Government Transfer Payments and Regional Development in China

Tingsong Jiang¹
Centre for International Economics, Canberra

Zhiyun Zhao
Institute of Finance and Trade
Chinese Academy of Social Sciences, Beijing

A prominent feature associated with the rapid economic growth in China is the worsening regional disparity. As shown in Figure 1, the income gap between China’s coastal and inland regions² has been widening since the economic reforms in 1978. Of the three regions, the richest eastern coastal region experienced the fastest economic growth in the past two decades. The average per capita GDP in the eastern region increased seven-fold, while per capita GDP in the poorest western region increased by less than five times. Consequently, the gap in per capita GDP between the eastern and western regions increased from 380.6 yuan in 1978 to 3,354.9 yuan in 2000 in real terms. This phenomenon has been well documented by many authors, e.g. Wu (1999), Sun (2000), Sun and Parikh (2001) and Jiang (2002).

One way to tackle this problem is using inter-governmental transfer payments.

¹ Correspondence to:
Tingsong Jiang,
Senior Economist
Centre for International Economics
GPO Box 2203, Canberra ACT 2601, AUSTRALIA
Email: tjiang@thecie.com.au
Phone: (61 2) 6248 6699
Fax: (61 2) 6247 7484

² Thirty one provinces, municipalities and autonomous in mainland China are normally classified into three regions - eastern coastal, central and western regions – according to their geographical location and economic development situation. The eastern coastal region is the most developed region in China, including 12 provinces and municipalities - Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, Guangxi and Hainan. The central region includes nine provinces and autonomous regions with middle degree of economic development: Shanxi, Inner Mongolia, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei and Hunan. The western region is the least developed region, including the remaining six provinces – Yunnan, Guizhou, Sichuan, Shaanxi, Qinghai and Gansu; three autonomous regions – Tibet, Ningxia and Xingjiang; and one municipalities – Chongqing.
Transfer payments could ease the regional disparity through three channels. First, payments to households in less developed regions could directly narrow the regional income gap. Second, transfer payments to finance more investment in health, education and infrastructure in less developed regions could improve these regions’ economic growth potential and ease the disparity in longer term. Third, transfer payments may reduce the tax burden in the recipient regions and thus give additional stimulation to the regional economies.

**Figure 1: Per Capita GDP by Region**

![Figure 1: Per Capita GDP by Region](source: Jiang (2003, Figure 7).)

Transfer payment has been playing an important role in local governments’ budget in China. In 2001, about 41.3 per cent of local government revenues were transfers from the central government (Table 1). However, most of the transfers are purely redistribution of tax revenues among the central and local governments as a result of implementing the tax sharing system (*fen shui zhi*). Only a very small proportion of the transfers are dedicated to improve the regional disparity. The share of the “equalisation transfer” in total transfer payments from the central to the local governments was only 1.8 per cent in 2000 (He 2001). Therefore, many studies find that the transfer system failed to equalise the per capita fiscal expenditure as well as
per capita income (for example, Wong 2002a, Ma 2003).

This paper attempts to discuss the new development in this issue and relevant policies. It is organised as follows. The next section briefly introduces the transfer payment schemes in China, followed by an evaluation of the impact of transfer payments on regional development. In Section 3, a general equilibrium model of the Chinese economy with regional details, CERD, is used to conduct some stylised simulations of increasing transfer payments to less developed inland regions. Finally some concluding remarks are provided.

1. China’s Government Transfer Payment Schemes

The government transfer payment practices in China evolve along with the entire governmental fiscal system. There was no systematic arrangement of government transfer payments before the economic reform in 1978. Transfer payments, as supplementary measures, were made within other fiscal instruments under the centralised fiscal system. It was gradually decentralised under the fiscal contract system (caizheng baogan zi) implemented in 1980s and early 1990s until the implementation of the tax sharing system in 1994. The implementation of Transfer Payment Arrangement during the Transitional Period in 1996 marked the establishment of a formal and comprehensive program of government transfer payment in China. Therefore the evolution of transfer payment schemes after reform could be divided into three periods: 1980–93, 1994–95 and post-1996.

Transfer payment between 1980 and 1993

Along with the economic reform, the government finance was gradually decentralised and a governmental fiscal contract system was established. Under this system, the scope and base of revenues and expenditures were defined between the central and local governments and the local governments were required to be responsible for the balance of their budgets. Transfer payments occurred in three forms: fixed transfer, earmarked special purpose grant and settlement subsidy.

