The Effects of Corporate Pension Plans on Capital Structure: Evidence from China

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Abstract
With the increasing aging population in China, corporate pension plans have become an important pillar for the pension system. From the perspective that pension plans can affect employees' perceptions of bankruptcy risk, we show that corporate pension plans significantly increase the debt ratio, especially for companies in high labor-intensive industries, which generally have higher educated and younger employees. This paper not only enriches the labor economy literature on how labor impacts the financial decision-making of companies, but also provides some practical suggestions to improve China's corporate pension plan system.

Keywords: Corporate Pension Plan; Capital Structure; Labor

1. Introduction

China's pension system has undergone tremendous changes amid its economic development and demographic change. In response to the fast aging population, a three-pillar pension system has evolved after year 2015. The first pillar is public pensions, compulsorily paid jointly by employers and employees. The second pillar is the corporate pensions, voluntarily borne jointly by employers and employees. The third pillar is personal pensions, contributed by employees as they desire. As an important component of the three-pillar pension system, corporate pensions provide employees with more security by allowing themto receive pensions once they reach the official retirement age or have become disabled and are unable to work.

A growing number of enterprises and employees are joining corporate pension plans, following the continuous standardization and improvement of the policy. As of the end of 2019, a total of95, 963 enterprises in China had corporate pension plans, up 9.84% from the end of 2018, with 25,479,400 employees participating in the plans. Their accumulated funds amounted to1,798,533 billion RMB. Furthermore, in 2019, 1,804,600 pensioners received 49,239 billion RMB of enterprise annuities in installment payments or as lump sums. The weighted average investment return was 8.30% in 2019, far above the banking deposit rates[1]. The growing importance of corporate pension inevitably changed the capital structure of some firms.

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[1]This paper does not cover the effect of corporate pensions on asset allocation, but instead focuses on whether to implement corporate pensions because of the high investment return of China's corporate pensions. Compared with the late implementation and only positive investment return in China, corporate pensions in the U.S. were implemented early and experienced phases of positive and negative returns. Besides, American enterprises can change the asset allocation of corporate pensions, so the allocation naturally draws the attention of their employees.

There is a solid theoretical foundation in capital structure, such as the Modigliani-Miller theorem (Modigliani and Miller, 1958), agency cost theory (Jensen and Meckling, 1976), trade-off theory (Robichek and Myers, 1965; Robichek and Myer, 1966), pecking-order theory (Myers and Majluf, 1984). For example, either the lower threat of shareholder litigation (Nguyen et al., 2020) or employee lawsuits (Unsal and Hassan, 2020) can prompt enterprises to increase financial leverage. By analyzing the impact of enterprise strategy on capital structure, Cappa et al.(2020) show that integration strategy and internationalization strategy are significantly negative with debt ratio, while diversification strategy and debt ratio share a prominent positive relationship. With the panel data of American listed manufacturers, Hyun et al. (2020) take uncertainty as a key factor influencing target capital structure. Increased uncertainty reduces the benefits (interest tax shields) and increases the cost (bankruptcy costs) of debt, and exacerbates the conflicts between debtholders and shareholders, leading to a drop of the optimal or target leverage rate.

The impact of labor market factors on corporate finance has drawn much attention in recent years, including the topics of corporate financing (Agrawal and Matsa, 2013), investment (Bai et al., 2020), corporate governance (Huang et al., 2017), information exposure (Aobdia and Cheng, 2018), etc. The labor security system influences corporate financing by altering unemployment risk and workers' wages. For example, Devos and Rahman (2018) demonstrate that the increasein unemployment insurance benefits, which lowers unemployment risk, significantly reduces cash holdings. In the presence of unemployment risk, workers demand higher compensating wage, so firms tend to choose conservative leverage policies (Agrawal and Matsa, 2013). Firms manage workers' perceptions of job security by maintaining substantial financial resources, such as cash. The increased financial status not only lowers firms' costs to retain employees, but also improves workers' estimation of job security. Specifically, firms with less conservative cash policies appear to employees to be less safe, and therefore workers, when exposed to high unemployment risk, will require firms to pay higher premiums in wages and benefits. That is, wage differentials as compensation for perceived job loss potential (Abowd and Ashenfelter, 1981; Topel, 1984). The same authors demonstrate that firms exhibiting more unemployment risk are faced with higher search costs as potential employees shy away from the firms. Ben-Nasr (2019) examines whether U.S. unemployment insurance (UI) benefits, which reduce unemployment risk, lead to a heavy reliance on bank debt. That research shows that firms with generous UI benefits tend to rely more on bank debt, supporting the monitoring avoidance channel.

As the supplement to basic state pension, corporate pension plans may provide more security. Employees consider this protection as an increase of benefits and thus become more tolerant of lower salaries given the same risk of bankruptcy. Besides, according to stakeholder theory (Post et al., 2002; Hillman and Keim, 2002), corporate pension plans can align the interests of the enterprise and its employees. When implementing high leverage financing policy, the firm faces increased operational risk, leading to high risk of bankruptcy and unemployment. In this situation, the listed companies are more prone to seek high debts as long as the corporate pension plan offers its employee enough insurance.

In this paper, we empirically examine the relationship between corporate pension plans and capital structure using the data of Chinese listed companies. The main finding is that corporate pension plans significantly increase the debt ratio, especially for companies in high labor-intensive industries, which generally have higher educated and younger employees. Higher educated and younger employees typically are more sensitive to the bankruptcy risk. Besides, we demonstrate that corporate pension plan does not affect the firm's profit.

Our main contribution is to study the effect of corporate pension plans on capital structure from the perspective of employees. Although the current literature is not limited, but most studies are either from the CEO incentives (Alderson et al., 2017; Goldberg et al., 2020; Shen and Zhang, 2020) or from the supervision by independent directors (Vafeas and Vlittis, 2018). Shen and Zhang (2020) empirically prove that the negative effect of inside debt on equity cost is less pronounced in firms with pre-funded executive pension plans and in those with the lump-sum option. By examining the effect of independent directors on the likelihood, valuation effects, and long-term consequences of defined benefit pension plan freezes, Vafeas and Vlittis (2018) conclude that a greater percentage of independent directors make plan freezes more likely and more valuable to shareholders, as well as mitigate their effect on investment and leverage levels.

In comparison, we argue that corporate pension plans can be regarded as insurance for employees who may demand more benefits with perceived higher bankruptcy risk. In this way, our paper enriches the literatures on the insurance effect of corporate pension plans(Unsal and Hassan, 2020; Nguyen et al., 2020). Consequently, we demonstrate that corporate pension plans, the important part of the pension system, offer a new way to study capital structure.

