

The Impact of Price and Tax Burden by VAT reform in China

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1. Introduction

The value-added tax (VAT) is imposed to manufacturing sectors and business tax (retail sales tax) is charged to service sectors in China after 1994. This dual system, however, has been considered problematic from the point of view of complexity of tax system and inter-industry fairness of tax burden. Chinese government, therefore, has decided to abolish the business tax so that VAT may be also applied to service sectors. This tax reform has partially started on January 1, 2012, and fully started for all sectors in whole China on May 1, 2016.

Before taking up the main subject, let us explain on the trend of tax revenue of China's central and local government. Figure 1 shows the time series changes in the share of each tax item. In 2012, the total tax revenue was 10,061.4 billion yuan, of which the domestic value-added tax was 2641.6 billion yuan (about 26% of the total tax), and the business tax was 1574.8 billion yuan (16% of the total tax). The total of value-added tax and business tax accounts for 42% of the total tax. The consumption tax is the excise tax which is imposed on Luxury goods. As is observed in the figure, the Chinese government has adopted the policy of expanding the direct income taxes on individuals/corporates and reducing indirect consumption related taxes.

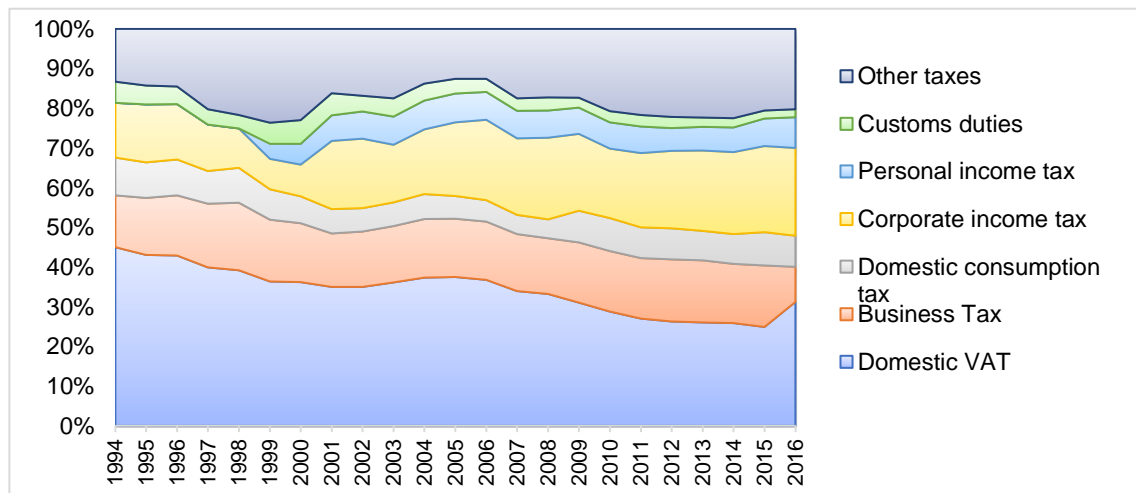


Figure 1 Time series changes of the share of tax items in China

Source: 2017 China Statistical Yearbook

Note 1: corporate income tax includes income tax for private companies after 2001.

Note 2: domestic VAT does not include import VAT.

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This VAT reform is a part of an ongoing economic restructuring reform promoted by the government. The multiple taxation for the service sector will be lifted and the indirect tax burden of the manufacturing sectors will be alleviated if VAT is also applied for the service sectors. On the other hand, the effect of the VAT reform is not uniform among the sectors in China. It is; therefore, appropriate to see the effects of the VAT reform in individual sectors. This study explores the impact on household income redistribution taking the price changes of all individual sectors by the VAT reform of 2012 in to consideration.

2. Literature review

Researchers and policy makers are interested in the impact of the VAT reform with the expansion of VAT covering sectors. Chen (2010), Wang *et al.* (2012) and Wang (2016) made an analysis on the VAT reform by using CGE model. These studies conclude that the impacts of the VAT reform are marginal while the overall price decrease is observed. Wang (2016), for example, observes that the price decline in service sector is 2.39%, which is the largest, that of manufacturing sector is 0.44% and that of agricultural sector is 0.23%. On the other Nie *et al.* (2016) analyzed the impact of on income distribution by the VAT reform applying input-output equilibrium price model. Nie *et al.* (2016) forecasts that the VAT reform may reduce the general price by up to 5% and the tax burden may be lighter though the VAT remains regressive to the income distribution. This study is highly evaluated since it considers the differentiated impacts of the VAT reform by income classes while rural households are not included in the research scope.

