# Research on the Impact of Tax Burden of Listed Companies on Investment and Employment under the Policy of "Tax Reduction and Fee Reduction"
## --Based on the Panel Data of A-share Listed Companies in Shanghai and Shenzhen

Pengjiao Guo[1, a]

[1]*School of Economics, AnHui University, HeFei, China*
[a]*2554489699@qq.com*

**ABSTRACT**
Faced with the complex economic situation, especially the impact of COVID-19, China has implemented a large-scale tax and fee reduction policy to achieve the goal of "stabilizing investment and employment". This paper uses the data of China's A-share listed companies in Shanghai and Shenzhen from 2012 to 2020 to examine the impact of corporate tax burden on investment and employment under the policy of tax reduction and fee reduction. The results found that the decline of the tax burden under the background of tax and fee reduction policies promotes enterprises to invest and expand the scale of employment. The decline of the tax burden has a stronger effect on promoting employment. In addition, the decline in tax burden has a significant effect on investment and employment of non-state-owned enterprises, small and medium-sized enterprises and technology-intensive enterprises. The decline in tax burden only has a significant impact on investment of large-scale and capital-intensive enterprises. The reduction of tax burden only has a significant impact on employment of labor-intensive enterprises, while it has no significant impact on state-owned enterprises. Therefore, the government can implement differentiated policies to promote the coordinated development of social economy.

***Keywords:*** *corporate tax burden, tax and fee reduction, investment, employment*

## 1. INTRODUCTION

After the implementation of the supply-side structural reform in 2012, our country has launched a series of tax reduction policies. since 2018, the domestic economy has faced increasing downward pressure, so the State Administration of Taxation proposed to intensify efforts to reduce taxes burdens and promote stable development of employment, investment and other sectors. Especially after the outbreak of COVID-19, the instability of the global economic environment has intensified. In order to alleviate the downward pressure on the economy, our country proposes to increase the efforts of "six stability" in a targeted manner, among which "stabilizing employment" and "stabilizing investment" are important work contents.

The reduction of tax burden increases the cash flow available to enterprises, which plays a very important role in expanding production. The state puts employment at the top of the "six stability" and "six guarantees" work, and the reduction of tax burden allows enterprises to have funds to hire employees, thereby increasing employment opportunities. Our country has cut taxes and fees on a large scale. How do companies make decisions between productive investment and employment? Are there differences in the decision-making of enterprises with different property rights, different factor densities, and different scales? To sum up, this paper analyzes the impact of tax burden on enterprise investment and employment under the background of tax and fee reduction. In order to provide suggestions for the implementation of targeted tax reduction policies, the nature of property rights, factor intensity and enterprise scale are taken into consideration.

## 2. RELATED LITERATURE AND HYPOTHESIS DEVELOPMENT

### *2.1. Tax Burden and Corporate Investment*

In terms of the effect of tax burden on corporate investment, scholars at home and abroad have carried out a lot of research. Auerbach (1986) proposed that there may be a correlation between the level of tax burden, corporate value and investment behavior, but the relationship is not clear[1]. Mao Defeng (2016) concluded that the tax incentives reduce the cost of capital, thereby promoting new investment, and the effect of investment growth shows regional and industry heterogeneity[2]. Wei Tianbao (2018) found that the reduction in the direct tax burden can increase the level of investment, while indirect taxes have an inhibitory effect[3]. Wang Jinyan et al. (2006) found that the positive effect of tax on investment income exceeds the negative substitution effect, so there is a positive correlation between tax burden and investment in general[4].

### *2.2. Tax Burden and Employment Scale*

In terms of the effect of tax burden on employment, Shuai & Chmura (2013) found that corporate income tax incentives have a positive impact on employment size[5]. Zeng Guoan (2019) believes that the effect of tax cuts to promote employment growth tends to be balanced over time and across regions. But there is literature that tax cuts will have a negative impact on employment[6]. Hurst & Pugsley (2011) found that some small enterprises gave up expanding their operations in order to enjoy policy incentives, so tax incentives had a negative impact[7].

Regarding the impact of tax burden on enterprise investment and employment, most studies discuss the impact of tax burden on investment or employment separately, and the indicators are not the same, and no consistent conclusion has yet been reached. Based on this, the hypothesis of this paper is put forward:

Hypothesis 1a: There is a negative correlation between tax burden and corporate investment under the tax and fee reduction policy.

Hypothesis 1b: There is a negative correlation between tax burden and employment scale under the tax and fee reduction policy.

Hypothesis 2: The promotion effect of tax reduction on employment is stronger than on investment.

Hypothesis 3: There is heterogeneity in the investment and employment effects of tax reduction for enterprises with different property rights, factor intensities and scales.

## 3. MODEL AND DATA

### *3.1. Data Sources and Sample Screening*

Select the 2012-2020 A-share listed companies in Shanghai and Shenzhen as the research sample, exclude companies with ST and ST* status, the financial industry, and companies with incomplete core financial data, and carry out 1% and 99% abbreviated processing for all continuous variables. Finally, 19,017 samples of 3,408 companies were obtained. The data used in this paper are all from the CSMAR database.

