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## Article

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# Job satisfaction and firm leverage: Evidence from the “China’s Best Employer Award 100” winners

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## ABSTRACT

In this study, we examine the relationship between job satisfaction and firm leverage using a sample of Chinese listed firms. We find that in a sample of “China’s 100 Best Employers Award” winners during 2011–2017, job satisfaction is negatively associated with firm leverage. The effect is more pronounced in firms with higher distress risk and operating in human capital intensive industries. We confirm the validity of the main findings using a matched sample and a series of robustness checks. Overall, our results indicate that firms can credibly demonstrate their commitment to stakeholders and re-shape their capital structure by improving job satisfaction.

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## 1. Introduction

The influence of a firm’s nonfinancial stakeholders (e.g., customers, suppliers, and workers) on its capital structure decisions attracts much attention from academics and practitioners. However, there is a dearth of empirical evidence on the effect of job satisfaction on firm leverage in emerging markets, where legal and financial systems are generally underdeveloped and firms obtain external financing based on their reputations and relationships (Allen et al., 2005). Specifically, there are few studies of the reputational consequences of firms’

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attitudes toward nonfinancial stakeholders in emerging markets. In this study, we investigate how employees' job satisfaction affects the financing decisions of Chinese A-share listed firms.

The relationship between job satisfaction and leverage ratio in an emerging market like China is *ex ante* ambiguous. On the one hand, in China, employees are important stakeholders in firms, and both law and social norms support stakeholder governance.<sup>1</sup> As firms tend to be stakeholder-oriented, they may protect their employees and suppliers by lowering their debt level and thus avoiding bankruptcy (Bae et al., 2011; Allen et al., 2014). Therefore, maintaining a lower leverage ratio could represent a commitment to stakeholders. Employees' job satisfaction may also provide positive soft information about a firm's true intrinsic value, leading such firms to price their equity at a higher rate. Consequently, firms with higher job satisfaction may have more access to equity finance and less need of debt finance, which also leads to lower firm leverage (Chemmanur et al., 2019).

On the other hand, as both employees and creditors are important non-shareholder stakeholders, adopting employee-friendly practices and fulfilling employees' needs can benefit a firm by improving its reputation for the fair treatment of value-relevant stakeholders and impressing potential and current creditors, which can facilitate subsequent debt financing by creating more efficient contracting (Francis et al., 2019).<sup>2</sup> Consequently, firms with higher job satisfaction can sustain a higher leverage ratio.

A major obstacle to empirically testing which of the above channels dominates in China is the lack of measures of employee satisfaction. To address this issue, in this study, we construct a measure of job satisfaction using the "China's 100 Best Employers Award" (BE) list for the 2011–2017 period. This list identifies the best 100 employers in mainland China each year. It was first published on December 21, 2011 by ZhiLianZhaoPin (Zhaopin.com), one of the largest job search websites in China. This list is highly visible in China. First, it is widely disseminated by the *Harvard Business Review* (Chinese version), and it covers large companies. Second, it is supported by influential organizations (e.g., UN Women), raising the award's profile. Third, hundreds of media outlets are invited to the award presentation each year, so the firms' names are widely disseminated by newspapers, online websites, and television channels. Fourth, a dedicated website (best.zhaopin.com) reports on the BE list and the electronic reports used in the selection process. Fifth, a grand award ceremony is held every year, which is attended by many political and business celebrities who make keynote speeches and present the prizes. Therefore, it is reasonable to assume that firms on the BE list have sound reputations for treating employees well, and this can be used to represent job satisfaction.

Our complete sample consists of 21,496 firm-year observations from firms listed on the Shanghai and Shenzhen stock exchanges in the 2011–2017 period. We find that firms on the BE list have significantly lower leverage than other firms. This result remains robust when we control for industry-, firm-, and year-fixed effects. In addition, the baseline results are robust when we change the proxies for the main dependent variable and the main independent variable, and when we include additional control variables. Overall, our results show that there is a negative relationship between job satisfaction and firm leverage in Chinese firms, which is consistent with our first assumption.

We then use a series of additional analyses to alleviate endogeneity concerns. A potential limitation of our sample is that the BE list may suffer from selection bias, as not all of the sample firms (i.e., all of the firms listed on the Shanghai and Shenzhen stock exchanges) are included in the selection process and firms need to apply to be considered for the list. To alleviate these concerns, we use the propensity score matching (PSM) method and the Heckman inverse Mills ratio (IMR) method to address selection bias due to observable and unobservable variables, respectively (Tucker, 2010). We rerun the regression, and obtain estimation results that are in line with the baseline results. In addition, the Heckman two-stage model indicates that any selection biases are in the downward direction. That is, if firms with lower employee treatment scores do not apply because they do not expect to make the list, this simply increases the accuracy of the list, and if a firm known for high job

<sup>1</sup> Lin (2010) indicates that the historical tradition of emphasizing workers as a powerful political group with strong representation in the People's Congresses influences Chinese corporate governance: the 1994 Company Law, issued several years before the modern idea of CSR was conceptualized, imposes requirements for employee participation in corporate governance.

<sup>2</sup> Valentine and Fleischman (2008) indicate that fair treatment of employees, who are internal stakeholders, reflects a firm's ethical standards in general. As a consequence, a firm's attitude toward employees may influence external stakeholders' perceptions of the firm's corporate social responsibility (Edmans, 2011, 2014; Glavas and Kelley, 2014; Francis et al., 2019).

satisfaction does not apply because it does not need the reputation boost created by the award selection, the results are weakened (Edmans, 2011).

We further explore cross-sectional differences in the main effect. We find that the decrease in firm leverage is more pronounced for firms with higher default risk and firms in human capital intensive industries, as these firms have stronger incentives to improve job satisfaction and thereby retain their employees. Such patterns are consistent with the predictions of previous studies regarding the effects of a stakeholder-oriented view on financial decisions (Bae et al., 2011; Allen et al., 2014).

Our study contributes to the literature in several ways. We contribute to the literature on job satisfaction and its impact on firm performance (Bae et al., 2011; Verwijmeren and Derwall, 2010). Prior studies argue that human capital is a crucial part of a firm's capital structure, because when firms have a higher leverage ratio, employees invest less in firm-specific human capital. For example, Bae et al. (2011) and Verwijmeren and Derwall (2010) use the Kinder, Lydenberg, and Domini (KLD) index as a proxy for employee treatment and find a negative effect of job satisfaction on firm leverage. Chemmanur et al. (2019) use employees' ratings of firms as a proxy for firms' reputation among employees and find that firms with a better reputation among employees tend to choose equity financing rather than debt financing, leading to a lower leverage ratio. Using China's BE list, we provide evidence that job satisfaction can influence firm leverage in a representative emerging market. Moreover, our study relates to studies that use the US "Best Companies to Work For" (BC) list published by the "Fortune Magazine" as a proxy for job satisfaction (e.g., Edmans, 2011, 2012). Our overall findings complement these studies, while using a more comprehensive and objective measure of job satisfaction.<sup>3</sup>

The rest of this paper is organized as follows. In Section 2, we introduce the Chinese Best Employers Award. In Section 3, we describe the data and summary statistics. In Section 4, we present our empirical strategy. In Section 5, we report the results. Section 6 documents the cross-sectional tests. Section 7 summarizes and concludes the paper.

