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Regional Equity and Influencing Factor of Social Assistance in China

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Abstract: Social assistance is the last safety net in the social security system and plays a vital role in poverty alleviation in countries around the world. Promoting the equal financial assistance is meaningful to achieve equalization of social assistance. Based on the provincial panel data from 2002 to 2017, this paper analyzes the dynamic characteristics and main influencing factors of the equity of social assistance in China, using the Theil index and geographically weighted regression (GWR) model. The results suggest that the level of per capita social assistance expenditure (PSAE) in China keeps increasing year by year, but the changes in different regions and provinces are quite different. These changes not only significantly changed the spatial pattern of PSAE in China, but also greatly improved its spatial coupling with the deeply impoverished areas. Further analysis shows that the regional inequality of PSAE between provinces is obvious during the study period, and the inter-regional inequality is significantly higher than the intra-regional inequality. This makes inter-regional inequality become the main source of the regional inequality of PSAE in China for a long time. According to GWR results, there is obvious spatiotemporal heterogeneity in the influence intensity and direction of the per capita financial revenue, urbanization rate, urban unemployment rate, natural disaster-affected area, and transfer payment intensity on the PSAE. The urbanization rate and per capita financial revenue are the main driving factors of PSAE, and the impact intensity of per capita financial revenue tends to strengthen. The remaining three factors have a positive effect on PSAE, but the effect intensity is not high.

Keywords: social assistance; regional equity; spatiotemporal pattern; poverty alleviation; influencing factors; China

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1 Introduction

Social assistance refers to a scheme in which the state and society provide a wide range of financial aid and support and guarantee their minimum living needs to residents who are trapped in survival difficulties due to various reasons (Huang et al., 2019). Meanwhile, the social assistance is a means-tested scheme in which eligibility is dependent on the income, i.e., the social assistance are to the most vulnerable and poorest sectors of the population (Gough et al., 1997; Devereux, 2013). From international experiences, an effective social assistance system would not only guarantee the basic rights of the poor, help them to escape poverty and avoid future shock, but also promote harmonious development of the economy and society by maintaining social order and solving social contradictions (Graham et al., 2014; Okello, 2016). It is generally believed that social assistance plays a vital role in the social protection system and is the last safeguard to support the basic livelihood of the poor or prevent those people falling back into poverty. In fact, since the beginning of the 21st century, non-contributory, tax-financed social assistance become one important kind of social protection

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in many developing countries (Carnes and Mares, 2014). The social assistance has become increasingly important policy tools to tackle poverty and relevant issues in these countries (Leung, 2006; Palmer, 2011; Okello, 2015). Thus, the issue of social assistance development has received considerable attention.

Recently, a considerable literature has grown up around the theme of social assistance and its effect on poverty alleviation in developing countries (Wilson et al., 2001; Leung, 2006; Gertler et al., 2012; Zhao et al., 2017; Huang et al., 2019). Assessing the poverty alleviation effect of social assistance is one major topic in these studies. For most poor people, relying on their own resource is not sufficient to enable them to escape from chronic poverty (Zhao et al., 2017). What's worse, even if they have been lifted out of poverty, they are very likely to return to normal survival due to diseases, natural disasters, market fluctuations or economic cycles (Cappellari and Jenkins, 2002; Liu, 2003; Qiu and Zhang, 2016). Therefore, external interventions are required to help them alleviate poverty vulnerability and improve welfare (McKay and Perge, 2013). Obviously, social assistance is one of the most effective interventions to escape the poverty trap for vulnerable people (Knight et al., 2010; Okello, 2015). However, some scholars pointed out that the overall improvement in household incomes resulted from the social assistance is modest, i.e., it can only ameliorate income poverty and inequality to a certain extent and can not permanently reduce poverty (Lloyd-Sherlock, 2006; Tekgüç, 2018).

A number of researchers have examined the effects of cash transfer on household income and expenditure in the process of social assistance. These studies show that the social assistance by cash transfer is an important income source for poor households and have a considerable impact on their income structure (Schneider et al., 2011; Mitra et al., 2013; Huang et al., 2019). For instance, according to the differentiated aid of urban minimum living allowance system (Dibao) that China has introduced in 2003, the poor urban households with disabled people, children, single elderly and other vulnerable people would receive additional cash transfers, which are usually 5%–30% of the minimum living allowance (Zhang, 2016). Loeb et al. (2008) found that in the eastern and western Cape provinces of South Africa, households receiving a disability grant were better off in terms of the level of basic survival than those who are not eligible for them. Recent evidence suggests that how households allocate cash transfers from social assistance projects between consumption (such as goods or services to meet basic household needs) and investment (such as investment in physical or human capital to improve the long-term living standards of households), will profoundly affect their short-term and long-term welfare (Gao et al., 2010; Graham et al., 2010; Zhao et al., 2017). As reported by Gertler et al. (2012), that cash transfers to the poor households could facilitate productive assets, children's education and health investments, thereby permitting them to attain higher living standards and break the inter-generational transmission of poverty (Sadoulet et al., 2001; Maitra and Ray, 2003; Lloyd-Sherlock, 2006; Farrington and Slater, 2006). Nevertheless, several studies have documented that the expected long-term welfare effects of social assistance cash transfer have not been achieved (Maluccio, 2010). For example, Graham et al. (2010) showed that the disability grant was constantly used to meet basic household needs such as food and education costs instead of productive investment.

The decentralization and equalization of social assistance are also the most active research fields. Recent evidence suggests that the social responsibility of social assistance has become increasingly apparent (Xiao, 2012). It is generally believed that apart from the governmental agency, NGOs, volunteers and private enterprises should jointly participate in social assistance projects to improve their assistance effectiveness (Subbarao, 1997; Wu and Dai, 2015). In recent years, the decentralization of financial responsibility for social assistance among different levels of governments has become more apparent, and the local governments have assumed more and more responsibilities for management and financial expenditure (Van Berkel, 2006). Several studies suggest that the decentralization of social assistance can reduce cost, which is conducive to achieve its goals, given the local government's superiority in grasping the information of social assistance recipients (Tresch, 2002). In addition, the negative effects of the decentralization of social assistance have been explored in several studies. If the financial expenditure of social assistance is mainly borne by local governments, it will easily lead to the lack of funds for certain social assistance projects, especially in developing countries or economically underdeveloped areas (Li et al., 2018).

Moreover, this will also cause the imparity in poor households' access to social assistance resources in different regions and further aggravate the horizontal imbalance of social assistance (Milanovic, 2000; Gu, 2011). For example, a study by Gu and Bai (2014) on the equalization of medical assistance in China found that there is obvious horizontal inequity in the level of funding for medical assistance.

Furthermore, the effect of social assistance on the labor market (Ford et al., 2003; Blanchard, 2004), the structure and living arrangements of poor households (Lemieux and Milligan 2008), the welfare dependency (Patel, 2003; Van Berkel, 2006; Underlid, 2007; Weinberg, 2017), and the social support and life satisfaction of poor people (Diener et al., 2012; Manjrekar and Berenbaum, 2012; Joshanloo, 2016; Huang et al., 2019) have also become the important research subjects in recent years.

As a typical basic public service, achieving equalization (or regional equity) of social assistance service is the core of social assistance, that is, providing fair and equal access to roughly equal social assistance services for all residents in different regions. However, the existing studies pay more attention to the function, funding sources, and policy effects of social assistance, from the perspective of social management and policy. Too little work has been devoted to the regional equity of social assistance and its dynamic characteristics. Moreover, we also lack a sufficient understanding of the main factors affecting the regional equity of social assistance, especially in China. In this study, we investigated the dynamic characteristics and main influencing factors of the regional equity of social assistance in China from 2002 to 2017, using the Theil index and geographically weighted regression (GWR) model. The results will provide decision-making reference for promoting the balanced development of social assistance in China.

2 Social Assistance and Poverty Alleviation in China

China has a long history of social relief practice, which can be traced back to the relief activities for the vagrants, disaster victims and refugees in ancient China. While traditional social relief activities have obvious characteristics of spontaneity, temporality, and charity, the complete and standardized relief system had not been established. During the early period of the People's Republic of China, the social relief mainly provided temporary emergency relief for vulnerable groups, such as the poor, vagrants, disaster victims, refugees, and unemployed people, aiming at solving their most urgent needs and maintaining social stability. The principles and methods of social relief established in this period have also become an important basis for modern social assistance in China.

