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Does employee welfare affect corporate debt maturity?

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Abstract

This study examines the effect of employee well-being on the corporate debt maturity structure of U.S. firms. It hypothesizes that a firm's degree of commitment to employee welfare affects its debt maturity structure. Using a sample of 19,347 firm-year observations over the period 1991–2014, we find evidence that firms with higher employee welfare scores prefer long-term debt over short-term debt. This relationship is more pronounced for firms operating in human-capital-intensive industries and firms with lower labor union-membership rate. Our findings are robust to endogeneity concerns and insensitive to the use of alternative regression methods, variable measurements, and sample compositions. This paper provides novel evidence on the role of employment policies and practices in explaining variations in debt maturity.

Keywords: Employee well-being; Employee welfare; Stakeholders; Debt maturity
JEL classification: G32, G34, M54

1. Introduction

Human capital has emerged as the key competitive asset for modern firms (Zingales, 2000). Human relations theories view employees as key assets, rather than disposable input, who can add substantial value to the firm (e.g., Maslow, 1943; McGregor, 1960). Management therefore commits considerable resources to attract, develop, and retain valuable employees. Employees respond to satisfying working conditions by increasing effort (e.g., Shapiro and Stiglitz, 1984; Akerlof and Yellen, 1986). The increased effort translates into higher productivity (e.g., Huselid, 1995; Ichniowski et al., 1997; Ichniowski and Shaw, 1999; Faleye and Trahan, 2011), performance (Huselid, 1995), firm value (Huselid, 1995; Faleye and Trahan, 2006), equity return (Filbeck and Preece, 2003; Kempf and Osthoff, 2007; Edmans, 2011), and innovation (Chen et al., 2016).

Firms undertake several actions to strengthen relationships with their key employees and to enhance the quality of their work conditions (e.g., Wood, 1991; Hillman and Keim, 2001). These actions take the form of explicit as well as implicit contracts. In this study, we focus on implicit contracts: employee welfare policies. These undertakings, being non-contractual in nature, have limited legal standing. Cornell and Shapiro (1987) argue that a firm seeking to honor its commitment toward its employees should pursue conservative financial policies. Consistent with this argument, empirical evidence shows that firms that are most committed to their employees' well-being undertake conservative dividend policies (Holder et al., 1998) and hold more cash (Ghaly et al., 2015). Moreover, the stakeholder view of capital structure predicts that firms committed to strong relationships with stakeholders are relatively less leveraged to better ensure that their claims can be honored (Titman, 1984; Cornell and Shapiro, 1987; Maksimovic and Titman, 1991; Zingales, 2000). The empirical studies of Verwijmeren and Derwall (2010) and Bae et al. (2011), among others, provide support to this prediction.

While there is evidence that employee welfare is negatively associated with the use of leverage, to the best of our knowledge there is no prior evidence that employee welfare affects the use of short-term debt versus long-term debt. This is surprising given that the choice of debt maturity structure is likely to affect the ability of the firm to meet its implicit claims. The aim of this study is to fill this gap in the literature by providing empirical evidence about the relationship between firms' involvement in employee welfare policies and corporate debt maturity structure. More specifically, we seek to answer the following question: Does employee welfare affect debt maturity structure of publicly-listed U.S. firms?

We expect firms that are committed to strong employee relationships to prefer long-term to short-term debt. The underlying reasoning is that a firm that relies heavily on short-term debt is likely to have strong incentives to cut costs related to employee benefits to increase its immediate cash flow needs for the payment of short-term debt. Thus, firms that place a higher value on their reputation for treating employees fairly should limit their use of short-term debt. These firms are expected to maintain a lower proportion of short-term debt than firms that do not implement employee-friendly policies. Second, employee well-being policies are conductive to sustainability, as firms nurture loyal relationships with their employees over time (Neubaum and Zahra, 2006). This enables firms to have a competitive edge and a stronger market position in the long run. Hence, one would expect that long-term debt investors might be attracted by firms with strong employee relations because of the expected improvement in the firm's financial outlook.

Using a sample of U.S. firms, we find strong evidence that firms with higher scores on employee welfare (EWI) tend to have more long-term borrowings. Additional analyses show that the positive effect of employee well-being on debt maturity is more pronounced for firms operating in human-intensive industries and firms where employees have lower membership rates in labor unions. Our results are robust to various sensitivity tests such as model specifications, alternative employee welfare index composition and different study periods. Furthermore, we address potential endogeneity concern of our variable of interest, EWI. A spurious correlation may exist between employee welfare and unobservable factors affecting debt maturity structure. Similarly, reverse causality can undermine our results. We address these endogeneity concerns by using a state-level exogenous measure of employee welfare, instrumental variables regression analysis, and matching techniques.

The current study contributes to several strands of literature. First, it adds a new dimension to an established literature on debt maturity (i.e., the impact of employee welfare). Earlier theories show that agency costs (Myers, 1977; Barnea et al., 1980), information asymmetry (Flannery, 1986), and liquidity risk (Diamond, 1991) affect the maturity structure of corporate debt. Building on these seminal papers, a growing body of empirical research finds that maturity choice varies depending on credit worthiness (Mitchell, 1993), growth opportunities (Johnson, 2003) and corporate governance mechanisms (e.g., Datta et al., 2005; Brockman et al., 2010; Ben-Nasr et al., 2015; Abdulla et al., 2015). In this paper, we provide novel empirical evidence that employee well-being affects corporate debt maturity structure.

Second, this paper builds on the employee welfare literature. Commitment to employee well-being is negatively associated with leverage (e.g., Maksimovic and Titman, 1991; Berk et al., 2010; Verwijmeren and Derwall, 2010; Bae et al., 2011) and positively associated with credit rating (Verwijmeren and Derwall, 2010) and firm performance (e.g., Edmans, 2011).[1] We add to this literature by investigating the link between employee well-being and debt maturity.

Finally, our paper contributes to a broader literature related to corporate social responsibility (CSR). The existing literature shows that firms' CSR engagements affect financial decisions (e.g., Barnea and Rubin, 2010). For a firm, higher CSR performance reduces the risk of being negatively perceived by outsiders and leads to cheaper financing sources. For instance, Dhaliwal et al. (2011), El Ghoul et al. (2011), and Scholtens and Kang (2013) provide empirical evidence that firms with better CSR scores benefit from a lower cost of equity capital. Our paper further explores this field by examining the relationship between one CSR dimension (i.e., employee relations) and debt maturity.

The remainder of the study proceeds as follows. Section 2 develops our hypotheses. Section 3 describes data and variables. Section 4 reports empirical results. Section 5 provides a battery of robustness tests. The last section provides our conclusion.

2. Literature and hypotheses

Our theoretical framework draws on stakeholder view of capital structure, which considers firms' financial policies are determined after considering the interests of various stakeholders. Titman (1984) points out that stakeholders, including employees, have high switching costs in the case of liquidation, especially for firms with unique products. To reduce their liquidation risk and to reassure their stakeholders, firms tend to adopt conservative policies. Consistently, Holder et al. (1998) empirically show that firms' commitment to their employees' well-being results in conservative dividend policies and Ghaly et al. (2015) find that employee welfare practices are positively related to a firm's cash holdings.

The stakeholder view of capital structure predicts that firms committed to strong relationships with stakeholders are relatively less leveraged to better ensure that their claims can be honored (Titman, 1984; Cornell and Shapiro, 1987; Maksimovic and Titman, 1991;

[1] There is also evidence that firms with satisfied employees have more entrenched managers (Cronqvist et al., 2009), and lower takeover threats (e.g., Macias and Pirinsky, 2015).

Zingales, 2000).[2] Empirically, Bae et al. (2011) show that firms with higher employee treatment indices maintain lower leverage ratios. Similarly, Verwijmeren and Derwall (2010) find that firms with stronger employee relations have lower leverage and better credit ratings than their peers.

We propose that an important decision that indicates a credible commitment to employees concerns is the choice between long versus short-term debt. First, firms that use more short-term debt face more frequent contract renegotiations. When firms roll over their debt, they risk refinancing at a significantly higher interest rate (Froot et al., 1993), or even fail to get refinancing.[3] In the event that lenders are unwilling to refinance, the borrower faces a liquidity risk. In such cases, firms are likely to reduce their investments including in employee welfare. Almeida et al. (2009), for instance, find that firms with debt coming due during 2007 cut investments more than did other firms. Firms facing high liquidity risk may even be forced to sell off assets at fire-sale prices to obtain funds to pay off debt that is coming due (Brunnermeier and Yogo, 2009). Whether the firm fails to obtain a refinancing or rolls over its debt at a higher interest rate, employee welfare programs are likely to be negatively affected. Employee welfare programs are non-contractual, implicit claims between the firm and its employees. Not bound by law, they are sensitive to the firm's financial situation. Thus, firms that place a higher value on their reputation for treating employees fairly should limit their use of short-term debt to indicate their capacity to make good on their commitments towards their employees.

