interesting as some of the former CEOs who disappear might actually retire from all their positions. However, the younger ones are also more likely to move to ED positions outside this firm sample which might lead to a lower average age.

In panel A of table 41 also investigates the effect of the turnover on the number outside NED appointments by the leaving CEO. As expected, the average number of NED appointments increases (CEOs retiring accepting NED positions for instance).

(Table 41 about here)

In the next step, I analyse the kind of positions leaving CEOs are able to get after the turnover, i.e. I am only considering positions that the former CEO starts after he steps down as a CEO. Panel B of table 41 shows that almost 96% (out of the former CEOs who are still in my sample) are able to secure any type of new ED or NED position after stepping down as a CEO. Most of the leaving CEOs get a new position (either as an ED or NED) within the same firm (about 82%) and more than half of them are able to generate a new external ED or NED position (56%). The third column only includes new positions that are started within 2 years after the turnover . As expected, this criterion does not affect the internal positions very much as leaving CEOs are likely to get a new position immediately afterwards in the same company. The picture is very different for external positions. The fraction of CEOs who are able to get a new external position drops sharply by almost 45% (going down to 32% from 56%) and the drops are similar for ED and NED positions. This pattern can be explained be either some search frictions (it needs time to find a new position) plus some former CEO might actually not allowed to start working immediately for a different company as part of their severance agreements.

In the next step, I analyse the type of external ED positions in more detail in terms of industries and positions. Panel C shows that about 40% of the former CEOs stay in the same Fama-French industry. Almost half of the leaving CEOs who find another ED position move to a new CEO position. This number is large in comparison to findings by Peters and Wagner (2009) who find that only 11 out of the 639 fired CEOs subsequently regain a CEO post within the same universe of firms (S&P 1500). However, employing the BoardEx dataset allows me to track CEO positions in non-public and companies outside (S&P 1500) as well which explains a large fraction of the difference. However, I observe that about 4.9% of the forced turnover-CEOs find a position within S&P1500 (compared to 1.7% in Peters and Wagner). Moreover, including companies outside S&P1500 increases the fraction of fired CEOs that are able to get an new CEO position from 4.5% to 26.2%.

About 46% get the position of a Chairman and 33% of a President. Note that managers can have several positions at the same time. Less than 10% become COO, CFO, and Vice President in the new firm. Considering only positions that the leaving CEO gets within the first 2 year of his departure, the picture does not change much for the CEO position. If a leaving CEO finds a new CEO position he does it within the first two years. The picture is different for non-ECO executive positions: Between one third to one half of the remaining executive positions are only found later than 2 years after the turnover.

Forced vs. Voluntary Turnovers In the last step of my analysis, I investigate potential differences between forced and voluntary turnovers. I use a similar classi-

fication as Parrino (1997) of voluntary / forced turnovers[56] which I match with my sample. I can match 185 (or about 15%) of my turnover events.[57]

Table 42 shows descriptive statistics. The first observation is that CEOs who are classified as voluntary turnovers are 5 years younger than CEOs leaving after classified forced turnovers. This is intuitive as a large fraction of voluntary takeovers is likely due to retirement. In Panel A, I analyse the effect of the turnovers on the CEO's NED positions. CEOs with turnovers classified as voluntary hold more (0.5) positions on average before the turnover. They are generate more additional NED positions in the year after the takeovers; the difference between the increase of NED positions of CEOs after voluntary and forced turnovers is about 0.2 on average.

(Table 42 about here)

In panel B, I am interested in ED positions that the former CEO gets after the turnover. First, CEOs classified as fired are more likely to find a new ED position outside the former firm (43% vs. 31%). Second, they are also more likely to become CEO again (26% vs. 14%). The evidence for other external ED positions is similar. These results appear very surprising to me. There are two potential explanations for these findings. First, the classification does not work well. Indeed, Kaplan and Minton (2008) find that turnover to performance sensitivities to be similar for turnovers classified as forced/voluntary and conclude that this result is likely due to misclassification of voluntary turnovers. Jenter and Lewellen (2011) find that voluntary turnovers are more likely to happen after bad performance. They also explain this puzzling finding by misclassification. Secondly, the market is not really punishing forced turnovers. The second alternative is interesting as many scholars (e.g. Peters and Wagner (2009, p.1)) argue that "forced turnover typically implies a drastic deterioration of future employment and earnings opportunities."

3.5 Business Conditions and Executive Careers

3.5.1 The Identification Problem

One important concern is that the treatment (e.g. starting in a recession) is likely to change the composition of people who make it to a CEO position at first. In other words, the proposed identification strategy is already selecting on outcomes. Table 43 illustrates the problem using recession as an example for a treatment and 'years to CEO' as an example for an outcome (following Schoar and Zuo (2011)):

(Table 43 about here)

[56] I thank Yuhai Xuan for providing his data.

[57] This rather small fraction is due to the fact that the samples are only partly overlapping. This also means that the observed turnovers are from the earlier period of my sample.

Suppose we are interested in the causal effect of a recession on the time to become CEO. Suppose that a recession increases the time by 2 years for good CEO candidates (observation 1-3 in panel A) and the weak candidates (observation 4 and 5) are never making it to a CEO position if they have to start their career in a recession. The causal effect of a recession (using the correct counterfactual) is negative. However, if we try to estimate the causal effect of a recession by comparing "normal year" cohorts to "recession" cohorts (otherwise they are assumed to be equal), we would actually estimate a positive effect (i.e. a time decreasing effect) of a recession on the average number of years to a CEO position. Indeed, table 5 shows that the average time to CEO is 25 years for a "normal year" cohort and 22 years of a "recession" cohort despite the negative (i.e. time increasing) causal effect of a recession. The problem is that the proposed regression analysis is already conditional on managers becoming CEO at first which might well depend on whether potential candidates start in a recession or not. The correct "population at risk" includes all potential candidates at the time of the recession which we do not observe. This example translates to other questions using the same identification strategy as well.

3.5.2 Exogenous Shocks and Executive Careers

As illustrated in the previous section, it is problematic to exploit exogenous shocks to the career of CEOs relying on a sample of individuals who already made it to a CEO position. Therefore, I propose a similar but slightly adjusted identification strategy, allowing me to estimate a causal effect of business conditions on the careers of executives. However, one caveat is that I am not able to analyse shocks that happen very early in the career.

My proposed strategy consists of the following steps:

1. For each year I define a cohort of newly appointed executive directors, i.e. of individuals who are just appointed to be executive directors on the board of directors.

2. I construct measures of exogenous variation across industries (such as reduced form industry-wide shocks measured by the stock market of an industry).

3. Following the careers of these individuals, I analyse how these (positive/negative) shocks affect the career progression of the EDs within these cohorts. This means that I am exploiting variation across industries.

(Table 44 about here)

Table 44 presents summary statistics of executive and non-executive directors between 2001 and 2007. In Panel A, columns (1) and (2) show details on all board members (non-executive directors NEDs and executive directors EDs). Column (3) provides equivalent details for the subsample of executive directors who just joined the board of directors. Age denotes the age of the directors in years, tenure is the tenure of the directors in the firm (in years). Director, Chairman,etc. are position dummy variables that are equal to 1 if the role of the directors corresponds to these positions. We observe 10,459 first year executive directors overall. The statistics on the difference between first-year executive directors and all executive directors are as expected. Newly appointed executive directors are younger on average compared to all executive directors (48.7 years vs. 52.5 years). They also have lower positions on average. They have also been with the company for a shorter time (6.7 years vs. 12.1 years).

