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## **Is the growth of Chinese annual tax revenues unnatural?**

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## IS THE GROWTH OF CHINESE ANNUAL TAX REVENUES UNNATURAL?

Shuhong Kong and M. Peter van der Hoek\*

**ABSTRACT.** The rapid growth of Chinese tax revenues in the past decade is often considered “unnatural” relative to GDP growth. In this paper we investigate this seemingly unnatural growth by presenting different models of the relationship between the annual growth of tax receipts and GDP. The models show different results. We also analyze various factors related to the transition from a centrally planned economy to a market economy, in particular the biased GDP calculation method, changes of the economic structure, tax policy changes and reinforcement of the tax administration. If we eliminate the impact of these factors we find that the growth of Chinese tax revenues is not unnatural, but by and large in line with the growth of GDP.

### INTRODUCTION

Since 1995, Chinese annual tax revenues grew by 15%-25% per year, whereas Chinese annual GDP growth rates averaged about 8%. Thus, tax revenues grew 2-3 times faster than GDP. In 2004, Chinese annual tax receipts grew by 25.7%, which is the highest growth rate in Chinese history. In this paper we investigate the seemingly high growth of Chinese tax revenues relative to GDP in the past decade.

Using annual data of Chinese tax receipts and Chinese GDP in the period 1984-2004, we develop three methods for modeling and analysis of relationships between the two time series in order to investigate whether there is a relationship between the growth rates of tax revenues and GDP that is consistent with basic economic principles. One is a simple linear regression model and the other is a non-linear time series regression model that is called ARCH model. The two models show different results.

Next, we analyze factors that cause these differences and that are specific to the Chinese economy. By examining parameters in the two

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models we find that the relationship between growth rates of tax revenues and GDP growth rates is not linear. Official statistics show unnatural high growth rates of Chinese tax revenues in comparison with GDP growth. However, some specific aspects of the Chinese GDP accounting system - including a lack of basic information, ignoring sunrise trade, interference from local government<sup>1</sup>, etc. – the official GDP is not as accurate in China as in western countries. China is not yet a market economy (Organisation for Economic Cooperation and Development, 2006, p. 14). We present evidence showing that there are factors related to China's transition from a centrally planned economy to a market economy that influence tax receipts and GDP.

Our conclusions are:

- Chinese tax revenues grow unusually rapidly relative to GDP in recent years.
- This unnatural high growth of Chinese tax revenues in the past decade is a normal phenomenon given the impact of specific factors of the Chinese economy.
- If we eliminate the impact of specific factors (see section 5 for details), which include the biased GDP calculation method, changes of the economic structure, tax policy changes and reinforcement of the tax administration, the growth of Chinese tax revenues is by and large in line with the growth of the Chinese economy.

#### **LITERATURE AND METHODOLOGY**

English language literature on Chinese tax revenues is scarce. Zhang (1998) analyzes the macro-economic and sectoral effects of carbon taxes imposed to achieve predefined CO<sub>2</sub> emission targets for China by using a dynamic computable general equilibrium model of the Chinese economy. In addition, this study presents a preliminary construction of a Social Accounting Matrix for China. Thus, Zhang (1998) does not address the development of general tax revenues, but rather specifically analyzes the macro-economic and sectoral effects of carbon taxes in China.

Wong (2001) considers the distinct ways in which Chinese and European governments have historically approached taxation. This is a qualitative and historical analysis without quantification. Specifically, it looks at tax resistance in China and compares this phenomenon with experiences in Europe. Thus, it does not address the development of Chinese tax revenues in general.

Lin (2000) analyzes the decline of Chinese tax revenues in general and also pays attention to extrabudgetary revenues. In fact, this is one of the two studies addressing our subject that we found in our literature

search. Although Lin (2000) does address the composition of Chinese tax revenues, the study does not model tax revenues. It basically describes the factors contributing to the decline of Chinese tax revenues. The latter illustrates that the study dates from 2000 and, therefore, is actually outmoded. The current development of Chinese tax revenues is very different from the development that Lin (2000) observed.