Fixed transfer was guaranteed by the contract system for those local governments
whose base revenues were not sufficient for defined expenditures. The amount of this type of transfer payment was fixed by the level of the deficit in the base year. However, additional settlement subsidy and special purpose grant may still be available. Settlement subsidies were made when some items of revenues and/or expenditures defined in the contract were changed, for example, the ownership of firms transferred from the central government to local governments or vice versa. Special purpose grants were paid in two forms. Some of them were earmarked to finance special programs, such as agricultural support fund, large infrastructure projects and so on; and the others were used in the case of natural disasters.

Transfer payment between 1994 and 1995
As a part of a comprehensive tax reform package, the central government replaced the fiscal contract system with a tax sharing system\(^3\) in 1994. Under this system, tax revenues received by the central and local governments were clearly defined and collected by different agencies.

As a result of the tax sharing system, the central government’s revenue, and thus the transfer payments, increased significantly. The transfer payments to local governments were 213.5 and 245.0 billion yuan, accounting for 78 and 76 per cent of the central government’s revenue, and 60 and 52 per cent of local governments’ expenditure, respectively, in 1994 and 1995 (Du, 2001, pp.49). Most of the transfer payments were in the form of “returned revenues” which was designed to ensure that local governments’ revenues after the implementation of the tax assignment system were no less than the level in 1993. The returned revenues, accounting for 77 per cent of total transfer payments in 1995, were not a real increment to the transfer payment as they were originally part of the local governments’ revenues. Nevertheless, they provided the central government more rooms to use fiscal instruments. The remaining transfer payments were equivalent to previous settlement, fixed transfer and special purpose grants.

Transfer payments after 1996

\(^3\) This system intended to resume the fiscal power of the central government which was eroded under the fiscal contract system.
The transfer payments were formalised and systemised in 1996 when the Transfer Payment Arrangement during the Transitional Period was implemented. These “transitional” transfer payments consist of two parts: objective factor determined and policy based transfer payments. The amount of objective factor determined transfer payments \((TO_i)\) is calculated according to the following formula:

\[
TO_i = (E_i - R_i) \times a,
\]

where, \(E_i\) and \(R_i\) are, respectively, region \(i\)’s standard fiscal revenues and expenditures; and \(a\) is the coefficient of objective factor transfer payment, which is in turn determined by

\[
a = \frac{T - TP}{R - E},
\]

where, \(T\) is the total amount of transfer payments nationwide, \(TP\) is the amount of national policy based transfer payments, \(R\) and \(E\) are, respectively, national standard fiscal revenues and expenditures. There are no objective factor transfer payments made to regions with more revenues than expenditures.

Policy based transfer payments are dedicated to ethnic minority autonomous regions according to the difference between regional standard fiscal revenue and expenditure. The amount of this type of transfer payments is affected by two factors: (1) the difference in the growth rate of fiscal capacity; and (2) the difference in per capita fiscal capacity between the nation and the concerned region (Ma 1998, pp.94).

However, this “transitional transfer payment” plays very limited role as it accounts for only a small proportion of the total transfer payments, being just above 2.5 per cent in 2001. Its shares in local governments’ total revenues were only 0.01, 1.63 and 2.17 per cent, respectively, in the eastern, central and western regions in (Table 1).

Some changes were made to the Transfer Payment Arrangement during the Transitional Period in 1998. They include mainly the adjustment of the calculation of standard fiscal revenues and expenditures. A new decree, General Transfer Payment

Jiang, T., & Zhao, Z., ‘Government Transfer Payments and Regional Development in China’. - 5 -
Arrangement, was promulgated in 2002, which was mainly designed to address the issue of transfer payments to the inland regions. The general transfer payments are similar to the objective factor determined transfer payments, except that the transfer payment coefficient now differs across regions (Ministry of Finance Budget Department, 2003, pp.83–89).

At present, 41.3 per cent of local governments’ total fiscal revenues are from transfer payments from the central government (Table 1). These transfers fall into four broad categories: fixed transfer, returned tax revenue, special purpose grants and general purpose grants. The general purpose grants in turn include transitional transfer, transfer to ethnic minority regions, transfer to increase salary standard of public servants and to improve social security networks, and other grants such as settlement subsidy. The shares of these four categories in total transfer payments are shown in Figure 2.

2. An Evaluation of the Transfer Payment System in China

The impact of transfer payments on regional development could be examined from two aspects: first, whether the structure of transfer payments is appropriate to address the problem of regional disparity; and second, whether the transfer payments actually contributed to regional fiscal equalisation and growth convergence.

**Figure 2: Composition of transfer payments by region, 2001**

Source: Authors’ construction based on statistics
2.1 Are richer provinces receiving more transfer payments?