### *3.2. Variables*

The explained variable draws on the method of Liu Guangqiang et al. (2016), and uses "(fixed assets + construction in progress)/total assets" to measure enterprise investment[8]; draws on the method of Li Lei (2016), the number of employees at the end of the year is the logarithm to measure employment[9]. The explanatory variable refers to the method of Feng Yanchao (2012), and is measured by "(actually paid taxes and fees - received tax refunds)/operating income"[10]. The control variables refer to previous research to select enterprise size (lnsize), financial structure (debt), operating performance (roa), ownership concentration (top10), and development capability (probg). The specific definitions of each variable are shown in Table 1.

**Table 1.** Definition of study variables

| Variable type | Variable Name | Definition |
|---|---|---|
| Explained variable | invs | (fixed assets + construction in progress)/Total assets |
| | lnlabour | the logarithm of the number of employees at the end of the year |
| Explanatory variable | tax | (various taxes paid - refund of taxes received) / current operating income |
| control variable | lnsize | the logarithm of the total assets of the enterprise |
| | debt | total Liabilities/Total Assets |
| | roa | net profit/average total assets |
| | top10 | shareholding ratio of top ten shareholders |
| | probg | (operating income of the current period - operating income of the previous period)/operating income of the previous period |

### *3.3. Measurement Model*

Model 1 and model 2 are respectively set based on the tax burden on the investment and employment of listed companies.

When determining the form of the panel data model, the individual fixed effect regression under the common standard error is carried out on the model, and the result of the F test is that the null hypothesis is rejected, so the panel fixed model is selected. Secondly, in the Hausman test, the results significantly rejected the null hypothesis, so a fixed-effects model was used. Finally, the time fixed effect was further added to the individual fixed effect model, and the results were significant, so a two-way fixed effect model was selected.

$$invs_{it} = \beta_0 + \beta_1 tax_{it} + \beta_2 X_{it} + \mu_i + \omega_t \quad (1)$$

$$lnlabour_{it} = \beta_0 + \beta_1 tax_{it} + \beta_2 X_{it} + \mu_i + \omega_t + \varepsilon_{it} \quad (2)$$

In the regression equation, $invsit$ and $lnlabourit$ are the explained variables, where i represents the enterprise and t represents the year. $tax_{it}$ is the core explanatory variable. $X_{it}$ represents a series of control variables, $\beta_0$ represents the intercept term, $\mu_i$ represents the individual fixed effect of the firm, $\omega_t$ represents the time fixed effect, and $\varepsilon_{it}$ is the random disturbance term.

## 4. ANALYSIS OF REGRESSION RESULTS

### *4.1. Basic Regression*

There may be multicollinearity problems in the model, so the VIF test is done in this paper, and the results show that the VIF value is between 1.088-1.796, indicating that the model does not have multicollinearity.

From Table 2, It can be seen from the full-sample regression results that the tax burden has a negative correlation with corporate investment and employment, which verifies Hypotheses 1a and 1b. Observing the absolute value of the coefficient, the influence coefficient of tax burden on investment is 0.240, and the influence coefficient on employment is 0.578. The effect of tax burden on employment is stronger, which supports Hypothesis 2.

**Table 2.** Full sample regression results and grouping regression results by property rights

| Variable | Full sample regression results | | State-owned enterprise | | Non-state-owned enterprise | |
|---|---|---|---|---|---|---|
| | （1） | （2） | （3） | （4） | （5） | （6） |
| | invs | lnlabour | invs | lnlabour | invs | lnlabour |
| tax | -0.240***<br>(-10.99) | -0.578***<br>(-5.97) | -0.039<br>(-0.94) | -0.126<br>(-0.72) | -0.320***<br>(-12.49) | -0.714***<br>(-6.20) |
| Year Fixed | YES | YES | YES | YES | YES | YES |
| Individual Fixed | YES | YES | YES | YES | YES | YES |
| Number of companies | 3,408 | 3,408 | 1,018 | 1,018 | 2,519 | 2,519 |
| N | 19,017 | 19,017 | 5,839 | 5,839 | 13,178 | 13,178 |
| R-squared | 0.117 | 0.511 | 0.098 | 0.415 | 0.135 | 0.543 |

Note: The parentheses in the table are t statistics, ***p<0.01, ** p<0.05, *p<0.1, the same below.

### *4.2. Heterogeneity Analysis*

#### *4.2.1. Group regression according to the nature of property rights*

The nature of the property rights of enterprises is different, so the resource conditions, market environment and financing constraints they face are different, so the impact of tax and fee reduction policies will also be different. From the columns (3) to (6) of Table 2, it can be seen that the reduction of tax burden under the policy of tax reduction and fee reduction effectively promotes the investment and employment of non-state-owned enterprises, while the impact on state-owned enterprises is not significant, which verifies Hypothesis 3.

