Fiscal Disparity across Chinese Cities

Li Zhang, Fanghua Li, and Xinye Zheng

© 2012 Lincoln Institute of Land Policy

Lincoln Institute of Land Policy
Working Paper

The findings and conclusions of this Working Paper reflect the views of the author(s) and
have not been subject to a detailed review by the staff of the
Lincoln Institute of Land Policy.

Contact the Lincoln Institute with questions or requests for permission
to reprint this paper. help@lincolninst.edu

Lincoln Institute Product Code: WP13LZ1

Abstract

Using county level data from 2006, we in this paper look at the fiscal disparity as measured by the CV in per capita expenditure at city level. We try to discern factors contributing to this measure of fiscal disparity. We find that expenditure disparity exhibits a trend of convergence. We also find that expenditure disparity is determined by revenue disparity, and would be worsening with the disparities in tax rebate and special transfer. Other factors include economic structure as well as extent of fiscal decentralization. Therefore, in order to reduce disparity in expenditure, a comprehensive policy framework is needed.

About the Authors

Li Zhang is an associate professor teaching public finance at the Central University of Finance and Economics. He is also a research fellow at the Peking University-Lincoln Institute Center for Urban Development and Land Policy.

Li Zhang
39 South College Road
Haidian District, Beijing, 100081
Tel: 10-62289236
E-mail: zzhangli99@gmail.com

Xinye Zheng is a professor of economics at Renmin University of China and a research fellow at the Peking University-Lincoln Institute Center for Urban Development and Land Policy

Xinye Zheng
59 Zhongguancun Street
Haidian District, Beijing, 100872
Tel: 10-82500296
E-mail: zhengxinye@ruc.edu.cn

Fanghua Li is a Ph.D. student in the Department of Economics at University of California, Los Angeles.

Fanghua Li
Department of Economics
University of California, Los Angeles
8283 Bunche Hall
Mail Stop: 147703
Los Angeles, CA 90095
E-mail li.fanghua.econ@gmail.com

Table of Contents

Fiscal Disparity across Chinese Cities

1. Introduction

Fiscal disparity among jurisdictions is widely observed in fiscal federalism economies. This phenomenon is highly related to the mismatch between tax base and public service needs. In practice, intergovernmental transfers are intensively used to reduce or mitigate disparities in public expenditures such as education spending across different states, counties or cities. Significant inequalities in different categories of local government spending still exist even huge efforts have been made and fiscal resources have been used (Duncombe and Yinger 1998).

There is an increasingly growing literature trying to understand factors behind the disparity and their implications for policy-making. In an influential paper, Bahl (1994) first discusses the measurement problem of fiscal disparity. He suggests that the disparity is better measured by resource-requirement gap—the gap between own revenue plus transfers and expenditure required to produce a "standard" package of local public services than expenditures, taxes, or aids that are used in most studies. The problem with this resource-requirement gap is that it is not easily measured. Bahl then reviews the evidence on the fiscal disparities among city and suburban governments, and discussed the nexus between the fiscal disparity and spatial mismatch problem. Based on a data set consists of a sample of 35 large metropolitan statistical areas (MSAs) in 1987, Bahl, Martinez-Vasquez, and Sjoquist (1992) study the fiscal disparity between city and suburb, and they found that fiscal disparity as measured by average per capita expenditure between city and suburb was 1.51.

In order to design a new municipal aid formula, Bradbury and Zhao (2009) develop new measures of revenue capacity and environmental costs for Massachusetts cities and towns. On the capacity side, the constraints of a tax limitation are estimated as a function of residents' incomes, while on the cost side, environmental costs are considered, controlling for preferences, efficiency, and non-school local revenue capacity.

Accepting that the revenue and expenditure gap is the measure of fiscal disparity, the next step is to design policies to close the gap and reducing fiscal disparity. Within the contexts of Russian states, Martinez-Vazquez and Timofeev (2008) examine fiscal equalization outcomes for about 2000 Russian local governments to assess and explain the extent of equalization differences between and within regions. They find that when these policies are implemented in a hierarchical fashion through the intermediate level governments—regional governments, the central government's equalization goals might be offset by regional or provincial government policies.