Second, a high standard of employee well-being is likely to be reflected in a superior long-term development of firm value and an increased corporate income in the long run. Körner (2005) and Menz (2010) point out that the increasing interest in sustainability and CSR is a way to counter the enormous focus on short-term value maximization. Drawing on the stakeholder view, sustaining a strong relationship with employees can improve a firm's

[2] There are two reasons for a firm to meet its implicit claims: (i) reputation (Telser, 1980; Cornell and Shapiro, 1987; Maksimovic and Titman, 1991) and (ii) the importance of employees' retention in an increasingly competitive environment (e.g., Zingales, 2000). Maksimovic and Titman (1991), for instance, state that one of the most important components of bankruptcy costs is the ex-ante costs of employees in case of loss of reputation. They also demonstrate that to maintain their reputation and to deter entry, firms make sure they treat their employees fairly.

[3] Diamond (1991, 1993) and Sharpe (1991) argue that lenders may underestimate the continuation value of the firm, and not allow refinancing to take place.

long-term profitability. Thus, one would expect that long-term debt investors are more likely to be attracted by firms that favor strong employee relations[4].

In light of these arguments, our testable hypothesis is set out as follows

H: There is a positive relationship between employee welfare and corporate debt maturity.

3. Data, variables and summary statistics

3.1. Sample selection

To examine the relationship between employee well-being and debt maturity, we exploit a firm-level measure of how a firm commits to treat its employees fairly. The source of our data is the KLD STATS (Statistical Tool for Analyzing Trends in Social & Environmental Performance) database that provides information on firms' social ratings. KLD is an independent research provider that specializes in analyzing firms' relations with employees, involvement to community, adherence to diversity standards, improvement of product characteristics, protection of environment, and insurance of good corporate governance. KLD assigns firms social ratings based on a wide variety of data sources, such as company filings, government data, nongovernmental organization data, general media sources, and direct communications with company officers. After collecting relevant information, KLD's sector-specific analysts assess the social and environmental performance of firms based on a proprietary analysis grid of positive and negative indicators.

Between 1991 and 2000, KLD coverage was limited to approximately 650 companies that comprise the FTSE KLD 400 Social Index and S&P 500. Beginning in 2001, KLD expanded its scope to include the largest 1000 US companies. In 2003, KLD broadened its coverage again to account for the largest 3000 US companies by market capitalization.

In this paper, we use all U.S. firms appearing in the KLD database over the period 1991–2014. While most previous studies on employee welfare samples that cover periods beginning in 2003, our analysis includess all periods for which social ratings on KLD are

[4] Admittedly, the positive association between employee welfare and the use of short-term debt is possible. Firms with high employee well-being scores are likely to perform better (Edmans, 2011; Edmans et al. 2014; Macias and Pirinsky, 2015) and may prefer short-term debt to take advantage of their higher quality when renegotiating the conditions of their loans at maturity (Diamond, 1991).

available.[5] Our initial sample is composed of 48,367 firm-year observations. We merge these observations with data from the Compustat database. We exclude unleveraged firms and all observations with missing information on total assets. We also exclude observations with debt maturity values that are less than 0 or greater than 1, as these observations reflect errors. Moreover, we remove financial firms and utilities (firms with primary standard industrial classification SIC codes between 6,000 and 6,999 and between 4,900 and 4,999). We winsorize all the continuous variables at the 1st and 99th percentiles of their distributions to mitigate the effect of outliers. The final sample consists of 19,347 firm-year observations.

3.2. Data and variables construction

Appendix A presents all variables' descriptions and sources. The employee welfare measure is based on the ratings given across the employee relations dimension in the KLD database. Measures of the dependent variable (i.e., corporate debt maturity) and control variables are the results of our calculations based on Compustat items.

3.2.1. Measure of debt maturity

We refer to prior studies (e.g., Demirgüç-Kunt and Maksimovic, 1999; Belkhir et al., 2016) to calculate the dependent variable, debt maturity. It is measured as the ratio of the firm's short-term financial debt (maturing in one year) to the sum of its long-term debt and its debt in current liabilities (i.e., total financial debt).

3.2.2. Measure of employee welfare

The variable of interest is the employee welfare index (EWI), which we derive from the KLD STATS database. KLD screens the covered firms' strengths and concerns of the 'Employee Relations' dimension. It attributes, to each strength and concern, a dummy variable which takes the value of one or zero. Following Verwijmeren and Derwall (2010) and Ghaly et al. (2015), we create an index that ranges from -5 to +5 from summing strengths and subtracting concerns. +5 indicates the best employee welfare practices.[6] In Appendix B, we summarize these indicators.

[5] In robustness tests, we show that our results hold when we restrict the time period to after 2002.

[6] Another measure for employee welfare consists of the level of expenditure on employee welfare. However, most of the relevant papers in corporate finance use ratings of the dimension employee relations because of the lack of comprehensive accounting measures for such expenditure. In robustness checks, we also use other variations of the index. For instance, we use an index including strength components only as in Bae et al. (2011) and Ertugrul (2013).

3.2.3. Control variables

We control for the following firm-specific characteristics in our regression analysis. These control variables have been theoretically and empirically shown to be germane in explaining the outcome variable.

(i) *Leverage (LEV)* is the ratio of total financial debt to total assets. Debt level is positively correlated to maturity (Morris, 1992; Johnson, 2003; Custódio et al., 2013). Leverage increases liquidity risk and default risk, which leads firms to lengthen the maturity of their debt. Thus, we expect a positive (negative) relationship between leverage ratio and long-term debt (short-term debt).

(ii) *Firm size (SIZE)* is the natural logarithm of total assets. It is generally positively associated with maturity. Large firms have less asymmetric information, and better financial situation, which enable them to raise more long-term debt (Barclay and Smith, 1995; Custódio et al., 2013). Long-term debt market screens out small firms because of their higher degree of information asymmetry and agency problems (Diamond, 1991). Size is therefore expected to be positively related to debt maturity.

(iii) *Tobin's Q (Q_TOBIN)* ratio is a proxy for growth. It is calculated as the ratio of book value of assets plus market value of common equity minus the book value of common equity to the value of total assets. Myers (1977) argues that firms with high growth opportunities take on debt with shorter maturities to control for agency problems between shareholders and debtholders. Hence, we expect a negative (positive) relation between the variable Q_TOBIN and the maturity of debt (short-term debt).

(iv) *Tangibility (PPE)* proxied by the ratio of property, plant and equipment to total assets. Demirgüç-Kunt and Maksimovic (1999), Kirch and Terra, (2012), and Custodio et al. (2013) find that firms with high asset tangibility have easier access to long-term debt market, because tangible assets can serve as collateral. Thus, tangibility is expected to be positively related to the use of long-term debt.

(v) *Asset maturity (AMAT)* is measured as the weighted average of the maturities of long-term assets and current assets. The maturity of long-term assets is computed as gross property, plant and equipment divided by depreciation expenses. The

maturity of current assets is computed as current assets divided by the cost of goods sold. Firms tend to match their liabilities maturity to their assets maturity. Hart and Moore (1994), for instance, argue that the durability of the projects' assets affects debt maturity. Myers (1977) argues that firms can mitigate agency problems by matching the maturities of their assets and liabilities. We then expect the asset maturity to be negatively related to the use of short-term debt.

(vi) *Return on Assets (ROA)* is a measure for firms' profitability. It is defined as the ratio of earnings before interest tax depreciation and amortization (EBITDA) to total assets. Flannery (1986) shows that short-term debt can be used as a signal for firms' quality and profitability. Thus, we expect ROA to be positively associated with short debt maturity.

(vii) *Z-score (ZSCORE)* is a proxy of default risk, measured as proposed by Boyd and Graham (1986). We split ZScore to ZScore1 (a measure of asset risk) and ZScore2 (a measure of leverage risk). ZScore1 is calculated as the ratio of ROA to the standard deviation of ROA. ZScore2 is calculated as the ratio of equity to the standard deviation of ROA. Higher values of ZSCORE correspond to a lower likelihood of default. Guedes and Opler (1996), and Custodio et al. (2013) argue that lower default risk – less volatile asset returns and less leverage risk – makes firms' accept issuing short-term debt consistent with the view that firms with low default can go short without fear of potential deadweight costs associated with a refunding crisis. As a result we expect a positive relationship between of our proxy of default risk and the use of short-term debt.

