

**An Empirical Study on the Relationship between Fiscal
Autonomy and Economic Growth - The Case of China**

**A Thesis Presented to the Faculty of Architecture and Planning
COLUMBIA UNIVERSITY**

**In Partial Fulfillment
of the Requirements for the Degree
Master of Science in Urban Planning**

by

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May 2017

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Yixiao Fang, “An Empirical Study on the Relationship between Fiscal Autonomy and Economic Growth - The Case of China”. Submitted May, 2017. Advisor: Prof. Weiping Wu.

Abstract

There is a close relationship between the revenue and expenditure assignment system and economic growth. Based on a literature review of the relationship between fiscal autonomy and economic growth, which shows that scholars have not made a consensus conclusion, the paper will introduce the historical process of fiscal decentralization in China since 1978, particularly as related to the establishment of the Tax Sharing System (TSS) in 1994. By studying the dataset of 30 provincial units, I find that the degree of fiscal autonomy remains at a relatively lower level after the TSS reform. There are significant variations in the level of fiscal autonomy across regions and provinces. Through the pooled OLS regression analysis, it is found that a higher level of fiscal autonomy is positively related to economic growth.

Key Words: fiscal autonomy; fiscal decentralization; economic growth; China

Table of Contents

Chapter 1 – Introduction	1
1.1 Background and Significance	1
1.2 Literature Review	3
1.3 Outline of the Study	5
Chapter 2 – History of Fiscal Autonomy in China	6
2.1 Under the Fiscal Contract System, 1979-1993	6
2.2 Under the Tax Sharing System, 1994-present	7
2.3 Revenue Structure at the Subnational Level	9
Chapter 3 - Research Design	11
3.1 Research Questions	11
3.2 Data Collection	11
3.3 Methodology	13
Chapter 4 - Changing Degree of Fiscal Autonomy	15
4.1 Overall Fiscal Status	15
4.2 Changing Degree of Fiscal Autonomy from 1980 to 2015	16
4.3 Fiscal Autonomy Variations among Provincial Units	18
Chapter 5 - Relationship between Fiscal Autonomy and Economic Growth	21
5.1 Analysis on all Provincial Units, 1980-2015	21
5.2 Before/After the TSS Reform in 1994	22
5.3 Across-Region Analysis	23
Chapter 6 – Conclusion	26
6.1 Summary of the Findings	26
6.2 Research Limitations	26
Appendix A – Degree of Fiscal Autonomy in Provincial Units from 1980 to 2015	28

List of Tables

Table 1 Taxes Division between the Central Government and Provincial Governments	8
Table 2 Division of Three Economic Geographic Regions	14
Table 3 Degree of Fiscal Autonomy in Three Regions from 1980 to 2015	20
Table 4 Regression Results for Fiscal Autonomy Indicators. Dependent variable: the real growth rate of provincial GDP (GDP), 1980-2015	21
Table 5 Regression Results for Fiscal Autonomy Indicators. Dependent variable: the real growth rate of provincial GDP (GDP), 1980-1993	23
Table 6 Regression Results for Fiscal Autonomy Indicators in the East Region. Dependent variable: the real growth rate of provincial GDP (GDP), 1980-2015	24

List of Figures

Figure 1 Share of Budgetary Revenue/ Expenditure Relative to GDP at National Level	15
Figure 2 Degree of Fiscal Autonomy in Three Regions from 1980 to 2015	17
Figure 3 Degree of Fiscal Autonomy of 30 Provincial Units in 2015	18

Chapter 1 – Introduction

1.1 Background and Significance

Fiscal decentralization has long been a hot topic. As early as in the 1950s, decentralization became an instrument used by some countries to adjust the government structure; after the 1970s, an increasing number of developed countries began to implement fiscal decentralization, and even in France where there is a strong tradition of centralization, decentralization has also been introduced nationwide since the 1980s. In the mid and late 1980s, decentralization reform was widely conducted in the process of transition from a planned economy to a market economy. Over the past decades, the fiscal decentralization has become a global trend. Throughout the world, decentralization is a common phenomenon in both developed and developing countries (Xu, 2006).

Since the launching of open and reform policy in 1978, China has gradually established the market economy system and experienced rapid development. Many factors have played important roles in the economic growth, including rural reforms based on the household responsibility system agriculture production, modern enterprise management reforms with the introduction of incentives, price reforms, the introduction of advanced management concepts and high technology, and etc (Lin & Liu, 2000). Fiscal system reform also plays an indispensable role in the economic growth.

Fiscal decentralization is an essential element in the financial relationship between the central government and local governments, with a focus on a certain degree of fiscal autonomy. Fiscal decentralization refers to the division of fiscal revenues and fiscal expenditures between the central

and local governments. Higher degree of fiscal autonomy indicates a more decentralized system. In the central government-led financial system, the central government will leave part of the fiscal revenue and financial expenditure rights to local governments, so local governments will have certain degree of autonomous authority, and they can decide their financial strategies according to their own actual situation of the local development (Xu, 2006).

Transferring fiscal power and responsibilities to lower levels of governments is expected to improve the provision of local public goods and public services, thus leading to higher economic efficiency and more sustainable economic growth because lower levels of governments have more information access than the central government regarding local resource allocation and general public needs, so they are able to provide public services to better meet the local needs. In addition, as lower levels of governments are more accessible for local residents, local government officials will have more incentives to develop better financial strategies. However, practical experience has shown such high expectations are not always met. In many cases, fiscal autonomy has resulted in increasing inequality among different local administrative regions (Zhang & Zou, 1998; Lin & Liu, 2000).

At present, the relationship between the level of fiscal decentralization and economic growth has not been agreed upon among scholars. Some scholars find they are positively related, while the others state the relationship is negative. As a key concept in fiscal decentralization, fiscal autonomy can be considered as a main standard to measure the degree of fiscal decentralization (DeMello, 2000). The thesis is to find the change of fiscal autonomy level and its correlation with local economic growth in China, and the final findings will have some implications for China's

future economic reform and fiscal policies. Also, exploring the relationship between fiscal autonomy and economic growth is meaningful in providing China's experience for the world.

1.2 Literature Review

In general, the relationship between fiscal autonomy and economic growth remains open. Oates (1993) thinks that fiscal decentralization tends to play a positive role in economic growth, but the potential function depends on a number of important conditions. Based on a cross-country panel data set of 46 countries from 1970 to 1989, however, Davoodi and Zou (1998) find that the level of fiscal decentralization and economic growth are slightly negative correlated in general. The relationship seems to be negative for developing countries, but not for developed countries. Generally, developed countries are on average more decentralized than developing countries, though a higher level of fiscal autonomy does not always stand for faster economic growth.

Whether fiscal autonomy is positively or negatively related to economic growth in China is an open-to-debate question, as different research's conclusions vary from each other. In conclusion, the relationship cannot be easily regarded as positively or negatively correlated, and it depends on time and regional characteristics significantly.

By studying the data at the provincial level from 1978 to 1992, Zhang and Zou (1998) made an in-depth analysis of the relationship between fiscal decentralization and economic growth in China as well as the distribution of rights between the central and local governments. They conclude that fiscal decentralization and economic growth are negatively correlated. The main reason for this result is that in developing countries, the central government has to make great commitment to a

large number of infrastructure construction, such as ports, railways, highways and so on, while the impact of these infrastructure construction on the local level is lagging behind. Therefore, in the early development stage, fiscal centralization is more beneficial to economic development. Yin (2004) also asserts that fiscal decentralization not only failed to effectively promote economic growth, but also exacerbated the imbalance of regional economic development. He points out the significance of choosing an appropriate level of fiscal autonomy – the optimal level of fiscal autonomy is decided by the share of central/local governments' expenditure on physical and human capital.