In addition to studies on US and Russia, there are some studies on other fiscal decentralized countries, such as China. One of important facts for Chinese fiscal system is its inequality problem. In addition, people cannot freely migrate from one city to another. The central government in China therefore spends huge fiscal resource in reducing fiscal inequality. The targeting efficiency is still low, however since there is a growing fiscal disparity across Chinese local governments (details will be provided in next section). Researches on fiscal disparity in China are also taking on important roles in the literature. Using country level data over the period of 1994–2000 in China, the start of the most comprehensive tax reform in recent years in China, Tsui (2005) decomposes the fiscal disparities at country level into the impact of the local tax system and the intergovernmental transfer system). Specifically, Tsui finds that taxes linked to non-agricultural sectors, enterprises and personal income taxes, as well as tax rebate contribute to fiscal disparities. Based on these, the author proposes to reform the tax sharing rule and also the intergovernmental transfer system.

Differently from the previous study, Yu and Tsui (2005) try to decompose economic and institutional factors explaining fiscal disparities at sub-provincial level. Using prefecture level cities as well as counties in the second half of the 1990s, Yu and Tsui find that factors driving fiscal disparities in per capita expenditure include, GDP per capita and urban-rural dichotomy, which contribute as high as 60 percent toward total disparities. Other factors include economic structure and population density. This paper also suggest to re-designing the current local tax system.

Zhao (2008) changes the unit of analysis to the thirty-one provincial-level governments. Using fiscal and economic data during the period 1978–2006, Zhao not only traces the evolution of intergovernmental fiscal relations in China during the period, but also analyzes the relative contribution of per capita revenue and per capita transfer in the disparity in per capita expenditure. Evidence shows that during different time period, the role of per capita transfers has been different. Comparison between China and the US is also carried out in order to derive policy insights for China. The author also suggests reforming the revenue, expenditure and also the intergovernmental transfer system.

Approaching the problem from a different angle, Martinez-Vazquez, Qiao and Zhang (2008) try to examine in the process of central government allocating equalization transfers to county governments for the purpose of reducing fiscal disparity, whether or not the provincial government is enhancing the equalization outcomes or the opposite. With county level fiscal data, the empirical results show that, provincial governments with more decentralized expenditure tend to promote the equalization efforts of the center, while provinces with more decentralized revenue tend to hinder the equalization outcomes. Based on this, the paper suggests that in designing equalization policies, it is necessary to consider the role of provincial governments. In order to close fiscal disparities, strengthening transfer systems as well as restructuring fiscal system at provincial level is of equal importance.

The existing studies are useful for us in understanding the factors contributing to fiscal disparity in China. The city government usually is ignored in the existing literature, however. The city government is powerful since it can make important decisions on revenue-sharing rate, size of transfers, and responsibility between city and counties. All these factors are highly related to fiscal disparity within a city.

This study contributes to the literature by taking prefecture level cities as unit of research. In other words, we investigate empirically the determinants of fiscal disparities across different cities. We also contribute to the literature by using different way to measure disparity. Specifically, we use coefficient of variation (CV) to measure the fiscal disparities. To calculate the CVs for prefecture level cities, we use fiscal data for counties within the jurisdiction of the corresponding prefecture level cities.

Using the 2006 data, we find that fiscal disparities as measured by CV in per capita expenditure are determined mainly by city's own revenue, disparity in county revenue, disparity in tax rebate and special transfer, as well as economic structures and extent of fiscal decentralization. Knowing these is important in designing appropriate fiscal policies in reducing fiscal disparities.