The other contribution is our paper enriches the few studies on corporate pension in China. Extant research focuses on the corporate pensions of developed rather than developing economies (Rydqvist et al., 2014; Rauh, 2006; Shen and Zhang, 2020; Garcia and Domingos, 2020).As the largest developing country in the world, China is experiencing a soaring aging population with the phenomenon of getting old before getting rich, yet few literatures discuss Chinese corporate pensions. The issue of Trial Measures on Enterprise Pensionin 2004 marks the implementation of corporate pension plans, with the formal version launched on February 1, 2018. Due to significant individual differences, employees' perceptionsof corporate pension plans vary on labor intensity and employee age, type of work, educational attainment, etc. Therefore, companies choose different corporate pension plan policies according to diverse labor characteristics. On these grounds, our paper compares the effects of different corporate pension plan policies and provides a theoretical basis for the improvement of corporate pension plans. Our conclusions provide policy suggestions to optimize corporate pension plans, which is among one of the top priorities of China's economic policy authorities.

The rest of the paper is organized as follows. Section 2 presents literature review and research hypothesis; Section 3 and 4 presents the research design and empirical results, respectively.

2. Literature Review and Research Hypothesis

Corporate pension plans, formerly known as supplementary pensions, are the second pillar of the pension system2. As a supplement to public pensions, corporate pension plansare a significant part of corporate benefits, playing an important role in protection and incentivesfor employees. Corporate pension plans not only improve the multi-pillar pension system in China, but also promote human resource mobility. Corporate pension plans are of two types, categorized by their methods of financing and payment: one is a Defined Benefit Plan (DB Plan), the other is a Defined Contribution Plan (DC Plan). Generally, the DB Plan is suitable for large companies with stable operations to attract and stabilize talents, while the DC Plan works better in small enterprises during initial or developing stage to satisfy career mobility of employees. Also, enterprises can apply a compound-pattern plan (DB-DC plan) tocombine the advantages of both plans.

Chinese corporate pension plans are DC plans, noting that their implementation is relatively late. China's Ministry of Labor and Social Security successively issued the Trial Measures on Enterprise Pension and Interim Measures for Administration of Enterprise Pension Fundin 2004. On February 1, 2018, the Ministry of Human Resources and Social Security and Ministry of Finance jointly issued the Measures on Enterprise Annuities. These measures mark the gradual standardization of the corporate pension plan system in China. The appendix summarizes the institutional arrangements of corporate pension plans issued by Chinese government departments over the years. These policies are not mandatory, but aimto encourage enterprises to establish corporate pension plans according to their particular circumstances. Corporate pension plans include individual accounts that receive insurance premiums paid regularly by both enterprises and employees. The payment amount is a proportion of salary. Corporate pension plan funds manage the investment of accounts. Employees are encouraged to make lump sum withdrawals of premiums paid over years and their investment earnings upon retirement. Different from enterprise benefits, corporate pension plans have the property of deferred incentives because they are based on the enterprises' profits and employees' contributions to the enterprise. Furthermore, the flexibility of corporate pension plans allows employees to choose between lump sum with drawalsor conversion to pensions. There are many plan provisions that provide more security for employees. For example, when an employee changes companies, the corporate pension plan may be either transferred to the new company or remain with the original company for the emloyee to withdraw upon retirement. If enterprises go bankrupt, the corporate pension plans are protected to avoid being appropriated by the enterprises. Should employees encounter major economic difficulties, they may terminate their corporate pension plans and access their funds. To maintain the safety of corporate pension plan funds under market-oriented operations, the Chinese government has strongly restricted the investment scope of fund management. No more than 30% of the net asset value of the corporate pension plan fund shall be invested in equity products such as stocks, stock funds, mixed funds, and investment-linked insurance products. Employees

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[2]There are two types of occupational pensions as the second pillar of China's pension system. One is government occupational pensions for staff in government and its affiliated institutions, as well as public institutions. The other is corporate occupational pensions, which are also known as corporate pensions. In this paper, we use corporate pensions to represent the second pillar of the pension system in China.

assume the relevant investment risk, and in principle enterprises do not undertake obligations beyond regular payments, i.e., insurance premiums.

Scholars have done much research on the effect of corporate pension plans. Some focus on the investment asset allocation of corporate pension plans (Bicksler and Chen, 1985; An et al., 2013; Duygun et al., 2018; Jnr et al., 2019). For example, Duygun et al. (2018) suggest that a firm's DB Plan coverage has a negative relationship with its propensity for making a major investment. Firms with higher DB Plan coverage prefer to diversify, that is, to acquire firms abroad or in other industries rather than make fixed-asset investments or domestic horizontal acquisitions. Other literatures analyze the determinants of corporate pension plans. Based on Bartram (2018), plan sponsors with less cash have smaller plan contributions and lower funding levels, associated with less profitability and financial distress. However, they tend to make more aggressive pension plan assumptions if they have lower cash holdings and profit margins. Particularly, some literatures explore the impact of corporate pension plans, including how corporate pension plans influence tax effect (Tepper, 1981; Omori and Kitamura, 2020), fixed-asset investment (Rauh,2006), corporate value (Garcia and Domingos, 2020), equity costs (Shen and Zhang, 2020), auditing fees (Chen et al., 2017), and corporate innovation (Shen et al., 2020).Rauh (2006) states that compulsory DB Plans reduce fixed-asset investment. Shen and Zhang (2020) note that the effect of inside debt on the cost of equity is less pronounced in firms with pre-funded executive pension plans and in firms with the lump-sum option. Shen et al. (2020) confirm that firms with mandatory contributions are associated with decreased innovation output and R&D expenditures, and this effect is stronger in firms with financial constraints, more short-term institutional investors, and higher levels of managerial short-termism.

There are many theories of capital structure, such as the Modigliani-Miller theorem, agency cost theory, trade-off theory, and pecking-order theory. Both Dang et al. (2019) and Hyun et al. (2020) study the capital structure of U.S. companies. With the data of U.S. listed companies, Dang et al. (2019)determine that news media reports reduce the costs of enterprises adjusting to target leverage through information broadcasting and monitoring, while Hyun et al. (2020) discuss how uncertainty influences the target capital structure of U.S. enterprises; that is, increased uncertainty reduces the debt tax shield, increases the potential costs of financial distress, and exacerbates the conflicts between debt holders and shareholders, leading to a drop of the optimal or target leverage rate. Furthermore, either the lower threat of shareholder litigation (Nguyen et al., 2020)or employee lawsuits (Unsal and Hassan, 2020) prompts enterprises to increase financial leverage. Cappa et al. (2020) show that integration and internationalization strategies are significantly negatively correlated with debt ratio, while diversification strategy and debt ratio share a prominently positive relationship.