Piketty and Qian (2006) study progressive income taxation in China and state that this is about to become an important economic and political issue. Assuming constant tax law and income trends they expect income tax revenues to exceed 4% of GDP by 2010. As the paper focuses on progressive income taxation rather than the ratio of total tax revenues relative to GDP it is only loosely related to our topic.

In this paper we develop three methods to model and analyze the relationships between the annual data of tax revenues and GDP in China in the period 1984-2004. The first method is a simple linear regression model using data of GDP and tax receipts. The correlation between the two variables implies that the growth of tax revenues is not linear.

The second method is a non-linear time series regression model, which is a first-order ARCH model. This model shows positive differences between the actual and forecasted tax revenue growth rates indicating that the tax revenue growth rates deviate from the long-term trend of the stationary time sequence. Interestingly, these two models show different results.

The third method that we apply is an analysis of the factors that cause these differences and that are specific to the Chinese economy. We examine parameters in the first two models and find that the relationship between growth rates of tax revenues and GDP growth rates is not linear. In addition, we present evidence showing that there are factors related to China's transition from a centrally planned economy to a market economy that influence tax receipts and GDP.

Due to factors that are specific to the Chinese economy - including the biased GDP calculation method, changes of the economic structure, tax policy changes and reinforcement of the tax administration – the growth of Chinese tax revenues seems unnaturally high at first sight. Therefore, we measure these factors and evaluate the differences between the calculated and the actual value of GDP. As a result, we are able to eliminate the impact of these specific factors.

On the one hand our methodology seems conventional in terms of techniques used. On the other hand, however, our methodology seems unconventional in that it has not been applied before to explain the development of Chinese tax revenues. This is not surprising given the scarcity of literature on the development of Chinese tax revenues.

## THE GROWTH OF CHINESE TAX REVENUES AND GDP IN THE PAST DECADE

The macro-tax burden  $t$  in a given year is the ratio of tax revenues  $T$  to annual GDP  $Y$ :

$$t = \frac{T}{Y} \times 100\%$$

This ratio is frequently used to measure a country's tax burden. The Global 2005 Tax Burden Index published by Forbes Magazine ranks China second of the countries with the highest tax burdens. However, this may be questioned as opinions differ about Forbes' ranking. Some argue that Forbes' calculation method is not appropriate and that, as a result, the tax burden in China is considerably lower than in many other countries (see, for example, Ai, 2005). Others argue that in spite of the inappropriate calculation China is now indeed a high tax country (see, for example, An, 2005). Obviously, the measurement and evaluation of the Chinese macro-tax burden raises questions and has become a subject of economic research. In order to investigate the Chinese macro-tax burden, we have collected data on the growth of GDP and tax revenues in China over the past 10 years as shown in Table 1.

**TABLE 1**  
**Growth of GDP and Tax Revenues in China, 1995-2004**

Year	GDP (billions yuan) in current prices	GDP growth rate in constant prices (%)	GDP growth rate in current prices (%)	Tax revenues (billions yuan) in current prices	Tax revenues growth rate in current prices (%)	Macro tax burden (%)
1995	5847.8	10.5	25.1	603.8	17.8	10.3
1996	6788.5	9.6	16.1	691.0	14.4	10.2
1997	7446.3	8.8	9.7	823.4	19.2	11.1
1998	7834.5	7.8	5.2	926.3	12.5	11.8
1999	8206.8	7.1	4.8	1068.3	15.3	13.0
2000	8946.8	8.0	9.0	1258.2	17.8	14.1
2001	9731.5	7.5	8.8	1530.1	21.6	15.7
2002	10517.2	8.3	8.1	1763.7	15.3	16.8
2003	11725.2	9.3	11.5	2001.7	13.5	17.1
2004	13651.5	9.5	16.4	2571.8	28.5	18.8
Average	90696.1	8.6	11.5	1323.8	17.6	13.9

Source: National Bureau of Statistics of China (2004).

