How is Postsecondary Education Associated with Membership in the American Corporate Elite?

by

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DEDICATION

To the Otts:

Bob, Mary J., Katy, Andrew, and Will

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABSTRACT

How is postsecondary education associated with membership in the American corporate elite?

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Chair: Janet H. Lawrence

This study contributes to the discussion around the value of a college degree and associated career advantages by considering how postsecondary education contributes to the attainment of the most powerful and prestigious positions in the American corporate world. Guided by a conceptual framework informed by status attainment, power elite, and upper echelon theories, I examined the backgrounds of almost 4,000 top-level Fortune 500 business executives in 2010. The data, including socio-demographics, postsecondary degrees, various undergraduate accomplishments, and company characteristics, were collected from a variety of secondary sources. A series of analyses, inspired by the work of Useem and Karabel (1986), compared executives who were senior managers or outside directors of one company to even more powerful executives. This latter group, referred to as the "corporate elite," were operationalized as CEOs, outside directors of multiple companies, or leaders in major business associations.

I found a bachelor's degree to be almost universally held and few significant differences emerged distinguishing the most powerful executives from others in terms of their bachelor's degree source. Focusing more closely on undergraduate academic and extracurricular accomplishments, however, indicated that the corporate elite were more likely to be involved in certain activities. Also, I observed differences in the levels of graduate degree attainment and graduate degree sources. Possessing an MBA degree from a top business school or, to a lesser extent from a lower ranked business school, were each positively associated with membership in the business elite. For law school graduates, the likelihood of holding a top position of corporate power was less consistent than that of MBAs.

Ultimately, this paper adds to our understanding of how postsecondary education might shape a small and understudied population that is a high status occupational class, the top management team responsible for major corporate decisions, and a powerful inner circle positioned to define national business interests and influence policy.

CHAPTER 1

Introduction

Does a college degree really give someone an advantage in his or her career? Most professors, university administrators, and policy experts – not to mention students and parents – would like to believe that this is the case. With the average annual tuition for a four-year degree in the range of $20,000 per year, it is reasonable to assume that such a major investment will pay off in the form of a good job after graduating as well as continued occupational success. As is it reasonable to assume that the "better" or more elite the degree, the greater the advantage.

Examples of highly successful college graduates abound. Yet for every Yale B.A., Harvard MBA-holding Chief Executive Officer of a huge corporation like Boeing's James McNerney, there is a Bill Gates counterexample. Literally one of the first facts mentioned by many news articles and biographies of the Microsoft founder is his choice to drop out of Harvard as an undergraduate in 1976 (e.g., BBC, 2004; Grossman, 2004). Gates is certainly not alone; anecdotes about wildly successful college dropouts are everywhere[1] and contribute to an undercurrent of doubt that runs through popular opinion on the true necessity and value of a degree (Altucher, 2010; Baldwin, 2003; Murray, 2007; Steinberg, 2010). One of the latest examples is Pay-Pal co-founder and Facebook investor Peter Thiel's "20 Under 20" program (Lacy, 2011). Thiel is a graduate of Stanford University and Stanford Law School but is convinced that higher education is the latest "bubble" industry. In 2011, Thiel announced his intentions to pay twenty

[1] See, for instance, the unofficial College Dropout Hall of Fame at http://www.collegedropoutshalloffame.com/

talented young adults $100,000 each over the course of two years to drop out of college and start a company instead.

Purpose of the Study

This study confronts these competing narratives by considering the influences on who achieves the most powerful, most lucrative positions in the business world. In today's competitive and global economy, how important is postsecondary education, specifically whether and where someone goes to college, in determining whether someone attains a corporate leadership role? How likely is it that someone will run a major business enterprise if he chooses to attend a top university compared to a lesser-regarded school? Will earning a graduate degree such as an MBA improve one's chances?

More specifically, this study builds on the scholarship of Michael Useem and colleagues in considering the role that higher education plays in determining who will be part of the senior-most managers and directors of the world's largest public companies (Useem, 1978; Useem, 1979; Useem, 1980; Useem, 1982; Useem, 1984; Useem, 1989). Useem studied top American business executives in the late 1970s and early 1980s, and his research with Jerome Karabel during this time period informs the design and methodology here. Useem and Karabel (1986) examined a sample of upper level corporate managers and found that postsecondary education influenced the chances that a top executive would be a Chief Executive Officer, serve on multiple corporate boards of directors, or be appointed to a leadership position in an influential business organization. Their research indicated that educational credentials are associated with career

achievement, even among those who already reached the upper levels of corporate management.

In this study, I replicated, refined and extended that of Useem and Karabel with a sample of 3,798 top executives from 250 companies that were part of the 2010 Fortune 500 list. My analyses compared executives who were senior managers or outside directors of one company only to even more powerful executives who were part of what scholars label the "corporate elite." To be clear, the entire population is high-level American executives, all holding relatively high status and well paid positions. This study, like the one that I replicate, was "concerned *not* with whether an aspiring middle manager with top university credentials will reach the senior level of a firm, but rather with those factors that increase the probability that senior managers already there will reach even higher levels of power and responsibility [and status] within the corporate world" (Useem & Karabel, 1986, p. 190).

I began by analyzing whether the sample's social background and postsecondary degree patterns were associated with membership in the corporate elite, and I contrasted my findings with those of the prior study. I then refined these analyses by incorporating more variables and more comparisons among the different executive groups. Finally, I focused on a subsample of executives and explored patterns of their undergraduate experiences and achievements.

Corporate Elite Defined

The focus here is on a small group of business leaders known as the *corporate elite*. I discuss the theoretical underpinnings of this term in Chapter Two and empirical representations in Chapter Three, but since they are the conceptual basis of the study, I

offer a brief definition here as well. By corporate elite, I mean individuals who hold top positions in major American corporations, according them the highest status, prestige, and power in American business. Their positions enable them to define the political interests of business at a national level and mobilize to exert corporate influence over the political process, serving the interests of all large companies (Domhoff, 1974a; Domhoff, 2006a; Domhoff, 2010; Dye, 1995; Useem, 1978, 1979, 1980, 1984).

There are three ways the corporate elite are operationally represented in this study: 1) Top corporate management, or those who have oversight of a company's major strategic decisions and responsibility for its outcomes (i.e., CEOs), 2) Corporate governance, or involvement in the governance of two or more major corporations, and 3) Business association leaders, or those who are key members and leaders of organizations that represent the national political interests of business.

Unfortunately, "elite" often is considered to be pejorative when used to describe individuals (Klitgaard, 1985) and that is especially true in the mainstream media (e.g., Murray, 2010). As used here, elite refers to those at the apex of the corporate power structure in legitimate leadership positions. Political scientist Thomas Dye (1995) asserts, "the elitist character of American society is not a product of political conspiracy, capitalist exploitation, or any specific malfunction of democracy. *All* societies are elitist. There cannot be large institutions without great power being concentrated within the hands of the few at the top of these institutions" (p. 3).

Foundation of the Study: Useem and Karabel (1986)

Given the importance of Useem and Karabel's (1986) research to this study, a brief summary of their conceptual framework, design, and findings is warranted.

Published in the *American Sociological Review,* their study was theoretically grounded in Pierre Bourdieu's work on what (and how) an individual's background– especially family social class and education – facilitate social and economic success. Useem and Karabel assumed a family background rich with social connections and opportunities (i.e., high status) was a type of "social capital" and a postsecondary degree from a top university was a type of "scholastic capital." These forms of capital, along with cultural and economic capital (neither measured in this study, however), were hypothesized to be important influences on a business executive's chances of entrance into the corporate elite.

To test this hypothesis, Useem and Karabel selected 3,105 executives with the rank of vice president or above from 208 companies included in *Fortune* magazine's 1977 list. They used a variety of secondary sources to construct a biographical dataset with their major measures being high status family background (i.e., graduate from an elite secondary school and/or family listed in the *Social Register*) and university credentials (i.e., a BA from a top ranked university, an MBA from a top ranked program, a JD from a top ranked program). Using the three representations of the corporate elite described in the prior section, Useem and Karabel compared these executives to other top leaders (e.g, single outside directors, executive vice presidents) using quantitative analytic techniques, primarily crosstabulation and linear regression.

The main conclusion from this study was that social capital and scholastic capital were associated with membership in the corporate elite, even when this group was compared to others who had also reached upper management levels of major firms. For instance, approximately sixteen percent of their executives were born into high status

families, and this was directly related to being in one of the extra-firm leadership positions (i.e., being a multiple outside director and a business association leader), though not significant for CEOs. Postsecondary education was associated with each of the three outcomes. The odds that senior managers without bachelor's degrees would be in a CEO position were 26.5 percent, for example, while the odds increased to 36.4 percent for those with a "lesser" bachelor's degree and 51.5 percent for those with a "top" bachelor's degree. Earning an MBA or a law degree from a top program also improved the likelihood that executives would be a CEO but not as much compared to holding a top bachelor's degree. However, a law degree from a top program relative to any other type of degree provided the largest career advantage for multiple outside directors and business association leaders.

Significance of the Study

The study by Useem and Karabel is considered seminal in the sociology and higher education literatures as evidence for the continued importance both of family background and of attending a top college on an individual's social and economic attainment. Their findings are especially remarkable given that their entire sample was comprised of high-achieving executives, yet significant differences still existed in the social and scholastic backgrounds of those in the topmost positions to those just below. Nonetheless, there are a number of reasons that make revisiting the topic a worthwhile endeavor.

The data are over thirty years old, and whether the findings continue to apply to contemporary social and economic context is unclear. In his review of educational and occupational attainment literature, Bills (2003) concluded, "employers are probably

reading signals and establishing screens differently from the way they did those things 30 years ago" (p. 459). Patterns of educational attainment were clearly different in 2010 than 1977 – in 1980, 10.7 percent of Americans age 25 years and over held a college degree, compared to 28.7 percent in 2007 – so it follows that patterns of executive degree attainment have changed as well (U.S. Census, 2008).

Also, Useem and Karabel did not explore the distinctions among postsecondary degrees in much detail. They simply used Coleman's university rankings in 1940 to identify eleven "top" undergraduate programs. The relationship between holding a top degree was contrasted to holding a "lesser" degree (i.e., any other bachelor's degree) as well no degree. A similar method was used to identify the top eleven MBA programs and the top nine law programs. No further investigation was made of the college groupings or of any other organizational characteristics that might be salient explanations for the differences in occupational attainment, nor did they consider the role that individual aspects of the executives' postsecondary experience might play (e.g., undergraduate major, academic performance, campus involvement). This limitation reflects an ongoing challenge in higher education research, namely understanding what it is about specific colleges that may confer distinctive advantages on degree holders and in turn translate into different outcomes. Using contemporary data, I investigate these dimensions more closely.

The outcomes of Useem and Karabel's research, which were the same outcomes I used in this study (i.e., whether an executive was a CEO, served on multiple corporate boards of directors, or held a leadership position in a major business organization), can be thought about in several ways. Depending on how the outcomes are conceptualized, this

study represents a contribution to at least three separate bodies of scholarship across several disciplines – status attainment (sociology), power elite theory (sociology/political science), and upper echelon theory (business management/organizational behavior) – as well as research in higher education that addresses college outcomes and college impact. I discuss the literature in more detail in Chapter Two but consider here the significance of this study to each of these areas.

From a career-oriented perspective, my focus is on the attainment of top-level occupational outcomes. A CEO position is above a CFO, COO, or Executive Vice President in an organizational chart; it is a relatively higher occupational category. Also, these positions are among the best compensated today. Piketty and Saez's (2006) income trends research demonstrates "the very large increases in top wages (especially top executive compensation). As a consequence, top executives (the "working rich") replaced top capital owners (the "rentiers") at the top of the income hierarchy during the twentieth century" (p. 204).

Surveys of prospective college students indicate that improving career opportunities is a common reason cited for pursuing postsecondary education (King, 1996; Knox, Lindsay & Kolb, 2003; Mullen, 2010). Business is a popular field that students enter. According to UCLA's 2008 College Senior Survey, 17.4 percent of seniors nationally reported business was their probable career/occupation after graduation, the most frequent response on the survey after the 20 percent of seniors who responded "other" (Liu, Ruiz, DeAngelo & Pryor, 2009). While students may hope that their investment in a degree will translate into occupational advantages, Pascarella and Terenzini (2005) "uncovered only a small body of studies published in the 1990s that

focused on the impact of postsecondary educational attainment on occupational status" (p. 449). My review of the status attainment literature published in the twenty-first century did not produce many additional resources (exceptions include Roksa, 2005; Stock & Alston, 2000; Warren, Sheridan & Hauser, 2002). Also, most of the studies in this area focus on early career; less is known about how postsecondary education relates to later-in-life occupational outcomes.

Another way to view the study outcomes is that they represent positions held by individuals who direct and manage major organizational decisions; "more than any other single set of people, their decisions have decisive bearing on the contemporary contours of the nation's career hierarchies, wage distributions, and plant locations" (Useem & Karabel, 1986, p. 184). Therefore, I also use the upper echelon theory in business management to frame my research. While the research in this tradition suggests that CEOs and directors influence firm outcomes (Carpenter, Geletkanycz & Sanders, 2004; Hambrick & Mason, 1984), little is known about specific characteristics of these individuals, including their education. After reviewing the literature, Keiser (2004) concluded, "for all the field knows about CEOs, there are regrettably few examples of systematic research about executive traits, and whether the demographic traits of individuals in this top position have changed over time" (p. 55).

Executives who are CEOs, networked across several organizations as multiple outside directors, or part of leading business organizations represent a small group of leaders who are able to exert considerable power over the decisions made not only in their own companies but across corporations as well. This is part of power elite theory, and scholars who ascribe to this view assume the corporate elite – also referred to as the

"inner circle" – are a unified class that exerts corporate influence over the political process based upon its shared interests (Domhoff, 2010; Useem, 1984). Do those who achieve powerful positions share common postsecondary backgrounds? Beyond Useem and Karabel's study, this question has been given scant attention by power elite researchers and no attention at all by higher education researchers. However, Baker (in press) argues that a college degree is more important than ever before in positioning someone to move into power:

> power (often now in formal organizations with large professional staffs) in society is legitimately distributed by education credentials…the schooled society not only makes educational credentials ever more prominent for individuals' status attainment, educational credentialing anchors the society-wide status system by which the volume of resources and power of a richly technological world are legitimately controlled and distributed (p. 14).

Also encouraging me to pursue this line of inquiry is the recent resurgence of interest across all disciplines in studying and understanding elites (Sullivan, 2010). Early in the twentieth century, scholars such as C. Wright Mills, Digby Baltzell, and Thorstein Veblen produced a strong foundation of work on social, cultural, economic, and political elites. In the early 1980s, however, social scientists interested in inequality focused their attention on the other end of the socioeconomic spectrum, at impoverished, unemployed, and disenfranchised members of society. These studies rarely made distinctions among the middle classes or the elites, so the place of elites in contemporary society and how they reach this position is under researched (with a few exceptions like Domhoff). Though the idea that elites exist is uncomfortable to many in the United States (Dye, 1995), this group directs and manages major decisions that have far-reaching effects on the contours of American socioeconomic life and therefore is an important focus for scholars. Over the last few years, precipitated at least in part by the growing

concentration of wealth in the hands of a small group, attention to elite formation and associated consequences has increased and in October 2010 the first "Elites Research Network" conference was convened at Columbia University (Sullivan, 2010). These researchers are mostly sociologists and political scientists, however, and my focus on education uniquely positions me to make a distinctive contribution to the field.

Research Questions

This study addresses the primary overarching question, how is postsecondary education associated with membership in the American corporate elite? I begin by establishing the patterns of executives' postsecondary attainment and the specific types of institutions from which they earned their bachelor's and graduate degrees. This descriptive analysis addresses the following sub-question:

> 1). What are the higher education backgrounds of top corporate executives? Are there differences in the backgrounds of Chief Executive Officers, multiple directors, and business association leaders compared to other senior executives?

I then replicate the work done by Useem and Karabel (1986) in their 1977 study of corporate executives. The study replication addresses the following sub-question:

> 2). How has the relationship between postsecondary attainment and membership in the corporate elite changed between 1977 and 2010?

I refine the replication by incorporating more variables and next address the following sub-question:

> 3). Is postsecondary attainment related to the chances that an executive will be part of the corporate elite?

Finally, I extend the prior study to better understand the executives' undergraduate accomplishments beyond the college or university from which they earned their degrees. The study extension addresses the following sub-questions:

> 4). Do the undergraduate academic achievements of the corporate elite differ from other top executives?
>
> 5). Does the undergraduate campus involvement of the corporate elite differ from other top executives?

Organization of the Dissertation

The dissertation is organized into five chapters. In this chapter, I gave an overview of the study's purpose, including the significance of understanding the relationship between postsecondary education and membership in the corporate elite today, and I identified the research questions guiding my analysis.

My review of the literature is in Chapter Two and organized around two overarching questions. First, how are top corporate executives studied? I discuss three main conceptual frameworks that inform this line of inquiry – status attainment, power elite, and upper echelon theory – and highlight main assumptions and strengths/weaknesses of each. Second, what predicts executive career achievement? Drawing from the empirical evidence pertaining to each conceptual framework, I summarize the demographics, social-psychological characteristics, postsecondary education, career experiences, and firm characteristics that have been shown to affect someone's chances of ascending to the corporate elite.

Chapter Three outlines the study methodology. I discuss the companies and individual executives sampled for inclusion. I also describe the variables collected and

constructed as well as the analytic strategy I employed to understand ways in which the corporate elite differed from other top executives.

The study results are presented in Chapter Four. I begin by analyzing the descriptive characteristics of postsecondary degree attainment for the full sample. I then replicate and refine Useem and Karabel's (1986) study of top business executives with contemporary data. Next, I extend their analysis to focus on the role of postsecondary education – academic achievements, status-conferring experiences, involvement, etc. – on membership in the corporate elite. The chapter concludes with a summary of the study limitations.

The final chapter summarizes the key findings, considers their implications for policy and practice as well as for each of the three contributing conceptual frameworks, and suggests directions for further inquiry.

CHAPTER 2

Review of the Literature

I begin this chapter by considering how executive careers are studied, summarizing the three main theoretical frameworks that inform the study design. I then examine the evidence around what predicts executive career achievement, especially why and how postsecondary education affects executive careers.

How are Top Corporate Executives Studied?

Much of the contemporary research on the careers of high level business executives approaches the topic using one of three frameworks: status attainment, power elite, or the upper echelon. I discuss each of these orientations to the study of business executives, their limitations, and their conceptual contributions to framing my dissertation, which are summarized in Table 2.1.

Table 2.1
Theoretical Frameworks for Studying Executive Careers

Framework	Primary Discipline(s)	General Purpose	Contribution to this Study
Status attainment	Sociology	To explain differences in individual outcomes	a. Emphasizes the social value & importance of occupation. b. Groups occupations according to relative desirability and status. c. Identifies education as an important factor in individual status attainment.
Power elite	Sociology / Political Science	To explain the American power structure	a. Defines the corporate elite as CEOs, members of multiple boards, and business policy group leaders. b. Asserts corporate elite are more powerful than other top executives because they participate in cross-corporate decision making processes. c. Is the framework for Useem and Karabel (1986) research.
Upper echelon	Management / Org. studies	To explain differences in org. outcomes	a. Asserts top corporate executives – CEOs and boards –are important to a company's performance.

Status Attainment

The status attainment perspective assumes occupation is a central element of social organization as well as the basis on which modern forms of social stratification arise (Hall, 1983; Sorensen, 2001). The attribute of occupation represents something beyond financial standing. It is one of the fundamental economic and social roles of most adults, a basic piece of one's identity and activities (Haller & Portes, 1973; Sewell & Hauser, 1975). It also gives information about skills and abilities that are valuable in the labor market, as well as current and future economic prospects.

No approach to measuring occupation for research purposes is universally accepted among status attainment researchers, though most typically consider all occupations together based upon ratings of status, desirability, or prestige associated with any given occupation (Blau & Duncan, 1967; Nakao & Treas, 1989; Siegel, 1971). Business executives are not typically the sole focus of the research in this tradition and are considered along with other types of workers, with the goal of understanding how and why different individuals follow different career paths.

Status attainment offers insight into how individuals attain positions in the hierarchies of social, economic, and/or political power. In this framework, the term "status" is taken to mean "inequalities among social units, such as persons or families, which are more or less institutionalized within the larger social system" (Haller & Portes, 1973, p. 51). Thus, status attainment offers insight not only where individual social mobility is concerned but also the degree to which individual achievement is connected to broader social stratification.

In *The American Occupational Structure* (1967), Peter Blau and Otis Duncan outlined the basic status attainment framework. Using data collected by the U.S. Census Bureau in 1962, they employed path analysis to test how two exogenous variables – father's education and father's occupation – influenced an individual's educational attainment and occupational status and found strong support for the hypothesized relationships. Blau and Duncan's work is foundational in asserting the importance of education in the overall status attainment process (Haller & Portes, 1973). The zero-order correlation between educational attainment (measured in years) and occupational status (measured by SEI score) in 1962 was 0.60. Education exerted a direct effect on first job

of 0.440 and a direct effect on occupation in 1962 of 0.394. In fact, the effect of education on occupational status in 1962 (r=0.394) was comparably larger than the effect of first job on occupational status in 1962 (r=0.281).

The basic Blau-Duncan framework is one of the most cited works in sociology and has been modified, extended, and updated extensively (Sewell & Hauser, 1992). One of its early modifications is often referred to as the Wisconsin model and in its own right is similarly foundational for the status attainment tradition. Researchers from the University of Wisconsin incorporated psychological variables (e.g., IQ) and social psychological variables (e.g., aspirations, self-concept, motivation) into the status attainment path model (Sewell, Haller & Portes, 1969; Sewell, Haller & Ohlendorf, 1970). Tested using data collected from Wisconsin males who were high school seniors in 1957, variables for occupational aspirations, educational aspirations, influence of parents', friends, and teachers, academic performance, and "mental ability" were added. The influence of education (again measured in years) on occupational status continued to be strong despite the inclusion of these additional independent variables. Specifically, the direct path coefficient was 0.553, and educational attainment explained 38 percent of the variance in occupational attainment in 1964 (Sewell, Haller & Ohlendorf, 1970).

The Blau-Duncan and Wisconsin models both gave support to the causal order of status variables, and the classic framework derived from them is reproduced in Figure A1 (Appendix A). Ascribed characteristics present at birth (e.g., family socioeconomic success), achieved characteristics (e.g., training), and the social-pyschological characteristics discussed above directly influence occupational status as well as earnings. Separately, each of these factors indirectly influences occupational status and earnings

through educational attainment. Education in turn exerts a unique effect on earnings and occupational status throughout the life course, although the direct effect declines over time. Many studies report results consistent with Blau-Duncan and Wisconsin using different data sets, including additional variables, and applying more sophisticated methods to adjust for unobservables, response errors and incomplete data, but there is strong continued support for the fundamental assumption that educational attainment directly contributes to occupational attainment (Corcoran, 1992; Griffin & Alexander, 1978; Hout, 1988; Kerckhoff, Raudenbush & Glennie, 2001; Sewell & Hauser, 1992; Warren, Hauser & Sheridan, 2002).

By the same token, scholars in this tradition have been criticized for not exploring this relationship in more detail beyond parsing out its significance and effect size. Baker (in press) recently observed,

> Not only has formal educational credentialing become widely interjected into the occupational process, the nature of educational credentialing itself continues to intensify (p. 3) … [but] oddly, with only a few notable exceptions this distinctive and expanding feature of education in postindustrial society is generally underappreciated, under-analyzed and under-theorized in the sociologies of education, occupations and social stratification. If appreciated, educational credentialing is seen as playing a supporting role in inter-occupational conflict; if analyzed, educational credentials are considered as a mere technical adjustment to the status attainment models; and if theorized about, educational credentialing is considered a minor phenomenon, or as an indicator of the assumed problem of over-education (p. 4).

Several other criticisms of the classic status attainment framework are relevant to my research. First, the dependent variable is typically a continuous measure of prestige or socio-economic status. Determining where differences exist between specific groups – such as CEOs compared to other executives – is unclear with continuous outcomes. Critics also note inattentiveness to structural issues, including organizational

characteristics of schools and labor force variations according to sector and firm (Baron & Bielby, 1980; Braxton, Brier, Herzog & Pascarella, 1990; Kerckhoff, 1995; Petersen, 1992; Scott, 1996; Smart, 1986; Tinto, 1980). More recent status attainment research – referred to as "fourth generation" (Kerckhoff, 1995, 1999) or "new structuralism" (Baron & Bielby, 1980) – ameliorates some of these limitations and considers how a cohort of individuals is sorted into positions in the stratification hierarchy, given their structured social contexts. Petersen (1992) asserts that "the macro-sociological orientation of Blau and Duncan, to characterize the stratification structure of an entire society, has been replaced by a more micro- or meso-sociological approach, where specific career mechanisms, as found for example in organizations, are studied in detail, uncovering much more heterogeneity in positions and conditions than a standard status attainment approach allows" (p. 638). The classic status attainment framework is silent about the actual mechanisms that produce occupational attainment. For instance, what is it about a college degree that causes an individual to find a high quality job? How does this relationship work? Also, the occupational attainment process is not as simplistic or linear for everyone as the model assumes (Haller & Portes, 1973; Rosenfeld, 1992).

Despite its limitations, the status attainment tradition is relevant to my study for two reasons. First, it offers a conceptual reason to study business executives; namely, they are a high status and desirable occupation. Second, despite criticisms about under attentiveness to education, it is the foundational framework on which much of the research on the relationship between education and career outcomes is based. Conceptually, the design of this study is informed by status attainment research,

especially findings on the importance of education and the literature that has applied status attainment, which will be discussed later in this chapter.

Power Elite Theory

Status attainment ranks occupations based on relative social prestige. A top executive of a major corporation is a position of high status, and a CEO is an even more prestigious occupation. Social status is one dimension along which a society may stratify; another dimension is power. Power is a core concept in the social sciences, and scholars dating back to Plato, Aristotle, Machiavelli, and Hobbes have extensively debated what power is, how to measure it, and how to determine who possesses it (Scott, 1991). Max Weber's definition is classic and a common starting point (Emerson, 1962). Weber (1946) described power as "the chance of a number of men to realize their own will in a communal action even against the resistance of others who are participating in the action" (p. 132). Though an extensive discussion of the power literature is beyond the scope here,[2] especially germane is the assumption that high level corporate executives are able to wield a great deal of power based on their positions as heads of major institutions, what French and Raven (1960) labeled "legitimate" power. Also important is the assumption that this power is separate from the income or the status associated with their positions (Weber, 1946).

Top executives' power can be thought of as extending in two dimensions, vertically and horizontally. By virtue of their positions at the top of a company's organizational structure, executives have vertical power over the organization's key resources, operations, and employees (Pfeffer, 1981; Perrow, 1981). Their decision-making capacities affect the company's employees, stockholders, customers, and other

[2] See Clegg (1989) for a summary of competing frameworks of power.

stakeholders. The higher an executive is in an organization chart, the closer he will be to the biggest decisions with potentially the greatest impact (e.g., plant closings, layoffs, product launches, investment decisions).

According to the power elite theory,[3] a subset of these top executives are in even more powerful positions. The corporate elite – also referred to as the "inner circle" – not only have vertical influence over a single company's decisions but also have horizontal influence extending *across* all major corporations. They are a unified class that defines the political interests of business at a national level, mobilizes to exert corporate influence over the political process, and ensures that political actions produce benefits that serve the interests of all large companies (Domhoff, 1974a; Domhoff, 2006a; Domhoff, 2010; Dye, 1995; Mills, 1956; Moore, 1979; Useem, 1984).

Scholars in the power elite tradition, including Useem and Karabel (1986), assert that the corporate elite is a relatively cohesive group; they collaborate to define the political interests of business at a national level. These shared interests or extracorporate logic are characterized as a "classwide principle," and allow the corporate elite to exert institutionalized power (Useem, 1984, pp. 14-15). The group mobilizes based upon its shared logic to exert corporate influence over the political process. This does not, however, imply corporations are coordinating every decision. According to Useem (1984),

> Most corporate business decisions are viewed, correctly, as a product of the internal logic of the firm. Yet when decisions are made on the allocation of company monies to political candidates, the direction of its philanthropic activities, and other forms of political outreach, an external logic is important as

[3] Also commonly considered to be part of the power elite are top leaders in other dimensions of the institutional structure of American society beyond major corporations – including media, law, education, civic and cultural organizations, the government, and the military – but detailed attention to these is outside the scope of my study (Dye, 1995; Temin, 1997; Temin, 1999).

> well. This is the logic of classwide benefits, involving considerations that lead to company decisions beneficial to all large companies, even when there is no discernible direct gain for the individual firm. The inner circle is the carrier of this extracorporate logic; the strategic presence of its members in the executive suites of major companies allows it to shape corporate actions to serve the entire corporate community (p. 5).

Who is part of the corporate power elite?

In modern societies that favor bureaucratic structures such as the United States, the acquisition and maintenance of large-scale bases of power occurs through institutions (Mills, 1956). Someone may exert great power outside of an institutional context (e.g., an assassin who kills a President), but this is fleeting and situation-specific. Through their control of economic resources on a national and even global scale, corporations and large banks are the main economic institutions that are the basis for the corporate elite in the United States. Executives leading local or family-owned companies, therefore, are not part of this group. The form of power associated with institutional positions is not merely an attribute of an individual but rather an attribute of the role held by that individual in the broader social structure (Dye, 1995).

Determining who specifically is part of the power elite is a function of identifying the positions that translate to the cross-company horizontal influence described above. Members are commonly distinguished by the formal roles that they occupy (Pettigrew, 1992; Useem, 1979; Useem, 1984). The *Chief Executive Officer* of a company is generally assumed to have the most vertical influence over his company's operations of any other single employee, although research on exactly what they do is surprisingly limited (Mintzberg, 1973; Mintzberg, 1990). In addition, CEOs are recognized as "the key decision-makers in corporations that account for most of the economic activity in

modern economies" (Bertrand, 2009). Corporate elite scholars, therefore, commonly include CEOs of major corporations as part of the power elite.

Interlocking directorships are another key mechanism through which the power elite operates. Individuals who sit on the boards of directors for at least two major corporations are part of an interlocking directorship. According to Domhoff (2009), interlocking directorships are "valuable for the dissemination of organizational innovations among corporations; they give the people who are members of several boards a very useful overview of the corporate community as a whole; they contribute to political cohesion; and they have modest effects on some of the financial practices of the interlocked corporations" (pp. 24-25). While power elite theory recognizes that outside directors have responsibility for approving major internal decisions such as the selection of top executives, they are also critical in helping the organization monitor the external environment and ensure its policies and strategies are consistent with those of the larger business community. Useem (1979, 1984) asserts that interlocking directors have a unique opportunity to define and communicate extracorporate logic through their relationships with multiple firms that are often in different environments.

An additional means by which corporate leaders shape this extracorporate logic and influence policy is through certain overarching *business policy organizations* (Useem & Karabel, 1986), also referred to as "policy discussion groups" (Domhoff, 2010) or "elite policy-planning networks" (Burris, 1992). Examples include the Business Roundtable, the Business Council, the Committee for Economic Development (CED), and the Council on Foreign Relations (CFR), and all are comprised of and funded by leaders from a variety of industry backgrounds. They are distinct from trade associations

that narrowly focus on policies pertinent specifically to their membership (e.g., the National Association of Home Builders, the American Petroleum Institute) and instead take positions on larger scale issues that affect all major businesses such as free trade or international tax laws (Domhoff, 2010). Business policy organizations are forums for corporate leaders to hear about policy issues from experts, to work though disagreements with other members and formulate collective positions, to identify peers who might be good representatives for government appointments or organizational spokespeople, and to influence public opinion and policy outcomes (Burris, 1992; Domhoff, 2010; Useem, 1984). An important note is that business policy organizations have full-time staff members and hundreds of members, but "only those who come to have major roles within the policy-planning network are part of the leadership group, the power elite" (Domhoff, 2010, p. 100). Each organization has a board of directors or trustees comprised of a subset of the membership, and these positions are commonly used to proxy those who have sustained involvement in and oversight of the organization's activities (Colwell, 1993; Useem & Karabel, 1986).

Evidence on the existence of a corporate power elite.

Most studies[4] of the corporate power elite focus on defining the prevalence and density of interlocking corporate directorships (Scott, 1991). In 1969, about half of outside directors in the largest 800 American firms were also a top executive (president, chairman, or CEO) of another company in that group (Useem, 1979). Also, compared to individuals holding a single corporate directorship, multiple directors were at least twice

[4] Network analysis is the main technique used to study power and by extension the inner circle of the power elite. This is a process of mapping out different connections between people and organizations, including the size and direction of financial transactions, information transactions, social relationships, and kinship ties (see Domhoff, 2006a, Appendix A).

as likely to be on boards of nonprofit private organizations, to be members of major business policy organizations, or to be government policy advisors. In a more recent study, Davis, Yoo and Baker (2003) examined the Fortune 500 interlocks in 1982, 1990, and 1999 and found a consistent "small world property," in that "corporate America is overseen by a network of individuals who to a great extent know each other or have acquaintances in common" (p. 321). In 1999, for instance, the average board member had 4.3 ties to other members in other firms. The trustees and directors of major business policy organizations also overlap considerably with major corporations (Burris, 1992), and their leadership is interlocked to major foundations and think tanks as well (Burris, 2008; Colwell, 1993).

Yet the mere existence of interlocking relationships does not necessarily imply that a cohesive power elite is at work. While boards of directors meet face-to-face several times per year, it cannot be assumed these interlocks imply that some type of coordination is occurring through them. Interlocks likely offer other advantages to firms acting solely in their self-interest – directors with ties to other well-known institutions may convey a sense of legitimacy to investors, banks, and other firms, or they may give information that better enables the firm to monitor their environment and co-opt uncertainty (Mizruchi, 1996). However, in a review of the corporate network literature, Scott (1991) notes that even "at its weakest, an interlock involves a *potential* for communication and for the exercise of influence and power" (p. 182). Also, studies of these groups' political ideology and political contributions are mixed in terms of whether they appear to be more cohesive than other businesspeople (Mizruchi, 1989; Mizruchi, 1990; Useem, 1978). For example, Burris (2005) found that executives who shared a

direct or indirect corporate board tie were more likely to make contributions to similar political candidates, but a similar study by Mizruchi (1992) indicated that only indirect ties were statistically significant.

Mizruchi (2007) suggests that the corporate power elite may be an artifact that peaked in the first few decades after World War II. In a reaction to the Cold War, the corporate elite needed to coordinate the national business interests and affect social policy. Then in the late 1970s and early 1980s, the disappearance of an active state, decline in union power, a change in commercial banks, and the takeovers in the 1980s contributed to the dissolution of a classwide principle and ultimate fragmentation of the corporate elite, according to Mizruchi. However, Domhoff (2009) argues that these same events in fact *strengthened* the corporate elite: "in the same time period between 1965 and 2000 when individual rights and freedoms expanded, corporate power also became greater because unions were decimated, the Civil Rights movement dissipated, and the liberal-labor coalition splintered" (p. 212).

Therefore, the degree to which the corporate elite today directly or indirectly drives policy-making is uncertain. One of the leading contemporary advocates for the existence of a power elite is William Domhoff, and he readily acknowledges that executives regularly complain about their lack of power in the policy arena (2006a, 2010). However, he also maps out the process by which the corporate elite serves on federal executive branch policy advising committees, participates in presidential and congressional commissions, and is appointed (or their close colleagues are appointed) to high level government positions that permit them to enact the policies favored by the collective.

Power elite theory offers several key contributions to this research. It underlies Useem and Karabel's (1986) research and I am replicating their study. In addition, it emphasizes the importance of studying the corporate elite because they have power in cross-corporate decisions and business policy-making at the federal level. Power elite research also offers solid grounding in how to empirically represent the positions associated with membership in the corporate elite; namely, CEOs and multiple directors for major corporations as well as business policy group leaders.

Upper Echelon Theory

Even if the relative collective power has declined there is another important reason to focus on the individuals who hold these positions. They are leaders who exert enormous influence over the directions individual corporations take and matter for firm performance (Bertrand, 2009). Management and organizational scholars, as well as some economists, use upper echelon (UE) theory to study firm performance. First proposed by Hambrick and Mason (1984) and updated by Carpenter, Geletkanycz and Sanders (2004), it considers interrelationships among firm and environment characteristics, the attributes of top executives, and organizational outcomes. The Carpenter et al framework, which is more detailed than Hambrick and Mason's and draws from more recent research, is reproduced in Figure B2 (Appendix B).

Top executives, also referred to as the firm's top management team (TMT), are central to the UE perspective. Conceptually, the TMT is defined as those individuals who "provide an interface between the firm and its environment, and are relatively powerful, and therefore their choices and actions are likely to have an impact on the organization" (Carpenter et al, 2004, p. 753). The way that this definition is

operationalized varies, with most researchers relying on organizational charts or 10-K filings to select high-level executives by title, by compensation, or those who report directly to the CEO. A few researchers instead ask the CEO to identify the top managers who are involved in strategic decisions, while others include only those who hold management positions and are members of the board.[5] In their summary of the UE literature Carpenter et al (2004) observed that no matter how the TMT is defined empirically, almost all of the research demonstrates a significant relationship between executives and firm outcomes.

UE theory suggests executives directly affect a firm's performance outcomes such as survival, profitability, and growth. Executives affect the firm's strategic choices and direction, including acquisitions, diversification, technology and other investment decisions (e.g., buildings, equipment), product innovations or launches, administrative complexity, internal reorganizations, and responsiveness (Hickson, 1987). These strategic decisions, in turn, influence firm performance. Each of these relationships may be mediated by contextual differences, including variations in discretion, incentives, integration, or team processes (Carpenter et al, 2004).

In terms of precise executive characteristics, the original UE framework proposed by Hambrick and Mason (1984) includes both psychological attributes, including their cognitive base and values, as well as more observable career background and demographics, including age, functional tracks, education, social origins, financial position, and other group characteristics. However, Hambrick and Mason downplayed

[5] These definitions are consistent with at least some of those used by power elite scholars, but UE research has developed as a mostly parallel tradition. In his review, Pettigrew (1992) observed the UE literature "has neither sought nor made any connections with the sociological research on elites and interlocking directorates." (p. 164).

the importance of psychological attributes, arguing they are difficult to measure, and asserted that not only are career background and demographics influential in their own right, they are affected by and can serve as proxies for psychological attributes. Applications of the UE model since have operated from this assumption and most rely upon demographic measures alone, although scholars consistently call for a better understanding of the underlying mechanisms of how and why executives affect strategic decisions and organizational outcomes (Carpenter et al, 2004).

Several studies substantiate the relationship between CEO education and different dimensions of organizational strategy, such as openness to innovation or change, choices about the deployment of resources, and the comprehensiveness of decision-making strategies (Bantel & Jackson, 1989; Barker & Mueller, 2002; Bertrand & Schoar, 2003; Papadakis & Barwise, 2002; Wally & Baum, 1994; Weirsma & Bantel, 1992). Tihanyi, Ellstrand, Daily and Dalton (2000) found that top managers with degrees from elite postsecondary institutions are more likely to pursue an international diversification strategy or implement strategic change. Education may also be directly related to firm performance and related outcomes. Some evidence suggests that companies whose top executives have more years of education are more likely to see growth in profits, sales and market share (Hambrick, Cho & Chen, 1996; Smith et al, 1994), and D'Aveni (1990) determined that companies whose CEOs held an elite degree were less likely to declare bankruptcy. Also, Srivastava and Lee's (2008) meta-analysis indicates a statistically significant relationship between the TMT's education and their firm's return on assets.

A number of possibilities exist as to why executives' schooling might affect organizational outcomes. Education may merely proxy cognitive ability, and more

intelligent people may be more likely to follow these sorts of strategies. Alternatively, CEOs might gain skills in college that improve their ability to understand sophisticated financial strategies (Graham & Harvey, 2002), formulate high-level tactics, and make important executive decisions (Frydman, 2007). CEOs with degrees in technical fields are more likely to invest in research and development activities than CEOs with degrees in business or law (Barker & Muller, 2002; Finkelstein & Hambrick, 1996). Rather than schooling future executives on content, another possible explanation for the connection between education and firm outcomes is college experience may create opportunities for CEOs to establish individual relationships with other executives that ultimately translate to strategic firm-to-firm relationships (Keiser, 2004). What actually goes on in this "black box" relationship between CEO education and firm outcomes, however, is not well understood.

In contrast to status attainment and the power elite framework, UE theory does not focus on *individuals'* career paths to the executive suite. This is consistent with the functionalist tradition in sociology, in which individuals are thought of in terms of the role(s) that they play to keep society functioning seamlessly (Parsons, 1961). In the UE theory, executives' attributes are antecedents of organizational outcomes (e.g., profits) rather than individual outcomes (e.g., promotion). Also, no distinctions are made among members of the TMT; for instance, the attributes of the CEO are not considered to have different effects on the firm than those of other top executives (Peterson, Smith, Martorana, & Owens, 2003).

However, as the far left box in Figure A2 (Appendix A) indicates, UE theory recognizes, at least conceptually, the separate role that board characteristics play in who

is selected for the TMT. Most studies of board composition compare the proportion of executive/inside directors to the proportion of nonexecutive/outside directors (Pettigrew, 1992). Studies of board educational backgrounds are uncommon. An exception is Westphal and Zajac (1995) who found when a firm's CEO is perceived to be powerful the boards (and any incumbent members) have similar levels of educational attainment as the CEO. When the boards are perceived to be more powerful than the CEO, incumbent members are more likely to share educational backgrounds with the existing board rather than the CEO.

A strength of UE theory is it includes labor market demand forces in the executive selection process, while both status attainment and the power elite are supply-side focused. The relationship between executives and the organization is assumed to be recursive, as indicated by the bi-directional arrow from Organizational Outcomes to Antecedents in Figure A2. In other words, a firm and its environment are affected by its executives, then these affect subsequent executive selection. Antecedents associated with the broader environment include external stakeholders, external managerial labor markets, and environmental characteristics, while organizational antecedents include firm characteristics, board characteristics, and the internal labor market (Carpenter et al, 2004).

Research by Palia (2000) supports the likelihood that CEO educational patterns vary across firms. He found CEOs in regulated firms (e.g., utilities) attended less prestigious universities, according to student SAT scores, than CEOs at unregulated manufacturing firms. One explanation for this pattern might be that regulated firms

restrict the ability of a CEO to affect change. If degree prestige equates to "quality," then regulated firms have less incentive to seek a CEO of the highest quality.

UE theory offers an additional rationale for the importance of studying executive careers. Not only does this study give insight into the process of individual occupational attainment and social mobility (as status attainment would argue) and into the process of power acquisition (as power elite theory would argue), but it also may have implications for organizational performance.

What Predicts Executive Career Achievement?

The perspectives discussed in the prior section inform my choice to focus on high-level corporate executive outcomes – namely, becoming a chief executive officer, holding multiple directorships, or involvement in business policy organizations. Also, research using each framework contributes to our knowledge about potential *influences* on these outcomes, and my review of the literature now turns to these findings. I organize my discussion according to five main categories of likely influences – demographics, social-psychological characteristics, postsecondary education, career experiences, and firm characteristics – which together construct my conceptual framework for this study (see Appendix A, Figure A3).

Demographics

An extensive body of research considers the influence of demographics such as gender, race, age, and social class origins on executive career outcomes and why, despite inroads by traditionally underrepresented groups in other occupational sectors, white upper middle class males continue to dominate executive offices and boardrooms.

Gender.

Although it is the highest paying job that a woman can hold according to *Forbes* magazine, very few women actually attain a Chief Executive position (Bertrand, 2009; Daily, Certo & Dalton, 1999; Goudreau, 2010). In 2009, thirteen of the Fortune 500 CEOs were female, the highest total ever. Women fare comparatively better in directorships; 17 percent of Fortune 100 corporate directors in 2006 were female, according to the Executive Leadership Council (2008).

While women have made gains over time in access to managerial jobs and other higher status occupations generally (Capelli & Hamori, 2004), explanations for the gender imbalance in corporate leadership vary. There is little evidence that differences in ability or motivation are the cause (Stroh, Brett & Reilly, 1992), but other possibilities include human capital differences, family power, industry choices, and discrimination (Bertrand, 2009). Human capital would say women do not invest as much as men in their careers, with "investments" variably defined as formal education or company training, ongoing career opportunities (e.g., transfers that require relocation), or by choosing to take time off for family reasons (Judiesch & Lyness, 1999). Family power theory suggests that whichever member of a couple generates more resources will hold more power in the family – and historically, males have held this role (McDonald, 1980). On average, therefore, women make disproportionate sacrifices in their careers for their partners (Eby, 2001; Eby, Allen, & Douthitt, 1999). In terms of industry differences, historically women have been concentrated lower paying and lower prestige positions, such as clerical jobs. Using workforce data from 1966 to 2000, Stainback and Tomaskovic-Devey (2009) determined that, although white women made gains,

especially in traditionally female sectors where the majority of the employees remain female, white men consistently maintained access to managerial jobs in older and more desirable sectors of the economy. Finally, discrimination or bias against women may exist on the part of boards, shareholders, or outgoing CEOs who pre-ordain a replacement.

Race and ethnicity.

Compared to white women, racial and ethnic minorities have made less progress in achieving proportional representation in higher status occupations, including corporate managers (Miech, Eaton, & Liang, 2003; Morrison & von Glinow, 1990; Stainback & Tomaskovic-Devey, 2009; Wilson, Sakura-Lemessy & West, 1999). The first African American was appointed to a Fortune 500 board in 1964, though ten years later blacks still represented less than one percent of all Fortune 500 directors (Zweigenhaft & Domhoff, 2006). According to the Executive Leadership Council (2008), minorities held 15.4 percent of Fortune 100 directorships in 2006 (9.8 percent were African-American, 1.6 percent were Asian-American and 4.0 percent were Hispanic).[6] Considerably fewer become Chief Executives; a total of fifteen CEOs on the 2009 Fortune 500 were racial or ethnic minorities. In July 2009, Xerox became the first Fortune 500 company to have an African American female as its CEO.

Similar to those pertaining to the gender gap, hypotheses about the ongoing executive racial gap include discrimination and racism, structural barriers, and/or human capital differences (see summary in Morrison & von Glinow, 1990). There is likely some degree of bias based upon physical appearance, as lighter skinned minorities have better

[6] Certain racial and ethnic minorities are relatively advantaged compared to others (e.g., Cuban Americans, Japanese Americans), but the research of business executives' backgrounds does not typically make finer grade distinctions beyond "African American," "Hispanic," or "Asian American."

chances of achieving corporate leadership positions compared to those who are darker (Zweigenhaft & Domhoff, 2006). Also, discrimination may play a role in more subtle stereotypes that associate characteristics of "good managers" with those of white males (Morrison & von Glinow, 1990). A commonly cited structural barrier for underrepresented minorities is a lack of same-race mentors to assist in navigating white-dominated corporate cultures (Irons & Moore, 1985). Finally, researchers operating from a human capital framework often reference the "pipeline" idea that minorities lack the educational credentials and/or career experiences necessary to qualify for corporate elite membership. Although educational attainment of underrepresented minorities – and especially access to elite postsecondary schools – has improved over time, it is not yet at parity with that of whites.

Social class origins.

Social class background receives a great deal of attention from scholars who study career attainment. There is no universally accepted approach in how to define and measure class, but in studies of corporate executives, there are two main approaches. Both consider class in a Weberian sense, assuming social status and economic class to be separate constructs. Those operating from a status attainment framework model father's occupation as a direct influence and father's education as an indirect influence. In contrast, those who use a power elite framework assume there is a single national upper class that offers distinctive advantages to those who are born into it.

