

Study on the Problem of China's Business Tax Changes to VAT

—Based on the Panel Data of Listed Companies in the Transport Industry

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Abstract

The program to replace the business tax with a value-added tax has been taken for three years since 2012 and it is a great success. Moreover, the transport industry is not only a basic and service one, but also a “bridging” institute between social production and consumption, wherefore it turns itself into a focus and forerunner industry of the program. Under the condition of a comprehensive program about business, tax changes to the value-added tax in the overall industry for 2016 (shortened as “program” below). This essay attempts to probe what the program would impact upon the transport industry along with the causes in respect of tax incidence and so forth in the model of DID (Difference-in-Difference model). Based on this, further relevant suggestions and reflections upon improvements and soluble schemes of the policies are going to be proposed.

Keywords

The Program to Replace the Business Tax with a Value-Added Tax, Transport Industry, Tax Incidence, Suggestion

1. Introduction

The program to replace the business tax with a value-added tax was first put forward on November 16, 2011; then on January 1, 2012, Shanghai was the first place as a pilot implementation of the program in the transport industry and a part of the modern service industry. Furthermore it was expanded to Guangzhou and other eight provinces in the same year on December 1. On May 24, 2013, this program re-upgraded, and expanded its scope to the whole country. With the constant improvement of the financial reform, China will achieve a whole indus-

try change of this program, such as the construction, the financial services, etc. in 2016. As the railway transportation was included in the scope of the pilot in 2014, transport industry began as a full implementation of this program.

Transportation was treated as the reform pioneer, and its reform not only would impact well or ill on the direction of national pilot program, but also is directly related to the program's next strategic plan and the successful implementation of the pilot work. For judging the quality of its effectiveness, the present studies embody two issues. One is the research on the necessity of this program, and the other one is the study of changes in the issue of the tax burden on transport enterprises. Most of the issues pay focus on the second one, such as Xu Dachang and Shao Yu (2012) who made the calculation on the part of the port. The data estimate the corporate tax cases, which obtain the changeover withholdings on VAT that would affect the conclusions [1]. Yang Jun (2013) got through the achievement by measuring the specific business and acquired at least some amount of input tax to account for 6.89% of tax revenue, in order to make corporate tax burden mitigated after the reform of "this program" [2].

The essay selects the listed transportation company data from 2011 to 2013 as a sample. Then, the model was based on the tax burden (turnover tax), ROE, policy variable, fixed asset yields, company size and the number of years that the company set up on behalf of the natural logarithm variable, by using DID model (Difference-in-Difference model), and analyzing the division of industry specifically on transportation tax burden of enterprises in various industries, so as to make deep analysis of the impact on the transportation business efficiency. The purpose of the essay is also to provide experiences and references to the whole industry innovation, and moreover to help other industries to make the most of this program to reduce the tax burden and achieve the goal of maximizing corporate value.

This article provides the second part of the literature review and research hypothesis, and the third part of the study design. The fourth part of empirical analysis provides empirical results. The fifth part analyzes the reasons and gives the relevant conclusions and inspiration of this article.

2. The Study Design

2.1. Hypothesis

From the essay's point of view, particular to each separate industry input tax deductible costs that will take effect onto the corporate tax changes, as well as the results of the this program implemented in transport industry. Whether the increase of tax burden mentioned in research above is only in the short term due to the input tax deduction system caused by inadequate, or, as some scholars have said above in the long term, the tax burden is eased, and the ultimate goal of this program is to reduce the business turnover tax. Therefore, we propose the first hypothesis:

H1: "this program" making the tax burden of listed companies to reduce transportation. Meanwhile, after the implementation of this program in transport industry, you can significantly promote the equipment renewal and transformation of the industry, improve transport efficiency and improve the quality of transport, so as to enhance business performance. After this program, with corporate tax burden eased and a corresponding reduction in cash outflow, the enterprises will promote the improvement of the performance of enterprises. For road transport operators after the reform, the corporate tax increasing, despite the increase in the tax burden, but the VAT chain will be more complete, and thus does great good to the company's business. Its operation may lead to growth, even if the short-term growth is not obvious, and to estimate the long-term, the results of operations will herald a distinct increase. Based on the above analysis, the essay presents the second study hypothesis.

H2: "this program" will raise transport operating performance of listed companies.

