

## Theoretical Analysis and Empirical Analysis of the Effect of Transformation of VAT on Fixed Assets Investment Based on the Data of Jiang Su Listed Companies

Jiating Yan and Qingchun Lu  
8Focheng Road, Business School of Hohai University, Nanjing, China

**Abstract:** In 2009, the transformation of VAT on the full implementation of the national. Transformation of VAT has brought huge influence on the fixed assets investment, thus affecting the development of the district economy. This study based on the data of Jiang Su listed companies studies whether the transformation of VAT increases the investment of enterprise fixed assets, whether to improve the benefit of investment, whether to accomplish the desired purpose. Research shows that the transformation of VAT indeed to expand the scale of investment in fixed assets in Jiang Su. Overall the transformation of VAT has a positive effect on management and development of Jiang Su listed companies.

**Keywords:** Empirical analysis, fixed assets investment, transformation of VAT

### INTRODUCTION

Since July 1st, 2004, approved by the state council, the transformation of value-added tax in the northeast “three provinces and one city” has been begun to pilot and achieved expected result, from July 2007 it extended to the 6 provinces and 26 cities of central China to prepared for accumulating experience. From January 1, 2009, the transformation of VAT has been in the nationwide promotion. In 1994, the implementation of the production VAT, the choice adapted to the financial situation in China at that time. In the new economic situation, the transformation of VAT, is not only the demand of social and economic development and has the conditions to implement of the transformation. The transformation of VAT reduces the double taxation, promotes the optimization of the industrial structure and improves the production efficiency. Ultimately it promotes the transformation of the development of the district economy, realizes the further deepening of reform of fiscal.

In this process, the reform of VAT will inevitably affect the tax burden of enterprises and has a significant impact on the investment of fixed assets. Jiang Su as an economic province, at present is in the previous industrialization in the late stage of transition to industrialization and the value added tax of Jiang Su province has been in the leading position of fiscal revenue, so the transformation of VAT will promote fixed asset investment, at the same time influence on economic development and play a role in encouraging to adjust the investment structure and industry internal structure in a certain extent.

In this study, the author selects the relevant data of listed company in Jiang Su province, using panel

regression models to analyze the influence of the transformation of VAT on the fixed assets investment. This study is roughly divided into four parts. The first part is the literature review. The second part is theoretical analysis of the effect of transformation of VAT on fixed assets investment. The third part is the empirical analysis. The last part, the author raised some suggestions about the economic development of Jiang Su province.

### LITERATURE REVIEW

Since January 1, 2009, in the national scope, all industries are implementing the transformation of VAT and the transformation of VAT has already been to the highest level. The research of the transformation of VAT is also more deeply and widely. Based on the theme of this study, the author mainly summarizes and reviews the literature.

Jiaming and Suya (2007) through the variance analysis proved the change of the northeast enterprise investment in fixed assets before and after the transformation of VAT and by means of regression analysis, contrast before and after the transformation of VAT tax fixed asset investment and promoted the conclusion that the influence of the transformation of value-added tax on the investment of enterprise fixed assets. Huihua *et al.* (2009) only from the perspective of production inputs concluded that the transformation of value-added tax would lead to the increase of fixed assets investment. Chang (2009) analyzed long-term effect of the transformation of VAT on the tax burden of enterprises, fixed assets investment and the economy. Mingfeng and Bing (2010) based on the data

of the 6 provinces and 26 cities of central China, using matching sample T test and regression analysis method, empirical researched the relationship between the transformation of VAT and the enterprise investment, concluded that the transformation of VAT greatly reduced tax, created conditions for updating of fixed assets and enlarged the scale of investment in central region.

The author found that most scholars studied only in pilot areas and in most cases, the inspection object is the whole national economy. However, belonging to the scope of VAT does not include all industry in causing national income and producing the fixed assets investment. If you want to better describe the effects of transformation of value-added tax, you should analyze from the microscopic view. To research changes of the macroeconomic better, the author chooses the listed company as the research object.

The author also found that most of the literatures focus on promoting influence of the transformation of value-added tax on fixed assets investment. In fact, however, the enterprise investment decision need to consider many factors, such as investment opportunities, internal cash flow and debt level and so on, so the actual effect of the transformation of VAT is still a worthy of discussion.

