

Decentralization, Inequality and Poverty Relief in China

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Paper prepared for presentation at the Conference on the Development and  
Reforms in China

The University of Chicago

August 28, 2013

## I. Introduction

It is well established that China's post-Mao reforms have helped to unleash the initiative and creativity of the world's most populous country and fundamentally alter China's economic landscape. China has transformed itself from a centrally planned economy best known for its autarchy and poverty to a dynamic emerging economy that is the second largest in the world. It has achieved the remarkable GDP growth rate of more than 9 percent per annum for more than three decades.

Yet it is also well known that the Chinese growth model faces growing imbalances and headwinds. One of the most serious challenges is growing inequality. According to World Bank estimates, China's income Gini coefficient far exceeds that of South Asian countries such as India, Bangladesh, and Pakistan. Income differences in China are large both inter- and intra-regionally, with inter-regional differences increasing over time (Fujita and Hu, 2001; Kanbur and Zhang, 1999; Kanbur and Zhang, 2005; Cadelaria et al., 2012). The urban–rural income disparity has risen from 1.8 in 1984 to 3.2 by 2005 (Sicular et al. 2007).

There is an extensive literature on the evolution of regional inequality in China since the onset of reform in the late 1970s. The primary focus of this literature has been on estimating the level of inequality and its changes over time and identifying the underlying sources of inequality and its changes. Ravallion and Chen (2007) show that economic growth, especially rural economic growth, and government spending has contributed significantly to poverty reduction but the effect has been uneven across regions. Kanbur and Zhang (2005) construct time series of regional inequality using provincial income data and show that it is explained, in different periods of time, by the share of heavy industry, the degree of decentralization, and the degree of openness in Chinese provinces. Candelaria, Daly and Hale (2013) cite structural and long-term factors, including labor quality, industrial composition, regional labor supply, and geographical location, to account for China's persistent inequality. Heckman and Yi (2012) note the role of investment on education in reducing inequality and other studies demonstrate that investing in human capital will be an effective policy for reducing regional gaps in China (Fleisher, Li and Zhao, 2008; Goh,

Luo and Zhu, 2009). Decomposition analysis demonstrates that rural-urban inequality (Wu and Perloff, 2004; Kanbur and Zhang, 1999; Yang, 1999), coastal-inland inequality (Kanbur and Zhang, 2009; Yao and Zhang, 2001; Jian, Sachs and Warner, 1996), sectoral reforms (Tsui, 1996), TFP and factor inputs (Tsui, 2006) all contribute to China's persistent regional inequality.

Among the discussions on forces driving regional inequality both in China and around the world, the role of fiscal decentralization has received much attention. Over the last forty years a decentralizing wave has swept the world. There is a growing literature on the relationship between decentralization and inequality. However, no consensus has been reached on whether decentralization leads to greater economic efficiency and growth, and how it is associated with changes in economic disparities. Instead the causal relationship between decentralization and inequality appears to be contingent on the level of development, the quality of institutions and government, and fiscal redistributive capacity (Rodríguez-Pose and Ezcurra, 2009).

The argument for a certain degree of decentralization is strong on both economic and political grounds. Decentralizing decision-making authorities to local governments can enhance the efficiency of public goods provision because information about local preferences is less scarce and local officials in democracies face strong pressure to serve (Oates, 1972; Hayek, 1948; Tiebout, 1956; Besley and Case, 1995; Besley and Coate, 2003; Bardhan and Mookherjee, 2006). This greater public efficiency at the local level might stimulate regional growth and lead to convergence (Oates, 1993). Decentralization is also accompanied by inter-jurisdictional competition, which can serve as a disciplinary mechanism against inappropriate market intervention by sub-national officials (Weingast, 1995; Qian and Weingast, 1997). For example, local governments could be removed if they fail to achieve standards of wealth and growth comparable with those of the rest of the country, and constituents may "vote with their feet".

Yet too much local discretion may exacerbate regional inequality and undermine macroeconomic stability. Fiscal decentralization can undermine the fiscal power of the central government and thus reduce the central government's capacity for

redistribution (Prud'homme, 1995). Local governments may also be captured by interest groups that divert resources to serve particularistic ends (Prud'Homme, 1995; Crook and Manor, 1998; Tanzi, 1996; Manor, 1999; Bardhan and Mookherjee, 2000). Therefore, as pointed out by Martinez-Vazquez and McNab (2003), “unfettered fiscal decentralization is likely to lead to a concentration of resources in a few geographical locations and thus increase fiscal disparities across sub-national governments”.

China's case has been quite different from other countries in two aspects. First, China's fiscal system is highly centralized on the revenue side but decentralized on the expenditure side, and therefore local governments, particularly those in less developed regions, rely heavily on intergovernmental transfers from the central government. Therefore, China's fiscal decentralization is largely transfer-based and local governments enjoy less fiscal autonomy than in other decentralized countries. The highly decentralized fiscal expenditure hardens the budget constraints of local governments (Ahmad, et al. 2002). Revenue-starved jurisdictions have faced mounting difficulty in providing sufficient public services and pursuing economic investment and development, further contributing to the regional income and fiscal gaps (Jin and Zou 2003; Park, et al. 1996; Shen and Zou, 2008).

Second, lack of local accountability, both top-down and bottom-up, also contributes to the rising inequality. For the central government's policies to promote equalization with intergovernmental transfers to work, money should be spent where it is designated. However, as we will show below, such top-down accountability is remarkably weak even though China retains a highly centralized political apparatus. Anecdotes and case studies have shown that diversion of intergovernmental transfers has been a serious problem. China's National Audit Office reported that, between 1997 and 1999, 20.43 percent of earmarked poverty relief funds (4.34 billion yuan or about US\$ 640 million) were misallocated and mostly diverted to support the expansion of local bureaucracy. A case study of a national poverty county in China finds that the outright diversion rates for EMS were between 37 and 52% in 1998-2000 (Liu et al, 2009).

In the absence of electoral accountability, local officials also lack the incentive to

prioritize the public service needs of local residents. Since the CCP came to power the rural population has tended to be relegated to serve as a vast reservoir for resource extraction (grain, labor, and land). Instead, in spite of history of peasant-based social revolution, urban bias has prevailed in China. Urban-centered elites have tended to produce institutions and policies that favor the urban population, which have in turn become more affluent as well as influential over time. It has been argued that political pressure from the urban population in the reform period has resulted in various transfer programs that promoted income growth disproportionately in the urban (Yang, 2009; Yang and Cai, 2000). If such urban bias in government spending continues to exist at the local level, stronger local fiscal capacity would not bring about the narrowing of the urban–rural divide even if such narrowing is desired by the national leadership (Tao et al., 2009).

