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Original Paper

The Study on Poverty Reduction Effects of Chinese Urban Minimum Living Standard Guarantee System—Empirical Analysis Based on CHIP 2002 and 2007

Chen Zongsheng[1*] & Wen Wen[2]

[1] Institute of Economics, Nankai University, Tianjin, China

[2] China Center for Economic Research, Fudan University, Shanghai, China

[*] Chen Zongsheng, Institute of Economics, Nankai University, #94 Weijin Road, Nankai District, 300071, Tianjin, China

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Abstract

The Chinese urban minimum living-standard guarantee system, mainly functions to guarantee the poor people to have minimum living-standard life; at same time it can make some people to get rid of poverty by some poverty lines. But how much of the rates can be reduced? What differences among provinces, and what impact on all kind of families? The paper tries to answer these questions by using Chinese Household Income Project (CHIP) 2002 and 2007, taking international poverty line, minimum living standard line, Martin's poverty line and relative poverty line respectively to measure the poverty reduction impact of urban minimum living standard guarantee. On the whole, the urban minimum living standard guarantee is effective to alleviate absolute poverty and even part of relative poverty. For example, taking international poverty line as standard, in 2002 the urban minimum living guarantee respectively decreased absolute poverty rate, poverty gap and squared poverty gap of national urban area by 4.58%, 11.41% and 16.32%, while in 2007 decreased respectively by 47.24%, 70.87% and 83.04%. Taking relative poverty line as standard, in 2002 respectively poverty rate, poverty gap and squared poverty gap of national urban area decreased by 1.92%, 4.65% and 8.37%, while in 2007 the 3 indices reached by 3.28%, 11.63% and 22.57% respectively, but which are lower than by international poverty line. On the whole, according to different poverty lines and indices, the urban citizen in different provinces and families gained different poverty reduction effects brought by the urban minimum living standard guarantee.

Keywords

minimum living standard, guarantee system, poverty line, poverty rate

1. Introduction

After 35 years of reform and opening up, China has entered the middle-income countries from a low-income country with backward economic development and weak government financial resources. However, China is still a developing country with a per capita GDP of just over $6,000. Therefore, except the poverty of rural residents need to be figure out, whether absolute or relative poverty of urban residents, both of them still have in different degrees. It has always been an important problem in the economic development of social, averting the poverty pass on the generation's gap and immobilization, and eliminating urban poverty by hardworking (Note 1). In the 1990s, in order to alleviate the social impact caused by the transformation of enterprises in urban areas (Note 2), and to guarantee the basic living conditions of laid-off workers, the urban minimum living standard guarantee system came into being, building the last survival "defense line" for urban residents, namely the livelihood income line (Note 3), or urban poverty line. After more than a decade of development, the system has become increasingly perfect, playing an important role in ensuring residents' right to subsistence and maintaining "bottom line equity".

However, since it was not until 1999, China formally established the minimum living standard guarantee system, the data which can be used to evaluate the policy effect is scarce at that time (Hong Dayong, 2004; Wang Weiping, 2007; Yang Lixiong, 2008; Zhang Haomiao, 2010). The good news is that the quantitative analysis of poverty reduction effect of minimum living standard guarantee by domestic and foreign scholars has been gradually carried out in recent years, and achieved some research results. For example, Chen, Ravallion and Wang (2006), used the China's Urban households for Short-term Survey (UHSS, 2003) data, to measure the aim of targeting and poverty reduction effect of the urban minimum living standard guarantee system in 35 large and medium-sized cities in China, found that urban poverty reduction effect is mainly reflected in reducing the intensity and depth of poverty, which may well prevent the leakage to the non-poor, but due to the low coverage affected its role in poverty reduction.

Wang (2007) used the data of 14 small and medium-sized cities in the "China urban employment and Social Security Survey 2004" and five different poverty line, to measure the poverty reduction function of the urban minimum living standard guarantee system. The results showed that the urban minimum living standard guarantee reduced the absolute poverty rate by 11%-16% on average and the relative poverty rate by 2%-4% on average. Therefore, she thought that the poverty reduction effect of the urban minimum living standard guarantee could be measured and more effective.

Du Yang and Albert Park (2007) analyzed the poverty reduction effect of urban minimum living standard guarantee, laid-off subsidy and unemployment insurance based on the labor market surveys conducted by the Chinese academy of social sciences in Shanghai, Wuhan, Shenyang, Fuzhou and

Xi'an in 2001 and 2005. They found that the poverty rate in 2001 and 2005 decreased by 0.86 and 2.09 percentage points respectively when measured by the minimum living standard guarantee line; Compared with two years, the reduction in poverty rate in 2005 was mainly due to the effect of the implementation of the minimum living standard guarantee system.

Gustafsson and Deng (2007) used Chinese Household Income Project (CHIP) 2002 in the town of survey data, using Khan (2004) of high and low absolute poverty line for the standard, and estimates the poverty reduction effect of urban poor, the results show that in high poverty line, low-income residents and all samples of absolute poverty rate fell 16% and 5%, respectively, poverty gap fell by 29% and 12% respectively, the square poverty gap dropped by 38 percent and 20 percent, respectively. Gao et al. (2009) obtained similar results using the same data and methods (Note 4). Xia Qingjie et al. (2007) used the data of (CHIP) (1988, 1995, 1999 and 2002) to evaluate the impact of subsistence assistance, unemployment allowance and minimum living standard guarantee policies paid by work units on poverty rate with the international poverty line, and found that the effect of these three social welfare subsidy systems on reducing poverty rate was less than 1 percentage point. Therefore, the social welfare system still has a lot of space for improvement in urban anti-poverty.

In a word, by reviewing the empirical measurement and theoretical analysis of the poverty reduction effect of social assistance system in the above-mentioned literatures, we can clearly find that the effect of the current urban minimum living standard guarantee system in China is mainly to help the recipient families reduce the poverty depth and intensity, but not to lift them out of poverty. Some policy simulation results show that the poverty reduction effect will be further improved if the urban minimum living standard guarantee can be fully covered and the amount of minimum living standard guarantee is fully distributed. In addition, the above studies mainly focus on the early stage of the minimum living standard guarantee system, so it is difficult to carry out a comparative study on the effects of cross-period policies. At the same time, due to the short implementation time of the minimum living standard guarantee system, the inconsistency among different regions, and the relative lack of information, it has not been clearly answered how much the poverty reduction effect of the national urban minimum living standard guarantee is, and how much the poverty reduction effect is different among different regions and family types.

This paper makes comprehensive analysis and conducts measurement of the poverty reduction effect of urban minimum living standard guarantee in China based on the two large-scale micro-survey data of "Chinese Household Income Project (CHIP)" (2002 and 2007), which can make up for the above deficiencies to some extent and provide the corresponding basis and reform ideas for the future development of China's minimum living standard guarantee system.

