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The Impact of the 2017 Tax Cuts and Jobs Act on the Link Between Stock-Based Compensation and Corporate Debt Policy

Victoria Heavey
University of Tennessee, vheavey@vols.utk.edu

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ABSTRACT

This paper studies the effect of reductions in the amount of executive compensation expense that corporations could deduct after passage of the 2017 Tax Cuts and Jobs Act (TJCA) on capital structure. Research has examined whether other provisions in the TJCA lead to decreased corporate leverage, but this research has not considered the potentially large non-debt tax shield provided by executive compensation. I predict and find some evidence that firms with relatively larger amounts of executive compensation will experience either increases or smaller decreases in leverage due to expanded executive compensation related debt capacity after the passage of TJCA.

Introduction

This research examines whether the restrictions in tax deductibility of executive stock compensation due to the 2017 Tax Cuts and Jobs Act (TCJA) impacted corporate debt structure. Modigliani and Miller (1963) suggest that the tax benefits of debt increase firm value and decrease the cost of using debt capital. However, in the presence of non-debt tax shields, the tax benefit of debt is reduced (Trezevant, 1992). Prior research has found that tax deductions from stock options can be a significant non-debt tax shield that reduces the attractiveness of debt relative to other forms of financing (Graham, Lang, and Shackelford, 2004). Because the TJCA reduced the tax benefit from executive stock options, it reduced a potentially significant non-debt tax shield that could increase the relative attractiveness of debt financing for the most impacted firms.

The intent behind the TCJA that limited the deduction for publicly traded corporations specifically targeted executive remuneration in excess of $1 million. Congress enacted this change in tax policy in response to the exponential increase in executive compensation that occurred in recent decades. Policymakers believed that executive compensation, particularly for "covered employees," had reached excessive levels. The Internal Revenue Service (IRS) published guidance on interpretation of the TCJA law that defined "covered employees" as an individual who served as either the Principal Executive Officer (PEO) or the Principal Financial Officer (PFO) at any point during the fiscal year in addition to the three highest compensated employees besides these two officers.[1] While Congressional reports indicate a key objective of this provision was to shift the mix of executive compensation away from stock options to create a greater focus on longer-term company performance, the initial evidence in DeSimone, McClure, and Stomberg (2019) suggests firms did not alter their compensation structure after the passage of TJCA. Because

[1] Moreover, the new law also applies to any individual who previously qualified as a "covered employee," whether they fit the definition during the current year or not.

executive compensation remained largely consistent before and after the TJCA, I can better isolate the impact of lost non-debt tax shields on firms' capital structure decisions

The TJCA transformed the corporate landscape in the U.S. and lead to a number of other significant changes to the corporate tax code (Carrizosa, Gaertner, and Lynch, 2019) including reducing the corporate tax rate, removing the deferral provision for income earned overseas, and limiting the deductibility of interest expense. While research has also examined the impact of the TJCA on executive compensation structure and mix (Luna, Schuchard, and Stanley, 2019; DeSimone et al., 2019) to my knowledge no study has examined how the TJCA impacted the non-debt tax shield from executive stock options. Carrizosa et al. (2019) finds that on average, firms most likely to be impacted by the interest limitations enacted by the TJCA reduced leverage, while firms less likely to be impacted increased leverage. However, Carrisoza et al. (2019) does not consider the reduction in non-debt tax shields from the TJCA's executive compensation provisions. Consequently, it could be the case that the likelihood a firm is constrained by the interest deduction limitation is different after adding back the lost deduction from executive compensation to estimates of adjusted taxable income in Carrisoza et al. (2019).

For my empirical tests, I begin by accessing financial information for a random sample of twenty S&P 100 firms and twenty NASDAQ 100 firms before and after the TJCA (i.e. for fiscal years 2016 and 2018).[2] With this sample, I replicate descriptive analysis in Graham et al. (2004) by summarizing firm size, equity risk, leverage, the tax benefits from stock options, as well as other firm attributes. Consistent with the executive compensation provisions of the TJCA I find that, on average, the tax benefit from stock compensation as reported by the firms in my sample decreased from 2016 to 2018.

