Three Worlds of the Chinese Welfare State: Do Health and Education Change the Picture?

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Abstract:

Using the China Household Income Project 2007 data and imputing health and education benefits through microsimulation, this paper provides new empirical evidence on the size, structure, and redistributive effects of the Chinese social welfare system. We find that the divided urban-rural-migrant worlds of the Chinese welfare system revealed in previous literature persisted in our results, with imputed health benefits further enlarging the urban-rural-migrant gaps that existed based on self-reported social benefits while imputed education benefits helping narrow the gaps somewhat. The size of the total social benefit package measured as a share of final household income for rural and migrant families was only about half that for urban families. The urban-rural gap was especially large given the huge difference in their final household income levels. Social insurance, arguably the pillar of modern welfare states, was the major social benefit enjoyed by urban residents but was still nearly non-existent for rural and migrant families. Social benefits, especially social insurance and imputed health benefits, contributed significantly to the reduction in income inequality in urban areas but played a minimal role in reducing income inequality for rural and migrant families. As a result, despite the lower income inequality level enjoyed by rural residents based on market income only, the post-transfer income distribution in rural areas was much more unequal than that in urban areas. These results highlight the urgency for China to truly integrate the fragmented and unequal welfare systems and provide unified and just social benefits to all citizens.

Introduction

The Chinese welfare system has had dramatic changes during the past 35 years. A recent set of research has endeavored to use national household survey data to quantify the size, structure, and redistributive effects of the Chinese welfare system (Gao, 2010; Gao and Riskin, 2008; Gao, Yang, and Li, 2013). Existing evidence on this topic suggests that the Chinese welfare system has diverged into three worlds: the more generous and progressive urban world, the minimal and very regressive rural world, and the growing yet still small and regressive migrant world.

One challenge faced by most existing studies is the lack of information on health and education benefits in the survey data. In most countries, health and education are two of the largest and most important components of the social welfare systems. However, different from cash transfers (e.g., pensions, unemployment insurance, social assistance), they are mostly in-kind benefits and hard to be captured in monetary forms through surveys. Often referred to as *S*ocial Transfers In-Kind (STIK), health and education benefits have been estimated to dramatically boost the size of the welfare systems and change the redistributive effects of these systems (Smeeding, 1982). For example, Garfinkel, Rainwater, and Smeeding (2010) calculated the shares of social welfare transfers in GDP across 14 rich nations and found that health expenditures accounted for about 5-10% and education accounted for about 5-8% of GDP for most of these countries. Given that the share of total social welfare transfers in GDP in these countries ranged between about 18% in Ireland and 41% in Sweden, the combined total of 10-18% of health and education benefits in GDP is very significant and definitely non-negligible. This conclusion challenges the conventional approaches that ignored these important STIK benefits in estimating the size and redistributive effects of social welfare transfers.

The social welfare system in China has experienced drastic changes during the recent decades, first retrenching significantly in the urban areas during the early stages of the market economic reforms, and then having rapid expansions in multiple domains during the past decade. As China becomes a more active and dominant player in the global context, a more in-depth and precise understanding of the Chinese welfare system is in demand.

In this article, we use the nationally representative China Household Income Project (CHIP) 2007 data to quantify the size, structure, and redistributive effects of the Chinese welfare system. We not only utilize the detailed income data available in CHIP, but also impute health and education benefits that are often excluded from existing studies. By doing so, we provide updated and more thorough evidence on the Chinese social welfare system to see if the story of the three worlds revealed in previous literature holds. More importantly, we try to understand if the inclusion of the two vital components of in-kind social benefits, health and education, might change the story. Would the three worlds be further apart from each other or would the gaps between them be narrowed by health and education?

Our analysis builds on and extends a recent study by Gao, Yang, and Li (2013). Using the CHIP 1988, 1995, 2002, and 2007 data, their study found that the Chinese social welfare system is highly divided along urban–rural lines: the urban social benefit system is much more comprehensive and generous than the rural system, which is minimal and residual. By international standards, the urban system is similar to those in the western industrialized countries while the rural system is similar to those in the least developed countries. The urban system has consistently reduced income inequality and has remained progressive over time, while the rural system has had little impact on reducing income inequality and has been largely regressive. The social benefit system for the rural-to-urban migrants stands somewhere between

the urban and rural systems and has played an increasingly larger redistributive role from 2002 to 2007. One limitation of their analysis is the exclusion of education benefits in all years and the failure to fully capture health benefits in 2007. To address this limitation, our analysis imputes health and education benefits at the household level using CHIP 2007 data to detect whether the inclusion of health and education benefits changes the conclusions achieved by Gao et al. (2013).

This article extends the existing literature in two ways. First, comprehensive definitions and measurements of final household income and household social benefit package are used. The household social benefit package includes cash transfers, health, education, housing, food, and other in-kind benefits. Most importantly, health and education benefits not captured in the survey data are imputed using provincial level per capita government expenditure data. The final household income package consists of market income (including wage income, income from private enterprises/individual business, property income, and rental value of owner-occupied housing), social benefits, private transfers, minus taxes and fees.

Second, different from research in many other countries, most existing studies on household income in China calculate income as household per capita values and does not use any other equivalent scales to take into consideration the economies of scale or the realistic allocation of resources among family members. In this article, we adopt the OECD square root of household size equivalent scale as a sensitivity test to our main results based on household per capita values.

The Chinese Social Welfare System

The Chinese social welfare system has always been divided by the urban-rural lines, embedded in the rigid Household Registration System (Hukou) which assigns an urban or rural Hukou to any citizen upon birth. Before the market economic reforms were launched in the late

1970s, urban China had a full employment policy under which all urban citizens had assigned secure jobs. The jobs came with low wages but generous and comprehensive social benefits such as pensions, health care, housing, food, and education for children. These benefits were employment based and often better for those with more prestigious jobs or holding higher positions. Nonetheless, urban citizens in general had broad social benefit coverage and enjoyed the security afforded by such coverage (Gao, 2006; Hussain, 1994).

Meanwhile, rural citizens had access to the use of the farmland for production purposes but had to rely on themselves or their extended families or communities when in need. Only those without working abilities or any family support could apply for social assistance from the government. As a result, the rural social welfare system was very minimal and only covered a tiny fraction of rural residents (Wong, 1998).

Alongside the rapid market economic reforms, the social welfare systems in both urban and rural China have undergone significant changes. The formerly broad and generous urban social welfare system has been cut back, mainly to relieve the burden of social benefit payments held by state and collective enterprises to stimulate economic growth and efficiency. Housing used to be provided to employees for free or at very low rent but has been gradually privatized and became a trivial part of the urban social benefit package. Food benefits, namely distribution of food items or subsidies by employers to employees, have been eliminated. Social insurance— mainly pensions and health insurance—used to be entirely covered by employers but shifted to be the shared responsibility of employers and employees. Employers also stopped offering child care centers or other educational arrangements for the children of employees (Gao, 2006; Hussain, 1994).

As the urban social benefits shrank, market competition became increasingly fiercer, creating a group of the new urban poor who lacked both market earnings and social benefits. To meet the basic survival need of this group and maintain social stability, the government established the Minimum livelihood Guarantee (or Dibao) program in all cities in 1999 to provide monthly cash subsidies as a last resort for poor urban families. The expansion of this social assistance, though, lagged behind the pace and scope of the cutbacks in social insurance and important in-kind benefits such as housing and education in urban China.

During the past ten years, the Chinese government has undertaken a series of actions to address the meager situation of the rural social benefits. The formerly heavy agricultural taxes were eliminated nationwide in 2006, which has greatly relieved peasants—especially those who are poor—from financial hardship. The Dibao program was expanded to rural China nationwide in 2007, providing a much needed safety net for the rural poor. In 2008, the formerly available rural cooperative medical insurance that collapsed during the market economic reforms was restored and has since been expanding constantly to provide health insurance to the majority of rural residents (Gao, 2010).

