Does Unemployment Benefits Affect the Choice of Debt Source?

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Abstract

In this paper, we examine whether labor unemployment risk affects the choice of debt source. Specifically, we examine whether unemployment insurance (UI) benefits in the US, which reduce unemployment risk, lead to a high degree of reliance of bank debt that is associated with a strong monitoring. We find that firms from states with generous UI benefits tend to rely more on bank debt. This finding is robust to addressing the identification issues. We also find that the positive relationship between UI benefits and bank debt ratio is more pronounced in firms from highly unionized states and in labor-intensive firms. Furthermore, we find that the positive association between UI benefits and the degree of reliance on bank debt is more profound in less financially constrained firms, in opaque firms, and in firms with higher asset substitution risk.

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1. Introduction

Unemployment risk may be associated with substantial labor costs. In fact, prior literature shows that employees require a high compensation to bear unemployment risk (i.e., compensating wage differential), which increases firms' employment costs. A strand of literature shows that firms adopt corporate policies that reduce unemployment risk perceived by employees in order to lower labor costs. For instance, Agrawal and Matsa (2013) show that firms prefer conservative financial policies that reduce the risk of layoffs, hence reduces the compensation required by the employees for bearing unemployment risk. Furthermore, Ng, Ranasinghe, Shi, and Yan, (2015) argue that firms have incentives to smooth income in order to show to their current and prospective employees that they are less risky, which reduces the compensation requested to bear unemployment risk. In the same vein, Dou, Khan, and Zou (2016) argue that firms tend to engage in upward earnings management in order to reduce workers' perception of unemployment risk. Similarly, Ji and Tan (2016) argue that firms have incentives to disclose good news and hoard bad news in order to maintain a better financial image, which reduces the level of unemployment risk perceived by employees. In this paper, we extend this strand of literature by examining whether unemployment risk affects the choice of debt source (i.e., the choice between bank and public debt).

To examine the impact of unemployment risk on the choice of debt source we follow prior literature (e.g., Agrawal and Matsa, 2013; Ng, Ranasinghe, Shi, and Yan, 2015; Dou, Khan, and Zou, 2016; Ji and Tan, 2016) by exploiting changes in state unemployment insurance (UI) benefit laws in the US as a source of exogenous variation for labor unemployment concerns. Firms from states with generous UI benefits, which are less affected by unemployment risk are more likely to take less conservative corporate

policies. For instance, Agrawal and Matsa (2013) show that more generous UI benefits are associated with a riskier financial structure (i.e., a higher leverage). Similarly, Ellul, Wang, and Zhang (2016) show that more generous UI benefits reduce employees' concerns about unemployment and leads to riskier compensation structure for CEOs (i.e., increases the CEO's convex payoff structure). Furthermore, generous UI benefits reduce the incentives of managers to engage in discretionary reporting in order to maintain better financial image of the company, which improves financial reporting quality (Ng, Shi, Ranasinghe and Yang, 2015). For instance, prior literature show that generous UI benefits reduce income smoothing (e.g., Ng, Shi, Ranasinghe and Yang, 2015), reduce cost stickiness (e.g., Kim and Wang, 2014), and increase bad news forecasts (e.g., Ji and Tan, 2016).

The generosity of UI benefits may affect the firm's degree of reliance on bank debt in two ways. On the one hand, higher corporate transparency may lead to a high degree of reliance on bank debt because it is associated with a strong monitoring. The idea is that firms with higher corporate transparency and governance are more likely to opt for bank debt because banks are efficient monitors and more able than other debtholders in detecting the opportunistic behavior of managers. For instance, banks have better access to private information than public debtholders (e.g., James and Smith, 2000), hence are more able than other lenders to monitor managers 'actions. Furthermore, banks have more incentives to monitor corporate insiders because they have a more concentrated ownership of debt claims and are less affected by free rider problems (Berlin and Loeys, 1988; Houston and James, 1996). Moreover, banks are more able to discipline borrowing firms than public debtholders (Denis and Mihov, 2003; Park, 2000) because they can easily restructure or renegotiate debt contracts. Consistent with this view, Lin, Ma, Malatesta and Xuan (2013) show that firms with lower excess control rights (i.e., better corporate

governance), suffering less from severe agency problems are more likely to rely on bank debt. Similarly, Boubaker, Rouatbi, and Saffar (2017) show that the presence of multiple large shareholders reduce the reluctance of controlling shareholders to avoid bank debt in order to protect their private benefits of control. Firms from states with generous UI benefits, facing less unemployment risk, hence do not need to engage in an opportunistic financial reporting in order to reduce the unemployment risk perceived by employees and labor cost accordingly. Therefore, such firms are more likely to go for bank debt, which associated with a strong monitoring. On the other hand, banks are less sensitive to information asymmetry than public debtholders (e.g., Houston and James, 1996; Denis and Mihov, 2003; Li, Lin, and Zhan, 2015) because they have better access to private information and can easily restructure or renegotiate debt contracts. Therefore, firms with lower financial reporting quality may use more bank debt. Consistent with this point of view, Li, Lin, and Zhan (2015) show that firms substitutes away from public debt toward bank debt when information asymmetry increases. Given that firms from states with generous UI benefits having higher quality of financial reporting quality, we may expect that such firms rely less on bank debt.

Using a sample of U.S. firms over the period 1984-2013, we show that firms from states with generous UI benefits rely more on bank debt. This result supports the view that firms with generous UI benefits facing less unemployment risk have fewer incentives to engage in opportunistic financial reporting in order to reduce the unemployment risk perceived by employees and tend to rely more on bank debt that is associated with strong monitoring. This finding remains robust when we address the identification issues by controlling for UI benefits in bordering states and excluding industries with relatively

dispersed workforces. To verify further the robustness of our results we use alternative proxies of capital structure. We find that our findings are robust to the use of these proxies.

We extend our analysis by examining the impact of labor characteristics namely state-level labor union and labor intensity on the effect of UI benefits on the firm's degree of reliance on bank debt. We find that the positive relationship between UI benefits and bank debt ratio is more pronounced in firms from highly unionized states. We also find that the relation between UI benefits and the firm's degree of reliance on bank debt is more pronounced in firms from labor-intensive firms. Furthermore, we examine the impact of financial constraints on the relation between UI benefits and the firm's degree of reliance on bank debt. We use two proxies of financial constraints namely Altman's (1968) Z-score and the ratio of earnings before interests and taxes over interest expenses (i.e., interest coverage). We find that the positive association between UI benefits and the degree of reliance on bank debt is more pronounced in less financially constrained firms.

Additionally, we examine the effect of information opacity on the relationship between UI benefits and the degree of reliance of bank debt. Using the number of analysts following the firm and firm size as proxies for information opacity, we find that the positive association between UI benefits and the degree of reliance on bank debt is more pronounced in firms with lower analyst coverage and smaller firms. Finally, we examine whether asset substitution risk affects the relationship between UI benefits and bank debt ratio. We find that the influence of UI benefits on the use of bank debt is more profound in firms with higher asset substitution risk (i.e., higher market-to-book ratio).

Our paper contributes to the literature in two ways. First, we extend the literature on labor unemployment insurance (e.g., Agrawal and Matsa, 2013; Ng, Ranasinghe, Shi, and Yan, 2015; Dou, Khan, and Zou, 2016; Ji and Tan, 2016; Ellul, Wang, and Zhang, 2016)

by focusing on the impact of UI benefits on the choice of debt source. Second, we add to the literature on the choice of debt source (e.g., Dhaliwal, Khurana, and Pereira, 2011; Lin, Ma, Malatesta, and Xuan, 2013; Marshall, Mccann, and Mccolgan, 2016; Boubaker, Rouatbi and Saffar 2017) by examining how UI benefits may affect the choice between bank and public debt.

The rest of the paper is organized as follows. Section 2 reviews the related literature and develops our testable hypotheses. Section 3 describes our empirical design. Section 4 presents the results. Section 5 concludes.

2. Literature review and hypothesis development

Unemployment is associated with substantial costs for employees. Indeed, prior literature shows that unemployment is associated with a reduction in consumption (Gruber, 1997), decrease in future wages (Gibbons and Katz, 1991), decrease in life expectancy (Sullivan and von Wachter, 2009) and is associated with psychological (Winkelmann and Winkelmann 1998) and social (Rege, Telle, and Votruba, 2011) issues. Employees ask for a compensation called "compensating wage differential" for bearing unemployment risk, which increases firms' employment costs (Abowd and Ashenfelter, 1981; Li, 1986). Prior literature shows that the compensating wage differential is substantial. For instance, Abowd and Ashenfelter (1981) find that this compensation is between 2 to 6 percent of per hour wages. They also show that it varies across industries. Indeed, they find that it can reach 14 percent in industries that are more sensitive to unemployment risk. Topel (1984) shows that a percentage point increase in unemployment is associated with a one percent increase in wages. More recently, Agrawal and Matsa (2013) show for a BBB-rated firm that the cost of compensating wage differentials is more than 150 basis points when there is no unemployment insurance.