[2] My sample companies are listed in Appendix 2.

In subsequent analysis, I focus on differences between firms more or less likely to experience increased debt capacity due to lost executive compensation related deductions. For initial univariate tests, I partition my sample into NASDAQ 100 and S&P 100 firms because, prior to TJCA, stock option deductions tended to be more important in lowering firms' marginal tax rates for NASDAQ 100 firms than for S&P 100 firms (Graham et al., 2004). For subsequent univariate and multivariate tests, I access firms' Schedule 14A filings to estimate the magnitude of executive stock option deductions, absent any limitations, and scale this estimate by pretax book income consistent with Graham et al. (2004). Because this measure increases in forgone executive compensation deductions, I predict that it will be associated with increases in firms' debt capacity after TCJA.

My initial univariate correlation analysis provides some evidence that changes in capital structure are more highly correlated with my proxy for increased debt capacity for NASDAQ 100 firms than for S&P 100 firms, consistent with forgone stock option deductions freeing up more debt capacity for NASDAQ 100 firms. In an additional univariate analysis, I follow Carrizosa et al. (2019) to identify the firms more likely to be close to their interest limitation as enacted by the TCJA. Firms at their interest limitation would be less likely to increase debt even when my measure for increased debt capacity is higher. I find that firms likely to be at their interest limit have the lowest, and often negative, changes in debt subsequent to TJCA. Within the set of firms not at their interest limit, I find inconsistent evidence that increased debt capacity is related to larger increases in debt. To better control for the impact of correlated omitted variables on the relation between increased debt capacity from forgone executive stock option deductions and increases in debt, in my final set of analysis, I perform multivariate regressions. Specifically, I regress changes in total debt, both in percentage terms and relative to assets, on my measure of increased debt capacity and a set of controls consistent with Carrizosa et al. (2019). I find some evidence that my variable of interest, 2018 Stock Option Deductions divided by Pretax Income (*Debt_Capacity*), is associated with increases in debt. I provide more detail below on my sample, tests, and conclusions.

Data and Measurements

I begin with a sample of twenty randomly selected firms from the current S&P 100 and twenty randomly selected firms from the current NASDAQ 100. I then access financial data for each company from the respective 2016 and 2018 annual 10-K reports. These figures include total assets, common equity at year end to calculate market value, net income to calculate return on assets, income before income taxes, total debt, and total stock-based compensation tax benefit. These numbers are typically presented in the financial statements. The stock-based compensation tax benefit is typically found within the Notes to the Financial Statements related to Stock-Based Compensation. Using this information, I calculate the return on assets and the tax benefit related to stock-based compensation divided by pretax income. Next, I use Yahoo Finance to add the stock ticker and market value of the companies at the 2016 and 2018 year ends. I calculate market value by multiplying total share volume by the adjusted closing price. Further, I present the debt to value ratio as a percentage by dividing total debt by market value.

Because my descriptive analysis requires historic equity betas, I access firms' historical daily stock prices to calculate historical daily returns (i.e. ($Price_{new}$ / $Price_{old}$) – 1). I access data for the historical returns to S&P 500 index to serve as the source of the market return for the single factor beta model estimation. Finally, I access data from the Fama-French website for daily risk-free rates. [3] With this information, I calculate the excess market return and excess return for each company by subtracting the risk-free rate from the daily stock and market return. My final equity beta estimate is derived from an ordinary least-squares regression of excess daily stock returns on excess market returns, where the coefficient of market excess returns represents the equity beta estimate.

