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Human capital costs, firm leverage, and unemployment rates

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ABSTRACT

Because bankruptcy is costly for employees, theoretical studies argue that firms with higher leverage have to pay their employees higher wages. In this paper we empirically test this prediction. We find that firm leverage is positively related to the wages of employees, both in the United States and in the Netherlands. In the United States, the positive relation between wages and leverage is strongest in the 21st century, which is a period that also shows a positive relation between wages and unemployment rates. We conclude that the human capital costs of bankruptcy are an important disadvantage of debt.

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1. Introduction

Bankruptcy is costly for employees as it results in losses of income and firm-specific human capital. Titman (1984) points out that because of these costs, the incentives of employees to make firm-specific investments depend on the firm's financial condition. By maintaining relatively low debt ratios, firms can reduce stakeholders' concerns about potential liquidation risk. With a related argument, Maksimovic and Titman (1991) argue that employees are reluctant to do business with a highly levered firm because financial difficulties can affect the firm's incentive to honor its implicit contracts, which leads employees to require higher wages when leverage is high. Berk et al. (2010) show with a theoretical model that in a competitive labor market, firms with high leverage will have to pay

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higher wages, or they will not be able to hire an employee.¹ Our paper empirically tests the prediction that firms with higher leverage have to pay their employees higher wages.

Our main sample consists of US firms during the 1983–2010 period. The main finding of this paper is that firm leverage is positively related to the wages paid to the average employee, in line with the predictions of Titman (1984), Maksimovic and Titman (1991), and Berk et al. (2010). The human capital costs of bankruptcy thus provide a disincentive for firms to use a high debt ratio. We find that the positive relation between wages and leverage is strongest after 2001. The positive relation between leverage and wages also has economic significance: a one standard deviation increase in market leverage increases the average employee wage by about 3%. Our results on the relation between wages and firm leverage are robust to using book leverage rather than market leverage. Our results are also robust to controlling for a selection bias, which is an important robustness test as the majority of firms in Compustat do not provide information on their labor expenses. We conclude that the human cost of bankruptcy can (partly) explain Graham's (2000) observation that firms are underlevered based on the tradeoff between the tax shield of debt and bankruptcy costs that are not related to human capital.

We also examine the relation between firm leverage and employee wages by exploiting a database of non-public (i.e. unlisted) firms in the Netherlands. This test provides insight into the generalizability of our results, as the Netherlands is a country with for example a more comprehensive social security system, which results in on average lower costs of bankruptcy for employees in the Netherlands compared to those in the US (see for example van Dijk et al., 1998). We find that also for Dutch non-public firms there is a significantly positive relation between firm leverage and employee wages.

The idea in labor economics of providing compensation for unemployment risk goes back to at least Smith (1977), who argues that “the wages of labor in different occupations vary with the constancy or inconstancy of employment.” Abowd and Ashenfelter (1981) and Topel (1984) are early studies showing that higher wages compensate workers for accepting unemployment risk. Besides the relation between wages and leverage, we therefore also examine the relation between wages and unemployment rates. Although the aforementioned studies predict a positive relation between wages and unemployment rates, an argument could also be made for a potential negative relation between wages and unemployment rates. Because unemployment rates affect how easy it is for employed workers to find alternative jobs (see for example Blanchard, 1991), high unemployment relates to a reduction in the outside options of employed workers and a potential decrease in wages.

We further examine the relation between wages and the interaction term of unemployment rates and firm leverage, which can provide further evidence on the importance of workers' outside options. If outside options are important, then the predicted positive relation between wages and leverage will be stronger when employees have more outside options, i.e. when unemployment rates are low.

When examining unemployment rates over our full sample period, we find that in the US, higher unemployment rates in an industry are positively related to wages. However, the relation between unemployment rates and wages varies over time, and we find a negative relation during the 1993–2001 period, when unemployment rates were relatively low. Overall, though, our US evidence is more in line with the argument that workers demand higher compensation for higher unemployment risk than with the argument that wages are reduced when workers' outside options decline. On the other hand, in the Netherlands, where unemployment benefits are higher, we do not find a strong direct relation between unemployment rates and wages, but find that workers' outside options have an impact on their compensation for higher leverage.

Our paper contributes to studies that relate firms' leverage to the bankruptcy costs of the stakeholders of the firm. Titman and Wessels (1988) and Kale and Shahrur (2007) respectively show that product uniqueness and relation-specific investments by suppliers and customers are negatively related to firms' debt ratios. Both of these studies are in line with Titman's (1984) argument that customers, workers, and suppliers of firms that produce unique or specialized products suffer relatively high costs in the event that these firms liquidate. Hanka (1998) shows that the relation between wages and leverage varies over time, as he finds a positive relation in the 1950s, an insignificant

¹ Other papers relating labor markets to capital structure include Bronars and Deere (1991), Dasgupta and Sengupta (1993), Perotti and Spier (1993), Jaggia and Thakor (1994), Berkovitch et al. (2000), Dachraoui and Dionne (2001), Michelacci and Quadriani (2009), Matsa (2010), Simintzi et al. (2010), and Chen et al. (2011).

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