Does a CEO's Hedging Ability Affect the Firm's Capital Structure?

Lee M. Dunham[a]
Creighton University

ABSTRACT

I examine whether a CEO's composition of firm stockholdings between restricted and unrestricted shares impacts the amount of leverage carried by the firm. I document a negative and statistically significant relationship between leverage and the proportion of CEO total shareholdings that are unrestricted, and this negative relationship holds for alternative measures of leverage. This result supports the notion that the composition of a CEO's portfolio of firm stock between restricted and unrestricted shares is a significant determinant of leverage ratios.

November 2017

[a] Associate Professor of Finance, College of Business, Department of Finance and Economics, 2500 California Plaza, Omaha, NE 68178. Email: leedunham@creighton.edu. Tel: 402.280.2637. Fax: 402.280.556

I.   INTRODUCTION

The field of corporate finance states tell us that the operations and risk of a corporation can generally be summarized by three key policy decisions: the investment decision, the financing decision, and the payout decision. A company's management team, particularly its CEO, can influence the firm's degree of risk taking depending on his or her choices regarding these firm's three key policy decisions. CEOs can elect to increase or decrease firm risk by altering the mix of corporate investment between safer tangible assets and riskier research and development expenditures, or through diversification by investing into new lines of business (investment decision). CEOs may also alter the risk of the firm by increasing or decreasing the firm's debt level (via the financing decision), or by increasing or decreasing the amounts paid out as dividends or used to repurchase shares (via the payout decision).

Should CEOs steer their firms to take on more risk or less risk? The relevant theory and empirical evidence do not provide a clear answer. Agency theory suggests that shareholders have reason to incentivize CEOs to take risks in the presence of risky debt. Consistent with theory, most CEOs receive compensation packages that are heavily linked to stock-based performance, and often include unrestricted share grants, restricted share grants and stock options. Consequently, in most cases, CEOs end up with a disproportionate amount of their total wealth being directly linked to their company's stock performance. Of course, such an undiversified financial position may rationally lead CEOs to minimize the amount of risk undertaken by their firms, assuming they cannot hedge their undiversified positions.

While there is significant evidence that CEOs and other insiders often hedge the risk of the unrestricted shares they own (e.g. Bettis et al. (2015); Bettis et al. (2001); Jagolinzer et al. (2007); Bolster et al. (1996)) most CEOs often remain significantly exposed to firm-specific risk through their human capital, restricted share grants and option grants. Amihud and Lev (1981), Smith and Stulz (1985) and May (1995) show that risk-averse executives, who are unable to

hedge their exposure to their company's stock, will manage firm risk as to protect their own financial wealth and human capital. In a similar vein, Yost (2017) finds that firms with executives with high built-up capital gains in their firms' stock positions experience reductions in corporate risk-taking activities. However, consistent with risk-seeking behavior, Coles, Daniel and Naveen (2006) find that CEOs are more likely to steer their firms into riskier projects if their compensation includes stock options and equity grants, particularly restricted stock grants.

Based on the idea that the CEO's composition of unrestricted and restricted shares affects the ability of the CEO to hedge his or her firm-specific risk, Dunham (2012) examines whether the composition of a CEO's ownership of their firm's shares between restricted stock and unrestricted stock impacts the total risk of the firm. He documents a negative relationship between firm risk, as proxied by the logarithmic transformation of the annualized variance of daily stock returns over the fiscal year, and the proportion of a CEO's total shares that are unrestricted, even after controlling for other factors that have been documented to explain variation in firm risk[1]. That is, greater proportions of restricted stock held by CEOs lead to higher firm risk profiles. This finding is consistent with the risk-seeking behavior documented by Coles et al. (2006).

Of course, total risk, as measured by stock price volatility, is a result that encompasses the totality of all three of the key policy decisions. In this paper, I exclusively focus on financial risk (via the financing decision) rather than total risk, and investigate whether the CEO's composition of total shareholdings between unrestricted shares and restricted shares directly impacts the firm's capital structure. I find a negative and statistically significant relationship between a firm's debt ratio and the proportion of CEO total shareholdings of firm stock that are unrestricted. This inverse and statistically significant relationship, consistent with the risk-seeking behavior documented by Coles et al (2006), holds for alternative measures of leverage and survives several control variables previously documented to explain variation in leverage ratios,

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[1] Factors documented to explain firm risk across firms include characteristics such as firm size, growth, profitability, capital investment, capital structure, payout ratio, and firm diversification (number of different business segments).

including firm characteristics and industry peer firm effects. In short, these results indicate that the mix of unrestricted and restricted shares owned by the CEO has a direct impact on the firm's financing decisions over and beyond those factors previously documented to explain variation in debt ratios.