Because the change in deductibility of compensation subsequent to TCJA of 2017 targeted executives deemed to be "covered employees," I collect data related to executive compensation. Doing so helps me to estimate the portion of firms' total tax benefit from equity compensation correspondent to compensation of the top four to seven executives (i.e. all covered employees). For completeness, this portion of my analysis includes any executive listed in the firms' DEF 14A filings. These filings are found by searching the SEC EDGAR website using each sample firms' ticker symbol. From the DEF 14A, I compiled the value of exercised stock grants and exercised stock option awards for 2016 and 2018 fiscal years. Tax law suggests that unless executives elect to have stock grants taxable at the time of grant, before TCJA firms would receive a tax deduction equal to the fair value of the stock upon grant vesting. Estimating the tax deduction from exercised options is not as straight forward, as firms receive tax deductions equal to the difference between the option strike price and stock price at the date of exercise. Information on stock option exercises are typically summarized in the Options Exercised and Stock Vested Table. From this table, I collect the value realized on exercise as well as the number of shares exercised for each of the executives also listed in the Summary Executive Compensation Table. Using these two inputs, I estimate the tax deduction related to stock options with the following formula:

[3] I divide the daily risk-free rates by one hundred in order to convert the imported percentages to a decimal to be consistent with other data.

Stock Options Deduction = Value Realized on Exercise – (Weighted Average Exercise Price * Number of Shares Exercised)

Because the DEF 14A filing does not contain the weighted average exercise price, I searched the 10-K Annual Report for the respective fiscal year to find the weighted average exercise price. In a few instances (i.e. Pfizer, Walmart, Verisign, PepsiCo, AT&T, Duke Energy, and Mondelez International) the weighted average exercise price for stock options is not available. Therefore, I estimate the weighted average exercise price by using each firms' average vesting period. If this information could not be found in the 10-K or DEF 14A filings, I use four years as a vesting period, as this represents the average vesting period for stock options of all publicly traded companies. Because stock option strike prices are typically equal to stock value upon grant, knowing the vesting period provides an estimate of the date stock options were granted and an estimate of the strike price. I use the estimated vesting period to estimate grant year and then use the average of the stock price in the grant year as my estimate of option strike price as follows:

Weighted Average Exercise Price = (Beginning Stock Price + Ending Stock Price) / 2

In some cases, my assumptions yield a negative tax deduction value because estimated strike price exceeds stock value upon exercise. Because executives would not exercise underwater options, I set negative realizations to zero. The total tax benefit from executive compensation is the sum of the benefit from stock option exercises and stock grant vesting. Because this measure increases in forgone executive compensation deductions, I predict that it will be associated with increases in firms' debt capacity after TCJA.

Descriptive Analysis

I summarize my data that includes many of the variables examined in Graham et al. (2004) in Table 1. I present mean, median, standard deviation, twenty-fifth percentile, and seventy-fifth percentile realizations using various sample sorts. First in Panel A, I summarize this data for the full sample of forty firms from both S&P 100 and NASDAQ 100 firms presenting their 2016 and 2018 data as Panel A. Second in Panel B (Panel C), I present 2016 (2018) summary statistics for each subsample of twenty firms, separating S&P 100 firms and NASDAQ 100 firms. For the sake of my research question, I also include the data for the total stock option tax deductions as well as stock option deductions divided by pretax income. Appendix 1 defines these variables for more detail.

The results of summarizing these statistics suggest that all forty firms have an approximate average 2018 Stock Option Deductions equal to 2.55% of Pretax Book Income but that this measure is unequal for S&P 100 firms versus NASDAQ 100 firms. S&P 100 firms have an average 2018 Stock Option Deductions equal to 1.02% of Pretax Book Income, while NASDAQ 100 firms have an average 2018 Stock Option Deductions equal to 4.09% of Pretax Book Income. This measure corresponds to the independent variable *Debt_Capacity* later used in my regression analysis. The larger percentage of Pretax Income for NASDAQ 100 firms is consistent with Graham et al (2004) that marginal tax rates, and thus the 2017 Tax Cuts & Jobs Act, affect NASDAQ 100 firms to a greater degree.

Table 2 presents the results for a correlation analysis that tests whether change in debt is associated with the magnitude of stock option deductions and if this correlation differs depending on whether the firm is from the S&P 100 or NASDAQ 100. Specifically, I estimate the correlation coefficient between 2018 Stock Option Deductions divided by Pretax Income – my proxy for increased debt capacity following TCJA – with two variables designed to capture changes in firms' total debt: Percent Change in Total Debt and Change in Total Debt Scaled by Total Assets.