## 2. The Best employer list

Our main data source is China's BE list, which is published by ZhiLianZhaoPin (Zhaopin.com), one of the largest job search websites in China. An academic institution, the Center for Social Research, Peking University, is the authorized co-sponsor of the BE list, and ensures the neutrality of the evaluation process. The BE list was first published on December 21, 2011. It is updated every year between September 13 and October 13. Each year, the evaluation committee publishes the BE list on the dedicated website, best.zhaopin.com, and the results are reported in newspapers and on television. In addition, a grand award ceremony is organized and broadcast live on television and online. Therefore, the BE list receives significant attention from enterprises, shareholders, employees, and other stakeholders around China. Due to the increasing influence of the BE list, the number of firms that apply to be considered on the list has increased from 1186 in 2011 to 17,554 in 2017.

During the evaluation process, the Center for Social Research is in charge of formulating the application regulations, the selection rules, and the evaluation index system. In addition, the Center convenes the evaluation experts, monitors the evaluation process, analyzes the survey data, and writes the final report. ZhiLianZhaoPin has no direct involvement in the evaluation process, as that could create incentives to bias the list (Edmans, 2011; Reuter and Zitzewitz, 2006). The Center for Social Research and the ZhiLianZhaoPin also form a specialized evaluation committee that includes human resource specialists from industry and academia to give feedback on the survey design and evaluation criterion. Lastly, the relevant information, including the event dates, application process, evaluation process, survey reports, and BC list, is all published on the dedicated website, best.zhaopin.com. In general, the evaluation process of the BE list is objective and well-monitored by the public.

Based on former studies (Ambler and Barrow, 1996) and the advice of human resource specialists, the evaluation committee constructs an evaluation system that combines Western experiences and Chinese characteristics. Specifically, the evaluation has four general parts and six specific dimensions. The four general parts are

<sup>3</sup> We describe the construction of this database in detail in Section 2.

Table 1  
Evaluation system.

| Dimensions   | Sub-dimensions           | Descriptive statements  |
|--------------|--------------------------|---|
| Organization | Work environment         | (1) The workplace has harmonious internal interpersonal relationships.<br>(2) The work atmosphere is positive and healthy.<br>(3) The working conditions are comfortable.                     |
|              | Organization management  | (1) The employment principles are fair and just.<br>(2) The performance management system is effective.<br>(3) The communication and coordinate mechanism works effectively and smoothly.     |
| Culture      | Corporate image          | (1) The enterprise is willing to take corporate social responsibility.<br>(2) The products and services undergo continuous innovation.<br>(3) The firm has good prospects.                    |
|              | Corporate culture        | (1) The corporate culture is appealing.<br>(2) The firm makes a strong commitment to its employees.<br>(3) The employees feel strong trust and respect for the enterprise.                    |
| Training     | Training and development | (1) The firm offers great opportunities for employees to develop personal core competencies.<br>(2) The firm has a systematic training system.<br>(3) There are many promotion opportunities. |
| Incentives   | Remuneration and welfare | (1) The firm has a good income perspective.<br>(2) The compensation system accurately reflects employees' contributions.<br>(3) The firm has comprehensive benefits.                          |

Source: China Best Employers Award 2017.

the organization system, corporate system, training system, and incentive system. The six specific dimensions are the work environment, organization management, corporate image, corporate culture, training and development, and remuneration and welfare. In Table 1, we provide details of the evaluation system.

A firm's rank on the BE list comes from four sources: 30% of the score comes from the responses of former, current, and potential employees to an online survey<sup>4</sup>; 30% comes from the online nominations of the human resources jury, which is formed by thousands of anonymous human resource managers from enterprises and job agencies<sup>5</sup>; 30% comes from the evaluations of the expert jury, which is formed by experts from academia, government agencies (e.g., UN Women), guilds, and the media; and 10% comes from the qualification examination, which examines whether the declaring enterprise has had any major labor safety accidents or labor safety disputes in the application year.

The BE list used in this study is equivalent to the BC lists compiled by the Great Place to Work<sup>®</sup> Institute in San Francisco and published in *Fortune* magazine since 1998 (Edmans, 2011, 2012; Faleye and Trahan, 2011). Although the institute compiles lists for more than 45 countries in Asia, America, Europe, and Latin America, it does not publish a list for mainland China.<sup>6</sup> The evaluation process of the Chinese BE list is slightly different from that of the BC list. However, the evaluation dimensions and survey questions are developed through an extensive process that involves a review of the academic literature and interviews with managers, employees, human resource managers, and workplace experts. In addition, discussions are organized with management consultants, survey design experts, and researchers. All of these efforts ensure the accuracy of the survey questions and the objectivity of the evaluation process.

It is worth noting that the BE list has several advantages over other measures of job satisfaction. First, a limitation of prior studies of the effects of job satisfaction is weak measures of job satisfaction. For example, the KLD index can be easily manipulated and is based on observable practices, such as minority representation (Edmans, 2011). Similarly, using expenditure on employee-friendly programs as a measure of employee

<sup>4</sup> As ZhiLianZhaoPin is one of the largest online job search agencies in China, it is easy for the agency to access the contact information of former, current, and potential employees of the declaring firms and to distribute online surveys to them. For example, in 2017, 30,601,890 employees responded online surveys.

<sup>5</sup> The human resources jury normally includes more than 1000 human resource managers, and the number increases each year. For example, in 2017, the human resources jury consisted of 7018 human resource managers.

<sup>6</sup> For more details on the BC list, please see the website <http://www.greatplacetowork.net/>.

satisfaction does not capture employees' true feelings about their firms' treatment of employees. In contrast, the BE list not only considers firms' observable practices, but also conducts in-depth "grassroots" analysis based on extensive employee surveys. Therefore, the BE list is a more accurate measure of job satisfaction to some extent. Second, we have a panel data set for a 7-year period, in which nearly 50% of the sample firms each year are listed firms for which financial data are available in the China Stock Market Trading Research (CSMAR) database, one of the major Chinese data providers. The temporal length of the dataset helps ensure the results are not driven by a specific period or market conditions (Edmans, 2012). Third, the list is particularly visible in China, and receives significant attention from shareholders, employees, and the media. Therefore, it provides a suitable setting for the study of the effect of a firm's reputation for employee treatment.

### 3. Sample construction and description statistics

#### 3.1. Sample construction

The sample construction starts with the BE list from the 2011 to 2017 period. We hand-collect the BE list and relevant survey reports from the dedicated website, [best.zhaopin.com](http://best.zhaopin.com).<sup>7</sup> We focus our analysis on listed firms due to the limited availability of financial data for non-listed firms in China. In the 2011–2017 sample, 88 separate listed firms are included in the BE list. As our research period is relatively short, our sample contains fewer firms than Edmans's (2011) sample of BC lists, which comprises 244 listed firms from the 1984–2009 period.

We retrieve the listed firms' financial and stock return data from the CSMAR database provided by the Shenzhen Guotaian (GTA) Education Technology Company, a major provider of Chinese data. Next, we match the BE list with the financial and the stock return data. In Table 2, we summarize the data on the firms listed on the BE list. We also present the number of listed firms that are added, dropped, and retained each year. As shown in Table 2, the list of firms is reasonably stable, but not unchanging: 30% to 67% of the listed firms are dropped from the BE list each year.

We clean the data as follows. First, we exclude observations from the financial industry, based on the CSRC's classification standard. Second, we delete observations with obvious errors and missing values for main variables. The final sample is an unbalanced sample of 21,496 firm-year observations. As the evaluation committee does not make available the names of firms that applied but failed to make the list, we first use listed firms that are not on the BE list as matching firms in our sample. In a robustness test, we use PSM to select matching firms that have similar characteristics to each of the best employers. Finally, to limit the effect of outliers, we truncate all of the firms' financial data at the 1% level.

