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*Peihua Deng, Ronnie Schöb*

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Poschingerstr. 5, 81679 Munich, Germany

Telephone +49 (0)89 2180-2740, Telefax +49 (0)89 2180-17845, email [office@cesifo.de](mailto:office@cesifo.de)

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# Group-Specific Redistribution, Inequality, and Subjective Well-Being in China

## Abstract

Using survey data from the China Family Panel Studies (CFPS) from 2010 to 2018, this paper analyzes the relationship between income inequality, group-specific income redistribution, and subjective well-being among China's urban, rural, and migrant populations. Using narrowly defined reference groups, our findings suggest that within-group inequality does not significantly impact Chinese people. By contrast, a larger income gap between urban and rural residents is positively correlated with the rural residents' subjective well-being, which we interpret as a *tunnel effect*, i.e. a positive signal concerning their own future income. Compared to migrants, however, our results hint at a negative *status effect* for the rural residents. More importantly, the group-specific redistribution inherent in the *Hukou* system that widens the income gap between urban and rural residents makes rural residents worse off. The existing *Hukou* system thus fails to lend support to the '*harmonious society*' development strategy of the Chinese government.

JEL-Codes: D310, D630, I310.

Keywords: income inequality, income redistribution, subjective well-being.

*Peihua Deng\**  
School of Business & Economics  
Free University Berlin  
Boltzmannstraße 20  
Germany – 14195 Berlin  
[peihua.deng@fu-berlin.de](mailto:peihua.deng@fu-berlin.de)

*Ronnie Schöb*  
School of Business & Economics  
Free University Berlin  
Boltzmannstraße 20  
Germany – 14195 Berlin  
[ronnie.schoeb@fu-berlin](mailto:ronnie.schoeb@fu-berlin)

\*corresponding author

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## 1. Introduction

China has been the world's fastest-growing economy over the last decades, the impressive transition of the Chinese economy, however, came along with increasing inequality, making China one of the most unequal countries nowadays (Jain-Chandra et al. 2018; Xun 2015). The official Gini coefficient of individual per capita disposable income has grown from 0.29 in 1980 to 0.47 in 2018. One of the reasons is the persistently large income disparity between the people who, according to China's household registration (*Hukou*) system, are registered as urban or rural residents, irrespectively of where they work and live. In 2018, the average disposable income of registered urban residents was 2.7 times higher than the average disposable income of registered rural residents, including the workers who migrated from rural areas to urban areas.<sup>1</sup>

When starting economic reforms in 1978, the government initially pursued a strategy of letting some people and regions get rich first, hoping that those persons and regions with faster economic development would promote the progress of persons and regions with slower development (see He 2014). With the adoption of the "*harmonious society*" development strategy since 2003, the government changed its development strategy and now attaches greater importance to not leaving the poor too far behind and reducing income inequality across different groups and regions (Geis and Holt 2009; Zheng and Tok 2007). A series of policies were launched to reduce income inequality through enlarged social security programs and narrow the income gap between urban and rural areas. Nevertheless, there are still millions of Chinese people in rural areas and migrants in urban areas without any kind of welfare support (Wang 2017). Indeed, Huang (2019) reports a sharp stratification of welfare benefits across registered urban and registered rural residents, following the expansion of social welfare provisions since 2003, which even widened the urban-rural income gap (see Lustig and Wang 2020).

These adverse redistributive effects can be attributed to China's *Hukou* system implemented in 1951 to restrict mass migration from the countryside to the cities (Chan and Wei 2017). Individuals are designated part of a regional government responsible for providing fundamental rights to its citizens, such as education, healthcare, and social security (Li and Hu 2015). Thereby, distinct social security systems are operated in rural and urban areas, with urban residents continuously being favored. As it is still difficult for rural people to change

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<sup>1</sup> The Gini coefficient and average income of urban and rural residents are published by the National Bureau of Statistics of China. (<http://www.stats.gov.cn/tjsj/>)

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their *Hukou* status from a “rural *Hukou*” to an “urban *Hukou*” when they migrate to an urban area, the system has created a mechanism of social exclusion by prohibiting migrants from benefiting from the urban social safety net in the same way as urban residents (Afridi et al. 2015).

This paper elaborates on the inequality-wellbeing relationship in China by focusing on how both vertical income inequality within each of these three groups (*within-group inequality*) and horizontal income inequality across these three respective groups (*between-group inequality*) affect subjective well-being (SWB). By simultaneously looking at three distinct populations, urban residents, rural residents, and rural-urban migrants, we complement the insights from previous research on inequality and SWB in China on the interplay between within-group and between-group comparisons. More importantly, to the best of our knowledge, our study is among the first to establish a link between group-specific income redistribution and individuals’ SWB in China, shedding light on the potential impact of the redistributive system by comparing pre-and post-transfer inequality indicators and linking each of these indicators to individuals’ well-being. Furthermore, employing panel data from the China Family Panel Studies (CFPS) allows for the control of unobserved individual heterogeneity, an advantage compared to previous research often based on cross-sectional data only.

Our main results, in a nutshell, are as follows. We found no significant relationship between within-group inequality and individuals’ SWB. With respect to between-group inequality, we find a positive correlation between the income disparity of urban residents and people living in rural areas, which we interpret as a *tunnel effect*. Rural people take the larger income of urban residents as a positive signal for their future income. When comparing to migrants, however, a *status effect* seems to dominate: a larger income gap between migrants and rural people is associated with lower SWB for rural residents. More importantly, the SWB of rural residents is negatively affected by unequal group-specific redistribution. When controlling for pre-transfer between-group inequality, we find that while narrowly defined within-group redistribution is only weakly associated with SWB, the rural residents are negatively affected by the growing income disparity with the urban residents due to the group-specific redistribution.

The remainder of this paper proceeds as follows. Section 2 provides the conceptual framework and relates our analysis to previous literature. Section 3 then explains how the *Hukou* system contributes to Chinese inequality. Section 4 describes the data and provides descriptive statistics. Section 5 introduces the empirical methodology. In Section 6, we then report and discuss the empirical results. Section 7 summarizes and concludes.

## 2. Income inequality, income redistribution, and subjective well-being

Subjective well-being is often negatively correlated with inequality (Alesina et al. 2004; Fahey and Smyth 2004; O'Connell 2004). Individuals may intrinsically dislike inequality due to altruism (Corneo and Grüner 2002; Morawetz et al. 1977; Thurow 1971), alternatively, they dislike income inequality because of the negative social externalities such as crime and violence (Choe 2008) or because of the feeling of relative deprivation (Runciman 1966). The latter effect relates to the *status effect* well-known in the literature (for a discussion, see e.g. Weimann et al. 2015). However, there might also be a countervailing effect. Income inequality may influence people positively, either because of tight community ties and altruistic preferences as found in South Africa (Bookwalter and Dalenberg 2010) or because of a positive signal effect: especially in unpredictable and high mobility societies, inequality may be perceived as a positive signal of increased opportunities, see e.g. Akay et al. (2012) for China and Grosfeld and Senik (2010) for the early transition period in Poland. This latter effect, labeled as *tunnel effect* (Hirschman and Rothschild 1973), also relates to research showing that the poor might oppose redistribution if they are socially mobile and expect to become rich in the future, while the affluent might support redistribution as it provides insurance against possible future income losses when their income position should be threatened (Alesina and La Ferrara 2005; Benabou and Ok 2001).

For China, the most noticeable feature of the inequality-wellbeing relationship is the divided pattern across urban and rural citizens. Using the Chinese General Social Survey (CGSS), Yan and Wen (2020) show that a higher provincial Gini coefficient reduces the SWB of urban residents but increases the rural residents' SWB. They argue that rural residents regard income inequality as a ladder of upward ascension, i.e. they interpret the positive correlation for rural residents as the dominance of a tunnel effect. Employing the 2015 CGSS, Ding et al. (2021) find an inverted U-shaped association between municipal Gini coefficient and SWB for urban residents, indicating the existence of a tunnel effect as long as inequality is not too high. For rural residents, they only find a negative association. Inequality across different social groups also plays a significant role. Using the 2002 data from the China Household Income Project, Jiang et al. (2012) report that in urban areas, higher income inequality between the group of migrants without an urban *Hukou* and the group of urban residents (irrespective of whether they are urban residents with or without local *Hukou*) are associated with lower levels of SWB. Zhang and Awaworyi Churchill (2020), using data from the China Family Panel Studies, find negative associations for both province-level income inequality and between-group income inequality between migrants without urban *Hukou* and urban residents on SWB.