2. Data, Methods and Metrics

2.1 Data Description

The data used in this paper are urban part of the Chinese Household Income Project (CHIP) in 2002 and 2007. The CHIP sample is taken from a large sample of the National Bureau of Statistics by stratified sampling. CHIP (2002) provides population characteristics, income and expenditure information of 12 provinces and province-level municipality in the East (Beijing, Liaoning, Jiangsu, Guangdong), the Middle (Shaanxi, Anhui, Henan, Hubei), the West (Chongqing, Sichuan, Yunnan, Gansu). The original sample includes 6835 households and 20632 individuals. After the author removes the coding errors and repeated data, the effective sample package is obtained including 6823 households and 20573 individuals. CHIP (2007) provides the demographic characteristics, income and expenditure information of nine provinces and province-level municipality in the East (Shanghai, Jiangsu, Zhejiang, Guangdong), the middle (Anhui, Henan, Hubei), the West (Chongqing, Sichuan). The original sample includes 5002 households and 14683 individuals. The effective sample after the author's collation includes 4999 households and 14673 individuals.

There are two questionnaires in CHIP (2002 and 2007), one is consistent with the questionnaire of National Bureau of statistics, the other is a more detailed questionnaire designed by CHIP research team. Both questionnaires ask questions related to urban minimum living standard guarantee income. In the questionnaire of the National Bureau of statistics, one item directly asks about the minimum living standard guarantee income received by family members, while the questionnaire in the appendix asks about the social assistance income received by family members. Using the former to calculate the rate of urban minimum living standard guarantee is 2.1%, which is far lower than the statistical data officially published by China's Ministry of Civil Affairs. It is also quite different from the measurement results of Chen, Ravallion and Wang (2006), Duyang and Albert Park (2007) using large-scale survey samples. This shows that the "minimum living standard guarantee income" item in the main questionnaire is seriously underreported, while according to the survey in the appendix, the rate of urban minimum living standard guarantee is 3.7%, which is closer to the official results. Therefore, this paper refers to the practice of Gustafsson and Deng (2007) and Gao et al. (2009), and regards "social assistance income" in CHIP (2002 and 2007) as "minimum living standard guarantee income".

2.2 Selection of Poverty Indicators and Measurement Method

The selection of poverty indicators is related to the accuracy of poverty measurement. An appropriate poverty indicator will help to make a comprehensive evaluation of the poverty situation and the effect of poverty reduction policies. Poverty index usually needs to meet a series of normative requirements, such as monotonicity axiom, transferability axiom, transferability sensitivity axiom, subset monotonicity axiom, etc. These normative requirements are important criteria to judge the merits of poverty index. According to these standards, the comprehensive poverty index (FGT) proposed by Foster, Greer and Thorbecke (1984) was adopted as the poverty index in this paper, while the poverty

reduction effect of the urban minimum living standard guarantee system was based on the difference value of the comprehensive poverty index (FGT) FE before and after the implementation of the minimum living standard guarantee measures.

$$FE_{FGT(\alpha)} = FGT(\alpha)_{pre} - FGT(\alpha)_{post} \tag{1}$$

The ratio of its difference to the former comprehensive poverty index RE:

$$RE_{FGT(\alpha)} = (FGT(\alpha)_{pre} - FGT(\alpha)_{post}) / FGT(\alpha)_{pre} \tag{2}$$

$$FGT(\alpha) = \frac{1}{n}\sum_{i=1}^{q}(\frac{z-y_i}{z})^{\alpha} \tag{3}$$

Where q, n, z and y respectively represent the number of poor population, the number of total population, the poverty line and income of the i-th poor population. While, "α" is the poverty aversion coefficient. The larger α is, the higher the society's aversion to poverty is.

When α=0,

$$FGT = \frac{q}{n} = H \tag{4}$$

The H index represents the incidence of poverty in the total population, reflects the extent of poverty;

When α=1,

$$FGT = \frac{1}{n}\sum_{i=1}^{q}\frac{z-y_i}{z} = \frac{q}{n}\sum_{i=1}^{q}\frac{z-y_i}{qz} = HI \tag{5}$$

Here, FGT is the poverty gap index, which represents the relative gap between the income level of the poor population and the poverty line, and reflects the depth of poverty;

When α=2,

$$FGT = \frac{1}{n}\sum_{i=1}^{q}(\frac{z-y_i}{z})^2 = H\left[I^2 + (1-I^2)C\right] \tag{6}$$

Here, FGT is the square poverty gap index, where C represents Gini coefficient of the income distribution of the poor population and reflects the income difference among poor population. As this index gives higher weight to the individual with more serious poverty, it is mainly used to reflect the intensity of poverty.

When α>0, FGT index satisfies the monotonicity axiom and the subset monotonicity axiom. When α>1, FGT index satisfies the transferability axiom. When α>2, FGT index satisfies the transfer sensitivity axiom. In addition, FGT index also satisfies the decomposability axiom, that is, the overall poverty index is equal to the weighted average of each group's poverty index, that is,

$$FGT_{\alpha}(y,z) = \sum_{i=1}^{k} p^i FGT_{\alpha}^{i}(y_i,z) \tag{7}$$

Where p^i represents the population weight of group i, and $FGT_{\alpha}^{i}(y_i,z)$ represents the comprehensive poverty index of group i. Since the FGT index has a good character and reflects the poverty degree comprehensively, this paper also uses the FGT index to measure the poverty degree before and after the

implementation of the urban minimum living standard guarantee, so as to analyze the poverty reduction effect of urban minimum living standard guarantee.

2.3 The Choice of Poverty Line

In the above measurement formula, the determination of the poverty line is an important selection factor. The urban poverty line, as the basis for judging the urban poverty level, reflects the acceptable minimum living standard of a city under certain economic conditions. There is no unified national urban poverty line in China. In this study, the international poverty line, the line of minimum living standard guarantee, other poverty lines and the relative poverty line were used to measure the effect of urban poverty reduction policies on different occasions. Because of the sensitivity of the effect analysis of poverty reduction policy to the choice of poverty line (Duyang, Albert Park, 2007; Gustafsson & Deng, 2007; Gao et al., 2009; Xia Qingjie, 2007), it is a reasonable method to choose several poverty lines to illustrate the poverty reduction effect of policies from different perspectives. After careful comparison, this paper selects international poverty line, minimum living standard line, Martin's poverty line, relative poverty line and other related poverty lines to evaluate the poverty reduction effect of the policy.

According to purchasing power parity, the World Bank sets the standard of $1, $2 and $3 per capita per day as a representative poverty line standard for low-income countries (Ravallion, DATT and Van de walle, 1991). Although this kind of poverty standard ignores the differences of price levels in different parts of the country, it is a simple, effective and operable measure for uniform comparison of poverty in different regions and even different countries. This paper assumes that u$1 per person per day is the rural poverty line, and chooses $2 per day as one of the urban poverty lines (Note 5). It is found that the evaluation of purchasing power of RMB in 2005 (between 2002 and 2007) is 3.45 yuan/dollar (Deaton & Heston, 2008). Therefore, the international poverty line of urban residents is converted into RMB 2484 yuan in 360 days. By this single standard, the change of poverty of urban areas in China and other provinces can be measured. The results can also be compared internationally. This is a feature that none of the other criteria below have.

