Research on Impact of New Large-scale Tax and Fee Reduction on Total Factor Productivity of Enterprises: A Case Study of NEEQ Enterprises

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Abstract: In order to evaluate the policy effect of a new round of large-scale tax reduction and fee reduction reasonably, this paper takes the relevant financial data of listed enterprises on the New Third Board from 2015 to 2023 as sample data, constructs a panel breakpoint regression model, and calculates its policy processing effect on enterprise TFP. The results show that the implementation of a new round of large-scale tax reduction and fee reduction in 2019, and that the average total factor productivity of enterprises has increased by about 1.1%

***Keywords*:** tax and fee reduction, total factor productivity, NEEQ enterprises, enterprises

1. Introduction

As the main body of the socialist market economy with Chinese characteristics, the total factor productivity of enterprises can not only reflect the internal factors such as the enterprise's technical level and resource allocation efficiency, but also reflect the comprehensive impact of external factors such as economic system and market environment on the output level. Therefore, the improvement of the total factor productivity of enterprises represents the improvement of the overall total factor productivity of the economy, and is a key link to achieve high-quality economic development in China. Therefore, in order to stimulate the vitality of enterprise development, shape the new momentum of enterprise development, promote enterprise innovation input, expand the scale of investment, and improve the total factor productivity of enterprises, China has formulated a series of institutional reforms and preferential policies, among which the most extensive coverage and the most obvious effect is the "tax reduction and fee reduction" in the supply-side structural reform[1].

Tax reduction and fee reduction shoulder dual policy objectives, which need to stimulate total output as a counter-cyclical proactive fiscal policy to maintain macroeconomic stability, and as an important measure of "supply-side reform" to activate the vitality of micro-economic entities and improve enterprise production efficiency[2]. In this case, how to reasonably evaluate the impact of tax and fee reduction policies on the high-quality development of enterprises in different periods and optimize the implementation of policies has become an important issue that policy makers and economic researchers pay common attention to. If the answer is no, then how should the government improve its policies to guide enterprises to invest more funds, resources and energy in scientific and technological innovation, so as to further improve the total factor production efficiency of enterprises and help enterprises achieve high-quality development of China's economy? In order to solve this problem, this paper carried out a study.

2. Literature Review

As the name suggests, the main function of "tax reduction and fee reduction" is to reduce and reduce the tax burden of taxpayers, but the research on its role should not only stay at the level of reducing the burden, but should continue to rise from the role of reducing the burden, and in-depth study of its impact on higher levels of economic development.

At present, China's economy is in the critical stage of shifting from high-speed growth to high-quality development, and improving total factor productivity is the core source of achieving high-quality economic development (Liu Zhibiao, Ling Yonghui, 2020). At present, the academic circle has carried out extensive research on the policy effect of tax reduction and fee reduction on the total factor productivity of enterprises, and obtained fruitful research results[3]. Most scholars hold a positive attitude towards the policy effect of tax reduction and fee reduction, and believe that the reduction of tax burden will have a positive impact on the improvement of total factor productivity of enterprises. From the perspective of "tax reduction", Yue Shumin et al. (2023) adopted the financial data of listed companies, took the reduction of VAT rate as the natural experiment, and used the differential differential method to study and find that the reduction of tax rate has a significant promoting effect on the total factor productivity of enterprises[4].

3. Empirical Analysis

3.1 Variable selection and descriptive statistics

This paper selects 56808 observed values of 6312 enterprises in the National SME share trading System from 2015 to 2023 as sample enterprises, and all data in the sample are from the Wind database and the enterprise annual reports disclosed by the National SME share trading system[5]. According to the data in the research, we can find that the total factor productivity of the sample enterprises showed an upward trend from 2017,2018 to 2019, and also maintained this upward trend in the following years. However, the various tax burden levels of the sample enterprises basically showed a downward trend, and both showed a reverse trend, which proved that the reduction of the tax burden of enterprises is conducive to the growth of the total factor productivity of enterprises to a certain extent, in other words, the implementation of tax and fee reduction policies has achieved certain results in promoting the growth of the total factor productivity of enterprises.