To correct for the fiscal imbalance brought by fiscal decentralization in the 1980s and early 1990s, China’s central government has implemented a sequence of fiscal recentralization measures since 1994 to increase its fiscal capacity with the express goal of helping to reduce regional income disparity. However, the redistributive effect of the fiscal system remains limited and the fiscal imbalances are compounded by a proliferation of extra-budgetary revenues (Tao et al., 2009; Shen, Jin and Zou, 2012). Huang and Chen (2012) find that while the central government has in recent years stepped up its transfers to the provinces and made them less dependent on the past distribution of transfers or the expansion of local tax bases, intergovernmental transfers are significantly less equalizing and more dependent on political influence.

We try to empirically evaluate the impact of China’s transfer-based decentralization on regional inequality in this paper by exploring a unique opportunity. To reclaim control, China drastically recentralized its fiscal system in 1994 by carrying out a set of fiscal and tax reforms in which the central government takes 75% of the value-added tax but leaves the (enterprise and personal) income taxes to the provinces (Wong, 2000; World Bank, 2002). In 2002, the central government unilaterally decided to take 50% of income taxes and the central share increased further to 60% in 2003. Revenue centralization was accompanied by further

decentralization of expenditure responsibilities to local governments to reap the benefit of efficiency gains. The ensuing vertical imbalance was financed through intergovernmental transfers. Since the mid-1990s, central transfers have played a growing role in financing local spending. In 1994, various transfers from the center amounted to 49.7 billion yuan, or about 45% of central government revenue. By 2010, 73% of central revenue (2,735 billion yuan) were designated for transfer purposes (China Fiscal Statistical Yearbook, various years).

Utilizing the above mentioned changes in the tax regime, our paper aims to examine if the Chinese central government can achieve its goal in reducing regional and urban-rural inequality by combining revenue centralization with expenditure decentralization. Our paper contributes to the existing literature on three fronts: Theoretically, the existing literature has not analyzed how China evolving intergovernmental fiscal regime has changed local governments' incentives and therefore affected the inequality level within and between regions. Our paper focuses on the political economy factors driving China's persistent regional and rural-urban inequality. Empirically, few studies have separately analyzed the role of revenue recentralization and expenditure decentralization and the existing empirical studies treat the measure of fiscal decentralization as exogenous, which, as we will point below, is highly problematic. Utilizing an exogenous policy change in the tax-sharing regime in 2002 and 2003, we construct a simulated instrumental variable to deal with the endogeneity issue and separate the effects of tax-sharing rate and transfers from the central government. Moreover, we supplement our analysis with a case study based on two-waves of national poverty-alleviation program in China targeted by central government transfers. Finally, our empirical findings can shed some light on the current debate about fiscal reforms in China.

Our analyses of the impact of tax-sharing reforms as well as the case study of the poverty alleviation program indicate that a different problem is condemning public good provisioning in China: resources are unequally allocated between urban and rural areas and leak through the system because of unaccountable local officials. Therefore centralizing fiscal revenues and increasing intergovernmental transfers

offer little help to reduce regional inequality and enhance public goods provision. Instead, our findings suggest that introduction of political reforms in favor of bottom up democratic accountability may be necessary to stem the dissipation of public resources. If bottom-up accountability takes too long to build or is not feasible due to political constraints, an alternative option could be the adoption of a people-based anti-poverty strategy in place of channeling resources to targeted places.

The rest of the paper proceeds as follows. Section 2 discusses the evolution of China's fiscal regime and explains the political and economic reasons behind the transfer-based decentralization. This is followed by a description of China's regional inequality and urban-rural income gap. Section 3 describes the data used and defines variables. Section 4 discusses our empirical strategy, especially why a simulated instrumental variable approach is used and how the instruments are constructed. Section 5 reports the impact of the centralizing fiscal revenue and transfer-based decentralizing expenditures on local inequality level. In section 6, we supplement our analysis with a case study of China's two-phase national poverty program, and further examine how intergovernmental transfers affect local governments' spending behavior and therefore local development. We summarize overall findings in the conclusion and shed some light on the current debate about fiscal reforms in China.

## II. China's Fiscal Revenue-Sharing Systems and Regional Inequality

### 2.1 The Rise of Transfer-based Decentralization in China

China is a unitary state and its government, led by the Communist Party of China, consists of five layers of administration: the central government (State Council), 31 provinces, 331 prefectures, 2109 counties, and 44741 townships (World Bank, 2002). In the 1980s and early 1990s, alongside incentives-enhancing reforms in agriculture and industry centered on contracting, China's central leaders also adopted measures of fiscal and administrative decentralization (Oksenberg and Tong, 1991; Wong, 1991). Through fiscal contracts between the central government and the provinces, local governments started to command a larger share of government revenues. With better local information and region-specific expertise, local officials were entrusted with

primary responsibilities for local development and enjoyed significant revenue autonomy (Oi, 1992; Qian and Weingast, 1997).

While the fiscal contracting arrangements provided powerful incentives for local development, they also severely limited the fiscal upside for the central government and left it with a shrinking share of the growing pie. Between 1985 and 1993, the central government's share of total budgetary revenue declined from about 40 percent to less than 25 percent (World Bank, 2002). As more resources came under the control of local officials with only local economies and interests in mind, the need for coordination and macroeconomic control grew but the Chinese central government felt hard pressed to meet such demand, such as the inflationary pressures in the late 1980s and early 1990s (Yang 1999). The shocks from the political crisis of 1989 within China and the fall of the Soviet Union abroad also provided strong impetus for China's post-Tiananmen leadership to shore up the central government's fiscal foundations.

In 1994, the Chinese leadership was able to push through a significant revamp of the tax and fiscal system to stem a decline in central government fiscal capacity (Yang 1994). The reform, also known as for the introduction of a tax-sharing system, made the value added tax (VAT), the biggest tax category, a shared tax, with 75 per cent going to the central treasury. Other taxes were assigned to either the central or local governments. The enterprise income tax (with the exception of certain enterprises) and personal income taxes were assigned to local authorities as of 1994 but, as noted earlier, in 2002-03, the central government decided to claim 50% in 2002 and 60% beginning in 2003.

Following the introduction of the 1994 reforms, the central government's share of budgetary revenue jumped to more than 50 percent. On the expenditure side, however, the central government did not fundamentally alter the decentralized spending structure (Martinez-Vazquez and Zhang, 2002). As a matter of fact, the expenditure responsibilities of sub-national levels (province, prefecture, county, and township) have increased after 1994 because of the urgent need to offer a social safety net. As a result of the large-scale restructuring of China's state owned sectors, many social



services and social security responsibilities that had been shouldered by the enterprises had to be taken over by local governments (Wong, 2000).

