Local Public Finance in China: Revenues of Local Governments

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Overview

The legislative power of taxation in China is centralized. Fundamentally, the current system does not provide sub-national governments any autonomy on either the definition of tax base or the determination of the tax rate for almost all taxes. Nevertheless, the central government has designed a list of taxes as sub-national taxes, collected by sub-national tax agencies, and which are regarded as sub-national taxes.[1] The only elements of sub-national tax autonomy are the choice of introducing (or not) the banquet tax and slaughter tax, and the selection of tax rates of the urban and township land use tax within maximum and minimum legislated rates. In general, local taxes have narrower tax bases and less stable revenue yields than the central and shared taxes. Revenues from sub-national taxes represent fewer than 40 percent of total sub-national budgetary revenues in recent years.

Shared taxes (between the central and sub-national governments) represent the most significant source of revenues at the sub-national level. Currently, shared taxes include: the business tax, VAT, the corporate income tax, the foreign corporate income tax,[2] the individual income tax, and the stamp tax on security transactions. (See Box 3.1 for a summary of tax bases and rates.) The rest of sub-national budgetary revenues come from transfers (which will be discussed in the next section).

Besides the budgetary revenues, sub-national revenues also include non-tax revenues, such as net profits from SOEs,[3] administrative fees, penalty and confiscatory income, income from usage of sea resources, drilling, and others. The general revenue structure is summarized in table 3.1.

Table 3.1 Revenue Structure between the central and sub-national governments

	Budgetary					Extra-budgetary[4]					Budgetary and Extra budgetary				
	Total	Central	Subn	Central Share	Subn Share	Total	Central	Subn	Central Share	Subn Share	Total	Central	Subn	Central Share	Subn Share
1993	435	96	339	22	78	143	25	119	17	83	578	120	458	21	79
1994	522	291	231	56	44	186	28	158	15	85	708	319	389	45	55
1995	624	326	299	52	48	241	32	209	13	87	865	357	507	41	59
1996	741	366	375	49	51	389	95	295	24	76	1130	461	669	41	59
1997	865	423	442	49	51	283	15	268	5	95	1148	437	711	38	62
1998	988	489	498	50	50	308	16	292	5	95	1296	506	790	39	61
1999	1144	585	559	51	49	339	23	315	7	93	1483	608	875	41	59
2000	1340	699	641	52	48	383	25	358	6	94	1722	724	998	42	58
2001	1639	858	780	52	48	430	35	395	8	92	2069	893	1176	43	57

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[1] This list includes the urban maintenance and construction tax, vehicle purchasing tax, agriculture and animal husbandry tax, tax on special produces, contract tax, housing property tax, educational surcharge, stamp tax, pollution charge, urban and township land use tax, farmland occupation tax, resources tax, land appreciation tax, vehicle and vessel utilization tax, fixed asset investment tax, slaughter tax, banquet tax, and others.

[2] China's corporate tax system treats domestic and foreign investment enterprises separately to attract foreign investment.

[3] These are reported net of the planned subsidies to loss-suffering SOEs.

[4] The menthod of calculation changed beginning in 1996.

| 2002 | 1890 | 1039 | 852 | 55 | 45 | 448 | 44 | 404 | 10 | 90 | 2338 | 1083 | 1255 | 46 | 54 |
| 2003 | 2172 | 1187 | 985 | 55 | 45 | 457 | 38 | 419 | 8 | 92 | 2628 | 1224 | 1404 | 47 | 53 |

Centralized normative taxing powers

The current system of tax assignments and revenue sharing dates from the 1994 TSS reform, which for the first time explicitly defined revenue assignment between the central and sub-national governments. The overall assignments are summarized in Table 3.1.

Table 3.1 Revenue Assignment in China

Category	Tax	Central Revenue	Local Revenue
Central	Customs duties	100	
	Excise Tax	100	
	Profit remittances by centrally owned enterprises and rail transportation, Headquarters for banks and insurance companies	100	
	Export rebates of enterprises engaged in foreign trade	100	
Shared	VAT	100 VAT on import; 75 VAT on domestic	25 VAT on domestic
	Business Tax**	100 Rail transportation, Headquarters for banks and insurance companies	Others
	Stamp tax on security transaction	97	3
	Individual income tax	60	40
	Enterprises income tax	100 Central Owned enterprises; Local banks, foreign bank and other financial corporations; Rail transportation, Headquarters for banks and insurance companies 60 other corporate income tax	40 other corporate income tax
	Resource tax	100 on offshore	Other
	Urban maintenance and construction tax	100 Rail transportation, Headquarters for banks and insurance companies	Other
Local	Urban and township land use tax		100
	Housing property tax		100
	Vehicle and vessel utilization tax		100
	Land appreciation tax		100
	Stamp tax		100
	Agriculture and animal husbandry tax		100
	Tax on special produces		100
	Contract tax		100
	Farmland occupation tax		100
	Gift and bequest tax		100
	Slaughter tax		100
	Fixed asset investment tax		100

Profit remittances by locally owned enterprises	100	
Revenue from the compensation for use of stat-owned land	100	
Other	100	

**: the "business tax" is a tax on gross receipts assigned to local governments, which falls on a number of service sectors excluded from the VAT.
Source: Ministry of Finance

Note that the sharing of the individual income tax and the other corporate income tax was introduced with a 50:50 sharing rate in favor of the central government in 2002. In 2003 the sharing ratio was modified to 60:40 for the central government and there appear to be further plans to increase the centralization of this tax. The central government has announced it is using these additional resources to enlarge the pool of equalization funds for the central and western areas of the country.