Based on the work of Graham et al (2004) that demonstrates stock option deductions are more meaningful for NASDAQ 100 firms, my correlation results concur with this claim, as indicated by the correlation coefficients and the significance of P-values. For NASDAQ 100 firms, both correlations between *Debt_Capacity* and the Percent Change in Debt as well as the Change in Total Debt Scaled by Total Assets are positive, while the correlation coefficients between *Debt_Capacity* and the two change in debt measures for S&P 100 firms are negative. This presents evidence that changes in capital structure are more highly correlated with my proxy for increased debt capacity for NASDAQ 100 firms than for S&P 500 firms, as the findings in Graham et al. (2004) would predict. I also find evidence that the difference in correlation coefficients is statistically significant, as indicated by a P-value of 0.020 for my Z-score, when I measure the change in debt using percentages instead of scaled values.

Table 3 presents two partitioned analyses of means using the full sample of forty firms. I first separate the data between 2016 and 2018 collection, then I find the mean Total Debt Scaled by Total Assets of all firms below the median of their corresponding *Debt_Capacity*. *Debt_Capacity* represents 2018 Stock Option Deductions divided by 2018 Pretax Book Income. I repeat this test but find the mean Total Debt Scaled by Total Assets of all firms above the median of their corresponding *Debt_Capacity*. I perform this test using the 2016 data then again using the 2018 data. Next, I use the 2018 data separated by an Interest Limit equal to one versus Interest Limit equal to zero for two additional analyses of means for my dependent variables of interest. I calculate the mean Change in Total Debt Scaled by Total Assets of the twenty firms below the median *Debt_Capacity*, then I calculate the mean Change in Total Debt Scaled by Total Assets of the twenty firms above the median *Debt_Capacity*. Lastly, I calculate the mean Percent Change in Total Debt of the twenty firms below the median *Debt_Capacity*, then I calculate the mean Percent Change in Total Debt of the twenty firms above the median *Debt_Capacity*.

The results in Table 3 suggest that for most firms with an Interest Limit equal to one, debt decreases from 2016 to 2018, which is expected. This occurs in both samples above and below the median *Debt_Capacity* for the mean Change in Total Debt Scaled by Total Assets and in the sample above the median *Debt_Capacity* for the Percent Change in Total Debt. The mean change in debt measures for the samples above the median *Debt_Capacity* decrease to a lesser degree. This is most likely due to these firms having higher 2018 Stock Option Deductions, suggesting that they have a small increase in debt capacity due to no longer being able to deduct the stock-based compensation. Moreover, considering the firms whose Interest Limit equals zero, all four subsamples show a mean increase in debt, both as measured by Change in Total Debt Scaled by Total Assets and Percent Change in Total Debt. We would expect the firms with a higher *Debt_Capacity* to have a greater degree of increase in debt from 2016 to 2018, which is the case for Percent Change in Total Debt. However, when scaled by Total Assets, the change in Total Debt is less severe for firms with the higher 2018 Stock Option Deductions divided by Pretax Income.

Regression Analysis

To control for other correlated variables that are not related to debt capacity but could impact changes in leverage for my sample of firms, I also perform multivariate regression analysis. Specifically, I use the following ordinary least squares regression model:

$$\Delta Leverage = \beta_0 + \beta 1 Debt\_Capacity + \beta_2 \Delta ROA + \beta_3 \Delta SIZE + \beta_4 \Delta BTM + \beta 5 TANG + \beta 6 IntLim + \beta 7 Debt\_Capacity * IntLim$$