The fiscal recentralization first occurred between the central government and provincial governments but rippled through all subnational level governments in the following years. One problem with China's intergovernmental fiscal system is a lack of clear responsibility assignment among different levels of government with a province (World Bank, 2002). Such ambiguity can lead to overlapping expenditures among sub-national governments. In addition, because of their weak bargaining position in the hierarchy, lower-ranked local governments often end up shouldering responsibilities dumped onto them by their superiors.

[Figure 1 about here]

Figure 1 shows local governments' shares in total government revenues and spending. By the early 2000s, the central government took in over one-half of all budgetary revenues but only spent one-third of the budgetary expenditure. According to the World Bank (2002), China is one of the most decentralized countries in the world in terms of subnational government expenditure. In the 1990s, the ratio of sub-national to total government spending averaged 32 percent in OECD countries, 26 percent in transition economies, and 14 percent in developing countries. With its 70 plus percent ratio of subnational to total spending, of which more than 55 percent is at sub-provincial levels, China is clearly an outlier.

As a result of revenue centralization but continued expenditure decentralization, a large vertical fiscal imbalance has emerged and central transfers became necessary to meet local obligations. Starting from 1994, the central government gradually developed a complicated transfer system consisting of three main components: general transfers (*cailixing buzhu*), which are based on standard formulas and designed for leveling regional inequality; earmarked subsidies (*zhuanxiang buzhu*), which have specific policy objectives and are usually allocated on an ad hoc negotiated basis; and tax return subsidies (*shuishou fanhuan buzhu*). Strictly speaking, the final component was a concession made by the central government to win over local governments' support for the 1994 reforms; it was based on a pledge by the

central government pledged that local revenues would not fall below the 1993 base figure with the 1994 reforms. Therefore, the tax return subsidies should not be treated as a type of transfer as commonly understood in the literature. In fact, the Chinese Ministry of Finance has in recent years adopted new accounting rules that separate tax return subsidies from fiscal transfers. For this reason, we exclude “the tax return subsidies” from the calculation of fiscal transfers below.

Table 1 presents data on government revenue and central-local fiscal transfers for 1994-2010 and the progression in both revenue centralization and expenditure decentralization. Central transfers to local governments grew from just under 50 billion yuan in 1994 to 2.7 trillion yuan in 2010. Measured as a share of central government revenues, transfers rose from 45% in 1994 to 76% in 2010. The significance of central transfers can also be viewed from the angle of local revenues. The last column of table 1 computes the share of central transfers in total local revenues. Starting from 11% in 1994, central transfers rose quickly to 20% in 1999 and 42% in 2010. The same pattern holds for subnational government below provinces. In 1999, 40% of the county level spending was financed by their upper level governments though for nationally designated poverty counties it was 61% (Chen et al, 2002). Another notable pattern exists in the relative proportion of general transfers and earmarked transfers. General transfers accounted for less than 30% of total central transfers before 2000 but have since reached the 50% range in recent years. Meanwhile earmarked transfers have steadily dropped from 70-80% of total central transfers in the 1990s to 51.6% in 2010.

[Table 1 about here]

From the central government’s perspective, general transfers leave too much room for local discretion and manipulation but earmarked transfers give the central government a useful fiscal lever for steering local spending behavior toward certain policy targets, such as poverty alleviation in less developed areas. Like in many other countries where local governments rely on fiscal transfers to provide public services, however, diversion of funds from the designated purposes has been a persistent problem and lack of local accountability has been commonly cited as a major cause of

such diversion. This certainly applies to the Chinese case. The central government has resorted to national campaigns to deter noncompliance in certain policy arenas but the huge financial and administrative costs prohibit this method from being applied to issues other than those prioritized by the central leaders. Without democratic elections at the local level, local officials have few incentives to prioritize the public service needs of local residents. Worse still, strong government control over the media and the judicial system means that violations of central government's mandates have little chance of being exposed and punished. In consequence, local officials have tended to focus their energy on economic development and promote revenue-making public spending. In areas where natural endowments are poor and economic opportunities are lacking, employment in government or the public sector in general becomes a coveted commodity. Local officials are tempted to make use of the central fiscal transfers to support the expansion of public payroll and thus increase patronage opportunities for their friends and allies. In short, without good accountability mechanisms, private gains, both economic and political, drive local officials to divert central fiscal transfers to purposes not intended by the central government.

Another problem with the transfer-based fiscal decentralization system is the variation in local fiscal autonomy. While local governments across China have neither the power to set local tax rates nor autonomy in defining their tax bases, they nonetheless differ greatly in their capacity to generate tax revenue. Local tax revenues are derived mainly from the value-added tax, business tax, and the enterprise and personal income taxes. Since these taxes typically cover manufacturing and service sectors, localities (mainly in coastal provinces) with more developed secondary and tertiary sectors fare above the average in terms of local revenue collections. In contrast, provinces in the central and western regions are more agriculture-based and tend to fare poorly in tax revenue collection. The same holds for the personal income tax. The richer coastal provinces with higher average income tend to collect more in personal income tax revenue.

[Table 2 about here]

Table 2 presents the trends of fiscal transfer dependency (calculated as the ratio of

intergovernmental transfers to total fiscal revenue) and fiscal autonomy (calculated as the ratio of self-retained tax to total government expenditure) by region. Transfer dependency has grown more rapidly in the central and western regions than in the coastal region. The reverse is true for the measure of fiscal autonomy.

## **2.2 Persistent Regional Inequality and Urban-Rural Income Disparity**

With the above background in mind and as a prelude to the subsequent analysis, this section turns to the trend in China's regional inequality and urban-rural income gap for the period 1980-2011. [The dataset is described below] Figure 2 graphs the evolution of Chinese regional inequality. We construct two indices of inequality measures using data from our prefectural urban and rural disposable income data. Gini coefficient is calculated using the standard formula. We also calculate the decomposable generalized entropy (GE) class of inequality measures as developed by Shorrocks (1980, 1984). We then decompose the GE coefficient by urban-rural status and graph the between- and within- effect accordingly. Our results are similar to those in the existing literature (e.g. Kanbur and Zhang, 2005; Tsui, 2006; Wu and Perloff, 2004; etc.)

[Figure 2 about here]

As shown in Figure 2, regional inequality decreased in the initial phase of reforms in the first half of the 1980s and then increased rapidly through the mid-1990s and has remains at an elevated level. We also decompose regional inequality into rural and urban; the decomposed inequality within rural areas is much higher than inequality within urban areas but both are at moderate levels. In contrast, inequality between urban and rural areas has accounted for more than half of the total regional inequality. To better illustrate the urban-rural income disparity, Table 3 presents the urban-rural income ratios using the national urban-rural income data (National Bureau of Statistics or NBS) as well as our dataset on (prefectural-ranked) municipalities. As shown in Table 3, the urban-rural disparity based on our data displays a very similar trend compared to that based on the NBS national data. There was a short-lived decline in the mid-to-late 1990s when the government raised

procurement prices for agricultural produce while at the same time urban growth slowed down. Since 1998, the ratio of urban/rural incomes has risen and reached a historical high of 3.33 in 2009, with some moderation thereafter. Based on our prefectural dataset, we also report the urban-rural income ratio separately for the three regions and show that the ratio is much higher in the less developed western region than in the coastal region.

