



Capital structure, product market competition and firm performance: Evidence from South Africa

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ABSTRACT

This paper investigates the relationship between capital structure and firm performance, paying particular attention to the degree of industry competition. The paper applies a novel measure of competition, the Boone indicator, to the leverage–performance relationship. Using panel data consisting of 257 South African firms over the period 1998–2009, this paper examines the effect of capital structure on firm performance and investigates the extent to which the relationship depends on the level of product market competition. The results suggest that financial leverage has a positive and significant effect on firm performance. It is also found that product market competition enhances the performance effect of leverage. The results are robust to alternative measures of competition and leverage.

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1. Introduction

Despite several decades of research, there is no generally accepted conclusion about the relationship between capital structure and firm performance. Following the seminal papers of Modigliani and Miller (1958, 1963) suggesting that, but for the tax-advantage of debt, capital structure is irrelevant to firm performance, the relationship between financial leverage and firm performance has attracted much debate and mixed empirical findings. The trade-off between agency costs of debt and equity (Jensen & Meckling, 1976); the limited liability effect of debt (Brander & Lewis, 1986); and the disciplining effect of debt (Grossman & Hart, 1983; Jensen, 1986) all suggest a positive effect of leverage on performance. However, possible underinvestment problems associated with debt (Myers, 1977) and stakeholder reactions to leverage (Maksimovic & Titman, 1991; Titman, 1984) suggest negative effects. Extensions of these theories (Bolton & Scharfstein, 1990; Chevalier & Scharfstein, 1996; Dasgupta & Titman, 1998) suggest that leverage opens up opportunities for rivalry predation in concentrated product markets, thus conditioning the

performance effect of leverage on the degree of competition in the product market. The existing evidence of these interaction effects of leverage and competition is based on U.S. firms (Campello, 2003, 2006; Chevalier, 1995a, 1995b; Kovenock & Phillips, 1997; Opler & Titman, 1994). The South African experience offers an opportunity to gain new insight. Distinct from the U.S., South Africa features a highly concentrated and pyramidal ownership structure of firms (Barr, Gerson, & Kantor, 1995; Kantor, 1998), overly concentrated product markets (Fedderke, Kularatne, & Mariotti, 2007), and a less robust regulatory and legal environment (Roberts, 2004, 2008). These attributes suggest distinctively severe agency costs of equity and product market predation.

Using panel data consisting of 257 South African firms over the period 1998 to 2009, this study seeks to address three questions: (1) Does knowledge about product market competition improve our understanding of leverage–performance relationship in developing countries? (2) To what extent does this relationship hold or vary across alternative measures of competition? (3) To what extent do the effects of leverage on performance and its interaction with competition depend on rival firms' leverage levels?

The findings of this paper show a significant positive effect of leverage on firm performance. This effect is non-linear but remains significantly positive over the relevant range of leverage. It is also found that the interaction effect of leverage and competition on

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firm performance is positive. The findings imply that competition enhances the benefits of leverage. Using relative-to-rival firms' leverage yields consistent results.

These findings are broadly consistent with Opler and Titman (1994) and Kovenock and Phillips (1997) in respect of the adverse interaction effect of leverage and product market concentration (uncompetitiveness). However, these authors find statistically insignificant direct negative effects of leverage on firm performance, contrary to the direct positive effects reported in this paper. The observed difference in the direct effect of leverage could be attributed to the nature and severity of agency costs of equity faced by South African firms.

This paper contributes to the existing literature in the following ways: first, by focusing on South African firms, the paper provides firsthand developing country evidence of the interaction effect of leverage and competition on performance. Given the unique characteristics of South African product markets, this paper provides evidence from a potentially highly predatory environment with severe agency costs of equity. To the author's knowledge, this issue has not been previously addressed. Second, in addition to the Herfindahl–Hirschman Index, this study adopts a new measure of competition, the Boone indicator (Boone, Griffith, & Harrison, 2005; Boone, van Ours, & van der Wiel, 2007; Boone, 2008), which estimates the extent to which firms suffer lost earnings (or market share) as a result of being inefficient. The Boone indicator helps address potential setbacks in concentration indexes used in all previous studies (Campello, 2003, 2006; Chevalier, 1995a, 1995b; Kovenock & Phillips, 1997; Opler & Titman, 1994). For instance, a high level of product market concentration could simply be the outcome of pronounced efficiency (Demsetz, 1973) or the exit of inefficient firms from the market as competition intensifies, in which case the profits of the more efficient firms increase (Boone et al., 2005, 2007, Boone, 2008).