It is worth stressing that in the current system the sub-provincial revenue assignments are at the discretion of provincial government. (See Box 3.1 for an example of sub-provincial assignments in the province of Guangxi). The *Suggestions on the Sub-provincial Fiscal Relation* issued by the Ministry of Finance, and then approved by the State Council in December 2002 provided some guidelines for the revenue assignment for the sub-provincial government; however, even the key point stressed in this legal norm is the discretionary role of the provincial government. This arrangement implies the existence of a variety of revenue assignments at the sub-provincial level.

Currently, the general practice in revenue assignments at the sub-provincial level can be summarized as follows:

(1) the revenues from the major or key industries belong to the provincial government; for example, the business tax from the financial sector belongs to the provincial government;

(2) taxes with relatively smaller revenue yields, such as resources tax, urban maintenance and construction tax, and real estate tax belong to the prefecture (city),) and county governments;

(3) revenues from the major shared taxes including the VAT, corporate income tax and individual income tax, business tax and urban land occupation tax are shared by the provincial, prefecture (city), and county governments;

(4) it is still common practice that each level of government retains the entire tax revenues coming from the SOEs it owns.[5]

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[5] In 2002, the MOF started a reform to re-assign revenues from the corporate income tax between the central government and sub-national governments in which the income tax from some central owned enterprises is shared by the central government and the provincial governments where the income originates. However, taxes from the majority of SOEs still go to the level of to which the enterprise belongs.

Box. 3.1 Revenue assignments at the sub-provincial level in Guangxi

The revenue assignment in Guangxi is set in a hierarchical fashion: the provincial government determines the assignments between the provincial and prefecture governments, the prefecture government determines that between the prefecture and county governments, and the county government determines the assignment between the county and township governments.

The revenue assignment between the provincial and prefecture is as follows:
    i.   Shared revenues: resources tax, urban and township land use tax, land appreciation tax, and others, with a provincial share of 40 percent.
    ii.   Provincial revenues: profits from provincial-owned SOEs, business tax from financial and insurance companies.
    iii.   Prefecture revenues: all other taxes that not belong to the central and provincial governments.

The revenue assignment between the prefecture and counties in Nanning (prefecture level city) is as follows:

    i.   Shared revenues: Business tax, VAT, corporate income tax, individual income tax, urban maintenance and construction tax, Housing property tax.
    ii.   Prefecture revenues: Urban and township land use tax, Land appreciation tax, Vehicle and vessel utilization tax, Contract tax, Fixed asset investment tax, and others.
    iii.   County revenues: resources tax, Stamp tax, agriculture and animal husbandry tax, tax on special produces, Slaughter tax

The revenue assignment between the county and townships in Wuming county is defined as: "all revenues that do not belong to higher level governments belong to the county government." The township governments receive some base revenues as determined by the county government, and they are rewarded on the basis of the increased revenues collected by the townships.

Source: Field survey in Guangxi

TSS reform built a clear and relatively stable revenue assignment between the central and provincial governments; more precisely, the central government clarified what were exclusively central level revenues, what taxes would be shared with sub-national governments, and it decentralized some revenue authority to the provincial level government. This arrangement improved the transparency of revenue assignment, and it also helped the predictability of revenue for the government at the provincial level. Meanwhile, the central government has further encouraged the provincial government to continue the decentralization process of revenue assignment to the lower level governments.

This explicit revenue assignment significantly improved the revenue performance of the central government. In fact, the central government's budgetary revenues have continued to increase since the TSS reform. The division of budgetary revenues among the different levels of government from 1994 to 2003 is presented in Table 3.4. Although the composition has fluctuated over the years, the central government has received around 55 percent of all revenues. The recentralization or revenue sharing of the personal income tax in 2002 and 2003, described above, avoided a steadily declining share for the central government. At the sub-national level, a subtle centralization trend can be detected with the provincial level marginally increasing its share at the cost of lower shares for the prefecture and especially the county levels.