According to the classic status attainment framework, the fundamental process underlying how parent education and occupation affect the next generation is socialization (Kerckhoff, 1976). A parent influences a child's goals and aspirations, and

the parent's values and assumptions that are communicated to the child vary according to his own educational attainment and occupational position. So a parent from a high status occupation who manages employees himself may role model to his child that this is a desirable career path to pursue. The parent may also facilitate this process as the child reaches working age by creating an internship or entry level position at his company, by setting up interviews at colleagues' companies, etcetera. A socialization-based status attainment view is primarily agentic in nature; other applications of status attainment suggest structural mechanisms at work that are proxied by a parent's SES. For instance, the educational system may reward students differently according to their social class origins (Bowles & Gintis, 1976; Bowles & Gintis, 2002; Kerckhoff, 1976).

In my review of the literature, I did not find any researchers who used status attainment-type variables alone to predict whether someone specifically reaches a top executive position. A few researchers use status attainment to assess management careers generally, and Xie (1989) and Yamguchi (1983) both found father's occupational status measured by the Duncan SEI score was a direct influence on the likelihood that someone will become managers in first job and current job, even after controlling for father's and son's educational attainment. For other occupational groups, father's occupation was only an indirect influence on current occupation, through education. This suggests there is some aspect of family background that is important in business occupations beyond just promoting education – "high status families have economic resources and social networks that can directly assist in their offspring toward successful careers as managers, officials, or proprietors" (Xie, 1989, p. 345).

Several published studies examine descriptive characteristics of CEOs and include status attainment measures of social class origins. Friedman and Tedlow (2003) reviewed ten profiles of business executives in the nineteenth and first half of the twentieth century that included data about social mobility. Despite the popularity of "Horatio Alger" anecdotes from this time period, they concluded that most executives came from white Protestant families that were financially well off. Sarachek (1978) echoed these findings and presented data indicating that while corporate executives do not fit a rags-to-riches path, highly successful business entrepreneurs may be more likely to come from disadvantaged background. In a more recent descriptive analysis of the chief executives from the *Forbes* top 50 companies in 1988, however, Bassiry and Dekmejian (1990) claimed that 74 percent come from middle or lower middle-class backgrounds, as indicated by measures of family wealth, father's occupation, and type of schooling. The sample is small and the authors did not disaggregate their measures of class or explain them beyond this, so whether it reflects broader patterns of intergenerational mobility among executives is unclear.

In their initial formulation of the upper echelon framework, Hambrick and Mason (1984) noted that given the homogenous social class backgrounds of top executives, there is virtually no research by organizational scholars of the connection between class background and organizational outcomes. However, drawing from studies of entrepreneurs' social origins, Hambrick and Mason hypothesized that executives from lower class backgrounds will be more likely follow aggressive strategies like acquisition and unrelated diversification and their firms will therefore have more growth and more volatility. They assumed that a disadvantaged background cultivates risk-taking

behaviors, but there has not been any UE research since to support or refute this hypothesis.

Social class origins fit explicitly into the power elite model of executive careers. The corporate power elite is assumed to be part of a national "patrician" upper class that developed in conjunction with the industrialization of the American economy in the late 1800s and early 1900s (Baltzell, 1964; Mills, 1956). Membership is not merely a function of someone's wealth, educational attainment, or occupational prestige, so these status attainment measures are insufficient representations of intergenerational transmission among the corporate elite. Useem (1984) defined this upper class as consisting of "the social network of established wealthy families whose status is preeminent, whose culture and identity are distinct, and whose membership is closed to nearly all but those of proper descent" (p. 66).

Where this final feature of the upper class (i.e., social closure) is concerned, the ongoing success of the corporate elite depends on strong group cohesion, as "the most socially cohesive groups are the ones that do best in arriving at consensus when dealing with a problem" (Domhoff, 2006a, p. 50). Cohesion is reinforced by personal friendships that individuals share with one another as well as social institutions such as clubs, intermarriage, and certain schools (Domhoff, 2006a; Rothkopf, 2008; Useem, 1979; Useem, 1982; Useem, 1984). These relationships and institutions also transmit the common values, expectations and ideology that characterize the class. They establish ease with the rhetoric of privilege and comfort interacting with others from the same class position (Khan, 2008). Also, there might be a desire on the part of powerful parents to build a family legacy of success and leadership. According to Rothkopf (2008),

> the drive that brings people to the top is typically matched by a desire to hold on to the position, power and possessions that they have acquired and to pass them on to chosen successors-typically family members…children raised in an atmosphere of power are educated in its uses in ways that those who are distant from it cannot be…those who come from power acquire important advantages in maintaining or gaining it. The access that comes with being a family member provides a range of benefits, whether within an organization run by the family or through the network of other elites established by the family over time (p. 78).

Translating class location to empirical measures is challenging because most people feel uncomfortable identifying as anywhere but in the middle (Domhoff, 2006a). Useem and Karabel (1986) created a measure of "upper class origin," using information as to whether the individual's family was listed in the Social Register[7] or whether the individual attended one of 14 elite preparatory schools.[8] Equivalent representations of class origins are discussed in Baltzell (1964), Domhoff (1967, 2006a), Levine (1980) and Saveth (1988) and are used by similar studies (Allen, 1978; Dye, 1995; Persell & Cookson, 1985; Soref, 1976; Youn, Arnold, & Salkever, 1999).

The association between these measures and executive career attainment persist. Useem and Karabel found that 442 of 2,709 top managers were from upper class origins. Of these, 134 attended one of the preparatory schools, 175 were from families listed in the Social Register, and 133 had both qualities. The upper class executives were significantly more likely to become CEOs, hold multiple directorships, or be a member of a business association. Armstrong (1974) studied graduates of Hotchkiss prep school between 1940 and 1950 and determined that by 1970, 56 percent were business executives and an additional ten percent were lawyers. More recently, Domhoff (2006a)

[7] Published by Forbes magazine, the Social Register is a reputational compilation of families that are considered by their peers to be among the most socially prominent in 12 major U.S. cities.
[8] Useem & Karabel (1986) identified these top preparatory schools as Choate Rosemary Hall, Deerfield, Groton, Hill, Hotchkiss, Kent, Lawrenceville, Middlesex, Milton, Portsmouth Priory, St. George's, St. Mark's, St. Paul's, and Taft. They also did separate analyses adding Phillips Andover and Exeter as well.

tracked St. Paul's prep school graduates over the age of 45 and found that 303 of them are officers or directors of corporations, and 102 are directors in the Fortune 800. St. Paul's alumni were especially overrepresented in the financial sector, and 21 were either officers or directors at JP Morgan alone.

Age.

There are two competing schools of thought on the role of age in an individual's occupational life course. On one hand, an older worker could be thought of as highly experienced and a valuable corporate asset (Judge et al, 1994). Alternatively, negative stereotypes of older people in the workplace are common, and age might hinder promotion during later years of the career. Older workers are thought to be less stable, less creative, less open to change or adaptable, and unable to handle stressful or high-paced challenges (Rosen & Jerdee, 1976; Salthouse & Maurer, 1996).

Applied to corporate leadership, age might not be important in terms of a company's outcomes. Srivastava and Lee (2008)'s meta-analysis of the UE research suggested that executives' age was not statistically related to a firm's return on assets. How age is *perceived* in top management circles is a different matter, and studies of executive promotion are mixed as to whether it is a positive or negative factor. Judge et al (1994) studied records of high-level executives from an executive search firm, and they found older workers had higher levels of compensation, more promotions over the course of their careers, and higher reported levels of satisfaction with their careers generally. However, Goldberg, Finkelstein, Perry and Konrad (2004) determined that age was negatively related to number of promotions among one university's MBA graduates.

Social Psychological Characteristics

An early modification to the Blau-Duncan status attainment model by researchers from the University of Wisconsin expanded the basic father's occupation/education-son's education/occupation path model to incorporate social psychological variables (e.g., IQ, aspirations, self-concept, motivation) in the status attainment process (Sewell & Shah, 1967; Sewell, Haller & Portes, 1969; Sewell, Haller & Ohlendorf, 1970). In doing so, the Wisconsin model attempted to decompose the causal relationship between socioeconomic background and educational attainment into a set of social psychological and behavioral mechanisms. Research using a variety of datasets from different time periods supports a significant relationship between occupational status attainment and cognitive ability (Kerckhoff, Raudenbush & Glennie, 2001; Warren, 1998), self-concept (Chang, 2003; Wang et al, 1999), locus of control (Wang et al, 1999), and aspirations (Schoon & Parsons, 2002).

The upper echelon theory incorporates social psychological variables into models focused on top executives, asserting that managers' underlying values, personality, and cognitions affect a firm's strategic direction and performance (Carpenter et al, 2004). UE assumes that these social psychological characteristics may be proxied for research purposes by observable career, education, and demographic experiences, so most studies follow this approach (Pettigrew, 1992). Among those that directly integrate them, Peterson et al (2003) is the best example, examining how five dimensions of CEO personality affect strategies of their TMTs. Each of the dimensions - conscientiousness, emotional stability, agreeableness, extraversion, and openness - were correlated with at least one TMT group dynamic, which in turn were correlated with firm growth in income.

This research offers support to the idea that CEO personalities differ, and these differences may translate into different firm outcomes. As this suggests, UE considers executive selection from the perspective of the firm's needs and demand rather than the individual's career trajectory, which is the lens that status attainment takes.

Given the recursive property of UE theory, it follows that different organizations pick the top management team based upon personality as well as other social psychological characteristics. Measures of motivation, ambition, and dimensions of personality are associated with the odds of executive promotions generally (Boudreau, Boswell & Judge, 2001; Judge et al, 1994; Kilduff & Day, 1994; Ng, Eby, Sorensen, & Feldman, 2005; O'Reilly & Chatman, 1994; Rothkopf, 2008; Seibert & Kraimer, 2001; Whitely et al, 1991). Risk-taking and tolerance of ambiguity are also common traits among those who are inclined to seek power (Anderson & Galinsky, 2006; Galinsky, Magee, Inesi & Gruenfeld, 2006). Pfeffer (2010) argues that ambition, energy and a strong work ethic, the ability to focus, a commitment to learning and personal development, confidence, empathy, and the capacity to tolerate conflict are personal qualities especially important to reaching a position of corporate power. Consciously aspiring to a position of power appears to be important as well; McClelland and Burnham (2003) found that managers whose primary motivation was to acquire power were in fact more likely to achieve positions of power compared to managers most motivated by a need for likeability or most motivated by personal goal attainment. The only study that I uncovered in my literature review that speaks directly to CEO selection is Norburn (1989), who surveyed CEOs and other top managers in the UK to compare whether they significantly differed on several dimensions of self-concept. Chi square tests indicated

that CEOs were more satisfied with their careers and perceived their management style differently (i.e., interventionist style) than other top managers (i.e., participative style). No significant differences were found in motivation (e.g., career aspirations, retirement age wish) or personal beliefs and habits (e.g., importance of family, religion, politics, age, drinking, smoking, stress, sleep, exercise).

Postsecondary Education

In this section, I summarize the research pertaining to college effects on occupation as well as the evidence specific to college prestige, then I discuss in more detail *why* postsecondary education might be related to executive career outcomes. The research around education and the corporate elite is limited, mostly descriptive profiles and the Useem and Karabel study, so I draw from status attainment research and studies of early/mid-career executives as well.

General postsecondary effects on occupation.

Status attainment conclusively demonstrates that education is associated with achieving higher status occupations. In their synthesis of the college effects literature from the 1970s and 1980s, Pascarella and Terenzini (1991) suggested that bachelor's degree recipients have occupational status or prestige ratings that average approximately 34 percentage points higher than high school graduates. In their subsequent review of the college effects literature published in the 1990s, Pascarella and Terenzini (2005) identified only four studies that examine how postsecondary education affects occupational status – and each of these used data from the 1980s – but the results were consistent with prior patterns. Among the few studies published since is Kerckhoff, Raudenbush and Glennie (2001) who used National Adult Literacy Survey (1992) data

and showed an increase in educational attainment from one degree level to another is associated with a 39 point increase in SEI. These findings are perhaps to be expected, in that entry into several high status occupations, such as law and medicine, requires advanced degree completion.

Although educational attainment exerts significant effects on occupation, the magnitude of this relationship differs according to where an individual is in the life course. Status attainment researchers report that the direct influence of educational attainment on occupational status declines over a person's life, although it remains statistically significant (Alon & Tienda, 2000; Blau & Duncan, 1967; Elder, 1992; Featherman & Hauser, 1978; Hauser et al, 1996; Sorensen, 1974; Warren, 1998; Warren, 2001; Warren, Sheridan, & Hauser, 2002). For instance, Warren (1998, 2001) estimated that for individuals who entered high school in 1957, the effect of college on current/last occupation (i.e., in 1992-93) was 30 to 50 percent lower than on first occupation. He hypothesized that the declining effect size may indicate credentials are an imprecise measure of an individual's ability, talents, and experience. Therefore, the further an individual is into his career, an employer is able to draw on alternative signals or measures of experience, such as performance reviews, recommendations from colleagues, etc (see also Bills, 1988).

A complementary area of research examines whether education influences corporate employees' career trajectory, i.e., their chances of promotion to positions of higher rank. Most studies are analyses of firm internal labor markets and generally confirm that education (represented in several different ways) is a statistically significant dimension considered in promotions, although weaker in magnitude than the effect of

education on occupational entry (Bills, 2005). Using records from employees at a large insurance company between 1971 and 1978, Spilerman and Lunde (1991) found the association between years of schooling and promotion chances was statistically significant at all points in time, although it was curvilinear such that years of schooling mattered most on promotion in the middle ranks of employment. Belzil and Bognanno (2004) used a panel of 30,000 middle and upper level American executives followed between 1981 and 1988 and also reported that those with higher years of schooling completed started at higher levels in the company and were promoted at faster rates. Working from a human capital framework, they found schooling was the only consistently significant influence on promotion (the other two human capital variables used here were age and tenure at the company). Hurley-Hanson et al (2005) examined two cohorts of managers at a service sector company and reported that holding a bachelor's degree was not significantly associated with moving up management ranks for those who entered the firm in 1972 but was positively related with attainment for managers who entered in 1982.

The majority of the occupation/schooling literature uses either occupational status or promotion chances in early or middle career. Much of what is known about the education of CEOs and other top executives at major corporations comes from a small body of descriptive studies (see also Friedman and Tedlow, 2003, for a more in-depth discussion of this literature). As my summary of this work in Table 2.2 indicates, the educational attainment of top executives has increased over time.

Among the earliest is Joslyn and Taussig (1932) who published the results of a biographical survey sent to 15,101 executives in the 1928 *Register of Directors,* of which

7,371 replied. Thirty-two percent of the men were college graduates, approximately 13 percent more attended some college, 28 percent held high school or equivalent degrees, 26 percent elementary school only, and one percent reported no formal education.

The most recent statistical profile, comparing Fortune 100 executives in 1980 and 2001, is a descriptive working paper released through NBER in 2004 by Peter Cappelli and Monika Hamori. Where education is concerned, degree information was converted into years of education (i.e., high school degree to 12 years of education, bachelor's to 16 years, master's to 18 years, and PhD to 20 years). In 1980, according to this conversion, the average executive attained 17.02 years of schooling, compared to 17.26 years in 2001. Except for Useem and Karabel, none of the executive educational profiles compared senior managers to CEOs or board members to determine whether educational patterns differed among these subgroups.

Table 2.2
Summary of Past Corporate Elite Educational Profiles

Citation	Sample size	Sample selection	Findings pertaining to postsecondary education
Joslyn & Taussig (1932)	7,371 businessmen	Businessmen listed in the 1928 *Poor's Register of Directors*	32% had bachelor's or more
Mills (1945)	1,464 businessmen	All businessmen who appear in the *Dictionary of American Biographies* – born between 1570 and 1879	Those who held a college degree: 27.8% born between 1570-1699 28.6% born between 1700-1729 12.0% born between 1730-1759 10.9% born between 1760-1789 13.8% born between 1790-1819 20.0% born between 1820-1849 27.4% born between 1850-1879
Miller (1949) and (1950)	190 "career men"	Presidents, board chairmen, and some partners from major manufacturing, railroad, utility, and financial corporations between 1901-1910	22% had grammar school or less 37% had high school diploma 12% had some college 29% were college graduates
Warner & Abbeglen (1955)	8,300 business leaders	Executives in 1952	57% had bachelor's or more Sub-sample of 505 graduates to closely examine where they attended and the top 3 were Harvard, Yale, Princeton
Newcomer (1955)	284 executives (1900) 319 executives (1925) 863 executives (1950)	Presidents and board chairmen from the largest railroad, public utility, and industrial corporations in 1900, 1925, and 1950	28.3% had bachelor's or more in 1900 40.2% had bachelor's or more in 1925 62.1% had bachelor's or more in 1950
Allen (1978)	83 executives (1935) 70 executives (1970)	Executives who were directors of four or more of the 250 major American corporations in 1935 or in 1970	63.9% had bachelor's or more in 1935 80.0% had bachelor's or more in 1970 49.4% had degree from "elite private college" in 1935[a] 44.3% had degree from "elite private college" in 1970
Useem & Karabel (1986)	2,729 senior managers	Vice presidents or higher from 208 corporations	Odds of becoming CEO or of holding multiple directorships significantly increase for those

		sampled from the 1977 Fortune 500 based on industry	with BA from lesser college, top college, MBA from top program, or JD from top program compared to no postsecondary degree. Also, odds of joining leading business association significantly increase for MBA or JD from top program compared to no postsecondary degree.
Boone, Kurtz & Fleenor (1988)	243 CEOs	CEOs from the 800 largest industrial corporations and service firms (year not given)	91% had bachelor's degree 47% had advanced degree
Bassiry & Dekmejian (1990)	50 CEOs	All CEOs from top 50 companies on the 1988 Forbes list of 500 major companies	6% had less than a college degree 56% had bachelor's only 26% had master's degree 8% had law degree 4% had doctoral degree Most attended state universities 18% had Ivy League degrees
Temin (1997)[b] and (1999)	500 CEOs	All CEOs from Fortune 500 in 1996	Found college attendance information on 454 CEOs (did not confirm whether the remaining 46 had degrees or not) 17% attended an Ivy League 41% attended other private 42% attended public
Cappelli & Hamori (2004)	802 executives (1980) 1,160 executives (2001)	Top 10 executives from Fortune 100 companies in 1980 and in 2001	Mean of 17.02 years of school in 1980 Mean of 17.26 years of school in 2001 14% had bachelor's from Ivy League, 54% from other private, 32% from public in 1980 10% had bachelor's from Ivy League, 42% from other private, 48% from public in 2001
Frydman (2007)	1,545 executives	Panel consisting of the three highest-paid executives in the 50 largest publicly-owned corporations from 1936 to 2003.	No exact descriptives reported for education, but graphs the trends in degree attainment which show increases in bachelor's and graduate degrees and decreases in high school and some college between 1936 and 2003.

[a]Allen said that his definition of an elite private college is based on Baltzell (1958) and Domhoff (1967) but he did not specify exactly which these are.
[b]Temin explicitly aimed to replicate Miller's (1949, 1950) studies.

College prestige effects on occupation.

The American system of higher education is distinguished by and celebrated for its heterogeneity. Of the more than 3,600 postsecondary colleges and universities, no two are alike. This diversity has given rise to an intricate system of institutional stratification, complexified by the diffuse nature of American higher education, marked institutional resource differences, and comparatively minimal levels of federal control. As with any system of stratification, there are certain cases that fall in the top tier of the hierarchy, such that some are considered to be more prestigious (and sometimes also labeled as "higher quality") than others (Lawrence & Green, 1980; Stuart, 1995).

The findings are mixed as to whether college prestige is associated with occupational status measured as a continuous outcome. Brand and Halaby (2003) studied the relationship between top ranked undergraduate degrees according to *Barron's* college profiles and longitudinal career outcomes using a sample of 1957 Wisconsin high school graduates. While statistically significant at all points in time, the effect size associated with a BA from one of Barron's top two tiers diminished from 15.1 occupational status points at the first job, to 9.5 in 1974, to 7.9 in 1992. Pascarella, Smart and Smylie (1992) determined that a different measure of prestige, college tuition, was directly associated with higher occupational status for black women and white men, as well as indirectly associated with that of white men and women through academic achievement and degree completion. Karabel and McClelland (1987) found college selectivity predicted occupational status for individuals whose fathers held a professional occupation. Other researchers who studied the relationship between undergraduate prestige and overall

occupational status with a selectivity measure, however, report little to no relationship (Alwin, 1974; Dey et al, 1999; Mueller, 1988; Smart, 1986; Trusheim & Crouse, 1981).

When the outcome measure of occupation is disaggregated from a continuous scale into more nuanced destinations, clearer relationships emerge between specific types of colleges and specific occupation classes. A number of studies suggest a small but significant positive relationship between undergraduate selectivity and professional occupational attainment generally (Braxton et al, 1991; Cole & Barber, 2003; Kamens, 1974; Pascarella et al, 1987; Smart, 1986; Tinto, 1980; Tinto, 1981). For executives specifically, Ishida et al (2002) found some evidence that selectivity predicts promotion at middle levels but Hurley Hanson et al (2005) and Judge et al (1994) did not find a relationship between Gourman ranking and odds of executive promotion. Useem and Karabel (1986) found Coleman's ranking of the top eleven undergraduate institutions was associated with the chances of becoming a CEO, holding multiple directorships, and being a leader in a business association.

Given the popular assumption that graduating from an Ivy League school is a guarantee of future career success, there are surprisingly few comparisons of how occupational outcomes are influenced by Ivy League degrees in contrast to those from other schools. Cole and Barber (2003) found Ivy League students were more likely than those from all other four-year colleges to enter professional occupations, although Judge et al (1994) did not observe a relationship between Ivy League degree and odds of executive promotion. Cappelli and Hamori (2004) determined that 14 percent of Fortune 100 top executives held an Ivy League BA in 1980, but the proportion declined to 10 percent in 2001. Focusing on CEOs, a 1990 Fortune magazine survey of almost 2,000

past and present Fortune 500 CEOs found just over eight percent earned their bachelor's degrees from an Ivy (Caminiti, 1990). To put these numbers in context, the Ivy League colleges are estimated to have less than 0.5 percent of the total baccalaureate enrollment (Kingston & Lewis, 1990).

Only eight schools are in the Ivy League, but even this might be too generous a representation of prestige in some corporate settings where competition for positions is fierce and the stakes are high. In a large multi-method qualitative study of the hiring practices of elite investment banks, law firms and management consulting firms, Rivera (in press) found company recruiters placed the most weight on the prestige of applicant postsecondary credential(s). These exclusive firms had a very narrow view of prestigious top-tier schools; those Rivera labels the "super-elite."

> Evaluators drew strong distinctions between top four universities, schools that I term the super-elite, and other types of selective colleges and universities. So-called 'public Ivies' such as University of Michigan and Berkeley were not considered elite or even prestigious in the minds of evaluators (in contrast, these 'state schools' were frequently described pejoratively as 'safety schools' that were 'just okay'). Even Ivy League designation was insufficient for inclusion in the super-elite. For undergraduate institutions, 'top-tier' typically included only Harvard, Princeton, Yale, Stanford, and potentially Wharton (University of Pennsylvania's Business School). By contrast, Brown, Cornell, Dartmouth, and University of Pennsylvania (general studies) were frequently described as 'second tier' schools that were filled primarily with candidates who 'didn't get in' to a super-elite school. Definitions of 'top-tier' were even narrower for professional schools, primarily referring to Yale, Harvard, Stanford and to a lesser extent Columbia law schools, and Harvard, Wharton (University of Pennsylvania), and Stanford business schools. (p. 8)

As Rivera's findings suggest, identifying exactly which specific schools are the most prestigious and how/where to demarcate those that are "top" is an ambiguous task., Useem and Karabel (1986) determined just over 40 percent of those holding a BA only from Harvard, Princeton, or Yale became a CEO, but theirs is the only other study

besides Rivera's I found that reported executive career outcomes associated with such a narrowly defined set of prestigious schools.

Graduate degrees.

The Master in Business Administration (MBA) is the best-known advanced degree for business education (Gottesman & Morey, 2006) and has become more prevalent among top-level executives over time (Bertrand, 2009; Frydman, 2007). For example, Keiser (2004) observed that 6.9 percent of Fortune 500 CEOs in 1960 had an MBA, which increased to 34.2 percent in 1985. There is some evidence that executives who hold MBA degrees have increased odds of promotion (Belzil & Bognanno, 2004; Ishida et al, 2002). Also, Baruch, Bell and Gray (2005) found that MBA graduates achieved higher positions in their organization's hierarchy relative to those who held another business-related master's degree (e.g., an MA in Accounting). Forbes and Piercy (1991) surveyed top executives about desired attributes in candidates for promotion to a top management position. While all preferred candidates with a wide breath of experience, all else being equal, they also prioritized someone with an MBA degree over in-house training.

As with undergraduate degrees, the perceived prestige of the MBA program is likely an important influence on career outcomes. Several studies find earning a top law or business degree is associated with entering a prestigious firm upon completion (Granfield & Koenig, 1992; Kingston & Clawson, 1990; Schleef, 1997; Van Maanen, 1983). Useem and Karabel are among the only researchers who study top corporate executives to examine graduate prestige separate from undergraduate, and they found the

corporate elite were more likely to have earned an MBA from a top ranked business programs than other top managers.

Why does postsecondary education affect executive careers?

Many competing explanations exist as to why a college degree might create career advantages for a corporate executive (Bills, 2003; Pascarella & Terenzini, 2005). It is possible educational attainment merely proxies intelligence and does not represent any specific benefits derived from the actual college-going process. Perhaps smarter people are more likely to become business leaders, regardless of whether they actually finish college. A major challenge for researchers is to isolate the causal effects attributable to college itself rather than pre-college effects and/or general maturation. Several studies in the status attainment tradition report cognitive ability is a separate influence on occupational status from educational attainment (Warren, 1998). Kerckhoff, Raudenbush and Glennie (2001) use National Adult Literacy Survey (1992) data and, controlling for commonly used background variables (i.e., gender, race/ethnicity, age, language, parents' education), an increase in educational attainment from one degree level to another is associated with a 39 point increase in SEI. After adding a control for cognitive skill using a literacy test, educational attainment remains significantly associated with SEI, though the effect decreases to 33.9 points. Comparing the coefficients, they conclude "educational attainment is a much more effective source of the explanation of occupational status than is cognitive skill" (p. 8).

So it appears college may create occupational benefits for students above and beyond the individual's incoming cognitive ability. In this section, I summarize three competing hypotheses as to why this might be the case.

Signaling and screening.

Signaling and screening theories suggest it is difficult for an employer to discern the quality and productivity of a potential employee. Employers therefore screen for indications of productivity to reduce this uncertainty, and a college degree is a reliable credential that signals someone has desirable labor market skills (Arrow, 1973; Spence, 1973; Spence, 1974; Stiglitz, 1975). Screening and signaling are complementary schools of thought, and the key difference is that employers screen and potential employees signal (Bills, 2003). There is not consensus as to exactly what is screened for or what the degree signals – and whether schooling produces actual learning or is just a sorting device based on entering characteristics (Arkes, 1999).

The selection of top-level executives is a high stakes competitive process. The choice of a CEO today does not merely take into account the preferences and opinions of the outgoing CEO or the board (Khurana & Pikorski, 2004; Pfeffer, 2010). Many external constituencies – shareholders, Wall Street, business journalists – must be satisfied as well, and how an executive is collectively perceived is important. Applying signaling and screening to this selection process, degrees from high status schools may signal to these groups that a candidate is high achieving, able to succeed in elite environments, and a legitimate selection (Baker, in press; Collins, 1979).

Acquisition of knowledge and skills.

Human capital theory asserts formal education develops knowledge, skills, and problem-solving abilities in demand by the labor market (Becker, 1993). This includes technical or subject matter content, often specific to an academic major or an occupation, as well as more general skills such as communication, analytic reasoning, and critical

thinking. Pascarella and Terenzini (2005) suggest on average, students who earn a bachelor's degree improve their verbal skills by about 10 percent, math skills by about 12 percent, oral communication by 23 percent, written communication by 19 percent, and abstract reasoning by 13 percent. Business employers identify these types of skills as important characteristics of potential employees (Karakaya & Karakaya, 1996), and it follows they may also be attributes that create advantages in an executive's career path.

Researchers commonly use two proxies of an individual's knowledge acquisition during college, undergraduate major and undergraduate grade point average,[9] to test associations with career outcomes. [10] A number of studies demonstrate a significant positive relationship between undergraduate GPA and occupational status generally (Knox, Lindsay & Kolb, 1993; Pascarella & Terenzini, 2005). Also, there is evidence that corporate recruiters heavily weight GPA when hiring for entry-level positions (Cole, Rubin, Feild, & Giles, 2007). Two separate meta-analyses by Cohen (1984) and Bretz (1989) indicate a small but significant positive relationship between undergraduate GPA and different measures of job success for those in business careers, although the data examined in both studies are over twenty years old. Rivera's (in press) study of elite firms' hiring practices suggested that grades are secondary to credential source, specific grade performance cut-offs are not applied by hiring managers, and the interpretation of grades is very dependent on school attended, major, and extracurricular involvement.

The evidence is also mixed as to whether major has a significant impact on general occupational status or on career progression, due at least in part to the variation in

[9] Although MBA programs assign grades, I did not find any research testing these relationships with career outcomes. One explanation may that there is little variation in grades assigned to MBA students; most receive A's or B's, especially at elite schools. Also, there is little evidence that many recruiters value grades, with the possible exception of investment banks and consulting firms (Schleef, 1997).

how major is measured, the source of the data, and the time period under consideration. Smart and Pascarella (1986) examined CIRP data from 1971 to 1980 and did not find any differences in the status attainment of liberal arts and sciences majors compared to professional majors. Dey et al (1999) used Wisconsin Longitudinal Study data representing those who were high school seniors in 1957 and found no relationship between majoring in business and occupational status in 1992. However, those who majored in education, health, science/math, or humanities all had higher occupational status than the reference group, "other." Where career progression is concerned, Spilerman and Lunde (1991) found business majors and mathematics, science, or engineering majors were more likely to be promoted in middle-management type positions than were humanities or social science majors. Using data from a service-sector corporation in 1972 and 1982, Hurley-Hanson et al (2005) reported majoring in business increased the likelihood of promotion in both years. In contrast, Judge et al's (1994) analysis of executive search firm data did not find any differences in the promotion odds of those who held degrees in business, law or engineering compared to other majors, nor did Ishida, Spilerman and Su (1997) observe any significant differences in promotion probabilities at a large financial company for those who majored in business versus other majors. There is evidence to suggest many CEOs today have an educational background in business. A survey of 243 CEOs from the top 800 American industrial corporations found 44 percent majored in business, 24 percent in engineering, 12 percent in liberal arts, 7 percent in science, 3 percent in law and 2 percent in journalism (Boone, Kurtz, & Fleenor, 1988). Whether this pattern is shared among other top executives or the company's directors is unclear.

An MBA might also create value for degree holders by transmitting the skills that UE theory would suggest are important for top executives to possess. Useem and Karabel, for instance, characterize a Harvard MBA as "the best technical training for a management career" (p. 192). Some scholars disagree and argue MBA programs are too narrowly focused on technical business skills rather than those a top manager might need, such as the ability to handle a crisis (Pfeffer & Fong, 2002). However, Schleef's (1997)'s study of an elite MBA program indicates that while gaining competency in areas like cost accounting and financial statement evaluation were part of the curriculum, graduating students reported improved communication skills, decision-making abilities, and the ability to "think like an executive" were among the most valuable learning outcomes of the business school.

This echoes the assumption of many scholars that in addition to content-based knowledge and skills learned in the classroom, the workplace values what is commonly referred to as cultural capital. Cultural capital is the idea that certain attitudes, dispositions and behaviors are a type of currency in social or economic situations (Bourdieu, 1984; Lamont & Lareau, 1988; Musoba & Baez, 2009). Dimensions of demeanor and appearance – confidence, polish, ease, conversational ability/dialect/vocabulary – are forms of cultural capital as are aesthetic and cultural awareness. Classic examples of the latter are appreciation for music and art, although contemporary scholars often include sports, books, magazines, and restaurants or types of food in their analyses of cultural forms (Erickson, 1996; Warde, Martens & Olsen, 1999).

Most scholars assume cultural capital is transmitted through social interactions with others, and schools are a key setting where these types of interactions occur

(Alderson et al, 2007; Bourdieu, 1984; Mark, 2003; Musoba & Baez, 2009; Van Maanen, 1983). The majority of studies examining education and cultural capital focus on the private preparatory schools that serve a disproportionate number of affluent and powerful families (Armstrong, 1990; Persell & Cookson, 1985). One disposition cultivated in these educational settings and mentioned by many of the studies is a common sense of confidence that the students are all extraordinary and belong in the upper reaches of society (and by extension, the corporate world). In his study of St. Paul's preparatory school Khan (2008) concluded,

> for elites, the world is a place that one can feel at ease within. Through the near constant public recognition of their achievements and the parade of important visitors to the school students developed an everyday orientation to the extraordinary. In believing that they were surrounded by international-level talent, students developed a sense both their own capacity and of the potential of the world around them. (p. 247)

That elite postsecondary institutions transmit collective privilege to students is echoed by a study of Harvard Law School by Granfield and Koenig (1992). Gaining entry to the law school is a highly competitive process and vestiges of the pressure to succeed lingered in the first year, but a sense of cooperation quickly set in as students noticed nonchalance about course grades. They ultimately internalized the message that being average at Harvard Law was completely acceptable, since the entire group was so highly superior. Another related elite disposition developed in these schools is "social polish," poise, and sophistication as students become accustomed to interacting with alumni, company representatives, and other campus visitors who are already part of the upper class (Granfield & Koenig, 1992; Rivera, in press; Schleef, 1997). The ability to use, integrate, and make connections with cultural knowledge in formal and informal

interactions is another form of cultural capital associated with elite educational environments (Khan, 2008). By the same token, a wide base of cultural knowledge is especially valuable in the workforce for managers who have authority over many employees from various cultural backgrounds (Erickson, 1996; Schleef, 1997; Warde, et al, 1999).

Formation of networks and relationships.

The college-going process enables students to make connections with others through personal networks, either individual relationships or membership in a group (Coleman, 1988; Lin, 1999). These networks accord the parties involved with opportunities for social capital –in other words, material or symbolic exchanges with one another that may subsequently produce economic, social, or cultural value. In a college setting, a student may form relationships with other students, faculty, administrators, and alumni. Networks with those who can provide access to opportunities like internships or full-time employment are especially valuable (Lee & Brinton, 1996). These do not need to be close relationships; in fact, Granovetter's (1995) research suggests weak ties – casual acquaintances or "friends of friends" – are often more valuable in the job search process. His seminal study of professional, technical and managerial workers demonstrated the importance of personal contacts, compared to direct application and other formal means of searching, in finding employment.

The use of networks developed during college (and beyond) may extend over the course of someone's career. Studies of networks developed among MBA students suggest they might create opportunities for corporate alliances or the exchange of private stock

market information (Cohen et al, 2008). Lin (1999) noted social capital is especially valuable for leaders:

> Thus, we may anticipate that certain positions require more social capital than other positions in a firm. First, top-level executives are expected to possess rich social capital, as they need to deal and manage people both within and outside the firm. In fact, we may postulate that at the highest level of management, social capital far outweighs human capital for occupants. Thus, it can be hypothesized that firms such as IBM and Microsoft may be more likely to recruit experienced managers with social skills than with computer expertise for their CEOs, and that top universities need presidents who have the social skills to negotiate with faculty, students, parents, and alumni and to raise funds rather than to produce distinguished scholarship. (Lin, p. 484).

It also follows that networks would pay off in the form of gaining positions on boards of directors. While the value of social capital to top executives makes conceptual sense, there is a lack of evidence as to whether relationships formed in college affect long-term career outcomes. One source of these relationships lending itself well to study is membership in social organizations.

Fraternities and sororities are among the most well known collegiate social organizations; in the United States and Canada, there are over 650 campuses sponsoring nationally affiliated sorority chapters and over 800 campuses sponsoring nationally affiliated fraternity chapters (National Panhellenic Council, 2009). Involvement in Greek organizations may translate into social networks that are especially useful for students entering business. A study of Dartmouth College seniors indicated 19 percent of students seeking consulting positions used sorority or fraternity members or alumni in career networking, which was the second-most commonly used network behind relatives (25 percent) (Marmaros & Sacerdote, 2002). Those entering careers in finance or in IT

had similar patterns of reliance on Greek members, but students interested in education were more likely to seek help from professors.

A few universities have exclusive social organizations that are campus-specific, among these the Hasty Pudding Club and Porcellian Club at Harvard, the Order of Angell (formerly known as Michiguma) at the University of Michigan, Columbia's Axe and Coffin, Sphynx at Dartmouth, Georgetown's Second Society of Stewards, and Princeton's eating clubs (Robbins, 2002). Yale's highly selective "secret societies," which date back to the mid-1800s, are among the most notorious undergraduate social organizations, especially Skull and Bones, which admits 15 seniors each year. Anecdotally, at least, the networking associated with these organizations is invaluable. One Skull and Bones alumni told Robbins (2002), "the biggest benefit to Skull and Bones…is the networking. In the rest of the world you get to know people through accident or through choice. In Bones you meet people whom you otherwise wouldn't get to meet. It's a forced setup among a group of high achievers, even the legacies" (p. 163). It follows that ties developed through secret societies might be especially useful in corporate career advantages, because there is some evidence members are more likely to pursue business occupations. Zweigenhaft (1992) studied Yale's secret societies and found graduates had higher odds of pursing careers in finance or banking, as well as earning MBAs. Yale graduates who were not in the secret societies were more likely to earn doctoral degrees, medical degrees, or law degrees.

Other forms of extra-curricular engagement may also facilitate the development of networks useful in advancing to top corporate positions, though evidence is limited. Rivera (2010) studied networking patterns among 1,009 students in a top MBA program.

He found most developed relationships with those with similar gender, nationality, age or race, a pattern labeled "homophily." However, participation in MBA clubs and organizations promoted the development of diverse and less redundant networks – heterogenous ties thought to have more career benefits than homophilous ties.

A survey of 243 CEOs from the 800 largest American industrial corporations by Boone, Kurtz and Fleenor (1988) found 70 percent were officers in at least one club or student organization during their undergraduate years. Also, while only two to three percent of all college students participate in NCAA intercollegiate programs, 38 percent of these CEOs were members of an intercollegiate athletics team – although it is unclear if these patterns are significantly different from other top executives. In contrast, students who are active in political organizations are not likely to pursue business occupations generally but instead are more likely to enter government jobs or other human services-type organizations (Hoge & Ankney, 1982).

People with access to privileged opportunities are more highly concentrated in certain universities (Gerber & Cheung, 2008; Rothkopf, 2008). Granovetter (1995) noted, "I would also suggest that contacts acquired at higher prestige colleges are generally better placed in the occupational structure and will ultimately be of more help to their protégés – more likely to be in a position from which they can seek them out to offer or inform them of a job" (p. 32).

Individual Career Experiences

As the original Blau-Duncan status attainment model demonstrated, the occupational status of someone's first job is correlated strongly with late career occupational status (Warren, 1998; Warren, 2001; Warren, Sheridan & Hauser, 2002).

Also, early career mobility and "fast tracked" promotions are associated with promotion probability in late career (Belzil & Bognanno, 2004; Rosenbaum, 1979). Internship and fellowship programs are associated with early career advantages and may have lingering effects over time (Gault, Redington & Schlager, 2000; Lindsay, 2009).

Most of the research pertaining to top business executives' career experiences is for CEOs; outside of Useem and Karabel's (1986) study, there is little evidence on the backgrounds of corporate directors and more specifically, multiple directors compared to single directors. The specific firm(s) where someone has worked is important in predicting whether he will achieve a CEO position. A substantial portion of the CEO selection literature debates the choice of an insider versus outsider (Bertrand, 2009). Firm Internal Labor Market theory studies how executives rise through the ranks of a single organization, gaining promotions due to seniority or their achievements. Occupational Internal Labor Market theory spans organizational boundaries, assuming the existence of a transferrable occupationally-based skill set, and someone motivated to a position of power may need to switch organizations to get promoted more quickly (Althauser, 1989; Althauser & Kalleberg, 1981).

Historically, CEOs were more likely to be organizational insiders (Piercy & Forbes, 1991, and research by Frydman (2007) and Murphy and Zabojnik (2006) demonstrates just over 70 percent of CEOs today are internally recruited. Rationales for promoting from within include familiarity with the specific company's products; less need for socialization to firm norms and practices; the selection of an insider is often an institutionalized process that contributes to overall organizational stability; firms cultivate loyalty among employees by promoting within; internal candidates have insider

knowledge and personal networks/relationships already established; there is less uncertainty about skills and personalities of internal compared to external candidates; and outgoing CEOs often prefer to identify and groom an internal "heir apparent" with similar qualities to themselves (Datta & Guthrie, 1994; Zajac & Westphal, 1996; Zhang & Rajagopalan, 2003).

Selecting an external CEO often signals a desire for change or to focus on external growth, although Khurana and Piskorski (2004) found CEOs selected from an external pool are more likely to have been successful CEOs at another well-established firm beforehand because perceived competency is critical; "in an external CEO search, agreement on which social criteria are most important is evidenced by an overwhelming consensus in favor of three observable standards: the candidate's current position; the performance of the candidate's current firm; and the status of the candidate's current firm" (p. 172). Another observable indicator of competency is educational credentials, and though Khurana and Piskorski did not study this, it follows that an external CEO may have more prestigious educational credentials than an internal candidate.

Tenure of employment at a firm is a related characteristic, and executives have more inter-firm mobility today than in the past. Frydman (2007) found between 1940 and 1967, over 70 percent of top executives had worked for only one company their entire career, but this was the case for less than half by 2003. Mobility is most likely to occur early in the career, however (Piercy & Forbes, 1991). More than half of Frydman's (2007) sample of 50 CEOs in 1988 had worked at their company since their first job (58 percent), while most of the remainder joined the company in mid-career (38 percent). The average company tenure was thirty years.

Finally, an individual's functional background is associated with the likelihood of becoming CEO. Piercy and Forbes (1991) found experience in general administration was most common among *Forbes* highest paid CEOs between 1971 and 1982, followed by marketing, finance, and production/operations. The least common backgrounds were technical and legal areas, although these patterns likely depend upon the given industry and/or firm needs (Bassiry & Dekmejian, 1990). For instance, in regulated industries such as insurance, utilities and transportation, legal backgrounds were more common. Bertrand (2009) suggests a CEO with general management skills is desirable, as the organizational structure of firms has flattened at the top resulting in more division heads reporting directly to the CEO.

Firm Differences

Organizational theory would suggest different firms look for different things in their CEOs (Pfeffer & Salacik , 1978). As I noted in my discussion of status attainment, scholars from this tradition have acknowledged the importance of integrating structural and organizational differences into their analyses of occupational outcomes generally (Baron & Bielby, 1980). There is some evidence the effects of educational attainment on occupational status are stronger as firm size increases (Baron, 1984; Baron, Davis-Blake & Bielby, 1986). Whether industry or labor market sector mediates education's impact is unclear, though there is some evidence schooling matters more in nonmanufacturing firms compared to manufacturing-based (Baron, 1984; Baron, Davis-Blake & Bielby, 1986; Pfeffer & Cohen, 1984). The culture of an organization also likely shapes what types of educational backgrounds are preferred, in terms of the level of schooling

attained, the content area or focus, and the degree source (Forbes & Piercy, 1991; Useem, 1989).

The UE framework is the main approach that acknowledges potential firm and industry differences in what predicts executive career outcomes. Theoretically, as Figure B2 (Appendix B) illustrates, firm and board characteristics likely influence the type of executive a firm hires. Exactly what organizational dimensions might predict education has not received a great deal of attention from researchers, but there is evidence to suggest specific content background may be more important for firms interested in pursuing certain strategies. For instance, firms with high levels of R&D expenditures often seek top executives with technical knowledge (Datta & Guthrie, 1994; Wiersma & Bantel, 1992). A CEO's desired educational background may vary according to industry. After conducting several descriptive analyses of executive succession patterns and synthesizing the literature, Forbes and Piercy (1991) concluded,

> our research indicates that it is not meaningful to lump together firms from different industries when examining career paths. Different industries have different needs for technical expertise at the top and the most common functional background found at the top varies quite a bit across industries. In addition, the distribution of functional backgrounds of chief executives has varied over the years as the need for critical technical skills has changed (p. 4).

Summary of the Literature

This chapter grounds the study in three main traditions spanning several disciplines and summarizes the evidence around what might influence membership in the American corporate elite. Although the underlying motivation for studying top executives varies, each of the three frameworks asserts that postsecondary education is an influence on whether someone will reach these positions. Status attainment suggests that

the positions held by the corporate elite are among the most prestigious occupational groups, and higher levels of educational attainment are associated with higher prestige occupations. Upper echelon theory suggests that a company's top management team is selected in part based on their educational backgrounds and this has implications for the company's performance. Power elite theory suggests that membership in the corporate elite is predicated upon an executive's ability to cultivate position within the business community, and elite education is a common method by which this occurs (Useem, 1984).

As summarized in Figure A3 (Appendix A), education is only one of many likely influences on top executives' careers suggested by these frameworks. Demographics (e.g., race, gender, age, social class background) social-psychological characteristics (e.g., career aspirations, personality, motivation, values) are directly related to the chances of membership in the corporate elite, as well as indirectly through educational attainment and early career experiences. Likewise, educational attainment is hypothesized to directly influence executive selection and, as status attainment and upper echelon theory would suggest, have an indirect effect through entering occupational status, functional background, and tenure at the firm. The reason why education creates advantages for executive careers is debated. Explanations include signaling or screening based on the degrees themselves, development of knowledge or skills, and development of relationships or personal networks, and there is evidence to support all three of these to some extent. This study builds on the theories and associated evidence discussed in this chapter to better understand the relationship of postsecondary education with membership in the contemporary American corporate elite.

CHAPTER 3

Study Methodology

In this chapter, I discuss the Fortune 500 ranking system, my selection strategy for companies and individuals, the key variables I collected in regards to each, and my analytic approach. As explained briefly in Chapter 1, this study has several parts. I begin by replicating and refining Useem and Karabel's (1986) study of top business executives with contemporary data. Next, I extend their analysis to focus on the role of postsecondary education – academic achievements, status-conferring experiences, involvement, etc. – on membership in the corporate elite. My discussion of the study methodology begins with an explanation of the replication and refinement procedures then turns to what I did for the extension.

Study Replication & Refinement Phase

Data

The sampling strategy is two-tiered, in that I first identified the companies of interest then selected individual executives employed by those companies.

Fortune 500 companies.

The Fortune 500 is a listing of United States corporations ranked according to their revenues.[11] Privately held companies that do not file financial statements with a government agency (and thus are not publicly traded) as well as U.S. subsidiaries of

[11] The methodology for ranking the Fortune 500 is online at http://money.cnn.com/magazines/fortune/fortune500/2010/faq/

foreign-based companies are not considered for inclusion in the list. Fortune also has lists based on similar criteria for the top 1,000 U.S. companies, the top 500 global companies, and the top 1,000 global companies but the Fortune U.S. 500 has been collected since 1955 and is a widely accepted representation of the largest and most influential corporations in the United States (Ryan, Swanson, & Buchholz, 1987).

