

# EXECUTIVE SUMMARY

## Leverage Dynamics over the Business Cycle

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The recent financial crisis and the following sharp economic recession have sparked substantial interest in the link between macroeconomic conditions and firms' financial structures. During recessions most of the main theoretical capital structure determinants experience significant shocks. For example, corporate cash flows drop for many firms and their effective corporate tax rates are reduced. This may give rise to demand variation of firms' optimal capital structure over the business cycle. Maybe equally important, capital market conditions also covary with macroeconomic conditions generating supply effects on optimal capital structure. Moreover, demand and supply effects may be interacted by changing the link between corporate characteristics and optimal financial leverage. Documenting and understanding the relation between macroeconomic conditions and capital structure dynamics may therefore generate important insights about firms' financing decisions more generally.

From a theoretical point of view, the prediction of the business cycle effect on optimal financial leverage is ambiguous. Thus, whether optimal leverage ratios evolve pro-cyclically or counter-cyclically remains largely an empirical question. Surprisingly, empirical evidence on the cyclicity of corporate capital structures is scarce and that is the main motivation for our study.

Our main result is that observed and target leverage – for book as well as market values – evolve counter-cyclically over the business cycle. This result is very robust across different data samples, empirical models of target leverage, and leverage definitions. Interestingly, when we zoom into the cross-section of firms we find counter-cyclical dynamics for financially unconstrained as well as constrained firms, in contrast to earlier evidence that argued that constrained firms have pro-cyclical leverage dynamics. Nevertheless, at least 10% (25%) of the

sample firms have pro-cyclical target (observed) leverage dynamics. These are firms that appear to be more risky from a credit risk perspective, as they have, on average, higher market-to-book ratios, feature smaller fractions of tangible assets and tend to exhibit counter-cyclical dynamics for the loss-given-default. Finally, we also document that it matters whether an economic recession is accompanied by a banking crisis or not: the counter-cyclical dynamics of leverage are much more pronounced in the latter case.

When we decompose leverage dynamics into different sources, we find that the direct effect of recessions as well as the indirect effects play important roles. With the direct effect we mean the impact of a recession on a firm that has otherwise the exact same characteristics but finds itself in a recession rather than an expansion. The advantage of this *ceteris paribus* approach is that it emphasizes the average effect that the business cycle exhibits on all firms independent from their characteristics. However, this approach ignores the effect of the business cycle on leverage determinants (e.g., the cyclicity of firm characteristics) and on the relation between firm characteristics and target leverage (e.g., the cyclicity of leverage demand). We call these latter effects the indirect effects of the business cycle in this paper. For example, growth opportunities are an important leverage determinant, capturing the agency conflict between shareholders and debtholders among other things. Growth opportunities, however, are also known to vary over the business cycle and, even more importantly, might do so differently across firms, as some firms' growth opportunities are more sensitive to business cycle fluctuations than others'.

Our paper relates more generally to the literature studying leverage dynamics. While the predominant view in the literature is that leverage is rather stable and driven mostly by time-invariant determinants, more recent studies challenge this view. We contribute to this discussion in two ways. First, we show substantial variation of target leverage ratios over the business cycle. Second, we document variation in the parameters governing leverage dynamics in our empirical models. For example, the sensitivity of leverage to the market-to-book ratio becomes much more negative during recessions than during expansions consistent with the interpretation that the debt overhang problems becomes more severe during recessions.

A promising direction for future research is to improve our understanding of the cross-country variation of leverage dynamics, as we observe some interesting variation in leverage dynamics across countries. Most importantly, leverage varies more and more distinctively in an

international sample than in the US. A better understanding of this variation across countries with different legal, tax or governance environments could provide important insights about the determinants of firms' financial structures.