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Empirical Capital Structure: A Review

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Abstract

This survey provides a synthesis of the empirical capital structure literature. Our synthesis is divided into three parts. The first part examines the evidence that relates to the cross-sectional determinants of capital structure. This literature identifies and discusses the characteristics of firms that tend to be associated with different debt ratios. In the second part, we review the literature that examines changes in capital structure. The papers in this literature explore factors that move firms away from their target capital structures as well as the extent to which future financing choices move firms back toward their targets. Finally, we complete our review with a set of studies that explore the *consequences* of leverage, rather than its determinants. These studies are concerned with feedback from financing to real decisions. For example, we explore how a firm's financing choices influences its incentive to invest in its workers, price its products, form relationships with suppliers, or compete aggressively with competitors.

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1

Introduction

Corporations fund their operations by raising capital from a variety of distinct sources. The mix between the various sources, generally referred to as the firm's capital structure, has attracted considerable attention from both academics and practitioners. The empirical capital structure literature explores both the cross-sectional determinants of capital structure as well as time-series changes. This survey reviews both aspects of this literature.

Our review is organized around a simple framework that contains three key ingredients. The first is that at any point in time, there are benefits and costs associated with various financing choices, and that the trade-offs between these benefits and costs lead to well-defined target debt ratios. The second is the existence of shocks that cause firms to deviate, at least temporarily, from their targets. The third is the presense of factors that prevent firms from immediately making capital structure changes that offset the effect of the shocks that move them away from their targets. Almost all of the papers we examine can be conveniently classified as addressing one or more of these ingredients.

We begin our review with a group of studies that primarily deal with the first ingredient, the costs and benefits that determine a firm's

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capital structure. These can include the tax benefit of debt, deadweight costs of liquidation or reorganization, financial distress, and so on. The studies we discuss here are mostly cross-sectional in nature, addressing the extent to which firm characteristics, such as size and asset tangibility, line up with observed capital structures in a way consistent with theory. An implicit assumption of these cross-sectional studies is that the observed debt ratios are relatively close to the firm's actual targets. That is, shocks that move debt ratios from their targets are generally considered to be of second order importance in the interpretation of these cross-sectional leverage regressions.

These shocks are the focus of the second group of studies we consider. These studies focus explicitly on events in a firm's life that may cause it to be over- or under-leveraged relative to its target. These shocks can include "market timing" opportunities (periods where equity financing is temporarily cheap), periods of high (low) profitability that allow the firm to passively accumulate (deplete) its cash reserves, or rapid improvements in a firm's prospects that substantially change the value of a firm's equity. Additionally, deviations from value-maximizing targets can also stem from the firms' management who may realize private benefits from lower debt ratios. We discuss each of these alternatives in detail, exploring both the cross-sectional and time-series implications of such shocks.

Next, we move to the final ingredient — identifying factors that may prevent firms from constantly maintaining debt ratios that match their targets. To address this issue we first survey the empirical evidence on capital structure changes. For example, studies of the timing of the issuance of securities ask whether the debt vs equity issuance choice is consistent with firms acting to move toward their debt ratio targets. Then we turn to "speed of adjustment" models that examine how quickly firms move toward their targets. Such tests should be thought of as a joint test of ingredients one and three. That is, if leverage shocks are not rapidly corrected, then there are two possibilities — either target capital structures are not particularly important, or the adjustment costs are simply too high to warrant an adjustment.

This latter case describes what has been referred to as "pecking order" behavior, which is the subject of the next group of studies that

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we consider. According to the pecking order described by Myers (1984) and Myers and Majluf (1984), because of information asymmetries, firms issue equity only as a last resort, funding investments first with retained earnings followed by debt proceeds. Tests of the pecking order are also time-series regressions, and are often run as a horse race against standard speed of adjustment models.

To conclude our review, we examine a class of studies that consider how a firm's business decisions are influenced by how it is financed. For example, how does a firm's debt ratio influence how aggressively it prices its products? Can firms with high leverage extract rents from their workers, e.g., labor unions? Does leverage impede a firm's ability or willingness to invest? There are a number of studies in this literature that consider this feedback from capital structure to business decisions, and although these feedback channels have implications about the total costs and benefits of debt, we segregate these studies from our discussion of the target capital structure choice because the empirical issues are very different. In particular, the direction/causality in these studies run from the capital structure choice to the firm characteristic rather than vice versa.

The review is organized as follows. In Section 2, we briefly discuss some specification and econometric issues that will be important for many of the tests we consider. Then, in Section 3 we begin our review of cross-sectional capital structure determinants, focusing mostly on costs and benefits involving the firm's managers and suppliers of capital. Section 4 then explores factors that pull firms away from their leverage targets. Then, in Section 5, we discuss reasons why firms might not immediately reverse the effect of these leverage shocks, apparently allowing deviations from their targets to persist for extended periods of time. In Section 6, we explore a group of studies that looks at the leverage problem from a different perspective. Rather than asking what determines leverage, these studies explore how leverage feeds back into a firm's real business decisions. Finally, Section 7 concludes and provides suggestions for new research.

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