Journal of Empirical Finance 35 (2016) 150–168

Contents lists available at ScienceDirect

Journal of Empirical Finance

journal homepage: www.elsevier.com/locate/jempfin

Are target leverage ratios stable? Investigating the impact of corporate asset restructuring☆

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ARTICLE INFO

Article history:
Received 23 May 2014
Received in revised form 12 November 2015
Accepted 16 November 2015
Available online 24 November 2015

JEL classification:
G32
G34

Keywords:
Corporate asset restructuring
Target leverage ratio
Downsizing
Upsizing

ABSTRACT

If firms balance the benefits and costs of leverage, then we might expect corporate asset shocks to trigger a change in corporate target leverage. We investigate the impact of corporate asset restructuring and find that target leverage after restructuring is reduced for downsizing firms and increased for upsizing firms. Changes in target leverage are stabilized by the second year after the restructuring event and are monotonic relative to the degree of restructuring. Decomposition analysis shows that corporate asset restructuring directly and significantly affects target debt ratios. Compared to control firms, downsizing firms adjust claims by repurchasing debt while upsizing firms issue debt securities. As expected, debt repurchases are associated with lower tax liabilities while debt issuance decisions correspond to lower growth proxies and are consistent with a higher adverse selection cost of issuing equity, positive leverage deficit, higher tax liabilities, and lower bankruptcy risk.

1. Introduction

Since Modigliani and Miller (1963), finance theory has suggested that in making capital structure decisions, firm managers trade off the benefits and costs of leverage. As a result, firms' leverage should be determined at an optimal target that balances these benefits and costs. Survey evidence (Graham and Harvey, 2001) supports this notion as 81% of firm CFOs claim to have a target range for debt-equity ratio or a strict target debt ratio. Although there has been an extensive literature investigating leverage movements, perturbations have generally been assumed to reflect deviations from a stable target. For example Fisher et al. (1989), Leland (1994), and Leland (1998) model corporate asset movement within the context of standard Brownian motion assumptions.

Since the mid-1980s, U.S. corporations have been affected by significant changes in asset structures.[3] If firms balance the benefits and costs of leverage, then in case of corporate asset shocks we might expect a change in corporate target leverage ratios. In fact, Denis and

☆ The authors thank participants at the 2009 Financial Management Association Meeting and 2009 Eastern Finance Association Meeting where the paper was presented under a different title. Cook gratefully acknowledges financial support from the Ehney A. Camp, Jr. Chair of Finance and Investments.

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[3] Denis and Shome (2005) document various ways a firm's assets could be reduced including: asset sales, spin offs, and discontinuation of the use of assets.

http://dx.doi.org/10.1016/j.jempfin.2015.11.003
0927-5398/

Shome (2005) find that 29.2% of the firms they survey indicate that they downsized in order to "improve financial condition." Thus, we might expect that in response to downsizing, firms' target leverage is reduced and in response to upsizing, firms' target leverage is increased.

In addition, DeAngelo and Roll (2015), investigate the stability of corporate capital structures and find that a time series of firm leverage ratios varies over time. One view consistent with their evidence indicates that although a firm's leverage ratio matters at each point in time, the specific way in which it matters changes a lot over time. They state "[i]n this case, the challenge for researchers is to identify the factors that generate substantial time-series volatility in target ratios." Our paper investigates the impact of asset restructuring on the change in target debt ratios. On the corporate side, there are interest tax shield benefits that are lost (gained) by firms that decrease (increase) leverage. We find that downsizing (upsizing) firms lose (gain) an average tax shield equivalent to 6.3% (78.6%) of their pre-event interest expenses, significant at a level $<.0001$.

In this paper, we study corporate asset restructuring firms from 1985 to 2011 and address the following five primary questions: (1) Does asset restructuring lead to changes in firm target leverage ratios? (2) If there is adjustment in target leverage ratios, how long does the adjustment process take? (3) Is the relationship between restructuring and changes in target leverage ratios monotonic? (4) Do firms use the issuance or repurchase of claims to adjust their claims on assets? (5) What are the determinants of the resultant repurchase or issuance decisions?