The minimum living standard guarantee line is a subsidy standard for the poor formulated by each city according to the local economic development level, residents' income and consumption and local financial resources. Therefore, the biggest deficiency of using the minimum living standard guarantee line as the poverty line is that the poverty line varies by the local financial resources, so that the poverty rate measured by the minimum living standard guarantee line cannot uniformly reflect its poverty situation in some areas. However, the benefit of measuring the poverty reduction effect using the minimum living standard guarantee line as the poverty line is that it can combine poverty reduction effects with assistance practices to examine the implementation effect of the policy. Some scholars have tried to measure the poverty reduction effect of the minimum living standard guarantee directly using the minimum living standard guarantee line as the poverty line (Note 6). In view of the unbalanced regional economic development in China, the urban minimum living standard guarantee

line is also selected as one of the urban poverty lines. It was calculated that the national urban minimum living standard guarantee line was 1824 yuan per person per year in 2002 and 2188.8 yuan per person per year in 2007. The urban minimum living standard guarantee line varies from province to province (Note 7), as shown in Table 1.

Table 1. Four Types of Urban Poverty Line in 2002 and 2007 (Yuan/Person Per Year)

	2002					2007			
Region	Minimum living standard guarantee line	International poverty line	Martin's poverty line	Relative poverty line	Region	Minimum living standard guarantee line	International poverty line	Martin's poverty line	Relative poverty line
Nation	1824.0	2484	2863.9	3558.2	Nation	2188.8	2484	3216.8	7626.0
Jiangsu	1872.0	2484	2742.0	3890.2	Jiangsu	2943.6	2484	3095.1	8226.7
Anhui	1716.0	2484	2335.7	2986.4	Anhui	2416.8	2484	2674.5	6365.5
Henan	1632.0	2484	2567.4	3039.0	Henan	1818.0	2484	2997.1	5625.1
Hubei	1572.0	2484	2615.3	3439.8	Hubei	1953.6	2484	3057.3	6466.2
Guangdong	2184.0	2484	3436.0	4784.1	Guangdong	2617.2	2484	3822.6	12630.3
Chongqing	1608.0	2484	2889.1	3319.8	Chongqing	2139.6	2484	3257.2	5596.4
Sichuan	1560.0	2484	2233.8	3023.6	Sichuan	2104.8	2484	2625.9	6140.2
Yunnan	1788.0	2484	2758.7	3912.2	Shanghai	4200.0	2484	4638.1	10130.4
Gansu	1536.0	2484	2635.7	2834.9	Zhejiang	3144.0	2484	4355.4	9361.3
Shanxi	1872.0	2484	2274.4	3173.6					
Liaoning	2064.0	2484	2455.9	3538.4					
Beijing	3420.0	2484	4173.8	5717.2					

Sources: 1) The international poverty line is calculated by the author at an annual rate of $2 per day (see text). It is a uniform poverty line for all countries, regions and years; 2) The relative poverty line is calculated at 50% of the national and local average income for the year; 3) In 2002, the urban minimum living standard guarantee standards of the whole country and sample provinces were cited from Hong Dayong (2003), and in 2007, the urban minimum living standard guarantee standards were cited from China civil affairs statistical yearbook 2008; 4) Martin's poverty line was cited by Wang Youjuan (2006). In addition, the data in Table 1 are adjusted using the consumer price index of urban residents.

Compared with other methods, Martin's poverty line has greater advantages in operability, data availability and theoretical completeness (Note 8) (Yang Lixiong, 2010). Therefore, the Martin's poverty line is also used in this paper to measure the urban poverty line. The national urban poverty line calculated by the Martin's poverty line was 2861.3 yuan per person in 2002 and 3215.3 yuan per person in 2007. The two-year Martin's poverty line varies in province (Note 9), as shown in Table 1.

In addition, this paper also chooses the relative poverty line calculated by 50% of the median of per capita disposable income of households before receiving minimum living standard guarantee. In general, the relative poverty rate in urban areas is significantly higher than the absolute poverty rate (Note 10), which reflects the difference between the two poverty standards.

3. Measurement Results of Poverty Reduction Effect by Provinces and by Types of Urban Households

3.1 Measurement of Poverty Reduction Effect of Urban Minimum Living Standard Guarantee by Provinces

Based on the selected data, this paper takes the international standard of two dollars per day per capita, the urban minimum living standard and the poverty line calculated by Martin's poverty line as the absolute poverty line, and takes 50% of the median of per capita disposable income of households before receiving minimum living standard guarantee as relative poverty line, and uses the above comprehensive analysis formula to analyze the poverty reduction effect of implementing the urban minimum living standard guarantee in China.

The results of poverty reduction in urban areas measured by international poverty line of $2 per day are shown in Table 2. In 2002, the overall urban poverty rate dropped by 4.58%, the poverty rate in Guangdong, Chongqing, Shanxi and Liaoning all dropped more than the national average. Among them, the province with the largest decline was Guangdong, which reached 33.34%, followed by Chongqing, which declined by 11.11%; The average decline of other provinces is less than 5%, while Beijing, Jiangsu, Anhui, Hubei and Yunnan remained roughly unchanged.

The poverty gap index, which measures the depth of poverty, fell by 11.41% nationwide. In all provinces, except Beijing, the poverty gap of all provinces has declined to some extent. The most significant is Chongqing, Yunnan, Gansu and Anhui, which are located in the middle and west of China, The decline range is more than 20%, of which Chongqing reaches 32.51%, which is the largest, while Beijing, Jiangsu and Henan have the smallest decline range, which is less than 1/3 of the national level on average. The intensity of poverty, which reflects the extent of disparities within poor groups, has declined by 16.32% in the whole country. Chongqing, Yunnan and Gansu are 3.23 times, 2.46 times and 2.05 times of the national average, respectively, indicating that the minimum living standard guarantee plays an important role in alleviating poverty intensity in these areas. However, the average degrees of falling in the provinces of Beijing, Jiangsu and Henan was less than 5 percent.

In 2007, the overall poverty rate, poverty gap and poverty intensity dropped by 47.24%, 70.87% and 83.04%, respectively, 9.3 times, 5.2 times and 4.1 times higher than that in 2002, which show that poverty reduction has intensified. From Jiangsu and other seven sample provinces included in both surveys showed a significant increase in the decline of all three indicators. Among them, the three indicators of Jiangsu Province decreased by 0%, 2.83% and 1.64% respectively from 2002, and increased to 49.98%, 72.76% and 87.68% respectively in 2007; In Henan province, the poverty index decreased by less than 5% in 2002, and by more than 40% in 2007. In particular, the poverty gap and poverty intensity decreased by 76.34% and 92.55%, respectively. The declines of Sichuan increased from 1.92%, 4.03% and 9.05% in 2002 to 62.50%, 87.26% and 96.06% in 2007. The absolute poverty in Shanghai and Hubei Province has been completely eliminated. This clearly shows that the implementation effect of the policy is more and more significant and effective. But is it the same with other indicators? The following is measurement of other poverty lines.