#### 3.2. Key variables

##### 3.2.1. Job satisfaction

We create the indicator variable, *Top100*, to denote job satisfaction. If firm *i* is selected as a best employer in year *t*, *Top100* is equal to one, and otherwise zero. In our research setting, the firms on the BE list are not permanent; instead, between 30% and 67% of the listed firms are dropped from the BE list each year. Therefore, some firms are only on the BE list for a single year, whereas others are on the list for multiple years. Furthermore, the years that a firm is on the BE list are not necessarily continuous.

##### 3.2.2. Firm leverage

Following Bae et al. (2011), we use firms' long-term debt ratio as a proxy for firm leverage. More specifically, we use the book long-term debt ratio (long-term debt divided by the total book value of assets) as the primary measure, because managers focus on book leverage rather than market leverage when making capital structure decisions (Serfling, 2016; Verwijmeren and Derwall, 2010). In the robustness checks, we also use the market long-term debt ratio (the long-term debt divided by the sum of total debt plus market value of equity),

<sup>7</sup> Please see the website (in Chinese): <https://best.zhaopin.com/#/>.



Table 2

Listed firms on the BE list by year.

| Year | No. of listed firms | Added | Dropped | Retained |
|------|---------------------|-------|---------|----------|
| 2011 | 40                  | –     | –       | –        |
| 2012 | 44                  | 25    | 21      | 19       |
| 2013 | 41                  | 20    | 23      | 21       |
| 2014 | 44                  | 16    | 13      | 28       |
| 2015 | 52                  | 20    | 12      | 32       |
| 2016 | 57                  | 23    | 18      | 34       |
| 2017 | 67                  | 30    | 20      | 37       |

which is more closely tied to theoretical predictions of target leverage levels. Our results are robust to using either measure of firm leverage as a dependent variable.

### 3.2.3. Other control variables

Consistent with former studies (Myers and Majluf, 1984; Rajan and Zingales, 1995), we include the following set of leverage determinants: firm size (natural log of total assets), profitability (return on asset), tangible assets (fixed assets scaled by total assets), and growth opportunities (market to book ratio). We also include the average industry leverage and non-debt tax shield as controls. In Table 3, we provide the definitions of all of the main variables in our study.

### 3.3. Sample descriptions

We present the summary statistics for our sample firms in Table 4. Panel A documents the summary statistics of the firm characteristics for the full sample. The firm characteristics are relatively standard, but have a reasonable degree of variation. For instance, the average firm size is 21.86, the average ROA is 0.04, and the average tangible assets are 0.23. In Panel B, we present the mean differences in firm leverage between the top 100 firms and non-top 100 firms. We find that firms with higher job satisfaction (top 100 firms) have lower book leverage and lower market leverage than the matching firms. This provides preliminary evidence that higher job satisfaction is associated with lower firm leverage. We conduct a regression analysis to further explore this relationship.

Panel C presents the size distribution of the top 100 firms and the corresponding statistics for the matching firms in our sample. In general, the best employers are large, with mean (median) total assets and total sales of 56.8 billion RMB (32.4 billion) and 37.3 billion RMB (26 billion), respectively. For example, the top 100 list includes big firms such as Tsingtao Beer (stock code: 600600), Kweichow Moutai (stock code: 600519), and TCL (stock code: 000100). However, the listed firms in our sample have average total assets and sales of 2.7 billion RMB and 1.4 billion RMB, respectively. Therefore, firm size might be an important determinant

Table 3

Variable definitions.

| Variables         | Definitions  |
|-------------------|--|
| <i>Book_lev</i>   | Book long-term debt ratio, calculated as the long-term debt divided by the total book value of assets.   |
| <i>Market_lev</i> | Market long-term debt ratio, calculated as the long-term debt divided by the sum of total debt plus market value of equity.  |
| <i>Top100</i>     | Job satisfaction, a dummy variable that is equal to one if firm <i>i</i> has been included in the “Best Employers Award 100” list in year <i>t</i> , and zero otherwise.                     |
| <i>Size</i>       | Firm size: the logarithm of total assets.  |
| <i>Roa</i>        | Return on assets: the ratio of net income to total assets.   |
| <i>Tangible</i>   | Tangible assets: the ratio of tangible assets to total assets.   |
| <i>M/B</i>        | Market-to-book ratio, calculated as the market value of assets over book value in year <i>t</i> .  |
| <i>Ndts</i>       | Non-debt tax shield, the ratio of depreciation expenses to total assets.   |
| <i>Ind_lev</i>    | Average industry leverage ratio: the average leverage ratio in firm <i>i</i> 's industry, excluding firm <i>i</i> . Leverage ratio is calculated as the ratio of total debt to total assets. |

Table 4  
Descriptive statistics.

| Panel A: Summary of firm characteristics                      |             |             |        |             |             |         |
|---|-------------|-------------|--------|-------------|-------------|---------|
| Variables   | p25         | Median      | Mean   | p75         | St. Dev     |         |
| <i>Book_lev</i>   | 0.011       | 0.044       | 0.089  | 0.133       | 0.107       |         |
| <i>Market_lev</i>   | 0.004       | 0.023       | 0.116  | 0.108       | 0.235       |         |
| <i>Size</i>   | 20.929      | 21.717      | 21.862 | 22.62       | 1.308       |         |
| <i>Roa</i>  | 0.014       | 0.038       | 0.040  | 0.068       | 0.060       |         |
| <i>Tangible</i>   | 0.093       | 0.192       | 0.228  | 0.328       | 0.172       |         |
| <i>M/B</i>  | 1.307       | 1.714       | 2.247  | 2.489       | 1.700       |         |
| <i>Ndts</i>   | 0.009       | 0.017       | 0.021  | 0.029       | 0.015       |         |
| <i>Ind_lev</i>  | 0.377       | 0.397       | 0.436  | 0.497       | 0.102       |         |
| Panel B: Mean differences of the dependent variables          |             |             |        |             |             |         |
|   | Top 100     | Non-top 100 | dif    | St_Err      | t_value     | p_value |
| <i>Book_lev</i>   | 0.089       | 0.120       | −0.031 | 0.007       | −4.3        | 0.000   |
| <i>Market_lev</i>   | 0.115       | 0.245       | −0.131 | 0.016       | −8.1        | 0.000   |
| Panel C: Comparisons of firm size                             |             |             |        |             |             |         |
|   | Top 100     |             |        | Non-top 100 |             |         |
| (¥ million)   | Assets      | Sales       |        | Assets      | Sales       |         |
| Minimum   | 611.55      | 110.28      |        | 186.60      | 24.68       |         |
| First quartile  | 9,622.14    | 6,613.71    |        | 1,222.07    | 579.76      |         |
| Median  | 32,444.21   | 25,978.77   |        | 2,673.00    | 1,400.52    |         |
| Mean  | 56,780.0.24 | 37,327.78   |        | 8,612.34    | 5,188.45    |         |
| Third quartile  | 96,946.02   | 60,019.27   |        | 6,506.15    | 3,698.47    |         |
| Maximum   | 163,542.00  | 95,601.25   |        | 163,542.00  | 95,601.25   |         |
| Panel D: Industry distribution                                |             |             |        |             |             |         |
| Industry  |             |             |        | Freq.       | Percent (%) |         |
| Agriculture   |             |             |        | 1           | 1.14        |         |
| Mining  |             |             |        | 1           | 1.14        |         |
| Manufacturing (food, textile, and fur processing)             |             |             |        | 10          | 11.36       |         |
| Manufacturing (furniture, paper and stationery)               |             |             |        | 8           | 9.09        |         |
| Manufacturing (computers, telecommunication, cars, equipment) |             |             |        | 35          | 39.77       |         |
| Construction  |             |             |        | 1           | 1.14        |         |
| Wholesale and retail  |             |             |        | 4           | 4.55        |         |
| Transportation  |             |             |        | 6           | 6.82        |         |
| Software and information technology                           |             |             |        | 6           | 6.82        |         |
| Real estate   |             |             |        | 9           | 10.23       |         |
| Leasing and business service                                  |             |             |        | 2           | 2.27        |         |
| Utility   |             |             |        | 2           | 2.27        |         |
| Culture, sport, and entertainment                             |             |             |        | 1           | 1.14        |         |
| Comprehensive sector  |             |             |        | 2           | 2.27        |         |
| <i>Total</i>  |             |             |        | <i>88</i>   | <i>100</i>  |         |

of the relationship between job satisfaction and firm leverage. We need to control firm size to ensure that omitting this variable does not bias our results. We use the PSM method to construct a sample of matching firms with similar firm characteristics, such as firm size, to alleviate the endogeneity concern.

