



**University of
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Master Thesis

Corporate Capital Structure across Europe:
The Influence of Country-, Industry- and Firm-Specific
Determinants on Leverage

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ABSTRACT

I find that corporate European leverage variation between 2007 and 2015 is largely driven by firm and industry characteristics. Conventional, time-varying firm characteristics explain as much leverage variation as country and industry fixed effects combined. Cross-sectional leverage disparities are more distinct between industries than between countries. Corporate tax rate does have a significant positive effect on leverage, as predicted by the traditional tradeoff theory. The impact is however negligibly small relative to firm- and industry-specific effects. Evidence on both the tradeoff and pecking order model is, at best, mixed. Moreover, macroeconomic conditions are largely insignificant and unable to explain leverage differences in a linear regression context. Macroeconomic effects on capital structure might however channel through firm and industry determinants, thus affecting financing choice indirectly. A more dynamic, possibly nonlinear model specification is needed. Effects of the financial crisis of 2008 and the subsequent European debt crisis are apparent across all of corporate Europe and are most severe for Southern European firms.

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Executive Summary

This section provides a brief description of the research goal, sample selection, methodology and results of this thesis. It is included as a formal requirement and outlines the aforementioned points without going into too much detail. The categorization of this study in relation to previous capital structure literature is done in the Introduction and omitted here. A more or less thorough discussion on the implications and shortcomings of this analysis can be found in Section IV.

The goal of this thesis is to identify the role of firm-, industry- and country-specific determinants on capital structure across corporate Europe. While institutional factors have been found to be fundamental in describing differences in leverage ratios between firms across developed and developing countries, they are also likely to directly and indirectly influence other relevant firm, industry and macroeconomic determinants. Thus, the relative economic importance of these factors is likely to be better identified in a setting where countries exhibit comparable institutional, legal and political characteristics. To address this, I draw on a dataset of the 1'940 largest, publicly traded, nonfinancial companies from 31 European countries between 2007 and 2015. While this allows me to disentangle the effects of firm, industry and macroeconomic determinants on leverage from cross-country institutional differences, it also allows me to provide a more complete picture of leverage characteristics for corporate Europe than any previous study.

The primary sample of analysis consists of all listed, nonfinancial companies in Europe in the Bureau van Dijk's Orbis database between 2007 and 2015. All companies are required to have at least USD 10 million in total book assets for each year of the sample period. In addition, only companies that stay listed for the entire sample period with nonmissing firm-year data for key variables are kept. By construction, the sample does not include companies that went public after 2007, became bankrupt or exited the sample due to other reasons. The chosen time period of 2007 to 2015 is due to the fact that no previous financial data was available at Bureau van Dijk's Orbis database for publicly traded, nonfinancial companies in Europe. Furthermore, the sample is extended by several macroeconomic measures and the statutory corporate tax rate.

The empirical model of capital structure applied here begins with a standard OLS regression. I include different firm, industry and macroeconomic measures while sequentially controlling for different fixed effects. Heteroskedastic robust standard errors clustered at the country-industry interaction level are used. I begin by decomposing the effects on leverage and measure the relative importance of different factors in explaining capital structure variation. In doing so, one prominent feature that stands out is that conventional, time-varying firm characteristics explain as much leverage variation as country and industry fixed effects combined. The addition of time-varying country specific determinants (macroeconomic measures and the corporate tax rate) is largely unable

to add any explanatory power to the model. Overall, and somewhat unsurprising given the short panel, 83 percent (80 percent) of book (market) leverage variation is explained by firm fixed effects.

I then continue by estimating the coefficients of the leverage determinants throughout different model specifications that control for year and country fixed effects as well as the country-year interaction. These results are then compared to the results of model extensions that control for firm fixed effects and a first-order autoregressive (AR(1)) disturbance. I find that the only robust and significant determinants on both book and market leverage are firm size, profitability, cash and short-term investments as well as median industry leverage. Market-to-book, tangibility and intangibility are largely insignificant, with the market-to-book ratio being only significant in the market leverage context. Although the corporate tax rate is found to be significant and has a positive association with leverage, as predicted by the traditional tradeoff theory, the effect is negligibly small compared to the effects of significant firm and industry measures. Furthermore, and as indirectly indicated by the results of the variance decomposition, the macroeconomic variables are largely insignificant throughout all model specifications. However, one should not overstate these findings, as large parts of macroeconomic effects are likely to influence firm and industry specific measures, which then relate to changes in financing decisions and capital structure. Thus, macroeconomic conditions are likely to influence leverage indirectly. The applied models in this study are however unable to account for these relations, as they are not designed to capture any indirect effects.

The importance of macroeconomic conditions is indicated by the plotted changes in book equity, book debt and market equity between 2007 and 2015. The effects of the financial crisis of 2008 and subsequent European debt crisis are clearly observable throughout corporate Europe and most severe for Southern European firms. Yet, this evidence is merely suggestive as I do not provide a more formal analysis.

Overall, I find that corporate European capital structure differs more between industries than between countries. While firm fixed effects explain the vast majority of leverage variation, a model of conventional time-varying firm characteristics alone explains as much leverage variation as a model combining country and industry fixed effects. These results suggest that for the average publicly traded, nonfinancial company in Europe, capital structure choice is primarily determined by firm and industry characteristics and is largely independent of the country of incorporation.