The combined study of labor and corporate financial decision-making has become a hot topic recently. There are rich literatures on labor and enterprise capital structure, such as trade-off theory (Berk et al., 2010) and rent sharing theory (Matsa, 2010). According to Berk et al. (2010), although financial leverage generates a tax-efficient effect within a certain range, it increases the bankruptcy risk of enterprises. Employees will require compensatory salaries once they perceive potential risk. Therefore, enterprises need to make a trade-off between the tax savings from the

debt tax shield and the increased wage costs associated with bankruptcy risk. Agrawal and Matsa (2013) explore that highly leveraged enterprises need to pay higher salaries to compensate for expected bankruptcy costs when employees cannot avoid the risk of being fired. They also explain another phenomenon: that enterprise leverage goes up as unemployment benefits increase. As a compensation mechanism for salary, unemployment benefits increase marginal revenue from enterprise debt financing. However, Matsa (2010) presents another mechanism. High liquidity of the enterprise incentivizes employees to negotiate higher wages, which prompts the enterprise to increase cash payment demand by increasing financial leverage to guarantee an advantageous position in negotiations. Serfling (2016) analyzes how labor-adjusting costs, such as recruitment costs and dismissal costs, impact enterprise capital structure. An enterprise with higher dismissal costs usually adopts lower financial leverage due to its weak ability to relieve financial pressure through layoffs. On the other hand, according to Sanati (2017), if recruitment costs are too high, an enterprise will choose to keep low financial leverage to cope with turnover risk.

As an important component in China's pension system, corporate pension plans offer an economic compensation to enterprise employees upon retirement. Hence, employees with corporate pension plans may perceive greater security and loyalty to their employers, so they are more willing to assume risk together to seek long-term value maximization for the company. When the company increases financial leverage, employees are more tolerant of greater bankruptcy risk, being satisfied with less compensation both in salary and working environment. On the other hand, when higher leverage leads to higher bankruptcy risk, employees without corporate pension plans face unemployment risk but no corresponding earnings to make up for higher operation risk. They would bear this additional riskonly with higher compensations, leading to increased operational costs and reduced corporate valuations. Thus, this forces companies to tradeoff between earnings from increased financial leverage and the extra costs to compensate employees, perhaps resulting in not increasing leverage.

Accordingly, our main hypothesis is that firms implement corporate pension plans to change their employees' perception of the risk of bankruptcy, and therefore to significantly increase the financial leverage of the firm.

3. Research Design

3.1. Sample Selection and Variable Definitions

With guidance from New Accounting Standard for Business Enterprise, effective January 1, 2007, we obtain the data of Chinese A-share listed companies from 2007 to 2018 from the China Stock Market Accounting Research (CSMAR) database. After excluding financial industry stocks, ST stocks and samples missing financial data, 27,513 observations are presented as our final sample. See table 3.1 for detail.

Table 3.1 Data processing

whole sample	delete financial industry	delete ST stock	delete missing Taxrate data	delete missing Ndts data	delete missing TQ data	study sample
30026	222	1169	341	10	771	27513

Based on our hypothesis, we set up empirical Model (1):

$$DA_{i,t}/LA_{i,t} = a_0 + \beta_1 * DummyDC_{i,t} + \beta_2 * Taxrate_{i,t} + \beta_3 * Ndts_{i,t} + \beta_4 * First_{i,t} + \beta_5 * Soe_{i,t}$$
$$+ \beta_6 * Roa_{i,t} + \beta_7 Size_{i,t} + \beta_8 * Tangas_{i,t} + \beta_9 * TQ_{i,t} + \sum Year + \sum Industry$$
$$+ \varepsilon_{i,t} \qquad (1)$$

The two dependent variables are debt-to-asset ratio (DA) and liability-asset ratio (LA). DA is the ratio of interest-bearing liabilities to total assets. Here, interest-bearing liabilities include mainly debts from public financing channels such as bank loans, corporate bonds, short-term financing, and medium-term notes, as well as financial leases and trust loans3. As a common measure of leverage, LA is calculated as total liabilities divided by total assets.

The independent variable Dummy DC indicates whether the corporate pension plan is implemented. Screening for corporate pension plan payments in annual reports reveals that only approximately 10% of observations include corporate pension plans. Accordingly, we define Dummy DC as a dummy variable taking value as 0 or 1, without considering the amount of corporate pension plan payments. The control variables are chosen as tax rate (Taxrate), non-debt tax shield (Ndts), the sharing ratio of the largest shareholder (First), whether the entity is a state-owned enterprise (Soe), return on total assets (Roa), company scale (Size), the proportion of tangible assets (Tangas) and Tobin's q (TQ). Table 3.2defines each variable.

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[3]The liabilities of Chinese listed companies include trade credit without interest payments, so total liabilities = interest-bearing liabilities+ trade credit (accounts payable).

Table 3.2Definitions of Variables

Type	Symbol	Name	Definition
Dependent Variable	*DA*	Debt-to-asset ratio	(short-term loans+long-term liabilities due within one year+long-term loans+bond payable)/total assets
	LA	Liability-asset ratio	total liabilities/total assets
Independent Variable	*DummyDC*	Corporate pension plan	when the corporate pension plan is implemented, takes value of 1, otherwise 0
Control Variables	*Taxrate*	Tax rate	the tax rate paid by the enterprise in current year
	Ndts	Non-debt tax shield	discounts/total assets
	First	The sharing ratio of the largest shareholder	the number of shares held by the largest shareholder/total number of shares outstanding
	Soe	Nature of property rights	if the enterprise is SOE, equals 1, 0 otherwise
	Roa	Return on total assets	net profits/total assets
	Size	Firm size	ln(total assets)
	Tangas	The proportion of tangible assets	net fixed assets/total assets
	TQ	Tobin's q	the enterprise market value/book value

3.2. Statistical Description

Table 3.3 reports the statistical description for variables. The mean value of debt-asset ratio (DA) is 0.3639 with the median as 0.3332; the mean value of liability-asset ratio (LA) is 0.4630 with the median as 0.4337. The significant greater LA (than DA) is caused by the high proportion of commercial credit in China, as no interest payments are required for commercial credit compared to the interest payments characteristic of other liabilities. The mean value of independent variable DummyDC is 0.1025, indicating that only 10.25% of our sample have implemented corporate pension plans. Obviously, corporate pension plans are still not common among listed companies.

The control variable Taxrate is 15% in 25 quantiles, confirming that the tax rate for most enterprises is 25%, while over 25% of listed companies have a preferential tax rate of 15%. The mean value of Ndts 0.0122 represents that the ratio of discounts to total assets is 1.22%. First 's mean value is 0.3527, indicating that the average shareholding of the largest shareholder is about 35.27%. The mean value of Soe is 0.3845, which means 38.45% of our sample are state-owned enterprises. Finally, the mean and median values of Roa, Tangas, TQ are 4.26% and 4.07%, 22.51% and 18.85%, 2.8821 and 2.0827, respectively.