Within urban areas, residents with urban *Hukou* are treated differently than migrants in the same urban area who belong to a rural *Hukou*. This may also affect a third group, the rural residents with rural *Hukou*. Our paper complements their research by including rural residents in the analysis and discussing within-group inequality and between-group inequality for three rather than two different societal subgroups.

Governments try to countervail the negative consequences of income inequality by redistributing income through taxes and public transfers. Public transfers are much more important for redistribution in China than the income tax system. Only a small share of Chinese income earners pay the personal income tax (Lam and Wingender 2015). Therefore, the link between increasing income redistribution and higher taxation of the rich is very weak. Indeed, using the 2013 China Health and Retirement Longitudinal Study, Xie (2018) reports that the personal income tax and social security contributions contribute only less than 10 percent, while the government public transfers (pension benefits included) contribute more than 90 percent of the redistributive effect. In what follows, we focus on the redistributive effect of public transfers for which we have data that allows us to analyze the potential impact on SWB. Therefore, in the next section, we will explain the institutional framework of the group-specific redistribution in more detail.

### **3. The social security system in China**

Before the opening-up and the economic reforms, though characterized by a sharp urban-rural divide and a low level of welfare provision, the social security system provided basic social protection for both urban workers and farmers (Leung and Nann 1995). In urban areas, generous welfare packages were provided for workers through *danwei* (state-owned enterprises, state agencies, government departments, and other organizations in the public sector). It covered more than 80 percent of the urban labor force. In rural areas, farmers worked for the communes through which daily necessities were distributed, but it covered only a tiny fraction of rural residents (see Wong 2005).

With the break-up of the state-run economy, guaranteed access to jobs and lands was gradually dismantled. According to Gao and Riskin (2009), the average share of social benefits in total household income for urban families shrank from 44 percent in 1988 to 25 percent in 2002. The Chinese government has undertaken several reforms toward a more inclusive social security system only since 2003, e.g. the initiation of new rural cooperative medical insurance in 2003, the medical insurance for urban residents in 2007, and the basic pension insurance for rural residents in 2009. The current social security system comprises five public insurances:

pension insurance, unemployment insurance, medical insurance, work-related injury insurance, and maternity insurance, one housing fund, several other social relief programs like the minimum living standard scheme (*Dibao* program), the rural five guarantees system (*Wubao* program<sup>2</sup>) and others.

The public pension insurance reveals the general idea about how the social security program operates for different *Hukou* holders. It comprises three sub-schemes: the *basic urban employee pension*, which has been provided for employees with a formal working contract in urban areas since 1998; the *basic urban pension*, available but not obligatory for self-employed and unemployed urban residents with local *Hukou* since 2012; the *basic rural pension*, available for rural residents since 2009. In 2014, the basic urban pension and the basic rural pension were merged into one sub-scheme, the *basic rural and urban pension*. According to the Ministry of Human Resources and Social Security, in 2015, this new *basic rural and urban pension* covered 504.7 million people, while the *basic urban employee pension* covered 353.6 million people. Despite the extensive coverage, there is a significant disparity in the benefit levels. In 2018, the average annual benefit was 1,836 *yuan* (\$288) for the *basic rural and urban pension*, while it was 37,836 *yuan* (\$5,844) for the *basic urban employee pension*. The replacement ratio of the *basic urban employee pension* is about 45 percent of the average urban employee's annual wage income, which is more than three times higher than that of the *basic rural and urban pension* in rural areas in 2018 (Figure A1 in Appendix).

Chinese migrant workers are among the largest group of workers in the informal sector not covered by social insurance (Giles et al. 2021). Even though the Labor Contract Law (2008) and Social Insurance Law (2011) obliges employers to contribute to migrant employees' social security insurance, this provision has proved very difficult to implement. Most migrants working in the urban areas are not protected by the destination city's basic social security program. According to the Ministry of Human Resources and Social Security, in 2017, just 22 percent of migrant workers had a basic pension or medical insurance, 27 percent had work-related injury insurance, and 17 percent had unemployment insurance.

As it turns out, the Chinese social security system is in itself highly unequal as it does not provide comprehensive coverage, nor does it provide equal benefits for different groups. It is thus *a priori* unclear how the social security system affects income inequality in China across different populations (Cai and Yue 2020; Lustig and Wang 2020; Hoken and Sato 2017).

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<sup>2</sup> The "Five-Guarantee" system refers to a system that provides daily care and subsistence assistance in terms of food, clothing, shelter, medical care, and burial expenses to those who are most deprived and are primarily older, frail, childless, widowed, and disabled in rural China." (State Council 2006)



#### 4. Data and descriptive statistics

This study uses China Family Panel Studies (CFPS) data, a large-scale, nationally representative, and longitudinal survey of Chinese households. The CFPS surveys 25 provinces/municipals/autonomous regions and gathers data at the individual, household, and community levels. In the 2010 baseline survey, 33,600 adult individuals from 14,798 households were interviewed. Half of the sample was generated by oversampling five large provinces (*Shanghai, Liaoning, Henan, Gansu, and Guangdong*). The other half of the samples were from an independent sampling frame of 20 provinces. Follow-up surveys were carried out every two years so that we could make use of five waves (2010, 2012, 2014, 2016, and 2018).<sup>3</sup>

CFPS allows us to separate residents according to their *Hukou* statuses and living places. Urban residents are defined as those who hold an urban *Hukou* (local or non-local) and are currently living in an urban area. Rural residents are defined as those who hold a rural *Hukou* and currently live in rural areas. Migrants are defined as those who hold a rural *Hukou* but are currently living in urban areas. We drop provinces with very few observations (*Beijing, Tianjin, Anhui, Fujian, Jiangxi, Guangxi, Chongqing, and Yunnan*) and get a sample composed of 17 provinces. The distribution of respondents by type and province is reported in Table A1 in the Appendix.

The outcome variable is respondents' subjective well-being, which is measured by the response to the survey question "*How satisfied are you with your life?*" with an answer from 1 (very unsatisfied) to 5 (very satisfied). The dataset also provides rich information about respondents' social demographic characteristics, including gender, age, marital status, employment status, years of education, household size, and whether being a member of the communist party of China. More importantly, CFPS has detailed panel data on households' receipts of various public transfer benefits, along with other income sources. For the households, we can distinguish pre-transfer and post-transfer income. The household pre-transfer income includes salary income, operating income, property income, and other income.<sup>4</sup> The household post-transfer income equals pre-transfer income plus transfer income. Transfer income comprises a list of public transfer benefits (including pensions, *Dibao*, agricultural subsidy, *Wubaohu* subsidy, *Tekunhu* subsidy, reforestation subsidy, work injury subsidies to

<sup>3</sup> CFPS maintains a relatively good tracking rate. The CFPS2018 household-level cross-round follow-up response rate is 86.6 percent. The individual sample has a cross-round follow-up response rate of 80.8 percent.

<sup>4</sup> Salary income is the wages of all family members. Operating income is the net income of agricultural production, profit from self-employment, or operating private enterprises. Property income is income from renting and selling properties, savings interests, and income from financial investments.

the linear relatives, and emergency or disaster relief). We only focus on the redistributive effects of public transfers, as all the income data reported in the survey is after-tax. The unit of analysis here is annual equivalent household income defined as household income divided by the square root of household size.<sup>5</sup> Official consumer price indices from the China Statistical Yearbook convert 2010, 2012, 2014, and 2016 to constant 2018 values. Only those survey participants aged between 16 and 80 who answered at least two rounds of the survey are included. After excluding observations with missing information, we obtain a sample of 9,142 urban residents, 5,314 migrants, 15,984 rural residents, and 85 province-year observations (see Table A1).<sup>6</sup>

Table 1 summarizes the 5-waves average pre-and post-transfer income in constant 2018 values for urban residents, rural residents, and migrants separately, aggregated over the 17 provinces under consideration. The annual pre-transfer income is highest for urban residents with an average of 29,366 *yuan* (\$4,560) and lowest for rural residents with an average of 15,526 *yuan* (\$2,398). Transfer income accounts for about 22 percent of urban people’s total income. In comparison, for migrants and rural residents, transfers add up to only about 5 percent of their total income. Income redistribution through public transfers thus substantially increases the income gap between urban residents and migrants, and between urban and rural residents, but does not affect the standing of migrants relative to rural residents.

