

Research on the Effects of Corporate Social Insurance on Total Factor Productivity

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Abstract. Social insurance is an insurance arrangement that the country or the government collects from some specific groups, such as enterprises, through compulsory means and then sets up social security funds to guarantee the basic living standards of specific groups of society, including the old, weak, sick, disabled, pregnant and temporarily unemployed. It is a legal responsibility and obligation that enterprises or employers must undertake and in the financial aspect, it is a rigid labor cost besides the wages. In China, enterprise is the main object that should afford the payment of social insurance and its contribution rate is higher than the international level, followed by some negative effects. This article prefers to study the correlation between corporate social insurance and TFP and find a reasonable range of the contribution rate based on the other researchers' data and viewpoints. It may also provide some possible suggestions to the governments to decrease the burden of firms and ensure the development of a welfare security system.

Keywords: Corporate social insurance, Total factor productivity, Social welfare.

1. Introduction

Corporate social insurance, which is a kind of social welfare, is an important component of the labor force cost of Chinese enterprises. It could dramatically affect the operation and development of enterprises and the welfare of workers [1]. In the past few years, the effects of corporate social insurance on the operation of businesses have aroused extensive discussion. It is generally believed that excessive social insurance could increase the operating costs of firms and adversely affect technological progress, R&D investment, and human capital structure [2]. In China, nearly 30% of social insurance is afforded by firms and according to the research results by Nielsen and Smyth in 2008, the social insurance cost of enterprises in China was about 40%-50% of labor cost, which was about 2.5 to 5 times higher than in other Asian countries [3-5]. These have caused the low recognition of Chinese enterprises for social insurance payments. According to the White Paper on Social Security of Chinese Enterprises in 2022, only 28.4 percent of enterprises achieved full compliance with the social security base in 2022, which was 1.5 percentage points lower than in 2021. To solve this problem, the government has lowered corporate social insurance contribution rates five times from 2015 to 2019.

However, some people believe that social insurance could have a positive impact on the economic efficiency of firms within a certain limit. Since the 19th century, Western countries have generally established social insurance systems to encourage enterprises to fully cooperate with the government to improve the welfare of workers, which decreases the uncertainty of workers about the future and increases working motivation. The establishment of the system effectively promoted the development of the capitalist economy at that time [1]. Some studies have also proved that if enterprises can provide reasonable salaries, bonuses, five insurance, housing funds, enterprise annuity, and other benefits, the job satisfaction of laborers will be greatly improved [6].

Consequently, the theoretical significance of the research is to study the correlation between corporate social insurance and total factor productivity (TFP) of the firms and enrich the related research about labor economics and corporate finance, which is an immensely popular field recently. Additionally, its practical significance is to help firms with decision-making, evaluate the current policies of the governments, and provide theoretical evidence for policy-making in the future.

2. Analysis of Influence Factors

2.1. Causes and Effects of Excessive Corporate Social Insurance

During the past few years, many scholars, like Ji and Nielsen have found that compared with other countries, the payment burden of Chinese corporate social insurance is at a relatively high level [3, 4]. There are some causes of such a phenomenon.

Firstly, one of the most important reasons is problems existing in the Chinese social security system, which leads to a higher corporate social security contribution rate. Specifically, the Chinese social security system started in the 1950s and has experienced three significant changes from the mixed system of enterprise insurance and social insurance to business insurance and then to the establishment of the social security system. The overall orientation of social security system reform is to disperse from enterprise security to socialized security, but enterprises always bear the main responsibility for payment and the concept that enterprises are the main responsible object for social security has been retained in the social security system [3]. Consequently, Chinese enterprises should suffer higher corporate social insurance payments, the rate of which is higher than 40% and is markedly higher than the international level [7].

Secondly, some external factors, especially the serious aging phenomenon, have also caused the heavy payment burden of Chinese corporate social insurance. According to the statistics from the seventh national census, the proportion of individuals aged 60 and above has reached 18.7%, of which 13.5% was aged 65 and above, which means the number of retirees and the size of pension spending have increased continuously. This can also increase the payment burden of social insurance of firms [8].

There are also some possible effects of increasing corporate social insurance on both firms and laborers and most scholars have thought that higher corporate social insurance has more negative effects.

