Do CEO Qualifications Affect Capital Structure?

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This paper examines the relationship between qualifications of top management and capital structure. We study how education and work experience of company CEOs affect Leverage values for companies. We hypothesize that managers with higher qualifications will use greater leverage to increase the value of their firms. Empirical evidence is consistent with our hypotheses. Thus, our findings support human capital theory that superior qualifications and experience will improve managerial productivity.

INTRODUCTION

In the last two decades company executive compensation packages have increased tremendously. Large multinational companies compete with each other in paying higher and higher salaries and offering lucrative stock option packages to top managers. According to Murphy (1999), level of top executive compensation between 1992 and 1996 has increased 55% from $2.0 million to $3.2 million. Many researchers (Agrawal and Mandelker (1987), Agrawal and Walking (1994), Boschen and Smith (1995), Defusco, Johnson and Zorn (1990), Zhou (1990)) examined CEO and CFO compensation packages across industries and across nations. Taking into public sentiment administrators make companies disclose executive pay to the public.

Although the researchers investigated short term announcement effect of executive pay disclosure on shareholder wealth, effect of CEO pay on long-term company value hasn't been investigated thoroughly. Senior managers can affect the value of their companies not only by producing best, innovative products or providing best service, but also by choosing the optimal capital structure for the company and by issuing the most beneficial financial instruments.

This study examines the relationship between qualifications and experiences of company CEOs and capital structure using panel data for 490 companies between 1985 and 2005. We investigate how education level and prior work experience of company top executives affect leverage values for companies in our sample. We evaluate the quality of

education by identifying whether or not executives have MBA degrees, and whether they graduated from a business school in top 25 of the Financial Times ranking list of business schools. Next, we measure work experience by tenure at the current position, and by documenting whether they had prior experience as a part of senior management team or as a partner in a law or accounting firm.

The influence of managerial skills on firm valuation has received limited attention from researchers. At present we are only aware of one study by Chemmanur and Paeglis (2005) who investigate the effect of managerial quality on IPO performance. A parallel stream of studies, for example Lucas (1978), Fama and French (1995), or Maksimovic and Phillips (2002), investigates how various firm characteristics affect market valuation of firms. At the same time many studies investigate how managerial skill affects mutual fund performance. In most cases the results are mixed, for example Switzer and Huang (2007) find significant cross sectional differences in fund mutual performance that are attributed to managerial qualifications, while Philpot and Peterson (2006) find little evidence that managerial qualifications add value.

The present study adds to this literature in two ways. First, to the best of our knowledge this is the first study that investigates the relationship of qualifications and experiences of firm's top managers and capital structure. Second, we investigate not only whether an executive has an MBA degree, but also in what university the CEOs obtained education and how the place of study influences leverage.

The paper is organized as follows. The next section describes the data set and the third section outlines the hypotheses and methodology. The fourth section presents our findings, and is followed by the conclusion.

DATA

We use panel data on companies in the S&P 500, S&P Midcaps, and S&P Smallcaps indices between 1985 and 2005. The data on qualifications of active CEOs are hand-collected from 1985-2005 annual reports and investor information sections of company webpages. We collect information about tenure, education, and work experience for company CEOs from their profiles. We also collect information and company age. Finally, we collect information on corporate governance, which includes whether or not the current chairman of the board of directors is also the CEO, the number of independent directors, and total number of directors on the board of each company. See for example Borokhovich et al (1996) for discussion of the benefits of outside directors in the board composition. We find 490 companies that satisfy all data requirements in terms of availability of CEO information on company web pages, corporate governance, and financial performance variables.