3.2 Panel breakpoint regression model construction

This paper mainly studies the processing effect of the new round of tax and fee reduction on the total factor productivity of enterprises, and the selected policy node is 2018. Different from previous studies, the basic idea of breakpoint regression experiment design is in the frame of cross-section data, and this paper applies it to the frame of panel data. Specifically, the samples before the policy node are taken as the control group, the samples after the policy node are taken as the experimental group, and the policy node is taken as the critical point. If the new round of tax and fee reduction has a positive effect on the total factor productivity of enterprises, then the total factor productivity of enterprises in the experimental group will perform better than that of enterprises in the control group.

3.3 Breakpoint existence test

By using the segmented fitting method, this paper finds out whether the fitting between the level of tax burden and the total factor productivity of the sample enterprises has significantly changed before and after 2018, and whether there has been a significant jump in 2018. The results of first-order fitting (linear fitting) to fourth-order fitting are given in this paper. Where the horizontal coordinate is the driving variable, that is, the product of the enterprise tax burden level and the year variable, and the vertical coordinate is the enterprise total factor productivity. Through observation, it can be clearly found that at 0 point, that is, in 2018, these four fitting lines have obvious jumps, and the fitting lines on both sides of 0 point are also significantly different. Therefore, this paper concludes that the policy node for a new round of large-scale tax and fee reduction in 2018 can be used as the policy break point of the breakpoint regression experiment.

3.4 Measurement of policy effect

In this paper, the global polynomial regression results of first-order to sixth-order polynomials are given. According to the Bayesian information criterion, the fifth-order polynomial sets the form of the optimal model, and the processing effect calculated by the global breakpoint regression is 1.920, indicating that the new round of large-scale tax reduction and fee reduction in 2018 has increased the average total factor productivity of enterprises by 1.92%, which proves that the new round of large-scale tax reduction and fee reduction has indeed promoted the improvement of the total factor productivity of enterprises.

According to the result analysis of global breakpoint regression and local breakpoint regression, we can conclude that the implementation of a new round of large-scale tax reduction and fee reduction has a significantly positive policy treatment effect on the total factor productivity of enterprises, that is, a new round of large-scale tax reduction and fee reduction has promoted the improvement of the total factor productivity of enterprises, and the improvement level is about 1%.

4. Robustness Test

From the regression results, we can find that the processing effect of the selected covariables at the breakpoint is not significant, indicating that these covariables are not affected by a new round of large-scale tax and fee reduction policies at the breakpoint, there is no processing effect, and the local smoothness test passes.

The policy node selected in this paper is 2018, and if the real policy node is consistent with the choice in this paper, the placebo test of the breakpoint is required. The breakpoint and 20%, 30%, 40% and 50% points on the left and right sides of the breakpoint are selected as the breakpoint to conduct the placebo test of the breakpoint. Except that the processing effects measured at the breakpoint selected in this paper are significantly positive, the processing effects measured at the other breakpoints are close to 0 and not significant, indicating that the breakpoint selection in this paper is robust.

Since the closer the sample is to the breakpoint, the more motivated it is to manipulate, this paper deletes the sample closest to the breakpoint to observe whether the regression is significant (donut hole approach). In this paper, samples near

the breakpoint of 1%, 2%, 3%, 4% and 5% were selected to be deleted. It can be seen from the regression results that even if 1%-5% of the samples near the breakpoint are deleted, the effect of policy treatment is significantly positive, indicating that the influence of human selection factors in the breakpoint regression experiment in this paper is small, and the results are relatively robust.

The above three sets of robustness tests show that the breakpoint regression results of this paper are robust, and the calculated effect of a new round of tax and fee reduction on the policy treatment of enterprise TFP is credible.

5. Suggestions and Conclusion

It's urgent to maintain the current trend of steadily expanding the scale of tax cuts and fee reductions, continue to improve enterprises' sense of benefit from tax cuts and fee reductions. Besides, government also need to strengthen the guiding role of tax cuts and fee reductions in enterprises' total factor productivity. The empirical research in this paper confirms that enterprises have fully enjoyed policy dividends in this round of tax cuts and fee reductions. Therefore, it is necessary to continue to deepen and promote a new round of large-scale and substantial tax cuts and fee reduction policies by continuing to deepen VAT reform, increase income tax incentives and reduce the burden of social insurance contributions for enterprises, and continue to reduce the burden on enterprises.

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