**Table 3.** Industry Classification by Factor Intensity

| Industry | Specific Industry |
|---|---|
| Technology Intensive | C7:IT; C8 Machinery and equipment; C9: medicine, biology; E: building industry; I: information, software; N: Ecological protection, public facility management |
| Capital intensive | C4:paper, printing; C5:Petroleum, chemical raw materials, plastics; C6:metal, non-metal；K: real estate; Q: health |
| Labor-intensive | A: agriculture, forestry, animal husbandry and fisheries; B: mining; C1: beverages, food; C2: fur, clothing, textiles; C3: wood, furniture; C10: other manufacturing industries; D: electricity, heat, gas; |

| | |
|---|---|
| | F: wholesale and retail; G: transportation, warehousing, postal service; H: accommodation and meals; L: leasing, business services; M: professional technical services, experiments; P: education; R: culture, sports , entertainment; S: integrated industry |

### *4.2.2. Group regression by element density*

The industry is classified according to the intensity of input of production factors. This paper uses cluster analysis to group sample companies, which draws on Dong Yiyu's practice[11]. The classification results are shown in Table 3.

Observing the regression results in Table 4, it can be found that under the background of tax reduction and fee reduction, the reduction of tax burden has a promoting effect on the investment and employment of technology-intensive enterprises, and the promotion effect on employment is greater than that on investment. Among capital-intensive firms, the fall in the tax burden only significantly affects investment. In labor-intensive industries, lower tax burdens only affect employment. Hypothesis 3 is verified.

**Table 4.** Grouping regression results by factor density

| Variable | Technology Intensive | | Capital intensive | | Labor intensive | |
|---|---|---|---|---|---|---|
| | （1） | （2） | （3） | （4） | （5） | （6） |
| | invs | lnlabour | invs | lnlabour | invs | lnlabour |
| tax | -0.233***<br>(-8.70) | -0.473***<br>(-3.65) | -0.391***<br>(-7.75) | -0.234<br>(-1.25) | -0.004<br>(-0.08) | -0.382*<br>(-1.82) |
| Year Fixed | YES | YES | YES | YES | YES | YES |
| Individual Fixed | YES | YES | YES | YES | YES | YES |
| Number of companies | 1,967 | 1,967 | 824 | 824 | 802 | 802 |
| N | 10,972 | 10,972 | 4,356 | 4,356 | 3,689 | 3,689 |
| R-squared | 0.098 | 0.536 | 0.159 | 0.522 | 0.085 | 0.384 |

### *4.2.3. Group regression by firm size*

Table 5 shows the results of grouping regression according to enterprise size. The basis for grouping is based on the ideas of Xie Shenxiang (2020). The median of enterprise size in different industries is used as the classification standard, and the sample enterprises are divided into two groups[12]. According to the results, it can be seen that the reduction of tax burden can promote the investment level of all enterprises, and the promotion of investment in small and medium-sized enterprises is greater than that of large-scale enterprises; however, the reduction of tax burden only has a significant effect on the employment of small and medium-sized enterprises. Hypothesis 3 is verified.

**Table 5.** Grouping regression results by enterprise size

| Variable | Large-scale enterprises | | Small and medium-sized enterprises | |
|---|---|---|---|---|
| | (1) | （2） | （3） | （4） |
| | invs | lnlabour | invs | lnlabour |
| tax | -0.156***<br>(-4.92) | 0.105<br>(0.73) | -0.284***<br>(-9.40) | -0.687***<br>(-5.56) |
| Year Fixed | YES | YES | YES | YES |
| Individual Fixed | YES | YES | YES | YES |
| Number of companies | 1,970 | 1,970 | 2,439 | 2,439 |
| N | 9,575 | 9,575 | 9,442 | 9,442 |
| R-squared | 0.086 | 0.391 | 0.122 | 0.391 |

## 5. CONCLUSIONS AND IMPLICATIONS

### *5.1. Conclusion*

The results found that, under the policy of tax reduction and fee reduction, the decline of the tax burden promotes enterprises to invest and expand the scale of employment and has a stronger effect on promoting employment. In addition, the decline in tax burden has a significant effect on investment and employment of non-state-owned enterprises, small and medium-sized enterprises and technology-intensive enterprises; for large-scale enterprises and capital-intensive enterprises, it only has a significant impact on investment; for labor-intensive enterprises, it only has a significant impact on employment. But it has no significant impact on state-owned enterprises.

### *5.2. Implication*

Under the current economic environment, combined with my country's tax system, the following suggestions are put forward:

First, in the past, individual tax reductions and exemptions were used to adjust employment. In the future, attention should be paid to the impact of corporate tax on employment, and the two types of tax policies should be used together to better play the role of taxation in promoting employment.

Second, when implementing the tax and fee reduction policy, the heterogeneity of property rights, factor density and scale should be fully considered. Policies should pay more attention to private enterprises, small and medium-sized enterprises, and labor-intensive and technology-intensive enterprises. Enterprise income tax concessions can be granted to non-state-owned enterprises, labor-intensive, technology-intensive and small and medium-sized enterprises that maintain a positive growth in the number of employees every year.

Third, explore innovation-oriented tax reduction policies and promote manufacturing to intelligent manufacturing. It is not only necessary to expand the scale of employment, but also to focus on optimizing the employment structure. Provide more jobs for technologically innovative talents, increase the super deduction of R&D expenses, continuously improve the super deduction policy, and provide more diversified and detailed policy preferences for the employment of technical talent.

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