2.2. Research Methods

As this program is equivalent to a "natural experiment", furthermore the reform can be considered exogenous events. In the essay, the DID model would be taken in analysis. Highlighting the advantages of the model is better to avoid selection bias, reverse causality bias, the time fixed effects and lack of a cross-section fixed effects and other endogenous variable biases, to make them effectively controlled for other different influence and advance the pilot areas and non-pilot regions to make spontaneous policies, enabling more accurate identification.

2.3. Variable Design

In this essay, I choose to use the DID model set. From **Table 1**, you can see my selection and interpretation of variable [3].

Select the same article with the choice of two tax business tax and VAT to measure the policy change in the corporate tax burden. **Table 2** has shown the selection of selection tax value specifically.

2.4. Sample Selection

The essay selected listed transport companies from 2011 to 2013. As this program was carried out on January 1, 2012 in Shanghai, and gradually extended to the whole country, there are differences around the region implemented. The adaption environment and the appropriate time will also affect the corporate tax changes as well as changes in the operational effectiveness of the results. It is generally believed that the longer time to adapt, the more responsive policies the company will make with some changes. Policy changes will make a difference to enterprises in business, therefore we choose in August 2013 as the cutoff point.

I finally select 66 listed companies as a sample. The sample data are from the Wind Information and Annual Reports of Listed Companies, including industry data from the Chinese Chamber of Commerce Listed Companies' Financial Indicators Index. Also I use the STATA 12.0 software processing for statistical analysis, and use the EVIEWS 7.2 software for regression analysis.

2.5. The Model

It can be obtained from the above discussion, for all transport us to 2013 as the "Time Year", and with P presentation. P = 1 represents businesses in 2013, P = 0 indicates business in 2012. Provinces and the full implementation of the same in 2013, this program after 1, called the treatment group; the rest of the first implementation of this program in the local transportation is 0, as the control group, were represented by D. P·D is treated with a virtual cross-term variable annual dummy variables. Panel double difference regression equation:

$$y = b + gP \cdot D + cLNTA + dDFA + fLNAGE + e$$

where, y represents the dependent variable, respectively, reflecting the corporate tax burden (Tax) and return on equity (ROE). P·D indicates a key explanatory variable known as "this program" policy variables, LNTA, DFA, LNAGE control variables represent natural logarithm of firm size, the growth rate of fixed assets, the company established years of natural logarithm, e represents the error term.

Table 1. The selection and interpretation of variable.

Symbol	Definitions
Tax	Business tax + VAT
ROE (Rate of Return on Common Stockholders' Equity)	Mainly from the weighted average return on net assets of the financial statements which was given directly
P*D (P represents the policy year, D represents the region)	DID model embodies, P represents the policy year, D represents the region (excluding railway transport)
LNTA (Total amount of assets)	The natural logarithm of the total assets of the company, namely when the total amount of assets
DFA (Dynamic Financial Analysis)	(Fixed assets this year – fixed assets last year amount)/ Fixed assets*100% of the amount of the previous year
LNAGE (Age)	Founded on the number of years of nature

Table 2. The selection of selection tax value.

Business tax	Annual statement "sales tax and additional tax"
VAT	City tax/0.07 – Business tax

2.6. Statistical Analysis

There will be four cases:

1) The first case is $P = 1, D = 0$, indicates tax and business conditions in 2013 in the control group areas; the second case is $P = 1, D = 1$, which represents the tax burden in 2012 and treated areas business conditions; the third case is $P = 0, D = 0$ the tax burden and the operating conditions are non-regional group in 2013 represented 0; the fourth case is $P = 0, D = 1$ non-treated group represented region in 2013 the tax and operating conditions. Thus it will produce several different, a difference the first case and the second case of shows changes in the region in 2013 in the control group and the experimental group and the regional tax operating conditions; 2) the first case and the second the difference between the three cases of changes in the control group may react regional corporate tax and operating conditions; 3) the second case the difference between the fourth case of the said policy changes due to changes in circumstances treated the regional tax and operating conditions; 4) except in 2013 outside the region and the control group treated area tax changes in business conditions and the difference between the third and fourth case of representation [4].

“This program” will eventually be reflected in the cross-term coefficients g region and year two dummy variables. That is, the double difference model was evaluated both pilot enterprises “this program” the effect, and also evaluate the effect of the reform pilot enterprises compared to the non-pilot enterprises.