Prior studies show that the unemployment risk affects corporate policies. In fact, they show that firms adopt conservative corporate policies in order to mitigate the exposure of employees to unemployment risk. For instance, Agrawal and Matsa (2013) show that firms prefer financial policies associated with a low financial distress risk and less firing in order to reduce the compensation requested by the employees to bear unemployment risk. Furthermore, unemployment risk may induce discretionary reporting. For example, Ng, Ranasinghe, Shi, and Yan, (2015) argue that firms have incentives to engage in income smoothing in order to show their current and prospective employees that they are less risky, which reduces the compensation required by employees for bearing unemployment risk. Similarly, Dou, Khan, and Zou (2016) argue that firms tend to manage earnings upward in order to manage workers' perception of unemployment risk. In the same vein, Ji and Tan (2016) argue that firms have incentives to hard bad news in order to maintain a better financial image, which reduces the employees' perception of unemployment risk. A lower perceived risk by employees is associated with lower wages and lower labor cost.

Unemployment insurance (UI) benefits distributed in the US to eligible unemployed workers reduce their concern about unemployment risk, which reduces labor costs. Consistent with this point of view, Topel (1983) provide evidence suggesting that more generous UI benefits are associated with lower unemployment costs for both of employees and employers. In addition, Agrawal and Matsa (2013) show that more generous UI benefits are associated with a higher leverage, consistent with the conjecture that UI benefits reduce unemployment risk and lead to less conservative financial policies. In the same vein, Ellul, Wang, and Zhang (2016) argue that more generous UI benefits reduce employees' concerns about unemployment risk and reduce the compensation

required to bear unemployment risk, hence increase their tolerance for financial distress risk. In such a case, the board of directors provide more incentives to the managers to increase risk-taking. Consistent with this point of view, the authors show that boards increase the CEO's convex payoff structure. As for the implications of UI benefits for financial reporting, they may reduce discretionary reporting. The reason is that, in the presence of generous UI benefits to employees in case of involuntary layoff, managers have lower incentives to engage in discretionary reporting in order to maintain better financial image of the company because unemployment risk is mitigated. Consistent with this point of view, Ng, Shi, Ranasinghe and Yang (2015) show that income smoothing is negatively associated with UI benefits. In the same vein, Kim and Wang (2014) show that UI benefits reduce cost stickiness. Similarly, Dou, Khan, and Zhou (2015) find that state-level unemployment insurance reduces upward earnings management. More recently, Ji and Tan (2016) show that an increase in UI benefits generosity is associated with more bad news forecasts. By reducing discretionary reporting incentives, UI benefits improve financial reporting quality. For instance, Ng et al. (2015) using two measures of financial reporting quality: (i) financial statement opacity (Hutton, Marcus, and Tehranian, 2009) and (11) accruals quality (Dechow and Dichev, 2002) show that UI benefits are associated with higher financial reporting quality.

In this paper, we examine whether improved financial reporting quality associated with more generous UI benefits lead firms to use more (less) bank debt. We argue that UI benefits may affect the choice of debt source in two ways. On the one hand, banks are more able than other lenders to monitor managers'actions because they have better access to private information than public debtholders (e.g., James and Smith, 2000). Furthermore, banks; having a more concentrated ownership of debt claims and are less affected by free

rider problems (Berlin and Loeys, 1988; Houston and James, 1996) than public debtholders; have more incentives to monitor corporate insiders. Moreover, banks who can easily restructure or renegotiate debt contracts are more able to discipline borrowing firms than public debtholders (Denis and Mihov, 2003; Park, 2000). Firms with lower (higher) corporate transparency and governance quality are more (less) likely to avoid bank debt because banks are efficient monitors and have access to private information, hence are more able to detect opportunistic behavior in financial reporting that aims to hide corporate resources expropriation. Consistent with this argument, Lin, Ma, Malatesta and Xuan (2013) show that firms with higher excess control rights, suffering from severe agency problems are less likely to rely on bank debt. Given this discussion, we expect that managers of firms from states with higher unemployment risk are more likely to avoid bank debt because banks who are more efficient at monitoring and are more likely to detect opportunistic manipulation activities. Consequently, we expect that more generous UI benefits; which mitigate unemployment risk; are associated with a higher degree of reliance on bank debt. On the other hand, banks; who have better access to private information, stronger monitoring incentives, and can easily restructure or renegotiate debt contracts; rely less on publically available information and are less sensitive to information asymmetry than public debtholders (e.g., Boyd and Prescott, 1986; Houston and James, 1996; Denis and Mihov, 2003; Li, Lin, and Zhan, 2015). Therefore, since public debtholders are more sensitive to information asymmetry than banks thus may ask for a higher price, managers of firms from states with higher unemployment risk suffering from lower transparency may avoid public debt and rely more on bank debt. Consistent with this point of view, Li, Lin, and Zhan (2015) show that firms substitutes away from public debt toward bank debt when information asymmetry increases. Given that, we

may expect that firms from state with generous UI benefits suffering less from unemployment risk, hence suffer less from information asymmetry problems are less likely to use bank debt.

Overall, the literature provides two competing predictions about the impact of UI benefits on the choice of debt source, when all other factors remain constant. Based on that, our hypothesis is not directional and states that:

H1: Firms located in states with more generous UI benefits tend to rely more (less) on bank debt.

The relation between UI benefits and the likelihood to rely on bank debt is likely to be contingent on labor characteristics, information opacity, financial constraints and substitution risk. In the following section, we discuss how these factors may affect the incentives of managers to rely on bank debt in states with generous UI benefits:

Firms from highly unionized industries have collective bargaining power agreements that cover issues such as layoff and severance pay, which may reduce the unemployment risk perceived by employees, hence strengthen the relation between UI benefits and the likelihood to rely on bank debt. Labor-intensive firms are likely to benefit more from the reduced unemployment risk due to generous UI benefits. Therefore, we expect that the relation between UI benefits and the likelihood to use bank debt is more pronounced in labor-intensive firms. In line with these arguments, we state our second hypothesis as follows:

H2: The effect of UI benefits on the likelihood to rely on bank debt is more pronounced among firms from highly unionized industries and labor-intensive firms.

Financial constraints may also affect the impact of UI benefits on the likelihood to rely on bank debt financing. Firms with less financial constraints are more able to obtain

external financing, hence the employees of such firms are less affected by unemployment risk. Indeed, such firms are less likely to experience bankruptcy, hence are less likely to fire employees and/or reduce wages. Therefore, we expect that the positive impact of UI benefits on the likelihood to rely on bank debt is more pronounced in less financially constrained firms. This leads us to formulate the following hypothesis:

H3: The impact of UI benefits on the likelihood to rely on bank debt is more pronounced among less financially constrained firms.

Banks rely less on publically available information, hence are less affected by information asymmetry. Consistent with this point of view, prior literature (e.g., Li, Lin, and Zhan, 2015) shows that opaque firms substitutes away from public debt toward bank debt. Given that, we expect that the association between UI benefits and the likelihood to use bank debt is more pronounced in opaque firms. Our fourth hypothesis states that:

H4: The association between UI benefits and the likelihood to rely on bank debt is more pronounced in opaque firms.

Bondholders of firms with a high asset substation risk are more affected by information asymmetry problems (e.g., Li, Lin, and Zhan, 2015). Therefore, such firms are more likely to avoid public debt and opt for bank debt. Based on that, we expect that the effect of UI benefits on the use of bank debt is more pronounced in firms with higher asset substitution risk. Our final hypothesis can be stated as follows:

H5: The relation between UI benefits and the likelihood to use bank debt is more pronounced in firms with higher asset substitution risk.

3. Empirical design

3.1 Sample

We collect data on debt structure from *Capital IQ* database and financial data from *COMPUSTAT*. We also manually collect state-level UI benefits data, namely minimum and maximum weekly benefit amount and the number of benefit weeks from the United States Department of Labor. Furthermore, we collect state-level labor union data from Hirsch and Macpherson (2003)'s updated database of Union Membership and Coverage, in line with Chen, Chen, and Wang (2015) and Xing, Howe, Anderson and Yan (2017).[1] Additionally, we collect analyst coverage data from the Institutional Brokers' Estimate System (I/B/E/S) summary files. We combine the collected firm-level data with the state-level data and exclude financial firms and regulated utilities (SIC 6000-6999 and SIC 4900-4948). We winsorize all firm-level variables at the 1st and the 99th percentiles to mitigate the effect of outlier observations, we end up with a sample of 49,719 firm-year observations for the period from 1990 and 2013.