Table 2. FGT Index Reduction Measured by International Poverty Line Before and After the Implementation of Urban Minimum Living Standard Guarantee in 2002 and 2007 (%)

Region	2002			Region	2007		
	$RE_{FGT(0)}$	$RE_{FGT(1)}$	$RE_{FGT(2)}$		$RE_{FGT(0)}$	$RE_{FGT(1)}$	$RE_{FGT(2)}$
Nation	4.58	11.41	16.32	Nation	47.24	70.87	83.04
Jiangsu	0.00	2.83	1.64	Jiangsu	49.98	72.76	87.68
Anhui	0.00	21.80	31.28	Anhui	22.23	47.47	59.23
Henan	2.04	3.32	3.60	Henan	41.76	76.34	92.55
Hubei	0.00	10.49	21.18	Hubei	100.00	100.00	100.00
Guangdong	33.34	19.59	6.47	Guangdong	66.71	44.46	34.15
Chongqing	11.11	32.51	52.64	Chongqing	25.00	56.10	75.59
Sichuan	1.92	4.03	9.05	Sichuan	62.50	87.26	96.06
Yunnan	0.00	23.68	40.13	Shanghai	100.00	100.00	100.00
Gansu	4.00	23.20	33.50	Zhejiang	—	—	—
Shanxi	10.26	12.63	18.13				
Liaoning	7.69	15.17	20.49				
Beijing	0.00	0.00	0.00				

Note. 1) The corresponding data of FGT index $RE_{FGT(0)}$, $RE_{FGT(1)}$ and $RE_{FGT(2)}$ in Table 2 respectively represent the percentage reduction of poverty rate, poverty gap and poverty intensity, that is, the decline rate of the same index before and after the implementation of the minimum living standard guarantee in the same year. It is calculated according to the FGT method introduced in the second part of this paper; 2) The "0.00" in Table 2 indicates that the implementation of urban minimum living standard guarantee has no effect on the poverty rate (as well as the poverty gap and poverty intensity) of the sample area; "100%" means that the urban minimum living standard guarantee reduces the poverty rate, poverty gap and poverty intensity of the sample areas by 100%, that is, poor households are lifted out of poverty; "-" means that there is no poverty in the sample area under the set poverty line.

The poverty reduction results in urban areas measured by minimum living standard guarantee line are shown in Table 3. In 2002, according to the poverty line of urban minimum living standard guarantee assistance, first, the national urban poverty rate dropped by 10.56%, much larger than that calculated by the international poverty line, which is mainly the result of the change of measurement standard. According to the results measured by minimum living standard guarantee line in each province, except that the poverty rate of Beijing, Jiangsu and Yunnan has not changed, the other provinces and province-level municipality have declined, the largest decline is Chongqing, which is 6.3 times of the national average level. Second, the poverty gap of urban areas has dropped by 16.2 percent nationwide, 61.47 percent in Chongqing and 46.79 percent in Yunnan, 3.8 times the national average and 2.9 times the national average. The poverty gap in Henan has decreased by 2.91%, which is far lower than the national level. Beijing and Jiangsu have not changed. Third, the decline of square poverty gap is the largest, reaching 20.43%; Among the provinces, Chongqing, Yunnan and Anhui saw steeper declines of 70.57%, 60.94% and 43.03%, respectively, which were 3.5, 3.0 and 2.1 times of the national average level, while Henan and Guangdong dropped by less than 5%, while Beijing and Jiangsu did not change. On the whole, the poverty reduction effect of urban minimum living standard guarantee was measured by the absolute poverty line based on the minimum living standard guarantee standard in 2002. Chongqing had the strongest effect, while Beijing, Jiangsu and Henan had the weakest.

In 2007, the poverty rate in urban areas decreased by 57.2%, and the absolute poverty of urban poor families in Hubei was completely eliminated. The declines in Henan and Sichuan reached 85.74 % and 75.0 % respectively. The declines in Anhui, Chongqing and Shanghai were only 50 %, 52% and 58% of the national levels. Second, the poverty gap of urban areas has dropped by 79.11 percent on average, Henan Province and Sichuan Province decreased by 98.61% and 98.02% respectively. Guangdong Province and Anhui Province were the smallest, with a decrease of 44.40% and 55.59% respectively. The decrease of urban poverty gap in Shanghai and Jiangsu Province was 9.92 and 9.74 percentage points lower than the national average, and the urban poverty gap in Hubei disappeared. The intensity of urban poverty in China has declined by 88.3% on average, among which the decline in Hubei, Henan and Sichuan provinces has basically reached 100%, Guangdong is less than 50% of the national level, and Shanghai and Jiangsu are close to the national average. The above facts show that in 2007, Hubei, Henan and Sichuan provinces had an outstanding effect in reducing poverty through urban minimum living standard guarantee, while Anhui and Guangdong provinces are significantly behind the national level.

Table 3. FGT Index Reduction Measured by the Line of Minimum Living Standard Guarantee Before and After the Implementation of Urban Minimum Living Standard Guarantee in 2002 and 2007 (%)

Region	2002			Region	2007		
	$RE_{FGT(0)}$	$RE_{FGT(1)}$	$RE_{FGT(2)}$		$RE_{FGT(0)}$	$RE_{FGT(1)}$	$RE_{FGT(2)}$
Nation	10.56	16.20	20.43	Nation	57.20	79.11	88.30
Jiangsu	0.00	0.00	0.00	Jiangsu	49.98	69.37	83.68
Anhui	33.33	27.67	43.03	Anhui	28.57	55.59	64.83
Henan	5.56	2.91	3.92	Henan	85.74	98.61	99.90
Hubei	12.50	27.53	35.01	Hubei	100.00	100.00	100.00
Guangdong	25.00	14.37	3.13	Guangdong	66.71	44.40	34.12
Chongqing	66.67	61.47	70.57	Chongqing	30.00	66.63	85.05
Sichuan	4.76	10.35	15.50	Sichuan	75.00	98.02	99.89
Yunan	0.00	46.79	60.94	Shanghai	33.33	69.19	88.92
Gansu	33.34	26.73	17.53	Zhejiang	-	-	-
Shanxi	5.27	17.84	26.71				
Liaoning	10.53	19.67	24.24				
Beijing	0.00	0.00	0.00				

The poverty reduction results in urban areas measured by Martin's poverty line are shown in Table 4. In 2002, the urban poverty rate calculated by Martin's poverty line decreased by 1.85%, which was lower than that measured by international poverty line; Among urban areas in each province, the urban poverty rate of Shanxi declined the most, reaching 10.81%. The poverty rates in Beijing, Anhui, Henan and Sichuan did not change; the average drop in urban poverty gap across the country was 6.66 percent, with the largest drops in Anhui and Chongqing, at 20.96 percent and 18.12 percent. Jiangsu, Henan and Sichuan is only 37%, 34% and 63% of the national average, while that in Beijing was unchanged; The decrease of the square poverty gap of urban area is 11.29% in China, the decrease of Chongqing, Anhui and Gansu is more than 25%, and that of Jiangsu and Henan is only 18% and 29% of the national average. It can be seen from this that in 2002, the poverty reduction effect of urban minimum living standard guarantee was measured by Martin's poverty line, and the effect of Chongqing and Gansu was good, while that of Beijing, Jiangsu and Henan was not ideal.