(viii) *Effective Tax Rate (ETR)* is the ratio of income taxes to pre-tax income. Taxation may affect debt maturity (Brick and Ravid, 1985). Empirical evidence, however, vary from one study to another. While Zheng et al. (2012) find no relation between corporate tax rate and debt maturity structure, Guedes and Opler (1996) find a negative relation between the two variables. We include the variable ETR in our model to account for its potential impact on debt maturity.

3.3. Summary statistics

Table 1 reports summary statistics for all variables used in the regression equation. Panel A of Table 1 presents descriptive statistics for the EWI and its components. The mean and median EWI score in our sample is –0.102 and 0, respectively. More than half of the firm-year observations have a neutral (zero) EWI score, 23.5% have a negative score and 14.4% have a positive score. Our summary statistics are consistent with the findings of Verwijmeren and Derwall (2010) and Ghaly et al. (2015) who use a similar index.

Panel B of Table 1 provides descriptive statistics for the dependent and control variables. We document that, on average, short-term debt represents 11.82% of the firms' total debt. The median is 2.61%, showing that the distribution is skewed to the right. Belkhir et al. (2016) report similar figures in their sample of all listed U.S. firms for the period 1990-2010. The mean leverage ratio, is 25.54% and is consistent with Bae et al. (2011), who report an average leverage ratio of 23% for U.S. firms. Moreover, the sample firms have valuable growth opportunities, since, on average, the Tobin's Q equals 2.028.

[Insert Table 1 about here]

Table 2 reports correlations between the variables used in the main analysis. Below (above) the diagonal, we provide Pearson (Spearman) correlation coefficients. We document that the correlation between employee welfare (EWI) and short maturity debt (DMAT) is significantly negative (–0.016/ –0.027). Consistent with Bae et al. (2011) and Verwijmeren and Derwall (2010), the correlation coefficient between employee well-being and leverage (–0.039/ –0.032) shows that better employee treatment is associated with lower debt ratios. We also find a positive correlation between employee well-being and the Z-score. Verwijmeren and Derwall (2010) report similar results showing that high employee well-being scores reduce the probability of bankruptcy. In line with Chen et al. (2016), we find a positive correlation between EWI and Tobin's Q. The highest reported correlation is –0.694 between leverage and our proxy for default risk. Overall, Table 2 indicates low correlations among the variables and hence the absence of multicollinearity problems. We note that the signs of the coefficients obtained in the correlation matrix are in accordance with those obtained in the table of expected signs. The correlations are largely in line with our theoretical predictions of the relationship between debt maturity structure and control variables.

[Insert Table 2 about here]

Table 3 provides a comparison between firms based on the sign of the EWI. Column 1 reports statistics for all observations in our sample (19,347 observations). Column 2 presents

the averages of the firm characteristics for firms with zero EWI score (12,018 observations). Columns 3 and 4 provide the mean values for the characteristics of firms with positive EWI scores (2,778 observations) and negative EWI scores (4,551 observations), respectively. The t-test of differences in the means of the characteristics between firms with positive and negative EWI scores is presented in column 5.

The comparison reveals that firms with negative EWI scores have more short-term debt than firms with positive EWI scores. The mean time-to-maturity is 0.123 for negative-scoring firms compared to 0.103 for positive-scoring firms. T-tests of the difference in means for short debt maturity are statistically significant at the 1% level. Several other differences are also noteworthy. The comparison between firms with positive and negative EWI score shows that negative-scoring companies are more leveraged, with a significant difference in means, at –0.021. They also have lower growth opportunities, tangible assets and asset maturity.

[Insert Table 3 about here]

4. Empirical results

4.1. Main analysis: effect of employee well-being on debt maturity

Table 4 presents the results of our main analysis of the effect of employee welfare on debt maturity. We begin our analysis by running a pooled ordinary least squares (OLS) regression of the ratio of short-term debt on EWI and other control variables. The standard errors are adjusted for heteroscedasticity and clustered at the firm level. The results displayed in Column 1 show a negative relation between employee well-being and short debt maturities. Thus, firms that are committed to treat their employees fairly are more likely to hold long-term debt. As for the control variables, we find that leverage, return on assets, tangibility and effective tax rate load negatively, suggesting a positive association with debt maturity. Tobin's Q and Z-score are negatively related to debt maturity. The empirical results, however, show that there is no relationship between asset maturity and debt maturity, suggesting that firms do not seem to match the maturity of their assets and liabilities. In general, the signs of the control variables are consistent with prior research on the determinants of debt maturity (e.g., Custódio et al., 2013; Belkhir et al., 2016).

Table 4 also tabulates results using alternative econometric models. In particular, we use Newey-West (Column 2), Prais-Winsten (Column 3) and Prais-Winsten with Cochrane–Orcutt transformation (Column 4) regressions to account for serial correlation of the standard

errors. The results reported in Columns 2, 3, and 4 show that our inferences remain unchanged.

[Insert Table 4 about here]

In our sample, the number of firms is much larger than the number of years covered. Thus, the cross-sectional variation of the employee welfare variable across firms is larger than its time series variation. We tackle this issue in specification (1) and (2) of Table 5, by exploring the cross-sectional relation between employee well-being and debt maturity.[7] Column (1) reports the results of the cross-sectional regression of the time-series average of debt maturity on the time-series average of the other firms' characteristics. Regression results indicate that there is a cross-sectional relation between EWI and the maturity structure since the EWI coefficient (–0.017) has the same sign and remains statistically significant at 1% threshold, suggesting that better employee treatment induces firms to borrow more long-term debt. In Column (2), we run a GEE population-averaged model and find similar results.

The EWI tends to be a time-invariant variable. Moreover, the Breusch and Pagan Lagrangian multiplier test for random effects indicates that is appropriate to use the random effect model. Thus, we employ a GLS random effect model in Column (3). The coefficient on EWI is significantly negative and similar in magnitude to those in previous models (–0.007), indicating that firms with high EWI scores borrow more on the long-term. In Model (4), we exclude observations that take a zero as a score for EWI and we re-estimate the specification of the main model to make sure that our earlier results are not driven by the inclusion of these observations. Results show a similar significant coefficient on the variable EWI. Column (5) provides results after running a Fama Mac-Beth regression model. Since our dependent variable is truncated between 1 and 0, we use a Tobit regression in model (6). The findings are in line with those reported using our baseline models, confirming that firms that treat their employees better have less short-term borrowings.

[Insert Table 5 about here]

Overall, our results are qualitatively similar from one model to another. We find that employee welfare practices have a robust, negative association with the use of short-term debt. This evidence is consistent with our hypothesis that predicts a positive relationship between fair employee treatment and debt maturity. These findings can be explained by the

[2] Bae et al. (2011), Ertugrul (2013) and Ghaly et al. (2015) also find that EWI exhibits little within variation.

stakeholder view of capital structure suggesting that firms adopt more conservative policies to certify their commitment to fulfilling employee claims.[8]

4.2. Employee welfare and debt maturity: Cross sectional analyses

In this section, we perform additional tests to delve more deeply into the nature of the relationship between employee welfare benefits and corporate debt maturity structure. Our earlier findings suggest that firms with higher employee well-being scores rely more on long-term debt. Arguably, the strength of this relationship may differ across firms with different sensitivities to labor-related factors. More specifically, we investigate whether the identified relationship between EWI and debt maturity structure is restricted to firms operating in human-capital-intensive industries and to firms with lower membership rates in labor unions.

The effect of human capital intensity

Edmans (2011) argues that firms in very competitive industries in terms of labor requirements strive to afford and increase employee well-being benefits. Employee welfare practices can attract, motivate, and maintain high-quality employees to form a foundation of sustainable competitive advantages, especially in industries that rely more on intangible capital. Faleye and Trahan (2011) find that improved performance due to better employee treatment accrue mainly to human capital dependent firms. Thus, we expect firms' commitment to employee welfare to be stronger in the case of knowledge-based industries such as software, pharmaceuticals, and financial services.

Following Ertugrul (2013), we define human-capital-intensive industries as those in subcategories of the telecommunications, high-technology and healthcare services. Specifically, we include firms based on the following two- and three-digit SIC codes: 283, 357, 36, 384, 48, and 80. We split our sample into two subsamples. The first (second) subsample is composed of firms that belong to industries with high (low) human-capital- and R&D-intensity. Table 6 provides the results of pooled ordinary least squares regressions for the subsample of firms with high human-capital and R&D-intensity (Column 1) and the subsample of firms with low human-capital and R&D-intensity (Column 2). We find that the coefficient on EWI is significant and negative in both subsamples. More importantly, we find

[8] Admittedly, the relationship between employee welfare and corporate debt maturity is more complex and could also be the result of a mediation effect. Employee welfare can improve employee productivity and firm performance, which, in turn, affect debt maturity. Our preliminary empirical results do not provide full support for a mediation effect.

that the coefficient on EWI is significantly larger for firms operating in human-capital- and R&D-industries (–0.009) than in the remaining industries (–0.005).