3.2 Variables

3.2.1 Dependent Variable. Following Lin, Ma, Malatesta and Xuan (2013), we use the ratio of bank debt (i.e., the sum of term loans and revolving credit) over public debt (i.e., the sum of subordinated bonds and notes, senior bonds and notes, and commercial paper) as a measure of the firm's degree of reliance on bank debt ($BANK\_DEBT/TOTAL\_DEBT_{i,t}$).

3.2.2 UI benefits proxies. Following Agrawal and Matsa (2013) we use two proxies for UI benefits: (i) the natural logarithm of the of the product of the maximum weekly benefit amount and the maximum number of weeks (*LMTB*) and (ii) the logarithm of the maximum weekly benefit amount (*LMWB*).

3.2.3 Control variables. Following prior literature (e.g., Lin, Ma, Malatesta and Xuan,

[1] The database is available at http://www.unionstats.com. See Hirsch and Macpherson (2003) for a description of the approach used to construct this database.

2013; Li, Lin, and Zhan, 2015), we include the following control variables: (i) the natural logarithm of total assets ($SIZE_{i,t}$) as a proxy for firm size, (ii) the ratio of total debt over total assets ($LEVERAGE_{i,t}$) to control for leverage, (iii) the firm's Tobin's Q calculated as the sum of the market value of equity and the book value of debt over the book value of assets ($Q_{i,t}$) to control for growth opportunities, (iv) the ratio of net income over total assets ($ROA_{i,t}$) to control for firm profitability, (v) tangibility defined as the ratio of property, plant, and equipment over total assets ($TANGABILITY_{i,t}$) to control for the firm's capability to provide collateral, (vi) the number of analysts following a firm from the *I/B/E/S* summary files control for information opacity, (vii) a dummy variable equal to one (1) if the firm has an S&P long-term rating, and zero (0) otherwise ($RATED_{i,t}$) to control for the firm's ability to obtain public debt financing, (viii) a dummy variable equal to one (1) if the firm has an S&P long term rating that is BBB- or above, and zero (0) otherwise ($INV\_GRD_{i,t}$) also to control for the firm's ability to raise public debt, (viiii) the state unemployment rate ($UNEMP\_RATE_t$) and the state-level GDP growth rate ($GDPG_{,t}$) to control for determinants of the state-level UI benefits.

3.3 Descriptive statistics and univariate results

Table 1 reports the descriptive statistics on the variables used to examine the impact of UI benefits on the choice of debt source. The mean of $BANK\_DEBT/TOTAL\_DEBT_{i,t}$ is equal to 0.245. The mean (median) of $LMTB_{i,t}$ and $LMWB_{i,t}$ are 9.175 (9.188) and 5.912 (5.930), respectively, consistent with Agrawal and Matsa (2013) and Dou, Khan and Zou (2016).

[Please Insert Table 1 about here]

Table 2 reports Pearson correlation coefficients between the ratio of bank debt over total debt, the UI benefit proxies, and the control variables as well as the significance at

the 1% level. For instance, we find that both of *LMTB* and *LMWB* are significantly and positively correlated at the 1% level with *BANK_DEBT/TOTAL_DEBT*, suggesting that more generous UI benefits are associated with a higher bank debt ratio. As for the control variables, our results are consistent with the correlations shown in the prior related debt structure literature. In fact, *BANK_DEBT/TOTAL_DEBT* is positively correlated at the 1% level with *ROA* and *UNEMP_RATE*, indicating that more profitable firms and firms from states with higher unemployment rates are more likely to use bank debt. Additionally, *BANK_DEBT/TOTAL_DEBT* is negatively correlated at the 1% level with *SIZE*, *LEVERAGE*, *Q*, *NUMEST*, *RATED*, *INV_GRD* and *GDPG*, implying that larger firms, firms with higher financial leverage, Tobin's Q, analyst following, S&P rating, and firms from states with higher GDP growth tend to use less debt financing. We generally document low correlation coefficients between the UI benefits proxies and the control variables, indicating that the multicollinearity does not affect our results when we conduct the regressions.

[Please Insert Table 2 about here]

4. Results

4.1 Main evidence

To examine the impact of UI benefits on the choice of debt source, we estimate several specifications of the following multivariate model:

$$BANK\_DEBT/TOTAL\_DEBT_{i,j,s,t} = \delta_0 + \delta_1 UI_{s,t} + \delta_2 FIRM\_CONTROLS_{i,j,s,t} + \delta_2 STATE\_CONTROLS_{s,t} + \gamma_j + \gamma_t + \varepsilon_{i,j,s,t} \quad (1)$$

where *BANK_DEBT/TOTAL_DEBT* is the ratio of bank debt over total debt, *UI* represents the UI benefits proxies, *LMTB* and *LMWB*, *FIRM_CONTROLS* include the following firm-

level control variables: *SIZE*, *LEVERAGE*, *Q*, *ROA*, *TANGABILITY*, *NUMEST*, *RATED*, *INV_GRD* and *STATE_CONTROLS* include *UNEMP_RATE* and *GDPG*. The firm-level and state-level control variables are discussed in section 3.2.3. The data sources of theses variables are presented in the Appendix. γ_j and γ_t are industry and year dummies included to control for industry and year fixed-effects. $\varepsilon_{i,j,t}$ is the error term.

Table 3 reports the OLS results of estimating several specification of equation (1). The results of Model 1 and 2 show that the coefficient for *LMTB* and *LMWB* are positive and significant at the 1 % level, suggesting that firms from states with more generous UI benefits are more likely to rely on bank debt. *LMTB (LMWB)* is economically highly significant. It shows conclusively that a one standard deviation increase in UI benefits is associated with a 22.2% (24.4%) increase in bank debt ratio.[2] We can interpret these findings as implying that more generous UI benefits mitigate unemployment risk perceived by employees and are associated with an improvement in financial reporting quality (e.g., Ng, Shi, Ranasinghe and Yang, 2015; Kim and Wang, 2014; Dou, Khan, and Zhou, 2015; Ji and Tan, 2016). Firms with higher financial reporting quality are more likely to rely on bank debt because banks are more efficient at monitoring and are more likely to detect opportunistic manipulation activities. Indeed, banks (i) have better access to private information, hence are more efficient in monitoring managers' actions, (ii) have more incentives to monitor corporate insiders and (iii) are more able to discipline borrowing firms than public debtholders (Denis and Mihov, 2003; Park, 2000).

[2] The sample average value of *BANK_DEBT/TOTAL_DEBT* is 0.245. The coefficient for *LMTB* (*LMWB*) is equal to 0.165 (0.191) and its standard deviation is equal to 0.330 (0.313). A one standard deviation increase in *LMTB* (*LMWB*) is associated with a 22.2% (24.4%) increase in bank debt ratio (0.165*0.330/0.245)=0.222) (0.191*0.313/0.245)=0.244).

The rest of Models in Table 3 report the results of estimating equation (1) with different approaches to ensure the robustness of our findings. First, we control for state dummies to control for potential unobserved state-level factors that may affect UI benefits and also the degree of the firm's reliance on bank debt. The results reported in Models 2 and 3 of Table 4 show that the coefficients for *LMTB* and *LMWB* load positive and significant at the 1% level, corroborating our earlier findings. Second, we control for firm fixed-effects to ensure that our findings are not affected by potential unobserved firm-level variables. The results reported in Models 5 and 6 of Table 4 show that the coefficient for *LMTB* and *LMWB* remain positive and significant at the 1% level, further corroborating our earlier finding. Finally, we re-estimate equation using a Tobit Model because our dependent variable is truncated at zero and one. The results reported in Models 7 and 8 of Table 4 show that the coefficient for *LMTB* and *LMWB* are still positive and significant at the 1% level, again confirming our earlier findings.

We report several significant relations between the control variables and bank debt ratio. The coefficients for *LEVERAGE*, *NUMEST*, *RATED*, *INV_GRD* and *GDPG* are negative and significant at the 1% level, suggesting that more levered firms and firms with higher analyst coverage, S&P rating, and from state with higher GDP growth are less likely to rely on bank debt. Additionally, we find a positive and significant coefficient for *SIZE* and *UNEMP_RATE*, implying that larger firms and firms from states with higher unemployment rates are more likely to rely on bank debt, respectively.