Incidentally, there are some issues worth improving in those above mentioned previous studies. For example, the investment goods tax credit is not considered, the used input-output tables are of competitive import type, and the taxation of imported goods is not taken into account. This study has amended these problems. We consider the investment goods tax credit in our model according to the Provisional Regulations of the People's Republic of China on Value Added Tax (2008 Revision and 2016 Revision). In addition, we have estimated the non-competitive type input-output table under the assumption that the import ratio is common in the same row in the table. This study uses household survey data (China Household Survey in 2013 and China Statistical Yearbook in 2013) to estimate the impacts on household consumption expenditures for both urban and rural households. The model used in this analysis is the input-output equilibrium price model introduced by Fujikawa (1999).

3. Price changes by the VAT reform

We implement simulation analyses on the impacts on the prices of goods and services given by the VAT reform where business tax is replaced by VAT. We assume that the VAT reform was done in 2012 in the view point of understandability and simplicity though the VAT reform started in 2012 and spread out in whole China later on gradually. And we also assume that the prices of all goods and services

were one when neither value added tax nor business tax is introduced. The prices before the VAT reform, therefore, shown in the column (A) in Table 1 are not one but those including VAT and business tax before VAT reform.

Table 1 shows top 10 service sectors with a large price decline and the top 10 manufacturing sectors with a large price decline. It is noteworthy that the prices of all sectors, regardless of the service sector or manufacturing sector, declines through the VAT reform. The largest decline is observed in Entertainment service (15.7%) and Research and technological development (8.40%) among the service sectors. The main reasons for the decline in Entertainment service include (i) that the tax rate declined from 20% (business tax) to 6% (VAT) and (ii) that the tax deduction of intermediate purchases and investments become possible. It is possible to say that the VAT reform has greatly contributed to the price reduction of service sectors.

The sectors where the large price reduction is observed are coke (8.49%) and industrial mining, metallurgical and construction equipment (8.42%). The prices in manufacturing sectors also fall down since the prices of service sectors incline and VAT included intermediate purchases from service sectors is deductible for manufacturing sectors. As a result, the average price of the whole economy drops by 5.03%.

Table 1 Price changes through the VAT reform

		Industries	(A) before VAT reform	(B) after VAT reform	(B-A)/A Price change
Top 10 sectors in service	137	Entertainment service	1.221	1.029	-15.70%
	124	Research and technological development	1.109	1.016	-8.40%
	118	Insurance	1.099	1.007	-8.36%
	110	Warehouse service	1.102	1.012	-8.10%
	115	Information service	1.083	0.999	-7.83%
	121	Business service	1.105	1.019	-7.77%
	123	Professional skill service	1.089	1.005	-7.70%
	102	Other construction service	1.120	1.036	-7.57%
	125	Water supply management service	1.097	1.014	-7.57%
	109	Freight transportation service	1.101	1.018	-7.54%
Top 10 sectors in manufacturing	040	Coke	1.141	1.044	-8.49%
	071	Machinery for mining, metallurgical and construction	1.112	1.018	-8.42%
	041	Basic chemical material	1.116	1.026	-8.01%
	093	Other manufacturing	1.109	1.023	-7.72%
	035	Furniture	1.066	0.984	-7.67%
	011	Mining service	1.141	1.055	-7.61%
	092	Measuring instrument	1.054	0.978	-7.22%
	052	Cement, lime, and gypsum	1.137	1.067	-6.18%
	056	Ceramic products	1.126	1.059	-5.95%
	053	Gypsum and cement products	1.144	1.080	-5.66%
		Average (output is used as a weight)	1.097	1.042	-5.03%

Note: The part of the VAT and business tax which is not concluded is 1. Therefore, the price of the present situation is less than 1.