The paper is constructed as following. After reviewing some literature on fiscal disparities, we look at the general picture of the evolution of the fiscal disparities in the entire country; simple comparisons between different provinces are also carried out. Then we try to discern factors contributing to the fiscal disparities across different cities. Finally, conclusions are drawn and policy implications are discussed.
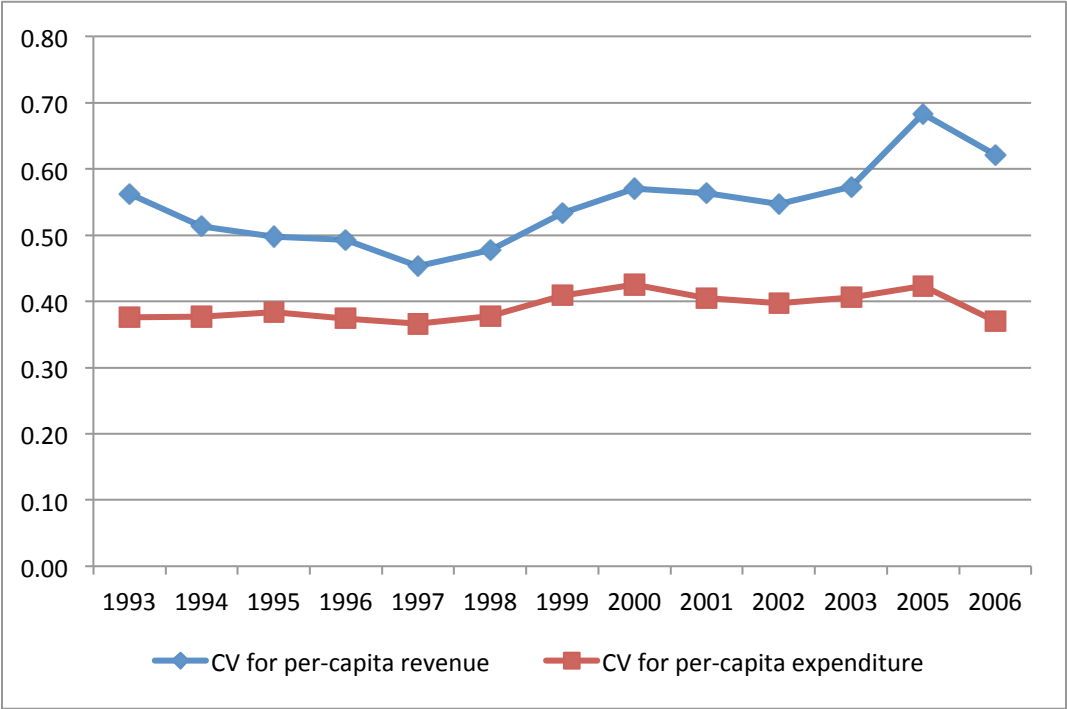

2. Fiscal disparity Across Chinese Cities (1993–2006)

Firstly, we try to look at how the fiscal disparities as measured by average CVs in per capita revenue and expenditure evolve over years. We calculated the relevant CVs in the period 1993–2006. The method we adopt here is to calculate the CVs for each of the prefecture level cities and then obtain the average CV over all prefecture level cities within the country, and repeat this for each year. The following chart (see Chart 1) shows the trends for average CVs in revenue, expenditure, revenue plus transfers, expenditure plus remittance to upper level government, respectively, and all in per capita term.

As we can see from the chart, fiscal disparity as measured by average CV in per capita revenue has always been more severe than all the other three measures. In other words, the disparity in per capita revenue is higher than the disparity in per capita expenditure, the disparity in per capita revenue plus transfers and disparity in per capita expenditure plus remittance. In addition, the average CV for per capita revenue has been increasing over year, especially after 1997. Average CV for per capita revenue increased from 0.563 in 1993 to 0.621 in 2006. It means that

the disparity in per capita revenue has been increasing over the period. At the same time, the disparities in per capita expenditure, per capita revenue plus transfers, per capita expenditure plus remittance have been exhibiting moderate trend of decrease. For example, average CV for per capita expenditure decreased from 0.38 in 1993 to 0.37 in 2006, while average CV for per capita revenue plus transfers decreased from 0.435 in 1993 to 0.38 in 2006, average CV for per capita expenditure plus remittance decreased from 0.405 in 1993 to 0.375 in 2006. As a result, the difference between per capita revenue and all other three measures has been enlarging. It seems that the fiscal disparity across cities in china has been increasing over years, if we measure disparity by per capita revenue. However, evidence shows that transfers from higher level governments could mitigate the regional disparity to some extent, as average CV for per capita expenditure has been relatively lower than average CV for per capita revenue.

**Chart 1: Trend of Fiscal Disparity over Year (1993–2006)**

In order to get a closer look at the fiscal disparity across cities in different provinces in China, we take 2006 data and calculate the average CVs for per capita revenue and expenditure for each province.[1] As it shows in the following Chart 2, when we compare average CVs in per capita revenue as well as in per capita expenditure for different provinces, the variation is dramatic. Jiangxi has the lowest disparity as measured by average CV in per capita revenue, with average CV of 0.38; while Hebei has the highest disparity for the same measure, which was as high as

---

[1] Here we take average CVs over all of the prefecture level cities within each province, while in the precious chart, we average over all cities within the entire country, including all the provinces.