[Please Insert Table 3 about here]

4.2 Identification Issues

We run some robustness tests to ensure that the identification issues do not affect our findings. First, we perform a test to rule out the possibility that our results are driven

by unobserved regional economic conditions that are the only determinant of the changes in UI benefits. Since the changes in UI benefits in bordering states are also determined by these unobserved economic conditions, we control for UI benefits in bordering states. Specifically, we re-run our basic regressions (Models 1 and 2 of Table 3) while controlling for the natural logarithm of the median of total UI benefits (*BORDER_LMTB*) and weekly UI benefits (*BORDER_LMWB*) in bordering states. The results reported in Models 1 and 3 of Table 4 show that the coefficients for the state-level UI benefits proxies (*LMTB* and *LMWB*) continue to load positive and significant at the 1% level, suggesting that our results are not likely affected by omitted variables such as unobserved regional economic conditions.

Second, we exclude industries with relatively dispersed workforces because the employees in these industries obtain UI benefits in accordance to the state where they work and not the state where their company is located. Since we use the state of incorporation to collect data on UI benefits, excluding firms belonging to such industries will ensure that our results are not affected by the mismatch between the state where the company is incorporated and the state where the employees work. The results reported in Models 3 and 4 of Table 4 show that the coefficients for *LMTB* and *LMWB* remain positive and significant at the 1% level, suggesting that our results are not affected by such mismatch.

[Please Insert Table 4 about here]

4.3 The role of labor characteristics

We extend our previous analysis by examining the impact of labor characteristics on the effect of UI benefits on the firm's degree of reliance on bank debt. Specifically, we examine whether the positive association between UI benefits and bank debt ratio is more

pronounced in firms from highly unionized states. As we mentioned in section 2, the intuition behind that strong labor protection in highly unionized states reduces unemployment risk perceived by employees, hence strengthens the relation between UI benefits and the firm's degree of reliance on bank debt. To test this point of view, we re-run Models 1 and 2 of Table 3 separately for the sub-sample firms from highly unionized states and the sub-sample of firms from less unionized states. The results reported in Models from 1 to 4 of Table 5 show that the coefficients for *LMTB* and *LMWB* are higher for the sub-sample of firms from highly unionized states, supporting our prediction.

We also examine whether the relation between UI benefits and the firm's degree of reliance on bank debt is more pronounced in labor-intensive firms. The idea behind this prediction is that employees in labor-intensive firms are likely to benefit more from the reduction in unemployment risk due to generous UI benefits, hence are more likely to rely on bank debt. To test this prediction, we divide our sample based on the median of *LABOR_INTENSITY* calculated as the ratio of the total number of employees over total assets. The results reported in Models from 5 to 8 of Table 5 show that the coefficients for *LMTB* and *LMWB* are higher for the sub-sample of labor-intensive firms, confirming our prediction.

[Please Insert Table 5 about here]

4.4 The effect of financial constraints

In this section, we examine the influence of financial constraints on the relation between UI benefits and the firm's degree of reliance on bank debt. To do so, we split our sample based on financial constraints proxies. First, we use Altman's (1968) Z-score as a proxy for financial constraints. Firms with a high Z-score have a lower probability of financial distress and hence have better access to credit financing; hence are less likely to

fire employees and/or reduce wages. Therefore, we expect that the positive association between UI benefits and the degree of reliance on bank debt is more pronounced in such firms. The results reported in Models from 1 to 4 of Table 6 show that the coefficients for *LMTB* and *LMWB* are higher for the sub-sample of firms with a high z-score, consistent with our prediction.

Second, we use the ratio of earnings before interests and taxes over interest expenses (*INT_COV*) as a proxy for financial constraints, in line with Whited (1992). A higher score for *INT_COV* indicates lower financial constraints. Models from 5 to 8 of Table 6 report the regression results of our basic models separately for sub-samples of firms with a high and low *INT_COV*. The results show that the coefficients for *LMTB* and *LMWB* are positive and significant at the 1% level across all models, but are higher for the subsample of firms with a high *INT_COV*, further supporting our earlier findings. Overall, the results in Table 6 suggest that the positive association between UI benefits and the degree of reliance on bank debt is more pronounced in less financially constrained firms.

[Please Insert Table 6 about here]

4.5 The impact of information opacity

Information opacity affects the firm's degree of reliance on bank debt. Specifically, prior literature (e.g., Li, Lin, and Zhan, 2015) argue that that opaque firms substitutes away from public debt toward bank debt. The intuition behind this argument is that banks rely less on publically available information, hence are less affected by information asymmetry. Therefore, we expect that the relation between UI benefits and the degree of reliance on bank debt is more pronounced in opaque firms. To test this point of view, we split our sample based on two proxies of information opacity. First, we use the number of

analysts following the firm (*NUMEST*) as a proxy for information opacity. Data on analyst coverage from the Institutional Brokers' Estimate System (I/B/E/S). Financial analysts act as intermediaries between managers and outside investors, which help mitigating information asymmetry problems (e.g., Healy and Palepu, 2001; Lang, Lins, and Miller, 2003). The results reported in Models from 1 to 4 in Table 6 show that the coefficients for *LMTB* and *LMWB* are positive and significant at the 1% level across all models, supporting our earlier findings. However, we find that the coefficients of these variables are higher for sub-samples with lower analyst coverage (i.e., higher information opacity), consistent with our prediction.

Second, we use firm size calculated as the natural logarithm of total assets (*SIZE*), in line with Lin, Ma, Malatesta and Xuan (2013) as a proxy for information opacity. Smaller firms tend to be less transparent and are more likely to suffer from information asymmetry problems (Lin, Ma, Malatesta and Xuan, 2013). Given that, we expect that the positive association between UI benefits and the degree of reliance on bank debt is more pronounced in smaller firms. To test this prediction, we divide our sample based on the median of *SIZE*. The results reported in Models from 5 to 8 in Table 7 show that the coefficients for *LMTB* and *LMWB* are positive and significant across all sub-samples, but are higher for low *SIZE* sub-samples, supporting our prediction. Overall, the results of Table 7 are consistent with H_4 implying that the positive relation between UI benefits and the degree of reliance on bank debt is more pronounced in opaque firms.

[Please Insert Table 7 about here]

4.6 The effect of asset substitution risk

Firms with higher asset substitution risk are more likely to opt for bank debt and avoid public debt. The intuition behind this argument is that bondholders of such firms

are more affected by information asymmetry problems (e.g., Li, Lin, and Zhan, 2015), hence may require higher compensation, which lead managers to rely more on bank debt. Therefore, we expect that the impact of UI benefits on the use of bank debt is more profound in firms with higher asset substitution risk. To test this prediction we split our sample based on the market-to-book ratio (*MB*). In line with prior literature (e.g., Campello, Lin, Ma and Zou, 2011; Li, Lin, and Zhan, 2015), we argue that firm with a higher *MTB* have higher growth opportunities and are more likely to shift their investments toward riskier assets. We expect that the positive effect of UI benefits on the degree of reliance on bank debt is more profound in the high *MB* sub-sample. Consistent with this prediction, we find that positive and significant coefficients at the 1% level for *LMTB* and *LMWB* are higher for the sub-samples of firms with higher *MB*.

4.7 Robustness tests

To ensure the robustness of our findings we use the ratio of bank debt over total assets instead of the ratio of bank debt over total debt to account for the fact that a firm may have a low level of total debt, which leads to a high bank debt ratio. The results reported in Models 1 and 2 of Table 9 show that the coefficients for *LMTB* and *LMWB* are positive and significant at the 1% level, suggesting that our findings are not affected by the use of a specific proxy for the degree of reliance on bank debt. We also use an alternative approach to examine the impact of labor unemployment insurance on the debt structure. Specifically, we extend our analysis by examining the impact of UI benefits on the speed of leverage adjustment toward targets. Following recent literature on the determinants of capital structure adjustments (e.g., Oztekin and Flannery, 2012; Chang, Chou, and Huang, 2014; Brisker and Wang, 2016; Jiang, Jiang, Huang, Kim and Nofsinger, 2017) we use a two stage approach to study the impact of UI benefits on leverage dynamic behaviors. In

the first stage, we predict the target debt ratio by regressing the observed leverage ratios on UI benefits as well as determinants of the target ratio used by related studies. Specifically, we estimate the following model:

$$D^*_{is,t} = \alpha_0 + \beta_1 UI_{is,t} + \beta_2 X_{is,t} + \beta_3 Y_{is,t} + \nu_{1i,t} \quad (2)$$

where D^* is the firm i's optimal leverage ratio at year t in state s. We use the book debt ratio calculated as total debt over total assets as a proxy for leverage. $UI_{is,t}$ represents our UI benefits proxy (i.e., $LMTB_{is,t}$ or $LMWB_{is,t}$ defined in section 3.2.2). $X_{is,t}$ includes the following firm-level determinants of the optimal leverage: (i) the market-to-book ratio (*MB*) which is calculated by dividing the book value of equity over its book value to control for growth opportunities, (ii) tangibility (*TANG*) which is the ratio of property, plant, and equipment over total assets as a proxy for debt capacity, (iii) profitability (*PROFITA*) which is the ratio of earnings before interests and taxes (*EBIT*) over total assets; (iv) the ratio of deprecation over total assets (*DEP/TA*) to proxy for the firm's need to interest deductions, (v) the ratio of R&D expenditure over total assets (*R&D/TA*) to control for the quality of the firm's assets, (vi) the firm's industry median leverage ratio (*MED*) as well as industry dummies to control for country characteristics. $Y_{is,t}$ includes industry and year dummies. $\nu_{1i,t}$ is the error term.