Most recently, the government has made efforts to achieve universal coverage of social insurance across the urban-rural boundaries (Frazier, 2014). The 2008 Labor Contact Law mandated all employers to sign labor contracts with employees, including migrant workers, and to provide social insurance coverage to these employees. Since then the social benefit coverage for migrants has been greatly expanded. The 2010 Social Insurance Law stipulated the establishment of a unified old-age and health insurance system for all urban and rural citizens regardless of employment status. In February 2014, the central government issued the Social Assistance Regulations to provide cash and in-kind assistance to those with low income and/or

with specific health, education, or housing needs. In July 2014, the State Council issued a document to launch fundamental reforms of the Hukou system to enable much greater mobility between rural and urban areas and broader social benefit coverage for all citizens.

Health and Education in China

Because health and education benefits are imputed at the household level using administrative data in this article, we devote this section to detail the health and education systems in China. As shown in Table 1, the current health insurance system in China is constituted of three main schemes: the Urban Employee Basic Health Insurance (UEBHI), the Urban Resident Basic Health Insurance (URBHI), and the New Rural Cooperative Health Insurance (NRCHI). In addition, civil servants (*xingzheng bianzhi*) and those working in government affiliated institutions (*shiye bianzhi*) do not need to pay for health insurance themselves but get about 90% coverage at state expenses (*gongfei yiliao*). This is an important and expensive component of the Chinese health care system. In 2014, the total number of civil servants in China was 7.6 million (China Economic Weekly, 2014) and the total number of government affiliated institutions staff was 31.53 million (China News, 2014). Unfortunately, there is no publicly available data on the total expenditures of this health insurance system. As detailed below, we treat the benefit levels for this group as similar to those of UEBHI in our imputations.

First experimented in Zhenjiang city in Jiangsu province and Jiujiang city in Jiangxi province in 1994, the UEBHI has been mandatory for employees in all urban firms, government institutions, and non-for-profit organizations since 1998. It is optional for township and individual-owned businesses. Usually the employer contributes 6% and the employee contributes 2% of the employee's wage toward the premium. Benefits are capped at a certain level, ranging

from 30 to 300 thousand yuan annually according to local policies (Fang, 2013). In 2012, UEBHI covered 199 million working urban employees and 66 million urban retirees (Ministry of Human Resources and Social Security, 2013). Initially only covering employees with urban Hukou, the UEBHI expanded during 2009-2011 to cover 45.83 million migrant workers (Hu & Ljungwall, 2013).

The URBHI was piloted in 79 cities across the country in 2007 and implemented nationally in 2009 to provide health coverage for urban residents not covered by UEBHI. These include children, older adults who are ineligible for UEBHI, and the poor and disabled who are not working (Ministry of Health, 2010). The premiums for URBHI are set to be much lower than those for the UEBHI and the benefits are also significantly lower. Participation in URBHI is voluntary and participants paid the premium by themselves (Fang, 2013). By 2013, 300 million urban residents participated in URBHI, exceeding the target set by the Ministry of Health in 2011 (National Bureau of Statistics, 2014).

Initiated by the State Council in 2002 and fully implemented nationwide in 2008, the New Rural Cooperative Health Insurance (NRCHI) is a voluntary health insurance program for rural residents. The annual premium is very low—usually less than 300 yuan—and over half of it is subsidized by the central and local governments (Barber & Yao, 2010; Fang, 2013). As of 2013, 820 million people participated in the NRCHIP and the coverage rate reached 99% nationally (National Bureau of Statistics, 2014).

In addition to health insurance, China also provides health assistance to those without any health insurance and cannot afford health care. In 1990, Shanghai was the first to provide outpatient and inpatient subsidies for those who were unemployed and had difficulty to pay for medical care (Li & Wu, 2009). This practice was gradually adopted by various other local

governments. From 2003 to 2007, health assistance was expanded to provide additional support to Dibao recipients with serious illnesses. From 2008 to 2011, it was further expanded to cover those who did not qualify for Dibao but had hospitalization and could not afford to pay for it. Since 2012, the coverage categories have been extended to hospitalization, inpatient care (including for chronic diseases), and serious illness (Xiang, Gu, Li, Zhang, & Mao, 2014). In 2012, 6.9 million hospital visits in urban areas and 14.8 million visits in rural areas were subsidized by health assistance (Ministry of Health, 2013).

In 2009, the State Council issued *the Implementation Plan for the Recent Priorities of the Health Care Reform (2009-2011)*, which aimed to expand the basic medical insurance coverage and government subsidies at various levels, to upgrade primary health care services at the grassroots, and to broaden the coverage of basic public health services to include immunization, maternal and child health care, folic acid supplements for rural women, screening for breast cancer and cervical cancer, physical examination for elders, and the establishment of individual health records. The goal is to firmly establish an equal and unified health insurance system for all urban and rural residents by 2020 (Eggleston, 2012).

China's educational system includes early education, primary education, secondary education, higher education, and continuing (or adult) education. Specifically, early education includes day care centers, pre-kindergarten, and kindergarten education. Primary education refers to elementary school education. Secondary education includes junior middle school and senior middle school (or high school) education as well as technical and vocational school secondary education. Higher education includes junior (2-year) college, bachelors, masters, and doctoral education. Continuing or adult education covers various forms of education and training programs for adults formally out of school (Liu, 2002). Since 1978, local governments have been

the primary financers and decision makers for education programs. Accordingly, in 2011, 90.4% of total education expenditures are from local governments whereas only 9.6% were from the central government (Educational Statistical Yearbook of China, 2012). Overall, from 2006 to 2012, the share of total education expenditures in China's GDP increased from 3.01% to 4.28% (Ministry of Finance, 2007, 2013).

The compulsory education system in China includes six years of elementary school and three years of junior middle school education. It was first established in 1986 and amended in 2006. China's compulsory education law stipulates that all children have the rights to attend elementary and junior middle schools free of tuition charges. As shown in Table 2, the national net enrollment rate[1] for elementary school students was 99.85% in 2012, and the gross enrollment rate[2] for junior middle school students in 2012 was 102.1% (Zhang, 2013).

Although the national compulsory education enrollment rate increased dramatically over the recent decades, the urban-rural and regional gaps persisted in educational investments. On average, in 2011, the education expenditure per rural elementary student was 700 yuan less than per urban student, and it was 900 yuan less per rural junior middle school student than per urban student (China News, 2013). In addition, central and western regions lagged behind the eastern region in compulsory education investment. In 2011, Beijing had the highest education expenditure among all provinces and municipalities; its expenditure per elementary student was 7.5 times that of Henan province and its expenditure per junior middle school student was 8.2 times that of Guizhou province (Educational Statistics Yearbook, 2012).

Data and Methods

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[1] The Net Enrolment Rate (NER) is the number of students of a certain official school age who are enrolled in school as a percentage of the total number of students of that official school age.
[2] The Gross Enrollment Rate (GER) is the number of the students enrolled in a certain grade level as a percentage of the total number of students of the official age for that level. The number may exceed 100% because of the inclusion of over- or under-aged students due to early or late school entrance and grade repetition.

Data

This article uses the China Household Income Project (CHIP) 2007 survey data. CHIP is a repeated cross-sectional study widely considered to be among the best available national survey data on household income, expenditures and program participation. Samples of the CHIP study were drawn from larger National Bureau of Statistics urban and rural samples using a multistage stratified probability method to achieve national representativeness. CHIP 2007 included 10,235 urban households, 13,000 rural households, and 5,000 migrant households.

CHIP particularly fits the analytical needs of this study; it provides detailed information on the various cash and in-kind social benefits received by all urban, rural and migrant households, along with a detailed accounting of other income sources. Further, for the purpose of imputing health and education benefits, CHIP contains information regarding the type of health insurance that respondents had, if any, and the level and type of school attended by children in the households. This enables us to impute provincial level per capita government expenditure data to individual and household level based on the status and type of health and education benefits actually enjoyed by the respondents and their families.