[Insert Table 6 about here]

The effect of labor unions

Prior studies suggest that labor unions resulting in strong labor protection can lead to the prevalence of short-term debt. First, labor unions increase information asymmetry (e.g., Kleiner and Bouillon, 1988; Reynolds et al., 1998; Hilary, 2006). When employees have a strong bargaining power, firms reduce the disclosure of information on financial statements, sales and production costs, wages, future strategies and investments, productivity results (Kleiner and Bouillon, 1988), and pension plans (Scott, 1994). Flannery (1986) and Diamond (1991) consistently show that firms operating in opaque environments characterized with high information asymmetry are more likely to use short-term debt. Second, strong legal labor protection can be a threat to creditors' contract enforcement. Specifically, in the event of default, liquidation and repossession of collateral by creditors are more expensive and harder in the presence of legally empowered employees. Thus, debtholders use short-term debt to mitigate the problem of poor contract enforceability (Bae and Goyal, 2009) and ineffective collateral (Qian and Strahan, 2007). According to these views, it is expected that companies whose employees have less labor bargaining power to be less constrained with hiring and firing. They therefore are not forced to use shorter maturities to mitigate debt agency costs and information asymmetry issues.

Thus, we divide our sample into two subsamples based on the level of unionization. As a proxy, we use union membership data from the Bureau of Labor Statistics. We define firms with high (low) union membership as those with a percentage of workers who are members of labor unions that is above (below) the sample median.[9] Results displayed in Table 6 provide evidence consistent with the argument that the effect of employee welfare is less pronounced in firms with stiffer labor unionization.

[9] We find equivalent results using the number of employees who are also members of labor unions in absolute value and not in percentage of total employees.

5. Robustness tests

5.1. Alternative periods

Our sample consists of all firms that are screened by the KLD database over the period 1991-2014. In 1991, KLD coverage was restricted to companies that comprise the Domini 400 Social SM Index. Beginning in 1995, the database started to screen firms that encompass the Standard & Poor's (S&P) 500 index. In 2003, KLD expanded its coverage to include firms in Russell indexes; the largest 3,000 US companies by market capitalization.

As robustness check, we first restrict our sample period to 1995-2014. Second, we use KLD ratings between 2003 and 2014. Finally, we consider the periods spanning from 1991 to 2009 and from 2003 to 2009 since in 2010 some changes have been implemented in the KLD database. We run pooled ordinary least squares regressions over these four time periods. The results reported in Table 7 show a negative and significant coefficient at the 1% level for each of our four subperiods. These results confirm that the negative effect of employee welfare practices on the use of short-term debt is not restricted to a particular time period or to firms with particular size.

[Insert Table 7 about here]

5.2. Alternative measures for the employee welfare index and debt maturity

The key explanatory variable of our model is the employee welfare index, which represents the aggregate scores of KLD strengths and concerns in the employee relations dimension. Following prior studies (e.g., Bae et al., 2011; Ertugrul, 2013), we use an index that incorporates only the strengths components.[10] The results reported in Column 1 of Table 8 show that our inferences remain the same.

In addition, we use an alternative measure for our dependent variable, calculated as the ratio of long-term financial debt to total financial debt. The results reported in Column 2 of Table 8 are consistent with our main hypothesis, that firms' commitment to employee well-being is associated with less use of short-term debt.

[Insert Table 8 about here]

[10] The five strengths relate to capabilities in the areas of: union relations, cash profit sharing, employee involvement, retirement benefits, and work/life benefits. See Appendix B for details.

5.3. Endogeneity concerns

One major concern with our study is the potential endogeneity problem that might arise from our variable of interest, the EWI. Employee well-being programs implemented in the firm can be endogenously chosen, leading to a spurious correlation between employee welfare and debt maturity. Moreover, we find that employee welfare is significantly related to corporate debt maturity structure. However, we cannot ascertain whether the results are driven be reverse causality. In other words, our results could be driven by debt maturity that drives firms to invest in employees' well-being.

We address this potential concern using different approaches. In the first model in Table 9, we construct an exogenous index of employee welfare. We consider three sets of state-level federal laws following Ghaly et al., (2015). The first set concerns the wrongful discharge laws (WDL). These laws were enacted to define whether the employer has wrongfully caused the job termination of an employee. They protect workers from being fired based on discrimination or illegal reasons such as race, gender, ethnic background, religion, or disability. The WDL are composed of three exceptions to the employment-at-will doctrine (i) the public policy exception, (ii) the implied contract exception, and (iii) the good faith exception. We assign three dummy variables to these three exceptions. Each variable takes the value of one if the firm is headquartered in a state that adopts the exception. The second set of laws is the U.S. *Occupational Safety and Health Act* (OSHA). Under this federal law, the employer must provide a safe workplace. An employee can file a confidential complaint and ask for inspection if she perceives that working conditions are unhealthful. We create a dummy variable that takes the value of one if the state in which the firm is located operates these health and safety state programs. Finally, the last set of laws is related to the U.S. *Family and Medical Leave Act* (FMLA). It allows eligible workers to be able to take unpaid job break and to enjoy job-protected leave for medical and family purposes. We also assign a dummy variable for this act that equals to one if the firm is located in a state recognizing this set of laws. The exogenous EWI is the result of summing all the dummy variables that we created for each set of state laws. It ranges from 0 to 5. Higher ratings indicate higher exogenous obligation to be committed to employee welfare. The results reported in Column 1 of Table 9 show that EWI continues to be negatively (positively) associated with short-term debt (long-term debt).

To further address the endogeneity concern, we employ an instrumental variable (IV) approach. We run two-stage least squares (2SLS) regressions using the two-year lagged firm EWI and then the one-year lagged industry average of the EWI. The results reported in Columns 3 and 5 show that employee welfare has a significantly positive effect on corporate debt maturity structure[11].

[Insert Table 9 about here]

5.4. Sample matching

The dependent variable is short-term debt (STD) over total debt (TD), and one of the independent variables is total debt (TD) over total assets. Thus, the dependent variable is already a part of the independent variable. To address this concern, we use a matching technique and drop the leverage variable from the explanatory variables.[12] For each sample firm with a positive or neutral Employee Welfare Index score, we select a matching firm of similar leverage ratio from the same industry using Fama French 12 industry classification and with a negative Employee Welfare Index score. Our final sample is composed of 7,240 firm-year observations. Table 10, Panel A compares the characteristics of firms with a positive Employee Treatment Index score with those of matching firms with a negative Employee Treatment Index score. We find that firms with a positive Employee Treatment Index score have lower short-term debt ratios than matching firms with a negative Employee Treatment Index score. In Table 10, Panel B, we regress the ratio of short-term debt on EWI and the set of control variables except leverage. We find that firms that treat their employees fairly maintain lower short-term debt ratios. Thus, our results are not affected by the inclusion of leverage in the regression analysis.

[Insert Table 10 about here]

6. Conclusion

There has been a surge of interest in employee well-being in recent years. In today's competitive markets, employee welfare policies enable firms to build viable relationships with their employees and to have a competitive edge and higher financial performance (e.g., Lengnick-Hall, 1996). According to stakeholder view, firms that are committed to honoring

[11] We are fully aware that these approaches cannot completely rule out the concerns of unobserved heterogeneity. Our results should be hence interpreted with care.
[12] We would like to thank an anonymous referee for this suggestion.

stakeholder claims have an incentive to certify their ability and willingness to service these claims. The reasoning underlying this prediction is that when a firm defaults on the latter claims, stakeholders, including employees, respond by adjusting their willingness to maintain relations with the company. Titman (1984) and Cornell and Shapiro (1987) state that firms supporting employee well-being are more likely to undertake conservative financial policies. These firms strive to signal their capacity to deliver on implied promises toward employees about welfare provision, to promote good reputation in the labor market and, ultimately, to preserve firm value from declining.

In this paper, we argue that compared to short-term debt, long-term debt allows firms to have more liquidity and to be less constrained to honor their implicit claims about employee welfare. Moreover, long-term debt investors better value sustainability and the increased corporate income in the long run. Thus, they are more likely to favor strong and sustainable employee relations and prefer to invest in socially responsible firms. We assess the effect of firms' commitment to employee claims on its debt maturity structure using an index of employee well-being derived from the KLD STATS database. We report evidence that high scores of employee welfare index are associated with less short-term debt. Our additional tests highlight that this relationship is stronger for firms operating in human-capital-intensive industries and for firms with lower percentage of union membership.