In 2007, according to the Martin's poverty line, the urban poverty rate decreased by 36.58% on average, and that of Hubei and Sichuan reached 75.06% and 75.00% respectively, which is 2.05 times of the national average level. Zhejiang and Chongqing are significantly on the low side. For example, Zhejiang only decreased by 0.68%; The poverty gap of urban areas decreased by 61.62% on average, 98.82% in Hubei and 88.22% in Sichuan, and less than 50% in Zhejiang, Anhui and Chongqing; In

China, the square poverty gap urban area has declined by 76.19%, in Hubei and Sichuan, by more than 95%, and in Guangdong, Zhejiang and Anhui, respectively, by 58%, 60% and 77% of the national average. It can be seen that in 2007, when Martin's poverty line was used to measure the poverty reduction effect of urban minimum living standard guarantee, Hubei and Sichuan were more effective, while Zhejiang, Anhui and Guangdong were less effective.

Table 4. FGT Index Reduction Measured by Martin's Poverty Line Before and After the Implementation of Urban Minimum Living Standard Guarantee in 2002 and 2007 (%)

Region	2002			Region	2007		
	$RE_{FGT(0)}$	$RE_{FGT(1)}$	$RE_{FGT(2)}$		$RE_{FGT(0)}$	$RE_{FGT(1)}$	$RE_{FGT(2)}$
Nation	1.85	6.66	11.29	Nation	36.58	61.62	76.19
Jiangsu	2.94	2.43	2.02	Jiangsu	49.98	68.08	81.99
Anhui	0.00	20.96	30.86	Anhui	27.28	46.72	58.68
Henan	0.00	2.28	3.24	Henan	26.78	66.76	86.83
Hubei	3.57	8.08	15.62	Hubei	75.06	98.82	99.97
Guangdong	3.23	11.48	13.91	Guangdong	25.10	50.87	43.86
Chongqing	4.76	18.12	36.80	Chongqing	15.38	47.45	66.41
Sichuan	0.00	4.20	9.50	Sichuan	75.00	88.22	96.66
Yunnan	3.12	9.87	23.43	Shanghai	33.33	59.80	79.28
Gansu	3.23	16.79	27.15	Zhejiang	0.68	26.18	45.45
Shanxi	10.81	12.94	18.70				
Liaoning	6.45	13.94	18.88				
Beijing	0.00	0.00	0.00				

The results of poverty reduction in urban areas measured by relative poverty line are shown in Table 5. In 2002, the relative poverty rate of the whole country decreased by 1.92%, which was smaller than the previous two poverty rates measured by the absolute poverty line. The relative poverty rate of seven provinces and province-level municipality such as Beijing, Shanxi and Liaoning did not change. Although the relative poverty rate of five provinces and province-level municipality such as Henan, Hubei and Chongqing decreased, it was significantly smaller than that measured by the absolute poverty line Value. The relative poverty gap of urban areas decreased by 4.65% in China, that of Gansu and Chongqing by 14.86% and 14.28%, respectively, while that of Jiangsu, Henan, Sichuan and Guangdong was lower than the national average, while that of Beijing remained unchanged. The relative square poverty gap of urban areas decreased by 8.37% in China, Chongqing and Gansu by 2.6 times and 1.96 times higher than the national average respectively, and Jiangsu, Henan and Sichuan by 22%, 34% and 74% of the national average. By comparison, in 2002, according to the relative poverty

line, Chongqing and Gansu were the areas with the greatest poverty reduction effect, while Beijing, Jiangsu and Henan were the areas with the worst poverty reduction effect.

In 2007, the relative poverty rate of urban areas decreased by 3.28% in China, with Shanghai and Guangdong remaining unchanged, Zhejiang and Jiangsu falling by less than 2%t and Anhui, Hubei and Chongqing by more than 8%. The relative poverty gap of urban areas decreased by 11.63% in China, 26.21% in Hubei and 22.3% in Chongqing, less than 10% in Shanghai, Zhejiang and Guangdong, and only 0.89% in Guangdong. The relative square poverty gap of urban areas fell by 22.57% in China, while those in Hubei, Chongqing and Sichuan provinces fell by 46.87%, 38.74% and 35.71%, respectively. The declines in Shanghai, Zhejiang, Anhui and Guangdong provinces were all lower than the national average, of which only 7.26% was in Guangdong. This shows that in 2007, according to the relative poverty line, Hubei and Chongqing had the greatest poverty reduction effect, while Shanghai, Zhejiang and Guangdong had the least.

Table 5. FGT Index Reduction Measured by Relative Poverty Line Before and After the Implementation of Urban Minimum Living Standard Guarantee in 2002 and 2007 (%)

Region	2002			Region	2007		
	$RE_{FGT(0)}$	$RE_{FGT(1)}$	$RE_{FGT(2)}$		$RE_{FGT(0)}$	$RE_{FGT(1)}$	$RE_{FGT(2)}$
Nation	1.92	4.65	8.37	Nation	3.28	11.63	22.57
Jiangsu	0.00	1.36	1.85	Jiangsu	1.61	10.17	21.96
Anhui	0.00	9.56	19.98	Anhui	8.33	11.52	18.12
Henan	1.15	1.86	2.85	Henan	3.64	17.76	35.98
Hubei	5.00	5.66	10.72	Hubei	8.85	26.21	46.87
Guangdong	0.00	4.40	8.60	Guangdong	0.00	0.89	7.26
Chongqing	4.35	14.28	30.13	Chongqing	8.16	22.30	38.74
Sichuan	0.00	2.95	6.18	Sichuan	6.76	18.00	35.71
Yunnan	1.30	4.79	10.58	Shanghai	0.00	8.29	18.28
Gansu	2.86	14.86	24.77	Zhejiang	0.67	5.52	11.38
Shanxi	0.00	7.55	12.49				
Liaoning	0.00	6.62	11.21				
Beijing	0.00	0.00	0.00				

Based on the above four poverty line measures, the results of poverty reduction in urban areas are summarized in Table 6. It can be found that firstly, the most significant effect is to compare the poverty index values measured by various poverty lines in each year. For example, the reduction of poverty rate measured by minimum living standard guarantee line is 5.98, 8.71 and 8.64 percentage points higher than those measured by other poverty lines in 2002, and 9.96, 20.62 and 53.92 percentage points higher

than those measured by other poverty lines in 2007. The same situation also appears in the measurement of poverty gap and poverty intensity.

Secondly, we focus on the ranking of the measurement results of various poverty lines in each year. Except for the changes in the ranking of Martin's poverty line and relative poverty line in 2002 (marked by the bottom line), the rest are arranged in the order of "minimum living standard guarantee line, international poverty line, Martin's poverty line and relative poverty line", which is the order in Table 6. The above findings indicate that there is a large gap in the poverty reduction effect measured by selecting different poverty lines. Compared with the poverty line in Table 1, the lower the poverty line is selected, the more significant the poverty reduction effect is measured, and vice versa. Because there are fewer people who can get rid of poverty through the minimum living standard guarantee according to the high poverty line, that is, the high (low) poverty line pulls down (high) the poverty reduction effect of the minimum living standard guarantee system. This is the sensitivity of poverty line selection.

Thirdly, compared with the decline rates of various poverty indicators, poverty intensity has decreased more significantly, followed by poverty gap and poverty rate. See the overall comparison of the three indicators in Table 6. This illustrates the sensitivity of measurement of poverty reduction effects to the selection of poverty indicators.