Table 3.3 The Descriptive Statistics of Variables

Variable	Mean	P25	P50	P75	Standard Deviation	N
DA	0.3639	0.1829	0.3332	0.4921	0.6306	27,446
LA	0.4630	0.2672	0.4337	0.6026	0.9940	27,513
DummyDC	0.1025	0.0000	0.0000	0.0000	0.3034	27,513
Taxrate	0.2103	0.1500	0.2500	0.2500	0.0533	27,513
Ndts	0.0122	0.0045	0.0121	0.0232	0.0600	27,513
First	0.3527	0.2334	0.3333	0.4556	0.1521	27,513
Soe	0.3845	0.0000	0.0000	1.0000	0.4865	27,513
Roa	4.2590	1.5056	4.0665	7.4839	15.4975	27,513
Size	21.2806	20.2934	21.1625	22.1501	1.5354	27,513
Tangas	0.2251	0.0923	0.1885	0.3215	0.1715	27,513
TQ	2.8821	1.4377	2.0827	3.2644	4.2686	27,513

This paper reports the descriptive statistics of the variables used in regressions. The sample set contains 27,513 observations of Chinese A-share listed companies from2007 to 2018.

4. Empirical Results

4.1. Baseline Regression Results

Table 4.1 shows the baseline regression results of Model (1). When the dependent variable is debt-asset ratio DA, the coefficient of the independent variable DummyDC is 0.0375, passing the significance test at a level of 1% with t value as 3.88, indicating that the debt-asset ratio of companies with corporate pension plans is significantly 3.75% higher than that of companies without corporate pension plans. Moreover, the same conclusion appliesin the case of LA as the dependent variable. The coefficient of DummyDC equals 0.0620 with t value 3.65 at a significance level of 1%,a 6.20% difference between companies with and without corporate pension plans for the LA case.

In both cases of DA and LA, the control variables Ndts, Roa, Size, Tangas and TQ all passed the 1% significance tests, as well as the independent variable DummyDC. In addition, the regression coefficient of DummyDC is positive. Hence, our hypothesis is supported: companies implementing corporate pension plans have a higher debt ratio.

Table 4.1 Baseline Regressions

	DA		LA	
	Coefficient	t	Coefficient	t
Constant	-1.9429***	-4.54	-2.2539***	-2.99
DummyDC	0.0375***	3.88	0.0620***	3.65
Taxrate	-0.0331	-0.60	-0.2991***	-3.11
Ndts	-0.2359***	-5.35	-0.6245***	-8.05
First	-0.0912***	-5.01	0.0599*	1.87
Soe	0.0057	0.90	0.0202*	1.81
Roa	-0.0210***	-123.56	-0.0270***	-91.17
Size	0.0936***	45.59	0.1174***	32.62
Tangas	0.1558***	7.87	0.2034***	5.84
TQ	0.0848***	126.45	0.1217***	106.01
Year fixed effect	YES		YES	
Industry fixed effect	YES		YES	
F	326.13		208.16	
p>F	0.0000		0.0000	
R^2	0.5489		0.4365	
Observations	27,446		27,513	

This table presents the OLS regression results of the following model:

$$DA_{i,t}/LA_{i,t} = a_0 + \beta_1 * DummyDC_{i,t} + \beta_2 * Taxrate_{i,t} + \beta_3 * Ndts_{i,t} + \beta_4 * First_{i,t} + \beta_5 * Soe_{i,t} + \beta_6 * Roa_{i,t}$$
$$+ \beta_7 * Size_{i,t} + \beta_8 * Tangas_{i,t} + \beta_9 * TQ_{i,t} + \sum Year + \sum Industry + \varepsilon_{i,t}$$

Here, the dependent variables *DA* and *LA* are proxies for corporate financial leverage, which are the debt-to-asset ratio and the liability-asset ratio, respectively. The independent variable *DummyDC* is a dummy variable indicating the implementation of a corporate pension plan for firm *i* in year *t*, which equals 1 when the firm establishes a corporate pension plan and 0 otherwise. After eliminating observations with missing information, all continuous variables are winsorised at the 1 percent level in each tail. The year and industry fixed effects are controlled by the variables of tax rate (*Taxrate*), non-debt tax shield (*Ndts*), the sharing ratio of the largest shareholder (*First*), whether a state-owned enterprise (*Soe*), return on total assets (*Roa*), company scale (*Size*), proportion of tangible assets (*Tangas*), and Tobin's q (*TQ*). The standard errors are corrected by the cluster method of firms. The results of *DA* and *LA* cases are shown in columns 1&2 and 3&4, respectively, where *, **, *** indicate significance at 10%, 5% and 1% levels, respectively.

4.2. Instrumental Variable Method

Endogeneity may exist in the main regression results, possibly caused by companies' aggressive financial policies implemented to improve performance, which leads to the implementation of corporate pension plans. Duygun et al. (2018) note that industry characteristics may still simultaneously affect corporate pension plan coverage and firm performance as well as the investment opportunity set. In addition, the same pension plan is offered within each individual province, but pension plans vary greatly among provinces in China. In addition, there is

continuity in the implementation of corporate pensions unless a company suffers a severe financial crisis. Thus, this paper re-runs models for Table 4.1 using two-step instrumental variable (IV) regressions with three instruments, namely, the proportions of companies implementing corporate pension plansin the same year-industry and same year-province, respectively, and the one-period lagged dummy variable of corporate pension plans. As shown in Table 4.2, the independent variable DummyDC is positive, passing the significance test at 1% for both DA and LA; thus, the hypothesis is further supported. The Sargan chi2 of both models are statistically insignificant, suggesting that our IV models are well-specified.