China's social assistance has achieved rapid development and improvement since the 1990s, with the introduction and implementation of a series of related policies. For examples, Opinions on Accelerating the Construction of Rural Social Security System (in 1996), Regulations on Urban Residents' Minimum Living Security (in 1999), Opinions on Some Policies on Promoting the Increase of Farmers' Income (in 2005), Establishment of the National Rural Minimum Living Security System (in 2007), *etc*. In particular, the establishment of the rural minimum living allowances system in 2007 marked the full implementation of the basic living allowances system covering both urban and rural residents in China, which is designed to reduce poverty by providing cash transfers to poor householders with per capita income below the minimum living standard of 2300 CNY (about 328 U.S. Dollar). At the same time, special assistance projects such as medical assistance, education assistance, and housing assistance have also been primarily established. All these projects made vulnerable people more access to social assistance resources. With the evolution of the practice of social assistance worldwide, the authority no longer focuses on the increase of social assistance funds and the scale of recipients. Instead, the institutionalization and legalization of the operating mechanism of social assistance policies were prioritized. In 2014, the interim measures for social assistance clarified the basic contents of China's social assistance system in the form of administrative regulations for the first time. It integrates various social assistance projects and resources previously managed by different departments into a multidimensional '8+1' social assistance system, including minimum living allowances, support for the extremely poor, disaster assistance, medical assistance, educational assistance, housing assistance, employment assistance, temporary assistance, and social force participation. Since then, one more sophisticated social assistance system in

China has taken shape and the largest social safety net was established, benefiting the largest number of poor people in the world. After more than 40 years of operation, social assistance has become the most widely implemented, institutionalized, and anti-poverty policy tool in China, which plays significant roles in alleviating poverty and the survival support of the poor.

China is the first developing country in the world to achieve the poverty-reduction goals of the Millennium Development Goals and has made an important contribution to global poverty reduction. Since the mid-1980s, a series of poverty alleviation policies implemented by the Chinese government have greatly alleviated poverty. From 2013–2018, China's rural poor people reduced by 82.39 million, with the poverty rate dropped from 10.2% to 1.7% (Huang, 2019). Despite the progress, there are still urgent challenges in China, i.e., millions of the most vulnerable people (such as those people with disabilities, the elderly, the chronically ill, *etc*.) are still grappling with dire poverty. The spatial distribution of these most vulnerable groups is extremely unbalanced, mostly scattered across the deeply impoverished regions, especially 'three regions and three prefectures' (The 'three regions' refers to Tibet, the four prefectures of Hotan, Aksu, Kashi, and Kizilsu in southern Xinjiang, and the ethnic Tibetan areas in Sichuan, Yunnan, Gansu, and Qinghai; 'the three prefectures' are Liangshan in Sichuan, Nujiang in Yunnan and Linxia in Gansu). How to help them to get rid of poverty has become the hardest task for China. In addition, it should be noted that poverty-reduction is accompanied by a large proportion of returning poverty, which is unknown as there is not any time series-data on the exact number of poverty-returning from China (Gao and Bi, 2016). The academic community generally believes that the poverty-returning rate of the population out of poverty in China is usually 15%–30%. In some years of natural disasters, the poverty-returning rate can even reach more than 45% in the northwestern China, southwestern China, Qinghai-Tibet Plateau, and Qinling-Bashan Mountainous area (Liu, 2003; Zheng and Cao, 2016).

On the whole, regional poverty has gradually transformed to householders or individual poverty, with the continuous progress of poverty alleviation in China. During this process, the role of social assistance has become increasingly prominent and has become an important support for China's targeted poverty alleviation strategy, with the decline of the poverty reduction effect of economic growth. In particular, by 2020, after achieving the policy goal of lifting the rural impoverished population out of poverty by China's current standards, how to break the vicious cycle of poverty, prevent poverty-returning and better consolidate the achievement of poverty alleviation largely depends on the role of social assistance. However, it is worth noting that due to a long-standing imbalance of regional economic development and financial inequality (both vertical and horizontal), the social assistance services in China displays significant regional imparity, and those undeveloped regions cannot enjoy roughly equal social assistance services as their developed counterparts. Obviously, promoting the equalization of social assistance has become a challenging task for China to improve its social security system and promote poverty reduction. Therefore, by exploring the dynamic characteristics of regional equity of social assistance in China and identifying its key influencing factors, it is valuable for policymakers to improve social assistance policies as well as consolidate the achievement of poverty alleviation.

3 Materials and Methods

3.1 Variable selection

At present, financial equalization is often viewed as an important dimension of public services to equalization by academics. Generally speaking, government finance and social donations are the main sources of social assistance funds. However, due to the low level of the overall development of China's philanthropy and social donation activities, it accounts for a very low proportion of the sources of social assistance funds. Thus, social assistance funds are mainly shared by the central and local governments. Social assistance fund in the annual government expenditure can basically reflect the investment of social assistance funds in different regions. In view of this, the PSAE, that is, the ratio of the actual social assistance expenditure to the household registered population is selected by the present study to measure the development level of social assistance in each province.

There are active discussions on the influencing factors of regional equity of social assistance in academic circles, and empirical studies from China, mainly fo-

cus on government functions, fiscal decentralization, administrative funds, intergovernmental competition, and gross domestic product (GDP) (Kuai, 2007; Zheng and Zhang, 2009). In China, the construction of the social assistance system is more manifested as government behavior. However, from the perspective of the supply and demand of social assistance funds, the level of social assistance expenditure is not only closely related to the economic strength and financial system, but also to the level of social development and the quality of the natural environment. It is necessary to understand the influence characteristics of different factors on the regional equity of social assistance. Based on previous studies and considering the availability of original data, the present study selects five key variables from the dimensions of economic, social, natural environment and institution, such as per capita financial revenue, urbanization rate, the urban unemployment rate, natural disaster-affected area, and transfer payment intensity. Table 1 shows the statistical info for each of the variables.

Per Capita Financial Revenue (PCFR): The financial system is the economic foundation of the construction and operation of the social assistance, and is closely related to the regional economic development. The completeness, assistance standards, and coverage of social assistance projects will be deeply affected by the level of regional financial revenue. Thus, in the present study, per capita fiscal income was selected as an indicator to measure the degree and quality of regional economic growth.

Urbanization Rate (UR) and **Urban Unemployment Rate (UUR)**: As an important part of the social security system, the most fundamental purpose of the social assistance is to guarantee the minimum living needs of the poor. The development and reform of social assistance system will inevitably be affected by the status of regional social development (e.g., urbanization, employment, education, *etc*.). Ensuring the basic lives of the laid-off people who are living in difficulties has become the focus of social assistance, especially in the context of China's economic growth slowing down and employment pressure increasing in recent years. So, we selected the urbanization rate and urban unemployment rate as indicators of societal advancement.

Natural Disaster-affected Area (NDAA): Natural disasters are one of the important reasons that lead to the vulnerable groups fall into poverty or make the groups out of poverty return to poverty. Providing financial and material assistance to these people who cannot maintain their basic living needs due to natural disasters is an important part of social assistance services. Owing to the great differences in the natural environment between provinces and cities in China, provinces with poor natural environments or frequent natural disasters need to get more social assistance funds. Therefore, we used the natural disaster-affected area to represent the quality of the natural environment in different provinces.

Transfer Payment Intensity (TPI): Theoretically, fiscal transfer payment can help to improve local social assistance investment, no matter whether it is general transfer payments from the superior government or the special transfer payment directly targeted at social assistance projects. However, the excessive dependence on transfer payments is likely to reduce the financial independence and decision-making autonomy of local governments as well as restrict the construction of local social assistance system. As such, in the present study, transfer payment intensity is used as a proxy variable for the financial system to analyze the impact of transfer payments to the level of social assistance in each province. The calculation formula is as follows: transfer payment intensity = (revenues subsidized from the central government–the expenditures turned in to the central government) / local fiscal expenditure.

Table 1 Statistical summary of the variables

Variables definition	Symbol	Min.	Max.	Mean	SD
Per capita financial revenue / CNY	PCFR	272.76	15648.97	2386.02	2394.27
Urbanization rate / %	UR	0.15	0.90	0.50	0.15
Urban unemployment rate / %	UUR	1.20	6.50	3.59	0.71
Natural disaster affected area / km^2	NDAA	0.00	41600.00	5924.19	6006.26
Transfer payment intensity / %	TPI	5.83	259.33	49.12	22.55

3.2 Methods

3.2.1 Theil index

Theil Index is an effective method to measure regional inequality and is widely used in the empirical research of the economy, industry, social security and other fields. Theil index has a characteristic of decomposability which can decompose the total regional inequality into inter-regional inequality between a set of regions and intra-regional inequality within a region (Liu, 2006). It would help to measure inter-regional inequality' and intra-regional inequality' contribution to the total regional inequality, so as to identify and highlight important sources of regional inequality. The present study adopted the Theil Index to calculate the regional inequality of PSAE. The formula is as follows:

$$T = T_{\text{inter}} + T_{\text{intra}} = \sum_{i=1}^{k} y_i \ln \frac{y_i}{p_i} + \sum_{i=1}^{k} y_i \times \left[\sum_j y_{ij} \ln \left(\frac{y_{ij}}{p_{ij}} \right) \right] \quad (1)$$

where T represents the total Theil Index. T_{inter} is the inter-regional inequality between the eastern, central, western and northeastern regions of China, and T_{intra} is the intra-regional inequality within each region. k is the number of sub-regions. y_i and p_i are the ith region's attribute and population, respectively. y_{ij} and p_{ij} are the jth province's attribute and population in ith region, respectively. The value range of the Theil Index is from 0 to 1. The greater the number, the greater disparity.