A full list of the 2010 Fortune 500 companies may be found in Appendix B. The top company was Wal-Mart, with approximately $408 billion in total revenues, of which $14 billion was after-tax profit. Though Wal-Mart had a successful year, not all of the companies on the list fared as well. In fact, 97 incurred a financial loss including #81, Fannie Mae with a loss of approximately $71 billion, #54 Freddie Mac with a loss of $38 billion, and #6 American International Group (AIG) with a loss of $11 billion.

In addition to widely varying levels of financial success, the companies differed quite a bit in terms of structural characteristics. On average, the companies were incorporated[12] in 1945 with a standard deviation of 45 years. Two on the list were incorporated in the eighteenth century - Bank of New York Mellon Corporation (1794) and Cigna (1792). Twenty-eight companies were incorporated in 2000 or later, including the most recent: Dr. Pepper Snapple Group in 2007. The headquarters for the 2010 Fortune 500 companies were scattered across 41 states as well as Washington DC, Quebec (Canada), and Stockholm (Sweden). Six states (as well as Stockholm) were home to one Fortune 500 company only, while at the other end of the range, Texas was the headquarters for 57. California (n=56) and New York (n=55) were also well

[12] The year of incorporation is not necessarily the year that the company was founded. However, companies must be incorporated to be considered for inclusion in the Fortune 500.

represented as headquarter locations. The majority of the companies were publicly held, but 8.4 percent are privately owned.

Not only are the Fortune 500 companies a major part of the American economy, as the revenue and profit figures illustrate, but they also have a major direct influence on the lives of their millions of employees. The median number of full-time employees was approximately 22,950. At the upper end of the range, Wal-Mart had approximately 2.1 million full-time employees; the next largest was UPS with 408,000. These figures offer perspective into the vertical scale of power these executives have over the livelihoods of many people (not to mention consumers and investors), regardless of whether they are also part of the intra-business corporate elite.

A cursory comparison of the 1977 Fortune 500 to those in 2010 suggests the composition of the list has changed considerably over time. No companies have exactly the same ranking in both years. In fact, only 116 of those listed in 2010 were also ranked among the top 500 in 1977.[13] There are 52 companies that were part of the 1977 study sample and also part of my 2010 sample (see Appendix B). One reason why some might only be on the 2010 list is obviously because they did not yet exist in 1977; 168 companies on the 2010 Fortune 500 were not incorporated until 1977 or later. Even those on both lists certainly have experienced change in their corporate forms. In 1977, for example, Warner Communications was ranked #261 and Time, Inc. was ranked #217. The companies merged in 1989 and became Time Warner, which was ranked #82 on the 2010 list. The 2010 corporations continue to change in form, and this analysis is a "snapshot in time" rather than representing the current state of each company.

[13] This is consistent with Capelli and Hamori's (2004) comparison of the 1980 and 2001 Fortune 100. Of the 100 listed in 1980, only 26 were also listed in 2001.

Sample: Companies.

I first stratified the 2010 Fortune 500 companies according to industry, following an approach similar to the Useem and Karabel study. A common standard designating the type of business in which a company is engaged is the Standard Industrial Classification (SIC) developed by the U.S. government and used by agencies such as the Securities and Exchange Commission (SEC).[14] The SIC scheme organizes businesses by their primary type of activity using several levels of classification, and I used the broadest grouping of ten industries for my stratification. I discarded four industry groups from the sample – agriculture, construction, mining, and nonclassifiable establishments – because only a small number of companies fell within each (see Table 3.1). I sorted companies by revenues in each of the six remaining categories: manufacturing; finance, insurance & real estate; retail trade; wholesale trade; transportation, communications & utilities; and business & personal services. Finally, I sampled a total of 250 companies according to their revenue rankings within the six industries (the companies that are part of my sample are listed in Appendix B). Table 3.1 contains the selection criteria and comparison to the 1977 study sample criteria. As noted previously, the composition of the 1977 Fortune 500 is quite different from the current group of companies, so the industries from which each sample is drawn are not identical.

[14] In 1997, a new standard known as the North American Industry Classification System was introduced, but because this did not exist at the time of the 1977 study, I use the SIC to describe my sample and compare it to theirs.

Table 3.1
Sample selection.

	1977 Study	Current Study
Population	1977 Fortune magazine list of America's largest corporations	2010 Fortune 500
Number of companies	208 companies	250 companies
Stratification criterion	Seven industry categories: • 6 Retail firms ranked 1 to 6 by sales • 110 Manufacturing firms ranked 1 to 60 and 451 to 500 by sales volume • 5 Transportation companies numbered from 1 to 5 by operating revenues • 5 Utilities numbered 1 to 5 by assets • 24 Insurance companies ranked from 1 to 15, and 9 of those ranked 41 to 50 by assets (10th company not included because a complete list of officers unavailable) • 22 Diversified financial firms: 13 of those numbered 1 to 15 and nine of those ranked 41 to 50 by assets (3 not included due to unavailability of top executive info) • 35 Commercial banks ranked 1 to 25 and 41 to 50	Six industry categories: • 25 Retail trade companies ranked from 1 to 15 and 31 to 40 • 105 Manufacturing firms ranked 1 to 105[1] • 50 Transportation, Communications & Utilities from 1 to 30 and 51 to 70[2] • 50 Finance, insurance & real estate companies ranked from 1 to 30 and 51 to 70[3] • 10 Wholesale trade firms ranked from 1 to 10 • 10 Business and personal services companies ranked from 1 to 10
Number of executives	3,105	3,789
Response rate	87.9% (376 missing on postsecondary)	95.6% (165 missing cases on postsecondary)
Sample for analysis	2,729	3,624

[1] Sun Microsystems, a manufacturing company ranked 204 overall, was acquired in early 2010 by Oracle, a manufacturing company ranked 105 overall. Since Oracle was already part of the sample, I replaced Sun with VF, which numbered 106 in revenues among manufacturing firms.
[2] Burlington Northern Railroads, a transportation company ranked 167 overall, was acquired in early 2010 by Berkshire Hathaway, which is characterized as a "Nonclassifiable Establishment." I replaced Burlington Northern with CenturyTel, which numbered 71 in revenues in the Transportation, Communications & Utilities group.
[3] Auto-Owners Insurance is ranked 418 but is a privately held company and I could not locate a list of executives or directors. I replaced it with the next company in Finance, Insurance & Real Estate, which is Blackrock and numbered 441 in revenues.

As the descriptive statistics in Table 3.2 illustrate, this strategy resulted in a final group of companies that were, on average, larger than the average Fortune 500 member in revenues, profits, and number of employees. They had been in existence for almost twenty years longer, and there were slightly more privately owned companies in the sample than in the population. By industry, there were relatively more manufacturing firms in the sample (42%) than in the population (35%). The same was true for those classified as finance, insurance, and real estate (16% in population, 20% in sample) and transportation, communications and utilities (16% in population, 20% in sample). In contrast, there were fewer service sector firms in the sample (4% compared to 10% in population).

Table 3.2
Descriptive statistics for 2010 Fortune 500 company population and study sample of companies.

Fortune 500 Company Characteristics	Population (N=500)	Sample (n=250)
Average Revenues (FY 2009, in millions) [1]	19,527 (32,038)	30,467 (40,839)
Average 2009 Profit (FY 2009, in millions) [1]	786 (4,348)	1,241 (5,943)
Average Year of Incorporation[1]	1945 (45)	1937 (47)
Average Number of Full-Time Employees[1]	47,029 (110,717)	66,737 (147,966)
Percentage Privately Owned[2]	7.4% (26%)	8.4% (28%)
Major SIC Sector[2]		
Agriculture	0.4% (2)	0% (0)
Construction	1.0% (5)	0% (0)
Finance, Insurance, & Real Estate	16.4% (82)	20.0% (50)
Manufacturing	35.4% (177)	42.0% (105)
Mining	2.6% (13)	0% (0)
Nonclassifiable establishments	1.2% (6)	0% (0)
Retail Trade	12.2% (61)	10.0% (25)
Service Industries	9.8% (49)	4.0% (10)
Transportation, Communications & Utilities	15.8% (79)	20.0% (50)
Wholesale Trade	5.2% (26)	4.0% (10)

[1] Means are displayed first; standard deviations are in parentheses
[2] Percentage of total is displayed first; frequencies (i.e., number of companies) are in parentheses

Sample: Executives.

The population of individuals for this study is those employed in the 2010 Fortune 500 who hold a rank of executive vice president, senior vice president or above, as listed on the company's most recent 10-K filing or annual report. These executives typically include the Chief Executive Officer (CEO), Chairman of the Board of Directors, Chief Operating Officer (COO), Chief Financial Officer (CFO), and other top leaders of the organization. Each is well positioned to influence their company policies and exercise influence over decisions (Finkelstein & Hambrick, 1996; Finkelstein, Hambrick & Cannella, 2009) – and each is accorded high social status (Nakao & Treas, 1994).

Useem and Karabel picked six to eight of the senior-most officers and ten outside directors for each company for a total of 3,105. I used a similar strategy, by selecting all outside directors, including the Chairman of the Board if this individual was different from the CEO, and between 6 to 8 senior-level managers holding ranks of vice president or higher as listed on the company's most recent 10-K filing. I collected data for approximately 10 to 15 executives associated with each company that was part of the sample, for a total of 3,789 individuals.

Variables

After identifying the sample, I assembled data about each individual's personal history, educational history, and career achievements from each company's 10-K filing for 2010, their websites, and a number of publicly available business directories such as Standard & Poor's Register of Corporations, Directors, and Executives, Dun & Bradstreet's Reference Book of Corporate Management, Marquis's Who's Who in America, Ward's Business Directory, Mergent Online, Kelly's Business Directory,

NNDB.com, and general internet searches. I did not use any one source exclusively and triangulated information when possible. One thing to note is I collected data in addition to those used in the prior study, all of which are described in more detail below.

Membership in the corporate elite.

My dependent variables are various representations of membership in the corporate elite. There were 1,165 individuals, or 30.7 percent of the sample, that were part of the corporate elite through at least one of the positions proxying membership (see Table 3.3).

I used the position titles for each executive from the 10-K statements to determine whether someone was currently a *Chief Executive Officer* of one of the 250 companies in the sample. There were actually 252 individual CEOs in this group, because Whole Foods and Motorola had co-CEOs. In the 1977 study, they also classified someone as a CEO if he was currently the chief executive for any company in the Fortune list of the approximately 1,300 largest American companies. I therefore determined whether any of the board members was currently a CEO for any other company on the Fortune 1,000 list of U.S. corporations. An additional 47 were CEOs of the non-sampled 250 companies in the Fortune 500 and an additional 35 were CEOs of companies ranked 501 to 1000 by Fortune, which brought the total number of CEOs to 334 individuals, or 8.8 percent of the total sample.

An executive was characterized here as a *multiple director* if he or she was an outside director for at least two companies. If a CEO (or other top level executive) sat on his own board, referred to as an "inside" director, this position was not included in my analyses of multiple directors. My source for these data was annual reports for the most

recent year as well as 10-K statements. As with the CEOs, I determined whether executives were directors for one or more of the companies in my sample as well as directors for the other 250 companies outside of my sample and for the rest of the Fortune 1000. There were 564 individuals – or 14.9 percent of the sample – who were outside directors for two or more companies in the 2010 Fortune 500, and 777 – or 20.5 percent of the sample – were outside directors for two or more companies in the 2010 Fortune 1000.

Where the *business association leaders* are concerned, I used the most recent lists of trustees and boards as of July 2010 for the Committee for Economic Development (approximately 203 total), Business Roundtable (approximately 170 total), and Business Council (approximately 127 total) as well as the most recent list of "life members" of the Council on Foreign Relations (approximately 4,000 total life members) and matched to my sample. There were 334 individuals, or 8.8 percent of the sample, who were leaders of at least one of these associations in 2010.

The majority of the executives in the sample were not CEOs, part of an association, or multiple directors. In several analyses, I divided them into two groups. *Senior managers* were the 1,459 individuals (38.5%) who held top positions in their own companies (e.g., executive vice president, CFO, CIO) but were not the chief executives nor did they serve on multiple boards of directors or associations. *Single directors* were the 1,377 individuals (36.3%) who held one outside director position only. Information about these position titles was documented and confirmed using company 10-Ks and annual reports.

Table 3.3
Descriptive statistics for corporate positions (n=3,789)

	N	Percent
Corporate Governance		
Serves on no corporate boards	1,635	44.2%
Serves on one corporate board	1,377	36.3%
Serves on two or more corporate boards	777	20.5%
Top Management		
Senior manager	1,459	38.5%
Chief executive officer	334	8.8%
Business Representatives		
Not leader of an association	3,455	91.2%
Leader of at least one association	334	8.8%
Committee for Economic Development	33	0.9%
Business Roundtable	102	2.7%
Council on Foreign Relations	93	2.5%
Business Council	182	4.8%

.

As these statistics suggest, the three categories used here to define the corporate elite were not discrete. For instance, about 17 percent of CEOs (n=57) were outside directors for two or more companies (in addition to their own), so they were classified as multiple directors as well as CEOs. The correlation between these two variables – CEO and multiple directorships – was not statistically significant (see Table 3.4). Membership in a business association was slightly correlated with holding multiple directorships (r=.08, p<.001) and moderately with being a CEO (r=.363, p<.001).

Table 3.4
Correlation matrix for corporate positions

	CEO	Senior Manager	Multiple Director	Single Director
Senior Manager	-0.244***			
Multiple Director	-0.026	-0.386***		
Single Director	-0.235***	-0.499***	-0.384***	
Association Member	0.363***	-0.219***	0.080***	-0.041*

Note. p-values are 2-tailed; * p<.05; ** p<.01; *** p<.001

The distribution of positions across this sample varies quite a bit from the 1977 study. As the comparison in Table 3.5 indicates, the prior study had more executives in each elite subgroup – 25.9 percent were multiple directors, 38.9 percent were CEOs, and 18.4 percent were business association representatives. Perhaps there are fewer interlocking relationships among major contemporary companies; also, they identified CEOs and directors for 1,300 companies while I used 1,000 companies. Domhoff (2009) stated that 15 to 20 percent of directors sit on more than one corporate board, so my figures appear to be consistent with other contemporary estimates.

Table 3.5
Corporate positions in 2010 compared to 1977

	1977 Study		2010 Study	
	N	Percent	N	Percent
Corporate Governance				
Serves on one board or none	2,023	74.1%	3,012	79.5%
Serves on two or more corporate boards	706	25.9%	777	20.5%
Senior most Management				
Does not hold CEO position	1,667	61.1%	3,490	92.1%
Chief executive officer	1,062	38.9%	334	8.8%
Business Representatives				
Not leader of a business association	2,227	81.6%	3,455	91.2%
Leader of one or more	502	18.4%	334	8.8%

Note. Data for 1977 study reproduced from Useem and Karabel (1986) Table 1, p. 188.

Demographics.

Demographics for replication.

For social class, Useem and Karabel created a measure of *upper class origin* using information as to whether the individual's family was listed in the Social Register[15] or whether the individual attended one of fourteen preparatory academies that traditionally

[15] Published by Forbes magazine, the Social Register is a reputational compilation of families that are considered by their peers to be among the most socially prominent in 12 major U.S. cities.

enroll a high proportion of students from prominent social families. These schools are Choate Rosemary Hall, Deerfield, Groton, Hill, Hotchkiss, Kent, Lawrenceville, Middlesex, Milton, Portsmouth Priory, St. George's, St. Mark's, St. Paul's, and Taft. Some scholars also include in this list Phillips Academy Andover and Phillips Exeter, and Useem and Karabel conducted some analyses adding these two schools and other analyses with the aforementioned fourteen only. I determined whether an executive graduated from one of these sixteen preparatory schools using alumni directories from each school. I also checked the 2010 Social Register to determine if the executive's family was listed.

Just over three percent of the full sample had either or both of these characteristics (see Table 3.6). CEOs, business association leaders, and directors were slightly more likely to share these backgrounds, while only 1.5 percent of senior managers had upper class origins. As a point of comparison, Useem and Karabel found 9.8 percent of their sample were from the upper class.

Demographics for refinement.

A large body of research discusses the role that *gender* plays in business career outcome, and I was able to collect this information for each executive from business databases and company websites. *Race/ethnicity* was a bit more difficult to determine than gender. I relied on company websites, nndb.com, and general Internet searches to identify an individual's race/ethnicity. Also, the Executive Leadership Council published a census of African American board members of Fortune 500s in 2008. They listed the names and companies of all African American board members in their report, so I used this information as well. Executives or board members who identify with

Asian, Hispanic, and other racial/ethnic minority groups have received comparatively less attention and I did not locate a source pertaining to their representation. Finally, I collected information for executives' *birth year* from several sources. Some biographies listed an executive's actual birthday, while others listed their ages only. In the latter case, I subtracted age from 2010, so these data may be slightly off by a year for any given individual.

Table 3.6 provides a demographic overview of the sample. The executives ranged in age from 30 years in 2010 (born in 1980) to 94 years (born in 1916), although the average executive was approximately 60 (born in 1950) with a standard deviation of 8.6 years. Board members in my sample were several years older, with multiple directors averaging 64 years and single directors averaging 62 years, compared to CEOs (mean=57 years) and senior managers (mean=53 years). As a point of comparison, Useem and Karabel found the average age of their sample in 1977 was 56 years old.

The 1977 study did not explicitly offer an analysis of executives' gender, but the pronouns used imply that almost all were male. In 2010, 15.7 percent of the full sample were female, though women were notably underrepresented in the CEO ranks (2.9%). In contrast, women comprised almost fifteen percent of the senior manager ranks. Also, about nineteen percent of multiple directors and eighteen percent of single directors were female.

Nor did the 1977 study discuss the racial/ethnic composition of their sample. I was able to determine race for almost 90 percent (n=3,408) of the executives, and 87.8 percent were white. Multiple directors were more diverse than the remaining executives – 82.3 percent were white compared to 86.3 percent of single directors, 87.9 percent of

association members, and 90.6 percent of senior managers. As with gender, CEOs were the most homogenous group; almost 94 percent were white.

Table 3.6
Descriptive statistics for personal characteristics

	Full Sample (n=3,789)		CEOs (n=334)		Senior Managers (n=1,459)		Multiple Directors (n=777)		Single Directors (n=1,376)		Assoc. (n=334)	
	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N
Female	15.7%	594	2.9%	13	14.7%	214	18.5%	144	17.7%	243	15.9%	53
White	87.8%	2,991	93.9%	307	90.6%	1,093	82.3%	622	86.3%	1,099	87.9%	291
Black	6.7%	230	2.4%	8	4.8%	58	12.0%	91	7.1%	90	7.3%	24
Asian/Indian	2.8%	93	3.0%	10	2.7%	33	2.0%	15	3.2%	41	2.7%	9
Hispanic	2.8%	94	0.6%	2	1.9%	23	3.7%	28	3.5%	49	2.1%	7
Upper class origins	3.1%	119	4.2%	14	1.5%	22	4.1%	32	4.1%	56	4.8%	16
Year of birth[a]	1950 (8.6)		1953 (5.9)		1957 (6.0)		1946 (6.8)		1948 (8.9)		1949 (7.8)	

Note. The sub-categories of executives are not mutually exclusive. See Table 3.4.
[a] Year of birth results are in mean years with the standard deviation in parentheses after since the measure is continuous. It's included in this table for overall parsimony though the scale does not lend itself to percentage terms.

Postsecondary education.

My descriptions of the variables in the prior section included descriptive statistics. In this section, discussion of the postsecondary variables in the replication and extension analyses is limited to how I operationalized the variables – the descriptive statistics are in the Results chapter – because they are the response to my first research question.

Postsecondary variables for replication.

The 1977 study asserted, "the distinguishing university credentials for top company managers are the prestige of the undergraduate university attended and whether their bachelor's degree was followed by professional training in management or law" (Useem & Karabel, 1986, p. 197). Their choice of variables is guided by this assumption, and they assigned their sample to nine different postsecondary categories:

1. Attended no college
2. Attended college but did not complete a bachelor's degree
3. Completed college at a "lesser" institution and did not pursue graduate training
4. Completed bachelor's degree at a "top" institution and did not pursue graduate training
5. Completed MBA degree at a "lesser" program
6. Completed MBA degree at a "top" program
7. Completed law degree (LL.B) at a "lesser" program
8. Completed law degree at a "top program"
9. Earned graduate degree other than MBA or LL.B

I attempted to replicate these categories as closely as possible. Where the first two are concerned, my analyses combine them into *less than BA*. I was able to determine for some executives two-year degree information and/or those who attended some four-year college but dropped out. However, I am not confident that the biographical sources were thorough enough to use as separate variables in the analyses. As my descriptive analyses in the next chapter show, these groups together account for less than two percent of the current sample – a marked change from 1977 when they together accounted for almost seventeen percent – so even combined they are a small fraction of the total.

I documented whether each individual earned a bachelor's degree and if so, the college or university awarding the degree. Useem and Karabel's main measure of undergraduate program is if an executive graduated from one of the top eleven according to Coleman's 1940 ranking – which they selected because it was done at a time when most of their sample was likely enrolled in college. These schools are:

Columbia University
Cornell University
Dartmouth College
Harvard University
Johns Hopkins University
Massachusetts Institute of Technology
University of Pennsylvania
Princeton University
Stanford University

Williams College
Yale University

From this information, they created one variable representing executives whose highest degree earned was a BA from one of these top colleges and another variable representing executives whose highest degree earned was a BA from a lesser ranked school.

An important point to note is that these variables represent executives whose terminal degree is a bachelor's degree. So for instance, if an executive held a bachelor's degree from MIT as well as a PhD from the University of Michigan, he would not be included in the "BA only, top college" group but rather in the final group, "earned a postgraduate degree other than an MBA or an LL.B." The 1977 authors implied that such scenarios were uncommon in their data, stating, "these groups [the nine postsecondary categories] are generally mutually exclusive. In those several instances when both business and law degrees had been earned, the manager was classified as holding the latter" (Useem & Karabel, 1986, p. 188). Although these categories are not mutually exclusive in the 2010 sample – for instance, 60 managers hold an MBA and a law degree – I assigned executives to postsecondary groups using the same procedures as Useem and Karabel for the replication portion of my analyses to maintain consistency with the prior study.

I created two variables representing *BA only, top college* and *BA only, lesser college.* The Coleman quality measure used by Useem and Karabel was not updated after 1940, but other common representations of university quality are admissions selectivity, financial resources (e.g., endowments, tuition costs), faculty characteristics (e.g., research productivity, faculty/student ratio, percent adjuncts) or academic reputation (Brooks, 2005). In studies of occupation, the majority of researchers use selectivity or a

reputational measure like Coleman's, Barron's, Gourman's, or U.S. News. The executives in my sample were, on average, born in 1950 so they were of traditional college age around 1970. Finding a measure of degree quality or prestige from approximately that time period was important, as was finding a measure that would permit me to identify eleven schools for purposes of replicating the prior study.

A ranking system that meets both criteria is the first Gourman Report, released in 1967 (the first US News & World Report rankings were published in 1983). Rating the academic departments for approximately 500 undergraduate-serving institutions, it is a composite representation using "data available from accrediting boards, scholarships and fellowship foundations, industrial and government fellowships and scholarship awards, publications, curriculum, and honorary societies" (Gourman, 1967, p. 2). Gourman assigned each school a numerical score that is supposed to mimic the SAT; the highest possible score is an 800 and those at the lower end of the range were scored in the 300's. In 1967, nine schools were given scores above a 700 and 15 were given scores above a 600.[16] To be consistent with Useem and Karabel, I chose the top eleven according to Gourman's rankings. The schools, with their 1967 scores in parentheses, are:

Princeton University (772)
Harvard University (770)
Yale University (762)
University of Michigan (749)
Columbia University (744)
Cornell University (742)
University of Notre Dame (741)
Dartmouth College (722)
University of Pennsylvania (709)

[16] Those that had scores above 600 but fell below the cutoff for the top eleven are: Brown University (642), University of California Los Angeles (678), Carnegie Institute of Technology (600), Massachusetts Institute of Technology (664), University of Minnesota (645), Oberlin College (636), Pomona College (600), Reed College (633), University of Rochester (600), Swarthmore College (623), Wesleyan University (600), Williams College (617), and the University of Wisconsin (656).

California Institute of Technology (697)
University of California Berkeley (693)

I collected information about graduate degrees earned by each individual, including where the degree was earned and what type of degree was earned. I documented whether an executive held an *MBA*. The 1977 study used MBA Magazine's 1974 list of top programs and grouped the top eleven together:

Columbia University
Dartmouth College
Harvard University
Massachusetts Institute of Technology
Northwestern University
Stanford University
University of California-Berkeley
University of California Los Angeles
University of Chicago
University of Michigan
University of Pennsylvania

They also did analyses of whether the MBA was from Harvard Business School only. As far as I could determine, MBA Magazine is defunct. Since 1988, Business Week has issued annual rankings of postsecondary business programs and they currently rank undergraduate, full-time MBA, executive MBA, and part-time MBA (among others). To proxy *top MBA program* similar to Useem and Karabel, I chose the top eleven programs from the full-time MBA list in 2010:[17]

Columbia University
Duke University
Harvard University
Massachusetts Institute of Technology
Northwestern University
University of California-Berkeley
University of Chicago
University of Pennsylvania
University of Michigan
University of Virginia

[17] http://www.businessweek.com/interactive_reports/bs_2010_US_FTMBA_TAB_1111.html

Stanford University

For executives who held an MBA from other lesser ranked programs, I created a dummy variable for *MBA, lesser program*.

Another set of variables pertain to whether the executives earned a *law* degree. The 1977 study defines the law degrees held by its sample as LL.B degrees, but the standards of legal education have shifted since that time. The last U.S. LL.B degrees were granted in the late 1970s (Wall Street Journal, 2007), and today the common standard for bar admission is a JD from an American Bar Association (ABA) accredited program. Other legal degrees include a Master of Laws (LL.M), for which the JD is a prerequisite, and the Doctor of Jurisprudence (J.S.D.) or Doctor of the Science of Law (S.J.D or J.S.D), for which the LL.M is a prerequisite. Any executive who held a JD or higher (or whose bio read, "earned a law degree from XYZ") was considered to have a law degree for purposes of my study.[18] I did not give credit for a law degree to executives who only had an undergraduate degree in pre-law or executives who earned a master's degree for non-lawyers as defined by the ABA, such as a Master of Science in Taxation, but not a JD

In the replication analyses, law degrees are treated similar to MBA degrees by separating those from "top programs" apart from others. The 1977 study relied on a 1974 survey conducted by Blau and Margulies to identify the top nine programs, including:

Columbia University
Harvard University
New York University
Stanford University
University of California-Berkeley
University of Chicago

[18] Information about these types of degrees is on the ABA website http://www.abanet.org/legaled/postjdprograms/postjd.html

University of Michigan
University of Pennsylvania
Yale University

I used the US News & World Report law school rankings for 2010 to represent *top law program* and selected the top nine programs:

Columbia University
Harvard University
New York University
Stanford University
University of California-Berkeley
University of Chicago
University of Michigan
University of Pennsylvania
Yale University

This list is, interestingly, the same nine as the Blau and Margulies list used in the prior study. For executives who held a law degree from other programs, I created a dummy variable for *law degree, lesser program*.

Finally, I created a measure to represent *graduate degree* other than MBA or law. The 1977 study did not disaggregate among these degree types or schools; nor did I in the replication.

In addition to the nine main postsecondary categories above, Useem and Karabel developed two interaction terms for inclusion in their multivariate analysis. These are dummy variables created by combinations of other main effects variables. The first, *lesser BA + top MBA*, represents executives who earned a bachelor's degree from a lesser institution but went on to earn an MBA from a top university. The second, *lesser BA + top family,* represents executives who earned a bachelor's degree from a lesser institution and came from upper class origins. Their rationale for including these measures was to better understand the alternative "pathways to corporate management" and whether

possessing a top credential or advantaged family background created an additional advantage compared to holding a lesser BA alone.

Postsecondary variables for refinement.

Gourman's undergraduate rankings are used to represent college desirability or prestige in other studies of careers (e.g., Ehrenberg, 1989; Judge et al, 1994; Solmon, 1973), but they are strongly criticized for an opaque methodology (Lawrence & Green, 1980; Stuart, 1995). Another classification scheme published during the same time period is the third edition of Barron's Profiles of American Colleges (Fine, 1966). Barron's classifies schools by admissions standards into six groups ("Most Competitive," "Highly Competitive," "Very Competitive," "Competitive," "Less Competitive," and "Noncompetitive"). There are 43 schools in the most selective category and they are not differentiated any further, so I could not choose only eleven to use in the replication analysis. However, Barron's is more accepted by scholars than Gourman (e.g., Brand & Halaby, 2003; Brewer, Eide, & Ehrenberg 1999). As part of my refinement of the Useem and Karabel study, I replaced the Gourman measures with a series of dummy variables to represent from which of the six Barron's categories an executive earned a bachelor's degree.

As part of my model refinements, I also created variables representing the interactions of race, gender, class, and age with education. This permitted me to test whether, for example, the relationship between holding a top MBA and becoming a CEO was the same for men and women or whether the degree might provide more of an advantage for one of the two groups.

Table 3.7
Description of variables used in multivariate analyses of full sample.

	Description	Scale
Membership in Corporate Elite		
CEO	Dichotomous measure of whether someone is chief executive officer of a Fortune 1,000 company in 2010	0=No, 1=Yes
Multiple Director	Dichotomous measure of whether someone holds two or more outside director positions in a Fortune 1,000 company in 2010	0=No, 1=Yes
Associational Networks	Dichotomous measure of whether someone is a member of the Business Roundtable, Business Council, Council on Foreign Relations, or Commission for Economic Development at the start of 2010	0=No, 1=Yes
Demographics for Replication		
Upper class origins	Dichotomous measure of whether an executive graduated from an elite preparatory high school or has parents listed in the Social Register	0=Non-upper class, 1=Upper class
Additional Demographics		
Gender – Female	Dichotomous measure representing whether an executive is female	0=Male, 1=Female
Birth year	Continuous measure of the year an executive was born	Range from 1916-1980
Race – White	Dichotomous measure of whether executive is white compared to collapsed group of non-white (includes black, Asian, Hispanic, Indian, Middle Eastern)	0=Non-white, 1=White
Postsecondary Characteristics for Replication		
Less than BA	Dichotomous measure of whether an executive possessed a four-year degree or not	0=bachelor's degree or higher 1=some or no 4-year college, no degree
BA only, lesser college	Dichotomous measure of whether an executive's highest degree earned is from a lesser undergraduate program (or international baccalaureate equivalent)	0=Highest degree is not a bachelor's from lesser college 1= Highest degree is bachelor's from lesser college

BA only, top college	Dichotomous measure of whether an executive's highest degree earned is from one of the top eleven undergraduate programs	0=No BA from top college 1=BA from top college
MBA, lesser program	Dichotomous measure of whether an executive holds a Master's of Business Administration degree from a lesser program	0=No MBA from lesser program 1= MBA from lesser program
MBA, top program	Dichotomous measure of whether an executive holds a Master's of Business Administration degree from top program according to Business Week's rankings	0=No MBA from top program 1= MBA from top program
Law degree, lesser program	Dichotomous measure of whether an executive holds graduate level law degree from a lesser program	0=No law from lesser program 1= Law from lesser program
Law degree, top program	Dichotomous measure of whether an executive holds graduate level law degree from top program according to US News rankings	0=No law from top program 1= Law from top program
Other graduate degree	Dichotomous measure of whether an executive holds any graduate level degree with the exception of law or MBA	0=Highest degree is not graduate other than MBA or law 1= Highest degree is graduate other than MBA or law
lesser BA + top MBA	Dichotomous measure of whether an executive holds a non-elite BA *and* a top MBA	0=Does not possess both lesser BA & top MBA 0=Holds both lesser BA & top MBA
Lesser BA + top family	Dichotomous measure of whether an executive holds a non-elite BA *and* is from an upper-class family background	0=Does not possess both lesser BA & from upper class family 0=Holds lesser BA & from upper class family

Additional Postsecondary Characteristics		
BA, Barron's Highly Competitive	Categorical variable recoded to dummy variable. Whether an executive earned bachelor's degree from a school classified as "Highly Competitive" admissions selectivity – the second highest category out of six – by Barron's in 1966. Comparison group is the most selective Barron's category.	0=BA, Barron's Most Competitive 1=BA, Barron's Highly Competitive
BA, Barron's Very Competitive	Categorical variable recoded to dummy variable. Whether an executive earned bachelor's degree from a school classified as "Very Competitive" admissions selectivity – the middle category out of six – by Barron's in 1966. Comparison group is the most selective Barron's category.	0=BA, Barron's Most Competitive 1=BA, Barron's Very Competitive
BA, Barron's Competitive	Categorical variable recoded to dummy variable. Whether an executive earned bachelor's degree from a school classified as "Competitive" admissions selectivity – the fourth highest category out of six – by Barron's in 1966. Comparison group is the most selective Barron's category.	0=BA, Barron's Most Competitive 1=BA, Barron's Competitive
BA, Barron's Less Competitive	Categorical variable recoded to dummy variable. Whether an executive earned bachelor's degree from a school classified as "Highly Competitive" admissions selectivity – the fifth highest category out of six– by Barron's in 1966. Comparison group is the most selective Barron's category.	0=BA, Barron's Most Competitive 1=BA, Barron's Less Competitive
BA, Barron's Non Competitive	Categorical variable recoded to dummy variable. Whether an executive earned bachelor's degree from a school classified as "Highly Competitive" admissions selectivity – the lowest category out of six – by Barron's in 1966. Comparison group is the most selective Barron's category.	0=BA, Barron's Most Competitive 1=BA, Barron's Non Competitive
BA, Not listed in Barron's/Unknown source	Categorical variable recoded to dummy variable. Whether an executive earned a bachelor's degree from a school not listed in Barron's 1966 edition. Comparison group is the most selective Barron's category.	0=BA, Barron's Most Competitive 1=BA, Not listed in Barron's

BA, International	Categorical variable recoded to dummy variable. Whether an executive earned bachelor's degree from a school outside of the US. Comparison group is the most selective Barron's category.	0=BA, Barron's Most Competitive 1=BA, International
Less than BA	Categorical variable recoded to dummy variable. Whether an executive holds less than a four-year college degree. Comparison group is the most selective Barron's category.	0=BA, Barron's Most Competitive 1=Less than BA

Analytic Strategy

My analyses of the full sample begin with descriptives comparing the corporate elite to all other executives. The next set of results is the replication of Useem and Karabel's analyses using contemporary data. They used a series of three multiple regressions to estimate the odds of membership in each of the three corporate elite groups. These models can be represented by the following equations:

$$\Pr(\text{CEO}) = \beta_0 + \beta_1(\text{BA lesser college}) + \beta_2(\text{BA top college}) + \beta_3(\text{MBA lesser program}) + \beta_4(\text{MBA top program}) + \beta_5(\text{JD lesser program}) + \beta_6(\text{JD top program}) + \beta_7(\text{other graduate degree}) + \beta_8(\text{social origins}) + \beta_9(\text{lesser BA + top MBA}) + \beta_{10}(\text{lesser BA + top family})$$

$$\Pr(\text{multiple director}) = \beta_0 + \beta_1(\text{BA lesser college}) + \beta_2(\text{BA top college}) + \beta_3(\text{MBA lesser program}) + \beta_4(\text{MBA top program}) + \beta_5(\text{JD lesser program}) + \beta_6(\text{JD top program}) + \beta_7(\text{other graduate degree}) + \beta_8(\text{social origins}) + \beta_9(\text{lesser BA + top MBA}) + \beta_{10}(\text{lesser BA + top family}) + \beta_{11}(\text{CEO})$$

$$\Pr(\text{business association}) = \beta_0 + \beta_1(\text{BA lesser college}) + \beta_2(\text{BA top college}) + \beta_3(\text{MBA lesser program}) + \beta_4(\text{MBA top program}) + \beta_5(\text{JD lesser program}) + \beta_6(\text{JD top program}) + \beta_7(\text{other graduate degree}) + \beta_8(\text{social origins}) + \beta_9(\text{lesser BA + top MBA}) + \beta_{10}(\text{lesser BA + top family}) + \beta_{11}(\text{CEO}) + \beta_{12}(\text{multiple director})$$

The models have the same independent variables with two exceptions. They added a control for whether someone was a CEO to the model predicting multiple directorships because other studies suggested being a CEO increases the odds of outside board membership. Also, Useem's (1984) research indicated that business associations were more likely to select CEOs or directors, so both of these are controls in the last regression.

To estimate these three equations, Useem and Karabel used multiple linear regression and I do the same. However, I also estimate each equation using a logistic regression because the dependent variables in this study are binary with only two possible values, yes or no.[19] A binary dependent variable violates several assumptions of linear regression: that the dependent variable is normally distributed across all levels of the independent variables; that the dependent variable is linearly related to any independent variable holding all of the other independent variables constant; and that that the standard error will be the same across all possible values of the dependent variable. Though multiple regression can technically be used to estimate an equation with a binary dependent variable, it often results in biased results especially when the distribution of the dependent variable is highly skewed (Dey & Astin, 1993). This is the case here, as the proportion of CEOs, multiple directors, or business association leaders is considerably smaller than the proportion of other executives. Therefore, to replicate the prior research I estimate each of the three models using least squares, and I also report the results of logistic regression estimations.

[19] Useem and Karabel had a footnote that, "because of the dichotomous structure of the outcome variables and their skewed distribution, particularly for business association leadership, we also performed a logistic regression. The relative magnitudes of the coefficients were virtually identical to those reported for the multiple regression above" (p. 196). They did not separately report these results.

I add a set of logistic regression models to refine Useem and Karabel's specification by including additional variables that fit with my conceptual framework. The three dependent variables are the same as the replication models, and each is represented by the following equations:

$$\Pr(\text{CEO}) = \beta_0 + \beta_1(\text{female}) + \beta_2(\text{white}) + \beta_3(\text{age}) + \beta_4(\text{social origins}) + \beta_5(\text{Barron's undergraduate rank}) + \beta_6(\text{MBA lesser program}) + \beta_7(\text{MBA top program}) + \beta_8(\text{JD lesser program}) + \beta_9(\text{JD top program}) + \beta_{10}(\text{other graduate degree})$$

$$\Pr(\text{multiple director}) = \beta_0 + \beta_1(\text{female}) + \beta_2(\text{white}) + \beta_3(\text{age}) + \beta_4(\text{social origins}) + \beta_5(\text{Barron's undergraduate rank}) + \beta_6(\text{MBA lesser program}) + \beta_7(\text{MBA top program}) + \beta_8(\text{JD lesser program}) + \beta_9(\text{JD top program}) + \beta_{10}(\text{other graduate degree})$$

$$\Pr(\text{business association}) = \beta_0 + \beta_1(\text{female}) + \beta_2(\text{white}) + \beta_3(\text{age}) + \beta_4(\text{social origins}) + \beta_5(\text{Barron's undergraduate rank}) + \beta_6(\text{MBA lesser program}) + \beta_7(\text{MBA top program}) + \beta_8(\text{JD lesser program}) + \beta_9(\text{JD top program}) + \beta_{10}(\text{other graduate degree})$$

I estimated each of these equations for the full sample of executives. In addition, I modeled the first two for subsamples of the dataset, guided by upper echelon and its use of firm internal labor market theory. The evidence in this tradition suggests CEOs are typically selected from the senior manager ranks or from CEOs of other organizations (Frydman, 2007; Murphy & Zabojnik, 2006; Vancil, 1987). Outside directors are less frequently in the CEO candidate pool, so having them as part of the dependent variable reference group may obscure some of the differences between CEOs and those in their occupational class. For CEOs, I determined the factors that made CEOs distinct from all other executives (i.e., the full sample) and then the factors that made CEOs distinct from other senior managers in their companies, removing the outside directors from the analysis. Similarly, for multiple directors, I determined the factors that made them

distinct from the full sample and then the factors that made multiple directors distinct from single directors, removing executives with internal positions only from the analysis.

While several assumptions that researchers must make when an outcome variable is continuous are relaxed for logistic regression, there are three main requirements that remain (Field, 2009). First, logistic regression models assume collinearity; in other words, all independent variables are linearly independent from one another. For each of my models, I checked for multicollinearity among the independent variables by examining the tolerance values and variance inflation factors (VIF) and found that they are within the acceptable ranges; for VIF the threshold is commonly accepted to be a value of ten (Field, 2009). The highest VIF value is footnoted at the bottom of each table. Second, logistic regression assumes there is a linear relationship between any continuous predictors and the logit of the outcome variable. The only continuous independent variable in my analyses is birth year, and I verified the assumption by testing whether the interaction term between the birth year and its log transformation is significant. Finally, logistic regression assumes independence of error terms. I ran a Durbin-Watson test to check for serial correlation among the residuals, and the statistics are all very close to a value of two, suggesting autocorrelation is likely not present (Field, 2009). The Durbin-Watson is footnoted at the bottom of each regression table. To prevent mis-estimating standard errors due to the nesting of the executives within companies, which might suggest some relationships are significant when this is not the case, I used the robust standard error correction in Stata.

Missing Data

Useem and Karabel were unable to find postsecondary information about 376 individuals in their sample. They considered these missing cases similar to survey non-respondents because "most biographical directory information is obtained through solicited disclosure by the entrant" (p. 186). Therefore, their response rate was about 88 percent. I was unable to find postsecondary information about 165 individuals, so my response rate was 95.6 percent.

Where the other variables in my replication analysis are concerned, no data are missing. However, I am missing some data on race and birth year[20] (Fligstein, 1990 discusses problem of missing data from archival research of executives). To maintain as many cases as possible, I used pairwise deletion in all correlations and regressions

Study Extension Phase

The rationale behind extending Useem and Karabel's work is to gain a better understanding of the similarities and differences in postsecondary education among the corporate elite. Although I collected degree source information for the full sample, the college someone attended is only a general proxy for the benefits associated with earning a degree. A clear conclusion in Pascarella and Terenzini's (1996, 2005) reviews of the college effects literature is that more variation in college effects exists *within* a given campus rather than *across* campuses. The types of activities, involvement, relationships, and accomplishments during undergraduate and graduate school have significant

[20] I ran crosstabs to compare the executives with missing data to those who were not. There was slightly more information missing from those holding non-CEO senior manager positions compared to CEO and director positions. However, the magnitude of the difference was only a few percentage points in each case, so I do not believe the results are skewed due to missing data.

relationships with a host of economic and occupational outcomes, and it follows that these might also translate into opportunities that facilitate entrée to the corporate elite.

Extension Sample Selection

I selected a subsample of 336 executives using a purposive strategy. I chose eight of the most common undergraduate alma maters of the executives in the full sample's corporate elite, aiming for geographic diversity as well as convenience in accessing campus records and archives related to undergraduate student involvement. I then selected all executives in the sample who earned undergraduate degrees from these schools. The eight are:

Cornell University
Massachusetts Institute of Technology
Northwestern University
Stanford University
University of Michigan-Ann Arbor
University of Notre Dame
University of Southern California
Yale University

I opted to sample based on alma mater rather than choose a subsample of executives completely at random for conceptual as well as practical reasons. Conceptually, campus context shapes the types of involvement open to students. For instance, Notre Dame and Yale each have a residential college model, and Greek organizations are not central to undergraduate student life. In contrast, Cornell has 39 Interfraternity Council fraternity chapters and eleven Panhellenic Association sorority chapters. Campus context also shapes the relative desirability of involvement opportunities. At Yale, senior societies are prestigious and only admit a small number of upper class students each year. By including executives who attended the same undergraduate schools (though at different points in time), I attend better to the context

for student involvement than if I randomly sampled individuals without considering their alma mater. More practically, a critical source of my extension data was university archives, and narrowing to a smaller number of campuses was the most logistically and economically feasible choice.

Extension Variables

I grouped the variables for the extension portion of the study into two general categories. *Academic achievements* refer to national awards or campus-specific recognition given for undergraduate scholastic accomplishments. *Campus involvement* is the co- and extra-curricular activities in which a student participated during his undergraduate years. Data for these variables, described in more detail below, came from yearbooks, university alumni directories, and lists published by several sources.

Academic achievements.

Since I was unable to directly collect information pertaining to the executives' grades, I used three proxies of academic accomplishments (see Table 3.8). Two are national awards and one represents campus-specific awards.

Phi Beta Kappa is a prestigious national academic honor society in the United States and includes top humanities, social sciences, and natural sciences students from member chapters on approximately 280 campuses.[21] The society occasionally issues a print directory, and I used the 2000 volume to determine if executives are members. Phi Beta Kappa information was also printed in some campus yearbooks and I used that as a triangulating source.

[21] Another major undergraduate honors society is Phi Kappa Phi; there are chapters on 240 campuses. I considered including membership in it as well as a separate variable, but I discovered that there are not any chapters on seven of the eight campuses on which I chose to focus. USC is the only school with a chapter, but none of the executives in my sample from USC are members.

Several foundations and nonprofit organizations award highly competitive scholarships for academically accomplished undergraduates to pursue graduate study. Perhaps the best known is the Rhodes Scholars; others include the Marshall Scholars, Danforth Graduate Fellowship, and Fulbright Scholars. I obtained lists of past Rhodes Scholars and Marshall Scholars, but the Fulbright organization would not release information on scholar identities and the Danforth Graduate Fellowship was awarded between 1952 and 1978 (Jablin, 1979), but the Foundation dissolved in 2010 and Fellowship archives are not accessible. To give a sense of how select these awards are, approximately 83 college seniors per year from 20 countries including the U.S. are named Rhodes Scholars and 40 or fewer U.S. college seniors per year are named Marshall Scholars.[22] The numbers of executives in the sample awarded each prize were small enough that I combined them into one variable, *Rhodes/Marshall Scholar*.

My final academic award variable represents *campus-specific academic achievements*. Using campus yearbooks and triangulating with self-reported biographies in business publications, I collected information about the executives' academic achievements recognized by their campuses. These include whether the executive earned Dean's List honors, graduated with honors, received a campus-specific academic award(s) or scholarship(s) (e.g., New York State Regents Scholarship, National Merit Scholarship) or was part of a campus academic honors society(s) (e.g., Notre Dame's Blue Circle honors society, Cornell's Red Key society for varsity athletes). While the prior two academic variables have a binary scale, this has a count scale, ranging from

[22] From http://www.marshallscholarship.org/about/statistics, between 1954 and 2010, a total of 318 individuals were named as Marshall Scholars from the eight universities that are represented in this sample; Cornell = 30; MIT = 58; Northwestern = 18; Stanford = 79; University of Michigan = 16; Notre Dame =7; Southern California = 7; Yale = 103.

zero to five. The sources I used from Michigan did not consistently report campus-specific academic awards, so I coded this variable as missing for Michigan alumni.

Finally, I used alumni directories from each campus to determine the individual's *academic major*. I then recoded major into seven categories: business, engineering, liberal arts and humanities, biological and physical sciences, government and international relations, social sciences (except economics) and economics. My choice of categories was guided by the distribution of the fields in the sample. Economics is an obvious example; though it is typically included within the broader social science category, there were such a large number of economics majors in the sample that I opted to keep them separate.

Campus involvement.

To collect information about the executives' college involvement, I examined student yearbooks using year of graduation as a starting point. Each university's yearbook is organized differently and its content varies from year-to-year. I examined the senior yearbook and three prior yearbooks for every executive. Also, I triangulated yearbook information with additional sources such as university intercollegiate athletics media guides, published lists of student leadership societies online and in university archives, class books (Yale only), and alumni databases (Stanford, Notre Dame, and Michigan only).