However, Ma (1997) reaches the opposite conclusion that fiscal decentralization has been positively contributed to the economic growth. Lin and Liu (2000) confirmed his conclusion based on the provincial panel data from 1970 to 1993. Unlike previous scholars, they measure the degree of fiscal decentralization by a marginal retention rate, which is decided by how large the part of the revenue increase is retained by provincial governments.

Upon these completely different conclusions, some scholars reach a compromised conclusion that the relationship between fiscal autonomy and economic growth cannot be simply described as positive nor negative. According to Zhang and Gong (2005), the Tax Sharing System (TSS) established in 1994 largely changed the relationship between the fiscal decentralization and economic growth based on the panel data from 1986 to 2002. Before 1994, the relationship was significantly negative. Since the implementation of the Tax Sharing System (TSS) reform in 1994, however, the two began to gradually show a positive correlation, especially in the localities with higher per capita GDP.

1.3 Outline of the Study

Based on previous studies, the paper tries to sort out the history of fiscal autonomy since the reform and opening up, then focusing on the changing degree of fiscal autonomy and the empirical study on the relationship between the level of fiscal autonomy and economic growth. The paper is divided into six chapters.

Chapter 1 is an introduction chapter that mainly introduces the background and significance of the study, followed by literature review and the outline of the study. Chapter 2 will introduce the history of fiscal autonomy in China after 1980, which is divided into two stages by the establishment of the Tax Sharing System (TSS) in 1994. Chapter 3 is the research design section, which will include research questions with detailed methodology (conceptual and analytical frameworks) and methods for data collection and analyses. The following chapter 4 will focus on answering the first research question, presenting the changing level of fiscal autonomy in different provinces over these decades. After finding the change of fiscal autonomy level over decades and accompanying economic growth rate, Chapter 5 aims to find if there is a relation between fiscal autonomy and economic growth. This last chapter will mainly summarize the findings from former chapters and end with some limitations of the research.

Chapter 2 – History of Fiscal Autonomy in China

Since the reform and opening policy published in 1978, there are two main fiscal reforms that restructured the revenue and expenditure assignment system between the central government and local governments: the implementation of the Fiscal Contract System in the early 1980s, and the Tax Sharing System reform came out in 1994 (Jing and Zou, 1999).

2.1 Under the Fiscal Contract System, 1979-1993

Before 1978, China implemented the old Centralized Fiscal System where the central government had absolute control over revenue collection and price decision rights for different products. However, as China began to shift from a planned economic system to a market economy system, the old unitary system was no longer the best option. The fiscal reform was driven by three important factors. First, with the rapid development of non-state-owned enterprises, and the worsening situation of inefficient and debt-ridden state-owned enterprises, the central government was facing the heavier national fiscal burden, so other sources of income were needed. Besides, the economic reform had strengthened the power of local governments, which naturally made local governments at all levels desire for the corresponding fiscal rights. Thirdly, it was aimed to encourage the local government to raise fiscal revenue and promote regional economic growth (Guo, 2007).

The Fiscal Contract System was introduced at that time. The main idea of the Fiscal Contract System was that the Ministry of Finance decided what kinds of taxes to be collected, and the revenue would be shared by the central and provincial governments. In other words, it was a relatively decentralized system. The revenue was allocated into three categories: the revenue

belonged to the central government, the revenue belonged to provincial governments, and the part that would be shared between the central government and provincial governments. A portion of the provincial revenue would be remit to the central government, and the percentage was determined by the budgetary number of the provincial government and the total revenue the provincial government generated (Lin & Liu, 2000).

In general, the Fiscal Contract System encouraged provincial governments to focus on economic growth, but it also had some limits. For most of the provinces, they were requested to give the certain portion of their revenue to the central government, regardless of the absolute volume of the revenue. For those places that required funds from the central government to cover their expenditures, they could not only receive the money for the central government, but keep 100 percent of their gross revenue as well. Therefore, the incentives for economic growth and revenue increase would go down, and some provincial governments were likely to hide their revenue in order to pay less or request subsidies from the central government. Therefore, the revenue of the central government decreased quickly, and the fiscal burden became heavier. Also, the lack of regulations and supervision possibly led to corruption and social discontent (Guo, 2007).

2.2 Under the Tax Sharing System, 1994-present

The Tax Sharing System was introduced in 1994 which simplified the Fiscal Contract System, and more taxation categories were added. It divided the taxes into three types – the state-owned taxes, the local-owned taxes, and the state-local sharing taxes. The specific allocation of several main taxes between the central government and provincial governments is shown in **Table 1**. The central government also developed the Transfer Payment System which would allow under-developed

regions and minority regions to borrow money from the central government without any interest, with the aim to narrow the gap between their revenue and expenditure. Moreover, the central government no longer entrusted the local tax authorities to complete the tax collection. Instead, it established its own tax institution, and thus formed the national tax management system with two parallel levels: the central and local tax revenue collection management systems (Guo, 2007).

Table 1 Taxes Division between the Central Government and Provincial Governments

Taxes belong to the Central Government	<ul style="list-style-type: none"> • Consumption Tax • Tariff Tax/ Custom Tax • Central Government Owned Enterprise Income Tax • Business Tax (Bank/Financial Services/Railway)
Taxes belong to Provincial Governments	<ul style="list-style-type: none"> • Individual Income Tax • Business Tax (Non-Bank/Non-Financial Service/Non-Railway) • Local Enterprise Income Tax • Stamp Duty
Shared Taxes	<ul style="list-style-type: none"> • Value Added Tax • Resource Tax • Stock Trading Tax

Source: State Council of the People's Republic of China, 1993

Most importantly, the TSS reform made the taxation responsibilities between the central government and provincial governments clarified, which encourages all levels of governments to promote economic development, strengthen the tax collection management, and etc. With a substantial increase in the national fiscal revenue and the central government's fiscal revenue, the fiscal deficit of the central government was greatly reduced, and the central government's control over the provincial units was strengthened. Besides, the TSS reform further rationalized and standardized the relationship between the government and enterprises at all levels, and protected the legitimate rights and interests of enterprises. Although overall the TSS reform realized its pre-

design purposes, there were still many problems. For example, the reform only focused on the central and provincial levels of governments, leaving the certain degree of fiscal freedom on the lower level, which was to ensure the success of the reform. It can be regarded as a compromise. Also, it gradually led to an increase on local fiscal burdens, and exacerbated the development imbalance among regions (Cui, 2011; Yang, 2014).

2.3 Revenue Structure at the Subnational Level

In China, when talking about the official government revenue, there are three related definitions: budgetary revenue, extra-budgetary revenue and consolidated revenue, which is the sum of the former two.

Public fiscal budgetary revenue refers to the revenue collected by the government with the core of tax revenue. Prior to 2011, it was known as the "General Budgetary Revenue". Public fiscal budgetary revenue is mainly composed of tax revenue and a portion of non-tax revenue:

1. Local Tax Revenue

Tax revenue refers to the fiscal revenue that is charged by the state to taxpayers by means of political power. Tax revenue is mandatory, fixed and unpaid. Generally speaking, tax revenue accounts for a majority proportion of the government revenue, which can be said to be the most important source of national budget funds.

2. Local Non-Tax Revenue

In 2001, the term of the non-tax revenue first appeared in the official documents issued by the State Council, since when the term was used by various studies and literature. The

concept of the non-tax revenue is correspondent to the tax revenue, referring to the fiscal revenue collected through non-tax ways, e.g. fees and the use of funds,.

As for extra-budgetary revenue, it used to be an unneglectable fiscal term before 2011, mainly including the administrative fees, fines, as well as government funds, land transfer income, lottery and so on. Since the extra-budgetary funds management reform in 2011, however, the category of the extra-budgetary revenue was cancelled, and all the revenue was integrated into the budgetary management. The extra-budgetary revenue became a historical statistical index.