1.22. If we change the measure to average CV in per capita expenditure, then the province with the lowest disparity is Anhui, with average CV of 0.2. Hebei remains to be the province with highest disparity even when we change to measure disparity by average CV in per capita expenditure, and the measurement was 0.76.

Another phenomenon can be observed in the chart obviously is that the fiscal disparity as measured by per capita expenditure has always been better than if measured by per capita revenue, as depicted in the chart by the red bars (CV in per capita expenditure) have always been lower than the blue bars (CV in per capita revenue). This is the similar trend that we have observed in the previous chart for the situation in the entire country. It provides further evidence that regional policies aimed at reducing fiscal disparities across counties, i.e. transfers from upper level government, could be effective.

Chart 2: Comparison of CVs in Per Capita Revenue and Expenditure in Different Provinces in 2006
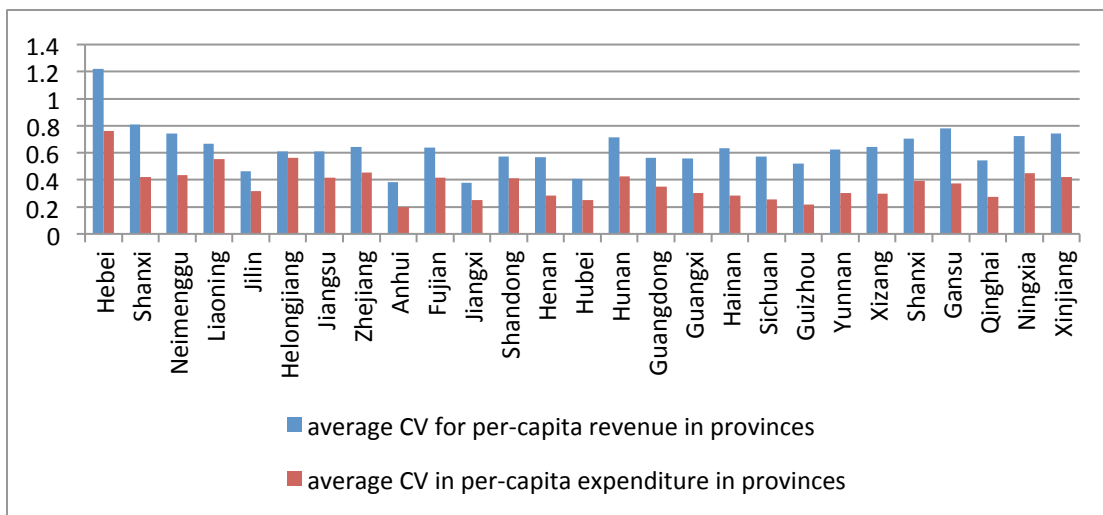

However, the improvement in fiscal disparity, or the change of CV in per capita revenue to lower level of CV in per capita expenditure for the same cities, varies across different localities. If we try to measure this improvement by the difference of CV in per capita revenue and expenditure (CV in per capita revenue – CV in per capita expenditure), then we can conclude that Guizhou has the biggest improvement, with CV in per capita revenue of 0.52, while CV in per capita expenditure of only 0.22. Heilongjiang has the smallest improvement, with CV in per capita revenue of 0.61, while CV in per capita expenditure of 0.56.

We also plot the scattered plot between average CV in per capita expenditure over all cities within the province and level of per capita expenditure in the corresponding province in Chart 3. The plot shows that the relationship between these two variables exhibits an inverted U shape: at

lower level of expenditure, fiscal disparity as measured by CV in per capita expenditure tend to increase, while at higher level of expenditure, fiscal disparity tend to decrease. This is an important relationship that we are going to verify, among others, in our empirical part below.