Panel B shows detailed statistic of the first year cohorts, i.e. of the individuals who just joined the board as executive directors. Column (1) shows the distribution of the cohort size over time. Columns (2) to (4) provides information on the number of individuals who become promoted to CEO between 2001 and 2007. Column (2) considers all CEO positions, while columns (3) and (4) differentiate between internal and external CEO position. An internal promotion corresponds to a promotion within the company where the individual became executive director first. I observe between about 1400 and 1900 executives being newly appointed in the years between 2001 and 2007 (see column (1)). In column (2) I document how many of these executive directors obtain a CEO position in the following years after appointment. Please note that I am able to observe the 2001 cohort for 7 years, the 2002 cohort for 6 years, etc. This explains why the fraction of CEO promotions declines over the year. In the cohort I am able to follow the longest (2001 cohort), 8% of the executives made it to a CEO position. Differentiating between internal and external promotions, I observe that about 77% of the promotions are within the same firm. There is no obvious trend over time.

Next, I am interested in how the performance of the industry affects the career progression of the CEO.

For each individual of my first-year cohorts, I observe whether he gets promoted to a CEO position in the following years. I define my dependent variable 'Becoming CEO' as a dummy variable that is equal to 1 if the individual is promoted to a CEO position between 2001 and 2007. I am interested in measures for luck / bad luck, i.e. something that is arguably not under the control of the individuals and exogenous to his individual performance. As a first step, I am using the performance if the whole industry as a proxy. Then, I am comparing the careers of individuals who ended up in lucky industries (as defined by the industry performance) with individuals who

were lucky. I am exploiting variation in luck across different industries within the same cohort and variation across time within the same industries.

I define quintile 1 - 5 as dummy variables that indicate to which performance quintiles the industry of the directors' firms belong to. The performance is measured every year and aggregated over the whole period. Similarly, I define half 1, 2 are dummy variables that indicate to which performance half the industry of the directors' firms belong to. The performance is measured every year and aggregated over the whole period. Last I define cumulative (average) return as the cumulative (average) return of the industry of the firm aggregated over the years.

I control for age, tenure, and the position of the individuals. Age denotes the age of the directors (in years), tenure is the tenure of the directors in the firm (in years). Director, Chairman, etc. are position dummy variables that are equal to 1 if the role of the directors corresponds to these positions.

The null hypothesis is that luck / bad luck does not have an impact on the career of an executive.

(Table 45 about here)

Table 45 shows the results. Columns (1) - (4) estimate a linear probability model, while columns (5) - (8) assume a logistic distribution. The results are qualitatively similar. The likelihood of becoming a CEO increases concavely with age and is negatively associated with firm tenure. Being President, Executive Vice President or COO is positively related with a CEO promotion (consistent with findings in the previous chapters). CEOs are less likely to be recruited from CFO positions.

Investigating the effect of luck on promotion, we find evidence for luck / bad luck being a significant determinant of career success. If the individual works at a firm in a sector that belongs to the worst performing quintile (half), the likelihood of becoming CEO decreases (columns (1) and (2)). Consistently, I document a positive correlation between good luck and the likelihood of becoming CEO. Columns (3) and (4) show that being in an industry that is performing well (as measure by the cumulative / average performance) the likelihood of becoming CEO increases. This is consistent with findings by Bender et al. (2006, 2011) who also document negative and long-lasting effects of negative shocks to the career of workers. Overall, my findings suggest that being in the right place at the right time is important for executives becoming CEO. This means that luck / bad luck does not only play a role for CEO compensation as documented by Bertrand and Mullainathan (2001) but also for executives becoming CEOs at first.

In the next step, I redo my analysis differentiating between internal and external promotions. A CEO promotion is considered to be internal if the executive become CEO in the firm whose board he joined first.

(Table 46 about here)

Table 46 presents the results. While most of the controls have similar effects for internal and external promotions, there are a few notable differences. First, age seems to be important for external promotions but not for internal ones. Secondly, external firms do not seem to recruit COOs of other companies but it is an important position for internal promotions. Interesting, luck seems only be playing a role for internal promotions.

This is interesting as it suggests certain within-firm dynamics. There are (at least) two intuitive stories that would support my findings:

1. The likelihood of a voluntary CEO turnover increases with good luck. For instance, a CEO might want to retire at the peak of his career or he might be hired by somebody else after a good performance (which is wrongly partly attributed to his skills rather than to the performance of the industry). In both scenarios the CEO position within the firm becomes vacant which potentially increases the likelihood of the lower ranked executives within the same firm.

2. Jenter et al. (2011) show that the likelihood a forced turnover does not only increase with bad relative performance but also with a bad industry performance. Moreover, Kuhnen et al. (2011) also show that the likelihood of an external CEO turnover increases after bad industry performance as the company might need a CEO with a different set of skills. This is consistent with my finding of observing a lower likelihood of being promoted after negative industry performance; it is also consistent with the finding that this effect is more prominent for potential internal promotions.

Overall, my findings suggest that luck play a significant role for executives becoming CEO or not. They are consistent with within-firm dynamics where luck has a top-down effect across the ranks of executives.

3.6 Conclusion

This chapter provides an empirical analysis of careers of executives in general (and CEOs in particular). Using a sample of board members of the largest US companies, I provide exhaustive descriptive statistics on several dimensions of their careers. For instance, I am analyzing the career paths of CEOs with respect to their industry experience and their promotion within and between firms. Investigating CEO turnovers in detail, I report several new findings that raise potential questions for future research. For instance, how should we incorporate the full employment history (compared to the last position only) of newly hired CEOs in our models and

empirical work? Why do some firms hire future CEOs several years before promoting them? Moreover, I document that a much larger fraction (as suggested by earlier research) of CEOs is able to get another CEO position after turnover. This finding raises questions on how effectively the thread of a CEO dismissal works as a governance mechanism. Moreover, recent work seems to suggest that part of CEO compensation is the premium for turnover risk. These questions remain unanswered for future research.

In the second part of this chapter, I am making a first attempt to estimate a causal effect of the economic environment on the careers of executives. I show that exogenous shocks (such as industry performance) affect the careers of executives. I follow cohorts who enter the board of companies as executive directors over time. I observe whether the industries of these individuals are hit by negative shocks. I show that individuals whose industries are performing badly are less likely to be promoted to a CEO position. My finding suggests that luck is not only affecting CEO pay (see Bertrand and Mullainathan (2001)) but also who is promoted to a CEO position at first. A promising route for future research might be a more rigorous analysis of the within-firm dynamics of executive careers. My findings are consistent with explanations where shocks to the firm affect the careers of executives from top-to-down, i.e. the careers of lower ranked executives are affected by the career progression and decisions of the higher ranked ones (e.g. due to vacancies).

A Appendix

A.1 Tables

Table 28: Fama-French 12 industries

This table shows information on the industry classification as well as the distribution of companies across these industries.