Fourth, the comparison of the poverty reduction effect between the two years shows that the poverty reduction effect in 2007 is more prominent, and the decline of some indicators in 2007 is more than 60 percentage points higher than that in 2002. See the comparison in the last row of Table 6. This shows the level of minimum living standard guarantee is an increasing function of the level of economic development.

Table 6. Comprehensive Comparison of the Poverty Reduction Results of Urban Minimum Living Standard Guarantee in China Measured by Four Poverty Lines

Year	$RE_{FGT(0)}$ (%)			
	Minimum living standard guarantee line	International poverty line	Martin's poverty line	Relative poverty line
2002	10.56	4.58	1.85	1.92
2007	57.20	47.24	36.58	3.28
2007-2002	46.64	42.66	34.73	1.36
Year	$RE_{FGT(1)}$ (%)			
	Minimum living standard guarantee line	International poverty line	Martin's poverty line	Relative poverty line
2002	16.20	11.41	6.66	4.65
2007	79.11	70.87	61.62	11.63
2007-2002	62.91	59.46	54.96	6.98
Year	$RE_{FGT(2)}$ (%)			
	Minimum living standard guarantee line	International poverty line	Martin's poverty line	Relative poverty line
2002	20.43	16.32	11.29	8.37
2007	88.30	83.04	76.19	22.57
2007-2002	67.87	66.72	64.9	14.2

Source: According to the relevant data in Tables 2-5.

3.2 Measurement of Poverty Reduction Effect of Urban Minimum Living Standard Guarantee System by Types of Urban Households

Next, this paper attempts to measure the poverty reduction effect of urban minimum living standard guarantee by household type, such as family size, gender, age, physical condition and employment status of household head. In order to simplify the analysis, only two poverty lines are selected: one is the international poverty line of $2 a day, which is roughly between the minimum living standard guarantee line and the Martin's poverty line; the other is the relative poverty line calculated by 50% of the median of per capita disposable income of households before receiving minimum living standard

guarantee to measure the poverty reduction effect of urban minimum living standard guarantee on different types of families.

The poverty reduction effects of urban minimum living standard guarantee on different types of urban households measured by international poverty line of $2 per day are shown in Table 7. According to this poverty line standard, in 2002, the minimum living standard guarantee had no effect on single households; among two-family, three-family and multi-person households, the decline in poverty was greatest for multi-person households. Among the impacts on poverty gap and square poverty gap of all kinds of households, the decline range of three person households is the largest, and that of multi-person households is the smallest. This shows that the minimum living standard guarantee system can promote the family with large population to get rid of poverty, and also help the family of three to reduce the depth and intensity of poverty. For urban resident with different gender heads of households, poverty reduction effect of the female-headed households brought by the minimum living standard guarantee was more significant than that of male-headed households. For urban households with different age heads, the poverty rate and poverty gap of middle-aged households decreased more than that of elderly households and young households, but the square poverty gap decreased less than that of young households. For households with different physical conditions, the poverty rate of households with physical disability after receiving the minimum living standard guarantee decreased by 0.27 percentage points lower than that of households without physical disability, but the poverty gap and square poverty gap are 2.03% and 3.23% higher than the latter. For the urban households with different heads of employment, the poverty rate, poverty gap and square poverty gap of the unemployed households decreased by 4.55%, 14.14% and 18.74% respectively in 2002, among which the poverty rate of the unemployed households was 0.07 % lower than that of the employed households, while the other two poverty indexes were 4.97% and 5.48% higher than the latter. This shows that the urban minimum living standard guarantee system can promote the head of household employment families out of poverty, so that the \head of household unemployment family effectively reduce the poverty level.

In 2007, the ability of minimum living standard gurantee to reduce absolute poverty improved significantly. Among the four categories of households divided by population size, the effect of poverty reduction was the most significant for single-person households after receiving the minimum living standard guarantee. The absolute poverty rate, poverty gap and square poverty gap decrease by 80%, 95.85% and 99.14% respectively; However, the three poverty indicators of double-person households, three-person households and multi-person households decreased by more than 35%, 55% and 75% respectively, while the above poverty indicators of these three-person households in 2002 did not decline by more than 5%, 15% and 25%.In 2007. The decline of absolute poverty rate, poverty gap and square poverty gap of female headed households were 6.7 times, 4.9 times and 4.3 times of 2002 respectively, and the decline of three indicators of male headed households were 12.7 times, 6.4 times and 5 times of 2002 respectively; In terms of poverty rates alone, female-headed households declined

less than male-headed households; In terms of poverty gap and square poverty gap, the decline of female headed households is significantly higher than that of male headed households. In 2007, the poverty rate of middle-aged households fell by the most after receiving minimum living standard guarantee, to 53.03%, nearly 8 times higher than in 2002. In terms of the poverty gap and the square poverty gap, the largest decline was in the elderly households, which reached 82.44% and 92.66% respectively, 9.1 times and 6.8 times higher than that in 2002, indicating that the elderly households' minimum living standard guarantee achieved remarkable poverty reduction effect in 2007. In 2007, the decline rate of the three poverty indicators of households with head disability reached 100%, which means that the absolute poverty of disabled households has been completely eliminated by the aid of minimum security; but all three indicators fell by less than 20% in 2002. In 2007, the three poverty indicators of unemployed households decreased by 52.80%, 73.86% and 84.21% respectively, 17.38, 14.25 and 9.10 percentage points higher than that of employed families.

Table 7. FGT Index Reduction of Different Types of Households Measured by International Poverty Line Before and After the Implementation of Urban Minimum Living Standard Guarantee in 2002 and 2007 (%)

Household type	2002			2007		
	$RE_{FGT(0)}$	$RE_{FGT(1)}$	$RE_{FGT(2)}$	$RE_{FGT(0)}$	$RE_{FGT(1)}$	$RE_{FGT(2)}$
Family size:						
Single	—	—	—	80.00	95.85	99.14
Double	2.94	11.17	12.73	36.42	73.88	79.25
Three	4.67	14.51	21.90	48.07	59.77	76.32
Many	5.00	6.68	9.16	41.80	62.86	78.30
Gender of household head:						
Female	6.95	15.66	20.95	46.67	76.69	89.88
Male	3.77	9.96	15.04	47.94	63.70	74.92
Age of household head:						
Elder	3.45	8.14	11.92	45.58	82.44	92.66
Middle-aged	5.92	12.68	15.53	53.03	68.38	78.74
Youth	2.33	10.11	18.98	25.00	50.98	63.98
Physical status of household head:						
Disability	4.35	13.03	18.86	100	100	100
No Disability	4.62	11.00	15.63	45.17	69.49	82.13

Employment status of household head:						
Unemployment	4.55	14.14	18.74	52.80	73.86	84.21
Employment	4.62	9.17	13.26	35.42	59.61	75.11

Source: Calculation results of stata.