Chart 3: Scattered Plots for Average CV in Per Capita Expenditure and the Levels
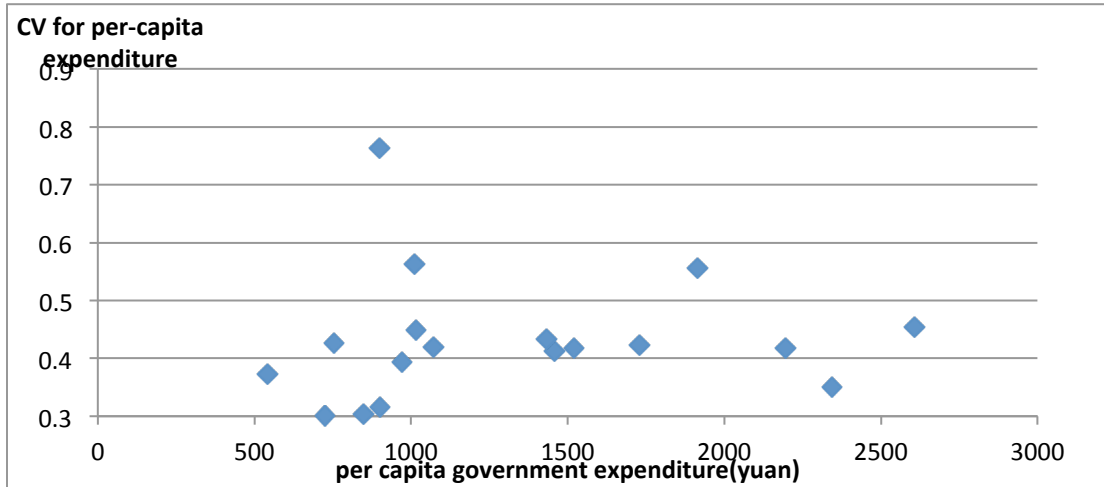
3. Factors Affecting Fiscal Disparities

In order to solve the problem of huge fiscal disparities across different places, it is insufficient simply to gauge the extent of the fiscal disparities within the country as well as across different regions. It is necessary to discover the factors having impact on the fiscal disparities. Fiscal disparities can be measured in both revenue and expenditure. Revenue levels are mainly determined by local tax capacities, which are further dominated by local economic condition, resource endowments and other local characteristics. Therefore, disparity in revenue is pretty much predetermined. On the other hand, expenditure can be affected by various factors; the disparity in revenue levels is among them. In addition, the expenditures at county level are vital in determining the quality of life for local residents since counties are main providers of significant public goods and services, including health and education. Dramatic fiscal disparities in per capita expenditure would hinder the service provision of local governments, and sometimes even result in under-provision of important public services. Therefore, we take fiscal disparity in per capita expenditure as the focus of our current study. Our dependent variable is EXPCV, or the fiscal disparity at prefecture level as measured by CV in per capita expenditure.

As we mentioned previously, fiscal disparity in per capita expenditure can be affected by a lot of different factors. One of them would be per capita revenue. As we conjectured earlier, at different level of revenue, fiscal disparity can be different. At lower level of revenue, some people or some localities get rich first, and the fiscal disparity tends to enlarge. As revenue

increases, people have the demand as well as the capability to implement policies to reduce disparity. Equity enters the utility function of the residents even the social welfare function, therefore, the demand for equity wound promote policies to reduce the fiscal disparity. Thus, we would anticipate that fiscal disparity would show an inverted U shape with per capita revenue. To see this, we include in our regression per capita revenue, both in level and squares, denoted by REV and REV^2.

Another potentially important factor in affecting expenditure disparity is disparity in per capita revenue. It is intuitive that when revenue level differs, expenditure level would inevitably differ. Therefore, we take fiscal disparity (measured by CV) in per capita revenue as one of our explanatory variables, denoted by REVCV.

Expenditure level can also be influenced by transfers received by each county. We can decompose total transfers into three different components: general purpose transfer, tax rebate and special purpose transfer. Since each different category of transfers are for different purpose and also are received by each county in different amounts, we anticipate that each transfer category has different impact on fiscal disparities. Therefore, we include in our regression disparities in each of the different category of transfers, denoted by RETURNCV (CV in tax rebate), SPECCV (CV in special purpose transfer), and GENERALTRANSCV (CV in general purpose transfer), respectively.

We also anticipate that extent of fiscal decentralization has an impact on disparity in per capita expenditure. Different extent of fiscal decentralization might give local governments different capacities in carrying out their fiscal responsibilities. In addition, fiscal decentralization as measured by revenue or expenditure might have different impact on fiscal disparity. Fiscal decentralization as measured by revenue in the hands of local governments says how much revenue has been allocated to local governments, while fiscal decentralization as measured by expenditure says how much expenditure has been made by local governments. These two measures would have different effects on fiscal disparity; therefore, we include both of these two measures in different models we use, denoted by DE_{REV} and $DE_{EXP.}$ In order to capture the nonlinear relationship between fiscal disparity and decentralization, we also include the square terms of these two variables.