Debt_Capacity is my independent variable of interest and is measured as 2018 Stock Option Deductions as a percent of 2018 Pretax Book Income. Because I predict increased debt capacity from forgone stock option deductions should be positively associated with increases in debt, I predict that $\beta 1 > 0$. The dependent variable in my regression model, Δ*Leverage*, is the change in leverage, defined as either Δ*LEV/SIZE or* Δ*%LEV*. Δ*LEV/SIZE* is measured as the raw Change in Total Debt Scaled by Total Assets from 2016 to 2018. Δ*%LEV* is measured as the Percent Change in Total Debt from 2016 to 2018. Additional control variables are *ΔROA*, *ΔSIZE*, *ΔBTM*, and *ΔTANG*. *ΔROA* is the change in Return on Assets, measured as 2018 net income as a percent of 2018 total assets minus 2016 net income as a percent of 2016 total assets. *ΔSIZE* is measured as the natural log of 2018 total assets minus the natural log of 2016 total assets. *ΔBTM* is measured as the change in the Book-to-Market Value from 2016 to 2018, calculated as 2018 book value of equity divided by share price at year end multiplied by the number of shares of common stock outstanding in 2018 minus 2016 book value of equity divided by share price at year end multiplied by the number of shares of common stock outstanding in 2016. The fourth control variable, *ΔTANG*, is measured as 2018 property, plant, and equipment (PPE) net of accumulated depreciation scaled by 2018 total assets minus 2016 property, plant, and equipment net of accumulated depreciation scaled by 2016 total assets.

I perform regressions with and without the inclusion of *IntLim* and the interaction between *IntLim* and *Debt_Capacity*. *IntLim* represents a binary measure equal to one if interest expense for the corresponding firm is greater than thirty percent of the sum of pretax income, interest expense and accumulated depreciation less interest income. If interest expense is less than or equal to thirty percent of the sum of pretax income, interest expense and accumulated depreciation less interest income, then *IntLim* equals zero. I include *IntLim* and its interaction with *Debt_Capacity* in my regression analysis based on the same variables used in the regression analysis presented by Carrisoza et al. (2019). Based on my hypothesis that increased debt capacity will not hold significance for firms that are already at the interest limit, I predict the coefficient on *Debt_Capacity* $\beta 1 > 0$, and the coefficient for the interaction between *Debt_Capacity* and *IntLim* $\beta 7 < 0$.

I find some evidence in my regression analysis supporting my prediction. Consistent with my prediction, the coefficient on *Debt_Capacity* is positive across all regressions. However, it is only statistically significant in the regressions where the percent change in debt is my dependent variable ($\Delta\%LEV$).

Conclusion

My paper examines whether the restrictions in tax deductibility of executive stock compensation due to the 2017 Tax Cuts and Jobs Act (TCJA) impacted corporate debt structure. Through statistical analysis, I find some evidence to support the hypothesis that firms with a higher debt capacity due to reduced stock option deductions in 2018 see a greater increase or lower decrease in debt from periods just prior to just after TJCA. This evidence is based univariate analysis of differences in means and multivariate regression analysis. Further in univariate correlation analysis, I find that that my hypothesis holds for NASDAQ 100 firms but does not hold for S&P 100 firms which is consistent with NASDAQ 100 firms being more impacted by the reductions in executive compensation and hence are likely to experience greater increase in debt capacity. My paper adds to the research on the impacts of TJCA, and particularly its impact on capital structure.

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APPENDIX 1

Variable Definitions

Assets ($M)=	Total current and non-current assets, in millions
Stock Option Deductions ($M)=	Total tax benefit related to employee stock options; value realized on exercise - (weighted average exercise price * number of shares exercised)
Pretax Income ($M)=	Earnings before income tax expense, in millions
Equity Beta=	Measure of fluctuation with the market; result of regressing daily returns for each individual firm against market returns
Δ*ROA=*	Change in return on assets; (2018 pretax income / 2018 total assets) - (2016 pretax income / 2016 total assets)
Δ*SIZE=*	Change in size; ln (2018 total assets) - ln (2016 total assets)
Δ*BTM=*	Change in Book-to-Market value; (2018 book value of equity / share price at 12/31/18 * common stock outstanding 2018) - (2016 book value of equity / share price at 12/31/16 * common stock outstanding 2016)
Δ*TANG=*	Change in tangibility; (2018 PPE, net / 2018 total assets) - (2018 PPE, net / 2018 total assets)
IntLim=	1 if interest expense > 30% *(pretax income + interest expense + accumulated depreciation - interest income)
Δ*(LEV/SIZE)=*	Change in leverage scaled by assets from 2016 to 2018; (2018 total debt / 2018 total assets) – (2016 total debt / 2018 total assets)
*%*Δ*LEV=*	Percent change in leverage from 2016 to 2018; (2018 total debt – 2016 total debt) / 2016 total debt
Debt_Capacity=	2018 Stock options deductions / 2018 pretax income
PPE, net=	Property, plant and equipment net of accumulated depreciation
Market Equity=	Share price at year end * weighted average common stock outstanding
Debt / Value=	Leverage scaled by market value; total debt / (share price at year end * common stock outstanding)
Change in Raw Total Debt=	Raw change in leverage from 2016 to 2018; 2018 total debt – 2016 total debt