At the present, studies on the fiscal revenue generally use the budgetary revenue (Yang, 2014). Though the extra-budgetary revenue used to play a significant role in local level's revenue structure – the ratio of the extra-budgetary revenue to the general budgetary revenue reached 110.5% in 1992, there is no fixed specific definition of it and the categories keep changing (Holzer & Zhang, 2004). In order to guarantee the calculation standard is uniformed as well as the data limitations, the paper will also use the budgetary data.

Chapter 3 - Research Design

3.1 Research Questions

The empirical research aims to find explanations for the following research questions:

1. What is the changing level of fiscal decentralization in China since 1980?
2. How is the level of fiscal decentralization related to local economic growth?

3.2 Data Collection

Data sources include China Statistical Yearbook, China Finance Yearbook and provincial Statistical Yearbooks for various years. All the data sources are official publications in China. The time period of the data selected is from 1980 to 2015. Due to the large number of missing data in Hong Kong/ Macau/ Taiwan areas, the paper will not include them into the discussion. Chongqing was established as a municipality in June 1997. Prior to that, it was under the governance of Sichuan Province, so the relevant economic data was included in Sichuan Province. As the data has been merged which would be difficult to split, and the data for two places after 1997 is more sufficient, the research will merge the data of Chongqing into Sichuan provincial unit to better facilitate the analysis. Therefore, the dataset will include 30 provincial units in total. The specific instructions for variable selection and data processing are as follows:

1. The real growth rate of provincial GDP (GDP): indicating the growth rate of GDP in each region. It will be the dependent variable. GDP (Gross Domestic Product) represents the value of all final goods and services produced in a given region for a given period of time. As the price changes, the data for each calendar year cannot be used directly. In order to ensure the actual value calculation method is inconsistent, the paper will use the Indices of Gross Domestic Product (preceding year = 100).

2. The level of fiscal autonomy (FA): indicating the degree of fiscal autonomy of provincial governments, which is calculated by the ratio of provincial budgetary revenue to provincial expenditure. It is the most indispensable variable of the research. The higher the ratio, the higher the autonomy of the local government (Psycharis et al., 2016).

Apart from the two most important variables, the paper will use a set of control variables to control the influence. The selection of control variables is based on the case study of China done by Zhang and Zou in 1998. The control variables are listed as below:

3. The central tax rate (CTAX) and the provincial taxation rate (PTAX). The tax rates reflect the strength of the government's financial capacity. The central tax rate is the ratio of central budgetary revenue to national GDP, while the provincial tax rate is calculated as the ratio of budgetary tax revenue of each province to provincial GDP.
4. The provincial investment rate (INV): measured by the share of investment in fixed assets in GDP at provincial level. The investment rate is an indispensable variable in the traditional growth estimation specification.
5. The growth rate of the provincial labor force (L). Labor force also cannot be omitted when conducting an economic growth study.
6. The degree of openness of the provincial economy (F): measured by the share of total volume of foreign trade (imports plus exports) in GDP at the provincial level. The general argument for including openness as a determinant of growth suggests that due to external

competition in the world market, more exports lead to a more efficient allocation of resources, while imports are the means to absorb advanced technology from developed economies (Zhang and Zou, 1998).

7. The inflation rate (RPI): measured by the general retail price index at the provincial level as a proxy for the macroeconomic instability on economic growth. Inflation may have a positive impact on growth, as rising inflation causes people to invest more in physical capital and reduce their actual balance (Tobin Portfolio Transfer effect). Meanwhile, however, inflation has also increased the transaction costs of economic activities (consumption and investment) and may lead to the decline of the rate of economic growth (Zhang and Zou, 1998).

3.3 Methodology

Based on the literature review, and the historical introduction of finance reforms in China, the paper will divide the time period into two sample periods by the establishment of Tax Sharing System in 1994: (1) 1980 to 1993, and (2) 1994 to 2015. Also, the paper will follow the tradition of the existing literature to divide China into several regions to conduct the analysis. According to National Bureau of Statistics of China, all the provincial units are divided into four regions: the East Region, the North-East Region, the Central Region and the West region. In order to balance the number of provinces in each region, taking the level of economic and social development into consideration as well, the paper decided to merge the North-East region with the Central region (shown in **Table 1**), to find the trend in fiscal allocations between central and local governments, as well as to examine the relationship between the fiscal autonomy and the economic growth.

Table 2 Division of Three Economic Geographic Regions

East Region (10)	Central Region (9)	West Region (11)
Beijing	Anhui	Gansu
Fujian	Heilongjiang	Guangxi
Guangdong	Henan	Guizhou
Hainan	Hubei	Neimenggu (Inner Mongolia)
Hebei	Hunan	Ningxia
Jiangsu	Jiangxi	Qinghai
Shandong	Jilin	Shaanxi
Shanghai	Liaoning	Sichuan
Tianjin	Shanxi	Tibet
Zhejiang		Xinjiang
		Yunnan

Source: Created by the author

The paper will mainly conduct the research with the pooled OLS regression model. The regression model the paper will use is based on the model of Barro (1990), in the combination of the model conducted by Zhang and Zou in 1998, and the model used by Zhang in 2006. It is shown as below:

$$GDP_{st} = \beta_0 + \beta_1(FA_{st}) + \beta_2(CTAX_t) + \beta_3(PTAX_{st}) + \beta_4(I_{st}) + \beta_5(L_{st}) + \beta_6(F_{st}) + \beta_7(RPI_{st}) + e_{st},$$

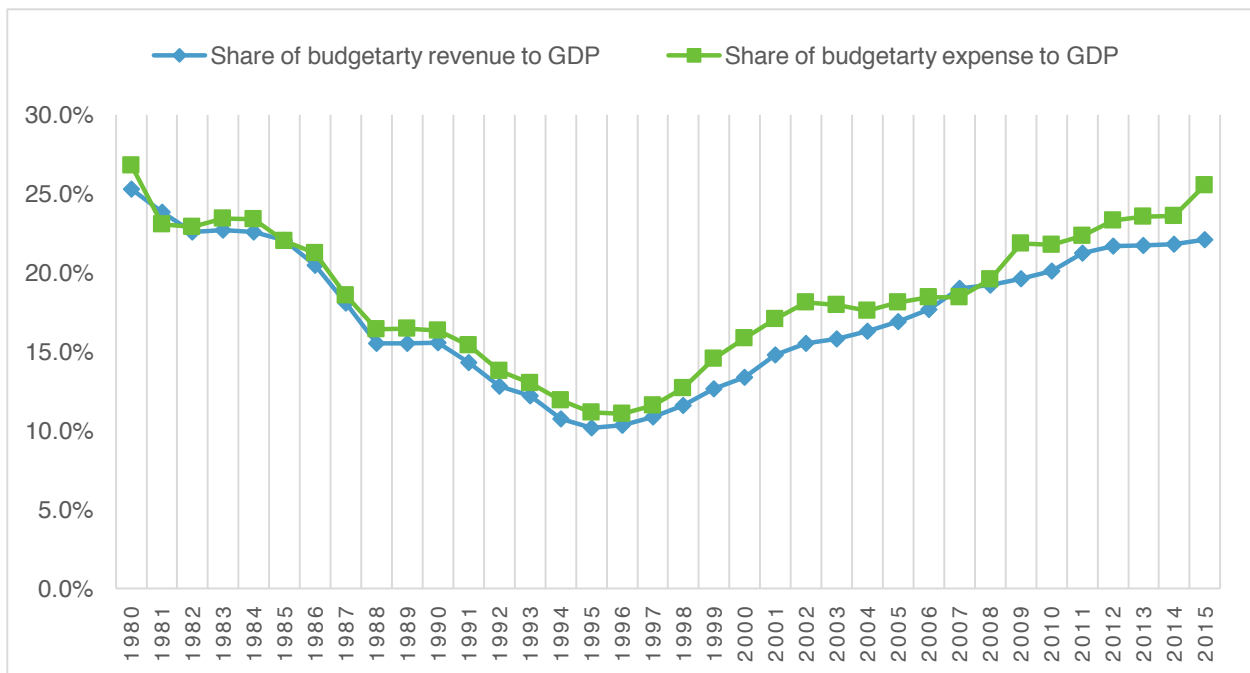
Where s and t indicate province and year, respectively. GDP is the dependent variable, the real growth rate of provincial GDP; FA is the primary concerned variable of the study, the degree of fiscal autonomy; CTAX and PTAX represent the central and provincial tax rates; L is the growth rate of labor force; I, F, R represent the investment rate, the degree of openness, and the inflation rate; g refers to the error term.

