Fiscal Decentralization and Pattern of County Public Expenditures in a Chinese Province[*]

Tao Qian

China Academy of West Region Development, Zhejiang University, Hangzhou, China
E-mail: qiantaochew@zju.edu.cn

and

Qi Zhang[†]

China Center for Economic Studies, School of Economics, Fudan University, Shanghai, China
E-mail: zhangqifd@fudan.edu.cn

Using county-level fiscal data from China's Zhejiang province during 1994-2005, we study how intraprovincial fiscal decentralization impacts county public expenditures, while controlling the fiscal relationship of the central government embodied at the county level. We find greater intraprovincial fiscal decentralization is associated with more fiscal expenditure (growth) on local bureaucracy but less on local public goods, such as education and health care. In addition, the marginal effects of intraprovincial fiscal decentralization vary by county per capita GDP, suggesting that the role of fiscal decentralization depends on a local institutional environment that is tightly linked to the county development level.

Key Words: Intraprovincial Fiscal Decentralization; Pattern of County Public Expenditure; Selectorate.

JEL Classification Numbers: H77, H71, H30, O53.

[†] Corresponding Author.

1. INTRODUCTION

Fiscal decentralization can bring about both costs and benefits. In conventional wisdom, fiscal decentralization has obvious beneficial effects on local governance and development (Zhang and Zhou, 1998; Lin and Liu, 2000; Jin, Qian, and Weingast, 2005), through the channels of the better official using local information to match the citizen's preferences (Hayek, 1948; Oates, 1972; Samuelson, 1954), spurring interjurisdictional competition (Tiebout, 1956), and so on. Many scholars, however, emphasize that decentralization is likely to come with costs, due to regional externalities (Musgrave, 1969; Riker, 1964), local elite capture (Bardhan and Mookherjee, 2000), "race-to-bottom" competition (Keen and Marchand, 1997), or state-eroding federalism (Cai and Treisman, 2004).

The contemporary literature makes clear the importance of institutions and politicians' incentives in determining whether or not the benefits of fiscal decentralization outweigh the costs. Institutions, be they political or fiscal (such as local elections, the party system, intergovernmental transfers, etc.), not only determine whether public officials care about the needs of the local population in their own jurisdictions, but they also influence the ways through which the decentralized settings shape local politicians' incentives for making decisions on economic policies, resource distribution, market opening, and so forth. For instance, based on large panel data covering up to 75 countries, including transition countries, for 25 years, Enikolopov and Zhuravskaya (2007) found that the strength of national political parties and administrative subordination (i.e., appointing local politicians rather than electing them) substantially influences the results of fiscal decentralization.

Using a panel for 16 countries between 1980 and 1998, Neyapti (2010) found the absence of local elections is associated with greater effectiveness of fiscal decentralization. Interestingly, the effects of fiscal decentralization also lie with the design of intergovernmental fiscal systems. Zhuravskaya (2000) found that in Russia, revenue-sharing between regional and local governments provides local governments with no incentive to increase the tax base or provide public goods. In addition, the more a decentralized government relies on fiscal transfers, which are equivalent to unearned income streams, to finance its expenditures, the more likely it is that the subnational government will engage in activities like appropriating rents, rather than protecting investors (Desai, Freinkman, and Goldberg, 2005). Transfers from higher-level governments may also destroy lower-level governments' incentive to foster their own tax base (Alexeev and Kurlyandskaya, 2003), entice the latter to overspend (Rodden, 2002), or result in excessive centralization of regional government spending (Freinkman and Plekhanov, 2009).

In this article, we extend the analysis of fiscal decentralization against the backdrop of an authoritarian single-party system like China's. We argue that, given the increasing fiscal autonomy of local government, measured here as the net fiscal resource at the discretion of county government vis-à-vis the provincial government, politicians may not be keen to provide public social goods and foster economic efficiency. Instead, in order to secure their political career, local leaders may use fiscal resources primarily to buy loyalty from their selectorate,[1] i.e., the administrative and security personnel who compose the key constituency of the local leadership.

Using unique county-level panel data for up to 55 counties between 1994 and 2005 in Zhejiang province, we investigated the relationship between Zhejiang's sub-provincial fiscal decentralization and the county government's fiscal behavior, as well as their public goods provisions. The empirical evidence is consistent with our argument. To be more specific, overall greater fiscal autonomy is associated with faster growth of fiscal expenditure in administrative organs and security apparatus but with negative or insignificant growth in education, social security, and health care. In addition, these effects vary according to the income levels of the counties. As a result, public goods, including health care (doctors and beds), roads, and teachers (as the ratio to students) are underfunded.

One contribution of this research is that we empirically distinguish the province-county fiscal relationship from the center-province fiscal relationship, as dedicated by the 1994 Tax Assigning System (TAS), and examine the intraprovincial fiscal decentralization and its impact on county government's fiscal behaviors within a Chinese province. At present, the basic framework of China's fiscal system is the TAS, introduced in 1994 by the central government. Since then, a large body of research has examined the features of fiscal decentralization in China, as well as its effects on the economy. Most measure decentralization by how fiscal revenues and responsibilities are divided between the central government and provincial governments (Jin, Qian, and Weingast, 2005; Lin and Liu, 2000; Zhang and Zhou, 1998). The TAS, however, did not stipulate what a sub-provincial fiscal system ought to be (World Bank, 2002). In practice, not only does the center-province fiscal relationship not equate with that at sub-provincial levels, but provinces also differ greatly as to how intraprovincial fiscal reform should unfold. To our knowledge, our research is the first to investigate the fiscal interactions between provincial and county governments and how it affects local public expenditure, while controlling for the center-province fiscal relationship (manifested at the county level).

This study is also related to the literature on political survival and the incentives of politicians under authoritarian regimes in general, and in China

---

[1] We borrow the term of selectorate from Susan Shirk (Shirk, 1993).

in particular. Most research on comparative fiscal federalism and decentralization tends to laud China as a paradigm of market-preserving federalism (Montinola, Qian, and Weingast, 1995; Qian and Weingast, 1997), in which the ruling party's cadre promotion system and the organization of "M-form" hierarchy institutionalized the regional yardstick competition between local officials and, thus, induced the decentralized subnational governments to facilitate non-state sector investment and expand growth in order to get promotions (Li and Zhou, 2005; Maskin, Qian, and Xu, 2000).[2] Without denying the economy's importance, we argue that leaders of local governments are most immediately concerned with building up their political foundations by guaranteeing the loyalty of their selectorate, i.e., the local bureaucratic personnel.[3] In comparison with social welfare and growth, continued support of the local bureaucracy can be more important for securing local leaders' political lives. Therefore, to benefit the local bureaucracy, the use of public resources may come at the sacrifice of economic efficiency and broad social interests. Our empirical analysis gives support to this hypothesis, which suggests that, very likely, there are more nuanced ways through which decentralization can affect the economy.

Our research also helps reflect on the role of fiscal transfers. There are many studies emphasizing the adverse effect of intergovernmental transfers, since the transfers, like the unearned income stream, detach the available resources from the tax base within the receiving region's jurisdiction. As we will introduce in this article, in Zhejiang, the fiscal transfer that a county receives from the provincial government is linked to the county's tax revenue. Our analysis of Zhejiang's fiscal system shows that, given the political incentives we mentioned above, even if the fiscal transfers are related to a county's own tax base, its effects are not as beneficial, as suggested in the literature.