The following variables measure managerial qualifications. We construct dummy variable MBA that indicate whether or not the executive has an MBA. The MBA degree should in theory help an executive better understand business situations and make better decisions. Variable SCHOOL show whether the executive graduated from a university on the top 25 business school list from Financial Times ranking. More reputable business schools should provide better education and greater networking opportunities, and thus a graduate from such a school should be able to make better business decisions. Variable CERTIFICATION indicates whether or not the company CEO has Certified Public

Accountant (CPA), Chartered Financial Analyst (CFA), or any other professional certification. An executive with such designation arguably should have better professional knowledge and analytical skills compared with an executive with no professional certification. Variable PARTNER indicate whether the corresponding executive was earlier a partner in a law or accounting firm, as such experience is valuable for top managers who have to routinely deal with legal and financial reporting issues that arise from company operations. Variable SENEXP shows whether or not the executive has prior experiences as a part of senior management team in any company in his/her career. Variable PUBBOARD indicates whether the CEOs has recognition outside of business community and serves as a trustee or a director on a non-business board of directors, for example on the board of governors of a university or a charitable foundation. Chemmanur and Paeglis (2005) used a similar set of variables to assess the impact of managerial quality on the performance of IPOs. Finally, TENURE specifies the number of years in the current position, a greater number of years will mean that the individual has more experience on the job and this should translate into higher managerial qualifications.

Table 1 presents descriptive statistics for the managerial qualifications variables. We find 21 CEOs that have MBA degrees, as indicated by the sum of variable MBA. Next, 75 CEOs graduated from a highly reputable business school. Out of 490 CEOs, only 11 have professional certification such as CPA or CFA, according to the information available on their profiles. 373 executive profiles report prior experience as a part of senior management team, and 84 CEOs serve on public boards. CEO tenure in 2006 varies from 4 to 44 years, with median tenure 9 years.

In order to investigate the effect of managerial qualifications on capital structure, we collect balance sheet and industry classification data from S&P Compustat between 1985 and 2005. Table 2 presents leverage, Total Assets, and company age. For companies in our sample, leverage as measured by book debt ratio averages at 0.2062 and ranges from 0 to 1.6208. Median firm size as measured by Total Assets is $1,069.886 million and it ranges from $5.69 million to $1,291,803 million. Finally, firm age varies from 3 to 222 years old, with mean age 45.4 years. Thus, we have a set of companies with very diverse capital structure, sizes, and histories.

Table 3 presents descriptive statistics for the control variables that proxy for quality of corporate governance. In 382 out of 490 companies in our sample the CEOs are also Chairs of the board of directors, as indicated by the sum of variable CHAIRCEO. The degree of board independence is measured by INDEPDIRPERCENT, the proportion of independent directors on the board, ranges from 0.22 to 0.93 with mean value of 0.7132. Next, we present industry composition of the sample in Table 4. The most represented industry sector in our sample is Consumer Discretionary with 100 firms out of 490. The least represented sector is Telecommunication Services, which has only three firms that satisfies all data requirements.

HYPOTHESES AND METHODOLOGY

The experience and qualifications of top executives can affect capital structure of companies in a variety of ways. The value of a company is affected by the amount of leverage companies have in their capital structures. Modigliani and Miller (1963) and

Table 1: CEO QUALIFICATIONS

	MBA	SCHOOL	CERTIFICATION	PARTNER	SENEXP	PUBBOARD	TENURE$_{2005}$
Mean	0.0429	0.1531	0.0224	0.0082	0.7612	0.1714	11.5755
Median	0	0	0	0	1	0	9
Max	1	1	1	1	1	1	44
Min	0	0	0	0	0	0	4
Std. Dev	0.2027	0.3604	0.1483	0.0901	0.4268	0.3773	7.6959
Sum	21	75	11	4	373	84	5672
Obs	490	490	490	490	490	490	490

Table 2: COMPANY CHARACTERISTICS

	Leverage	Total Assets	Company Age$_{2006}$
Mean	0.2062	8762.9860	45.4
Median	0.1802	1069.8860	32
Maximum	1.6208	1291803	222
Minimum	0.0000	5.69	3
Std. Dev.	0.1873	43416.48	37.33
Obs.	4326	4326	490

Miller (1977) demonstrated that in the presence of corporate and personal taxes and bankruptcy costs, and other market imperfections, optimal capital structure exist for companies and it is neither 100% debt nor 100% equity. For a firm with no debt borrowing will increase firm value. On the other hand, greater leverage increases the probability of financial distress and subsequent reorganization or liquidation; thus, it takes more skills to successfully manage a company that has debt in the capital structure. A knowledgeable and well-connected CEO can analyze the mission, the stakeholders' position, the production or service schedule of the company among other factors and decide on the optimum capital structure for the company and choose the best financial instruments and therefore he or she can maximize the firm value.