[Table 3 about here]

The central government has made efforts effort to reduce regional inequality by increasing intergovernmental transfers, carrying out several waves of national poverty alleviation program, investing a huge amount of money through the Western Development Strategy, and other measures. Yet the impact of these efforts on the reduction of inequality and poverty has been modest at best and significant regional inequality has persisted and even grown. Besides the above mentioned placed-based policies, it is well recognized that barriers to interregional mobility contribute to inequality (Candelaria et al., 2013) while migration helps to alleviate it. Ha et al. (2009) find a Kuznets (inverse U-shaped) pattern between migration and income inequality in the sending communities, suggesting that while emigration increases inequality in the short run, it has a strong income inequality reducing effect in the sending communities over a longer period of time. Whalley and Zhang (2007) calibrate the effect of removal of the hukou system and show that the resulting reduction in regional inequality is sizable. In contrast to the urban-rural income gap and inter-regional disparities, the gap between sending communities and receiving communities has remained quite stable. Figure 3 shows that the income gap between net immigration cities and net emigration cities, which has served as the driving force for of China's massive interregional migration, has remained almost unchanged since the 2000s.

[Figure 3 about here]

### **III Data Source and Empirical Strategy**

#### **3.1 Data Sources** [This may go into an appendix]

We construct a panel dataset of 321 prefecture-level cities over 13 years (1993-2005). Prefectural city is the unit of observation. We obtain our data from six separate sources. First, the source of city-level disposable income data, from which our key dependent variables are constructed, is the *China Socio-Economic Development Statistical Database*, an authoritative online source sponsored by Tsinghua University. The database automatically gathers data from various issues of national and provincial yearbooks. We obtain the per-capita disposable income of urban households and the rural households from the database, and therefore we can calculate the ratio of urban to rural income as a measure of urban-rural inequality in the city. Disposable income is defined as total personal income minus personal current taxes and expenditures on social insurance. In China, disposable income statistics are available for both urban and rural citizens, known as the per capita disposable income for urban households and the per capita rural net income for rural households respectively. Second, data on public finance, which includes various sources of government fiscal revenues for the same period, are obtained from the *National Prefecture and County Finance Statistics Yearbooks* (Quan Guo Di Shi Xian Caizheng Tongji Ziliao). This source offers detailed fiscal information for almost all counties and cities in China. Third, detailed prefecture-level economic and demographic information for the same period of 1993-2005 is obtained from the *China City Statistical Yearbooks* (Zhongguo Chengshi Tongji Nianjian). This information includes GDP per capita, industrial output by ownership (domestic, foreign and Hong Kong, Taiwan & Macau), population, and land area, etc.

To control for the pattern of population structure, which we believe to be a major driving force for the changing income structure in China in recent years, two variables are constructed. Due to the lack of annual city-level data on resident population, we proxy using registered population. The variable is calculated as total change rate plus birth rate minus death rate of the registered population divided by average annual total population. The second variable is urbanization rate, defined as the ratio of urban residents to total population. Similar as above, the figure is also calculated using registered population. Fourth, we supplement our data set with data from two rounds

of National Population Census which contains information on resident population. Therefore we are able to calculate the average annual change rate of resident population of each city as well as the average national change rate. We then divide the cities into two categories: one is those whose change rates are above the national average level and the other one is those whose rates are below. Finally, all of our variables are deflated to 1992 price level using provincial price deflators obtained from the *China Compendium of Statistics 1949-2006*. Descriptive statistics for all variables are summarized in Table 4.

[Table 4 about here]

### 3.2 Empirical Strategy

Our goal is to measure the impact of a change in tax-sharing regime on urban-rural inequality and intra-city income inequality. For ease of exposition, the budget constraint of local government can be written as follows:

$$R = I + P(1 - \tau) \quad (1)$$

where  $R$  is total fiscal revenue,  $I$  is intergovernmental transfer from the central government,  $P$  is total tax revenue, and  $\tau$  is the rate at which local government share local tax revenue  $P$  with the central government. We assume that after controlling for a set of covariates, there is no exogenous shock other than the change in tax regime to local tax revenue, i.e.  $P = P(I, \tau, X)$ , where  $X$  is a set of covariates which will be discussed below. A tax-sharing reform could be seen as a change in both marginal rate  $t$  and intergovernmental transfers  $I$  since after 2002-03 the central government has grabbed a larger proportion of income tax revenue from local governments and at the same time redistributed the newly added revenues to local governments in the form of transfers. Our purpose is to identify how a change in the tax-sharing regime causes a change in inequality within a municipality. Therefore the baseline model to be estimated could be written as follows:

$$\frac{dInequal}{Inequal} = \alpha + \beta \cdot \frac{d\tau}{\tau} + \gamma \cdot \frac{dI}{I} \quad (2)$$

where  $Inequal_{it}$  represents the measure of inequality within the city. Following

Gruber and Saez (2002), for the ease of estimation and to utilize the exogenous change in tax-sharing policies to construct a simulated instrumental variable (which will be explained later), we re-arrange the above equation as follows:

$$\frac{dInequal}{Inequal} = \alpha + (\beta + \gamma\tau \frac{P}{I}) \cdot \frac{d\tau}{\tau} + \gamma \cdot \frac{(dI - Pd\tau)}{I} \quad (3)$$

Note that  $dR = dI - Pd\tau$ , so that we could write the above equation as follows:

$$\frac{dInequal}{Inequal} = \alpha + \beta' \cdot \frac{d\tau}{\tau} + \gamma' \cdot \frac{dR}{R} \quad (4)$$

Eq. (4) shows the change in inequality level induced by a tax-regime change ( $d\tau, dI$ ). This equation could be estimated by replacing  $Inequal$  by  $Inequal_1$  (year 1 inequality),  $dInequal$  by  $Inequal_2 - Inequal_1$  (change in income inequality between year 1 and year 2),  $d\tau$  by  $\tau_2 - \tau_1$  (change in tax-sharing rate), and  $dR$  by  $R_2 - R_1$ . Following previous studies (e.g. Gruber and Saez, 2002; Han and Kung, 2012), we use a log-log specification and therefore the baseline model to be estimated could be written as follows:

$$\log\left(\frac{Inequal_{i,t}}{Inequal_{i,t-1}}\right) = \alpha + \beta \log\left(\frac{\tau_{i,t}}{\tau_{i,t-1}}\right) + \gamma \log\left(\frac{R_{i,t}}{R_{i,t-1}}\right) + \lambda \cdot X_{it} + \eta_t + \varepsilon_{it} \quad (5)$$

where  $Inequal_{i,t}$  represents the measure of inequality within the city,  $\tau_{i,t}$  represents the rate by which local governments share tax with the central government,  $R_{i,t}$  is the total fiscal revenue of city  $i$  in year  $t$ ,  $X_{it}$  is a vector of time-varying characteristics,  $\eta_t$  controls for year fixed effects (city fixed effects has been cancelled out by this first-difference specification), and  $\varepsilon_{it}$  denotes the random disturbances.