Firstly, as for firms, increasing corporate social insurance could significantly increase the costs of labor, which is an important component of productive costs, and will affect its competitiveness. To elaborate, increasing corporate social insurance can increase the productive costs of the firms and they might increase the selling prices of their services and goods if they prefer to maintain the profits, after which the price competition will fall. Additionally, if firms do not increase the selling prices, rising corporate social insurance will decrease their profits and then they can invest less money in research and development (R&D), so they cannot create more efficient productive methods and cannot achieve dynamic efficiency. Therefore, too heavy corporate social insurance can negatively impact the competitiveness of the firms.

Secondly, as for labor, rising corporate social insurance will have a crowding-out effect on wages, followed by a decrease in employees' wages [9]. Afterward, their disposable income will fall, which leads to decreasing living standards and motivation to work.

Additionally, there are some other effects. On the one hand, growing corporate social insurance can influence Chinese international competitiveness and reduce exports because growing corporate social insurance can cause higher unit cost of labor, but low labor cost is the reason why Chinese products can occupy an important place in world trade. Thus, higher corporate social insurance can cause lower international competitiveness. On the other hand, firms might attempt to avoid the payment of social insurance if such burden is too heavy, after which the collection rate of social security funds will decrease and this is not conducive to the normal operation of social security fund management [10].

However, increasing corporate social insurance can sometimes positively affect firms and laborers. To illustrate, according to efficiency wage theory, growing social insurance could stimulate the working motivation and efficiency of laborers, which leads to a rise in productivity because laborers can attain more security certainty about the future due to rising social insurance, followed by growing working motivation and efficiency. Therefore, the productivity of the firms will grow, which may lead to more profits and investments in R&D.

2.2. Factors That Affect Total Factor Productivity

In recent years, scholars have studied the factors that affect TFP in various aspects and concluded that many factors can impact TFP. In this research, just two factors --- labor cost and investment in R&D will be discussed.

Firstly, as for the research related to the effects of labor cost on TFP, different scholars have different viewpoints. Some scholars thought that increasing labor costs could decrease TFP. For example, Li Qianqian, Chen Pengjun, and Li have found that higher corporate social insurance causes rising labor costs, which increases the burden of the firms and leads to the falling TFP [11]. However, other scholars found that growing labor costs can promote the increase of firms' TFP. For instance, Xiaowen et al. concluded that there was a positive correlation between labor cost and TFP based on data from Chinese listed companies from 2007 to 2016 [12]. Then, she added financing constraints as a moderator variable and found that such a correlation would weaken when the intensity of corporate financing constraints increases.

Secondly, the research about the impacts of investment in R&D on TFP can be divided into two types ----direct effects and indirect effects. On the one hand, some scholars have studied the direct impacts of TFP. Mao et al. have studied that the TFP of firms that had investment in R&D was always higher than that of firms without such expenditure through group comparison [13]. Then, they also found an optimal range of investment in R&D, which is from 1% to 7%. If the investment is higher or lower than this range, the effects of it on TFP will decrease. On the other hand, the researches about indirect effects mainly focus on mesomeric effects. For example, Chen and Jiang in 2021 studied the effects of tax incentives on TFP based on data of listed companies from 2012 to 2018 and added the investment in R&D as a mediating variable in the model [14]. Afterward, they proved that tax incentives can dramatically increase firms' TFP by increasing R&D investment, which means the mediating effect of R&D investment is significant.

3. Correlation Analysis

Because endowment insurance is an important component of social insurance, most scholars prefer to regard endowment insurance as the representative of social insurance and separately study the relationship between such insurance and TFP. In the following, some key articles of this field will be divided into three groups based on the different correlations between social insurance and TFP.