In this research, we take Zhejiang as the analytical subject. As one of the richest provinces among China's 31 provinces and municipalities, Zhejiang's fiscal system has been a star in academic and policy circles since the 1994 TAS reform, and an increasing number of provinces are inclined to copy Zhejiang's "Province Governing County (PGC)" fiscal model,[4] adopted by Zhejiang in 1953 and still in place today.[5] Zhejiang was also the first

---

[2] For a useful summary and review of these studies, see Xu (2011).

[3] Some research also notes that, in China, local government officials' career concerns play a major role in determining its behavioral pattern. But most attention is paid to the interactions between the central and local government, in which they regard the latter as a coherent entity with its own private agenda that might be not consistent with the center's target. See Tsui and Wang (2008) and Oi (1999).

[4] Up to now, there are, in total, 20 provinces that have adopted the PGC system, although the concrete contents differ across the different provinces.

[5] The PGC system was briefly abandoned in the late period of the Cultural Revolution (1966-1976) and was resumed soon after the CR came to an end.

province to establish its own intraprovincial fiscal transfer system after 1994. Under the PGC, the county government has no fiscal relations with the prefecture (city) government[6] but instead deals with the provincial government, including receiving fiscal transfers directly from the provincial government. In addition, the head of the county's local tax bureau is appointed by county leaders. Therefore, under the PGC system, a county's fiscal expenditures are, to a large extent, a reflection of how the county leadership allocates public resources. Given the national popularity of Zhejiang's fiscal model, it is of great importance to examine the fabric of the system and how it works to fit with politicians' political incentives.

The following section offers a brief overview of Zhejiang's fiscal system after 1994, especially how it shaped the fiscal relations between the provincial and the county governments, increased county governments' fiscal autonomy, affected county governments' incentives and behaviors, and led to certain economic outcomes, i.e., public good provisions. Section 3 introduces the data and empirical strategy we use to test our hypotheses. Section 4 reports and discusses the testing results. Section 5 concludes.

2. A BRIEF SUMMARY OF ZHEJIANG'S FISCAL SYSTEM

2.1. The divergent trends of central and provincial fiscal centralization after 1994

The TAS fiscal reform of 1994 laid the basic framework for the present central-provincial fiscal relations.[7] Aiming at centralizing most revenue collection without changing the expenditure responsibilities among different levels of governments, the new fiscal system categorized taxes into central, local, and shared taxes. The reform significantly raised the central government's revenue, in relation to the sub-provincial governments, and allowed the center to play a more significant redistribution role. For example, one of the most important shared taxes is the value added tax (VAT), of which only 25% belongs to the sub-provincial governments. In fact, after 1994, the center continued to centralize tax revenue. In 1994, the center retained 50% of the stamp tax on securities transactions, but increased the share three times after 2000 and eventually increased it to 97% in 2002. In addition, in 2002, the center claimed 50% of the income tax, and this share rose to 60% in 2003. Because the centralization of revenue did not come with the shrinking of the sub-national governments' fiscal responsibilities, the center introduced an intergovernmental transfer system to compensate

---

[6]Chinese administrative hierarchy contains five levels from high to low: center, province, prefecture (or city), county, and township. Under the non-PGC system, county government should settle its fiscal account with prefectural/city government.

[7]For a succinct introduction of the fiscal system in China, see Wong and Bird (2008).

for the reduced fiscal capacity of local governments, and to deal with the widening fiscal disparity between regions.

Students of the Chinese fiscal system tend to believe the post-1994 fiscal centralization substantially worsened the fiscal status of sub-national governments at various levels because it forced them to do exactly as the center had done, namely, to centralize more tax revenues from their subordinate government bodies while devolving fiscal burdens to the latter. This claim, however, may be exaggerated, because the TAS reform did not regulate fiscal relationships between sub-provincial governments, and, in practice, the sub-provincial fiscal system differs considerably across provinces.

FIG. 1. Median values of central and provincial fiscal centralization across Zhejiang counties, 1994-2005
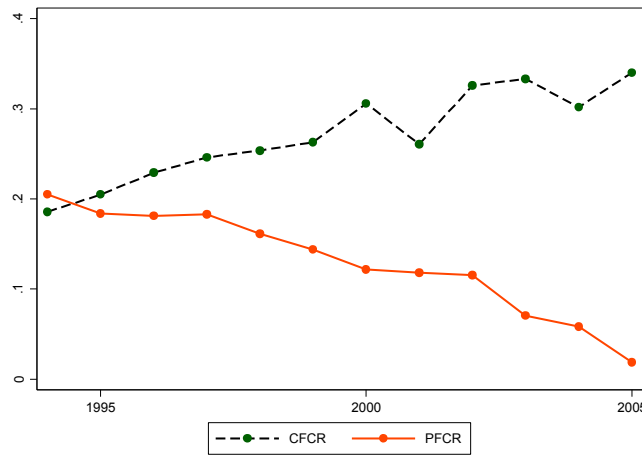

Note: CFCR is the center's fiscal centralization ratio, measured as the share of the net fiscal revenue turned over by a county government to the center in the county's total fiscal revenue; PFCR is the provincial fiscal centralization ratio, measured as the share of the net fiscal revenue centralized by the provincial government in the net fiscal revenue left over to a county after it has submitted revenues to the center.

FIG. 1 shows there is a divergent trend between the central and subprovincial fiscal revenue centralizations in Zhejiang province. The dashed line represents the center's net fiscal centralization ratio (CFCR), defined as the share of net fiscal revenue turned over to the center from a county's total fiscal revenue. The sold line stands for the sub-provincial fiscal centralization ratio (PFCR), defined as the share of the provincial government's net fiscal revenue in a county's remaining fiscal revenues after the center has

claimed its net revenues.[8] CFCR measures to what extent a county's fiscal revenue is centralized by the central government, while PFCR measures the degree to which the provincial government centralizes the remaining county fiscal revenues after a county has submitted revenues to the center.

As shown in FIG. 1 that, since 1994, the central government has been collecting more and more fiscal revenues from Zhejiang's county governments. The median value of CFCR, for example, rose from 18.5% percent in 1994 to 34% in 2005. On the other hand, during the same period, PFCR declined from 20% to 1.8%. Thus, contrary to the conventional wisdom that a provincial government tends to extract more resources from the subordinate governments to make up its fiscal shortfall, the sub-provincial fiscal centralization in Zhejiang has loosened through the period to counterbalance the tightening central fiscal centralization. In fact, over the whole period, the resources at the county governments' disposal were kept more or less intact, with the share of the net county fiscal revenues in total county fiscal revenues at 62% in 1994 and 63% in 2005.

FIG. 2. The relationship between PFCR and log (Per capita GDP), 1994-2005

Log (per capita GDP)
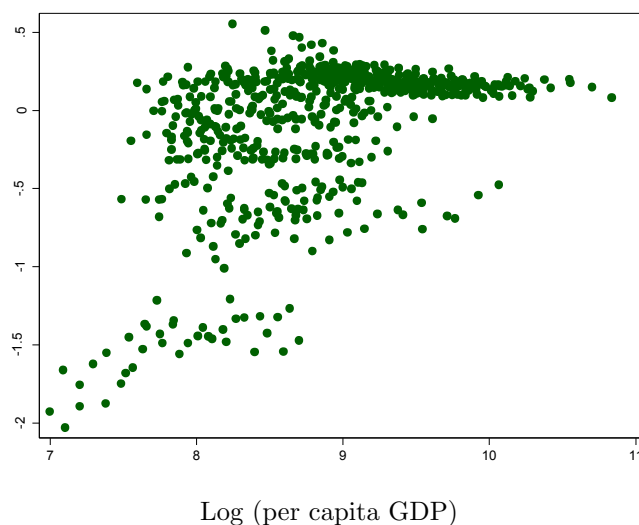
Not only did the provincial government officials show little interest in centralizing fiscal resources into their own hands, but they also took into account the variety of economic development levels across counties when deciding how to divide fiscal revenues between themselves and county gov-

---

[8]Section 3 explains why and how we construct CFCR and PFCR to reflect the central fiscal centralization and sub-provincial fiscal decentralization (which equals 1-PFCR), respectively.

ernments. FIG. 2 plots the relationship between log (county per capita GDP) and PFCR. Apparently, the provincial government centralized more resources from rich counties but took less from poor counties.