It is often argued that the transfer payment system in China failed to ease the regional disparity as richer regions receive even more transfers than poor regions (for example, Ma 2003). This could happen because of two reasons. First, the central government collects more taxes from more developed regions, and, consequently, these regions receive more transfers in the form of returned tax revenues under the tax sharing system (Table 1). Second, the transfer payment system is virtually a negotiable scheme. Developed regions could receive fairly large amount of transfers in other forms.

However, the situation has been changed and the above accusation may no longer be valid. Although richer regions still receive more transfers in the form of returned tax revenues, poorer regions receive more transfers in total. As shown in Table 1, in 2001 the total amount of transfer payments to the central and western regions are, respectively, double and three times of the amount to the eastern region.

This pattern is also evident at provincial level. Figure 3 scatters per capita total transfer payments (3a) and per capita transfer payments other than returned revenues (3b) received by each province, autonomous region or municipality against its per capita GDP in 2000. It can be seen from the charts that there is a negative relationship between per capita transfers and per capita GDP.

This is confirmed by the following OLS regressions of per capita transfer payments against per capita GDP:
<table>
<thead>
<tr>
<th>Items</th>
<th>National</th>
<th>Eastern region</th>
<th>Central region</th>
<th>Western region</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>billion</td>
<td>billion</td>
<td>billion</td>
<td>billion</td>
</tr>
<tr>
<td></td>
<td>yuan</td>
<td>%</td>
<td>yuan</td>
<td>%</td>
</tr>
<tr>
<td>Local governments’ total revenue</td>
<td>1328.26</td>
<td>100.00</td>
<td>600.65</td>
<td>100.00</td>
</tr>
<tr>
<td>Local tax revenue</td>
<td>780.33</td>
<td>58.75</td>
<td>467.85</td>
<td>77.89</td>
</tr>
<tr>
<td>Total transfer</td>
<td>547.93</td>
<td>41.25</td>
<td>132.80</td>
<td>22.11</td>
</tr>
<tr>
<td>Returned tax revenue</td>
<td>230.89</td>
<td>17.38</td>
<td>120.69</td>
<td>20.09</td>
</tr>
<tr>
<td>Fixed transfer</td>
<td>12.21</td>
<td>0.92</td>
<td>0.70</td>
<td>0.12</td>
</tr>
<tr>
<td>Special purpose grant</td>
<td>103.94</td>
<td>7.83</td>
<td>21.99</td>
<td>3.66</td>
</tr>
<tr>
<td>General purpose grant</td>
<td>200.89</td>
<td>15.12</td>
<td>-10.59</td>
<td>-1.76</td>
</tr>
<tr>
<td>Transitional transfer</td>
<td>13.82</td>
<td>1.04</td>
<td>0.05</td>
<td>0.01</td>
</tr>
<tr>
<td>Transfer to ethnic minority regions</td>
<td>3.30</td>
<td>0.25</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Salary increase and social security</td>
<td>99.38</td>
<td>7.48</td>
<td>7.90</td>
<td>1.32</td>
</tr>
<tr>
<td>Other</td>
<td>84.39</td>
<td>6.35</td>
<td>-18.54</td>
<td>-3.09</td>
</tr>
<tr>
<td>Per capita transfer payment</td>
<td>42.60</td>
<td>23.51</td>
<td>45.30</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Authors’ construction based on statistics.

Jiang, T., & Zhao, Z., ‘Government Transfer Payments and Regional Development in China’. - 9 -
where $PCTT_i$, $PCTO_i$ and $PCGDP_i$ are, respectively, per capita total transfer payments, per capita transfer payments other than returned revenues, and per capita GDP in province $i$; and numbers in brackets under the equation are $t$-ratios for estimated coefficients. It can be seen that there is a significant – at 5 per cent level – negative relationship between the per capita GDP and other transfers, that is, poorer regions receive more transfers other than returned revenues from the central government. There is a weaker negative relationship between per capita total transfer payments and per capita GDP if the outliers – Shanghai, Beijing and Tianjin – are excluded.

The above analysis indicates that poorer regions rather than richer regions receive more transfer payments from the central government in recent years. The next two subsections examine the impact of this pattern of transfer payments on regional fiscal situation and economic growth.


2.2 Transfer payment and regional fiscal inequality

The pattern of China’s regional fiscal inequality has been changing over time and the impact of transfer payment on regional fiscal capacity has been a debatable issue.

Under the fiscal contract system prevailing during 1980s and early 1990s, China’s fiscal system was decentralized and regional governments were required to finance themselves. Economists have been concerned that regional self-finance may worsen the inequality. However, Jin, Qian and Weingast (1999) find that regional fiscal inequality was actually improved during that period.