Table 3.4 Budgetary revenues among different levels of government: 1994-2003

Year	Central	Provincial	Prefecture	County
1994	55.7	7.6	18.5	18.2
1995	52.2	8.7	20.2	18.9
1996	49.4	10.0	21.3	19.3
1997	48.9	15.4	17.3	18.5
1998	49.5	13.8	17.0	19.7
1999	51.1	10.4	21.2	17.3
2000	52.2	10.7	19.7	17.4
2001	52.4	11.2	18.9	17.6
2002	55.0	11.7	17.1	16.3
2003	54.6	11.4	17.5	16.5

Source: China Statistic Yearbook 2004 and MOF

The structure of tax revenues by type of taxes at different levels of government for 2003 is shown in Table 3.5.The major components of central government and sub-national government revenue structure are significantly different, which is a product of the TSS reform. Note that for 2003, the business tax and revenue shares in the VAT and the corporate income tax are main revenue items for the sub-national governments; other important sources include the individual income tax and the urban construction and maintenance tax.

Table 3.5 Importance of main taxes on total revenue: 2003

Revenue	Central	Provincial	Prefecture	County and under
VAT	45.7	17.6	18.9	18.4
Import Consumption Tax and VAT	23.5			
Corporate income tax	14.7	23.4	9.7	6.6
Consumption Tax	10.0			
Individual Income Tax	7.2	9.2	4.9	4.3
Stamp Tax on Security	1.0	0.2		
Business Tax	0.6	31.4	29.3	24.7
Urban Construction and Maintenance Tax		2.0	8.2	5.4

Agriculture Tax   1.5   6.4   16.0

Source: MOF

Extensive local administrative discretion

Despite the fact that the 1994 TSS reform did not provide any meaningful tax autonomy to sub-national governments, *de facto* sub-national governments have revenue autonomy in some other forms such as collecting profits from SOEs, levying administrative charges, collecting penalty and confiscatory income and user charges for drilling, etc. The central authorities have also accepted the use of extra-budgetary revenues as a way to exert local revenue autonomy. In fact, extra-budgetary revenues are one of the important revenue sources for local government. Currently, extra-budgetary revenues come from revenue of administrative units and institutions, revenue of government funds, self-raised funds by township government, revenues from state-owned enterprises and their administrative department, etc. In 2002, total sub-national extra-budgetary revenues were US$ 41 billions, or about 41percent of all local budgetary revenues (Table 3.6).

Table 3.6 Extra-Budgetary Revenue and Structure (1978-2002)
(in billions of Yuan)

Year	Total	Ratio to Budgetary Revenue	Revenue of administrative units and institutions	Revenue of Government funds	Self-raised funds by township government	Revenue of local government	Revenue of state-owned enterprises and their administrative department	Others
1978	34.711	30.66	6.341	0	0	3.109	25.261	0
1980	55.74	48.05	7.444	0	0	4.085	44.211	0
1985	153.003	76.32	23.322	0	0	4.408	125.273	0
1990	270.864	92.22	57.695	0	0	6.059	207.11	0
1994	186.253	35.69	172.25	0	0	14.003	0	0
1995	240.65	38.55	223.485	0	0	17.165	0	0
1996	389.334	52.56	339.575	0	27.29	22.469	0	0
1997	282.6	32.67	241.432	0	29.578	11.59	0	0
1998	308.229	31.21	198.192	47.841	33.731	0	5.467	22.998
1999	338.517	29.58	235.428	39.651	35.886	0	5.011	22.541
2000	382.643	28.57	265.454	38.351	40.334	0	5.922	32.581
2001	430.00	26.24	309.00	38.00	41.00	0.00	6.00	36.00
2002	447.90	23.69	323.80	37.60	27.20	0.00	7.20	52.10

Source: China Statistic Yearbook 2004

Sub-national governments in China also practice other formal or informal forms of revenue autonomy, which is not captured or going through budgetary or extra-budgetary channels. For example, sub-national governments levy various surcharges with different titles. Because these practices do not have formal established procedures, the actual volume or importance of these revenues is not known.

Sub-national governments also exercised autonomy through their own tax administrations. Taxes in China are enforced and collected by the State Tax Agency at the central level and the provincial tax administration agencies. The 1994 TSS reform established that the State Tax Agency has the responsibilities of collecting all central and shared taxes, while the provincial tax agencies are responsible for collecting all sub-national taxes. We must note that the corporate income tax for the centrally owned enterprises and individual income tax were defined as sub-national taxes at the beginning of the TSS reform, and that correspondingly the responsibility for the collection of these taxes was assigned to the provincial tax administration agencies. This division of responsibilities has been kept untouched (with a few exceptions) with the recent changes in 2002 converting these taxes into shared taxes (as opposed to being 100 percent assigned to sub-national governments).

The separation of tax administrations in the 1994 TSS reform was intended to decrease the influence and impact of local government authorities on the performance of the tax administration in regard to central and shared taxes. At the same time, the intention was to provide some administrative autonomy to sub-national governments as local governments could use some instruments such as tax exemptions to exercise their own revenue autonomy.

