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Does debt capacity matter in the choice of debt in reducing the underinvestment problem?☆



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ABSTRACT

We test the impact of debt capacity on firms' simultaneous decisions of leverage and debt maturity in reducing underinvestment problems. Examining 24 OECD countries for the period between 1990 and 2011, we find strong evidence, that, unlike previous studies, the role of leverage and debt maturity in reducing underinvestment problems is not homogeneous across firms with varied debt capacity. We find new evidence that, when firms face lower debt capacity constraints, they benefit from their ability to use a greater amount of debt if they shorten their debt maturity, or gain from using longer maturity of debt if they decrease their leverage to reduce underinvestment problems. Our results suggest that they also benefit from the ability of their firms to gain from interest tax shields by financing more with debt or long-term debt, and hence use debt maturity and leverage as strategies substitutes. However, when firms are constrained by concerns over debt capacity, they tend to opt for a lower level of debt that is mainly short-term to reduce the underinvestment problem. Our results suggest that firms with lower debt capacity cannot completely resolve their underinvestment problems by using short-term debt or low leverage, implying that the effects of the liquidity risk outweigh those of underinvestment problems, and hence impose a constraint on firms' choice of debt.

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1. Introduction

One particular attribute that has received much attention in the subsequent literature is the agency conflict between shareholders and debt-holders which results in different choices of debt-equity as well as in corporate debt with different maturities. In the presence of agency conflicts between equity- and debt-holders, debt financing results in debt overhang problem (Myers, 1977). When a firm is highly leveraged and debt is risky, shareholders have a disincentive to raise new capital to invest in projects that would make debt safer, even if these projects have a positive net present value, causing underinvestment problems.¹

Within the agency costs theory, Myers (1977) argues that high-growth firms are expected to rely on lower levels of debt and/or short-term debt to mitigate their underinvestment problems. However, a short-term debt strategy creates liquidity risk² because lenders ignore the full value of control rents, so that, following Diamond (1991, 1993), shorter maturity of debt and lower leverage (a proportion of debt relative to total assets) are used as complementary strategies to alleviate the cost of roll-over. The cost of roll-over constrains the use of short-term debt; hence firms do not gain the benefits of using shorter maturity of debt to control their underinvestment problems. While short-term debt can mitigate the underinvestment cost and thereby increase leverage, it can also increase the cost of roll-over and hence reduce leverage (Johnson, 2003). Therefore, these arguments suggest that leverage and debt maturity (a proportion of long-term debt relative to total debt) could be either strategic complements (use both leverage and debt maturity) or substitutes (choose between leverage and debt maturity) in reducing underinvestment problems.

The limited literature has not investigated any condition under which leverage and debt maturity are expected to act as strategic complements or substitutes to control underinvestment incentives. In this paper, we investigate how debt capacity affects a joint choice of leverage and debt maturity in order to alleviate the underinvestment problem. Debt capacity plays a central role in capital structure dynamics which is related to financial flexibility hypothesis.³ Unlike previous studies, ours tests the hypothesis that firms which face lower debt capacity constraints are more likely to use debt maturity and leverage as strategic substitutes, as they could borrow long or short-term debt without constraining their ability to issue the other. Lemmon and Zender (2010) argue that firms which are not constrained by concerns over debt capacity are larger and have more stable returns, and thereby have higher ratings. Such firms, with their lower roll-over risk (Diamond, 1991, 1993) and greater financial flexibility (Denis and McKeon, 2012), can shorten their debt maturity to reduce the underinvestment problem without having to reduce leverage (Johnson, 2003).

In contrast, firms that are constrained by concerns over debt capacity are more likely to be low-credit quality firms and hence less able to gain access to public debt markets.⁴ Consistent with Mauer and Ott's (1998) model, according to which firms that shorten their debt maturity to reduce the underinvestment problem can also reduce their leverage to mitigate the roll-over costs, we expect that, for firms with limited debt capacity, the relatively large roll-over risk outweighs the underinvestment problem, and hence that they should reduce their leverage to avoid roll-over risk when they shorten their debt maturity to mitigate the cost of the underinvestment problem. Therefore, we expect that, in contrast to unconstrained firms, low-debt capacity companies are more likely to use debt maturity and leverage as complementary strategies in reducing the underinvestment problem.

To test our hypotheses, our study, unlike previous studies that focus on single countries mainly in the UK and US, uses a sample that spans 24 OECD countries containing 12,951 firms within the period

¹ To illustrate this problem with a simple example, consider a company with the following balance sheet (assets (£850) = liabilities (£1000) + equity (–£150)). The company has a positive NPV project with the cost of £300 and the future increase in the firm's asset value is £400. Shareholders invest if the benefit of this project exceeds. If they invest in this project, equity will be increased by £250. As the cost is £300, shareholders lose £50, and hence they choose not to invest, indicating that debt overhang distorts the investment decision.

² The liquidity risk is the probability-weighted expected costs related to bankruptcy, and, hence thereafter we use the term "roll-over" risk instead of liquidity risk.

³ See DeAngelo and DeAngelo (2007) and Graham and Harvey (2001) who survey CFOs.

⁴ See Lemmon and Zender (2010).

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