Jalbert, Terrance, Ramesh Rao, and Mercedes Jalbert (2002) "Does School Matter? An Empirical Analysis ofCEO Education, Compensation and Firm Performance," *International Business and Economics Research Journal*, Vol. 1(1) Winter, p. 83-98

Does School Matter? An Empirical Analysis of CEO Education, Compensation, and Firm Performance

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Abstract

In this paper the educational background of the Chief Executive Officers (CEOs) of Large U.S. Firms are examined. Specifically, the educational background of CEOs from large U.S. firms, as identified in the Forbes 800 Compensation List, are examined. Information concerning the number of Chief Executive Officers that received their undergraduate and graduate degrees from 463 institutes of higher education are compiled. We find that most CEOs have an undergraduate degree, while about half possess a graduate degree. The results indicate that there are preferred educational backgrounds for selection as the CEO of a major corporation. We also examine how the educational background of the CEO is related to the CEO's total compensation. The evidence indicates that those CEOs that do not have a degree earn significantly more than those CEO's that do have a college degree. We find little evidence that the school attended affects the compensation that the CEO receives. Finally, we examine firm ROA and Tobin's Q based on the educational background of the CEO. We find an association between possession of a degree as well as where the degree was earned and the ROA and Tobin's Q of the firm.

Section 1 Introduction

Executive Compensation has long been an area of interest in the finance literature. Of particular interest is how compensation is related to executive motivation, performance, perks and other variables. In this paper the educational paths that individuals take on their way to becoming the chief executive officer (CEO) of large U.S. firms are examined. The CEO's total compensation is then related to the institution that the executive received his/her degree(s) from. The results indicate that there is a high probability that the CEO for a large company received his/her undergraduate, graduate, or both degrees from a select group of higher education institutions. We find significant differences in CEO total compensation based on having earned an undergraduate and graduate degree as well as where the degree was earned from. We find CEO compensation differences based on the number of years the individual has been with the firm, the years the individual has been the firm's CEO, the age of the CEO, if the CEO is the founder of the firm and on the size of the firm. We find that possessing an undergraduate degree as well as a graduate degree has explanatory power for the ROA and Tobin's Q of the firm. We also find evidence that the class of school attended explains the firms ROA and Tobin's Q. The remainder of the paper is organized as follows. In Section 2, the data is discussed, in Section 3 the results of the empirical analysis are presented. Finally, Section 4 contains concluding comments.

Section 2 The Data

Each year since 1973, Forbes magazine has published a list containing information about the CEO's of large United States Companies. Specifically, Forbes Magazine examines compensation for approximately 800 Chief Executive Officers each year. The 800 CEOs included in the list each year are identified from the Forbes 500 lists of largest companies ranked by sales, profits, assets and stock market value. A company that makes any of the

Forbes 500 lists is included in the Forbes 800 Compensation List. This Forbes 800 Compensation List contains background information about each firms CEO, the compensation of the CEO, as well as firm performance data. The Forbes 800 Compensation List is the foundation for this study. The most recent 5 years of Forbes data was obtained in electronic format from Forbes Magazine. Data prior to 1992 was no longer available from Forbes Magazine. In order to complete the dataset the Forbes 800 Compensation List was recreated in electronic format from hard copies of the magazine for years prior to 1992. The combined dataset contains 20,884 annual observations spanning from 1972 through 1996 (published in years 1973-1997). The variables contained in the dataset vary by year. Individual years contain as many as 30 variables. Since the 1988 publication, Forbes has included variables in their dataset indicating the University where the CEO received his/her undergraduate and graduate degrees. Of interest in this study is to examine these education variables. As such Forbes data covering the calendar years 1987 through 1996 are used in this study. This data contains 8000 annual observations. It is important to emphasize that this study examines only those executives that hold the position of CEO in the firm. The CEO is not the only executive officer within the firm and is not necessarily the highest compensated executive within the firm as is pointed out in a cover article for the Forbes 800 Compensation List (Byrne 1985).

In order to facilitate additional tests, each firm in the Forbes 800 Compensation List was matched with its corresponding CUSIP number. Once matched with its Cusip number data from Compustat was obtained. Annual data for the Compustat variables: industry (Compustat Variable Dnum) and total assets (Compustat Annual Variable 6) of the firm were obtained. When Compustat data was not available for a company, the observation was eliminated from the dataset.

Section 3 Analysis

In this section we report the results of the empirical examination. The results are divided into two sections. In Section 3.1, the effectiveness of various universities in placing their graduates in CEO positions is examined. In section 3.2, the extent that educational background effects CEO total compensation is examined.

3.1 University Effectiveness

The first step in the analysis is to examine the number of management years that were performed by individuals possessing a degree versus those that did not possess a degree. For the analysis each annual observation in the dataset is considered a management year. Of the 8000 observations in the dataset, 7335 (91.7 percent) observations were performed by CEOs having an undergraduate degree while 665 (8.3 percent) observations were performed by CEOs that did not have an undergraduate degree. The evidence leaves little doubt about the importance of an undergraduate degree in achieving the CEO level of career development. Of the 8000 observations, 3930 (49.1 %) observations were performed by CEOs having a graduate degree while 4070 (50.9 %) of the observations were performed by CEOs that did not have a graduate degree. Thus while having an undergraduate degree is quite important in becoming a CEO, having a graduate degree appears to be somewhat less critical. The importance of having an undergraduate and graduate degree is examined in more detail later in the paper.

One method of measuring the effectiveness of a University is by examining the placement record of its graduates. A number of organizations rank universities on various attributes. The U.S. News and World Report (USNWR) produces one of the most prominent rankings. USNWR provides an annual overall ranking of universities on a nationwide basis. The rankings are based on surveys completed by the institutions. USNWR provides separate rankings of schools based on their mission as a national or regional university. Both undergraduate and graduate programs are ranked. In addition, rankings by academic disciplines are provided. Schools are ranked based on sixteen indicators of academic excellence. These criteria fall into the categories of academic reputation, retention, faculty resources, student selectivity, financial resources, graduation rate and alumni giving. Business Week publishes an annual ranking of 225 graduate schools of business. Like the UNWR, Business Week develops its ranking based on surveys. Business Week surveys recruiters and students and aggregates the data into a ranking system. Business week provides an overall ranking as well as a ranking by each of several criteria. These criteria include enrollment, acceptance rates, program costs, job placement, starting salary information and others. The Wall Street Journal ranks over 300 graduate schools of business based on twenty-seven criteria annually. It aggregates the criteria into an overall ranking. The rankings are developed based on surveys of MBA recruiters. The recruiters are asked to rank twelve school attributes and thirteen student attributes. The school attributes include program cost, placement services, faculty, curriculum, and the historical recruitment success from the school. Student attributes include leadership potential, communication and interpersonal skills, international

perspective, and visionary thinking. The complete results are published in a book titled The Wall Street Journal Guide to Business Schools. Summary results are reported in a special edition of the Wall Street Journal.