APPENDIX 2

Sample Companies

S&P 100	NASDAQ 100
American Express	Microsoft Corporation
Boeing Co.	Autodesk, Inc.
Colgate Palmolive	Apple Inc
The Walt Disney Company	Fox Corporation
Duke Energy Corporation	Hasbro, Inc.
FedEx Corporation	Amazon.com Inc.
Home Depot	Netflix
The Goldman Sachs Group, Inc.	Modelez International
The Coca Cola Company	PepsiCo, Inc.
JPMorgan Chase & Co.	Starbucks Corporation
3M Company	Texas Instruments, Inc.
Nike, Inc.	Ulta Beauty
Pfizer Inc	Tesla, Inc.
Southern Company	Workday, Inc.
Target Corporation	Facebook Inc
AT&T Inc	VeriSign
United Parcel Service	O'Reilly Automotive, Inc.
Visa Inc.	Microchip Technology
Walmart Inc.	Fastenal Company
Exxon Mobil Corp.	Costco Wholesale Corporation

TABLE 1 – PANEL A

Summary Statistics – Pooled Sample by Year

2016	Obs.	Mean	Median	Std Dev	25%	75%
Asset ($M)	40	157,660	44,530	409,482	13,221	115,463
Market Equity ($M)	40	35,010	12,295	53,883	2,097	42,612
Return on Assets (%)	40	10.21%	8.55%	9.68%	3.38%	15.44%
Debt/Value (%)	40	97.09%	104.30%	36.40%	70.25%	119.60%
Stock Option Deductions ($M)	40	211	77	392	27	190
Pretax Income ($M)	40	7865	4411	11104	1286	8402
Deductions / Pretax Income (%)	40	22.95%	1.25%	128.86%	0.85%	2.97%
Interest Limit (%)	40	5.00%	0.00%	22.07%	0.00%	0.00%
Equity Beta	40	0.97	1.04	0.36	0.70	1.20

2018	Obs.	Mean	Median	Std Dev	25%	75%
Asset ($M)	40	178,276	53,081	433,089	21,186	148,900
Market Equity ($M)	40	43,179	13,811	73,879	2,217	46,071
Return on Assets (%)	40	10.78%	8.01%	8.25%	4.54%	16.16%
Debt/Value (%)	40	96.89%	96.50%	38.85%	69.58%	126.75%
Stock Option Deductions ($M)	40	172	61	342	33	125
Pretax Income ($M)	40	10,494	5,277	14,237	1,583	12,562
Deductions / Pretax Income (%)	40	2.55%	0.79%	5.14%	0.49%	2.63%
Interest Limit (%)	40	12.50%	0.00%	33.49%	0.00%	0.00%
Equity Beta	40	0.97	0.97	0.39	0.70	1.27

TABLE 1 – PANEL B

Summary Statistics – 2016 NASDAQ 100 vs. S&P 100 Firms

S&P 100	Obs.	Mean	Median	Std Dev	25%	75%
Asset ($M)	20	267,172	89,652	559,254	39,641	178,607
Market Equity ($M)	20	51,354	24,916	66,043	10,801	65,783
Return on Assets (%)	20	10.16%	7.40%	12.05%	3.11%	11.97%
Debt/Value ($M)	20	365	174	513	72	480
Stock Option Deductions ($M)	20	168	89	203	45	232
Pretax Income ($M)	20	9,385	7,991	7,453	4,459	10,851
Deductions / Pretax Income (%)	20	1.71%	1.09%	1.49%	0.97%	2.22%
Equity Beta	20	0.84	0.82	0.35	0.63	1.09