China applies specific methods to calculate the growth rates of GDP and tax revenues. To eliminate the influence of price inflation and to reflect the real development of GDP, China uses the so-called

Comparable Uncontrolled Price Method. Basically, this is a calculation in constant prices, so that the calculation is based on the price level in a certain year. China takes a new price level as a baseline every 10 years. In the 1990s, China used the price level of 1990 to calculate GDP in constant prices. In the current decade it takes the price level of 2000 as the baseline. In contrast, the growth rate of tax revenues is calculated on the basis of the so-called Current Value Method. Basically, this is a calculation in current prices, so that the calculation for each year is based on the price level of that same year.

Table 1 shows that the average annual GDP growth rate in constant prices amounted to 8.6% in the period 1995-2004, with a high of 10.5% in 1995 and a low of 7.1% in 1999. Tax revenues in current prices grew at an average annual rate of 17.6%, with a high of 28.5% in 2004 and a low of 12.5% in 1998. Because the Chinese government publishes GDP growth rate in constant prices and tax growth rate in current prices, the two rates are often compared following the officially published data. This comparison suggests that the average growth rate of tax revenues was two times that of GDP. Some conclude, therefore, that the growth of Chinese annual tax revenues is unnatural compared with the growth of GDP.

Obviously, the fact that the Chinese government publishes GDP growth rates in constant prices and tax growth rates in current prices gives rise to incorrect calculations and interpretations. Tax growth rates in current prices should be compared with GDP growth rates in current prices, not in constant prices. Had the Current Value Method been used for GDP growth calculation, the average growth rate in the past 10 years would have been 11.5%, implying an average growth rate of tax revenues that was 1.5 times that of GDP (see Table 1), which is thus still considerably higher than GDP growth rate.

The ratio of tax revenues to GDP has risen to 18.8% in 2004 from 10.3% in 1995. Thus, the macro-tax burden has increased by 8.5 percent over the past 10 years and the average annual growth rate amounted to 0.85 percent. This also suggests that the macro-tax burden has increased steadily, irrespective of the growth of GDP.

#### **EMPIRICAL ANALYSIS OF TAX REVENUES AND GDP GROWTH**

The Chinese income tax is not indexed for inflation. Therefore, one might expect the absence of indexation to be one of the factors explaining the growth of Chinese tax revenues. However, the income tax is negligible in China. Piketty and Qian (2006) calculate income tax revenues at 1.2% of GDP in 2003. The absence of indexation of the income tax can thus hardly contribute to the rise of tax revenues relative to GDP.

To test the relationship between the growth of tax revenues and GDP, we use data for the period 1980-2004 and we apply three methods for modeling and analysis.

### Linear Regression Model

Based on the principle that economic growth affects taxation and taxation influences economic growth, it can be expected that the growth rates of taxation and GDP are positively correlated. Given the tax rates the level of taxation can only increase via growth of GDP. However simple linear regression models are, they clearly reflect the correlation between the two variables. We have applied the following linear regression model using data of GDP and tax revenues in the period 1980-2004 in current prices (National Bureau of Statistics of China, 2004):

$$\text{TAX} = 0.16\text{GDP} - 700.76$$

$$R^2=0.934, F=323.74, SE=1795.55$$

Figure 1 shows the regression map.