Chapter 4 - Changing Degree of Fiscal Autonomy

4.1 Overall Fiscal Status

At the national level, **Figure 1** shows the share of budgetary revenue/ expenditure in GDP. The trends of shares for both revenue and expenditure are similar, accounting for more than 25% in 1980 (right after the implementation of reform and opening policy in 1978), then the shares declined continuously until the year of 1995, except for a slight increase in 1982 and 1988. After 1995, both shares of the budgetary revenue/ expenditure started to recover gradually, reaching a level close to the beginning of the time period in 2015. Overall, shares of the budgetary revenue/ expenditure in national GDP show a U-shape, indicating the budgetary revenue/ expenditure declined greatly during the reform period, especially at the beginning of the reform.

Figure 1 Share of Budgetary Revenue/ Expenditure Relative to GDP at National Level



Data Source: China Finance Yearbook, 1980-2016

4.2 Changing Degree of Fiscal Autonomy from 1980 to 2015

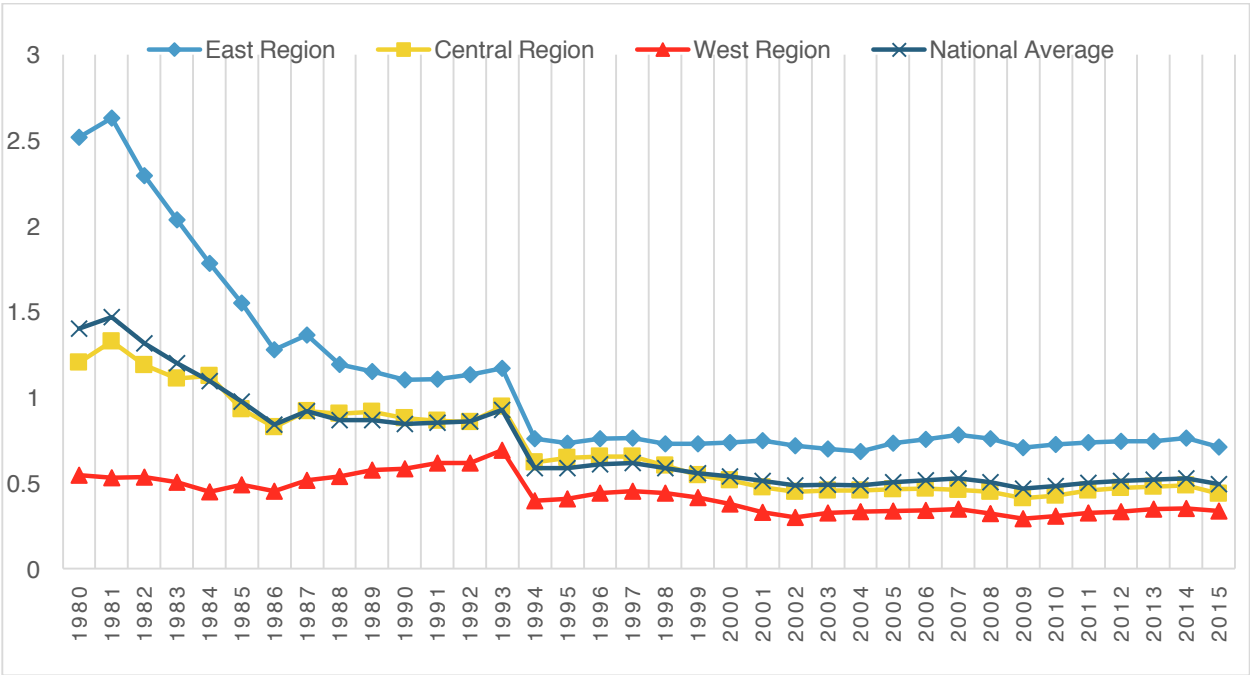
As stated in the previous chapter, this paper will use the ratio of provincial budgetary revenue to provincial budgetary expenditure to indicate the degree of fiscal autonomy of each province. The higher the ratio, the higher degree of fiscal autonomy the provincial unit has. The specific index data for each province in each year is listed as Appendix A. Here the 30 provincial units are divided into three regions as stated above.

Figure 2 presents the different levels of fiscal autonomy in three regions, and the national average level of the period from 1980 to 2015. The trends of the three regions are consistent with the national average level during the time period. In general, the degree of fiscal autonomy remained at a relatively high level before the implementation of Tax Sharing System in 1994. There is a sudden increase from 1986 to 1987, which is consistent with the practice of the Fiscal Contract System at that time. In the year of TSS reform (1994), there is a sharp decline in the fiscal autonomy index, which may due to the result of man-made revenue/ expenditure inaccuracy on the eve of the TSS reform (1993). In order to gain more benefits in the reform, the provincial governments may factitiously change the revenue/ expenditure data, e.g. partly hide the revenue or add the number of expenditure, which led to the abnormal indicators of fiscal autonomy (Guo, 2007).

During the following three to four years, the level of fiscal autonomy kept increasing slightly and steadily. After the year of 1998, however, the fiscal autonomy index began to go down until 2002, followed by a rise from 2002 to 2007. Then there is a decline happened in 2008, lasting for three to four years, and recovered gradually. The declines in 1998 and 2008 may be the results of the

Asian Financial Crisis in 1997 and the Global Financial Crisis in 2008. During the financial crisis when China's economy was under the pressure, the central government tended to put forward a proactive fiscal policy and the central government played a major role in the process, leading to the decrease in the level of fiscal autonomy. With the gradual economic recovery, the degree of fiscal autonomy increased as well. Overall, the degree of fiscal autonomy remains at a relatively low level after the TSS reform in 1994 as the TSS reform actually re-centralized the revenue collection.