The panel nature of the dataset allows us to use the first-difference estimator and therefore control for time-invariant characteristics that may affect the inequality measure. However, the term capturing the tax-sharing rate change  $\log(\tau_{i,t}/\tau_{i,t-1})$  may still correlate with  $\varepsilon_{it}$  and thus suffer from endogeneity. For instance, local governments can respond to a change in the tax-sharing regime by shifting their tax-collecting efforts among various types of taxes vis-à-vis cultivating new revenue sources. The change in local government behavior may benefit certain groups and at the same time hurt others, leading to a change in the intra-city inequality level. The same logic applies to the term representing the change in local fiscal revenue



$\log(R_{i,t}/R_{i,t-1})$ . Therefore, an OLS regression of Eq. (5) would lead to a biased estimate of the causal relationship.

To identify the causal impact of tax-sharing regime change on local inequality level, we need to find variations in the tax-sharing rate and local fiscal revenue that is plausibly orthogonal to the time-varying determinants of income inequality. Following Gruber and Saez (2002) and Han and Kung (2012), we turn to the simulated instrumental variable approach to address the endogeneity concern.

To construct instrumental variables for the two endogenous variables, we exploit the exogenous changes in the central-local sharing schedule independent of local characteristics. The strategy to build instruments is to compute  $\tau_{i,t}^p$  which is the tax sharing rate that the government would face in year  $t$  if its fiscal income did not change from year  $t-1$  to year  $t$ ; that is, to just use changes in tax regime to provide identification of the parameter of interest. The natural instrument for  $\log(\tau_{i,t}/\tau_{i,t-1})$  is thus  $\log(\tau_{i,t}^p/\tau_{i,t-1})$  which is the predicted log tax sharing rate change if local fiscal revenue and its components does not change from year  $t-1$  to year  $t$ . Thus it reflects only changes in the sharing schedule but not other changes in the amount and structure of fiscal revenue, the latter of which may be correlated with  $\varepsilon_{it}$ .

Since the simulated changes in a local government's fiscal revenue is a function of period  $t-1$  pre-sharing revenue  $R_{i,t-1}$ , the instrument still produces biased estimates if  $\varepsilon_{it}$  depends on  $R_{i,t-1}$ . There are several reasons why this could happen. For example mean reversion or serial correlation of  $\varepsilon_{it}$ . Therefore, following previous studies (e.g. Gruber and Saez, 2002; Auten and Carroll, 2002; etc.), we control the polynomials of lagged per capita fiscal income as well as its sub-categories including per capita lagged tax revenues, per capita value-added tax revenues, per capita corporate income tax and per capita individual income tax. Since the correlation may not be linear, we control for a flexible function of the variables for robustness. In addition, we also control for year fixed effects and a set of other control variables: including the registered population size, the net-immigration rate and its quadratic term.

Similarly, the term  $\log(R_{i,t}/R_{i,t-1})$  in Eq. (5) which captures the effect of intergovernmental transfers is also correlated with  $\varepsilon_{it}$  and needs to be instrumented. A natural instrument for it is the log change in after-sharing fiscal revenue if there were no change in fiscal revenue and its structure, i.e.

$$\log\left[\left(I_{i,t-1} + P_{i,t-1}(1 - \tau_{i,t}^p)\right)/R_{i,t-1}\right].$$

When using the first difference estimator, we need to relate changes in inequality level between pairs of years to the change in tax-sharing regime between the same pairs of years. In our basic specification, we follow the practices in the existing literature (Feldstein, 1995; Gruber and Saez, 2002) to use a time length of 3 years. In that case, we relate year 2000 to year 1997, year 2001 to year 1998, and year 2005 to 2002.

As discussed in the previous section, we utilize two major changes that occurred to the central-local revenue-sharing regime: the central government increased its share of corporate income tax and personal income tax from 0 to 50% in 2002 and further to 60% from 2003 onwards. Moreover, to the extent that it is likely for the importance of income tax to vary spatially, the aforementioned changes create substantial cross-sectional variations for estimating the impact of the tax-sharing reform on inequality.

[Table 5 about here]

Table 5 shows the predicted year-by-year change in tax-sharing rate. We provide information for each year in our sample on the value of the predicted change in the tax sharing rate, for the full sample and for three different regions (eastern, middle, and western). We show both the average value of the instrument, and, in square brackets, the standard deviation in this value. As shown in Table 5, there is substantial variation in the mean values of this instrument, over time, across geographic area, and within group over time.

## IV Empirical Results

### 4.1 Basic results

In this section, we discuss the estimated causality between reform in the tax-sharing arrangements and urban-rural inequality. Since the variable of our main interest is urban-rural inequality in the municipalities, we first present results for the urban-rural income ratio. We then discuss several other dependent variables and examine a number of different specifications to establish the robustness of our findings.

[Table 6 about here]

Table 6 presents the OLS and SIV results from our baseline model estimating the impact of tax-sharing reform on urban-rural income ratio. The first column presents results from the OLS model, and column (2) to (7) presents estimations from the SIV model. Column (2) shows the estimation results from the most parsimonious specification that only controls for year dummies. In column (3) to (7), we add lagged income ratio, a set of control variables, and polynomials of lagged per capita fiscal revenue and its subcategories as controls successively. As shown in Table 6, coefficients from the SIV model are slightly larger and statistically more significant than the ones from the OLS estimation, suggesting the appropriateness of using the IV approach. The coefficients for change in tax-sharing rate and per capita fiscal revenue are all positive and statistically significant, indicating higher urban-rural inequality level from a more centralized tax-sharing regime. The positive coefficients for the change in log tax-sharing rate suggest that when the central government takes away a larger share of local tax revenue, urban-rural inequality level increases as a result. As explained in the previous section, the coefficient for the change in tax revenue can measure the effect of intergovernmental transfer from the central government. The results indicate that more intergovernmental transfers from the central government also lead to higher urban-rural inequality.

The Chinese leadership recentralized the fiscal system by increasing the tax-sharing rate and increased intergovernmental transfers as a mean of redistribution after the 1994 tax-sharing reform in order to boost redistribution and alleviate inequality. Our estimations suggest that both measures in fact worked against reducing urban-rural inequality within the (prefectural-ranked) municipalities. The

results remain quite robust across different specifications.