Measuring Household Income and Social Benefits

The size of the social benefit package is measured by the amount of social benefits received by families as a percentage of their household final income. The shares of the various social benefits in the total social benefit package measure the structure of the social benefit system. The values of social insurance (mainly pensions and unemployment insurance), social assistance, housing, food, and other in-kind benefits other than health and education are self-reported by respondents in the data set. The shares of the various social benefits in the total social benefit package measure the structure of the social benefit system.

As noted above, one main contribution of this article is to capture health and education benefits through micro simulation. We impute that value of urban and rural provincial level per capita government expenditures on health insurance (by type of insurance) and education (by grade level) to respondents who report having such type of health insurance and whose children attend such level of public school. Part of health benefits was captured by the survey data: participants were asked to report any medical-care expenses covered by their employers, the government or the collective and estimate the cash value of in-kind health services. We count this sum as part of the health benefits received by families, and in addition, impute the value of the health insurance where they had coverage.

Specifically, to impute health benefits for urban employees, we calculate per capita health expenditures at provincial level, dividing the total UEBHI expenditures by the total number of UEBHI participants within each province (Ministry of Health, 2008), and impute this figure to those who reported contributing to their UEBHI accounts in the CHIP survey. Because there is no publicly available data on the total expenditures or number of participants for government and public institution employees who receive free health care at state expenses, we assume their benefit level is similar to those covered by UEBHI and impute the same values to government and public institution employees in CHIP data. We decide to ignore the health benefits received by urban residents through URBHI as this program was only piloted in 2007.

The imputation of rural health benefits is somewhat more complicated. There are no publicly available data on total NRCHI expenditures at the provincial level in 2007; instead, what we are able to locate are the total amount of raised funds available for NRCHI use. Official statistics show that, in 2007, the national total NRCHI expenditures accounted for 81% of the total raised funds. We assume that NRCHI expenditures of the various provinces all approximate

this proportion and multiply 81% to the amounts of provincial raised funds to obtain the estimated provincial level total NRCHI expenditures. We further divided these values by the numbers of NRCHI participants within each province to obtain the estimated per capita NRCHI expenditure. In our rural sample, those who reported participating in NRCHI are imputed this figure as their health benefits.

For migrants in the CHIP survey, we impute the value of per capita UEBHI expenditures in the province of their current residence if they reported participating in local UEBHI and impute the value of per capita NRCHI expenditures of their hometown province if they reported participating in NRCHI. A very small proportion of the migrants are imputed with both values as they reported participating in both programs.

The imputation methods used in this article have both pros and cons. On the one hand, it enables us to have a more accurate estimate of the size and structure of the social benefits, most notably health and education benefits. On the other hand, it does not provide the most accurate estimation of the redistributive effects of these benefits. Because we use provincial level per capita expenditures to capture these benefits, our results tend to undermine individual level differences but highlight provincial level differences.

Due to limited data availability for early and higher education, our imputation of education benefits only captures four levels of education: elementary school, junior middle school, senior middle school, and vocational high school. Both the rural and national per student education expenditures by grade are available at the provincial level; however, the urban ones can only be found in eight provinces. Based on the available information in these eight provinces, we estimate that the urban-to-rural ratio of per student expenditures at the elementary school, junior middle school, and senior middle school levels are 1.11, 1.25, and 1.43, respectively. Thus,

for the provinces without urban per student education expenditure data, we apply these ratios to the rural data within each province to estimate urban per student education benefits. We assume the ratio for vocational high schools is the same as for senior middle schools because no provinces have available data for calculating such a ratio for vocational high school. Migrant children who live with their parents in the cities are imputed the local per student education expenditure according to their school level. Education benefits for children who stay behind in their home villages are imputed with their local per student education expenditure and captured in the rural results.

Estimating Redistributive Effects and Sensitivity Tests

We use two measures to gauge the redistributive effects of the Chinese social benefits. First, we compare pre- and post-transfer income inequality levels measured by the Gini coefficient to see whether and to what extent social benefits helped reduce overall income inequality. Second, we calculate the economic distances between the bottom (i.e., 10th percentile income) and top (i.e., 50th percentile income) of the income distribution based on pre- and post-transfer income to evaluate the regressivity or progressivity of the social benefits. To compare the results across the "three worlds" of urban, rural, and migrant groups, all analysis are done within the respective urban, rural, and migrant samples and compared across the groups.

Our main results are based on the conventional equivalence scale of household per capita income used in the literature on income and welfare studies in China. As a sensitivity test for the resource sharing pattern among family members, we adopt the OECD family equivalence scale of square root of household size to see if the main results are robust to this widely used equivalence scale in the studies of western welfare states. All incomes are adjusted by provincial price deflators compiled by Brandt and Holz (2006) and updated to 2007 by us using provincial

consumer price indices (CPIs) reported in the China Statistical Yearbooks (various years).

Statistical weights are applied in all results to make the results nationally representative.

Results

Levels of Household Income and Size and Structure of Social Benefits

Figure 1 presents the levels and components of household per capita income in China

estimated from CHIP 2007 data and Table 3 also shows the shares of these components in final

household income. Overall, the large income gap between urban and rural China remained

prominent in these results: urban per capita household final income averaged 14,809 yuan in

2007, which was 2.8 times that of the rural level (5,281 yuan). The household per capita final

income for migrant families was only about 1,500 yuan lower than that for urban families. These

differences have already accounted for price differences across urban-rural areas and provinces.

[Figure 1 about here.]

[Table 3 about here.]

Among the various income sources, as expected, market income was the largest

component, making up 78% of urban household income and about 86% of rural and migrant

household incomes respectively. Similarly, private transfer income was much higher for urban

families (570 yuan or 4% of household final income) than for rural and migrant families (101

yuan or 2% for rural families and 165 yuan or 1% for migrant families). Taxes and fees paid for

families were significantly higher in urban areas than in rural areas and by migrant families:

urban families on average paid 966 yuan per capita in taxes and fees in 2007, accounting for 7%

of their household final income, while rural families on average only paid 14 yuan per capita in

taxes and fees, accounting for virtually 0% of their household final income. Migrant families

paid 76 yuan per capita or 1% of their household final income in taxes and fees.

The three worlds of the Chinese welfare system revealed in the previous literature persisted in our results, with imputed health benefits further enlarging the urban-rural-migrant gaps that existed based on self-reported social benefits while imputed education benefits helping narrow the gaps somewhat. Consistent with earlier studies, we find gigantic gaps among the three worlds in self-reported social benefits which include pensions, public assistance, in-kind housing, food, and health benefits. Urban families on average received 2,802 yuan per capita in social benefits in 2007, accounting for 19% of their final household income, while rural families only received 102 yuan social benefits per capita, accounting for only 2% of their final household income. Migrant families on average received 1,498 yuan per capita in social benefits, accounting for 11% of their final household income. Note, however, most of the self-reported social benefits for migrants were employer-provided food and housing which could be considered in-kind wage payments.

Imputed health and education benefits are the two income components ignored by previous studies but included in this study. While imputed education benefits were more equally distributed across the urban-rural-migrant lines, imputed health benefits were highly unequal as expected. Specifically, urban families on averaged enjoyed 389 yuan health benefits per capita, which accounted for 2.6% of their final household income. Rural families on average only enjoyed 53 yuan health benefits per capita, accounting for 1% of their household final income. The imputed health benefits for migrant families averaged 58 yuan per capita and accounted for only 0.4% of their household final income.

Imputed education benefits averaged 447, 456, 233 yuan per capita for urban, rural, and migrant families, accounting for 3%, 9%, and 2% of their respective household final income. It is important to note that the imputed education benefits were at the same level for urban and rural

families after adjusting for price differences, and the actual education benefits for migrant families might be at a similar level if we were able to capture the education benefits for the left-behind children.

As shown in Figure 2, overall, the size of the total social benefit package measured as a share of final household income for rural and migrant families was only about half that for urban families. On average, nearly 25% of urban final household income was from social benefits, while only 12% and 13% of final household income were from social benefits for the respective rural and migrant families. The urban-rural gap is especially large given the gigantic gap in their final household income levels.