## THEORETICAL ANALYSIS

The transformation of VAT allows that fixed assets contain value-added tax as the input tax shall be deducted in the national scope in 2009. The most direct impact on fixed asset investment is the transformation of VAT, this study discusses the influence of the transformation of VAT on the fixed assets investment in two aspects.

- The influence of the transformation of VAT on the investment cost:** The deduction range widening of fixed assets directly reduces the acquisition cost of the fixed assets, reduces the burden on the investment of enterprise fixed assets and increases the investment enthusiasm. By comparing different of actual tax burden rate between production VAT and consumer VAT, we can prove that the more investment, the lower actual tax burden rate. The specific calculation is shown in the Table 1.
- The influence of the transformation of VAT on the benefit of investment:** Due to the implementation of value-added tax policy can counteract the consumer purchases fixed assets VAT amount, thus reduced the cost of the fixed asset, so as to increase the fixed assets investment income. In this study, the formula of accounting rate of return can explain in detail the influence of the transformation of VAT on the benefit of investment.

Table 1: The different of actual tax burden rate between production VAT and consumer VAT

Project type	Production VAT	Consumer VAT
GDP	GDP	GDP
Increase in inventory	VP	VP
Depreciation	FM	FM
Fixed assets revaluation	FP	FP
The deductible amount	VP	VP+FP
Total revenue	(GDP-VP)*t	[GDP-(VP+FP)]*t
Investment accrual	VP+FP	VP+FP
Actual tax burden rate	(1-VP/GDP)*t	[1- (VP+FP)/GDP]*t

$$\text{Accounting rate of return} = \frac{\text{Original investment}}{\text{Average net income}}$$

Assume that the average net income is in the same circumstances, analyzing the original investment. The implementation of the production VAT policy, fixed assets input tax is not deductible, the original investment is  $I_1$  and after the transformation, the input tax can deduct from the cost of the fixed asset, its original investment deducted is  $I_2$ , apparently  $I_1 > I_2$ . After the transformation, the accounting rate of return will be improved and increase the enterprise investment income.

## EMPIRICAL ANALYSIS

Since January 1, 2009, consumer VAT has been in the national promotion. How is the effect of the transformation of VAT? This study based on this event, in the collection of data of listed companies in Jiang Su province; by using panel analysis method explain the specific effect of the reform.

**The research hypothesis:** The transformation of VAT will eliminate double taxation factor in production VAT and reduce tax burden of equipment investment. So, on the reform of the listed company, before and after the transformation the fixed assets investment will have significant differences. Based on the above analysis, the author puts forward the assumptions:

**Hypothesis 1:** The sample companies the scale of investment in fixed assets become larger after the reform.

**Hypothesis 2:** The effect of the transformation of VAT and increment of fixed asset investment are positively correlated.

**Data selection:** This study studies all of the listed company in Jiang Su province, According to the sample standard screening:

- Selecting listed companies before 2007. Because the sample data covering year for 2007-2011, of which January 1, 2007 to December 30, 2008 is before the transformation of value-added tax, January 1, 2009 to December 31, 2011 is after transformation.
- Eliminating B and H shares listed company.

Table 2: Variable selection and definition

Variable name	Economic meaning	Calculation method
I	Fixed asset growth	I = The change of fixed assets/initial fixed assets
T = (17%-r)	The effect of VAT	R = Profit/sales revenue
TQ	Investment opportunities	TQ = Market value/total assets
Size	Scale	The natural logarithm of the total assets
Growth	Development ability	Net profit growth rate
Roe	Profitability	Return on assets

Table 3: The regression results

Variable	Coefficient	t-Statistic	Prob.
C	-0.447944	-3.005606	0.0029***
T	0.561816	2.236680	0.0261**
I(-1)	0.025753	9.485955	0.0000***
TQ	0.010841	4.921560	0.0000***
Size	0.017399	2.353667	0.0193**
Growth	0.000960	2.100559	0.0366**
Roe	0.311413	2.638397	0.0088***

\*\*\*p<0.01; \*\*p<0.05; \*p<0.1

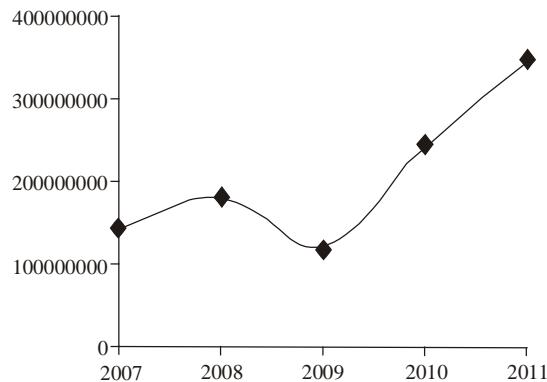


Fig. 1: The change trend of fixed assets scale

- Eliminating in \*ST, ST or PT status of the listed company. Financial data of the listed company are from CCER database. According to the above collection principle, the author chooses 86 listed companies. Samples have different companies' cross section data and have different time series data, so the author uses panel data model.