Figure 2 Degree of Fiscal Autonomy in Three Regions from 1980 to 2015

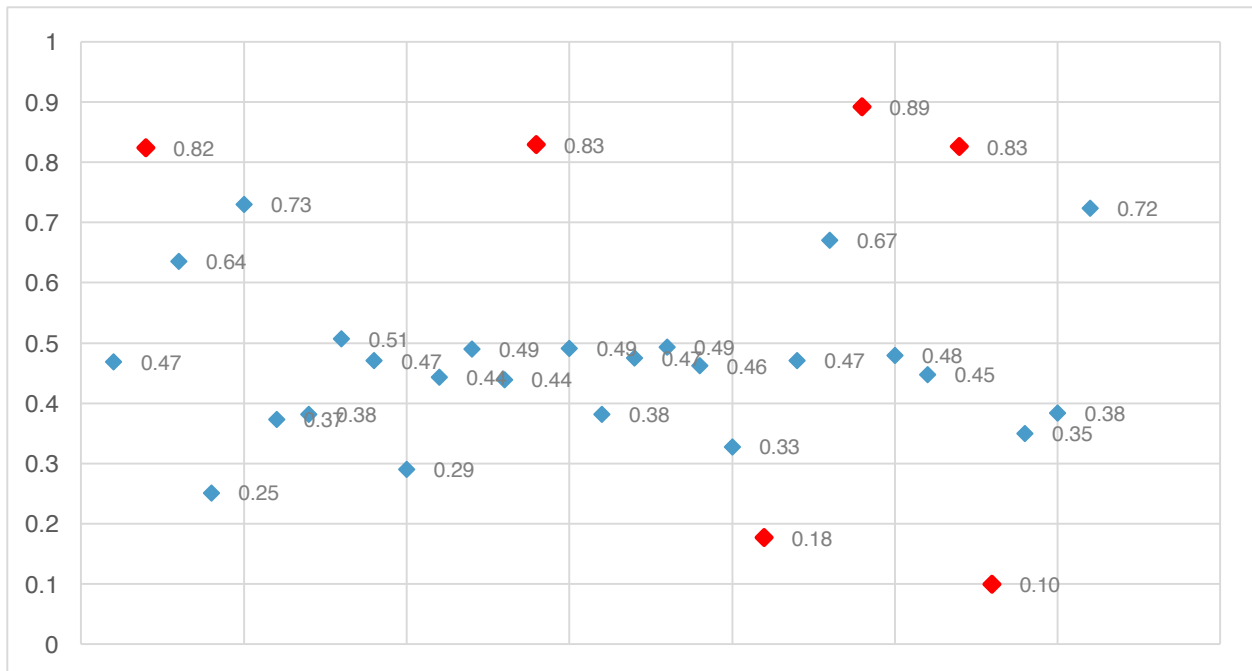


Data Source: China Finance Yearbook, 1980-2016

4.3 Fiscal Autonomy Variations among Provincial Units

There are significant variations in the degree of fiscal autonomy among different provinces. **Figure 3** shows the fiscal autonomy index of all provincial units, and data points are scattered. For example, in the most recent year 2015, the ratio of budgetary revenue to budgetary expenditure in Shanghai (a coastal metropolitan area) was 0.89, ranked the highest one among all the 30 provincial units. Beijing and Tianjin (another two coastal metropolitan areas) have the ratios up to 0.82 and 0.83. The ratio of Jiangsu (a coastal province) is 0.83. Meanwhile, the ratio in Tibet (an inland autonomous region) was as low as 0.10 merely. Qinghai (also an inland province) has the second lowest ratio of 0.18. In other words, the wealthier provinces enjoy higher levels of fiscal autonomy.

Figure 3 Degree of Fiscal Autonomy of 30 Provincial Units in 2015



Data Source: China Finance Yearbook, 2016

The level of fiscal autonomy performs differently among three regions. **Figure 2 and Table 3** both indicate the huge gap, especially between the East Region and the West Region. Provincial units in the East Region have a higher ratio than the national average, the ratio of Central Region is slightly lower than the national average, while the West region holds a ratio apparently below the national average line. In other words, provinces in the east are more fiscal decentralized and realize a higher level of fiscal self-sufficiency; western provincial units enjoy a lower level of fiscal autonomy, relying more on the intergovernmental transfers; provincial units in the Central region behave in the middle of the other two regions.

Table 3 Degree of Fiscal Autonomy in Three Regions from 1980 to 2015

Year	East Region	Central Region	West Region	National Average
1980	2.52	1.20	0.55	1.40
1981	2.63	1.33	0.53	1.47
1982	2.29	1.19	0.53	1.32
1983	2.04	1.11	0.51	1.20
1984	1.78	1.13	0.45	1.10
1985	1.55	0.93	0.49	0.98
1986	1.28	0.83	0.45	0.84
1987	1.36	0.92	0.52	0.92
1988	1.19	0.91	0.54	0.87
1989	1.15	0.92	0.58	0.87
1990	1.10	0.88	0.58	0.85
1991	1.11	0.86	0.62	0.85
1992	1.13	0.86	0.62	0.86
1993	1.17	0.95	0.69	0.93
1994	0.76	0.62	0.40	0.59
1995	0.73	0.65	0.41	0.59
1996	0.76	0.65	0.44	0.61
1997	0.76	0.65	0.45	0.62
1998	0.73	0.60	0.44	0.59
1999	0.73	0.55	0.41	0.56
2000	0.74	0.52	0.38	0.54
2001	0.75	0.48	0.33	0.51
2002	0.72	0.45	0.30	0.49
2003	0.70	0.46	0.33	0.49
2004	0.69	0.46	0.33	0.49
2005	0.73	0.46	0.34	0.51
2006	0.75	0.47	0.34	0.52
2007	0.78	0.46	0.35	0.53
2008	0.76	0.45	0.32	0.51
2009	0.71	0.41	0.29	0.47
2010	0.73	0.43	0.31	0.48
2011	0.74	0.46	0.33	0.50
2012	0.74	0.47	0.33	0.51
2013	0.75	0.48	0.35	0.52
2014	0.76	0.49	0.35	0.53
2015	0.71	0.44	0.34	0.49

Data Source: China Finance Yearbook, 1980-2016

Chapter 5 - Relationship between Fiscal Autonomy and Economic Growth

The chapter will focus on the relationship between the degree of fiscal autonomy and economic growth. The variables selected are stated in the Chapter 3. The analysis will be divided into three steps: 1. general analysis over all provincial units from 1980 to 2015; 2. divide the time period by the establishment of TSS in 1994, and compare the results of two time periods to substantiate if TSS reform played a significant role; 3. divide the provincial units into three regions as stated above, and conduct the cross-region analysis.

5.1 Analysis on all Provincial Units, 1980-2015

First of all, the paper input all the variables to conduct the regression analysis. The real growth rate of GDP in each province is the dependent variable. The result of the regression is shown as below:

Table 4 Regression Results for Fiscal Autonomy Indicators. Dependent variable: the real growth rate of provincial GDP (GDP), 1980-2015

Variable	Coefficient	Standard Error	t	P> t
FA (Fiscal Autonomy)	1.950	0.328	5.95	0.000
CTAX (Central Tax Rate)	Omitted because of collinearity			
PTAX (Provincial Tax Rate)	-32.020	3.775	-8.48	0.000
INV (Fixed Assets Investment)	0.041	0.006	6.69	0.000
L (Labor)	0.055	0.028	1.98	0.048
F (Foreign Trade)	0.020	0.004	5.64	0.000
RPI (Inflation)	0.077	0.019	4.02	0.000
Number of obs = 1080				
F-Stat = 22.04				
Adj R-squared = 0.1048				

After the check of collinearity, the variable of central tax rate (CTAX) should be deleted. Overall, the degree of fiscal autonomy turns to have a positive effect on the provincial GDP growth. The provincial tax has a negative, and relatively significant effect on growth, so the higher the provincial tax rate, the worse the impacts on economic growth. Investment in fixed assets, labor force, foreign trade (exports and imports) and inflation rate all perform positive but slight impacts on growth.

5.2 Before/After the TSS Reform in 1994

Since the TSS reform in 1994 played a significant role in the historical development of fiscal autonomy, the **Table 5-a** and **Table 5-b** show the impacts of the indicators on fiscal autonomy before and after the reform. It is shown that before TSS reform, the fiscal autonomy has a higher level of positive impact on economic growth, which is statistically significant, while the relationship between the degree of fiscal autonomy and economic growth is not statistically significant after the reform.

It is understandable that the inflation rate did not have a statistically significant relationship with the economic growth before 1994, as market did not play an important role in China then. After the reform, the inflation started to play a positive role in economic growth. Taxes were not conducive to economic growth, which is consistent with the Table 4. Fixed assets investment and foreign trade both are positively related to the economic growth though the impacts are relatively slight. The labor force tends to be positively related to the economic growth, but it is not statistically significant.