The poverty reduction effects of urban minimum living standard guarantee on different types of households measured by relative poverty line are shown in Table 8. In 2002, the relative poverty rate of single households and double-person households was not affected by the minimum living standard guarantee. The relative poverty rate of three-person households and multi-person households decreased by 0.76% and 1.56%. The poverty gap and the square poverty gap of all types of households have declined to varying degrees, among which, the poverty gap of multi-person households has declined the most, and the square poverty gap of three-person households has declined the most. According to the gender of household head, the contribution of minimum living standard guarantee to the decrease of poverty rate of female household head is less than that of male household head, while the contribution to the decrease of poverty gap and square poverty gap of female headed households is 0.97% and 1.22% higher than that of male households respectively. According to the age of the household head, the relative poverty rate of middle-aged households decreased by 1.55% in 2002, while that of young households and elderly households decreased by only 0.61% and 0.57 %. But in terms of their relative poverty gap and square poverty gap, the decline of young households was the largest. According to the physical condition of the head of household, the decline rate of the three poverty indicators of the disabled family is 0.84, 2.19 and 2.84 percentage points higher than that of the not disabled family. According to the employment status of household heads, the three indicators of unemployed household heads decreased by 1.34%, 4.73% and 8.53% respectively, which were 1.10, 2.48 and 4.14 percentage points higher than those of heads of employed families, indicating that the minimum living standard guarantee in 2002 played an important role in alleviating poverty of unemployed household heads.

In 2007, the relative poverty rate of single households was not affected by the minimum security assistance, while the poverty rate of double-person households, three-person households and multi-person households decreased by 1.62%, 0.65% and 2.79% respectively; In terms of the poverty gap and the square poverty gap of all kinds of households, the decline of single households was the largest, with 15.86% and 37.4% respectively, followed by 8.06% and 15.51% for multi-person households. According to the gender of the household head, the three indicators of female-headed households dropped by 1.95%, 6.80% and 15.91%, respectively, and were 0.82, 1.05 and 3.7 percentage points higher than that of male households. According to the age of the household head, the relative poverty rate of the middle-aged households decreased by 118%, which was the largest. However, the poverty gap of elderly households decreased by 3.51% and 8.76% more than that of middle-aged households and young households, and the square poverty gap decreased by 9.30% and

20.52% more than that of middle-aged households and young households, respectively. According to the physical condition of the household head, the decline rate of the three indicators of the disabled family reached 37.5%, 52.63% and 71.94% respectively, which was the largest. According to the employment situation of the head of household, the decline of the three indicators of the head of household unemployed households reached 1.97%, 12.50% and 25.58%, 1.13%, 9.15% and 18.61% higher than that of the head of household employed families respectively, and 0.47 times, 1.6 times and 2 times higher than that of 2002.

Table 8. FGT Index Reduction of Different Types of Households Measured by Relative Poverty Line Before and After the Implementation of the Minimum Living Standard Guarantee in 2002 and 2007 (%)

Household type	2002			2007		
	$RE_{FGT(0)}$	$RE_{FGT(1)}$	$RE_{FGT(2)}$	$RE_{FGT(0)}$	$RE_{FGT(1)}$	$RE_{FGT(2)}$
Family size:						
Single	0.00	1.87	4.80	0.00	15.86	37.40
Double	0.00	2.94	5.20	1.62	6.29	13.31
Three	0.76	3.63	7.46	0.65	5.29	11.64
Many	1.56	4.53	6.62	2.79	8.06	15.51
Gender of household head:						
Female	0.27	3.80	6.97	1.95	6.80	15.91
Male	0.37	2.83	5.75	1.13	5.75	12.21
Age of household head:						
Elder	0.57	3.19	5.06	0.86	11.11	25.26
Middle-aged	1.55	3.00	5.81	1.18	7.60	15.96
Youth	0.61	3.69	7.16	0.55	2.35	4.74
Physical status of household head:						
Disability	1.22	4.94	8.32	37.50	52.63	71.94
No Disability	0.38	2.75	5.48	1.42	5.76	12.93
Employment status of household head:						
Unemployment	1.34	4.73	8.53	1.97	12.50	25.58
Employment	0.24	2.25	4.39	0.84	3.35	6.97

4. Brief Conclusions and Policy Recommendations

Based on the urban data of China's Household Income Survey (2002 and 2007), this paper measures the poverty reduction effect of China's urban minimum living standard guarantee system and policies in a more comprehensive way than previous studies and draws the following brief conclusions:

China's minimum living standard guarantee system are effective. The direction of the minimum living standard guarantee system is to help the majority of poor families to alleviate poverty. This goal has been basically achieved from all angles, and the result also makes a few families completely out of poverty. This paper measures the poverty reduction effect of the urban minimum living standard guarantee system at the national level by using international poverty line, urban minimum living standard guarantee line, Martin's poverty line and relative poverty line. Comprehensive comparisons based on uniform standards at the national level are more comparable and accurate, so the conclusion is more reliable. Of course, because of the different poverty line standards, different poverty indicators, different years and different regions, the effect of the significant level is different.

From the comparison of the measurement effects of various poverty line standards, the poverty reduction effect measured by urban minimum living standard guarantee line is the most significant in each year, followed by the international line and Martin's poverty line, and the poverty reduction effect measured by relative poverty line is the smallest. And this is actually a ranking of the heights of the poverty lines, that is, the height of the poverty lines is inversely proportional to the effect of the implementation. Once again, this proves the sensitivity of the poverty reduction effect of the policy to the selection of poverty line, and also shows that it is very necessary to adopt multiple poverty lines to measure.

From the effects of absolute and relative poverty line measures on different poverty indicators in different years, the effects of absolute standard, recent years and poverty intensity are more significant. For example, according to the international poverty line, the absolute poverty rate, absolute poverty gap and absolute square poverty gap were reduced by 4.58%, 11.41% and 16.32% respectively by the national urban minimum living standard guarantee in 2002. In 2007, the three indicators measured by the same poverty line fell by 47.24%, 70.87% and 83.04%, respectively. In 2002, the three indicators, which measured by the relative poverty line, dropped by 1.92%, 4.65% and 8.37%, respectively. In 2007, it was 3.28%, 11.63% and 22.57%, respectively. The comparison of these indicators is significant. First, it shows that with the economic development, the poverty reduction effect of the urban minimum living standard guarantee in 2007 has significantly improved compared with that in 2002; second, it shows that urban minimum living standard guarantee reduces absolute poverty more significantly than relative poverty; third, it also shows that urban minimum living standard guarantee reduces poverty intensity more significantly than poverty gap and poverty rate.

Comparing the poverty reduction effects of the urban minimum living standard guarantee system in different provinces and province-level municipality, it can be seen that the effect of most provinces and regions is significant, even all of them have been lifted out of poverty, but some of them are not

significant or have no effect. For example, in 2002, no matter what standard is used, Chongqing is the most effective area for urban minimum living standard guarantee poverty reduction, while Beijing, Jiangsu, Henan and Sichuan are the areas with weak poverty reduction effect. Among them, Beijing has the worst effect, and several indicators have no impact. This may be mainly because the income level of that year is low, so that all kinds of standards are similar, and the measurement results are almost.