**The variable selection and the establishment of the model:** In fact, the effect of the transformation of VAT on the investment in fixed assets is mainly reflected in accordance with the deduction of the machinery and equipment conditions, but there is no disclosure of listed companies about machine equipment concrete numerical value, so the author has to use the fixed assets growth rate as an indicator. For explaining variable VAT transformation effect, the author uses the difference between the name of VAT rate and the actual rate. The control variable is the scale of the enterprise, the development ability and profit ability. Variable selection and definition are shown in the Table 2.

Establish the regression model:

$$I_{i,t} = \beta_0 + \beta_1 t_i + \beta_2 I_{i,t-1} + \beta_3 TQ_{i,t} + \beta_4 \text{size}_{i,t} + \beta_5 \text{growth}_{i,t} + \beta_6 \text{roe}_{i,t}$$

**The changes of the scale of fixed assets investment:** According to the data of 2007-2011 listed companies in Jiang Su province. The author uses cash flow of acquisition of fixed assets, intangible assets and other long-term fixed assets as a measure index of the scale of fixed asset investment index, draws out the line chart. From the Fig. 1 we can clearly see that change trend of fixed assets scale.

From the Fig. 1 can be seen, the scale of investment in fixed assets in the listed company between 2007 and 2011, only 2008-2009 is falling, the reason may have two aspects: one is the influence of the financial crisis and the other one may be that after the government announced that the VAT policy, enterprise have motivation to postpone fixed assets investment in 2008 to 2009. In 2009-2011, fixed asset investment of listed companies to rise sharply, which the reason is not only the world economic recovery, it also shows that the transformation of VAT has significantly positive effects to promote the investment of enterprise fixed assets.

This study uses Excel to preliminary treat the data and then uses Eviews to regression analyze, using the panel data model and section weighted to get the regression results.

As shown in the Table 3: T test is at 5% confidence level, it shows the regression coefficient 0.561816 significant different from zero and regression coefficient is positive, it indicates that the effect of transformation of VAT and fixed asset investment increment were positively correlated, more specific explanation for the transformation of VAT is that transition effect increases by 1%, its assets rise by an average of 0.561816. The transformation of VAT directly reduces the tax burden of enterprises and increase enterprise cash flow and cash flow is the important factors to consider the investment. Consumer VAT to the enterprise investment stimulation is very obvious. And, cost reduction of enterprise technical transformation will stimulate the enterprise to put more money in technological transformation and fixed assets investment. This study supports the hypothesis 2, the effect of the transformation of VAT and increment of fixed asset investment are positively correlated. That is to say, the transformation of VAT can promote investment in fixed assets.

The increase of the investment in fixed assets has a significant positive correlation with prior period fixed asset investment increment, the investment opportunity (TQ) and enterprise profitability (ROE) at 1% level and the scale of the enterprise (SIZE) and development ability (GROWTH) at 5% level, this shows that after the transformation of VAT, the influence of the prior period the scale of fixed asset investment, enterprise

investment opportunities and the enterprise profitability on the current investment in fixed assets is more, by contrast, the influence of the enterprise scale and development capability is smaller.

### **CONCLUSION**

The VAT reform of purpose and meaning in addition to reduce the tax burden, strengthen enterprise competition ability and ability of resisting risks and overcome the harmful effects of the international financial crisis, more important is fundamentally changing the industrial structure at present in China, to promote the upgrading of industrial structure and optimization. In a nationwide implement VAT reform at the same time, we must strengthen the mechanism construction.

Do the VAT deductions will reduce the cost of the enterprise technical transformation and stimulate the enterprise put more money in technical transformation. So, enterprise should accord to oneself circumstance, accelerate technology and equipment upgrades and improve the competitiveness of their products, through

introducing high-tech equipment. Only in this way can really play out the effect of the transformation of VAT transformation effect.

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