Table 5-a Regression Results for Fiscal Autonomy Indicators. Dependent variable: the real growth rate of provincial GDP (GDP), 1980-1993

Variable	Coefficient	Standard Error	t	P> t
FA (Fiscal Autonomy)	2.054	0.559	3.67	0.000
CTAX (Central Tax Rate)	Omitted because of collinearity			
PTAX (Provincial Tax Rate)	-33.395	7.173	-4.66	0.000
INV (Fixed Assets Investment)	0.116	0.034	3.37	0.001
L (Labor)	0.297	0.143	2.08	0.038
F (Foreign Trade)	0.057	0.015	3.69	0.000
RPI (Inflation)	-0.017	0.044	-0.38	0.701
Number of obs = 420				
F-Stat = 8.90				
Adj R-squared = 0.1016				

Table 5-b Regression Results for Fiscal Autonomy Indicators. Dependent variable: the real growth rate of provincial GDP (GDP), 1994-2015

Variable	Coefficient	Standard Error	t	P> t
FA (Fiscal Autonomy)	0.023	0.661	0.03	0.973
CTAX (Central Tax Rate)	Omitted because of collinearity			
PTAX (Provincial Tax Rate)	-31.030	4.400	-7.05	0.000
INV (Fixed Assets Investment)	0.032	0.006	5.42	0.000
L (Labor)	0.040	0.018	2.18	0.030
F (Foreign Trade)	0.021	0.003	6.20	0.000
RPI (Inflation)	0.115	0.017	6.86	0.000
Number of obs = 660				
F-Stat = 21.89				
Adj R-squared = 0.1598				

5.3 Across-Region Analysis

The positive relationship between the level of fiscal autonomy and economic growth is substantiated when conducting regression analysis across three regions. Since the numbers of

observations for each region are sufficient, the paper conducted the analysis within each region, instead of importing dummy variables.

As the **Table 6-a** shows, the fiscal autonomy is positively related to the economic growth, which is statistically significant. Therefore, provinces with higher level of autonomy enjoy higher growth rates. In the east region, taxes play a significantly negative role, while the foreign trade and inflation both are positively related to the economic growth. The variables better explain the economic growth than the other regions.

Table 6-a Regression Results for Fiscal Autonomy Indicators in the East Region. Dependent variable: the real growth rate of provincial GDP (GDP), 1980-2015

Variable	Coefficient	Standard Error	t	P> t
FA (Fiscal Autonomy)	1.731	0.448	3.86	0.000
CTAX (Central Tax Rate)	Omitted because of collinearity			
PTAX (Provincial Tax Rate)	-33.906	5.408	-6.27	0.000
INV (Fixed Assets Investment)	0.012	0.015	0.78	0.435
L (Labor)	0.089	0.041	2.18	0.030
F (Foreign Trade)	0.018	0.005	3.40	0.001
RPI (Inflation)	0.143	0.033	4.41	0.000
Number of obs = 360				
F-Stat = 12.30				
Adj R-squared = 0.1589				

In the central region, the degree of fiscal autonomy has a more significant positively impact on the growth compared with the east region. The negative influence of taxes is extremely severe. Fixed assets investment also plays a slightly positive role in the growth.

Table 6-b Regression Results for Fiscal Autonomy Indicators in the Central Region.

Dependent variable: the real growth rate of provincial GDP (GDP), 1980-2015

Variable	Coefficient	Standard Error	t	P> t
FA (Fiscal Autonomy)	4.988	1.323	3.77	0.000
CTAX (Central Tax Rate)	Omitted because of collinearity			
PTAX (Provincial Tax Rate)	-65.270	11.434	-5.71	0.000
INV (Fixed Assets Investment)	0.057	0.013	4.35	0.000
L (Labor)	0.089	0.055	1.60	0.111
F (Foreign Trade)	0.009	0.026	0.35	0.723
RPI (Inflation)	0.034	0.034	1.01	0.313
Number of obs = 324				
F-Stat = 8.10				
Adj R-squared = 0.1165				

The model does not work very well in the west region as variables together only explain 4.84% of the economic growth. The relationship between the degree of fiscal autonomy and economic growth is not statistically significant.

Table 6-c Regression Results for Fiscal Autonomy Indicators in the West Region. Dependent

variable: the real growth rate of provincial GDP (GDP), 1980-2015

Variable	Coefficient	Standard Error	t	P> t
FA (Fiscal Autonomy)	1.885	1.579	1.19	0.233
CTAX (Central Tax Rate)	Omitted because of collinearity			
PTAX (Provincial Tax Rate)	-18.893	8.392	-2.25	0.025
INV (Fixed Assets Investment)	0.046	0.011	4.06	0.000
L (Labor)	-0.017	0.054	-0.32	0.748
F (Foreign Trade)	0.005	0.010	0.49	0.621
RPI (Inflation)	0.030	0.034	1.66	0.372
Number of obs = 396				
F-Stat = 4.35				
Adj R-squared = 0.0484				

Chapter 6 – Conclusion

6.1 Summary of the Findings

The paper focuses on the fiscal autonomy in the time period of 1980 to the present in China. The changing degree of fiscal autonomy can be divided into two stages with the establishment of TSS in 1994. The TSS reform in fact re-centralized the revenue collection, so the level of fiscal autonomy keeps in a comparatively lower level after that. Also, provinces tend to have significantly different levels of fiscal autonomy. The east region has the highest level of fiscal autonomy, the central region ranks the second, while the west region relies on the central government most, which is consistent with other scholars' finding that areas with more developed economy is more likely to be fiscal self-sufficient. Overall, the relationship between the degree of fiscal autonomy and provincial economic growth is positive.

6.2 Research Limitations

The research does have some limitations illustrated as below:

1. First, due to the limited data sources, the paper uses the ratio of provincial budgetary revenue to expenditure as the only one index to indicate the degree of fiscal autonomy, which is not necessarily sufficient and reliable. Also, the paper did not take extra-budgetary data into consideration while the extra-budgetary revenue once accounted for a certain portion of the total revenue of provincial governments. If there are several more variables to establish a comprehensive evaluation system, the real degree of fiscal autonomy would be more accurate.

2. Besides, there is a large number of the factors will possibly impact the economic growth while the variables selected in this paper account for a limited part of the economic growth, which will damage the credibility of the research. It would be better if the research can import more related variables, making the research results more reliable.

3. Also, the independent variables selected here are probably endogenous. In other words, the same factors that determine the dependent variable, the growth rate of GDP, also determine the independent variables, e.g. the provincial investment rate, and the degree of openness.