In order to perform our analysis, we need to compare changes in target leverage ratios for our treatment groups (downsizing and upsizing firms) to control groups. The potential econometric problem in doing this analysis is that the effect of asset restructuring on changes in target leverage due to asset restructuring may be biased by the covariates that predict asset restructuring. To address this issue, we use the propensity score matching technique to find a control firm, matching on the covariates found by Denis and Shome to predict downsizing, and perform a difference-in-differences analysis.

Our paper makes important contributions to the literature involving target debt ratios and corporate asset restructuring. First, we find evidence that asset restructuring is responsible for causing changes in target debt ratios. In addition, we perform a decomposition analysis and find that the asset restructuring variable is significantly related to target debt ratios at both statistical and economic levels. Second, our paper adds to the literature by examining the level effect of corporate asset downsizings and asset upsizings on target leverage. Denis and Shome (2005) argue that asset downsizings result in more focused firms with lower debt ratios. Bates (2005) finds that, after controlling for coverage, divesting managers systematically allocate proceeds from asset sales to debt holders in order to adjust from a suboptimal debt level. The literature investigating the interaction between capital structure and product markets generally documents that plant closings are positively associated with high debt (Kovenock and Phillips, 1997; Lang et al., 1996; MacKay and Phillips, 2002; Maksimovic and Phillips, 1998; Phillips, 1995; Zingales, 1998), which suggests a lower debt ratio after the restructuring.

On the other hand, Harford et al. (2009) investigate upsizings through the mechanism of large acquisitions and find that whether the acquirer finances with debt or equity is determined in part by the acquirer's leverage position relative to its target leverage. They also find that subsequent to a debt-financed acquisition, the acquirer moves back toward its target leverage. Harford, et al. do not analyze the change in target leverage subsequent to the acquisition but focus instead on deviations from target. Elsas et al. (2014) use large investments to test simultaneously the dynamic trade-off, pecking order, and market timing hypotheses. They find evidence consistent with both the trade-off and market timing hypotheses. Support for the trade-off hypothesis results from firms choosing debt or equity at least partly due to their deviation from target leverage. Analyzing large investments, Dudley (2012) finds that firms sequence equity before debt, consistent with firms foregoing the use of debt before they can receive the tax advantage of debt. Firms also adjust their leverage ratios toward their target leverage ratios during the investment period. Both of these results are consistent with the tradeoff model. Using book to market as a proxy for growth options, Dudley finds that target leverage evolves over the financing period as firm growth options are converted into assets in place.

Given the above results, we would expect to observe a lower (higher) target leverage ratio subsequent to downsizing (upsizing). Our results confirm that corporate asset downsizing (upsizing) results in lower (higher) target leverage ratios relative to control firms. These adjustments occur within the span of two years and are monotonic; that is, greater asset restructuring results in greater changes in target leverage. Using decomposition analysis, we find that corporate asset restructuring directly and significantly impacts target leverage ratios.

Third, we examine the mechanism by which firms move toward their new target. Compared to control firms, downsizing firms tend to adjust claims on assets by repurchasing debt, although a 1% rise in the level of cash holdings increases the probability of debt repurchase by 68.4% for downsizing firms that repurchase either debt or equity. Upsizing firms are more likely to issue debt securities than equity securities. Fourth, analyzing the determinants of these decisions, we find, as expected, that debt repurchases are associated with lower tax liabilities while debt issuance decisions correspond to lower growth proxies, consistent with a higher adverse selection cost of issuing equity, a positive leverage deficit, higher tax liabilities, and a lower bankruptcy risk.

The rest of the paper is as follows. Section 2 discusses the construction of the restructuring samples, and displays basic statistics regarding these samples. Section 3 analyzes the change in target leverage as a response to restructuring. This section includes the difference-in-differences analysis used to control for methodology bias and asset decomposition analysis. Section 4 examines the repurchase and issuance mechanisms by which firms move to new target leverage. Section 5 discusses the robustness test and Section 6 concludes.