2.2. Zhejiang's provincial fiscal system after 1994

The above findings embodied in FIG. 1 and FIG. 2 results from the sub-provincial fiscal system devised after 1994. The key concern is how to divide fiscal revenue between the provincial and the county governments, after the latter have turned over revenues belonging to the center, according to the TAS regulation. In this regard, from 1994 onwards, most county governments have been required to relinquish 20% of the increased revenue (referring to revenue in 1993 as the base)[9] to the province, which is labeled as the proportional delivery of increased revenues (PDIR).[10] In addition, a large part of tax revenues returned by the central government will be shared between the provincial and the county governments. From 1994 onwards, 20% of the (VAT and consumption) tax-return above the base amount (referring revenue in 1993 as the base) belongs to the provincial government, while 80% is left to the county governments.[11]

Another key ingredient is the intraprovincial transfer system. All counties receive different kinds of formula-based general transfers from the provincial government. Unlike unearned income, in Zhejiang, the general transfers a county receives from the provincial government are linked to its own tax base. For example, all underdeveloped counties can receive general transfers, including poverty relief subsidies, budgetary subsidies, etc.[12] From 1995 onward, the general transfers received by an underdeveloped county in 1994 are taken as the base, and the total amount this county receives will increase by 0.5% for every 1% incremental fiscal revenue above the base.[13]

In addition, all counties can receive merit-based transfers (MBTs) from the provincial government, which were introduced in the years after 1994.

---

[9]When we are talking about the revenue division between the provincial and the county governments, we always refer to the remaining fiscal revenue of a county after it has turned over the amount belonging to the central government.

[10]Some underdeveloped counties were free of PDIR so they kept all increased revenues for some years.

[11]The provincial government also requires county governments to turn over fiscal revenues to it by some fixed rules. For example, county government needs to turn over a fixed quota to provincial government every year, which is called fixed delivery quota (FDQ). The fiscal delivery quota to the provincial government in 1994 was based on how much a county turned over to the province in 1993. Since then, FDQ has been fixed at the 1994 level without any changes.

[12]In 1995, 17 countries were labeled as underdeveloped counties. This number increased to 26 in 2001.

[13]After 1998, the provincial government has adjusted the base several times to expand the scale of general transfers to the underdeveloped counties.

To put it simply, for every 1% increase of fiscal revenue relative to the base in a county, the provincial government will reward a certain proportion of above-base revenues in transfers to that county.[14] MBTs are supposed to reward county leaders, the staff of the county bureau of finance, or help local enterprises to upgrade technology. In practice, MBTs are given at the discretion of county leaders.

Finally, counties receive earmarked subsidies (EMS). EMS are created, usually on an ad hoc negotiated basis, for specific purposes and projects designated by the provincial government, such as poverty alleviation, infrastructure development, education and health care, agricultural development, and so on.[15] In most cases EMS are directly distributed to a county and, finally, to the designated bureaus and projects, and the county government is required to provide local matching funds.

2.3. County leadership's political incentives under the post-1994 Province Governing County system

As introduced above, the post-1994 intraprovincial fiscal system tilts revenue sharing towards the county governments, especially the poorer counties, rather than the provincial government, since the former can retain a large share of fiscal revenues relative to the latter. Obviously, Zhejiang's intraprovincial revenue decentralization plays a key role in stabilizing the county governments' fiscal revenue stream by offsetting the tightened central fiscal centralization, as illustrated by FIG. 1 and FIG. 2 Although the reasons as to why the intraprovincial fiscal system took such a form is beyond the scope of this research, we speculate that the provincial leadership intentionally agreed to leave more fiscal revenues to local governments in order to consolidate its grassroots political support. Although its economic power is unmatched, Zhejiang's political power is rather weak because during the concerning period very few of Zhejiang's top leaders have been promoted to high posts in the center since the founding of the People's Republic. Thus, there is a strong incentive to enlist the support of local (county) politicians to secure their political careers.[16]

---

[14]The proportion, as well as the base, can vary across counties. For example, in underdeveloped counties, fiscal revenues in last year or at a certain year may be referred to as the base, while in wealthy counties the PDIR in present year can be counted as the base. In general, the proportions of the above-base revenues range from 10% to 15%. Some even receive 20% of above-base revenue as transfers from the provincial government.

[15]For two recent studies on EMS usage in other two provinces, see Liu et al (2009) and Duan and Zhan (2011).

[16]For historical reasons, Zhejiang's political status has been embarrassing, despite its economic vigor. Even today, very few of Zhejiang's political figures, those born and cultivated locally, can rise beyond the province to higher levels within the political hierarchy. However, the local political elites are very powerful and influential at the local level, which gives them considerable negotiating power in provincial politics and

The same logic can be applied to predict how county leaders might use the public resources. We argue that county leaders will use fiscal resources first and foremost to maximize the political support from their constituency, i.e., the county bureaucratic personnel. For one thing, without elections, the political importance of the support from the county bureaucracy for county leaders far outweighs that from ordinary local residents. In addition, as Bueno de Mesquitaet al. (Bruce Bueno de Mesquita and Smith, 2010; Bruce Bueno de Mesquita, Smith, Siverson, and Morrow, 2003) point out, when political leaders rely on the success of a narrow coalition to guarantee their political survival, turning public resources into private goods to sustain this support becomes an attractive, effective, and feasible option.

In our case, it is natural to expect county leaders are inclined to spend fiscal resources in a way that buys the loyalty of their selectorate, namely the county bureaucratic personnel, in order to strengthen their political foundation. In other words, such political incentives underpin the allocation of fiscal resources, whereas economic factors (such as providing public goods, improving markets and economic efficiency, etc.) are of secondary importance. In fact, we believe county leaders would rather sacrifice economic efficiency and social welfare to guarantee their political priorities, if necessary.

By virtue of this reasoning, we hypothesize, that although the center centralized more resources from the county governments, the intraprovincial fiscal revenue decentralization enabled the county leaders to continue to give top priority to their selectorate, rather than to ordinary residents, in the county's fiscal expenditures.

3. VARIABLES, DATA, AND ESTIMATION STRATEGY

To test how the intraprovincial fiscal system affected county leaders' fiscal expenditure strategy, we construct two variables to measure how local fiscal revenues are divided between the provincial and county governments, while controlling for the center-local fiscal relationship at county level. The first variable is CFCR (introduced in section 2). CFCR is defined as the share of net fiscal revenue submitted by a county government to the center in the county's total fiscal revenue, i.e.,

$$\text{CFCR} = \frac{\text{CNFR}}{\text{CTFR}} = \frac{\text{FRSC} - \text{TRCC}}{\text{CTFR}} \tag{1}$$

economic policymaking. For a brief introduction of Zhejiang's power structure and its economic consequences after 1949, see Zhang and Liu (2012).