The remainder of the paper is organized as follows. Section II provides a literature review and develops the hypotheses, and Section III describes the empirical methodology. Section IV describes the data and sample and Section V presents the empirical results. Section VI provides conclusions and topics for future research.

II.   LITERATURE REVIEW AND HYPOTHESES

For many years, executives have frequently favored using derivative products to hedge their firm stock positions in lieu of selling shares outright. Executives are incentivized not to sell shares outright for several reasons, including retaining the voting power associated with the shares, deferring taxes on capital gains, continuing to receive dividends, the fear of causing a price decline in the market resulting from outside investors observing insider selling, among others. O'Brian (1997) documents executives hedging via secured lending arrangements using the unrestricted shares they own as collateral. Bettis, Bizjak and Lemmon (2001) found that executives were hedging their firms' shares using zero-cost collars, and Bolster, Chance and Rich (1996) document executives' use of equity swaps to hedge. Jagolinzer, Matsunaga, and Yeung (2007) investigate the use of prepaid variable forward contracts (PVFs) by executives to hedge, and document that the average PVF transaction allows an insider to hedge approximately 30% of their stockholdings and to receive an average upfront cash payment of $22 million.

More recently, Bettis, Bizjak and Kalpathy (2015) compile a comprehensive list of over 2,000 insider derivative transactions involving over 1,000 insiders and find that executives continue to PVFs, zero-cost collars, exchange funds and equity swaps to hedge their stock positions. Dash (2011) finds that over a fourth of Goldman Sachs partners engaged in hedging

transactions over the 2007-2010 time period, and Sasseen (2010) discusses the use of a PVF contract by the CEO of Switch and Data Facilities to hedge against substantial declines in the company's share price during the 2008-2009 financial crisis. Kelly (2007) documents a derivative product offered by investment banks that provides executives with the ability to hedge against share price declines post-IPO. Dunham and Washer (2012) discuss the ethics of executive hedging and propose that relevant regulatory bodies demand more transparency surrounding these hedging transactions. In the aftermath of the financial crisis, that did occur, as the Dodd-Frank Act of 2010 included a provision requiring companies to disclose executives' derivative activities, although Bettis et al. (2015) suggests that innovation by investment banks will likely lead to more sophisticated products that may allow firms and executives to skirt these disclosure requirements.

A notable fact underlying these hedging transactions is that, in nearly all cases, the executive can only hedge unrestricted shares. Given that CEOs are generally unable to hedge their restricted shares but are able to hedge unrestricted shares might suggest they view the risk of holding these shares differently. I posit this difference may affect how CEOs manage their firms' risk levels. Dunham (2012) points out that the composition of a CEO's ownership of firm's shares between restricted stock and unrestricted stock (unrestricted shares/total shares) serves as a reasonably good proxy for the CEO's ability to hedge because typical hedging instruments used by executives generally can only be used to hedge unrestricted shares. Following the agency theory and literature on executives' behavior relating to firm risk, I develop and test two competing hypotheses relating to the possible empirical relationship between a firm's debt level and the proportion of its CEO's total firm shareholdings that are unrestricted.

The first hypothesis, the risk-averse CEO hypothesis, predicts a *positive* relationship between a firm's debt level and the proportion of its CEO total firm shareholdings that are unrestricted. The risk-averse CEO hypothesis proposes that CEOs who hold high (low) proportions of unrestricted equity has more (less) flexibility to hedge firm-specific risk on their own

with various hedging instruments, and therefore have less (more) incentive to limit the amount of leverage carried by the firm. Consequently, under the risk-averse CEO hypothesis, the CEO owning mostly restricted shares has incentive to limit the amount of leverage carried by the firm in the near term until the restricted shares vest and become hedgable. Therefore, as it relates to the firm's debt decisions, the risk-averse CEO hypothesis predicts that CEOs with high (low) proportions of unrestricted firm stock will operate at relatively higher (lower) debt ratios than firms with CEOs with high proportions of restricted firm stock.

The second hypothesis, the risk-seeking CEO hypothesis, predicts a *negative* relationship between a firm's debt level and its CEO's proportion of total shareholdings that are unrestricted. The risk-seeking CEO hypothesis proposes that CEOs treat the payoffs on restricted stock grants akin to those of stock option payoffs given the fact that restricted shares are an equity award with an effective payoff contingent upon employment on the vesting date, and not the grant date. Consistent with option pricing theory, these CEOs would have incentive to increase the total risk of the firm by increasing leverage to increase the expected payoff on the restricted shares at the vesting date. Therefore, CEOs with high proportions of restricted shares will want to operate at higher debt levels relative to CEOs with low proportions of restricted shares. Thus, the risk-seeking CEO hypothesis predicts that CEOs with low (high) proportions of unrestricted firm stock will operate at relatively higher (lower) debt ratios.