Although the unitary tax laws under the control of the central government harmonize China's tax system, in a practical sense actual tax collections are controlled by a tax collection model called the "tax revenue task." It is still the typical practice that at the beginning of a fiscal year the central tax agency, through bargaining and consultation with the provincial tax agencies, assign the total volume of taxes that need to be collected by the provinces as a "revenue task." The provincial authorities follow the same approach, assigning the tax revenue tasks (or the total volume of taxes that need to be collected) by the tax agencies at the prefecture or county levels. In the past, this approach of tax collection encouraged, to some extent, the abuse of the tax laws by the tax agencies. For example, local tax agencies could delay the tax collection to the next fiscal year if the assigned volume of tax revenue for this year had been fulfilled. In fact, delaying tax collection is a very common practice in richer jurisdictions because their wealthier tax bases make it easier to complete the revenue task in advance. On the other hand, the tax agencies of poorer jurisdictions may collect taxes in advance or delay tax refunds in order to complete their tax revenue tasks for the current year. In general, under the "tax revenue task" model, the scheduling of tax collections receives more attention and is more emphasized than the straight enforcement of the tax laws.

The "tax revenue task" can be seen as a practical administration tool but its costs may be outweighing its benefits. The "tax revenue task" model has left more administrative power to tax officials than is desirable; in particular, tax officials are quite free to exploit the benefits of delayed taxation; this in turn, naturally, encourages rent-seeking behavior and potentiall corrupt practices. The system also endangers the consistent application of the tax laws across all jurisdictions in the country, and it encourages informal tax autonomy by providing wide space for the intervention of local government on the determination of effective tax rates. A collection model based on ex-ante forecast without rigid revenue targets can avoid many of the problems listed above.

In practice, other departments of sub-national governments besides the tax agencies may also exercise authority to collect revenues (other than taxes), at the discretion of local authorities. In some extreme cases, government departments may collect revenues at their own discretion, and of course, most of these practices are illegal.

Box 3.2 Wide disparities in tax bases across townships in the country

There are significant disparities in tax revenues across township governments in China. One of the richest townships with 45 thousand people in Zhejiang province collected 47 million Yuan in 2003, while one of the poorest townships in Ningxia province with 12 thousand people only collected 130 thousand Yuan over the same period.

Poor townships usually largely, if not completely, depend on agriculture related taxes; in contrast these types of taxes are almost ignored or have been already abandoned in richer townships.

Township charges include administrative charges such as fees by the land authority, fees for the executive office for enterprises, justice and court fees, and so on; agricultural related charges include the fees charged by agriculture service centers, agriculture economic stations, forestry stations, birth plan stations, agriculture machine services, and agriculture technical services. The key objective of these charges is to finance the salary of employees in these organizations.

Although there is a decreasing trend, relatively heavy revenue collections by townships is a common phenomenon particularly in poorer areas, and it adversely affected the appropriate distribution of tax burdens.

As the budget law rightfully forbade local fiscal deficit in China, local governments, particularly township governments, use a variety of approaches to hide their deficit. These include "empty circulated revenues" which are financed by loans from banks or other sources, or "brought revenues" by which taxpayers from other jurisdictions buy out the tax-paying documents or liabilities (from local taxpayers) at a discount from township governments.

Extracted from *"Trapped Rural Finance-Survey on 20 township governments in 10 Provinces," Shukai Zhao, State Development and Research Center (http://www.drcnet.com.cn/new_product/drcexpert/showdoc.asp?doc_id=198442*

Weak revenue capacity of county and township governments

In general, all tax bases for the county and township governments are weak, particularly for poor jurisdictions, and also differ widely (see Box 3.2). In addition, local taxes have unstable yields with high collection costs (see Box 3.3).

Box 3.3 Bases, rates, and importance of shared taxes, local taxes and charges: 2003

Taxes	Tax base	Tax rate	Share of revenue(%)
Business tax	Services provided	3–20	28
VAT	Added value of production and productive service	0–17	18
Enterprise income tax	Taxable income	33	9
Individual income tax	Taxable income	5–45	6
Foreign enterprise income tax	Taxable income	15–33	3
Stamp tax on security transaction	Transaction value on document	0.003	1
Urban maintenance and construction tax	VAT and business tax	1–7%	5.55
Vehicle purchasing tax	Vehicle purchase cost	0.001	4.82
Agriculture and animal husbandry tax	Agriculture and animal husbandry earnings	Average 15.5%	4.3
Tax on special products	Cost of identified special agriculture products	5–10%	
Contract tax	Contract value	3–5%	3.64
Housing property tax	Assessed value of housing property or rental income	Assessed value of housing property: 1.2%, Rental income: 12%	3.29
Educational surcharge	VAT, business tax, and consumption tax	0.0003	2.34
Stamp tax	Transaction value on documents	0.003–0.05%	2.18
Pollution charge	Pollution	Varies for different types of pollution	0.95
Urban and township land use tax	Occupied urban and town land	0.2–10 yuan per square meter, based on location and rank of the land	0.93
Farmland occupation tax	Occupied farmland	15–150 yuan per acre	0.91
Resources tax	Gas, oil, minerals, salt	0.3–60 yuan per ton	0.85
Land appreciation tax	Increasing value of real estate transaction	30–60%	0.38
Vehicle and vessel use tax	Vehicle or vessel	Vehicles: 2–320 yuan, Vessels: 0.4–5 yuan per ton	0.33
Fixed asset investment tax	Investment amount	0–30%	0.05
Slaughter tax	Cost of slaughter animals for food	0.001	0.02
Banquet tax	Payment for banquet	15–20%	0