FF12 Code	Industry	Description	#firms	
1	NoDur	Consumer NonDurables -- Food, Tobacco, Textiles, Apparel, Leather, Toys	124	5.66%
2	Durbl	Consumer Durables -- Cars, TV's, Furniture, Household Appliances	54	2.46%
3	Manuf	Manufacturing -- Machinery, Trucks, Planes, Off Furn, Paper, Com Printing	242	11.04%
4	Enrgy	Oil, Gas, and Coal Extraction and Products	84	3.83%
5	Chems	Chemicals and Allied Products	57	2.60%
6	BusEq	Business Equipment -- Computers, Software, and Electronic Equipment	406	18.52%
7	Telcm	Telephone and Television Transmission	59	2.69%
8	Utils	Utilities	90	4.11%
9	Shops	Wholesale, Retail, and Some Services (Laundries, Repair Shops)	251	11.45%
10	Hlth	Healthcare, Medical Equipment, and Drugs	182	8.30%
11	Money	Finance	399	18.20%
12	Other	Other - Mines, Constr, BldMt, Trans, Hotels, Bus Serv, Entertainment	244	11.13%
			2192	100.00%

Table 29: CEO Demographics

This table shows basic information on the demographics of the CEO. MBA is a dummy variable equal to 1 if the CEO has done a MBA in his career. Age become CEO is the age of the executive when he was appointed CEO in the current company. Years to CEO is the number of years between the CEO's first position and his current CEO position. Male is a dummy variable equal to 1 if the CEO is male.

Variable	Mean
MBA	31.43%
Age becomce CEO	48.66
Male	97.38%
N	3773

Table 30: Past Positions (Firms and Industries)

This table provides information of the past career of the CEOs. Number of firms is the number of different firms a CEO was working in before becoming CEO. Listed and unlisted further sub-classify these experiences and they are referring to the public status of these firms. The number of industries corresponds to the number of Fama-French 48 (12) industries a CEO has worked in. Finance Experience, Auditing Experience, Consulting Experience are dummy variables equal to 1 if a CEO has prior experience in financial services, auditing or consulting respectively. Column (1) is considering all positions, while columns (2) and (3) only consider executive or non-executive positions respectively.

	All Positions	ED Positions	NED Positions
	mean	mean	mean
#firms	5.52	4.01	3.04
#firms (listed)	1.95	1.40	1.14
#firms (unlisted)	3.27	2.28	1.89
#FF48 industries	2.77	2.12	2.04
#FF12 industries	2.29	1.84	1.79
Finance Experience	40.92%	32.01%	37.04%
Banking Experience	21.89%	15.06%	20.08%
Auditing Experience	6.59%	6.61%	0.14%
Consulting Experience	7.80%	7.81%	0.28%
N	3773	3773	3773

Table 31: Past Positions (Tenure)

This table presents summary statistics on the tenure of the CEO in previous firms and positions. Panel A shows the tenure of a CEO at firm (differentiating between total tenure in executive positions and non-executive positions). Panel B shows the corresponding statistics for positions. A CEO can have several positions within a firm (e.g. when being promoted). Only positions with non-missing start- and end dates are included.

Panel A: Firms

	ED Positions (firms)		NED Positions (firms)	
	Months	Years	Months	Years
Tenure (Firms)	93.93	7.83	71.08	5.92
N	10227		3187	

Panel B: Roles

	ED Positions (roles)		NED Positions (roles)	
	Months	Years	Months	Years
Tenure (Roles)	46.38	3.87	65.31	5.44
N	20169		3430	

Table 32: First position

This table shows the first position of future CEOs. Age of first job is the age of the CEO at his first recorded position. Start in a recession is a dummy variable that is equal to one if the first job was in a year that is defined as a recession according to the NBER classification. 'Listed,' 'Unlisted', and 'Other' correspond to the public status of the firm where the CEO started his career. Founder is a dummy variable if the CEO started his career as an entrepreneur. Finance, Auditing, and Consulting are dummy variable that are equal to 1 of the CEO started his career in the financial sector, auditing or consulting respectively. The first column includes the first recorded position (i.e. the position with the earliest start date) as well as all positions with a missing start date. The second column only includes CEOs where the employment history has complete start dates, i.e. where all of his previous roles have a valid starting date.

	first available position (incl. CEOs with positions wo startdate)	first available position (only CEOs where ALL positions have startdate available)
	mean	mean
Age of first job	29.08	27.52
Start in a recession	16.75%	17.49%
Firm is listed	43.94%	46.34%
Firm is unlisted	50.71%	49.16%
Firm is "other"	7.13%	5.65%
Founder	4.09%	2.56%
Finance	14.45%	11.74%
Banking	6.97%	6.62%
Auditing	2.85%	3.71%
Consulting	3.26%	4.06%
N	3773	1133

Table 33: Turnovers across industries and time

This table shows the number of CEO turnovers across time and industries.

FF12	2001	2002	2003	2004	2005	2006	2007	2008		
	3	1		1			3	2	10	5.78%
NoDur	10	7	6	8	4	17	8	6	66	38.15%
Durbl	5	1	7	7	8	3	2	2	35	20.23%
Manuf	14	14	17	20	31	14	27	12	149	86.13%
Enrgy	2	5	5	4	4	8	2	2	32	18.50%
Chems	8	4	3	6	6	4	4	3	38	21.97%
BusEq	23	25	28	19	60	32	33	23	243	140.46%
Telcm	1	5	2	4	3	2	4	0	21	12.14%
Utils	4	7	8	15	10	9	7	4	64	36.99%
Shops	9	14	27	17	21	17	18	15	138	79.77%
Hlth	12	10	10	12	14	17	9	8	92	53.18%
Money	18	17	19	30	27	29	23	10	173	100.00%
Other	18	7	19	17	29	17	16	3	126	72.83%
	127	117	151	160	217	169	156	90	1187	
	10.70%	9.86%	12.72%	13.48%	18.28%	14.24%	13.14%	7.58%		

Table 34: Internal vs. External Turnovers

This table shows statistics on internal vs. External turnovers. A CEO is considered to be an insider if he had a position within the firm before becoming CEO. Columns (1)-(3) consider a CEO to be an outsider if he did not have any position within the firm, while in columns (4)-(6) only executive positions are considered. Panel A shows variation across industries and panel B shows variation over time.

Panel A: Industries

	All positions			*Executive Positions*		
FF12	Insider	Outsider	% Insider	Insider	Outsider	% Insider
?	6	4	60.00%	6	4	60.00%
NoDur	50	16	75.76%	47	19	71.21%
Durbl	25	10	71.43%	21	14	60.00%
Manuf	112	37	75.17%	97	52	65.10%
Enrgy	27	5	84.38%	26	6	81.25%
Chems	31	7	81.58%	28	10	73.68%
BusEq	166	77	68.31%	143	100	58.85%
Telcm	14	7	66.67%	13	8	61.90%
Utils	52	12	81.25%	48	16	75.00%
Shops	94	44	68.12%	85	53	61.59%
Hlth	62	30	67.39%	57	35	61.96%
Money	139	34	80.35%	131	42	75.72%
Other	100	26	79.37%	93	33	73.81%
Total	878	309	73.97%	795	392	66.98%

Panel B: Time trends

	All positions			*Executive Positions*		
year	Insider	Outsider	% Insider	Insider	Outsider	% Insider
2001	95	32	74.80%	91	36	71.65%
2002	90	27	76.92%	85	32	72.65%
2003	117	34	77.48%	107	44	70.86%
2004	121	39	75.63%	105	55	65.63%
2005	160	57	73.73%	144	73	66.36%
2006	122	47	72.19%	109	60	64.50%
2007	105	51	67.31%	96	60	61.54%
2008	68	22	75.56%	58	32	64.44%
Total	878	309	73.97%	795	392	66.98%

Table 35: Tenure of CEOs (Internal Turnovers)

This table shows the tenure within the firm of a CEO who was hired internally, i.e. who had a position within the firm before being promoted to CEO. The variable '0-5 months',...,'¿10 yeas' are dummy variables that are equal to 1 if the CEO has been for the corresponding period within the firm. The last row 'Years in Company' is the number of years that a CEO has been with the company.