3.1. Negative Correlation Between Corporate Social Insurance and TFP

In the past few years, many scholars have found that there is a negative correlation between the amount of corporate social insurance and TFP. Specifically, Zhao and Lu have concluded that there was a negative correlation between the payment of endowment insurance and TFP [15]. Based on some research and articles by other scholars, they firstly put forward two hypotheses: the proportion of employees' endowment insurance contribution is negatively correlated with productivity and such correlation is more significant in the low average wage group. Afterward, they started a series of quantitative analyses and finally attained two conclusions. Firstly, there is a negative correlation between these two objects, which means when firms pay a higher proportion of endowment insurance, their TFP will become lower. Secondly, such negative effects on TFP just exist in the group with low average wages. They also examined the possible gateways through which the percentage of endowment insurance affects TFP and found that higher payment of the insurance increases the labor cost, which leads to the fall in disposable income of employees and the future innovation output of the firms [15].

Su Chunhong and Ge have gotten the same conclusions, but they added and empirically tested two transmission mechanisms [16]. In the first transmission mechanism, they found that higher payment of endowment insurance would cause a decrease in R&D investment, followed by a lower TFP. Then in the second mechanism, they also found that the disposable income of laborers will decline due to more payment of the insurance, which precedes the falling TFP. Thereafter, the researchers added

financing constraints as a moderator variable and discovered that such constraints could increase the negative correlation between endowment insurance and TFP [16].

Thus, according to these researches, people could predict that there is a negative correlation between corporate social insurance and TFP and the negative effects of higher corporate social insurance on TFP are probably through decreasing disposable income of laborers and investment in R&D.

3.2. Positive Correlation Between Corporate Social Insurance and TFP

Some researchers also found that the correlation between these two objects can sometimes become positive. To illustrate, Lin thought that the rise in the payment of endowment insurance could promote the increase in firms' TFP [17]. The data of his research came from the China Industrial Enterprise Database between 1998 and 2007, after which based on other scholars' research about data processing, he deleted some data, including extremum, some missing parts of key data, and some inaccurate statistics. Finally, he retained the data from 1998 to 2003 and from 2005 to 2007, which consists of 1556847 annual data of the businesses. Based on these data, he found that after the growth in payment of endowment insurance, firms will respond to this burden by increasing the capital factor and decreasing the labor factor, after which more capital input could help firms achieve technological innovation [17]. As a result, the TFP of the firms will continuously rise rather than become lower.

3.3. Some Other Correlations

Unlike the above studies, some scholars have found that the relationship between the payment of endowment insurance and TFP is not monotone negative or monotone positive. For example, Yu Xinliang, Shangguan Yaowen, and other researchers in 2019 have discovered that when the payment of endowment insurance increases, the firms' TFP will grow first and then decrease, which means the relationship between them can be regarded as an inverted U shape [18]. Specifically, in their point of view, when the contribution rate of enterprise endowment insurance is too low, laborers can receive relatively higher incomes, but the role of endowment insurance in screening and locking highly skilled employees cannot be achieved; thus, firms cannot realize the effective incentives form highly skilled labors and may lose some of these labors. As a result, the remaining high-skilled laborers will only work at lower efficiency which is the same as the working efficiency of low-skilled laborers, and the productivity of the whole laborers will fall. Under such circumstances, only R&D investment could stimulate the increase in TFP. However, when the contribution rate of enterprise endowment insurance is too high, firms will face an immensely high burden of payment, after which they will decrease the wage rate of laborers to counterbalance the increasing payment of endowment insurance. Therefore, the disposable income of laborers will fall and they will have fewer incentives to work hard, which leads to lower productivity. Also, higher endowment insurance may crowd out the money invested in R&D and negatively affect firms' productivity in the long run.

Based on the analysis, the researchers assumed that if the endowment insurance is at the optimal contribution rate or range, firms can improve their TFP through both higher working efficiency of labor and more investment in R&D. After collecting the data of listed companies from 2013 to 2017, constructing a nonlinear model, and other processes, the researchers concluded that the actual contribution rate of endowment insurance should be 5.67% in which the firms' TFP can reach the highest and if the actual rate is between 5.20% and 9.57%, the higher working efficiency of highly skilled labors and R&D investment could jointly promote TFP [18].