3. The Literature Review and Research Hypothesis

Generally speaking, from the purpose of this program, the ultimate aim for the transportation is to reduce business tax burden. Some scholars' studies prove this conclusion. Wei Lu, Uribe Zhang *et al.* (2013) who concluded that in 2012 the overall tax effect is obviously decreased in transportation and the overall tax burden has been declined with statistical information disclosed in Xuhui District. More scholars proved that the small-scale taxpayers are the biggest beneficiary groups. Through Zhu Gedan (2013) study, he found that since the pilot in Shanghai reforms, the transportation tax of small-scale taxpayers' declines very significantly, and its development environment has been significantly improved. And Ma Xiuli (2013) pays focus on the small-scale taxpayers to find that only when the transportation and value-added rate of less than 43.38%, the tax burden can be decreased, while the results will directly affect small and micro enterprises enterprise value ratio of reform on the overall tax burden, including the different effects on different industries and sizes [5].

However, some research suggests that the tax of transport companies is increased after this reform program. Meng Xianguo (2012) have investigated the 32 pilot enterprises to fill in a questionnaire of transport service enterprises to draw that more than 40% of the general tax payers significantly increase the tax burden.

But more scholars thought the effect from this program on the transportation tax is not determined. The results of pilot implementation time, implementation of industry specific cost deduction, the taxpayer type, high and low value of fixed assets factors may all be the important factors of the reform. As Zhu Hui (2013), Yang Jun (2013) argued that the transportation tax changes depend mainly on the ratio of the amount of input tax deductible business, if the proportion is more than 47.6%, the corporate tax burden will reduce [6]. Li Zhijian (2013) thinks that due to the impact on the proportion of input tax portion of different transport companies by this reform program, the cost is also different [7]. Su Shanjiang, Fan Yao Lu, Wang Western Cape (2014) through cost analyses and analyses of the various sectors in different proportions, reach an argument that the result of offset costs, for instance, the increase or decrease in the tax burden, varies. The offset costs and the deductible costs of the road transport industry, the proportion of railway transport, maritime transport, air transport industry share the different changes in their respective industry tax burden is different, Reform of this program makes the air transport and water transport enterprises reduce the tax burden, road transport and rail transport enterprises increase the tax burden [8].

Although the empirical results is not unified, from the theoretical analysis, the reform is in favor of fair taxation and fair competition among enterprises, while more conducive to transport business-related upstream and downstream enterprises to “go out”, so that companies are at a competitive position. As the transport industry is the basic social economy and the service sector, long before this program, the enterprises have been offset by a 7% rate of VAT-deductible at a standard shipping costs, while the transport and other related invoice deduction certificate management has become more perfect. After this program, the applicable transport tax rate becomes 11%. What should be specifically noted is that, due to this program, the tax rate only relates to the business tax and value-added tax, so the essay will be the sum of business tax and the VAT as the tax burden.

4. Empirical Analysis

4.1. Statistical Description

Statistical results of each variable in the model as shown in the chart. By comparing a “treatment group” pilot areas sample enterprises and as a “control group” of non-pilot areas sample companies in 2011 to 2013 changes in the tax burden (in particular the results as shown), It can be seen that: 1) the treatment group have shown that since 2012, some regions reformed policy implementation that year, so the burden of transportation of listed companies in pilot areas also decreased, although in 2013 the tax burden on listed companies in the transport industry is rising, but in 2013 with the ongoing reform pilot area as a whole is lower than before the tax increase did not change camp. 2) For the purposes of the control group: Their tax burden has been increasing. Therefore, in 2012, the reformed year of policy implementation, the pilot area transportation tax burden of listed companies has declined, and the tax burden on non-pilot areas still upward trend there is a clear difference. You can see the result of statistical description from [Figure 1](#) and [Table 3](#).