Table 2 – which is reproduced from Table 6 in Jin, Qian and Weingast (1999) – reports the coefficients of variation for per capital revenue and expenditure across provinces between 1982 and 1992. It shows that the regional disparity for budgetary and extra-budgetary revenues and expenditures were improving over the period. For example, the coefficient of variation for budgetary revenue fell from 1.99 in 1982 to 0.98 in 1992. On the other hand, the coefficient of variation for per capita budgetary revenue remittance (the difference between budgetary revenue and expenditure) rose from 4.25 in 1982 to 7.78 in 1992, implying more revenue redistribution from rich to poor provinces. In other words, the transfer payments helped to ease the regional fiscal inequality during the period.

Wong (2002a) observed that regional fiscal inequality started worsening in 1993. For example, the coefficients of variation for per capita expenditure rose from 0.534 in 1992 to 0.675 in 1998, and the maximum to minimum ratio rose jum ped from 6.6 to 19.1 during the same period (Table 3). Based on these observations, she argues that the transfer payment system failed to equalise.

---

4 Wong (2002) does not give the exact definition of per capita expenditure and revenue. It is conjectured that they include both budgetary and extra-budgetary expenditure and revenue, which may explain the inconsistency between her numbers and those in Jin, Qian and Weingast (1999).

Jiang, T., & Zhao, Z., ‘Government Transfer Payments and Regional Development in China’. - 12 -
Table 2 The coefficients of variation for per capita revenue and expenditure across provinces, 1982-92

<table>
<thead>
<tr>
<th>Year</th>
<th>Budgetary revenue</th>
<th>Budgetary expenditure</th>
<th>Budgetary remittance</th>
<th>Extra-budgetary revenue</th>
<th>Extra-budgetary expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>1.99</td>
<td>0.68</td>
<td>4.25</td>
<td>1.02</td>
<td>0.88</td>
</tr>
<tr>
<td>1983</td>
<td>1.86</td>
<td>0.64</td>
<td>5.00</td>
<td>1.02</td>
<td>0.97</td>
</tr>
<tr>
<td>1984</td>
<td>1.78</td>
<td>0.62</td>
<td>6.17</td>
<td>1.05</td>
<td>1.00</td>
</tr>
<tr>
<td>1985</td>
<td>1.68</td>
<td>0.62</td>
<td>6.91</td>
<td>1.04</td>
<td>0.99</td>
</tr>
<tr>
<td>1986</td>
<td>1.53</td>
<td>0.61</td>
<td>5.39</td>
<td>1.08</td>
<td>1.01</td>
</tr>
<tr>
<td>1987</td>
<td>1.36</td>
<td>0.58</td>
<td>3.92</td>
<td>1.05</td>
<td>1.03</td>
</tr>
<tr>
<td>1988</td>
<td>1.20</td>
<td>0.57</td>
<td>4.55</td>
<td>1.02</td>
<td>1.01</td>
</tr>
<tr>
<td>1989</td>
<td>1.08</td>
<td>0.54</td>
<td>4.83</td>
<td>0.94</td>
<td>0.95</td>
</tr>
<tr>
<td>1990</td>
<td>1.06</td>
<td>0.54</td>
<td>6.27</td>
<td>0.95</td>
<td>0.93</td>
</tr>
<tr>
<td>1991</td>
<td>0.98</td>
<td>0.53</td>
<td>6.19</td>
<td>0.96</td>
<td>0.94</td>
</tr>
<tr>
<td>1992</td>
<td>0.98</td>
<td>0.52</td>
<td>7.78</td>
<td>0.84</td>
<td>0.81</td>
</tr>
</tbody>
</table>

Source: Jin, Qian and Weingast (1999, Table 6).

Table 3: Trends in the inter-regional distribution of fiscal resources, 1990-2001

<table>
<thead>
<tr>
<th>Year</th>
<th>Per capita expenditure (yuan)</th>
<th>Per capita Revenue (yuan)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max/Min Average</td>
<td>Coeff. var.</td>
</tr>
<tr>
<td>1990</td>
<td>6.1  241.0</td>
<td>0.551</td>
</tr>
<tr>
<td>1991</td>
<td>6.6  268.0</td>
<td>0.539</td>
</tr>
<tr>
<td>1992</td>
<td>6.6  282.9</td>
<td>0.534</td>
</tr>
<tr>
<td>1993</td>
<td>8.1  355.5</td>
<td>0.546</td>
</tr>
<tr>
<td>1994</td>
<td>9.7  417.6</td>
<td>0.665</td>
</tr>
<tr>
<td>1995</td>
<td>16.6 512.2</td>
<td>0.768</td>
</tr>
<tr>
<td>1996</td>
<td>18.1 612.7</td>
<td>0.801</td>
</tr>
<tr>
<td>1997</td>
<td>19.5 708.8</td>
<td>0.882</td>
</tr>
<tr>
<td>1998</td>
<td>19.1 817.5</td>
<td>0.864</td>
</tr>
<tr>
<td>2000</td>
<td>7.6  1058.1</td>
<td>0.705</td>
</tr>
<tr>
<td>2001</td>
<td>7.0  1326.4</td>
<td>0.675</td>
</tr>
</tbody>
</table>