We also control for economic structure as we expect under different economic structures, fiscal disparities tend to vary. We use share of value-added tax in total tax revenue to control for economic structure, as value-added tax is mainly collected from secondary industry and also from part of tertiary industry, and the variation in this share would capture part of the variation in economic structure. we denote this variable by VALUEADD.

Finally, as the main variables we are using in this study all involve CV, or coefficient of variation, we also include the number of counties under the jurisdiction of each prefecture level cities in our regression. The formula for CV is the following:

$$\text{Coefficient of variantion} = \frac{standard\ error}{mean} = \frac{\sqrt{\sum_{i=1}^{n}(y_i - \bar{y})^2 / n}}{\sum_{i=1}^{n} y_i / n}, \bar{y} = mean = \frac{\sum_{i=1}^{n} y_i}{n}$$

Since we calculate our relevant CV by calculate the standard errors and means over the counties within the same city, cities with similar level of revenue or expenditure but different numbers of counties might result in different measures of CVs. In order to taking care of this, we also control for COUNTY, number of counties under each of the cities in our regression.

We obtain our fiscal data as well as demographic data from County and city Fiscal Year Book in 2007, published by Ministry of Finance. The following table shows the summary of statistics used in our regression. As we can see from the statistics, the disparity in revenue is higher than disparity in expenditure. Fiscal decentralization measured by revenue or expenditure are different.

Table 1: Summary of Statistics

Variables		Obs.	Mean	Std. Dev.	Min	Max
REVCV	CV in per capita revenue	277	0.25	0.15	0.05	1.33
EXPCV	CV in per capita expenditure	277	0.16	0.11	0.01	0.65
RETURNCV	CV in per capita rebate	277	0.66	0.35	0.07	2.24
SPECCV	CV in per capita special transfer	276	0.51	0.31	0.04	1.93
GENERALTRANSCV	CV in per capita general transfer	263	0.82	0.49	0.08	3.03
GENERALTRANSCV	Gini in per capita general transfer	315	0.37	0.19	0.04	0.91
DE$_{REV}$	Share of county revenue in prefecture revenue total (%)	281	61.37	17.76	0.00	98.67
DE$_{EXP}$	Share of county expenditure in prefecture total (%)	281	68.19	16.11	0.00	90.12

REV	Per capita revenue (10 thousand/person)	278	0.12	0.22	0.01	2.54
VALUEADD	Share of VAT in total revenue (%)	281	18.35	6.68	2.95	40.63

Source: Fiscal data, population data are from County Fiscal Year Book, 2007 issue.

4. Estimation Equation and Regression Results

We start with verifying the inverted U shape between fiscal disparities in per capita expenditure and revenue level. Then we add in the regression function the disparity in per capita revenue. In order to verify the roles played by different part of transfers, we also include the disparities in tax rebate, special purpose transfer and general purpose transfer. Then the variable we use to control economic structure, i.e. the share of value added tax in total tax revenue is included. Finally, we include the measure of fiscal decentralization, either in revenue or expenditure. The relationship between fiscal disparity and fiscal decentralization might not be linear; therefore, we also include the squares of fiscal decentralization. The following are the regression functions we use. At this stage, we can only combine data for 2006, so we are using cross section regressions. The results of the regressions are included in Table 2 below.

（1）$EXPCV = \alpha_0 + \alpha_1 RV + \alpha_2 REV^2 + \varepsilon_1$

（2）
$$EXPCV = \alpha_0 + \alpha_1 RV + \alpha_2 REV^2 + \alpha_3 REVCV + \alpha_4 RETURNCV + \alpha_5 SPECCV + \alpha_6 GENERALTRANSCV + \varepsilon_2$$

（3）
$$EXPCV = \alpha_0 + \alpha_1 RV + \alpha_2 REV^2 + \alpha_3 REVCV + \alpha_4 RETURNCV + \alpha_5 SPECCV + \alpha_6 GENERALTRANSCV + \alpha_7 VALUEADDRATE + \varepsilon_3$$