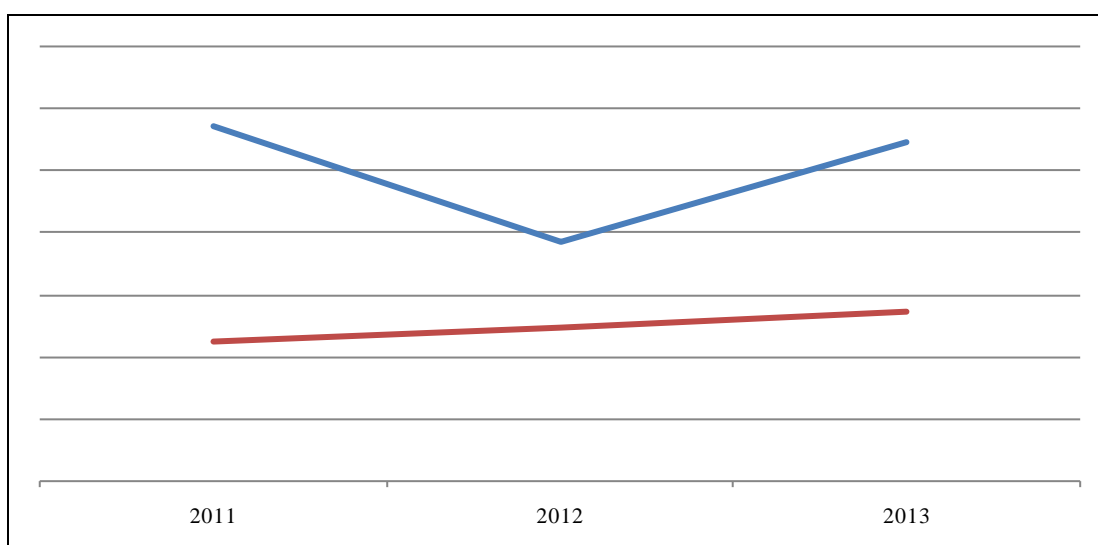


Figure 1. The tax changes from 2011 to 2013.

Table 3. The result of the statistical description.

Variable	Control group				
	N	Average	Standard deviation	Maximum	Min
TAX (unit: hundred million)	27	4.59	9.12	3.44	0.94
ROE	27	10.10%	7.01%	29.58%	-6.24%
LNTA	27	22.84	1.28	25.32	20.41
DFA	27	0.11	0.26	0.82	-0.26
LNAGE	27	2.71	0.48	3.33	1.78
Variable	Experimental group				
	N	Average	Standard deviation	Maximum	Min
TAX (unit: hundred million)	47	6.43	21.90	121.00	-1.3
ROE	47	4.76%	15.38%	21.33%	-59.76%
LNTA	47	22.89	1.38	25.70	20.42
DFA	47	0.07	0.41	1.80	-0.56
LNAGE	47	2.76	0.38	3.33	1.78

4.2. The DID Model Regression Analysis

Before the DID model, the paper was co-linear test, there is no problem of collinearity between independent variables in the model. Hausmann test carried out at the same time. Hausmann test of the null hypothesis is unrelated individual effect and regression variables of the model due Hausmann value is smaller, the corresponding P values greater than 0.1, so we should establish a random effects model.

In this essay, all the sample companies in 2013 as a pilot area, “this program” pilot reform after the treatment group, while 2012 sample enterprises across other non-pilot regions as the pilot pre-reform group. In this way, we construct a data set is from 2011 to 2013 balance panel. To test the hypothesis presented earlier, the essay take the DID model, respectively, the tax burden, weighted average return on net assets is estimated as the dependent variable. The results are shown in **Table 4**.

The results show that, under the control of the situation the company size, company’s fixed asset growth and the company set up the same age, in 2012, “this program” on the transport of listed companies the tax burden through significant test, so that the “reduce traffic business tax costs of transport”, the expectations are effectively realized, the null hypothesis H1 be sure. In addition, the size of the company and a significant positive correlation between the tax burden, which is consistent with the actual situation, in general, the larger the size of the company, the higher the tax burden; the same level of performance is also related to the size of the company. This conclusion shows that the program enhance the company’s expectations of market demand, increased business investment will enable the industry have been expanding, through economies of scale brought about a better economic benefits.

“This program” transport policy affect the performance of listed companies, from the measurement results can be seen, the impact of policies on the ROE does not pass the significance test, while in 2012, the reformed policy makes transportation ROE of listed companies an average of 2.41%, while the 2013 ROE of listed companies,

Table 4. The result of DID model.

The result of DID model		
Variable	TAX	ROE
P*D	-2.46E+05** (-1.32668)	4.05E-02 (1.02103)
LNTA	5.99E+05*** (4.712984)	1.84E-02** (1.876254)
DFA	-6.48E+04 (-0.521286)	4.47E-03 (0.184541)
LNAGE	-3.49E+05 (-0.804715)	-2.00E-02 (-0.551381)
c	-1.22E+07 (-3.988554)	-2.58E-01 (-1.03297)
Hausmann test	3.343869 5	3.112497 5
Estimation Method	0.5471 RE	0.5124 RE
Sample	198	198
Individual	66	66
R-squared	0.860791	0.94499

Remark: T values for the coefficients in parentheses. ***, ** and * denote at 1%, 5% and 10% significance level. RE random effects model, FE model for the fixed accordingly, Hausmann test the null hypothesis to accept random effects are random effects model.