We examine which schools are the most effective at producing graduates who ultimately become the CEO of large firms. Four hundred sixty three institutions of higher education are represented in the Forbes 800 Compensation List from 1987-1996. Four hundred twenty three of the institutions provided an undergraduate degree to at least one CEO. One Hundred eighty two institutions provided a graduate degree to at least one CEO. We examine the extent to which each of the schools are represented in the dataset. For comparison purposes management years are aggregated for each university in the sample. The number of management years performed by graduates of each university thereby are counted. Each university is ranked based on the number of management years attributable to the school. A listing of the number of management years attributable to various institutions of higher education is provided in Table 1. Summary statistics of the top ranking schools are provided in Table 2.

Panel A of Table 1 is a listing of the number of management years attributable to the 50 most effective undergraduate schools. The top undergraduate school, Princeton, produced 241 observations or 3% of all management years. The top 5 undergraduate schools produced 996 management years or 12.5 percent of the total. The top ten undergraduate schools combine for a total of 1586 (19.8 percent) observations. The top 25 schools combine for a total of 2,715 observations (33.9 percent). Finally, the top 50 schools combine 3944 observations or 49.3 percent of all management years.

Panel B of Table 1 is a listing of the number of management years attributable to various graduate schools. Forty-nine percent (3,930 out of 8,000) of the management years were performed by CEOs having a graduate degree. This figure is somewhat higher than those reported by others. Mintzberg and Lampel (2001) report that about forty percent of the one hundred largest U.S. corporations are run by individuals that hold a MBA degree. That the figures reported here are somewhat higher is not surprising as we count those holding any graduate degree rather than only those holding an MBA degree. Of the 3930 observations having a graduate degree, 3024 observations received their graduate degree from a different school than they received their undergraduate degree from while 906 received their graduate degree from the same school that offered their undergraduate degree. Thus there seems to be a preference to change schools when attending graduate school. The top graduate school, Harvard University, was responsible for the graduate education of a whopping 750 management years, 9.4 percent of all CEO's, and 19.1 percent of those CEOs having a graduate degree! The total for Harvard is more than the number 2 through 5 ranked schools combined. The top five graduate schools were responsible for 1437 management years, 18.0 percent of all CEO's and 36.6 percent of CEOs having a graduate degree. The top ten graduate schools combine for a total of 1934 observations, 24.2 percent of all CEO's and 49.2 percent of those CEOs that have a graduate degree. The top 25 schools combine for 2633 management years, 32.9 percent of all CEO's, and 67.0 percent of CEO's having a graduate degree. Finally, the top 50 schools combine for 3157 management years or 39.5 percent of all CEO's and 80.3 percent of CEOs that have a graduate degree.

College students having both an undergraduate and a graduate degree have two possible paths for combining their undergraduate and graduate educations. One path is to get both their undergraduate and graduate degrees from the same institution. The other path is to change schools, thereby getting an undergraduate degree from one institution and a graduate degree from a different institution. The affiliation with a particular institution is thought to be important in becoming a CEO, regardless of the degree level. In this ranking, the combined undergraduate and graduate education of the CEOs are examined. In order to complete the ranking the number of management years attributable to a CEO who received their undergraduate degree, their graduate degree, or both degrees from a given institution are counted. The results are presented in Panel C of Table 1. Again, Harvard dominates the group with 889 observations, thereby being responsible for educating the CEO's that perform 11.1 percent of all management years and 12.1 percent of all degreed CEO management years. The top 5 schools are responsible for 2052 management years, 25.7 percent of all management years and 28.0 percent of those management years having a degreed CEO. The top 10 schools produce 3080 observations, or 38.5 percent of all management years and 42.0 percent of management years where the CEO possessed a degree. The top 25 schools are responsible for 4585 management years, 57.3 percent of all management years and 62.5 percent of management years where the CEO possessed a degree. The top 50 schools are responsible for 6125 management years or 76.5 percent of all management years and 83.5 percent of management years where the CEO possessed a degree.

Table 2 contains a summary of the rankings in Table 1. The combined evidence clearly suggests that there is an elite group of schools from which CEOs of large companies are selected. The evidence suggests that a student with the goal of becoming the CEO of a large corporation has a clear educational path toward increasing the probability of achieving that goal. Most notable is the very large number of CEOs that received their graduate education from Harvard University. As noted earlier, a full 19.1 percent of all CEOs that have a graduate degree, received their degree from Harvard University.

Table 1: Educational Background by School

	Panel A: Undergrad Schools		Panel B: Grad. Schools		Panel C: Undergrad and Grad.	
Rank	School	N	School	N	School	N
	Total Observations	8,000	Total Observations	8,000	Total Obs.	8,000
	No Undergrad Ed	665	No Graduate Ed	4,070	No UG or No G	665
1	Princeton	241	Harvard	750	Harvard	889
2	Yale	220	Stanford	187	Pennsylvania	330
3	Harvard	206	Pennsylvania	182	Stanford	287
4	Cornell	169	Columbia	161	Princeton	278
5	Pennsylvania	160	MIT	157	Yale	268
6	Michigan	135	Michigan	141	Michigan	218
7	Stanford	133	NYU	111	Columbia	214
8	North Carolina	115	Chicago	102	MIT	214
9	Purdue	108	Northwestern	76	Cornell	196
10	Northwestern	99	Cornell	67	NYU	186
11	MIT	98	SMU	59	Northwestern	166
12	Dartmouth	91	George Washington	56	Chicago	120
13	Wisconsin	88	Princeton	56	North Carolina	119
14	NYU	86	Berkeley	53	Purdue	117
15	Notre Dame	76	Washington	52	Washington	102
16	Texas	75	Yale	51	Wisconsin	100
17	Missouri	74	Indiana	50	Virginia	99
18	Georgia Tech	72	Virginia	47	Berkeley	93
19	Oklahoma	70	Pittsburgh	46	Dartmouth	93
20	Vanderbilt	70	Minnesota	41	Illinois	86
21	Columbia	69	Dartmouth	40	Texas	84
22	Washington	68	Georgia State	39	Minnesota	83
23	CUNY City	68	Loyola	38	Pittsburgh	82
24	Minnesota	63	USC	37	USC	81
25	Berkeley	61	Purdue	34	Indiana	80
26	Arkansas	60	Illinois	33	Missouri	80
27	Illinois	59	Case Western	31	SMU	77
28	Auburn	58	Boston U	26	Notre Dame	76
29	Ohio State	58	Houston	25	Georgia Tech	74
30	Utah	57	Iowa	24	Oklahoma	70
31	Colorado	56	Wisconsin	24	Vanderbilt	70
32	Kansas	56	North Carolina	22	CUNY City	68
33	Davidson	52	Pace	22	Boston U	66
34	Virginia	52	Cincinnati	22	Ohio State	65
35	Cincinnati	51	Duke	21	Iowa	64
36	Navy	51	Georgetown	21	George Washington	63
37	USC	51	Texas	21	Utah	62
38	Iowa	50	Rutgers	20	Arkansas	60
39	Army	48	Kentucky	19	Auburn	60
40	Lehigh	47	Seton Hall	19	Colorado	59
41	Penn State	47	St Louis	19	Kansas	56
42	Alabama	47	Utah	19	Cincinnati	55
43	Pittsburgh	46	Arkansas	18	Duke	55
44	Duke	42	Texas Christian	18	Rutgers	55
45	North Carolina State	42	Fordham	17	Lehigh	53
46	Boston U	42	South Carolina	17	Davidson	52
47	SMU	41	Texas A&M	17	Navy	51
48	Indiana	40	Boston College	17	Case Western	50
49	Fordham	38	Oklahoma	16	Loyola	50
50	Michigan State	38	Univ. of Richmond	16	Depaul	49
	Florida	38				
	Brown	38				
	Top 50 Total	3,944*	Top 50 Total	3157	Top 50 Schools	6,125
	Other Schools	3,391	Other Schools	773	Other Schools	1,210