Panel D documents the industry distribution of the top 100 firms. We find that the top 100 employers are from nearly all industries. However, industries that manufacture computers, telecommunication devices, cars, and equipment, make up 39.77% of the firms on the list. Other well represented industries are real estate (10.23%), software and information technology (6.82%), and transportation (6.82%). Generally, our industry distribution suggests that firms that rely on intensive human capital tend to have higher job satisfaction. To control for the cross-industry variation outlined above, we include industry-fixed effects in our main speci-



cation. After controlling for industry-fixed effects, our estimates of job satisfaction should measure the effect of within-industry variation in job satisfaction on leverage.

#### 4. Empirical results

##### 4.1. Baseline regression

We first conduct an ordinary least squares (OLS) regression to examine the relationship between job satisfaction and firm leverage. Our model is specified as follows:

$$\text{Leverage}_{i,t} = \alpha_0 + \beta_1 \text{Top100} + \beta_2 \text{Controls}_{i,t} + \delta_t + \eta_j + \varepsilon_{i,t}, \quad (1)$$

where the subscripts  $i$  and  $t$  denote firm and year, respectively. Leverage is the dependent variable. We use book leverage as the main dependent variable and market leverage in our robustness checks. Our main independent variable of interest is the *Top100* dummy variable. We include a number of firm-level control variables, such as firm size (*Size*), return on assets (*ROA*), tangible assets (*Tang*), market to book ratio (*M/B*), the average industry leverage ratio (*Ind\_lev*), and non-debt tax shield (*Ndts*). We also include year-fixed effects ( $\delta_t$ ) to control for time-variant heterogeneity. The relationship between job satisfaction and firm leverage may also be driven by within-industry variation in the BE list. For example, manufacturing firms may be more interested in treating employees well than other firms (Faleye and Trahan, 2011). Thus, we use industry-fixed effects ( $\eta_j$ ) to control for across-industry variation. Lastly, we cluster the standard errors at the firm level to correct for within-firm error terms.

In Table 5, we report the baseline regressions that examine the relationship between job satisfaction and leverage. In column (1), we include *Top100* and all of the control variables. The coefficient of *Top100* is  $-0.019$  and significant at the 10% level. In column (2), following Bae et al. (2011), we add the lagged leverage as a control variable and estimate our baseline specifications. We find that the coefficient of *Top100* is still significantly negative. However, this approach biases our results, as lagged leverage is highly correlated with

Table 5  
Baseline results (full sample).

|                   | (1)                             | (2)                             | (3)                             |
|-------------------|---------------------------------|---------------------------------|---------------------------------|
| <i>Top100</i>     | $-0.019^*$<br>( $-1.705$ )      | $-0.022^{**}$<br>( $-2.428$ )   | $-0.017^*$<br>( $-1.885$ )      |
| <i>Size</i>       | $0.032^{***}$<br>( $25.583$ )   | $0.022^{***}$<br>( $16.039$ )   | $0.029^{***}$<br>( $24.009$ )   |
| <i>Roa</i>        | $-0.302^{***}$<br>( $-16.254$ ) | $-0.215^{***}$<br>( $-12.211$ ) | $-0.331^{***}$<br>( $-17.784$ ) |
| <i>Tangible</i>   | $0.225^{***}$<br>( $13.356$ )   | $0.165^{***}$<br>( $11.452$ )   | $0.178^{***}$<br>( $12.071$ )   |
| <i>M/B</i>        | $0.006^{***}$<br>( $4.951$ )    | $0.003^{***}$<br>( $3.415$ )    | $0.006^{***}$<br>( $4.479$ )    |
| <i>Ndts</i>       | $-1.332^{***}$<br>( $-8.551$ )  | $-1.199^{***}$<br>( $-8.830$ )  | $-1.076^{***}$<br>( $-7.727$ )  |
| <i>Ind_lev</i>    | $0.226^{***}$<br>( $14.898$ )   | $0.019$<br>( $0.660$ )          | $0.083^{***}$<br>( $2.888$ )    |
| <i>Lagged_lev</i> |                                 | $0.129^{***}$<br>( $17.827$ )   |                                 |
| <i>_cons</i>      | $-0.732^{***}$<br>( $-25.951$ ) | $-0.523^{***}$<br>( $-13.430$ ) | $-0.581^{***}$<br>( $-18.328$ ) |
| <i>Year FE</i>    | N                               | Y                               | Y                               |
| <i>Ind FE</i>     | N                               | Y                               | Y                               |
| <i>N</i>          | 23,066                          | 23,066                          | 23,066                          |
| adj. $R^2$        | 0.307                           | 0.307                           | 0.383                           |

Note:  $t$  statistics are reported under the coefficient estimates; \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

the leverage at year  $t$ . In column (3), we also control for the year-fixed effects and industry-fixed effects, and find that the coefficient of *Top100* is still negative and significant. All of the control variables also have the expected signs. For example, firm size (*Size*) is positively related to leverage, as it is an inverse proxy for volatility and the cost of bankruptcy (Franka and Goyal, 2003). Profitability is negatively related to leverage, because profitable firms use less external financing (Myers and Majluf, 1984). Tangible assets (*Tangible*), growth opportunity (*M/B*), non-debt tax shield (*Ndts*), and average industry leverage (*Ind\_lev*) also have reasonable signs that are consistent with the literature (Rajan and Zingales, 1995).

#### 4.2. Endogeneity concern

In our research setting, listed firms make their own decisions about whether to enter the Best Employers Award contest. Thus, firms on the BE list are not randomly chosen and there is a self-selection problem in our setting. To alleviate this endogeneity concern, we follow Tucker (2010) in using PSM to mitigate selection bias caused by observable variables and estimate a Heckman two-stage model to mitigate selection bias due to unobservable variables.

##### 4.2.1. PSM method

If listed firms' decisions to enter the Best Employers Award contest are influenced by firm characteristics, our baseline results will be biased. We first use the PSM method to reduce the effects of observable firm characteristics that are difficult to fully control in the regressions. The PSM method is able to dampen the potentially confounding firm characteristic differences between the top 100 and non-top 100 firms that affect firm leverage, and thus alleviates concerns that the results are driven by general time trends. We use Equation (2) to screen our samples to avoid selection bias between firms on the BE list and firms not on the list. Subsequently, we exclude the differences in observable characteristics between the two groups of firms. Our PSM model is as follows:

$$P(\text{Top100} = 1) = \alpha_0 + \beta_1 \text{Controls}_{i,t} + \eta_i + \varepsilon_{i,t}. \quad (2)$$

First, to eliminate the order effect, we randomly order the observations before matching (Dehejia, 2004). Second, we estimate the propensity score using probit models in which the dependent variable is *Top100* and then perform a nearest neighbor matching strategy, using a propensity score within 0.01 as the criterion to match each firm on the BE list with a non-top 100 firm (1:1 matching) with replacement (Rosenbaum and Rubin, 1983). We retain all of the pairs in the case of multiple matches. The probit models contain all of the control variables in Equation (1) and the industry-fixed effects. Table 6 presents the mean differences in the firm characteristics of the top 100 firms and non-top 100 firms after matching. After matching, there are no significant differences between the two groups in any of the main variables.

