



Shareholders valuation of long-term debt and decline in firms' leverage ratio[☆]



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ARTICLE INFO

Article history:

Received 14 June 2017

Received in revised form 17 November 2017

Accepted 20 November 2017

Available online 23 November 2017

JEL classification:

G30

G32

G34

Keywords:

Capital structure

Marginal cost of debt

Leverage

ABSTRACT

The median U.S. non-regulated firm reports a 47% decline in leverage ratio between 1980 and 2010. We investigate whether the cost-benefit tradeoff to *shareholders*, captured by the valuation impact of an additional dollar of debt on owners' equity, is an explanation for the observed change in leverage. Using Faulkender and Wang (2006) methodology, we find that shareholders view increasing debt to have a negative impact on their wealth, that is, shareholders perceive firms to be over-levered. Further, the net cost of issuing additional debt has increased steadily for three decades beginning in 1980 before declining marginally after 2010. This trend holds for different groups of firms classified on factors known to affect capital structure decisions. Managers respond to the changing cost to shareholders by reducing (increasing) leverage when the cost of debt increases (decreases). The time-series pattern in the marginal cost of debt persists after controlling for firm-specific characteristics. We find that macroeconomic factors, such as federal debt, play a role in explaining the marginal value of debt.

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1. Introduction

According to the tradeoff theory of capital structure, firms determine their long-term leverage ratio by balancing the costs and benefits of debt.¹ Firms that deviate from their "optimal" leverage can increase their market value by moving the debt-equity mix towards the target. Consistent with this argument Graham (2000) and Binsbergen et al. (2010) find that firms are under-levered and suggest that firms can increase value by adding debt and capturing the tax-shield benefits of interest payments. The tradeoff theory therefore posits that changes in leverage ratios reflect changing dynamics of the cost-benefit tradeoff of debt.

A time-series examination of the capital structure of non-financial, and unregulated public U.S. firms between 1980 and 2014 reveals a long-term trend in firms' leverage ratios. We find a general decline in long-term debt ratios from 1980 until 2010. The median (average) firm reported a long-term leverage ratio of 25.10 (26.78) percent in 1980, and this ratio fell to 13.39 (19.04) percent in 2010, a decline of approximately 47% (29%). Additionally, the median (mean) firm's leverage ratio in the 1980s was

[☆] We thank Jeffrey Netter (editor), an anonymous referee, Sudip Datta, Anand Jha, Min-Jeong Kwon, Jared Smith, Shawn Thomas, John Wagster, and seminar participants at Wayne State University for helpful comments and suggestions. All errors remain our own.

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¹ The tradeoff theory is one of several explanations for capital structure decisions. Other explanations include the pecking order theory (Myers and Majluf, 1984) and the market timing theory (Baker and Wurgler, 2002).

higher than that in the 1990s and the leverage ratio was at its lowest in the 2000s.² The end of the latest financial crisis in 2010 was followed by a gradual rebound in long-term debt-to-asset ratios, but the leverage ratio in 2014 is below the levels in the first two decades of the sample period. Further, the time-series trend in leverage is present in firms grouped by size, growth opportunities, corporate governance, leverage, and any other factors known to affect capital structure.

In the context of the tradeoff theory, the trend in firms' leverage ratios suggests that the costs and benefits of debt are changing over time. The pervasive decline in debt levels in the first three decades of the sample period indicates that either the benefits of debt declined over that interval, or the costs steadily increased, or both. The subsequent increase in leverage ratios beginning in 2011 suggests that this trade-off has reversed after the recent financial crisis and the net benefits of issuing debt have increased.

Prior studies that have tested the tradeoff theory (e.g., Bradley et al., 1984; Shyam-Sunder and Myers, 1999) do so from the viewpoint of the *firms*. In cross-sectional tests, these papers regress leverage or changes in leverage on several variables that capture the costs and benefits of debt to determine factors that affect firms' capital structure choices, making assumptions about the target capital structure, bankruptcy costs, etc. However, these studies provide limited insights about the relative importance of the different factors on firm valuation and do not present explanations for the pattern in leverage ratios described above.

In this paper we investigate the cost-benefit tradeoff of debt from the viewpoint of *shareholders* by estimating the net value that firms' owners place on an incremental dollar of debt. We argue that focusing on the tradeoff from the equity holders' perspectives provides a more comprehensive valuation of the net contribution of an additional dollar of debt. Shareholders consider not only the cost of borrowing and the implication on financial distress and bankruptcy but also how the proceeds from the debt issue are used to fund investment opportunities, manage agency costs, determine payout policy, increase tax shields, thus incorporating benefits, costs, as well as the relative significance of these factors in determining the net valuation impact of issuing debt. Additionally, examining the variation in the annual net value of additional debt across the sample period allows us to ascertain whether shareholders view the cost-benefit tradeoff to be changing over time.