## **4.2 Interregional inequality**

We now examine several other dependent variables. Tables 7 and 8 report results estimating the effect of fiscal recentralization on urban and rural disposable incomes separately. The results suggest that more intergovernmental transfers from the central government only contribute to an increase in the urban per capital disposable income while having no statistically significant effect on the rural disposable income per capita. Meanwhile, a higher tax-sharing rate, which means a more centralized fiscal regime, has a significant negative effect on rural disposable income per capita. When the central government takes a greater share of revenue, rural income growth tends to be lower.

The results indicate two undesired effects of the tax-sharing reform carried by the central government: First, the central government increase intergovernmental transfers mainly as a means of fiscal rebalancing. However, even if such policies may help to reduce inequality across different places, intergovernmental transfers mainly benefit urban residents but not the rural people. Second, when local governments have less autonomy on their tax revenue, their incentives change accordingly. As explained, local governments' incentive to develop the urban sectors becomes stronger than before, and this developmentalism may contribute to industrial development at the price of farmers. The two effects jointly contribute to a larger urban-rural income gap. As shown in the tables, the results are insensitive to the inclusion of more controls.

[need to refine]

[Table 7 about here]

[Table 8 about here]

## **4.3 Controlling for time-varying income distribution changes**

Even with the above flexible model specification, we still rely on a crucial identifying assumption: that the problems of mean reversion and serial correlation are not changing year-to-year in a way that is correlated with year-specific changes in tax

policy. In other words, we are allowing the relationship between  $\varepsilon_{it}$  and  $R_{it}$  to be non-linear, but we are imposing that it is constant over time. However, when the revenue process is highly non-stationary (which is quite possible since earmarked transfer which is a part of intergovernmental transfers is highly discretionary), the assumption is unlikely to hold. We now present specification tests that show that this assumption is robust to allowing in limited ways for year-specific variation in the relationship between  $\varepsilon_{it}$  and  $R_{it}$ .

Following Gruber and Saez (2002), we consider two alternatives: First, we allow for a linear time trend in the lagged per capita fiscal revenue. This allows the relationship between  $\varepsilon_{it}$  and  $R_{it-1}$ . The second is to interact lagged dependent variable with a full set of year dummies. This allows for year-specific changes in the inequality distribution, but only in a way that is linearly related to base-period inequality level.

[Table 9 about here]

As shown in Table 9, the estimation results are robust to these two sets of controls. Our standard errors rise somewhat, but in both cases the key coefficients are similar to those in Table 6-7, suggesting that changes in the relationship between  $\varepsilon_{it}$  and  $R_{it-1}$  are not driving our earlier results. While we cannot rule out year-specific non-linear changes in the relationship between  $\varepsilon_{it}$  and  $R_{it-1}$ , it seems unlikely that these would occur in precisely the same way as tax regime changes and therefore unlikely that they can explain our results.

#### **4.4 Robustness Check**

Finally, we conduct another robustness check to verify our empirical findings. As the above empirical analysis mainly focuses on the effect of the changing tax-sharing regime on income inequality, we now turn our attention to how transfer-dependency – another measure of the level of fiscal centralization – affects local inequality level. Our main explanatory variable is the ratio of intergovernmental transfers to total fiscal revenue. The more heavily local governments rely on intergovernmental transfers from the central government, the less fiscal autonomy they have. Therefore, the

variable is a good measure of the level of fiscal centralization. As before, the model is also subject to the endogeneity concern.

To address the potential endogeneity issue, we utilize another policy shock to construct the instrumental variable for transfer-dependency. In 2000, through the amended Minority Region Autonomy Law and the strategy of opening up the western region, a new preferential fiscal policy was introduced under the name of “transfers to ethnic minority areas”. The policy promised an extra 1 billion yuan (about 0.16 billion dollars) to the minority regions, and the amount has increased every year since then, reaching 15.9 billion yuan in 2005.

Utilizing this exogenous policy change, we construct an instrumental variable interacting the number of minority counties in the city and a dummy variable equal to 1 for observations in year 2000 to year 2005. We can expect cities with more minority counties to receive more intergovernmental transfers after 2000, and therefore the instrumental variable should have a positive coefficient in the first stage. However, the trend of inequality level is not likely to change differently after 2000 for minority counties and other counties, which could lend support to the exclusion restriction of our instrumental variable.

[Table 10 about here]

We report the regression results for this empirical model in Table 10. Column (1) presents result from the first-stage model. The coefficient for the instrumental variable is positive and statistically significant, and the F-value is 14.87, suggesting that our instrumental variable is strong enough. Column (2) and (3) presents results for the 2SLS model, and the dependent variables are the urban-rural income ratio and the growth rate of urban-rural income ratio accordingly. The variable measuring local governments’ transfer dependency is positive and statistically significant, thus indicating that as local governments rely more heavily on intergovernmental transfers, urban-rural inequality in the municipality/prefecture becomes larger. The findings further reinforce our empirical findings above that the level of fiscal centralization has a negative effect on intra-locality inequality level.

## **5 Empirical Evidence from China's National Poverty Alleviation Program**

We supplement our analysis with a case study of China's national poverty alleviation program to further explore how intergovernmental transfers incentivize local governments and affect the economy. In order to combat poverty, the Chinese central government in 1994 launched probably the largest and most ambitious poverty alleviation program in the world known as the 8-7 Program (lifting 80 million people out of poverty within seven years, 1994-2000). The 8-7 Program was succeeded by the New Century Rural Poverty Alleviation program for the period of 2001–10, which represented an attempt to better target the poor (in this round, the number of poverty counties was kept about the same but 50 counties in coastal provinces were replaced by the same number of interior counties).

The central government's key policy instrument for the antipoverty program was the earmarked transfer. Over the course of its seven-year operation, the 8-7 program targeted 592 designated poverty counties and cost 1.24 trillion yuan (USD 14.9 billion), about 5-7 percent of China's central government expenditures each year. Program funding averaged 19 million yuan per county in 1994 and 45 million yuan in 2000; this was a very sizable amount compared to the average government expenditure of 46 million yuan in 1994 and 120 million yuan in 2000 among the designated poverty counties (Lu, 2010). Since 2001, the anti-poverty funds have received further boosts.