We measure the unobservable managerial quality with the proxy variables that indicate whether not a CEO has an MBA degree, graduated from a highly reputable business school, has professional certification, was a partner in a law or accounting firm and therefore has extensive financial reporting and legal experience prior to becoming the company executive, has prior experience of working as a part of a senior management

Table 3: GOVERNANCE PROXIES

	CHAIRCEO	INDEPDIRPERCENT
Mean	0.7796	0.7132
Median	1	0.73
Maximum	1	0.93
Minimum	0	0.22
Std. Dev.	0.4149	0.1439
Sum	382	349.49
Observations	490	490

TABLE 4: INDUSTRY DISTRIBUTION

Industry sector	Number of firms
Materials	39
Consumer Discretionary	100
Consumer Staples	23
Health Care	51
Energy	20
Financials	71
Industrials	83
Information Technology	73
Telecommunication Services	3
Utilities	27
Total:	490

team, and tenure in a current position. We expect a positive relationship between each measure of the managerial quality and leverage.

Univariate Analysis

To examine the relationship between managerial quality and leverage we first compute cross-sectional Leverage mean values in every year between 1985 and 2005 for firms where CEOs exhibit certain qualifications and compare them with the mean values for Leverage for firms where CEOs do not have such qualifications. In particular, we separate firms based on whether their CEOs have MBA degrees, graduated from Financial Times top 25 business schools, have professional certification, have experience as a partner on a law or accounting firms, or have senior management team experience prior to becoming the CEO or CFO.

Next, we use seemingly unrelated regressions (SUR) method to estimate the system of equations specified as follows:

$$\begin{cases} L_{t,D=0} = c(1) + \varepsilon_{1,t} \\ L_{t,D=1} = c(2) + \varepsilon_{2,t} \end{cases} \quad (1)$$

where $L_{t,D=0}$ is mean Leverage value in year t across companies where the executive in question does not have the qualification (i.e. MBA=0), $L_{t,D=1}$ is mean Leverage value in

year t across companies where the executive in question does have the qualification (i.e. MBA=1), c(1)and (2) are constants and $\varepsilon_{1,t}$ and $\varepsilon_{2,t}$ are regression residuals. We estimate two regressions on the mean for firms with and without a given managerial qualification, and the SUR method allows us to directly test using Wald test whether c(1) equals to c(2). We expect that if qualifications measure quality, and higher quality managers indeed outperform lower quality managers as specified in the hypotheses, then it should be the case that c(2)>c(1).

Multivariate Analysis

To further analyze the relationship between managerial quality and capital structure we estimate the flowing equation using panel least squares method with fixed period effects and White's correction for heteroskedasticity.

$$L_{i,t} = \beta_0 + \beta_1 MBA_i + \beta_2 SCHOOL_i + \beta_3 CERTIFICATION_i +$$
$$+ \beta_4 PARTNER_i + \beta_5 SENEXP_i + \beta_6 SENEXP_i + \beta_7 \ln(1 + TENURE_{i,t}) +$$
$$+ \beta_8 \ln(1 + COMPANYAGE_{i,t}) + \beta_9 CHAIRCEO_i + \beta_{10} INDEPDIRPERCENT_i + \quad (2)$$
$$+ \sum_{j=1}^{9} \lambda_j IndustryDummy_{i,j} + \varepsilon_{i,t}$$