**Table 1: Pre-and post-transfer income components**

(Yuan)	Urban residents		Migrants		Rural residents	
	Mean	Share	Mean	Share	Mean	Share
(1) Salary income	26,070	69.35%	19,159	78.97%	11,115	67.50%
(2) Operational income	1,264	3.36%	2,148	8.85%	3,722	22.60%
(3) Property income	630	1.68%	857	3.53%	209	1.27%
(4) Other income	1,402	3.73%	802	3.31%	480	2.91%
<b>Pre-transfer income</b>	<b>29,366</b>		<b>22,966</b>		<b>15,526</b>	
(5) Transfer income	8,227	21.88%	1,295	5.34%	941	5.72%
<b>Post-transfer income</b>	<b>37,593</b>	<b>100%</b>	<b>24,261</b>	<b>100%</b>	<b>16,467</b>	<b>100%</b>

Source: CFPS, own calculations.

Note: 5-waves weighted average for 17 provinces. Pre-transfer income equals the sum of (1) to (4), post-transfer income equals the sum of pre-transfer income and (5). The share represents the proportion of each income component in post-transfer total income.

Next, we consider the within-group and between-group income inequality before and after public transfers. Knight and Gunatilaka (2021) show empirically that for people in China mainly narrowly defined inequality matters, arguing that “a reference group can be defined as

<sup>5</sup> This definition is often used in inequality analyses (see OECD 2011). Our main results do not change when employing either the OECD equivalence scale or the OECD-modified equivalence scale, in which household income is divided by a weighted number of persons living in the household.

<sup>6</sup> People who moved between different provinces during the survey (96 urban residents, 93 migrants, and 110 rural residents) have been excluded.

a group that frames the social norms, attitudes, values, and behavior of the individual” (Knight and Gunatilaka 2021, p. 11). To apply this concept, we need group-specific inequality measures at the provincial level. Unfortunately, the government only publishes the Gini coefficient at the national level. We therefore calculate the respective group-specific Gini coefficients at the provincial level from our sample and report the 5-waves average Gini coefficients in Table 2.<sup>7</sup> As demonstrated in Table 2, compared to the pre-transfer levels, public transfers reduce the within-group Gini coefficients most significantly for urban residents, while migrants and rural people are barely affected. Our findings align with previous research, which shows that Chinese urban residents continuously receive the most generous social benefits (Li and Sicular 2014; Huang 2019).

**Table 2:** *Income inequality indicators of pre-and post-transfer income*

Inequality indicators	Pre-transfer income (1)	Post-transfer income (2)	Percentage change (2) - (1)/(1)
<b>Within-group Gini</b>			
Urban Gini	0.465	0.409	-12.04%
Rural Gini	0.486	0.482	-0.82%
Migrant Gini	0.484	0.482	-0.41%
<b>Between-group mean income ratio</b>			
$BI_{ur}$	1.612	1.913	18.67%
$BI_{um}$	1.300	1.530	17.70%
$BI_{mr}$	1.340	1.410	5.22%

Source: CFPS, own calculations.

Note: Within-group income inequality is measured by the Gini coefficient based on individuals' pre-transfer and post-transfer income of all individuals belonging to the same group in the same province. Between-group income inequality is calculated as the ratio of mean income of residents belonging to a different group within the same province. The figures are the weighted 5-waves averages for 17 provinces.

For between-group comparison, we apply the approach developed by Jiang et al. (2012) and Zhang and Awaworyi Churchill (2020). In Table 2, our measure of between-group inequality  $BI_{ij}$ ,  $i, j = u$  (urban residents),  $m$  (migrants),  $r$  (rural residents), is calculated as the 5-waves average ratio of the mean income of residents belonging to different groups within the same province, shown as:

$$BI_{ur}^p = \frac{\text{Mean income of urban residents in province } p}{\text{Mean income of rural residents in province } p},$$

$$BI_{um}^p = \frac{\text{Mean income of urban residents in province } p}{\text{Mean income of migrants in province } p},$$

$$BI_{mr}^p = \frac{\text{Mean income of migrants in province } p}{\text{Mean income of rural residents in province } p},$$

<sup>7</sup> The 5-waves average post-transfer Gini-coefficient for the whole sample equals 0.472, the respective average official Gini-coefficient based on individual disposable income equals 0.474. To further rule out the possibility that the variation in our Gini coefficient is merely due to attrition, we estimate the Gini coefficient based on respondents who have attended at least two waves, three waves, four waves, and all five waves separately in Table A3 in the Appendix, The Gini coefficients turn out to be very stable.

As it turns out, the group-specific redistributive system substantially widens the income gap between urban and rural residents as well as between urban residents and migrants (Figure A2 in Appendix shows the development of these ratios over time).

## 5. Empirical strategy

Our empirical approach links province-level income inequality and income redistribution through public transfers to individuals' SWB. A linear relationship is estimated using the following specification, following Hadju and Hadju (2014) and Schwarze and Harpfer (2007):

$$LS_{ipt} = \alpha + \beta Gini_{pt}^{post} + BI_{pt}^{post} \gamma + Y'_{ipt} \eta + X'_{ipt} \theta + P'_{ipt} \vartheta + \mu_p + \sigma_i + \varepsilon_{ipt} \quad (1)$$

In the baseline model, an individual's SWB is regressed by post-transfer income inequality and a set of explanatory variables. The post-transfer within-group income inequality  $Gini_{pt}^{post}$  is estimated using the post-transfer income of those who belong to the same group and live in the same province. The post-transfer between-group income inequality  $BI_{pt}^{post}$  is calculated as the mean income ratio of residents belonging to different groups within the same province. For each group, we have then two  $BI$  measures. For instance, the urban residents have  $BI_{um/pt}^{post}$  for the mean income ratio between urban residents and migrants, and  $BI_{ur/pt}^{post}$  for the mean income ratio between urban and rural residents. We have 85 observations for each measure, i.e.  $p$  multiplied by  $t$ .

Individuals' income information is considered in vector  $Y_{ipt}$ . Absolute income is controlled as the log of post-transfer income, the relative income position is indicated by a dummy variable showing whether the absolute income of  $i$  is higher than the average group income in the same province. The vector  $X$  refers to a set of characteristics, including gender, age, age squared, education, marital status, whether being employed, household size, and membership of the China Communist Party. The vector  $P_{pt}$  refers to variables aggregated at the provincial level, including provincial GDP per capita and the provincial unemployment rate, obtained from China's National Bureau of Statistics. To take account of the disparity in the economic development, we also consider the region to which the respondents belong (East, Middle, and West). Furthermore, we control for spatial variation in prices using province-level prices for urban and rural households provided in the Statistical Yearbook of China to capture differences in living costs.<sup>8</sup>  $\mu_p$  is a provincial fixed effect,  $\sigma_i$  is an individual effect, and  $\varepsilon_{ipt}$  is an error

<sup>8</sup> Urban provincial price indices are used for urban residents and migrants, and rural provincial price indices are used for rural residents—Statistical Yearbook of China (<http://www.stats.gov.cn/tjsj/ndsjs/>).

term. Finally, we control for the province-specific time trends to account for the effect of exogenous causes on SWB variations. A summary of all the control variables can be found in Appendix Table A2.