(CNFR: The center's net fiscal revenue, CTFR: A county's total revenue, FRSC: Fiscal revenue submitted to the center, TRCC: Tax returns from the center to the county)

FRSC is made up of tax revenues submitted to the center and fixed quota delivery to the center. TRCC includes two elements: VAT and consumption tax returns to the county, and income tax base returns. We use CFCR to control for the effect of the center-local fiscal relationship applied at the county level.

The second variable is a county's retained net revenue ratio (CRNRR), which is defined as the net fiscal revenue left over after a county has delivered revenues to the center, or the share of the net fiscal revenue retained by a county (and the remaining were submitted to the provincial government), i.e.,

$$
\begin{aligned}
\text{CRNRR} &= \frac{\text{a county's net fiscal revenue}}{\text{CTFR} - \text{CNFR}} \\
&= \frac{(\text{CTFR} - \text{CNFR}) - \text{the province's net fiscal revenue}}{\text{CTFR} - \text{CNFR}} \\
&= 1 - \frac{\text{FRSP} - (\text{PGTC})}{\text{CTFR} - \text{CNFR}} = 1 - \text{PFCR}
\end{aligned} \tag{2}
$$

(CTFR: a county's total fiscal revenue, CNFR: the center's net fiscal revenue, FRSP: Fiscal revenues submitted to the province, PGTC: province's general transfers to the county)

where FRSP includes three constituents: (1) fixed quota delivery to the province; (2) PDIR; (3) the center's VAT and consumption tax returns claimed by the provincial government. PGTC includes formula-based general transfers and MBTs, introduced in subsection 2.2. The center's net fiscal revenue equals the numerator of equation (3.1), and PFCR is the province's fiscal centralization ratio, introduced in section 2. CRNRR measures the degree of intraprovincial fiscal revenue decentralization.

The data we use to construct the (de)centralization variables are mainly from The fiscal data of all prefectures, counties, and cities (quanguodi'xian's hicaizhengtongjiziliao, hereafter QGDSX) from various years, which is published by the Ministry of Finance. This dataset contains county-level financial information, e.g., local income, expenditures, subsidies, etc., for every county-level unit, including Zhejiang's counties. Although most analysts also use the QGDSX dataset to investigate county-level fiscal status, we want to emphasize here that when we measure intraprovincial fiscal (de)centralization, the data cannot be used directly, but instead should first be processed in a way to fit with Zhejiang's intraprovincial fiscal system. This is because many revenue categories, as well as some items under "the balancing portion" in the dataset, do not distinguish the revenues,

tax returns, and transfers claimed by the center from those accrued by
the provincial and county governments. Instead, they are put in the same
category, though they should be differentiated. In addition, the data are
compiled year by year, so in many cases the same revenue or transfer cat-
egory may be arranged differently in the QGDSX data each year.

For example, to measure CFCR and PFCR, we need to know the fixed
quota delivery to the center and the fixed quota delivery to the provincial
government, respectively. The QGDSX data, under the balancing sec-
tion, contains one item labeled "FDQ." However, what FDQ means in
the dataset is the sum of the FDQ that went to both the center and the
provincial government. Similarly, we also need to know how much, out
of the total tax returns from the center to a county, is claimed by the
provincial government, and how much is left with the county, separately.
The QGDSX dataset does contain information on "(VAT and consump-
tion) tax returns." But, it is only the tax returns left to a county after the
provincial government has taken its share. Another example is that, be-
tween 1994 and 1999, the earmarked transfers under the balancing portion
in the dataset actually include both the general transfers (including the
MBTs) and the earmarked transfers, as we introduced in subsection 2.2.
Obviously, due to these flaws, which are inherent in the original dataset,
researchers must know how to adjust the dataset for it to be used.

In order to assist us in this process, over the past 2 years we made field
visits to the provincial bureau and to dozens of county fiscal bureaus to get
first-hand information about how Zhejiang's intraprovincial fiscal system
works. We learned, among other things, about how county fiscal bureaus
formulated their fiscal balance sheet item by item. This information helps
us to understand how Zhejiang's PGC fiscal system was run in practice
and, based on that information, enables us to know how to adjust the
original dataset to calculate CRNRR and CFCR.[17] As far as we know,
we are the first to examine the intraprovincial fiscal system in Zhejiang
in order to sort out the QGDSX dataset and measure the intraprovincial
fiscal (de)centralization.

Besides, it is worth noting that we do not include EMS from the provin-
cial government in the calculation of CRNRR. As introduced in section
2, EMS can hardly be regarded as a county government's disposable in-
come in any sense because the recipient county government has hardly any
discretion over how to use the earmarked grants. In addition, because in
most cases the local government recipients are required to provide match-
ing funds for projects associated with the received EMS, EMS are more
of a burden than a resource for local governments. By virtue of this same

---

[17]In the appendix attached with this article, we show in detail how we construct CFCR
and PFCR as well as CRNRR based on the QGDSX dataset, and what information is
missing in the dataset and should be derived from our field survey.

reasoning, equation (3.1) does not include the earmarked transfers from the central government to county governments.

Besides, we do not differentiate general transfers from the central government to county governments from the general transfers made by the provincial government, because only aggregate data on the center's general transfers at provincial level are available, and we have no information about how the center's general transfers are distributed among Zhejiang counties. However, the omission of general transfers from the center should not lead to a severe bias in the calculations of both CRCR and the CRNRR, because the amount of these kinds of transfers has been very low. In 1995, the ratio of the general transfers (from the center) to (Zhejiang's) fiscal revenue was only 0.001, and in 2005 this figure was still less than 0.007.

We then estimate the following baseline equation:

$$
\begin{aligned}
\text{gfexpen\_}Y_{it} \;=\; & \alpha + \beta_1 \cdot \text{gfexpen\_}Y_{it-1} + \beta_2 \cdot \text{CRNRR}_{it} \\
& \beta_3 \cdot \text{CFCR}_{it} + \sum \phi \cdot X_{it} + \chi_i + \delta_t + \varepsilon_{it}
\end{aligned} \tag{3}
$$

where subscripts i and t are index counties and years, respectively. α is the constant item. gfexpen_Y is the annual growth rate of a county's fiscal expenditures on Y, i.e., $\text{gfexpen\_}Y_{it} = \log(\text{fexpen\_}Y_{it}/\text{fexpen\_}Y_{it-1})$, including: gfexpen_administration, the growth rate of per capita fiscal expenditure on administrative personnel and tasks; gfexpen_police, the growth rate of per capita expenditure on the police, the Supreme People's Procuratorate, the court and judiciary (PPCJ); gfexpen_welfare, the growth rate of per capita expenditure on health care and social welfare; gfexpen_education, the growth rate of per capita expenditure on education. The first two variables reflect how much a county's fiscal expenditures benefited the county leaders' selectorate. We consider the public expenditure on PPCJ because these sectors are the pillars of the reign of the party state, and maintaining stability has become a key job for county and township leaders, especially since the mid-1990s. The latter two variables (gfexpen_welfare and gfexpen_education) measure the amount of public expenditure spent on social public goods and welfare.