III. METHODOLOGY

I employ a multivariate regression model to investigate the relationship between firm leverage and the CEO share proportion variable (unrestricted/total) where firm leverage is the dependent variable. The base regression specification is:

$$\text{LEV}_{i,t} = \alpha + \varphi\text{PROP}_{i,t-1} + \gamma X_{i,t-1} + Z_{i,t-1} + \varepsilon_{i,t} \qquad (1)$$

where $LEV_{i,t}$ is a measure of firm leverage measure for firm i at time t, $X_{i,t-1}$ is a vector of firm characteristic control variables for firm i at time t-1, $Z_{i,t-1}$ is a vector of industry peer firm averages for firm i at time t-1, and $PROP_{i,t-1}$, the variable of interest, is defined as the proportion of total shares owned by the CEO that are unrestricted at time t-1.

Frank and Goyal (2009) identify several measures of leverage to proxy for capital structure policy. These leverage measures include both total leverage and long-term debt (LTD), measured both in book value and market value. Book total leverage is measured as total debt [short-term debt + LTD] scaled by total assets, and market total leverage is measured as total debt scaled by the market value of assets (MVA). Similarly, book LTD leverage is measured as LTD scaled by total assets, and market LTD leverage is measured as LTD scaled by MVA. All variables are defined in the Appendix.

Several studies, including Titman and Wessels (1988), Rajan and Zingales (1995), Graham (2000), Leary and Roberts (2014), and Frank and Goyal (2009), have found that firms' debt ratios are related to certain firm-specific and industry peer firm characteristics. Those firm characteristics include firm size, growth (proxied by the market-to-book ratio), profitability, asset tangibility (proxied by net PPE/total assets), the availability of tax shields (proxied by the depreciation expense/total assets ratio), equity risk (proxied by the variance of stock returns), and recent stock market return (proxied by previous 12-month stock return). These firm-specific control variables comprise the vector X. Leary and Roberts (2014) document that certain firm characteristics of industry peers are also important determinants of firms' leverage ratios. Industry peer averages of these firm characteristics comprise the vector Z. The risk-averse CEO hypothesis predicts φ to be positive and significant; conversely, the risk-seeking CEO hypothesis predicts φ to be negative and significant.

IV.   DATA AND SAMPLE

The sample of firms is constructed by combining data from Compustat, CRSP and Execucomp. The sample starts with CEO stock ownership data from Execucomp for the time period 1992-2014. Execucomp reports restricted shares owned and total shares owned by CEOs for each fiscal year, and unrestricted shares are calculated by subtracting restricted shares owned from total shares owned. The sample includes only observations where both restricted holdings and total shares owned are populated, but does exclude the few observations where restricted shares owned are greater than total shares owned. Data on the control variables are taken from Compustat, and daily stock return data are taken from CRSP. Following previous studies, financial firms (SIC 4000-4999) and utilities (SIC 6000-6999) are excluded from the sample given the fact that leverage decisions of these firms may be dictated more so by regulatory policies than by CEO preferences. The find sample consists of 27,648 CEO firm-year observations on 2,638 firms and 5,477 CEOs, although data on policy and control variables are not available for some firms. A complete list of the variables used in the study can be found in the Appendix.

Table 1 presents summary statistics for all variables used in the study. The proportion of total shares owned by the average CEO that are unrestricted is 85.3%. The average sample firm operates at book and market total debt ratios of 23.3% and 20.5%, respectively. The average sample firm has total sales of $1.24 billion, a market-to-book ratio of 1.79, and a profit margin of 13.5%.

Figure 1 illustrates how the unrestricted/total proportion ratio has evolved over time. For the first half of the sample period, of the total shareholdings for the average CEO, approximately 90-93% were unrestricted. However, over the second half of the sample period, a greater proportion of the shares owned by the average CEO were restricted, and for the last few years of the sample, the average CEO held a combination of approximately 75% unrestricted shares and 25% restricted shares. Figure 2 shows how book total leverage and market total leverage has evolved over time for the average firm. Book total leverage and market total leverage tend to

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move together over time, although market leverage is more volatile than book leverage. Leverage for the average firm surged in 2006-2007 before falling precipitously in 2008-2009 amid the financial crisis.