In the second stage, we measure the speed of the firm's leverage adjustment toward the optimal leverage. In the absence of adjustment costs firms can instantly adjust their leverages toward targets. However, in the presence of adjustment costs firms are unable to constantly and fully adjust their leverages. Consequently, the firm's leverage will deviate from the optimal leverage then partially adjust toward the optimal leverage.

Following, Fama and French (2002) and Kayhan and Titman (2007) we implement the following partial adjustment model:

$$D_{is,t} - D_{is,t-1} = \delta(D^{*}_{is,t} - D_{is,t-1}) + v_{2i,t} \quad (3)$$

where δ is the speed of the adjustment of the firm's current leverage to its optimal leverage. It lies between 0 and 1, with a higher value indicating a higher speed of adjustment towards the optimal leverage. We estimate equation (3) for the sub-sample of firms with high and low UI benefits and we expect a higher δ for the firms with higher UI benefits. The intuition behind this prediction is that firms from states with generous UI benefits have higher quality of financial reporting (e.g., Ng, Ranasinghe, Shi, and Yan, 2015; Dou, Khan, and Zou, 2016; Ji and Tan, 2016), hence are less affected by information asymmetry problems and shall face lower external financing cost (e.g., Myers 1984; Myers and Majluf, 1984). Therefore, such firms are more likely to adjust their leverage ratios to the optimal level (e.g., Oztekin and Flannery, 2012). The results of the second stage are reported in Table 9. We only report the coefficients of the UI benefits proxies for the sake of brevity. The results when we use *LMTB* as a proxy for the generosity of UI benefits are reported in Models 3 and 4. As we can see the coefficient for $D^{*}_{is,t} - D_{is,t-1}$ is higher for the sub-sample of firms with a high *LMTB*, consistent with our prediction. This finding is confirmed when we use *LMWB* as a proxy for the generosity of UI benefits. In fact, we find a higher coefficient for $D^{*}_{is,t} - D_{is,t-1}$ in the sub-sample of firms with a high *LMWB*. Overall, these findings suggest that firms from states with generous UI benefits are more able to adjust their leverages toward target.

5. Conclusions

In contributing to the literature on UI benefits (e.g., Agrawal and Matsa, 2013; Ng, Ranasinghe, Shi, and Yan, 2015; Dou, Khan, and Zou, 2016; Ji and Tan, 2016; Ellul, Wang, and Zhang, 2016) we choose to focus on one an important financing decision, namely the decision to use bank debt. Using a large sample of U.S. firms over the period 1984-2013, we show that firms from states with generous UI benefits rely more on bank debt. This finding is consistent with the view that firms from state with generous UI benefits have fewer incentives to engage in opportunistic financial reporting in order to reduce the unemployment risk perceived by employees, hence rely more on bank debt which is associated with strong monitoring. This result is robust to addressing the identification issues. Specifically, our results remains qualitatively unchanged after controlling for UI benefits in bordering states and excluding industries with relatively dispersed workforces. Furthermore, our results are robust to the use alternative proxies of debt structure.

We also find that the positive relationship between UI benefits and bank debt ratio is more pronounced in firms from highly unionized states and labor-intensive firms. Furthermore, we find that the positive relationship between UI benefits and the degree of reliance on bank debt is more pronounced in less financially constrained firms. Additionally, we find that the positive association between UI benefits and the degree of reliance on bank debt is more pronounced in opaque firms. Finally, we find that the effect of UI benefits on the use of bank debt is more profound in firms with higher asset substitution risk. In sum, our paper contributes to the literature on capital structure by providing novel evidence on the role of important non-financial stakeholders, namely employees in determining the choice between bank debt and public debt. Overall, our

findings highlight the importance of unemployment concerns for the choice of debt source.

Appendix

Variable	Description	Source
BANK_LOAN/TOTAL_DEBT	The ratio of bank debt over total debt.	Capital IQ
SIZE	The natural logarithm of the firm's market value.	Authors' calculation
LEVERAGE	The ratio of long-term debt over total assets.	Authors' calculation
Q	The ratio of total assets less the book value of equity plus the market value of equity over total assets.	Authors' calculation
ROA	The ratio of the net income over the total assets.	Authors' calculation
TANGABILITY	The ratio of gross property, plant, and equipment over total assets.	Authors' calculation
NUMEST	The number of analysts following a firm from the *I/B/E/S* summary files.	Authors' calculation
RATED	A dummy variable equal to one (1) if the firm has an S&P long-term rating, and zero (0) otherwise.	Authors' estimation
INV_GRD	A dummy variable equal to one (1) if the firm has an S&P long term rating that is BBB- or above, and zero (0) otherwise.	Authors' calculation
UNEMP_RATE	The state unemployment rate.	US Bureau of Labor Statistics
GDPG	The state-level GDP growth rate.	US Bureau of Labor Statistics
BORDER_LMTB	The natural logarithm of the median of total UI benefits.	Authors' calculation
BORDER_LMWB	The natural logarithm of the median of weekly UI benefits.	Authors' calculation
UNION	The state-level percentage of employees covered by collective bargaining agreements.	Authors' calculation
LABOR_INTENSITY	The ratio of the number of employees over total assets.	Authors' calculation
Z_SCORE	Altman's Z-score calculated based on four financial ratios: Z-score = 1.2A + 1.4B + 3.3C + 0.999D+0.6E where A = working capital/total assets; B = retained earnings/total assets; C = earnings before interest and Tax/total assets; D = sales/total assets; E = market value of equity /book value of debt.	Authors' calculation
INT_COV	The ratio of earnings before interests and taxes over interest expenses.	Authors' calculation
LN(TOTAL_ASSETS)	The natural logarithm of total assets.	Authors' calculation

MTB	The market-to-book ratio.	Authors' calculation

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TABLE 1
Descriptive Statistics

Variable	N	Mean	Median	Standard deviation	Q1	Q3
$BANK\_DEBT/TOTAL\_DEBT_{i,t}$	49,719	0.245	0.000	0.376	0.000	0.462
$LMTB_{i,t}$	49,719	9.175	9.188	0.330	8.942	9.367
$LMWB_{i,t}$	49,719	5.912	5.930	0.313	5.684	6.109
$SIZE_{i,t}$	49,719	5.475	5.639	2.378	3.860	7.173
$LEVERAGE_{i,t}$	49,719	0.297	0.221	0.407	0.078	0.382
$Q_{i,t}$	49,719	2.595	1.526	5.010	1.136	2.342
$ROA_{i,t}$	49,719	-0.025	0.106	0.581	0.021	0.163
$TANGABILITY_{i,t}$	49,719	0.531	0.441	0.391	0.218	0.770
$NUMEST_{i,t}$	49,719	2.420	0.000	4.587	0.000	3.000
$RATED_{i,t}$	49,719	0.281	0.000	0.449	0.000	1.000
$INV\_GRD_{i,t}$	49,719	0.132	0.000	0.338	0.000	0.000
$UNEMP\_RATE_{t}$	49,719	0.061	0.057	0.020	0.047	0.071
$GDPG_{t}$	49,719	0.047	0.046	0.032	0.031	0.066

This table presents descriptive statistics for the variables used in our multivariate regression analysis to examine the impact of UI benefits on the choice of debt source for a sample of 49,719 firm-year observations for the 1984-2013 period. Descriptions and sources of these variables are provided in the Appendix.