I coded campus involvement into six variables: varsity athletics, clubs, fraternity/sorority, campus media, student society, and leadership position (see Table 3.8). As with the campus academic award variable, these have count-type scales. Each variable represents the total number of organizations/activities in which an executive

participated, not the total number of years. For instance, if an executive was in a fraternity for three years, I assigned him a value of "1" for the Fraternity/Sorority variable, not a value of "3". My reason for doing this was that the quality of information in my main source, university yearbooks, was inconsistent and in many cases, discerning the length of time for which someone was involved in a given activity was difficult.

For *varsity athletics,* I assigned someone a value of "1" for every varsity sport in which he participated. I discerned among teams but as noted above, not among number of years that an individual participated on the team. For example, if an executive was on the varsity football and varsity soccer teams, he was assigned a value of "2" for varsity athletics.

Executives coded as part of the *campus media* and student publications included yearbook, newspaper, literary magazine, and university radio station staff. As with athletics, if someone participated in yearbook and newspaper, for example, she was coded as "2" but being on the yearbook staff for three years was coded as a "1."

The *fraternity/sorority* variable is one of two variables in this group on a binary rather than a count scale. Someone who was a member of a fraternity or sorority at least once during their undergraduate years was coded as "1" and all others as "0." Notre Dame does not have Greek organizations, so the Notre Dame alumni were coded as missing for this variable.

The other binary-scaled variable is *student society*, which represents membership in elite campus specific organizations that are not formally overseen by the university but that admit a very small number of junior and/or senior class leaders. These organizations were at Yale (i.e., Skull & Bones, Wolf's Head, Book & Snake, Cannon & Castle, Truth

& Courage, and St. Elmo's), Cornell (i.e., Quill & Dagger, Sphinx Head, Aleph Samach, and Raven & Serpent), Northwestern (i.e., Deru), and Michigan (i.e., Michigamua, now known as the Order of Angell). From what I could determine, the other four universities in the subsample – MIT, Stanford, USC, or Notre Dame – did not have equivalent organizations so I coded all executives from these schools as missing on this variable.

The *other student organizations* measure is a catchall, comprising all other forms of co- and extracurricular student involvement not captured by the prior variables that did not recur frequently enough to code into more discrete groups. Examples of the types of activities represented here are intramural sports teams, special interest and discipline-specific clubs, ROTC, university band, a capella groups, theater, and volunteer/service groups. If someone was in an academic honors society, I coded it as "campus academic awards" rather than the student organization variable.

If an executive held a *leadership position* for any of the above organizations, I coded this separately. For instance, a member of Sigma Alpha Epsilon fraternity would be assigned a "1" for the greek life variable, but the Rush Chairman of SAE would be assigned a value of "1" for the greek life variable and "1" for the leadership variable. Those who held student government leadership positions or were Resident Assistants/Advisors are also included here.

Table 3.8
Description of variables used in extension analyses

	Description	Scale
Academic Achievements		
Phi Beta Kappa	Member of Phi Beta Kappa national honors society, from membership directory (2000)	0=Not member 1=Member
National Scholar	Awarded Rhodes or Marshall Scholar recognition	0=Not Scholar 1=Scholar
Campus-specific academic recognition	Honor roll/Dean's list for at least one semester and/or graduated with honors *(Michigan alumni excluded*	Count; range from 0 to 5
Academic major	1) Business includes Accounting, Management, Marketing, Finance, Industrial & Labor Relations, Real Estate, Administrative Sciences, and Business Administration. 2) Engineering includes Mechanical, Chemical, Aeronautical, Industrial Engineering as well as Mathematics and Computer Sciences. 3) Liberal Arts & Humanities include History, English, Speech, American Studies, Philosophy, Languages/Linguistics, Journalism, and General Studies or Arts & Letters 4) Biological & Physical Sciences include Biology, Chemistry, Physics, and Anatomy 5) Government & International Relations 6) Social Sciences (except economics) include Political Science, Sociology, Psychology, Anthropology, and Education 7) Economics	Categorical but recoded into dummy variables for t-tests

Campus Involvement		
Student Society	Member of elite undergraduate student society *(Michigan, Cornell, Northwestern, and Yale alumni only)*	0=Not member 1=Member
Varsity Athletics	Number of varsity sports played	Count; range from 0 to 3
Other student organizations	Number of student organizations and clubs in which an executive was a member	Count; range from 0 to 10
Fraternity/Sorority	Member of a fraternity or sorority	0=Not member 1=Member
Campus Media	Number of campus media organizations, including paper, radio, and yearbook, for which an executive was staff	Count; range from 0 to 3
Leadership Position	Number of campus leadership positions held, including athletic team captain, student government representative, fraternity or sorority officer, newspaper editor, and student organization officer	Count; range from 0 to 7

Analytic Strategy

The small number of executives that are part of the subsample limits the types of analyses that can be used on the data. I used a series of independent sample t-tests to better understand the differences in undergraduate accomplishments of those who held positions characterized as part of the corporate elite (i.e., CEOs, multiple directors, association leaders) compared to other top executives. The null hypothesis for each test was the means of the executive subgroups were equal. The alternative hypothesis for each two-tailed test was the means of the executive subgroups were significantly different using a 90 percent confidence interval.[23]

[23] The most commonly used threshold for significant findings is 95 percent confidence interval, or $p<0.05$, established by Ronald Fisher in the early 1920s although it is acknowledged to be a somewhat arbitrary cutpoint (Cowles & Davis, 1982). I use $p<0.05$ in my first two sets of analyses, but I chose to report findings at $p<0.10$ for the final section because the sample size in these analyses is much smaller than the full sample size (i.e., n=336, and sometimes even smaller, depending on the variable in question).

There are five series of independent sample t-tests. I compared the mean achievements of CEOs to those of all other executives and to those of other internal senior managers only:

H_O: $m_{CEO} = m_{All\ other\ execs}$
H_A: $m_{CEO} \neq m_{All\ other\ execs}$

H_O: $m_{CEO} = m_{Senior\ managers}$
H_A: $m_{CEO} \neq m_{Senior\ managers}$

Similarly, I compared the mean achievements of multiple directors to those of all other executives and to those of single directors only:

H_O: $m_{Multiple\ directors} = m_{All\ other\ execs}$
H_A: $m_{Multiple\ directors} \neq m_{All\ other\ execs}$

H_O: $m_{Multiple\ directors} = m_{Single\ directors}$
H_A: $m_{Multiple\ directors} \neq m_{Single\ directors}$

Finally, I compared the mean achievements of association leaders to those of all other executives:

H_O: $m_{Association\ leaders} = m_{All\ other\ execs}$
H_A: $m_{Association\ leaders} \neq m_{All\ other\ execs}$

Increasing the confidence interval is an acceptable choice for researchers using small sample sizes who are willing to trade off the increased chance of Type I error, i.e., the null hypothesis is true but is rejected, for a reduced chance of Type II error, i.e., the null hypothesis is false but is not rejected (Rubin, 2010).

CHAPTER 4

Results

The study results are organized according to my research questions. I begin by presenting descriptive characteristics of postsecondary degree attainment for the full sample of 2010 executives. The next section updates and contrasts the key findings from Useem and Karabel's research in 1977 to mine in 2010, again highlighting the comparisons around postsecondary attainment. I then present the results of additional analyses using the full sample of 2010 executives, refining the Useem and Karabel model to add demographic variables and more postsecondary distinctions. Finally, I discuss patterns in the academic achievements and campus involvement of a subsample of the 2010 executives. This chapter concludes with a summary of the study limitations.

Descriptive Results

In this section, I address my first research question: What are the higher education backgrounds of top corporate executives? Are there differences in the backgrounds of Chief Executive Officers, multiple directors, and business association leaders compared to other senior executives? My results are organized into four main categories of postsecondary attainment: undergraduate degrees, MBA degrees, law degrees, and other graduate degrees.

To begin, Table 4.1 offers a basic overview of degree attainment for the sample. Almost all of the executives earned at least a four-year bachelor's degree; only 73 (or 2% of the total) did not. This latter group includes people whose highest degree earned is an associate's, as well as those who attended a four-year college but dropped out before completion.

The majority of executives – over two thirds of the sample – also held at least one graduate degree, and 7.5 percent earned multiple graduate degrees. The most common graduate degree earned was a Master's of Business Administration, which approximately one third of the sample held. Just over seventeen percent had a law degree, and about the same percentage held a master's degree other than an MBA (17.7%). Nine percent earned a doctoral degree (i.e., PhD, MD, Doctorate of Business, Doctorate of Laws, or other discipline specific terminal degree with the exception of a JD).

Contrasting the degree attainment of the executive subgroups, CEOs were moderately less likely to have earned any type of graduate degree (63.1%) than were other executives, while business association members were most likely to have done so (78.1%). Looking at specific graduate degrees, CEOs and multiple directors were moderately more likely to have an MBA than other executives (41.5% and 39.6%, respectively), though both groups held slightly fewer law degrees (13.1% and 14.8%, respectively). Senior managers were the most likely to hold JDs (20.3%), which makes sense because at least some were in positions directly responsible for legal matters facing their company (e.g., general counsel, chief legal officer). Terminal doctoral level degrees were more common among multiple directors (11.5%), single directors (13.9%) and

business association leaders (14.4%) than among CEOs (4.9%) or other senior managers (4.8%).

Table 4.1.
Descriptive statistics for postsecondary attainment

	Full Sample (n=3,625)		CEOs (n=328)		Senior Managers (n=1,374)		Multiple Directors (n=771)		Single Directors (n=1,309)		Assoc. (n=333)	
	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N
Bachelor's degree	98.0%	3,551	97.0%	318	98.4%	1,352	98.6%	760	97.4%	1,275	99.7%	332
At least one graduate degree	67.7%	2,453	63.1%	207	65.4%	898	72.1%	556	69.9%	915	78.1%	260
Multiple graduate degrees	7.5%	373	7.3%	206	6.2%	85	8.7%	67	8.0%	108	9.0%	30
MBA degree	33.6%	1,272	41.5%	136	35.2%	484	39.6%	305	32.6%	427	36.9%	123
Top ranked program[b]	16.8%	608	18.6%	61	13.1%	180	21.8%	168	17.6%	231	20.1%	67
Law degree	17.5%	633	13.1%	43	20.3%	279	14.8%	114	16.7%	219	19.5%	65
Top ranked program[b]	6.5%	235	5.2%	17	8.4%	116	6.4%	49	7.6%	99	11.7%	39
MBA and law degree	1.7%	60	2.4%	8	1.8%	25	1.6%	12	1.4%	18	1.8%	6
Other master's degree	17.7%	642	14.0%	46	13.6%	187	20.9%	161	20.9%	274	24.3%	81
Doctoral degree[a]	9.3%	337	4.9%	16	4.8%	58	11.5%	89	13.9%	182	14.4%	48

Note. The education categories are <u>not</u> mutually exclusive and the percentages do not add up to 100%. So for instance, if an executive has an MBA and a PhD, she will be counted in both rows. Also, education information is missing for 165 executives, which is why the sample N for this table is 3,625.

[a] The doctoral degree group includes PhD, MD, doctorate in business, doctorate in law, or other advanced degree beyond a master's (does not include postgraduate studies without degree completion)

[b]The Business Week top eleven MBA programs in 2010 were: Columbia University, Duke University, Harvard University, Massachusetts Institute of Technology, Northwestern University, University of California Berkeley, University of Chicago, University of Pennsylvania, University of Michigan, University of Virginia and Stanford University.

[b]The US News & World Report law programs in 2010 were: Columbia University, Harvard University, New York University, Stanford University, University of California-Berkeley, University of Chicago, University of Michigan, University of Pennsylvania, and Yale University.

To place these statistics into broader perspective, according to the 2005-09 American Community Survey five-year estimates, 27.5 percent of U.S. adults age 25 and over held a bachelor's degree or higher (compared to 98.0% of this sample). Also, 10.1% of adults held a graduate or professional degree (compared to 67.7% of this sample). All of the executives here clearly have markedly higher levels of educational attainment than the general American population.

Undergraduate Degree Characteristics

Table 4.2 contains more information about characteristics of the colleges and universities from which the executives earned their undergraduate degrees.[24] Just over nine percent of those who had four-year bachelor's (or bachelor's equivalent) degrees graduated from a program outside of the United States. Multiple directors (5.0%) and business association leaders (5.4%) were slightly less likely to have earned their degree from an international university than others and single directors were the most likely (12.2%).

Among the 3,172 executives who graduated from U.S. institutions, 15.9 percent earned their degrees from a school ranked among Gourman's top eleven in 1967. The average Gourman ranking for all executives was 530 points with a range of 245 to 772 and a standard deviation of 132. Senior managers were the relatively least likely group to have graduated from a top Gourman school (11.4%) and they had the lowest average ranking as well (513 points). Single directors were the most likely to have graduated from a top Gourman school (19.4%), though business association leaders had the highest average Gourman score (559 points).

[24] Appendix D has more institutional characteristics but since they are not part of the multivariate analyses I didn't include them in the main text.

According to my other measure of college prestige, Barron's admissions selectivity ratings in 1966, 20.7 percent of the executives' bachelor's degrees were from the Most Competitive schools. As with the Gourman rankings, senior managers were the least likely to have a BA from a Barron's Most Competitive school (14.6%). Business association leaders were the most likely to have a top Barron's undergraduate degree (32.2%).

Table 4.2.
Descriptive statistics for characteristics of bachelor's degree institutions

	Full Sample		CEOs		Senior Managers		Multiple Directors		Single Directors		Assoc.	
	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N
International school	9.2%	322	11.0%	35	8.8%	116	5.0%	38	12.2%	153	5.4%	18
Barron's Rankings												
Most Competitive	20.7%	656	21.3%	60	14.6%	176	23.6%	169	25.2%	278	32.2%	101
Highly Competitive	14.4%	457	14.5%	41	14.4%	173	15.1%	108	13.9%	153	15.3%	48
Very Competitive	17.6%	559	16.3%	46	17.7%	213	17.6%	126	18.0%	198	17.2%	54
Competitive	20.8%	659	19.1%	54	24.0%	288	20.2%	145	18.9%	208	14.0%	44
Less Competitive	12.7%	402	15.6%	44	12.9%	155	11.6%	83	12.3%	136	10.5%	33
Noncompetitive	2.7%	87	2.8%	8	3.2%	38	2.4%	17	2.4%	26	1.9%	6
Not listed in Barron's	11.1%	352	10.3%	29	13.2%	159	9.6%	69	9.4%	104	8.9%	28
Gourman Rankings												
Top eleven school[a]	15.9%	505	17.4%	49	11.4%	137	16.7%	120	19.4%	214	17.8%	56
Continuous rank[b]	530(132)		536(131)		513(125)		534(132)		543(137)		559(133)	

Note. In this table, the full sample N represents those who earned a bachelor's degree – executives without bachelor's degrees are not included in the total, which is 3,172 for all rows except the first. Three groups are not part of the statistics: 1) I could not confirm whether 165 had earned a bachelor's degree or not, 2) 73 do not have a bachelor's degree, and 3) 57 have a bachelor's degree (because I was able to verify that they held a graduate degree) but I could not determine where that degree was from. In addition, there are 322 who earned international baccalaureate degrees. They are only included in the first row.
Full Sample: first row n=3,494, rest n=3,172; For CEOs: first row n=317, rest n=282; Senior Managers: first row n=1319, rest n=1203; Multiple Directors: first row n=755, rest n=717; Single Directors: first row n=1256, rest n=1103; Association: first row n=332, rest n=314.
[a]The Gourman top eleven undergraduate universities in 1967 are: Princeton University, Harvard University, Yale University, University of Michigan, Columbia University, Cornell University, University of Notre Dame, Dartmouth College, University of Pennsylvania, California Institute of Technology, and University of California Berkeley.
[b]The Gourman continuous measure is in mean years with the standard deviation in parentheses after since the measure is continuous. It's included in this table for overall parsimony though the scale does not lend itself to percentage terms.

There were 585 four-year colleges and universities represented among the individuals who earned a bachelor's degree from a U.S. school. To put this figure into broader context, when the average executive in the sample was age 18 in 1968, there were approximately 1,850 degree-granting four-year colleges and universities in the United States (Snyder & Dillow, 2010) so clearly, not every possible institution is represented here. While the mean number of executives per school was just over five, the median was two, indicating that the alma maters were not normally distributed across the sample. In fact, there were 228 schools from which only one executive graduated, and 95 from which only two executives graduated.

Almost one third of the full sample (n=1,008 individuals) earned a bachelor's degree from one of 25 schools (see Table 4.3). Harvard University topped the list with 98 graduates (3.1%), followed by Princeton University with 68 (2.1%) and Yale and Stanford with 67 (2.1%) each. While these four are often cited among the top undergraduate universities in the nation, if not the world, the remaining schools on the list included twelve public schools, the United States Naval Academy, as well as the rest of the Ivy League members with the exception of Columbia.

Are these university patterns consistent across the entire sample, or do the executives who are part of the corporate elite share certain undergraduate alma maters that differ from others? Table 4.4 lists common institutions from which the CEOs, multiple directors, and business association leaders graduated. For purposes of comparison to the overall sample, I cut each list where the overall percentage column totaled roughly 30 percent of the given position. Harvard was the most frequent bachelor's degree source for CEOs (3.2%) and association members (5.1%) and second

on the list for multiple directors (2.7%), who were most likely to have graduated from Princeton (2.9%). In addition to Harvard and Princeton, common among all three lists were Notre Dame, Stanford, Yale, and the University of Pennsylvania.

Table 4.3.
Most common undergraduate alma maters: Full sample (n=3,171)

	N	Percent
Harvard University[a]	98	3.09%
Princeton University[a]	68	2.14%
Yale University[a]	67	2.11%
Stanford University	67	2.11%
University of Pennsylvania[a]	62	1.96%
Cornell University[a]	51	1.61%
University of Notre Dame[a]	46	1.29%
Michigan State University	44	1.39%
University of Michigan[a]	39	1.23%
University of Texas Austin	38	1.20%
Duke University	37	1.17%
Dartmouth College[a]	34	1.07%
University of Illinois	31	0.98%
Iowa State University	29	0.91%
University of North Carolina	29	0.91%
University of Virginia	29	0.91%
University of California Los Angeles	28	0.88%
Pennsylvania State University	28	0.88%
University of Wisconsin Madison	28	0.88%
United States Naval Academy	27	0.85%
Brown University	27	0.85%
Purdue University	26	0.82%
Georgia Institute of Technology	25	0.79%
Northwestern University	25	0.79%
University of Minnesota	25	0.79%
Total	*1,008*	*31.63%*

Note. In terms of the next most common, there are four schools that graduated 23 executives each, two schools that graduated 22, three that graduated 21, and one that graduated 20.
[a] To proxy top bachelor's degree institutions for the replication analyses, I used the eleven highest rated by the Gourman list in 1967. The Gourman schools correspond well with the sample's alma maters; eight from Gourman indicated with the superscript are among those here. Not included in the table but part of Gourman's group are Columbia University (from which 23 executives earned bachelor's degrees), California Institute of Technology (from which five executives earned bachelor's degrees), and the University of California Berkeley (from which 17 executives earned bachelor's degrees).

Although the six schools recurring on the three lists in Table 4.4 are also present on the two lists in Table 4.5, the mix attended by senior managers had a slightly different character, at least descriptively. None of the executive subgroups was concentrated in any single school, but senior managers were even more distributed than the other four groups. Only 5.7 percent of senior managers graduated from their subgroup's three most common alma maters, compared to 8.2 percent of CEOs graduated from their three most common, 8.0 percent of multiple directors, 11.2 percent of association leaders, and 10.0 percent of single directors.

Michigan State University was the single most common school from which senior managers earned undergraduate degrees (2.1%). While Michigan State is a well-respected school, it is not commonly accorded the same level of external prestige as Harvard (most common alma mater of CEOs, single directors, and association leaders) or Princeton (most common alma mater of multiple directors). Overall, the schools listed in Table 4.5 for single directors more resemble those of the corporate elite than senior managers.

Table 4.4.

Most common undergraduate alma maters: CEOs, multiple directors, business association leaders

CEOs (n=282 individuals; N=158 schools)			Business Association (n=314 individuals; N=158 schools			Multiple Directors (n=716 individuals; N=284 schools)		
	N	Pct		N	Pct		N	Pct
Harvard University	9	3.19%	Harvard University	16	5.10%	Princeton University	21	2.93%
University of Notre Dame	7	2.48%	Yale University	10	3.18%	Harvard University	19	2.65%
Princeton University	7	2.48%	Stanford University	9	2.87%	Yale University	17	2.37%
Stanford University	6	2.13%	United States Naval Academy	7	2.23%	Stanford University	15	2.09%
Yale University	6	2.13%	Dartmouth College	7	2.23%	University of Pennsylvania	15	2.09%
Dartmouth College	6	2.13%	Princeton University	7	2.23%	United States Naval Academy	14	1.96%
Pennsylvania State University	6	2.13%	Columbia University	6	1.91%	University of Notre Dame	12	1.68%
Georgia Institute of Technology	5	1.77%	United States Military Academy	6	1.91%	Massachusetts Institute of	10	1.40%
University of Pennsylvania	5	1.77%	University of Pennsylvania	6	1.91%	Technology		
University of Texas at Austin	5	1.77%	Brown University	6	1.91%	Cornell University	10	1.40%
University of California Los Angeles	4	1.42%	University of Notre Dame	5	1.59%	Howard University	9	1.26%
Tufts University	4	1.42%	Tufts University	5	1.59%	University of Illinois	9	1.26%
University of Michigan	4	1.42%	Pennsylvania State University	5	1.59%	University of Southern California	8	1.12%
Ohio State University	4	1.42%	Massachusetts Institute of	5	1.59%	University of Michigan	8	1.12%
Michigan State University	4	1.42%	Technology			Duke University	8	1.12%
University of Missouri	4	1.42%				University of North Carolina	8	1.12%
United States Military Academy	4	1.42%				University of Texas	8	1.12%
						University of Washington	8	1.12%
Total individuals	*90*	*31.9%*	*Total individuals*	*100*	*31.9%*	*Total individuals*	*199*	*27.8%*

Note. The "Percent" column is the number of graduates of any given school compared to the total number of executives who are part of that subgroup (i.e., CEO, multiple director, or association) and hold a bachelor's degree from a U.S. school. It is not the percentage of the full sample.

Table 4.5.
Most common undergraduate alma maters: Senior managers, single directors

Senior Managers (n=1,203 individuals; N=394 schools)			Single Directors (n=1,103; N=349 schools)		
	N	Pct		N	Pct
Michigan State University	25	2.08%	Harvard University	54	4.90%
Stanford University	23	1.91%	Yale University	28	2.54%
Yale University	20	1.66%	University of Pennsylvania	27	2.45%
University of Texas at Austin	19	1.58%	Princeton University	26	2.36%
Harvard University	18	1.50%	Stanford University	26	2.36%
University of Michigan	18	1.50%	Cornell University	23	2.09%
University of Illinois	17	1.41%	Dartmouth College	17	1.54%
University of Notre Dame	17	1.41%	Duke University	15	1.36%
Princeton University	16	1.33%	Brown University	14	1.27%
University of Virginia	16	1.33%	University of California Los	12	1.09%
Cornell University	15	1.25%	Angeles		
University of Pennsylvania	15	1.25%	Georgia Institute of Technology	11	1.00%
Iowa State University	14	1.16%	University of Notre Dame	11	1.00%
Indiana University	13	1.08%	University of North Carolina	11	1.00%
Duke University	13	1.08%	Boston College	11	1.00%
University of North Carolina	12	1.00%	University of Minnesota	11	1.00%
Pennsylvania State University	12	1.00%	University of Arkansas	11	1.00%
Texas A&M University	12	1.00%			
University of Wisconsin	12	1.00%			
University of Minnesota	11	0.91%			
Miami University (Ohio)	11	0.91%			
Total individuals	*329*	*27.35%*	*Total individuals*	*308*	*27.92%*

MBA Degree Characteristics

Almost exactly one third of the full sample (n=1,272) held a Master's of Business Administration degree. Proportionally more CEOs (n=136; 41.5%) and multiple directors (n=305; 39.6%) earned MBAs than senior managers (n=484; 35.2%) single directors (n=427; 32.6%), or business association leaders (n=123; 36.9%).

Generally, the programs represented here were highly ranked (see Table 4.1). Half of the executives who hold MBAs earned them from one listed among the top eleven by *Business Week* in 2010 (16.8% of full sample). Association leaders were especially likely

to have graduated from a top ranked MBA program (20.1%), while senior mangers were the least likely of any executive subgroup to have graduated from a top ranked MBA program (13.1%). Less than two percent (n=55) earned MBAs from programs located outside of the United States. CEOs were slightly more likely to hold an international MBA (5.9%), while multiple directors were the least likely (2.0%) of any executive subgroup (see Appendix D, Table D.2).

Focusing on individual programs, 199 different U.S. schools were represented among the 1,217 executives' MBA alma maters. According to the Association to Advance Collegiate Schools of Business, 434 U.S. universities offered MBA degrees in 2010, so just under half were observed in this sample (AACSB, 2010). There were 88 schools from which only one individual earned an MBA, and certain programs were overrepresented (see Table 4.6). As with undergraduate alma maters, Harvard was the most common. In fact, Harvard was even more popular among MBAs than BAs; among those who held an MBA degree, 19.4 percent were graduates of Harvard Business School. The University of Chicago was the next most frequent, with 6.4 percent, followed by University of Pennsylvania with 5.5 percent, Stanford University with 5.0 percent, and Northwestern University with 4.3 percent.

These schools overlapped considerably with *Business Week*'s rankings of the top MBA programs. Eight of the eleven most frequent attended by the sample were among the top eleven on *Business Week*'s list in 2010. The remaining three were also highly ranked by *Business Week* – New York University is 18, University of California Los Angeles is 17, Dartmouth is 14.

Table 4.6.
Most common MBA alma maters: Full sample (n=1,217)

	N	Percent
Harvard University[a]	234	19.2%
University of Chicago (Booth School)[a]	78	6.4%
University of Pennsylvania (Wharton School)[a]	67	5.5%
Stanford University[a]	61	5.0%
Northwestern University (Kellogg School)[a]	52	4.3%
Columbia University[a]	48	3.9%
New York University (Stern School)	43	3.5%
University of Michigan (Ross School)[a]	22	1.8%
University of California Los Angeles (Anderson School)	21	1.7%
Dartmouth College (Tuck School)	19	1.6%
University of Virginia (Darden School)[a]	16	1.3%
Total Individuals	*661*	*54.3%*

Note. In terms of the next most common MBA alma maters, three schools (Michigan State, UC Berkeley, and Cornell) graduated 14 each, one graduated 12, and one (Indiana) graduated 11.
[a] School is one of the top eleven on Business Week's 2010 MBA rankings.

Table 4.7 disaggregates this information further, listing the common institutions from which each executive subgroup earned MBAs. In this instance, I cut each list where the overall percentage column totaled roughly half of the given position. So for example, 54.3 percent of multiple directors who had an MBA earned the degree from one of the seven programs listed in Table 4.7. It is important to note that the group sizes are unequal but even adjusting for that, certain MBA programs seemed to be especially concentrated among multiple directors, business association leaders (53.8% graduated from six programs listed), and single directors (53.5% graduated from seven programs listed). Two fifths of the CEOs (40.5%) who held MBAs graduated from five programs, while half of the senior managers (51.0%) graduated from sixteen programs.

Which specific schools recurred across all of the groups? Again, Harvard Business School was most common, especially among directors and business association leaders. Northwestern University and Columbia University were represented among the

most common MBA alma maters of all five subgroups, though not nearly to the extent of Harvard. There were sharp drop-offs to the next most frequent school, which was the University of Chicago for multiple directors (10.5%) and Northwestern University (6.8%) for association representatives.

However, the proportion of executives in the top-most positions that graduated from Harvard Business School in 2010 was different than in the past. Useem and Karabel reported that 41.4 percent of CEOs had a Harvard MBA, while 19.8 percent did in the current study. Similarly, they found that 33.6 percent of multiple directors had a Harvard MBA, compared to 24.0 percent in 2010. A slight reversal of this trend was apparent for business association leaders; 21.6 percent had a Harvard MBA in 1977 in contrast to 26.5 percent in 2010.

Placing these numbers into the larger context of MBA recipients is important, as Harvard enrolls a large number of students. For example, the Harvard Business School awarded 806 MBAs in 1975 (and there were 3,381 applicants in 1975, although Harvard did not report the percent admitted or yield).[25] In 1974-75, the total number of MBAs awarded in the United States was 35,758[26], so Harvard graduates represented roughly 2.2 percent of the total. Harvard's enrollment stayed relatively constant over the next few decades, although the number of applicants increased substantially,[27] and the number of MBAs awarded nationally increased substantially as well.[25] Over the last several years, Harvard moderately increased the size of their classes; there were 937 MBA students in the 2010-11 class (and 9,093 applicants that year).[24] In 2009-10, a total of 168,375

[25] Data are from http://www.hbs.edu/about/statistics/mba.html
[26] Data are from http://nces.ed.gov/pubs2002/digest2001/tables/dt284.asp
[27] The number of Harvard MBA students in the 1985 class was 793 and the number of applicants for admission to that class was 5,709. There were 789 students in the 1995 class and the number of applicants for admission to that class was 6,321

master's degrees in business were awarded,[28] so Harvard awarded 897, or 0.533 percent of the total. Among the other schools ranked in the *Business Week* top eleven, New York University awarded the most MBAs: 1,615 or 0.956 percent of the total in 2009-10.[29] Thus, while these individual schools do enroll a large number of students, they nonetheless represent a small proportion of overall MBA degrees nationally.

Though Harvard is the alma mater that also graduated the most non-corporate elite senior managers in the current study, these individuals comprised only 10.4 percent of the overall subgroup.[30] Similar to what was observed for patterns in bachelor's degrees, senior managers had a more diverse distribution of MBA degree sources than other executives. In other words, senior managers were comparatively less concentrated and attended a relatively wider array of MBA programs.

[28] The grand total completion is from 2010 Digest of Education Statistics, http://nces.ed.gov/programs/digest/d10/tables/dt10_283.asp

[29] From IPEDS, the remaining top *Business Week* schools awarded MBA degrees as follows in 2009-10: Columbia University: n=1,168 or 0.694% of total nationally; Dartmouth: n=253 or 0.150%; Northwestern: n=1,376 or 0.817%; Stanford: n=424 or 0.252%; UCLA: n=677 or 0.402%; University of Chicago: n=1,288 or 0.765%; University of Michigan: n=822 or 0.488%; University of Pennsylvania: n=915 or 0.543%; and University of Virginia: n=553 or 0.328%.

[30] The proportion of senior managers and single directors with Harvard MBAs was not separately reported by Useem and Karabel; they only presented this information for CEOs, multiple directors, and business association members.

Table 4.7. *Most common MBA alma maters: By executive subgroups*

CEOs (n=126; N=56 schools)			Business Association (n=117; N=44 schools)			Multiple Directors (n=299; N=85 schools)		
	N	Pct		N	Pct		N	Pct
Harvard University	25	19.8%	Harvard University	31	26.5%	Harvard University	72	24.0%
Columbia University	8	6.3%	Northwestern University	8	6.8%	University of Chicago	27	9.0%
Stanford University	7	5.6%	University of Chicago	6	5.1%	Stanford University	17	5.7%
Northwestern University	7	5.6%	Dartmouth College	6	5.1%	Columbia University	15	5.0%
University of Texas Austin	4	2.8%	University of Pennsylvania	6	5.1%	University of Pennsylvania	12	4.0%
			Columbia University	6	5.1%	Northwestern University	10	3.3%
						New York University	10	3.3%
Total Individuals	*51*	*40.5%*	*Total Individuals*	*63*	*53.8%*	*Total Individuals*	*163*	*54.3%*

Single Directors (n=407; N=107 schools)			Senior Managers (n=461; N=154 schools)		
	N	Pct		N	Pct
Harvard University	99	24.3%	Harvard University	48	10.4%
University of Pennsylvania	31	7.6%	University of Chicago	31	6.7%
Stanford University	30	7.4%	Northwestern University	26	5.6%
University of Chicago	21	5.2%	University of Pennsylvania	24	5.2%
New York University	18	4.4%	New York University	15	3.3%
Columbia University	16	3.9%	Columbia University	14	3.0%
Northwestern University	12	2.9%	University of California Los Angeles	12	2.6%
			Stanford University	12	2.6%
			University of Michigan	8	1.7%
			Cornell University	8	1.7%
			University of Virginia	8	1.7%
			Dartmouth College	7	1.5%
			Michigan State University	6	1.3%
			Pace University	6	1.3%
			Duke University	5	1.1%
			Drexel University	5	1.1%
Total Individuals	*227*	*55.8%*	*Total Individuals*	*235*	*51.0%*

Law Degree Characteristics

Approximately 18 percent of the sample held a JD (n=633). Senior managers were slightly more likely to be lawyers (n=239; 20.3%) as were business association representatives (n=65; 19.5%) in contrast to 16.4 percent of single directors (n=279), 15.0 percent of multiple directors (n=84), and 13.1 percent of CEOs (n=43).

Almost two fifths of those with law degrees graduated from one of the top nine schools (6.5% of full sample; see Table 4.1). Business association leaders were notably more likely to hold a top law degree than any other executive subgroup: 11.7 percent compared to 8.4 percent of senior managers, 7.6 percent of single directors, 6.4 percent of multiple directors, and 5.2 percent of CEOs.

By far, the most common school from which an executive earned a law degree was Harvard Law School (14.7% of those with law degrees). Second on the list was Columbia University, from which 5.4 percent of those with JDs graduated, followed by the University of Virginia (5.1%), Yale University (4.3%), and the University of Michigan (3.5%). Almost half of the full sample graduated from one of the twelve schools listed in Table 4.8. Seven were also among 2010 *U.S. News* top nine law schools, namely Harvard, Columbia, Yale, the University of Michigan, New York University, the University of Pennsylvania, and Stanford. Not in Table 4.8 but on the *U.S. News* list were the University of California-Berkeley and the University of Chicago.

Table 4.8
Most common law alma maters: Full sample (n=607)

	N	Percent
Harvard University [a]	89	14.7%
Columbia University [a]	33	5.4%
University of Virginia	31	5.1%
Yale University [a]	26	4.3%
University of Michigan [a]	21	3.5%
University of Pennsylvania [a]	20	3.3%
New York University [a]	19	3.1%
Georgetown University	15	2.5%
George Washington University	13	2.1%
Stanford University [a]	11	1.8%
University of Minnesota	10	1.6%
Duke University	10	1.6%
Total Individuals	298	49.1%

[a] School is one of the top nine of US News 2010 law rankings.

Harvard was the most common alma mater of the law school graduates that comprise each of the five executive subgroups (see Table 4.9). However, a higher proportion of business association leaders – 28.6 percent – and multiple directors – 22.2 percent – graduated from Harvard Law compared to the other groups. Only ten percent of senior managers with law degrees, fifteen percent of CEOs with law degrees, and 18.7 percent of single directors with law degrees earned them from Harvard. Yale Law School was the second most frequent alma mater of business association members (9.5%), multiple directors (6.5%), and single directors (6.7%) but did not rank among the most common listed for senior managers or CEOs.

Table 4.9.
Most common law alma maters: By executive subgroups

CEOs (n=40; N=23 schools)			Business Association (n=63; N=25 schools)			Multiple Directors (n=108; N=49 schools)		
	N	Pct		N	Pct		N	Pct
Harvard University	6	15.0%	Harvard University	18	28.6%	Harvard University	24	22.2%
Columbia University	6	15.0%	Yale University	6	9.5%	Yale University	7	6.5%
Southern Methodist University	3	7.5%	Columbia University	6	9.5%	Columbia University	5	4.6%
University of Virginia	3	7.5%	University of Michigan	4	6.3%	New York University	5	4.6%
			Southern Methodist	3	4.8%	George Washington	4	3.7%
			University of Virginia	3	4.8%	University		
Total Individuals	*18*	*45.0%*	*Total Individuals*	*40*	*63.5%*	*Total Individuals*	*45*	*41.7%*

Single Directors (n=209; N=67 schools)			Senior Managers (n=238; N=90 schools)		
	N	Pct		N	Pct
Harvard University	39	18.7%	Harvard University	24	10.1%
Yale University	14	6.7%	University of Virginia	18	7.6%
Columbia University	14	6.7%	Georgetown University	11	4.6%
New York University	11	5.3%	University of Michigan	11	4.6%
University of Virginia	8	3.8%	Columbia University	11	4.6%
University of Pennsylvania	7	3.3%	University of Pennsylvania	10	4.2%
University of Michigan	7	3.3%			
Total Individuals	*100*	*47.8%*	*Total Individuals*	*85*	*35.7%*

Other Graduate Degree Characteristics

Almost 18 percent of the sample held a master's degree other than or in addition to an MBA or law degree, and 9.3 percent earned a terminal degree such as PhD or MD. More specifics about the fields of study for these degrees are in Table 4.10. One fifth of the master's degrees were in engineering, 14.6 percent were in business fields (e.g., accounting), 11.4 percent were in the social sciences, and 10.1 percent were in public administration. Two thirds of the social science degrees (i.e. 49 out of 73) were in economics. A smaller number of the executives held master's degrees in the biological or physical sciences (7%) and other fields such as law (5%), liberal arts/humanities (4%), education (3.1%), health professions (3.1%), computer sciences (2.3%), mathematics (2.0%), and communications (1.6%).

The most common doctoral degrees were in the biological/physical sciences (19.3%) and the health professions (e.g., MDs) (11.9%). There were 51 executives holding a PhD in a social science (15.1%), and of these 39 – or 76.5 percent – were in economics. Also well represented were doctorates of business or a PhD in a business field such as management or finance (12.5%). The remaining seven fields each represented three percent or less of doctoral degrees in the sample.

Comparing the specific schools from which these executives earned their master's and doctoral degrees presents more complex task, because the quality/prestige/ranking of programs often vary quite a bit within a single university. Therefore, I did not examine the sources of these degrees in much depth and did not create tables for each field. Harvard University was most common, graduating 39 of the master's degrees (6.1% of the total) and 34 of the doctoral degrees (10.1% of the total), followed by Stanford

University, from which 25 of the master's graduates earned degrees (3.9%) and 18 of the doctoral graduates (5.3%).

Table 4.10.
Frequency of other graduate degrees by field.

	Master's Degrees		Doctoral Degrees	
	N	Pct	N	Pct
Business [a]	94	14.6%	42	12.5%
Communications & journalism	10	1.6%	1	0.3%
Computer & information sciences	15	2.3%	8	2.4%
Education	20	3.1%	10	3.0%
Engineering	132	20.6%	40	11.9%
Health professions [b]	20	3.1%	64	19.0%
Legal professions & studies [c]	32	5.0%	6	1.8%
Liberal arts & humanities [d]	26	4.0%	7	2.1%
Mathematics	13	2.0%	5	1.5%
Biological & physical sciences	45	7.0%	65	19.3%
Public administration & international affairs [e]	65	10.1%	9	2.7%
Social sciences [f]	73	11.4%	51	15.1%
Not classified [g]	97	15.1%	29	8.6%
Total	*642*	*100.0%*	*337*	*100.0%*

[a] Examples of business master's degrees are Master's of Accountancy, Master's of Human Resources Management, Master's of Industrial Management or Relations (not MBAs, however); terminal degree examples are Doctorate of Business, PhD in Finance, PhD in Marketing
[b] Example of health master's degree is master's in public health; terminal degree examples are MDs, D.O.
[c] Examples of legal master's degrees are LLM, Master's in Tax Law (not JDs, however)
[d] Examples of liberal arts and humanities are English, history, languages, philosophy
[e] Public administration & international affairs also includes Public Policy
[f] Examples of social sciences are economics, psychology, sociology, political science
[g] Not classified are those executives whose biographies stated that they hold a master's or doctoral degree without specifying the field

Summary of Descriptive Results

The sample of executives had high levels of postsecondary attainment, and in several cases, those in the corporate elite had even higher levels although this depended on the specific subgroup. CEOs had especially high levels of MBA attainment but relatively lower levels of JDs, other master's and doctoral degrees. Multiple directors also had more MBAs, though not quite to the proportion of CEOs, but they had the largest

share of MBAs from top programs. Business association leaders had more JDs generally, and they had the largest share of JDs from top programs. Also, they held the highest proportion of other master's degrees and doctoral degrees.

Although a bachelor's degree was almost universal across all of the executive subgroups, association leaders were the most likely to have graduated from a Barron's top tier school as well as the highest average Gourman ranking. Single directors held the highest proportion of degrees from schools in the top eleven according to Gourman. Senior managers were the least likely to have earned bachelor's degrees from top Barron's or Gourman schools. When I disaggregated alma maters into specific schools, those considered to be elite by most classification schemes were most common among CEOs, directors, and association leaders although no single school dominated. The senior managers' undergraduate alma maters appeared to be comparatively more diverse.

Replication Results

The research question guiding this section is *how has the relationship between postsecondary attainment and membership in the corporate elite changed between 1977 and 2010?* Useem and Karabel were dually interested in social class background and education, but I focus primarily on the postsecondary findings. I begin by comparing the overall levels of attainment in 1977 to 2010, then describe patterns of attainment among CEOs, multiple directors, and business association members. Finally, I replicate the multivariate portion of the analysis using Ordinary Least Squares regression as did the prior study, and I also estimate the same models using logistic regression.

Postsecondary Attainment: Full Sample Descriptive Comparison

The comparison in Table 4.11 clearly demonstrates the expansion in degree attainment that has occurred among top executives over the past thirty years. In 1977, over sixteen percent of the sample did not have a bachelor's degree, in contrast to two percent in 2010. Also, 30.3 percent of the current sample held only a bachelor's degree compared to approximately 40 percent in 1977. Roughly two thirds of the 2010 executives had at least one graduate degree – 35.1 percent had an MBA, 17.5 percent had a law degree, and 22.8 percent had another type of master's, doctoral, or professional degree. In contrast, less than half of the 1977 executives had at least one graduate degree – 17.1 percent had an MBA, 17.4 percent had a law degree, and 10.1 percent had another type of master's, doctoral, or professional degree. The expansion in degree attainment, therefore, was most evident in MBA and other graduate degrees.

Focusing more closely on the institutions from which executives earned their degrees, the same proportion earning bachelor's degrees only from lesser colleges or

universities was unchanged from 1977 to 2010 (i.e., 27.6%). Only 2.7 percent of the executives in 2010 held a bachelor's degree only from a top ranked college, while this was the case for 11.2 percent of the 1977 executives. This finding does not necessarily indicate executives in 2010 were no longer attending top undergraduate institutions, because 15.9 percent of those who were college graduates (n=505) earned their degrees from one of the Gourman ranked schools (see Table 4.2). However, 81 percent of these top college BA holders went on to earn one or more graduate degrees. In contrast, of the 3,120 executives who graduated from a lower ranked school, 67.1 percent obtained one or more graduate degrees. Relatively more of the 2010 executives who earned their bachelor's degrees from one of the top eleven schools continued on to additional study, therefore, compared to those from lower ranked schools. This information is not given for the 1977 study but offers one possible explanation for the decline between 1977 and 2010 in the "BA only, top college" group.

There was clearly an expansion in the proportion of executives who earned MBA degrees over the thirty year period, and much of the growth comes from attendance at programs outside of the top eleven. In 1977, only 3.0 percent of the total held MBAs from these schools, in contrast to 19.3 percent in 2010. A slightly higher proportion of the current executives also graduated from top MBA programs (16.8%) compared to the past (14.1%). The overall percentage of law program graduates remained the same, though slightly fewer in 2010 earned their degrees from top ranked schools (6.5%) compared to the executives in 1977 (7.4%).

Table 4.11
Study replication: Descriptive comparison of postsecondary attainment for full sample

University Background	1977 Study		2010 Study	
	N	Pct	N	Pct
No college[a]	291	10.7%	73	2.0%
College drop-out[a]	161	5.9%		
BA only, lesser college	753	27.6%	1002	27.6%
BA only, top college	306	11.2%	97	2.7%
MBA, lesser program[b]	81	3.0%	699	19.3%
MBA, top program[b]	385	14.1%	608	16.8%
Law, lesser program[b]	274	10.0%	398	11.0%
Law, top program[b]	203	7.4%	235	6.5%
Other graduate degree[b]	275	10.1%	825	22.8%
Total	*2,729*	*100.0%*	*3,625*	*100.0%*

Note. Data for 1977 study reproduced from Useem and Karabel (1986) Table 1, p. 188.
[a] No college and college drop-outs combined for 2010.
[b] In 2010, 60 executives (1.7% of the total sample) possessed both law and MBA degrees. For the 1977 study, the authors observed, "these groups are generally mutually exclusive. In those several instances when both business and law degrees had been earned, the manager was classified as holding the latter." (p. 188). For consistency, I therefore coded these 60 as having a law degree only for the replication analyses in this section. In addition, 85 executives who held a law degree also had another non-MBA graduate degree and 138 executives who held an MBA also had another non-law graduate degree. These executives I assigned to law or MBA, not in the "other graduate degree" group.

Postsecondary Attainment: Corporate Elite Descriptive Comparison

Whether the shifts in degree attainment observed for the full sample of executives held for those in the corporate elite is the focus of this section. Table 4.12 is a crosstabulation of degree attainment for CEOs, multiple directors, and business association members in 1977 and the corresponding results for 2010. Each cell displays the proportion of the executive subgroup represented in the corresponding column that possesses the characteristic for that row. For example, in 1977, of all executives in the study who did not have a college degree, 26.5 percent were CEOs. This finding is more meaningful when compared to the first row, which indicates that 38.9 percent of the full sample were CEOs. Therefore, CEOs were underrepresented in the group of executives without bachelor's degrees in 1977. My discussion here is organized by each of the three

corporate elite subgroups and pays special attention to contrasting the 1977 findings regarding executives' postsecondary attainment to those from 2010.

CEO comparison.

Only two percent of all executives in 2010 did not possess a bachelor's degree. However, as the "no college" row in Table 4.12 suggests, CEOs were disproportionately more likely to be part of this group; 13.7 percent had less than a four-year college education although they comprised only 8.8 percent of the full sample. This is a reversal from 1977, when 38.9 percent of the sample were CEOs but only 26.5 percent of those with less than a BA were CEOs.

The undergraduate degree patterns of CEOs were also different in 2010 compared to 1977. A finding emphasized by Useem and Karabel was just over half of all executives who earned a bachelor's degree only from a top college were CEOs (51.6%), though they comprised 38.9 percent of the total sample. In 2010, this clear pattern was no longer apparent. While CEOs made up 8.8 percent of the sample, they comprised 10.3 percent of the executives in "BA only, top college," a 1.5 percent margin of difference that is certainly narrower than the 12.7 percent observed in 1977.

In 1977, chief executives also represented a disproportionate percentage of MBA holders from top programs, as 44.9 percent of these executives were CEOs. However, in 2010, an even smaller gap than the "BA only" pattern was observed for CEOs who hold MBAs from top programs; they made up 9.9 percent of this group for a 1.1 percent margin of difference in contrast to 6.0 percent in 1977. For law degrees from ranked programs, CEOs in 2010 held less than their relative share of the overall sample (7.2%), though in 1977 CEOs had 6.4 percent more than their representation in the sample.

Useem and Karabel's conclusion from their data reproduced in Table 4.18 was "the attributes acquired in a top liberal arts program, top MBA program, or top law school all apparently provide resources that facilitate the final upward climb [to CEO]" (p. 196). These statistics suggest this is no longer the case. CEOs in 2010 were less likely to hold a disproportionate share of top bachelor's degrees alone, top MBA degrees, or top law degrees compared to other senior managers and directors.

