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Labor unions, bargaining power and corporate bond yield spreads: Structural credit model perspectives

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ABSTRACT

This study investigates labor union effects on bond yield spreads from perspectives of structural credit models by employing American bond observations from 2001 to 2007. This research finds that union strength significantly and positively relates to bond yield spreads (this effect is roughly equal to that of issuer rating for one standard deviation change when controlling for well-known variables). The empirical results also show that the positive effects become weaker when management has higher bargaining power. Additionally, union strength volatility significantly and negatively relates to bond yield spreads and capital structure (leverage). The above results are robust when controlling for credit ratings, collinearity concerns, industry effect and tax effect.

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1. Introduction

Among structural credit model literature, Merton's (1974) model is the forerunner and has many extensions. Merton's (1974) model assumes that firm value follows a diffusion process and default occurs when firm value falls below debt face value (i.e., the default threshold) at the debt maturity date. The model estimates a firm's asset value from its equity market value using the option-based theory, so that the determinants of an option value, such as asset volatility, firm leverage and others, influence corporate bond values.¹ The extended structural credit models add other risk variables into Merton's (1974) framework, such as interest rate (Longstaff and Schwartz, 1995), optimal capital structure (Leland and Toft, 1996), time-varying default threshold (Collin-Dufresne and Goldstein, 2001), incomplete accounting information (Duffie

and Lando, 2001), and default event risk (Driessen, 2005).² It reveals that both the systematic risk and a firm's idiosyncratic risk affect corporate credit risk. Recent studies document that a firm's idiosyncratic risk also plays a significant role in explaining yield spreads (Campbell and Taksler, 2003) and results from a firm's characteristics or real activities.³ However, few existing studies explore the relations between a firm's idiosyncratic risk and its real activities. The purpose of this study therefore is to fill part of the important gap by investigating the idiosyncratic risk effects resulting from labor unions on corporate credit risk.

Most labor union related studies emphasize on exploring how unions affect the wealth of equity holders rather than that of debt holders and are from the perspectives of profitability and strikes (Lewis, 1986; Becker and Olson, 1986). According to Merton's

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¹ Because equivalently a firm's equity holders hold a call option with the firm asset value as the underlying asset and debt balance as the exercise price, Merton (1974) shows that a firm's asset market value can be obtained by converting from its equity market value using the option theory.

² Some of them more realistically model the default by using the first-passage framework, such as Collin-Dufresne and Goldstein (2001) and Leland and Toft (1996).

³ Several extant studies explore the effects of firm or bond characteristics on bond yield spreads other than equity volatility and external liquidity risk, including information asymmetry and information uncertainty (Liao et al., 2009; Lu et al., 2010; Güntay and Hackbarth, 2010), tax effect (Liu et al., 2006; Qi et al., 2010), internal liquidity (Chen et al., 2011) and so on. In addition, Tang and Yan (2010) also show that market conditions have significant impacts on bond yield spreads.

(1974) framework, changes in a firm's profitability and firm value variations caused by unions may also affect the value of debt holders' claims, and therefore also the firm's credit risk. However, few existing studies consider the effects of unions on debt holders' wealth and incorporate them into corporate credit model settings, or investigate their effects on bond yield spreads from perspectives of structural credit models.⁴ To address this issue, the current study employs American bond market data to examine the effects of unions on bond yield spreads from structural credit model perspectives. This investigation also contributes to the line of literature of exploring the determinants of corporate bond yield spreads, which is an important topic in credit risk management.

This study explores the potential effects of unions on a firm's credit risk from four perspectives: asset returns, asset volatilities, default thresholds and a firm's cash flows. The first three are the major elements of Merton's (1974) structural credit risk framework (also called stock-based credit risk) while the last one is the key element of flow-based credit risk (Chen et al., 2011). Lewis (1986) states, from the viewpoint of asset returns, that unions are commonly linked to wage raises, which generates additional costs on employers so that strong unions have negative impacts on a firm's productivity and profitability (Clark, 1984; Vender and Gallaway, 2002). In addition, union work rules which aim to protect union members' jobs may slow down the production process. Card (1996) shows that union workers earn 17% more than non-union workers. Ruback and Zimmerman (1984) and Bronars and Deere (1994) find that union-organizing activities significantly lower a firm's market value (a proxy for a firm's future profitability) compared to its industry peer's. Higher wages demanded by union members lead to higher production costs and lower earnings. Addison and Hirsch (1989) also document a negative impact of unions on a firm's profitability. Becker and Olson (1986) show that firms lose sales and profits during strikes, which cause a decrease in shareholder wealth.⁵ As a result, the wage and strike effects suggest that firms facing stronger unions would have lower operating cash flows and asset returns.⁶ Therefore, from the asset returns perspective, unions increase a firm's credit risk and bond yield spreads.

