

Analysis of the impact of VAT reduction on investment efficiency

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ABSTRACT

This paper uses the difference-in-differences method to analyze the changes in the investment efficiency of companies affected by the policy before and after the VAT tax reduction policy. The results show that the VAT tax reduction policy not only effectively improves the investment efficiency of listed companies, but also has a more obvious effect on the improvement of over-investment.

KEYWORDS

VAT reduction; Efficiency of Investment

1 Introduction

The value-added tax (VAT), as the most important national fiscal revenue, has developed to a strong Chinese dimension despite its introduction by France. In the 2019 government work report, the implementation of large-scale tax cuts and fee reductions is a major part of the economic work, and the reform of VAT is the top priority in the construction of tax cuts. The concept of VAT was originally introduced in 1917 to avoid the shortcomings of the business tax, and the development of VAT in China has been closely related to the business tax. In the process of moving towards a new journey, due to the problem of repeated collection of tax revenue caused by business tax, the policy of business tax to value-added tax was fully promoted in 2016, which solved some defects in taxation to a certain extent. Since then, business tax disappeared from people's view. The VAT rates have been continuously streamlined from 2017 to 2019, as evidenced by the abolition of the 13% rate in 2017-2018, the 1% reduction in 2018-2019, and an even larger reduction in April 2019. This series of initiatives reflects the country's firm confidence in supporting the domestic real economy through "tax cuts and fee reductions". As investment becomes larger and resources become more scarce, improving the efficiency of resource allocation in order to tap the potential of economic growth at a deeper level becomes the inevitable direction of development.

2 Theoretical analysis and research hypothesis

The VAT rate can have a direct impact on the efficiency of a company's investment not only because of the "price effect". In particular, in the current VAT reduction, the government reduced the 13% rate to 11%. Of course, the ideal situation is that the amount of tax paid by the company does not have any impact on the company, because it is paid by the downstream customers and is only paid by the company on their behalf. In this case, although the VAT rate will have some impact on the company's tax revenue, it will have no impact on the company's investment efficiency. However, in practice, companies do not always achieve the ideal situation described above, that is, when

enterprises obtain VAT tax and cannot obtain corresponding cash flow from downstream customers, the decrease of VAT rate will directly lead to the decrease of cash flow expenditure of enterprises.

Due to information asymmetry (Myers and Majluf, 1984), there is a possibility that external investors will not invest, that is, to provide funds to the firm. In the capital market, due to the large information asymmetry, companies are difficult to finance in the capital market, or need to pay a high cost of capital. This leads to the fact that companies have to rely on their own capital when facing investments, resulting in a high sensitivity to cash flow and an increasing dependence on internal financing of the company, which means that the company's cash flow can make some companies to discard projects that have a net present value above zero, resulting in underinvestment. From the perspective of the financing constraint hypothesis, the financing constraint problem must be based on the existence of investment behavior. For firms, one of the important reasons why the VAT reduction is effective in improving their investment efficiency is that it reduces their financing constraints, which in turn reduces the pressure to invest in order to better improve their investment efficiency.

On the other hand, within the framework of the "free cash flow" hypothesis, the structure of financing for mergers and acquisitions can easily lead to conflicts between agents and shareholders. By shifting the focus to the firm, the utility of the manager is to continue to expand the firm rather than to consider the net present value of the project, but when the free cash available to the manager decreases, his or her control decreases, making it easier to mitigate the agency problems associated with financing. As a result, the operating cash flow of a firm can make the firm's business activities more intense, which can affect the firm's resource allocation, resulting in a decrease in the firm's investment efficiency.

In summary, the possible paths of the impact of the VAT tax reduction on firms' investment efficiency are as follows: the tax reduction has a direct impact on firms' internal financing and thus on their investment efficiency. From the perspective of internal financing, firms' investment is influenced by their own capital adequacy, that is, they are constrained by financing constraints. Taxes are closely related to the financing constraints of enterprises. Specifically, taxes are an important cost for enterprises, which can lead to cash outflows, thus making the endogenous financing sources of enterprises tighter and more insufficient. Tax reduction can reduce the tax burden of enterprises, save their tax expenditure, improve their cash flow level, and alleviate the problem of tight internal financing caused by their own insufficient funds.