3.2.2 Geographically weighted regression

GWR model was proposed by Fotheringham (2002) using the local smooth processing method. GWR assumes that the regression coefficient is the location function for each observation point in linear regression. To do that, GWR embeds the data's spatial location into the regression parameter, and then carry out local regression estimation on adjacent subsamples of each group. The changes of location specific parameter estimate along with the geospatial location can be used to reveal the spatially varying relationships between the dependent and independent variables. The specific GWR fitted model can be expressed as:

$$y_i = \beta_0 (u_i, v_i) + \sum_{k=1}^{n} \beta_k (u_i, v_i) x_{ik} + \varepsilon_i \quad (2)$$

where y_i is the dependent variable of the sample i, (u_i, v_i) is the geographical coordinates of the sample i, β_0 (u_i, v_i) is the intercept parameter of the sample i, β_k (u_i, v_i) is the regression parameter for the kth independent variable of the sample i, x_{ik} is the kth independent variable of the sample i, ε_i is random error term.

As for GWR model calibration, the selection of a proper kernel function and optimal bandwidth has a significant impact on the result of GWR. After careful analysis and comparison, fixed bi-square was chosen as the kernel function in the present work, and the Akaike information criterion corrected (AICc) was used to identify the fitness of the bandwidth selection. Finally, the GWR 4.0 version developed by Nakaya et al. (2009) was used for model calculated.

3.3 Data sources

The study area includes the 27 provinces and 4 municipalities of China (Due to the lack of data, this analysis does not include Hong Kong, Macao, and Taiwan of China). According to the standards of the National Bureau of Statistics of China (2011), the present work divides China into four major regions, eastern, central, western, and northeastern China (Fig. 1). The social assistance expenditure data come from China Civil Affairs' statistical Yearbook (https://ie.cnki.net/KNavi/yearbook/navi/CYFD), edited by the Ministry of Civil Affairs of the People's Republic of China. The data of other socioeconomic indicators are obtained primarily from the Chinese National Database (http://data.stats.gov.cn) and China Statistics Yearbook (http://www.stats.gov.cn). In order to eliminate the impact of price changes, we use the GDP deflator based on 2002 to deflate the above indicators, so as to obtain comparable data. Finally, in order to make the data closer to the normal distribution, we logarithmized the continuous variables in the model, except the variables in the form of a percentage.

4 Results

4.1 The spatial-temporal pattern of social assistance

In Fig. 2, the average PSAE of 27 provinces and 4 municipalities increased from 19.66 CNY in 2002 to 139.31 CNY in 2017, with an average annual increase rate of 13.95%. Especially in 2008, the average PSAE showed a significant increase, with a growth rate of 83.95%. This reflects that since 2002, with the development of social assistance under the increasing attention of the Chinese government, financial investment in social assistance has kept increasing year by year. This

Fig. 1 Administrative division of China. The data do not include Hong Kong, Macao and Taiwan of China

provides an important financial basis for the construction of China's social assistance system.

It was observed that the average PSAE in the eastern, central, western, and northeastern regions of China have different growth trends in 2002–2017. Among them, the average growth rate of PSAE in the central and western regions is the most obvious, with an average annual growth rate of 15.76% and 15.27%, respectively, and slightly higher than the national annual growth rate 13.95%. Over the same period, the average annual growth rate of PSAE in the eastern region is relatively lower, at 12.10%. The eastern region has become the region with the lowest average PSAE in China and it has been surpassed by the central region since 2007. In 2002–2017, PSAE in the northeastern region expanded an average of 10.55% a year, which is 3.40, 1.55, 5.21, and 4.72 percentage points lower than the average annual growth rate of the national, eastern, central, and western regions. What is interesting is that while the average PSAE in the other three regions consistently increased year by year, the average PSAE in the northeast region shown a downward trend in fluctuations since 2014. This reflects the grim fact of the ongoing economic downturn and the dilemma of the operation of social assistance in the northeast region, to some extent, during the current economic system reform (Wang, 2017). According to the average PSAE from high to low, the ranking of the four regions was adjusted from northeastern, western, eastern, and central in 2002 to western, northeastern, central and eastern in 2017. That is, the spatial pattern of social assistance in China has changed significantly from 2002 to 2017.

As shown in Fig. 3, the PSAE of 31 provinces showed a continuous growth trend during the study period. Their PSAE increased by more than 7.33% annually, of which 16 provinces reporting annual growth rates of more than 15.00%. Moreover, the annual growth rate of PSAE in these provinces has been fluctuating. Especially after 2007, a clear turning point of the growth rate appeared between each province, and the PSAE of most provinces began to accelerate. This trend would help us better understanding of the Chinese government on social assistance and the construction of the social assistance system. China has developed the rural minimum living allowance system and a variety of special assistance systems (e.g., medical assistance, educational assistance,

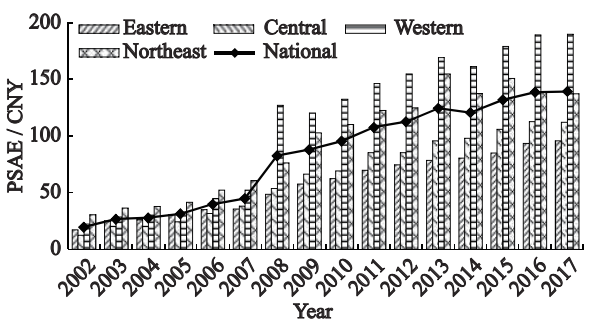

Fig. 2 Dynamics of per capita social assistance expenditure (PSAE) of different regions in China. The data do not include Hong Kong, Macao and Taiwan of China

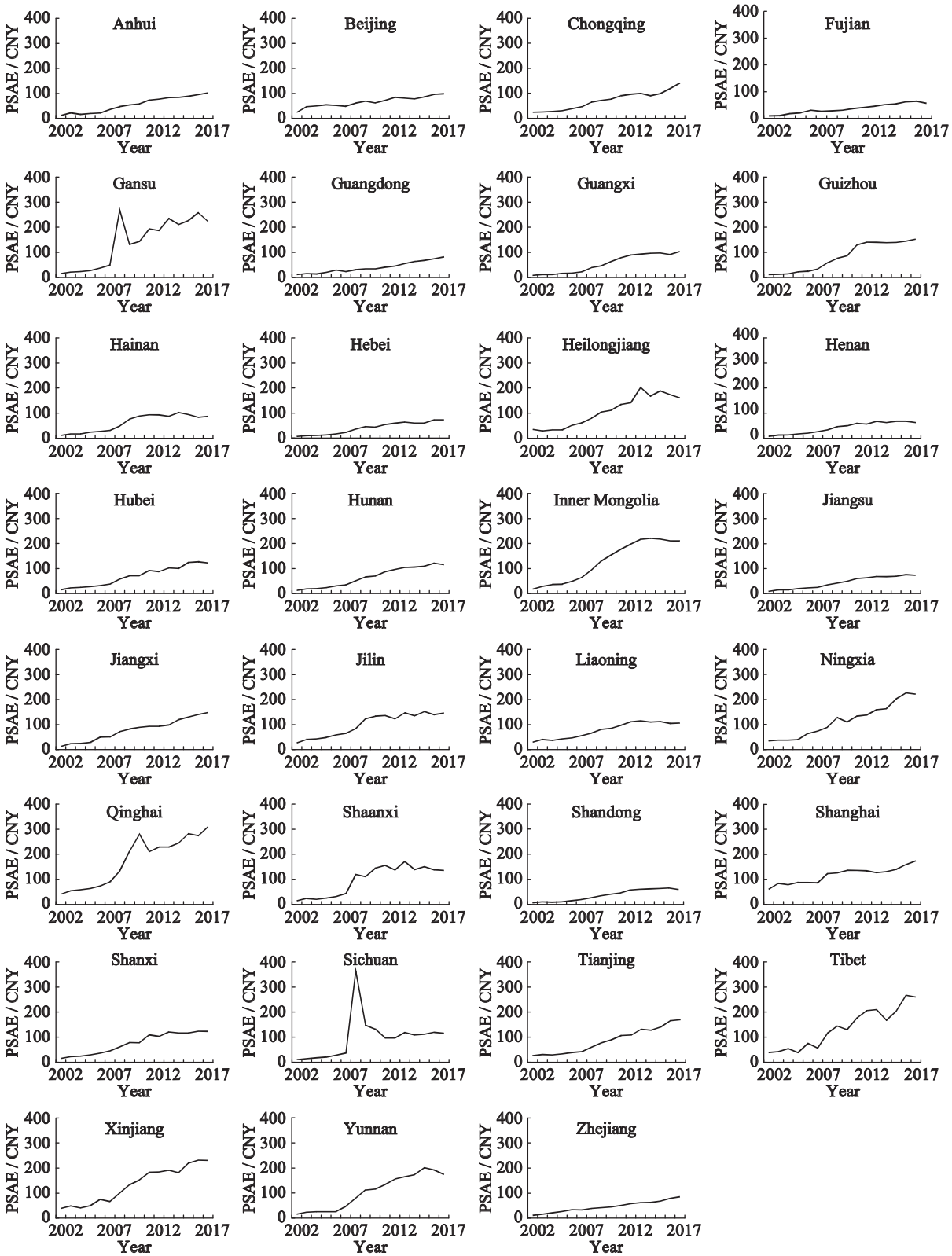

Fig. 3 Dynamics of per capita social assistance expenditure (PSAE) of various provinces in China from 2002 to 2017. The data do not include Hong Kong, Macao and Taiwan of China

housing assistance, *etc*.) based on the urban minimum living allowance system since 2007. More poor people benefit from this program and obtained more cash transfers. At the same time, this has also significantly promoted the growth of PSAEs in various provinces.