Table 2
Pearson Correlation Coefficients

Variable	$BANK\_DEBT/TOTAL\_DEBT_{i,t}$	$LMTB_{i,t}$	$LMWB_{i,t}$	$SIZE_{i,t}$	$LEVERAGE_{i,t}$	$Q_{i,t}$	$ROA_{i,t}$	$TANGABILITY_{i,t}$	$NUMEST_{i,t}$	$RATED_{i,t}$	$INV\_GRD_{i,t}$	$UNEMP\_RATE_t$
$LMTB_{i,t}$	**0.213**											
$LMWB_{i,t}$	**0.231**	**0.994**										
$SIZE_{i,t}$	**-0.048**	**-0.013**	**-0.007**									
$LEVERAGE_{i,t}$	**-0.023**	0.001	0.007	**-0.150**								
$Q_{i,t}$	**-0.028**	**0.020**	**0.020**	**-0.332**	**0.272**							
$ROA_{i,t}$	**0.028**	**-0.076**	**-0.080**	**0.459**	**-0.368**	**-0.560**						
$TANGABILITY_{i,t}$	-0.006	**-0.081**	**-0.080**	**0.087**	**0.120**	**-0.079**	**0.075**					
$NUMEST_{i,t}$	**-0.010**	**0.097**	**0.105**	**0.409**	**-0.069**	**-0.054**	**0.133**	**-0.043**				
$RATED_{i,t}$	**-0.143**	**-0.038**	**-0.032**	**0.651**	**0.084**	**-0.115**	**0.170**	**0.120**	**0.280**			
$INV\_GRD_{i,t}$	**-0.179**	**-0.038**	**-0.037**	**0.511**	**-0.035**	**-0.055**	**0.121**	**0.077**	**0.259**	**0.622**		
$UNEMP\_RATE_t$	**0.244**	**0.195**	**0.220**	**0.018**	**0.029**	**0.025**	**-0.065**	**-0.019**	**0.118**	-0.007	**-0.033**	
$GDPG_t$	**-0.215**	**-0.253**	**-0.271**	**-0.030**	**-0.032**	0.006	**0.046**	**0.018**	**-0.078**	**-0.009**	**0.006**	**-0.577**

This table presents Pearson pairwise correlation coefficients between the regression variables. The full sample includes 49,719 firm-year observations for the 1984-2013 period. Bold face indicates statistical significance at the 1% level. Descriptions and data sources for these variables are provided in the Appendix.

TABLE 3

Unemployment Insurance and the Choice of Debt Source

Variable	*Basic Model*		*State fixed-effects*		*Firm fixed-effects*		*Tobit Model*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$LMTB_{i,t}$	0.165***		0.535***		0.528***		0.582***	
	(16.037)		(39.062)		(31.813)		(20.096)	
$LMWB_{i,t}$		0.191***		0.551***		0.546***		0.679***
		(17.680)		(39.701)		(32.364)		(22.048)
$SIZE_{i,t}$	0.010***	0.009***	0.008***	0.007***	0.044***	0.041***	0.037***	0.036***
	(4.332)	(4.260)	(3.643)	(3.556)	(9.981)	(9.208)	(6.135)	(6.017)
$LEVERAGE_{i,t}$	-0.010	-0.010	-0.017**	-0.018***	-0.024***	-0.024***	0.030	0.029
	(-1.433)	(-1.480)	(-2.566)	(-2.614)	(-3.087)	(-3.225)	(1.636)	(1.579)
$Q_{i,t}$	-0.001	-0.001	-0.001	-0.000	0.001**	0.001**	-0.002	-0.002
	(-1.433)	(-1.315)	(-0.931)	(-0.845)	(2.065)	(2.014)	(-0.965)	(-0.836)
$ROA_{i,t}$	0.042***	0.042***	0.051***	0.052***	-0.009*	-0.008	0.095***	0.098***
	(7.836)	(7.973)	(9.632)	(9.772)	(-1.793)	(-1.546)	(5.467)	(5.610)
$TANGABILITY_{i,t}$	0.022**	0.022**	0.011	0.011	0.067***	0.064***	0.068**	0.068**
	(2.170)	(2.185)	(1.254)	(1.288)	(5.105)	(4.908)	(2.516)	(2.528)
$NUMEST_{i,t}$	-0.002**	-0.002***	-0.003***	-0.003***	-0.004***	-0.004***	0.001	0.000
	(-2.481)	(-2.721)	(-5.314)	(-5.631)	(-5.610)	(-6.148)	(0.549)	(0.239)
$RATED_{i,t}$	-0.082***	-0.082***	-0.089***	-0.090***	-0.067***	-0.068***	-0.106***	-0.107***
	(-7.992)	(-8.041)	(-8.894)	(-8.997)	(-5.924)	(-6.085)	(-4.117)	(-4.159)
$INV\_GRD_{i,t}$	-0.136***	-0.135***	-0.109***	-0.107***	-0.035***	-0.033***	-0.376***	-0.373***
	(-13.793)	(-13.623)	(-11.709)	(-11.485)	(-3.035)	(-2.865)	(-12.528)	(-12.377)
$UNEMP\_RATE_t$	2.346***	2.283***	2.169***	2.075***	1.220***	1.137***	6.220***	5.960***
	(15.214)	(14.827)	(15.481)	(14.890)	(9.059)	(8.490)	(15.610)	(14.973)
$GDPG_t$	-0.979***	-0.940***	-0.496***	-0.485***	-0.513***	-0.508***	-3.381***	-3.275***
	(-13.874)	(-13.327)	(-8.501)	(-8.303)	(-9.198)	(-9.091)	(-16.460)	(-15.970)

Intercept	-1.398***	-1.004***	-4.722***	-3.062***	-4.882***	-3.248***	-5.918***	-4.566***
	(-12.564)	(-11.528)	(-22.592)	(-16.263)	(-33.821)	(-34.839)	(-19.607)	(-19.552)
INDUSTRY EFFECTS	YES	YES	YES	YES	YES	YES	YES	YES
YEAR EFFECTS	YES	YES	YES	YES	YES	YES	YES	YES
STATE EFFECTS			YES	YES				
FIRM EFFECTS					YES	YES		
R^2	0.170	0.173	0.221	0.224	0.191	0.195		
Pseudo R2							0.110	0.114
N	49,719	49,719	49,719	49,719	49,719	49,719	49,719	49,719

This table presents regression results of the impact of UI benefits on the choice of debt source. The full sample includes 49,719 firm-year observations for the 1984-2013 period. Bold face indicates statistical significance at the 1% level. Descriptions and data sources for the regression variables are provided in the Appendix. z-statistics based on robust standard errors adjusted for clustering by firm are shown below each estimate – in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, one-tailed when directional predictions are made, and two-tailed otherwise.

TABLE 4
Addressing Identification Issues

Variable	*Bordering effect*		*Without industries with dispersed operations*	
	(1)	(2)	(3)	(4)
$LMTB_{i,t}$	0.165***		0.166***	
	(16.037)		(14.975)	
$BORDER\_LMTB_{i,t}$	0.298***			
	(17.201)			
$LMWB_{i,t}$		0.065***		0.193***
		(4.982)		(16.585)
$BORDER\_LMWB_{i,t}$		0.292***		
		(16.532)		
$SIZE_{i,t}$	0.008***	0.008***	0.011***	0.011***
	(3.564)	(3.540)	(4.523)	(4.477)
$LEVERAGE_{i,t}$	-0.013*	-0.013*	-0.013*	-0.013*
	(-1.932)	(-1.938)	(-1.901)	(-1.943)
$Q_{i,t}$	-0.001	-0.001	-0.001	-0.000
	(-1.206)	(-1.142)	(-0.946)	(-0.822)
$ROA_{i,t}$	0.044***	0.044***	0.040***	0.041***
	(8.161)	(8.244)	(7.269)	(7.400)
$TANGABILITY_{i,t}$	0.029***	0.029***	0.028**	0.028**
	(2.796)	(2.787)	(2.547)	(2.576)
$NUMEST_{i,t}$	-0.002***	-0.002***	-0.002***	-0.003***
	(-3.636)	(-3.780)	(-3.685)	(-3.923)
$RATED_{i,t}$	-0.085***	-0.085***	-0.077***	-0.077***
	(-8.233)	(-8.264)	(-6.803)	(-6.856)
$INV\_GRD_{i,t}$	-0.124***	-0.123***	-0.151***	-0.150***
	(-12.285)	(-12.224)	(-14.101)	(-13.940)
$UNEMP\_RATE_t$	2.151***	2.125***	2.402***	2.338***
	(14.159)	(13.999)	(14.472)	(14.106)
$GDPG_t$	-0.654***	-0.635***	-0.986***	-0.944***
	(-9.394)	(-9.133)	(-12.840)	(-12.308)
Intercept	-3.021***	-1.953***	-1.401***	-1.013***
	(-20.228)	(-17.656)	(-11.960)	(-11.170)
INDUSTRY EFFECTS	YES	YES	YES	YES
YEAR EFFECTS	YES	YES	YES	YES
R^2	0.192	0.194	0.165	0.168
N	49,584	49,584	42,798	42,798

This table presents regression results of the tests performed to address the identification issues that may affect our results. The full sample includes 49,719 firm-year observations for the 1984-2013 period. Bold face indicates statistical significance at the 1% level. Descriptions and data sources for the regression variables are provided in the Appendix. z-statistics based on robust

standard errors adjusted for clustering by firm are shown below each estimate – in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, one-tailed when directional predictions are made, and two-tailed otherwise.