X includes a set of control variables, including the logarithm of per capita GDP of a county, the logarithm of the distance between the county seat and the provincial city (Hangzhou), a dummy if the county is a costal county, and a logarithm of the altitude of the county seat. We use the first variable to control for the economic development level of a county, and the other three variables to control for the geographical features of the county. We estimate the baseline model by using a linear OLS regression model with fixed county (χ) and year (δ) effects. ε is an error term. All fiscal expenditures and per capita GDP are deflated with a 1993 GDP deflator.

According to our hypothesis, after controlling for the CFCR, the coefficient of the CRNNR should be positive and statistically significant when the dependent variables are gfexpen_administration and gfexpen_police, and be statistically insignificant when the dependent variables are gfexpen_welfare and gfexpen_education.

Many researchers have emphasized that the effects of fiscal institutions are conditional on other institutional environments in which they are working, for example, political institutions (Faguet, 2008; Neyapti, 2010). We assume that within Zhejiang province, a county's overall institutional quality and environment are tightly tied with its economic development level. When faced with the same fiscal incentive, local governments in counties under different institutional circumstances could have different concerns and, thus, behave differently. In other words, the marginal effects of the CRNRR are likely to vary with the changing economic development levels. We use an interaction term between CRNRR and per capita GDP (in log form) to capture such effects. Therefore, besides the baseline model (3.3), we also estimate an expanded model (3.4):

$$
\begin{aligned}
\text{gfexpen\_}Y_{it} \;=\; & \alpha + \beta_1 \cdot \text{gfexpen\_}Y_{it-1} + \beta_2 \cdot \text{CRNRR}_{it} \\
& + \beta_3 \cdot (\text{CRNRR}_{it} \times \text{per capita gdp}) + \beta_4 \cdot \text{CFCR}_{it} \\
& \sum \phi \cdot X_{it} + \chi_i + \delta_t + \varepsilon_{it} \qquad\qquad (4)
\end{aligned}
$$

The fiscal expenditure data are from the QGDSX dataset from various years. We only consider counties and county-level cities, excluding prefectures. The reason for this is that, since the 1990s, Zhejiang's prefectures have undergone frequent changes in administrative divisions. As a result, the fiscal institutions of its many constitutive districts, and thus the fiscal data, are not comparable.[18] Information on the control variables, including GDP and price indexes, etc., is from the Zhejiang statistical year book from various years. The geographical variables are drawn from the GIS database provided by the Institute for Geography at the Chinese Academy of Sciences. We eventually gleaned unbalanced panel data covering up to 55 counties and county-level cities within the period 1994-2005.[19] TABLE 1 provides the summary statistics of key variables in the analysis.

---

[18]For example, a previous county was absorbed into a prefecture and became a district of the latter. Then the previous county-provincial fiscal relationship was replaced with a new district-prefectural fiscal relationship. There are some exceptions, however, where when a county like Xiaoshan was absorbed into a prefecture/city, it kept its original county-provincial fiscal relations intact. In such cases, we still treat these administrative units as counties.

[19]Given the unbalanced nature of the panel data in this study, we resort to Levin-Lin-Chu (LLC) statistics to test the stationary of the model. LLC-test results indicate that both CRNRR and CFCR are stationary.

TABLE 1.

Summary statistics of key variables

	No. of observations	Mean	Std.	Min	Max
CFCR (the fiscal centralization of)	660	0.26	0.11	−0.04	0.52
CRNRR	660	1.09	0.46	0.45	3.03
Log (per capita GDP)	660	8.82	0.67	7.00	10.84
Growth of log (per capita expenditure on administrative personnel)	440	0.17	0.15	−0.36	0.75
Growth of log (per capita expenditure on police, procuratorate, court and judiciary)	555	0.13	1.32	−6.63	7.27
Growth of log (per capita expenditure on health care and social welfare)	378	0.63	0.85	−2.36	4.23
Growth of log (per capita expenditure on education)	495	0.17	0.12	−0.19	0.62
Growth of log (the number of doctors in public hospitals per ten thousand county population)	593	0.03	0.43	−7.04	6.89
Growth of log (the number of beds in public hospitals per ten thousand county population)	612	0.01	0.11	−0.69	0.94
Growth of log (the kilometers of road)	404	0.05	0.14	−0.74	0.94
Student-teacher ratio in primary schools	632	0.05	0.02	0.03	0.33

4. ESTIMATION RESULTS

4.1. Estimation results for public expenditures

Column 1 of TABLE 2 reports the estimation results for the baseline model when the dependent variable is gfexpen_administration. The lagged dependent variable has a negative coefficient. Per capita GDP has a positive and statistically significant coefficient, suggesting that wealthy counties tended to spend more on the bureaucracy than poor counties. All the other control variables included in X are not statistically significant.

CFCR, the center's fiscal centralization variable, has a negative coefficient and is insignificant at any conventional level. This result is not surprising in that, although the center extracted more resources from a county, the sub-provincial fiscal decentralization helped counteract the shock. It is also likely that county leaders may make sure of the expenditures on administrative personnel by decreasing the expenditures on non-administrative sectors. Regardless of the reason, the result is consistent with our hypothesis that county leaders made spending decisions in a way to favor their selectorate.

TABLE 2.

Estimation results for public expenditures

	Administration			PPCJ	Health and social welfare		Education	
	1	2	3	4	5	6	7	8
lag_lnperexp_execu2	−0.49***	−0.51***						
	(0.06)	(0.06)						
lag_lnperexp_security			−0.92***	−0.92***				
			(0.06)	(0.06)				
lag_lnperexp_health					−0.76***	−0.77***		
					(0.07)	(0.07)		
lag_lnperexp_edu							−0.35***	−0.39***
							(0.05)	(0.05)
CFCR	−0.24	−0.22	1.34	1.38	−0.82	−0.73	−0.30***	−0.31***
	(0.17)	(0.17)	(1.07)	(1.07)	(1.27)	(1.26)	(0.10)	(0.09)
CRNRR	0.04	1.18***	0.90**	1.88	−0.95***	4.24*	0.08*	0.85***
	(0.06)	(0.35)	(0.39)	(2.45)	(0.35)	(2.46)	(0.04)	(0.23)
CRNRR × log(per capita GDP)		−0.13***		−0.12		−0.59**		−0.09***
		(0.04)		(0.29)		(0.28)		(0.03)
Log(per capita GDP)	0.24**	0.32***	−2.15**	−2.08**	0.44	0.85	0.25***	0.31***
	(0.11)	(0.11)	(0.88)	(0.90)	(0.79)	(0.81)	(0.08)	(0.08)
Log (distance)	0.16	−0.34	−10.20	−10.41*	16.25**	13.95**	0.42	0.22
	(0.92)	(0.91)	(6.22)	(6.24)	(6.42)	(6.46)	(0.57)	(0.56)
Coast dummy	−0.27	0.94	23.40	23.88	−40.33***	−34.72**	−1.18	−0.74
	(2.18)	(2.14)	(14.63)	(14.69)	(15.13)	(15.21)	(1.35)	(1.33)
Log (altitude)	−0.46	0.90	26.21	26.76	−44.62***	−38.30**	−1.32	−0.82
	(2.46)	(2.42)	(16.56)	(16.63)	(17.08)	(17.17)	(1.53)	(1.50)
County fixed effect	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effect	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.39	0.40	0.44	0.44	0.56	0.57	0.63	0.64
No. of observations	416	416	525	525	357	357	468	468

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Robust standard errors are in parentheses.