the average is reduced 4.01 percent, rejected the null hypothesis H2. That is, “this program” for transport enterprises effect is not fully apparent. The reason may be follows: 1) from the model set, due to operational efficiency are many tax burden, they are not too obvious linear relationship exists, so the result is not significant; 2) from the income statement analysis, even though the lower tax burden makes the total profit increase, the result in corporate income tax burden increase profits increase, and ultimately makes the operating efficiency decreases; 3) since the chain structure incomplete deductible proportion deductible costs cannot be accounted for relatively large, thus affecting the results of operations. Air transport industry, only 53% of non-deductible (except for 33% + 4% + 10%); road transport enterprises are deductible only fuel and repairs, non-deductible reached 66.77%; rail transport capable of reaching deduction of the cost of only water consumption and outsourcing services, and the remaining 74.53% non-deductible; water transportation deductible costs only fuel consumption, 43.1% of the total cost of the remaining 56.9% are non-deductible. Plus some business equipment refresh cycles just not in this camp changed to increase the years, will result in fixed assets are not deductible portion, the tax burden will increase, leading to a decrease in operating efficiency in the short term [9].

5. Conclusions and Recommendations

Through research, in 2012, implementation of the program to replace business tax with a value-added tax reached a great efficiency in reducing the taxation burden of listed companies in transport industry, by means of which enterprises fulfilled a remarkable industry expansion. In 2013, the full-scaled practice of this program, however, did not present a satisfactory effect, as the taxation burden of enterprises intensified. Probable causes might be an untimely transformation of enterprises’ operation patterns, excess of small-scale taxpayers, and an inefficient access to deduction voucher under no expedite communication amidst upstream and downstream, because of the less completed chain of this program. So as to guarantee the smooth implementation and promotion, in this essay, these suggestions follow [10].

Initially, enterprises should alter operation patterns as soon as possible to better adapt themselves to this program. And it demands that firstly more importance should be attached to the access to value-added tax invoice, together with staff training and construction of relative departments to study tax declaration of formal enterprises. Furthermore, since acquisition and management of VAT special invoice exert a direct influence upon the enterprises’ tax level, enterprises should strengthen specific knowledge trainings for relative members like higher managers, finance and taxation staffs, purchasing staffs and so forth, so that they can better understand VAT and VAT special invoice, being trained in accurately handling complex problems in tax declaration process, to make sure enterprises’ smooth reformation in tax system. And finally, traditional decentralized purchasing should be transformed into centralized purchasing, to obtain more VAT invoice for increasing income tax deduction.

Secondly, from this program per se, it is necessary to make perfect the VAT legal system. In 2015, under the industry-wide implementation of this program, VAT deduction chain has been basically completed according to state policies, and it should be the next focus to make overall promotion in cooperation of various industries concerned with this program. And in the meanwhile, some VAT income deduction items would be appropriately added, like road maintenance expenses and insurances that take up a large share of transportation enterprises output, which government should permit enterprises to deduct. Besides, in some economic activities hard to request special invoice, for instance, fuel purchasing, repair service etc., the government should allow relevant corporations to deduct pertinent output. And if possible, comprehensive special VAT invoice compatible in both in logistics and transport industry can be designed and employed, thus making VAT income chain further accomplished, income tax of transportation enterprises’ VAT deduction increased, and enterprises’ turnover tax decreased. And more importantly, this kind of special invoice could ensure reasonable growth of other taxes, resulting in a genuine cut in enterprises’ comprehensive taxation along with expansion of the industry, whereby it achieved the fundamental goal to truly abate enterprises’ taxation burden as well as speculate the market. As a consequence, arrangements from the side of enterprises could facilitate job operation and efficiency of staffs.

Thirdly, from the perspective of tax rate, after this program, value-added taxes at the rate of 11% and 6% are set higher than business tax paid at 5% and 3% by many corporations that could not deduct a large amount of cost. No one can conform to neutral principle of taxation. Therefore according to the requirement of commitment of the principle of legislative taxation put forward in the Third Plenary Session of the 18th Central Committee of the CPC, reformation on the VAT system should be placed under promotion in the next step of this program for the purpose of reducing tax rate and simplifying taxation. The steady promotion of this program entails favorable opportunities for the VAT legislation. Completion of the VAT legislation guarantees the pru-

dence in taxation implementation, and brings forth further chance and welfare to experimental industries including transport industry.

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