



Determinants of target capital structure: The case of dual debt and equity issues ☆

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Abstract

We examine whether market and operating performance affect corporate financing behavior because they are related to target leverage. Our focus on firms that issue both debt and equity enhances our ability to draw inferences. Consistent with dynamic trade-off theories, dual issuers offset the deviation from the target resulting from accumulation of earnings and losses. Our results also imply that high market-to-book firms have low target debt ratios. On the other hand, consistent with market timing, high stock returns increase the probability of equity issuance but have no effect on target leverage.

Introduction

Trade-off theories of corporate financing are built around the concept of target capital structure that balances various costs and benefits of debt and equity. These include the tax benefits of debt and the costs of financial distress (Modigliani and Miller, 1963), various agency costs of debt and equity financing (e.g., Jensen and Meckling, 1976; Myers, 1977; Stulz, 1990; Hart and Moore, 1995), and the costs and benefits of signaling with capital structure (Ross, 1977).

In contrast, in the pecking order model of Myers and Majluf (1984), managers do not attempt to maintain a particular capital structure. Instead, corporate financing choices are driven by the costs of adverse selection that arise as a result of information asymmetry between better-informed managers and less-informed investors. Because these costs are incurred only when firms issue securities and are lower for debt than for equity, firms prefer internal financing and prefer debt to equity when external funds have to be raised.

Most of the empirical evidence on capital structure comes from studies of the determinants of corporate debt ratios (e.g., Titman and Wessels, 1988; Rajan and Zingales, 1995; Graham, 1996) and studies of

issuing firms' debt versus equity financing choice (e.g., Marsh, 1982; Jalilvand and Harris, 1984; Bayless and Chaplinsky, 1990; MacKie-Mason, 1990; Jung et al., 1996).¹ These studies have successfully identified firm characteristics such as size, research and development (R&D) intensity, market-to-book ratio of assets, stock returns, asset tangibility, profitability, and the marginal tax rate as important determinants of corporate financing choices. The effects associated with profitability and market-to-book ratio have been found to be especially important.

This study is a contribution to the ongoing debate about whether the profound effects of operating and market performance on firms' financing decisions are due to trade-off or to pecking order financing behavior. Recent work in this area starts with Shyam-Sunder and Myers (1999), who argue that the negative relation between profitability and leverage is consistent with the pecking order but not with the trade-off model. Fama and French (2002) agree that the negative effect of profitability on leverage is consistent with the pecking order model, but they also find an offsetting response of leverage to changes in earnings, implying that the profitability effects are in part due to transitory changes in leverage instead of changes in the target. Hovakimian et al. (2001) report that even though high profitability is associated with low leverage, it is also associated with a higher probability of issuing debt vis-à-vis issuing equity, which is consistent with dynamic trade-off models (e.g., Fischer et al., 1989; Leland, 1994). They also conclude that the negative effect of market-to-book ratios on both the observed debt ratios and the probability of debt versus equity issue choice is consistent with both the trade-off and the pecking order models. In contrast, Baker and Wurgler (2002) suggest that neither the trade-off nor the pecking order theory is consistent with the negative effect of long-past market-to-book ratios on firm leverage. They contend that the observed capital structures reflect the cumulative outcome of timing the equity market.

Unlike earlier studies, this paper focuses on the instances when firms issue both debt and equity. Earlier studies either exclude such dual issues from their analysis (e.g., Marsh, 1982; Hovakimian et al., 2001) or use additional criteria to reclassify them as either debt or equity issues (MacKie-Mason, 1990).

One of our most striking findings is that the number of dual issues is fairly large and that the amount of capital raised tends to be very large relative to the size of the dual issuer. The average dual issue size is 61.5% of pre-issue total assets. This is almost double of an average equity issue size and more than triple of an average debt issue size. Thus, dual issues are important events that have a potential to induce substantial changes in the issuer's capital structure. This suggests that firms are likely to be deliberate in choosing the amounts of debt and equity and that the analysis of dual issues should help us identify the factors affecting the corporate capital structure choice.

Specifically, the analysis of dual issues allows us to extend the existing literature in the following two directions. First, the inference problem associated with the effects of profitability in regressions of observed debt ratios can be addressed. Even if firms have target capital structures, the observed debt ratios may deviate substantially from these targets. For example, Fischer et al. (1989) and Leland (1994) present dynamic trade-off models in which firms let their leverage fluctuate over time reflecting accumulated earnings and losses and do not adjust it toward the target as long as the adjustment costs exceed the value lost due to suboptimal capital structure. Such a behavior could induce a negative relation between profitability and leverage in samples with capital structure adjustments that are relatively infrequent. This implies that tests of such a relation have no power to reject the dynamic version of the trade-off hypothesis in favor of the pecking order model.

The analysis of dual issues offers an opportunity to test the effects of firm profitability on leverage in a setting where the trade-off and the pecking order theories do not share the same predictions. Limiting

the sample to dual issuers eliminates observations with passive changes in leverage, so we do not have a leverage–profitability relation simply because of accumulation of earnings and losses. Furthermore, because these firms are able to issue both debt and equity, they have a rare opportunity to reset their capital structure at a relatively low cost.² Therefore, firms that follow a dynamic trade-off strategy will choose the amounts of new debt and equity so that the deviation from the target induced by accumulation of earnings and losses is offset and the resulting debt ratio is close to the target. As a result, the negative relation between profitability and leverage will no longer hold. In contrast, if firms follow pecking order, then the negative relation between profitability and leverage will persist because such firms have no incentive to offset the effects of profitability on leverage.