4. Suggestions and Implication

4.1. Setting Reasonable Contribution Rate Based on Economic Development

These days, the recognition of firms for the payment of corporate social insurance is low and just a small number of firms could achieve full compliance with social insurance due to the high contribution rate in China. On the one hand, according to some articles, if the burden of corporate

social insurance is too high, there will be crowded-out effects of R&D investment and the wage rate of laborers, after which the firms' TFP will be negatively affected. Additionally, if the corporate social insurance is too low, the motivation of laborers will decrease, which can also adversely influence TFP. Thus, it is quite significant for the governments to keep the contribution rate in a reasonable range. On the other hand, in the long run, the serious aging phenomenon will dramatically impact the social security system. The pressure of supporting the elderly population and the shortage of young labor force all make the setting of social insurance contribution rate must adapt to the development of enterprises to ensure the development of social insurance based on the normal operation of firms. Therefore, governments must set reasonable contribution rates in line with economic development.

4.2. Establishing a Multi-pillar Social Insurance System

In China, social insurance premium is through the way of social pooling and firms always bear the main responsibility for payment. Therefore, if the fund income in other aspects remains unchanged and the contribution rate of corporate social insurance decreases, the overall income of China's social insurance premium will fall dramatically. Under the background of the aging phenomenon, the expenditure pressure of social security funds will increase, followed by the rising gap between social security income and expenditure. If the governments prefer to reduce the payment burden of firms, they should increase the social security income in other aspects to provide room for corporate social insurance to decline.

The social security income can grow through the following gateway. Firstly, the country could increase the amount of state contributions to social insurance. Secondly, the governments should strengthen the collection of social security funds and perfect the collection management procedures of social insurance to ensure the payment ability of social insurance. Thirdly, the replenishment of the social security fund by state-owned enterprises can increase appropriately to counterbalance the financial burden of the country.

4.3. Establishing Differentiated Corporate Social Security Policies

The increasing corporate social insurance might have quite different effects on different types of businesses. For example, for some technology-intensive enterprises, social insurance can effectively promote labor productivity, whereas for some traditional labor-intensive industries, it will dramatically increase labor costs and negatively affect investment in R&D and operation. Consequently, the related departments should make the policies more targeted, which means they should evaluate the effects of corporate social insurance on different types of firms or different regions and introduce differentiated policies. Afterward, the benefits of adjustments of policies could be maximized.

4.4. Other Reasonable Suggestions

Besides the suggestions above, some other suggestions could solve the conflicts between corporate social insurance and TFP.

Firstly, firms should focus on how to improve their innovative ability and the motivation of laborers directly rather than just concentrate on the contribution rate of social insurance. Specifically, the payment of corporate social insurance can affect TFP through the intermediation of the firms' innovative ability and motivation of laborers. Thus, firms should focus on both the benefits of decreasing contribution rate and the methods to increase the innovative ability and motivation of laborers in order to impact TFP to the largest constant.

Secondly, the governments can encourage the firms to develop enterprise annuities to improve the motivation of laborers. To illustrate, an enterprise annuity is a pension plan provided by a company to its employees to provide them with additional pension income after retirement. The universality of social endowment insurance has limited the role of endowment insurance in motivating employees and improving productive efficiency, with the high contribution rate of basic endowment insurance

also inhibiting the willingness of enterprises to purchase supplementary endowment insurance for employees. The phenomenon can negatively impact the firms' TFP and the development of enterprise annuity. After the decreasing contribution rate, the governments can encourage the firms to establish personalized enterprise annuity systems to improve the laborers' motivation and TFP further.

5. Conclusion

This article studies the topic of the relationship between corporate social insurance and total factor productivity (TFP) through methods of literature collation, text analysis, and systematic review, after which the author gains the following conclusions.

Firstly, the burden of the social insurance payment for Chinese firms is immensely heavy. Specifically, enterprises always bear the main responsibility for payment of social insurance, and the social insurance cost of Chinese firms is much higher than the international level, which causes the low recognition of enterprises for social insurance payment and drives the firms to avoid the payment of social insurance.

Secondly, there are many negative impacts of increasing corporate social insurance. On the one hand, firms' TFP will decrease due to the falling working motivation of laborers and R&D investment. On the other hand, the countries' exports, the operation of social security fund management, and some other aspects can also be impacted.

Thirdly, as for the relationship between corporate social insurance and TFP, different groups of scholars have different viewpoints. Many researchers thought that there is a negative correlation between these two objects, whereas some concluded that there still exists a positive correlation between them. Additionally, a small group of scholars believed that there might be an inverted U shape based on some mathematic models and related data from listed companies.