Multiple director comparison.

Although the postsecondary attainment of CEOs relative to other executives changed from 1977 to 2010, fewer differences were evident across the other two corporate elite groups. Multiple directors were less likely to be among the executives who were not college graduates in 1977, as well as those who held a BA degree only from a lesser program, and the same was true in 2010. Multiple directors were more likely to be among the executives who had a BA degree only from a ranked program as well as an MBA from a ranked program, and the same was true in 2010. The most notable change in the attainment patterns of multiple directors from 1977 to 2010 was the proportion with law degrees from top programs. Multiple directors in 1977 held more top law degrees (36.0%) in proportion to their representation in the overall sample (25.9%). This pattern was reversed in 2010, as 16.3 percent of multiple directors held law degrees from top schools though they represented 20.5 percent of the overall sample.

Business association comparison.

Business association representatives comprised 8.8 percent of the full sample but only 1.4 percent of those without a bachelor's degree, a pattern consistent with the 1977 results. That year, they were 18.4 percent of the sample but only 4.5 percent of the

group that did not graduate from college. Of all levels of degree attainment, association leaders were relatively overrepresented among those who earned ranked law degrees in both years. Though they comprised 8.8 percent of the full 2010 sample, they represented 16.6 percent of top law graduates. In 1977, they were 18.4 percent of the sample and 25.6 percent of top law graduates. Also, association leaders were slightly overrepresented among MBA recipients from top programs in 1977 (23.4%) as well as 2010 (11.3%).

Table 4.12.
Study replication: Descriptive comparison of postsecondary attainment for corporate elite

University Background	1977 Study			2010 Study		
	CEOs	Multiple Directors	Assoc.	CEOs	Multiple Directors	Assoc.
All managers	38.9%	25.9%	18.4%	8.8%	20.5%	8.8%
No college	26.5%	9.6%	4.5%	13.7%	15.1%	1.4%
BA only, lesser college	36.4%	20.5%	14.9%	10.1%	18.2%	6.6%
BA only, top college	51.6%	37.9%	22.5%	10.3%	22.7%	6.2%
MBA, top program	44.9%	29.6%	23.4%	9.9%	27.9%	11.3%
Law, ranked program	45.3%	36.0%	25.6%	7.2%	16.3%	16.6%
MBA, lesser program				11.1%	20.8%	8.1%
Law lesser program				6.5%	20.9%	6.5%
Other graduate degree				5.9%	24.5%	12.9%

Note. Data for 1977 study reproduced from Useem and Karabel (1986) Table 2, p. 190 and Table 6, p. 195. I added the final three rows for the 2010 study to give a more complete picture of the contemporary executives' schooling, but that information was not published in the 1977 study.

Replication: Predictors of Membership in the Corporate Elite

To better understand the unique "advantaging effects" of executives' education and other background characteristics, Useem and Karabel created three linear regression models using educational background, social origins and company position as predictors of the chances that an executive would be a CEO, multiple director, or business association member. An important methodological point to reiterate is the prior study

relied on a linear regression technique for these estimates, though the binary distributions of the dependent variables call for the use of logistic regression. Table 4.13 presents an ordinary least squares estimate for the 2010 executives juxtaposed with the results of the 1977 linear regression.[31] Tables 4.14, 4.15, and 4.16 have logistic regression estimates for the odds an executive is a CEO, multiple director, and association member, respectively. My discussion of the results here contrasts the linear regressions, and I also note the instances where the 2010 logistic estimates diverged from the OLS.

There are a few key differences between linear and logistic regressions in terms of interpreting the results. Model fit is an important consideration; in other words, to what degree the statistical model accurately represents the observed data (Field, 2009). In linear regression, the R^2 represents the percent of variance in the dependent variable that is explained by the included independent variables. Assessing model fit for a nonlinear probability model is less straightforward, and there are a number of fit statistics including the chi square likelihood ratio test, log likelihood comparisons, pseudo-R^2, Akaike's Information Criterion (AIC) and Bayesian Criterion (BIC) (Long & Freese, 2006). Comparing the log likelihood for the intercept to the log likelihood for the full model will indicate whether the model better estimates the population parameters when all independent variables are included than when no independent variables are included. If the log likelihood is closer to zero in the final iteration compared to the first iteration, the fit is relatively better. The McFadden's pseudo R^2 does not have the same meaning as an OLS R^2; it offers a rough approximation of fit. If greater than zero, the full model fits the data better than the intercept-only model (a similar conclusion to the change in log likelihood). Finally, AIC and BIC are useful for comparing the fit of one model to

[31] The bivariate correlation matrix for all of the variables in this section is in Appendix C.

another. BIC is slightly more conservative than AIC, but low values of both are desired. A model with a lower AIC or BIC will fit the data better than a model with higher values (Field, 2009).

Interpreting the relationship between each independent variable in a logistic regression model is similarly more complex than for linear regression. The metric for linear regression coefficients is the metric of the dependent variable, while the metric for raw logistic regression coefficients is "log odds." When the log odds for a given independent variable have a positive sign, the variable increases the likelihood of the dependent variable occurring. When the log odds are negative, the variable decreases the likelihood of the dependent variable occurring. In addition to the coefficients, odds ratios are an alternative metric often used for interpreting the independent variables. Any odds ratio above one indicates that an independent variable has a positive influence, and vice versa for a negative odds ratio. In all tables, I include both raw coefficients (column labeled "b") and odds ratios (column labeled "odds ratio"). When discussing the results, however, I use odds ratios because "a change of β_k [the unique effect of independent variable k on the dependent variable] in the log odds has little substantive meaning for most people" (Long & Freese, 2006, p. 177).

Predictors of being a CEO

In 1977, four postsecondary variables were significantly associated with being a chief executive. Compared to executives without postsecondary degrees, those who held a bachelor's degree only from a lesser college were 0.08 more likely to be a CEO, those who held a bachelor's degree only from a top college were 0.184 more likely to be a CEO, those with a top MBA were 0.120 more likely to be a CEO, and those with top law degrees were 0.072 more likely to be a CEO.

In 2010, no variables emerged as a significant distinction between the CEOs and any other top executive in the sample according to the OLS model in Table 4.13 ($F_{10, 3612}=2.03$; $p<.05$). However, the logistic regression estimate in Table 4.14 ($\chi^2_{10, 3612}=28.36$; $p<.01$) indicated that holding a JD from a lesser program (compared to no JD at all) significantly reduced the odds an executive would be a CEO by 57 percent and holding another type of graduate degree (compared to no graduate degree) reduced the odds by 61 percent. No other variables in the CEO logistic regression reached statistical significance.

Table 4.13.
Study Replication: Predictors of membership in the corporate elite

	CEOs				Multiple Directors				Association Leaders			
	1977		2010		1977		2010		1977		2010	
	beta	p	beta	p	beta	p	beta	p	beta	p	beta	p
Educational background												
BA only, lesser college	.084	*	.003		.080	*	.133	**	.068		.084	**
BA only, top college	.184	**	.012		.138	**	.160	**	.045		.062	
MBA, lesser program [a]			.017				.167	**			.096	**
MBA, top program	.120	**	.005		.099	**	.184	**	.086	*	.130	**
Law, lesser program [a]			-.029				.120	*			.100	**
Law, top program	.072	**	-.021		.183	**	.161	**	.121	**	.193	**
Other graduate degree [a]			-.036				.193	**			.155	**
Upper social origins	.012		-.028		.143	**	.116		.086	**	.091	*
Interaction terms												
Lesser BA, top MBA	.051		-.003		.014		.057		.009		-.010	
Lesser BA, top family	.191	**	.093		.028		-.106		-.015		-.104	*
Business position												
Chief executive	-	-	-	-	.243	**	-.037		.150	**	.371	**
Multiple director	-	-	-	-	-	-	-	-	.240	**	.057	**
Multiple correlation coef.	.175	**	.075	*	.365	**	.120	**	.372	**	.398	**
Multiple R squared	.031		.006		.133		.014		.138		.159	
N	1,993		3,622		1,993		3,622		1,993		3,622	

* p<.05; ** p<.01 (this is the same p-value standard used by prior study)
Note. Data for 1977 study reproduced from Useem and Karabel (1986) Table 7, p. 197.
[a] The educational background independent variables indicated are those used in the 1977 study. Their tables do not include controls for "MBA, lesser program," "law, lesser program," or "other graduate degree" although each of these are part of their descriptive statistics and they footnote information about the effect of a "lesser ranked" program. Without these controls, the individuals holding the degrees are part of the reference group (e.g., the effect of a "top MBA" would be compared to "no MBA" & "lesser MBA" together), so I included them in my analysis.

Table 4.14.
Study Replication: Predictors that an executive will be a CEO using logistic regression

	b	SE	Odds Ratio	Sig.
Educational background				
BA only, lesser college [a]	-0.385	0.482	0.755	
BA only, top college [a]	-0.280	0.357	0.681	
MBA, lesser program [b]	-0.262	0.430	0.742	
MBA, top program [b]	-0.298	0.363	0.770	
Law, lesser program [c]	-0.844	0.397	0.430	*
Law, top program [c]	-0.719	0.424	0.487	
Other graduate degree [d]	-0.943	0.382	0.390	*
Upper social origins	-0.438	0.620	0.645	
Interaction terms				
Lesser BA, top MBA	-0.128	0.295	0.880	
Lesser BA, top family	1.038	0.705	2.823	
Business position				
Chief executive	-	-	-	
Multiple director	-	-	-	
BIC	-28889			
AIC	0.595			
Log likelihood: intercept only	-1129.9			
Log likelihood: full model	-1115.7			
McFadden's Pseudo R-square	0.013			
N	3,622			

* p<.05; ** p<.01; *** p<.001
Note. Collinearity statistic: highest VIF was 6.8 for MBA lesser.
Independent errors statistic: Durbin-Watson = 1.96.
[a] Reference group is "No BA"
[b] Reference group is "No MBA"
[c] Reference group is "No JD"
[d] Reference group is "No other graduate degree"

Predictors of being a multiple director.

All postsecondary variables significantly increased an executive's odds of being a multiple director in 1977. Those with a lesser BA only had a 0.08 higher probability, with a ranked BA only had a 0.138 higher probability, with a top MBA had a 0.099 higher probability, and with a top law degree had a 0.183 higher probability. Using an

ordinary least squares estimation, the same significant patterns were observed in 2010 ($F_{11, 3611}$=4.77; p<.001). Holding only a lesser BA increased an executive's chances by 0.133, holding a ranked BA increased the chances by 0.160, holding a lesser MBA increased the chances by 0.167, holding a top MBA increased the chances by 0.184, holding a lesser law degree increased the chances by 0.120, holding a top law degree increased the chances by 0.161, and holding another graduate degree increased the chances by 0.193.

Comparing the magnitudes of these coefficients, Useem and Karabel noted a top law degree had the single largest effect size on being a multiple director in 1977. In 2010, this was no longer true. Of all types of credentials considered here, multiple directors were most likely to hold another form of master's, professional, or doctoral degree. An MBA from a top program was the next largest coefficient in 2010. This also runs a bit contrary to the 1977 study's observation that the "BA only, top college" coefficient was relatively larger than the "MBA top program" coefficient.

However, an important point to note is that most of these relationships lost significance in the logistic regression estimates in Table 4.15, including the BA only measures, MBA measures, top JD, and other graduate degree ($\chi^2_{11, 3611}$=79.01; p<.001). The only postsecondary variable that was significant was a JD from a lower ranked program, and the direction of the relationship shifted from positive in the OLS estimate to negative here. All else held constant, it reduced the odds that an executive would be a multiple director by 28.7 percent.

Table 4.15.
Study Replication: Predictors that an executive will be a multiple director using logistic regression

	b	SE	Odds Ratio	Sig.
Educational background				
BA only, lesser college [a]	-0.098	0.196	0.907	
BA only, top college [a]	-0.201	0.103	0.818	
MBA, lesser program [b]	0.119	0.152	1.126	
MBA, top program [b]	-0.026	0.127	0.974	
Law, lesser program [c]	-0.339	0.158	0.713	*
Law, top program [c]	-0.066	0.178	0.936	
Other graduate degree [d]	0.160	0.108	1.174	
Upper social origins	0.613	0.325	1.847	~
Interaction terms				
Lesser BA, top MBA	0.282	0.199	1.326	
Lesser BA, top family	-0.558	0.436	0.573	
Business position				
Chief executive	-0.274	0.153	0.760	~
Multiple director	-	-	-	
BIC	-27350.2			
AIC	1.00			
Log likelihood: intercept only	-1920.8			
Log likelihood: full model	-1881.2			
McFadden's Pseudo R-square	0.021			
N	3,622			

~ p<.10; * p<.05; ** p<.01; *** p<.001
Note. Collinearity statistic: highest VIF was 6.8 for MBA lesser.
Independent errors statistic: Durbin-Watson = 1.69.
[a] Reference group is "No BA"
[b] Reference group is "No MBA"
[c] Reference group is "No JD"
[d] Reference group is "No other graduate degree"

Predictors of being business association leader.

Of the three models, this had the best overall fit, explaining 15.9 percent of the variation in business association leadership ($F_{12, 3610}$=56.63; p<.001). This is even higher than the multiple R square in 1977 of 13.8 percent. In the ordinary least squares model, all but one of the individual postsecondary coefficients were significantly associated

higher chances of being an association leader. An executive who earned a bachelor's degree only from a top college was not any more likely to be part of an association than an executive without a bachelor's degree. This was also the case in 1977. Nor was there a statistically significant relationship with having a lesser bachelor's degree only in 1977, though in 2010 this increased the odds that an executive would be an association leader (b=0.084). Otherwise, in both years, holding an MBA from a top program (b=0.130 in 2010; b=0.086 in 1977) or a law degree from a top program (b=0.193 in 2010; b=0.121 in 1977) increased the likelihood that an executive would be an association leader. Also consistent in both years: the law coefficient was relatively larger than the MBA coefficient.

Patterns in the non-postsecondary variables were similar from 1977 to 2010 as well. Executives from the upper class background were more likely to be in the business associations in 2010 (b=0.091) and in 1977 (b=0.086). Also, executives who were CEOs or multiple directors were more likely to be in a business association in 1977 and in 2010 than those not in these alternative representations of corporate power.

As Table 4.16 illustrates, the logistic estimation again changed the results somewhat ($\chi^2_{12, 3610}$=421.17; p<.001). The sign switched on the lower ranked bachelor's degree coefficient; here, executives were 59.5 percent less likely to be in an association. A top law degree increased odds of being in an association by over 200 percent, though lower ranked law degrees were not significant. Nor was either MBA variable. Another type of graduate degree, however, significantly increased the odds by 118 percent.

Table 4.16.

Study Replication: Predictors that an executive will be member of business association using logistic regression

	b	SE	Odds Ratio	Sig.
BA only, lesser college [a]	-0.905	0.385	0.405	*
BA only, top college [a]	-0.246	0.183	0.787	
MBA, lesser program [b]	-0.049	0.218	0.952	
MBA, top program [b]	0.350	0.241	1.419	
Law, lesser program [c]	-0.026	0.263	0.974	
Law, top program [c]	1.099	0.240	3.003	***
Other graduate degree [d]	0.778	0.179	2.177	***
Upper social origins	1.035	0.430	2.814	*
Interaction terms				
Lesser BA, top MBA	0.006	0.302	1.006	
Lesser BA, top family	-1.270	0.634	0.281	*
Business position				
Chief executive	2.732	0.144	15.367	***
Multiple director	0.715	0.141	2.044	
BIC	-29265.8			
AIC	0.492			
Log likelihood: intercept only	-1129.9			
Log likelihood: full model	-919.3			
Pseudo R-square	0.186			
N	3,622			

* p<.05; ** p<.01; *** p<.001

Note. Collinearity statistic: highest VIF was 6.8 for MBA lesser.
Independent errors statistic: Durbin-Watson = 1.99.

[a] Reference group is "No BA"

[b] Reference group is "No MBA"

[c] Reference group is "No JD"

[d] Reference group is "No other graduate degree"

Summary of Replication Results

Three key conclusions from the prior study are listed below, and I assess the degree to which they applied to executives in 2010.

1. *"Corporate ascent is facilitated by the possession of a bachelor's degree from a top-ranked college, a master's degree in business administration from a*

prominent program, or a degree in law from a leading institution" (Useem & Karabel, 1986, p. 184).

In other words, the odds of being a CEO compared to any other senior level corporate position were higher when an executive had a BA only from a top institution, a ranked MBA, or a ranked law degree. This finding did not hold in 2010. None of the variables representing educational degree attainment were statistically significant in the ordinary least squares model. In the logistic regression, holding a lesser law degree or another graduate degree were *negatively* associated with being a CEO (Table 4.14).

2. *"Controlling for educational credentials, an upper-class background increases the likelihood of rising to the top ranks of corporate management" (Useem & Karabel, 1986, p. 184).*

Useem and Karabel did not find a significant relationship between social origins and likelihood of being CEO, but there was a positive association between an upper class background and being a multiple director or a member of a business organization. In 2010, these relationships held in the OLS and the logistic models. Multiple directors were 84.7 percent more likely to be from socially prominent families (Table 4.15), and representatives of key business organizations were 181 percent more likely (Table 4.16).

3. *"The impact of a law degree and an upper-class origin are most pronounced for successful movement beyond the firm into formal and informal inter-corporate networks" (Useem & Karabel, 1986, p. 184).*

In other words, the coefficients for "law, top program" and "upper social origins" were statistically significant and relatively larger in magnitude for multiple directors and business association members compared to CEOs. This finding was still true for business association leaders in 2010 in the OLS (Table 4.13) as well as the logistic estimates (Table 4.16). A top law degree increased executives' odds of membership more than any

other postsecondary variable, and an upper class family background increased an executive's odds, though to a lesser magnitude. However, the 2010 results for multiple directors were less pronounced. The OLS model indicated holding a top law degree did increase someone's chances of having two or more director positions (Table 4.13), but this was not statistically significant in the logistic regression model (Table 4.15).

Refinement Results

The analyses presented here refine the models in the prior section with three changes. I added controls for age, gender, and race and tested the interactions of these variables with postsecondary education; I changed the undergraduate degree distinction from the Gourman measure to Barron's admissions selectivity categories; and I added models comparing CEOs to other internal executives only and multiple directors to single directors only (in addition to comparisons to the full sample). In all of the models, which are logistic regression estimates,[32] I adjusted the standard errors for company affiliation and I entered the variables in two blocks. The first block was the postsecondary variables alone, then I added demographics in order to illustrate how the direct postsecondary relationships change when controls were included. The research question is: *Is postsecondary attainment related to the chances an executive will be part of the corporate elite?*

Predictors of being a CEO

In the logistic regression that replicated Useem and Karabel's analysis, two postsecondary variables were significant (Table 4.14). Having a top JD or another type of graduate degree each reduced an executive's odds of being CEO. After refining the model, holding another graduate degree was the only statistically significant

[32] The correlation matrix is in Appendix C.

postsecondary variable initially, reducing the odds of being CEO by 36.2 percent (Table 4.17, "full sample" column). When the demographic controls were added, however, CEOs did not differ from the rest of the sample on any postsecondary characteristics ($\chi^2_{13, 3031}$=23.54 p<.05). There were several statistically significant differences in demographic characteristics. CEOs had 97.7 percent higher odds of being white and 80.1 percent lower odds of being female. Also, for every year decrease in age, an executive's chances of being a CEO increased by 3.9 percent.

The second set of results in Table 4.17 ("internal executives only" column) compared CEOs to other top internal executives[33] ($\chi^2_{13, 1780}$=33.50 p<.01). When single or multiple directors were removed, several variables changed in significance and/or magnitude. In terms of demographics, gender remained statistically significant though the effect size was reduced. CEOs were 69 percent less likely to be female compared to other internal executives. The variable proxying race/ethnicity was no longer significant, but social class became significant. CEOs were 130 percent more likely to be from an upper class family background. Also, while age remained significant, the direction of the relationship reversed, as CEOs were significantly older than the other internal executives in their firms. For every year decrease, an executive's chances of being a CEO diminished by 11.2 percent.

CEOs significantly differed from other executives within their firms on several aspects of postsecondary attainment as well. Those with an MBA from a top program were 65.2 percent more likely than those without an MBA to be a CEO, , though no

[33] Examples of the positions held by the comparison group in these analyses were executive vice presidents, group vice presidents, Chief Financial Officers, General Counsels and Chief Legal Officers, company president if this person differed from the CEO, Chief Operating Officers, Chief Information Officers, and other high level positions identified on the most recent 10-K statements.

differences were observed between executives with MBAs from lesser-ranked programs compared to no MBA at all. Executives with a JD from a lesser program compared to no law degree at all were 48.1 percent less likely to be a CEO. The only measure of undergraduate degree selectivity that was statistically significant in the final block was the middle tier of Barron's ranking compared to the top tier. Executives who had a BA from a school characterized as "Competitive" were 40.3 percent less likely to be CEO than someone with a "Most Competitive" BA.

Table 4.17.
Study refinement: Predictors that an executive will be a CEO

	Full sample								Internal executives only							
	Block One				Block Two				Block One				Block Two			
	B	SE	OR	Sig.	B	SE	OR	Sig.	B	SE	OR	Sig.	B	SE	OR	Sig.
Demographics																
Female					-1.613	0.290	0.199	***					-1.170	0.301	0.310	***
White					0.681	0.004	1.977	**					0.218	0.287	1.244	
Year of Birth [a]					0.038	0.005	1.039	***					-0.119	0.013	0.888	***
Upper Class					0.123	0.312	1.131						0.835	0.416	2.305	*
Postsecondary Education																
BA, Barron's Highly [b]	-0.064	0.215	0.938		-0.154	0.222	0.857		-0.357	0.233	0.700		-0.348	0.261	0.706	
BA, Barron's Very [b]	-0.183	0.212	0.833		-0.250	0.223	0.779		-0.484	0.231	0.616	*	-0.476	0.260	0.621	
BA, Barron's Competitive [b]	-0.206	0.206	0.814		-0.292	0.214	0.747		-0.623	0.224	0.537	**	-0.516	0.250	0.597	*
BA, Barron's Less [b]	0.139	0.219	1.149		0.182	0.226	1.200		-0.190	0.242	0.827		-0.056	0.269	0.945	
BA, Barron's Non-Comp [b]	-0.099	0.402	0.906		-0.148	0.418	0.862		-0.464	0.427	0.628		-0.290	0.457	0.749	
BA, Not listed in Barron's [b]	0.002	0.230	1.002		-0.066	0.240	0.936		-0.175	0.259	0.839		0.005	0.303	1.005	
BA, International [b]	-0.193	0.245	0.825		-0.108	0.245	0.898		-0.776	0.260	0.460	**	-0.539	0.278	0.583	
Less than BA	0.342	0.382	1.408		0.409	0.391	1.505		0.250	0.429	1.284		0.459	0.502	1.582	
MBA, lower ranked	0.251	0.152	1.285		0.142	0.164	1.152		0.081	0.161	1.084		0.103	0.184	1.109	
MBA, Business Week top	0.096	0.168	1.101		0.077	0.178	1.080		0.298	0.186	1.348		0.502	0.213	1.652	*
JD, lower ranked	-0.377	0.220	0.686		-0.219	0.230	0.804		-0.594	0.229	0.552	**	-0.657	0.249	0.519	**
JD, US News top	-0.304	0.276	0.738		-0.169	0.272	0.844		-0.368	0.299	0.692		-0.480	0.320	0.619	
Other graduate degree	-0.449	0.163	0.638	**	-0.269	0.172	0.764		-0.016	0.176	0.984		-0.201	0.195	0.818	
BIC	-27398.4				-24868.1				-10907.0				-9383.44			
AIC	0.609				0.602				0.978				0.915			
Log likelihood: intercept only	-1100.6				-1046.6				-833.78				-769.76			
Log likelihood: full model	-1088.8				-983.6				-817.03				-661.01			
McFadden's Pseudo R-square	0.011				0.060				0.02				0.141			
N	3,044				3,044				1,793				1,793			

* p<.05; ** p<.01; *** p<.001

Note. Collinearity statistic: highest VIF = 1.8 for Barron's Competitive. Independent errors statistic: Durbin-Watson = 1.95.

[a]Year of birth is a continuous variable that represents the year an executive was born. A negative b coefficient or odds ratio below 1.0 for this variable indicates that as year of birth increases (i.e., an executive is younger), the chances of being in an association decrease.

[b]Reference group is "BA, Barron's Most Competitive"

Predictors of being a Multiple Director

A number of characteristics distinguished multiple directors from all other executives (Table 4.18, full sample columns; $\chi^2_{13, 3031}$=66.96 p<.001). In the logistic regression that replicated Useem and Karabel's study (Table 4.15), only a law degree from a lower ranked program was significant; it was associated with reduced chances of being a multiple director. Prior to controlling for demographic characteristics, a JD from a lesser-ranked university was again associated with 25.4 percent lower odds of being a multiple director, but this lost significance in the full model. However, holding a top JD was associated with 32.8 percent lower odds of being a multiple director when demographics were added. Also in the full model, executives who held a BA from a school not listed in Barron's 1966 edition were 59.3 percent less likely than graduates of a Most Competitive school to be multiple directors. Compared to those without an MBA, executives with an MBA from a lesser school had 30.4 percent higher odds of being a multiple director, and executives with an MBA from a top school had 53.1 percent higher odds. The "other graduate degree" variable was associated with 38.3 percent higher odds of being a multiple director in the first block, but it lost significance and the sign turned negative when the demographics were added.

For every year decrease in age, an executive was eight percent less likely to be a multiple director. Someone who was female was 54.8 percent more likely to be a multiple director, and someone who was white is 65.8 percent less likely. This finding might appear counterintuitive at first read, but it's important to keep in mind the full sample was predominantly white and male. The few women and non-whites that make it to the upper

executive ranks (and are part of this sample) were disproportionately more likely have connections with more than one company.

The second set of results in Table 4.18 ("directors only" column) compared multiple directors to single directors, removing internal senior executives not in an external oversight position from consideration ($\chi^2_{13, 2297}$=45.96 p<.001). There were fewer differences between multiple directors and single directors. The same undergraduate variable that was significant in the full sample model also emerged here; directors who held a BA from a school not listed in Barron's were 69.0 percent less likely to be multiple directors than graduates of a Most Competitive school. Multiple directors were also 28.0 percent more likely to have a lower ranked MBA and 31.7 percent more likely to have top MBA than single directors. While multiple directors were still less likely to be white (odds were only one percent, however) and older (1.5 percent lower odds associated with every year younger), gender was no longer statistically significant.

Table 4.18.
Study refinement: Predictors that an executive will be a multiple director

	Full sample								Directors only							
	Block One				Block Two				Block One				Block Two			
	B	SE	OR	Sig.	B	SE	OR	Sig.	B	SE	OR	Sig.	B	SE	OR	Sig.
Demographics																
Female					0.437	0.117	1.548	***					0.061	0.126	1.063	
White					-0.817	0.003	0.442	***					-0.010	0.003	0.990	***
Year of Birth [a]					-0.083	0.006	0.920	***					-0.015	0.006	0.985	*
Upper Class					-0.087	0.249	1.000						-0.232	0.243	0.793	
Postsecondary Education																
BA, Barron's Highly [b]	-0.070	0.144	0.932		0.114	0.158	1.120		0.126	0.161	1.134		0.124	0.165	1.132	
BA, Barron's Very [b]	-0.109	0.140	0.896		0.037	0.152	1.037		0.036	0.155	1.037		0.064	0.159	1.066	
BA, Barron's Competitive [b]	-0.120	0.136	0.887		0.157	0.149	1.170		0.121	0.152	1.129		0.186	0.158	1.204	
BA, Barron's Less [b]	-0.203	0.158	0.816		-0.120	0.176	0.886		-0.001	0.175	0.999		0.038	0.185	1.039	
BA, Barron's Non-Comp [b]	-0.213	0.290	0.808		0.030	0.276	1.031		0.056	0.331	1.058		0.147	0.328	1.158	
BA, Not listed in Barron's [b]	-0.971	0.190	0.379	***	-0.899	0.206	0.407	***	-0.914	0.210	0.401	***	-0.892	0.220	0.410	***
BA, International [b]	-0.262	0.167	0.769		-0.019	0.182	0.982		-0.011	0.180	0.989		0.045	0.186	1.046	
Less than BA	-0.581	0.361	0.560		-0.502	0.385	0.606		-0.686	0.381	0.504	~	-0.585	0.387	0.557	
MBA, lower ranked	0.077	0.115	1.080		0.266	0.122	1.304	*	0.231	0.133	1.260	~	0.247	0.136	1.280	~
MBA, Business Week top	0.384	0.115	1.468	**	0.426	0.125	1.531	**	0.245	0.128	1.278	~	0.275	0.131	1.317	*
JD, lower ranked	-0.293	0.148	0.746	*	-0.295	0.157	0.745		-0.080	0.169	0.923		-0.059	0.174	0.943	
JD, US News top	-0.113	0.178	0.893		-0.398	0.198	0.672	*	-0.221	0.193	0.802		-0.211	0.201	0.810	
Other graduate degree	0.324	0.100	1.383	**	-0.036	0.111	0.965		-0.054	0.110	0.947		-0.089	0.114	0.915	
BIC	-25894.6				-23611.02				-13081.05				-12422.28			
AIC	1.024				0.980				1.310				1.310			
Log likelihood: intercept only	-1874.15				-1780.52				-1370.38				-1321.36			
Log likelihood: full model	-1840.66				-1612.19				-1347.41				-1286.99			
McFadden's Pseudo R-square	0.018				0.095				0.017				0.026			
N	3,044				3,044				2,310				2,310			

~ p<0.10; * p<.05; ** p<.01; *** p<.001

Note. Collinearity statistic: highest VIF = 1.8 for Barron's Competitive. Independent errors statistic: Durbin-Watson = 1.74.

[a] Year of birth is a continuous variable that represents the year an executive was born. A negative b coefficient or odds ratio below 1.0 for this variable indicates that as year of birth increases (i.e., an executive is younger), the chances of being in an association decrease.

[b] Reference group is "BA, Barron's Most Competitive"

Predictors of being Business Association Leader[34]

As Table 4.19 indicates, a number of postsecondary variables were significantly associated with being a business association leader, even after controlling for demographics ($\chi^2_{13, 3031}$=72.73; p<.001).

The replication results indicated possession of only a bachelor's degree from a top ranked school did not change the odds that an executive would be a business association representative while a lesser BA reduced executives' chances; the comparison group was executives without a bachelor's degree. When undergraduate degree source was redefined according to Barron's rather than Gourman's rankings in this analysis, statistically significant differences were again apparent. Even after controlling for demographics, compared to those who graduated from an undergraduate school ranked in the top Barron's category, executives with less than a bachelor's degree were 94.2 percent less likely to be an association leader, those with a BA from a school not listed in Barron's were 72.2 percent less likely, those with a BA from a less competitive school were 50.7 percent less likely, and Competitive were 54.6 percent less likely.

In the replication results, holding a top JD or another graduate degree each increased the chances of association leadership. Both remained statistically significant with the addition of the demographic controls. The odds were 80.7 percent higher that a

[34] The four business associations included in these results are the Committee on Economic Development, Council on Foreign Relations, Business Council, and Business Roundtable. Domhoff (2009) asserts that the business interests of the contemporary corporate community are protected and advocated for in the policymaking process by the National Association of Manufacturers, the U.S. Chamber of Commerce, the Conference Board, the Business Council, and the Business Roundtable. He also discusses the role that the Council on Foreign Relations plays in international policy but he explicitly cites the Committee on Economic Development as a group in decline. I created an updated association variable excluding the Committee on Economic Development and adding leaders from the National Association of Manufacturers, the U.S. Chamber of Commerce, and the Conference Board to the Council on Foreign Relations, Business Council, and Business Roundtable. However, none of the models with this updated association membership as the dependent variable changed in terms of the direction or significance of the coefficients, so I opted not to include the results separately.

top law graduate would be an association representative and 81.2 percent higher for someone with another type of graduate degree besides MBA or JD.

Association leaders were significantly older than the other executives in the sample; for every year decrease in age, an executive's odds of being in an association were reduced by 4.6 percent. Women were 46.6 percent more likely to be an association leader, though there were no differences in whether someone was white versus another racial/ethnic background. Although the results replicating Useem and Karabel's research indicated association leaders were more likely to be from upper social class origins (see Table 4.16), this variable was no longer significant with the additional demographics included.

Table 4.19.
Study refinement: Predictors that an executive will be business association leader

	Block One				Block Two			
	B	SE	Odds Ratio	Sig.	B	SE	Odds Ratio	Sig.
Demographics								
Female					0.428	0.164	1.534	*
White					-0.080	0.212	0.923	
Year of Birth [a]					-0.047	0.007	0.954	***
Upper Class					-0.135	0.300	0.874	
CEO					2.950	0.164	19.098	***
Multiple Director					0.443	0.147	1.558	**
Postsecondary Education								
BA, Barron's Highly [b]	-0.345	0.189	0.708		-0.325	0.214	0.723	
BA, Barron's Very [b]	-0.401	0.186	0.669	*	-0.377	0.210	0.686	
BA, Barron's Competitive [b]	-0.777	0.199	0.460	***	-0.789	0.228	0.454	**
BA, Barron's Less [b]	-0.574	0.219	0.563	**	-0.707	0.253	0.493	**
BA, Barron's Non-Comp [b]	-0.669	0.443	0.512		-0.686	0.491	0.504	
BA, Not listed in Barron's [b]	-1.210	0.271	0.298	***	-1.279	0.307	0.278	***
BA, International [b]	-0.598	0.232	0.550	**	-0.499	0.257	0.607	
Less than BA	-2.260	1.019	0.104	*	-2.854	1.057	0.058	**
MBA, lower ranked	0.107	0.168	1.113		0.049	0.192	1.050	
MBA, Business Week top	0.172	0.164	1.188		0.132	0.185	1.142	
JD, lower ranked	-0.273	0.221	0.761		-0.129	0.242	0.879	
JD, US News top	0.497	0.205	1.644	**	0.592	0.238	1.807	*
Other graduate degree	0.494	0.136	1.638	***	0.594	0.156	1.812	***
BIC	-27424.6				-24813.2			
AIC	0.602				0.619			
Log likelihood: intercept only	-1112.04				-1066.75			
Log likelihood: full model	-1075.69				-1011.10			
McFadden's Pseudo R-square	0.033				0.052			
N	3,044				3,044			

* p<.05; ** p<.01; *** p<.001

Note. Collinearity statistic: highest VIF = 1.8 for Barron's Competitive.
Independent errors statistic: Durbin-Watson = 1.96.

[a] Year of birth is a continuous variable that represents the year an executive was born. A negative b coefficient or odds ratio below 1.0 for this variable indicates that as year of birth increases (i.e., an executive is younger), the chances of being in an association decrease.

[b] Reference group is "BA, Barron's Most Competitive"

Interactions of Demographics with Postsecondary Education

For each of the models explained in this section, I tested whether the demographic effects varied according to an executive's educational attainment. These interactions were not significant for the most part, so for parsimony I did not create separate results tables but summarize the results here. The odds of leading an association were not associated with the interaction of demographics and postsecondary education. Nor were the odds of being a CEO compared to the remaining full sample of executives.

When I limited the sample to CEOs compared to internal senior managers only, however, the interaction of age and holding an undergraduate degree from a school in the highest Barron's tier was significant ($b=0.072$; $p<0.05$). The direct effect of age was significant, in that younger executives had higher odds of being CEOs (Table 4.17). The interaction suggests that having a top BA gives younger executives an even better chance of attaining a CEO position.

Similarly, I found an interaction between age and top Barron's tier for multiple directors ($b=0.040$, $p<0.01$) as well as age and possessing a graduate degree other than JD or MBA ($b=0.037$, $p<0.01$). The interpretation of these coefficients is the same as for the CEOs; younger executives were advantaged in their chances of becoming an outside director for two or more companies by holding a BA from a top school or earning an additional graduate degree. I also found a significant interaction of race and possessing another type of graduate degree for directors ($b= -0.482$, $p<0.05$), indicating that executives who were not white received an advantage from earning a graduate degree other than JD or MBA compared to executives who were white. This is only for the

comparison of multiple directors to all other executives; when limited to multiple compared to single outside directors only, there were no significant interaction terms.

Scholarship in the status attainment tradition supports the assumption that that an individual's ascriptive background and social-psychological makeup will interact with education, as some groups historically have benefited more from possessing an educational credential than others (Sewell, Hauser & Wolf, 1980). Wilson, Sakura-Lemessy and West (1999), for example, found the influence of some college or college completion on entry into upper tier management and professional occupations was stronger for African Americans than for whites. In these data, although the direct effects of race, gender and age were associated with membership in the corporate elite, the interactions with education were not significant, by and large. Perhaps the main advantages produced by education and specific to gender or race emerged earlier in the career process for the top executives studied here.

Summary of Refinement Results

Adding demographic controls to the logistic estimates, adjusting how the undergraduate degrees are represented, and refining the executive comparisons changed the results in several instances compared to the models that more closely replicated Useem and Karabel's work.

Representing undergraduate degrees with a three-category variable – distinguishing the top eleven schools from all other schools and comparing each to those with less than a four-year degree – resulted in only one significant difference in the study replication; executives with a lower ranked BA were less likely to be part of the corporate elite than those without a BA. However, adding more distinctions among undergraduate

schools as part of the refinement resulted in at least one significant difference for each of the three dependent variables, in each case favoring those who graduated from a top tier Barron's undergraduate school.

Multiple directors were more likely to have any type of MBA (compared to all other executives as well as to single directors only), and CEOs were more likely to have top ranked MBAs (compared to other internal executives only). Holding a lower ranked JD reduced the chances of being a CEO. Association leaders were still more likely to have another type of graduate degree than all other executives. Also, they were the only corporate elite group with higher odds of holding a top JD.

Extension Results

The research questions guiding this section are: *does the undergraduate academic achievements of the corporate elite differ from other top executives?* and *does the undergraduate involvement of the corporate elite differ from other top executives?* My analysis is based on a subsample purposively selected according to undergraduate alma mater; the 336 executives who received bachelor's degrees from Yale University, Cornell University, Massachusetts Institute of Technology, Northwestern University, University of Notre Dame, University of Michigan, University of Southern California, and Stanford University are included.

I begin by summarizing the academic achievements and campus involvement for the full subsample, then I use independent sample t-tests to compare the three corporate elite subgroups, i.e., CEOs, multiple directors, and association leaders, to other executive subgroups, i.e., single directors, senior managers

Academic Achievements

Berger, Webster, Ridgeway and Rosenholz (1998) suggested academic honors are an "indicative" cue that make a clear claim about an individual's expertise and competency. Three categories of awards, as well as undergraduate major, represent the executives' academic achievements (Table 4.20). The first is Rhodes and Marshall Scholar awards, which are highly competitive and distributed on a national basis for postgraduate study. Three percent of the study subsample received a Rhodes or Marshall scholarship. Considerably less than one percent of all college graduates are former recipients of these awards, so though the numbers are still small, scholars are overrepresented among these executives compared to the general population.

Another academic award that is less exclusive but still widely known is the Phi Beta Kappa national honors society. Eight percent of the subsample were members of Phi Beta Kappa. This figure is a bit misleading; although each of the eight universities in this study has a campus chapter of the organization, only students majoring in liberal arts and sciences are eligible for election.[35] Removing Business, Engineering, Education, and Journalism majors from consideration, Phi Beta Kappa members comprised 13 percent of the 195 executives who majored in qualified fields. To put this into context, Phi Beta Kappa's website estimates that ten percent of all postsecondary institutions in the United States have chapters, and about ten percent of arts and science majors are selected by each chapter. Therefore, the sample appears to be at least slightly more accomplished than the general population of college graduates in terms of these awards.

For the third measure of academic achievement, I collected information about campus-specific awards given to the subsample members, including dean's list

[35] http://www.pbk.org/infoview/PBK_infoview.aspx?t=&id=50

recognition, local scholarships and election to honors societies other than Phi Beta Kappa that did not have chapters on all of the eight campuses. The executives received an average of 0.45 campus academic awards, with a range of zero to five. More specifically, 71 percent of the executives did not receive a campus academic award, 18 percent received one award, 7 percent received two awards, 2 percent received three awards, one percent received four awards and less than one percent (i.e., one person) received five awards.

The three prior measures are intended to be a rough proxy of an individual's academic performance and perhaps knowledge gained during college or general intellect. Another possible source of knowledge development for executive management and governance positions is the subject focus of their undergraduate programs. I collected academic major information for 326 of the 336 subsampled executives. The most common category of major[36] was engineering (22%), followed closely by the liberal arts and humanities[37] (21%). Sixteen percent of the executives majored in a business field,[38] and an additional sixteen percent majored in economics. Twelve percent majored in a

[36] Campus context is an important mediating variable, as not all universities offer the same range of majors for undergraduates. Business is an example most appropriate to this study; neither Yale nor Stanford currently allows undergraduate students to major in business administration or specific fields traditionally considered part of the profession like finance, marketing, management, or accounting. To illustrate the differences in major across campuses, Appendix F is a crosstabulation of major by university. For instance, engineering was the most frequent major category across the full sample, and it was most prevalent among MIT (63.6%) and Cornell graduates (30.0%) and tied at the top for University of Michigan (27.8%) and Stanford (23.9%) alumni. Business was the most popular major among alumni from two schools: Notre Dame (47.8%) and University of Southern California (36.8%).

[37] Of the 21 percent (n=67) who majored in liberal arts and humanities, 40 percent (n=27) were History, 17 percent (n=11) were English or Speech, 10 percent (n=7) were American Studies, 7 percent (n=5) were Philosophy, 7 percent (n=5) were Languages/Linguistics, 7 percent (n=5) were Journalism, and the remaining 10 percent (n=7) were General Studies or Arts & Letters.

[38] Of the 53 business majors, 25 percent (n=13) were Accounting, 23 percent (n=12) were Industrial and Labor Relations, 20 percent (n=10) were Business Administration, 11 percent (n=6) were Finance, 8 percent (n=4) were Management, 8 percent (n=4) were Marketing, 5 percent (n=3) were Administrative Sciences, and 2 percent (n=1) were Real Estate.

social science other than economics[39], seven percent in biological or physical sciences, and seven percent in government/international affairs.

Upper echelon theory, as well as the work of Rivera (in press), would suggest that the executives' accomplishments might vary according to the industry in which they are associated. I tested this by examining correlations with the six sampled industry categories (see Appendix H). None of the academic award variables were related to industry, but I observed several significant differences in the undergraduate major choices of executives and the type of company with which he or she was associated. Manufacturing firms – for example, Exxon Mobil, Dell, Boeing, Kraft Foods – were less likely to have executives with a bachelor's degree in a social science field (r=-0.131, $p<0.05$) but more likely to have engineering majors (r=0.144, $p<0.01$). Companies such as Wal-Mart and Amerisource Bergen that are categorized in the Wholesale/Retail Trade industry also were positively associated with executives from engineering undergraduate programs (r=0.122, $p<0.01$). Conversely, finance, insurance, and real estate corporations such as Fannie Mae, JP Morgan & Chase, Goldman Sachs, and Wells Fargo were less likely to have executives with engineering (r=-0.113, $p<0.05$) or government/international relations degrees (r=-0.09, $p<0.10$). These firms tended to have more leaders from liberal arts (r=0.104, $p<0.10$) and social sciences backgrounds (r=0.101, $p<0.10$). None of the aforementioned industries was associated with an undergraduate major in business. However, the final industry group, service industry companies (e.g., Microsoft, Google, Manpower), was comparatively less likely to have

[39] Of the 12 percent (n=38) who majored in social sciences other than economics, 55 percent (n=21) were Political Science, 24 percent (n=9) were Psychology, 11 percent (n=4) were Sociology, 5 percent (n=2) were Education and 5 percent (n=2) were Anthropology.

leaders executives who majored in business (r=-0.124, p<0.05) though they were positively associated with economics majors (r=0.130, p<0.05).[40]

Campus Involvement

There is limited scholarly consideration of the role that campus involvement might play in occupational outcomes, with the recent exception of Rivera (in press). In a study of the hiring practices of elite firms, she found that in addition to a highly prestigious degree source, extracurricular accomplishments were an important consideration for employee selection, trumping grades, standardized test scores, and previous job experience. Namely, job applicants involved in a variety of high status activities were favored, as employers saw these as signals for personality, sociability, ability to balance and effectively manage multiple commitments, and underlying ambition. Activities requiring considerable investment of resources and effort, such as varsity athletics or major leadership positions, were especially valued by employers. Rivera's study was of entry-level employment in super-elite investment and law firms. The focus of this study is on top-level career outcomes among those in a more diverse set of firms; nonetheless, there is evidence to support Rivera's conclusions.

I found the executives were involved in an average of 0.25 sports. While 79 percent were not varsity athletes, 16.3 percent played one sport, 4.0 percent played two sports, and 0.3 percent played three sports. According to the Equity in Athletics Data Analysis website[41] for the 2009-10 academic year, varsity athletes comprised about six percent of full-time undergraduate students at these eight schools. Participation may

[40] Note, however, that service firms were modestly associated with earning a top MBA (r= 0.095, p<0.10) although not at all with earning any other type of MBA.
[41] EADA information is online at http://ope.ed.gov/athletics/

have changed over time, but this comparison offers at least some indication that top executives were more likely to be varsity athletes than the average undergraduate student.

Approximately 37 percent were in a fraternity or sorority at the seven schools that have Greek life. Information about participation in Greek life is more difficult to ascertain than intercollegiate athletics, but college guides indicate that the 2010 average at these schools ranges from roughly one out of ten undergraduate students (Stanford and Yale) to one third (Cornell, MIT, and Northwestern).[42] As with athletics, therefore, there is at least some evidence to suggest top executives were perhaps more likely to have been fraternity or sorority members than the average student.

Fifteen percent of the executives who graduated from the four schools that have undergraduate student societies were named to one. This is almost certainly a higher proportion than average, because sources indicate that less than one percent of all undergraduates are part of these groups (Robbins, 2002).

Eleven percent of the sample was part of a campus media organization (e.g., student newspaper, radio station, yearbook). The remaining forms of involvement are combined together, and the executives were members of 0.83 organizations in addition to those mentioned above. More specifically, 65 percent were not members of any of these, 13.2 percent were members of one organization, 8.8 percent were members of two organizations, 5.7 percent were members of three organizations, 3.7 percent were members of four organizations, 2.0 percent were members of five organizations, and the remaining 1.2 percent were members of six to ten organizations. The experiences of Lucio Noto, an outside director of Penske Automotive and Phillip Morris who graduated

[42] According to the http://collegeprowler.com college guide in 2010, fraternity/sorority members represent 10% of Yale students, 13% of Stanford students, 16% of Michigan students, 20% of USC students, 33% of Cornell students, 35% of Northwestern students, and 35% of MIT students.

from the University of Notre Dame in 1959, offer a representative example of what is included in this category. According to the *Dome* yearbook, Noto was a member of the Physics Club, the International Relations Club, and the Young Christian Students. Since none are a varsity sport, a fraternity or sorority, or a media organization, I included them together in this final involvement category.