From Fig. 3, we can also find that Sichuan, Gansu, and Shaanxi experienced significant abnormal PSAE growth in 2008, with an increase of 901.69%, 447.25%, and 181.07%, respectively, compared with the previous year. This is mainly due to the fact that Sichuan, southern Gansu, and southern Shaanxi were the main affected areas in the 2008 Wenchuan Earthquake, one of the most destructive and widespread catastrophic earthquakes to occur in China since the beginning of the twenty-first century. In addition, the 2010 Yushu Earthquake, which killed 2698 people and injured more than 100 000, also caused an abnormal increase in PSAE in Qinghai. Usually, for quite a long time after the occurrence of extraordinary natural disasters, the local government needs to invest a large amount of financial funds in the fields of social assistance, such as resettlement of victims, restoration and reconstruction of damaged houses, as well as procurement, management, storage and transportation of social assistance materials. This has greatly increased the local PSAE.

In order to further reveal the characteristics of the spatial-temporal pattern of social assistance in China, Fig. 3 is redrawn on the map (Fig. 4). In addition, 31 provinces were divided into four categories: higher, high, medium, and low, by the 'standard deviation' classification method. As shown in Fig. 3 and Fig. 4, the spatial pattern of social assistance in China has changed significantly in 2002–2017. Qinghai, Tibet, Xinjiang, and Ningxia maintained the highest level of PSAE in China from 2002 to 2017. The growth of PSAEs in the seven provinces of Gansu, Guizhou, Guangxi, Jiangxi, Inner Mongolia, Sichuan, and Yunnan are more obvious, with an average annual growth rate of 19.77%, 19.24%, 18.20%, 18.10%, 17.69%, 17.45%, and 17.45%, respectively. Over the same period, the PSAEs

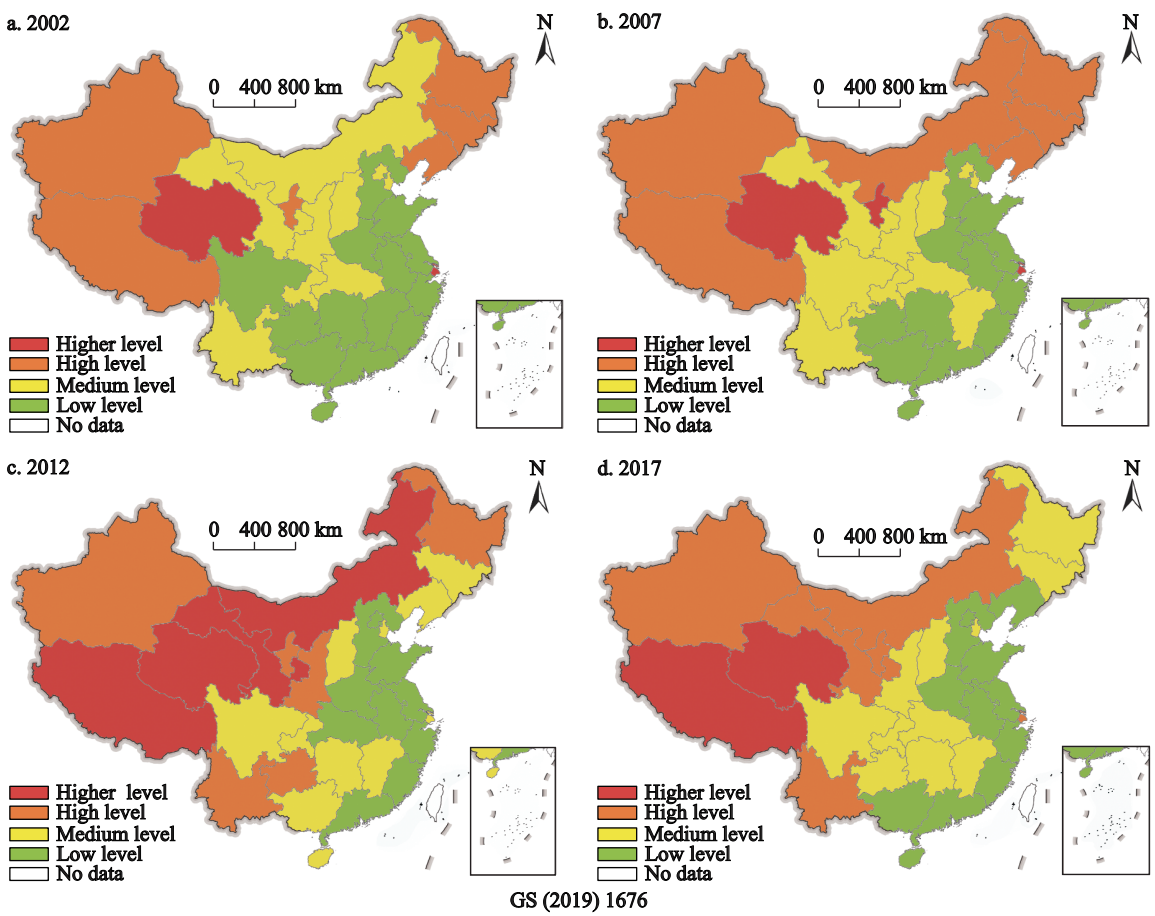

Fig. 4 The spatiotemporal patterns of per capita social assistance expenditure (PSAE) in China. The data do not include Hong Kong, Macao and Taiwan of China

in the provinces of Liaoning, Jilin, Heilongjiang, Beijing, and Shanghai grew relatively slowly, and their rankings in the provinces across the country have declined significantly. Liaoning, for example, has dropped from the high category in 2002 to the lowest category in 2017. Besides, the zonal characteristics of the four types of provinces in terms of spatial distribution became increasingly clear during the study period, that is, the level of PSAE increased gradually in a gradient from coastal to inland. Although this spatial structure of PSAE is contrary to the decreasing trend of China's regional economy from coastal to inland, it is more consistent with the spatial distribution of deeply impoverished areas.

4.2 Regional equity of social assistance

Equation 1 was used to calculate the regional inequality of PSAE in 31 provinces of China from 2002 to 2017 and the results are presented in Table 2, including Theil's total regional inequality indexes and their decomposition.

As shown in Table 2, the total Theil index for PSAE dropped from 0.388 in 2002 to 0.295 in 2017. This means although the regional inequality of PSAE is still prominent in recent years, the regional equity of PSAE was overall on the rise during the research period with the construction and improvement of social assistance. Specifically, the change of the regional equity of PSAE shows an obvious stage characteristic of 'up-down-up-down'. In the first stage of 2002–2007, there was a rapid increase trend in the regional equity of PSAE, with the total Theil index dropped sharply from 0.388 to 0.273. In the second stage of 2008–2010, with the average annual growth rate of the total Theil index reached 0.334%, the regional equity of PSAE began to decrease year by year. In the third stage of 2011–2014, the total Theil index dropped to a historical minimum of 0.258, which means that the regional equity of PSAEs between provinces increased year by year. Finally, in the fourth stage of 2015–2017, the total Theil index began to rise again and reached 0.295 in 2017, indicating that the regional equity of PSAE between provinces has shown a downward trend once again. This downward trend is alarming and attention to closely tracks the observation.