[Figure 2 about here.]

Figure 3 further details the shares of each social benefit item in final household income. Among self-reported social benefits, social insurance which was mainly made up of pensions and unemployment insurance was the major component in urban areas, accounting for 16% of household final income. In-kind health benefits made up 2% of urban household final income. Total health benefits—including both in-kind and imputed health benefits—accounted for 5% of urban final household income. In rural areas, different social benefit items were not separately asked about in the CHIP survey and the total self-reported social benefits accounted for 2% of household final income. Therefore, imputed education benefits were the major social benefit item in rural China, accounting for 9% of household final income. For migrant families, the majority of social benefits were from in-kind housing (5% of household final income) and food (6%) benefits, followed by imputed education benefits (2%). Social insurance, arguably the pillar of modern welfare states, was still nearly non-existent for rural and migrant families in China in 2007.

[Figure 3 about here.]

Redistributive Effects of Social Benefits

We now to analyze the redistributive effects of the social benefits, differentiating the self-reported benefits versus imputed health and education benefits. Figure 4 presents the changes in the Gini coefficient within the respective urban, rural, and migrant context based on different income definitions. We start with market income only, and then incrementally add in self-reported social benefits, private transfers, imputed health, imputed education, and lastly minus taxes and fees.

In urban areas, consistent with its large size, self-reported social benefits had the largest effect in reducing income inequality. The Gini coefficient based on market income only was 0.39 in 2007 and it was lowered to 0.32 after self-reported social benefited were considered. Private transfers had virtually no effect on reducing urban income inequality as measured by the Gini coefficient. Imputed health benefits lowered the Gini coefficient from 0.3212 to 0.3164, and imputed education benefits further lowered the Gini coefficient to 0.3076. Taxes and fees had minimal effect on the urban Gini coefficient.

[Figure 4 about here.]

By contrast, the respective rural and migrant Gini coefficients based on market income only were much lower than the urban Gini, but social benefits and other transfers contributed little to the reduction of income inequality in the rural and migrant contexts. Specifically, the rural Gini based on market income was 0.36 and it was lowered to 0.33 after all public and private transferred were accounted for. The final Gini in rural areas was still higher than the urban final Gini, highlighting the minimal role played by social benefits in rural areas. The

largest reduction in the rural Gini (from 0.35 to 0.33) was due to imputed health benefits, the largest social benefit component in rural China.

The Gini for migrants based on market income only was 0.2868 and it was lowered to 0.2661 after all benefits and transfers were taken into consideration. Self-reported social benefits—mostly in-kind housing and food benefits—contributed the most to such reduction (by about 0.01), followed by imputed education (by about 0.009), while imputed health, private transfers, and taxes and fees had virtually no effect on the Gini coefficient.

Figure 5 presents the changes in the economic distance between the low- and high-income households, with the value of the P10/P50 ratio at the lower end and the value of the P90/P50 ratio at the higher end. A longer bar therefore represents a larger gap between the poor and rich families, and the redistributive role of the social benefits and other transfers are revealed by the changes in the lengths of the bars after each benefit or transfer item is considered.

[Figure 5 about here.]

The first observation from Figure 5 is that all additional benefits and transfers helped narrow the economic distances between the poor and the rich in the respective urban, rural, and migrant settings. Consistent with the results on Gini coefficients above, the largest contributions were made by self-reported social benefits in urban areas, reducing the length of the bar from 199 based on market income only to 160, a reduction of 39 points. Imputed health and education respectively shortened the length of the bar by 5 and 4 points, while taxes and fees helped narrow the bar by 2 points.

By contrast, in rural areas, only imputed education contributed significantly to the reduction of the length of the economic distance bar (by 14 points). The other benefit and transfer items were small in size and had nearly no effect on the economic distances between the

poor and rich. Among the migrants, self-reported social benefits (i.e., in-kind housing and food benefits) helped reduce the length of the bar by 39 points. Imputed health and education respectively helped reduce the length of the bar by 4 and 5 points respectively, while the other benefit and transfer items contributed little to the narrowing of the gaps.

Overall, social benefits contributed significantly more to the reduction of income inequality in urban areas than in rural areas and for migrant families. These results are consistent based on the Gini coefficient and the economic distance measures. As a result, despite the lower income inequality level enjoyed by rural residents based on market income only, the post-transfer income distribution in rural areas was much more unequal than that in urban areas.

Sensitivity Tests

As mentioned earlier, we adopt the OECD equivalence scale of square root of the household size as a sensitivity test of our main results. These sensitivity test results are presented in Table 4 (in parallel form to Table 3) and Figures 6-8 (in parallel form to Figures 3-5, respectively). These results are very consistent with the patterns revealed above in our main results.

[Table 4 and Figures 6-8 about here.]

Conclusion and Discussion

Armed with the inclusion of imputed health and education benefits and enriched by the use of an alternative equivalence scale as sensitivity tests, this paper provides new empirical evidence on the size, structure, and redistributive effects of the Chinese social welfare system using the China Household Income Project 2007 data. We find that the divided urban-rural-migrant worlds of the Chinese welfare system revealed in previous literature persisted in our results, with imputed health benefits further enlarging the urban-rural-migrant gaps that existed

based on self-reported social benefits while imputed education benefits helping narrow the gaps somewhat.

We find that the size of the total social benefit package measured as a share of final household income for rural and migrant families was only about half that for urban families. The urban-rural gap was especially large given the huge difference in their final household income levels. Social insurance, arguably the pillar of modern welfare states, was the major social benefit enjoyed by urban residents but was still nearly non-existent for rural and migrant families in China in 2007. For the migrants, in-kind housing and food were important social benefits that might exist only as an alternative form of wage payment.

Social benefits, especially social insurance and imputed health benefits, contributed significantly to the reduction in income inequality in urban areas as measured by both the Gini coefficient and the economic distance between the poor and rich families. However, social benefits played a very small role in reducing income inequality for rural and migrant families. As a result, despite the lower income inequality level enjoyed by rural residents based on market income only, the post-transfer income distribution in rural areas was much more unequal than that in urban areas.

These results affirm the earlier findings on the three worlds of the Chinese welfare system that is divided by the urban-rural-migrant lines. Imputed health benefits actually enlarged such divisions, while imputed education benefits helped somewhat narrow such divisions. Alongside the urbanization and population aging trends and as China faces increasing pressure for democracy and social justice, it is urgent for China to truly integrate the fragmented and unequal welfare systems and provide a unified and just social welfare system to all citizens. It will be a delicate effort of balancing the rights of the Chinese citizens, economic growth and

financing responsibilities, maintaining social order and stability, and the political will and power

of the Chinese government.

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Table 1: Overview of the three health insurance programs in China

	Urban Employee Basic Health Insurance (UEBHI)	**Urban Resident Basic Health Insurance (URBHI)**	**New Rural Cooperative Health Insurance (NRCHI)**
Administration	Provincial level	Provincial level	County level
Eligibility	Urban employees and retirees	Urban residents not covered by UEBHI	Rural residents
Start year	1994 (pilot) 1998 (national)	2007 (pilot) 2009 (national)	2002 (pilot) 2008 (national)
N of participants in 2013 (Million)	270	300	820
Total expenditure in 2012 (Billion yuan)	486.8	67.5	240.8
Inpatient reimbursement rate	Average 70-80% (varies from city to city)	Average 50-60% (depending on whether hospital is classified as provincial, city, or township level)	Average 20-60% (depending on whether hospital is classified as provincial, city, or township level)

Sources: Barber & Yao (2010); Eggleston (2012); Ministry of Health (2013, 2014); National Bureau of Statistics (2013, 2014).

Table 2: Key indicators of compulsory education in China from 1992 to 2012

	1992	**2002**	**2012**
NER* of Elementary School	97.2%	98.58%	99.83%
GER* of Junior Middle School	71.8%	90%	102.1%

Source: Zhang (2013).