NASDAQ 100	Obs.	Mean	Median	Std Dev	25%	75%
Asset ($M)	20	48,148	15,381	78,508	5,409	62,340
Market Equity ($M)	20	18,666	5,322	32,181	1,804	13,758
Return on Assets (%)	20	10.26%	9.57%	6.86%	5.22%	15.81%
Debt/Value ($M)	20	57	35	57	19	82
Stock Option Deductions ($M)	20	203	22	388	7	130
Pretax Income ($M)	20	6,345	1,117	13,881	519	4,382
Deductions / Pretax Income (%)	20	44.19%	2.36%	182.02%	0.63%	4.22%
Equity Beta	20	1.11	1.10	0.33	0.99	1.23

TABLE 1 – PANEL C

Summary Statistics – 2018 NASDAQ 100 vs. S&P 100 Firms

S&P 100	Obs.	Mean	Median	Std Dev	25%	75%
Asset ($M)	20	293,744	107,756	589,683	48,513	192,881
Market Equity ($M)	20	65,102	25,665	95,626	9,839	11,138
Return on Assets (%)	20	8.41%	7.42%	6.43%	3.73%	10.38%
Debt/Value ($M)	20	287	119	452	76	202
Stock Option Deductions ($M)	20	126	59	237	23	139
Pretax Income ($M)	20	11,946	9,977	10,078	4,346	14,599
Deductions / Pretax Income (%)	20	1.02%	0.70%	0.98%	0.38%	1.15%
Equity Beta	20	0.84	0.86	0.33	0.69	1.08

NASDAQ 100	Obs.	Mean	Median	Std Dev	25%	75%
Asset ($M)	20	62,808	25,065	95,967	5,457	66,459
Market Equity ($M)	20	21,255	5,081	32,362	1,804	22,027
Return on Assets (%)	20	13.14%	11.04%	9.31%	5.22%	19.19%
Debt/Value ($M)	20	57	38	91	11	49
Stock Option Deductions ($M)	20	246	38	483	7	182
Pretax Income ($M)	20	9,042	2,268	17,607	829	6,007
Deductions / Pretax Income (%)	20	4.09%	1.45%	6.95%	0.53%	3.07%
Equity Beta	20	1.10	1.14	0.41	0.76	1.39

Table 1 presents the summarized statistics pulled from my sample of forty firms' annual reports and other filings. Panel A summarizes all forty companies separated by the years 2016 and 2018. Panel B separates S&P 100 firms from NASDAQ 100 firms for the year 2016. Panel C separates S&P 100 firms from NASDAQ 100 firms for the year 2018.

TABLE 2
Univariate Tests - Correlations

	NASDAQ 100		S&P 100		Tests for Differences in Correlations	
	Correlation Coefficient	P-value	Correlation Coefficient	P-value	Z-Score	P-value
Change in Total Debt / Total Assets & 2018 Deductions / Pretax Income	0.106	0.100	-0.103	0.159	0.61	0.542
Percent Change in Total Debt & 2018 Deductions / Pretax Income	0.586	0.007	-0.128	0.127	2.33	0.020

Table 2 presents the results of correlations as a univariate test. First, I present correlations separately on the twenty S&P 100 firms and the twenty NASDAQ 100 firms, and then I present the same correlations using the sample of all forty firms.

TABLE 3
Univariate Tests – Analysis of Means

Change in Total Debt / Total Assets	Obs.	*IntLim* = 0	*IntLim* = 1
Below Median *Debt_Capacity*	20	0.2210	-0.1947
Above Median *Debt_Capacity*	20	0.1811	-0.0723

Percent Change Total Debt	Obs.	*IntLim* = 0	*IntLim* = 1
Below Median *Debt_Capacity*	20	0.3705	0.0813
Above Median *Debt_Capacity*	20	0.5794	-0.0141

Table 3 presents the results of a univariate test through analysis of means for the sample of forty firms. I separate my sample by interest limit of zero and interest limit of one. I show the means of my two dependent variables, Change in Total Debt Scaled by Total Assets and Percent Change in Total Debt, separated as below median 2018 Stock Option Deductions divided by Pretax Income and above median 2018 Stock Option Deductions divided by Pretax Income.