Note: 1990–98 indicators are calculated from data of 29 provinces, municipalities and autonomous regions with Tibet excluded and Chongqing included in Sichuan for 1990–98; 2000–01 indicators are calculated from data of all 31 provinces, municipalities and autonomous regions in the mainland China.

Source: 1990–98 figures from Wong (2002a), 2000-01 figures from authors’ own calculation.
However, it seems that the regional fiscal inequality is improving in recent years. As shown at the bottom of Table 3, both maximum to minimum ratio and coefficient of variation for per capita revenue and expenditure are lower in 2001 than in 1998. Because our data sources and variable definitions may be different to Wong’s (2002a), the results may not be directly comparable. However, the results for 2000 and 2001 are comparable as they have consistent data sources and definition. At least for these two years, there existed an improvement in regional fiscal inequality.

Table 1 shows that the eastern, central and western regions received, respectively, 24.2, 36.0 and 39.8 per cent of the central government’s transfer payments in 2001. Given that these regions account for 42.5, 34.8 and 22.7 per cent of the Chinese population, respectively, it is clear that the improvement in regional fiscal inequality was a result of increasing transfer payment from the central government to less developed regions.

2.3 Transfer payment and regional economic growth

The ultimate purpose of transfer payment is to stimulate regional economic growth. Jiang (2002) observes a divergence of per capita GDP in Chinese provinces, autonomous regions and municipalities after 1995. Therefore one way to evaluate the impact of transfer payment on regional disparity is to examine whether it contributed to this divergence.

Ma (2003) presents an econometric analysis of the impact of transfer payments on regional growth. He estimates following regional economic growth equations using regional data during 1995 and 2000:

\[
\ln Y_{iT} - \ln Y_{i0} = C - (1 - e^{-\beta T}) \ln Y_{i0} + \varepsilon_i, \tag{3}
\]

\[
\ln Y_{iT} - \ln Y_{i0} = C - (1 - e^{-\beta T}) \ln Y_{i0} + \beta TRANSF_i + \varepsilon_i, \tag{4}
\]

where \( Y_{i0} \) and \( Y_{iT} \) are, respectively, per capita GDP of province \( i \) in year 0 and year \( T \); \( TRANSF_i \) is the per capita transfer payment received by province \( i \) during the period from year 0 to year \( T \); and \( \beta \) is a convergence coefficient. A positive (negative) \( \beta \) indicates convergence (divergence), that is, regions with lower per capita GDP level
at base year have higher (lower) growth rate. He finds that, without including the transfer payment variable, $\beta$ is between -0.012 without regional dummy and -0.021 with regional dummy and statistically significant. If including the transfer variable, the coefficient of transfer payment ($\gamma$), is significant and positive, and the value of $\beta$ reduces to -0.018 and -0.023, respectively, without and with regional dummy. Based on these results, he concludes that “transfer widens regional gaps”.

However, we believe that the above results should be interpreted in the opposite direction. Although regional economic growth diverges, transfer payments do help to mitigate this trend. In (3), $\beta$ captures all the impacts on regional growth, whilst in (4) it captures other impacts except transfer payments. As the value of $\beta$ in (3) is smaller in absolute value than that in (4), the regional growth is less divergent if including transfer payment than if not including transfer payment. It may become clearer from the following derivation.

According to estimates in (1) and (2), transfer payment received by one region is negatively related to its GDP level. For convenience, this relationship may be written as:

$$TRANSF_i = \bar{T} - \alpha_i \ln Y_{10}$$

where $\bar{T}$ is a fixed amount which is independent of regional income, $\alpha_i$ is a positive coefficient which is region specific. Replacing $TRANSF_i$ with the above relationship, (4) becomes

$$\ln Y_{iT} - \ln Y_{10} = C + \gamma\bar{T} - (1 - e^{-\bar{T}} + \gamma\alpha_i) \ln Y_{10} + \epsilon_i$$

(4’)

It is clear from comparing (3) with (4’) that $\beta$ in (3) includes the effect of transfer payment $\gamma\alpha_i$.