V.   EMPIRICAL RESULTS

Table 2 reports the result of pooled regressions using four different specifications of Equation 1.   In all four model specifications, the dependent variable is *book total leverage*, measured at time t, and the independent variables are measured at time t-1. All regressions include year fixed effects. Column 1 in Table 2 reports coefficient estimates from regressing book total leverage on the set of control variables, excluding equity return and equity volatility. The estimated coefficients on the control variables are all significant at the 1% level, are generally consistent with prior corporate literature in that leverage ratios are increasing in firm size and asset tangibility and decreasing in profitability and the availability of tax shields. Column 2 in Table 2 reports estimates of Equation 1 with the control variables, again excluding equity return and volatility, but now including the variable of interest, the proportion of CEO total shareholdings that are unrestricted. The key result from column 2 is that the coefficient on the proportion variable is negative and statistically significant at the 1% level, after controlling for various firm characteristics previously documented as determinants of firms' debt ratios. All of the control variables that were statistically significant in column 1 remain statistically significant at the 1% level in column 2 and have the same sign. Also, the addition of the proportion variable to the model specification does add marginal explanatory power as measured by the slight increase in the r-squared measures. Column 3 reports regression results that includes all of the firm-specific control variables but not the proportion variable. All of the control variables remain statistically significant and have the same signs as in columns 1 and 2, except that the market-to-book now has the expected negative sign. Column 3 also shows that, consistent with prior literature, a firm's debt ratio is inversely related to the firm's past year's equity return. When the proportion variable is added to the

regression in column 4, the coefficient on the proportion variable remains negative and highly significant. This statistically, negative relationship between the debt ratio and the unrestricted/total shares proportion variable is consistent with the risk-seeking CEO hypothesis.

Table 3 reports the result of pooled regressions for the same four specifications as in Table 2 but where the dependent variable is *market total leverage*. All regressions include year fixed effects. Again, the estimated coefficients on the proportion variable in columns 2 and 4 in Table 3 are negative and statistically significant at the 1% level, after controlling for firm characteristics previously documented as determinants of firms' debt ratios. In addition, all of the control variables are statistical significant except for tangibility in column 2, and have the same signs as in Table 2 with the exception of the market-to-book ratio. Interestingly, consistent with past research, the market leverage regressions in Table 3 have much better explanatory power than the book leverage regressions in Table 2, as indicated by the by the large increase in the r-squared measures – particularly in columns 3 and 4.

Table 4 reports coefficient estimates from regressions that include both firm characteristics and industry peer firm averages. Again, all regressions include year fixed effects, and most control variable coefficients are significant and have the same sign. Controlling for both firm characteristics and peer firm averages, the proportion variable remains negative and statistically significant in both regressions (columns 2 and 4) in Table 4. Consistent with prior research, the sign on the industry peer average leverage ratio is positive and highly significant in all regressions, as well as most other industry peer firm average characteristics. Also, relative to the models in Tables 2 and 3, the results in Table 4 indicate that inclusion of peer firm averages serves to improve the fit of the regression model, as indicated by the moderate increase in the r-squared measures. Taken together, the regression results in Tables 2-4 show that the unrestricted/total shares proportion coefficient is negative and significant after controlling for factors previously documented to explain leverage ratios, regardless of which measure of leverage is used. Again, these results are consistent with the risk-averse CEO hypothesis.

As a first robustness test, Table 5 reports the result of pooled regressions where the dependent variable is *book long-term debt* and *market long-term debt*. All regressions include year fixed effects. Again, controlling for both firm characteristics and industry peer firm averages, the proportion variable is negative and statistically significant in all four regressions in Table 5. Most of the control variables are significant and continue to have the same sign.

Lastly, as a final robustness test, Table 6 reports the result of Fama-MacBeth (1973) regressions. The reported coefficients in Table 6 are the mean values of the fitted coefficients from annual regressions over the 1993-2013 time period. Again, controlling for both firm characteristics and peer firm averages, the unrestricted/total proportion variable is negative and statistically significant in all eight model specifications in Table 6. In summary, these results collectively provide further support for the CEO-risk seeking hypothesis, which predicts a negative relationship between the firm's debt ratio and the CEO's fraction of total shareholdings that are unrestricted.

VI.   CONCLUSION

In this paper, I examine whether the composition of an executive's portfolio of firm shareholdings between restricted and unrestricted holdings has a direct impact on the level of leverage carried by the firm. I test competing hypotheses relating to the empirical relationship between the level of leverage and the proportion of CEO total shareholdings that are unrestricted. Taken together, the results in Tables 2-6 provide strong support for the CEO risk-seeking hypothesis. In short, it appears that the CEO's composition of total shareholdings between unrestricted and restricted shares is an additional key determinant of a firm's capital structure not previously documented. Specifically, the higher (lower) the proportion of restricted shares owned by the CEO, the higher (lower) the firm's debt ratio. These results, which hold for various measures of leverage and controls, adds to the existing literature on the relationship between firm risk and equity compensation.