TABLE 4
Regression Sample Summary Statistics

Variable	Obs	Mean	Median	Std Dev	25%	75%
2018 Deductions / Pretax Income	40	0.03	0.01	0.05	0.00	0.03
Change in Total Debt / Total Assets	40	0.188	0.088	0.893	-0.036	0.230
Change in Total Debt (%)	40	45.31%	23.83%	106.68%	-0.81%	44.37%
Change in ROA	40	0.01	0.01	0.09	-0.00	0.04
Change in Size	40	0.22	0.10	0.44	0.045	0.24
Change in Book-to-Market (BTM)	40	3.45	0.00	17.28	-0.13	0.22
Change in Tangibility	40	-0.01	-0.00	0.05	-0.03	-0.01
2018 Interest Limit	40	0.13	0.00	0.33	0.00	0.00

Table 4 presents the summarized statistics pulled from my sample of forty firms' annual reports and other filings. It summarizes all forty firm changes from 2016 to 2018 in addition to the 2018 Stock Option Deductions divided by Pretax Income. These changes are used as the control variables as well as the dependent variables for my regression analysis using the 2018 Stock Option Deductions divided by Pretax Income as the independent variable in question.

TABLE 5

Regression Analysis

Panel A – Dependent variable = Change in total debt/assets

	Δ(*LEV/ASSETS*)			
	(1)	(2)	(3)	(4)
Intercept	0.173	0.309	0.358	0.358
	(0.287)	(0.164)	(0.136)	(0.142)
Debt_Capacity	**0.622**	**2.209**	**2.234**	**2.294**
	(0.826)	**(0.533)**	**(0.533)**	**(0.530)**
Δ*ROA*		-1.245	-1.632	-1.669
		(0.738)	(0.669)	(0.667)
Δ*SIZE*		-0.572	-0.638	-0.647
		(0.417)	(0.377)	(0.379)
Δ*BTM*		0.006	0.007	0.007
		(0.464)	(0.410)	(0.425)
Δ*TANG*		1.878	2.166	2.168
		(0.612)	(0.566)	(0.571)
Int_Limit			-0.344	-0.268
			(0.558)	(0.724)
*Debt_Capacity*Int_Limit*				-7.469
				(0.872)
R^2	0.001	0.066	0.075	0.076
Nobs	40	40	40	40

Panel B – Dependent variable = Percent change in total debt

	Δ%*LEV*			
	(1)	(2)	(3)	(4)
Intercept	0.263	0.279	0.323	0.324
	(0.149)	(0.270)	(0.238)	(0.244)
Debt_Capacity	**7.448****	**6.991***	**7.014***	**7.129***
	(0.023)	**(0.091)**	**(0.094)**	**(0.095)**
Δ*ROA*		-0.558	-0.907	-0.979
		(0.896)	(0.836)	(0.826)
Δ*SIZE*		0.147	0.088	0.070
		(0.855)	(0.915)	(0.934)
Δ*BTM*		0.005	0.006	0.006
		(0.614)	(0.563)	(0.583)
Δ*TANG*		1.409	1.669	1.673
		(0.739)	(0.699)	(0.702)
Int_Limit			-0.311	-0.163
			(0.644)	(0.851)
*Debt_Capacity*Int_Limit*				-14.581
				(0.784)
R^2	0.129	0.142	0.148	0.150
Nobs	40	40	40	40

TABLE 5

Regression Analysis, continued…

Table 5 presents the results of my regression analysis on the sample of forty firms. Panel A displays results for the first dependent variable, Change in Total Debt Scaled by Total Assets from 2016 to 2018. Panel B shows results for the second dependent variable, Percent Change in Total Debt from 2016 to 2018. The coefficient is listed first with the P-value listed below in parentheses. One asterisk indicates a P-value greater than 0.05 but less than or equal to 0.10; two asterisks indicates a P-value greater than 0.01 but less than or equal to 0.05; and three asterisks indicates a P-value less than or equal to 0.01.