In Table 7, we document the baseline results estimated for the PSM sample. In column (1), we report the regression results in the PSM sample using the 1:1 nearest neighbor matching strategy. We find that the top 100 firms' leverage is 0.015 lower than that of the matching firms, and the difference is significant at the 5% level, indicating a significantly negative relationship between job satisfaction and firm leverage. The 1:1 matching strategy reduces the number of observations in the sample. In columns (2) to (4), we re-estimate our base-

Table 6  
Mean differences of firm characteristics after matching.

|                   | Non-top 100 | Top 100 | Diff   | SD    | T-value | P-value |
|-------------------|-------------|---------|--------|-------|---------|---------|
| <i>Book_lev</i>   | 0.124       | 0.114   | 0.010  | 0.010 | 1.000   | 0.317   |
| <i>Market_lev</i> | 0.222       | 0.231   | −0.009 | 0.028 | −0.350  | 0.744   |
| <i>Size</i>       | 23.901      | 23.916  | −0.015 | 0.005 | −0.850  | 0.568   |
| <i>Roa</i>        | 0.047       | 0.044   | 0.002  | 0.005 | 0.350   | 0.714   |
| <i>Tangible</i>   | 0.205       | 0.187   | 0.019  | 0.014 | 1.350   | 0.180   |
| <i>M/B</i>        | 1.904       | 1.710   | 0.194  | 0.132 | 1.450   | 0.141   |
| <i>Ndts</i>       | 0.019       | 0.018   | 0.001  | 0.002 | 0.650   | 0.520   |
| <i>Ind_lev</i>    | 0.432       | 0.428   | 0.004  | 0.001 | 0.700   | 0.675   |

Table 7  
Baseline results (PSM sample).

|                            | (1)<br>PSM 1:1        | (2)<br>PSM 1:2        | (3)<br>PSM 1:3        | (4)<br>PSM 1:4        |
|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <i>Top100</i>              | −0.015**<br>(−1.971)  | −0.015**<br>(−2.054)  | −0.012*<br>(−1.680)   | −0.014**<br>(−2.053)  |
| <i>Size</i>                | 0.019***<br>(3.445)   | 0.026***<br>(5.506)   | 0.029***<br>(7.232)   | 0.031***<br>(8.161)   |
| <i>Roa</i>                 | −0.249***<br>(−3.063) | −0.373***<br>(−5.260) | −0.307***<br>(−4.942) | −0.366***<br>(−6.307) |
| <i>Tangible</i>            | 0.133***<br>(2.051)   | 0.082<br>(1.517)      | 0.137***<br>(3.037)   | 0.138***<br>(3.464)   |
| <i>M/B</i>                 | −0.003<br>(−0.829)    | −0.002<br>(−0.789)    | −0.003<br>(−1.463)    | −0.001<br>(−0.666)    |
| <i>Ndts</i>                | −1.165**<br>(−1.964)  | −0.965*<br>(−1.918)   | −1.059**<br>(−2.565)  | −1.181***<br>(−3.126) |
| <i>Ind_lev</i>             | 0.253***<br>(3.059)   | 0.246***<br>(3.026)   | 0.222***<br>(3.096)   | 0.234***<br>(3.506)   |
| <i>_cons</i>               | −0.468***<br>(−3.335) | −0.594***<br>(−5.102) | −0.660***<br>(−6.651) | −0.729***<br>(−7.511) |
| <i>Year FE</i>             | Y                     | Y                     | Y                     | Y                     |
| <i>Ind FE</i>              | Y                     | Y                     | Y                     | Y                     |
| <i>N</i>                   | 1111                  | 1541                  | 1999                  | 2403                  |
| adj. <i>R</i> <sup>2</sup> | 0.455                 | 0.414                 | 0.453                 | 0.446                 |

line regression using the 1:2, 1:3, and 1:4 PSM samples, respectively. The results are consistent with those in column (1). In general, after using the PSM samples to eliminate the concern that observable firm characteristics are biasing our results, we still find a significantly negative relationship between job satisfaction and firm leverage.

#### 4.2.2. Heckman two-stage model

In this study, we are interested in the differences between the leverage ratios of the top 100 firms and the leverage ratios they would have if they were not top 100 firms. This difference is referred to as the average treatment effect on the treated (Ayyagari et al., 2010). As we cannot observe the leverage ratios of top 100 firms if they were not top 100 firms, we need to find matching non-top 100 firms and observe their leverage ratios. For example, we use the sample of non-top 100 firms as matching firms in our regressions. However, this process may bias the estimated results, as the top 100 firms are not randomly selected. The Heckman (1979) two-stage model explicitly addresses bias caused by a correlation of the regressor with omitted variables by adding the inverse Mills ratio, which represents the non-zero expectation of the error term. This term is interpreted as private information driving the selection decision.

To estimate the first stage of the Heckman model, we need to find an instrumental variable that is correlated with *Top100* at the firm level, but uncorrelated with firms' financing decisions. Our instrumental variable is the 5-year lagged value of firms' per employee welfare expenses, which is calculated as the 5-year lagged value of firms' overall welfare expenses divided by employee number (*Welfare\_5*). According to previous studies, a firm's per employee welfare expenses are relatively persistent over time, and therefore is highly correlated with employee treatment. Furthermore, the long-term lagged value of per employee welfare expenses is unlikely to correlate with current leverage for the following two reasons. First, in a perfect capital market, firms can rebalance their capital structure rapidly whenever it deviates from the optimal leverage level (Bae et al., 2011). Thus, the long-term lagged per employee welfare expenses and current leverage should have no effect on each other. Second, even in a non-perfect market, where past employee welfare expenses affect current leverage, the capital structure adjustment is not immediate. Flannery and Rangan (2006) show that it takes about 1.6 years for a firm to rebound from a shock that affects its leverage. Huang and Ritter (2009) find that the time is longer, closer to 3.6 years. Thus, using 5-year lagged per employee welfare expenses as an instrumental variable should be sufficient to remove any effects of past welfare expenses on current leverage.

In our estimates, we allow for the possibility that the selection of firms receiving the Best Employers Award may be caused by firm characteristics that are unobserved by the researchers but observed by the evaluation committee or employees. In particular, we assume that a firm obtains the award ( $Top100 = 1$ ) if it meets certain criteria in evaluation dimensions, such that the linear function of information observed by researchers and the proprietary information observed by the evaluation committee or employees exceeds a certain threshold. Thus,  $Top100 = 1$  if

$$\alpha_0 + \beta_1 Welfare_{i,t} + \beta_2 Controls_{i,t} + \delta_t + \tau_i + \varepsilon_{i,t} > 0, \quad (3)$$

where  $\varepsilon_{i,t} \sim (0, \sigma^2)$  is proprietary information observed by the evaluation committee and employees. Equation (3) is referred to as the selection or treatment equation and forms the first stage of a two-stage selection model. Equation (4) forms the second stage:

$$Leverage_{i,t} = \alpha_1 + \gamma_1 Top100 + \gamma_2 Controls_{i,t} + \delta_t + \tau_i + \lambda + \varepsilon_{i,t} \quad (4)$$

The instrumental variable,  $Welfare\_5$ , does not affect a firm's leverage, and hence is not included in the second stage. Thus, it serves as an identifying variable in Equation (4). We first obtain estimates of the selection equation, and from these estimates compute the non-selection hazard  $\lambda$  (inverse of the Mills ratio) for each observation.  $\lambda$  is an estimate of the evaluation committee's or employees' private information that affects the firm selection. The regression Equation (4) is then augmented with the estimate of the selection bias, the non-selection hazard,  $\lambda$ .