The empirical finding that firms with CEOs that own mostly hedgable, unrestricted stock are carrying less debt and firms with CEOs that own mostly unhedgable, restricted stock carry more debt warrants further examination. While Coles, Daniel and Naveen (2006) investigate how CEOs alter firm risk through the investment channel, and this paper via the financing channel, further work might consider assessing how CEOs alter firm risk through the payout channel.

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APPENDIX: DEFINITION OF VARIABLES USED IN STUDY

Variable	Definition
Unrestricted / Total	The fiscal year-end ratio of unrestricted stock holdings to total stock holdings by the CEO; calculated as (total shares owned – restricted shares owned) / total shares owned.

Leverage Variables

Book Total Leverage	Total debt [ST debt + LT debt (LTD)] / Total assets
Market Total Leverage	Total debt / Market value of assets (MVA) MVA = Market cap + Total Debt + Liquidating Value of Preferred Stock – Deferred Taxes and Investment Tax Credit
Book LTD Leverage	LTD / Total assets
Market LTD Leverage	LTD / MVA

Control Variables

Size	Natural log of total sales
Market-to-Book	MVA / Book value of total assets
Profitability	EBITDA / Total assets
Tangibility	Net PPE / Total assets
Depreciation/Assets	Depreciation / Total assets
Equity Return	Total common stock return for the calendar year
Equity Volatility	Standard deviation of common stock daily returns for the calendar year

Table 1
Descriptive Statistics

Table 1 reports descriptive statistics on CEO holdings, firm leverage, firm-specific variables and industry control variables for sample firms over the 1992-2014 time period. Peer firm averages denotes variables constructed as the average of all firms within an industry-year combination, excluding the ith observation. CEO holdings are taken from Execucomp. Equity return and equity volatility are calculated using data from CRSP. All other variables are taken from Compustat. Industries are defined by 3-digit SIC codes. A complete list and description of the variables used in the study can be found in the Appendix.

	Mean	Median	Quartile 1	Quartile 3	St Dev
CEO Holdings					
Unrestricted / Total	0.853	1.000	0.781	1.000	0.247
Firm Leverage Variables					
Book Total Leverage	0.233	0.201	0.049	0.331	0.919
Book LTD Leverage	0.192	0.164	0.018	0.292	0.195
Market Total Leverage	0.205	0.146	0.024	0.310	0.215
Market LTD Leverage	0.176	0.119	0.008	0.270	0.195
Firm-Specific Variables					
Firm Size (Log Sales)	7.122	7.059	6.067	8.173	1.668
Market-to-Book	1.785	1.298	0.891	2.039	2.020
Profitability	0.135	0.139	0.093	0.193	0.245
Tangibility	0.284	0.221	0.112	0.401	0.221
Depreciation/Assets	0.047	0.040	0.027	0.056	0.041
Equity Return	0.181	0.101	(0.144)	0.372	0.690
Equity Volatility	0.445	0.389	0.288	0.537	0.237
Industry Averages					
Book Total Leverage	0.232	0.205	0.131	0.288	0.226
Market Total Leverage	0.189	0.147	0.086	0.261	0.140
Firm Size (Log Sales)	7.141	6.966	6.412	7.760	1.007
Market-to-Book	1.643	1.446	1.057	2.037	0.871
Profitability	0.132	0.138	0.102	0.173	0.124
Tangibility	0.285	0.224	0.136	0.381	0.193
Depreciation/Assets	0.047	0.043	0.035	0.055	0.022

Sample Characteristics					
Firm-year Observations	27.648				
Number of CEOs	5,477				
Number of Firms	2,638				

Table 2
Book Total Leverage and Firm Specific Factors

Table 2 reports pooled regression results for firms in the final sample. The dependent variable, book total leverage, is measured at time t. All independent variables are measured at time t-1 (lagged one year). Both panels present OLS estimated coefficients with t-stats reported below each coefficient. A complete list and description of all analysis variables can be found in the Appendix. Intercepts have been suppressed for brevity.

	Book Total Leverage			
	(1)	(2)	(3)	(4)
Unrestricted / Total		-0.077***		-0.021**
		(2.96)		(3.57)
Size	0.042***	0.040***	0.022***	0.022***
	11.18	10.53	24.24	23.44
M/B	0.176***	0.176***	-0.007***	-0.007**
	52.93	52.72	(8.94)	(8.75)
Profitability	-1.017***	-1.015***	-0.061***	-0.061***
	(38.86)	(38.79)	(9.96)	(9.89)
Tangibility	0.589***	0.588***	0.180***	0.180***
	19.58	19.56	26.40	28.39
Depreciation/Assets	-1.795***	-1.796***	-0.079*	-0.079*
	(10.86)	(10.87)	(1.92)	(1.94)
Equity Return			-0.007***	-0.007***
			(3.30)	(3.31)
Equity Volatility			0.058***	0.058***
			7.77	7.81
Year Effects	Yes	Yes	Yes	Yes
Observations	22,733	22,733	22,594	22,594
R^2	0.1559	0.1562	0.0880	0.0885
Adj. R^2	0.1551	0.1554	0.0871	0.0876

Note: * denotes significance at the 10% level, ** denotes significance at the 5% level and *** denotes significance at the 1% level.