We use the Faulkender and Wang (2006) methodology to determine the value that firms' owners place on an incremental dollar of long-term debt. In this model a firm's excess stock return is regressed on changes in several investment and financial policy factors and the coefficient on the independent variables reflects the net cost (negative coefficient) or benefit (positive coefficient) to equity holders. In our study we concentrate on the coefficient for the change in long-term debt variable that captures the net effect of issuing an additional dollar of debt on the wealth of the firms' owners.

We find that between 1980 and 2014, shareholders of U.S firms value *an additional dollar* of long-term debt to be $-\$0.28$. This result suggests that for shareholders of the average firm, the cost of increasing long-term debt exceeds the benefits.³ Given that the annual change in net debt (defined as debt issues less repurchases) is approximately 2.29% of prior year's equity, the decline in shareholders' wealth of the average firm is 0.64% ($0.28 * 2.29\%$) and this is comparable to announcement period returns at debt issues documented by prior studies (e.g., Mikkelsen and Partch, 1986; Smith, 1986). The negative impact of increasing debt on shareholders' wealth is robust; we find consistent results when we use the Fama and French (1998) or the Pinkowitz and Williamson (2002) models. Our results suggest that, on average, shareholders view firms to be overleveraged which contradicts the conclusions of prior theoretical studies of Graham (2010) and Binsbergen et al. (2010) that firms should be issuing additional debt. This result is, however, in agreement with recent empirical evidence in Kahle and Stulz (2017) and Michaely et al. (2017) that U.S firms are reducing leverage over an extended period of time.

We proceed to explore whether the model's annual long-term debt coefficient changes over the sample period to determine whether investors view the cost-benefit tradeoff of debt to be changing over time. We find that the average net cost of a dollar of debt increases steadily from $\$0.20$ in the 1980s to $\$0.32$ in the 1990s and rises to $\$0.44$ in the 2000s, before falling to $\$0.30$ in 2010s.⁴ This result suggests that shareholders perceive issuing long-term debt to be increasingly more expensive over the first three decades of the sample period. There is a shift in shareholders' valuation of additional debt after the end of the financial crisis in 2010; in the last five years equity holders view issuing debt more favorably relative to the preceding two decades. Over the sample period the average annual increase in the net cost of issuing additional debt over is about 0.70% that translates to an increase of about 25 percentage points from 1980 to 2014. The time-series pattern of the net cost of issuing debt is generally present in different groups of firms classified by several factors that impact the capital structure decision, suggesting that the trend is pervasive.

We investigate whether changes in the net cost of issuing debt is a possible explanation for the general time series pattern of declining firms' leverage ratios. Assuming that managers are working in the best interest of shareholders, the marginal cost of debt to shareholders should be an important consideration in executives' capital structure decisions. Consistent with this argument, we document that firms are more likely to reduce (increase) debt in a given year when the net cost of debt to shareholders are high (low) and that the fraction of debt issued/repurchased is significantly related to the marginal cost of debt to investors.

² Michaely et al. (2017) find that leverage ratios peaked in 1992. More recently, Kahle and Stulz (2017) report similar findings. Strebulaev and Yang (2013) and D'Mello and Guskin (2013) document a dramatic increase in the fraction of firms with less than five percent leverage ratio between 1980 and 2010, and find that this shift to lower leverage cannot be explained by traditional determinants of capital structure. Additionally, Custódio et al. (2013) report a decline in debt maturity over time.

³ While we do not explicitly model the impact of information asymmetries (Leland and Pyle, 1977), agency costs (Jensen and Meckling, 1976), debt maturity (Barclay and Smith, 1995), tax rates (Graham, 2006) etc. in calculating how shareholders view an additional dollar of debt. The underlying assumption of our model is that shareholders' reaction to changes in firms' capital structure implicitly incorporates these factors. Our measure of how shareholders value an additional dollar of debt, thus, is the composite measure of all of these costs, as viewed by the shareholders. A similar assumption is made in Fama and French (1998), Faulkender and Wang (2006), Pinkowitz et al. (2006), Bates et al. (2017), among others.

⁴ We use 1980s, 1990s, 2000s, and 2010s to refer to the periods 1980–1989, 1990–1999, 2000–2009, and 2010–2014, respectively.

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