In Table 8, we report the regression results of the Heckman two-stage model. To more thoroughly eliminate the selection bias concern, we use the two-stage model in the 1:1 PSM sample. In column (1), in the first-stage model, we find that the variable  $Welfare\_5$  has a significantly positive association with  $Top100$ , indicating that

Table 8  
Baseline results (Heckman 2SLS).<sup>a</sup>

|                             | (1)<br>First-stage<br><i>Top100</i> | (2)<br>Second-stage<br><i>Book_lev</i> |
|-----------------------------|-------------------------------------|--|
| <i>Welfare_5</i>            | 0.234***<br>(2.631)                 |  |
| <i>Top100</i>               |                                     | −0.108**<br>(−2.350)                   |
| <i>Size</i>                 | 0.183*<br>(1.868)                   | 0.037***<br>(6.585)                    |
| <i>Roa</i>                  | 1.525<br>(1.009)                    | −0.305***<br>(−4.929)                  |
| <i>Tangible</i>             | −3.870***<br>(−3.705)               | 0.114**<br>(2.049)                     |
| <i>M/B</i>                  | 0.060<br>(0.709)                    | 0.001<br>(0.277)                       |
| <i>Ndts</i>                 | 30.117***<br>(2.749)                | −0.285<br>(−0.472)                     |
| <i>Ind_lev</i>              | 0.738<br>(0.199)                    | 0.203<br>(1.554)                       |
| <i>Lambda</i>               |                                     | 0.058**<br>(2.157)                     |
| <i>_cons</i>                | −8.027***<br>(−3.116)               | −0.832***<br>(−6.266)                  |
| <i>Year FE</i>              | Y                                   | Y                                      |
| <i>Ind FE</i>               | Y                                   | Y                                      |
| <i>N</i>                    | 719                                 | 714                                    |
| <i>Pseudo R<sup>2</sup></i> | 0.225                               | —                                      |
| <i>adj. R<sup>2</sup></i>   | —                                   | 0.544                                  |

<sup>a</sup> As we use the 5-year lagged value of firms' per employee welfare expenses as the instrumental variable, we lose some observations due to some omitted data for this variable. Consequently, only 719 observations are used for the regression presented in Table 8.

a firm's per employee welfare expenses positively affect job satisfaction. In column (2), we add the inverse of the Mills ratio ( $\lambda$ ) to the second stage to control for the private information driving the selection decision. We find that *Top100* is still negative and significant at the 5% level. The results provide evidence that the significantly negative relationship between job satisfaction and firm leverage remains valid after we eliminate the selection bias concern.

#### 4.2.3. Tests of reverse causality

Our baseline estimates may also suffer from reverse causality. Myers (1977) predicts that a firm's capital structure may affect its investment in employees; for example, firms with higher leverage tend to underinvest in employee benefits. To eliminate this concern, we follow Bae et al. (2011) and use the change in job satisfaction between year  $t-1$  and year  $t$  as the dependent variable and regress it on the changes in firm leverage between year  $t-1$  and  $t$ , between year  $t-2$  and  $t-1$ , and between year  $t-3$  and  $t-2$ . Table 9 shows the results. We find no evidence that past changes in firm leverage affect changes in job satisfaction. Overall, our baseline results do not seem to suffer from reverse causality.

#### 4.3. Robustness checks

In this section, we conduct several tests to examine the robustness of our baseline results. We conduct the robustness checks using the PSM method and the Heckman two-stage model, respectively. First, we further control for firm-fixed effects to capture across-firm variation in firm characteristics. The inclusion of firm-fixed effects removes the effect of omitted time-invariant firm characteristics that could cause a spurious relationship between job satisfaction and firm leverage, and thus partially alleviates the endogeneity concern.

Table 9  
Causal effect of change in leverage on change in job satisfaction.

|                              | (1)<br>PSM   | (2)<br>Heckman 2SLS   |
|------------------------------|--|-----------------------|
|                              | Change in job satisfaction between year $t-1$ and year $t$ |                       |
| $\Delta leverage_{t-1, t}$   | −0.403<br>(−1.413)   | −0.082<br>(−0.716)    |
| $\Delta leverage_{t-2, t-1}$ | −0.071<br>(−0.296)   | −0.166<br>(−1.227)    |
| $\Delta leverage_{t-3, t-2}$ | −0.163<br>(−0.732)   | −0.044<br>(−0.446)    |
| $\Delta Size_{t-1, t}$       | 0.021<br>(0.397)   | 0.007<br>(0.308)      |
| $\Delta Roa_{t-1, t}$        | −0.427*<br>(−1.703)  | 0.131<br>(1.106)      |
| $\Delta Tangible_{t-1, t}$   | −0.307<br>(−1.408)   | −0.388***<br>(−3.318) |
| $\Delta M/B_{t-1, t}$        | 0.017<br>(0.750)   | 0.004<br>(0.534)      |
| $\Delta Nds_{t-1, t}$        | −0.707<br>(−0.275)   | 3.506**<br>(2.537)    |
| $\Delta Ind\_lev_{t-1, t}$   | 0.160<br>(0.585)   | 0.117<br>(1.168)      |
| $\Lambda$                    |  | 0.584***<br>(32.261)  |
| _cons                        | −0.044<br>(−1.244)   | 0.427**<br>(2.403)    |
| Year FE                      | Y  | Y                     |
| Ind FE                       | Y  | Y                     |
| N                            | 728  | 651                   |
| adj. $R^2$                   | 0.074  | 0.844                 |

Table 10  
Robustness checks.