Table 3
Market Total Leverage and Firm Specific Factors

Table 3 reports pooled regression results for firms in the final sample. The dependent variable, market total leverage, is measured at time t. All independent variables are measured at time t-1 (lagged one year). Both panels present OLS estimated coefficients with t-stats reported below each coefficient. A complete list and description of all analysis variables can be found in the Appendix.

	Market Total Leverage			
	(1)	**(2)**	**(3)**	**(4)**
Unrestricted / Total		-0.030***		-0.030***
		(5.24)		(5.40)
Size	0.021***	0.021***	0.030***	0.029***
	26.21	24.96	34.25	33.07
M/B	-0.031***	-0.030***	-0.035***	-0.035***
	(42.19)	(41.89)	(43.88)	(43.57)
Profitability	-0.138***	-0.137***	-0.083***	-0.082***
	(24.45)	(24.34)	(14.34)	(14.24)
Tangibility	0.234***	0.234	0.243***	0.243***
	36.04	36.02	37.86	37.65
Depreciation/Assets	-0.413***	-0.413***	-0.588***	-0.589*
	(11.55)	(11.57)	(15.10)	(15.13)
Equity Return			-0.011***	-0.011***
			(5.63)	(5.66)
Equity Volatility			0.185***	0.185***
			26.26	26.35
Year Effects	Yes	Yes	Yes	Yes
Observations	22,348	22,348	22,213	22,213
R^2	0.2109	0.2118	0.2486	0.2496
Adj. R^2	0.2101	0.2110	0.2478	0.2488

Table 4
Book and Market Total Leverage – Firm Specific Factors and Peer Firm Effects

Table 4 reports pooled regression results for firms in the final sample. The dependent variables, book total leverage and market total leverage, are measured at time t. All independent variables are measured at time t-1 (lagged 1 year). Both panels present OLS estimated coefficients with t-stats reported below each coefficient. T-statistics for industry averages have been suppressed for brevity. Peer firm averages denotes variables constructed as the average of all firms within an industry-year combination, excluding the ith observation. Industries are defined by 3-digit SIC codes. A complete list and description of all analysis variables can be found in the Appendix.

	Book Total Leverage		Market Total Leverage	
	(1)	**(2)**	**(3)**	**(4)**
Firm Specific Factors				
Unrestricted / Total		-0.025**		-0.038***
		(4.34)		(7.11)
Size	0.021	0.020***	0.025***	0.024***
	21.74	20.85	28.38	27.01
M/B	-0.003***	-0.003***	-0.028***	-0.028***
	(3.71)	(3.50)	(35.54)	(35.20)
Profitability	-0.055***	-0.054***	-0.071***	-0.070***
	(8.93)	(8.84)	(12.60)	(12.46)
Tangibility	0.079***	0.079***	0.108***	0.108***
	7.54	7.54	11.11	11.12
Depreciation/Assets	0.056	0.056	-0.437***	-0.438***
	1.30	1.28	(10.87)	(10.90)
Equity Return	-0.007***	-0.007***	-0.012***	-0.012***
	(3.60)	(3.61)	(6.04)	(6.08)
Equity Volatility	0.077***	0.077***	0.185***	0.186***
	10.25	10.31	27.05	27.18
Industry Averages				
Leverage	0.215***	0.215***	0.395***	0.397***
Size	-0.004**	-0.003**	0.000	0.000
M/B	-0.019***	-0.019***	-0.006***	-0.006***
Profitability	0.136***	0.135***	0.014	0.013
Tangibility	0.087***	0.086***	0.060***	0.059***
Depreciation/Assets	-0.344***	-0.343***	-0.097	-0.095
Year Effects	Yes	Yes	Yes	Yes
Observations	21,738	21,738	21,371	21,371
R^2	0.1244	0.1252	0.3098	0.3113
Adj. R^2	0.1233	0.1241	0.3089	0.3105

Note: * denotes significance at the 10% level, ** denotes significance at the 5% level and *** denotes significance at the 1% level.

Table 5
Book and Market LTD – Firm Specific Factors and Peer Firm Effects

Table 5 reports pooled regression results for firms in the final sample. The dependent variables, book leverage (LTD) and market leverage (LTD), are measured at time t. All independent variables are measured at time t-1 (lagged 1 year). Both panels present OLS estimated coefficients with t-stats reported below each coefficient. T-statistics for industry averages have been suppressed for brevity. Peer firm averages denotes variables constructed as the average of all firms within an industry-year combination, excluding the ith observation. Industries are defined by 3-digit SIC codes. A complete list and description of all analysis variables can be found in the Appendix.