Table 2 showcased the highest inter-regional Theil index for PSAE is 0.097 in 2008. Using this as a breaking point, the inter-regional Theil index from 2008 to 2017 is slightly higher than that from 2002 to 2007. This shows that between 2002 and 2017, the regional equity of PSAE between eastern, central, western, and northeast regions is relatively high and stable. Over the same

Table 2 Theil's regional inequality index and its decomposition of per capita social assistance expenditure (PSAE) in China

Year	Total Theil Index	Inter-regional inequality		Intra-regional inequality	
		Theil index	Contribution / %	Theil Index	Contribution / %
2002	0.388	0.053	13.75	0.335	86.25
2003	0.352	0.035	10.07	0.317	89.93
2004	0.356	0.039	10.86	0.317	89.14
2005	0.306	0.031	10.28	0.274	89.72
2006	0.315	0.037	11.78	0.278	88.22
2007	0.273	0.041	14.94	0.232	85.06
2008	0.281	0.097	34.49	0.184	65.51
2009	0.294	0.068	23.18	0.226	76.82
2010	0.301	0.072	23.82	0.229	76.18
2011	0.275	0.065	23.73	0.210	76.27
2012	0.278	0.068	24.37	0.210	75.63
2013	0.265	0.070	26.25	0.195	73.75
2014	0.258	0.061	23.78	0.197	76.22
2015	0.277	0.066	23.93	0.211	76.07
2016	0.290	0.063	21.80	0.226	78.20
2017	0.295	0.063	21.19	0.232	78.81

period, the intra-regional Theil index for PSAE fluctuated between 0.184 and 0.335, which is consistent with the trend of the total Theil index. This shows that, from 2002–2017, the inequality of PSAE within each region is relatively high, and the trend of change is more obvious. According to the contribution rate to the total Theil index, the contribution rate of the intra-regional Theil index (65.51% ≤ contribution ≤ 89.93%) in 2002–2017 is significantly higher than that of the inter-regional Theil index (10.07% ≤ contribution ≤ 34.49%), and the gap has been expanding in recent years. Thus, it can be seen that, for a long time, the change of regional inequality of PSAE is mainly affected by intra-regional inequality.

Fig. 5 illustrates the changes of Theil index in the eastern, central, western, and northeastern regions of China, from which we can find significant differences in the changes of regional equity of PSAE in these four regions. From 2002 to 2017, the regional equity level of PSAE in the central and northeastern regions was relatively high, and remained stable (the standard deviation of Theil index was 0.006). The trend of the Thiel index in the eastern region is like that of the total Thiel index, which also experienced four stages of 'down-up-down-up'. After fluctuating, the Thiel index in the eastern region dropped from 0.492 in 2002 to 0.299 in 2017, suggesting that the regional equity of PSAE in the eastern region has improved overall during the study period, but it is still not optimistic. Moreover, the regional equity level of PSAE in the western region is also not ideal, and it fluctuates greatly during the study period (the standard deviation of Theil index reaches 0.064). In particular, since 2014, the regional inequality of PSAE in the western region has expanded, which should be taken seriously.

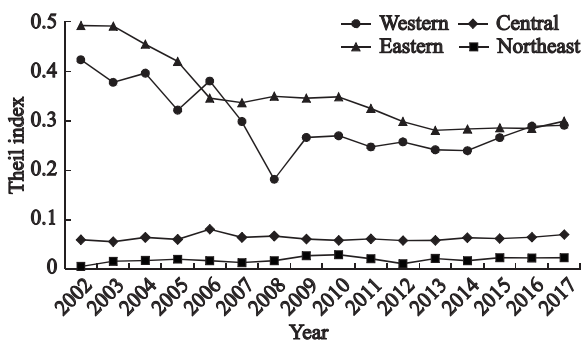

Fig. 5 Dynamics of Theil index in different regions of China. The data do not include Hong Kong, Macao and Taiwan of China

During the study period (2002–2017), the variations the four regions are obvious in the overall level of regional equity of PSAE. According to the level of regional equity of PSAE (from high to low), they are northeastern region (average Theil index is 0.019), central region (average Theil index is 0.063), western region (average Theil index is 0.296), and eastern region (average Theil index is 0.352). Therefore, the regional inequality in the eastern and western regions is the main source of the regional inequality in PSAE, while the regional inequality in the western regions is the main reason for the expansion of the regional inequality in PSAE in recent years. In other words, reducing the inequality of PSAE among provinces in different regions (especially the eastern and western regions) is critical for equalization of social assistance in China.

4.3 Factors influencing regional equity of social assistance

To identify spatial autocorrelation of PSAE from 2002 to 2017, the global Moran's *I* is calculated in ArcGIS (Li et al., 2018). The results show that Moran's *I* of PSAE increased from 0.226 in 2002 to 0.470 in 2017, and all passed the significance level test of 95%. This indicates that there is significant spatial autocorrelation in China's PSAE. Its agglomeration state is obvious and has a trend of the increasing year by year. Therefore, the GWR model was then used to explore the spatial heterogeneity of factors influencing regional equity of social assistance.

Table 3 lists the results of ordinary least squares (OLS) and GWR models. According to the model's fitting performance, the independent variables using OLS for 2002 and 2017 obtain the AICc 28.787 and 23.063. However, independent variables using GWR gain a lower AICc value of 25.600 and 22.896 for 2002 and 2017, respectively. In addition, the R^2 of GWR is 0.101 and 0.084 higher than that of the OLS model. It can be concluded that the fitting performance of the GWR model considering spatial heterogeneity is better than that of OLS, and it is more accurate to reveal the factors influencing regional equity of social assistance.

The detailed effects of the independent variables in GWR models were presented in Table 4. From the table, we can see that there is spatiotemporal heterogeneity in the influence intensity and direction of the five variables on the PSAE. In terms of the negative and posit-

Table 3 The comparison of ordinary least squares (OLS) and geographically weighted regression (GWR) models' performance

Year	AICc		AIC		R^2		Adjusted R^2	
	OLS	GWR	OLS	GWR	OLS	GWR	OLS	GWR
2002	28.787	25.600	23.917	12.827	0.774	0.875	0.718	0.797
2017	23.063	22.896	18.193	13.877	0.658	0.742	0.572	0.621

Table 4 Estimation result of geographically weighted regression (GWR) models

Variable	Min.		Max.		Mean		Median		SD	
	2002	2017	2002	2017	2002	2017	2002	2017	2002	2017
ln *PCFR*	–0.633	0.322	0.861	1.052	0.317	0.754	0.346	0.765	0.339	0.138
UR	–1.352	–1.016	5.356	2.523	1.959	0.973	1.846	0.965	1.283	0.703
UUR	–0.329	–0.051	0.175	0.148	0.097	0.069	0.133	0.073	0.107	0.034
ln *NDAA*	–0.252	–0.047	–0.019	0.080	–0.141	0.030	–0.141	0.031	0.054	0.026
TPI	0.020	0.033	0.036	0.037	0.029	0.034	0.029	0.033	0.003	0.001
Intercept	–4.979	–4.970	4.594	–0.752	–0.979	–3.705	–1.382	–3.757	2.073	0.828

Notes: *PCFR*, per capita financial revenue; *UR*, urbanization rate; *UUR*, urban unemployment rate; *NDAA*, natural disaster affected area; *TPI*, transfer payment intensity; SD, Standard Deviation

ive of the regression coefficients of the variables, except for NDAA which was negative in 2002, the rest were all positive. This implies that the five variables have a positive effect on PSAE. In terms of the average value of regression coefficients, PCFR, NDAA, and TPI increased by 0.437, 0.171, and 0.005 from 2002 to 2017, respectively. Meanwhile, UR and UUR decreased by 0.986 and 0.028, respectively. This makes the order of influence intensity of the five variables changed significantly, from UR > PCFR > NDAA > UUR > TPI in 2002 to UR > PCFR > UUR > TPI > NDAA in 2017. Therefore, we can find that UR is the main driving force for the growth of PSAE, although its influence intensity decreased significantly during the study period. At the same time, the impact of PCFR on PSAE is increasing continuously. This reflects the increasing dependence of Social Assistance Development on local fiscal revenue in all provinces of China. The effect of UR on PSAE showed a downward trend from 2002 to 2017, while TPI's effect showed an upward tendency. But generally speaking, their effect on PSAE was relatively weak. Moreover, the direction of NDAA's impact on PSAE reversed in 2002–2017, and it has now become one of the driving forces to promote the growth of PSAE. Finally, the standard deviation of the regression coefficient of the five variables reduced in different degrees during the study period, indicating that the spatial gap of the influence intensity of each factor on the PSAE is narrowing.

To further reveal the spatiotemporal heterogeneity of the influence intensity and direction of the five variables on the PSAE in different provinces, we created maps for each variable that represent the geographic distribution of their regression coefficient values across China, according to the results of the GWR modeling in 2002 and 2017 respectively. Mapped regression coefficients were divided into five classifications (Fig. 6).

Figs. 6a and 6b demonstrate that in 2002 and 2017, 83.87% and 100% provinces respectively showed a positive relationship between the PCFR and PSAE, suggesting PCFR has a positive effect on the growth of PSAE in most provinces. The regression coefficient of PSAE in 93.55% of the provinces has increased by different ranges, especially the provinces located in the eastern and northeastern regions. This makes the spatial distribution of the regression coefficient of PCFR gradually decrease from the northeast and east to the west region in 2017. Fiscal revenue is closely related to regional economic growth. With the rapid development of China's economy, the zonal characteristics of the economic development level decreasing from the eastern region to the western region have become more apparent. The rapid economic development in the eastern and northeastern regions promotes the continued growth of fiscal revenue and provides strong financial funds for social assistance.

