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Capital structure and abnormal returns

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ABSTRACT

This paper examines the relation between capital structure and abnormal returns for UK equities. A firm's industry matters when examining this relation. Abnormal returns decline in firm gearing, however, abnormal returns increase as the average industry gearing in a risk class increases. Separating the average level of external financing in an industry from that in a particular firm is important. This study focuses on industry characteristics. Firms in nonregulated and competitive industries with low concentration ratios exhibit this behavior. In contrast, in the utilities risk class, abnormal returns increase in firm gearing which is similar to the findings of Modigliani and Miller (1958) which was unique to the utilities sector.

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1. Introduction

Theoretical finance regards debt as one of the principle sources of financial risk. However, previous studies find mixed results on how gearing influences stock returns. Modigliani and Miller (1958, henceforth MM) explain in Proposition 1that the rate of return on real assets, not the mix of securities that are issued affect the value of a firm. Proposition 2 of MM states that though the value of a levered firm remains constant, the cost of equity increases due to the risk of debt. However, empirical studies, such as those by Hamada (1972), Masulis (1983), Bhandari (1988), Dimitrov and Jain (2008) and Korteweg (2010) provide mixed evidence. Strong and Xu (1997) find market gearing to be positively related to returns and book gearing to be negatively related to stock returns. Ho, Strange and Piesse (2008) find that market gearing and not book gearing exhibit conditional pricing relation with returns. Gomes and Schmid (2010) find market gearing to be positively related to returns but find no effect on stock returns when book gearing is used. Fama and French (1992) find that although market gearing is positively associated with returns, the relation becomes negative when book gearing is used. George and Hwang (2010) argue that the negative relation between gearing and returns is due to the sensitivity of high levered firms to financial distress risk. Garlappi and Yan (in press) use a dynamic model to examine the link between distress risk and asset returns by introducing gearing in a simple equity valuation model. They find that gearing helps in explaining stock returns especially for firms with high default probabilities. None of these studies looks specifically into industry differences in this relation.

This study contributes to the literature on gearing and its effect on stock returns by taking into account the industry characteristics such as industry concentration, regulation and the sector the firms belong to. Previous work investigates the

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tax implications of debt financing on cost of equity capital (Adami, Gough, Muradoglu, & Sivaprasad, 2010; Dhaliwal, Heitzman, & Li, 2006; Modigliani & Miller, 1963; Muradoglu & Sivaprasad, 2009). This study does not address the tax implications[1] as the main objective of the paper is to undertake a direct test of Proposition 2 of MM by separating the effect of industry gearing from firm gearing and the effect of industry compositions. This paper also offers evidence of MM's second proposition using a dataset of a major international stock market, i.e. UK. There is little published research work in the UK testing MM's second proposition (Bakke, Kvernes, & Muradoglu, 2005; Muradoglu & Sivaprasad, in press; Strong & Xu, 1997).

Gearing is a ratio that measures the proportion of debt or borrowed funds to shareholders' funds in funding firms' activities. This study uses the ratio of total debt to total financing from firm balance sheets. Firms in various industries have typically different asset structures and the composition of these asset structures determine the financing structures of the firms. Previous studies have used book values (for example, Muradoglu & Sivaprasad, in press) and market values (for example, Gomes & Schmid, 2010) to measure gearing (Baturevich & Muradoglu, 2010; D'Mello & Sivaprasad, 2010). We use book values of gearing following Schwartz (1959) who argues that it is the relevant measure of cash flows to the firm over which management has discretion in making decisions regarding capital structure. Using book value of gearing is also consistent with other authors (Rajan & Zingales, 1995).

To measure firm performance previous authors have used different measurements. Hamada (1972) uses accounting profits which show the past performance of the firm. Accounting profits are not forward looking compared to stock returns which integrate expectations of investors about the future value of the firms. Bhandari (1988) uses inflation adjusted returns which constitutes an improvement over the accounting profit measure used by Hamada (1972) but still the returns are not adjusted for stock market movements in this measurement. Studies by Dimitrov and Jain (2008) and Korteweg (2010) use risk adjusted returns that are adjusted for all market movements. Likewise, we argue that by observing firms' gearing decisions, the market learns about the performance of the firm, potentially beyond what can be learned from earnings and other similar accounting variables. Our first hypothesis is that the market impounds the information about firm gearing in stock prices. We also take the view that an investor measures firm performance by removing the effect of general stock market movements over a holding period and thus use cumulative abnormal returns (Campbell, Lo, & MacKinley, 1997). We report that abnormal returns decline in firm gearing in the cross section of all firms.

This analysis integrates MM (1958) findings into an investment approach by estimating abnormal returns on gearing portfolios in the time-series for various firms categorized by industry in order to examine the impact of industry on cumulative abnormal returns. Bradley, Jarrell, and Kim (1984), Barclay, Smith, and Watts (1995), and Campello (2003) document that industry characteristics are key for explaining gearing. Arend (2009) states that each firm is defined by its context, that is, its industry. Hence, industry characteristics are important in explaining the relation between gearing and abnormal returns. Our second hypothesis is that the market incorporates information about industry gearing in stock prices. We provide evidence that abnormal returns increase in industry gearing.

Conducting the analysis in the cross section of all firms may be misleading due to the different capital structures in various industries. Our third hypothesis is that the relation between firm gearing and returns can differ from one industry to another. We report that abnormal returns decrease in firm gearing except in the utilities sector, where abnormal returns increase in firm gearing. This is due to the nature of the industry. The true nature of gearing return relation can be disclosed only by testing this relation within industries (Arditti, 1967). In concentrated industries such as utilities, barriers to entry are high and, thus, firms are insulated from distress risk (Hou & Robinson, 2006). In addition, in regulated industries, gearing is high and is less related to firm performance (Ovtchinnikov, 2010) when utilities deregulate, firms decrease gearing and profitability declines. Similarly, regulation insulates firms from distress risk. Our fourth hypothesis is that the degree of regulation and concentration effects the relation between gearing and returns. Our results show that the negative relation between abnormal returns and gearing is observed in firms positioned in non-regulated industries with low concentration.

The risk class of a firm as defined by the industry, or the structure of its product market, is important. Firms in regulated and concentrated industries are insulated from demand shocks, thus, the risk of poor operating decisions leading to distress is much lower (Hou & Robinson, 2006). Innovation, another source of risk through the product market, is much more likely to occur in competitive industries (Schumpeter, 1912). For firms in regulated and concentrated industries, the main determinant of risk is management's financing decisions. Thus, the relation between gearing and abnormal returns in the utilities sector is positive. Otherwise, one would expect the relation to be negative.

This study finds that abnormal returns decrease in firm gearing, except in the case of firms in the utilities sector, where abnormal returns increase in firm gearing. This study also undertakes test to examine the effect of industry gearing on abnormal returns and the results show that abnormal returns increase in industry gearing. Next, the effect of industry concentration and regulation on abnormal returns is examined as the structure of product markets and regulation may affect the risk of a firm's cash flows and hence a firm's rate of return. The results indicate that abnormal returns are higher for firms in regulated and concentrated industries. Finally, the analyses show that the relation between gearing and abnormal returns is negative only for firms in less concentrated, non-regulated industries. The study also takes in account several known risk factors in these estimations. The results are robust with regards to other risk factors.

MM (1958) represent equity returns by the average cost of capital in a one-year period and conduct estimations on a cross-section of a particular risk class. In this analysis, equity returns represent cumulative abnormal returns for a holding

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[1] The general conclusions presented here do not change even when taxes are included in the analysis (Muradoglu & Sivaprasad, 2009).

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