* Four Universities tied for the 49th ranking in the undergraduate education listing. While all four universities are listed, only two are used to computing the number of observations attributable to the top 50 schools.

Table 2: Summary of Top School Representation

	Undergrad		Graduate		Graduate or Undergraduate	
School	All CEO's	With degree	All CEO's	With Degree	All CEO's	With Degree
Top School	3.0% (241)	3.3 %	9.4 % (750)	19.1 %	11.1 % (889)	12.1 %
Top 5 School	12.5% (996)	13.6 %	18.0 % (1437)	36.6 %	25.7 (2052)	28.0 %
Top 10 School	19.8% (1586)	21.6 %	24.2 % (1934)	49.2 %	38.5% (3080)	42.0 %
Top 25 School	33.9% (2715)	37.0 %	32.9 % (2633)	67.0 %	57.3% (4585)	62.5 %
Top 50 School	49.3%(3944)	53.8 %	39.5 % (3157)	80.3 %	76.6% (6125)	83.5 %

Observations	8,000
Received UG Degree	7,335
Did not receive an UG Degree	665
Received a Unique Undergraduate School	6,429
Received a Graduate Degree	3,930
Did not Receive a Graduate Degree	4,070
Received a Unique Graduate Degree	3,024
Attended same Undergraduate and Graduate School	906

3.2 Educational Background and CEO Compensation

We turn to the issue of how the university attended affects the compensation of the CEO. Two competing theories of the relationship between education and future earnings are frequently forwarded. The human capital theory is that the credential of having a degree is not what is important in determining future successes. Rather, the skills learned allow individual to achieve higher employment status. The screening theory argues that credentials afford the individual something above and beyond the skills attained. That is, individuals can only realize the value of the skills they have learned when accompanied by the acquisition of a recognized credential. Employers, lacking complete information about an individual, rely on credentials as a screening device. Students select an educational level that signals their abilities to employers. This debate has continued for many years. The general method used to distinguish between screening and human capital theories is to decompose the role of education into a skills component and an information component. Studies typically do this by including both degrees earned and number of years of education variables into earnings regressions. (Park, 1999, Gullason, 1999 and Heywood, 1994). Park (1999) estimated the certification value of different levels of education achievement. An earnings gain of 21 percent was found for obtaining a bachelor's degree. Heywood (1994) examined differences in signaling effects across public, private unionized, and non-unionized, labor markets. He found that signaling effects are strongest in private sector and nonunion labor markets. Gullason (1999) examines signaling effects across five age cohorts. He finds that the returns to educational signals have reduced value as additional work experience permits a more direct observation of employee quality. Pascarella and Smart (1990) examine the incomes of individuals nine years after they entered college. They find that university selectivity is a significant explanatory variable in explaining income net of the influence of control variables. The extent to which possessing a degree as well as where the degree was received from affects the salary the CEO will receives is of critical importance.

Salary data as it relates to the University where the individual received his degree is provided in Table 3. To complete this analysis, CEO compensation data is deflated using the Consumer Price Index to 1996 equivalent dollars. A quick look indicates that individuals that reach the position of the CEO of a major corporation make considerable more than other individuals. The Forbes 800 CEO's average salary is $2,470,829 per year. In contrast, the average salary of MBA graduates from the best schools approaches $100,000, a paltry amount by comparison (The Wall Street Journal, 2001). Interestingly, graduates from Harvard University are not among the highest paid. Harvard University did not make the top 50 list of undergraduate schools. While Harvard did make the top 50 list of Graduate Schools, its twenty-first ranking was lower than expected.

We continue the analysis by comparing the salaries of CEOs having varying degree levels and having gone to various schools. In Panel A of Table 4, we compare salaries based on the degree that the CEO earned. We begin by comparing those CEOs that have a College Degree to those CEOs that do not have a college degree. The results are somewhat surprising. CEOs without a degree are found to earn significantly more than those CEOs that possess a college degree. The data indicates that CEOs without a earned $3,591,581 per year, while those possessing a degree earned $2,370,042. The difference, as compared using a t-test is significant at the 1 percent level. In Column two, we compare those CEOs that have an undergraduate degree, but do not have a graduate degree to those CEOs that do not possess a college degree. Again, the evidence indicates that CEOs without a degree receive higher compensation levels. We continue by comparing those CEOs that have a graduate degree to those CEOs that do not