Table 4.2 Instrumental Variable Approach

	DA		LA	
	Coefficient	t	Coefficient	t
Constant	-1.9350^{***}	-34.89	-2.4906^{***}	-26.32
DummyDC	0.0384^{***}	2.70	0.0684^{***}	2.81
Taxrate	-0.1495^{**}	-2.56	-0.3524^{***}	-3.52
Ndts	-0.0862^{*}	-1.93	-0.5181^{***}	-6.79
First	-0.0443^{**}	-2.37	0.0858^{***}	2.68
Soe	-0.0041	-0.61	-0.0006	-0.05
Roa	-0.0264^{***}	-136.56	-0.0325^{***}	-99.06
Size	0.1038^{***}	49.71	0.1292^{***}	36.19
Tangas	0.1028^{***}	5.07	0.1474^{***}	4.24
TQ	0.0892^{***}	125.64	0.1228^{***}	103.56
Year fixed effect	YES		YES	
Industry fixed effect	YES		YES	
Wald chi-2 (*p*-value)	0.0000		0.0000	
Over-identification Sargan chi2 (*p*-value)	0.6252		0.8686	
R^2	0.6407		0.5226	
Observations	23,205		23,255	

This table shows the IV regression results of the same modelin Table 4.1 (Equation (1)), to overcome endogeneity of the previous regression. The first stage of instrumental variable regression is to run regression between instrument variables and independent variable *DummyDC*. Here, we use three instruments, that is, the proportions of companies implementing corporate pension plan in the same year-industry and same year-province, respectively, and the one-period lagged dummy variable of corporate pension plans. In the second stage, we run the OLS regression of the same model featured in Table 4.1 by replacing the *DummyDC* with its fitted value obtained in the previous stage. After eliminating observations with missing information, all continuous variables are winsorised at the 1 percent level in each tail. The year and industry fixed effects are controlled. The standard errors are corrected by the cluster method of firms. The results of *DA* and *LA* cases are shown in columns 1&2 and 3&4, respectively, where *, **, *** indicate significance at 10%, 5% and 1% levels, respectively.

4.3 Sensitivity Discussions

4.3.1. The Effect of Labor Intensity

In labor intensive enterprises, employees are more important and have a greater impact on enterprise operations. If employees require greater salary to compensate for increased bankruptcy risk associated with a high leverage policy, but their demand cannot be satisfied, they will act to resist the increased debt of the enterprise, such as requiring more compensation or resigning. To motivate employees, this kind of compensation is necessary. As a result, the labor-intensive enterprise faces more total labor costs when increasing its debt ratio, forcing management during financial decision making to pay more attention to the unemployment costs of labor.

Labor intensity is defined as the number of employees divided by total assets. If the ratio of a firm is greater thanthe sample-year median, the firm is categorized as high labor-intensive industry; if its ratio is less than the sample-year median, it is low labor-intensive industry. Relative empirical results are shown in Table 4.3.

In Panel A, the coefficient of DummyDC in high labor-intensive industry is 0.0609 with t value as 3.19 at 1% significance level, while in low labor-intensive industry, the DummyDC coefficient is -0.0006 with t value as -0.14 and failing the significance test. Similar results are obtained in Panel B: the coefficients of DummyDC in high and low labor-intensive industries are 0.1002 with t value as 2.83 at 1% significance level, and 0.0039 with t value as 0.88 failing the significance test, respectively.

Therefore, labor-intensive companies can significantly increase their debt ratios by promoting corporate pension plans because employees play a more important role in this kind of company. When companies implement corporate pension plans, their employees will tolerate greater operational risk, including higher debt ratios.

Table 4.3 The Effect of Corporate Pension Plans on Capital Structure: Labor-Intensive Subsample Tests

Panel A: *DA* as Debt Ratio

DA	High Labor-Intensive Industry		Low Labor-Intensive Industry	
	Coefficient	*t*	Coefficient	*t*
Constant	-2.0453***	-3.72	-0.7996***	-29.77
DummyDC	0.0609***	3.19	-0.0006	-0.14
Taxrate	-0.1090	-1.15	0.1958***	7.10
Ndts	-0.2042***	-3.24	-0.2008***	-6.01
First	-0.1509***	-4.47	-0.0535***	-6.19
Soe	0.0095	0.87	0.0076**	2.34
Roa	-0.0216***	-89.68	-0.0040***	-25.68
Size	0.0946***	24.15	0.0546***	55.01
Tangas	0.2204***	6.03	0.0541***	5.45
TQ	0.1010***	100.91	0.0029***	5.50
Year fixed effect	YES		YES	
Industry fixed effect	YES		YES	
F	230.77		139.34	
p>F	0.0000		0.0000	
R^2	0.6166		0.4980	
Observations	13,725		13,721	

Panel B: *LA* as Debt Ratio

LA	High Labor-Intensive Industry		Low Labor-Intensive Industry	
	Coefficient	*t*	Coefficient	*t*
Constant	-2.3480**	-2.31	-0.9941***	-36.39
DummyDC	0.1002***	2.83	0.0039	0.88
Taxrate	-0.4779***	-2.72	0.1763***	6.23
Ndts	-0.6422***	-5.51	-0.2251***	-6.55
First	0.1426**	2.29	-0.0474***	-5.35
Soe	0.0435**	2.14	0.0173***	5.20
Roa	-0.0272***	-61.56	-0.0045***	-28.36
Size	0.1140***	15.73	0.0665***	65.62
Tangas	0.2613***	3.86	0.0446***	4.39
TQ	0.1449***	80.72	0.0043***	7.99
Year fixed effect	YES		YES	
Industry fixed effect	YES		YES	
F	136.28		153.73	
p>F	0.0000		0.0000	
R^2	0.4868		0.5217	
Observations	13,742		13,771	

After eliminating observations with missing information, we divide the sample set into two subsets of high and low labor-intensive industries by the median labor intensity, defined as the

ratio of the number of employees to total assets. Firm *i* is marked as high labor-intensive industry if its ratio is greater than the median; otherwise, it belongs to the low labor-intensive subset. We re-run Equation (1), using the two subsamples. All continuous variables are winsorised at the 1 percent level in each tail. The year and industry fixed effects are controlled. The standard errors are corrected by the cluster method of firms. Panels A and B display the results of *DA* and *LA* cases, respectively. The results of high and low labor-intensive subsamples are shown in columns 1&2 and 3&4 of each panel, respectively. Note*, **, *** indicate significance at 10%, 5% and 1% levels, respectively.

4.3.2. The Effect of Employee Type Proportion

Generally, front-line employees can communicate only with their immediate leaders and rarely have the opportunity of leapfrog communicating with senior management. Consequently, front-line employees pay limited attention to the development and management of their companies, as they believe they are irrelevant to operational strategy, and so naturally they feel that corporate strategy is none of their business. In stark contrast, management and technicians can take part in and influence operational decisions; hence, when managinga corporate pension plan, considerations focus on the high and medium levels of management rather than on front-line employees. In fact, the coverage of corporate pension plans is usually insufficient, mainly benefiting management and technicians. Without a corporate pension plan, front-line employees rarely identify with the company.

We classify samples into companies with high and low proportions of front-line employees. Non front-line employees include technicians and managers. The proportion of front-line employees is defined by the number of production workers divided by the total number of employees. The benchmark is the median of sample-year samples. If greater than the benchmark, it is a company with a high proportion of front-line employees. If less, it is marked as a company with a low proportion of front-line employees. See Table 4.4 for the empirical results.