The remainder of this paper is organised as follows. Section 2 provides brief motivation for the study of South African firms. Section 3 presents a review of the relevant theoretical literature and empirical evidence; whilst Section 4 outlines the research hypothesis. Section 5 describes the data and variables used for the study. Section 6 discusses the empirical estimation methods. Section 7 presents the empirical results. The summary and conclusion of the study are presented in Section 8.

2. South African corporate context

Concentrated and pyramidal ownership structures, as well as overly concentrated product markets, are some of the key features that distinguish South African firms from their U.S. counterparts. A considerably large proportion of Johannesburg Stock Exchange (JSE) listings are effectively controlled by groups with a pyramidal ownership structure.¹ Hence, South African firms are distinct from U.S. firms by way of the agency problems they face. Conflict of interest is largely between minority and majority shareholders, rather than between managers and shareholder or creditors and shareholders as in the U.S. and U.K. (Barr et al., 1995; Kantor, 1998). In this agency relationship, the minority shareholders are the agents; the majority shareholders, the principals. As noted in Morck, Stangeland and Yeung (1998), such a system of ownership leads to an extreme level of expropriation of the minority shareholders since significant control rights can be exercised with little

equity stake. This ownership structure, largely sustained by the tax advantage of equity investment, holding companies, cross-holding and voting trusts, has seen little change over time.² The agency problems associated with such a system of ownership may possibly be mitigated by the disciplinary measures embodied in debt contracts. Although debt financing comes with its own potential agency problems, with such a system of ownership the disciplinary measures embodied in debt contracts should logically be more desirable.

Although high levels of concentrated ownership, which have emerged from the pyramidal ownership structure (Ntim, Opong, & Danbolt, 2012), may be associated with lower agency costs (Fama & Jensen, 1983; Villalonga & Amit, 2006), the robustness of the regulatory environment plays a major role (Anderson & Reeb, 2003). Compared to the U.S., regulatory quality is less robust in South Africa (Roberts, 2004, 2008), suggesting that the agency benefits of a concentrated ownership, relative to the associated agency costs, may be less. It is reasonable to suggest that the legal structures in South Africa may offer relatively less protection to investors, thus making the agency problems worse.

Another distinctive feature of South African firms is the degree of concentration in their product markets. Traditionally, South African firms are faced with a very high degree of concentration in market shares, which does not encourage competition. Using both firm level and aggregate industry data, Aghion, Braun, and Fedderke (2008) find that competition is relatively low in South Africa.³ Consistent evidence is provided by Fedderke et al. (2007), who document mark-ups twice as high among South African manufacturing firms as among U.S. manufacturing firms. These findings, coupled with relatively suboptimal regulation, suggest a higher likelihood of rivalry predation in South Africa than in the U.S.

Over the past few years, stringent efforts have been made to improve product market competition. In 1999, South Africa's Competition Board was replaced with a new Competition Commission following the implementation of the Competition Act of 1998. These steps are meant to effectively address anticompetitive practices and to promote regulatory independence (Roberts, 2008). Unsurprisingly, Fedderke and Simbanegavi (2008) note that South African manufacturing industries are becoming less concentrated.

The uniqueness of the agency problems faced by South African firms makes it worthwhile to conduct further studies regarding the relationship between leverage, competition and performance. Since the existing evidence is in respect of U.S. firms, the findings may provide a strong indication of the extent to which the disciplinary effect of leverage can mitigate the agency costs of equity in a potentially highly predatory environment.

3. Literature review

3.1. Leverage and firm performance

Following the seminal paper of Modigliani and Miller (1958), the study of capital structure has attracted much attention with differing theoretical predictions. Modigliani and Miller (1958) predict that, in a perfect capital market, capital structure of a firm is irrelevant to its value (hence, performance). Capital structure, however, matters for firms for several reasons, which arise mainly from the tax-deductibility of debt interest and agency theory.

¹ For instance, almost 80% of JSE listings was controlled by groups in 1995 and this group structure has seen little change over time (Barr et al., 1995; Kantor, 1998). In fact, as at the end of 2002, 56.2% of the market capitalisation of JSE listings was controlled by four companies (see Rossouw, van der Watt, & Rossouw, 2002).

² For full a review of this control process, see Kantor (1998).

³ Their proxy for competition is price cost margin measured alternatively as the ratio of price to production cost; the ratio of value added to sales; and the ratio of operating income to sales.

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