Our results suggest that human capital strategies and corporate finance are inevitably intertwined, and indicate that nonfinancial stakeholder, such as employees, constitute an essential link between the two. Our findings are potentially significant with regard to the supply side of debt. Creditors and debtholders have an incentive to incorporate employee well-being in their credit assessment. A better understanding of companies' commitment to employee well-being can lead to a more accurate assessment of the firm's debt capacity. A higher degree of managerial responsibility in motivating and retaining employees, ceteris paribus, should be reflected in an easier access to long-term financing.

Thus, firms' devotion to employee well-being strengthens their relationships with their stakeholders over the long-term, and the different sides can align their visions towards a common strategic goal. Employee satisfaction can be mirrored in more reinforced exchanges with the rest of stakeholders (e.g., Evanschitzky et al., 2011; Netemeyer, et al., 2010).

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Table 1. Summary statistics

Panel A. Summary statistics for the employee welfare index

Panel A reports summary statistics for the employee welfare index (EWI) and its components. The sample period is 1991-2014. Data are obtained from KLD STATS database. For each component, KLD assigns a 0/1 rating measure. We construct the EWI by summing up the ratings of the strength components and subtracting the ratings of the concerns categories. A higher value of EWI reflects a stronger commitment to employee welfare. The dataset is composed of 19,347 firm-year observations.

Variable	**Mean**	**Median**	**Std. Dev**	**Minimum**	**P25**	**P75**	**Maximum**
EWI	–0.102	0	0.831	–4	0	0	4
Strengths							
Union relations strength	0.032	0	0.177	0	0	0	1
Cash profit sharing	0.075	0	0.263	0	0	0	1
Employee involvement	0.118	0	0.322	0	0	1	1
Retirement benefits strength	0.058	0	0.234	0	0	0	1
Work/life benefits	0.082	0	0.275	0	0	0	1
Concerns							
Union relations concern	0.034	0	0.182	0	0	0	1
Health and safety concern	0.100	0	0.300	0	0	1	1
Workforce reductions	0.057	0	0.232	0	0	0	1
Retirement benefits concern	0.246	0	0.431	0	0	0	1
Other concerns	0.055	0	0.229	0	0	0	1

Table 1. Summary statistics (continued)

Panel B. Summary statistics for the dependent and independent variables

Panel B provides summary statistics for the dependent and independent variables. Debt maturity is the ratio of short-term debt (due in one year) to total debt. Leverage is measured as total debt scaled by the book value of assets. Return on assets is the ratio of earnings before interest tax depreciation and amortization to the book value of total assets. Size is calculated as the logarithm of the firm's book value of assets. Tobin's Q is defined as the book value of assets plus the market value of common equity minus the book value of common equity scaled by the book value of assets. Tangibility is proxied by the ratio of property, plant and equipment to total asset. Asset Maturity is calculated as the weighted average of the maturities of long-term assets and current assets. The maturity of long-term assets is computed as gross property, plant and equipment divided by depreciation expenses and the maturity of current assets is computed as current assets divided by the cost of goods sold. The effective tax rate is calculated as the ratio of income taxes to pre-tax income. Zscore is the sum of Zscore1 and Zscore2. Zscore1 is the ratio of return on assets to the standard deviation of return on assets. Zscore2 is the ratio of shareholders equity to the standard deviation of return on assets.

Variable	Mean	Median	Std. Dev.	Minimum	P25	P75	Maximum
Dependent variable							
Debt maturity	0.118	0.026	0.215	0	0.001	0.122	1
Control variables							
Leverage	0.255	0.227	0.197	0.000	0.106	0.356	0.952
Return on assets	0.118	0.130	0.134	–0.578	0.084	0.181	0.401
Size	7.361	7.295	1.615	3.796	6.201	8.427	11.593
Tobin's Q	2.028	1.620	1.274	0.734	1.242	2.322	8.079
Tangibility	0.280	0.210	0.228	0.008	0.100	0.407	0.898
Asset maturity	13.808	12.830	6.771	1.915	9.148	17.359	38.259
Effective tax rate	0.242	0.325	0.399	–2.166	0.179	0.377	1.731
Z-score	0.552	0.573	0.269	–0.490	0.414	0.729	1.077

Table 2. Correlation matrix

Table 2 reports correlation coefficients for all variables. The correlation matrix provides Pearson's correlation coefficients below the diagonal and Spearman's correlation coefficients above the diagonal. Debt maturity (DMAT) is the ratio of short-term debt (due in one year) to total debt. Leverage (LEV) is measured as total debt scaled by the book value of assets. Return on assets (ROA) is the ratio of earnings before interest tax depreciation and amortization (EBITDA) to the book value of total assets. Size (SIZE) is calculated as the logarithm of the firm's book value of assets. Tobin's Q (QTOBIN) is defined as the book value of assets plus the market value of common equity minus the book value of common equity scaled by the book value of assets. Tangibility (PPE) represents the ratio of property, plant and equipment to total asset. Asset Maturity (AMAT) is calculated as the weighted average of the maturities of long-term assets and current assets. The maturity of long-term assets is computed as gross property, plant and equipment divided by depreciation expenses and the maturity of current assets is computed as current assets divided by the cost of goods sold. The effective tax rate (ETR) is calculated as the ratio of income taxes to pre-tax income. Z-score (ZSCORE) is the sum of Zscore1 and Zscore2. Zscore1 is the ratio of return on assets to the standard deviation of return on assets. Zscore2 is the ratio of shareholders equity to the standard deviation of return on assets. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels respectively.

	DMAT	EWI	LEV	ROA	SIZE	QTOBIN	PPE	AMAT	ETR	ZSCORE
DMAT		-0.027***	-0.213***	-0.042***	0.002	0.051***	-0.067***	-0.007	-0.015**	0.090***
EWI	-0.016**		-0.032***	0.092***	0.003	0.123***	-0.014**	0.013*	0.014**	0.077***
LEV	-0.300***	-0.039***		-0.060***	-0.000	-0.203***	0.199***	0.009	-0.008	-0.683***
ROA	-0.139***	0.071***	-0.039***		-0.006	0.379***	0.251***	0.013*	0.317***	0.430***
SIZE	0.010	0.0027	-0.001	-0.008		0.008	-0.007	0.142***	-0.000	0.002
QTOBIN	0.161***	0.116***	-0.118***	-0.008	0.009		-0.169***	-0.006	-0.0438***	0.224***
PPE	-0.169***	-0.015**	0.181***	0.178***	-0.012*	-0.178***		0.011*	0.140***	-0.018***
AMAT	-0.012*	0.012*	0.010	0.014**	0.110***	-0.007	0.009		0.005	-0.012*
ETR	-0.040***	0.008	-0.051***	0.191***	0.000	-0.029***	0.073***	0.010		0.166***
ZSCORE	0.149***	0.076***	-0.694***	0.515***	0.005	0.057***	-0.009	-0.008	0.126***	

Table 3. Firm characteristics across different employee welfare index scores

Table 3 presents the mean values of firm characteristics for all observations and subsamples of firms with neutral EWI, positive EWI and negative EWI, respectively. The last column provides the t-test of the differences in means between positive-scoring and negative-scoring firms. The sample covers the period 1991-2014. N denotes the number of observations for each column. Debt maturity is the ratio of short-term debt (due in one year) to total debt. Leverage is measured as total debt scaled by the book value of assets. Return on assets is the ratio of earnings before interest tax depreciation and amortization to the book value of total assets. Size is calculated as the logarithm of the firm's book value of assets. Tobin's Q is defined as the book value of assets plus the market value of common equity minus the book value of common equity scaled by the book value of assets. Tangibility represents the ratio of property, plant and equipment to total asset. Asset Maturity is calculated as the weighted average of the maturities of long-term assets and current assets. The maturity of long-term assets is computed as gross property, plant and equipment divided by depreciation expenses and the maturity of current assets is computed as current assets divided by the cost of goods sold. The effective tax rate is calculated as the ratio of income taxes to pre-tax income. Z-score is the sum of Zscore1 and Zscore2. Zscore1 is the ratio of return on assets to the standard deviation of return on assets. Zscore2 is the ratio of shareholders equity to the standard deviation of return on assets. *, **, and *** refer to significance at the 10%, 5%, and 1% levels respectively.