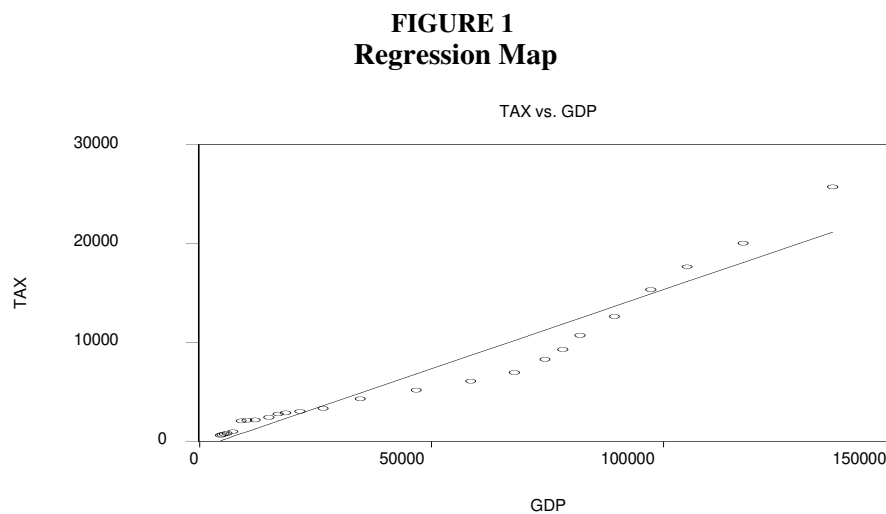


Table 2 shows the differences between the actual values of tax revenues in the period 2001-2004 and the values forecasted by the linear regression model.

Table 2 and Figure 1 show that the positive differences between the actual and expected values of tax revenues increase between 2001 and 2004. Thus, tax revenues deviate from the long-term linear trend to an increasing extent. Compared with the 25-years linear growth trend, the growth of tax revenues exceeds GDP growth at an increasing pace in recent years. The correlation between the two variables implies that the

growth of tax revenues is not linear.

**TABLE 2**  
**Differences between Actual and Forecasted Values of Tax Revenues,**  
**2001-2004 (In Billions Yuan)**

Year	Value		Difference	
	Actual	Forecasted	Absolute	Relative
2001	1530.1	1487.5	426.0	2.8
2002	1763.7	1613.3	150.4	8.5
2003	2001.7	1806.6	195.1	9.7
2004	2571.8	2114.9	456.9	17.8

### ARCH Regression Model

An ARCH model is suitable for dealing with heteroskedasticity. Although the sample is not large, we can use an ARCH model to deal with errors given its characteristics. Moreover, the tax revenue increase is not only related to GDP, but also to its lagged value. For example, our tax modeling is based on the tax revenues realized in year t with the tax revenue of year t-1 as its baseline. In order to better reflect the correlation between tax revenues and GDP, we apply a first-order ARCH regression model to analyze the relationship using GDP and tax revenue in the period 1980-2004 (source: China Statistical Yearbook 2004). We denote  $TAX_t$  as the growth rate of tax revenues in year t and  $GDP_t$  as the growth rate of GDP in year t (in current prices):

$$TAX_t = \{[\text{tax revenue in year } t / \text{tax revenue in year } t-1] - 1\} \times 100\%$$

$$GDP_t = \{[\text{GDP in year } t / \text{GDP in year } t-1] - 1\} \times 100\%$$

Thus, we assume stationary sequences indicating that the growth rate of year t will be high if that of year t-1 is high.

The autocorrelation coefficient distribution shows that the data sequence of tax revenue is correlative largely in the second-order and auto-regression significantly in the third order. The partial autocorrelation coefficient distribution shows that the first-order difference sequences of tax revenue and GDP - i.e.,  $TAX_t$  and  $GDP_t$  - are stationary random sequences. If we use the ARCH model we obtain:

$$TAX_t = \alpha_0 + \alpha_1 TAX_{t-1} + \beta GDP_t + \mu_t$$

$$(5.33) - (0.028) \quad (0.88)$$

$$\mu_t = \varepsilon_t + \theta \varepsilon_{t-1}$$



(0.013)

where  $\mu_t$  is the error and  $\varepsilon_t$  is the white noise.

This model reflects the correlation between tax revenues and GDP in China. It shows that in the past decade tax revenues grew faster than GDP. Table 3 displays this model's forecasts of the tax revenues from 2000. Generally, there are positive differences between the actual and forecasted tax revenue growth rates. This indicates that the tax revenue growth rates deviate from the long-term trend of the stationary time sequence. According to the ARCH model, growth rates of tax revenues and GDP show increasing differentials.