Table 3: Compensation By School

	Panel A: Undergrad Schools		Panel B: Grad. Schools		Panel C: Undergrad and Grad.	
Rank	School	Comp.	School	Comp.	School	Comp.
	Total Observations	7,878	Total Observations	7,878	Total Observations	7,878
	No Undergrad Ed	3,591581	No Graduate Ed	2,487,153	No UG or No G	3,591,581
1	Denison	16,710,483	Tulane	6,810,648	Denison	16,710,483
2	Colgate	6,061,394	Boston	6,693,061	SUNY Buffalo	8,229,066
3	CUNY City Col	5,710,012	New York Law	5,008,924	Colgate	6,061,395
4	Washburn	5,293,872	Illinois	4,850,252	CUNY City	5,710,012
5	Massachusetts	5,249,740	USC	4,131,387	Washburn	5,293,872
6	CUNY Brooklyn C	4,734,296	Washington	3,992,146	New York Law	4,998,513
7	West Virginia	4,377,439	SMU	3,776,054	Tulane	4,768,100
8	Chicago	4,373,702	Berkeley	3,724,143	CUNY Brooklyn	4,734,296
9	Dickinson	4,231,995	Houston	3,388,187	Massachusetts	4,672,861
10	Houston	4,140,717	Princeton	3,291,316	Boston U	4,569,346
11	Cornell	4,045,774	St. Louis	3,192,409	Dickinson C	4,231,995
12	Fairleigh Dickinson	3,958,745	Yale	3,115,882	West Virginia	4,101,957
13	Syracuse	3,890,552	Carnegie Mellon	3,047,966	Tufts	3,971,864
14	Georgia State	3,866,856	Seton Hall	2,910,332	Syracuse	3,890,552
15	Miami	3,857,435	Missouri	2,830,593	Illinois	3,811,684
16	American U Beirut	3,789,125	Pennsylvania	2,796,890	Redlands	3,787,759
17	St. John's	3,665,909	Dartmouth	2,794,163	Houston	3,787,218
18	Brown	3,623,424	Indiana	2,782,489	Cornell	3,783,614
19	Vanderbilt	3,553,493	Rollins	2,590,742	Queens U	3,767,379
20	Kent State	3,549,909	Cornell	2,582,507	Brown	3,671,498
21	Georgia	3,458,758	Harvard	2,580,568	Vanderbilt	3,553,494
22	CUNY Queens	3,383,593	Oklahoma	2,551,225	Kent State	3,549,909
23	Haverford	3,336,479	Georgia State	2,493,012	CUNY Queens	3,383,593
24	Antioch	3,186,679	Purdue	2,468,333	Haverford	3,336,479
25	Boston U	3,128,826	Chicago	2,393,145	Fairleigh Dickinson	3,316,366
26	USC	3,114,113	Minnesota	2,335,246	Miami	3,251,298
27	Worchester	3,100,913	Texas A&M	2,278,089	Louisville	3,196,395
28	Pennsylvania	3,063,343	Stanford	2,276,194	USC	3,192,105
29	Williams C	3,054,325	MIT	2,204,035	Antioch	3,186,680
30	Illinois	3,028,380	Michigan	2,200,978	Seton Hall	3,170,615
31	Army	2,937,201	Rutgers	2,187,836	SMU	3,135,649
32	Texas Tech	2,928,969	Columbia	2,160,335	American U Beirut	3,128,034
33	Northwestern	2,884,947	Georgia Tech	2,112,751	Berkeley	3,121,657
34	Lehigh	2,840,935	Pittsburgh	2,103,258	Worcester	3,100,914
35	Yale	2,798,557	Northwestern	2,071,845	Georgia	3,095,266
36	Rhode Island	2,750,080	NYU	2,054,161	Williams C	3,054,326
37	Babson	2,743,002	Pace	2,018,599	Pennsylvania	2,980,738
38	Wabash	2,718,643	Boston C	1,987,602	St Louis	2,949,938
39	Missouri	2,710,495	Virginia	1,955,572	Army	2,937,201
40	NYU	2,677,226	George Washington	1,918,598	Texas Tech	2,928,969
41	Johns Hopkins	2,668,256	Pepperdine	1,871,938	Yale	2,870,374
42	Carleton	2,659,735	Villanova	1,857,230	Arizona State	2,775,240
43	Stanford	2,619,089	Kentucky	1,826,198	Johns Hopkins	2,725,559
44	Texas	2,601,941	Case Western	1,822,180	Wabash	2,718,643
45	Princeton	2,595,644	Wisconsin Milwaukee	1,812,049	Washington	2,714,901
46	Northeastern	2,582,320	South Carolina	1,788,327	Chicago	2,700,473
47	Louisiana Tech	2,570,991	Fordham	1,782,019	St Johns	2,683,116
48	Wake Forest	2,555,943	DePaul	1,724,440	Princeton	2,678,904
49	Wooster	2,552,973	Utah	1,641,957	Carleton	2,659,735
50	Dartmouth	2,543,570	Maryland	1,608,955	Missouri	2,659,388
	Average Comp.	2,470,829				

have a graduate degree (Column 3). No difference is found between the salaries of these two groups. When we eliminate those CEOs that do not have a degree from the sample (Column 4), there remains no evidence of a salary differential. Finally, we compare those CEO's that have a graduate degree to those CEOs that do not have a college degree (Column 5). Again, those CEOs who do not have a college degree continue to produce higher salaries. These findings are certainly surprising on their face. However, it is possible that the findings might be explained by confounding factors. One such potentially confounding factor is the possibility that there is a preponderance of CEOs that are firm founders among the non-degree group. This issue is explored later in the paper. As second

potentially confounding factor is the possibility that CEOs who are family members of major shareholders are represented more heavily in the non-degreed group. Unfortunately, the data does not contain information concerning CEO family background.

We continue by comparing the compensation by the school that the CEO attended. The results are presented in Table 4, Panel B. In the Combined Schools analysis, those CEO's that did not receive a degree are eliminated from the sample. We group schools by their rank in CEO production as outlined in Table 1. For example, the Big 5 undergraduate schools are the five undergraduate schools that produced the largest number of CEOs. We find some evidence that the school that the CEO attended affects the salary that the CEO will receive. Specifically, when comparing the BIG 5 schools versus all other schools, the BIG 10 Schools versus all other schools and the Big 25 schools versus all other schools, CEO's attending the high ranked schools receive a higher compensation than CEOs that attend other institutions. To examine undergraduate degrees, those CEOs not having a degree are eliminated from the analysis as well as those CEOs that have a graduate degree. Again, the data indicates that those CEOs that attend the BIG universities receive different compensation than others. Interestingly, those CEOs that attended the number one school received lower compensation than CEOs from other schools. CEOs that attended a BIG 5 or BIG 10 School received higher compensation than other CEO's. Finally, we examine Graduate Degrees. For this analysis, we eliminate any CEO that does not have a graduate degree from the analysis. We find no evidence to suggest that the graduate school attended affects the salary of the CEO will receive.