Source: Adapted from Qiao and Shah (forthcoming)

Generally, townships are heavily dependent on transfers from the county governments. For example, with 59 employees, Shuang Qiao township in Guangxi province had about 417 thousand Yuan from own revenues in 2004, accounting for 24 percent of total township revenues. All other revenue was from the intergovernmental transfers[6]. Actually, it is quite common, especially in poor areas of the country, to have the county government directly manage the townships' finances; in these cases, the township governments practically become departments of the county government and their budgets just simply show in the fiscal records. County and township governments in poor jurisdictions have also depended heavily on a variety of charges and fees on farmers and agriculture taxes.

The revenue autonomy of county and township governments has been further diminished in recent year due to the recent reforms initiated at the central level with the goal of cutting the tax burden of farmers. These reforms have become generally known as the Tax-for-Fee reform.

The Tax-for-Fee reform and the impact on the delivery of basic social services

The Rural Tax-for- Fee reform was first introduced as a pilot experiment in the eastern area of Anhui province in 1994; two years later, the reform was expanded to 50 selected counties in seven other major agricultural provinces. In 2000, Chinese government extended the experiment to the whole of Anhui province in a bid to standardize the tax burdens on farmers and eliminate the growing administrative and arbitrary fees charged to farmers.[7] In 2002, the Central government broadened the reform further, and the number of provinces under the reform had grown to 20 by the end of the year; thus, around 620 million farmers, or three quarters of the country's total, were benefiting from the reform. The main effect of the reform was to cut the financial burden on farmers by at least 30 percent. The Chinese government also decided in late 2003 to abolish, exempt or lower 15 charges on the country's 900 million farmers in a bid to further reduce their tax burdens. The list of the 15 charges published by the Ministry of Finance and the State Development and Reform Commission included quarantine certificates, licensing fees for using water resources, education fees, land-use rights certificates, and charges for fishing boat inspections.

More recently, China's central government has moved to abandon the agriculture related taxes. In 2004, Jilin and Helongjiang, two main agriculture provinces, started to abolish agriculture taxes, and other 11 provinces including Hebei, Inner Mongolia, Liaoning, Jiangsu, Anhui, Jiangxi, Shanggong, Henan, Hubei, Hunan, Sichuan decreased the agriculture tax rate by 3 percentage points. All other provinces decreased the agriculture tax rate by 1 percentage point. In exchange, the central government filled the corresponding fiscal gap caused by the reform in its entirety for the provinces of Jilin, Helongjiang and Hubei, by 80 percent for all other central and western provinces, and by

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[6] Source: Field investigation in Guangxi
[7] No doubt, the reforms were also motivated by the political need to address the growing unrest in rural across the country. See, for example, Yep (2004).

50 percent for some east coast provinces such as Shangdong.[8] It is expected that all agriculture taxes will have been abolished by the end of 2006.

Although these reforms are significantly decreasing the tax burdens on farmers and thus improving vertical equity in the tax system, the abolition of agriculture taxes quite likely has further weakened the fiscal capacity of a majority of county and township governments, especially in poor areas of the country where these governments usually have been highly dependent on agriculture taxes to finance their budgets.

As we have seen above, county and township governments have very little or no formal tax autonomy. Although it might be a good choice to limit or even eliminate their informal revenue autonomy, there is a need to carefully assess the impact of all recent reforms, including the Rural Tax-for-Fee reform and the elimination of agricultural taxes on the ability of these local governments to deliver the public services for which they are responsible. As we have mentioned above, compensatory transfers (from the central government totally or partially, and/or from provincial governments) have accompanied these revenue measures.

Two important questions need to be asked on the impact of the "tax-for-fee" reform. First, are central compensatory transfers actually reaching the county and township governments, as intended, or are some of these funds being retained by upper-level governments (provinces and prefectures)? What are the consequences of the "tax-for-fee" reform on the actual level of provision of local services?

At present, we do not have the micro level data necessary to examine the issue of potential transfer fund retentions. However, we are able to use county level budget data to examine the second question: what has been the impact of the reform on the delivery of local services, in particular social services in education, health, and social security. In the following paragraphs we make a detour to empirically examine this question.

The data used in our empirical analysis come from a large county level dataset from the Ministry of Finance, which includes most fiscal variables and some social indicators over the years of 1993-2003. More in particular, this data set covers counties, county level cities and districts under prefectures and regions, districts directly under cities for 30 provincial level administrative units. The data set contains over 20,000 observations pertaining to over 2,400 counties or equivalent units observed each year.