**TABLE 3**  
**Differences between Actual and Forecasted Values of Tax Revenue Growth Rates according to the ARCH Regression Model, 2000-2004**

Year	Value		Difference	
	Actual	Forecasted	Absolute	Relative
2000	17.8	12.8	5.0	28.1
2001	21.6	12.6	9.0	41.7
2002	15.3	11.9	3.4	22.2
2003	13.5	15.1	-1.6	-11.9
2004	28.5	19.5	9.0	31.6

### Macro-tax Burden Analysis

We denote  $t_t$  as the tax burden of year  $t$ ,  $T_t$  as the tax revenues in year  $t$  and  $Y_t$  as GDP in year  $t$ . The macro-tax burden is calculated as  $t_t = T_t/Y_t$  (in current prices). The last column of Table 1 shows that the macro-tax burden increased to 18.8% in 2004 from 10.3% in 1995. Thus, the ratio of tax revenues to GDP increased by 8.5 percentage-points, which implies an average annual growth rate of 0.85 percent. The growth of the ratio of tax revenues to GDP was independent of the growth of GDP. This may partially reflect the fact that from 1994 China has a more or less effective tax administration. The lack of such an administration may be one of the causes of the dramatic decline in revenues between 1978 and 1994. Revenues decreased to 17% of GNI in 1994 from 34% in 1978 (World Bank 1996, p. 119).

In 2004, China's GDP per capita amounted to \$1,290. Therefore, it is considered to be a lower-middle-income economy.<sup>2</sup> The average tax burden of lower-middle-income countries worldwide is 18.6% (Wang, 2005, p. 36). In 2004, China's macro-tax burden exceeded the average level of lower-middle-income economies. Moreover, the Chinese government's income from regulation is estimated at 10% of GDP.

Taking this into account, the tax burden of China in 2004 would amount to 25% of GDP, exceeding that of upper-middle-income countries. Therefore, we conclude that China's macro-tax burden is inconsistent with GDP growth.

#### **FACTORS THAT INFLUENCE THE GROWTH OF TAX REVENUE IN CHINA**

The Chinese economy is in transition from a command economy to a market economy with acceleration of privatization and a continuous adjustment and modification of the industrial structure. However, the Chinese economy has not yet reached the stage of a full-fledged market economy (Buitelaar, 2006). Quite a lot of transition factors affect the Chinese economy. In this section, we analyze the factors that influence the growth of tax revenues and the macro-tax burden.

#### **The Chinese Calculation Method Underestimated GDP as the Economy Developed**

Official GDP has been lower than actual GDP since 1990, when the Chinese economy began the transition to a market economy. The official calculation method includes only traditional industries and does not capture some of the emerging industries such as high-tech and tourism, while there is no standardized calculation method for the private sector. Comprehensive and reliable statistics are lacking. A calculation system for emerging industries including stock and future transactions, advertising, information services, law services, accounting services, real estate, etc. has not yet been established. Some industries - especially in the tertiary sector - are still excluded from the official GDP. As a result, the official tax burden (tax revenues relative to GDP) exceeded the actual burden in the past decade. This might lead to biased results of research testing the relationship between tax revenues and GDP.

Recently, an economic census was carried out in China that aimed at obtaining more realistic economic statistics. The results suggest that GDP in 2004 was 16 trillion yuan, which is 2.3 trillion or 16.8% higher than the originally published GDP. The tertiary sector accounts for 2.1 trillion or 93% of the difference. The primary sector's share in GDP decreased to 13.1% of GDP from 15.2%. The secondary sector's share in GDP declined to 46.2%, down from 52.9%. The tertiary sector's share in GDP, however, increased to 40.7%, up from 31.9%. Currently, the National Bureau of Statistics of China is adjusting the historical data from 1993 on the basis of the results of the 2004 economic census. For the time being, however, GDP is still underestimated as the Chinese economy is still in transition and the GDP calculation system for the private sector has not yet been improved.