Both panels fail the significance test. In Panel A, the coefficients of DummyDC in industries with high and low proportions of front-line employees are 0.0001 with t value as 0.01, and 0.0165 with t value as 1.37, respectively. In Panel B, the coefficients of DummyDC in industries with high and low proportions of front-line employees are 0.0036 with t value as 0.41, and 0.0232 with t value as 1.71(weak significance), respectively. Hence, the proportion of front-line employees does not have a significant influence on corporate pension plans.

Table 4.4 The Effect of Corporate PensionPlans on Capital Structure: Employee Type Proportion Subsample Tests

Panel A: *DA* as Debt Ratio

	High Proportion of Front-line Employees		Low Proportion of Front-line Employees	
	Coefficient	*t*	Coefficient	*t*
Constant	-0.7344***	-13.53	-0.6860***	-9.77
DummyDC	0.0001	0.01	0.0165	1.37
Taxrate	0.1402***	3.11	0.2441***	3.53
Ndts	-0.5438***	-17.96	-0.9860***	-10.90
First	-0.1134***	-7.31	-0.1432***	-6.18
Soe	0.0298***	5.54	0.0061	0.72
Roa	-0.0116***	-47.18	-0.0050***	-19.85
Size	0.0554***	27.42	0.0483***	17.89
Tangas	0.1586***	9.44	0.2697***	9.21
TQ	0.0184***	12.68	0.0139***	13.04
Year fixed effect	YES		YES	
Industry fixed effect	YES		YES	
F	59.32		22.75	
p>F	0.0000		0.0000	
R^2	0.3525		0.1815	
Observations	9,786		9,944	

Panel B: *LA* as Debt Ratio

	High Proportion of Front-line Employees		Low Proportion of Front-line Employees	
	Coefficient	*t*	Coefficient	*t*
Constant	-0.9736***	-16.88	-0.9605***	-12.16
DummyDC	0.0036	0.41	0.0232*	1.71
Taxrate	0.1615***	3.37	0.2421***	3.11
Ndts	-0.5736***	-17.81	-1.0836***	-10.64
First	-0.1067***	-6.47	-0.1376***	-5.27
Soe	0.0408***	7.11	0.0184*	1.92
Roa	-0.0127***	-48.41	-0.0058***	-20.65
Size	0.0684***	31.84	0.0640***	21.08
Tangas	0.1338***	7.49	0.3022***	9.17
TQ	0.0221***	14.26	0.0166***	13.78
Year Fixed Effect	YES		YES	
Industry fixed effect	YES		YES	
F	58.34		23.62	
p>F	0.0000		0.0000	
R^2	0.3485		0.187	
Observations	9,797		9,954	

After eliminating observations with missing information, we divide the sample set into two subsets ofcompanies with high and low proportions of front-line employees based on the sample median. Front-line employees are employees except technicians and managers. The proportion is the ratio of the number of front-line employees to the total number of employees. Firm *i* is categorized as ahigh proportion subsample if its ratio is greater than the median; otherwise, it is a sample ofthe low proportion subset. We re-run Equation (1), using the two subsamples. All continuous variables are winsorised at the 1 percent level in each tail. The year and industry fixed effects are controlled. The standard errors are corrected by the cluster method of firms. Panels A and B display the results of *DA* and *LA* cases, respectively. The results of high and low labor-intensive subsamples are shown in columns 1&2 and 3&4 of each panel, respectively. Note *, **, *** indicate significance at 10%, 5% and 1% levels, respectively.

4.3.3. The Effect of Employee Education Level

Compared to employees with high school and lower education, employees with higher education enjoy more benefits from corporate pension plans. In companies with a high proportion of employees with higher education, more employees will realize the security provided by corporate pension plans. Consequently, they are more tolerant of the increased leverage of companies. Inversely, employees with lower education have not only alower possibility of having corporate pension plans, but also a lower understanding of corporate pension plans offering future protection. Hence, in companies with a high proportion of employees with higher education, corporate pension plans induce employees to tolerate higher financial leverage. Rauh (2006) concludes that in a DB pension plan, the firm pledges retirement benefits to employees based on a function of each employee's age, tenure, and salary.

Accordingly, we divide all samples into enterprises with high and low proportions of high education employees, with the benchmark of junior college and above as high education. The proportion of high education employees is defined as the number of employees with high education divided by the total number of employees. If this proportion for a company is greater than the sample-year median, the company is marked as high proportion of high education employees. If less, it is low proportion of high education employees. Refer to Table 4.5 for empirical results.

In Panel A, the coefficient of DummyDC in industry with a high proportion of high education employees is 0.0348 with t value as 2.5 at 5% significance level, while infirms with a low proportion of high education employees, the DummyDC coefficient is 0.0067 with t value as 0.59and failing the significance test. Similar results are shown in Panel B. The coefficients of DummyDC in industries with high and low proportions of high education employees are 0.0725 with t value as 2.50 at 5% significance level, and 0.0269 with t value as 1.57and failing the significance test, respectively. The results show that the effect of the corporate pension plans on the increase of the asset-liability ratio is more significant in companies with a high proportion of high education employees. Hence, the impact of corporate pension plans on financial leverage is more significant in companies with high proportions of high education employees.

Table 4.5 The Effect of Corporate Pension Plans on Capital Structure: Employee Education Level Subsample Tests

Panel A: *DA* as Debt Ratio

DA	High Proportion of High EducationEmployees		Low Proportion of High EducationEmployees	
	Coefficient	*t*	Coefficient	*t*
Constant	-1.7651***	-21.55	-1.2642***	-4.16
DummyDC	0.0348**	2.50	0.0067	0.59
Taxrate	-0.0076	-0.09	-0.0384	-0.70
Ndts	0.1694**	2.05	-0.6907***	-17.48
First	-0.1778***	-6.25	0.0161	0.84
Soe	0.0238**	2.29	-0.0296***	-4.58
Roa	-0.0072***	-22.24	-0.0317***	-190.73
Size	0.0896***	28.77	0.0819***	35.36
Tangas	0.3129***	9.61	0.0228	1.12
TQ	0.0946***	105.43	0.0361***	33.87
Year fixed effect	YES		YES	
Industry fixed effect	YES		YES	
F	131.98		498.74	
p>F	0.0000		0.0000	
R^2	0.4981		0.7852	
Observations	12,998		13,058	

Panel B: *LA* as Debt Ratio

LA	High Proportion of High Education Employees		Low Proportion of High Education Employees	
	Coefficient	*t*	Coefficient	*t*
Constant	-2.2266***	-13.18	-1.7150***	-3.75
DummyDC	0.0725**	2.50	0.0269	1.57
Taxrate	-0.5572***	-3.04	-0.0346	-0.42
Ndts	-0.9769***	-5.69	-0.5987***	-10.08
First	0.0631	1.07	0.0454	1.58
Soe	0.0380*	1.76	-0.0052	-0.54
Roa	-0.0251***	-38.45	-0.0300***	-120.61
Size	0.1166***	18.08	0.1072***	30.84
Tangas	0.3723***	5.50	0.0391	1.28
TQ	0.1392***	76.75	0.0760***	49.44
Year fixed effect	YES		YES	
Industry fixed effect	YES		YES	
F	87.80		242.92	
p>F	0.0000		0.0000	
R^2	0.3968		0.6401	
Observations	13,042		13,071	