Tenure	*Executive Insiders*		*Non-Executive*	
	mean	cum.	mean	cum.
0-5 months	3.53%	3.53%	17.04%	17.04%
6-11 months	3.66%	7.19%	8.15%	25.19%
1-2 years	9.08%	16.27%	13.33%	38.52%
2-3 years	7.44%	23.71%	10.37%	48.89%
3-5 years	12.86%	36.57%	15.56%	64.44%
5-9 years	22.32%	58.89%	21.48%	85.93%
>10 years	41.11%	100.00%	14.07%	100.00%
Years in Company	10.73		4.88	
N	793		135	

Table 36: Last positions of hired CEO (dataset)

This table shows the origin (in terms of data universe) of new CEOs. Column (1) shows whether the new CEO had a board position within the BoardEx sample before becoming CEO in the current company. Column (2) shows the equivalent statistic for the whole ExecuComp Sample. The main difference is that also non-board positions are considered in column (2). Both columns differentiate between executive and non-executive positions.

	Boardposition within BrdEx Sample	Position within ExecuComp Sample
	Mean	Mean
ED and NED position	15.89%	24.33%
ED position only	56.36%	64.97%
NED position only	7.11%	3.68%
Not in sample	20.65%	7.02%
N	1196	1196

Table 37: Last positions of hired CEO

This table shows the last position of a newly hired CEO. Same FF48 (FF12) are dummy variables that are equal to one of the CEO is coming from the same FF48 (FF12) industry. CEO, ..., VP are dummy variables that are equal to 1 of the last position of the new CEO was a CEO, ..., VP position. Column (1) shows statistics for CEO who were hired internally, i.e. he had an executive position within the firm before. . Column (2) shows the corresponding statistics for CEO who were recruited externally, i.e. who did not have an internal executive position before. Remark: internal non-executive positions are considered to be external hires.

	Internal	External
	Mean	Mean
Same FF48	100.00%	26.50%
Same FF12	100.00%	38.53%
CEO	0.00%	32.79%
COO (only)	12.21%	3.83%
President (only)	16.23%	24.04%
COO / President	48.18%	4.37%
CFO	8.31%	3.28%
Chairman	6.23%	20.77%
VP	27.14%	27.87%
N	770	366

Table 38: Industry ED changes after external turnover - Transition Matrix

The table shows the transition matrix between different industries in the event of an external turnover. 'Industry from' indicates the industry of the previous executive position the CEO had before becoming CEO in the current company. 'Industry to' stands for the industry of the firm the executive was just promoted CEO.

from \ to	NoDur	Durbl	Manuf	Enrgy	Chems	BusEq	Telcm	Utils	Shops	Hlth	Money	Other	
NoDur	4	1			1	1			1			1	9
Durbl		2	3						1	1	1		8
Manuf	1	1	14		1	8	1			3		1	30
Enrgy	1		1	3				1				2	8
Chems	1		1		4	1		1	1				9
BusEq	1		5			27	1		3	2	3	1	43
Telcm						1	4						5
Utils								7			1		8
Shops	1		2			2			17	1	1		24
Hlth	1					3			1	12		1	18
Money	2		1			8				1	20	2	34
Other	1	1	1			6		1	1	3		5	19
	13	5	28	3	6	57	6	10	25	23	26	13	215

Table 39: Industry ED changes after external turnover

The table shows the in- and out-flows of executives of different industries. Column (1) 'sending' indicates the number of CEOs that had their previous position in the corresponding industry, while column (2) 'receiving' tells the number of externally hired CEOs in that industry. While columns (1) and (2) also include hires within the same industry, column (3) and (4) only consider movements between different industries. The last column calculates the net position for each industry.

	All		Cross-Industries		
	Sending	Receiving	Sending	Receiving	Net Sender
NoDur	9	13	5	9	-4
Durbl	8	5	6	3	3
Manuf	30	28	16	14	2
Enrgy	8	3	5	0	5
Chems	9	6	5	2	3
BusEq	43	57	16	30	-14
Telcm	5	6	1	2	-1
Utils	8	10	1	3	-2
Shops	24	25	7	8	-1
Hlth	18	23	6	11	-5
Money	34	26	14	6	8
Other	19	13	14	8	6

Table 40: Fraction of inside industry hires

This table analyses the industry expertise of newly hired CEOs. Column (1) considers a turnover to be a within-industry hire if the highest position just before becoming CEO was in the same industry as the industry of the current firm. Column (2) considers all positions that the executive had just before he became CEO. In column (3) all executive positions are considered (not only the last position). Column (4) counts the number of turnovers within the corresponding industry.

	Highest last ED position	Any last ED position	Any previous ED position	Turnovers
NoDur	76.27%	79.66%	88.14%	59
Durbl	67.86%	71.43%	82.14%	28
Manuf	73.08%	75.39%	77.69%	130
Enrgy	93.33%	96.67%	96.67%	30
Chems	82.35%	85.29%	88.24%	34
BusEq	73.91%	75.85%	83.58%	207
Telcm	84.21%	84.21%	94.74%	19
Utils	86.44%	94.92%	96.61%	59
Shops	86.24%	88.07%	91.74%	109
Hlth	80.00%	80.00%	90.00%	80
Money	87.58%	91.50%	94.12%	153
Other	85.19%	87.96%	89.82%	108
Avg.	81.37%	84.25%	89.46%	1016

Table 41: Future Positions after CEO Turnover

This table analyses the future careers of CEOs after a turnover. Panel A shows whether CEOs are staying still in the sample after the turnover (keeping old non-CEO positions and/or getting new positions). Age is the age of the CEO at the date of the turnover. NEDs in the year before (after) the turnover counts the number of non-executive positions a CEO has in the year before (after) the turnover. Delta NEDs computes the difference between these two numbers. Panel B analyses potential new positions (i.e. positions that start after the turnover) of the former CEOs. 'New position' is a dummy that is equal to one if the former CEO gets any new position after the turnover. Given that the former CEOs are getting an external executive position, panel C shows the position they obtain. Column (1) includes all future positions and column (2) only considers positions that were obtained within 2 years after the turnover.