*Note: The Net Enrolment Rate (NER) is the number of students of a certain official school age who are enrolled in school as a percentage of the total number of students of that official school age. The Gross Enrollment Rate (GER) is the number of the students enrolled in a certain grade level as a percentage of the total number of students of the official age for that level. The number may exceed 100% because of the inclusion of over- or under-aged students due to early or late school entrance and grade repetition.

Table 3: Levels of Income Components and as a Percentage of Final Household per capita Income in China in 2007

	Income Levels in Annual Yuan			As % of Final Household Income		
	Urban	Rural	Migrants	Urban	Rural	Migrants
Market Income	11,567	4,583	11,400	78.1%	86.8%	85.9%
Self-reported Social Benefits	2,802	102	1,498	18.9%	1.9%	11.3%
Imputed Health	389	53	58	2.6%	1.0%	0.4%
Imputed Education	447	456	233	3.0%	8.6%	1.8%
Private Transfers	570	101	165	3.9%	1.9%	1.2%
Taxes & Fees	-966	-14	-76	-6.5%	-0.3%	-0.6%
Final Household Income	14,809	5,281	13,278	100%	100%	100%

Source: Authors' calculations using CHIP 2007 data.

Table 4: Levels of Income Components and as a Percentage of Final Household Equivalized Income in China in 2007

	Income Levels in Annual Yuan			As % of Final Household Income		
	Urban	Rural	Migrants	Urban	Rural	Migrants
Market Income	20,176	9,188	16,113	78.7%	86.6%	86.8%
Self-reported Social Benefits	4,684	195	1,843	18.3%	1.8%	9.9%
Imputed Health	674	108	79	2.6%	1.0%	0.4%
Imputed Education	813	954	439	3.2%	9.0%	2.4%
Private Transfers	969	195	203	3.8%	1.8%	1.1%
Taxes & Fees	-1,684	-27	-107	-6.6%	-0.3%	-0.6%
Final Household Income	25,633	10,612	18,568	100%	100%	100%

Note: Household equivalized income is defined as the sum of household final income divided by the square root of the household size.
Source: Authors' calculations using CHIP 2007 data.

Figure 1: Levels and Components of Final Household per capita Income in China, 2007
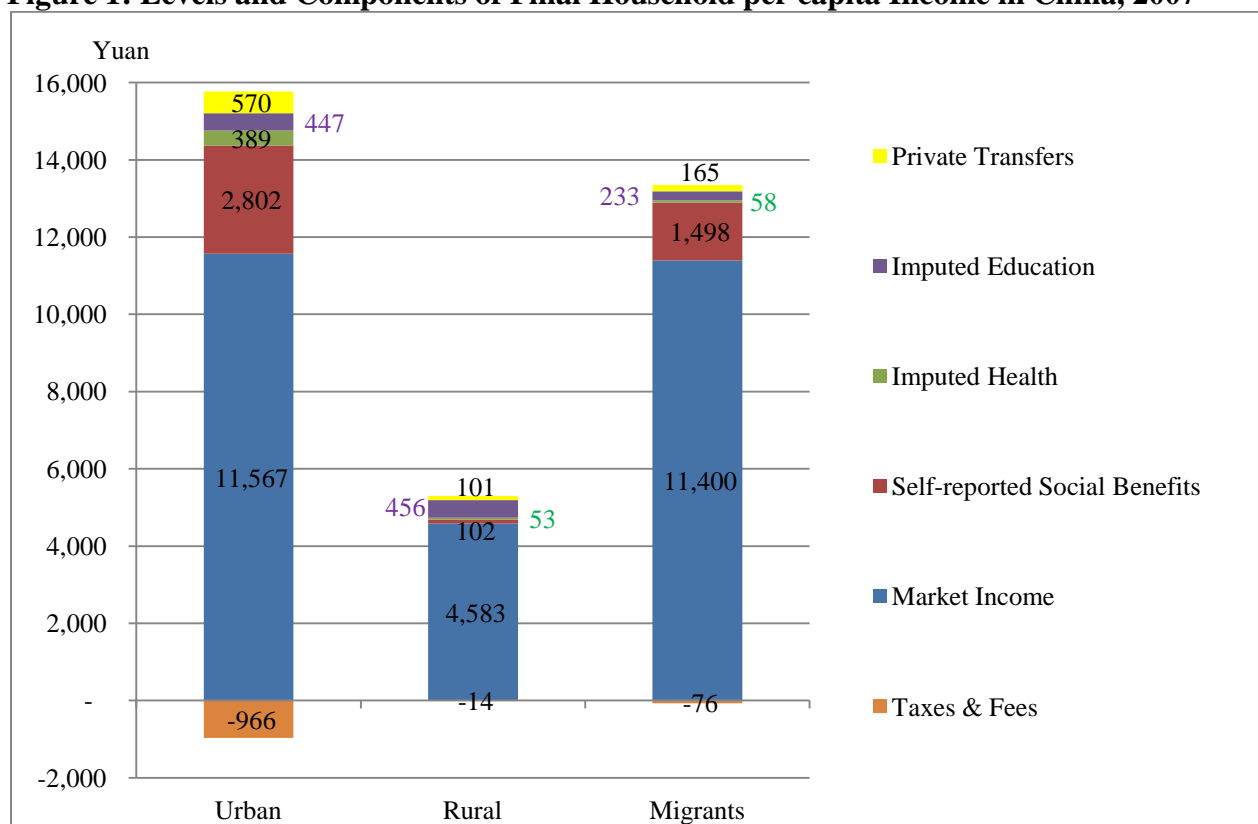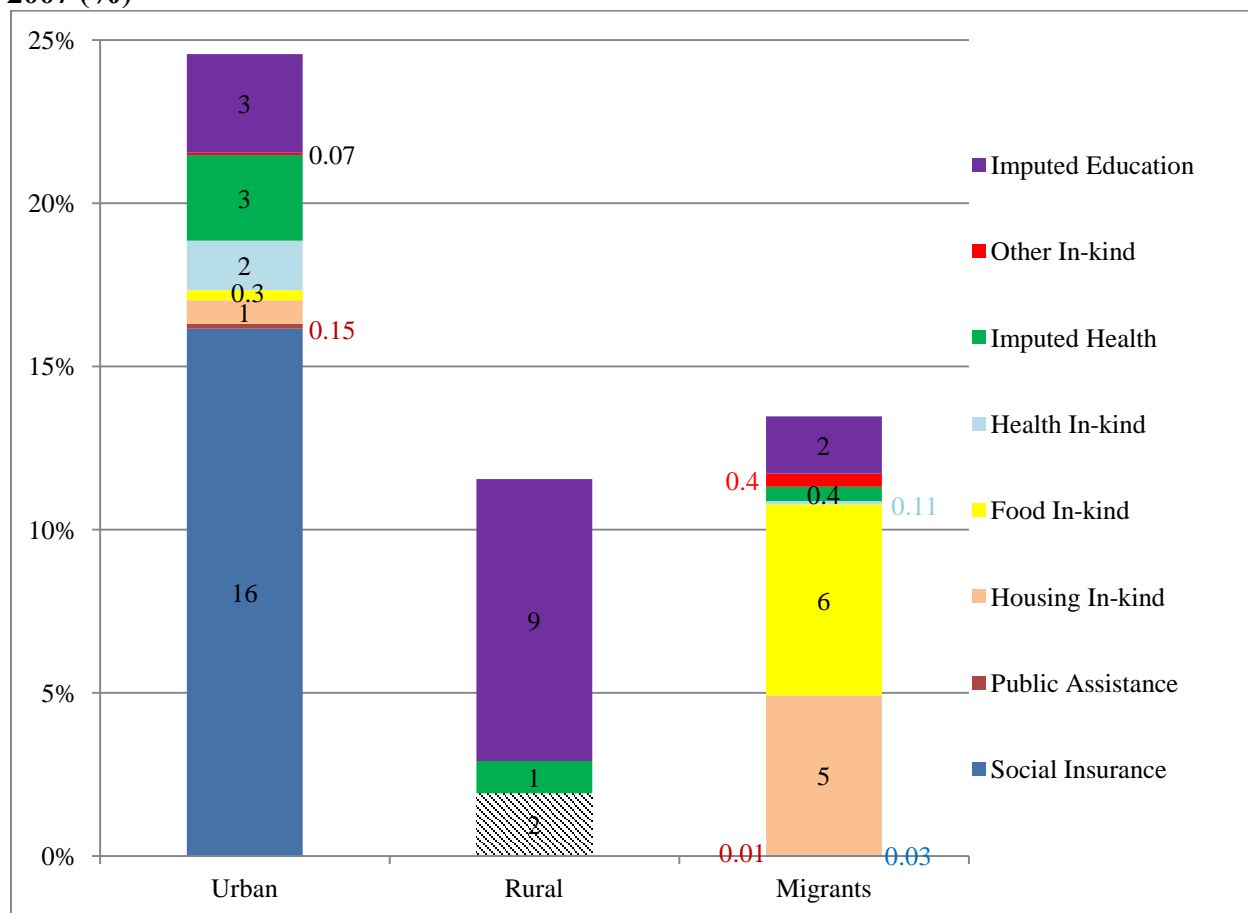