After eliminating observations with missing information, we divide the sample set into two subsets of companies with high and low proportions of high education employees based on the sample-year median. High education background is defined as junior college and above. The proportion is the ratio of the number of high education employees to the total number of employees. Firm *i* is classified in the high-proportion subsample if its ratio is greater than the sample-year median; otherwise, it is a sample in the low-proportion subset. We re-run Equation (1) using the two subsamples. All continuous variables are winsorised at the 1 percent level in each tail. The year and industry fixed effects are controlled. The standard errors are corrected by the cluster method of firms. Panels A and B display the results of *DA* and *LA* cases, respectively. The results of high and low labor-intensive subsamples are shown in columns 1&2 and 3&4 of each panel, respectively. Note *, **, *** indicate significance at 10%, 5% and 1% levels, respectively.

4.3.4. The Impact of Employee Age

When a corporate pension plan is implemented, some older employees are approaching retirement, leaving a short annuity benefit period. Comparatively, younger employees enjoy more protection from the corporate pension plan, explaining their higher tolerance for the company's increased leverage.

Based on age, if the proportion of employees aged 30 and below is more than the median of the sample-year, a company is deemed to have a high proportion of young employees. If less, it is a company with a low proportion of young employees. The empirical results are shown in Table 4.6.

Panel A passes the 10% significance test, while Panel B fails the significance test. In Panel A, the coefficient of DummyDC in industry with a high proportion of young employees is 0.0511 with t value as 1.72, while in firms with a low proportion of young employees, the DummyDC coefficient is -0.0616 with t value as -1.81. In Panel B, the coefficients of DummyDC in industries with high- and low proportions of young employees are 0.0374 with t value as 1.18, and 0.0379 with t value as -1.08, respectively.

Therefore, when companies implement corporate pension plans, young employees can gain more protection by enjoying a longer payment period. Compared with older employees, younger employees have a stronger perception of the security offered by corporate pension plans and are more motivated to accept the increased leverage.

Table 4.6 The Effect of Corporate Pension Plans on Capital Structure: Employee Age Subsample Tests

Panel A: DA as Debt Ratio

DA	High Proportion of Young Employees		Low Proportion of Young Employees	
	Coefficient	t	Coefficient	t
Constant	-1.0914***	-10.29	-1.2218***	-10.53
DummyDC	0.0511*	1.72	-0.0616*	-1.81
Taxrate	0.0575	0.82	-0.0471	-0.60
Ndts	-0.5781	-1.40	-0.1844	-0.78
First	-0.0441	-1.66	-0.0214	-0.77
Soe	-0.0049	-0.30	0.0256*	1.90
Roa	-0.0088***	-10.35	-0.0147***	-14.30
Size	0.0792***	17.99	0.0802***	16.20
Tangas	0.1953***	4.41	0.1209***	3.30
TQ	0.0032	1.31	0.0073***	1.99
Year fixed effect	Yes		Yes	
Industry fixed effect	Yes		Yes	
F	17.22		20.38	
p>F	0.0000		0.0000	
R^2	0.5306		0.5833	
Observations	1,040		1,059	

Panel B: LA as Debt Ratio

LA	High Proportion of Young Employees		Low Proportion of Young Employees	
	Coefficient	t	Coefficient	t
Constant	-1.6553***	-14.60	-1.5214***	-12.73
DummyDC	0.0374	1.18	-0.0379	-1.08
Taxrate	0.1000	1.34	-0.0808	-0.99
Ndts	-0.3439	-0.78	-0.4256*	-1.74
First	-0.0388	-1.37	-0.0253	-0.89
Soe	-0.0064	-0.36	0.0361***	2.60
Roa	-0.0104***	-11.38	-0.0158***	-14.94
Size	0.1074***	22.85	0.0989***	19.38
Tangas	0.1857***	3.93	0.1266***	3.36
TQ	0.0049*	1.88	0.0108***	2.85
Year fixed effect	Yes		Yes	
Industry fixed effect	Yes		Yes	
F	23.31		25.41	
p>F	0.0000		0.0000	
R^2	0.6038		0.6358	
Observations	1,044		1,059	

After eliminating observations with missing information, we divide the sample set into two subsets of companies with high and low proportions of young employees based on the sample median. Young employees are aged 30 and younger. The proportion is the ratio of the number of young employees to the total number of employees. Firm *i*belongs tothe high proportion subsample if its ratio is greater than the median sample-year; otherwise, it is a sample of the low proportion subset. We re-run Equation (1), using the two subsamples. All continuous variables are winsorised at the 1 percent level in each tail. The year and industry fixed effects are controlled. The standard errors are corrected by the cluster method of firms.Panels A and B display the results of *DA* and *LA* cases, respectively. The results of high and low labor-intensive subsamples are shown in columns 1&2 and 3&4 of each panel, respectively. Note *, **, *** indicate significance at 10%, 5% and 1% levels, respectively.

5. Alternative Explanation – the Production Cost Hypothesis

Following the free cash flow hypothesis in Devos and Rahman (2018), we present an alternative explanation, the production cost hypothesis. When listed companies provide corporate pension plans for employees, the results include increased production costs, decreased profits, and an increased asset-liability ratio. The mechanism is different from that discussed previously, which is that corporate pension plansaffect employees' feelings towards bankruptcy risk. Hence, we examine whether there exists decreased profits after listed companies pay for corporate pension plans. If corporate pensions significantly reduce the profitability of listed companies, the hypothesis might be valid, but not vice versa.

Here we use ROA and industry-adjusted ROA as the profitability measurement. The industry-adjusted ROA equals the ROA of listed companies minus the median ofthe ROA for same year and same industry. Replacing the dependent variable in Model (4-1) with ROA (Roa) and industry-adjusted ROA (AdjRoa), respectively, we present the empirical results in Table 5.1.

From Table 5.1, we learn that the coefficients of independent variable DummyDC are non-significant negative for regressions with ROA and industry-adjusted ROA. This means that corporate pension plan payments do not cause a significant decline in the profit of listed companies, invalidating the production cost hypothesis, though production costs do indeed increase. Therefore, this alternative hypothesis is not applicable.