Panel A: Stayer vs. Leaver (Dataset)

	Not in Sample	*Still in Sample*
Still in sample	11.21%	88.79%
age	55.37	58.42
#NEDs in the year before the turnover	0.18	0.94
#NEDs in the year after the turnover		1.88
Delta #NEDs		-0.19
N	137	1085

Panel B: Type of New Position (ED vs. NED)

	New positions	
	any time after turnover	**within 2 years after turnover**
New position	95.76%	92.35%
Intern	82.48%	83.83%
Intern NED	47.35%	47.90%
Intern ED	50.43%	50.60%
Extern	56.40%	31.81%
Extern NED	46.39%	25.45%
Extern ED	24.06%	10.45%
N	1085	1085

Panel C: Type of New External ED position

	New positions	
	any time after turnover	**within 2 years after turnover**
Same FF48 industry	29.20%	25.46%
Same FF12 industry	38.80%	31.82%
CEO	48.80%	48.18%
CEO (ExecuComp)	15.20%	10.91%
COO	6.80%	3.64%
CFO	2.80%	0.91%
Chairman	46.40%	37.27%
President	32.40%	23.64%
Vice president	9.20%	4.55%
N	250	110

Table 42: Forced vs. Voluntary Turnover

This table shows is comparing the effect of voluntary and forced turnovers on the future careers of former CEOs. Age is the age of the CEO at the date of the turnover. NEDs in the year before (after) the turnover counts the number of non-executive positions a CEO has in the year before (after) the turnover. Delta NEDs computes the difference between these two numbers. Panel B analyses potential new positions (i.e. positions that start after the turnover) of the former CEOs. 'Find any external ED' is a dummy that is equal to one if the former CEO gets any new external executive position after the turnover. G iven that the former CEOs are getting an external executive position, panel B also shows the position they obtain. Columns (1) and (3) include all future positions and columns (2) and (4) only consider positions that were obtained within 2 years after the turnover.

Panel A: Changes in NED positions

	Voluntary	*Forced*
Age	59.31	54.08
#NEDs in the year before the turnover	1.21	0.71
#NEDs in the year after the turnover	2.26	1.66
Delta #NEDs	0.24	0.03
N	112	73

Panel B: Type of new external ED position

	Voluntary		*Forced*	
	any time after turnover	within 2 years after turnover	*any time after turnover*	within 2 years after turnover
Find any external ED	30.61%	14.29%	42.62%	19.05%
Same FF48 industry	5.10%	1.02%	8.20%	1.59%
Same FF12 industry	9.18%	3.06%	9.84%	3.17%
CEO	14.29%	8.16%	26.23%	9.52%
CEO (ExecuComp)	4.08%	3.06%	4.92%	1.59%
COO	5.10%	1.02%	0.00%	0.00%
CFO	0.00%	0.00%	1.64%	0.00%
Chairman	23.47%	10.20%	36.07%	17.46%
President	12.25%	5.10%	11.48%	3.17%
Vice president	3.06%	1.02%	1.64%	1.59%
N	112	112	73	73

Table 43: Identification Concern

This table illustrates an identification concern when already selecting on the outcome, i.e. the individual already being CEO.

Panel A: Cohort 1 -Starting in a normal year

	Years to CEO	
	Start in normal year	Start in recession
	(Observed)	*(Counterfactual)*
1	15	*17*
2	20	*22*
3	25	*27*
4	30	*N/A*
5	35	*N/A*
Avg.	25	

Panel B: Cohort 2 - Starting in a recession

	Years to CEO	
	Start in normal year	Start in recession
	(Counterfactual)	*(Observed)*
1	*15*	17
2	*20*	22
3	*25*	27
4	*30*	N/A
5	*35*	N/A
Avg.		22

Table 44: Cohort Statistics

This table shows summary statistics of executive and non-executive directors between 2001 and 2007. In Panel A, columns (1) and (2) show details on all board members (non-executive directors NEDs and executive directors EDs). Column (3) provides equivalent details for the subsample of executive directors who just joined the board of directors. Age denotes the age of the directors in years, tenure is the tenure of the directors in the firm (in years). Director, Chairman, etc. are position dummy variables that are equal to 1 if the role of the directors corresponds to these positions. Panel B shows detailed statistic of the first year cohorts, i.e. of the individuals who just joined the board as executive directors. Column (1) shows the distribution of the cohort size over time. Columns (2) to (4) provides information on the number of individuals who become promoted to CEO between 2001 and 2003. Column (2) considers all CEO positions, while columns (3) and (4) differentiate between internal and external CEO position. An internal promotion corresponds to a promotion within the company where the individual became executive director first.

Panel A: Board members vs. First-year cohorts

	All		First Year Cohorts
	NED	ED	ED
age	60.66	52.48	48.72
Tenure	8.68	12.13	6.71
Director	94.20%	1.30%	1.27%
Chairman	4.76%	23.64%	2.37%
President	0.00%	22.18%	5.78%
Executive VP	0.00%	22.57%	26.21%
CFO	0.00%	15.60%	16.93%
COO	0.00%	8.04%	4.75%
CEO	0.00%	26.42%	4.69%
N	89368	47514	10459

Panel B: First-year cohorts and Promotion

	Size of Cohort	Become CEO					
		All		Internal		External	
2001	1887	154	8.16%	124	80.52%	30	19.48%
2002	1356	105	7.74%	77	73.33%	28	26.67%
2003	1288	65	5.05%	53	81.54%	12	18.46%
2004	1501	78	5.20%	60	76.92%	18	23.08%
2005	1492	47	3.15%	31	65.96%	16	34.04%
2006	1549	28	1.81%	19	67.86%	9	32.14%
2007	1386	18	1.30%	17	94.44%	1	5.56%
N	10459	495		381		114	

Table 45: Cohort Analysis: CEO Promotions

This table analyses determinants of CEO careers. The dependent variable 'Becoming CEO' is a dummy variable that is equal to 1 if the individual is promoted to a CEO position between 2001 and 2007. Age denotes the age of the directors in years, tenure is the tenure of the directors in the firm (in years). Director, Chairman, etc. are position dummy variables that are equal to 1 if the role of the directors corresponds to these positions. Quintile 1 - 5 are dummy variables that indicate to which performance quintiles the industry of the directors' firms belong to. The performance is measured every year and aggregated over the whole period. Half 1, 2 are dummy variables that indicate to which performance half the industry of the directors' firms belong to. The performance is measured every year and aggregated over the whole period. Cumulative return is the cumulative return of the industry of the firm aggregated over the years. Average return is the average return of the industry of the firm aggregated over the years.