Second, dual issues can be incorporated as an additional issue type into the traditional debt versus equity choice analysis. Introducing dual issues into the analysis improves our ability to discriminate between alternative interpretations of the effects of market-to-book on the debt versus equity choice. Studies of debt versus equity choice have found that the probability of issuing debt vis-à-vis issuing equity declines with the firm's market-to-book ratio (Hovakimian et al., 2001). This is consistent with the hypothesis that high-growth (high market-to-book) firms have low target debt ratios, while low-growth firms have high target debt ratios (Stulz, 1990). An alternative explanation of this result is that firms time equity issuance to the periods when their market-to-book ratios are high, e.g., because managers believe that shares of such firms are overvalued (Baker and Wurgler, 2002).

By comparing dual issuers to debt issuers and, separately, to equity issuers, we are able to discriminate between these alternative hypotheses. The pecking order and the market timing hypotheses imply that firms issue equity when their market performance is high. This prediction applies to dual issues as well, given that dual issues are defined as issues of both debt and equity. Because both equity issuers and dual issuers are expected to time the market by issuing in the periods of high market performance, market timing effects should be insignificant in the dual versus equity issue regressions.³ In other words, dual versus equity issue regressions allow us to examine the effect of market performance on the choice of the form of financing while holding market timing constant.⁴ Therefore, differences in market performance observed between dual issuers and equity issuers can be attributed to the trade-off hypothesis.

Our main results are as follows. We find that the importance of market-to-book ratio in corporate financing decisions is, at least partially, due to the negative relation between growth opportunities and target leverage predicted by trade-off theories. High market-to-book firms have low target debt ratios and, therefore, are more likely to issue equity and are less likely to issue debt. We also find evidence of market timing. Holding market-to-book ratio constant, the most recent increases in share price are associated with a higher probability of equity issuance even though these recent increases are not associated with a lower target debt ratio.

We find that profitability has no effect on the firm's post-dual issue leverage ratio. This is consistent with the dynamic trade-off hypothesis that the negative effect of profitability on observed debt ratios reflects the deviation from the target, which is offset when firms reset their capital structures.

Consistent with the findings of earlier studies, the probability of debt versus equity issuance increases with the firm's profitability. Further analysis shows that, although the likelihood of equity issuance declines with profitability, the likelihood of debt issuance is not affected by profitability. Neither the trade-off nor the pecking order hypothesis can fully explain all of our profitability results. However, the results are consistent with a hybrid hypothesis that firms have target debt ratios but also prefer internal financing to external funds. Only when unprofitable do such firms raise external financing. Furthermore,

because unprofitable firms are likely to be overlevered, they issue equity rather than debt. On the flip side, the propensity to issue debt when the firm is underlevered because of high profitability is neutralized by the firms' preference for and availability of internally generated funds.

The paper proceeds as follows. Section 2 describes the sample. Section 3 discusses the hypotheses about the effects of market and operating performance on capital structure. Section 4 examines the determinants of target capital structure using leverage regressions. Section 5 presents the univariate and the multivariate analyses of the choice of the form of financing. Section 6 summarizes our findings and concludes the paper.

Section snippets

The sample

Following MacKie-Mason (1990) and Hovakimian et al. (2001), security issues are identified using annual firm level data from the Compustat Industrial, Full Coverage, and Research files. A firm is defined as issuing equity (debt) when net equity (debt) issued exceeds 5% of the pre-issue book value of total assets.⁵...

How market performance and profitability affect corporate financing: theory and prior evidence

In this section, we summarize the existing empirical evidence and discuss the predictions of the trade-off, pecking order, and market timing hypotheses about the effects of profitability and market performance on corporate financing...

Determinants of the target leverage ratio

To directly test whether market performance and profitability affect the target leverage ratio, we follow the tradition of debt ratio studies and estimate a model in which leverage is regressed on a set of potential determinants of target capital structure. $\text{Leverage}_t = \alpha + \beta Z_{t-1} + \xi_t$. In samples dominated by firms that do not adjust their capital structure, both the dynamic trade-off and the pecking order theories predict that the effect of profitability in regression Eq. (1) will be negative, making...

Determinants of the form of financing

In this section, we examine how firms that raise external funds choose the form of financing. The firm's choice of the form of financing is modeled as follows: $D_t^* = \alpha + \beta X_{t-1} + \varepsilon_t$. In Eq. (2), the dependent variable, D_t^* , is a latent continuous variable with an observable binary counterpart, D_t . Earlier studies use regression Eq. (2) to model the choice between debt issues ($D_t=1$) and equity issues ($D_t=0$). In addition to the traditional debt versus equity choice, we will model the choice between debt...

Conclusions

Empirical studies of corporate financing have been successful in identifying firm characteristics that are important determinants of corporate financing choices. At the same time, financial economists have been unable to reach consensus in interpreting these empirical results. In particular, the importance of firm profitability and stock market performance in explaining corporate debt ratios and the financing choices of firms that raise external funds has been subject to alternative...

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