The coefficient of CRNRR, the intraprovincial fiscal decentralization variable, is positive; however, it is statistically insignificant. One explanation of this result is that there is heterogeneity in public expenditures across counties with different economic development levels. Column (2) in TABLE 2 examines this heterogeneity by adding an interaction term between CRNRR and log (county per capita GDP). The average marginal effects (AMEs) of CRNRR on gfexpen_administration are illustrated by

FIG. 3(a).[20] As we can see from the figure, the AMEs decline with the increase of per capita GDP. And the marginal effects are statistically significant when per capita GDP is lower than 4359 Yuan, i.e., in or around 16% of sample observations, county fiscal expenditure on administrative sectors goes up significantly when the county government retained more revenues vis-à-vis the provincial government. As a county becomes wealthier, however, the marginal effects are no longer significant from zero. Only in the top 3% of sample observations (i.e., when county per capita GDP is larger than 27,222 Yuan) do the marginal effects become significant again and turn negative. In other words, greater sub-provincial fiscal revenue decentralization facilitated the growth of public expenditure on administrative organs, but this effect vanished as a county became richer.

Column (3) lists the results when the dependent variable is gfexpen_police. The coefficient of CFCR is positive but statistically insignificant, showing that even if the center claimed more revenues from a county, it would not affect government spending on police, the Supreme People's Procuratorate, and the court and judiciary. Even more interesting, is that the coefficient of CRNRR is positive and statistically significant; this indicates that as a county kept more revenues, fiscal expenditures on PPCJ would grow faster. Column (4) reports the results by controlling for the interaction term between CRNRR and log (county per capita GDP). The AMEs of CRNRR are illustrated by FIG. 3 (b). According to the figure, in 72% of all sample observations (i.e., when per capita GDP is less than 11, 214 Yuan), the AMEs are positive and significant from zero. Again, the significance of the marginal effects disappears if counties become wealthier.

Column (5) contains estimation results when the dependent variable is gfexpen_welfare. As we can see, CFCR has a negative coefficient but is statistically insignificant. However, the coefficient of CRNRR is negative and statistically significant from zero. This result shows that when the provincial government left more revenues to a county government, the latter tended to decrease spending on health care and social welfare. Column (6) lists the results by adding the interaction between CRNRR and log (per capita GDP). Correspondingly, FIG. 3 (c) shows the AMEs of CRNRR. In fact, in 95% of the total sample observations (i.e., when per capita GDP is larger than 3328 Yuan), the AMEs are negative and significant from zero, and continue to decline as per capita GDP increases. It seems that wealthier counties decreased spending on health care and social welfare more than the relatively poorer counties.

Finally, column (7) and column (8) show the results when the dependent variable is gfexpen_education. In column (7), the CFCR significantly

---

[20]We follow Brambor et al. (2006) to construct confidence intervals for the estimates of $(\beta_2 + \beta_3)$ in equation (3.4) over the possible values of per capita GDP.

FIG. 3. The average marginal effects (AMEs) of subprovincial fiscal decentralization (CRNRR) on different categories of public expenditures
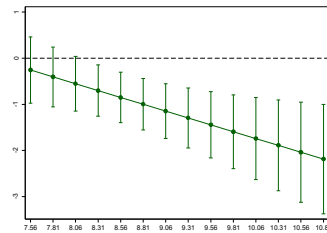
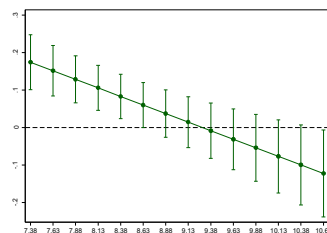(a) growth of per capita administrative fee
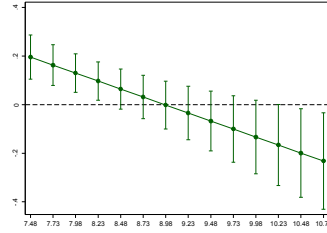
(b) growth of per capita expenditure on police, procuratorate, court and judiciary
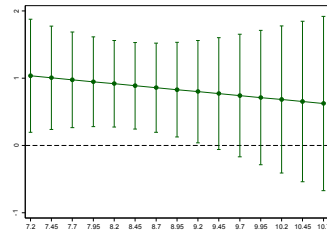
(c) growth of per capita expenditure on health care and social welfare

(d) growth of per capita education expenditure

decreased the growth of public spending on education. But the CRNRR significantly led the expenditures on education to grow faster. On the other hand, however, we know from column (8) and FIG. 3 (d) that the AMEs of CRNRR lose significance when the per capita GDP is larger than 5,597 Yuan, i.e., which is the case in two-thirds of the total sample observations. In the top 1% of the richest counties, the AMEs become significant again but turn negative, indicating that the wealthiest counties tend to reduce public spending on education.

Do these results point to relatively poorer counties tilting public spending towards education? We argue that this may not be the case. First, the education sector in China is kind of a combination of public goods and bureaucratic agency, as education is firmly regulated by the government and staffed by governmental personnel. Second, the distribution of fiscal funding may be used primarily for paying those governmental officials, rather than on improving the quality of education. We will turn back to this issue in section 4.2 to analyze if fiscal expenditures were used to increase the efficiency of the education sector.

4.2.   Estimation results for public goods provision

The above results have shown that Zhejiang's sub-provincial fiscal system indeed influenced the patterns of government public expenditures. It is natural to ask if the sub-provincial fiscal system affected public goods provision. Three indicators are adopted to measure the overall public goods provision. The first is the growth of the number of doctors in public hospitals per ten thousand of the county's population (g_doctor). The second is the growth of the number of public hospital beds per ten thousand of the county's population (g_bed). The third is the growth of total kilometers of road (g_road) in the county. The last indicator is the student-teacher ratio in primary schools.[21] As mentioned above, more fiscal expenditure on education may not necessarily improve the supply of education in a locality, but instead benefit government officials in the sector. Therefore, we use the student-teacher ratio as a way of examining the relationship between revenue decentralization and the quality of education. In all regressions, we use OLS regressions to examine the relationship between the provincial fiscal institutions and the public goods provisions. The results are shown in TABLE 3.

Column (1) and column (3) report the results when the dependent variable is g_doctorand g_bed, respectively, without controlling for the interaction between CRNRR and log (county per capita GDP). In both columns,

---

[21]China's 9-year compulsory education system covers primary schools and junior high schools but not senior high schools. Since we only have data of all high schools, we consider only the student-teacher ratio in primary schools. The current results remain basically unchanged even if we include all primary schools and high schools.

TABLE 3.