	Becoming CEO							
	OLS				Probit			
	I	II	III	IV	I	II	III	IV
Quintile = 1 (best)	-0.001				0.029			
	[-0.167]				[0.220]			
Quintile = 2	-0.005				-0.065			
	[-0.898]				[-0.580]			
Quintile = 3	-0.006				-0.004			
	[-1.104]				[-0.037]			
Quintile = 4	0.001				0.144			
	[0.227]				[1.196]			
Quintile = 5 (worst)	-0.011*				-0.147			
	[-1.902]				[-1.185]			
Half = 1 (best)		-0.006				-0.133		
		[-1.338]				[-1.234]		
Half = 2 (worst)		-0.010**				-0.195*		
		[-2.054]				[-1.653]		
Cumulative Return			0.004***				0.050**	
			[4.718]				[2.418]	
Average Return				0.006***				0.092*
				[3.992]				[1.772]
Age	0.004	0.004	0.004	0.004	0.263**	0.255**	0.252**	0.255**
	[1.547]	[1.552]	[1.471]	[1.510]	[2.497]	[2.462]	[2.393]	[2.418]
Age squared	-0.000**	-0.000**	-0.000**	-0.000**	-0.003***	-0.003***	-0.003***	-0.003***
	[-2.192]	[-2.210]	[-2.123]	[-2.153]	[-2.892]	[-2.870]	[-2.797]	[-2.817]
Tenure	-0.001*	-0.001*	-0.001**	-0.001**	-0.035**	-0.034**	-0.036**	-0.036**
	[-1.895]	[-1.893]	[-2.030]	[-2.041]	[-2.176]	[-2.123]	[-2.178]	[-2.188]
Tenure squared	0.000*	0.000*	0.000*	0.000*	0.001**	0.001**	0.001**	0.001**
	[1.763]	[1.747]	[1.857]	[1.861]	[2.164]	[2.047]	[2.130]	[2.154]
Chairman	0.040**	0.040**	0.040**	0.040**	0.731***	0.760***	0.798***	0.800***
	[2.056]	[2.067]	[2.042]	[2.068]	[2.577]	[2.704]	[2.823]	[2.845]
President	0.285***	0.285***	0.286***	0.286***	2.269***	2.264***	2.277***	2.273***
	[10.305]	[10.326]	[10.330]	[10.313]	[12.502]	[12.549]	[12.398]	[12.395]
Executive VP	0.023***	0.022***	0.024***	0.024***	0.543***	0.526***	0.561***	0.559***
	[4.973]	[4.719]	[4.964]	[4.963]	[5.032]	[4.874]	[5.171]	[5.161]
CFO	-0.015***	-0.015***	-0.015***	-0.014***	-0.378***	-0.390***	-0.369***	-0.366**
	[-3.110]	[-3.197]	[-3.097]	[-3.074]	[-2.650]	[-2.727]	[-2.578]	[-2.564]
COO	0.114***	0.112***	0.114***	0.114***	1.098***	1.098***	1.107***	1.106***
	[6.147]	[6.112]	[6.128]	[6.128]	[6.904]	[6.937]	[6.907]	[6.904]
Year FE	yes	yes	yes	yes	yes	yes	yes	yes
Industry FE	yes	yes	yes	yes	yes	yes	yes	yes
Observations	10,459	10459	10459	10459	10459	10459	10459	10459

Table 46: Cohort Analysis: Internal vs. External

This table analyses determinants of CEO careers. The dependent variable 'Becoming CEO' is a dummy variable that is equal to 1 if the individual is promoted to a CEO position between 2001 and 2007. Age denotes the age of the directors in years, tenure is the tenure of the directors in the firm (in years). Director, Chairman, etc. are position dummy variables that are equal to 1 if the role of the directors corresponds to these positions. Quintile 1 - 5 are dummy variables that indicate to which performance quintiles the industry of the directors' firms belong to. The performance is measured every year and aggregated over the whole period. Half 1, 2 are dummy variables that indicate to which performance half the industry of the directors' firms belong to. The performance is measured every year and aggregated over the whole period. Average return is the average return of the industry of the firm aggregated over the years.

	Becoming CEO			
	Internal		External	
	I	II	III	IV
Half = 1 (best)	-0.004		-0.003	
	[-0.926]		[-1.195]	
Half = 2 (worst)	-0.009**		-0.002	
	[-2.190]		[-0.709]	
Average Return		0.006***		0.000
		[4.813]		[0.461]
Age	0.001	0.001	0.004***	0.004***
	[0.410]	[0.367]	[3.074]	[3.039]
Age squared	-0.000	-0.000	-0.000***	-0.000***
	[-0.920]	[-0.863]	[-3.441]	[-3.406]
Tenure	-0.001	-0.001	-0.000	-0.001
	[-1.305]	[-1.575]	[-1.319]	[-1.422]
Tenure squared	0.000	0.000*	0.000	0.000
	[1.429]	[1.675]	[1.020]	[1.196]
Chairman	0.027*	0.028*	0.003	0.004
	[1.654]	[1.683]	[0.271]	[0.392]
President	0.257***	0.259***	0.033***	0.032**
	[9.664]	[9.632]	[2.637]	[2.565]
Executive VP	0.008**	0.009**	0.009***	0.010***
	[2.244]	[2.342]	[3.559]	[3.865]
CFO	-0.015***	-0.015***	-0.000	0.000
	[-3.830]	[-3.706]	[-0.022]	[0.172]
COO	0.109***	0.113***	0.004	0.003
	[6.233]	[6.348]	[0.499]	[0.429]
Year FE	yes	yes	yes	yes
Industry FE	yes	yes	yes	yes
Observations	10459	10459	10459	10459

References

Abody, D., and B. Lev (2000): "Information Asymmetry, R&D, and Insider Gains," *Journal of Finance*, 55(6), 2747–2766.

Acharya, Viral, S. M., and R. Rajan (2010): "The Internal Governance of Firms," *Journal of Finance*.

Adams, R. (2009): "Governance and the Financial Crisis.," *working paper*.

Adams, R., H. Almeida, and D. Ferreira (2005): "Powerful CEOs and Their Impact on Corporate Performance," *Review of Financial Studies*, 18, 1403–1432.

Adams, R., and D. Ferreira (2007): "A Theory of Friendly Boards," *Journal of Finance*, 62, 217–250.

——— (2009): "Women in the Boardroom and their Impact of Governance and Performance," *Journal of Financial Economics*, 94, 291–309.

Adams, R., and H. Mehran (2003): "Is Corporate Governance Different for Bank Holding Companies?," *Economic Policy Review*, 9, 123–142.

Adams, R. B., and H. Mehran (2008): "Corporate Performance, Board Structure and its Determinants in the Banking Industry," *Federal Research Board of New York Staff Report*, (330).

Adrian, T., and H. S. Shin (2010): "Liquidity and Leverage," *Journal of Financial Intermediation*, 19, 418–437.

Aggarwal, Reena, I. E. R. S., and R. Williamson (2009): "Differences in Governance Practices between U.S. and Foreign Firms: Measurement, Causes, and Consequences," *Review of Financial Studies*, 22, 3132–3169.

Ahern, K. (2010): "Bargaining Power and Industry Dependence in Mergers," *Working Paper*.

Aivazian, Varouj, T.-k. L., and M. Rahaman (2010): "What Does An External CEO Bring to the Table?," *working paper*.

Aktas, N., E. De Bodt, H. Bollaert, and R. Roll (2010): "CEO Narcissism and the Takeover Process," *Working Paper*.

Aktas, N., E. De Bodt, and R. Roll (1989): "Negotiation Under the Threat of an Auction," *Journal of Financial Economics*, 24(2), 363–403.

Andrade, G., M. Mitchell, and E. Stafford (2001): "New Evidence and Perspectives on Mergers," *Journal of Economic Perspectives*, 15(2), 103–120.

Ang, J., and Y. Chen (2006): "Direct evidence on the market-driven acquisitions theory," *The Journal of Financial Research*, 29(2), 199–216.

Ang, S., A. De Jong, and M. Van Der Poel (2008): "Does CEOs' Familiarity with Business Segments Affect Their Divestment Decisions?," *Working Paper*.

Baker, M., X. Pan, and J. Wurgler (2009): "A Reference Point Theory of Mergers and Acquisitions," *NBER Working Paper*, (15551).

Bandiera, O., L. Guiso, Prat, and R. A., Sadun (2010): "What do CEOs do? New Evidence from a Time Use Survey," *Working Paper*.

Barth, J. R., G. C., and R. Levine (2008): "Bank Regulations are Changing: For Better or Worse?," *World Bank Policy Research Working Paper*, WP4646.

Bebchuck, L., M. Cremers, and Y. Grinstein (2010): "Lucky CEOs and Lucky Directors," *Journal of Finance 65*, pp. 2363–2401.

Beltratti, A., and R. Stulz (2009): "Why Did Some Banks Perform Better During the Credit Crisis? A Cross-Country Study of the Impact of Governance and Regulation," *working paper*.