TABLE 5

The Role of Labor Union and Intensity

Variable	*UNION*				*LABOR_INTENSITY*			
	High	High	Low	Low	High	High	Low	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$LMTB_{i,t}$	0.231***		0.179***		0.188***		0.143***	
	(18.653)		(12.966)		(13.873)		(9.804)	
$LMWB_{i,t}$		0.262***		0.209***		0.214***		0.168***
		(20.383)		(14.246)		(15.162)		(10.894)
$SIZE_{i,t}$	0.007***	0.007***	0.011***	0.010***	0.013***	0.013***	0.007**	0.007**
	(2.763)	(2.750)	(3.421)	(3.317)	(4.246)	(4.263)	(2.333)	(2.280)
$LEVERAGE_{i,t}$	-0.009	-0.009	-0.016*	-0.016*	-0.008	-0.008	-0.016	-0.017
	(-0.983)	(-1.081)	(-1.724)	(-1.719)	(-0.995)	(-1.027)	(-1.497)	(-1.525)
$Q_{i,t}$	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(-0.845)	(-0.714)	(-0.858)	(-0.778)	(-1.531)	(-1.456)	(-1.326)	(-1.224)
$ROA_{i,t}$	0.038***	0.039***	0.045***	0.046***	0.034***	0.035***	0.064***	0.065***
	(5.851)	(5.987)	(5.345)	(5.449)	(5.547)	(5.652)	(6.096)	(6.149)
$TANGABILITY_{i,t}$	-0.005	-0.005	0.025*	0.025*	0.019	0.018	0.014	0.015
	(-0.353)	(-0.371)	(1.889)	(1.882)	(1.433)	(1.373)	(0.971)	(0.993)
$NUMEST_{i,t}$	-0.003***	-0.003***	-0.001	-0.001	-0.000	-0.000	-0.002***	-0.002***
	(-3.470)	(-3.727)	(-1.416)	(-1.618)	(-0.065)	(-0.189)	(-2.658)	(-2.844)
$RATED_{i,t}$	-0.065***	-0.067***	-0.108***	-0.108***	-0.077***	-0.078***	-0.089***	-0.089***
	(-4.634)	(-4.734)	(-8.074)	(-8.120)	(-5.353)	(-5.409)	(-6.737)	(-6.743)
$INV\_GRD_{i,t}$	-0.120***	-0.118***	-0.133***	-0.130***	-0.123***	-0.121***	-0.149***	-0.148***
	(-9.012)	(-8.857)	(-10.197)	(-10.021)	(-8.657)	(-8.510)	(-11.513)	(-11.421)
$UNEMP\_RATE_t$	2.916***	2.871***	2.539***	2.458***	2.930***	2.873***	1.837***	1.780***
	(15.418)	(15.220)	(10.869)	(10.521)	(13.621)	(13.377)	(8.805)	(8.527)
$GDPG_t$	-0.990***	-0.917***	-0.632***	-0.601***	-1.165***	-1.116***	-0.771***	-0.739***

	(-11.570)	(-10.757)	(-6.247)	(-5.953)	(-11.864)	(-11.390)	(-7.961)	(-7.642)
Intercept	-2.095***	-1.525***	-1.489***	-1.070***	-1.665***	-1.206***	-1.137***	-0.804***
	(-16.320)	(-15.559)	(-9.885)	(-9.007)	(-11.232)	(-10.402)	(-7.573)	(-6.993)
INDUSTRY EFFECTS	YES	YES	YES	YES	YES	YES	YES	YES
YEAR EFFECTS	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.211	0.216	0.162	0.166	0.190	0.194	0.166	0.169
N	24,952	24,952	24,767	24,767	25,525	25,525	24,194	24,194

This table presents regression results of the effect of labor union and intensity on the impact of UI benefits on the choice of debt source. The full sample includes 49,719 firm-year observations for the 1984-2013 period. Bold face indicates statistical significance at the 1% level. Descriptions and data sources for the regression variables are provided in the Appendix. z-statistics based on robust standard errors adjusted for clustering by firm are shown below each estimate – in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, one-tailed when directional predictions are made, and two-tailed otherwise.

TABLE 6
The Role of Financial Constraints

Variable	*Z_SCORE*				*INT_COV*			
	High	High	Low	Low	High	High	Low	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$LMTB_{i,t}$	0.175***		0.156***		0.185***		0.147***	
	(13.642)		(11.413)		(14.397)		(11.231)	
$LMWB_{i,t}$		0.203***		0.179***		0.206***		0.176***
		(15.088)		(12.491)		(15.516)		(12.740)
$SIZE_{i,t}$	0.010***	0.010***	0.007**	0.006**	-0.001	-0.001	0.018***	0.018***
	(3.562)	(3.480)	(2.311)	(2.257)	(-0.396)	(-0.487)	(6.174)	(6.128)
$LEVERAGE_{i,t}$	0.117***	0.118***	-0.037***	-0.037***	-0.007	-0.008	-0.010	-0.010
	(3.979)	(4.015)	(-4.680)	(-4.687)	(-0.511)	(-0.538)	(-1.356)	(-1.413)
$Q_{i,t}$	-0.001	-0.001	-0.000	-0.000	-0.006***	-0.006***	0.000	0.000
	(-0.938)	(-0.814)	(-0.111)	(-0.107)	(-3.199)	(-3.157)	(0.369)	(0.496)
$ROA_{i,t}$	0.055***	0.056***	0.035***	0.035***	0.023	0.025*	0.033***	0.033***
	(5.540)	(5.667)	(5.503)	(5.557)	(1.612)	(1.701)	(5.896)	(6.021)
$TANGABILITY_{i,t}$	0.036**	0.035**	0.008	0.009	0.003	0.003	0.042***	0.042***
	(2.342)	(2.333)	(0.713)	(0.737)	(0.270)	(0.271)	(3.287)	(3.309)
$NUMEST_{i,t}$	-0.002**	-0.002**	-0.001	-0.001	-0.001	-0.001	-0.003***	-0.003***
	(-2.271)	(-2.455)	(-1.279)	(-1.463)	(-1.209)	(-1.450)	(-2.872)	(-2.987)
$RATED_{i,t}$	-0.110***	-0.110***	-0.078***	-0.078***	-0.048***	-0.049***	-0.159***	-0.158***
	(-6.474)	(-6.524)	(-6.472)	(-6.495)	(-4.338)	(-4.402)	(-10.072)	(-10.052)
$INV\_GRD_{i,t}$	-0.119***	-0.118***	-0.141***	-0.139***	-0.129***	-0.127***	-0.091***	-0.091***
	(-7.303)	(-7.234)	(-12.163)	(-11.939)	(-12.485)	(-12.272)	(-5.235)	(-5.248)
$UNEMP\_RATE_t$	2.172***	2.113***	2.546***	2.481***	1.932***	1.871***	2.800***	2.740***
	(10.259)	(9.998)	(12.717)	(12.398)	(10.520)	(10.205)	(12.740)	(12.477)
$GDPG_t$	-1.020***	-0.970***	-0.924***	-0.897***	-1.097***	-1.061***	-0.822***	-0.780***

	(-10.403)	(-9.901)	(-9.594)	(-9.315)	(-12.510)	(-12.108)	(-7.833)	(-7.442)
Intercept	-1.459***	-1.044***	-1.343***	-0.966***	-1.486***	-1.006***	-1.271***	-0.953***
	(-10.340)	(-9.364)	(-9.724)	(-9.259)	(-11.698)	(-10.731)	(-8.387)	(-7.763)
INDUSTRY EFFECTS	YES	YES	YES	YES	YES	YES	YES	YES
YEAR EFFECTS	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.164	0.168	0.194	0.197	0.212	0.215	0.146	0.150
N	26,799	26,799	22,920	22,920	26,137	26,137	23,582	23,582

This table presents regression results of the effect of financial constraints on the association between UI benefits and the choice of debt source. The full sample includes 49,719 firm-year observations for the 1984-2013 period. Bold face indicates statistical significance at the 1% level. Descriptions and data sources for the regression variables are provided in the Appendix. z-statistics based on robust standard errors adjusted for clustering by firm are shown below each estimate – in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, one-tailed when directional predictions are made, and two-tailed otherwise.