|                            | (1)<br>PSM 1:1        | (2)                   | (3)                   | (4)                   | (5)<br>Heckman 2SLS   | (6)                   | (7)                   | (8)                   |
|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                            | Firm FE               | Placebo test          | Market_lev            | Other controls        | Firm FE               | Placebo test          | Market_lev            | Other controls        |
| <i>Top100</i>              | −0.014*<br>(−1.860)   |                       | −0.038**<br>(−2.036)  | −0.019**<br>(−2.571)  | −0.140***<br>(−2.702) |                       | −0.078*<br>(−1.864)   | −0.101**<br>(−2.086)  |
| <i>Top100_fal</i>          |                       | 0.001<br>(0.198)      |                       |                       |                       | −0.004<br>(−0.778)    |                       |                       |
| <i>Size</i>                | 0.026***<br>(3.045)   | 0.019***<br>(3.392)   | 0.115***<br>(6.406)   | 0.021***<br>(3.530)   | 0.038***<br>(6.181)   | 0.027***<br>(5.828)   | 0.033***<br>(5.583)   | 0.038***<br>(6.331)   |
| <i>Roa</i>                 | −0.212***<br>(−2.722) | −0.251***<br>(−3.058) | −0.501***<br>(−2.757) | −0.212***<br>(−2.604) | −0.267***<br>(−3.661) | −0.325***<br>(−5.192) | −0.290***<br>(−6.736) | −0.273***<br>(−4.324) |
| <i>Tangible</i>            | 0.158**<br>(2.156)    | 0.138**<br>(2.150)    | 0.224*<br>(1.653)     | 0.101<br>(1.552)      | 0.078<br>(1.373)      | 0.165***<br>(2.750)   | 0.037<br>(0.769)      | 0.119**<br>(2.036)    |
| <i>M/B</i>                 | −0.001<br>(−0.146)    | −0.003<br>(−0.887)    | 0.004<br>(0.653)      | −0.002<br>(−0.510)    | 0.002<br>(0.468)      | −0.001<br>(−0.335)    | −0.007***<br>(−2.812) | 0.002<br>(0.801)      |
| <i>Ndts</i>                | −1.040<br>(−1.584)    | −1.217**<br>(−2.116)  | −0.277<br>(−0.257)    | −0.892<br>(−1.639)    | 0.206<br>(0.259)      | −1.293**<br>(−2.406)  | −0.024<br>(−0.043)    | −0.192<br>(−0.314)    |
| <i>Ind_lev</i>             | 0.127*<br>(1.897)     | 0.258***<br>(3.082)   | 1.461***<br>(4.800)   | 0.252**<br>(2.479)    | 0.087<br>(1.371)      | 0.180**<br>(2.402)    | 0.112<br>(1.007)      | 0.312**<br>(2.186)    |
| <i>Manage_share</i>        |                       |                       |                       | −0.023<br>(−0.523)    |                       |                       |                       | 0.001<br>(0.061)      |
| <i>Risk</i>                |                       |                       |                       | 0.001<br>(0.719)      |                       |                       |                       | 0.001<br>(1.037)      |
| <i>Soe</i>                 |                       |                       |                       | −0.014<br>(−1.252)    |                       |                       |                       | −0.012<br>(−1.225)    |
| <i>lambda</i>              |                       |                       |                       |                       | 0.078**<br>(2.578)    | −0.003<br>(−0.859)    | 0.038<br>(1.562)      | 0.052*<br>(1.839)     |
| <i>_cons</i>               | −0.526**<br>(−2.553)  | −0.463***<br>(−3.300) | −3.186***<br>(−7.119) | −0.495***<br>(−3.299) | −0.800***<br>(−5.401) | −0.618***<br>(−5.761) | −0.717***<br>(−4.422) | −0.926***<br>(−6.888) |
| <i>Year FE</i>             | Y                     | Y                     | Y                     | Y                     | Y                     | Y                     | Y                     | Y                     |
| <i>Ind_FE</i>              | N                     | Y                     | Y                     | Y                     | N                     | Y                     | Y                     | Y                     |
| <i>Firm FE</i>             | Y                     | N                     | N                     | N                     | Y                     | N                     | N                     | N                     |
| <i>N</i>                   | 1111                  | 1111                  | 1091                  | 1006                  | 714                   | 1243                  | 698                   | 676                   |
| adj. <i>R</i> <sup>2</sup> | 0.235                 | 0.454                 | 0.506                 | 0.484                 | 0.130                 | 0.534                 | 0.649                 | 0.563                 |

**Table 10**, columns (1) and (5) report the results. We find that the coefficients of *Top100* are still negative and significant at the 5% and 1% levels, respectively.

Second, we conduct a placebo test, in which we randomly choose the same number of firms from the sample as *Top100* firms, then reset the event years and re-estimate the baseline specification. As shown in columns (2) and (6), the coefficients of *Top100* are nearly zero and there is no significant relationship, indicating that our baseline results are driven by inclusion on the BE list, and not other factors.

Third, we use market leverage ratio (the long-term debt divided by the sum of total debt plus market value of equity) as the dependent variable and re-estimate our baseline specification. As shown in columns (3) and (7), we find that the coefficients of *Top100* are still negative and significant.

Lastly, we include other control variables drawn from previous studies (Yang et al., 2017), namely management ownership (*Manage\_share*), operational risk (*risk*), and ownership structure (*Soe*). As shown in columns (4) and (7), our basic results hold even after including these control variables.

Generally, our baseline results are robust when we control for firm- and year-fixed effects, conduct a placebo test, change the main dependent variable, and add other control variables.

## 5. Cross-sectional analysis

In Section 4, we show that job satisfaction is negatively related to firm leverage. In this section, we further examine the validity of our baseline results by using several subsamples. Specifically, we first divide our sample

into subsamples based on the factors that may affect the relationship between job satisfaction and leverage. Next, we rerun the baseline regression in these subsamples to investigate whether these factors affect the relationship between job satisfaction and leverage. We base our empirical tests on the theory of Maksimovic and Titman (1991), which predicts that firms that have strong incentives to maintain higher job satisfaction also have higher incentives to maintain low leverage. Therefore, we develop several testable predictions in the following subsections.

### 5.1. Financial distress risk

The negative relationship between job satisfaction and leverage may be stronger in firms with greater financial distress risk. When firms face financial distress, they are more likely to lower costs by cutting employee benefits or firing employees (Serfling, 2016). Consequently, rational employees may ask for higher wages for their labor, and this will result in lower firm value. Thus, firms facing financial distress risk are more eager to maintain high job satisfaction among employees by lowering leverage.

We use two proxies for the likelihood of financial distress. We first use Altman's Z-score, which is also referred to as bankruptcy risk, to proxy for a firm's financial distress (Altman, 2000; Altman et al., 2017). The lower the Z-score, the higher the distress risk. We use the sample median as the cutoff point to divide our samples into subgroups and re-estimate the basic specification. Table 11, Panel A reports the results. In columns (1) and (3), we find that the negative relationship between job satisfaction and leverage is significant in firms with higher bankruptcy risk. However, columns (2) and (4) show that the effect of job satisfaction is not significant for firms with lower bankruptcy risk.

Table 11  
Effect of financial distress risk.

| Panel A: Altman's Z-score as a proxy for financial distress |                       |                       |                       |                       |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
|   | (1)<br>PSM 1:1        | (2)                   | (3)<br>Heckman 2SLS   | (4)                   |
|   | Bankruptcy_high       | Bankruptcy_low        | Bankruptcy_high       | Bankruptcy_low        |
| <i>Top100</i>   | −0.020*<br>(−1.722)   | −0.020<br>(−1.587)    | −0.236***<br>(−2.816) | −0.073<br>(−1.613)    |
| <i>Controls</i>   | Y                     | Y                     | Y                     | Y                     |
| <i>lambda</i>   |                       |                       | 0.138***<br>(2.958)   | 0.036<br>(1.415)      |
| <i>_cons</i>  | −0.375***<br>(−2.838) | −0.459**<br>(−2.449)  | −0.624***<br>(−2.939) | −0.993***<br>(−5.171) |
| <i>Year FE</i>  | Y                     | Y                     | Y                     | Y                     |
| <i>Ind_FE</i>   | Y                     | Y                     | Y                     | Y                     |
| <i>N</i>  | 552                   | 555                   | 311                   | 397                   |
| <i>adj. R<sup>2</sup></i>                                   | 0.640                 | 0.469                 | 0.579                 | 0.567                 |
| Panel B: Firm age as an proxy for financial distress        |                       |                       |                       |                       |
|   | PSM 1:1               |                       | Heckman 2SLS          |                       |
|   | Age_high              | Age_low               | Age_high              | Age_low               |
| <i>Top100</i>   | −0.001<br>(−0.126)    | −0.031***<br>(−3.499) | 0.042<br>(0.640)      | −0.175***<br>(−2.860) |
| <i>Controls</i>   | Y                     | Y                     | Y                     | Y                     |
| <i>lambda</i>   |                       |                       | −0.035<br>(−0.890)    | 0.101***<br>(2.789)   |
| <i>_cons</i>  | −0.435***<br>(−2.816) | −0.410**<br>(−2.256)  | −0.612**<br>(−2.505)  | −0.840***<br>(−5.033) |
| <i>Year FE</i>  | Y                     | Y                     | Y                     | Y                     |
| <i>Ind_FE</i>   | Y                     | Y                     | Y                     | Y                     |
| <i>N</i>  | 518                   | 525                   | 231                   | 453                   |
| <i>adj. R<sup>2</sup></i>                                   | 0.558                 | 0.405                 | 0.530                 | 0.678                 |