To investigate the role of income redistribution through public transfers, we follow Schwarze and Härpfer's (2007) method and decompose post-transfer income inequality into pre-transfer income inequality and the extent of redistribution by the government public transfers. Income redistribution  $R_{pt}^I$  is the income inequality reduction by public transfers, computed as the percentage change between inequality indices based on pre-transfer income and post-transfer income.

$$R_{pt}^I = \frac{I_{pt}^{pre} - I_{pt}^{post}}{I_{pt}^{pre}} \cdot 100 ; I = Gini, BI_{ur}, BI_{um}, BI_{mr}. \quad (2)$$

Thus, in equation (3), the estimated model includes a measure of pre-transfer income inequality ( $I_{pt}^{pre}$ ) and a measure of income redistribution by the government ( $R_{pt}^I$ ) as follows:

$$LS_{ipt} = \alpha + \beta Gini_{pt}^{pre} + \gamma R_{pt}^{Gini} + BI_{pt}^{pre} \delta + R_{pt}^{BI} \epsilon \\ + Y'_{ipt} \eta + X'_{ipt} \theta + P'_{ipt} \vartheta + \mu_p + \sigma_i + \varepsilon_{ipt} \quad (3)$$

The inequality-wellbeing relationship is explained by the sign of the coefficients of pre-transfer income inequality indicators,  $\beta$  and  $\delta$ . A positive coefficient may be interpreted as the tunnel effect dominating the status effect. If it is negative, it may be interpreted as the status effect dominating the tunnel effect; if the coefficient turns out not to be statistically significant, there may be opposing interactions that have a net effect of approximately zero. The redistribution-wellbeing relationship is captured by the sign of the coefficients of income redistribution  $R_{pt}^I$ ,  $\gamma$  and  $\epsilon$ . If a coefficient is positive, redistribution from rich to poor is positively correlated with SWB. We estimate equations (1) and (3) using panel fixed effect estimators.

## 6. Results

### 6.1 Post-transfer income inequality and life satisfaction

The regression results from equation (1) are shown in Table 3. Though having the expected negative sign, post-transfer within-group inequality has an insignificant effect on individuals'

well-being. The size of the coefficient means that a one percentage point increase in the Gini index results in a  $-0.007$  point lower life satisfaction for the urban residents.<sup>9</sup>

**Table 3: Post-transfer inequality and life satisfaction**

	Urban residents	Migrants	Rural residents
<b>Post-transfer within-group inequality</b>			
Post-transfer within-group Gini	-0.007 (0.004)	-0.009 (0.006)	-0.001 (0.004)
<b>Post-transfer between-group inequality</b>			
Post-transfer BI: Urban vs. Rural	0.084** (0.038)		0.163** (0.062)
Post-transfer BI: Urban vs. Migrant	-0.026 (0.059)	-0.035 (0.127)	
Post-transfer BI: Migrant vs. Rural		-0.008 (0.075)	-0.088* (0.042)
R-squared	0.093	0.072	0.078
Observations	9,142	5,314	15,984
Respondents	3,663	2,329	6,471

Source: CFPS, own calculations according to equation (1).

Note: \*denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level. Dependent variable: Life satisfaction. Robust standard errors adjusted for clustering by province are in parentheses. See Table A4 for all coefficients.<sup>10</sup>

Our results for the between-group inequality indicate that the urban and rural residents' life satisfaction is higher when the income disparity between urban and rural residents is larger. For the urban residents, a one-point increase in the between-group income gap with rural residents is associated with a 0.084-point increase in well-being. This result is in line with the literature, which suggests that the rich may be more likely to engage in downward social comparison in unequal societies, leading to increased SWB through improving one's self-image (Brown and Dutton, 1995; Taylor, Wood and Lichtman, 1983). However, the positive effect for the rural residents can be interpreted as a tunnel effect, urban residents' high income may signal rural residents' rising income in the future. Similar findings can be found in low-income countries (Bookwalter and Dalenberg 2010; Kingdon and Knight 2007). This finding is also consistent with the literature that finds a positive influence of income inequality on individuals' SWB in volatile and high mobility societies (Clark 2003; Grosfeld and Senik 2010; Ohtake and Tomioka 2004).

Interestingly, comparing urban residents to migrants in the same city, both respective correlations are negative though both are statistically insignificant. This is in line with the findings by Zhang and Awaworyi Churchill (2020), who report that the income gap between

<sup>9</sup> We also checked the square term of income inequality (both for Gini and BI), but there is no significant non-linear relationship between income inequality and SWB.

urban residents and migrants decreases individual's SWB in both groups. For urban residents, the income disparity between urban residents and migrants may be seen as a proxy for the costs of living with poor people. The larger the inequality, the more likely negative outcomes will occur in urban areas, such as rising poverty, decreasing social trust and rising crime rates.

Our results for migrants and rural residents give support to the results by Akay et al. (2012), who report that for Chinese migrants, the tunnel effect towards urban residents decreases with their duration of urban stay. Our results indicate that also rural residents, who may consider migrating to an urban area in the future, take the higher income of urban residents as a positive signal, being not fully aware of the manifold difficulties they would face in urban areas as well as the fact that the discriminating *Hukou* system contributed to the widening income gap between urban and rural residents, which the migrants are already aware of.

**Table 4:** Post-transfer inequality and life satisfaction by income terciles

	Urban residents	Migrants	Rural residents
<b>Post-transfer within-group inequality</b>			
Post-transfer within-group Gini * T1	-0.012** (0.005)	-0.015** (0.007)	-0.001 (0.004)
Post-transfer within-group Gini * T2	-0.004 (0.005)	-0.006 (0.007)	0.001 (0.005)
Post-transfer within-group Gini * T3	-0.006 (0.005)	-0.004 (0.006)	-0.003 (0.005)
<b>Post-transfer between-group inequality</b>			
Post-transfer BI: Urban vs. Rural * T1	0.123** (0.045)		0.132* (0.072)
Post-transfer BI: Urban vs. Rural * T2	0.019 (0.068)		0.219*** (0.074)
Post-transfer BI: Urban vs. Rural * T3	0.095 (0.065)		0.163** (0.071)
Post-transfer BI: Urban vs. Migrant * T1	0.022 (0.075)	0.051 (0.152)	
Post-transfer BI: Urban vs. Migrant * T2	-0.020 (0.079)	-0.106 (0.143)	
Post-transfer BI: Urban vs. Migrant * T3	-0.053 (0.065)	-0.043 (0.168)	
Post-transfer BI: Migrant vs. Rural * T1		0.085 (0.111)	-0.063 (0.045)
Post-transfer BI: Migrant vs. Rural * T2		-0.024 (0.092)	-0.210** (0.094)
Post-transfer BI: Migrant vs. Rural * T3		-0.095 (0.137)	0.001 (0.054)

Source: CFPS, own calculations according to equation (1).

Note: \*denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level. Dependent variable: Life satisfaction. Robust standard errors adjusted for clustering by province are in parentheses.

Impoverished people may suffer more from income inequality than those better off (see Alesina et al. 2004). Therefore, we also look at the relative individual income positions by using terciles of the pre-transfer income distribution; T1 denotes the first tercile, T2 the second, and T3 the

third. Table 4 summarizes the coefficients for the interaction terms between post-transfer income inequality depending on the individuals' relative income positions.

We find that life satisfaction of urban residents and migrants in the lowest income tercile are most negatively affected by inequality but do not find a similar pattern for people living in rural areas. For between-group income inequality we find a very mixed picture. Relating to the results presented in Table 3, we find evidence that the positive signal effect is significant for all income groups of rural residents.

### 6.2 Pre-transfer income inequality, income redistribution and life satisfaction

Next, we decompose the post-transfer income inequality into the pre-transfer income inequality and the income redistribution through public transfers as suggested by equation (3). For urban residents, we consider first the pre-transfer within-group inequality measured as the within-group Gini coefficient and within-group income redistribution  $R_{pt}^{Gini}$  (cf. equation (2)); second, the pre-transfer between-group inequality is measured by  $BI_{ur/pt}^{pre}$  when comparing with rural residents and  $BI_{um/pt}^{pre}$  when comparing with migrants respectively (see column (1) in Table 2 for the average values). The between-group income redistribution is measured, according to equation (2), as

$$R_{ur/pt}^{BI} = \frac{BI_{ur/pt}^{pre} - BI_{ur/pt}^{post}}{BI_{ur/pt}^{pre}}, \quad R_{um/pt}^{BI} = \frac{BI_{um/pt}^{pre} - BI_{um/pt}^{post}}{BI_{um/pt}^{pre}},$$

when comparing urban residents with rural residents and migrants respectively. We then proceed in the same way for migrants and rural residents. The estimates are shown in Table 5.