TABLE 7

The Role of Information Opacity

Variable	*ANALYST_COV*				*SIZE*			
	High	High	Low	Low	High	High	Low	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$LMTB_{i,t}$	0.127***		0.173***		0.096***		0.188***	
	(6.816)		(15.143)		(5.674)		(15.706)	
$LMWB_{i,t}$		0.149***		0.199***		0.107***		0.219***
		(7.516)		(16.670)		(6.084)		(17.448)
$SIZE_{i,t}$	0.022***	0.021***	0.008***	0.008***	-0.025***	-0.025***	0.019***	0.019***
	(3.540)	(3.321)	(3.323)	(3.295)	(-5.096)	(-5.166)	(6.731)	(6.723)
$LEVERAGE_{i,t}$	-0.032	-0.031	-0.010	-0.010	0.005	0.005	-0.010	-0.010
	(-1.120)	(-1.108)	(-1.486)	(-1.520)	(0.189)	(0.167)	(-1.467)	(-1.506)
$Q_{i,t}$	-0.009***	-0.009***	-0.000	-0.000	-0.024***	-0.024***	-0.000	-0.000
	(-3.271)	(-3.210)	(-0.543)	(-0.440)	(-5.992)	(-5.978)	(-0.162)	(-0.014)
$ROA_{i,t}$	0.094**	0.098**	0.041***	0.042***	0.246***	0.245***	0.036***	0.037***
	(2.449)	(2.545)	(7.689)	(7.800)	(3.906)	(3.892)	(6.556)	(6.684)
$TANGABILITY_{i,t}$	-0.044**	-0.043**	0.033***	0.033***	-0.072***	-0.072***	0.041***	0.041***
	(-2.053)	(-2.018)	(3.009)	(3.003)	(-4.413)	(-4.392)	(3.478)	(3.469)
$NUMEST_{i,t}$	-0.008***	-0.008***	0.035***	0.035***	0.002**	0.001**	-0.004***	-0.004***
	(-6.355)	(-6.252)	(5.681)	(5.577)	(2.376)	(2.239)	(-3.463)	(-3.532)
$RATED_{i,t}$	-0.069***	-0.069***	-0.086***	-0.086***	-0.034*	-0.035**	-0.102***	-0.102***
	(-4.045)	(-4.046)	(-7.416)	(-7.457)	(-1.954)	(-1.979)	(-8.644)	(-8.621)
$INV\_GRD_{i,t}$	-0.132***	-0.131***	-0.123***	-0.121***	-0.126***	-0.125***	-0.085***	-0.082***
	(-7.924)	(-7.871)	(-10.906)	(-10.726)	(-10.370)	(-10.260)	(-4.510)	(-4.376)
$UNEMP\_RATE_t$	1.921***	1.852***	2.501***	2.449***	0.864***	0.823***	2.872***	2.809***
	(7.376)	(7.106)	(13.773)	(13.506)	(3.726)	(3.549)	(15.282)	(14.978)
$GDPG_t$	-0.726***	-0.708***	-1.013***	-0.968***	-0.652***	-0.638***	-1.048***	-0.998***

	(-5.622)	(-5.494)	(-12.315)	(-11.777)	(-6.240)	(-6.100)	(-12.044)	(-11.493)
Intercept	-1.023***	-0.729***	-1.484***	-1.068***	-0.366**	-0.112	-1.713***	-1.275***
	(-4.701)	(-4.017)	(-12.533)	(-11.837)	(-2.005)	(-0.777)	(-13.565)	(-13.124)
INDUSTRY EFFECTS	YES	YES	YES	YES	YES	YES	YES	YES
YEAR EFFECTS	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.208	0.211	0.170	0.173	0.251	0.252	0.164	0.169
N	12,998	12,998	36,721	36,721	12,547	12,547	37,172	37,172

This table presents regression results of the effect of information opacity on the relationship between UI benefits and the choice of debt source. The full sample includes 49,719 firm-year observations for the 1984-2013 period. Bold face indicates statistical significance at the 1% level. Descriptions and data sources for the regression variables are provided in the Appendix. z-statistics based on robust standard errors adjusted for clustering by firm are shown below each estimate – in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, one-tailed when directional predictions are made, and two-tailed otherwise.

TABLE 8
The Role of Asset Substitution Risk

Variable	*MB*			
	High	High	Low	Low
	(1)	(2)	(3)	(4)
$LMTB_{i,t}$	0.164***		0.163***	
	(13.746)		(11.986)	
$LMWB_{i,t}$		0.190***		0.188***
		(15.154)		(13.230)
$SIZE_{i,t}$	0.008***	0.008***	0.009***	0.009***
	(2.963)	(2.862)	(3.248)	(3.213)
$LEVERAGE_{i,t}$	0.034*	0.034*	-0.028***	-0.028***
	(1.670)	(1.658)	(-3.880)	(-3.898)
$Q_{i,t}$	-0.002**	-0.002**	0.001	0.001
	(-2.176)	(-2.058)	(1.117)	(1.155)
$ROA_{i,t}$	0.063***	0.065***	0.041***	0.041***
	(5.947)	(6.060)	(6.935)	(7.014)
$TANGABILITY_{i,t}$	0.019	0.019	0.020	0.020*
	(1.453)	(1.448)	(1.632)	(1.659)
$NUMEST_{i,t}$	-0.001	-0.001	-0.002	-0.002*
	(-1.238)	(-1.483)	(-1.588)	(-1.703)
$RATED_{i,t}$	-0.061***	-0.062***	-0.103***	-0.103***
	(-4.589)	(-4.658)	(-8.341)	(-8.352)
$INV\_GRD_{i,t}$	-0.141***	-0.139***	-0.127***	-0.126***
	(-10.836)	(-10.716)	(-10.205)	(-10.037)
$UNEMP\_RATE_t$	1.475***	1.417***	3.072***	3.006***
	(7.127)	(6.858)	(15.387)	(15.072)
$GDPG_t$	-0.999***	-0.951***	-0.908***	-0.877***
	(-10.289)	(-9.804)	(-9.634)	(-9.316)
Intercept	-1.410***	-1.020***	-1.373***	-0.985***
	(-11.106)	(-10.217)	(-9.413)	(-8.721)
INDUSTRY EFFECTS	YES	YES	YES	YES
YEAR EFFECTS	YES	YES	YES	YES
R^2	0.173	0.176	0.173	0.176
N	24,862	24,862	24,857	24,857

This table presents regression results of the effect of asset substitution risk on the relationship between UI benefits and the choice of debt source. The full sample includes 49,719 firm-year observations for the 1984-2013 period. Bold face indicates statistical significance at the 1% level. Descriptions and data sources for the regression variables are provided in the Appendix. z-statistics based on robust standard errors adjusted for clustering by firm are shown below each estimate – in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, one-tailed when directional predictions are made, and two-tailed otherwise.

TABLE 9
Robustness Tests

Variable	*BANK_LOAN/TOTAL_ASSETS*	
	(1)	(2)
$LMTB_{i,t}$	0.039***	
	(7.823)	
$LMWB_{i,t}$		0.045***
		(8.422)
$SIZE_{i,t}$	-0.002	-0.002
	(-1.385)	(-1.408)
$LEVERAGE_{i,t}$	0.149***	0.149***
	(8.415)	(8.412)
$Q_{i,t}$	0.000	0.000
	(0.375)	(0.396)
$ROA_{i,t}$	0.009	0.009
	(1.032)	(1.056)
$TANGABILITY_{i,t}$	0.001	0.001
	(0.191)	(0.197)
$NUMEST_{i,t}$	-0.000	-0.000
	(-1.367)	(-1.512)
$RATED_{i,t}$	0.008	0.008
	(1.338)	(1.320)
$INV\_GRD_{i,t}$	-0.046***	-0.046***
	(-8.671)	(-8.603)
$UNEMP\_RATE_{t}$	0.630***	0.615***
	(6.763)	(6.611)

Variable	*LMTB*		*LMWB*	
	HIGH	*LOW*	*HIGH*	*LOW*
	(3)	(4)	(5)	(6)
$D^{*}_{is,t}$-$D_{is,t-1}$	0.514***	0.334***	0.515***	0.333***
	(5.582)	(5.438)	(5.581)	(5.441)
INDUSTRY EFFECTS	YES	YES	YES	YES
YEAR EFFECTS	YES	YES	YES	YES
Controls	YES	YES	YES	YES
R^2	0.413	0.217	0.413	0.217
N	21,903	13,840	21,896	13,847

$GDPG_t$	-0.315***	-0.305***
	(-6.874)	(-6.648)
Intercept	-0.354***	-0.262***
	(-7.063)	(-6.875)
INDUSTRY EFFECTS	YES	YES
YEAR EFFECTS	YES	YES
R^2	0.131	0.132
N	49,719	49,719

This table presents the results of tests to ensure the robustness of our findings. The full sample includes 49,719 firm-year observations for the 1984-2013 period. Bold face indicates statistical significance at the 1% level. Descriptions and data sources for the regression variables are provided in the Appendix. z-statistics based on robust standard errors adjusted for clustering by firm are shown below each estimate – in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, one-tailed when directional predictions are made, and two-tailed otherwise.