In summary, we propose the following hypotheses:

Hypothesis 1: Other things being equal, VAT tax reduction can significantly promote firms' investment efficiency.

Hypothesis 2: On the basis of VAT tax reduction promoting firms' investment efficiency, the improvement of over-investment is more pronounced.

3 Research Design

3.1 Sample selection and data sources

This paper selects listed companies from 2016 to 2019 as samples to construct a panel data model. (1) In the sample selection, in order to ensure the comparability of information, delete the lack of part of the data samples: such as ST, has been delisted, unable to view the report, eliminate the abnormal value of variables, eliminate can not calculate the investment efficiency index of enterprises, after finishing a total of 5455 samples. (2) The enterprise scale, asset-liability ratio, profitability, stock yield, management expense ratio, the proportion of the largest shareholder and the proportion of independent directors mentioned in this paper All financial data are obtained

from the CSMAR database, and Excel and STATA software are used to sort out, screen out and decompose relevant data.

3.2 Variable design

Explanatory variables

Referring to the research of Richardson (2006) and Liu Xing and Ye Kangtao (2013), such as the idea of calculating investment efficiency is based on estimating the normal investment level of the enterprise in the current period, and the difference between the actual amount of investment generated by the enterprise in the current period and the normal investment amount estimated with the investment efficiency model is taken as the measure, while the estimation method uses the enterprise (t-1) period's investment level, the size of the enterprise (t-1) period, the gearing ratio of the enterprise (t-1) period, the cash holding level of the enterprise (t-1) period, and several other indicators are used to calculate, and the final difference obtained is the Ineffective Investment (IEInv) of the enterprise. For the convenience of analysis and understanding, the absolute value of the difference is generally taken to indicate the investment efficiency of the enterprise, and the higher the absolute value, the lower the investment efficiency of the enterprise. From the above ideas, we can see that the calculated difference is positive, specifically the amount of the actual investment of the enterprise than the most efficient investment amount is higher than the phenomenon of Over Investment (OInv); the calculated difference is negative, it means that the actual investment of the enterprise is lower than the normal level of investment and Under Investment (UInv). The larger the absolute value of the difference, the lower the efficiency of the enterprise's investment. In this paper, the optimal investment level of the enterprise is estimated by the following model:

$$\text{Inv}_{i,t} = \beta_0 + \beta_1 \text{Inv}_{i,t-1} + \beta_2 \text{Lev}_{i,t-1} + \beta_3 \text{Cash}_{i,t-1} + \beta_4 \text{Size}_{i,t-1} + \beta_5 \text{Ret}_{i,t-1} + \beta_6 \text{Tobin} - Q_{i,t-1} + \beta_7 \text{Age}_{i,t-1} + \text{Year} + \text{INDUSTRY} + \varepsilon_{i,t} \quad (1)$$

The meaning of the relevant variables in the model (1) is as follows: $\text{Inv}_{i,t}$ represents the investment amount of the enterprise in t years, which is the net amount of cash paid by the enterprise to build fixed assets, intangible assets and other long-term assets minus the cash recovered from the disposal of fixed assets, intangible assets and other long-term assets divided by the total assets of the enterprise at the beginning of the period; $\text{Inv}_{i,t-1}$ is the amount of investment in the previous year; $\text{Lev}_{i,t-1}$ represents the company's asset-liability ratio last year, the previous year's cash holding level as a measure; $\text{Cash}_{i,t-1}$ indicates the company's cash holding level in the previous year, using the company's monetary fund holdings in the previous year divided by the total assets at the beginning of the previous year; $\text{Size}_{i,t-1}$ represents the company's operating scale last year, with the logarithm of the company's total assets last year as the standard; $\text{Ret}_{i,t-1}$ represents the return on investment of the company in the past year, with the stock price return of the company in the previous year as the measurement standard; $\text{Tobin} - Q_{i,t-1}$ indicates the growth opportunities of the enterprise at the end of the last year, (tradable stock market value + non-tradable stock book value + liability book value) / total assets are used as the measurement standard; $\text{Age}_{i,t-1}$ indicates the number of years from IPO to the end of the year, and the measure is the year minus the year of establishment; Year and Industry are regarded as annual dummy variables and industry dummy variables respectively. Both industry and time are very important external factors for policy reform, so it is necessary to stabilize the experimental results by controlling them. The residual in the equation represents the investment efficiency of the enterprise. When $\varepsilon_{i,t} < 0$, it indicates that the enterprise is under-invested and the investment efficiency is low. When the enterprise is over-invested, $\varepsilon_{i,t}$ is greater than 0. Based on the control of time and industry fixed effects, the fixed effect regression of Model (1) is carried out. The regression results are shown