（4）
$$EXPCV = \alpha_0 + \alpha_1 RV + \alpha_2 REV^2 + \alpha_3 REVCV + \alpha_4 RETURNCV + \alpha_5 SPECCV + \alpha_6 GENERALTRANSCV + \alpha_7 VALUEADDRATE + \alpha_8 DE_{REV} + \alpha_9 DE_{REV}^2 + \varepsilon_4$$

（5）
$$EXPCV = \alpha_0 + \alpha_1 RV + \alpha_2 REV^2 + \alpha_3 REVCV + \alpha_4 RETURNCV + \alpha_5 SPECCV + \alpha_6 GENERALTRANSCV + \alpha_7 VALUEADDRATE + \alpha_8 DE_{EXP} + \alpha_9 DE_{EXP}^2 + \varepsilon_4$$

Table 2: Regression Results

VARIABLES	(1) EXPCV	(2) EXPCV	(3) EXPCV	(4) EXPCV	(5) EXPCV
REV	0.406***	0.202***	0.219***	0.202***	0.227***
	(0.0825)	(0.0641)	(0.0636)	(0.0663)	(0.0646)
REV2	-0.218***	-0.0980**	-0.108**	-0.0996**	-0.112**
	(0.0628)	(0.0440)	(0.0437)	(0.0442)	(0.0440)
REVCV		0.309***	0.314***	0.304***	0.313***
		(0.0321)	(0.0317)	(0.0317)	(0.0318)
RETURNCV		0.0368**	0.0379**	0.0381**	0.0366**
		(0.0157)	(0.0155)	(0.0154)	(0.0156)
SPECCV		0.137***	0.137***	0.141***	0.140***
		(0.0162)	(0.0160)	(0.0162)	(0.0164)
GENERALTRANSCV		0.0105	0.0101	0.00572	0.0103
		(0.0101)	(0.0100)	(0.0101)	(0.0101)
VALUDADD			-0.00169***	-0.00171***	-0.00166***
			(0.000624)	(0.000619)	(0.000628)
DE_{REV}					0.00149
					(0.00170)
DE_{EXP}				0.00604**	
				(0.00274)	
$DE_{exp}2$				-4.93e-05**	
				(2.10e-05)	
$DE_{REV}2$					-1.21e-05
					(1.39e-05)
Constant	0.124***	-0.0372***	-0.00988	-0.178**	-0.0544
	(0.00958)	(0.0110)	(0.0149)	(0.0891)	(0.0542)
Observations	273	258	258	258	258
R-squared	0.089	0.621	0.632	0.641	0.633

As we can see from Table 2, level of revenue is positively related to CV in per capita expenditure, while the square term of revenue is negatively related to our dependent variable. This provides evidence that per capita revenue exhibit an inverted U shape with CV in per capita expenditure. In other words, at lower level of revenue, fiscal disparity tent to increase, as some people get rich first. When revenue reaches certain level, this relationship reversed, as poor people either obtain help from others or from the government, thus can also improve their

expenditure level, therefore, the disparity in expenditure tend to be reduced. Therefore the disparity in per capita expenditure is convergence in revenue levels. This result is robust as we can see that it holds throughout all of our 5 regressions, and all coefficients are highly significant.

From CV in per capita revenue, we can see that this variable has an important impact on CV in per capita expenditure, as the coefficients on it are positive and significant. It means that disparity in per capita revenue determines to some extent the disparity in per capita expenditure: how much local governments can spend is highly related to how much revenue they have in their discretion, even though transfers from higher level government can help local governments to reach certain level of expenditure even when their revenue levels are very low.

Disparity in per capita expenditure is indeed affected by transfers, as we can see from the disparities in the three transfer categories. And different categories of transfers are having different impacts on disparity in expenditure. More specifically, disparities in tax rebate and special purpose transfer contribute to disparity in per capita expenditure, while disparity in general purpose transfer has no significant effect on the disparity. It is easy to understand if we take the role of different transfers into consideration. Tax rebate is basically giving more transfers to richer counties, and disparity in tax rebate certainly will increase disparity in expenditure. Special purpose transfer is not closely related to the revenue or expenditure levels in different counties and is, by its name, transfers for certain special purpose. However, if certain transfers with special purpose give some counties more money while less money for the others, for example, transfers for wage increase of civil servants, which give more money to rich counties since those counties have more civil servants, then it is no surprise that disparity in special purpose transfer increase disparity in per capita expenditure. As for general purpose transfer, who is mainly for the purpose of helping the poor counties and might contribute in reducing regional disparities, would certainly play no significant role in increasing fiscal disparity.