In order to proceed with the empirical analysis it was necessary to adjust some of the data. The number of counties, and sometimes their administrative allotment, or even the names of the counties have changed over time.[9] We take those counties with the same name in one province to be the same county, even though they might not stay in the same

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[8] Richer provinces in the east coastal region were supposed to finance the tax cuts themselves.

[9] In some cases, when the prefectures were changed into prefectures level cities, as a lot of perferctures experienced in recent years, the county with the same name as the new cities would change their names to districts with different names. In these cases, which we can usually tell from the data, we take them as the same counties even though the names have been changed.

prefecture. Due to missing values, we typically end up with slightly over 17,000 observations in our general regressions. We also deleted those observations containing suspicious values for some of the variables, either due to the special characteristics of the counties, or simply due to the data entry errors.

Our interest lies in explaining the evolution of expenditures per capita in education, health and social welfare at the county level over the sample period (1993-2003), and in particular, how the introduction of the "tax-for-fee" reform may have affected these expenditures. Since the data set only has separate information for expenditure on education and health in 2003, the panel regressions for the entire sample period requires using as the dependent variable the general expenditure on both education and health. We also separate panel regression for for expenditures per capita on social security.[10]

Besides the two dependent variables of per capita local expenditure on health and education ("phealedu") and per capita local expenditure on social security ("pss"), the two explanatory variables we focus our attention on are: (i) a dummy variable ("dummyreform") which takes value of 1 when a specific region starts the rural reform in that year, 0 otherwise. Because we do not have exact dates for the start of the "tax-for-fee" reform for all counties, we approximate that date by the beginning of the presence of compensatory transfers in the county budget. That is, when the value of transfer for rural reform is greater than zero in certain county region, we take it to mean that the reform started in this county and therefore the dummy takes the value of 1. (ii) an interaction term for the impact of rural reform ("rimpact") constructed by interacting share of rural population in the total population with the reform dummy.

In addition, we also use in the regressions a set of other control variables, which are typically used in local public finance models of expenditure determination. These control variables include: per capita regional GDP, capturing income effects; the share of rural population in total population, capturing the significance of rural sector in one particular county; the share of public and other public service unit employees in total population; the share of expenditure on public administration in total local expenditure—a measure of relative inefficiency; population size, capturing economies of scale in delivering public services; the ratio of total local expenditure over GDP in each locality to control for budget effects; and the ratio of total own revenue over total expenditure also to control for price effects. The definition of all variables, variable labels, and notes on their construction are presented in Table 3.7.

Table 3.7 Explanation of the Variables

Variable label	Definition and Variable Construction	Notes

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[10] To control for the inter-county heterogeneity, we use fixed effects estimation. Hausman tests generally support the use of a fixed-effects regression methodology over the random effects methodology.

phealedu	Per Capita local expenditure on health and education, denoted by local expenditure on health and education/population	
pss	Per Capita local expenditure on social security, denoted by local expenditure on social security/population	
pgdp	Per capita regional GDP	
srpop	Share of rural population in total population, denoted by rural population/population	In percentage
spubem	Share of public and other public service unit employees in total population	In percentage
spubadm	Share of expenditure on public administration in total local expenditure	In percentage
epop	Population	In our dataset, population is only available up to 2001. We are using 2001 population data to denote 2002 and 2003 population.
pexp	Ratio of total local expenditure over GDP in each locality	In percentage
ownrev	Ratio of total own revenue over total expenditure	In percentage
dummyreform	Dummy variable which takes value of 1 when a specific region starts the rural reform in that year, 0 otherwise. When the value of transfer for rural reform is greater than zero in certain region, we take it to mean that the reform started in this region, and therefore the dummy takes the value of 1.	We don't have the complete list of when and where the reform started and extended. We use as a criterion of the presence of transfer for rural reform.[11]

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[11] In Anhui province where the reform began as early as in 1999, there were no such transfers before 2002, when the reform was broadened to many other provinces. We have a list of counties where the experiment was first conducted in 1999, and since it was extended to the whole province in 2000, we let the dummy take the value of 1 for all the counties in Anhui in 2000 and 2001. Although this way of constructing the dummy may not be completely accurate, it is the best we could do with the current information and it should serve our purpose.

| rimpact | Impact of rural reform, constructed by interacting share of rural population in total population with the reform dummy |

The empirical model we estimate is as follows:

$$phealedu_{i,t} = \beta_0 + \beta_1 srpop_{i,t} + \beta_2 spbem_{i,t} + \beta_3 spubadm_{i,t} + \beta_4 epop_{i,t} + \beta_5 pgdp_{i,t} + \beta_6 dummyreform_{i,t}$$
$$+ \beta_7 rimpact_{i,t} + \beta yeardummies + v_i + \varepsilon_{i,t}$$

where the dependent variable represents per capita local expenditure on health and education combined.