Estimation results for public goods provision

	G_doctor		G_bed		G_road		Student-teacher ratio	
	1	2	3	4	5	6	7	8
log(doctor$_{-1}$)	−0.63***	−0.67***						
	(0.10)	(0.10)						
log(bed$_{-1}$)			−0.25***	−0.28***				
			(0.04)	(0.04)				
log(road$_{-1}$)					−0.02	−0.02		
					(0.05)	(0.49)		
log(student-teacher ratio$_{-1}$)							0.79***	0.78***
							(0.20)	(0.20)
CFCR	0.10	0.21	0.06	0.07	−0.25*	−0.25*	−0.01***	−0.01***
	(0.12)	(0.13)	(0.07)	(0.06)	(0.14)	(0.15)	(0.003)	(0.004)
CRNRR	−0.08	1.77***	0.01	0.53***	−0.05	−0.06	−0.003*	−0.03
	(0.06)	(0.57)	(0.04)	(0.19)	(0.06)	(0.50)	(0.002)	(0.02)
CRNRR × log(per capita GDP)		−0.22***		−0.07***		0.001		0.004
		(0.07)		(0.02)		(0.06)		(0.003)
Log (per capita GDP)	0.14*	0.26***	0.06	0.09**	−0.08	−0.08	0.002	0.0004
	(0.08)	(0.10)	(0.04)	(0.04)	(0.06)	(0.07)	(0.002)	(0.003)
Log (distance from county seat to Hangzhou)	0.25	−0.14	0.60	0.65*	0.22**	0.22**	0.02	0.02
	(0.75)	(0.73)	(0.39)	(0.39)	(0.10)	(0.10)	(0.02)	(0.02)
Coast dummy	−0.67	0.27	−1.64*	−1.80*	−0.70***	−0.70***	−0.04	−0.05
	(1.84)	(1.79)	(0.98)	(0.96)	(0.26)	(0.30)	(0.04)	(0.04)
Log (altitude of county seat)	−0.42	0.67	−1.75	−1.92*	−0.83***	−0.83***	−0.05	−0.06
	(2.08)	(2.02)	(1.10)	(1.08)	(0.27)	(0.28)	(0.05)	(0.05)
County fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	YES	YES
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	YES	YES
Adjusted R-squared	0.28	0.31	0.08	0.11	0.19	0.19	0.74	0.74
No. of observations	536	536	548	548	345	345	595	595

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Robust standard errors are in parentheses.

CRNRR is statistically insignificant from zero. Such results are consistent with our hypothesis since county leaders had no incentive of providing sufficient public goods for local population.

Column (2) and column (4) control for the interaction terms, and the AMEs of CRNRR on g_doctor and g_bedare illustrated by FIG. 4 (a) and FIG. 4 (b), respectively. As we can see from FIG. 4 (a), the AMEs of CRNRR on g_doctor are positive but insignificant in 25% of all sample observations when the per capita GDP is larger than 4230 yuan. In the remaining 75% of sample observations, the AMEs of CRNRR are negative and statistically significant, suggesting that a county with more retained
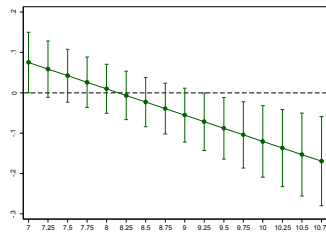
revenues relative to the provincial government tended to lose doctors, and the wealthier it became, the more doctors it lost.

FIG. 4. The average marginal effects (AMEs) of subprovincial fiscal decentralization (CRNRR) on public goods provision
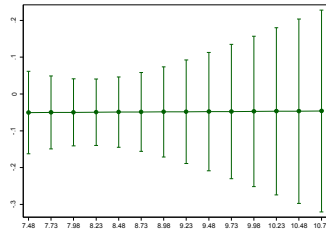
(a) growth of the number of doctor
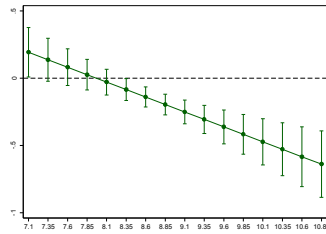
(b) growth of the number of bed

(c) growth of the kilometers of road
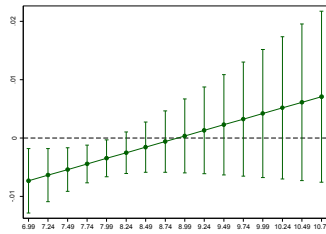
(d) student-teacher ratio in primary schools

FIG. 3 (b) presents a similar picture for the AMEs of CRNRR on g_bed. In 72% of sample observations when per capita GDP is lower than 10,301 yuan, the AMEs of CRNRR are statistically insignificant. In the remaining 28% of sample observations the AMEs of CRNRR are negative and statistically significant, indicating that in wealthy counties, a county with more retained revenues relative to the provincial government tended to have less hospital beds.

Column (5) and column (6) include the regression results when the dependent variable is g_road. According to the results, the coefficients of CRNRR are insignificant from zero. FIG. 4 (c) shows that the AMEs of CRNRR vary as the size of per capita GDP increases. As we can see, in all ranges of per capita GDP, the AMEs are not significant. Additionally, the CFCR has negative and statistically significant coefficients in both columns.

The dependent variable is the student-teacher ratio in primary schools in column (7) and column (8). In column (7), CRNRR has a negative coefficient and is significant at a 10% level. According to the results in column (8), FIG. 4. (d) illustrates the AMEs of CRNRR across the range of county per capita GDP. In 15% of total sample observations (i.e., when per capita GDP is lower than 3102 Yuan), greater revenue decentralization is associated with a smaller student-teacher ratio. In the remaining 85% of sample observations, there are no significant relationships between CRNRR and the student-teacher ratio. Additionally, CFCR has negative and statistically significant coefficients in both columns.

In summary, Zhejiang's intraprovincial revenue decentralization has very weak links to the public goods supply, and this link has only become weaker as a county's per capita GDP increased. Based on these results, we conclude that Zhejiang's intraprovincial revenue decentralizations do little to help increase public goods provision. This finding is consistent with the results in TABLE 2 and with our hypothesis that public resources were used primarily to benefit the local leadership's selectorate rather than to provide public goods and social welfare.

4.3. Robust check

To see how robust our findings are to changes of sub-samples and alternative specifications, we conducted several sensitivity tests. First, we expanded our sample to include those prefectural cities. Second, we excluded potential influential observations of key explanatory variables and dependent variables which are above or below two or three standard deviations of the corresponding means. Our results are robust to these sub-sample changes. Third, to avoid the potential endogeneity problem, we substitute a one-year-lag of CFCR and CRNRR (i.e., $CFCR_{t-1}$ and $CFCR_{t-1}$) for current $CFCR_t$ and $CFCR_t$. The results are proved to be robust. Fourth, in

current specifications the dependent variables are calculated as the growth of Y_s, in which Y stands for fiscal spending on a certain fiscal item. We then used Y_s as the dependent variable and found this did not lead to any significant changes to our current findings. Finally, we divided CRNRR into two parts: the non-transfer fiscal revenue and the transfers from the provincial government. We found this did not lead to any changes to our current findings. Given the nature of the fiscal transfers in Zhejiang, it is not surprising to have such findings.

In addition, we also compare our findings to similar studies on local governments' fiscal spending patterns to see if we can repeat their findings in our framework. For example, our results echo the findings of Duan and Zhan (2011), who found a county of Shanxi province receiving more of the center's fiscal transfers was not encouraged to spend more on public goods but, instead, more on basic construction. In fact, we also found very similar results when we used the growth of log (per capita expenditure on basic construction) as the dependent variable in our regressions. We take this as further evidence for our basic argument since the local government in China is no doubt the biggest beneficiary of basic construction made by itself.[22]

In a recent article by Wu and Lin (2012), they found fiscal revenue decentralization contributed to the expansion of government size. By adopting the same definition of government size (county budget revenue ratio to GDP) as the dependent variable, we found that in our regressions fiscal revenue decentralization led to bigger government and this effect is more profound in relatively wealthy counties.

5. CONCLUSION

In this article we examine how county governments' fiscal expenditures were allocated for different usages and how this affected public goods provision under Zhejiang's PGC fiscal system. We argue that we should be able to better understand the pattern of county fiscal expenditures and public goods supply by pinning down the political incentive of county leaders. Because county leaders primarily care about how to secure their political life, they will distribute public expenditures first and foremost in order to benefit their selectorate, namely, the bureaucratic agencies and personnel, rather than the ordinary people under their jurisdictions. Overall, the empirical evidence supports this hypothesis.