Source: the author calculates.

4. The impact of the VAT reform on income redistribution

Table 2 shows the simulated tax burden rate (indirect tax portion in total consumption) for urban and rural households, respectively. Firstly, the VAT reform alleviates the tax burden rate for both urban and rural households. The tax burden rate in urban areas is 9.73% in average before the VAT reform while it drops to 4.32% by 5.42% after the VAT reform, similarly, in rural areas, the tax burden rate drops by 4.41% after the VAT reform.

Let us see the results by income classes in order to explore the impact of the VAT reform. As in shown in Table 2, we can see that the tax burden rates for all income classes in urban and rural households declines to a significant extent according to the VAT reform. Before discussing the impacts of the VAT reform, we can observe the VAT’s regressive nature where the tax burden is lighter in high-income classes and heavier in low-income classes whether or not the VAT reform exists. Then, let us compare the degree of regressive nature before and after the VAT reform. Before the VAT reform, the tax burden rate of urban household is 10.23% in the lowest income class (the first class) and 9.38% in the highest income class (the eighth class), where the gap is 1.09 times. On the other hand, after the VAT reform, the tax burden rates of the lowest income class and the highest income class in urban households are 4.90% and 3.85% respectively, where the gap widens to 1.27 times. In addition, the VAT reform also aggravates the degree of regressive nature for rural households. Before the VAT reform, the tax burden rate was 10.81% in the lowest income class (the first class) and 10.37% in the highest income class (the fifth class), where the gap is no more than 1.04 times. On the other hand after the reform, the tax burden rate in the lowest income class is 6.55% and the highest income class is 5.92%, where the gap widens to 1.11 times.

Table 2 Change of tax burden rate by VAT reform

Urban households	Tax burden before VAT reform	Tax burden after VAT reform	Changes	Rural households	Tax burden before VAT reform	Tax burden after VAT reform	Changes
	(Au)	(Bu)	(Bu-Au)		(Ar)	(Br)	(Br-Ar)
Average	9.73%	4.32%	-5.41%	Average	10.67%	6.26%	-4.41%
1st class	10.23%	4.90%	-5.33%	1st class	10.81%	6.55%	-4.26%
2nd class	10.15%	4.82%	-5.33%	2nd class	10.77%	6.49%	-4.28%
3rd class	9.98%	4.66%	-5.32%	3rd class	10.67%	6.34%	-4.33%
4th class	9.90%	4.56%	-5.34%	4th class	10.58%	6.21%	-4.37%
5th class	9.81%	4.44%	-5.36%	5th class	10.37%	5.92%	-5.45%
6th class	9.69%	4.29%	-5.40%				
7th class	9.58%	4.15%	-5.44%				
8th class	9.38%	3.85%	-5.53%				

Source: the author calculates.

In addition, comparing urban areas and rural areas before and after the VAT reform, the tax burden rate of all the income classes in urban households decrease more than that in rural households. The income of the lowest income class in urban households and the lowest income class in rural households are roughly the same about 6,000 RMB. The tax burden rate in urban households, however, falls to

5.33 points while that in rural household falls by only 4.26 points. The reason is considered to be the difference of consumption components between urban and rural households. According to the VAT reform, the sharp decline in prices is observed in the service sectors (especially the entertainment service). Access to services is easier for urban households in general, and the consumption share of services in urban areas is relatively large in the urban households. Therefore, the urban residents will be able to enjoy more benefits of the VAT reform.

5. Conclusion

This study focuses on the VAT reform in 2012 to see the impacts on the price change and income distribution of households. The results are summarized as follows:

- 1) According to the VAT reform in 2012, the prices of all sectors fall and the average price declines in the whole economy is 5.03%. Among them, the sectors with the largest price drop are Entertainment service, Research and technology development, followed by Insurance and Warehouses, etc. Prices in these sectors have fallen by more than 8%.
- 2) Indirect tax has a regressive nature. The VAT reform in 2012 aggravates the regressive nature because the benefits for high income classes are larger than those in lower income classes though it alleviates the tax burden for all households.
- 3) The urban residents will enjoy more benefits of the VAT reform because of the difference of consumption components among urban and rural households.

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