For pre-transfer within-group income inequality we find the same signs for the coefficients as reported in Table 3 for the post-transfer within-group inequality. However, we find no significant impact of within-group redistribution on life satisfaction.



**Table 5: Pre-transfer inequality, inequality reduction and life satisfaction**

	Urban residents	Migrants	Rural residents
<b>Pre-transfer within-group inequality &amp; redistribution</b>			
Pre-transfer within-group Gini	-0.013** (0.006)	-0.009 (0.006)	-0.004 (0.004)
Within-group redistribution $R_{rt}^{Gini}$	0.001 (0.003)	-0.003 (0.008)	-0.008 (0.006)
<b>Pre-transfer between-group inequality &amp; redistribution</b>			
Pre-transfer BI: Urban vs. Rural	0.091** (0.042)		0.106** (0.053)
BI redistribution $R_{rt}^{BI}$ : Urban vs. Rural	-0.001 (0.003)		0.005*** (0.001)
Pre-transfer BI: Urban vs. Migrant	-0.008 (0.077)	-0.015 (0.141)	
BI redistribution $R_{rt}^{BI}$ : Urban vs. Migrant	0.002 (0.003)	0.004* (0.002)	
Pre-transfer BI: Migrant vs. Rural		-0.031 (0.072)	-0.106 (0.064)
BI redistribution $R_{rt}^{BI}$ : Migrant vs. Rural		-0.001 (0.005)	-0.004 (0.003)

Source: CFPS, own calculations according to equation (3)

Note: \*denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level. Dependent variable: Life satisfaction. Robust standard errors adjusted for clustering by province are in parentheses.

The pre-transfer between-group coefficients BI in Table 5 show the same signs as the respective post-transfer BI coefficients reported in Table 3. Concerning the between-group income redistribution, we find that lowering the mean income gap between the rural residents or the migrants and the urban residents is strongly positively associated with rural residents and migrants' life satisfaction.

As Table 2 indicates, however, these income ratios widen since the urban residents receive much larger public transfers. Our results thus suggest that the existing redistribution inherent in the Hukou system makes both migrants and rural residents, i.e. the two relatively impoverished population groups, worse off. The specific Chinese redistributive system thus harms the most disadvantaged societal groups in China, which may provide an explanation for the finding that the life satisfaction of the Chinese disadvantaged population in 2015 remains below its 1990 level as reported by Easterlin et al. (2021). The discriminating redistribution scheme in China is harmful to its rural residents and migrants as it widens the between-group inequality.

For completeness, we report the interactions between pre-transfer income inequality and income redistribution depending on the relative individual income position in Table A5.

### 6.3 Robustness checks

Our results should be interpreted with caution. The relatively small cell size on the provincial level makes it hard to assume income representativeness. As a result, some of our tests might be weak and inconclusive, and some possible explanations have to be left unexplored. This section will therefore examine the robustness of our regression results.

First, we look at a subsample of the five largest provinces, *Shanghai, Henan, Gansu, Liaoning, and Guangdong*, which allows us to calculate the inequality measures on the basis of more observations per province. The results reported in Tables A6 and A7 confirm the qualitative results concerning the association of inequality and life satisfaction for this subsample. The effects of the between-group comparison described above become even more pronounced for urban and rural residents. The association of income redistribution with life satisfaction is also not altered when restricting our analysis to the five large provinces (see Table A8).

Second, we use the Theil index as an alternative measure of the within-group income inequality.<sup>11</sup> As Table A9 shows, we obtain qualitatively similar results for the Theil index: the three societal groups are not positively affected by the income redistribution within their groups, whereas migrants and rural residents are negatively affected by the larger mean income gap to urban residents, as a result from the unequal income redistribution.

Finally, one could argue that we should not use individual fixed effect if there is little variation in income inequality and inequality reduction ( $I_{pt}^{pre}$ ;  $I_{pt}^{post}$ ;  $R_{pt}^I$  ( $I = Gini, BI_{ur}, BI_{um}, BI_{mr}$ ) within each province across time. We thus compare the fixed effect estimations with pooled OLS estimations in Tables A10 to A12, and, once again, obtain similar results as for the fixed effect estimation.

## 7. Conclusions

Using five waves of the China Family Panel Studies (2010-2018), we investigate the link between income inequality, group-specific income redistribution, and individuals' SWB for three societal subgroups in China, urban residents, rural-urban migrants, and rural residents. Our results suggest that income redistribution through government public transfers substantially reduces the within-group income inequality only for urban residents. While

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<sup>11</sup> For a comparison of the different inequality measures see Trapeznikova (2019). We also checked the square term of income inequality (both for Gini and *BI*), but find no significant non-linear relationship between income inequality and SWB.

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inequality among rural residents and migrants is hardly affected. Using narrowly defined reference groups, we then explore how within-group and between-group inequality are related to the respective group members' SWB. Our findings suggest that within-group inequality has no significant impact on Chinese people. By contrast, between-group inequality seems to be relevant mainly for rural residents. A larger income gap between urban and rural residents is positively correlated with the rural residents' SWB. We interpret this correlation as a tunnel effect, i.e. the gap is interpreted as a positive signal for rural residents concerning their own future income. Compared to migrants, however, our results hint at a negative status effect for the rural residents.

Urban residents benefit substantially more from public transfers. Hence, the redistributive system makes people with rural *Hukou*, i.e. rural residents and rural-urban migrants, worse off. The existing *Hukou* system thus fails to lend support to the “*harmonious society*” development strategy of the Chinese government, as it reflects a severe unequal provision of public transfers in China. Nevertheless, we corroborate the presence of a tunnel effect for the rural residents. Chinese rural residents seem to be positively motivated by between-group inequality between urban and rural residents. Since the group-specific redistribution that favors urban residents apparently reduces the tunnel effect, rural residents seem to perceive the income gap resulting from market incomes as a positive signal, however, at the same time, they do not see a similar positive signal concerning income changes resulting from the redistributive system.

Being fully aware of the fact that our results cannot be interpreted as causal effects, our results nevertheless indicate that distinguishing between within-group and between-group inequality effects when assessing the influence of income inequality on SWB is important. This has far-reaching implications for the “*harmonious society*” development strategy of the Chinese government. In particular, for the stratified Chinese society, the negative correlation between group-specific redistribution inherent in the existing *Hukou* system and SWB should raise concerns about how the government pursues the objective of building a harmonious society. Rather than linking social benefits to individuals' *Hukou* status as in the existing system, the government should aim for a more inclusive social security system that ensures all populations receive similar advantages in terms of coverage and benefit level. To make the most disadvantaged group better off, it must abolish the adverse effects of group-specific redistribution.