The anti-poverty program has been largely development-oriented, in particular for the 8-7 program and the New Century Program.<sup>1</sup> For example, the objectives of the 8-7 Plan were to: (1) assist poor households with land improvement, increased cash crop, tree crop and livestock production, and improved access to off-farm employment opportunities; (2) provide most townships with access to road and

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<sup>1</sup> The objectives of the 8-7 Plan were to: (1) assist poor households with land improvement, increased cash crop, tree crop and livestock production, and improved access to off-farm employment opportunities; (2) provide most townships with road access and electricity, and improve access to drinking water for most poor villages, and (3) accomplish universal primary

electricity, and improve access to drinking water for most poor villages, and (3) accomplish universal primary education and basic preventive and curative health care. In practice, given its short-term horizon and low returns to education in the then still very distorted labor market, the 8-7 Plan placed less emphasis on rural education and health (World Bank, 2002). Therefore, in total, about 30 percent of poverty funds went to agriculture and industry each, and 35 percent to infrastructure. Compared to the 8-7 program, the new century plan also emphasizes more on human capital and social development in poor localities and promotes participatory poverty reduction approaches.

For both periods, the central government's targeted poverty investment mainly comprises of three components. First, the designated counties receive special subsidized loans administered by the Leading Group's Poor Area Development Office and the Agricultural Development Bank. It is provided to support enterprises and farmers in the national poverty counties. Second, the State Planning Commission (correct name?) established a public works program called Food-for-Work in the designated counties. This policy mainly support economic development in poverty-stricken areas and the construction of small-scale infrastructure projects in rural areas related to poverty reduction, including building of roads in counties, townships and villages, works of farmland irrigation, drinking water projects for the people and livestock, basic farmland capital construction, grassland construction, comprehensive improvement of small river basins, etc. Finally, the Ministry of Finance provided earmarked budgetary subsidies to support productive construction projects in the designated poor counties. Aiming at achieving persistent growth through the program and lifting the efficiency in the use of transfer payments, the central government provided special subsidies to support productive investment, especially investment in infrastructure, resource exploitation, labor-intensive projects, and tertiary industries.

We make use of a panel dataset of Chinese counties (1994-2006) to examine the effect of central government earmarked transfers on local government expenditure behavior, especially whether the national designated poverty counties (NDP counties)



followed central government funding guidelines to make use of the earmarked funds. Because program designation and the amount of intergovernmental transfers from the central government could be endogenous due to several reasons such as omitted variable, reverse causality, etc., an OLS regression would lead to biased estimation. Luckily, the rule of program designation enables us to use the regression discontinuity approach to address the endogeneity issue. According to the central policy, in principle, the standard for selecting NDP counties was the per capita rural net income below 400 Yuan in 1992 (State Council Notice on 8-7 Poverty Alleviation Project, 1994). Due to political pressures from NDP counties already included in the anti-poverty program before the 8-7 Program, the central government set a different criterion (per capita rural net income not exceeding 700 Yuan) for these old NDP counties. Since this different criterion creates more than one cutoff point, we exclude these 291 counties from our data set. As noted earlier, by the end of the 8-7 poverty alleviation program, the central government started a new wave of poverty alleviation program known as the New-century Poverty Alleviation Program. Counties from the coastal provinces were phased out and the same number of counties from the interior was added. To simplify our analysis, we drop all the counties that changed their national poor county status in 2001. Therefore, the NDP designation in our sample is based on the criterion of per capita 400 Yuan in 1992.

This discrete relationship between a county's pre-program performance and its probability of being treated provides us with a unique quasi-experimental setting to estimate the causal effect of the treatment, i.e. NDP designation and central transfers. Following the literature (e.g. Card et al. 2007, etc.), we apply the control function approach to estimate the model as follows:

$$Y_{it} = D_{it}\tau + f(X_{it}; \gamma) + a_i + b_t + \varepsilon_{it}$$

where  $i$  and  $t$  denote the individuals and time, respectively,  $X_i$  is the 1992 per capita rural net income of county  $I$  net off the cutoff point, and  $f$  is the control function which is by assumption continuous at the cutoff point.  $a_i$  denotes individual fixed effects and  $b_t$  is year fixed effects. However, in our context, the treatment  $D_{it}$

is time-invariant, thus making the inclusion of individual fixed effects impossible.<sup>2</sup> Therefore, we include only year fixed effects and provincial fixed effects in our analysis. In addition, we also account for within-individual correlation of the errors over time using clustered standard errors.

One thing worth mentioning is that closer examination of data and interviews with officials from the Ministry of Finance suggests that, in practice, each province has adjusted the 400 Yuan criteria according to their own conditions. Some more developed provinces raised the poverty line, while only a few less-developed ones implemented the 400 Yuan criterion. Besides per capita rural net income, other factors such as political connection and status as a minority or revolutionary base county also affected the poverty county designation. We therefore follow accepted practice to estimate the cutoff in each province (e.g. Chay et al., 2005; Porter, 2003; Ozier, 2011). In order to address the small-sample problem in estimation, we propose a bootstrap approximation with the change-point detection technique to get the asymptotic variance of the estimator (Antoch et al., 1995).

We test the validity of our RD design by conducting a density function test of the assignment variable (i.e. county level rural net income per capita in 1992) to examine potential manipulation during the designation process (McCrary, 2008). A formal McCrary test is also conducted and the log discontinuity estimate is statistically insignificant, indicating no precise manipulation of the running variable at the cutoff. In addition, we test the continuity of a set of pre-treatment variables at the cutoff point. There is no evidence of contradiction of the continuity assumption. For space limitation, we do not report the tables and graphs for the tests here.

Regression results for our core analyses are reported in Tables 11 and 12. We first examine the effects of NDP designation on local governments' fiscal revenue and

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<sup>2</sup> It is important to note here that this model sharply contrasts with a more traditional panel data setting where the error component  $a_i$  and  $b_t$  are allowed to be correlated with the observed covariates, including the treatment variable  $D_{it}$ . In that case including fixed effects is essential for consistently estimating the treatment effect  $\tau$ . (Lee & Lemieux, 2009).

expenditure per capita. Panel RDD results for the entire 1994-2006 period are reported in Panel A in Table 11. Panel B and Panel C report the results for the 8-7 Plan period and the New Century Plan period respectively. Since the central government significantly increased general transfers after 2001, dividing the whole sample by two phases allows us to detect different treatment effects separately so as to examine how local governments modified their spending behavior when local budget constraint were relaxed following the injection of more general transfers for all counties. To test the robustness of our results, we consider five bandwidths around the cutoff point, i.e., CNY 200, 250, 300, 350 and 400 respectively.

[Table 11 about here]

The results indicate that total revenue and transfer revenue of poor counties are significantly higher than that of non-poor counties both for the whole period 1994-2006 and for the two phases. A closer examination of the coefficients suggests that this is mainly driven by the significantly higher central transfers rather than tax revenues. Table 11 indicates that the coefficients for designation are all statistically insignificant when local self-raised tax revenue is the dependent variable. This null-effect indicates that while receiving more transfers from the central government, local governments in the designated poor counties did not reduce local tax collection in any statistically significant way. This finding confirms the existence of the flypaper effect where grants are shifted to spending, but not to reducing taxes. As for transfer revenues, both earmarked transfer and general transfer per capita are significantly higher for the national poor counties.