In 2007, according to the absolute poverty line, the areas with the strongest poverty reduction effect were Hubei and Sichuan, the former were all out of poverty, the weakest areas were Anhui and Chongqing; In terms of the relative poverty line, the strongest regions are Henan, Hubei, Chongqing and Sichuan, with some individuals lifted out of poverty, while the weakest are Shanghai, Jiangsu, Zhejiang and Guangdong. In 2007, under the premise of the general improvement of income level, various measurement standards opened the gap, so the measurement results are different. This illustrates the impact of economic development level on the measurement of poverty reduction effect of minimum living standard guarantee.

The comparison of poverty reduction effects of urban minimum living standard guarantee on different family types cannot be generalized, but must be treated differently. One is in addition to the individual circumstances all types of families after accepting threshold has the effect of different degrees, but various indicators, the poverty rate of decline is less than the poor from the peace party from declines, it shows that the threshold of poverty reduction effect on poverty reduction to the sensitivity of the index selection, namely not only single poverty reduction index for measure. First, except for some cases, all types of families have different effects after receiving the minimum security assistance, but various indicators are different, in which the decline of poverty rate is less than that of poverty gap and square poverty gap, which shows that the poverty reduction effect of the minimum living standard guarantee is sensitive to the selection of poverty reduction indicators, that is, it is not easy to use a single poverty reduction indicator as a measure. Second, the effect of different households is different in different years: for example, in 2002, according to the standard of absolute poverty, female headed households and three person households benefited the most; According to the standard of relative poverty, households with unemployed heads and disabled heads benefited the most. In 2007, according to the standard of absolute poverty, disabled households, single households and elderly households benefited the most; In terms of relative poverty, households with a disability, single households and households with an unemployed head benefited the most. This shows the sensitivity of household types to poverty reduction policies, that is, it cannot be assumed that the same poverty reduction criteria will benefit all households equally, which requires that poverty reduction policies should be more targeted and differentiated.

To sum up, the current urban minimum living standard guarantee system and policies in China can alleviate the absolute poverty and partial relative poverty of urban residents to a large extent, reduce the poverty level of most households, and the more poverty-stricken households, the more significant the effect of poverty reduction, and even make some people completely out of poverty, of course,

according to different standards, different indicators, different years, different places The degree of poverty reduction is different in districts and different types of households.

In order to better cope with challenges of urban poverty and make all the residents including the poor, share the fruits of economic development, the urban minimum living standard guarantee system should be further improved. First, in the standard design of the urban minimum living standard guarantee system, we should break through the concept of subsistence and anti-absolute poverty, and emphasize the relative standard and enhance the self-development ability of the recipients. Second, in the process of institutional construction, we should gradually establish a normal growth mechanism and a dynamic subsidy mechanism in which the security standard is linked to the level of economic development, build a diversified financing mechanism with the government as the main body and multiple social participation, and ensure the supply of minimum living standard guarantee funds. The third is to gradually improve the level of management and the unity degree of urban minimum living standard guarantee system. Fourth, in view of the fact that the measurement of poverty reduction effect is quite sensitive to the selection of poverty line and poverty indicators, when evaluating the implementation effect of various social security policies, such as the minimum living standard guarantee, we must emphasize the comprehensive application of multiple poverty lines and indicators to prevent the possible biases caused by certain poverty lines and indicators.

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Notes

Note 1. Literature review shows that since the poor law in Britain, countries have been committed to establishing social assistance system as the main body, helping poor groups improve their lives and creating conditions for them to get rid of poverty. Due to the early establishment of social assistance system and complete assistance projects in western developed countries, researchers in various countries can systematically measure and compare the poverty reduction effect of this system within and across regions.

You can refer to M. Gouveia and C. F. Rodrigues (1999), C. Behrendt (2000), D. Sainsbury and A. Morissens (2002), A. Szulc (2010), P. Brunori, M. C. Chiuri and V. Peragine (2009), Ben-Shalom et al. (2011), I. V. Tasseva (2012), K. Nelson (2012).

Note 2. In addition to the traditional "three no", a series of problems caused by the adjustment of industrial structure, the restructuring of enterprises, the aging of the population, urbanization and so on have become the main causes of new urban poverty. The problem of poverty after affluence also appears gradually.

Note 3. See income distribution in economic development by Chen Zongsheng for discussion on livelihood income.

Note 4. Absolute poverty rates for low-income households and all sample households fell by 1 percent and 0 percent, poverty margins fell by 22 percent and 13 percent, and square poverty margins fell by 37 percent and 30 percent, respectively.

Note 5. The authors calculated that below the absolute poverty line of $1 a day, poverty rates were significantly lower in urban areas. Below the absolute poverty line of $3 a day, the urban poverty rate is significantly higher, indicating that neither of them is suitable for measuring the poverty reduction effect of urban minimum living standard guarantee line as an absolute poverty line. Therefore, this article chooses to use $2 per day as the standard.

Note 6. For example, Wang (2007), Li Shi, Yang Sui (2009), Chen, Ravallion and Wang (2006).

Note 7. In 2002, Beijing, Guangdong and Liaoning were 1596 yuan, 360 yuan and 240 yuan higher than the national average. In 7 provinces and province-level municipality, the line is lower than the national average, among which, the line in Hubei, Sichuan and Gansu is less than 1600 yuan per person per year, only reaching about 45% of the line in Beijing. In 2007, the minimum living standard guarantee in Shanghai and Zhejiang were 2011.2 yuan and 955.2 yuan higher than the national average, respectively. Henan, Hubei, Chongqing and Sichuan are all lower than the national average, especially Henan, which is only 43% of Shanghai's. It can be seen that such a poverty line in the local difference is still relatively large.

Note 8. For example, Gustafsson and Deng (2007) and Gao et al. (2009) calculated the poverty reduction effect of urban minimum living standard guarantee based on Khan (2004)'s high and low poverty lines calculated by the cost of basic needs method. That is, in 2002, the high and low poverty lines of urban areas in China were RMB 2,534 and RMB 1,774 respectively (see Khan (2004) for details). Because these poverty lines are calculated using different principles and methods, it is difficult to judge their merits. For example, Zhu Hailing (2003) thinks it is more appropriate to use Engel's coefficient method and basic demand method to measure the poverty line. Luo Zuoyan (2006) found that the Engel coefficient method was not suitable for directly measuring poverty degree in China, and the poverty rate was too high indirectly by this method. Zhu Meijuan (2003) and Yao Jinhai (2007) pointed out that the extended linear expenditure system method was superior to other methods.

Note 9. Among them, in 2002, the poverty line calculated by Beijing and Guangdong was 1313.3 yuan and 572.4 yuan higher than the national level respectively; 9 provinces and province-level municipality were lower than the national average level, and the poverty line calculated by Shanxi, Anhui and Sichuan was less than 2400 yuan/person year, only about 54% of Beijing. In 2007, the poverty line calculated by Shanghai and Zhejiang reached more than 4000 yuan/person year; the poverty line obtained by Anhui, Henan and Sichuan was less than 3000 yuan/person year, among which the poverty line of Sichuan was only 57% of that of Shanghai.

Note 10. Due to the limitation of space, this paper does not list the urban poverty rate calculated by the international poverty line, urban minimum living standard guarantee line, Martin's poverty line and relative poverty line, etc., but only gives the rate of change before and after the implementation of the minimum living standard guarantee system.