Variables	Overall sample (N=19,347)	Sample firms with neutral EWI (N=12,018)	Sample Firms with positive EWI (A) (N=2,778)	Sample Firms with negative EWI (B) (N=4,551)	Difference in means (A-B)
Dependent variable					
Debt maturity	0.118	0.119	0.103	0.123	–0.020***
Control variables					
Leverage	0.255	0.255	0.242	0.263	–0.021***
Return on assets	0.118	0.115	0.146	0.109	0.036***
Size	7.361	7.373	7.337	7.343	–0.005
Tobin's Q	2.028	2.045	2.275	1.833	0.442***
Tangibility	0.280	0.269	0.300	0.297	0.003
Asset maturity	13.808	13.818	14.017	13.656	0.360***
Effective tax rate	0.242	0.238	0.260	0.243	0.017**
Z-score	0.552	0.560	0.574	0.516	0.057***

Table 4. The relation between employee welfare and debt maturity

Table 4 provides the regression results of debt maturity on the variable of interest, the employee welfare index (EWI) and a set of control variables and. Debt maturity is the ratio of short-term debt (due in one year) to total debt. Leverage is measured as total debt scaled by the book value of assets. Return on assets is the ratio of earnings before interest tax depreciation and amortization to the book value of total assets. Size is calculated as the logarithm of the firm's book value of assets. Tobin's Q is defined as the book value of assets plus the market value of common equity minus the book value of common equity scaled by the book value of assets. Tangibility represents the ratio of property, plant and equipment to total asset. Asset Maturity is calculated as the weighted average of the maturities of long-term assets and current assets. The maturity of long-term assets is computed as gross property, plant and equipment divided by depreciation expenses and the maturity of current assets is computed as current assets divided by the cost of goods sold. The effective tax rate is calculated as the ratio of income taxes to pre-tax income. Z-score is the sum of Zscore1 and Zscore2. Zscore1 is the ratio of return on assets to the standard deviation of return on assets. Zscore2 is the ratio of shareholders equity to the standard deviation of return on assets. All regressions include industry and year fixed effects. Industries are classified following Fama French 12 industry classification. Standard errors are clustered at the firm level. T-statistic are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Pooled OLS	**Newey-West**	**Prais-Winsten**	**Prais-Winsten with Cochrane–Orcutt transformation**
Variables	(1)	(2)	(3)	(4)
EWI	–0.008***	–0.008***	–0.008***	–0.008***
	(–5.28)	(–5.47)	(–5.37)	(–4.40)
Leverage	–0.254***	–0.254***	–0.255***	–0.260***
	(–19.08)	(–19.59)	(–19.09)	(–16.65)
Return on assets	–0.260***	–0.260***	–0.261***	–0.258***
	(–14.93)	(–14.60)	(–14.96)	(–12.31)
Size	0.000	0.000	0.001	0.001
	(1.00)	(1.03)	(0.99)	(1.09)
Tobin's Q	0.020***	0.020***	0.020***	0.020***
	(12.80)	(13.28)	(12.80)	(10.91)
Tangibility	–0.070***	–0.070***	–0.070***	–0.068***
	(–12.93)	(–12.54)	(–12.98)	(–10.56)
Asset maturity	–0.000	–0.000	–0.000	–0.000
	(–1.10)	(–1.11)	(–1.11)	(–1.07)
Effective tax rate	–0.010***	–0.010**	–0.010**	–0.007
	(–2.91)	(–2.89)	(–2.92)	(–1.60)
Z-score	0.054***	0.054***	0.054***	0.049***
	(4.57)	(4.58)	(4.58)	(3.56)
Intercept	0.144***	0.144***	0.144***	
	(5.06)	(5.04)	(6.97)	
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
N	19,347	19,347	19,347	14,105
Adjusted R^2	0.15	0.15	0.15	0.14

Table 5. Alternative estimation methods

Table 5 provides the results of the main regression using alternative econometric methods. Model 1 and model 2 control for across firm effect. model 3 reports the results using a random effect model. In model 4, we run a pooled OLS regression only for firms with positive or negative scores, excluding those with neutral EWI scores. Model 5 shows the results using the Fama Mac-Beth regression model. In model 6, we run a Tobit regression. Debt maturity is the ratio of short-term debt (due in one year) to total debt. Leverage is measured as total debt scaled by the book value of assets. Return on assets is the ratio of earnings before interest tax depreciation and amortization to the book value of total assets. Size is calculated as the logarithm of the firm's book value of assets. Tobin's Q is defined as the book value of assets plus the market value of common equity minus the book value of common equity scaled by the book value of assets. Tangibility represents the ratio of property, plant and equipment to total asset. Asset Maturity is calculated as the weighted average of the maturities of long-term assets and current assets. The maturity of long-term assets is computed as gross property, plant and equipment divided by depreciation expenses and the maturity of current assets is computed as current assets divided by the cost of goods sold. The effective tax rate is calculated as the ratio of income taxes to pre-tax income. Z-score is the sum of Zscore1 and Zscore2. Zscore1 is the ratio of return on assets to the standard deviation of return on assets. Zscore2 is the ratio of shareholders equity to the standard deviation of return on assets. Standard errors are clustered at the firm level. T-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

	Across firm	GEE population-averaged regression	Random effect GLS regression	Pooled OLS +/- scores	Fama Mac-Beth	Tobit
Variables	(1)	(2)	(3)	(4)	(5)	(6)
EWI	–0.017***	–0.008***	–0.007***	–0.008***	–0.009***	–0.011***
	(–4.55)	(–4.81)	(–4.50)	(–4.99)	(–4.70)	(–3.87)
Leverage	–0.251***	–0.254***	–0.254***	–0.0218***	–0.227***	–0.484***
	(–9.27)	(–21.20)	(–21.14)	(–10.18)	(–13.73)	(–20.13)
Return on assets	–0.320***	–0.259***	–0.257***	–0.297***	–0.256***	–0.328***
	(–9.83)	(–17.53)	(–17.36)	(–9.96)	(–9.10)	(–11.65)
Size	0.000	0.000	0.000	0.002*	0.001	0.000
	(0.31)	(1.01)	(0.95)	(–1.66)	(1.22)	(0.59)
Tobin's Q	0.020***	0.020***	0.020***	0.020***	0.020***	0.024***
	(7.52)	(17.34)	(17.35)	(7.28)	(11.22)	(10.48)
Tangibility	–0.087***	–0.070***	–0.069***	–0.079**	–0.079***	–0.104***
	(–5.86)	(–10.60)	(–10.52)	(–8.28)	(–11.47)	(–9.40)
Asset maturity	0.000	–0.000	–0.000	–0.000	0.000	–0.000
	(0.18)	(–1.05)	(–0.94)	(–1.14)	(0.68)	(–0.90)
Effective tax rate	–0.011	–0.010***	–0.010***	–0.011**	–0.010**	–0.007
	(–1.44)	(–2.86)	(–2.78)	(–2.07)	(–2.56)	(–1.10)
Z-score	0.085***	0.053***	0.053***	0.078**	0.072***	0.042**
	(3.78)	(5.31)	(5.28)	(4.13)	(4.29)	(2.17)
Intercept	0.159***	0.145***	0.149***	0.090**	0.180***	0.101***
	(2.77)	(4.13)	(4.30)	(3.01)	(5.01)	(2.61)
Year dummies	Yes	Yes	Yes	Yes	No	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	3,818	3,818	19,347	7,329	19,347	19,347
Adjusted R^2	0.17		0.14	0.15	0.17	
Chi2 (p-value)		(0.00)				
Pseudo R^2						0.12

Table 6. The effect of human capital intensity and labor unions

Table 6 reports the regression results for subsamples based on human capital intensity and labor union levels. Human-capital-intensive industries are all the subcategories of the telecommunications, high-tech and health-care industries. Labor unions is defined by union-membership rate. High (low) union membership rate consists of values above (below) the median. Debt maturity is the ratio of short-term debt (due in one year) to total debt. Leverage is measured as total debt scaled by the book value of assets. Return on assets is the ratio of earnings before interest tax depreciation and amortization to the book value of total assets. Size is calculated as the logarithm of the firm's book value of assets. Tobin's Q is defined as the book value of assets plus the market value of common equity minus the book value of common equity scaled by the book value of assets. Tangibility represents the ratio of property, plant and equipment to total asset. Asset Maturity is calculated as the weighted average of the maturities of long-term assets and current assets. The maturity of long-term assets is computed as gross property, plant and equipment divided by depreciation expenses and the maturity of current assets is computed as current assets divided by the cost of goods sold. The effective tax rate is calculated as the ratio of income taxes to pre-tax income. Z-score is the sum of Zscore1 and Zscore2. Zscore1 is the ratio of return on assets to the standard deviation of return on assets. Zscore2 is the ratio of shareholders equity to the standard deviation of return on assets. All regressions include industry and year fixed effects. Industries are classified following Fama French 12 industry classification. Standard errors are clustered at the firm level. T-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