Table 4: Comparison of Total Compensation by Degree and School Rank

Panel A

	With Degree Without degree	Undergrad Degree Without Degree	Graduate Degree No Grad Degree	Graduate degree Undergrad Degree only	Graduate Degree No Degree
With Degree	2,370,042	2,273,053	2487153	2,453,966	2,453,966
Without Degree	3,591,581	3,591,581	2453996	2,273,053	3,591,581
Nw/Nwo	7228 (650)	3353 (650)	3875 (4003)	3875 (3353)	3875 (650)
T-Statistic	-3.10***	3.29***	0.26	1.46	2.86***

Panel B

Big Schools Combined	Big 1	Big 5	Big 10	Big 25	Big 50
Big School CEO's	2,500,381	2,584,263	2,543,657	2,503,229	2,431,214
All Other CEO's	2,352,161	2,299,214	2,272,154	2,218,751	2,247,063
Nbig/Nother	872 (6356)	1796 (5432)	2606 (4622)	3844 (3384)	4827 (2401)
T Statistic	-1.10	-2.40**	-2.25**	-2.30**	-1.33

Big Schools Undergraduate	Big 1	Big 5	Big 10	Big 25	Big 50
Big School	1,691,659	3,139,288	2,780,568	2,509,675	2,322,489
All Other CEO's	2,290,190	2,145,282	2,142,511	2,158,461	2,222,272
Nbig/Nother	96 (3257)	431 (2922)	686 (2667)	1094 (2259)	1699 (1654)
T Statistic	3.33***	-2.69***	-2.34**	-1.71	-0.52

Big Schools Graduate	Big 1	Big 5	Big 10	Big 25	Big 50
Big School	2,580,568	2,480,268	2,430,388	2,555,433	2,481,978
All Other CEO's	2,424,332	2,438,888	2,472,746	2,287,414	2,383,836
Nbig/Nother	735 (3140)	1412 (2463)	1718 (2157)	2408 (1467)	2769 (1106)
T Statistic	-0.96	-0.29	0.28	1.63	-0.52

For this analysis, CEO's whose educational background are not known are deleted from the analysis. *** indicates significance at the 1 percent level. ** indicates significance at the 5 percent level. * indicates significance at the 10 percent level.

To analyze the compensation issue further, we use the full Forbes 800 Compensation data, as reduced when merged with the Compustat data. Of interest is to determine how the dependent variable, the Total Compensation of the CEO, is related to the following independent variables. The first independent variable is UGATT, a dummy variable that is set to 1 when the CEO earned an undergraduate degree and 0 when the CEO did not earn an undergraduate degree. Those CEOs having earned an undergraduate degree are expected to command higher total compensation than those CEO's that have not earned an undergraduate degree. The variable GATT is the graduate school equivalent of UGATT. The variable YRCEO is the number of years that the individual has been the CEO of

the firm. A positive relationship between total compensation and the number of years an individual has been the CEO of a firm is expected because of annual compensation reviews. The variable YRFRM is the number of years the CEO has been with the same firm. The variable CEOAGE is the current age of the CEO. It is hypothesized that older CEOs will command higher salaries than their younger counterparts due to experience. A positive relationship between the years an individual has been with the firm and their compensation as the CEO is expected due to the value of institutional experience. CEOs who have been with the firm for a longer period of time possess institutional knowledge that is valuable in their role as the CEO. The final independent variable, FOUNDER, is a dummy variable that is set to 1 when the CEO is the founder of the firm and 0 when the CEO is not the founder of the firm. CEOs who are the Founder of the Firm are though to be in a better negotiating position than other CEOs, as such they will command higher compensation. Finally, we measure the natural log the firms ASSETS to control for skewness in the data. It is expected that CEOs of larger firms will earn higher salaries due to a higher level of responsibility and the ability of the firm to pay. We include a series of dummy variables in each regression to control for differences by industry. The dummy variables are developed based on SIC codes as taken from Compustat data. Nine dummy variables are created based on the SIC code deciles. The coefficients of the dummy variables are not meaningful and as such are not reported. In general however, the dummy variables were significant.

The regression results are presented in Table 5. Regressions are run incorporating each of the independent variables individually. Four of the independent variables, UGATT, UGCODE, YRCEO, CEOAGE, FOUNDER and ASSETS are significant in explaining variations in total CEO compensation. Several additional noteworthy observations can be made from these regressions. Most interesting is that CEO's that have an undergraduate degree receive $1,121,636 less compensation per year than CEOs that do not have an undergraduate degree. The significance of the variable YRCEO provides evidence that the number of years that the individual has been the CEO of the firm is an important determinant of salary. The coefficient indicates that the salary of the CEO increases by $68,232 for each year that the individual serves as the CEO of the firm. CEO age is also a significant explanatory variable. The coefficient indicates that each year of additional age results in a $31,836 higher salary. Interestingly, in the multiple regressions, the number of years that an individual has been with the firm has a negative impact on his/her earnings. This suggests that the salary compression that is so well known in academic institutions is also present in the highest levels of the corporate world. FOUNDER is found to be significant in explaining the compensation of the CEO. The coefficient on the FOUNDER variable indicates that Founders receive $1,335,576 more in total compensation per year than other CEOs. Similarly, the coefficient on the ASSETS variable indicates that CEOs from large firms earn more than other CEOs. Equally interesting is those variables that were not significant in the single regressions. GATT, the dummy variable for having attended graduate school is not significant, suggesting that possessing a graduate degree is not an important factor in determining CEO compensation. Finally, the number of years that a CEO has been with the firm is not important in determining the total compensation as CEO. We combine the variables into a multiple regression with similar results.

Table 5: Regressions on Total Compensation.

Constant	UGATT	GATT	YRCEO	YRFRM	CEOAGE	FOUNDER	ASSETS	R2/Fstat
2,903,464 *6392*	-1,121,636 -4.14***							0..0174 14.14***
1,836,692 *6392*		108,156 0.72						0.0148 12.03***
1,463,704 *6392*			68,232 7.28***					0.0229 18.69***
1,915,854 *6390*				-1,261.11 -0.20				0.0148 12.00***
21,832 *6392*					31,836 2.93***			0.0161 13.05***
1,866,469 *6369*						1,335,576 5.15***		0.0189 15.34***
-13,057,515 6392							689,351 10.74***	0.0322 26.59***
-16,219,239 *6367*	-1,216,554 -4.33***	48,952 0.31	83.813 7.04***	-39,981 -5.53***	2,751.06 0.22	897,052 3.10***	889,444 13.24***	0.0535 25.63
-16,131,592 *6367*	-1,119,852 -4.39***		84,795 7.55***	-39,974 -5.89***		886,875 3.09***	892,904 13.43***	0.0534 29.90***

The dependent variable is the Total CEO compensation. The number of observations are in italics. The T-statistic is in parentheses. *** indicates significance at the 1 percent level. ** indicates significance at the 5 percent level. * indicates significance at the 10 percent level

We continue the analysis by examining how the classification of the school attended affects the salary received. The results are presented in Table 6. The evidence suggest that there is no difference in salary depending upon the class of school attended. Each of the class variables are insignificant after controlling for the effects of the control variables. The results hold for the combined sample (Panel A), the undergraduate sample (Panel B), and the graduate sample (Panel C). Each of the control variables, with the exception of Founder, is significant in at least one sample.