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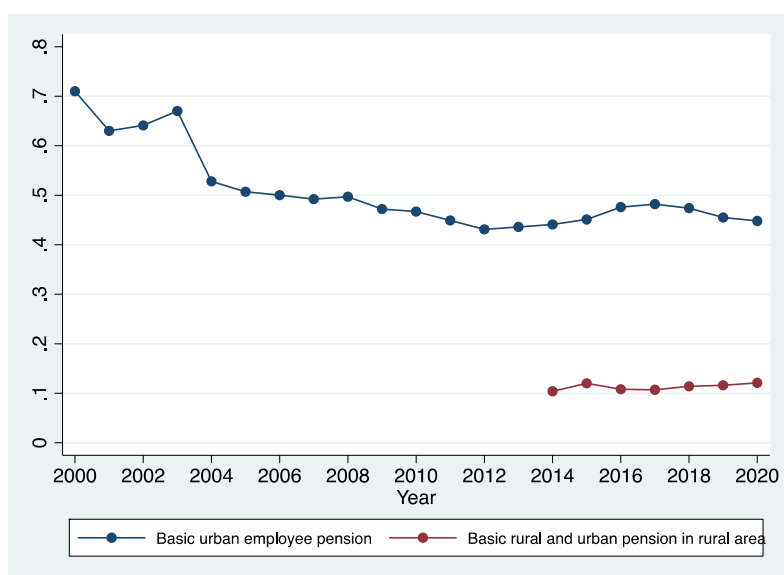
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## Appendix

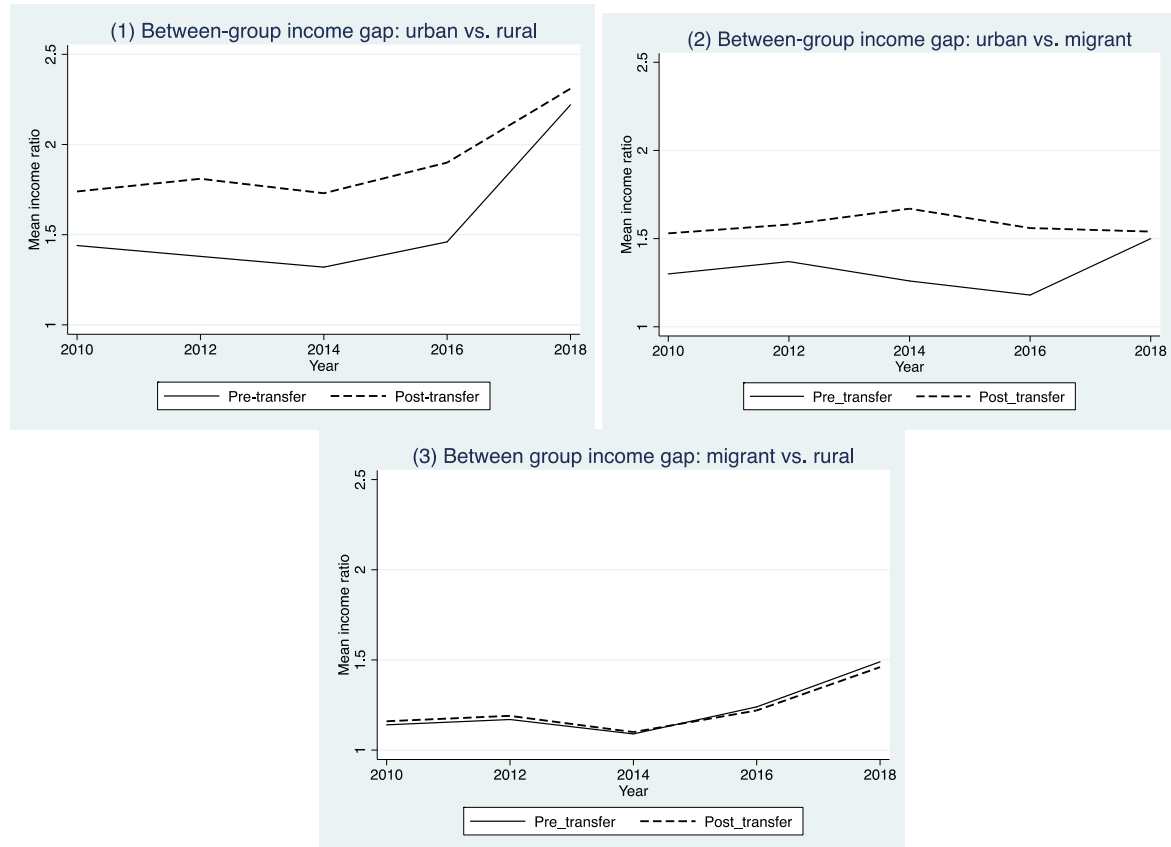
**Figure A1: Replacement ratios of public pension insurance schemes**



Source: National Bureau of Statistics of China, own calculations

Note: Following the method by Yang (2021). The replacement ratio of "basic urban employee pension" is equal to the average urban employee annual pension benefit divided by average urban employees' annual wage income; the replacement ratio of "basic rural and urban pension" in rural areas is calculated using the average basic rural and urban annual pension benefit divided by average disposable income of rural residents.

**Figure A2: Between-group mean income ratio: 5 waves 2010-2018**



Source: CFPS, own calculations

**Table A1: Distribution of individuals by type and across provinces**

Province	Urban residents		Migrants		Rural residents		Total
	Obs.	Share	Obs.	Share	Obs.	Share	Obs.
Hebei	247	2.70	448	8.43	1,394	8.72	2,092
Shanxi	220	2.41	206	3.88	1,025	6.41	1,451
Liaoning	1,500	16.41	544	10.24	1,929	12.07	3,973
Jilin	343	3.75	125	2.35	319	2.00	788
Heilongjiang	786	8.60	148	2.79	251	1.57	1,189
Shanghai	1,863	20.38	342	6.44	213	1.33	2,418
Jiangsu	142	1.55	269	5.06	208	1.30	619
Zhejiang	101	1.10	219	4.12	296	1.85	616
Shandong	218	2.38	392	7.38	1,309	8.19	1,919
Henan	913	9.99	620	11.67	2,208	13.81	3,744
Hubei	309	3.38	109	2.05	224	1.40	642
Hunan	503	5.50	158	2.97	393	2.46	1,054
Guangdong	882	9.65	779	14.66	1,220	7.63	2,886
Sichuan	233	2.55	430	8.09	947	5.92	1,611
Guizhou	96	1.05	130	2.45	721	4.51	949
Shanxi	253	2.77	141	2.65	431	2.70	827
Gansu	533	5.83	254	4.78	2,896	18.12	3,683
<b>Observations</b>	<b>9,142</b>	<b>100%</b>	<b>5,314</b>	<b>100%</b>	<b>15,984</b>	<b>100%</b>	<b>30,440</b>
<b>Excluded</b>							
Beijing	88	---	73	---	22	---	183
Tianjin	168	---	39	---	87	---	294
Anhui	72	---	373	---	407	---	852
Fujian	39	---	115	---	302	---	456
Jiangxi	116	---	92	---	563	---	771
Guangxi	41	---	173	---	568	---	782
Chongqi	92	---	101	---	202	---	395
Yunnan	88	---	194	---	831	---	1,113

Source: CFPS, own calculations

**Table A2: Descriptive statistics**

	Urban residents		Migrants		Rural residents	
	Mean/Share	Std.Dev.	Mean/Share	Std.Dev.	Mean/Share	Std.Dev.
Life satisfaction (1-5)	3.55	1.05	3.64	1.07	3.60	1.11
Absolute income (log)	10.11	1.03	9.49	1.32	9.09	1.25
Income above average (0/1)	0.36		0.39		0.37	
Age	49.9	14.15	46.6	14.83	49.9	13.92
Male (0/1)	0.49		0.49		0.54	
Married (0/1)	0.80		0.82		0.83	
Education (years)	6.97	4.65	4.67	3.98	4.24	3.68
Employed (0/1)	0.51		0.71		0.71	
Household size	3.05	1.38	3.56	1.73	3.81	1.84
Party membership (0/1)	0.10		0.09		0.08	
<i>Observations</i>	9,142		5,314		15,984	

Source: CFPS, own calculations



**Table A3: Comparison of Gini coefficients**

	Official	CFPS			
		At least 2 waves	At least 3 waves	At least 4 waves	All 5 waves
2010	0.490	0.470	0.468	0.469	0.467
2012	0.477	0.480	0.480	0.480	0.480
2014	0.473	0.450	0.450	0.450	0.451
2016	0.462	0.472	0.472	0.472	0.473
2018	0.467	0.487	0.487	0.487	0.488
<i>Observations</i>		44,886	20,159	6,926	6,926

Source: CFPS and National Bureau of Statistics of China, own calculations.

Note: The official Gini coefficient is based on individual disposable income. The CFPS Gini coefficient is based on individual post-transfer income.