The equation for per capita social security expenditures is given by:

$$pss_{i,t} = \gamma_0 + \gamma_1 srpop_{i,t} + \gamma_2 spbem_{i,t} + \gamma_3 spubadm_{i,t} + \gamma_4 epop_{i,t} + \gamma_5 pgdp_{i,t} + \gamma_6 dummyreform_{i,t}$$
$$+ \gamma_7 rimpact_{i,t} + \gamma yeardummies + \omega_i + \varepsilon_{i,t}$$

The results of the regressions for health and education expenditure and social security expenditure are shown in Tables 3.8 and 3.9, respectively. These two tables list the estimation results for different specifications of the regressions introducing different groupings of explanatory variables.

The regression results generally show a negative and statistically significant impact of the rural "tax-for-fee" reform on per capita public expenditure on education and health, as well as on social security services. In all of the regressions listed in the table for health and education, the coefficients on the dummy for reform are all negative and significant at the 1% confidence level. This can be interpreted as saying that expenditures per capita on education and health at the county level were significantly lower in those counties after the "tax-for-fee" reform was started. And the reduction in the average amount of expenditures in the regressions is in some cases close to one half. The results for for social security in Table 3.9 show negative and insignificant or positive and significant coefficients for the reform dummy, but in any case, they are not large. Note that when the dummy variable for the reform is not included, as in regression (4) in both Tables 3.8 and 3.9, the interaction term is negative and statistically significant, indicating that the impact of the reform may have been more pronounced for rural areas. These results should be taken as preliminary and subject to futher analysis and confirmation. However, the results raise the possibility that the delivery of basic services at the lower level of government have been negatively affected as the consequence of the "tax-for-fee" reforms. Several reasons may be behind this icluding that the compensating transfers were not large

enough ot that, if they were, part of those funds never made it down to the lower-level governments after the reform got started.[12] At this point, we have no information to discriminate among these possible explanations.

Table 3.8 Panel Regression for per capita Health& Education Expenditures
(1997-2003)

	(1)	(2)	(3)	(4)	(5)	(6)
	phealedu	phealedu	phealedu	phealedu	phealedu	phealedu
pgdp	0.005	0.005	0.005	0.005	0.005	0.005
	(64.30)***	(63.49)***	(63.27)***	(63.58)***	(63.84)***	(63.84)***
srpop	0.080	0.089	0.091	0.120		0.020
	(1.02)	(1.15)	(1.17)	(1.54)		(0.26)
spubem	8.002	8.111	8.017	8.010	8.174	8.165
	(20.61)***	(21.00)***	(20.75)***	(20.66)***	(21.28)***	(21.17)***
spubadm	1.110	1.092		1.119	1.065	1.065
	(6.39)***	(6.32)***		(6.45)***	(6.17)***	(6.17)***
epop	-0.085	-0.090	-0.094	-0.086	-0.092	-0.091
	(1.90)*	(2.05)**	(2.13)**	(1.95)*	(2.10)**	(2.06)**
pexp	1.494	1.475	1.420	1.501	1.449	1.449
	(20.14)***	(19.99)***	(19.35)***	(20.26)***	(19.64)***	(19.64)***
ownrev	0.929	0.821	0.847	0.891	0.821	0.821
	(15.80)***	(13.89)***	(14.35)***	(15.08)***	(13.92)***	(13.92)***
y97	-131.212	-158.589	5.395	-140.229	-159.379	-159.430
	(71.30)***	(56.72)***	(3.36)***	(58.07)***	(57.18)***	(57.05)***
y98	-135.909	-162.910	0.000	-144.756	-163.786	-163.824
	(71.89)***	(58.03)***	(.)	(59.46)***	(58.44)***	(58.38)***
y99	-122.005	-149.233	13.458	-130.814	-150.330	-150.362
	(70.59)***	(54.96)***	(8.73)***	(56.71)***	(55.40)***	(55.35)***
y00	-110.787	-137.387	25.417	-119.332	-138.576	-138.600
	(66.70)***	(52.13)***	(16.17)***	(53.60)***	(52.57)***	(52.54)***
y01	-83.316	-109.960	52.934	-91.815	-111.287	-111.289
	(54.05)***	(42.86)***	(31.92)***	(43.05)***	(43.32)***	(43.32)***
y02	-54.568	-59.926	103.216	-55.890	-60.910	-60.906
	(37.10)***	(39.42)***	(41.30)***	(37.58)***	(39.95)***	(39.94)***
y03	0.000	0.000	162.887	0.000	0.000	0.000
	(.)	(.)	(57.94)***	(.)	(.)	(.)
dummyreform		-29.688	-29.818		-48.702	-48.611
		(12.95)***	(12.99)***		(13.51)***	(13.42)***
rimpact				-13.412	24.831	24.706
				(5.76)***	(6.84)***	(6.74)***
Constant	77.248	110.063	-35.636	84.978	118.267	116.740

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[12] There is also the possibility that county governments have proceeded to spend theis budgets in a different way after the "tax-for-fee" reforms after the reforms got started. This would be the case if transfer funds are perceived by the local authorities as having a more footloose destination than taxes and fees raised locally. As discussed further below, a suggestive set of results in Tables 3.8 is that counties that raise a larger share of their budgets in own revenues, other things the same, tend to spend more per capita on education and health services.