where $L_{i,t}$ denotes leverage for company i in year t, MBA = 1 when an executive has an MBA and zero otherwise, $SCHOOL_i$ = 1 when an executive graduated from the top 25 Financial Times business school and zero otherwise, $CERTIFICATION_i$ = 1 when an executive has professional certification and zero otherwise, $PARTNER_i$ = 1 when an executive has previous experience as a partner in an accounting or law firm and zero otherwise, $SENEXP_i$ = 1 when an executive has previous experience as a part of top management team in any company and zero otherwise, $PUBBOARD_i$ = 1 when an executive serves on a public board and zero otherwise, $TENURE_i$ is the number of years the officer worked in current position. The other independent variables are not related to the quality of management and are used as control variables for other aspects of firm quality. $COMPANYAGE_i$ is the number of years since the company started operations or was incorporated, whichever occurred first. $CHAIRCEO_i$ =1 when the CEO is also the chairman of the board and 0 otherwise, and $INDEPDIRPERCENT_i$ is the percentage of independent directors on the board, $\varepsilon_{i,t}$ is regression residual, i=1, 2, …, 490, and t=1985, 1986, …, 2005.

EMPIRICAL RESULTS

Figure 1 presents time trajectories of annual cross sectional mean values for Leverage for firms CEOs of which have MBA dummy variables equal to 0 or 1. A casual inspection of the graph reveals that in almost all years higher mean Leverage values were displayed by companies with CEOs that have MBA degrees. Plotting the other CEO qualification variables against leverage produced similar graphs (not reported here). Thus, from the first look it appears that companies managed by CEOs with higher qualifications, for example with more advanced business degrees, were using debt more aggressively.

Figure 1: CAPITAL STRUCTURE AND CEO EDUCATION
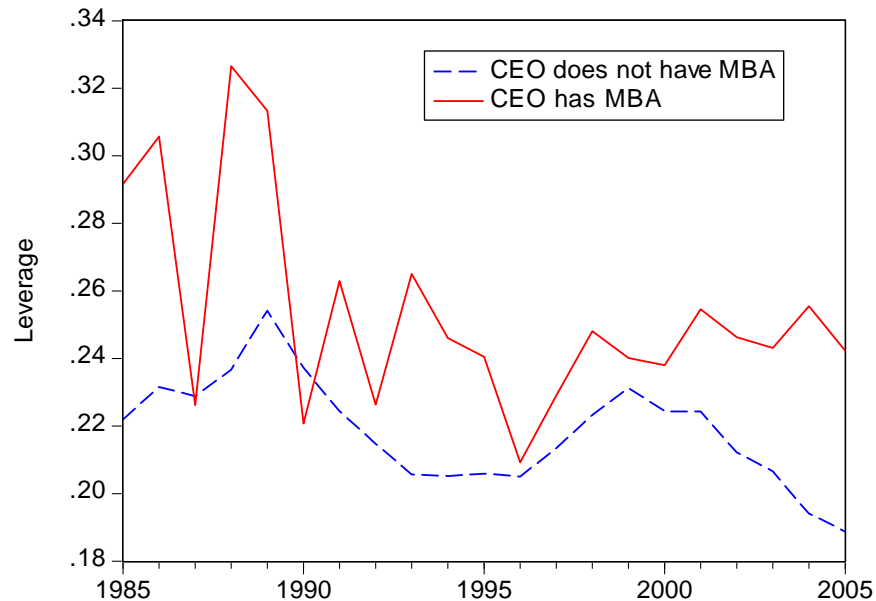
To formally examine the relationship between managerial qualifications and capital structure we estimate system (1) for MBA, SCHOOL, CERTIFICATION, PARTNER, and SENEXP and test whether intercepts for both equations are equal. The test results are presented in Table 5 suggest that for all six variables $c(1) \neq c(2)$, and in all six variables when the corresponding managerial qualification is present, the estimated mean values for leverage are greater than those when the corresponding managerial qualification is not present, which is consistent with our hypotheses. For example, the estimated mean leverage for companies with MBA=0 is 0.2185, the estimated mean leverage for MBA=1 is 0.2539, and the Wald test statistic for the test that $c(1)=c(2)$ is 36.1815. For the Chi-squared test with 1 degree of freedom it means the null hypothesis of coefficient equality is strongly rejected.