Consequently, governments should introduce some regulations and laws to decrease the payment burden of firms and ensure the development of social welfare and people's living standards at the same time.

In short, some issues exist in the current social security system and the governments should make some regulations to reduce such problems. Also, it is difficult to determine the accurate relationship between corporate social insurance and TFP and such research still needs to continue. These days, the further development of the Chinese economy will become a significant topic due to the serious aging phenomenon and the slow growth of GDP in recent years. The author prefers to study the related topic in the future.

References

- [1] Cheng, X. (2020). Research on the influence of enterprise social insurance input on enterprise economic efficiency. Ph. D. dissertation, Wuhan University. <https://link.cnki.net/doi/10.27379/d.cnki.gwhdu.2020.000656doi:10.27379/d.cnki.gwhdu.2020.000656>.
- [2] Ge, J. (2018). The pass-through effect of social insurance contributions on wages and employment: an investigation based on industrial characteristics and business cycle. *Public Finance Research*, (8): 93-103.
- [3] Ji, P. (2010). Study on the moderate level of enterprise social insurance premium affordability. Master's thesis, Nanjing University of Finance and Economics.
- [4] Nielsen & Smyth. (2008). Who Bears the Burden of Employer Compliance with Social Security Contributions? Evidence from Chinese Firm Level Data. *China Economic Review*, 19 (2): 230-244.
- [5] Guo, Y. (2022). Research on the impact of corporate social insurance contribution rate on its total factor productivity. Master's thesis, Southwestern University of Finance and Economics.
- [6] Serfling, M & Serfling, M. (2016). Firing Costs and Capital Structure Decisions. *Journal of Finance*, 71 (5): 2239—2285.
- [7] Liu, Y. (2008). Several considerations on the comparison and determination of social insurance rates in various countries. Paper of the Third China Social Security Forum.

- [8] Office of the seventh national census leading group of the state council. (2021, November 26). Major Figures on 2020 Population Census of China. National Bureau of Statistics. <http://www.stats.gov.cn/sj/pcsj/rkpc/d7c/202303/P020230301403217959330.pdf>.
- [9] Qian, X & Jiang, Z. (2018). Research on the impact of social insurance contributions on the employment wage and size of enterprises. *Statistical research*, 35 (12): 68-79.
- [10] Li, Z & Wang, X. (1999). Reduce the burden of social insurance and improve the competitiveness of enterprises. *The Economic Review*, (05): 56-60.
- [11] Li, Q & Chen, P & Li, Q. (2022). Productivity effect of corporate social insurance payment and social insurance collection system: from the perspective of small and medium-sized listed companies. *Journal of Dalian University of Technology (Social Science Edition)*, (02). 49-58.
- [12] Xiao, W & Xue, T. (2019). Rising labor costs, financing constraints and changes in total factor productivity of firms. *The World Economy*, 42 (01): 76-94.
- [13] Mao, D & Li, J & Peng, F & Luo, Z. (2013). R&D investment and firm total factor productivity: a test based on PSM and GPS. *Financial and Economic research*, 39 (04): 134-144.
- [14] Chen, J & Jiang, Q. (2021). Tax incentives, R&D investment, and firm total factor productivity. *Financial Supervision*, (08): 84-90.
- [15] Zhao, J & Lu, Z. (2018). Does the proportion of pension insurance contribution affect the production efficiency of enterprises. *Economic research*, (10), 97-112.
- [16] Su, C & Ge, C & Geng, M. (2021). The impact of endowment insurance contribution rate on total factor productivity: transmission mechanism and empirical test. *Journal of Shandong University (Philosophy and Social Sciences Edition)*, (03): 127-141.
- [17] Lin, W. (2013). Firm innovation incentives: An explanation from rising labor costs in China. *Management World*, (10): 95-105.
- [18] Yu, X & Shangguan, Y & Yu, W & Li, Q. (2019). Endowment insurance contribution rate, capital-skill complementarity and total factor productivity of enterprises. *China's Industrial Economy*, (12): 96-114.