I separately documented if the executives were leaders in a student organization as well as in student government, and they averaged 0.66 leadership positions. About 69 percent did not hold any leadership positions (for instance, Lucio Noto from Notre Dame referenced above), 15.2 percent were leaders in one organization, 7.1 percent were in two leadership positions, four percent were in three leadership positions, 2.7 percent were in four leadership positions, and 2.3 percent had five, six or seven. An example of a highly involved leader is George H. Walker. Before graduating from Yale University in 1953, Walker was President of the Dwight Hall Freshman cabinet, Vice President of Dwight Hall government, chairman of the Campus Council, treasurer of Delta Kappa Epsilon fraternity, chairman of the 1952 Charities Drive, and secretary of the Torch honors society.

As with the academic accomplishments, I examined the correlations of company industry type with undergraduate involvement. Former varsity athletes were associated with service firms; Google, Microsoft, and IBM are among the ten companies in this industry (r=0.211, $p<0.01$). Executives with backgrounds in campus media groups were more likely to be in retail or wholesale trade companies such as Sysco, Target, and Best Buy (r=0.124, $p<0.05$), although less likely to be with manufacturing firms (r=-0.11, $p<0.10$). Student society members were relatively concentrated in transportation,

communications, and utilities firms – for instance, Time Warner, AT&T, and Disney (r=0.128, p<0.10).

Table 4.20.
Study extension: Descriptive statistics for undergraduate achievement & involvement (n=366)

	Mean	SD	Min	Max
Academic Achievements				
Phi Beta Kappa	0.08	0.27	0	1
Rhodes or Marshall Scholar	0.03	0.16	0	1
Campus Academic Award[a]	0.45	0.85	0	5
Major				
Engineering	0.22	0.41	0	1
Liberal Arts & Humanities	0.21	0.40	0	1
Business	0.16	0.37	0	1
Economics	0.16	0.37	0	1
Social Sciences	0.12	0.32	0	1
Biological & Physical Sciences	0.07	0.25	0	1
Government/International Affairs	0.07	0.25	0	1
Campus Involvement				
Varsity Athletics	0.25	0.54	0	3
Fraternity/Sorority	0.37	0.49	0	1
Campus Media	0.11	0.36	0	1
Student Society	0.15	0.41	0	1
Club	0.83	1.50	0	10
Leadership Position	0.66	1.26	0	7

CEOs' Undergraduate Accomplishments

Are there any differences in the undergraduate academic achievements and campus involvement of CEOs compared to everyone else? To answer this question, I ran two sets of independent sample t-tests for each independent variable. One compared the CEOs' means to all other executives, and one compared the CEOs' means to those who are senior managers only (removing directors from the analysis). The number of CEOs was small, so many of the differences did not achieve statistical significance, but there were nonetheless several noteworthy findings (see Table 4.21).

I found that CEOs had lower means on the academic achievements measures. They received an average of 0.28 campus academic awards but the rest of the executives received an average of 0.47 campus academic awards ($p<0.10$). Senior managers had virtually the same average awards as CEOs (mean=0.26), so this finding reflects the fact that outside directors received more campus academic awards than those who are internal employees of sampled companies.

There were not any significant differences in the academic focus of CEOs compared to others, although their most common major was in liberal arts and humanities (mean=0.29 compared to 0.20 for all other executives as well as senior managers only), and they were slightly less likely than the others to major in economics (mean=0.11 compared to 0.17 for all other executives as well as senior managers only). As a point of general comparison, Boone, Kurtz, and Fleenor (1988) studied the college backgrounds of 243 CEOs of the largest 800 American companies. In contrast to the results here, they found the most common major was business, selected by 44 percent of their sample,

followed by 24 percent in engineering, 12 percent in liberal arts, 7 percent in science, 3 percent in law, 2 percent in journalism and 9 percent in other fields.

In this study, CEOs were different from the others on several aspects of undergraduate involvement. They were significantly more likely to have been a varsity athlete (mean=0.52) compared to all other executives (mean=0.23; $p<0.01$) and to senior managers only (mean=0.19; $p<0.05$). A representative example is the two Boeing executives that were part of this subsample. Before graduating from Yale University in 1971 with an American Studies degree, Boeing's CEO James McNerney played varsity baseball and was a member of the sailing team (he also played JV hockey as a sophomore, junior, and senior but because this was not a varsity sport I included it with other clubs rather than athletics). The other Boeing executive in this subsample, outside director John Bryson, graduated from Stanford in 1965 with a degree in history. While he was involved in a number of extra- and co-curricular activities (e.g, Stanford in Government, Administration Assistant with the Associated Students of Stanford University, studied abroad in Germany), Bryson was not a member of a varsity athletics team.

Also, I found CEOs had higher average participation in campus media organizations (mean=0.28) when contrasted to all other executives (mean=0.10; $p<0.05$) and to senior managers only (mean=0.05; $p<0.01$). An especially illustrative example is the CEO of Sysco, William DeLaney, who was a member of the *Observer* student newspaper, the *Dome* yearbook staff, and the *Scholastic* magazine staff before graduating from Notre Dame in 1976 with a major in Accounting. Incidentally, DeLaney was also a varsity athlete with the Notre Dame track team.

Finally, CEOs were more likely to be part of an undergraduate student society on their campuses (mean=0.22 compared to 0.14 for all other executives and 0.09 for senior managers only). Because this variable is only relevant for executives who graduated from Yale, Cornell, Northwestern, and Michigan, the lack of statistical significance is not surprising.

Table 4.21.
Study extension: CEO undergraduate achievements and involvement

	CEOS (n=29)	All Other Executives (n=307)	Senior Managers Only (n=101)
Academic Achievements			
Phi Beta Kappa[a]	0.03	0.08	0.04
Rhodes or Marshall Scholar	0.00	0.03	0.02
Campus academic award[b]	0.28	0.47~	0.26
Major			
Business[a]	0.18	0.16	0.21
Engineering[a]	0.21	0.22	017
Liberal arts & humanities[a]	0.29	0.20	0.20
Biological & physical sciences[a]	0.04	0.07	0.05
Government/international affairs[a]	0.07	0.07	0.05
Social sciences[a]	0.11	0.12	0.15
Economics[a]	0.11	0.17	0.17
Campus Involvement			
Varsity athletics[b]	0.52	0.23*	0.19*
Fraternity/sorority[a,d]	0.39	0.37	0.33
Campus media	0.28	0.10*	0.05**
Student society[a,c]	0.22	0.14	0.09
Club[b]	0.60	0.86	0.56
Leadership position[b]	0.52	0.67	0.44

~ p<.10; * p<.05; ** p<.01; *** p<.001
Note. Each column displays the mean for the relevant executive subgroup. I used independent sample t-tests to compare the CEO means to All Other Executives and Senior Managers Only, and the statistically significant differences are noted with asterisk next to the comparison group mean. The full results of these tests are in Appendix G, Tables G1 and G2.
[a] Variable is dummy coded.
[b] Variable is on a count scale.
[c] The student society variable is for only executives who graduated from Cornell, Yale, Northwestern and Michigan – see Chapter 3 for further explanation about the organizations it represents.
[d] The fraternity/sorority variable does not include executives who graduated from Notre Dame.

Multiple Directors' Undergraduate Accomplishments

To better understand whether multiple directors differed in their academic achievements and campus involvement compared to everyone else, I followed a similar procedure to the CEO analysis. The results here are based on two sets of independent sample t-tests comparing multiple directors' means to all other executives and comparing multiple directors' means to those who are single directors only (removing non-director senior managers and CEOs from the analysis; see Table 4.22).

Unlike CEOs, multiple directors had higher average undergraduate academic awards compared to other executives. They were proportionally more likely to have been named a Rhodes or Marshall scholar (6%, compared to 2% of all other executives and 1% of single directors only) as well as part of Phi Beta Kappa (10%, compared to 7% of all other executives and 9% of single directors only). These differences, however, were not statistically significant. Multiple directors were statistically less likely to have majored in business (9%) compared to the rest of the subsample (19%; $p<0.05$) as well as single directors alone (17%; $p<0.10$), but more likely to have majored in engineering (30% compared to 19% of all other executives, $p<0.05$, and 20% of single directors only, $p<0.10$) and social sciences (14%, compared to 11% of all other executives, n.s., and 7% of single directors, $p<0.10$).

The academic accomplishments of David Boren, an outside director for Texas Instruments, AMR (American Airlines), and Torchmark in 2010, encapsulate those of the multiple directors in this study. Boren, a native of Washington DC, graduated from Yale University in 1963 and was a History honors major. He was named a Rhodes Scholar and a member of Phi Beta Kappa. Boren was also a member of Delta Sigma Rho, the

national forensics (debating/politics) honors society. He was a Ranking Scholar, which designates the top two percent of a Yale class cohort, from 1959 through 62.

In terms of campus involvement, the multiple directors were more likely to have participated in several activities – the significant comparisons are all different from those in the CEO analyses, however. Almost half of the multiple directors (46%) were members of a fraternity or sorority compared to roughly one third of all other executives (34%; $p<0.10$) and single directors only (35%; n.s.). Also, the average multiple director participated in more than one student club during college (mean=1.14), compared to less than one for all other executives (mean==0.72; $p<0.10$) and single directors (mean=0.88; n.s.). As with CEOs, multiple directors were more likely to be part of an undergraduate student society on the three campuses with these types of organizations, and the comparison was significant (mean=0.23 compared to 0.12 for all other executives, $p<0.10$, and 0.14 for single directors, n.s.). Contrary to CEOs, however, multiple directors were less likely to be a member of a campus publication staff (mean=0.08 compared to 0.13 for all other executives, n.s., and 0.16 for all other executives; $p<0.10$). Though not significant, multiple directors held more campus leadership positions than other executives (mean=0.80 compared to 0.60 for all other executives and 0.75 for single directors).

David Boren, the corporate director and Yale graduate used above as an example for academic awards, also represents the types of out-of-class achievements common among multiple directors. Though not in a fraternity, Boren was a member of several student organizations at Yale, including Army ROTC, the Cannon & Castle military society, the Young Democrats, the Concert Band (from 1959-63), the Football Band

(from 1959-63), the Freshman Debate Team, the Varsity Debate Team, and the Wesley Foundation (a religious organization). He was also in the Skull & Bones senior society. Boren did not participate on a varsity athletics team nor was he part of a campus publication; both types of involvement that were less common among multiple directors generally. In terms of leadership positions, Boren was a member of the Calhoun residential hall council for two years, a member of his class council and the speaker and secretary of the Political Union.

Table 4.22.
Study extension: Multiple director undergraduate achievements and involvement

	Multiple Directors (n=87)	All Other Executives (n=249)	Single Directors Only (n=134)
Academic Achievements			
Phi Beta Kappa[a]	0.10	0.07	0.09
Rhodes or Marshall Scholar[a]	0.06	0.02	0.01
Campus academic award[b]	0.52	0.43	0.55
Major			
Business[a]	0.09	0.19*	0.17~
Engineering[a]	0.30	0.19*	0.20~
Liberal arts & humanities[a]	0.21	0.21	0.22
Biological & physical sciences[a]	0.06	0.07	0.09
Government/international affairs[a]	0.06	0.07	0.08
Social sciences[a]	0.14	0.11	0.07~
Economics[a]	0.15	0.17	0.15
Campus Involvement			
Varsity athletics[b]	0.29	0.24	0.25
Fraternity/sorority[a,d]	0.46	0.34~	0.35
Campus media	0.08	0.13	0.16~
Student society[a,c]	0.23	0.12~	0.14
Club[b]	1.14	0.72~	0.88
Leadership position[b]	0.80	0.60	0.75

~ p<.10; * p<.05; ** p<.01; *** p<.001
Note. Each column displays the mean for the relevant executive subgroup. I used independent sample t-tests to compare the Multiple Director means to All Other Executives and Single Directors Only, and the statistically significant differences are noted with asterisk next to the comparison group mean. The full results of these tests are in Appendix G, Tables G3 and G4.
[a] Variable is dummy coded.
[b] Variable is on a count scale.
[c] The student society variable is for only executives who graduated from Cornell, Yale, Northwestern and Michigan – see Chapter 3 for further explanation about the organizations it represents.
[d] The fraternity/sorority variable does not include executives who graduated from Notre Dame.

Association Leaders' Undergraduate Accomplishments

My analyses of the academic awards received by CEOs and multiple directors indicated few differences between these groups and other executives. However, business association leaders were more likely to have been a Rhodes or Marshall Scholar (12% compared to 1% of all other executives; $p<0.01$) and also to have received a campus academic award (mean=0.81 compared to other executives' mean=0.39; $p<0.05$) (see Table 4.23). They were also slightly more likely to have been part of Phi Beta Kappa, but this difference was not significant. In terms of academic major, the association leaders were more likely to have a degree in a liberal arts or humanities discipline (34% compared to 19%; $p<0.05$) but less likely to have an engineering degree (10% compared to 24%; $p<0.05$).

An individual example of the association leaders' academic achievements is Thomas Gerrity, a member of the Committee for Economic Development as well as an outside director of Sunoco and Pharmerica. Gerrity graduated from MIT in 1963 and was a Rhodes Scholar. He was not in Phi Beta Kappa but was not eligible for membership, as he is one of the few association leaders who majored in engineering although he later earned a PhD in Management from MIT. Among his campus-specific awards, Gerrity was named to the Dean's list for eight terms, to the Beaver Key junior honorary society (for MIT students involved in sports and campus activities but also maintain high grades), to Eta Kappa Nu as a senior (honors society for electrical engineering), and to Tau Beta Pi as a junior and senior (honors society for all engineering majors displaying noteworthy scholarship & character).

Though not statistically significant in every case, association leaders were more involved on almost every measure compared to their colleagues. The only exception was the campus publications (mean for association=0.10 and all others mean=0.11, n.s.). Most notably, they were more likely to have held student leadership positions (mean=1.10 compared to mean=0.59; $p<0.05$). As with multiple directors and CEOs, association leaders who attended Yale, Michigan, and Cornell were more likely to have been part of an elite student society (34% compared to 12%; $p<0.01$). They were in more student clubs, fraternities or sororities, and varsity sports teams as well, though none of these margins were significant.

In 2010, Stephen Friedman was a member of the Council on Foreign Relations as well as an outside director of Goldman Sachs. Friedman earned a bachelor's degree in sociology from Cornell University in 1959, and his undergraduate experiences at Cornell illustrate the types of activities more common among association leaders compared to their fellow executives. A member of Tau Delta Phi fraternity, Friedman was also part of the Aleph Samach student society (for junior men only) and the Quill & Dagger student society (for senior men only). Also, Friedman was on the varsity wrestling team. In terms of his leadership achievements, Friedman was a "wearer of the 'C'", a "wearer of the numbers" (both of the former are athletics leadership designations) and the president of the Committee on Student Conduct.

Table 4.23.
Study extension: Association leader undergraduate achievements and involvement

	Association Leaders (n=42)	All Other Executives (n=294)
Academic Achievements		
Phi Beta Kappa[a]	0.10	0.07
Rhodes or Marshall Scholar[a]	0.12	0.01*
Campus academic award[b]	0.81	0.39*
Major		
Business[a]	0.10	0.17
Engineering[a]	0.10	0.24*
Liberal arts & humanities[a]	0.34	0.19*
Biological & physical sciences[a]	0.05	0.07
Government/international affairs[a]	0.10	0.06
Social sciences[a]	0.17	0.11
Economics[a]	0.15	0.17
Campus Involvement		
Varsity athletics[b]	0.34	0.24
Fraternity/sorority[a,d]	0.42	0.37
Campus media	0.10	0.11
Student society[a,c]	0.34	0.12**
Club[b]	1.02	0.80
Leadership position[b]	1.10	0.59*

~ p<.10; * p<.05; ** p<.01; *** p<.001
Note. Each column displays the mean for the relevant executive subgroup. I used independent sample t-tests to compare the Association means to All Other Executives, and the statistically significant differences are noted with asterisk next to the comparison group mean. The full t-test results are in Appendix G, Table G.5.
[a] Variable is dummy coded.
[b] Variable is on a count scale.
[c] The student society variable is for only executives who graduated from Cornell, Yale, Northwestern and Michigan – see Chapter 3 for further explanation of the organizations it represents.
[d] The fraternity/sorority variable does not include executives who graduated from Notre Dame.

Study Limitations, Delimitations, and Assumptions

Study Limitations

The data for this study were collected from secondary sources. I was able to gather equivalent measures to those used in the 1977 study, but I was unable to locate information to fully represent all of the variables in my proposed conceptual framework that are likely influences on executive career outcomes. For instance, a key set of variables missing from my analysis were psychological measures. The entire population of top executives probably has psychological attributes that qualitatively differ from other American adults – for instance, a strong work ethic might be important in ascending the corporate ladder – so some of these may be controlled for with a design that only samples from top executives. Yet even within this population, the corporate elite may be distinct from the others in qualities like level of ambition, drive for power, or social/interpersonal skills. I was unable to test these attributes with this study design.

My measures for the executives' social class background were the same used by the 1977 study, but they likely do not have the same contemporary meaning - or even the same meaning when the executives in this sample were adolescents compared to when the executives in the prior study were adolescents.[43] Social Registers have lost favor among established families and are no longer as comprehensive as they were in the past (Domhoff, 2006a). Though identified by some scholars as "the elite of the elites" (Khan, 2008, p. 11; also Baltzell, 1964), the sixteen preparatory schools used here are by no means the only exclusive secondary schools that educate children of the most established and wealthy American families. Other lists of elite preparatory schools are proposed by

[43] To give a sense of the generational differences, in this study, the mean age was 60 in 2010, so the average executive was 15 years old in 1965. In the prior study, the mean age was 56 in 1977, so the average executive was 15 years old in 1921.

scholars including Baird (1977), Domhoff (2009), and Persell and Cookson (1985), although the sixteen considered here are typically included with the addition of other schools. Another possible limitation related to the class variable is, as Useem and Karabel acknowledge, studies[44] of elite prep schools have shown that they explicitly aim to prepare students for leadership positions. So, any effects associated with this variable might be from that rather than the measure as a proxy for social class.

The study design would be strengthened if I had more measures of early career positions, in terms of promotion history as well as firm(s) where the executives were employed. A number of studies in the status attainment tradition suggest the direct impact of education on occupational status diminishes over time and is strongest immediately after degree completion (Alon & Tienda, 2000; Hauser et al, 1996; Warren, 1998; Warren, 2001; Warren, Sheridan, & Hauser, 2002). My dependent variable is later-in-life, and I do not control for early or mid-career experiences. The model fits are not extremely high, indicating there are important influences unaccounted for in the estimations. There is anecdotal discussion of certain companies as "feeders" to the corporate elite; Rothkopf (2008), for example, notes the prevalence of Goldman Sachs. When collecting data about the executives in my sample, I came across an article about the CEO of Heineken discussing one of his top senior executives who was promoted to a U.S. position after spending ten years in the Democratic Republic of Congo. According to the CEO, the Congo experience was "certainly worth three times Harvard Business School."[45] Unfortunately I cannot test that assertion but it is another example of the types

[44]They cite Persell & Cookson (1985) study; a more recent example is Khan's (2008) study of St. Paul's school.
[45] http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a3btbxTTb.Vw&pos=12

of experiences that are likely important predictors of career outcomes but not accounted for by my models.

Many of the data sources are from executives' self-reported biographies. In a study of the discrepancies of self-reported degree attainment compared to institution-reported degree attainment using NELS data, Attewell and Domina (in press) suggested that six percent of those who claim to have a bachelor's degree do not. For the most part, these individuals attended the schools but never completed their coursework. In this study, when collecting additional data from the Yale University archives for the extension phase, I discovered one executive whose biography listed he had attended Yale for his undergraduate did attend Yale but did not complete his bachelor's degree at Yale. This was the only instance among the 300 executives who were part of the study where I found this sort of discrepancy, but it illustrates the potential limitations of self-reported data.

Finally, although this is a replication of a study conducted 33 years ago and I compare results from past to present, it is nonetheless a cross-sectional design. I do not track individual executives over time, and no causal relationships can be inferred from my findings.

Study Delimitations

This study is designed to replicate research conducted in 1977, so many of the choices about sample definition and variable selection were guided by Useem and Karabel (1986). The sample is drawn from companies that were listed in the 2010 U.S. Fortune 500. This list is limited to those that are publicly incorporated in the United States. Noteworthy among those *not* eligible for inclusion in the Fortune 500 are

investment banks and other types of privately held financial services, hedge funds, and consulting companies. These firms are perhaps a bigger institutional player in the corporate power structure today than they were in the late 1970s. Also, they draw a disproportionate number of graduates from top universities. Rothkopf (2008) quotes a hedge fund manager, who told him,

> 'there are only every year a few hundred people coming out of the best schools in the U.S. – maybe a few thousand worldwide – who are the cream of the cop. Where do they start? Once it might have been the Foreign Service or law or some other field. But today, we have such a huge advantage in terms of the compensation we can offer that we get first crack. Of course, all that ebbs and flows too with market cycles. A couple years ago, we hedge funds were the pinnacle because we were paying starting MBAs base salaries of a couple hundred thousand and bonuses that could double that. Now private equity firms are offering bases of $300,000, $400,00 and total first-year packages of like $1.2 million. This is to Harvard MBAs or whatever, twenty-five year olds. So what would you do if you were that MBA? Where would you work?' (p. 131).

These firms are outside the scope of this study; also, the identities and backgrounds of their top executives are generally more difficult to determine because public reporting responsibilities for privately held firms are considerably lower than those that are publicly traded (which is the case for most of the Fortune 500). They nonetheless represent an intriguing possibility for future study.

The hedge fund quote above alludes to another aspect of executive that is beyond the scope of this study, that of compensation. Top American executives are extremely well-paid[46] even in the midst of a major recession and in the face of Congressional reforms (Anderson, Collins, Pizzigati & Shih, 2010), but I did not collect information about individual salaries, bonuses, stock options, etc. Also, my review of the literature is constrained to research on occupational outcomes and how postsecondary education may

[46] In the 1970s, the median annual compensation for a CEO leading one of the top 50 largest American firms was the equivalent of $1.2 million in 2009 dollars. The median CEO in 2009 was paid $8.5 million (Anderson, Collins, Pizzigati & Shih, 2010).

affect executive careers, and my analyses do not incorporate income, earnings, wealth, or similar variables representing an individual's economic standing.

Because the Fortune 500 is a list of U.S. companies only, some of the largest companies on a global level are excluded. To illustrate, five of the world's ten largest corporations in 2010 were based in the United States: JP Morgan Chase, General Electric, Bank of America, ExxonMobil, and Wells Fargo. The rest were distributed across several countries: ICBC (China), Banco Santander (Spain), HSBC Holdings (UK), Royal Dutch Shell (Netherlands), and BP (UK). Nonetheless, the U.S. has the largest total GDP of any single country in the world, so the companies that are part of this study are major contributors to the global economy (CIA, 2009).

A related delimitation of this study is that my analyses focus on U.S. colleges and universities. The literature review in Chapter Two is limited to research pertaining to U.S. executives and universities. There is a solid foundation of comparative work in education – a cursory search produced articles from Australia, Ireland, Great Britain, the Netherlands, Israel, and Canada – but because the structural makeup of education is so different in every country, it is outside the scope here. I found that just under ten percent of the sampled executives earned a bachelor's degree or its equivalent from a college or university outside of the United States. In my analyses, I note whether the institution awarding the degree was international or not, but I do not create detailed measures for the international universities. For instance, I do not represent "top" international universities, although some such as Oxford, Cambridge, the Ecole Polytechnique, the Indian Institute of Technology, and the University of Tokyo are often considered to have prestige and quality equivalent to their top American counterparts.

A final delimitation pertaining to education is that my focus is on various combinations of postsecondary *degree* completion. As I began my data collection, I noticed some executive biographies not only listed their degrees but also executive non-degree programs in which they had participated. Many of these programs are offered by the top business schools, so having "Harvard Business School Advanced Management Program" in a biography might signal business knowledge and competence although probably not to the extent of Harvard MBA. However, the role they play in upper level executive career outcomes and power is not addressed in this study.

Study Assumptions

A major assumption I make, consistent with the power elite theory, is that the dependent variables – the positions of Chief Executive Officers, multiple directors, and association leaders – represent those who have relatively more power over national business decisions than other executives. A competing perspective to power elite is the pluralist perspective (Lerner, Nagai & Rothman, 1996). Applied to this study, both perspectives would agree that top executives wield much power over their companies. The views diverge in terms of the power that executives exert beyond their respective institutions. Pluralists acknowledge there is a subgroup of the population that holds disproportionate decision-making power over important social issues, policies, programs, and activities but this power is diffuse among different individuals and institutions representing many domains – economic, political, religious, intellectual, cultural, military etc. The relative distribution of power is functionalist, shifting across these domains over time and according to specific issues, such that a single dominant elite is never in control (Dahl, 1961; Hartmann, 2007; Polsby, 1963; Wolfinger, 1973). Also, Robert Dahl (1961)

suggested in his study of community power in New Haven that there is little overlap among the powerful positions in one domain with another. On occasion a business might attempt to block a law contrary to its interests, but pluralists contend that there is no ongoing systemic involvement in or initiation of programs by businesses in the policy arena. As I discuss in Chapter Two, the power elite theory asserts there is a unified corporate power structure and the dependent variables used here represent that power. However, it is important to acknowledge that there is a longstanding body of literature where scholars from both traditions debate this assumption.

CHAPTER 5

Discussion, Implications and Conclusions

This study improves our understanding of how postsecondary education might shape a small and understudied population that is a high status occupational class (Blau & Duncan, 1967; Sewell & Hauser, 1992), the top management team responsible for major corporate decisions (Carpenter, Geletkanycz & Sanders, 2004; Hambrick & Mason, 1984), and a powerful "inner circle" with positions in cross-corporate structures that shape national business interests and influence policy (Domhoff, 2006; Dye, 1995; Mills, 1956; Useem, 1984; Useem & Karabel, 1986). In this final chapter, I discuss key findings, suggest directions for further research generated by the results, and offer implications for practice as well as for each of the three contributing theoretical frameworks.

Discussion

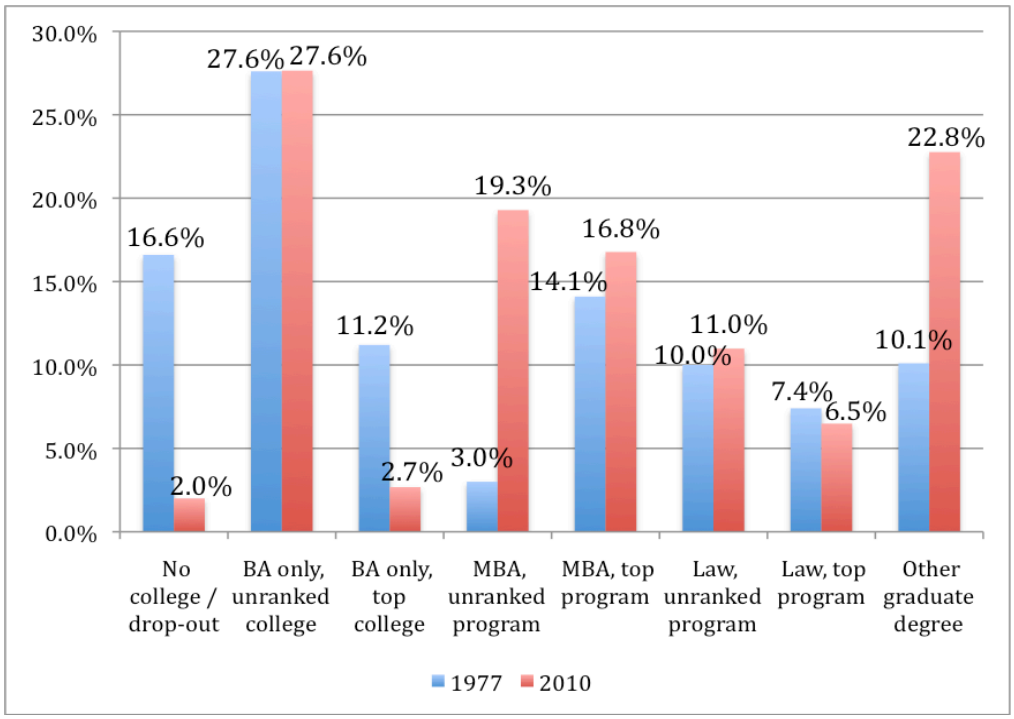
I begin my discussion by summarizing the descriptive results for the full sample, which add to prior research on top executive degree attainment patterns and degree sources. The multivariate results offer insight into the role that education plays in shaping the corporate elite, so I also summarize the types of postsecondary degrees that were associated with being a CEO, a multiple outside director, and a business association leader. My discussion is especially attentive to the similarities and differences between these results and those of Useem and Karabel (1986).

Postsecondary Backgrounds of All Top Corporate Executives

Degree attainment.

These results contribute to the long line of executive educational profiles (summarized in Table 2.2) and update our understanding around the continuing trend of overall degree expansion in the U.S. population generally as well as this specific occupational sector. Allen's (1978) study of directors indicated 63.9 percent had bachelor's degrees in 1935, and 80.0 percent had bachelor's degrees in 1970. Useem and Karabel found that 83.4 percent of corporate leaders in 1977 held at least a bachelor's degree, and 44.6 percent had at least one graduate degree as well. In 2010, I determined 98 percent of corporate leaders held a bachelor's degree, and two thirds had at least one graduate degree (see Figure 5.1). Returning to the study introduction, these findings underscore that Bill Gates, Michael Dell, and other famous college dropouts who have been wildly successful leading major corporate institutions are clear exceptions rather than the norm. Anyone aspiring to a high level position in a Fortune 500 firm would be well advised to at least earn a bachelor's degree.

Figure 5.1
Summary of findings: Full sample degree attainment in 1977 and 2010



Together with prior studies, the descriptive findings pertaining to MBA attainment offer insight into the professional identity of business management as a field. Whether management is a profession has long been debated by business faculty and by sociologists (Abbott, 1988; Bowen, 1955; Keiser, 2004; Khurana & Nohria, 2008; Khurana, Nohria & Penrice, 2005). A defining feature of a profession is the possession and application of expert knowledge (Abbott, 1988), and the process of professionalization is to assert jurisdiction over that specific body of knowledge through a system of certification, most notably mandatory professional associations, educational requirements (e.g., MD for medical profession, JD for legal profession), codes of conduct, and licensures, and this certification establishes an implicit social contract. None of these, however, is a mandatory aspect of business management; the MBA is not a

formal requirement for entry. Yet as these study results indicate, the MBA is prevalent among those at the top of the field and is increasingly accepted as a certifying device (Khurana, Nohria & Penrice, 2005). Not only did more executives possess an MBA compared to thirty years prior (36.1% versus 17.1%), I found CEOs were especially likely to have earned one (41.5%). These findings offer evidence for the continuing professionalization of the field, but certainly not definitive or sufficient proof to claim business *is* a profession.

Why does it matter if an occupation is a profession? Khurana and Nohria (2008) assert an established profession is accorded high levels of public confidence, something large corporations have struggled with in recent years. Given the evidence here that many top executives do possess an MBA, business schools – along with accreditation groups such as the Association to Advance Collegiate Schools of Business – could take the lead in moving the field toward more acceptance as a profession and engender social trust by agreeing on consistent and publicly transparent standards to which their graduates should be held (for instance, explicitly incorporating a universal code of ethics or mandated ethics component into all programs[47]). To prepare future generations of executive leaders, such an effort would have to cut across all MBA programs and not be limited to the most elite schools. If the comparisons from 1977 to 2010 are any indication, the proportion of top executives with MBA degrees from all programs, not just the top eleven, will expand into the future.

[47] The AACSB encourages schools to have a code of conduct but these are not mandatory nor do the accreditation standards explicate on what should be the content or application of such codes. http://www.aacsb.edu/accreditation/standards-2011-revised-jan2011-final.pdf

Degree sources.

This leads to another question: are those in the top levels of corporations constrained to graduates of certain schools, a form of the "good old boys club," or is any bachelor's (or MBA or JD) degree sufficient? My descriptive results suggest this is not an either/or proposition, as both alternatives are supported somewhat by these data.

In a study of the hiring practices of elite professional services firms, Rivera (in press) found employers commonly screened resumes for educational credentials, seeking only those with what she characterized as "super-elite" university affiliations. These were BA degrees from Harvard, Princeton, Yale and Stanford only, MBA degrees from Harvard, Stanford, and the University of Pennsylvania (Wharton) only, and JDs from Yale, Harvard, Columbia, and Stanford law schools only. The companies studied here are much larger and have more open hiring practices at the lower levels of the organization than the firms studied by Rivera, but nonetheless it is interesting that my descriptive findings offer some credence to the role these schools might play in reaching the top of these major corporations as well. Rivera's super-elite universities were in fact the four most common undergraduate alma maters for the full sample of executives. Though the schools were not as ubiquitous in this sample as in the elite private firms studied by Rivera, 9.5 percent of executives with bachelor's degrees in this study graduated from one of these schools. For MBAs, the most common of the full sample of executives were Harvard (19.2%), Chicago (6.4%), Wharton (5.5%) and Stanford (5.0%), and for JDs, the most common were Harvard (14.7%), Columbia (5.4%), University of Virginia (5.1%), and Yale (4.3%). Chicago's MBA program and Virginia's law program were not labeled as super-elite, but the rest were consistent with those identified by

Rivera. How far the overrepresentation of these degrees extend down the organizational charts of Fortune 500 companies and whether they are used as screening devices at different promotion points is not answered by this study, but the consistency with Rivera's results indicates super-elite credentials may also be valuable in larger corporate settings.

Yet these same data might be interpreted quite differently. While 9.5 percent of bachelor's degrees were earned from four schools, obviously the other 90.5 percent were earned from 581 different schools. Is this a change from the past; are degree sources comparatively more democratized? Returning to the Useem and Karabel results, it is difficult to conclude that the proportion of executives earning a bachelor's degree from a top eleven school declined from 1977 to 2010 although at first glance Figure 5.1 suggests this might be the case. The proportion of executives with BAs only from a top college was 11.2 percent in 1977 and 2.7 percent in 2010, but perhaps more graduates of top bachelor's programs in the 2010 sample continued on for further study. I found that over 80 percent of the executives who graduated from a top BA program go on to earn at least one graduate degree, in contrast to 60 percent of executives who earned their BAs from lesser programs. Useem and Karabel did not report the proportion of top BA graduates who continued to graduate study in their sample, so I am unsure as to whether today's executives attended a more diverse array of undergraduate schools than in the past. For business and law schools, however, this is definitely the case. Overall, more executives today hold MBA degrees and while the number holding MBAs from top programs increased slightly since 1977, graduates of lower ranked programs increased substantially (3.0% in 1977, 19.3% in 2010). For law programs, the proportion of executives from a

top school declined slightly (7.4% in 1977, 6.5% in 2010) while the proportion from a lower ranked school increased slightly (10.0% in 1977, 11.0% in 2010).

Postsecondary Backgrounds of the Corporate Elite

This study compared the postsecondary attainment of executives who were part of the corporate elite, in the highest positions of power, to that of other top executives. An important point to reiterate is the sample does not represent all workers, so the results do not indicate the effect of a college degree globally. The executives here were a very narrow slice of the labor force. If a larger range of workers were part of the sample, the relationships among the variables may be more pronounced. However, even within this sample, there were differences between executives who were part of the corporate elite and others who were in less powerful positions, though these underlying relationships proved to be complex – contingent upon how postsecondary attainment was defined, how the corporate elite was defined, and to whom they were compared.

A technical point apparent in this study was the marked differences in results depending on the estimation technique, in contrast to Dey and Astin (1993), who found few substantive variations in the results of a probit, logit, and linear regression estimation on college student retention. My results add to the solid body of evidence supporting the use of logistic regression to estimate a binary outcome variable (Cabrera, 1994), and my discussion therefore concentrates on the logistic rather than linear results.

Another observation related to the model specification is the results varied depending on whether I limited the sample to an internal labor market-type comparison or used the full group, especially for the CEO models. Multiple directors compared to single directors versus the full sample were similar. Useem and Karabel only considered

the full sample together, and if being a CEO, a multiple director, or an association leader are substantially different types of corporate power, then including all of the executives in the analysis together is reasonable. The selection/ascension process to these positions is an under theorized aspect of power elite theory beyond asserting that the group is likely to share certain background characteristics (e.g., education) and be part of a small networked class. However, the contrast of CEOs with other top internal executives is conceptually sound from an upper echelon theory standpoint, as these are often the internal candidates for promotion to the next (and highest) level of day-to-day firm management. Outside directors have more diverse functional backgrounds. Although many are business executives themselves, leaders from other sectors such as university administrators, foundation presidents, former elected officials, and representatives of ethnic and racial minorities are common as well (Domhoff, 2009).

Key results from the series of logistic regressions in the replication and refinement analyses are summarized in Figure 5.2. The relationship between postsecondary education and membership in the corporate elite varied according to the three dependent variables representing the elite, suggesting that the processes underlying CEO, director, and association selection may differ.

Figure 5.2
Summary of findings: Postsecondary predictors of membership in corporate elite

	CEOs[b]	Multiple Directors[c]	Assn[d]
Study Replication[a]			
BA, lower ranked (Gourman)			–
BA, top ranked (Gourman)			
MBA, lower ranked			
MBA, top ranked			
JD, lower ranked	–	–	
JD, top ranked			+
Other graduate degree	–		+
Study Refinement			
BA, top ranked (Barron's)[e]	+	+	+
MBA, lower ranked		+	
MBA, top ranked	+	+	
JD, lower ranked	–		
JD, top ranked		–	+
Other graduate degree			+

Note. A plus sign indicates a significant positive relationship, a negative sign indicates a significant negative relationship. No sign means the relationship was not significant at $p<0.05$
[a] Summary is from Tables 4.14-4.16 of logistic regression results for the replication, not the OLS results. These estimates did not include controls for gender, race, or age.
[b] The significant CEO results are from Table 4.17 – the contrast with other internal executives and the Block Two results, controlling for demographics. No significant postsecondary differences observed for contrasts with full sample in the refinement after controlling for demographics.
[c] The significant multiple director results are from Table 4.18 - the contrast with full sample and the Block Two results controlling for demographics. The only differences in the contrast with single directors only was that the top JD coefficient was not significant.
[d] The significant multiple director results are from Table 4.19 - the Block Two results controlling for demographics.
[e] At least one contrast with the other types of BAs were significant. BA top ranked was the reference group for all others.

Useem and Karabel concluded a top MBA degree offered the same advantages as a bachelor's degree alone from a top college or a top law degree. Also, the executives in their study who held an MBA degree from a lesser-ranked program were no more likely to be in a powerful position than those without MBAs. In 2010, MBA degrees played a more important and consistent role. Not only were all executives more likely to have top ranked MBAs (16.8% in 2010 compared to 14.1% in 1977) and especially lower ranked

MBAs (19.3% in 2010 compared to 3.0% in 1977), but also MBAs were associated with membership in the corporate elite. I found association leaders were more likely to hold a top MBA degree than the rest of the sample, though this relationship lost significance after I refined the model specification. Yet even after controlling for demographics, multiple directors were more likely to have a top MBA, as were CEOs compared to other high-level non-director executives in their firms.

There are several possibilities as to why a top MBA degree would be associated with advantages even at the very top of these major corporations that are opportunities for further inquiry. It could be a function of the executives' innate abilities; perhaps those admitted to top MBA programs were more intelligent or had higher incoming aptitudes for business. The Graduate Management Admissions Test (or GMAT, the standardized test required by most MBA programs) is incorporated into many MBA rankings, so it is reasonable to assume most alumni of elite programs performed well on the test.[48] The data used here did not include any measures of cognitive ability, leadership traits, or other psychological characteristics, so I am unable to test whether the MBA variable remains significant with their inclusion, but this is an interesting direction for further inquiry.

Along the same lines, perhaps elite MBA programs facilitate skill development in a way other programs do not. Bennis and O'Toole (2005) assert Ford and Carnegie foundation efforts as well as postwar demand for skilled managers improved the rigor and quality of top MBA program curricula beginning in the 1960s. The executives in Useem and Karabel's study may have predated this overhaul, but many of the executives in this study are of the generation that would have encountered these improvements.

[48] It should be noted however, that whether the GMAT is a valid measure of the skillset necessary for success in business is debated (Carver & King, 1994)

Incidentally, elite MBA schools have come under criticism as of late for rewarding faculty research production with limited relevance to practitioners and overemphasizing analytical skill development and narrow functional specialization while losing focus on student learning of practice-based competencies, leadership preparation, or ethics training (Bennis & O'Toole, 2005; Mintzberg, 2004; Pfeffer & Fong, 2004; Schatz, 1997) – but pundits suggest these trends took hold in the 1990s, most likely after most of these executives completed their graduate training.

Alternatively, certain MBA programs might socialize their students to pursue the types of positions studied here in a way other MBA programs or career experiences do not. Van Maanen (1983) compared the MBA student experience at MIT's Sloan School of Management to Harvard Business School. He found clear differences in the culture of each program and the types of careers students seemed to be socialized to enter, suggesting

> on average, Harvard graduates are more likely to find large Fortune 500 companies attractive, especially those that emphasize managerial teamwork as the key to career advancement. MIT graduates are responsive to rewards claimed to be linked to individual performance. Teamwork and group-based management practices hold relatively little fascination for Sloan graduates…" (p. 447).

The job placement statistics he examined and recruiter reports supported this assertion; Harvard graduates took positions with major corporations while MIT MBAs were more likely to work for smaller firms in more specialized positions. Integrating more characteristics of the executives' early careers into this dataset would permit me to test this hypothesis further.

Finally, some sociologists argue elite MBA programs might function as an implicit class preservation tactic (Bourdieu, 1977). After interviewing law and business

graduate students at an elite university, Schleef (2000) concluded their motivation to pursue the degrees was "not so much by an ardent interest or perceived aptitude in these fields, but by the need for credentials to remain in and to have the salary, prestige, and lifestyle of the upper middle class … for most, however, professional education was really about maintaining a possibly precarious class status" (p. 156). In this study, the measure of high social origins had a positive correlation with earning a BA from a Barron's top tier school (r=0.160, p<0.001), a modest positive correlation with earning a top MBA degree (r=0.076, p<0.001) and a modest negative correlation with earning a lower ranked MBA degree (r=-0.043, p<0.01). However, my representation of social class was not nuanced enough to test this hypothesis in depth, and I was unable to assess the associations among upper middle class backgrounds, attendance at top schools, and entry into the corporate elite.

Which of these hypotheses explains the significance of elite MBA degrees in corporate elite membership cannot be ascertained from my results. In my review of the literature, I did not locate any research of the longer-term career impact of earning an MBA; most studies focus on job placement immediately after degree completion or on salary. Further research, perhaps interviews with executive search firms or directors who have been part of CEO searches in these major firms, would offer more insight into why I observed these patterns.

Useem and Karabel (1986) found top law school graduates had the same odds of corporate elite membership as did top MBA graduates. The authors suggested, "in the contemporary corporate environment, the legal and political capacities developed in law school may be as useful as the managerial skills stressed in business schools. But

whatever the reason, graduation from a top law school provides an alternative pathway that is apparently as smooth as the more familiar route traveled by holders of top MBAs" (p. 196). My findings indicated this was less true in 2010. Holding a law degree from a top school was not significantly associated with being a CEO or multiple director, and in several cases, holding a law degree from a lesser-ranked law school had a negative relationship.

Perhaps graduates of top law schools today do not want to work for corporations. Heinz and Lauman (1982) determined general corporate law ranked eighth out of thirty areas in prestige according to members of the Chicago bar, below securities, tax, antitrust defense, patents, antitrust plaintiffs, banking, and public utilities. For many, the ideal job out of law school is with an elite law firm. Not only are these organizations associated with the highest entry-level salaries, but they also reflect the sense of collective eminence and prestige cultivated through attendance at top law schools (Granfield & Koenig, 1992; Samuels, 2000). However, elite law firms are also associated with high levels of turnover and burnout (Fortney, 2000). There is not much evidence considering longer-term career paths of top law graduates and whether they transition from these elite firms to corporate jobs, but regardless, the results here suggest any skills, abilities, or relationships exclusively developed in law school are not in high demand at the highest levels of corporations today.

A notable exception, however, were the business association leaders. They represented 16.6 percent of top law graduates in the full 2010 sample (though only 8.8 percent of the total executives), and the "top law" coefficient was positive and significant in the replication as well as the refinement. Involvement in the federal policymaking and

advising process is one of the foremost, explicitly stated roles of business association leaders. For example, in 2010 the Obama administration asked the Business Roundtable to provide a list of specific regulations that impeded domestic job creation (Williamson, 2010). In contrast, the policy involvement of CEO and multiple director positions is more implicit. Perhaps the legal knowledge and legal connections that come from a top law program are more valuable in the association setting than the other powerful positions.

Undergraduate Achievement and Involvement

The study extension considered patterns in the undergraduate academic achievements and campus involvement of the corporate elite. Unless otherwise noted, the findings discussed here were all statistically significant at $p<0.10$ according to independent sample t-tests.

Of all characteristics examined in the extension analysis, other scholars have given the most attention to business executives' major. Frydman's (2007) longitudinal study of top executives in the 50 largest corporations revealed a trend toward majoring in business fields and a decline in technical degrees in science or engineering. Some of this is a function of the growing popularity of business as a major generally. According to Rukstad and Collis (2001), it is the largest single field among postsecondary students nationally, comprising 20 percent of bachelor's degrees, 25 percent of master's degrees and 3 percent of doctoral degrees. At Yale, history is the most popular major but over the last decade economics – "the closest thing to an undergraduate business degree an anxious parent can find" (Goldstein, 2005, ¶6) – has replaced English as the second most popular. There is also some evidence that business majors are in demand from corporations. Hurley-Hanson et al (2005) found that managerial career attainment in a

major service sector company had a significant relationship with majoring in business as an undergraduate. Majoring in engineering was significant only for a cohort who entered the firm in 1972 but not one who entered in 1982.

In this study of top executives, no one undergraduate major dominated. Executives were split relatively evenly among engineering, liberal arts & humanities, business, economics, and the social sciences.[49] I did not find statistically significant differences in CEOs' majors compared to the full sample or to internal senior managers only. However, for multiple directors, a background in business was *less* common than the rest of the sample and than single directors only, while *more* multiple directors majored in engineering. Wise (1975) and more recently Spilerman and Lunde (1991) each found that majoring in math/science or engineering increased workers' promotion rates. Spilerman and Lunde suggested these fields may proxy intellect or they develop specific analytic skills that translate to success in the middle levels of a corporation, the primary focus of their analysis. Useem's survey of managers supports this latter hypothesis; he found those with liberal arts majors felt underprepared in terms of their quantitative and technical skills, although they felt better prepared in their leadership abilities and appreciation for ethical issues. Alternatively, according to signaling theory, directors with an engineering background might indicate to Wall Street and other investors that a company's board members are especially intelligent and hard workers so these individuals might be more in demand across multiple corporations. Testing whether major investors do have perceptions about educational background that affect their views

[49] An important caveat that I also mentioned in the Results chapter is not all of the schools studied here permit undergraduates to major in business (see Appendix G). This is something other researchers should consider, especially when studying populations that include a disproportionate number of elite college graduates.

of a firm's potential and their investing behavior, as well as whether companies consider these characteristics in director selection (as upper echelon theory assumes), would be interesting directions for further research. Also, certain firms may value some content backgrounds more than other content backgrounds (Useem, 1989). A direction for further analyses with these CEO and director data would be to examine variations in major as well as the other graduate degree fields besides MBAs and JDs according to the company's industry.