	Book Leverage (LTD)		Market Leverage (LTD)	
	(1)	(2)	(3)	(4)
Firm Specific Factors				
Unrestricted / Total	-0.018***	-0.022***	-0.029***	-0.037***
	(3.44)	(4.21)	(5.81)	(7.50)
Size	0.016***	0.015***	0.022***	0.018***
	18.93	16.70	26.82	21.25
M/B	-0.007***	-0.003***	-0.029***	-0.024***
	(8.59)	(3.40)	(40.11)	(32.26)
Profitability	-0.050***	-0.047***	-0.069***	-0.061***
	(8.87)	(8.29)	(13.04)	(11.70)
Tangibility	0.200***	0.102***	0.254***	0.129***
	32.13	10.65	42.88	14.50
Depreciation/Assets	-0.156***	-0.070*	-0.531***	-0.432***
	(4.14)	(1.75)	(14.86)	(11.66)
Equity Return	-0.002	-0.003	-0.005***	-0.006***
	(1.03)	(1.45)	(2.85)	(3.38)
Equity Volatility	0.044***	0.060***	0.135***	0.136***
	6.41	8.71	20.92	21.51
Industry Averages				
Leverage		0.187***		0.360***
Size		-0.002		0.000
M/B		-0.017***		-0.003**
Profitability		0.127***		0.019*
Tangibility		0.082***		0.053***
Depreciation/Assets		-0.117		0.081
Year Effects	Yes	Yes	Yes	Yes
Observations	22.595	21,739	22,213	21,371
R^2	0.0905	0.1260	0.2305	0.2914
Adj. R^2	0.0895	0.1249	0.2297	0.2905

Note: * denotes significance at the 10% level, ** denotes significance at the 5% level and *** denotes significance at the 1% level.

Table 6
Fama-MacBeth Regressions – Book and Market (Total and LTD) Leverage

Table 6 reports Fama-MacBeth regression results for firms in the final sample. The dependent variables, book leverage and market leverage (total and LTD), are measured at time t. All independent variables are measured at time t-1 (lagged 1 year). The reported coefficients are the mean values of the fitted coefficients from annual regressions over the 1993-2013 time period. T-statistics are calculated using the Fama and MacBeth (1973) approach from the time series of fitted regression coefficients and assess the hypothesis that the expected coefficient is zero. T-statistics for industry averages have been suppressed for brevity. Peer firm averages denotes variables constructed as the average of all firms within an industry-year combination, excluding the ith observation. Industries are defined by 3-digit SIC codes. A complete list and description of all analysis variables can be found in the Appendix.

	Book Leverage (Total)		Market Leverage (Total)		Book Leverage (LTD)		Market Leverage (LTD)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Firm Specific Factors								
Unrestricted / Total	-0.013**	-0.018**	-0.022***	-0.027***	-0.011***	-0.016***	-0.023***	-0.027***
	(2.19)	(2.64)	(4.12)	(4.81)	(2.42)	(2.84)	(4.49)	(5.78)
Size	0.024***	0.023***	0.032***	0.028***	0.017***	0.016***	0.023***	0.020***
	16.18	15.75	19.22	19.25	9.61	9.41	14.15	13.68
M/B	-0.002	0.001	-0.038***	-0.033***	-0.004	-0.001	-0.033***	-0.029***
	(0.80)	0.26	(16.89)	(13.58)	(1.58)	(0.42)	(16.28)	(12.91)
Profitability	-0.192***	-0.191***	-0.220***	-0.221***	-0.144***	-0.143***	-0.174***	-0.174***
	(5.49)	(5.24)	(8.48)	(8.07)	(5.11)	(4.84)	(8.47)	(8.31)
Tangibility	0.182***	0.085***	0.230***	0.108***	0.199***	0.102***	0.242***	0.127***
	26.57	7.92	19.91	9.04	26.02	9.98	21.56	12.04
Depreciation/Assets	-0.084	-0.007	-0.519***	-0.446***	-0.121**	-0.068	-0.469***	-0.433***
	(1.38)	(0.10)	(6.81)	(7.25)	(2.21)	(1.23)	(5.86)	(6.57)
Equity Return	-0.009	-0.011**	-0.024***	-0.026***	-0.002	-0.005	-0.016**	-0.018***
	(1.61)	(2.30)	(3.88)	(4.44)	(0.36)	(1.02)	(2.82)	(3.29)
Equity Volatility	0.054**	0.074***	0.205***	0.216***	0.044*	0.059***	0.155***	0.162***
	2.47	4.22	7.27	8.99	2.04	3.18	6.24	7.28
Industry Averages								
Leverage		0.382***		0.379***		0.337***		0.340***
Size		-0.007***		-0.001		-0.005***		0.000

