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Target leverage and speed of adjustment along the life cycle of European listed firms



Paula Castro^{a,b}, María Teresa Tascón Fernández^{a,*}, Borja Amor-Tapia^a,
Alberto de Miguel^b

^a Universidad de León, Departamento de Dirección y Economía de la Empresa, Facultad de Ciencias Económicas y Empresariales, Campus de Vegazana s/n, 24071 León, Spain

^b Universidad de Salamanca, Departamento de Administración y Economía de la Empresa, Facultad de Economía y Empresa, Salamanca, Spain

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Abstract This paper analyzes differences in target leverage and speed of adjustment across three life cycle stages of European listed firms: introduction, growth and maturity. We determine that profitability and tangibility are the most stable determinants, whereas growth opportunities and size exhibit changing effects across stages. The speed of adjustment does not increase as the firms evolve, as firms in introduction are able to adjust the fastest. Firms changing stage adjust leverage at a lower speed, and their target is more affected by profitability, primarily when the change is from growth to maturity. Finally, we confirm the existence of long-term debt targets, by providing evidence that the next-year target is a relevant factor to explain current debt when firms change from one stage to another.

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Introduction

Since the seminal work of Fischer et al. (1989), which proposed a model of dynamic capital structure choice considering the adjustment costs, target leverage has become an important concept for research on capital structure. In addition to the identification of the determinants of the

target leverage, the model computes the speed of adjustment to the target. Depending on the cost of transactions relative to the changes toward the new capital structure, the speed of adjustment varies across companies and over time (Hovakimian et al., 2001). Recent papers have studied the target leverage as a function of firm-level (Byoun, 2008; Chang and Dasgupta, 2009; Hovakimian and Li, 2011; Aybar-Arias et al., 2012; Faulkender et al., 2012) or country-level variables (Cook and Tang, 2010; Rubio and Sogorb, 2011), as well as in relation to firms' legal and institutional environment (González and González, 2008; Öztekin and Flannery,

* Corresponding author. Tel.: +34 987291737.

E-mail address: m.tascon@unileon.es (M.T. Tascón Fernández).

2012). Our work adds a new factor to this growing literature: the firm life cycle.

The empirical literature suggests the existence of changing patterns of capital structure across the life stages (La Rocca et al., 2011; Teixeira and Santos, 2014) and a time-varying target leverage ratio (Myers, 1984; Elsas and Florysiak, 2011) in response to changing circumstances and conditions. Several authors (Hackbarth et al., 2006; Drobetz et al., 2007) exhibit interesting relations between the speed of adjustment and well-known business cycle variables, indicating the impact of macroeconomic factors. However, there is no empirical evidence about the capital structure adjustment along the life cycle of the firm.

After using a classification model partially based on Dickinson (2011) that allows us to consider the comprehensive behavior of the firm to distinguish between firms in introduction, growth or maturity, we investigate a panel data of quoted firms from fourteen European countries to analyze their target determinants and their speed of adjustment across the stages.

Our work makes several contributions. First, we demonstrate that the main factors of target leverage as well as the speed of adjustment vary along the stages of the life cycle. Our findings suggest that firms adjust to the target ratio faster during introduction than during growth or maturity. Second, we observe differential effects of some determinants and a lower speed of adjustment in firms that have changed stage. We attribute this result to the increase of asymmetric information resulting in an intensification of transaction costs. Finally, we provide evidence that next-stage target leverage induces the level of current leverage, consistent with firms involved in the process of leverage adjustment previously (in advance) to carry out their planned investments.

The rest of the paper is organized as follows. The second section discusses the concepts of target leverage, adjustment speed, life cycle, and the relation between them to derive the hypotheses tested. The following section describes the research design including the measure of life cycle, the dynamic models of capital structure, the factors of target leverage, and the methodology used. The fourth section presents the sample and the descriptive statistics. The fifth section discusses empirical results and robustness checks. Finally, the sixth section presents the conclusions.

Theoretical background and hypotheses

The optimal capital structure has been related to the trade-off theory (TOT), as it poses that a firm's target leverage is driven by competing forces that originate the benefits and costs of debt, mainly the agency cost of financial distress and the tax-deductibility of debt finance (Myers, 1977). Under this dominant explanation, adjustment costs generate lags between the actual debt ratio and the optimal level by slowing down the speed at which firms adjust deviations (Myers, 1984; Titman and Tsyplakov, 2007). For example, if there are fixed transactions costs for issuing or retiring debt, a firm only rebalances when its debt ratio crosses an upper or lower hurdle (Fischer et al., 1989). Consistent with the trade-off reasoning, the following factors have been found crucial to determine the speed of adjustment (Elsas and

Florysiak, 2011): high opportunity costs of deviating from a target, for example, in firms with high financing deficits or in small firms; and high default risk.

However, for Shyam-Sunder and Myers (1999), the existence of a target debt ratio does not invalidate the pecking order theory (POT). Flannery and Rangan (2006) find that although more than half of the observed changes in debt ratios are from targeting behavior, pecking order considerations account for part of them (less than 10%). Under the POT, managers do not attempt to maintain a particular target; instead, the leverage ratio is defined as the gap between operating cash flows and investment requirements over time (Barclay and Smith, 1999). In this line, Byoun's (2008) results suggest that many adjustments occur when firms have above-target debt with a financial surplus or when they have below-target debt with a financial deficit. Hovakimian and Li (2009) find asymmetric adjustment costs depending on whether the firm is above or below its target leverage. They find particularly low incremental costs when the firm pays off the excess debt with internal funds. Consistent with the pecking order reasoning, some factors appear as crucial to determine the speed of adjustment: the level of information asymmetry between insiders and outsiders (Öztekin and Flannery, 2012); a variable related to debt capacity, size (Drobetz et al., 2007; Aybar-Arias et al., 2012); other variables indicating current or future additional investments, such as growth (Drobetz and Wanzenried, 2006; Drobetz et al., 2007) or growth opportunities (Aybar-Arias et al., 2012); and cash flow (Faulkender et al., 2012).

We argue that the TOT and the POT change their prevalence along the introduction, growth, and maturity stages of the firm life cycle, giving rise to changing patterns of both debt targets and adjustment speeds. Costs and benefits of adjusting debt, adduced by the TOT, such as bankruptcy costs and tax shields, depend on firm-specific factors that evolve along life cycles as the firms do. Concerning the POT, factors behind the firm financing needs, ability to produce cash flows, financing alternatives, debt capacity, and information asymmetries evolve along the life cycle as well.

Target leverage and life cycle

Considering the trade-off reasoning, the costs and benefits of debt financing are expected to change over the life cycle, thus allowing or forcing firms to modify their financing strategies. As firms grow and develop, they are usually more profitable and have more tangible assets that can act as collateral (Titman and Wessels, 1988), whereas their size allows them to be more diversified (González and González, 2008), and these three factors contribute to a reduction in bankruptcy costs. As for growth opportunities, the literature attributes this factor an increase of bankruptcy costs, that would reduce leverage (Frank and Goyal, 2009), however, some authors find that firms with more growth opportunities have relative cost advantages in external growth funding (Drobetz et al., 2007; Elsas and Florysiak, 2011). During maturity, the trust of shareholders and the market is greater, easing the transaction of these firms and decreasing their costs with regard to the growth stage. As for the benefits of debt, the possibility of using tax shields effectively varies depending on net income or

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