Table 5.1 The Tests for Production Cost Hypothesis

	Roa Coefficient	t	AdjRoa Coefficient	t
Constant	-1.584	-0.10	-9.817	-0.64
DummyDC	-0.271	-0.78	-0.094	-0.27
Taxrate	-11.167***	-5.68	-10.444***	-5.34
Ndts	-8.327***	-5.26	-8.706***	-5.52
First	6.058***	9.28	5.954***	9.16
Soe	-1.896***	-8.32	-1.873***	-8.26
Size	0.828***	11.28	0.786***	10.76
Tangas	-8.324***	-11.73	-8.104***	-11.47
TQ	-0.051**	-2.19	-0.066***	-2.83
Year fixed effect	Yes		Yes	
Industry fixed effect	Yes		Yes	
F	9.07		6.27	
p>F	0.0000		0.0000	
R^2	0.0323		0.0226	
Observations	27,513		27,513	

This table presents the OLS regression results of following model to test the validity ofthe production cost hypothesis:

$$Roa_{i,t}/AdjRoa_{i,t} = a_0 + \beta_1 * DummyDC_{i,t} + \beta_2 * Taxrate_{i,t} + \beta_3 * Ndts_{i,t} + \beta_4 * First_{i,t} + \beta_5 * Soe_{i,t} + \beta_6 * Size_{i,t} + \beta_7 * Tangas_{i,t} + \beta_8 * TQ_{i,t} + \sum Year + \sum Industry + \varepsilon_{i,t}$$

Here, the dependent variables *Roa* and *AdjRoa* are the proxies for corporate profitability, which are return on capital and that adjusted by industry, respectively. The independent variable *DummyDC* is a dummy variable indicating the implementation of a corporate pension plan for firm *i* in year *t*, which equals 1 when the firm establishes a corporate pension plan and 0 otherwise, without considering the amount of annuity payments. All continuous variables are winsorised at the 1 percent level in each tail. The year and industry fixed effects are controlled by the variables of tax rate (*Taxrate*), non-debt tax shield (*Ndts*), the sharing ratio of the largest shareholder (*First*), whether it is a state-owned enterprise (*Soe*), company scale (*Size*), the proportion of tangible assets (*Tangas*) and Tobin's q (*Tq*). The standard errors are corrected by the cluster method of firms. The results of *Roa* and *AdjRoa* cases are shown in columns 1&2 and 3&4, respectively, where *, **, *** indicate significance at 10%, 5% and 1% levels, respectively.

6. Conclusion

Corporate pension plans are important supplements of employee protections, so employees of companies with corporate pension plans may be more tolerant of a high leverage policy, resulting in increased financial leverage for the company. We check this hypothesis using with the annual data of Chinese listed companies from 2007 to 2018. By adoptingtwo debt ratios, the asset-liability ratio (LA) and the debt-to-asset ratio (DA), and the instrumental variable method,

we show that the corporate pension plan indeed increase the debt ratio, especially for companies in high labor-intensive industries, which generally have higher educated and younger employees. Moreover, we adopt sensitivity tests to demonstrate that the effect of corporate pension plans on debt ratios is realized through the influence on employees. Finally, we check the production cost hypothesis, for which we find that pension plan does not affect firm's profit.

Our research provides rich policy implications for the corporate pension plans, both for the expansion of the coverage and for the effective management. Only with more employees benefiting from corporate pension plans can ensure the compatible objectives of employees and companies. When employees see an effectively guaranteed return, they will identify more strongly with the corporate pension plan and company. This may hold in other developing countries that are facing similar issues as well.

Appendix

Policy Summary

Issuing Time	Issuing Institution	Policy	Content
June 26, 1991	The State Council of the People's Republic of China	*Decision of the State Council on the Reform of the Pension System for Enterprise Employees*	It reforms the basic pension system established in the 1950s. The state advocates and encourages enterprises to execute a supplementary pension system, as well as employees to participate in individual savings endowment insurance. Its aim is to gradually establish the combining system of state basic-, enterprise supplementary- and employee private savings-endowment insurance.
March, 17, 1995	The State Council of the People's Republic of China	*Circular of the State Council on Deepening the Reform of the Pension System for Enterprise Employees*	It deepens the reforms by clarifying the objectives and principles of pension reforms. Also, it makes clear provisions for establishing enterprise supplementary pension insurance and individual savings endowment insurance.
December 29, 1995	The Ministry of Labour of the People's Republic of China	*Opinions of the State Council on Establishing a Supplementary Pension System for*	It makes clear provisions for enterprise supplementary pension insurance, including its implementation and conditions, decision-making procedures,

		Enterprises	management organizations, bonus sources, accounting method, calculation method, contribution method and level, conditions and benefits, agency institutions and commission procedure,etc.
December 25, 2000	The State Council of the People's Republic of China	*Notice of the State Council on issuing the Pilot Plans to Improve the Social Security System in Urban Areas*	It chooses Liaoning Province as a pilot to improve the urban social security system and puts forward the term *corporate pension plan*for the first time.
January 6, 2004	The Ministry of Labour and Social Security of the People's Republic of China	*Trial Measures on Enterprise Pension*	It clarifies the conditions for establishing corporate pension plans, and corporate pension planmatters, including contents and the upper limits of enterprise and individual contributions, etc.
February 23, 2004	The Ministry of Labour and Social Security of the People's Republic of China, the China Banking Regulatory Commission, the China Securities Regulatory Commission and the China Insurance Regulatory Commission	*Interim Measures for Administration of Enterprise Pension Funds*	It defines the rights and obligations of the principals, trustees, account managers and custodians, as well as the investment scope of corporate pension plan funds, etc.
February 12, 2011	The Ministry of Human Resources and Social Security of the People's Republic of China, the China Banking Regulatory Commission, the China Securities Regulatory Commission and the China Insurance Regulatory Commission	*Measures for Administration of Enterprise Annuity Funds*	It refines the trial measures in the aspects of the rights and obligations of the principals, trustees, account managers and custodians, as well as the investment scope of corporate pension plan funds, etc.
December 6, 2013	The Ministry of Finance of the People's Republic of China	*Circular on Issues Related to Individual Income Tax of Corporate*	It refines the trial measures on the deferred tax policy for individual income tax realized from corporate pension plans,

		PensionPlans and Occupational Annuities	consistent with the international EET method.
December 18, 2017	The Ministry of Human Resources and Social Security of the People's Republic of China and the Ministry of Finance of the People's Republic of China	*Measures for Administration of Annuities of Enterprises*	It changes the *to establish voluntarily* in the trial measures to *to establish autonomously*. For the first time, it encourages enterprises to establish corporate pension plans, promoting their development. In addition, the annual contribution of enterprises was increased from a maximum*one-twelfth (about 8.3%)* of totalwages paid to employees \ to *one-sixth (about 12%)*. This marked the further perfection and optimization of China's multi-layer pension system, improving protections for retired employees.

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