However, Spilerman and Lunde (1991) asserted that, "in the highest corporate ranks the dominant activities are policy formulation, negotiation with external actors, and alliance building. A background in humanities or the social sciences would appear beneficial for these tasks" (p. 696), although they did not test this hypothesis. I found that more association leaders majored in liberal arts & humanities and fewer were engineering compared to the rest of the sample (also fewer in business, although that did not reach significance). In a study of Stanford University graduates, Katchadourian and Boli (1994) found that those who became lawyers reported they possessed a broader array of liberal arts/humanities competencies than any other occupational group. Coupled with my finding from the refinement analysis that association leaders were more likely to have a top ranked JD, perhaps certain communication skills honed in the liberal arts disciplines as well as in law school (e.g., the ability to construct persuasive arguments) are especially useful for association leaders' work lobbying policymakers. Although CEO and multiple directors engage with policymakers too, it is not the only major responsibility of their positions – managing major decisions of their primary company/s is equally important as

their tenure depends in a large part on stock performance, profits, and other company-specific metrics.

Association leaders stood out from the rest on my other dimensions of academic achievements as well. There were more national scholars and recipients of campus academic awards in this group compared to the rest of the sample. No differences existed for multiple directors in terms of academic awards, and CEOs actually had significantly lower average campus academic awards than the rest of the full sample. Perhaps there is a meritocratic dimension in the selection of the business association leaders, since even within a population of very smart people (at least by virtue of their educational attainment), those who were recognized for their intellectual abilities in college comprised a higher proportion of these elite organizations.

Also, association leaders held more campus leadership positions than the others. Of the different executive roles considered here, leading a business association is perhaps most similar to an undergraduate leader, in that each is selected to publicly represent their peers (albeit on a quite different scale). In contrast, CEOs are selected to lead an organization, and outside directors are selected to represent the interests of stockholders. The type of individual who is drawn to run for an undergraduate office and has the personal characteristics to get elected might be more likely to pursue and be selected for similar opportunities throughout his professional career.

While not any more likely to be in campus leadership positions, I found that CEOs were more likely to be a varsity athlete. Shulman and Bowen's (2001) study of 30 colleges and universities revealed that among male athletes who entered college in 1976, almost half (49 percent) worked in business fields in 1995 compared to 35 percent of

other students. More specifically, 24 percent of the athletes were executives, compared to 19 percent of students at large. Although Shulman and Bowen did not conduct fine-grained analyses of the executives' positions, their findings corroborate mine. I also determined CEOs were more likely to be in campus media organizations, which is interesting since a major corporate leadership position is not the most expected career outcome associated with journalists. The communication skillset reflected by this type of involvement, however, is perhaps especially useful for someone who is often in the public eye and speaks for the company to stockholders, the board, and the community at large.

For undergraduate involvement, one of the common variables across the groups were the elite student societies. Of the graduates from the four schools that had these for upperclassmen, association leaders and multiple directors were more likely to be members, and the same was true for CEOs though not significant. The relationships formed in those societies are probably not directly affecting whether someone reaches one of these powerful positions, but at the least this evidence suggests the types of people who gain entry to elite undergraduate organizations have qualities that make them attractive (or attracted) to similar rarefied elite circles in the corporate world. Power elite scholars highlight the close connections between the corporate elite and membership in prestigious private clubs, a famous example being the Bohemian Grove in California (Domhoff, 1974b; Wehr, 1994). Such clubs help establish the social cohesion of this class (Wehr, 1994), and elite undergraduate societies are similarly cohesive (Robbins, 2002).

With the exception of the athlete studies, there is little evidence on how undergraduate involvement is associated with post-college socioeconomic outcomes writ

large (Pascarella & Terenzini, 2005). As bachelor's degrees become universal across the population, it follows that activities during college might become more important to employers trying to discern among equally credentialed applicants. The executives studied here graduated from college over 40 years ago on average; whether my findings about their involvement will persist in younger generations is uncertain.

Implications for Theory

This study drew from three theory bases – status attainment, upper echelon, and power elite – and contributes to our understanding of each as well as directions for further inquiry.

Status Attainment

Guided by the assumption that "modern American elites are defined primarily by their occupational position" (Lerner, Nagai & Rothman, 1996, p. 11), the status attainment tradition focuses on the relative prestige associated with a given occupation as a life outcome (Blau & Duncan, 1967; Hodge, 2001; Nakao & Treas, 1989; Siegel, 1971). To represent occupational status, researchers traditionally use a continuous scale with all occupations assigned a ranking relative to one another, but this does not offer an explanation as to how inequality develops because the distinctions among groups are unclear (Hauser & Warren, 1997; Sorensen, 2001; Wright & Perrone, 1977; Zhou, 2005). Also, determining how an individual might move from a lower to higher status over his life course is confusing, because most of the rankings are impractical for understanding movement (e.g., an individual rarely moves from lawyer, which is a 75 in the Nakao and Treas, 1989 prestige ratings, to physician, which is an 86). Most contemporary sociologists operating from a status attainment framework recognize the need to

disaggregate occupations into discrete groups (Kerckhoff, 1995, 1999), and this study illustrates how differences in individuals' backgrounds do exist even when contrasts of status levels are very refined. The model comparing CEOs to other top internal senior managers could be thought of as a comparison of one discrete level of occupational status to another. Few studies follow this approach and examine whether education comes into play for finer grained status distinctions within an occupational sector, profession, or specific firm – for instance, law firm practicing partners compared to managing partners; or investment bank employees who are hedge fund managers (high status) compared to those who manage bank operations or compliance (lower status).

A major contribution of status attainment scholarship is documenting the critical role of education in socioeconomic achievements. In fact, Baker (in press) makes the bold claim that "educational attainment of diplomas and their use in the labor market have come to replace all traditional forms of status attainment, and for most in postindustrial society the educational credential is the only path to adult status." (p. 11). However, beginning in the 1980s, social scientists paid comparably more attention to understanding how education affects income (and reduces poverty) rather than status (Hauser & Warren, 1997). The comprehensive reviews conducted by Pascarella and Terenzini (1993, 2005) of research published in the 1970s, 1980s, and 1990s suggest a paucity of studies examine the relationship between different colleges and occupational attainment. Those that exist often use education as a control, without focusing on what types or levels of education are relatively more important in causing high status outcomes. Yet as the findings here demonstrate, there is a clear connection between someone's educational attainment and ultimate status (not to mention power) attainment.

As this study and others (Rivera, in press) establish, more fine-grained distinctions among degrees are needed in the status attainment tradition, especially as more people earn graduate level credentials that are qualitatively distinct though quantitatively identical. Also, the extension results offered preliminary evidence that within college differences, or individuals' academic achievements and campus involvement, may distinguish those who ascend to highest status positions. Testing these relationships in other status contexts is an important direction for further research.

Upper Echelon

The top management team's education is assumed to be an important factor in selection and in firm outcomes, but evidence is scant as to what educational characteristics are in demand and why they matter. This study offers insight into the former (see Figure 5.2).

For CEOs, the internal labor market contrast was important. There were not any differences in their postsecondary backgrounds when directors were included in the comparison group. However, when CEOs were compared to non-director top executives only, several differences in their postsecondary histories emerged. Removing outside directors from the analysis is consistent with upper echelon theory because outside directors are a more diverse group – their backgrounds, ages, and current positions do not situate them to assume a CEO position as well as internal senior managers (Vancil, 1987). Studies of CEO succession often use inside directors as part of their sample but not outside directors (e.g., Zhang & Rajagopalan, 2003). Therefore, these results speak directly to the internal labor market of Fortune 500 firms and offers evidence that even at the top, educational differences are still evident between top manager and those one level

below on the organizational chart. CEOs were more likely than other internal executives to have a top ranked MBA, and CEOs were less likely than other internal executives to have a lower ranked JD or another graduate degree.

When I compared multiple outside directors to single outside directors only, there were not any significant differences in terms of postsecondary credentials. This indicates the kinds of skills, relationships, or other qualities represented by postsecondary degrees do *not*, on average, facilitate an individual's likelihood of being involved in networks of ties across several corporations as opposed to a single outside tie. However, multiple directors *were* different than the full sample of executives, in that they were more likely to have any type of MBA but less likely to have a JD.

A definite direction for further research would be to incorporate firm data with the executive data. What are the implications of these degree patterns for organizational outcomes including corporate performance? Do companies led by prestigious MBA graduates perform better or pursue different strategies than other companies whose top leaders did not have this type of (assumed) expert technical classroom-based learning experience?

Also, how do variables not included here but hypothesized to be important from an upper echelon standpoint mediate the relationship between educational background and top management team selection (illustrated in Figure A2)? For instance, a firm's organizational characteristics such as industry probably affect the demand for certain types of backgrounds (Bassiry & Dekmejian, 1990). Or perhaps there is a connection between the geographic proximity of a firm's main offices to an executive's alma mater, will someone educated in a super-elite postsecondary environment be less willing to

relocate to "flyover" country compared to someone who graduated from a school in that region (Rivera, in press)? Board characteristics are another possible mediator. What is the likelihood that CEOs' credentials and board members' credentials will match with one another, perhaps reflecting homophilic tendencies based on postsecondary affiliations for "birds of a feather to flock together?" (McPherson, Smith-Lovin & Cook, 2001). Westphal and Zajac (1995) assessed similarities in the level of attainment for CEOs and boards, but there is not any information about degree source patterns.

Power Elite

Much has changed within the broad contours of American society and American business since Useem and Karabel's study. The population as a whole is more educated; women and people of color have made inroads into management positions that were exclusive to white males; technology has evolved at a rapid rate; decline in U.S.-based manufacturing has been accompanied by growth in the service sector; and economic competition is at a global rather than national scale. Yet their study still stands in the power elite tradition as definitive evidence for the postsecondary preparation of the most powerful business leaders, so the updates in the present study are a direct contribution to this literature base.

These results indicate that the corporate elite were less concentrated in prestigious undergraduate schools, especially Harvard, Princeton and Yale, in 2010 compared to 1977, though they were certainly still more likely to have attended these top schools than the average American. The corporate elite were more likely to have attended graduate school in 2010, and in several cases a degree from a top MBA program was specifically advantageous. Postsecondary distinctions between the corporate elite and other top

executives, therefore, were no longer apparent at the BA level but only at the graduate level. In several cases, directly opposite to the 1977 results, I observed a negative relationship between possessing a JD and being in the most powerful positions. This finding should not be interpreted as suggesting these degrees are worthless (or even worse, have negative worth)! They probably facilitate entry and promotions at lower levels of the firms – but when it comes to the transition to the highest position of internal status, power, and leadership these results indicate that law degrees and other graduate degrees besides an MBA do not proxy or signal the types of skills, traits, abilities, or networks that facilitate acquisition of power at the top levels of business.

Most power elite theorists today agree that the class cohesion of the corporate elite is not a function of social reproduction or origins in a national patrician class as it was in the time of Mills, Baltzell, or even Useem and Karabel (Domhoff, 2009). To support this, I found there were considerably fewer executives from this background in 2010 (3.1%) compared to 1977 (9.8%). Yet those in powerful positions were still more likely to come from a highly privileged background, though the overall N's were small. In the logistic estimate controlling for other demographics and postsecondary attainment, CEOs were 130 percent more likely to be from upper class origins than other top senior managers in their firms. Business association leaders were also more likely to be from this background according to the OLS model, but once the estimates were refined, the significance disappeared. These numbers are still very small, and the study would benefit from additional variables representing family background, such as whether the executive's father was also a business executive or whether the company the executive leads was founded by a relative (Useem & Karabel, 1986).

Another direction for further research using this theoretical base would be to extend beyond business to other spheres where power is desired and fought for. The power elite is defined in terms of key political and economic institutions[50] that are interlocked to ensure major decisions are communicated and coordinated (Domhoff, 1974a; Domhoff, 2009; Mills, 1956). Those political institutions include the federal government as well as foundations, think tanks, and policy-discussion groups (Domhoff, 2009). Little is known about the role of higher education in shaping the careers of these leaders. Dye (1995) descriptively summarized the postsecondary backgrounds of top Clinton cabinet members and not surprisingly, many had a legal background, but we do not know whether systematic patterns exist in the backgrounds of those in relatively more powerful positions compared to less powerful positions (e.g., those who win elections versus those who lose elections, federal judges in lower level courts versus upper level courts). The 2010 confirmation of Elena Kagan for the U.S. Supreme Court triggered a rush of commentary (and some backlash) about the fact that all of the justices were graduates of either Harvard or Yale law schools (e.g., Edley, 2010). Beyond such anecdotes, the prevalence of alma maters is unknown, so too is whether powerful politicians gain early practice through their undergraduate college experiences. One of the executives in this study was Richard Gephardt, a former U.S. senator who was on the boards of Ford Motor Company, CenturyTel, United States Steel, and Centene as well as a member of the Business Roundtable and the Committee on Economic Development.

[50] According to the classic power elite perspective proposed by Mills in 1956, power in American society is concentrated in three areas: the economy, politics, and the military. Soon after Mills published his work, power elite scholars observed that the military's role diminished after World War II and was not equal in standing to that of corporations or the political directorate (Domhoff, 2006b). In addition, areas that may be power centers in other societies, such as families, religions, or schools, do not generate or shape national-level decision making and control in the way that economic and political institutions do in the United States.

Gephardt attended Northwestern, was student body president, a member of the Norleggama and Deru student societies, and held more campus leadership positions than any other Northwestern alumni in the sample. His undergraduate accomplishments were more similar to others in the corporate elite than other top executives with comparatively less power; is the same true in the political arena?

Implications for Policy & Practice

Most of the elites studied here were highly educated, which implies they value education (or at least they valued it for themselves). Corporate leaders often talk about the need for an educated workforce. The Business Roundtable, for instance, has an Education, Innovation and Workforce Initiative that advocates for improved training, professional skill development, and lifelong learning in the workforce. A major recommendation from the Commission on the Future of Higher Education convened by U.S. Secretary of Education Margaret Spellings in 2006 was that American colleges and universities must better develop transferable workforce skills to meet the labor market needs. In addition to professors, university presidents/for-profit education CEOs, and foundation representatives, among the 18 Commission members were Richard Stephens of The Boeing Company, Nicholas Donofrio of IBM and Gerri Elliott of Microsoft. The Commission's final report was viewed by many academics, agencies, associations, and journalists as representing the predominant corporate opinion on the state of U.S. higher education (Ruben, Lewis & Sandmeyer, n.d.)

Whether and how that sort of rhetoric translates to action on their part in terms of promoting educational attainment is unclear. Does the almost universally high level of educational attainment of top executives demonstrated by this study result in corporate

practices that value education? Companies are, of course, profit-driven and there is at least some evidence that corporate policies valuing education may benefit the bottom line. One example is United Parcel Service's Metropolitan College program in Kentucky. Experiencing high levels of turnover among employees at its international hub, UPS began to offer tuition remission at a local community college and the University of Louisville. According to its website, the annual turnover rate for new UPS hires went from 100 percent in 1998 to 20 percent, generating what the company characterized as a 600 percent return on investment in its students. What prompts some executives like those at UPS to translate the rhetoric around an educated workforce into practice while other executives do not?

Focusing more closely on specific degree types and sources, many of the most powerful in corporate America hold MBAs from a small number of programs. These leaders are positioned to influence their organizational workforce education policy. Useem (1989) studied internal corporate cultures around education and found a) chief executives were very influential in defining their companies' educational cultures and recruitment policies/preferences (e.g, liberal arts, technical fields, MBAs), and b) clear differences exist in educational cultures across corporations in terms of what is valued. Power elite theory would suggest that leaders also indirectly influence policies of other corporations, through the business associations and other more informal channels like multiple directorships. How can the types of policies like UPS's be encouraged more broadly; more specifically, where this study concerned, is there a way to integrate these into curriculum in MBA or executive education programs that, as this study demonstrates, reach and influence many key decision makers?

What do we know about the curriculum, content, and underlying moral principles of MBA programs? Are top programs truly providing the "best" training in graduate level business? Do they differ in the technical knowledge - the business practices and strategies - imparted? What about the values emphasized? Evans, Trevino and Weaver (2006) studied over 200 MBA programs and found a positive association between admissions selectivity and requirement of an ethics course as well as the prevalence of ethics requirements in the curriculum. However, the linkages between the educational content of certain programs and how/whether they ultimately shape the policies of the corporate elite is uncertain. In a 2010 *New York Times* editorial, David Brooks contended that ascending to a position of power in America's major political and corporate institutions has become more meritocratic over the past century, but these institutions have worse reputations today than in the past when they were run by "blue bloods." Since these top MBA programs are at least part of the basis for this perceived meritocracy, are there ways by which they could restore some of this lost trust as they prepare future corporate leaders?

Agenda for Further Research

Given the myriad findings of this study, several questions are especially interesting lines of inquiry for further research. First, given the discussion above, how do MBA degrees create advantages? What are the underlying causal processes that reward executives who graduate from, for example, Harvard Business School? To what degree do the signaling/screening, acquisition of knowledge and skills or formation of networks and relationships explanations hold? Does it depend on the MBA program attended, on the industry and type of job pursued, on the specific firms? Is the career value of an elite

school's executive MBA and non-degree advanced management programs similar to a traditional MBA degree? Does it depend on how "elite schools" are defined? While some schools consistently rank among the top, the placement of other schools varies quite a bit depending on the ranking schema. Employing a qualitative lens would be beneficial to study these questions, gathering data from the executives themselves in relation to their own experiences, data from those who sit on boards that select other leaders, or perhaps faculty from top business schools responsible for preparing these leaders.

In addition, to what extent are postsecondary degrees from top universities or graduate programs associated with successful careers outside of the major corporations that were the focus here? As I observed in my review of the literature, the occupational outcomes associated with postsecondary degrees are under-studied. Whether and why pathways exist between specific undergraduate or graduate institutions and specific career directions is unclear. These results support further inquiry into nuanced distinctions among different occupational groups that might be more informative in practice compared to global occupational prestige measures. For example, plastic surgery and dermatology are among the most competitive medical specialties for prospective doctors (National Resident Matching Program, 2009). How and why do a prospective doctor's postsecondary choices, undergraduate institution and/or medical school, affect her odds of pursuing and being admitted to these most competitive specializations compared to less competitive ones, such as internal medicine?

Another related direction for further research is: to what extent are undergraduate experiences and involvement associated with other types of career outcomes? My findings, coupled with those of Rivera (in press), lend credence to the notion that the

labor market screens for degrees themselves and also for within-college accomplishments. However, our studies are specific to elite contexts. The connections between academic and extracurricular activities and other career pathways are under-studied, but the evidence here offers reason to believe they might exist. Business is, of course, only one of many careers that college graduates pursue. How are patterns of involvement connected to other fields that have varying levels of expectations around the competencies, skills, and personalities of successful employees? Also, we do not have a good understanding of how these processes play out from the student's perspective. Do their choices of extracurricular activities and associated accomplishments shape their decisions around specific jobs and firms to which they apply? Or is the causal direction reversed; do students have a clear career path in mind and strategically select activities that will position them for the future? How can colleges better assist this occupational decision in terms of matching students with out-of-class opportunities?

Conclusion

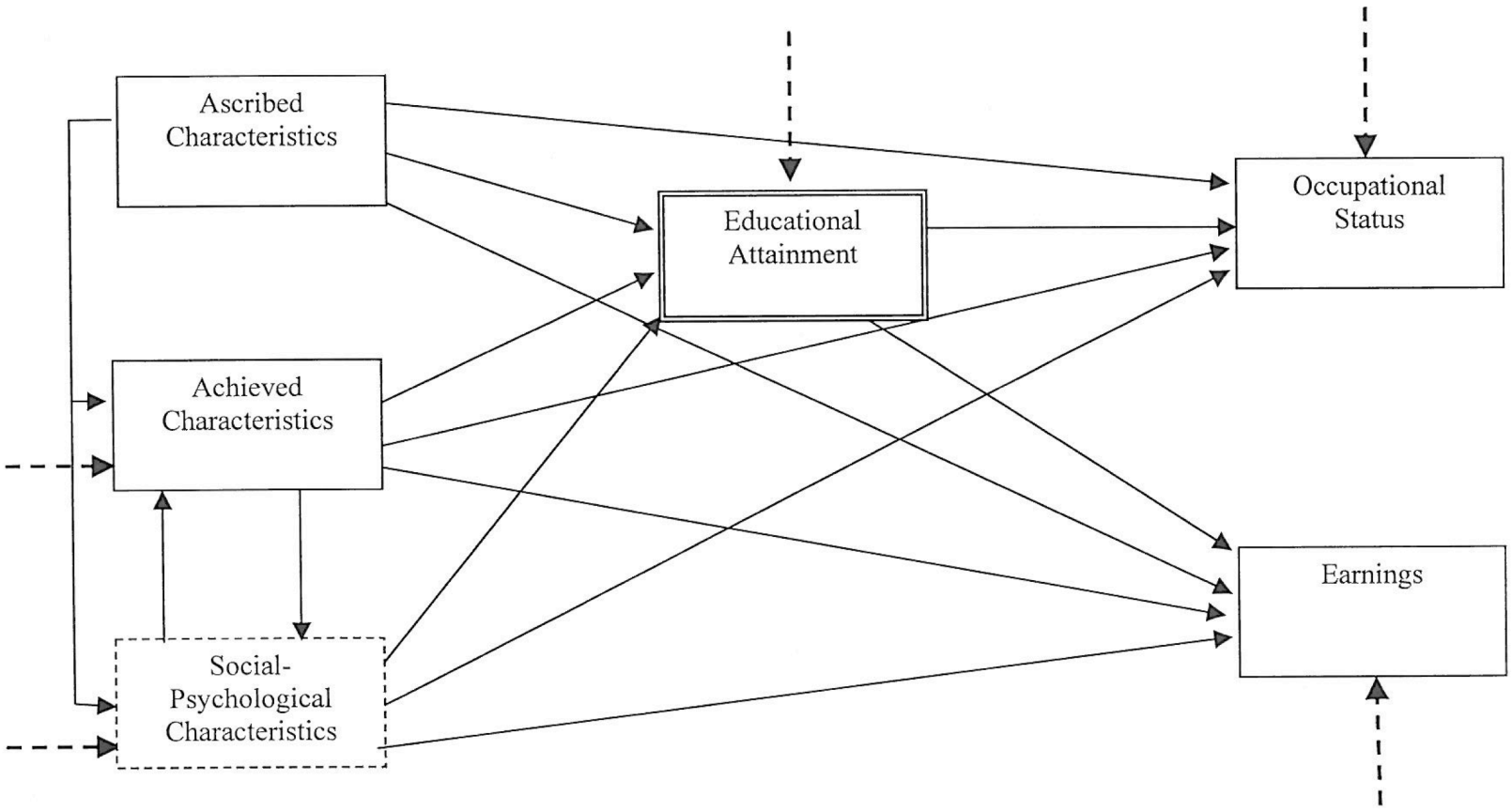
Although the findings raise many questions for further research, what does this study contribute that was not known already? Useem and Karabel's (1986) study is still cited today (e.g., McDonald & Westphal, 2010; Mullen, 2010), but many of their findings no longer hold. There has been an expansion in the number and types of degrees earned by top executives, such that a bachelor's degree is virtually universal, as well as a democratization of undergraduate sources. Earning only a bachelor's degree from a top university is no longer associated with membership in the corporate elite. Focusing more closely on executives' undergraduate experiences rather than their alma maters alone, however, suggests certain activities and achievements might distinguish the most

successful and powerful. Variations also exist in the types and sources of graduate degrees possessed by the corporate elite compared to other top executives. CEOs today are less likely to hold any type of law degree, although business association leaders are more likely to have JDs and more specifically top ranked JDs. As in 1977, MBA degrees continue to distinguish those in top positions of corporate power from their colleagues.

I approached this study with the lens of a higher education researcher. Although informative to the fields of sociology and organizational studies, it offers a unique contribution to higher education, where consideration of socioeconomic effects associated with college mostly focus on income. Far less frequent are studies of occupation, and the idea of power as a theoretically distinct college outcome has not received attention in the field of higher education. Yet modern American society is stratified in a way that concentrates a disproportionate amount of power under the control of a small group in the top tier of the social hierarchy. The leaders of large corporations are among those who wield a disproportionate amount of public influence, through their oversight of vast amounts of resources, financial capital, and hundreds of thousands of employees as well as engagement in national policy decisions pertaining to business. This study suggests higher education does play a role in the acquisition of power and also indicates a number of directions for further inquiry into the complex tasks of parsing out the true influence of college and why it might matter at the highest levels of institutionalized power.

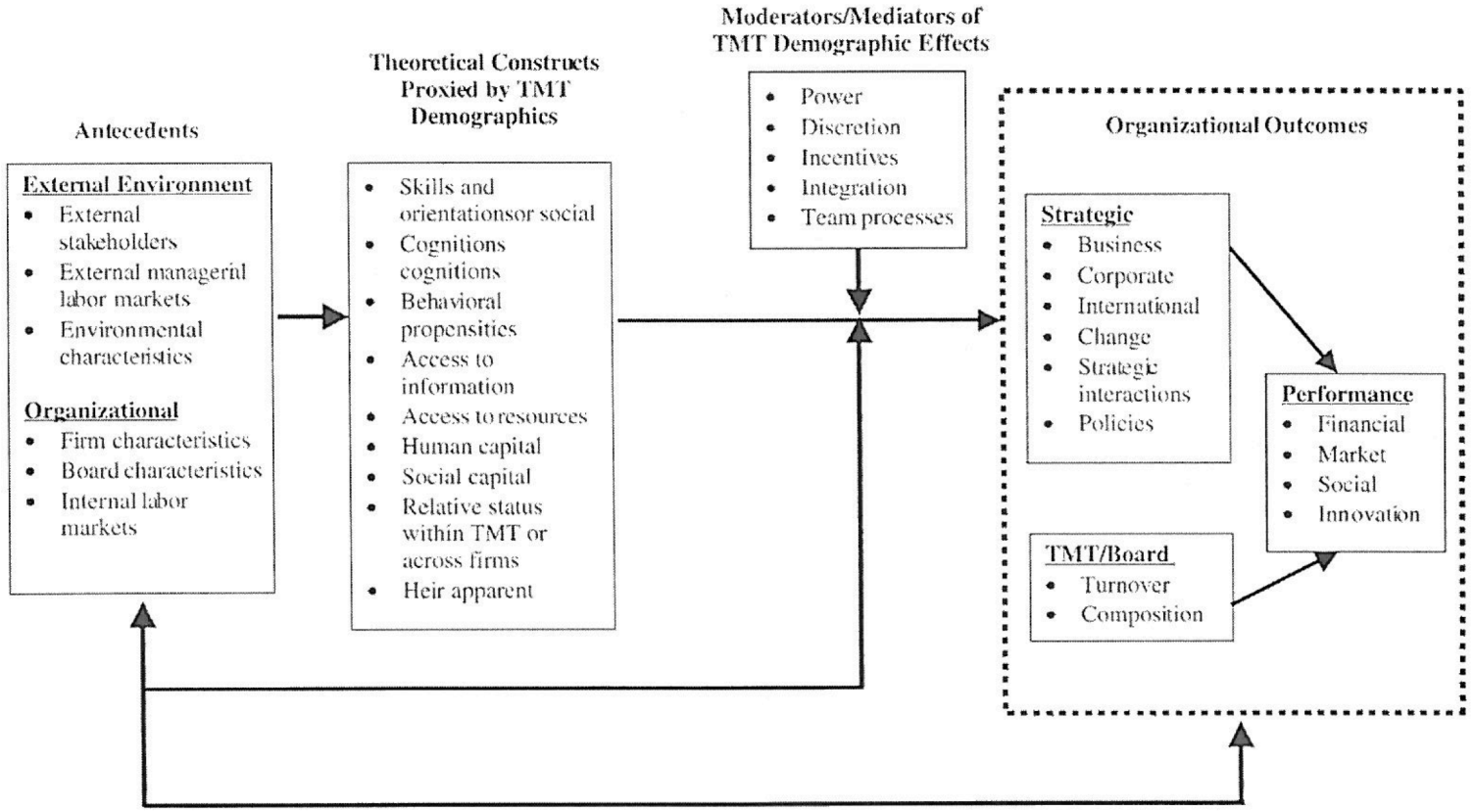
APPENDICES

Figure A1. Classic Status Attainment Path Model



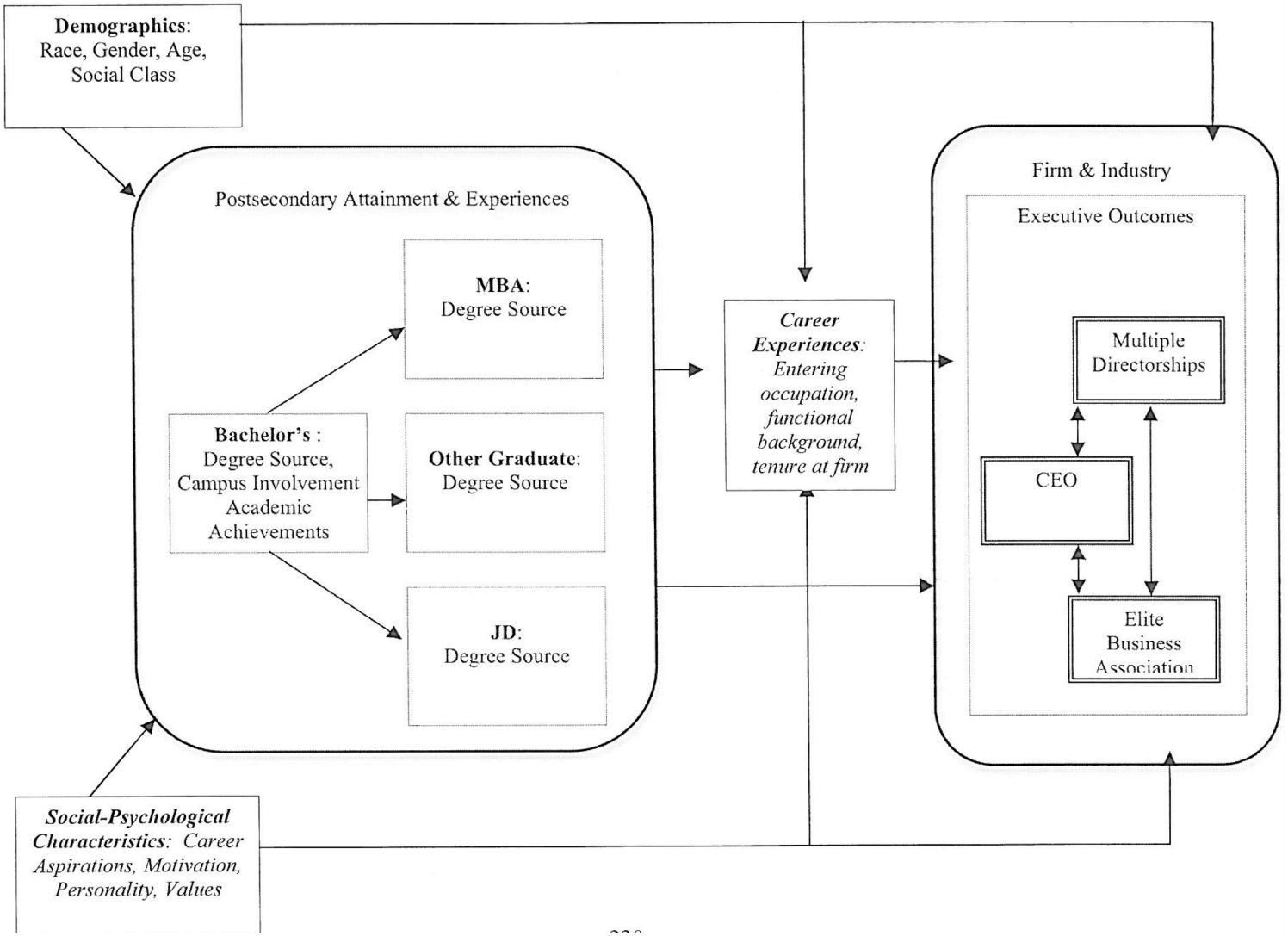
Note. Dotted arrows represent external influences from sources not represented in this model (i.e., unobservables). The Social-Psychological box is represented by a dotted border because it is not included in the Blau/Duncan status attainment path model but is included in that of the Wisconsin sociologists.

Figure A2. Upper Echelon Framework



Note. Reproduced from Carpenter, Geletkanycz and Sanders (2004), p. 760

Figure A3. Conceptual Framework for this Study



Appendix B: 2010 Fortune 500 Companies

Part of 2010 Sample	Part of 1977 Sample	Rank	Company	Major SIC
*		1	Wal-Mart Stores	Retail Trade
*	*	2	Exxon Mobil	Manufacturing
*		3	Chevron	Manufacturing
	*	4	General Electric	Nonclassifiable Establishments
*		5	Bank of America Corp.	Finance, Insurance, & Real Estate
*	*	6	ConocoPhillips	Manufacturing
*	*	7	AT&T	Transportation, Communications & Utilities
*	*	8	Ford Motor	Manufacturing
*	*	9	J.P. Morgan Chase & Co.	Finance, Insurance, & Real Estate
*		10	Hewlett-Packard	Manufacturing
		11	Berkshire Hathaway	Nonclassifiable Establishments
*	*	12	Citigroup	Finance, Insurance, & Real Estate
*		13	Verizon Communications	Transportation, Communications & Utilities
*		14	McKesson	Wholesale Trade
*	*	15	General Motors	Manufacturing
*		16	American International Group	Finance, Insurance, & Real Estate
*		17	Cardinal Health	Wholesale Trade
*		18	CVS Caremark	Retail Trade
*	*	19	Wells Fargo	Finance, Insurance, & Real Estate
*	*	20	International Business Machines	Service Industries
*		21	UnitedHealth Group	Finance, Insurance, & Real Estate
*	*	22	Procter & Gamble	Manufacturing
*		23	Kroger	Retail Trade
*		24	AmerisourceBergen	Wholesale Trade
*		25	Costco Wholesale	Retail Trade
*		26	Valero Energy	Manufacturing
*		27	Archer Daniels Midland	Manufacturing
*	*	28	Boeing	Manufacturing
*		29	Home Depot	Retail Trade
*		30	Target	Retail Trade
*		31	WellPoint	Finance, Insurance, & Real Estate
*		32	Walgreen	Retail Trade
*		33	Johnson & Johnson	Manufacturing
*		34	State Farm Insurance Cos.	Finance, Insurance, & Real Estate
*		35	Medco Health Solutions	Retail Trade
*		36	Microsoft	Service Industries
*	*	37	United Technologies	Manufacturing
*		38	Dell	Manufacturing
*		39	Goldman Sachs Group	Finance, Insurance, & Real Estate
*		40	Pfizer	Manufacturing
*	*	41	Marathon Oil	Manufacturing
*		42	Lowe's	Retail Trade
*	*	43	United Parcel Service	Transportation, Communications & Utilities
*		44	Lockheed Martin	Manufacturing
*		45	Best Buy	Retail Trade

*	*	46	Dow Chemical	Manufacturing
*		47	Supervalu	Retail Trade
*	*	48	Sears Holdings	Retail Trade
*		49	International Assets Holding	Finance, Insurance, & Real Estate
*		50	PepsiCo	Manufacturing
*		51	MetLife	Finance, Insurance, & Real Estate
*	*	52	Safeway	Retail Trade
*	*	53	Kraft Foods	Manufacturing
*		54	Freddie Mac	Finance, Insurance, & Real Estate
*		55	Sysco	Wholesale Trade
*		56	Apple	Manufacturing
*		57	Walt Disney	Transportation, Communications & Utilities
*		58	Cisco Systems	Manufacturing
*		59	Comcast	Transportation, Communications & Utilities
*		60	FedEx	Transportation, Communications & Utilities
*		61	Northrop Grumman	Manufacturing
*		62	Intel	Manufacturing
*	*	63	Aetna	Finance, Insurance, & Real Estate
*	*	64	New York Life Insurance	Finance, Insurance, & Real Estate
*	*	65	Prudential Financial	Finance, Insurance, & Real Estate
*	*	66	Caterpillar	Manufacturing
*		67	Sprint Nextel	Transportation, Communications & Utilities
*		68	Allstate	Finance, Insurance, & Real Estate
*		69	General Dynamics	Manufacturing
*		70	Morgan Stanley	Finance, Insurance, & Real Estate
*		71	Liberty Mutual Insurance Group	Finance, Insurance, & Real Estate
*		72	Coca-Cola	Manufacturing
*		73	Humana	Finance, Insurance, & Real Estate
*		74	Honeywell International	Manufacturing
*		75	Abbott Laboratories	Manufacturing
*		76	News Corp.	Transportation, Communications & Utilities
*		77	HCA	Service Industries
*		78	Sunoco	Manufacturing
*	*	79	Hess	Manufacturing
*		80	Ingram Micro	Wholesale Trade
*		81	Fannie Mae	Finance, Insurance, & Real Estate
*		82	Time Warner	Transportation, Communications & Utilities
*	*	83	Johnson Controls	Manufacturing
*		84	Delta Air Lines	Transportation, Communications & Utilities
*		85	Merck	Manufacturing
*	*	86	DuPont	Manufacturing
*		87	Tyson Foods	Manufacturing
*	*	88	American Express	Finance, Insurance, & Real Estate
*		89	Rite Aid	Retail Trade
*		90	TIAA-CREF	Finance, Insurance, & Real Estate
*		91	CHS	Wholesale Trade
*		92	Enterprise GP Holdings	Transportation, Communications & Utilities
*	*	93	Massachusetts Mutual Life Insurance	Finance, Insurance, & Real Estate
*		94	Philip Morris International	Manufacturing

*		95	Raytheon	Manufacturing
*		96	Express Scripts	Finance, Insurance, & Real Estate
*		97	Hartford Financial Services	Finance, Insurance, & Real Estate
*	*	98	Travelers Cos.	Finance, Insurance, & Real Estate
*		99	Publix Super Markets	Retail Trade
		100	Amazon.com	Retail Trade
		101	Staples	Retail Trade
*		102	Google	Service Industries
		103	Macy's	Retail Trade
*	*	104	International Paper	Manufacturing
*		105	Oracle	Service Industries
*		106	3M	Manufacturing
*	*	107	Deere	Manufacturing
		108	McDonald's	Retail Trade
*		109	Tech Data	Wholesale Trade
*		110	Motorola	Manufacturing
		111	Fluor	Construction
*		112	Eli Lilly	Manufacturing
*		113	Coca-Cola Enterprises	Manufacturing
*		114	Bristol-Myers Squibb	Manufacturing
*	*	115	Northwestern Mutual	Finance, Insurance, & Real Estate
*		116	DirecTV Group	Transportation, Communications & Utilities
*		117	Emerson Electric	Manufacturing
*	*	118	Nationwide	Finance, Insurance, & Real Estate
		119	TJX	Retail Trade
*	*	120	AMR (American Airlines)	Transportation, Communications & Utilities
*	*	121	U.S. Bancorp	Finance, Insurance, & Real Estate
		122	GMAC	Nonclassifiable Establishments
*	*	123	PNC Financial Services Group	Finance, Insurance, & Real Estate
*		124	Nike	Manufacturing
*		125	Murphy Oil	Manufacturing
*		126	Kimberly-Clark	Manufacturing
*		127	Alcoa	Manufacturing
*		128	Plains All American Pipeline	Transportation, Communications & Utilities
		129	Cigna	Finance, Insurance, & Real Estate
		130	AFLAC	Finance, Insurance, & Real Estate
*		131	Time Warner Cable	Transportation, Communications & Utilities
		132	United Services Auto. Assn.	Finance, Insurance, & Real Estate
	*	133	J.C. Penney	Retail Trade
*		134	Exelon	Transportation, Communications & Utilities
		135	Kohl's	Retail Trade
*		136	Whirlpool	Manufacturing
*	*	137	Altria Group (Phillip Morris)	Manufacturing
*		138	Computer Sciences	Service Industries
*		139	Tesoro	Manufacturing
*	*	140	UAL	Transportation, Communications & Utilities
*	*	141	Goodyear Tire & Rubber	Manufacturing
*		142	Avnet	Wholesale Trade
*		143	Manpower	Service Industries

		144	Capital One Financial	Finance, Insurance, & Real Estate
*	*	145	Southern	Transportation, Communications & Utilities
		146	Health Net	Finance, Insurance, & Real Estate
*		147	FPL Group	Transportation, Communications & Utilities
*		148	L-3 Communications	Manufacturing
*		149	Constellation Energy	Transportation, Communications & Utilities
	*	150	Occidental Petroleum	Mining
*	*	151	Colgate-Palmolive	Manufacturing
*	*	152	Xerox	Manufacturing
*		153	Dominion Resources	Transportation, Communications & Utilities
		154	Freeport-McMoRan Copper & Gold	Mining
*		155	General Mills	Manufacturing
*		156	AES	Transportation, Communications & Utilities
*		157	Arrow Electronics	Wholesale Trade
		158	Halliburton	Mining
*		159	Amgen	Manufacturing
*		160	Medtronic	Manufacturing
		161	Progressive	Finance, Insurance, & Real Estate
		162	Gap	Retail Trade
*		163	Smithfield Foods	Manufacturing
*	*	164	Union Pacific	Transportation, Communications & Utilities
	*	165	Loews	Finance, Insurance, & Real Estate
*		166	EMC	Manufacturing
~	*	167	Burlington Northern Santa Fe	Transportation, Communications & Utilities
*		168	Coventry Health Care	Service Industries
*		169	Illinois Tool Works	Manufacturing
*		170	Viacom	Transportation, Communications & Utilities
		171	Toys "R" Us	Retail Trade
*	*	172	American Electric Power	Transportation, Communications & Utilities
*	*	173	PG&E Corp.	Transportation, Communications & Utilities
*		174	Pepsi Bottling	Manufacturing
*		175	Consolidated Edison	Transportation, Communications & Utilities
		176	Chubb	Finance, Insurance, & Real Estate
*		177	CBS	Transportation, Communications & Utilities
*		178	ConAgra Foods	Manufacturing
*		179	FirstEnergy	Transportation, Communications & Utilities
*		180	Sara Lee	Manufacturing
		181	Duke Energy	Transportation, Communications & Utilities
*		182	National Oilwell Varco	Manufacturing
	*	183	Continental Airlines	Transportation, Communications & Utilities
*		184	Kellogg	Manufacturing
*		185	Baxter International	Manufacturing
		186	Public Service Enterprise Group	Transportation, Communications & Utilities
		187	Edison International	Transportation, Communications & Utilities
		188	Qwest Communications	Transportation, Communications & Utilities
		189	Aramark	Retail Trade
*		190	PPG Industries	Manufacturing
*		191	Community Health Systems	Service Industries
		192	Office Depot	Retail Trade

		193	KBR	Construction
*		194	Eaton	Manufacturing
		195	Dollar General	Retail Trade
		196	Waste Management	Transportation, Communications & Utilities
	*	197	Monsanto	Agriculture, forestry, and fishing
*		198	Omnicom Group	Service Industries
*		199	Jabil Circuit	Manufacturing
		200	DISH Network	Transportation, Communications & Utilities
*		201	TRW Automotive Holdings	Manufacturing
*		202	Navistar International	Manufacturing
		203	Jacobs Engineering Group	Construction
~	*	204	Sun Microsystems	Manufacturing
*		205	World Fuel Services	Wholesale Trade
*		206	Nucor	Manufacturing
*		207	Danaher	Manufacturing
*		208	Dean Foods	Manufacturing
		209	Oneok	Transportation, Communications & Utilities
		210	Liberty Global	Transportation, Communications & Utilities
*	*	211	United States Steel	Manufacturing
		212	AutoNation	Retail Trade
		213	Marriott International	Service Industries
*		214	ITT	Manufacturing
		215	SAIC	Service Industries
		216	Yum Brands	Retail Trade
		217	BB&T Corp.	Finance, Insurance, & Real Estate
*		218	Cummins	Manufacturing
		219	Entergy	Transportation, Communications & Utilities
*		220	Textron	Manufacturing
		221	Marsh & McLennan	Finance, Insurance, & Real Estate
		222	US Airways Group	Transportation, Communications & Utilities
*		223	Texas Instruments	Manufacturing
		224	SunTrust Banks	Finance, Insurance, & Real Estate
*		225	Qualcomm	Manufacturing
*		226	Land O'Lakes	Manufacturing
		227	Liberty Media	Retail Trade
*		228	Avon Products	Manufacturing
		229	Southwest Airlines	Transportation, Communications & Utilities
*		230	Parker Hannifin	Manufacturing
*		231	Mosaic	Manufacturing
*		232	BJ's Wholesale Club	Retail Trade
*		233	H.J. Heinz	Manufacturing
*		234	Thermo Fisher Scientific	Manufacturing
		235	Unum Group	Finance, Insurance, & Real Estate
		236	Genuine Parts	Wholesale Trade
		237	Guardian Life Ins. Co. of America	Finance, Insurance, & Real Estate
		238	Peter Kiewit Sons'	Transportation, Communications & Utilities
		239	Progress Energy	Transportation, Communications & Utilities
*		240	R.R. Donnelley & Sons	Manufacturing
*		241	Starbucks	Retail Trade

*		242	Lear	Manufacturing
*		243	Baker Hughes	Manufacturing
		244	Xcel Energy	Transportation, Communications & Utilities
*		245	Penske Automotive Group	Retail Trade
		246	Energy Future Holdings	Nonclassifiable Establishments
*	*	247	Great Atlantic & Pacific Tea	Retail Trade
		248	Fifth Third Bancorp	Finance, Insurance, & Real Estate
		249	State Street Corp.	Finance, Insurance, & Real Estate
		250	First Data	Service Industries
		251	Pepco Holdings	Transportation, Communications & Utilities
		252	URS	Service Industries
		253	Tenet Healthcare	Service Industries
		254	Regions Financial	Finance, Insurance, & Real Estate
*		255	GameStop	Retail Trade
	*	256	Lincoln National	Finance, Insurance, & Real Estate
		257	Genworth Financial	Finance, Insurance, & Real Estate
		258	XTO Energy	Mining
		259	CSX	Transportation, Communications & Utilities
		260	Anadarko Petroleum	Mining
		261	Devon Energy	Mining
*		262	Praxair	Manufacturing
		263	NRG Energy	Transportation, Communications & Utilities
		264	Harrah's Entertainment	Service Industries
		265	Automatic Data Processing	Service Industries
		266	Principal Financial	Finance, Insurance, & Real Estate
		267	eBay	Service Industries
		268	Assurant	Finance, Insurance, & Real Estate
*		269	Limited Brands	Retail Trade
*		270	Nordstrom	Retail Trade
		271	Apache	Mining
*	*	272	Reynolds American	Manufacturing
*		273	Air Products & Chemicals	Manufacturing
*	*	274	Bank of New York Mellon Corp.	Finance, Insurance, & Real Estate
		275	CenterPoint Energy	Transportation, Communications & Utilities
		276	Williams	Transportation, Communications & Utilities
*		277	Smith International	Manufacturing
*		278	Republic Services	Transportation, Communications & Utilities
*		279	Boston Scientific	Manufacturing
		280	Ashland	Wholesale Trade
*		280	Sempra Energy	Transportation, Communications & Utilities
*		282	Paccar	Manufacturing
		283	Owens & Minor	Wholesale Trade
*		284	Whole Foods Market	Retail Trade
*		285	DTE Energy	Transportation, Communications & Utilities
*		286	Discover Financial Services	Finance, Insurance, & Real Estate
*		287	Norfolk Southern	Transportation, Communications & Utilities
*		288	Ameriprise Financial	Finance, Insurance, & Real Estate
*		289	Crown Holdings	Manufacturing
		290	Icahn Enterprises	Nonclassifiable Establishments