	(10.46)***	(14.16)***	(4.86)***	(11.33)***	(22.77)***	(14.93)***
Observations	17754	17754	17757	17754	17754	17754
Number of ID	2742	2742	2742	2742	2742	2742
R-squared	0.57	0.58	0.58	0.57	0.58	0.58

Absolute value of t-statistics in parentheses
* Significant at 10%; ** significant at 5%; *** significant at 1%

Table 3.9 Panel regression for per capita expenditure on Social Security (1997-2003)

	(1)	(2)	(3)	(4)	(5)	(6)
	pss	pss	pss	pss	pss	pss
pgdp	0.001	0.001	0.001	0.001	0.001	0.001
	(20.91)***	(20.80)***	(21.01)***	(20.48)***	(20.58)***	(20.52)***
srpop	-0.182	-0.182	-0.184	-0.170		-0.158
	(5.80)***	(5.80)***	(5.82)***	(5.42)***		(5.00)***
spubem	5.203	5.203	5.173	5.196	5.131	5.192
	(24.99)***	(24.99)***	(24.69)***	(24.97)***	(24.70)***	(24.97)***
spubadm	-0.802	-0.802		-0.799	-0.798	-0.797
	(12.46)***	(12.46)***		(12.42)***	(12.40)***	(12.39)***
epop	-0.024	-0.025	-0.022	-0.025	-0.014	-0.024
	(1.69)*	(1.70)*	(1.52)	(1.71)*	(0.97)	(1.67)*
pexp	0.131	0.131	0.171	0.135	0.142	0.141
	(4.56)***	(4.55)***	(5.95)***	(4.69)***	(4.95)***	(4.90)***
ownrev	-0.042	-0.045	-0.067	-0.052	-0.043	-0.044
	(1.93)*	(2.03)**	(3.01)***	(2.35)**	(1.93)*	(1.98)**
y97	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)
y98	-15.820	-16.469	0.000	0.000	-16.327	-16.127
	(24.35)***	(17.16)***	(.)	(.)	(17.00)***	(16.79)***
y99	-11.195	-11.850	4.758	4.629	-11.619	-11.453
	(19.17)***	(12.86)***	(9.32)***	(9.13)***	(12.59)***	(12.41)***
y00	-9.778	-10.419	6.080	6.111	-10.119	-9.997
	(17.66)***	(11.70)***	(11.61)***	(11.75)***	(11.33)***	(11.20)***
y01	-7.403	-8.046	8.375	8.498	-7.550	-7.585
	(14.68)***	(9.33)***	(14.91)***	(15.23)***	(8.73)***	(8.77)***
y02	-0.469	-0.584	15.818	17.367	-0.257	-0.284
	(0.99)	(1.19)	(18.18)***	(22.27)***	(0.52)	(0.58)
y03	0.000	0.000	16.586	18.132	0.000	0.000
	(.)	(.)	(17.17)***	(21.94)***	(.)	(.)
dummyreform		-0.715	-0.757		5.630	5.039
		(0.92)	(0.97)		(4.59)***	(4.09)***
rimpact				-3.497	-8.157	-7.385
				(4.52)***	(6.71)***	(6.03)***
Constant	27.260	28.059	-0.115	11.043	13.807	25.669
	(9.46)***	(9.32)***	(0.04)	(3.63)***	(7.31)***	(8.47)***
Observations	14960	14960	14961	14960	14960	14960
Number of ID	2702	2702	2702	2702	2702	2702
R-squared	0.26	0.26	0.25	0.26	0.26	0.27

Absolute value of t-statistics in parentheses

* Significant at 10%; ** significant at 5%; *** significant at 1%

The estimation results for our other control variables are generally as expected. Common to the two sets of regressions, per capita GDP is always positive and significant. This is intuitive since the higher the income level, the higher the expected expenditure on these social services including education, health and social security. The share of public employees in total population is always positive and significant; this reflects the fact that teachers, doctors and social workers are all counted in the total number of public employees and the wages paid to them are included in the expenditure in respective sectors; therefore the share of public employees and the corresponding expenditure go the same direction as more public employees drive up the expenditure. A higher share of public employees in the population may a sign of relative inefficiencies but it may also reflect different population profiles; for example, populations with a higher relative presence of the young and the old generally will require relatively higher numbers of teachers and health personnel.

The coefficient for population is negative and significant in most of the regressions in both tables, indicating that the delivery of education and health, as well as social security service involves economies of scale. The share of total local expenditure over GDP is also positive and significant in both tables, an indication for the positive budget effect.

For the general expenditure on education and health, own revenue in total expenditure is always positive and significant, showing that those communities raising more of their own money tend to spend more on education and health services. The share of expenditure on public administration in total expenditure exhibits positive and significant effect on general education and health, indicating counties with a bigger public sector also spend more on these social services of education and health.

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