Source: Authors' calculations using CHIP 2007 data.

Figure 2: Shares of Social Benefits in Final Household per capita Income in China, 2007 (%)
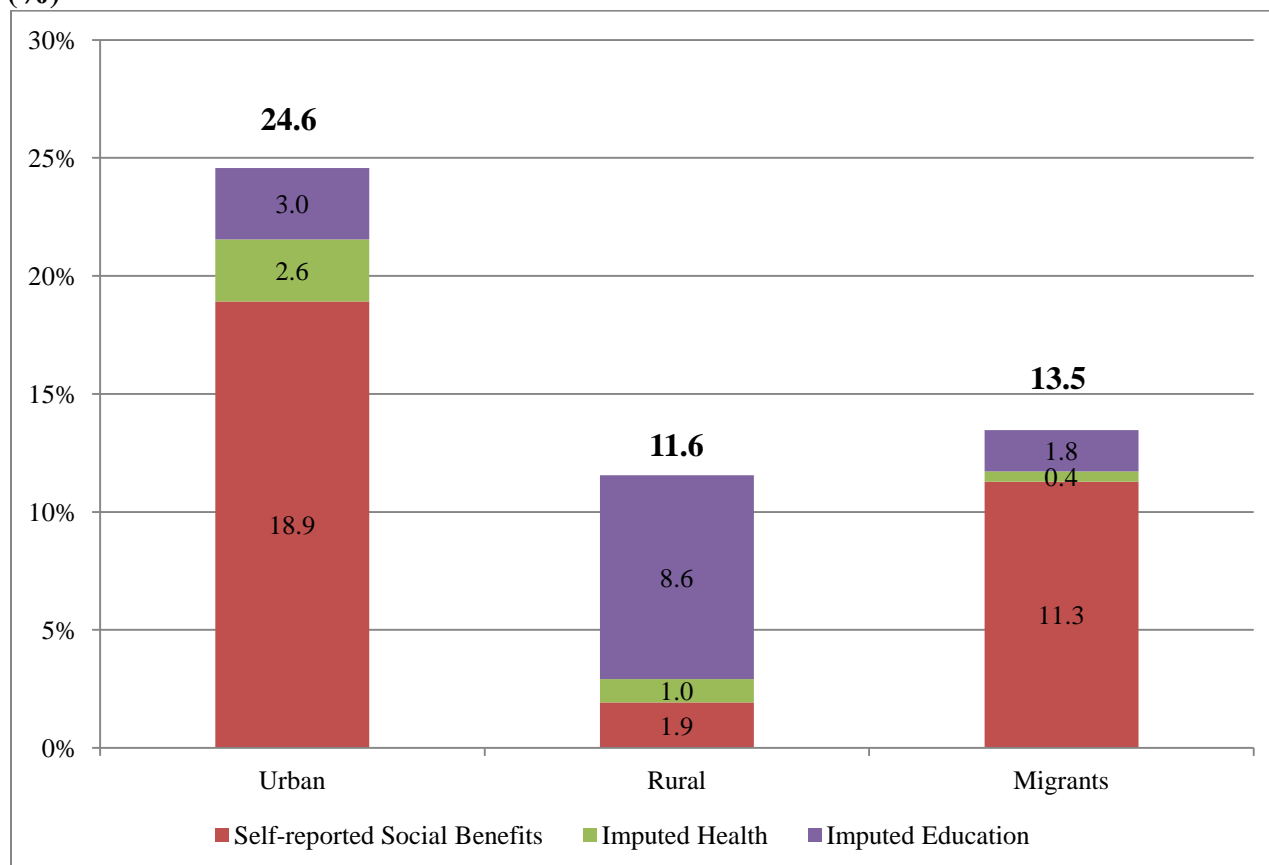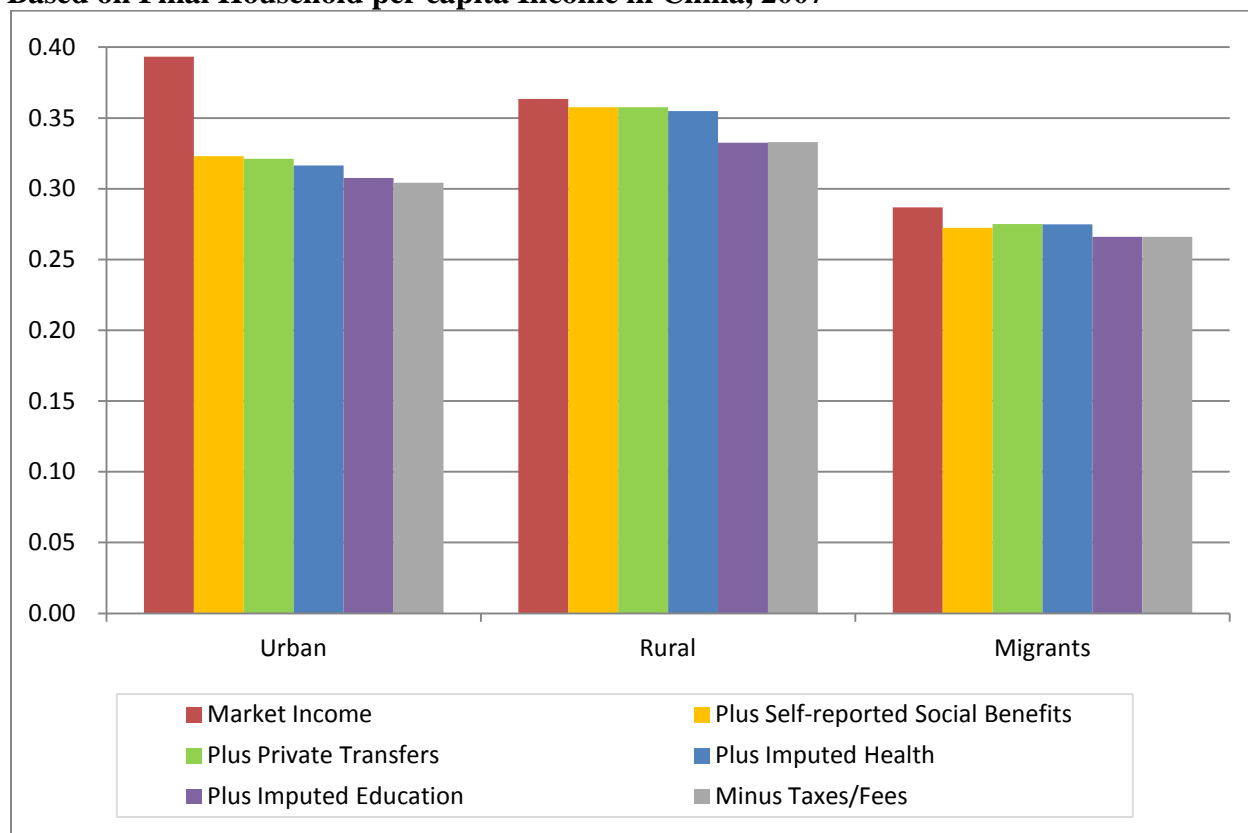

Source: Authors' calculations using CHIP 2007 data.