3.3 Educational Effectiveness

We continue by examining the effectiveness of CEOs based on their educational background. We measure the effectiveness of the CEO as the ability to produce return on assets (ROA) and Tobin's Q. Tobin's Q measures the market value of the firm relative to the assets that the firm employees. While other measures of performance could be included, we limit ourselves to these variables in the current research. For this analysis we create two additional control variables. The first additional control variable is the debt ratio (Total Debt divided by Total Assets). It is well known that the capital structure that the firm adopts affects the firm in various ways including through financial leverage effects. The second additional independent variable is growth in sales. To the extent that CEO's are able to produce sales growth, his/her compensation is expected to increase. In Table 7, the school attendance variables are included in the analysis. In Table 8, the BIG variables as previously described are included in the analysis. In both cases, while not reported in the table, the industry dummy variables were included in the analysis.

Table 6: Regressions on Total Compensation

Panel A: Combined Sample											
Constant/N	Big1	BIG5	BIG10	BIG25	BIG50	Yrceo	YRFRM	CEOAGE	FOUNDER	ASSETS	R2/Fstat
-15,788,705	75,595					79,178	-33,630	1255.27	386,381	825,029	0.0568
5841	0.36					6.75***	-4.94***	0.10	1.34	13.13***	26.97***
-15,845,575		206,282				77,427	-33,377	1818.20	389,011	824,018	0.0570
5841		1.28				6.55***	-4.92***	0.14	1.35	13.12***	27.10***
-15,801,064			-157,490			81,609	-34,408	884.83	382,180	829,758	0.0569
5841			-1.07			6.87***	-5.07***	0.07	1.33	13.19***	27.06***
-15,774,897				23,932		79.195	-33,788	1012.55	382,402	825,266	0.0567
5841				0.17		6.70***	-4.98***	0.08	1.33	13.14***	26.96***
-15,735,892					-60,424	80,034	-33,969	1003.78	377,286	825,632	0.0568
5841					-0.41	6.79***	-5.01***	0.08	1.31	13.14	26.98***
Panel B: Undergraduate Sample											
Constant/N	Big1u	BIG5u	BIG10u	BIG25u	BIG50u	Yrceo	YRFRM	CEOAGE	FOUNDER	ASSETS	R2
-17,094,524	-415,509					89,986	-33,247	-29,423	472,759	960,091	0.0702
2769	-0.69					5.52***	-3.34***	-1.63	1.18	9.82***	16.01***
-17,147,921		223,400				87,911	-33,714	-29,011	482,251	960,956	0.0702
2769		0.72				5.35***	-3.38***	-1.61	1.20	9.83***	16.01***
-17,178,529			121,882			88,315	-33,791	-29,112	472,328	962,991	0.0701
2769			0.47			5.36***	-3.37***	-1.62	1.18	9.86***	15.99***
-17,174,681				17,010		89,255	-33,325	-29,460	473,235	963,228	0.0701
2769				0.08		5.41***	-3.33***	-1.63	1.18	9.86***	15.97***
-17,053,124					-163,343	91,228	-32,511	-29,445	457,470	960,131	0.0703
2769					-0.79	5.55***	-3.25	-1.63	1.14	9.82***	16.02***
Panel C: Graduate Sample											
Constant/N	Big1g	BIG5g	BIG10g	BIG25g	BIG50g	Yrceo	YRFRM	CEOAGE	FOUNDER	ASSETS	R2
-14,650,804	102,490					71,213	-36,415	39,483	69,838	680,371	0.0518
3071	0.43					4.11***	-3.72***	2.19**	0.16	8.07***	12.86***
-14,510,116		-125,325				72,976	-36,953	39,219	59,572	678,634	0.0519
3071		-0.63				4.20***	-3.77***	2.18**	0.14	8.06***	12.88***
-14,491,781			-283,450			75,561	-37,022	38,640	55,078	682,266	0.0524
3071			-1.46			4.33***	-3.78***	2.14**	0.13	8.10***	13.02***
-14,549,872				-159,192		73,005	-36,510	38,912	56,817	682,555	0.0520
3071				-0.79		4.21***	-3.73***	2.16**	0.13	8.09***	12.89***
14,479,685					-159110	72,433	-36,352	38,737	52,283	679,895	0.0519
3071					-0.75	4.19***	-3.72***	2.15**	0.12	8.07	12.89***

The dependent variable is the Total CEO compensation. The number of observations are in italics. The T-statistic is in parentheses. *** indicates significance at the 1 percent level. ** indicates significance at the 5 percent level. * indicates significance at the 10 percent level.

In Table 7, the results indicate that having received an undergraduate degree and having received a graduate degree are important in explaining the ROA of the firm. However, the coefficients are negative indicating that those CEOs that do not have a degree outperform those CEOs that do have a degree. This may not be surprising in light of evidence provided by Mintzberg and Lampel (2001) who note a preponderance of business failures

among firms managed by CEOs having an MBA degree. This evidence is also consistent with the finding that CEO's without a degree earn more than those with a degree. However, in the multiple regression, UGATT and GATT are no longer significant in explaining ROA after controlling for the effects of the explanatory variables. Consistent with most literature, we find a negative size effect, with large firms earning a lower return than small firms. In the single regression, there is no evidence of a capital structure effect, however, the debt ratio variable is significant in the multiple regression. Finally, we find that firm founders produce a higher return on assets than other CEOs. Thus the higher salaries associated with firm founders noted earlier appear to be appropriate given the higher returns earned by these CEOs.

Table 7: Regressions on ROA.

Constant	ugatt	gatt	Yrceo	YRfrm	ceoage	Founder	DR	Assets	growth	R2/Fstat
0.04769 *6381*	-0.0971 -3.60***									0.1627 154.82***
0.0411 *6381*		-0.0044 -3.00***								0.1622 154.23***
0.0348 *6381*			0.0007 7.21***							0.1678 160.63***
0.0354 *6379*				0.00018 2.96***						0.1622 154.22***
0.0393 *6381*					-0.000006 -0.06					0.1610 152.88***
0.0384 *6358*						0.0240 9.56***				0.1751 168.48***
0.0389 *6380*							<0.00000001 0.55			0.1611 152.90***
0.2645 *6381*								-0.0104 -16.70***		0.1962 194.41***
0.0359 *5941*									0.0216 6.72***	0.1712 153.23***
0.2576 *5917*	-0.0030 -1.09	-0.00107 0.70	0.00013 1.08	0.00039 5.54***	-0.00033 -2.65***	0.01386 4.70***	<0.00000001 2.45***	-0.0096 -14.46	0.01546 4.82***	0.2139 100.53***

The dependent variable is Return on Assets. The number of observations are in italics. The T-statistic is in parentheses. *** indicates significance at the 1 percent level. ** indicates significance at the 5 percent level. * indicates significance at the 10 percent level.

In Table 8, Panel A the results of the test on the Big combined schools are presented. In Panel B, the results of the test on the Big Combined undergraduate schools are presented. Finally, in Panel C, the results of the test on the Big undergraduate schools are presented. There is limited evidence of a difference in ROA in the combined and undergraduate analysis. However, there is evidence to suggest that those CEOs that attend one of the Big graduate schools provide higher ROA than other CEOs. With the exception of the debt ratio, in general, the control statistics are significant in explaining ROA.