	Human-capital-intensive industries		**Labor unions**	
	High	Low	High	Low
Variables	(1)	(2)	(1)	(2)
EWI	–0.009***	–0.005*	–0.012*	–0.018***
	(–5.01)	(–1.81)	(–1.84)	(–4.18)
Leverage	–0.259***	–0.0242***	–0.277***	–0.265***
	(–17.27)	(–8.45)	(–11.50)	(–17.22)
Return on assets	–0.255***	–0.275***	–0.274**	–0.239***
	(–12.50)	(–8.16)	(–9.19)	(–12.83)
Size	–0.003	0.002	0.003**	–0.000
	(–0.08)	(1.50)	(2.15)	(–0.29)
Tobin's Q	0.021***	0.017***	0.025***	0.022***
	(11.29)	(6.09)	(10.71)	(14.79)
Tangibility	–0.066***	–0.083***	–0.060***	–.070***
	(–10.59)	(–7.60)	(–4.40)	(–8.33)
Asset maturity	0.000	–0.000	0.000	–0.000
	(0.14)	(–1.87)	(1.07)	(–0.80)
Effective tax rate	–0.012***	–0.005	–0.007	–0.010**
	(–2.99)	(–0.71)	(–1.10)	(–2.29)
Z-score	0.048***	0.069***	0.062***	0.048***
	(3.63)	(2.83)	(3.05)	(3.68)
Intercept	0.133***	0.159***	0.136***	0.185***
	(5.72)	(3.53)	(6.30)	(13.53)
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
N	4,938	14,409	5,264	11,911
Adjusted R^2	0.14	0.13	0.12	0.14

Table 7. Alternative sample periods

Table 7 reports the regression results for four sub-periods: 1995-2014, 2003-2014, 1991-2009, and 2003-2009. Debt maturity is the ratio of short-term debt (due in one year) to total debt. Leverage is measured as total debt scaled by the book value of assets. Return on assets is the ratio of earnings before interest tax depreciation and amortization to the book value of total assets. Size is calculated as the logarithm of the firm's book value of assets. Tobin's Q is defined as the book value of assets plus the market value of common equity minus the book value of common equity scaled by the book value of assets. Tangibility represents the ratio of property, plant and equipment to total asset. Asset Maturity is calculated as the weighted average of the maturities of long-term assets and current assets. The maturity of long-term assets is computed as gross property, plant and equipment divided by depreciation expenses and the maturity of current assets is computed as current assets divided by the cost of goods sold. The effective tax rate is calculated as the ratio of income taxes to pre-tax income. Z-score is the sum of Zscore1 and Zscore2. Zscore1 is the ratio of return on assets to the standard deviation of return on assets. Zscore2 is the ratio of shareholders equity to the standard deviation of return on assets. All regressions include industry and year fixed effects. Industries are classified following Fama French 12 industry classification. Standard errors are clustered at the firm level. T-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

Variables	**1995-2014**	**2003-2014**	**1991-2009**	**2003-2009**
EWI	–0.008***	–0.007***	–0.008***	–0.006***
	(–5.06)	(–4.35)	(–4.03)	(–2.77)
Leverage	–0.261***	–0.266***	–0.239***	–0.254***
	(–19.01)	(–17.94)	(–15.29)	(–13.55)
ROA	–0.261***	–0.266***	–0.264***	–0.274***
	(–14.57)	(–13.72)	(–12.22)	(–10.81)
Size	0.001	0.000	0.001	0.001
	(1.08)	(0.81)	(1.20)	(1.09)
Tobin's Q	0.019***	0.019***	0.021***	0.020***
	(3.16)	(11.50)	(10.96)	(9.31)
Tangibility	–0.068***	–0.067***	–0.068***	–0.062***
	(–12.08)	(–11.24)	(–9.74)	(–7.53)
Asset maturity	–0.000	–0.000*	–0.000	–0.000
	(–1.26)	(–1.81)	(–0.12)	(–1.14)
ETR	–0.010***	–0.009**	–0.011**	–0.010**
	(–2.83)	(–2.44)	(–2.56)	(–1.97)
Z-score	0.049***	0.047***	0.063***	0.010***
	(4.04)	(3.56)	(4.39)	(4.39)
Intercept	0.146***	0.173***	0.109***	0.053***
	(6.52)	(7.98)	(4.80)	(3.06)
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
N	18,464	15,988	12,467	9,108
Adjusted R^2	0.13	0.13	0.14	0.14

Table 8. Alternative measures

Table 8 reports the regression results using alternative measures of the dependent variable and EWI. Debt maturity is the ratio of long-term financial debt (due in more than one year) to total financial debt. Leverage is measured as total debt scaled by the book value of assets. Return on assets is the ratio of earnings before interest tax depreciation and amortization to the book value of total assets. Size is calculated as the logarithm of the firm's book value of assets. Tobin's Q is defined as the book value of assets plus the market value of common equity minus the book value of common equity scaled by the book value of assets. Tangibility represents the ratio of property, plant and equipment to total asset. Asset Maturity is calculated as the weighted average of the maturities of long-term assets and current assets. The maturity of long-term assets is computed as gross property, plant and equipment divided by depreciation expenses and the maturity of current assets is computed as current assets divided by the cost of goods sold. The effective tax rate is calculated as the ratio of income taxes to pre-tax income. Z-score is the sum of Zscore1 and Zscore2. Zscore1 is the ratio of return on assets to the standard deviation of return on assets. Zscore2 is the ratio of shareholders equity to the standard deviation of return on assets. All regressions include industry and year fixed effects. Industries are classified following Fama French 12 industry classification. Standard errors are clustered at the firm level. T-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

	Alternative measure for EWI	**Alternative measure for debt maturity**
Variables	(1)	(2)
EWI	–0.005**	0.05**
	(–2.50)	(2.03)
Leverage	–0.255***	0.020
	(–3.69)	(0.89)
Return on assets	–0.262***	0.024
	(–3.45)	(1.01)
Size	0.001*	–0.052**
	(0.09)	(–2.19)
Tobin's Q	0.019***	0.002*
	(3.16)	(1.99)
Tangibility	–0.070***	–0.015
	(–2.69)	(–1.37)
Asset maturity	–0.000	–0.004***
	(0.96)	(–4.20)
Effective tax rate	–0.010	0.007
	(1.43)	(1.42)
Z-score	0.051*	0.002
	(1.96)	(0.14)
Intercept	0.150***	0.768***
	(3.12)	(4.63)
Year dummies	Yes	Yes
Industry dummies	Yes	Yes
N	19,347	19,347
Adjusted R^2	0.14	0.11

Table 9. Exogeneity

Table 9 reports the regression results using several methods to address endogeneity concerns. In the first model, we use an exogenous measure of the EWI based on federal laws. The exogenous welfare index is constructed by summing up strength of discharge laws, strength of health & safety laws, and strength of family laws, and ranges between 0 and 5. In the second and third model, we run 2SLS regressions, using lagged EWI and lagged industry average of the EWI as instruments. Debt maturity is the ratio of short-term debt (due in one year) to total debt. Leverage is measured as total debt scaled by the book value of assets. Return on assets is the ratio of earnings before interest tax depreciation and amortization to the book value of total assets. Size is calculated as the logarithm of the firm's book value of assets. Tobin's Q is defined as the book value of assets plus the market value of common equity minus the book value of common equity scaled by the book value of assets. Tangibility represents the ratio of property, plant and equipment to total asset. Asset Maturity is calculated as the weighted average of the maturities of long-term assets and current assets. The maturity of long-term assets is computed as gross property, plant and equipment divided by depreciation expenses and the maturity of current assets is computed as current assets divided by the cost of goods sold. The effective tax rate is calculated as the ratio of income taxes to pre-tax income. Z-score is the sum of Zscore1 and Zscore2. Zscore1 is the ratio of return on assets to the standard deviation of return on assets. Zscore2 is the ratio of shareholders equity to the standard deviation of return on assets. Standard errors are clustered at the firm level. T-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