---

[22]Remember that in Zhejiang, most transfers are from the provincial government rather than from the central government, and the transfers are sensitive to a county's own tax base, as introduced in section 3.

Given our findings, we tend to doubt the benefit of fiscal decentralization under the current political circumstances in China. As Zhejiang's experience shows, even if fiscal revenue decentralization guaranteed sufficient fiscal autonomy for county government, the increased revenue was seldom used on social public goods and welfare. By virtue of the same reason, government fiscal decisions are likely based on narrow political considerations rather than on long-term economic prosperity and wider social interests, and, thus, the effects of Chinese fiscal decentralization on economic growth in the long run, as proposed in the literature, is questionable. In fact, if we regress economic and income growth (including per capita GDP growth, rural household per capita net income growth, and urban household per capita disposable income growth) on the fiscal revenue decentralization variable, there are no significant relationships between them.[23]

Although we are not optimistic about the role of fiscal decentralization, we do not believe the fiscal system should be reformed by recentralized means, i.e., shifting more revenues to the provincial government. For all the weak evidence of revenue decentralization in boosting public goods and social welfare, one possible positive effect of fiscal revenue decentralization could be that it leaves more revenue to local government, helping to decrease the likelihood of local officials becoming "grabbing hands" to the market. In addition, without changing the basic incentive of local politicians, centralizing revenue to provincial governments does not help to mitigate the problem of local officials who lack accountability to their constituents. In fact, our analysis shows that in order to solve the problems of the current fiscal system, some fundamental reforms—beyond fiscal institutions—should be included in the agenda.

REFERENCES

Alexeev, M.and Kurlyandskaya, G., 2003. Fiscal federalism and incentives in a Russian region. *Journal of Comparative Economics* **31**, 20-33.

Bardhan, P.and Mookherjee, D., 2000. Capture and Governance at Local and National Levels. *American Economic Review* **90**, 135-139.

Brambor, T., Clark, W.R. and Golder, M., 2006. Understanding Interaction Models: Improving Empirical Analyses. *Political Analysis* **14**, 63-82.

Bueno de Mesquita, B. and Smith, A., 2010. Leader Survival, Revolutions, and the Nature of Government Finance. *American Journal of Political Science* **54**, 936-950.

Bueno de Mesquita, B., Smith, A., Siverson, R. M. and Morrow, J. D., 2003. *The Logic of Political Survival*. Cambridge: the MIT Press.

Cai, H. and Treisman, D., 2004 . State Corroding Federalism. *Journal of Public Economics* **88**, 819-843.

Desai, R. M., Freinkman, L. and Goldberg, I., 2005. Fiscal federalism in rentier regions: Evidence from Russia. *Journal of Comparative Economics* **33**, 814-834.

---

[23]The regression results are available on request.

Duan, H. and Zhan, J.V., 2011. Fiscal Transfer and Local Public Expenditure in China: A Case Study of Shanxi Province. *The China Review* **11**, 57-88.

Enikolopov, R. and Zhuravskaya, E., 2007. Decentralization and political institutions. *Journal of Public Economics* **91**, 2261-2290.

Faguet, J.-P., 2008. Decentralisation's Effects on Public Investment: Evidence and Policy Lessons from Bolivia and Colombia. *Journal of Development Studies* **44**, 1100-1121.

Freinkman, L. and Plekhanov, A., 2009. Fiscal Decentralization in Rentier Regions: Evidence from Russia. *World Development* **37**, 503-512.

Hayek, F.A., 1948. Individualism and Economic Order. Chicago, IL: The University of Chicago Press.

Jin, H., Qian, Y. and Weingast, B.R., 2005. Regional decentralization and fiscal incentives: Federalism, Chinese style. *Journal of Public Economics* **89**, 1719-1742.

Keen, M. and Marchand, M., 1997. Fiscal Competition and the Pattern of Public Spending. *Journal of Public Economics* **66**, 33-53.

Li, H. and Zhou, L.-A., 2005. Political Turnover and Economic Performance: the Incentive Role of Personnel Control in China. *Journal of Public Economics* **89**, 1743-1762.

Lin, J.Y. and Liu, Z., 2000. Fiscal Decentralization and Economic Growth in China. *Economic Development and Cultural Change* **49**, 1-21.

Liu, M., Wang, J., Tao, R. and Murphy, R., 2009. The Political Economy of Earmarked Transfers in a State-Designated Poor County in Western China: Central Policies and Local Responses. *The China Quarterly* **200**, 973-994.

Maskin, E., Qian, Y. and Xu, C.-G., 2000. Incentives, Scale Economies and Organizational Form. *Review of Economic Studies* **67**, 359-378.

Montinola, G., Qian, Y. and Weingast, B.R., 1995. Federalism, Chinese Style: The Political Basis for Economic Success in China. *World Politics* **48**, 50-81.

Musgrave, R.A., 1969. Theories of Fiscal Federalism. *Public Finance/Finances Publiques* **24**, 521-532.

Neyapti, B., 2010. Fiscal decentralization and deficits: International evidence. *European Journal of Political Economy* **26**, 155-166.

Oates, W.E., 1972. Fiscal Decentralization. New York: Harcourt Brace Jovanovich.

Oi, J., 1999. Rural China Takes Off: Institutional Foundations of Economic Reform. Berkeley: University of California Press. Qian, Y. and Weingast, B.R., 1997. Federalism as a Commitment to Perserving Market Incentives. *Journal of Economic Perspectives* **11**, 83-92.

Riker, W.H., 1964. Federalism: Origins, Operation, Significance. Boston, MA: Little, Brown and Co.

Rodden, J., 2002. The Dilemma of Fiscal Federalism: Grants and Fiscal Performance around the World. *American Journal of Political Science* **46**, 670-687.

Samuelson, P.A., 1954. The Pure Theory of Public Expenditure. *Review of Economics and Statistics* **36**, 387-389.

Shirk, S., 1993. The Political Logic of Economic Reform in China. Berkeley: University of California Press.

Tiebout, C.M., 1956. A Pure Theory of Local Expenditures. *Journal of Political Economy* **64**, 416-424.

Tsui, K.-y. and Wang, Y., 2008. Decentralization with political trump: Vertical control, local accountability and regional disparities in China. *China Economic Review* **19**, 18-31.

Wong, C. and Bird, R., 2008. China's Fiscal System: a work in progess, in: Brandt, L., Rawski, T. (Eds.), China's Great Transformation: Origins, Mechanism, and Consequences of the Post-Reform Economic Boom. NY: Cambridge University Press.

World Bank, 2002. China: National Development and Sub-national Finance: A Review of Provincial Expenditures. the World Bank, World Bank Poverty Reduction and Economic Management Unit Report 22951-CHA.

Wu, A. and Lin, M., 2012. Determinants of government size: evidence from China. *Public Choice* **151**, 255-270.

Xu, C., 2011. The Fundamental Institutions of China's Reforms and Development. *Journal of Economic Literature* **49**, 1076-1151.

Zhang, Q. and Liu, M., 2012. Entrepreneurial Capitalism under the Red Flag: The Long-term Effect of the Communist Revolution on the Private Economy in China's Zhejiang Province. Mimeo.

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

Zhuravskaya, E.V., 2000. Incentives to provide local public goods: fiscal federalism, Russian style. *Journal of Public Economics* **76**, 337-368.