The above discussion reveals that the regional gap in per capita GDP was widening at a rate of 1.2–2.1 per cent per annum during 1995 and 2000. However, if there were no transfer payments, the widening rate would have been 1.8–2.3 per cent.
2.4 Outstanding issues

Although the above analysis shows that transfer payment system played a positive role in improving regional disparities in China in recent years. It does not imply that the system is problem-free. In fact, there have been many imperfections associated with this system.

First, the structure of the transfer payments is problematic. As shown in Table 1 and Figure 2, general purpose grant accounts for only 15 per cent of total transfer payments. Within the category of general purpose grant, only the “transitional transfer”, which accounts for less than 7 per cent of general purpose grant or 1 per cent of total transfer payments, is dedicated for the purpose of “equalisation”. Most of the grants are still allocated for special purposes. For example, about half of the general purpose grants were used to increase the payment to public servants and to improve the social security system. This structure gives little flexibility for local governments to arrange the use of transfer payments according to their own needs. Moreover, special purpose grants often require matching fund from the recipient regional governments. This arrangement may have two negative impacts. First, it may in fact increase rather than decrease the tax burden on recipient regions as these regions have to raise the matching fund. Alternatively, the recipient governments may try to divert the earmarked grant to other purposes, thus corrupting the fiscal discipline.

The second problem of the current fiscal and transfer payment system is that it provides little to deal with the extra-budgetary revenues and off-budget funds, which include user charges for government provided goods and services, administrative fees for government services and incomes from government-owned enterprises. Local governments have good excuse to collect extra-budgetary and off-budget revenues under the tax sharing system because they are responsible for providing vital public services including education, health care, social security and welfare, but their budgetary revenues are not enough to provide these services. As a result, the magnitude of extra-budgetary revenues is equivalent to that of budgetary revenues.

5 According to World Bank (2001), governments at county and township level spend 70 per cent of budgetary expenditure on education, and 55-60 per cent of those on health. Cities at the prefecture and county levels account for all expenditures on unemployment benefit and social security.
For example, extra-budgetary and budgetary revenues in 1999 were equivalent to 12 and 14 per cent of GDP, respectively (Wong 2001, 2002b). This huge amount of extra-budgetary revenues and expenditures not only increase the difficulty in budgetary management, but also widen regional gaps in regional government fiscal capacity and government services. For example, World Bank (2001) cited that the *World Health Report 2000* ranked China 61st out of 191 countries in overall quality of health, but 188th in terms of fairness in financial contribution. One of the two fieldwork counties in World Bank (2001) was not able to provide six years of primary schooling.

The third problem is the uneven tax burden on local economies. Figure 4 scatters each province’s average tax rate, which is the ratio of total taxes collected by the central and local governments from one province to the province’s total GDP, against its per capita GDP. The relationship displays a U-shape: the most developed and the least developed provinces have higher tax rates than middle-income provinces. It becomes clearer if grouping the provinces into the three regions as shown in Figure 5: the poorest western region has the highest average rate (12 per cent), followed by the richest eastern region (10.8 per cent) and the central region (9.2 per cent). This tax disparity not only further distorts the economy, but also hinders economic development in the least developed regions.

Finally, the discussion and design of a transfer payment scheme were preoccupied by equity criteria, however, efficiency criteria are also important. Jiang (2003) shows that simply transferring fund from the eastern coastal region to inland regions may reduce total welfare although regional gap could be narrowed. This is because the coastal region has better infrastructure, higher technology level and more market-oriented policy environment, therefore it has higher returns to resources than the inland regions.
Figure 4: Provincial average tax rate versus per capita GDP, 2001

Source: Authors’ construction

Figure 5: Regional average tax rate, 2001

Source: Authors’ construction

3. Stylised Simulation of Increasing Transfer Payments to Inland Regions

The above discussion reveals that transfer payment scheme in China has been helped to ease the trend of worsening regional disparity, however its effect has been limited by its structure and scope. This section simulates different programs of increasing transfer payments to inland regions using a general equilibrium model of the Chinese economy with regional details, CERD.
3.1 Description of the model

This subsection gives a brief introduction to the model of the Chinese economy used in the analysis. For more details about the model, see Jiang (2003).

As CERD suggests, it is a multi-regional model of the Chinese economy. In this study a simple version of CERD is used, wherein Chinese provinces are grouped into east, central and west regions as defined above.\(^6\) Traditionally, a multi-regional model follows the so-called “top-down” approach where a central model is solved and then a regional distribution is done using the shares of the different regions. For example, the PRCGEM model (Fan and Zheng 2001) classifies sectors into local and national sectors. Local sectors produce products which are not tradable between regions. Although national sectors produce tradable products, it is assumed that the same percentage change in sectoral output applies to all regions. Therefore, the differences in regions’ responses to policy changes or shocks are purely the structural effect, that is, coming from the difference in the composition of sectors in the regional economy.