### **Adjustment and Improvement of the Economic Structure Increased the Growth of Tax Revenues**

GDP growth is the sum of the growth of the primary, secondary and tertiary sectors. In the past 10 years, the secondary and tertiary sectors showed high growth rates. Thus, tax revenues in China mainly increased as a result of the growth of these two sectors. The primary sector grew at an average annual rate of 3.1%, whereas the secondary sector grew at an average annual rate of 9.0% and the tertiary sector at a rate of 9.6%. As a result, the structure of the economy has changed. The primary sector's share in GDP was down to 13.1% in 2004 from 20.4% in 1996. The secondary sector's share was down to 46.2% in 2004 from 49.5% in 1996. The tertiary sector's share, however, was up to 40.7% in 2004 from 30.1% in 1996. The improvement of the economic structure has contributed to the fact that tax revenues grew faster than GDP.

### **Tax Policy Changes and a More Effective Tax Administration Promoted Tax Revenue Growth**

In recent years, the Chinese tax policy was constantly readjusted and modified in order to meet the needs of a market economy. Examples include tax policies in favor of foreign capital and/or emerging industries; expansion and reform of the personal income tax and the vehicle purchase tax; and the adjustment of VAT and other tax refunds for exported goods. Policy changes and adjustments have a substantial impact on tax revenue growth (Jin, 2002). The average annual growth rates of VAT (20.2%), corporate income tax (27.2%), foreign enterprise income tax (34.8%), personal income tax (34.3%), land tax (65.2%) and vehicle purchase tax (42.4%) are higher than that of overall tax receipts (19.3%).<sup>3</sup> All taxes mentioned above have been severely influenced by tax policy changes.

In recent years, reinforcement of the tax administration also promoted a rapid growth of tax revenues. Tax evasion, fraud and resistance have been severely cracked down with intensified efforts. In addition, efforts have been made to reduce the loss of tax revenues by enhancing tax source control, examinations of incomplete tax returns, and rectifications of tax debts and tax extensions. For example, a crack down on smuggling in 1999 led to an increase of 80 billion yuan in tariffs, which is equivalent to more than half of the value added tax revenue (Cai, 2002). Moreover, promotion and application of IT and systematic tax management such as the "Golden Tax Project" have improved the quality of the tax administration in general and of the VAT administration in particular. For example, in 2004, amendment and rectification of VAT tax liabilities amounted to 70 billion yuan, equivalent to more than 12.3% of the growth of tax revenues. (An, 2005).

However, there is still a long way to go before the Chinese economy will have completed the transition to a market economy. It seems reasonable to expect that these factors will continue to exist in the near future and that the growth of tax revenues will continue to exceed the growth of GDP while the Chinese economy further develops.

#### **MEASURING THE FACTORS AFFECTING THE GROWTH OF TAX REVENUES**

According to our analysis, factors influencing the increase of the Chinese tax burden include the biased GDP calculation method, structural adjustment, tax policy changes and reinforcement of the tax administration. We measure these factors as follows. To evaluate the difference between the calculated and the actual value of GDP, we use the data published in the 2004 economic census as a benchmark. Using trend deviation we have adjust the GDP data of the past decade to obtain data that seem more realistic (see Table 4).

To evaluate the impact of other factors than economic growth (including changes of the economic structure, tax policy changes and reinforcement of the tax administration) we have calculated the GDP contributions and tax burdens by sector for the period 1995-2004. Table 5 shows the results.

**TABLE 4**  
**China's Adjusted GDP (in billions yuan) and GDP Growth Rates, 1995-2004**

Year	GDP (current prices)	Growth rate (%)
1995	6079.4	25.1
1996	7117.7	17.7
1997	7897.3	10.9
1998	8440.2	6.9
1999	8967.7	6.2
2000	9921.5	10.6
2001	10965.5	10.5
2002	12033.3	9.7
2003	13582.3	12.8
2004	15987.8	17.7

**TABLE 5**  
**Changes (In %) of GDP and Tax Burden by Sector, 1995-2004**

Year	GDP			Tax burden		
	Primary sector	Secondary sector	Tertiary sector	Primary sector	secondary sector	Tertiary sector
1995	19.8	47.2	33.0	2.4	11.2	12.8
1996	19.5	47.5	33.0	2.5	11.6	13.0
1997	18.1	47.5	34.4	2.6	12.0	14.7
1998	17.3	46.2	36.5	2.3	14.2	13.4
1999	16.2	45.8	38.0	2.3	15.1	15.3
2000	14.8	45.9	39.3	2.4	15.6	16.9
2001	14.1	45.2	40.7	2.0	17.4	19.3
2002	13.5	44.8	41.7	2.7	18.6	18.8
2003	12.5	46.0	41.5	3.0	19.3	19.9
2004	13.1	46.2	40.7	2.6	20.2	21.6

Notes: Tariffs and contract-tax are not included.