Ben-David, I., J. R. Graham, and C. R. Harvey (2010): "Managerial Miscalibration," *Working Paper*, (16215).

Bender, S., and J. S. T. von Wachter (2011): "The Effects of Extended Unemployment Insurance Over the Business Cycle: Evidence from Regression Discontinuity Estimates Over 20 Years," *Forthcoming in the Quarterly Journal of Economics*.

Bender, S., and T. von Wachter (2006): "In the Right Place at the Wrong Time: The Role of Firms and Luck in Young Workers' Careers," *The American Economic Review*, 96(5), 1679–1705.

Bennedsen, M., F. Perez-Gonzalez, and D. Wolfenzon (2008): "Do CEOs matter?," *working paper*.

Bertrand, M., and K. Hallock (2001): "The gender gap in top corporate jobs," *Industrial and Labor Relations Review*, 55(1), 3–21.

Bertrand, M., and S. Mullainathan (2001): "Are CEOS Rewarded for Luck? The Ones without Principals Are," *The Quarterly Journal of Economics*, 116(3), 901–932.

Bertrannd, M., and A. Schoar (2003): "Managing with Style. The Effect of Managers on Firm Policies," *Quarterly Journal of Economics*, 68, 1169–1208.

Betton, S., and T. K. Eckbo, E. (2008): "Corporate Takeovers," *Handbook of Corporate Finance: Empirical Corporate Finance*, 2, 289–427.

Betton, S., and T. K. Eckbo, E. (2009): "Merger negotiations and the toehold puzzle," *Journal of Financial Economics*, 91(2), 158–178.

Boone, A. L., and J. H. Mulherin (2007): "How Are Firms Sold?," *The Journal of Finance*, 62(2), 847–875.

Boone, Audra, L. F. J. K., and C. Raheja (2007): "The Determinants of Corporate Board Size and Composition: An Empirical Analysis," *Journal of Financial Economics*, 85, 66–101.

Bottazzi, L., M. Da Rin, and T. Hellmann (2008): "Who are the active investors?: Evidence from venture capital," *Journal of Financial Economics*, 89(3), 488–512.

Brandenburger, A. (2002): "Porter's added value: High indeed!," *Academy of Management Executive*, 16(2).

Cappelli, P., and M. Hamori (2008): "The Path to the Top: Changes in the Attributes of Corporate Executives 1980 to 2001," *working paper*.

Caprio, Gerard, L. L., and R. Levine (2007): "Governance and Bank Valuation," *Journal of Financial Intermediation*, 16, 584–617.

Chan, W. (1996): "External Recruitment versus Internal Promotion.," *Journal of Labor Economics*, 14, 555–570.

Cheng, Ing-Haw, H. H. G., and J. A. Scheinkman (2009): "Yesterday's Heroes: Compensation and Creative Risk-Taking," *working paper*.

Chesney, Marc, J. S., and A. F. Wagner (2010): "Risk-taking Incentives, Governance, and Losses in the Financial Crisis," *Swiss Finance Institute Research Paper*, (10-18).

Chhaochharia, V., and Y. Grinstein (2007): "Corporate Governance and Firm Value: The Impact of the 2002 Governance Rules," *Journal of Finance*, 62, 1789–1825.

Coles, Jeffrey, N. D., and L. Naveen (2008): "Boards: Does One Size Fit All?," *Journal of Financial Economics*, 87, 329–356.

Commission, E. (2010): "Corporate Governance in Financial Institutions and Remuneration Policies," *Green paper*.

Cremers, M., and Y. Grinstein (2011): "The Market for CEO Talent: Implications for CEO Compensation," *working paper*.

Cuñat, V., and L. Garicano (2010): "Did Good Cajas Extend Bad Loans? Governance, Human Capital and Loan Portfolios," *Forthcoming in The Crisis of the Spanish Economy, edited by S. Bentolila, M. Boldrin, J. Díaz Jiménez, and J.J Dolado*.

Custodio, C., and D. Metzger (2011a): "Financial Expert CEOs," *working paper*.

——— (2011b): "How do CEOs matter? The Effect of Industry Expertise on Acquisition Returns," *working paper*.

Dittmann, I., E. M., and C. Schneider (2010): "Bankers on the Boards of German Firms: What They Do, What They Are Worth, and Why They Are (Still) There," *Review of Finance*, 14, 35–71.

Djankov, S., R. L. P. F. L.-d.-S., and A. Shleifer (2008): "The Law and Economics of Self-dealing," *Journal of Financial Economics*, 88, 430–465.

Doidge, C., A. K., and R. Stulz (2007): "Why Do Countries Matter so Much for Corporate Governance?," *Journal of Financial Economics*, 86, 1–39.

Duchin, Ran, J. G. M., and O. Ozbas (2010): "When Are Outside Directors Effective?," *Journal of Financial Economics*, 96, 195–214.

Edmans, A., and X. Gabaix (2011): "The Effect of Risk on the CEO Market," *Review of Financial Studies*.

Eisfeld, A., and C. Kuhnen (2011): "CEO-Firm Matches and Industry Conditions," *working paper*.

Erkens, David, M. H., and P. Matos (2010): "Corporate Governance in the 2007-2008 Financial Crisis: Evidence from Financial Institutions Worldwide," *working paper*.

Ferreira, Daniel, M. F., and C. Raposo (2011): "Board Structure and Price Informativeness," *Journal of Financial Economics*, 99, 523–545.

Frydman, C. (2005): "Rising Through the Ranks: The Evolution of the Market for Corporate Executives," *working paper*.

Frydman, C., and R. E. Saks (2010): "Executive Compensation: A New View from a Long-Term Perspective, 1936–2005," *Review of Financial Studies*, 23(5), 2099–2138.

Gabaix, X., and A. Landier (2008): "Why has CEO Pay Increased so Much?," *Quarterly Journal of Economics*, 123(1), 49–100.

Giannone, Domenico, L. M., and L. Reichlin (2010): "Market Freedom and the Global Recession," *working paper*.

Güner, A. B., U. Malmendier, and G. Tate (2008): "Financial expertise of directors," *Journal of Financial Economics*, 88(2), 323 – 354.

Goel, A. M., and A. V. Thakor (2008): "Overconfidence, CEO Selection, and Corporate Governance," *Journal of Finance*, 63(6), 2737–2784.

Graham, J., S. Li, and J. Qiu (2009): "Managerial Attributes and Executive Compensation," *Working paper*.

Graham, J. R., C. R. Harvey, and M. Puri (2008): "Managerial Attitudes and Corporate Actions," *Working Paper*.

——— (2010): "A Corporate Beauty Contest," *Working Paper*, (15906).

——— (2011): "Capital Allocation and Delegation of Decision-Making Authority within Firms," *Working Paper*, (17370).

Grennan, M. (2010): "Bargaining Ability and Competitive Advantage: Empirical Evidence from Medical Devices," *Working Paper*.

Harford, J. (2005): "What drives merger waves?," *Journal of Financial Economics*, 77, 529–560.

Hau, H., and M. Thum (2009): "Subprime Crisis and Board (in-)Competence: Private vs. Public Banks in Germany," *Economic Policy*, 24, 701–751.

Ho, K. (2009): "Insurer-Provider Networks in the Medical Care Market," *American Economic Review*, 99(1), 393–430.