In Tables 9 and 10, the regressions on Tobin's Q are presented. Like the ROA analysis, Table 9 includes the attendance variables while Table 10 includes the Big school variables. In Table 9, the single regressions indicate that each of the explanatory variables with the exception of CEO age are important explanatory variables of Tobin's Q. The school attendance variables are positively related to Tobin's Q being significant at the 1 percent level. Interestingly, the YRCEO, YRFRM, CEO age and Founder variables each have negative coefficients. In Table 10, the results suggest some difference in Tobin's Q based on the school attended. However, the coefficients are generally negative suggesting that graduates from schools that place many graduates in CEO positions are less effective at producing high levels of Tobin's Q than other CEOs.

Section 4: Concluding Comments

In this paper the educational background of the Chief Executive officers of the largest U.S. firms are examined. The data for the analysis are obtained from the Forbes 800 Compensation list published by Forbes Magazine and is supplemented by data from the Compustat data files. The number of CEOs that have received a higher education degree relative to those that have not earned a degree are analyzed. We find that a large proportion of CEOs have an undergraduate degree while a much smaller percentage of the CEOs have a graduate degree. The analysis proceeds by investigating the effectiveness of schools at producing graduates that achieve the position of CEO. For comparison purposes, the data is aggregated for each of the 463 institutes of higher education represented in the sample. Three lists of university effectiveness are created. The first list indicates the most successful undergraduate schools. The second listing identifies the most popular graduate schools. The third list identifies the most effective

Table 8: Regressions on ROA

Panel A: Combined Sample													
Constant	Big1	BIG5	BIG10	BIG25	BIG50	Yrceo	YRFRM	CEOAGE	FOUNDER	DR	ASSETS	Growth	R2/Fstat
0.2409	0.0022					0.00026	0.00032	-0.00023	0.0121	<0.000000001	-0.0092	0.011	0.2072
5470	1.01					2.09**	4.49***	-1.67*	3.77***	0.20	-13.61	3.47***	95.03
0.2411		0.0014				0.00026	0.00032	-0.00023	0.0120	<0.000000001	-0.0092	0.0112	0.2071
5470		0.81				2.04**	4.45***	-1.69*	3.74***	0.20	13.61***	3.44***	95.00***
0.2418			0.0010			0.00026	0.00032	-0.00024	0.01196	<0.000000001	-0.0092	0.01125	0.2071
5470			.63			2.04**	4.45***	-1.74*	3.72***	0.20	-13.60***	3.46***	94.97***
0.2413				0.00073		0.00026	0.00032	-0.00023	0.012	<0.000000001	-0.0092	0.01127	0.2071
5470				0.49		2.08**	4.43***	-1.73*	3.74***	0.20	-13.60***	3.47***	94.96***
0.2422					-0.0014	0.00029	0.00031	-0.00024	0.01187	<0.000000001	-0.0092	0.01135	0.2071
5470					-0.92	2.27**	4.37***	-1.73*	3.69***	0.20	13.59***	3.49***	95.01***
Panel B: Undergraduate Sample													
Constant	Big1u	BIG5u	BIG10u	BIG25u	BIG50u	Yrceo	YRFRM	CEOAGE	FOUNDER	DR	ASSETS	Growth	R2
0.3126	-0.008					-0.00009	0.00072	-0.00047	0.0095	<0.000000001	-0.01251	0.0316	0.2305
2579	-1.18					-0.48	6.45***	-2.25***	2.00**	0.32	-11.29***	5.22***	51.21
0.3112		0.0037				-0.00013	0.00071	-0.00045	0.0096	<0.000000001	-0.0125	0.0304	0.2305
2579		1.08				-0.69	6.32***	-2.17**	2.02**	0.32	-11.27***	5.17***	51.19***
0.3104			0.00052			-0.00011	0.00071	-0.00046	0.0094	<0.000000001	-0.0125	0.0315	0.2301
2579			0.18			--0.57	6.35***	-2.21***	1.98**	0.32	-11.24***	5.19***	51.09
0.3104				-0.0064		-0.00002	0.00074	-0.00045	0.0088	<0.000000001	-0.0125	0.0319	0.2321
2579				-2.55		-0.12	6.65***	-2.16**	1.85*	0.34	-11.27***	5.27***	51.66***
0.3176					-0.0092	0.000001	0.00076	-0.00047	0.00864	<0.000000001	-0.0126	0.0316	0.2348
2579					-3.97***	0.01	6.79***	-2.25**	1.83*	0.35	-11.43	5.23***	52.46***
Panel C: Graduate Sample													
Constant	Big1g	BIG5g	BIG10g	BIG25g	BIG50g	Yrceo	YRFRM	CEOAGE	FOUNDER	DR	ASSETS	Growth	R2
0.1975	0.0029					0.00046	0.000008	0.00016	0.0122	<0.000000001	-0.0078	0.0033	0.2168
2890	1.24					2.70***	0.08	0.90	2.75***	1.12	-9.24***	0.90	53.07***
0.1989		0.0023				0.00046	0.000012	0.000154	0.0116	<0.000000001	-0.0078	0.0033	0.2168
2890		1.18				2.69***	0.12	0.86	2.64***	1.11	-9.32***	0.90	53.05***
0.1988			0.00414			0.00042	0.000012	0.00016	0.01176	<0.000000001	-0.0079	0.0034	0.2177
2890			2.18**			2.48**	0.12	0.91	2.67***	1.08	-9.38***	0.92	53.34***
0.1990				0.0070		0.000425	0.000001	0.00017	0.01174	<0.000000001	-0.00801	0.0032	0.2198
2890				3.55***		2.50**	0.02	0.96	2.67***	1.02	-9.52***	0.89	54.01
0.1979					0.0038	0.00046	-0.0000009	0.00016	0.0119	<0.000000001	-0.00787	0.0031	0.2173
2890					1.80*	2.72***	-0.01	0.92	2.69***	1.09	-9.35***	0.88	53.21***

The dependent variable is Return on Assets. The number of observations are in italics. The T-statistic is in parentheses. *** indicates significance at the 1 percent level. ** indicates significance at the 5 percent level. * indicates significance at the 10 percent level.

universities based on their combined undergraduate and graduate ranking. A high concentration of management years among a relatively small number of schools is evident in the data. Particularly noteworthy is the record of Harvard University. Over 19 percent of those CEOs that have a graduate degree earned that degree from Harvard University! The effect that degree source has on the total compensation of the CEO is explored. The data indicates that those CEOs which possess an undergraduate degree receive less total compensation per year than those CEOs that do not possess an undergraduate degree. Several explanations are provided for this phenomenon. The data suggests that the school attended has no significant effect on the CEO's compensation. Overall, the evidence suggests that possessing a degree and where the degree is earned is important in reaching the CEO position in a firm but has little affect on the salary earned once there. Other variables found to be significant in explaining total CEO compensation are the number of years the CEO has been with the firm, the number of years the CEO has served in the CEO capacity, if the CEO is the Founder of the firm, the size of the firm and the industry that the firm operates in. Evidence is found to indicate that those CEO's that earn a degree, as well as the university attended have explanatory power for the firms ROA and Tobin's Q.