Appendix A – Degree of Fiscal Autonomy in Provincial Units from 1980 to 2015

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Anhui	1.22	1.34	1.30	1.10	1.03	0.89	0.77	0.87	0.91	0.95	0.86	0.59	0.74	1.02	0.59	0.62	0.64	0.66
Beijing	3.45	3.31	2.81	2.03	1.68	1.59	1.36	1.28	1.29	1.19	1.11	1.13	1.12	1.04	1.01	0.75	0.81	0.80
Fujian	1.02	1.02	0.83	0.70	0.82	0.82	0.77	0.83	0.81	0.88	0.83	0.89	0.89	0.97	1.09	1.08	1.07	1.12
Gansu	1.21	1.16	0.97	0.70	0.63	0.68	0.66	0.71	0.69	0.76	0.74	0.74	0.75	0.82	0.40	0.42	0.48	0.46
Guangdong	1.45	1.45	1.32	1.23	1.06	1.08	0.96	1.03	0.93	0.97	0.87	0.97	1.01	1.05	0.72	0.73	0.80	0.80
Guangxi	0.71	0.79	0.75	0.72	0.58	0.68	0.60	0.64	0.64	0.72	0.72	0.78	0.78	0.89	0.50	0.57	0.58	0.58
Guizhou	0.53	0.48	0.51	0.58	0.53	0.62	0.56	0.68	0.72	0.70	0.74	0.80	0.78	0.84	0.42	0.45	0.50	0.51
Hainan	0.57	0.47	0.49	0.51	0.67	0.54	0.39	0.44	0.52	0.45	0.42	0.48	0.59	0.60	0.69	0.67	0.68	0.65
Hebei	1.23	1.46	1.23	1.29	1.09	1.08	0.95	1.08	0.96	0.98	0.93	0.99	1.00	1.01	0.59	0.63	0.65	0.65
Heilongjiang	0.66	0.60	0.62	0.70	0.74	0.84	0.77	0.81	0.85	0.85	0.83	0.86	0.83	0.87	0.59	0.58	0.61	0.64
Henan	1.19	1.32	1.12	1.21	1.07	0.99	0.79	0.97	0.93	0.92	0.93	0.93	0.89	0.94	0.55	0.60	0.63	0.66
Hubei	1.28	1.56	1.43	1.43	1.33	1.15	0.99	1.07	1.01	0.98	0.92	0.96	0.95	1.00	0.56	0.61	0.63	0.63
Hunan	1.26	1.47	1.30	1.16	1.09	0.98	0.88	0.97	0.87	0.93	0.88	0.91	0.94	0.97	0.57	0.62	0.60	0.59
Jiangsu	2.16	2.65	2.70	2.28	1.95	1.76	1.49	1.58	1.45	1.37	1.35	1.12	1.21	1.35	0.68	0.68	0.72	0.72
Jiangxi	0.78	0.94	0.79	0.77	0.68	0.71	0.66	0.75	0.76	0.77	0.80	0.74	0.72	0.80	0.96	0.95	0.94	0.88
Jilin	0.83	0.68	0.69	0.73	0.65	0.63	0.59	0.70	0.71	0.74	0.71	0.79	0.71	0.77	0.49	0.52	0.52	0.49
Liaoning	2.55	2.91	2.47	1.89	2.63	1.50	1.31	1.34	1.22	1.17	1.06	1.07	1.02	1.18	0.69	0.67	0.67	0.67
Neimeng	0.22	0.25	0.26	0.31	0.27	0.39	0.36	0.43	0.47	0.51	0.54	0.59	0.54	0.64	0.39	0.43	0.45	0.51
Ningxia	0.35	0.31	0.27	0.26	0.26	0.30	0.30	0.35	0.34	0.39	0.42	0.42	0.49	0.56	0.37	0.39	0.43	0.42
Qinghai	0.28	0.20	0.21	0.21	0.18	0.24	0.26	0.33	0.36	0.43	0.42	0.48	0.44	0.50	0.28	0.30	0.29	0.30
Shaanxi	0.86	0.82	0.78	0.77	0.67	0.74	0.68	0.75	0.76	0.77	0.76	0.77	0.78	0.83	0.50	0.50	0.56	0.58
Shandong	1.60	2.01	1.67	1.56	1.38	1.32	0.91	0.97	0.88	0.89	0.88	0.97	0.96	1.03	0.62	0.65	0.67	0.72
Shanghai	9.11	9.15	8.12	6.98	5.41	4.00	3.04	3.14	2.45	2.28	2.25	2.04	1.95	1.87	0.89	0.85	0.84	0.82
Shanxi	1.07	1.13	0.97	1.01	0.91	0.70	0.70	0.80	0.90	0.95	0.94	0.92	0.90	0.96	0.60	0.64	0.63	0.65
Sichuan	1.03	1.06	1.12	1.10	0.97	0.80	0.65	0.76	0.79	0.80	0.77	0.81	0.81	0.88	0.55	0.57	0.62	0.63
Tianjin	2.79	2.78	1.81	1.89	2.15	1.79	1.56	1.79	1.28	1.18	1.12	1.22	1.36	1.46	0.69	0.66	0.70	0.73
Tibet	-0.13	-0.13	-0.11	-0.08	-0.11	-0.06	-0.01	0.00	0.00	0.01	0.01	0.02	0.07	0.07	0.20	0.06	0.07	0.08
Xinjiang	0.25	0.11	0.29	0.30	0.31	0.30	0.29	0.34	0.40	0.46	0.45	0.48	0.46	0.56	0.40	0.40	0.42	0.45
Yunnan	0.67	0.81	0.83	0.71	0.64	0.75	0.63	0.70	0.78	0.77	0.85	0.90	0.90	1.02	0.38	0.42	0.48	0.48
Zhejiang	1.80	2.01	1.94	1.90	1.62	1.56	1.35	1.49	1.35	1.31	1.27	1.23	1.24	1.33	0.62	0.65	0.65	0.63
National Average	1.40	1.47	1.32	1.20	1.10	0.98	0.84	0.92	0.87	0.87	0.85	0.85	0.86	0.93	0.59	0.59	0.61	0.62

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Anhui	0.66	0.60	0.55	0.48	0.44	0.44	0.46	0.47	0.46	0.44	0.44	0.40	0.44	0.44	0.45	0.48	0.48	0.47
Beijing	0.82	0.79	0.78	0.81	0.85	0.81	0.83	0.87	0.86	0.90	0.94	0.87	0.87	0.93	0.90	0.88	0.89	0.82
Fujian	0.74	0.75	0.72	0.73	0.69	0.67	0.65	0.73	0.74	0.77	0.73	0.66	0.68	0.68	0.68	0.69	0.71	0.64
Gansu	0.43	0.39	0.33	0.30	0.28	0.29	0.29	0.29	0.27	0.28	0.27	0.23	0.24	0.25	0.25	0.26	0.26	0.25
Guangdong	0.78	0.79	0.84	0.88	0.79	0.78	0.77	0.79	0.85	0.88	0.88	0.84	0.83	0.82	0.84	0.84	0.88	0.73
Guangxi	0.60	0.59	0.57	0.51	0.44	0.46	0.47	0.46	0.47	0.42	0.40	0.38	0.38	0.37	0.39	0.41	0.41	0.37
Guizhou	0.49	0.43	0.42	0.36	0.34	0.37	0.36	0.35	0.37	0.36	0.33	0.30	0.33	0.34	0.37	0.39	0.39	0.38
Hainan	0.61	0.64	0.61	0.55	0.50	0.49	0.45	0.45	0.47	0.44	0.40	0.37	0.47	0.44	0.45	0.48	0.50	0.51
Hebei	0.69	0.64	0.60	0.55	0.52	0.52	0.52	0.53	0.53	0.52	0.50	0.45	0.47	0.49	0.51	0.52	0.52	0.47
Heilongjiang	0.61	0.50	0.49	0.45	0.44	0.44	0.41	0.40	0.40	0.37	0.37	0.34	0.34	0.36	0.37	0.38	0.38	0.29
Henan	0.64	0.58	0.55	0.53	0.47	0.47	0.49	0.48	0.47	0.46	0.44	0.39	0.40	0.41	0.41	0.43	0.45	0.44
Hubei	0.60	0.58	0.58	0.48	0.48	0.48	0.48	0.48	0.45	0.46	0.43	0.39	0.40	0.47	0.48	0.50	0.52	0.49
Hunan	0.57	0.53	0.51	0.48	0.43	0.47	0.45	0.45	0.45	0.45	0.41	0.38	0.40	0.43	0.43	0.43	0.45	0.44
Jiangsu	0.70	0.71	0.76	0.78	0.75	0.76	0.75	0.79	0.82	0.88	0.84	0.80	0.83	0.83	0.83	0.84	0.85	0.83
Jiangxi	0.55	0.51	0.50	0.47	0.41	0.44	0.45	0.45	0.44	0.43	0.40	0.37	0.40	0.42	0.45	0.47	0.48	0.49
Jilin	0.49	0.43	0.40	0.37	0.36	0.38	0.33	0.33	0.34	0.36	0.36	0.33	0.34	0.39	0.42	0.42	0.41	0.38
Liaoning	0.68	0.61	0.57	0.58	0.58	0.57	0.57	0.56	0.57	0.61	0.63	0.59	0.63	0.68	0.68	0.64	0.63	0.47
Neimeng	0.46	0.43	0.38	0.31	0.29	0.31	0.35	0.41	0.42	0.45	0.45	0.44	0.47	0.45	0.45	0.47	0.48	0.46
Ningxia	0.39	0.38	0.34	0.29	0.23	0.28	0.30	0.30	0.32	0.33	0.29	0.26	0.28	0.31	0.31	0.33	0.34	0.33
Qinghai	0.29	0.25	0.24	0.20	0.18	0.20	0.20	0.20	0.20	0.20	0.20	0.18	0.15	0.16	0.16	0.18	0.19	0.18
Shaanxi	0.56	0.52	0.42	0.39	0.37	0.42	0.42	0.43	0.44	0.45	0.41	0.40	0.43	0.51	0.48	0.48	0.48	0.47
Shandong	0.72	0.74	0.76	0.76	0.71	0.71	0.70	0.73	0.74	0.74	0.72	0.67	0.66	0.69	0.69	0.68	0.70	0.67
Shanghai	0.81	0.81	0.80	0.86	0.83	0.81	0.80	0.86	0.88	0.95	0.91	0.85	0.87	0.88	0.89	0.91	0.93	0.89
Shanxi	0.63	0.59	0.51	0.46	0.45	0.45	0.49	0.55	0.64	0.57	0.57	0.52	0.50	0.51	0.55	0.56	0.59	0.48
Sichuan	0.61	0.58	0.52	0.46	0.42	0.46	0.43	0.44	0.45	0.48	0.35	0.33	0.37	0.44	0.44	0.45	0.45	0.45
Tianjin	0.74	0.72	0.71	0.70	0.79	0.66	0.66	0.75	0.77	0.80	0.78	0.73	0.78	0.81	0.82	0.82	0.83	0.83
Tibet	0.08	0.09	0.09	0.06	0.05	0.06	0.07	0.06	0.07	0.07	0.07	0.06	0.07	0.07	0.10	0.09	0.10	0.10
Xinjiang	0.45	0.43	0.41	0.36	0.32	0.35	0.37	0.35	0.32	0.36	0.34	0.29	0.29	0.32	0.33	0.37	0.39	0.35
Yunnan	0.51	0.46	0.44	0.39	0.39	0.39	0.40	0.41	0.43	0.43	0.42	0.36	0.38	0.38	0.37	0.39	0.38	0.38
Zhejiang	0.69	0.71	0.79	0.84	0.76	0.79	0.76	0.84	0.88	0.91	0.88	0.81	0.81	0.82	0.83	0.80	0.80	0.72
National Average	0.59	0.56	0.54	0.51	0.49	0.49	0.49	0.51	0.52	0.53	0.51	0.47	0.48	0.50	0.51	0.52	0.53	0.49