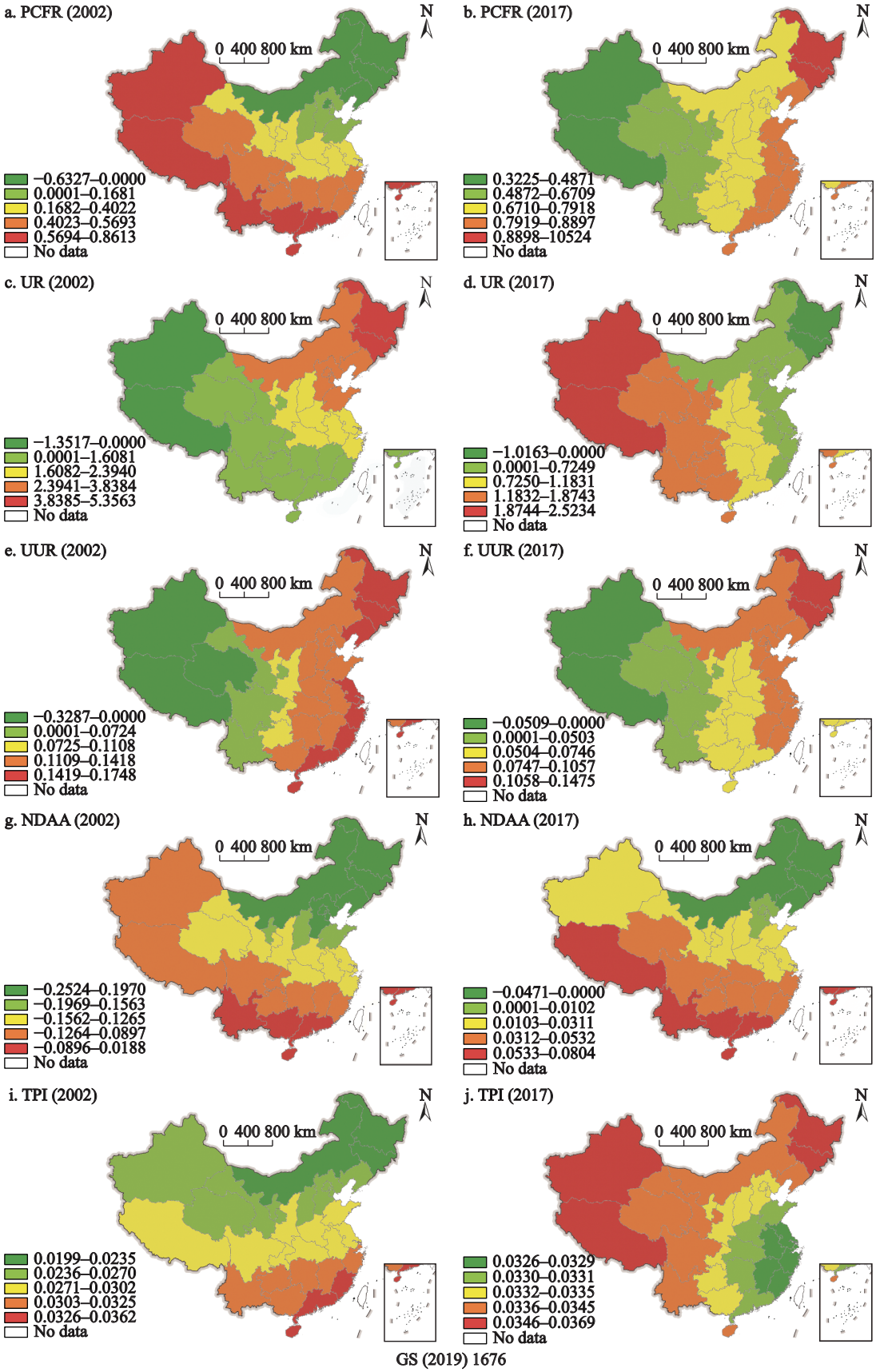

Fig. 6 Spatial distribution of the geographically weighted regression coefficients of factors in China. The data do not include Hong Kong, Macao and Taiwan of China

The results illustrated in Figs. 6c and 6d show that the UR has a positive correlation with PSAE, in 93.55% of provinces. In 2002, provinces, where the UR contributed significantly to the PSAE, were mainly distributed in northeastern and surrounding areas of China, while the weaker provinces were mainly distributed in western China. However, the spatial distribution of UR's regression coefficients reversed in 2017. The positive effect of the UR of the western provinces on the PSAE is rapidly strengthened, and then surpasses the provinces in the northeastern and eastern regions to become a new high regression coefficient area. For a long time, there has been an obvious gradient difference in the urbanization level between regions in China, which decreased in order from east to west. In recent years, the growth rate of urbanization in eastern and northeastern provinces in China has slowed down and gradually lagged behind the growth of PSAE. This may reduce the correlation between the UR and PSAE to some extent. Meanwhile, with the Chinese central government increasing investment in the central and western provinces, the level of urbanization has been considerably improved. Thereby strengthening the positive impact of UR on PSAE. Specifically manifested in the rapid growth of the regression coefficient.

The maps showed in Figs. 6e and 6f demonstrate that the number of provinces where UUR has a positive effect on PSAE reached 28 in 2002, and 29 in 2017, respectively. In addition, the range of the regression coefficient of UUR in each province from 2002 to 2017 is very small, so that their spatial distribution pattern remained basically stable. Among them, the provinces with high regression coefficient are mainly distributed in the northeastern and eastern regions, while the provinces with low regression coefficient are mainly distributed in the central and western regions. It is an important content of social assistance work to provide the workers, who are unable to meet their basic living needs due to unemployment, with certain financial and material assistance, so that to maintain their minimum living needs and help them to reemployment. Therefore, the increase of urban unemployment rate means more unemployed population may fall into poverty, which will inevitably require increasing the investment of social assistance funds, and then increasing the local PSAE.

As Figs. 6g and 6h showed, the impact of NDAA on PSAE is relatively more complicated at the local scale. In 2002, the NDAA was found to be negatively correlated with PSAE in all provinces, and its influence intensity is decreasing from northeast to southwest. In 2017, the positive correlation between NDAA and PSAE are observed in 27 provinces, except Heilongjiang, Jilin, Liaoning, and Inner Mongolia. Among them, the provinces with high regression coefficient are mainly distributed in the southwest region, and the provinces with low regression coefficient are mainly distributed in the northeast and its surrounding areas. That is to say, in 2002 and 2017, the intensity and direction of NDAA's impact on PSAE changed significantly. Due to various reasons, the level of economic development in various regions of China is not balanced, and natural disaster-prone areas are usually areas with backward economic development. The lack of local fiscal revenue makes the funds available for social assistance in these places relatively limited. On the other hand, China's natural disaster assistance system was still in the early stages of development in 2002. During this period, the relevant policies and measures of social assistance in China were imperfect. The use of disaster relief funds was based primarily on the number of people affected, rather than the actual area affected. Thus, the internal relationship between NDAA and PSAE is affected and weakened.

The results illustrated in Figs. 6i and 6j show that the impact of TPI on PSAE is positive in all provinces, which mean that increasing the scale of fiscal transfer payments in any province can promote the growth of PSAE to a certain extent. In terms of the spatial distribution of the regression coefficient, the impact of TPI on PSAE showed a circle structure of decreasing from southeast to northwest in 2002, but increasing from southeast to northwest and northeast in 2017. It is worth noting that although the regression coefficients of TPI can be divided into five categories in space, the gap between different types of regions and provinces is very small in terms of the regression coefficient value. The above results are consistent with the regional development strategy and financial transfer payment system implemented by China in recent years. Since the implementation of the Northeast Revitalization, the Rise of Central China, the Western Development and poverty alleviation strategy, the central financial transfer payments have tilt significantly to the central and western

provinces with severe poverty for a long time. This provides significant financial support for economic development and social assistance in these areas. Furthermore, the lack of financial revenue caused by the weak foundation of economic development has also aggravated the dependence of the social assistance system on financial transfer payments in the central and western provinces. For example, according to our calculation, more than 64.30% of the social assistance funds in the central and western regions came from the central financial transfer payments in 2017.

5 Discussion and Conclusions

This study aimed to analyze the dynamic characteristics of the regional equity of social assistance and investigated the socioeconomic drivers on the regional equity of social assistance in China. To achieve these aims, we firstly analyzed the dynamic characteristics of the regional equity of social assistance from 2002 to 2017, using the Theil index. Then, we applied the GWR model to evaluate the impact of five drivers on the regional equity of social assistance. The main results of this study are as follows.