Table 6 presents the estimation results for equation (2). The coefficients for MBA, SCHOOL, CERTIFICATION, PARTNER, SENEXP, and PUBBOARD are positive and highly significant. For example, the parameter estimate for variable SENEXP is 0.018 and is significant at 1% level with the corresponding t-value of 6.962. These results suggest that companies CEOs of which have the specified qualifications have a greater degree of financial leverage compared with the companies whose managers do not have these qualifications. These results are consistent with our hypotheses and suggest that more qualified managers take more advantage of debt financing. The estimated coefficient for TENURE is -0.014 and highly significant. We have the following interpretation for this result. As the CEO stays in his/her position longer, he/she may tend to be more cautious with the use of debt because it increases the probability of bankruptcy, and/or because a greater degree if financial leverage reduces reserve borrowing capacity than may be essential in financing unexpected profitable investment opportunities.

Table 5: RESULTS OF UNIVARIATE ANALYSIS

	MBA	SCHOOL	CERTIFICATION	PARTNER	SENEXP	PUBBOARD
C(1)	0.2185***	0.2129***	0.2179***	0.2190***	0.1909***	0.2105***
	(65.384)	(63.298)	(67.033)	(68.014)	(44.904)	(60.330)
C(2)	0.2539***	0.2588***	0.3000***	0.2773***	0.2293***	0.2654***
	(38.291)	(58.133)	(24.937)	(21.436)	(72.014)	(66.471)
Wald C(1)=C(2)	36.1815***	155.5094***	58.5615***	25.6768***	268.6739***	214.9112***

*** indicates 1% significance, ** indicates 5% significance, * indicates 10% significance

Table 6: RESULTS OF MULIVARIATE ANALYSIS

Variable	Coefficient	Variable	Coefficient
Constant	0.456***	Materials	-0.175***
	(20.892)		(-7.477)
MBA	0.037***	Consumer Discretionary	-0.255***
	(3.903)		(-11.120)
SCHOOL	0.036***	Consumer staples	-0.213***
	(8.438)		(-7.851)
CERTIFICATION	0.062***	Health Care	-0.286***
	(4.913)		(-17.064)
PARTNER	0.102***	Energy	-0.214***
	(5.618)		(-7.817)
SENEXP	0.018***	Financials	-0.295***
	(6.962)		(-13.706)
PUBBOARD	0.031***	Industrials	-0.294***
	(7.806)		(-13.570)
LOG(1+TENURE)	-0.014***	Information Technology	-0.381***
	(-3.619)		(-19.306)
LOG(1+COMPANYAGE)	-0.007**	Utilities	-0.090***
	(-2.203)		(-3.150)
CHAIRCEO	0.037***		
	(8.929)		
INDEPDIRPERCENT	0.022	Year dummies	YES
	(1.286)		
Adjusted R-squared	0.1822	Periods included	21
		Cross sections included	490
		Available observations	4326

*** indicates 1% significance, ** indicates 5% significance, * indicates 10% significance

Overall, much of the empirical evidence suggests that companies with higher qualified managers tend to have greater degrees of leverage. Results of univariate analysis point that an MBA degree, the school where the CEO graduated, professional certification, past experience as a partner in a law or accounting firm and past experience as a part of senior management team are all contributing factors associated with higher firm financial leverage. The results of multivariate analysis reinforce this notion and show positive association of each of the outlined factors and leverage, after controlling for corporate governance and industry effects.

CONCLUSION

This study examines the relationship between qualifications of top management and capital structure. We study how education and work experience of company CEOs and affect Leverage values for companies. We compare mean Leverage values for firms where top managers have the specified qualifications and experiences versus firms where CEOs do not have them. We also analyze the relationship between managerial qualifications and leverage using panel least squares estimation.

Our investigation produced several interesting findings. We conduct univariate analysis and discover that higher leverage is used by companies whose CEOs have MBA degrees, graduated from highly reputable business schools, have professional certification, have previous experience as either a partner in a law or accounting firm or a part of senior management team, or serve on public boards such as university board of governors or any other non-business organization. We also find that each of these qualifications significantly increases company leverage, other things being equal. Finally, our results suggest that CEOs whose tenure in a company is relatively short tend to use debt more aggressively compared their peers with longer tenure, after controlling for firm age and industry effects.

These results support human capital theory that superior qualifications and experience will improve manager's productivity. Overall, we find a significant positive relationship between of top managerial qualifications and leverage.

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