(Continued)

Reference:

Barro, R.J. (1990). *Government spending in a simple model of endogenous growth*. Journal of Political Economy, 98(5), 103-125.

Cui, Y. (2011). *A study on fiscal decentralization and improving the local fiscal system (doctor's dissertation)*. Retrieved from <http://kns.cnki.net/>

Davoodi, H., & Zou, H. (1998). *Fiscal decentralization and economic growth*. Journal of Urban Economics, 1998(43), 244-257.

DeMello, L. (2000). Fiscal decentralization and intergovernmental fiscal relations: a cross-country analysis. World Development, 28(2), 365-380.

Guo, C. (2007). *A study on the relationship of fiscal decentralization and economic growth –based on the data of China (master's thesis)*. Retrieved from <http://kns.cnki.net/>

Holzer, M. & Zhang, M. (2004). *China's fiscal reform: the issue of extra budgeting*. Journal of Public Budgeting, Accounting & Financial Managemeng, 16(1), 19-39.

Huang, J. (2010). *Literature review of the relationship between fiscal decentralization and economic growth*. Industrial Economic Review, 3(2), 114-125.
doi:10.14007/j.cnki.cjpl.2010.02.016

Jing, J., & Zou, H.(1999). *Fiscal decentralization and economic growth*. Mimeo, Washington, D.C.: World Bank.

Lin, S. (2000). *The decline of China's budgetary revenue: reasons and consequences*. Contemporary Economic Policy, 18(4), 477-490.

Lin, Y., & Liu, Z. (2000). *Fiscal decentralization and economic growth in China*. *Economic Development and Cultural Change*, 49(1), 1-21.

Ma, J. (1997). *Fiscal transfer payment from central to the local - an equalization formula and simulation results*. *Economic Research Journal*, 1997(3), 11-20.

Meloche, J.P., Vaillancourt, F., & Yilmaz, S. (2004). *Decentralization or fiscal autonomy ? What does really matter? – Effects on growth and public sector size in European Transition Countries*. World Bank Policy Research Working Paper 3254.

Miao, X., Fu, R., & Wang, T. (2014). *The study of the effect of local fiscal decentralization on county economic growth and its transmission mechanism: evidence from the panel data of 106 counties in Yunnan Province*. *Journal of Finance and Economics*, 40(9), 4-15.
doi:10.16538/j.cnki.jfe.2014.09.004

Ministry of Finance the People's Republic of China. (1980-2016). *China Finance Yearbook*. Beijing, China: China Statistics Press.

National Bureau of Statistics of the People's Republic of China. (1980-2016). *China Statistical Yearbook*. Beijing, China: China Statistics Press.

Oates, W. (1993). *Fiscal decentralization and economic development*. *National Tax Journal*, 46(2), 237-243.

Oates, W. (2011). *Federal federalism*. Northampton, MA, USA: Edward Elgar. Originally published: London, UK: Harcourt Brace Jovanovich, 1972.

Oi, J. (1992). *Fiscal reform and the economic foundations of local state corporatism in China*. *World Politics*, 45(1), 99-126.

Psycharis, Y., Zoi, M. & Iliopoulou, S. (2016). *Decentralization and local government fiscal autonomy : evidence from the Greek municipalities*. *Environment and Planning C: Government and Policy*, 2016(34), 262-280.

Qian, Y. (1999). *The institutional foundations of China's market transition*. Presented at the World Bank's *Annual Conference on Development Economics*, Washington, D.C.

Shen, K., & Fu, W. (2005). *The relationship between China's decentralized system and its regional economic growth*. *Management World*, 2005(1), 31-39.

Wen, J. (2006). *Fiscal decentralization and economic growth in China - based on empirical study with provincial panel data*. *Modern Economic Science*, 28(5), 109-113.

Xie, D., Zou, H., & Davoodi, H. (1999). *Fiscal decentralization and economic growth in the United States*. *Journal of Urban Economics*, 45, 228-239.

Xu, X. (2006). *A research on the relationship of federal decentralization and economic growth on the provincial level in China (master's thesis)*. Retrieved from <http://epub.cnki.net/kns/detail/detail.aspxQueryID=2&CurRec=2&FileName=2006106195.nh&DbName=CMFD0506&DbCode=CMFD&pr=>

Xu, Y., & Qiao, B. (2012). *Measuring degrees of fiscal decentralization: theory and China experience from 1985 to 2007*. *Economic Research Journal*, 10(2012), 4-13.

Yang, J. (2014). *The study on the impact of China's fiscal decentralization system on economic development (doctor's dissertation)*. Retrieved from <http://kns.cnki.net/>

Yang, Z. (2014). *Research on analysis and improvement of local fiscal revenue structure – taking Hainan province as an example (master's thesis)*. Retrieved from <http://kns.cnki.net/>

Yin, D. (2004). *Optimal fiscal decentralization and economic growth*. *World Economy*, 2004(11), 62-71.

Zhang, T. & Zou, H. (1998). *Fiscal decentralization, public spending, and economic growth in China*. *Journal of Public Economics*, 67(1998), 221-240.

Zhang, X. (2006). *Fiscal decentralization and political centralization in China: Implications for growth and inequality*. *Journal of Comparative Economics*, 34(4), 713-726.
doi:10.1016/j.jce.2006.08.006

Zhang, Y., & Gong, L. (2005). *The Tax Sharing System, fiscal decentralization, and economic growth in China*. *China Economic Quarterly*, 05(1), 75-108.