We then turn to local government spending. For ease of interpretation, we characterize local governments' expenditures into three categories: productive spending includes spending on capital construction and rural development which are the two categories that the central government expects local governments to spend the earmarked transfers on. Social spending in education, health and social welfare, and administrative spending includes expenditures on salaries and operational costs of various bureaus and organizations. As expected, the total per capita budgetary expenditure is higher in NDP counties just below the cutoff than in non-NDP counties

just above the cutoff. However, the coefficients are much higher during 2001-2006, almost twice as that in 1994-2000. Dividing the total fiscal expenditure into productive spending, social welfare spending and administrative spending allows us to analyze the contributions of different spending categories to the higher government expenditure in NDP counties. For the full sample, all three categories have positive coefficients but administrative spending has the largest coefficients.

Under the development-oriented poverty alleviation policy, earmarked transfers from the central government should be mainly used for productive spending. Therefore one should expect the NDP counties, after receiving significantly higher earmarked transfers, would spend more on productive investments. However, the coefficients for productive spending are statistically insignificant during 1994-2000. This suggests significant transfer diversion by local governments for other uses. On the contrary, we find a significantly higher social spending and administrative spending in the NDP counties during 1994-2000. For administrative spending, the coefficients are much larger than those for social spending. These results suggest serious diversion problem of earmarked transfers during the 8-7 poverty alleviation program when all local governments were facing serious hard budget constraints. Although local governments in NDP counties did spend more on social spending, they seem to have diverted most of the transfers to support the bureaucracy.

The regression results for 2001-2006 show a different pattern of local government spending. The coefficients for productive spending turn significantly positive and become much larger, indicating that the diversion problem was less severe during this period. However administrative spending as well as its subentries remains positive and statistically significant, and the coefficients are still the largest among the three categories. Moreover, social spending, especially expenditure for education is still highly positive and the coefficients are significantly larger than for productive spending. These results suggest that as the central government significantly increased the total amount of inter-governmental transfers, especially general transfers, local governments in both NDP counties and non-NDP counties have faced a more relaxed budget constraint and there is less need to divert the

earmarked transfers. Thus NDP counties receiving more transfers can spend more on productive investment as well as providing public goods. However, the diversion problem remains.

[Table 12 about here]

To assess the real effect of the two phases of poverty alleviation, we further analyze a set of variables on the counties' public goods provision, rural production, and economic outcomes and the results are presented in Table 12. We find that none of the outcome variables show significantly better results in the NDP counties than in the non-NDP counties and results are robust to different window widths. The treatment effect for rural net income per capita is not significant from zero. Note also that the null-effects are largely consistent among different models, thus providing consistent evidence that the estimates of designation are statistically insignificant. These results contradict the central government's claim of a big success of the national poverty alleviation programs. Compared with other similarly situated counties, NDP counties did not raise farmers' income. Since the main objective of the place-based national poverty alleviation program was to promote production and increase income in poverty areas, the results of our analyses point to a failure by the central government to use earmarked transfers for its intended purpose of alleviating poverty through development. China's National Audit Office reported that, between 1997 and 1999, 20.43 percent of earmarked poverty relief funds, worth 4.34 billion Yuan (US\$ 640 million) in total, had been misallocated. A more recent case study of a national poverty county in China finds that, in 1998, 1999 and 2000, outright diversion rates for earmarked transfers were 52%, 37% and 43% respectively (Liu et al, 2009).

As spending on social welfare, especially education expenditures, shows significantly positive coefficients, one may expect education conditions in the poverty counties should improve. However, our research indicates that enrollment rates for both primary and middle schools see no significant higher results in the poverty counties. Our field work and interviews with local officials may provide a plausible explanation for this paradoxical result. In many poverty-stricken regions, private

sector jobs were scarce and people were drawn to government employment. As a result, local officials utilized this opportunity to reward friends and political allies or extract kickbacks. Yet the central government monitors the size of local government agencies closely, leaving social sectors like education a soft spot for public employment expansion. Under the name of supporting education, local officials put family members and friends on the payroll in the education sector. In fact, our RD estimation indicates that the numbers of fiscal dependents per 10,000 people in the national poverty counties are significantly higher than that in the non-NDP counties in both phases of the poverty relief program.

## **6 Conclusion**

In the past two decades, the extractive capacity of the Chinese state has increased enormously. Concerned about declining state capacity caused by a previous round of fiscal decentralization in 1980s, the central government revamped the tax and fiscal system in 1994. As a result of the revenue centralization and continued spending decentralization, a large vertical imbalance emerged and central transfers became essential for local authorities to meet their expenditure obligations. With more resources at hand, the central government has made meaningful efforts to balance fiscal capacity across regions through fiscal redistribution and have also invested heavily in targeted regions and areas through central transfers to address the issue of enlarging urban–rural disparity.

Whereas the central government transfer payments have helped ease the serious financial shortfall in less developed regions, we argue that capacity for fiscal redistribution has had limited impact for income redistribution and is in fact of limited utility for alleviating urban–rural divide in China. Our empirical evidence suggests that the present configurations of institutions and interests in China are strongly urban-biased. The lack of fiscal autonomy and increasing transfer-dependency at the lower levels of government have contributed to the persistent and even growing regional inequality and urban-rural income disparity. Coupled with the lack of bottom up accountability, the lack of fiscal autonomy harms local governments' incentive and

undermines its ability to provide public goods and promote economic development in rural areas. Instead intergovernmental transfers that are designed to correct for regional inequality and promote rural development have tended to go to urban areas and have therefore further increased urban-rural disparity. Moreover, evidence from a case study of China's national poverty alleviation program reveal that the nationally designated poverty counties did not increase their spending on production-enhancing investments - something the central government emphasized strongly in designing the poverty relief program - in the first wave of the program and only increased such spending modestly in the second phase. Instead local officials diverted funds to the expansion of administrative personnel as well as to increasing bureaucratic consumption. Compared with other poverty counties, the nationally designated poverty counties did not show meaningful improvement in terms of a range of socio-economic variables such as farmers' income.

Our research, along with findings from others, reminds us that government accountability, both top-down and in particular bottom-up accountability, are important to stem resource leakage to wasteful spending, as well as improving the welfare of the rural poor. The Chinese leadership has so far made tremendous efforts to enhance top-down accountability, so much so that the system is known for its (top-down) pressures (cite). Yet the top-down demands have often ended up producing unintended and perverse consequences. It is necessary to introduce local accountability from the bottom up, through both democratic elections and information transparency. Since there is scant momentum for bottom-up local accountability, a possible improvement could be a shift from a place-based poverty alleviation strategy to a people-based one, for example by providing aid and services to migrants to facilitate their permanent migration out of the poverty-stricken areas.

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