Figure 3: Detailed Shares of Social Benefits in Final Household per capita Income in China, 2007 (%)
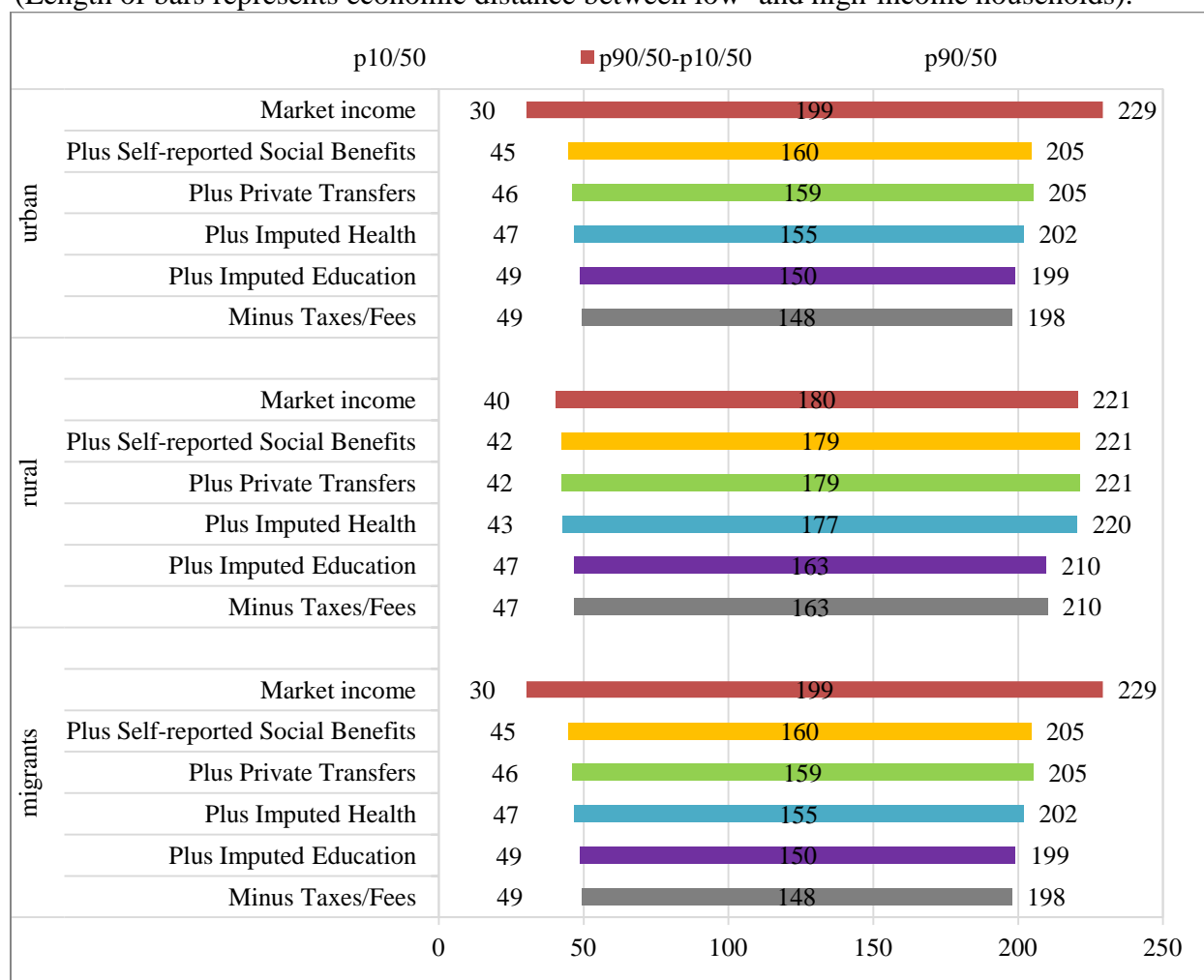

Source: Authors' calculations using CHIP 2007 data.

Figure 4: Effects of Social Benefits, Private Transfers, and Taxes/Fees on Gini Coefficients Based on Final Household per capita Income in China, 2007

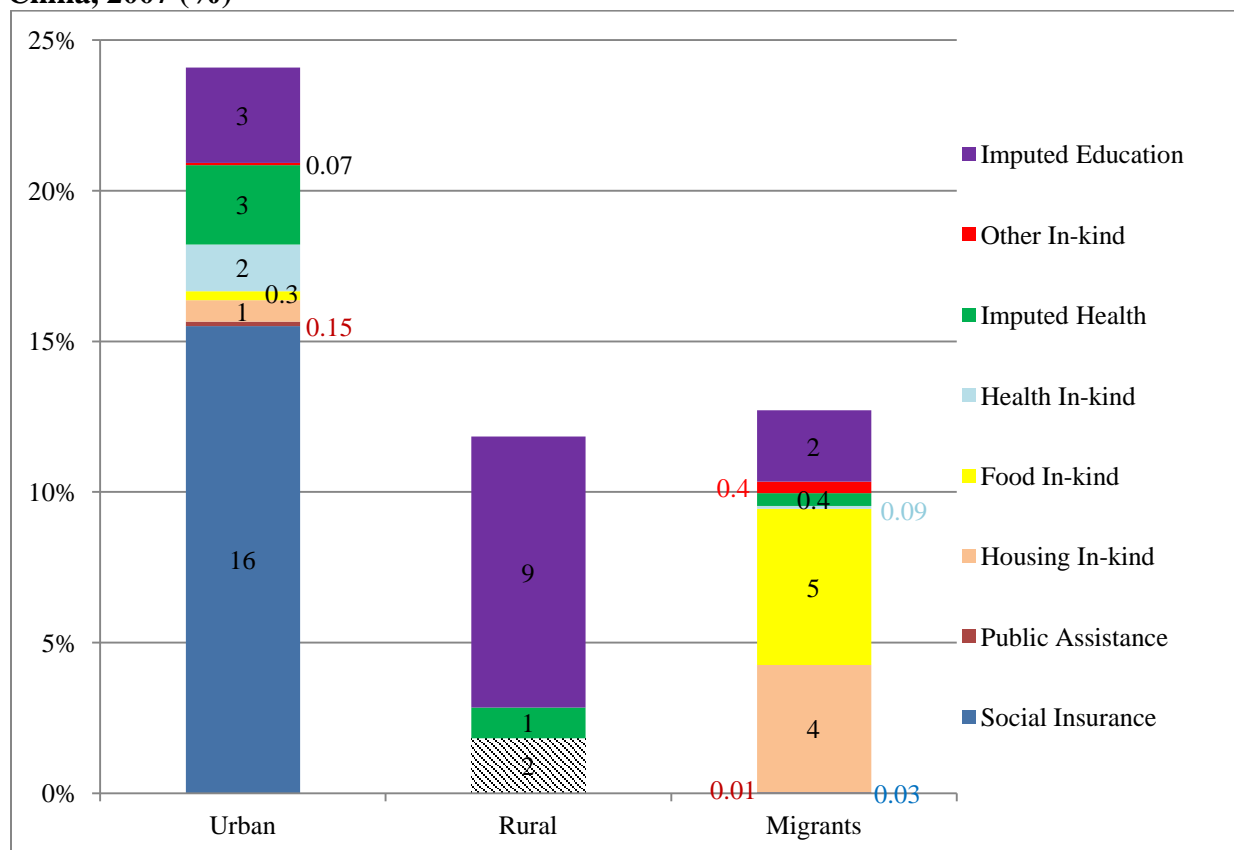Source: Authors' calculations using CHIP 2007 data.