In terms of the spatial-temporal pattern (Figs. 2, 3 and 4), we found that although the PSAE generally keeps increasing over time, demonstrated significant variation in different regions and provinces. The central and western regions have the fastest growth in PSAEs, while the northeastern region has the lowest PSAE growth and has shown an abnormal decline after 2014. By 2017, the PSAEs are in the order of western, northeastern, central, and eastern regions from high to low. At the provincial level, the PSAE in Qinghai, Tibet, Xinjiang, and Ningxia remained at a high level. But in Liaoning, Jilin, Heilongjiang, Beijing, and Shanghai, the PSAE growth is relatively slow. These changes have significantly changed the spatial pattern of PSAE.

The result of the Theil index (Table 2) indicated that from 2002 to 2017, the regional inequality of PSAE between provinces in China is quite obvious. This result is consistent with Bai and Gu (2016) who found that there is a high level of horizontal inequality in the financial expenditure of rural minimum living allowance in China. The results illustrated in Table 2 and Fig. 5 demonstrates that, during the study period, the inter-regional inequality between eastern, central, western, and northeastern regions was always significantly higher than the intra-regional inequality within each region, suggesting that the inter-regional inequality has been the main source of the regional inequality of PSAE for a long time.

The results of the GWR model (Table 4 and Fig. 6) revealed spatiotemporal heterogeneity in both the influence intensity and direction of the five selected variables (PCFR, UR, UUR, NDAA, TPI) at the local scale. The spatial gap of the influence intensity of the five variables on the PSAE seemed narrowing down. Moreover, the results also demonstrate that the five variables have different positive effects on the growth of PSAE in China. Among them, the UR and PCER have a relatively stronger driving effect on the regional equity of social assistance. This result can be found in research by Zheng and Zhang (2009) that suggested the financial resources of local governments and the proportion of urban population largely determine the level of social assistance payment.

The findings of this study will help us to better understand the development of China's social assistance system and its regional equity features. As China's governments at all levels continue to increase investment in social assistance, the spatial disparity of PSAE tends to narrow, and the regional equity of social assistance has improved. The spatial distribution pattern of social assistance expenditure and poverty level tends to be consistent, providing an important guarantee for China's poverty alleviation endeavor. However, imbalance development among areas and between urban and rural areas is still one of the important issues facing the development of China's social assistance system. The analysis results of the influencing factors of PSAE (Table 4 and Fig. 6) also confirm to a certain extent that China's social assistance system has an obvious feature of government dominating and policy-oriented. The spatial-temporal distribution of the regression coefficient of UR (calculated based on household registration data) in the GWR model reflects not only the impact of urban development on social assistance, but also the impact of the urban-rural dual household registration system to some extent (Ma, 2012). For a long time, China's social assistance system has been linked with the household registration system, which is regarded as one of the important conditions for the distribution of social assistance. As a result, an urban-rural dual social assistance

system with urban social assistance standards significantly higher than that in rural areas has been formed (Yang and Bao, 2018). In recent years, China's governments at all levels have increased their financial resources in social assistance and relaxed the restrictions on the household registration of recipients. This has significantly promoted the gradual narrowing of the urban-rural social assistance gap and the reduction of its unfairness. This trend is directly reflected in the decline of the impact of UR calculated based on household registration data on PSAE.

Due to the long-term lag in the development of philanthropy and social donation activities in China, social assistance funds mainly come from governments (shared by the central government and local governments). Therefore, the level of fiscal revenue greatly determines the level of social assistance expenditure in different regions. Especially in recent years, with the improvement of the social assistance system, and the gradual improvement of the assistance standard, the dependence of social assistance on the government's financial input has been further strengthened. However, the sharing mechanism of such social assistance funds between the central government and local governments is not perfect. The slowdown of economic growth and the rigid growth of local fiscal expenditure make local governments face the severe challenge of insufficient social assistance funds. On the one hand, when faced with the dual pressures of economic development and performance evaluation, local governments naturally pay less attention to social assistance that is not included in the performance evaluation indicator system or accounts for a relatively low proportion, due to the limited financial resources, resulting in insufficient investment in social assistance projects. On the other hand, it has increased the dependence of local governments (especially the underdeveloped areas in the central and western regions) on central government transfer payments. All of these are challenges for the sustainable development of social assistance in China.

In the future, how to gradually narrow the gap in social assistance services among the inter-region, city, and countryside, and intergroup has become a key issue that needs to be solved urgently in the construction of China's social assistance system. According to the results of this study, we believe that the horizontal imbalance (or regional imparity) of social assistance in China is a long-term problem, which is the result of the combined effect of various factors such as social, economic, and environment.

In the process of promoting equalization of social assistance, policymakers should firmly grasp the core of equalization, and focus on legislation, finance, management agencies, and other aspects to enable all regions to have a balanced capacity in providing social assistance services, thereby ensuring that residents enjoy equal opportunities for social assistance. At the same time, given the characteristics of 'strong government-weak society' in the development of social assistance in China, the relevant administrative departments of governments at all levels need to change the traditional concept of social assistance development, and actively guide and support local social workers, voluntary service organizations, industry associations, and other social forces to participate in social assistance. In addition, it is also possible to provide higher-quality and more diversified social assistance services to the poor through the pattern of government purchase services. It will further promote the transition of social assistance governance from government-led to the co-governance of multiple identities such as government, social organizations, enterprises, and individuals, to promote the equalization of social assistance services. Finally, the social assistance, as the last safety net in the social security system, works only to provide basic living needs for the poor, not to resolve poverty. To truly address the development of poor households beyond survival, it is necessary to strengthen the effective connection between social assistance and other policy measures, such as healthcare, education, and employment.

The present work investigates the dynamic characteristics and main influencing factors of the regional equity of social assistance in China, at the provincial level. The findings would help us to better understand the spatial-temporal pattern of China's social assistance development, as well as provides valuable references for policy-making. There are some limitations to the existing studies using provincial panel data, including the lack of analysis of regional equity at the city or county level and without considering the differences between urban and rural areas. The selection of influencing factors is also not comprehensive. These problems are tasks for future research.

References

Bai Chen, Gu Xin, 2016. Provincial Governments and horizontal equity of social assistance in Chinese rural areas-a Gini analysis and Theil index decomposition of Rural Di-Baos fiscal spending 2008−2014. *Public Finance Research*, (1): 67–74. (in Chinese)

Blanchard O, 2004. The economic future of Europe. *Journal of Economic Perspectives*, 18(4): 3–26. doi: 10.1257/089533 0042632735

Cappellari L, Jenkins S P, 2002. Who stays poor? Who becomes poor? Evidence from the British household panel survey. *The Economic Journal*, 112(478): C60–C67. doi: 10.1111/1468-0297.00028

Carnes M E, Mares I, 2014. Coalitional realignment and the adoption of non-contributory social insurance programmes in Latin America. *Socio-Economic Review*, 12(4): 695–722. doi: 10.1093/ser/mwt024

Devereux S, 2013. Trajectories of social protection in Africa. *Development Southern Africa*, 30(1): 13–23. doi: 10.1080/ 0376835X.2013.755871

Diener E, Fujita F, Tay L et al., 2012. Purpose, mood, and pleasure in predicting satisfaction judgments. *Social Indicators Research*, 105(3): 333–341. doi: 10.1007/s11205-011-9787-8

Farrington J, Slater R, 2006. Introduction: cash transfers: panacea for poverty reduction or money down the drain? *Development Policy Review*, 24(5): 499–511. doi: 10.1111/j.1467-7679.2006.00344.x

Ford R, Gyarmati D, Foley K et al., 2003. *Can Work Incentives Pay for Themselves? Final Report on the Self-Sufficiency Project for Welfare Applicants*. Ottawa: Social Research and Demonstration Corporation.

Fotheringham A S, Brunsdon C, Charlton M, 2002. *Geographically Weighted Regression: the Analysis of Spatially Varying Relationships*. Chichester: John Wiley & Sons, Ltd.

Gao Q, Zhai F H, Garfinkel I, 2010. How does public assistance affect family expenditures? The case of urban China. *World Development*, 38(7): 989–1000. doi: 10.1016/j.worlddev. 2009.12.005

Gao Shuai, Bi Jieying, 2016. Dynamic multidimensional poverty in rural China: persistence and transition. *China Population, Resources and Environment*, 26(2): 76–83. (in Chinese)

Gertler P J, Martinez S W, Rubio-Codina M, 2012. Investing cash transfers to raise long-term living standards. *American Economic Journal: Applied Economics*, 4(1): 164–192. doi: 10.1257/ app.4.1.164

Gough I, Bradshaw J, Ditch J et al., 1997. Social assistance in OECD countries. *Journal of European Social Policy*, 7(1): 17–43. doi: 10.1177/095892879700700102

Graham L, Selipsky L, Moodley J et al., 2010. *Understanding Poverty and Disability in Johannesburg*. Johannesburg: Centre for Social Development in Africa and University of Johannesburg.

Graham L, Moodley J, Ismail Z et al., 2014. *Poverty and Disability in South Africa*. Johannesburg: Centre for Social Development in Africa and University of Johannesburg.