Huang, S. (2010): "CEO Characteristics, Corporate Decisions and Firm Value: Evidence from Corporate Focusing," *Working Paper*.

Huson, M., P. Malatesta, and R. Parrino (2004): "Managerial Succession and Firm Performance," *Journal of Financial Economics*, 74, 237–275.

Huson, M., R. Parrino, and L. Starks (2001): "Internal Monitoring Mechanisms and CEO Turnover: A Long Term Perspective," *Journal of Finance*, 56, 2265–2297.

Imbens, G., and J. Wooldridge (2009): "Recent Developments in the Econometrics of Program Evaluation," *Journal of Economic Literature*, 47, 5–86.

Ishii, J., and Y. Xuan (2010): "Acquirer-Target Social Ties and Merger Outcomes.," *Working Paper*.

Jenter, D., and F. Kanaan (2011): "CEO Turnover and Relative Performance Evaluation," *Forthcoming in the Journal of Finance*.

Jenter, D., and K. Lewellen (2010): "Performance-induced CEO Turnover," *working paper*.

Kaniel, R., C. Massey, and D. T. Robinson (2010): "The Importance of Being an Optimist: Evidence from Labor Markets," *Working Paper*, (16328).

Kaplan, S., M. K., and M. Sorensen (2010): "Which CEO Characteristics Matter?," *Forthcoming in the Journal of Finance*.

Kaplan, S. N., and P. Stromberg (2009): "Leveraged Buyouts and Private Equity," *Journal of Economic Perspectives*, 23(1), 121–46.

Kirkpatrick, G. (2009): "The Corporate Governance Lessons from the Financial Crisis," *Financial Markets Trends*, 96(2009/1).

La Porta, R., F. L.-D.-S.-A. S., and R. Vishny (1998): "Law and Finance," *Journal of Political Economy*, 106, 1113–1155.

Laeven, L., and R. Levine (2009): "Corporate Governance, Regulation, and Bank Risk Taking," *Journal of Financial Economics*, 93, 259–275.

Lazear, E. (2002): "Entrepreneurship," *NBER Working Paper*, (9109).

——— (2004): "Balanced Skills and Entrepreurship," *American Economic Review*, 94, 208–211.

Lehn, K.M, S. P., and M. Zhao (2009): "Determinants of the Size and Composition of US Corporate Boards: 1935-2000," *Financial Management*, 38, 747–780.

Linck, James, J. N., and T. Yang (2008): "The Determinants of Board Structure," *Journal of Financial Economics*, 87, 308–328.

Maksimovic, V., and G. Philipps (2002): "Do Conglomerate Firms Allocate Resources Inefficiently Across Industries? Theory and Evidence," *Journal of Finance*, 57(2), 721–767.

Malmendier, U., and G. Tate (2008): "Who makes acquisitions? CEO–Overconfidence and the Market's Reaction," *Journal of Financial Economics*, 89(1), 20–43.

Malmendier, U., and G. Tate (2009): "Superstar CEOs," *The Quarterly Journal of Economics*, 124(4), 1593–1638.

Malmendier, U., G. Tate, and J. Yan (2011): "Overconfidence and Early Life Experience," *Journal of Finance*, 66(5), 1687–1733.

Masulis, R., C. Wang, and F. Xie (2007): "Corporate Governance and Acquirer Returns," *Journal of Finance*, 62(4), 1851–1889.

Minton, Bernadette A., J. P. A. T., and R. Williamson (2010): "Do Independence and Financial Expertise of the Board Matter for Risk Taking and Performance?," *working paper*.

Mitchell, M. L., and J. H. Mulherin (1996): "The impact of industry shocks on takeover and restructuring activity," *Journal of Financial Economics*, 41(2), 193 – 229.

Moeller, S., F. Schlingemann, and R. Stulz (2005): "Wealth Desctruction of a Massive Scale? A Study of Acquiring-Firm Returns in the Recent Merger Wave," *Journal of Finance*, 60(2), 757–782.

Morck, Randall, M. D. Y., and B. Y. Yeung (2010): "Banking System Control, Capital Allocation, and Economy Performance," *Journal of Financial Economics*.

Morgan, D. P. (2002): "Rating Banks: Risk and Uncertainty in an Opaque Industry," *American Economic Review*, 92, 874–888.

Murphy, K., and J. Zabojnik (2007): "Managerial Capital and the Market for CEOs," *working paper*.

Myerson, R., and M. Satterwhaite (1983): "Efficient mechanisms for bilateral trading," *Journal of Economic Theory*, 29(2), 265–281.

Nguyen, B. D., and K. M. Nielsen (2009): "The Value of Independent Directors: Evidence from Sudden Deaths," *Journal of Financial Economics*.

Officer, M. (2007): "The price of corporate liquidity: Acquisition discounts for unlisted targets," *Journal of Financial Economics*, 83(3), 571–598.

Oyer, P. (2008): "The Making of an Investment Banker: Stock Market Shocks, Career Choice, and Lifetime Income," *Journal of Finance, American Finance Association*, 63(6), 2601–2628.

Parrino, R. (1997): "CEO Turnover and Outside Succession: A Cross-Sectional Analysis," *Journal of Financial Economics*, 46, 165–197.

Peters, F., and A. Wagner (2009): "The Executive Turnover Risk Premium," *working paper*.

Porter, M. (1990): *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. Free Press: New York.

Rajgopal, Shivaram, T. S., and V. Zamora (2006): "CEOs. Outside Employment Opportunities and the Lack of Relative Performance Evaluation in Compensation Contracts," *Journal of Finance*, 61, 1813–1844.

Rauh, J. D., and A. Sufi (2010): "Explaining Corporate Capital Structure: Product Markets, Leases, and Asset Similarity," *working paper*.

Rousseau, P. L., and C. Stroup (2011): "Director Histories and the Pattern of Acquisitions," *Working Paper*.

Schmieder, J. F. (2010): "Does Wage Persistence Matter for Employment Fluctuations? Evidence from Displaced Workers," *American Economic Journal: Applied Economics*, 2(3), 1–21.

Schoar, A., and Zuo (2011): "Shaped by Booms and Busts: How the Economy Impacts CEO Careers and Management Style," *working paper*.

Shleifer, A., and R. Vishny (2003): "Stock Market Driven Acquisitions," *Journal of Financial Economics*.

Simintzi, E., V. Vig, and P. F. Volpin (2011): "Labor Protection, Debt and Access to Finance," *working paper*.

Spamann, H. (2010): "The "Antidirector Rights Index" Revisited," *Review of Financial Studies*, 23, 467–486.

Spiegel, Y., and D. Spuler (1994): "The Capital Structure of a Regulated Firm," *RAND Journal of Economics*, 25(3), 424–440.

Walker, D. (2009): "A Review of Corporate Governance in UK banks and other Financial Industry Entities: Final Recommendations," *Online document*.

Weisbach, M. (1988): "Outside Directors and CEO Turnover," *Journal of Financial Economics*, 20, 431–460.

Williamson, O. (1971): "The Vertical Integration of Production: Market Failure Considerations," *The American Economic Review*, 61(2), pp. 112–123.

Wolfers, J. (2006): "Diagnosing Discrimination: Stock Returns and CEO Gender," *Journal of the European Economic Association*, 4(2-3), 531–541.

Yim, S. (2009): "The Acquisitiveness of the Youth: CEO Age and Acquisition Behavior," *Working paper*.