By contrast, CERD uses the “bottom-up” approach. Each region in CERD is treated as an open economy with its own agents and behavioural functions. As shown in Figure 6, agents in each region make their decisions on the demand for and supply of commodities and primary factors, and regional economies are linked through commodity and factor flows.

**Figure 6: Structure of CERD**

It can be seen from

\(^6\) The detailed version of the CERD model identifies 28 regions, which correspond to one province, autonomous region or municipality directly under the central government in mainland China, with exceptions where Hainan, Ningxia and Tibet are included in, respectively, Guangdong, Gansu and Qinghai.
the diagram that CERD mimics a global model of multiple regions like GTAP (Hertel 1997). However, it has some peculiar features. First of all, regional links in CERD are more intensive than in a global model, especially for the movement of primary factors. For example, in GTAP labour is immobile across countries, while CERD allows partial mobility across regions within China. Four types of labour are identified in CERD: urban labour, rural agricultural labour, rural non-agricultural labour and migrant labour. It is assumed that urban labour and rural migrant labour engage in non-agricultural activities only. CERD also assumes perfect mobility of capital across domestic regions and sectors.

As labour and capital can move across regional boundaries, it is important to distinguish between the usage and ownership of these factors to better calculate regional household income and consumption. This makes CERD superior to some CGE models.

Another feature of CERD is that rural and urban households are distinguished in each region according to their possession of primary factors. This is very important and appropriate for the analysis of the Chinese economy where rural and urban areas are still separated to some degree because of various restrictions, although significant improvements have been made. For example, the household registration system, which identifies a person as a rural or urban resident, is still in effect and prevents people from freely moving across regions, especially from the countryside to cities.

Another difference between CERD and global models is its treatment of regional links. Ideally, inter-regional flows of commodities and factors would be presented in the model, however, such information is not available as there are no “customs” in each province to register “imports” from and “exports” to other provinces. In order to avoid arbitrary decisions in creating the database, CERD models inter-regional trade indirectly via a national pool of commodities and factors. Each region sells its excess supply to and buys excess demand from the national pool. For example, as shown in Figure 7, migrant labour in the national pool is a constant elasticity of substitution (CES) aggregation of migrant labour supplied by each region. The aggregate migrant labours are then allocated to each region to meet regional demand according to a constant elasticity of transformation (CET) process. The CES and CET processes
represent regional difference of migrant labour supply and demand.

CERD also distinguishes between regional and national governments, which allows for the analysis of transfer payments. To simplify the treatment, it is assumed that tax collections (except import tariffs and export taxes), government saving and consumption are made by regional governments, while the central government serves only to transfer payments to regional governments. Therefore, each regional government’s revenue is the regional tax revenues plus transfers from the central government.

Figure 7: National migrant labour market

There are two closures in modelling regional governments’ behaviour, namely, exogenous revenues and exogenous expenditures. In the former closure, regional tax rates and transfer payments are fixed and local governments consequently allocate the resultant revenues to government saving and consumption. On the other hand, in the latter closure, local governments’ expenditures on saving and consumption are fixed at pre-defined levels, while the tax rates or the amount of transfer payments vary to balance their budgets.

A particular feature of CERD is that its database has been compiled based on the provincial 44-sector input-output tables for 1997. The 44-sector classification follows the 40-sector classification in the 1997 national input-output table (National Accounts Department 1999) with the agricultural sector further disaggregated into five sectors. These 44 sectors include five agricultural sectors, 25 industrial sectors, one
construction sector, and 13 service sectors. In total there are 28 provincial tables available. These provincial input-output data have been aggregated into three regions. Other data and parameters are drawn from GTAP database 5, Yang and Huang (1997) and the China Statistics Yearbook series.

3.2 Stylised simulations

Three stylised changes in transfer payments are simulated using the CERD model described above. All these simulations are centred on increasing transfer payments to the central and western regions by 9.2 and 12.0 billion yuan, respectively, being equivalent to 10 per cent of each region’s general purpose grant in 2001. However, different treatments are made in each simulation. A summary of these simulations are given in Table 4.