M/B		-0.015***		-0.002		-0.014***		0.000
Profitability		0.164***		0.131***		0.134***		0.096***
Tangibility		0.048***		0.053***		0.051***		0.051***
Depreciation/Assets		-0.212*		-0.079		-0.021		0.105
Avg Obs	1,027	988	1,010	971	1,027	988	1,010	971
Avg R^2	0.1271	0.1865	0.2860	0.3526	0.1255	0.1828	0.2666	0.3317

Figure 1
Unrestricted / Total Ratio Over Time

Figure 1 illustrates the average unrestricted / total ratio over time. The unrestricted / total ratio is the fiscal year-end ratio of unrestricted stock holdings to total stock holdings owned by the CEO.
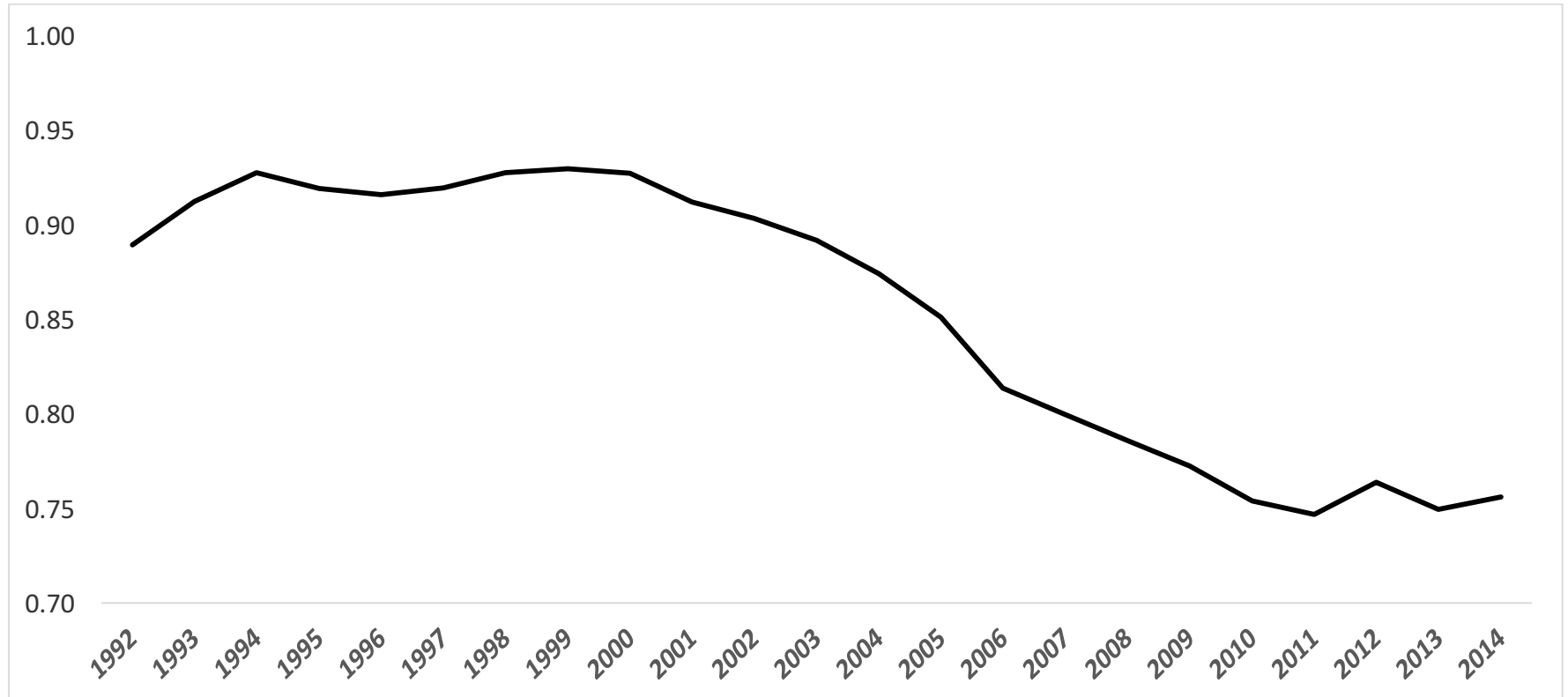
Figure 2
Market and Book Leverage (Total) Over Time

Figure 2 illustrates the path of book total leverage and market total leverage over time. A complete list and description of the variables used in the study can be found in the Appendix.