We also use firm age as a proxy for the likelihood of financial distress. When a firm is at an early stage of development, it often faces significant uncertainty about future growth, which is manifested in higher book-to-market ratios and firm-specific risk (Koh et al., 2015). In addition, young firms often focus on innovation, which increases firm risk. Thus, younger firms face a higher probability of financial distress. We use the sample median of firm age to divide our sample groups and rerun the regression for each subsample. As shown in Panel B, we find that in younger firms, the negative relationship between job satisfaction and leverage is more pronounced.

Table 12  
Effect of human capital retention.

| <b>Panel A: Effect of industry competition</b> |                           |                       |                                |                       |
|--|---------------------------|-----------------------|--------------------------------|-----------------------|
|  | (1)<br>PSM 1:1<br>HHI_low | (2)<br>HHI_high       | (3)<br>Heckman 2SLS<br>HHI_low | (4)<br>HHI_high       |
| <i>Top100</i>                                  | −0.034***<br>(−2.610)     | −0.000<br>(−0.070)    | −0.208***<br>(−2.932)          | −0.105<br>(−1.100)    |
| <i>Controls</i>                                | Y                         | Y                     | Y                              | Y                     |
| <i>lambda</i>                                  |                           |                       | 0.111***<br>(2.659)            | 0.055<br>(1.005)      |
| <i>_cons</i>                                   | −0.277*<br>(−1.845)       | −0.630**<br>(−2.066)  | −1.161***<br>(−5.627)          | −0.320*<br>(−1.656)   |
| <i>Year FE</i>                                 | Y                         | Y                     | Y                              | Y                     |
| <i>Ind_FE</i>                                  | Y                         | Y                     | Y                              | Y                     |
| <i>N</i>                                       | 545                       | 513                   | 472                            | 242                   |
| <i>adj. R<sup>2</sup></i>                      | 0.476                     | 0.356                 | 0.413                          | 0.682                 |
| <b>Panel B: Effect of R&amp;D investment</b>   |                           |                       |                                |                       |
|  | Rd_high                   | Rd_low                | Rd_high                        | Rd_low                |
| <i>Top100</i>                                  | −0.034***<br>(−2.610)     | −0.004<br>(−0.525)    | −0.093**<br>(−2.105)           | −0.066<br>(−0.864)    |
| <i>Controls</i>                                | Y                         | Y                     | Y                              | Y                     |
| <i>lambda</i>                                  |                           |                       | 0.052**<br>(2.018)             | 0.036<br>(0.835)      |
| <i>_cons</i>                                   | −0.277*<br>(−1.845)       | −0.653**<br>(−2.329)  | −0.950***<br>(−6.454)          | −0.203<br>(−0.960)    |
| <i>Year FE</i>                                 | Y                         | Y                     | Y                              | Y                     |
| <i>Ind_FE</i>                                  | Y                         | Y                     | Y                              | Y                     |
| <i>N</i>                                       | 545                       | 566                   | 472                            | 242                   |
| <i>adj. R<sup>2</sup></i>                      | 0.476                     | 0.138                 | 0.395                          | 0.683                 |
| <b>Panel C: Effect of high-tech industries</b> |                           |                       |                                |                       |
|  | High_tech                 | Low_tech              | High_tech                      | Low_tech              |
| <i>Top100</i>                                  | −0.014*<br>(−2.610)       | −0.010<br>(−0.525)    | −0.108**<br>(−2.105)           | −0.162<br>(−0.864)    |
| <i>Controls</i>                                | Y                         | Y                     | Y                              | Y                     |
| <i>lambda</i>                                  |                           |                       | 0.058**<br>(2.157)             | 0.082<br>(1.417)      |
| <i>_cons</i>                                   | −0.526**<br>(−2.553)      | −0.594***<br>(−3.083) | −0.832***<br>(−6.266)          | −1.002***<br>(−3.478) |
| <i>Year FE</i>                                 | Y                         | Y                     | Y                              | Y                     |
| <i>Ind_FE</i>                                  | Y                         | Y                     | Y                              | Y                     |
| <i>N</i>                                       | 399                       | 712                   | 316                            | 398                   |
| <i>adj. R<sup>2</sup></i>                      | 0.235                     | 0.250                 | 0.544                          | 0.323                 |

## 5.2. Human capital retention

According to Maksimovic and Titman's (1991) theory, employees are critical assets in human capital intensive industries, and such firms have stronger incentives to improve job satisfaction to retain current key employees and attract talent. Thus, they are motivated to reduce leverage to maintain their implicit contracts with employees. As a consequence, we may find a more pronounced negative relationship between job satisfaction and leverage in firms in which employee retention is more important.

In this study, we use high industry competition, high R&D intensity, and being a high-tech firm as indicators of a focus on employee retention. First, firms in highly competitive industries are more likely to have difficulty recruiting and retaining talented employees, as such employees have more opportunities to switch employers. Consequently, employee job satisfaction is expected to have higher potential value for these firms. Second, in R&D intensive and high-tech firms, human capital is the most valuable asset, as people are the most critical source of innovation. Thus, firms that rely on human capital for success pay more attention to employees' job satisfaction.

We use the Herfindahl-Hirschman Index (HHI) and R&D expenditure (R&D investment divided by total assets) as proxies for industry competition and R&D intensity and use the sample median to create high and low subgroups. We define the following industries as high-tech industries: telecommunication, computer and software; health care, medical equipment and pharmaceutical; and education. Table 12 reports the regression results. Panel A shows that job satisfaction is significantly negatively related to leverage in competitive firms. However, in firms facing lower competition, the negative effect is not significant. These results are consistent with our assumption. Panel B documents that in firms with higher R&D intensity, job satisfaction is significantly related to firm leverage. Finally, Panel C shows that in high-tech firms, job satisfaction has a significantly negative effect on firm leverage. Overall, our results confirm that firms that rely on their employees tend to value job satisfaction more than other firms, and lower their leverage to maintain their implicit contracts with employees.

## 6. Conclusions

This study uses China's BE list to explore how job satisfaction affects firm leverage in a representative emerging market. Our results show that job satisfaction is significantly negatively related to firm leverage, which is consistent with Maksimovic and Titman's (1991) theory. Our results are robust when we control for firm- and year-fixed effects, conduct a placebo test, change the main dependent variable, and add other control variables. Moreover, the cross-sectional tests document that the effect is more pronounced in firms experiencing greater financial distress and in firms in more competitive industries. In general, our results provide evidence that stakeholders have a strong influence on firms' capital structure decisions. In particular, in a stakeholder-oriented economy where the information environment is relatively opaque, firms can credibly demonstrate their commitment to stakeholders and re-shape capital structure by improving job satisfaction. Our study has implications for other emerging markets in which debt financing is the major driving force of firm growth.



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