	Pooled OLS	**2SLS regression**		**2SLS regression**	
	Exogenous EWI	First stage	Second stage	First stage	Second stage
Variables	(1)	(2)	(3)	(4)	(5)
EWI	–0.147*		–0.080***		–0.120***
	(1.76)		(–3.67)		(–2.77)
Leverage	–0.265***	0.097*	–0.258***	0.120***	–0.246***
	(–18.19)	(1.66)	(–14.84)	(2.23)	(–14.47)
Return on assets	–0.223***	0.231***	–0.244***	0.251***	–0.228***
	(–12.48)	(3.22)	(–10.09)	(3.58)	(–9.15)
Size	0.002	0.002	0.002	–0.001	0.001
	(0.49)	(0.53)	(1.61)	(–0.29)	(0.89)
Tobin's Q	0.023***	0.077***	0.024***	0.077***	0.028***
	(16.35)	(13.08)	(9.53)	(14.81)	(7.51)
Tangibility	–0.061***	–0.008	–0.067***	–0.019	–0.069***
	(–7.63)	(–0.25)	(–8.69)	(–0.64)	(–9.30)
Asset maturity	0.003	0.002*	–0.000	0.001*	–0.000
	(0.64)	(1.85)	(–0.83)	(1.69)	(–0.23)
Effective tax rate	–0.008	–0.015	–0.005	0.002	–0.006
	(–1.86)	(–0.81)	(–1.11)	(0.15)	(–1.42)
Z-score	0.045***	0.250***	0.057***	0.225***	0.074***
	(3.68)	(4.82)	(3.56)	(4.70)	(4.28)
Intercept	–0.172	–0.790***	0.078*	–0.655***	0.049
	(–0.85)	(–4.02)	(1.75)	(–3.71)	(1.07)
Instrumental variable					
Lagged EWI		0.106***			
		(10.64)			
Lagged EWI industry mean				0.095***	
				(6.04)	
Year dummies	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes
N	17,090	11,693	11,693	14,105	14,105
Adjusted R^2	0.13	0.03		0.03	
Chi2 (p-value)			(0.00)		(0.00)

Table 10. Matched sample

Table 10 reports results using a matched sample. We use leverage and industry based on Fama French 12 industry classification as matching criteria. Panel A provides descriptive statistics of the dependent and control variables. Column 1 is for the subsample of firms with positive EWI. Column 2 is for the subsample of firms with negative EWI. Column 3 reports the differences in means between the two subsamples. Panel B reports the regression results of the effect of EWI on debt maturity for the matched sample of firms. Debt maturity is the ratio of short-term debt (due in one year) to total debt. Leverage is measured as total debt scaled by the book value of assets. Return on assets is the ratio of earnings before interest tax depreciation and amortization to the book value of total assets. Size is calculated as the logarithm of the firm's book value of assets. Tobin's Q is defined as the book value of assets plus the market value of common equity minus the book value of common equity scaled by the book value of assets. Tangibility represents the ratio of property, plant and equipment to total asset. Asset Maturity is calculated as the weighted average of the maturities of long-term assets and current assets. The maturity of long-term assets is computed as gross property, plant and equipment divided by depreciation expenses and the maturity of current assets is computed as current assets divided by the cost of goods sold. The effective tax rate is calculated as the ratio of income taxes to pre-tax income. Z-score is the sum of Zscore1 and Zscore2. Zscore1 is the ratio of return on assets to the standard deviation of return on assets. Zscore2 is the ratio of shareholders equity to the standard deviation of return on assets. Standard errors are adjusted for heteroskedasticity and clustered at the firm level. T-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

Panel A. Descriptive Statistics

	Sample	Matching	Difference in means
	Firms with negative EWI	Firms with positive EWI	
	(A)	(B)	(A-B)
Variables	(N=3,620)	(N=3,620)	
Dependent variable			
Debt maturity	0.111	0.099	0.011**
Control variables			
Leverage	0.269	0.270	–0.001
Return on assets	0.109	0.121	–0.011***
Size	7.330	7.324	0.005
Tobin's Q	1.786	2.010	–0.223***
Tangibility	0.303	0.283	0.020***
Asset maturity	13.687	13.858	–0.170
Effective tax rate	0.249	0.238	0.011
Z-score	0.510	0.549	–0.039***

Panel B. Regression analysis

Variables	Debt maturity
EWI	–0.007***
	(–3.38)
Return on assets	–0.407***
	(–14.06)
Size	–0.001
	(–0.77)
Tobin's Q	0.025***
	(8.90)
Tangibility	–0.055***
	(–6.42)
Asset maturity	0.000
	(0.68)
Effective tax rate	–0.009*
	(–1.84)
Z-score	0.211***
	(17.38)
Intercept	–0.032
	(–1.04)
N	7,240
Adjusted R-squared	0.119

Appendix A. Variables Descriptions and Sources

Variable	Description	Source
The dependent variable		
DMAT	The ratio of the firm's short-term financial debt (maturing in one year) to the firm's total financial debt. Total debt equals the sum of its long-term debt and its debt in current liabilities.	Authors' calculation based on data from Compustat
The explanatory variable		
EWI	Employee Welfare Index consists of summing identified strengths and subtracting identified concerns in the "Employee Relations" dimension in a given year.	Authors' calculation based on data from KLD STATS database
Control variables		
LEV	Leverage measured as long-term financial debt plus financial debt in current liabilities, all scaled by the book value of assets.	Authors' calculation based on data from Compustat
ROA	Return on assets, a proxy for profitability, calculated as the ratio of EBIT plus depreciation expenses and provisions to total equity to total assets	As above
ZSCORE	Default risk as proposed by Boyd and Graham (1986). We split ZScore to ZScore1 (a measure of asset risk) and ZScore2 (a measure of leverage risk). ZScore1 is calculated as the ROA on standard deviation of ROA. ZScore2 is calculated as the Equity on standard deviation of ROA. Equity is the ratio of shareholders' equity to total assets.	As above
SIZE	Firm size calculated as the natural log of total assets.	As above
Q Tobin	Tobin's Q a proxy for growth opportunities and defined as the ratio of the book value of assets plus the market value of common equity minus the book value of common equity to the book value of assets.	As above
PPE	Tangibility measured as the ratio of tangible assets (property, plant and equipment) to total assets.	As above
AMAT	Asset Maturity is calculated as the weighted average of the maturities of long-term assets and current assets. The maturity of long-term assets is computed as gross property, plant and equipment divided by depreciation expenses and the maturity of current assets is computed as current assets divided by the cost of goods sold.	As above
ETR	Effective Tax Rate (to account for the potential impact of effective tax rates on debt maturity) measured as the ratio of income taxes to pre-tax income.	As above
Robustness tests: other proxies for employee welfare		
EWI2	Following Bae et al. (2011) and Ertugul (2013), Employee Welfare Index consists of summing only identified strengths in the "Employee Relations" dimension in a given year.	Authors' calculation based on data from KLD STATS database
Exogenous EWI	We create an index based on three federal laws: The Wrongful Discharge Law (WDL) that consists of three exceptions, the Occupational Safety and Health Act (OSHA), and the Family and Medical Leave Act (FMLA). We assign to each a dummy variable that takes the value of one if the firm is located in a state that recognizes the law and zero otherwise. The exogenous EWI is the sum of all the dummy variables.	Following Ghaly et al. (2015)
Robustness tests: other proxies for corporate debt maturity structure		
DMAT_LT	The ratio of the firm's long-term financial debt (maturing in more than one year) to the firm's total financial debt. Total debt equals the sum of its long-term debt and its debt in current liabilities.	Authors' calculation based on data from Compustat

Appendix B. Components of the Employee Welfare Index

	Strengths	Concerns
1	Union relations strength: the company has taken exceptional measures to deal with its unionized workforce fairly.	Union relations concern: the company has a history of remarkably poor union relations.
2	Cash profit sharing: the company employs a cash profit-sharing program and distributes profits to a majority of its employees.	Health and safety concern: the company is involved in health and safety controversies, or has lately paid considerable fines or civil penalties for willful violations of its workforce health and safety standards
3	Employee involvement: the company powerfully encourages employee ownership and makes stock options available to a majority of its employees. It also encourages gain sharing, stock ownership, sharing of financial information, or empowerment (i.e., participation in management decision making).	Workforce reductions: the company has made substantial reductions in the number of employees in recent years.
4	Retirement benefits strength: the company has a remarkably well-established retirement benefits program.	Retirement benefits concern: the company has either a significantly underfunded benefit pension plan, or a poor retirement benefits program.
5	Work/life benefits[13]: the company has set up outstanding employee benefits or other practices addressing work/family concerns (e.g., childcare, elder care, or flextime).	Other concern: concerns that are not covered by the KLD database for which the company is involved in an employee relations controversy.

[13] We also include the indicator of 'work/life benefits' from the 'Diversity' dimension.

Highlights

- Examine the relationship between employee welfare and corporate debt maturity.
- Firms' commitment to employee welfare leads to the use of less short-term debt.
- This relation is more exacerbated for firms in labor-intensive firms.
- This relation is more exacerbated in less stringent labor union climate.