Figure 5. Impact of Social Benefits on Economic Distance between Low- and High-income Households Based on Final Household per capita Income in China, 2007
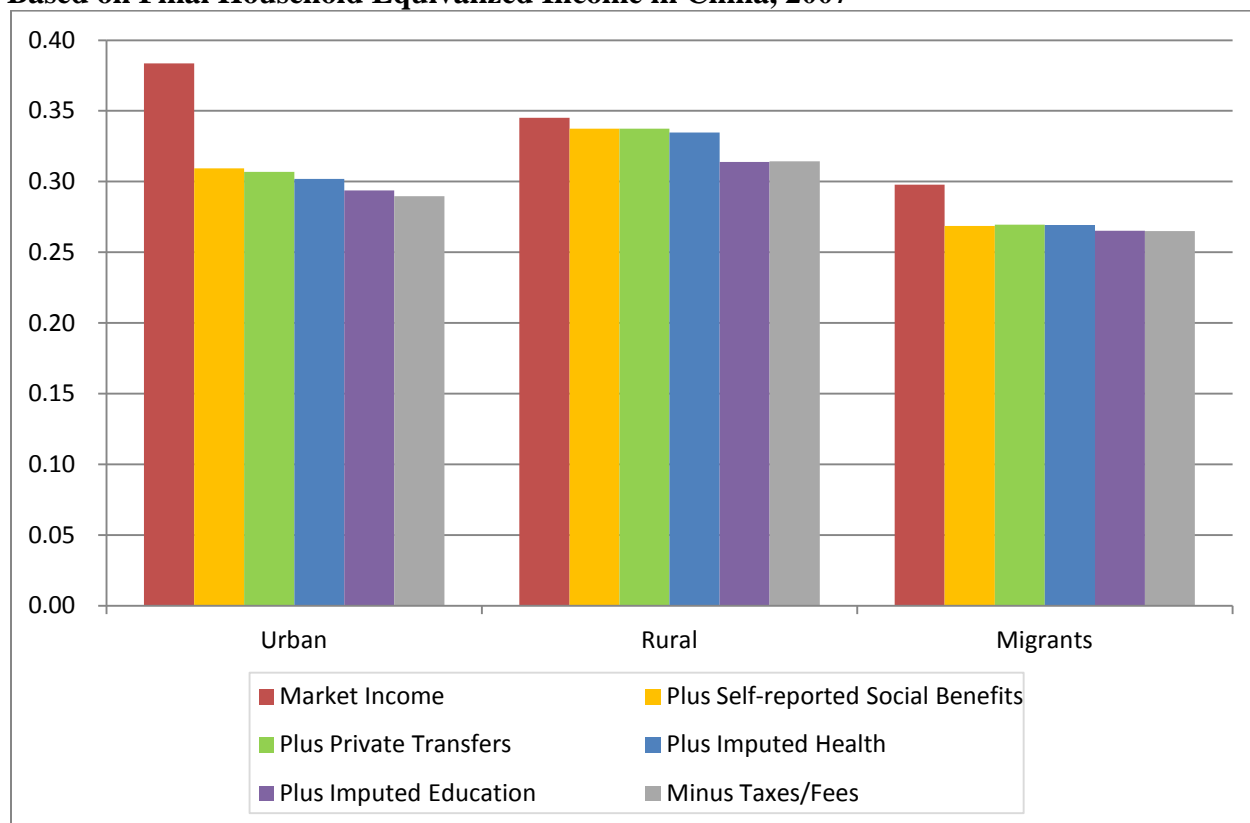(Length of bars represents economic distance between low- and high-income households).

Source: Authors' calculations using CHIP 2007 data.

Figure 6: Detailed Shares of Social Benefits in Final Household Equivalized Income in China, 2007 (%)

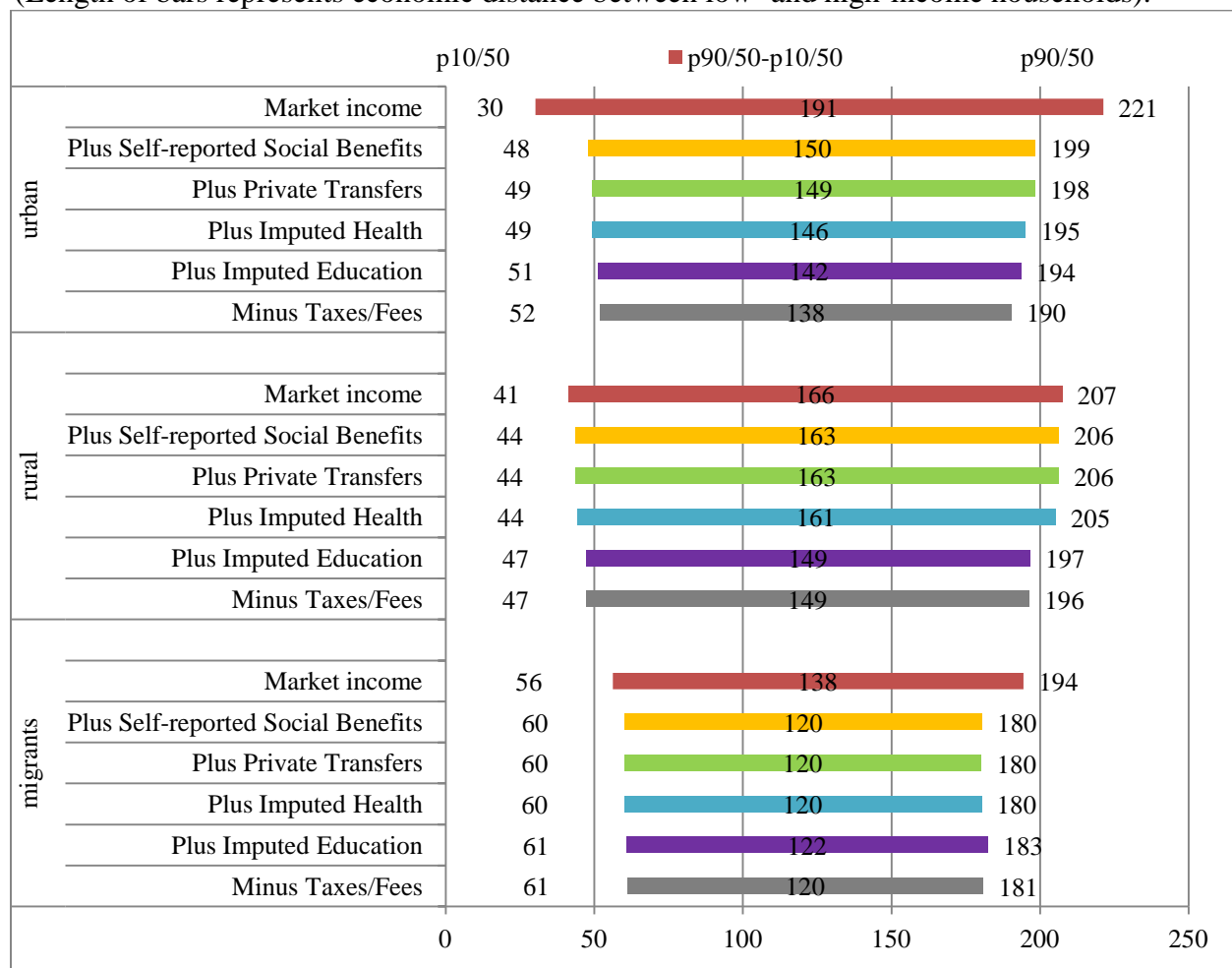Source: Authors' calculations using CHIP 2007 data.

Figure 7: Effects of Social Benefits, Private Transfers, and Taxes/Fees on Gini Coefficients Based on Final Household Equivalized Income in China, 2007

Source: Authors' calculations using CHIP 2007 data.

Figure 8. Impact of Social Benefits on Economic Distance between Low- and High-income Households Based on Final Household Equivalized Income in China, 2007
(Length of bars represents economic distance between low- and high-income households).

Source: Authors' calculations using CHIP 2007 data.