Table 9: Regressions on Tobins Q.

Constant	Ugatt	gatt	Yrceo	YRfrm	ceoage	Founder	DR	Assets	growth	R2/Fstat
0.6208 *6337*	0.03750 4.31***									0.3308 391.04***
0.6457 *6337*		0.01802 3.82***								0.3304 390.30***
0.6734 *6337*			-0.0030 -10.20***							0.3397 406.96***
0.6692 *6335*				-0.00072 -3.73***						0.3305 390.43***
0.6784 *6337*					-0.0004 -1.18					0.3290 387.84***
0.6552 *6316*						-0.09477 -11.72***				0.3439 413.35***
0.6538 *6337*							0.00000001 7.14***			0.3342 397.08***
-0.5873 *6337*								0.05725 29.28***		0.4089 547.29***
0.6531 *5089*									-0.000003 -2.05**	0.4085 438.54***
-0.5382 *5082*	0.0144 1.80*	0.00486 1.13***	0.00012 0.36	-0.0011 -5.58***	-0.00031 -0.84	0.00023 0.02	0.00000002 13.10***	0.0557 29.40***	-0.000003 -2.28**	0.5286 355.02

The dependent variable is Tobin's Q. The number of observations are in italics. The T-statistic is in parentheses. *** indicates significance at the 1 percent level. ** indicates significance at the 5 percent level. * indicates significance at the 10 percent level.

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Table 10: Regressions on Tobin's Q

Panel A: Combined Sample													
Constant	Big1	BIG5	BIG10	BIG25	BIG50	Yrceo	YRFRM	CEOAGE	FOUNDER	DR	ASSETS	Growth	R2/Fstat
-0.4932	-0.010					-0.00007	-0.0011	-0.00004	-0.011	0.00000002	0.0534	-0.000003	0.5319
4707	-1.63					-0.20	-5.65***	-0.11	-1.00	10.77***	28.30***	-2.43**	355.42***
-0.4921		-0.4921				0.000011	-0.0011	-0.00005	-0.0102	0.00000002	0.0534	-0.000003	0.5324
4707		-10.89				0.03	-5.65***	-0.13	-0.96	10.73***	28.34***	-2.41**	356.10***
-0.4993			-0.01355			0.00004	-0.0011	0.000008	-0.00919	0.00000002	0.0536	-0.000003	0.5326
4707			-3.18***			0.11	-5.71***	0.00	-0.86	10.72***	28.43***	-2.40**	356.48***
-0.4932				-0.0082		-0.00002	-0.0011	-0.000025	-0.01005	0.00000002	0.05338	-0.000003	0..5320
4707				-2.01**		-0.06	-5.65***	-0.06	-0.94	10.72***	28.32***	-2.46***	355.61***
-0.4978					0.0033	-0.00015	-0.0011	-0.000005	-0.0096	0.00000002	0.05328	-0.000003	0.5317
4707					0.87	-0.44	-5.46***	-0.01	-0.90	10.78***	28.26***	-2.43**	355.15***
Panel B: Undergraduate Sample													
Constant	Big1u	BIG5u	BIG10u	BIG25u	BIG50u	Yrceo	YRFRM	CEOAGE	FOUNDER	DR	ASSETS	Growth	R2
-0.6341	-0.0062					-0.00037	-0.0019	0.0018	0.0091	0.00000002	0.0554	0.0108	0.5637
2243	-0.37					-0.78	-6.42***	3.15***	0.64	8.45***	19.76***	11.55***	191.91***
-0.0217		-0.0217				-0.00023	-0.0018	0.0017	0.0102	0.00000002	0.0557	0.0107	0.5649
2243		-2.48**				-0.49	-6.21***	2.99***	0.72	8.44***	19.92***	11.53***	192.84***
-0.6346			-0.01631			-0.00023	-0.0018	0.0017	0.0100	0.00000002	0.05542	0.0107	0.5646
2243			-2.21**			-0.47	-6.10	3.06***	0.70	8.42***	19.84***	11.51***	192.64***
-0.6364				-0.00602		-0.000312	-0.00187	0.0018	0.00853	0.00000002	0.0554	0.0107	0.5639
2243				-0.94		-0.65	-6.30***	3.20***	0.60	8.44***	19.81***	11.51***	192.03***
-0.6465					-0.00053	-0.00053	-0.00196	0.00182	0.00973	0.00000002	0.05567	0.01076	0.5647
2243					-1.10	-1.10	-6.63***	3.21***	0.68	8.49***	19.92***	11.56***	192.69***
Panel C: Graduate Sample													
Constant	Big1g	BIG5g	BIG10g	BIG25g	BIG50g	Yrceo	YRFRM	CEOAGE	FOUNDER	DR	ASSETS	Growth	R2
-0.3229	-0.01853					-0.000291	-0.00029	-0.00191	-0.0396	0.00000002	0.05036	-0.000003	0.5347
2463	-2.77***					-0.58	-0.58	-3.63***	-2.41**	6.35***	19.82***	-2.54**	187.56***
-0.3372		-0.00668				-0.000387	-0.000214	-0.00184	-0.0364	-0.0000002	0.05076	-0.000003	0.5336
2463		-1.23				-0.77	-0.81	-3.49***	-2.22**	6.27***	19.99***	-2.55**	186.68***
-0.3353			-0.01516			-0.00025	-0.00022	-0.00187	-0.03729	0.00000002	0.05089	-0.000003	0.5348
2463			-2.80***			-0.49	-0.82	-3.55***	-2.28**	6.25***	20.07***	-2.51**	187.58***
-0.3352				-0.0144		-0.00034	-0.00018	-0.00191	-0.03644	0.00000002	0.05105	-0.000003	0..5345
2463				-2.55**		-0.68	-0.68	-3.62***	-2.22**	6.22***	20.11***	-2.50**	187.40***
-0.3351					-0.0916	-0.00041	-0.00018	-0.0019	-0.0368	0.00000002	0.0509	-0.000003	0.5337
2463					-1.52	-0.80	-0.69	-3.59***	-2.24***	6.22***	20.04***	-2.52**	186.80***

The dependent variable is Tobins Q. The number of observations are in italics. The T-statistic is in parentheses. *** indicates significance at the 1 percent level. ** indicates significance at the 5 percent level. * indicates significance at the 10 percent level.