The effects of unions on asset volatility are twofold: generating uncertainty in operating performance and reducing R&D and risky investments. Becker and Olson (1986) show that firms with unions might face the threat of strike if their wage proposals in the collective bargaining cannot meet unions' demands. As a result, the threat of strike casts uncertainty on firm operating performance and increases volatility of a firm's asset value distribution.⁷ On the other hand, beginning with Connolly et al. (1986), many studies support that union firms have lower capital investments and R&D activities. Chen et al. (forthcoming-a) show that firms in unionized industries adopt a less risky investment policy and this action is beneficial for bondholders' wealth. The R&D intensity effects of a firm on bondholder returns are not definite in the literature. Hence, from the asset volatility perspective, the effects of unions on bondholders' wealth are indefinite.

⁴ The current research is the first study (to our best knowledge) to explore the relationships among labor union, bargaining power and corporate bond yield spreads from structural credit model perspectives.

⁵ Becker and Olson (1986) find that, during the period of 1962–1982, strikes involving more than 1000 workers on average lead to a 4.1% drop in a strike firm's stock price.

⁶ Researches in the fields of labor and finance try to estimate union impacts on shareholder's wealth. A recent study indicates that firm stock price on average drops 10% following a union election victory.

⁷ For example, NBC news reported that the International Association of Machinists (IAM), a union representing most of Boeing's machinists, demanded a 13% rise in wage when Boeing made record profits in 2008. Boeing turned down union's demand and was struck by IAM's workers in Seattle. The strike lasted 58 days and caused Boeing a loss over four billion dollars.

Existing studies discuss the effects of unions on default threshold from two angles: capital structure and additional priority claims to a firm's assets. Regarding capital structure, because a higher level of financial liquidity encourages unions to demand higher wages, unionized firms tend to have a higher debt level which reduces a firm's liquidity and mitigates union's wage demand. Bronars and Deere (1991) find a positive relationship between industry unionization rate and industry leverage ratio. Matsa (2010) obtains similar results. In addition, Chapter 7 (liquidation) of bankruptcy rules explicitly regulates that labor claims have a higher priority than secured and unsecured creditors' claims to bankruptcy liquidation proceeds.⁸ A firm with higher union strength has a higher average wage which results in higher obligatory payments prior to bond holders' claims and decreases bond holders' recovery rate (or almost equivalent in effects to an increase in the level of default threshold). The above two viewpoints suggest a positive relation between union strength and a firm's credit risk (or bond yield spreads).

Hilary (2006) finds that management has an incentive to maintain information asymmetry over outsiders when facing organized labor.⁹ Information asymmetry contributes to an imprecise knowledge of firm value for outside investors. Firms also have an incentive to engage in earnings management when facing collective bargaining. DeAngelo and DeAngelo (1991) find that US major steel companies suppress earnings before contract negotiation to extract union concessions in 1980s. Since debt holders face greater uncertainty on firm's asset value distribution (including both asset returns and volatility) under a higher degree of information asymmetry or earnings management, a unionized firm's credit risk will be higher (Duffie and Lando, 2001; Yu, 2005; Lu et al., 2010).

Summarizing the union effects from the above three perspectives of structural credit models, this study preliminarily proposes that unions decrease a firm's asset returns and increase its default threshold. Union effects on a firm's asset volatility are indefinite. Within Merton's (1974) structural credit model framework, a firm's asset returns negatively relate to corporate credit risk while the firm's asset volatility and default threshold positively relate to it. Therefore, this study hypothesizes that union strength positively relates to credit risks from the perspectives of asset returns and default threshold, while the relation is uncertain from asset volatility perspective.

Besides the above three perspectives of structural (or also called stock-based) credit models, this study also considers the labor union effects from the perspective of flow-based credit risk (the risk of insufficient liquidity for repaying obligations due). Klasa et al. (2009) suggest that firms hold less cash to shelter corporate income and gain bargaining advantages against unions. They also provide empirical evidences of a negative relation between corporate cash holdings and industrial unionization rate. Holding less cash decreases a firm's internal liquidity and leads to an increase in the firm's credit risk. As a result, unions also increase a firm's credit risk from the perspective of flow-based credit risk. Therefore, both perspectives of structural (or stock-based) and flow-based credit risks suggest that unions increase a firm's credit risk and its bond yield spreads except for the asset volatility viewpoint. Accordingly, this study hypothesizes that the

⁸ Liquidation proceeds are distributed in order of priority: (1) administration expenses associated with liquidation; (2) unsecured claims arising after filing an involuntary bankruptcy petition; (3) wages earned within 90 days before the filing date, not to exceed \$2000 per claimant; (4) contributions to employee benefit plans arising with 180 days before the filing date; (5) consumer claims, not exceeding \$900; (6) tax claims; (7) secured and unsecured creditors' claims; (8) preferred stockholders' claims; (9) common stockholders' claims.

⁹ Hilary (2006) finds that firms facing strong unionization are associated with higher bid-ask spreads, higher probability of informed trading, lower trading volume and lower analyst coverage.

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