<table>
<thead>
<tr>
<th>Simulation 1</th>
<th>Simulation 2</th>
<th>Simulation 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase transfer payment to the central and western regions by 9.2 and 12.0</td>
<td>Changes in transfer payments as set in Simulation 1</td>
<td>Changes in transfer payments as set in Simulation 1</td>
</tr>
<tr>
<td>billion yuan, respectively</td>
<td>Fixed government spending</td>
<td>Fixed regional tax rates</td>
</tr>
<tr>
<td>Fixed regional tax rates</td>
<td>Endogenous regional tax rates</td>
<td>Improvement in input efficiency such that no welfare loss</td>
</tr>
</tbody>
</table>

The first simulation is carried out with an exogenous revenue closure. Regional tax rates are fixed and regional governments’ revenues changes along with the changes in transfer payments.9

---

9 If the central government was allowed to consume, in addition to the amount of goods it could consume, it should also make decisions about where the commodities are bought and sold. This would unnecessarily increase the burden of computation as it can be embodied in the decision making process of individual regional governments.

8 Three provinces or autonomous regions, Hainan, Ningxia and Tibet, do not have input-output tables. These regions are small in economic scale and their input-output data were constructed according to information about neighbouring regions with similar natural and economic characteristics. Specifically, Hainan is included in Guangdong, Ningxia in Gansu, and Tibet in Qinghai.

9 More accurately, government revenue is endogenous even in this “exogenous revenue” closure because it is also affected by the tax base, which is endogenous. However, that effect would be of second order.
The second simulation is carried out with an exogenous expenditure closure. Regional governments’ expenditures are fixed, and the increase in transfers to central and western regions is used to bring down the tax rates in these regions.

The third simulation takes consideration of the efficiency issue. As mentioned above, improving regional disparity through pure transfer payment may actually reduce total welfare. However, it is also possible that transfer payment may increase total welfare through improving the productivity in less developed regions. But we do not have concrete information to establish the relationship between transfer payment and productivity improvement to be included in the CERD. Rather, we proceed in the opposite direction, asking how much productivity improvement is required to offset the inefficiency brought about by transfer payments. This simulation is also carried out with an exogenous revenue closure. The simulation results are summarised in Table 5.

Some points are evident from these simulations. First, increase transfer payments to inland regions can improve regional inequality. For example, in simulation 1, the poorest western region benefits the most – household and government utility increases by 0.89 per cent, followed by the central region – utility up 0.48 per cent while the richest eastern region suffers - utility down by 0.4 per cent because increase in transfer payments to inland regions is financed by the decrease in transfer payments to the eastern region.
Second, a pure increase in transfer payment (Simulation 1) is welfare decreasing. Although the equivalent variations (EV) in the central and western regions increase by 9.96 and 12.76 billion yuan, respectively, the eastern region’s EV decreases by 25.76 billion yuan, causing a net loss of 3.03 billion yuan. This is because the inland regions have lower returns to resources. Although the impacts of simulation 1 are mainly on the demand side and the real GDP virtually does not change, the lower returns in inland regions are represented by lower utility of household and government savings in these regions.

Third, reducing tax rates in inland regions through higher transfer payments may increase total welfare. This is because the reduction in tax rates provides additional stimulus to regional economy. For example, tax rates decrease by 0.17 and 0.40 percentage points in central and western regions, respectively, leading to increase in real GDP by 0.42 and 1.03 per cent, respectively.
Finally, a 10 per cent increase in general purpose grant to inland regions requires a 0.04 per cent generic improvement in output efficiency in these regions in order to keep the total welfare unchanged.

4. Conclusion

China’s governmental transfer payment scheme has been evolving along with the entire fiscal regime. The implementation of Transfer Payment Arrangement during the Transitional Period in 1996 marked the establishment of a formal and comprehensive program of governmental transfer payment. It has played a positive role in easing the regional inequality. However, some imperfections are associated with the scheme. Most importantly, the amount of transfer payments aiming at “equalisation” is limited.

Using a general equilibrium model of the Chinese economy with regional dimensions, CERD, several approaches of increasing transfer payments to inland regions are simulated. It is found that a pure transfer payment increment would decrease the total welfare as the decline in the eastern region’s welfare is more than offset the gains in the inland regions. In order to keep the total welfare unchanged, a 0.04 per cent of generic improvement in regional output efficiency is required for a 10 per cent increase in general purpose grants to the inland regions.

It is also shown that if the increase in transfer payment is used to reduce the tax rates in the inland regions, total welfare nationwide could be improved. This may have some implication for the so-called “tax for fee” reform which aimed at reducing tax (fee) burden through replacing various administrative fee schemes implemented by regional governments by a uniform tax system. As the “tax for fee” reform usually reduces governments’ revenue in less developed regions, the central government should provide enough transfer payment for these governments to fulfil their duties. Otherwise, local governments may simply reduce vital public services.
References


Sun, Haishun, and Ashor Parikh, 2001, “Exports, Inward Foreign Direct Investment