Our measure of economic structure has negative coefficient with fiscal disparity in per capita expenditure, and the relationship is significant. Remember we measure economic structure with share of value-added tax in total tax revenue, then this relationship means that higher share of value-added tax in total tax tends to reduce disparity in expenditure. One possible explanation is that value-added tax is the most important tax sources in China and is still taking up almost one-third of total tax revenue if taking the country as a whole. At the city level, we can see from the summary of statistics that the mean of VALUEADD is close to 20%, with the maximum of over 40 percent. With more of revenue from value-added tax, local governments can have more resource to spend, thus is good in reducing disparity in expenditure.

As for the measure of fiscal decentralization, the results show that the more spending is decentralized to counties, the higher the disparity. It is intuitive since when more expenditure

responsibilities are left with counties, counties with different resources would spend differently, and the disparity would result. We also see that the square of expenditure decentralization is negative and significant, meaning that expenditure disparity is first increasing with expenditure decentralization, and then turning to decrease as more expenditure is decentralized. It reveals that fiscal disparity has a turning point with expenditure decentralization. However, this relationship is not observed for revenue decentralization, as extent of revenue decentralization and its square are not significant with fiscal disparity.

As for the number of counties within each prefecture level cities, we can see that as number of counties increase, the disparity in expenditure tends to be lower. It shows that compared with cities with very few counties, cities with many counties would be able to reduce disparity more easily. When the number of counties is controlled for, the results we obtained would be relatively free of bias from the number of counties.

5. Conclusions

We use disparity in per capita expenditure as our measure of fiscal disparity, and we look at the factors determining this measure of fiscal disparity. Using county level data from 2006, we calculate the CV in per capita expenditure at city level. We find that expenditure disparity exhibits a trend of convergence, since at lower level of revenue, fiscal disparity tend to increase; while at higher level of revenue, fiscal disparity would decrease. Therefore, there would be a trend of convergence in disparity across cities. We also find that revenue disparity determines expenditure disparity, as higher disparity in revenue would induce higher disparity in expenditure. Expenditure disparity is worsening with the disparities in tax rebate and special transfer. In addition, economic structure has impact on expenditure disparity as well.

And fiscal decentralization has a role to play in affecting expenditure disparity.

Disparity in expenditure is affected by a lot of different factors. Therefore, in order to reduce disparity in expenditure, a comprehensive policy framework in which different factors are attended should be in place. For example, transfer system need to be reformed, in order to mitigate the impacts from tax rebate and special purpose transfer. Also, trying to reduce disparity in revenue, increase the share of value-added tax in total tax revenue, would contribute in reducing fiscal disparity.

References

Bahl, Roy. 1994. Metropolitan Fiscal Disparities, Cityscape: A Journal of Policy Development and Research, Vol. 1, No. 1(August): 293–306.

Bahl, Roy, Jorge Martinez-Vazquez and David Sjoquist. 1992. Central City-Suburban Fiscal Disparity, *Public Finance Review,* Vol. 20 (4): 420–32.

Bradbury, Katharine and Bo Zhao. 2009. Measuring non-school fiscal disparities among municipalities，*National Tax Journal*, Volume 62, Issue 1, (March): 25–56.

Duncombe, W., and J. Yinger 1997. Why is it so hard to help central city schools? Journal of Policy Analysis and Management 16(1): 85–113

Martinez-Vazquez, Jorge and Andrey Timofeev, 2008. Regional-local dimension of Russia's fiscal equalization, Journal of Comparative Economics, 36: 157–176.

Martinez-Vazquez, Jorge, Baoyun Qiao and Li Zhang. 2008. the role of provincial policies in fiscal equalization outcomes in China, The China Review, Vol. 8 (2).

Tsui, Kai-yuen. 2005. Local tax system, Intergovernmental transfers and China's local fiscal disparities, *Journal of Comparative Economic*s 33: 173–196.

Yu, Qing and Kai-yuen Tsui. 2005. Factor decomposition of sub-provincial fiscal disparities in China, *China Economic Review* 16: 403–418.

Zhao, Zhirong. 2009. "Fiscal Decentralization and Provincial-level Fiscal Disparities: A Sino-US Comparative Perspective." *Public Administration Review*, 69s: 567–574.