**Table A4: Post-transfer inequality and life satisfaction with all controls**

	Urban residents	Migrants	Rural residents
<b>Income Inequality indicators</b>			
Within-group Gini	-0.007 (0.004)	-0.009 (0.006)	-0.001 (0.004)
BI: Urban vs. Rural	0.084** (0.038)		0.163** (0.062)
BI: Urban vs. Migrant	-0.026 (0.059)	-0.035 (0.127)	
BI: Migrant vs. Rural		-0.008 (0.075)	-0.088* (0.042)
<b>Income-related controls</b>			
Absolute income (log)	0.053*** (0.014)	-0.018 (0.024)	0.001 (0.013)
Relative rich	0.030 (0.037)	0.079* (0.044)	0.028 (0.028)
<b>Individual characteristics</b>			
Age	0.059** (0.021)	0.051 (0.040)	0.028 (0.023)
Age squared	0.001*** (0.000)	0.0003 (0.0003)	0.001*** (0.0001)
Male	-0.189 (0.147)	-0.224 (0.410)	-0.118 (0.402)
Married	0.098 (0.086)	-0.014 (0.114)	0.003 (0.102)
Education (year)	0.009* (0.005)	0.006 (0.006)	0.001 (0.004)
Employed	0.035 (0.039)	-0.004 (0.057)	0.013 (0.019)
Household size	0.065 (0.076)	0.043 (0.063)	0.081 (0.050)
Party membership	0.224*** (0.041)	0.293*** (0.053)	0.176*** (0.038)
<b>Provincial controls</b>			
GDP per capita	0.220 (0.191)	0.524** (0.185)	-0.136 (0.265)
Urban unemployment rate	0.086*** (0.015)	0.011 (0.024)	0.146*** (0.016)
Spatial price index	0.373*** (0.099)	0.326*** (0.050)	-0.149 (0.168)
East	1.912*** (0.257)	-0.886 (0.594)	-0.569 (0.332)
Middle	2.013*** (0.353)	-1.796*** (0.578)	1.824*** (0.301)
R-squared	0.093	0.072	0.078
Observations	9,142	5,314	15,984
Respondents	3,663	2,329	6,471

Source: CFPS, own calculations, according to equation (1).

Note: \*denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level. Dependent variable: Life satisfaction. Robust standard errors adjusted for clustering by province are in parentheses.

**Table A5: Pre-transfer inequality, inequality reduction and life satisfaction by income terciles**

	Urban residents	Migrants	Rural residents
<b>Pre-transfer within-group inequality &amp; redistribution</b>			
Pre-transfer within-group Gini* T1	-0.018** (0.006)	-0.015* (0.007)	-0.004 (0.004)
Pre-transfer within-group Gini* T2	-0.009 (0.006)	-0.007 (0.007)	-0.003 (0.005)
Pre-transfer within-group Gini* T3	-0.010 (0.006)	-0.005 (0.007)	-0.005 (0.004)
Within-group redistribution * T1	0.0003 (0.005)	0.002 (0.011)	-0.013** (0.005)
Within-group redistribution * T2	-0.005 (0.005)	-0.003 (0.013)	-0.009 (0.008)
Within-group redistribution * T3	0.004 (0.003)	-0.010 (0.008)	-0.003 (0.009)
<b>Pre-transfer between-group inequality &amp; redistribution</b>			
Pre-transfer BI: Urban vs. Rural * T1	0.131* (0.067)		0.069 (0.093)
Pre-transfer BI: Urban vs. Rural * T2	0.008 (0.082)		0.166** (0.089)
Pre-transfer BI: Urban vs. Rural * T3	0.128* (0.066)		0.092* (0.057)
BI redistribution: Urban vs. Rural * T1	0.004 (0.005)		0.005** (0.002)
BI redistribution: Urban vs. Rural * T2	-0.003 (0.004)		0.006*** (0.002)
BI redistribution: Urban vs. Rural * T3	-0.007 (0.004)		0.004*** (0.001)
Pre-transfer BI: Urban vs. Migrant * T1	0.110 (0.114)	0.073 (0.172)	
Pre-transfer BI: Urban vs. Migrant * T2	0.029 (0.114)	-0.064 (0.163)	
Pre-transfer BI: Urban vs. Migrant * T3	-0.192** (0.074)	-0.034 (0.166)	
BI redistribution: Urban vs. Migrant * T1	-0.002 (0.005)	0.003 (0.003)	
BI redistribution: Urban vs. Migrant * T2	0.005 (0.005)	0.006* (0.003)	
BI redistribution: Urban vs. Migrant * T3	0.007* (0.003)	0.002 (0.002)	
Pre-transfer BI: Migrant vs. Rural * T1		0.039 (0.098)	-0.069 (0.084)
Pre-transfer BI: Migrant vs. Rural * T2		-0.037 (0.086)	-0.220** (0.088)
Pre-transfer BI: Migrant vs. Rural * T3		-0.115 (0.137)	-0.040 (0.081)
BI redistribution: Migrant vs. Rural * T1		0.009 (0.007)	-0.005 (0.003)
BI redistribution: Migrant vs. Rural * T2		-0.010 (0.006)	-0.005 (0.005)
BI redistribution: Migrant vs. Rural * T3		-0.007 (0.007)	-0.004 (0.003)

Source: CFPS, own calculations.

Note: \*denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level. Dependent variable: Life satisfaction. Robust standard errors adjusted for clustering by province are in parentheses.

**Table A6: Post-transfer inequality and life satisfaction of 5 large provinces**

	Urban residents	Migrants	Rural residents
<b>Post-transfer within-group inequality</b>			
Post-transfer within-group Gini	-0.016** (0.004)	-0.010 (0.011)	-0.004 (0.004)
<b>Post-transfer between-group inequality</b>			
Post-transfer BI: Urban vs. Rural	0.183** (0.051)		0.339*** (0.065)
Post-transfer BI: Urban vs. Migrant	-0.033 (0.094)	0.195 (0.272)	
Post-transfer BI: Migrant vs. Rural		-0.113 (0.109)	-0.326** (0.108)
R-squared	0.104	0.078	0.080
Observations	5,720	2,571	8,514
Respondents	2,295	1,143	3,487

Source: CFPS, own calculations according to equation (1)

Note: \*denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level. Dependent variable: Life satisfaction. Robust standard errors adjusted for clustering by province are in parentheses. This table replicates the regression as in Table 3.

**Table A7: Post-transfer inequality and life satisfaction by income terciles of 5 large provinces**

	Urban residents	Migrants	Rural residents
<b>Post-transfer within-group inequality</b>			
Post-transfer within-group Gini * T1	-0.022** (0.007)	-0.011 (0.016)	-0.002 (0.002)
Post-transfer within-group Gini * T2	-0.011** (0.003)	-0.012 (0.015)	-0.002 (0.003)
Post-transfer within-group Gini * T3	-0.016** (0.005)	-0.005 (0.006)	-0.007 (0.005)
<b>Post-transfer between-group inequality</b>			
Post-transfer BI: Urban vs. Rural * T1	0.234** (0.071)		0.305** (0.109)
Post-transfer BI: Urban vs. Rural * T2	0.065 (0.045)		0.539** (0.163)
Post-transfer BI: Urban vs. Rural * T3	0.218* (0.093)		0.216* (0.112)
Post-transfer BI: Urban vs. Migrant * T1	0.011 (0.103)	0.239 (0.293)	
Post-transfer BI: Urban vs. Migrant * T2	0.019 (0.097)	0.245 (0.357)	
Post-transfer BI: Urban vs. Migrant * T3	-0.026 (0.130)	0.116 (0.287)	
Post-transfer BI: Migrant vs. Rural * T1		-0.174 (0.152)	-0.345** (0.141)
Post-transfer BI: Migrant vs. Rural * T2		-0.029 (0.157)	-0.697*** (0.123)
Post-transfer BI: Migrant vs. Rural * T3		-0.149 (0.189)	-0.033 (0.297)

Source: CFPS, own calculations.

Note: \*denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level. Dependent variable: Life satisfaction. This table replicates the regression as in Table 4. Robust standard errors adjusted for clustering by province are in parentheses.