Gu Wenjing, 2011. Regional balance of rural subsistence allowances based on equal utility standards. *On Economic Problems*, (2): 91–94. (in Chinese)

Gu Xin, Bai Chen, 2014. Research on horizontal equity of financing level of medical assistance in China. *Public Finance Research*, (12): 43–47. (in Chinese)

Huang C W, 2019. New Progress and Challenges in China's Poverty Alleviation Campaign. Available at http://www. stats.gov.cn/tjsj/zxfb/201908/t20190812_1690526.html. 2019-03-05.

Huang X R, Chen H, Li S S, 2019. The relationship between assistance satisfaction and negative affect in long-term social assistance recipients in China: the moderating role of self-acceptance. *Frontiers in Psychology*, 10: 109. doi: 10.3389/fpsyg. 2019.00109

Joshanloo M, 2016. Religiosity moderates the relationship between negative affect and life satisfaction: a study in 29 European countries. *Journal of Research in Personality*, 61: 11–14. doi: 10.1016/j.jrp.2016.01.001

Knight J, Li S, Deng Q H, 2010. Education and the poverty trap in rural China: closing the trap. *Oxford Development Studies*, 38(1): 1–24. doi: 10.1080/13600810903551595

Kuai Xiaoming, 2007. Insufficient-supply of rural society assistance in our country and governmental responsibility. *Research on Economics and Management*, (7): 58–62. (in Chinese)

Lemieux T, Milligan K, 2008. Incentive effects of social assistance: a regression discontinuity approach. *Journal of Econometrics*, 142(2): 807–828. doi: 10.1016/j.jeconom.2007.05.014

Leung J C B, 2006. The emergence of social assistance in China. *International Journal of Social Welfare*, 15(3): 188–198. doi: 10.1111/j.1468-2397.2006.00434.x

Li Qiong, Zhou Yu, Tian Yu et al., 2018. Spatial and temporal differentiation and driving mechanism of social security level in China during 2002-2015. *Geographical Research*, 37(9): 1862–1876. (in Chinese)

Liu Hui, 2006. Regional inequality measurement: methods and evaluations. *Geographical Research*, 25(4): 710–718. (in Chinese)

Liu Lingqi, 2003. The analysis on the characteristics of the return-to-poor population in Shanxi province and the ideas of the countermeasure. *Population Journal*, (4): 20–24. (in Chinese)

Lloyd‐Sherlock P, 2006. Simple transfers, complex outcomes: the impacts of pensions on poor households in Brazil. *Development and Change*, 37(5): 969–995. doi: 10.1111/j.1467-7660.2006.00509.x

Loeb M, Eide A H, Jelsma J et al., 2008. Poverty and disability in Eastern and western cape provinces, South Africa. *Disability & Society*, 23(4): 311–321. doi: 10.1080/09687590802038803

Ma Jing, 2012. The trend of the urban and rural social relief: in the condition of equalization of public service. *Reform*, (12): 145–149. (in Chinese)

Maitra P, Ray R, 2003. The effect of transfers on household expenditure patterns and poverty in South Africa. *Journal of Development Economics*, 71(1): 23–49. doi: 10.1016/S0304-3878(02)00132-3

Maluccio J A, 2010. The impact of conditional cash transfers on consumption and investment in Nicaragua. *The Journal of Development Studies*, 46(1): 14–38. doi: 10.1080/00220380903197952

Manjrekar E, Berenbaum H, 2012. Exploring the utility of emotional awareness and negative affect in predicting body satisfaction and body distortion. *Body Image*, 9(4): 495–502. doi: 10.1016/j.bodyim.2012.05.005

McKay A, Perge E, 2013. How strong is the evidence for the existence of poverty traps? A multicountry assessment. *The Journal of Development Studies*, 49(7): 877–897. doi: 10.1080/00220388.2013.785521

Milanovic B, 2000. *Social Transfers and Social Assistance: an Empirical Analysis Using Latvian Household Survey Data*. World Bank Policy Research Working Paper No. 2328, Washington: The World Bank.

Mitra S, Posarac A, Vick B, 2013. Disability and poverty in developing countries: a multidimensional study. *World Development*, 41: 1–18. doi: 10.1016/j.worlddev.2012.05.024

Nakaya T, Fotheringham A S, Charlton M et al., 2009. Semiparametric geographically weighted generalised linear modelling in GWR 4.0. In: *10th International Conference on GeoComputation, 30th November-2nd December 2009*. Sydney: UNSW.

National Bureau of Statistics of China, 2011. The method of dividing the east, west, central, and northeast China. Available at http://www.stats.gov.cn/ztjc/zthd/sjtjr/dejtjkfr/tjkp/201106/t20110613_71947.htm. (in Chinese)

Okello J J, 2015. Can the implementation of social protection policies and programme reducing households and community vulnerability to poverty in Uganda? *Public Policy and Administration Research*, 5(10): 15–23. doi: 10.22004/ag.econ.245742

Okello J, 2016. Analysis of household poverty and household vulnerability to poverty: the role of social protection measures in reducing household poverty and vulnerability in Katakwi district-Uganda. *Research on Humanities and Social Sciences*, 6(20): 126–137. doi: 10.22004/ag.econ.249337

Palmer M, 2011. Disability and poverty: a conceptual review. *Journal of Disability Policy Studies*, 21(4): 210–218. doi: 10.1177/1044207310389333

Patel L, 2003. Social development in a society in transition. *Social Development Issues*, 25(1-2): 150–161.

Qiu Yulin, Zhang Zhongchao, 2016. Research on anti-poverty of medical security in Guizhou minority areas. *Journal of Chinese Academy of Governance*, 18(3): 69–75. (in Chinese)

Sadoulet E, De Janvry A, Davis B, 2001. Cash transfer programs with income multipliers: PROCAMPO in Mexico. *World Development*, 29(6): 1043–1056. doi: 10.1016/S0305-750X(01)00018-3

Schneider M, Waliuya W, Munsanje J et al., 2011. Reflections on including disability in social protection programmes. *IDS Bulletin*, 42(6): 38–44. doi: 10.1111/j.1759-5436.2011.00271.x

Subbarao K, Bonnerjee A, Braithwaite J et al., 1997. *Safety net Programs and Poverty Reduction: lessons from Cross-Country Experience*. Washington: World Bank.

Tekgüç H, 2018. Declining poverty and inequality in turkey: the effect of social assistance and home ownership. *South European Society and Politics*, 23(3): 547–570. doi: 10.1080/13608746.2018.1548120

Tresch R W, 2002. *Public Finance: a Normative Theory*. Amsterdam: Academic Press.

Underlid K, 2007. Poverty and experiences of insecurity. *A qualitative interview study of 25 long-standing recipients of social security. International Journal of Social Welfare*, 16(1): 65–74. doi: 10.1111/j.1468-2397.2006.00423.x

Van Berkel R, 2006. The decentralisation of social assistance in the Netherlands. *International Journal of Sociology and Social Policy*, 26(1−2): 20–31. doi: 10.1108/01443330610644407

Wang Yijia, 2017. *Research on the Survival Dilemma and Contributing Factors of the Working Poor in Urban Area in Northeast China*. Harbin: Harbin Institute of Technology. (in Chinese)

Weinberg M, 2017. Trauma and social support: the association between informal social support, formal social support, and psychological well-being among terror attack survivors. *International Social Work*, 60(1): 208–218. doi: 10.1177/0020872814564704

Wilson F, Kanji N, Braathen E, 2001. *Poverty Reduction: what Role for the State in Today's Globalized Economy?* London: Zed Press.

Wu Pengsen, Dai Weidong, 2015. *Social Assistance Newly-Compled*. Shanghai: Fudan University Press. (in Chinese)

Xiao Yanhui, 2012. *The Comparative Study on the Model of Government Liability to the Social Assistance System*. Changsha: Hunan University. (in Chinese)

Yang Sui, Bao Chuanjian, 2018. China's social assistance on poverty reduction since reform and opening-up: practices, performance and prospects. *Reform*, (12): 112–122. (in Chinese)

Zhang H M, 2016. Social assistance for poor children in urban China: a qualitative study from the recipients' perspective. *Children and Youth Services Review*, 64: 122–127. doi: 10.1016/j.childyouth.2016.03.011

Zhao L Q, Guo Y, Shao T, 2017. Can the minimum living standard guarantee scheme enable the poor to escape the poverty trap in rural China? *International Journal of Social Welfare*, 26(4): 314–328. doi: 10.1111/ijsw.12265

Zheng Ruiqiang, Cao Guoqing, 2016. Re-poverty population: influencing factors, mechanism and risk control. *Journal of Agro-Forestry Economics and Management*, 15(6): 619–624. (in Chinese)

Zheng Xinye, Zhang Li, 2009. The determinants of social assistance expenditure: evidence from China. *Management World*, (2): 49–57, 74. (in Chinese)