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Credit market frictions and capital structure dynamics [☆]

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Abstract

We study the implications of credit market frictions for the dynamics of corporate capital structure and the risk of default of corporations. To do so, we develop a dynamic capital structure model in which firms face uncertainty regarding their ability to raise funds in credit markets and have to search for investors when seeking to adjust their capital structure. We provide a general analysis of shareholders' dynamic financing and default decisions, show when Markov perfect equilibria in financing and default barrier strategies exist, and when uniqueness can be achieved. We then use the model to generate a number of novel testable implications relating credit market frictions to target leverage, the pace and size of capital structure changes, creditor turnover, and the likelihood of default.

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1. Introduction

Since the famous irrelevance theorem of Modigliani and Miller [48], financial economists have devoted much effort to understand the effects of frictions, such as corporate taxes and bankruptcy costs, on corporate capital structure.¹ Although we have learned much from this work, virtually all existing models implicitly assume that a firm's capital structure is entirely determined by its demand for debt or equity. That is, the supply of capital is perfectly elastic in these models so that corporate behavior and capital availability depend solely on firm characteristics.

This demand-driven approach has recently been called into question by a number of large-sample empirical studies.² These studies show that firms often face uncertainty regarding their future access to credit markets and that credit supply conditions are very important in determining capital structure decisions. Using a different research design, several surveys of corporate managers from around the globe have confirmed the findings of these large-sample studies. These surveys indicate that financing decisions are generally governed by the preferences of the suppliers of capital rather than by the demands of the users of capital and that capital supply has first order effects on firms' financing decisions (see Graham and Harvey [27], or Bancel and Mitto [3]).

Our purpose in this paper is therefore twofold. First, we want to examine the importance of credit supply frictions in capital structure choice. Second, we seek to characterize their effects on the dynamics of leverage ratios and the pricing of risky debt. To this end, we build a dynamic model of financing decisions in which the Modigliani and Miller assumption of infinitely elastic supply of credit is relaxed and firms may have to search for investors when seeking to adjust their capital structure. As in Fisher, Heinkel, and Zechner [19] and Leland [38], we consider a firm with assets in place that generate a continuous stream of cash flows. The firm is levered because debt allows it to shield part of its profits from taxation. Leverage, however, is limited because debt financing increases the likelihood of costly financial distress and is subject to credit supply frictions. In our model, these frictions include not only issuance costs, as in prior contributions, but also search frictions.

In the model, management acts in the best interests of shareholders and makes three types of decisions to maximize equity value. First, it selects the firm's initial debt level. Second, it selects the firm's restructuring policy, i.e. the pace and size of capital structure changes. Third, it selects its default policy. Because the default and restructuring policies are selected after debt has been issued, management may have incentives to deviate from the policies conjectured by creditors at the time of debt issuance. In the paper, we therefore focus on Markov perfect equilibria in which the policies selected ex post by management coincide with those conjectured ex ante by creditors. We derive conditions under which such equilibria exist in barrier strategies, show when uniqueness can be achieved, and provide a full characterization of the associated financing and default decisions.

Our analysis emphasizes the role of credit supply frictions in affecting the time series of leverage ratios. In the model, firms are always on their optimal capital structure path but, due to

¹ A partial list of such models includes Leland [39,38], Fisher, Heinkel, and Zechner [19], Mello and Parsons [47], Collin-Dufresne and Goldstein [10], Duffie and Lando [14], Morellec [49], Strebulaev [54], Tserlukevich [56], Gomes and Schmid [24], Gorbenko and Strebulaev [25], Morellec and Schürhoff [51], or Hackbarth and Mauer [28].

² See Faulkender and Petersen [18], Becker [4], Leary [37], Massa and Zhang [44], Lemmon and Roberts [42], Ivashina and Scharfstein [35], Choi, Getmansky, Henderson, and Tookes [9], Becker and Ivashina [5], or Morellec, Valta, and Zhdanov [52].

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