**Table A8: Pre-transfer inequality, inequality reduction and LS of 5 large provinces**

	Urban residents	Migrants	Rural residents
<b>Pre-transfer within-group inequality &amp; redistribution</b>			
Pre-transfer within-group Gini	-0.035*** (0.003)	-0.023** (0.007)	-0.006 (0.004)
Within-group redistribution $R_{pt}^{Gini}$	0.014*** (0.002)	-0.005 (0.006)	-0.012 (0.010)
<b>Pre-transfer between-group inequality &amp; redistribution</b>			
Pre-transfer BI: Urban vs. Rural	0.286*** (0.046)		0.543*** (0.117)
BI redistribution $R_{pt}^{BI}$ : Urban vs. Rural	-0.016** (0.005)		0.004** (0.001)
Pre-transfer BI: Urban vs. Migrant	-0.223* (0.084)	0.410* (0.182)	
BI redistribution $R_{pt}^{BI}$ : Urban vs. Migrant	0.019** (0.005)	0.006** (0.001)	
Pre-transfer BI: Migrant vs. Rural		-0.347** (0.092)	-0.735** (0.167)
BI redistribution $R_{pt}^{BI}$ : Migrant vs. Rural		-0.005 (0.009)	0.008 (0.007)
R-squared	0.109	0.089	0.090
Observations	5,720	2,571	8,499
Respondents	2,295	1,143	3,480

Source: CFPS, own calculations.

Note: \*denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level. Dependent variable: Life satisfaction. Robust standard errors adjusted for clustering by province are in parentheses. This table replicates the regression as in Table 5.

**Table A9: Pre-transfer inequality, inequality reduction, and LS, Theil index**

	Urban residents	Migrants	Rural residents
<b>Pre-transfer within-group inequality &amp; redistribution</b>			
Pre-transfer within-group Theil	-0.321** (0.124)	-1.005 (0.613)	0.002 (0.043)
Within-group redistribution $R_{pt}^{Theil}$	-0.001 (0.001)	-0.004 (0.009)	-0.004 (0.003)
<b>Pre-transfer between-group inequality &amp; redistribution</b>			
Pre-transfer BI: Urban vs. Rural	0.075* (0.037)		0.112*** (0.038)
BI redistribution $R_{pt}^{BI}$ : Urban vs. Rural	-0.001 (0.003)		0.005*** (0.001)
Pre-transfer BI: Urban vs. Migrant	-0.001 (0.064)	-0.021 (0.135)	
BI redistribution $R_{pt}^{BI}$ : Urban vs. Migrant	0.003 (0.003)	0.004* (0.002)	
Pre-transfer BI: Migrant vs. Rural		-0.048 (0.079)	-0.109 (0.072)
BI redistribution $R_{pt}^{BI}$ : Migrant vs. Rural		-0.001 (0.005)	-0.003 (0.004)

Source: CFPS, own calculations according to equation (3)

Note: \*denotes significance at the 10% level, \*\* at the 5% level, and \*\*\* at the 1% level. Dependent variable: Life satisfaction. Robust standard errors adjusted for clustering by province are in parentheses. This table replicates the regression as in Table 3.

**Table A10:** Comparison of pooled OLS estimation with fixed effect estimation from Table 3

	Urban residents		Migrants		Rural residents	
	Pooled OLS	Fixed effect	Pooled OLS	Fixed effect	Pooled OLS	Fixed effect
<b>Post-transfer within-group inequality</b>						
Within-group Gini	-0.006 (0.007)	-0.007 (0.004)	-0.012* (0.006)	-0.009 (0.006)	0.002 (0.005)	-0.001 (0.004)
<b>Post-transfer between-group inequality</b>						
BI: Urban vs. Rural	0.178*** (0.048)	0.084** (0.038)			0.266*** (0.059)	0.163** (0.062)
BI: Urban vs. Migrant	-0.033 (0.061)	-0.026 (0.059)	-0.024 (0.136)	-0.035 (0.127)		
BI: Migrant vs. Rural			0.077 (0.072)	-0.008 (0.075)	-0.085** (0.038)	-0.088* (0.042)
R-squared	0.112	0.093	0.086	0.072	0.088	0.078
Observations	9,142	9,142	5,314	5,314	15,984	15,984
Respondents		3,663		2,329		6,471

Source: CFPS, own calculations.

**Table A11:** Comparison of pooled OLS estimation with fixed effect estimation from Table 4

	Urban residents		Migrants		Rural residents	
	Pooled OLS	Fixed effect	Pooled OLS	Fixed effect	Pooled OLS	Fixed effect
<b>Post-transfer within-group inequality</b>						
Within-group Gini * T1	-0.012* (0.007)	-0.012** (0.004)	-0.017** (0.006)	-0.015** (0.007)	0.001 (0.005)	-0.001 (0.004)
Within-group Gini * T2	-0.005 (0.007)	-0.004 (0.005)	-0.013* (0.008)	-0.006 (0.007)	0.003 (0.005)	0.0002 (0.005)
Within-group Gini * T3	-0.005 (0.006)	-0.006 (0.005)	-0.005 (0.007)	-0.004 (0.006)	0.002 (0.005)	-0.003 (0.005)
<b>Post-transfer between-group inequality</b>						
BI: Urban vs. Rural * T1	0.197** (0.079)	0.123** (0.045)			0.265*** (0.068)	0.132* (0.072)
BI: Urban vs. Rural * T2	0.125* (0.066)	0.019 (0.068)			0.295*** (0.070)	0.219*** (0.074)
BI: Urban vs. Rural * T3	0.172*** (0.045)	0.095 (0.065)			0.258*** (0.070)	0.163** (0.071)
BI: Urban vs. Migrant * T1	-0.001 (0.097)	0.023 (0.075)	0.019 (0.152)	0.051 (0.152)		
BI: Urban vs. Migrant * T2	-0.038 (0.073)	-0.020 (0.079)	-0.010 (0.143)	-0.106 (0.143)		
BI: Urban vs. Migrant * T3	-0.039 (0.069)	-0.053 (0.065)	-0.096 (0.149)	-0.043 (0.168)		
BI: Migrant vs. Rural * T1			0.119 (0.112)	0.085 (0.111)	-0.075 (0.061)	-0.063 (0.045)
BI: Migrant vs. Rural * T2			0.090 (0.074)	-0.025 (0.092)	-0.167*** (0.054)	-0.210** (0.094)
BI: Migrant vs. Rural * T3			-0.031 (0.139)	-0.095 (0.137)	-0.016 (0.058)	0.001 (0.054)

Source: CFPS, own calculations.

**Table A12: Comparison of pooled OLS estimation with fixed effect estimation from Table 5**

	Urban residents		Migrants		Rural residents	
	Pooled OLS	Fixed effect	Pooled OLS	Fixed effect	Pooled OLS	Fixed effect
<b>Pre-transfer within-group inequality &amp; redistribution</b>						
Within-group Gini	-0.013** (0.006)	-0.013** (0.006)	-0.010 (0.006)	-0.009 (0.006)	-0.001 (0.004)	-0.004 (0.004)
Within-group redistribution $R_{pt}^{Gini}$	0.004 (0.003)	0.001 (0.003)	0.002 (0.010)	-0.003 (0.008)	-0.006 (0.008)	-0.008 (0.006)
<b>Pre-transfer between-group inequality &amp; redistribution</b>						
BI: Urban vs. Rural	0.152*** (0.049)	0.091** (0.042)			0.146** (0.063)	0.106** (0.053)
BI redistribution $R_{pt}^{BI}$ : Urban vs. Rural	-0.001 (0.003)	-0.001 (0.003)			0.006*** (0.001)	0.005*** (0.001)
BI: Urban vs. Migrant	-0.042 (0.082)	-0.008 (0.077)	-0.037 (0.148)	-0.015 (0.141)		
BI redistribution $R_{pt}^{BI}$ : Urban vs. Migrant	0.004 (0.003)	0.002 (0.003)	0.007** (0.002)	0.004* (0.002)		
BI: Migrant vs. Rural			-0.010 (0.083)	-0.031 (0.072)	-0.102 (0.082)	-0.106 (0.064)
BI redistribution $R_{pt}^{BI}$ : Migrant vs. Rural			0.003 (0.007)	-0.001 (0.005)	-0.004 (0.004)	-0.004 (0.003)

Source: CFPS, own calculations