*		291	Masco	Manufacturing
*		292	Cablevision Systems	Transportation, Communications & Utilities
*		293	Huntsman	Manufacturing
		294	Synnex	Wholesale Trade
		295	Newmont Mining	Mining
		296	Chesapeake Energy	Mining
*	*	297	Eastman Kodak	Manufacturing
*		298	Aon	Finance, Insurance, & Real Estate
*		299	Campbell Soup	Manufacturing
*		300	PPL	Transportation, Communications & Utilities
*		301	C.H. Robinson Worldwide	Transportation, Communications & Utilities
*		302	Integrys Energy Group	Transportation, Communications & Utilities
		303	Quest Diagnostics	Service Industries
*		304	Western Digital	Manufacturing
*		305	Family Dollar Stores	Retail Trade
*		306	Winn-Dixie Stores	Retail Trade
*		307	Ball	Manufacturing
*		308	Estée Lauder	Manufacturing
		309	Shaw Group	Service Industries
*		310	VF	Manufacturing
		311	Darden Restaurants	Retail Trade
		312	Becton Dickinson	Manufacturing
		313	OfficeMax	Wholesale Trade
		314	Bed Bath & Beyond	Retail Trade
*		315	Kinder Morgan	Transportation, Communications & Utilities
		316	Ross Stores	Retail Trade
		317	Pilgrim's Pride	Manufacturing
		318	Hertz Global Holdings	Service Industries
		319	Sherwin-Williams	Manufacturing
*		320	Ameren	Transportation, Communications & Utilities
*		321	Reinsurance Group of America	Finance, Insurance, & Real Estate
		322	Owens-Illinois	Manufacturing
		323	CarMax	Retail Trade
		324	Gilead Sciences	Manufacturing
		325	Precision Castparts	Manufacturing
		326	Visa	Service Industries
		327	Commercial Metals	Manufacturing
*		328	WellCare Health Plans	Finance, Insurance, & Real Estate
		329	AutoZone	Retail Trade
		330	Western Refining	Manufacturing
		331	Dole Food	Agriculture, forestry, and fishing
		332	Charter Communications	Nonclassifiable Establishments
		333	Stryker	Manufacturing
		334	Goodrich	Manufacturing
		335	Visteon	Manufacturing
*		336	NiSource	Transportation, Communications & Utilities
		337	AGCO	Manufacturing
*		338	Calpine	Transportation, Communications & Utilities
		339	Henry Schein	Wholesale Trade

		340	Hormel Foods	Manufacturing
		341	Affiliated Computer Services	Service Industries
*		342	Thrivent Financial for Lutherans	Finance, Insurance, & Real Estate
		343	Yahoo	Service Industries
*		344	American Family Insurance Group	Finance, Insurance, & Real Estate
		345	Sonic Automotive	Retail Trade
	*	346	Peabody Energy	Mining
		347	Omnicare	Retail Trade
		348	Dillard's	Retail Trade
		349	W.W. Grainger	Wholesale Trade
*		350	CMS Energy	Transportation, Communications & Utilities
		351	Fortune Brands	Manufacturing
		352	AECOM Technology	Service Industries
		353	Symantec	Service Industries
*		354	SLM	Finance, Insurance, & Real Estate
		355	DaVita	Service Industries
*		356	KeyCorp	Finance, Insurance, & Real Estate
		357	MeadWestvaco	Manufacturing
		358	Interpublic Group	Service Industries
*		359	Virgin Media	Transportation, Communications & Utilities
		360	MGM Mirage	Service Industries
*		361	First American Corp.	Finance, Insurance, & Real Estate
	*	362	Avery Dennison	Manufacturing
		363	McGraw-Hill	Manufacturing
		364	Enbridge Energy Partners	Mining
		365	Ecolab	Manufacturing
*		366	Fidelity National Financial	Finance, Insurance, & Real Estate
		367	Dover	Manufacturing
		368	Global Partners	Wholesale Trade
*		369	UGI	Transportation, Communications & Utilities
		370	Gannett	Manufacturing
		371	Harris	Manufacturing
		372	Barnes & Noble	Retail Trade
		373	Newell Rubbermaid	Manufacturing
		374	Smurfit-Stone Container	Manufacturing
		375	Pitney Bowes	Manufacturing
*		376	CC Media Holdings	Transportation, Communications & Utilities
		377	Emcor Group	Construction
		378	Dr Pepper Snapple Group	Manufacturing
		379	Weyerhaeuser	Manufacturing
		380	SunGard Data Systems	Service Industries
		381	CH2M Hill	Service Industries
		382	Pantry	Retail Trade
		383	Domtar	Manufacturing
		384	Clorox	Manufacturing
*		385	Northeast Utilities	Transportation, Communications & Utilities
		386	Oshkosh	Manufacturing
	*	387	Mattel	Manufacturing
*		388	Energy Transfer Equity	Transportation, Communications & Utilities

		389	Advance Auto Parts	Retail Trade
		390	Advanced Micro Devices	Manufacturing
		391	Corning	Manufacturing
		392	Mohawk Industries	Manufacturing
		393	PetSmart	Retail Trade
		394	Reliance Steel & Aluminum	Wholesale Trade
		395	Hershey	Manufacturing
*		396	YRC Worldwide	Transportation, Communications & Utilities
		397	Dollar Tree	Retail Trade
		398	Dana Holding	Manufacturing
		399	Cameron International	Manufacturing
		400	Nash-Finch	Wholesale Trade
*		401	Pacific Life	Finance, Insurance, & Real Estate
		402	Terex	Manufacturing
		403	Universal Health Services	Service Industries
*		404	Amerigroup	Finance, Insurance, & Real Estate
		405	Sanmina-SCI	Manufacturing
		406	Jarden	Manufacturing
		407	Tutor Perini	Construction
*		408	Mutual of Omaha Insurance	Finance, Insurance, & Real Estate
		409	Avis Budget Group	Service Industries
		410	Autoliv	Manufacturing
*		411	MasterCard	Finance, Insurance, & Real Estate
		412	Mylan	Manufacturing
*		413	Western Union	Finance, Insurance, & Real Estate
		414	Celanese	Manufacturing
		415	Eastman Chemical	Manufacturing
*		416	Telephone & Data Systems	Transportation, Communications & Utilities
		417	Polo Ralph Lauren	Manufacturing
~		418	Auto-Owners Insurance	Finance, Insurance, & Real Estate
		419	Core-Mark Holding	Wholesale Trade
*	*	420	Western & Southern Financial Group	Finance, Insurance, & Real Estate
		421	Applied Materials	Manufacturing
		422	Anixter International	Wholesale Trade
*		423	CenturyTel	Transportation, Communications & Utilities
		424	Atmos Energy	Transportation, Communications & Utilities
*		425	Universal American	Finance, Insurance, & Real Estate
		426	Ryder System	Service Industries
		427	SPX	Manufacturing
		428	Foot Locker	Retail Trade
		429	O'Reilly Automotive	Retail Trade
		430	Harley-Davidson	Manufacturing
		431	Holly	Manufacturing
		432	Owens Corning	Manufacturing
		432	Micron Technology	Manufacturing
		434	EOG Resources	Mining
		435	Black & Decker	Manufacturing
		436	Big Lots	Retail Trade
		437	Spectra Energy	Transportation, Communications & Utilities

	438	Starwood Hotels & Resorts	Service Industries
	439	United Stationers	Wholesale Trade
	440	TravelCenters of America	Retail Trade
*	441	BlackRock	Finance, Insurance, & Real Estate
	442	Laboratory Corp. of America	Service Industries
	443	Health Management Associates	Service Industries
	444	NYSE Euronext	Finance, Insurance, & Real Estate
	445	St. Jude Medical	Manufacturing
*	446	Tenneco	Manufacturing
	447	El Paso	Transportation, Communications & Utilities
	448	Wesco International	Wholesale Trade
	449	Consol Energy	Mining
	450	ArvinMeritor	Manufacturing
	451	NCR	Manufacturing
	452	Unisys	Service Industries
	453	Lubrizol	Manufacturing
	454	Alliant Techsystems	Manufacturing
	455	Washington Post	Service Industries
	456	Las Vegas Sands	Service Industries
	457	Group 1 Automotive	Retail Trade
	458	Genzyme	Manufacturing
	459	Allergan	Manufacturing
	460	Broadcom	Manufacturing
	461	Agilent Technologies	Manufacturing
*	462	Rockwell Collins	Manufacturing
	463	W.R. Berkley	Finance, Insurance, & Real Estate
	464	PepsiAmericas	Manufacturing
	465	Charles Schwab	Finance, Insurance, & Real Estate
	466	Dick's Sporting Goods	Retail Trade
	467	FMC Technologies	Manufacturing
	468	NII Holdings	Transportation, Communications & Utilities
	469	General Cable	Manufacturing
	470	Graybar Electric	Wholesale Trade
	471	Biogen Idec	Manufacturing
	472	AbitibiBowater	Manufacturing
	473	Flowserve	Manufacturing
	474	Airgas	Wholesale Trade
	475	Conseco	Finance, Insurance, & Real Estate
*	476	Rockwell Automation	Manufacturing
	477	Kindred Healthcare	Service Industries
	478	American Financial Group	Finance, Insurance, & Real Estate
	479	Kelly Services	Service Industries
	480	Spectrum Group International	Service Industries
	481	RadioShack	Retail Trade
	482	CA	Service Industries
	483	Con-way	Transportation, Communications & Utilities
	484	Erie Insurance Group	Finance, Insurance, & Real Estate
	485	Casey's General Stores	Retail Trade
	486	Centene	Finance, Insurance, & Real Estate

487	Sealed Air	Manufacturing
488	Frontier Oil	Manufacturing
489	Scana	Transportation, Communications & Utilities
490	Live Nation Entertainment	Service Industries
491	Fiserv	Service Industries
492	Host Hotels & Resorts	Finance, Insurance, & Real Estate
493	H&R Block	Service Industries
494	Electronic Arts	Service Industries
495	Franklin Resources	Finance, Insurance, & Real Estate
496	Wisconsin Energy	Transportation, Communications & Utilities
497	Northern Trust Corp.	Finance, Insurance, & Real Estate
498	MDU Resources Group	Transportation, Communications & Utilities
499	CB Richard Ellis Group	Finance, Insurance, & Real Estate
500	Blockbuster	Service Industries

~ [1]Sun Microsystems was acquired in early 2010 by Oracle. Since Oracle was already part of the sample, I replaced Sun with VF. Burlington Northern Railroads was acquired in early 2010 by Berkshire Hathaway, which is characterized as a "Nonclassifiable Establishment." I replaced Burlington Northern with CenturyTel. Auto-Owners Insurance is ranked 418 but is a privately held company and I could not locate a list of executives or directors. I replaced it with the next company in Finance, Insurance & Real Estate, which is Blackrock.

Appendix C: Study Replication & Refinement Correlation Matrices

Table C.1
Study Replication: Correlation Matrix

Correlations

	Assn	Multiple Director	CEO	Upper class	BA only, top	BA only, low	MBA top	MBA, low	Law, low	Law, top	Other grad.	BA low xMBA top
Multiple Director	0.080 ***											
CEO	0.363 ***	-0.026										
Upper class	0.029 ~	0.028 ~	0.019									
BA only, top school	-0.017	0.006	0.007	0.114 ***								
BA only, lower school	-0.056 **	-0.047 **	0.022	-0.016	-0.103 ***							
MBA, top school	0.032 ~	0.071 ***	0.014	0.074 ***	-0.072 ***	-0.268 ***						
MBA, lower school	-0.011	0.003	0.036 *	-0.041 *	-0.077 ***	-0.286 ***	-0.201 ***					
Law, lower school	-0.028 ~	-0.035 *	-0.028 ~	-0.032 *	-0.058 ***	-0.217 ***	-0.152 ***	-0.154 ***				
Law, top	0.071 ***	0.002	-0.014	0.016	-0.044 **	-0.163 ***	-0.114 ***	-0.116 ***	-0.088 ***			
Other graduate	0.057 **	0.036 *	-0.049 **	-0.028 ~	-0.074 ***	-0.277 ***	-0.194 ***	-0.208 ***	-0.158 ***	-0.118 ***		
BA low x MBA top	0.025	0.073 ***	0.011	0.034 *	-0.064 ***	-0.237 ***	0.812 ***	-0.151 ***	-0.097 ***	-0.053 **	-0.172 ***	
BA low x upper class	0.005	0.007	0.033 *	0.767 ***	-0.023	0.037 *	0.048 **	-0.021	-0.009	-0.011	-0.031	0.079 ***

* p<.05; ** p<.01; *** p<.001

Table C.2 *Study Refinement: Correlation Matrix*

Correlations

	CEO	Multiple Director	Assn	Female	White	Birth Year	Upper Class	BA, Most Comp.	BA, Highly Comp.	BA, Very Comp.
Multiple Directors	-0.026									
Assn	0.363 ***	0.080 ***								
Female	-0.101 ***	0.040 *	0.002							
White	0.061 ***	-0.089 ***	0.002	-0.057 **						
Birth Year	0.073 ***	-0.261 ***	-0.082 ***	0.091 ***	-0.009					
Upper Class	0.019	0.028 ~	0.029 ~	-0.044 **	0.044 **	-0.061 ***				
BA, Most Comp.	0.002	0.052 **	0.101 ***	0.022	0.005	-0.079 ***	0.160 ***			
BA, Highly Comp.	-0.001	0.022	0.017	0.024	0.076 ***	0.019	0.010	-0.179 ***		
BA, Very Comp.	-0.012	0.013	0.007	0.049 **	0.061 ***	-0.010	-0.053 **	-0.201 ***	-0.162 ***	
BA, Comp.	-0.014	0.008	-0.041 *	-0.036 *	0.008	0.039 *	-0.034 *	-0.222 ***	-0.179 ***	-0.201 ***
BA, Less Comp.	0.023	-0.005	-0.012	0.010	-0.041 *	0.011	-0.025	-0.166 ***	-0.134 ***	-0.151 ***
BA, Noncomp.	0.001	-0.007	-0.012	-0.019	0.009	0.016	-0.019	-0.074 ***	-0.060 ***	-0.067 ***
BA, International	0.005	-0.083 ***	-0.053 **	-0.049 **	-0.132 ***	0.037 *	-0.042 *	-0.161 ***	-0.130 ***	-0.146 ***
BA, Not in Barron's	-0.009	-0.013	-0.014	0.003	-0.010	-0.002	-0.018	-0.154 ***	-0.125 ***	-0.140 ***
No BA	0.023	-0.022	-0.039 *	-0.046 **	0.021	-0.026	-0.026	-0.067 ***	-0.054 ***	-0.061 ***
MBA, Unranked	0.040 *	0.001	-0.006	-0.048 **	-0.003	0.088 ***	-0.043 **	-0.097 ***	-0.040 *	0.049 **
MBA, Ranked	0.015	0.070 ***	0.028 ~	-0.005	0.009	0.029 ~	0.076 ***	0.178 ***	0.116 ***	-0.018
JD, Unranked	-0.028 ~	-0.035 *	-0.028 ~	0.023	0.024	-0.001	-0.032 *	-0.044 **	0.047 ***	0.036 *
JD, Ranked	-0.014	0.002	0.071 ***	-0.015	-0.074 ***	-0.052 ***	0.016	0.240 ***	0.072 ***	-0.050 **
Other Grad	-0.050 **	0.046 **	0.062 ***	0.098 ***	-0.117 ***	-0.156 ***	-0.033 *	0.056 **	-0.030 ~	0.001

	BA, Comp.	BA, Less Comp.	BA,	BA,	BA, Not in	No BA	MBA,	MBA,	JD,	JD, ranked
Multiple Directors										
Assn										
Female										
White										
Birth Year										
Upper Class										
BA, Most Comp.										
BA, Highly Comp.										
BA, Very Comp.										
BA, Comp.										
BA, Less Comp.	-0.167 ***									
BA, Noncomp.	-0.074 ***	-0.055 **								
BA, International	-0.161 ***	-0.121 ***	-0.054 **							
BA, Not in Barron's	-0.155 ***	-0.116 ***	-0.051 **	-0.112 ***						
No BA	-0.068 ***	-0.051 **	-0.022	-0.049 **	-0.047 **					
MBA, Unranked	0.058 ***	0.014	0.028 ~	0.018	0.020	-0.068 ***				
MBA, Ranked	-0.074 ***	-0.074 ***	-0.037 *	-0.050 **	-0.065 ***	-0.064 ***	-0.213 ***			
JD, Unranked	0.011	-0.003	0.037 *	-0.034 *	-0.011	-0.050 **	-0.108 ***	-0.122 ***		
JD, Ranked	-0.089 ***	-0.050 **	-0.034 *	-0.083 ***	-0.041 *	-0.038 *	-0.110 ***	-0.058 ***	-0.088 ***	
Other Grad	-0.032 ~	0.001	-0.046 **	0.081 ***	-0.023	-0.078 ***	-0.135 ***	-0.128 ***	-0.079 ***	-0.057 **

~ p<.01; * p<.05; ** p<.01; *** p<.001

Appendix D: Additional Descriptive Statistics for Postsecondary Institutions

Table D.1
Additional descriptive statistics for characteristics of bachelor's degree institutions

	Full Sample		CEOs		Senior Managers		Multiple Directors		Single Directors		Assoc.	
	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N
Location (Census Region)[a]												
Northeast	37.9%	1,201	36.2%	102	34.3%	413	37.9%	272	42.2%	465	47.8%	150
Midwest	27.5%	872	30.1%	85	30.7%	369	26.9%	193	23.6%	260	22.9%	72
South	22.8%	723	22.3%	63	23.2%	279	23.7%	170	21.9%	242	19.4%	61
West	11.9%	376	11.3%	32	11.8%	142	11.4%	82	12.3%	136	9.9%	31
Public	44.6%	1,412	48.2%	136	51.4%	619	37.1%	266	41.5%	459	36.6%	115
Private not-for-profit	55.1%	1,749	51.4%	145	48.0%	578	62.8%	450	58.3%	643	63.4%	199
Private for-profit	0.3%	10	0.4%	1	0.5%	6	0.1%	1	0.2%	2	0%	0
US Service Academy	1.9%	60	2.8%	8	1.0%	12	2.9%	21	1.9%	21	4.1%	13
HBCU[b]	1.5%	56	0.4%	1	0.4%	8	4.2%	30	1.5%	17	2.2%	7
Land grant	19.4%	615	21.3%	60	21.5%	259	15.9%	114	18.6%	205	15.6%	49
Ivy League	13.6%	430	14.2%	40	8.9%	107	13.7%	98	18.0%	198	19.7%	62
Carnegie Classification												
Doctoral-granting	69.6%	2,206	75.2%	212	70.0%	843	64.1%	458	70.5%	777	69.4%	218
Master's/ comprehensive	12.2%	388	10.0%	28	13.3%	159	12.2%	87	11.8%	130	8.3%	26
Liberal Arts colleges	12.6%	398	8.9%	25	11.8%	142	16.1%	115	12.3%	135	14.0%	44
Other	5.7%	181	6.1%	17	4.2%	51	7.6%	55	5.5%	60	8.3%	26

Note. In this table, the full sample N represents those who earned a bachelor's degree – executives without bachelor's degrees are not included in the total, which is 3,172 for all rows except the first. Three groups are not part of the statistics: 1) I could not confirm whether 165 had earned a bachelor's degree or not, 2) 73 do not have a bachelor's degree, and 3) 57 have a bachelor's degree (because I was able to verify that they held a graduate degree) but I could not determine where that degree was from. In addition, there are 322 who earned international baccalaureate degrees. They are only included in the first row.

Full Sample: first row n=3,494, rest n=3,172;
For CEOs: first row n=317, rest n=282;
Senior Managers: first row n=1319, rest n=1203;
Multiple Directors: first row n=755, rest n=717;
Single Directors: first row n=1256, rest n=1103;
Association: first row n=332, rest n=314.

[a]The states included in each geographic region are as follows: Northeast: CT, ME, MA, NH, RI, VT, NJ, NY and PA; Midwest: IN, IL, MI, OH, WI, IA, KS, MN, MO, NE, ND, SD; South: DE, DC, FL, GA, MD, NC, SC, VA, WV, AL, KY, MS, TN, ARK, LA, OK, TX; West: AZ, CO, ID, NM, MT, UT, NV, WY, AK, CA, HI, WA.

[b]I examined statistics for Hispanic Serving Institutions as well as HBCUs, but the N was less than 1 percent of the sample and there weren't any differences by the executive subgroup comparison, so I opted not to include that in the table.

Table D.2
Additional descriptive statistics for characteristics of MBA institutions

	Full Sample		CEOs		Senior Managers		Multiple Directors		Single Directors		Assoc.	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
International MBA program (located outside of U.S.)	55	4.3%	8	5.9%	23	4.8%	6	2.0%	20	4.7%	6	4.9%
Location (Census Region)[a]												
Northeast	584	48.0%	54	42.2%	274	59.4%	153	51.2%	227	55.8%	66	56.4%
Midwest	320	26.3%	31	24.2%	147	31.9%	79	26.4%	84	20.6%	27	23.1%
South	148	12.2%	23	18.0%	73	15.8%	28	9.4%	37	9.1%	14	12.0%
West	165	13.6%	20	15.6%	54	11.7%	39	13.0%	59	14.5%	10	8.5%
Public	298	24.5%	33	25.8%	133	28.9%	69	22.7%	82	20.1%	22	18.8%
Private not-for-profit	916	75.3%	95	74.2%	325	70.5%	231	77.3%	325	79.9%	95	81.2%
Private for-profit	3	0.2%	0	0%	3	0.7%	0	0%	0	0%	0	0%
HBCU	19	1.5%	0	0%	12	2.7%	4	1.3%	5	1.2%	2	1.8%
Land grant	101	8.3%	9	7.0%	45	9.8%	24	8.0%	28	6.9%	10	8.5%

Note. In this table, the full sample N represents those who earned an MBA degree – executives without MBAs are not included in the total. In addition, there are 55 who earned MBAs from international schools. They are only included in the first row but not in any of the other rows representing program characteristics. So, the N for the first row is 1,272 but it is 1,217 for all others.

For CEOs: first row n=136, remaining rows n=128;
Senior Managers: first row n=484, remaining rows n=461;
Multiple Directors: first row n=305, remaining rows n=299;
Single Directors: first row n=427, remaining rows n=407;
Association: first row n=123, remaining rows n=117.

[a]The states included in each geographic region are as follows:
Northeast: CT, ME, MA, NH, RI, VT, NJ, NY and PA
Midwest: IN, IL, MI, OH, WI, IA, KS, MN, MO, NE, ND, SD
South: DE, DC, FL, GA, MD, NC, SC, VA, WV, AL, KY, MS, TN, ARK, LA, OK, TX
West: AZ, CO, ID, NM, MT, UT, NV, WY, AK, CA, HI, WA

Table D.3
Additional descriptive statistics for characteristics of law schools

	Full Sample		CEOs		Senior Managers		Multiple Directors		Single Directors		Assoc.	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
International program	16	2.6%	3	6.9%	1	0.4%	4	3.6%	10	4.8%	2	3.2%
Location[a]												
Northeast	247	40.7%	17	42.5%	122	51.3%	48	44.4%	105	50.2%	34	54.0%
Midwest	122	20.1%	8	20.0%	37	15.5%	18	16.7%	33	15.8%	8	12.7%
South	185	30.5%	13	32.5%	58	24.4%	34	31.5%	51	24.4%	17	27.0%
West	53	8.7%	2	5.0%	21	8.8%	8	7.4%	20	9.6%	4	6.3%
Public	192	31.6%	10	25.0%	71	29.8%	25	23.1%	65	31.1%	12	19.0%
Private not-for-profit	415	68.4%	30	75.0%	167	70.2%	83	76.9%	144	68.9%	51	81.0%
HBCU	14	2.3%	0	0%	6	2.5%	5	4.6%	5	2.4%	1	1.6%
Land grant	76	12.5%	4	10.0%	30	12.6%	11	10.2%	26	12.4%	3	4.8%

Note. In this table, the full sample N represents those who earned a JD – executives without JDs are not included in the total. In addition, there are 16 who earned law degrees from international schools. They are only included in the first row but not in any of the other rows representing program characteristics. Also, 10 additional individuals who hold JDs are not included – three earned their degrees from law schools not accredited by the American Bar Association (which do not receive federal funding and therefore are not required to report to IPEDS) and seven had biographical information indicating that they hold law degrees, but the specific source of these degrees could not be identified. So, the N for the first row is 633 but it is 607 for all others.

For CEOs: first row n=43, remaining rows n=40;
Senior Managers: first row n=239, remaining rows n=238;
Multiple Directors: first row n=112, remaining rows n=108;
Single Directors: first row n=219, remaining rows n=209;
Association: first row n=65, remaining rows n=63.

[a]The states included in each geographic region are as follows:

Northeast: CT, ME, MA, NH, RI, VT, NJ, NY and PA
Midwest: IN, IL, MI, OH, WI, IA, KS, MN, MO, NE, ND, SD
South: DE, DC, FL, GA, MD, NC, SC, VA, WV, AL, KY, MS, TN, ARK, LA, OK, TX
West: AZ, CO, ID, NM, MT, UT, NV, WY, AK, CA, HI, WA

Appendix E: Corporate Positions for Subsample Compared to Full Sample

When identifying the subsample for this analysis, a key criterion was selecting universities that are well represented among multiple directors, CEOs, and association leaders. As the table illustrates, proportionally more of these executives are in the subsample than in the full sample.

	Full Sample (n=3,789)		Subsample (n=336)	
	N	Percent	N	Percent
Corporate Governance				
Serves on no corporate boards	1,635	44.2%	115	34.2%
Serves on one corporate board	1,377	36.3%	134	39.9%
Serves on two or more corporate boards	777	20.5%	87	25.9%
Top Management				
Senior manager[a]	1,459	38.5%	111	33.0%
Chief executive officer	334	8.8%	29	8.6%
Business Representatives				
Not leader of an association	3,455	91.2%	294	87.5%
Leader of at least one association	334	8.8%	42	12.5%
Committee for Economic Development	33	0.9%	8	2.4%
Business Roundtable	102	2.7%	9	2.7%
Council on Foreign Relations	93	2.5%	28	8.3%
Business Council	182	4.8%	5	1.5%

[a] Ten of the senior managers were also multiple outside directors for two additional companies

Appendix F: Study Extension: Undergraduate major by university

		Business	Engineering	Liberal Arts & Humanities	Biological & Physical Sciences	Govt. & Intl. Affairs	Social sciences	Economics	*Total*
University of Southern California	N	7	1	2	0	3	3	3	*19*
	% of Total USC Grads	36.8%	5.3%	10.5%	0.0%	15.8%	15.8%	15.8%	*100.0%*
	% of Major	13.2%	1.4%	3.0%	0.0%	13.6%	7.9%	5.7%	*5.8%*
Yale University	N	3	3	31	3	1	8	13	*62*
	% of Total Yale Grads	4.8%	4.8%	50.0%	4.8%	1.6%	12.9%	21.0%	*100.0%*
	% of Major	5.7%	4.2%	46.3%	13.6%	4.5%	21.1%	24.5%	*19.0%*
Northwestern University	N	2	1	6	3	0	6	6	*24*
	% of Northwestern Grads	8.3%	4.2%	25.0%	12.5%	0.0%	25.0%	25.0%	*100.0%*
	% of Major	3.8%	1.4%	9.0%	13.6%	0.0%	15.8%	11.3%	*7.4%*
University of Notre Dame	N	22	11	1	4	5	1	2	*46*
	% of Notre Dame Grads	47.8%	23.9%	2.2%	8.7%	10.9%	2.2%	4.3%	*100.0%*
	% of Major	41.5%	15.5%	1.5%	18.2%	22.7%	2.6%	3.8%	*14.1%*
MIT	N	3	14	0	2	1	0	2	*22*
	% of MIT Grads	13.6%	63.6%	0.0%	9.1%	4.5%	0.0%	9.1%	*100.0%*
	% of Major	5.7%	19.7%	0.0%	9.1%	4.5%	0.0%	3.8%	*6.7%*
University of Michigan	N	5	10	10	1	1	4	5	*36*
	% of Michigan Grads	13.9%	27.8%	27.8%	2.8%	2.8%	11.1%	13.9%	*100.0%*
	% of Major	9.4%	14.1%	14.9%	4.5%	4.5%	10.5%	9.4%	*11.0%*
Cornell University	N	11	15	4	3	9	2	6	*50*
	% of Cornell Grads	22.0%	30.0%	8.0%	6.0%	18.0%	4.0%	12.0%	*100.0%*
	% of Major	20.8%	21.1%	6.0%	13.6%	40.9%	5.3%	11.3%	*15.3%*
Stanford University	N	0	16	13	6	2	14	16	*67*
	% of Stanford Grads	0.0%	23.9%	19.4%	9.0%	3.0%	20.9%	23.9%	*100.0%*
	% of Major	0.0%	22.5%	19.4%	27.3%	9.1%	36.8%	30.2%	*20.6%*
Total	*N*	*53*	*71*	*67*	*22*	*22*	*38*	*53*	*326*
	% of Total	*16.3%*	*21.8%*	*20.6%*	*6.7%*	*6.7%*	*11.7%*	*16.3%*	*100.0%*

Prior to 1984-85, Yale offered a major in "Administrative Sciences." I classified it as a "Business" field

Appendix G: Study Extension: Full Independent Sample T-Test Results

Table G.1
Study extension: Independent sample t-test comparing CEOs & senior managers only

	t	df	Sig.	Mean diff.	SE of diff.	Lower interval of diff.	Upper interval of diff.
Academic Achievements							
Phi Beta Kappa	.125	128	.900	.005	.041	-.076	.086
Rhodes/Marshall Scholar	.760	128	.449	.020	.026	-.032	.071
Campus academic award	-.147	107	.883	-.018	.123	-.262	.226
Major							
Business	.343	122	.732	.030	.087	-.142	.202
Engineering	-.442	122	.659	-.037	.084	-.204	.129
Liberal arts	-.986	122	.326	-.088	.089	-.264	.088
Bio./phys. sciences	.352	122	.725	.016	.046	-.076	.108
Government	-.387	122	.699	-.019	.050	-.118	.080
Social Sciences	.520	122	.604	.039	.074	-.109	.186
Economics	.765	122	.446	.060	.078	-.095	.214
Campus Involvement							
Varsity athletics[a]	-2.240	35.92	.031	-.328	.146	-.625	-.031
Fraternity/sorority	-.437	85	.663	-.056	.127	-.308	.197
Campus media	-2.738	107	.007	-.232	.085	-.401	-.064
Student society[a]	-1.188	23.32	.247	-.130	.109	-.356	.096
Club	-.158	107	.874	-.040	.256	-.547	.466
Leadership	-.346	107	.730	-.080	.230	-.535	.376

Note. These are the full results summarized in Table 4.21, last column.
[a] Equal variances not assumed according to Levene's test

Table G.2
Study extension: Independent sample t-test comparing CEOs & all other executives

	t	df	Sig.	Mean diff.	SE of diff.	Lower interval of diff.	Upper interval of diff.
Academic Achievements							
Phi Beta Kappa	.903	334	.367	.047	.052	-.055	.149
Rhodes/Marshall Scholar	.933	334	.351	.029	.031	-.032	.091
Campus academic award[a]	1.760	42.63	.086	.187	.106	-.027	.401
Major							
Business	-.239	324	.811	-.017	.073	-.161	.126
Engineering	.047	324	.963	.004	.082	-.157	.165
Liberal arts	-1.097	324	.273	-.088	.080	-.245	.070
Bio./phys. sciences	.699	324	.485	.035	.050	-.063	.133
Government	-.087	324	.931	-.004	.050	-.102	.094
Social Sciences	.162	324	.871	.010	.064	-.115	.135
Economics	.830	324	.407	.061	.073	-.083	.204
Campus Involvement							
Varsity athletics[a]	-2.108	28.84	.044	-.291	.138	-.574	-.009
Fraternity/sorority	-.126	254	.900	-.015	.119	-.249	.219
Campus media	-2.498	294	.013	-.184	.074	-.329	-.039
Student society[a]	-.776	232	.439	-.079	.101	-.279	.121
Club	.816	294	.415	.256	.314	-.362	.874
Leadership	.565	295	.572	.149	.264	-.370	.669

Note. These are the full results summarized in Table 4.21, middle column.
[a] Equal variances not assumed according to Levene's test

Table G.3

Study extension: Independent sample t-test comparing Multiple Directors & all other executives

	t	df	Sig.	Mean diff.	SE of diff.	Lower interval of diff.	Upper interval of diff.
Academic Achievements							
Phi Beta Kappa	-1.056	334	.292	-.035	.033	-.101	.030
Rhodes/Marshall Scholar[a]	-1.572	103.92	.119	-.041	.026	-.094	.011
Campus academic award	-.831	293	.407	-.093	.112	-.313	.127
Major							
Business[a]	2.398	204.98	.017	.096	.040	.017	.176
Engineering[a]	-1.993	133.94	.048	-.111	.055	-.220	-.001
Liberal arts	-.037	324	.971	-.002	.051	-.102	.098
Bio./phys. sciences	.434	324	.665	.014	.031	-.048	.076
Government	.434	324	.665	.014	.031	-.048	.076
Social Sciences	-.724	324	.470	-.029	.040	-.108	.050
Economics	.387	324	.699	.018	.046	-.073	.109
Campus Involvement							
Varsity athletics	-.712	298	.477	-.050	.070	-.186	.087
Fraternity/sorority[a]	-1.798	120.91	.075	-.124	.069	-.261	.013
Campus media	1.074	294	.284	.050	.047	-.042	.142
Student society	-1.766	232	.079	-.108	.061	-.229	.013
Club[a]	-1.860	112.91	.065	-.415	.223	-.858	.027
Leadership	-1.191	295	.235	-.196	.165	-.521	.128

Note. These are the full results summarized in Table 4.22, middle column.

[a] Equal variances not assumed according to Levene's test

Table G.4

Study extension: Independent sample t-test comparing multiple directors & single directors only

	t	df	Sig.	Mean diff.	SE of diff.	Lower interval of diff.	Upper interval of diff.
Academic Achievements							
Phi Beta Kappa	-.343	219	.732	-.014	.041	-.094	.066
Rhodes/Marshall Scholar[a]	-1.564	116.52	.121	-.043	.027	-.096	.011
Campus academic award	.252	198	.801	.035	.138	-.237	.306
Major							
Business[a]	1.702	210.56	.090	.077	.045	-.012	.167
Engineering	-1.675	215	.095	-.099	.059	-.215	.017
Liberal arts	.149	215	.881	.008	.057	-.104	.121
Bio./phys. sciences	.934	215	.352	.035	.037	-.039	.108
Government	.747	215	.456	.027	.036	-.044	.099
Social Sciences	-1.681	215	.094	-.069	.041	-.149	.012
Economics	.387	215	.699	.020	.051	-.081	.121
Campus Involvement							
Varsity athletics	-.542	202	.589	-.041	.076	-.191	.109
Fraternity/sorority	-1.594	176	.113	-.119	.075	-.266	.028
Campus media[a]	1.782	198.74	.076	.082	.046	-.009	.173
Student society[a]	-1.134	97.81	.259	-.088	.078	-.242	.066
Club	-1.109	199	.269	-.261	.236	-.726	.203
Leadership	-.234	200	.816	-.046	.197	-.434	.342

Note. These are the full results summarized in Table 4.22, right column.

[a] Equal variances not assumed according to Levene's test

Table G.5

Study extension: Independent sample t-test comparing association leaders & all other executives

	t	df	Sig.	Mean diff.	SE of diff.	Lower interval of diff.	Upper interval of diff.
Academic Achievements							
Phi Beta Kappa	-.462	334	.645	-.020	.044	-.107	.067
Rhodes/Marshall Scholar[a]	-2.066	42.48	.045	-.105	.051	-.208	-.003
Campus academic award	-2.906	293	.004	-.411	.141	-.690	-.133
Major							
Business[a]	1.431	59.85	.158	.074	.052	-.030	.178
Engineering[a]	2.583	65.55	.012	.138	.053	.031	.244
Liberal arts	-2.316	324	.021	-.155	.067	-.288	-.023
Bio./phys. sciences	.509	324	.611	.021	.042	-.061	.104
Government	-.819	324	.413	-.034	.042	-.117	.048
Social Sciences[a]	-.995	48.02	.325	-.062	.062	-.187	.063
Economics	.300	324	.764	.019	.062	-.103	.140
Campus Involvement							
Varsity athletics	-1.128	298	.260	-.102	.090	-.280	.076
Fraternity/sorority	-.555	254	.579	-.048	.087	-.220	.123
Campus media	.270	294	.788	.016	.060	-.102	.134
Student society	-2.907	232	.004	-.225	.077	-.377	-.072
Club	-.872	294	.384	-.220	.253	-.718	.277
Leadership	-2.431	295	.016	-.512	.210	-.926	-.097

Note. These are the full results summarized in Table 4.23.

[a] Equal variances not assumed according to Levene's test

Appendix H: Study Extension Correlation Matrix

	1	2	3	4	5	6	7	8	9	10
1. Senior manager (non-CEO)										
2. Single director	-0.456 ***									
3. CEO	-0.216 ***	-0.077								
4. Multiple director	-0.401 ***	-0.481 ***	-0.012							
5. Business Association leader	-0.170 **	0.005	0.365 ***	0.044						
6. Female	0.025	-0.022	-0.109 *	-0.009	-0.048					
7. White	0.014	-0.020	0.046	-0.078	0.054	-0.060				
8. Year of birth	0.447 ***	-0.212 ***	0.074	-0.236 ***	-0.063	0.139 *	-0.076			
9. Holds any MBA	-0.016	0.014	0.063	0.038	0.064	-0.038	0.032	0.119 *		
10. Holds top MBA	-0.060	0.010	0.030	0.101 ~	0.047	-0.032	0.034	0.067	0.776 ***	
11. Holds any JD	0.171 **	-0.033	-0.036	-0.114 *	0.032	-0.026	-0.049	-0.062	-0.414 ***	-0.296 ***
12. Holds top JD	0.066	0.018	-0.021	-0.060	0.076	-0.090	-0.099 ~	-0.068	-0.260 ***	-0.167 ***
13. Holds any other graduate degree	-0.115 *	0.010	-0.049	0.127 *	0.018	0.065	-0.106 ~	-0.088	-0.208 ***	-0.172 ***
14. Major: Business	0.102 ~	0.015	0.013	-0.115 *	-0.067	-0.088	0.094	0.066	0.009	-0.008
15. Major: Engineering	-0.065	-0.035	-0.003	0.118 *	-0.110 *	-0.079	0.063	-0.021	0.074	0.113 *
16. Major: Liberal arts	-0.029	0.020	0.061	0.002	0.128 *	0.095 ~	-0.072	-0.066	-0.098 ~	-0.045
17. Major: Sciences	-0.056	0.081	-0.039	-0.024	-0.028	0.075	-0.030	-0.053	-0.057	-0.101 ~
18. Major: Government	-0.056	0.056	0.005	-0.024	0.045	0.009	-0.148 *	-0.048	-0.032	-0.048
19. Major: Social sciences	0.074	-0.120 *	-0.009	0.040	0.064	0.092 ~	0.001	-0.033	-0.060	-0.078
20. Major: Economics	0.014	0.015	-0.046	-0.022	-0.017	-0.065	0.041	0.126 *	0.127 *	0.100 ~
21. Phi Beta Kappa	-0.038	0.037	-0.049	0.058	0.025	0.020	0.060	0.072	-0.019	0.053
22. National scholar	0.040	-0.060	-0.051	0.112 *	0.216 ***	-0.025	0.002	-0.029	-0.103 ~	-0.069
23. Campus academic award	-0.154 **	0.101 ~	-0.061	0.048	0.167 **	-0.076	0.080	-0.209 ***	-0.143 *	-0.072
24. Varsity athletics	-0.075	-0.008	0.155 **	0.041	0.065	-0.141 *	0.085	-0.052	0.138 *	0.142 *
25. Fraternity/sorority	-0.086	-0.051	0.008	0.115 ~	0.035	-0.188 **	0.166 *	-0.278 ***	0.110 ~	0.125 *
26. Club	-0.115 *	0.023	-0.048	0.123 *	0.051	-0.115 *	-0.029	-0.259 ***	-0.107 ~	-0.059
27. Leadership position	-0.121 *	0.065	-0.033	0.069	.140* *	-0.131 *	-0.036	-0.187 ***	-0.004	0.038
28. Campus media	-0.049	0.107 ~	0.144 *	-0.063	-0.016	-0.063	0.042	0.115 *	-0.027	0.049
29. Student society	-0.085	-0.017	0.051	0.115 ~	0.187 **	-0.157 *	0.036	-0.237 ***	-0.152 *	-0.125 ~
30. Industry: Insurance	-0.112	0.044	-0.009	0.073	0.057	0.103 ~	0.009	-0.086	-0.032	-0.031
31. Industry: Transportation	-0.031	-0.007	0.030	0.041	0.024	-0.060	0.052	-0.063	0.101 ~	0.126 *
32. Industry: Manufacturing	-0.053	-0.193 ***	0.013	0.298 ***	0.083	0.019	-0.077	-0.004	0.017	0.005
33. Industry: Service	-0.047	-0.084	-0.003	0.179 **	0.035	0.062	-0.014	0.003	0.070	0.095 ~
34. Industry: Trade	-0.049	-0.035	.133* *	0.016	-0.066	-0.031	0.002	-0.009	-0.006	0.000
35. Industry: Retail	-0.047	-0.052	0.002	0.117 *	-0.007	-0.044	0.056	0.008	-0.043	-0.026

~ p<0.10; * p<.05; ** p<.01; *** p<.001

Note. Table continues on next page

	11	12	13	14	15	16	17	18	19	20
1. Senior manager (non-CEO)										
2. Single director										
3. CEO										
4. Multiple director										
5. Business Association leader										
6. Female										
7. White										
8. Year of birth										
9. Holds any MBA										
10. Holds top MBA										
11. Holds any JD										
12. Holds top JD	0.685 ***									
13. Holds any other graduate degree	-0.151 **	-0.118 *								
14. Major: Business	-0.036	-0.033	-0.130 *							
15. Major: Engineering	-0.248 ***	-0.189 **	0.227 ***	-0.232 ***						
16. Major: Liberal arts	0.204 ***	0.172 **	-0.107 ~	-0.224 ***	-0.268 ***					
17. Major: Sciences	-0.087	-0.050	0.193 ***	-0.119 *	-0.142 *	-0.137 *				
18. Major: Government	0.103 ~	0.050	-0.008	-0.119 *	-0.142 *	-0.137 *	-0.072			
19. Major: Social sciences	0.197 ***	0.129 *	0.020	-0.160 **	-0.192 **	-0.185 **	-0.098	-0.098 ~		
20. Major: Economics	-0.092 ~	-0.056	-0.150 **	-0.194 ***	-0.232 ***	-0.224 ***	-0.119 *	-0.119 *	-0.160 **	
21. Phi Beta Kappa	0.106 ~	0.173 **	0.045	-0.130 *	-0.100 ~	0.046	-0.079	-0.034	0.105 ~	0.177 **
22. National scholar	0.095 ~	0.126 *	0.294 ***	-0.074	-0.044	0.053	-0.045	-0.045	0.114 *	0.027
23. Campus academic award	0.190 **	0.209 ***	0.061	-0.074	0.062	0.041	-0.024	0.116 *	-0.056	-0.053
24. Varsity athletics	-0.042	-0.003	-0.134 *	-0.093	-0.052	0.089	-0.035	-0.035	0.057	0.051
25. Fraternity/sorority	0.048	0.021	-0.080	0.034	0.067	-0.067	-0.045	-0.034	0.127 *	-0.084
26. Club	0.066	0.134 *	0.026	-0.104 ~	-0.018	0.273 ***	-0.008	-0.017	-0.085	-0.078
27. Leadership position	0.136 *	0.229 ***	-0.008	-0.096	-0.003	0.102 ~	-0.063	0.136 *	-0.057	-0.010
28. Campus media	0.048	0.094	-0.045	-0.012	-0.065	0.060	-0.015	-0.015	-0.056	0.087
29. Student society	0.230 ***	0.212 **	0.008	-0.071	0.021	0.098	-0.103	0.094	0.042	-0.100
30. Industry: Insurance	0.049	0.073	0.009	0.062	-0.113 *	0.104 ~	-0.013	-0.093 ~	0.101 ~	-0.066
31. Industry: Transportation	0.027	0.020	-0.001	-0.020	-0.020	-0.040	0.029	0.029	0.031	0.019
32. Industry: Manufacturing	-0.087	-0.071	0.037	-0.048	0.144 **	-0.007	0.017	0.017	-0.131 *	-0.015
33. Industry: Service	-0.103 ~	-0.060	-0.021	-0.124 *	-0.035	0.031	0.065	-0.076	0.007	0.130 *
34. Industry: Trade	-0.036	0.017	0.065	0.018	0.122 *	-0.090	0.023	-0.048	-0.009	-0.030
35. Industry: Retail	-0.022	-0.068	0.019	-0.006	0.001	-0.066	0.035	0.035	0.073	-0.034

~ p<0.10; * p<.05; ** p<.01; *** p<.001

Note. Table is continued from prior page.

	21	22	23	24	25	26	27	28	29	30	31	32	33	34
1. Senior manager (non-CEO)														
2. Single director														
3. CEO														
4. Multiple director														
5. Business Association leader														
6. Female														
7. White														
8. Year of birth														
9. Holds any MBA														
10. Holds top MBA														
11. Holds any JD														
12. Holds top JD														
13. Holds any other graduate degree														
14. Major: Business														
15. Major: Engineering														
16. Major: Liberal arts														
17. Major: Sciences														
18. Major: Government														
19. Major: Social sciences														
20. Major: Economics														
21. Phi Beta Kappa														
22. National scholar	0.228 ***													
23. Campus academic award	0.211 ***	0.138 *												
24. Varsity athletics	-0.007	0.026	0.004											
25. Fraternity/sorority	-0.010	-0.060	0.112 ~	0.176 **										
26. Club	0.074	0.190 **	0.286 ***	0.088	-0.012									
27. Leadership position	0.047	0.142 *	0.426 ***	0.119 *	0.190 **	0.427 ***								
28. Campus media	0.144 *	0.000	0.114 ~	0.000	-0.148 *	0.041	0.169 **							
29. Student society	0.054	0.197 **	0.155 *	0.118	0.139 *	0.238 ***	0.437 **	-0.091						
30. Industry: Insurance	-0.012	0.057	-0.087	-0.035	0.047	0.035	-0.031	-0.008	0.044					
31. Industry: Transportation	0.023	-0.005	0.093	-0.083	0.036	-0.057	0.077	-0.047	0.128 ~	-0.260 ***				
32. Industry: Manufacturing	-0.067	-0.006	0.022	-0.059	-0.071	0.072	-0.012	-0.105 ~	0.014	-0.366 ***	-0.302 ***			
33. Industry: Service	0.049	-0.046	-0.048	0.211 ***	-0.026	0.004	-0.019	0.024	-0.066	-0.049	-0.072	-0.048		
34. Industry: Trade	-0.051	-0.029	0.010	0.076	0.093	0.005	0.012	0.124 *	0.018	-0.112 *	-0.056	-0.127 *	-0.049	
35. Industry: Retail	0.051	0.005	-0.055	0.050	0.033	-0.009	-0.054	0.089	-0.058	-0.148 **	-0.163 **	-0.152 **	-0.093	-0

~ p<0.10; * p<.05; ** p<.01; *** p<.001

Note. Table is continued from prior page.

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