Sources: National Bureau of Statistics of China (2004), State Administration of Taxation of China (2004).

Structural changes, tax policy changes and reinforcement of the tax administration mainly affect the secondary and in particular the tertiary sector. We denote  $S_t$  as the sum of the tax burden changes of the three sectors, given by:

$$S_t = \sum_{j=1}^3 (R_{j,t} - R_{j,t-1})G_{j,t} \quad (1)$$

Where

$R_{j,t}$  is the tax burden of sector  $j$  in year  $t$ , and

$G_{j,t}$  is the contribution to GDP of sector  $j$  in year  $t$ .

If  $V_t$  denotes the growth of the tax burden by tax burden changes of the different sectors it is given by:

$$V_t = \frac{S_t}{T_t} \quad (2)$$

where

$T_t$  the total tax revenue of year  $t$ .

$V_t$  can be interpreted as the growth of the tax burden due to changes in the structure of the economy, tax policy changes and reinforcement of the tax administration.

As shown in Table 5, we can detail  $V_t$  by the different years. We argue that  $V_t$  is generated by other factors than economic growth. By eliminating the influence of these specific factors and comparing

calculated GDP with actual GDP, we obtain Table 6.

**TABLE 6**  
**Actual Growth Rates of GDP and Tax Revenues**

	2000	2001	2002	2003	2004
Growth rate of tax revenues ( $T_t$ )	17.8	21.6	15.3	13.5	28.5
$V_t$	6.9	12.5	2.7	5.9	6.3
$W_t = T_t - V_t$	10.9	9.1	12.6	7.6	22.2
Adjusted actual growth rate of GDP ( $Y_t^a$ )	10.6	10.5	9.7	12.8	17.7
$Z_t = W_t - Y_t^a$	0.3	-1.4	2.9	-5.2	4.5

$T_t$  is taken from Table 1;  $V_t$  is calculated using equations (1) and (2);  $W_t$  is the (adjusted) tax revenues growth rate, i.e., the growth rate if the economic structure and the tax policy would not have been changed and the tax administration would not have been reinforced;  $Y_t^a$  is taken from Table 4;  $Z_t$  is the difference between the (adjusted) tax revenues growth rate and the (adjusted) actual GDP growth rate and appears to be negative in two years and positive in three years, while its value is relatively small.

### CONCLUSION

The rapid growth of Chinese tax revenues in recent years was affected by various factors unrelated to the transition from a centrally planned economy to a market economy. We have analyzed in particular the biased GDP calculation method, changes of the economic structure, tax policy changes and reinforcement of the tax administration. If we eliminate these factors, the tax revenue growth rates are basically in line with GDP growth rates based on the 2004 economic census. The fact that tax revenue growth rates exceed GDP growth rates seems largely due to these specific factors. Thus, the growth rates of GDP and tax revenues seem by and large consistent.

### ACKNOWLEDGMENT

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### NOTES

1. Some Chinese local governments demand companies to report statistics that are not consistent with reality. The reason is that they want to present a more favorable picture of economic developments in

their jurisdictions to central government than real developments justify.

2. The World Bank (using Gross National Income rather than Gross Domestic Product) considers economies with a GNI per capita of \$825 or less low-income, economies with a GNI per capita of \$826 to \$10,065 middle-income, and economies with a GNI per capita of \$10,066 and above high-income economies. A further division at GNI per capita \$3,255 is made between lower-middle-income and upper-middle-income economies (World Bank 2005, pp. 289-290).
3. Source: China Tax Yearbook 2004.

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