in Table 1 :

Table 1 Regression results of investment efficiency model

	Inv
Tobin-Q	0.004*** (4.740)
Size	0.004*** (4.134)
Lev	-0.011* (-1.817)
Cash	0.031*** (3.429)
Age	-0.026*** (-18.528)
Ret	0.016*** (5.541)
Inv	0.007 (1.055)
_cons	-0.033 (-1.389)
Industry	控制
Year	控制

It can be seen from the regression results in the table that the prediction model fits the expected investment level of the sample in this paper well, because both the Tobin-Q value of the enterprise (Tobin-Q), the size of the enterprise (Size), the cash flow held by the enterprise (Cash) and the age of the enterprise (Age) are significant at the 1% level, while the asset-liability ratio is significant at the 10% level. The regression symbols and coefficients are generally consistent with the existing research. According to the regression results, it is necessary to calculate the residual value of the sample to obtain the investment efficiency of each enterprise and take the absolute value.

4 Empirical test and results

4.1 Descriptive statistics

The descriptive statistical results of each variable in the sample are shown in Table 2 :

The table is a descriptive statistics of the variables involved in the model (1) (2). According to the statistical results, it can be seen that the mean value of IEnv is 0.039 and the standard deviation is 0.061, which indicates that a large number of enterprises have not reached the best output ratio of investment or overinvestment or underinvestment, and the investment efficiency of different enterprises is also quite different. Among them, there are 2085 observation samples of over-investment, while the sample size of under-investment has reached 3370, indicating that under-invested enterprises are one third more than over-invested enterprises. The mean value of over-investment sample size is 0.050, and the variance is 0.088. The average sample size of under-investment is 0.032, and the variance is 0.033, indicating that the investment efficiency of over-invested enterprises is lower and the difference is greater.

4.2 Research conclusions

This paper chooses the VAT tax reduction policy as the research starting point, and the research

Table 2 Descriptive statistics

	Observed value	minimum	maximum	mean value	Standard deviation
IEInv	5455	0.000	0.964	0.039	0.061
Oinv	2085	0.000	0.964	0.050	0.088
Uinv	3370	0.000	0.307	0.032	0.033
Age	5455	0.69	3.37	2.26	0.80
Ret	5455	-0.77	4.89	0.02	0.44
Inv	5455	-0.07	0.74	0.07	0.15
Roe	5455	-1.65	0.38	0.04	0.07
Growth	5455	-1.31	96.02	0.29	2.67
Dual	5372	1	2	1.75	0.434
TOP1	5455	3.000	86.010	34.731	14.767
Tobin-Q	5455	0.72	729.63	2.29	10.03
Size	5455	15.98	28.52	22.46	1.37
Lev	5455	0.02	1.35	0.43	0.20
Cash	5455	0.006	0.936	0.169	0.115

object is the investment efficiency of enterprises. Under the tax reduction policy, underinvestment and overinvestment are significantly inhibited, that is, VAT tax reduction helps to promote the stability of enterprises in the market, and the promotion of their investment efficiency also enables enterprises to further reduce the tax burden in the new economic normal, make good investment decisions to obtain higher profits, increase internal financing, and make up for the problems caused by insufficient external financing. In the above empirical evidence, the following conclusions can be drawn: (1) In listed companies, the VAT tax reduction policy can effectively improve the investment efficiency of enterprises. (2) In the improvement of over-investment and under-investment, the effect of over-investment is more significant.

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