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A geographic identification of multidimensional poverty in rural China under the framework of sustainable livelihoods analysis

Yanhua Liu [a, b, **], Yong Xu [b, *]

[a] School of Economics, Zhejiang University of Finance and Economics, Hangzhou, Zhejiang, 310018, China
[b] Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Beijing, 100101, China

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ABSTRACT

Developing methods of measuring multidimensional poverty and improving the accuracy of poverty identification have been hot topics in international poverty research for decades. They are also key issues for improving the quality and effectiveness of rural poverty reduction programs in China. So far, selection and integration of poverty indicators remains the main difficult for measurement of multidimensional poverty. Guided by the sustainable livelihoods framework developed in the UK by the Department for International Development (DFID), an index system and an integration method for geographical identification of multidimensional poverty were established, and they were further used to carry out a county-level identification of poverty in rural China. Additionally, comparisons were made of the identification results with counties having single-dimension income poverty in rural areas and poor counties designated by the Chinese central government. The results showed that a total of 655 counties, with 141 million rural residents, were identified as multidimensionally poor. They are concentrated and conjointly distributed geographically, and evil natural conditions are their common features. In comparison to the income poor and the designated poor counties, the multidimensionally poor counties were not only worse in single-dimensional and composite scores, but also having multiple disadvantages and deprivations. By identifying the disadvantage and deprived dimensions, the measurement of multidimensional poverty should be very helpful for each county to work out and implement antipoverty programs accordingly, and it would make contribution to improve the sustainability of poverty reduction. Hopefully, this research may also shed light on multidimensional poverty measurement for other developing countries.

1. Introduction

Poverty has been an objective phenomenon throughout human history and the process of human social development. It is a worldwide problem that concerns all nations, especially developing countries. A series of mid- and long-term antipoverty and development plans and poverty reduction policies implemented by the central government has played a major role in a dramatic decrease of poverty in the Chinese population (Ravallion, 2009; Wang, Li, & Wang, 2009; World Bank, 2009). However, the designation of particular regions in China as “poor” has been criticized by academics and citizens alike who question the accuracy and reliability of the methodology (Park, Wang, & Wu, 2002; Riskin, 1994; Wang et al., 2007). As population of the remaining poor in rural China is getting less and, at the same time, the efficiency of poverty reduction is declining, improving the accuracy of poverty targeting and implementing corresponding strategies are widely acknowledged to be imperative for the next phrase of poverty alleviation (Park & Wang, 2010; Wang et al., 2007). Although estimates of per capita gross domestic product and financial revenue for local government are now included in the identification of poor regions, it remains clear that the indicators of poverty are primarily economic in China (Labar & Bresson, 2011; Wang, Qian, & Duan, 2013; Zuo & Fang, 2011). Accordingly, most of the antipoverty policies and strategies were orientated towards improving these economic indicators, which lead to a less sustainable effectiveness of poverty reduction and high rate of poor people falling-back-into-poverty. In the 1980s, the concepts of capability poverty and entitlement

* Corresponding author.
** Corresponding author. School of Economics, Zhejiang University of Finance and Economics, Hangzhou, Zhejiang, 310018, China.
E-mail addresses: yhliu2014@zufe.edu.cn (Y. Liu), xuy@igsnrr.ac.cn (Y. Xu).

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poverty, first described by the Nobel Prize winner Amartya Sen (Sen, 1982, 1985), expanded the view of poverty beyond its traditional economic context. Since that time, it has become generally accepted worldwide that the concept of poverty should include not only economic shortages, but also social exclusions, lack of opportunity or public services, and vulnerability or exposure to risks of those deficits (UNDP, 2010a; Wagle, 2002; World Bank, 2000). Consequently, the measurement of poverty evolved from one-dimensional measurement of income/consumption to multidimensional measurement of income, education, health, nutrition, resources, environment, location, and vulnerability. Actually, the remaining poor in rural China are experiencing severe multidimensional deprivations beyond economic shortage (Cao, Wang, & Wang, 2009; Glauben et al., 2012; Xiong, 2001). Therefore, developing method for identification of multidimensional poverty becomes an urgent and meaningful trial for China to improve its accuracy of poverty targeting and promote the effectiveness of poverty reduction.

Current methods of measuring multidimensional poverty have been described in numerous publications (Alkire & Foster, 2011; Cavatassi, Davis, & Lipper, 2004; Cohen, 2009; Maasoumi & Lugo, 2008; Ravallion, 2011; Tsui, 2002), but selection and integration of poverty indicators remain difficult (Bourguignon & Chakravarty, 2003; Ferreira & Lugo, 2012). In China, most studies of multidimensional poverty have lacked innovation, mainly concentrating on application of international developed methods to small geographic regions of the country (Chen, 2008; Liu et al., 2014; Wang & Alkire, 2009). Indicators used to measure multidimensional poverty are chosen and used for three reasons. First, because they were used to describe the main characteristics or basic demands of poor people in previous investigations (Alkire & Santos, 2010; Davis, 2003; Dorling et al., 2007; Henninger, 1998). Second, because they are consistent with investigator-defined concepts of poverty or the antipoverty targets to be addressed (Achia, Wangombe, & Khadioli, 2010; Krishna et al., 2006; Wang, Cheng, & Zhang, 2012). Third, because they are consistent with existing poverty theory or analytic frameworks (Cohen, 2009; Sharp, 2003). However, when conducting research, it is hard to systematically and accurately measure all the economic and social variables because of trade-offs between theoretical models and the accessibility of data (Davis, 2003). Consequently, the experimental approach based on the method described above is open to question.

Two main approaches are usually adopted for the integration of the indicators of multidimensional poverty (Alkire & Foster, 2011; Deichmann, 1999). One is to develop a tool to aggregate individual dimensions into a composite poverty index that is used to indicate whether a person or region is poor. It is quite easy to score poverty in this way, but weighting the contribution of each indicator is a key difficulty. It can be argued that the outcome of this approach to measure multidimensional poverty may not be very different from that obtained by measuring single dimensional poverty (Ferreira & Lugo, 2012). Actually, the true value of the notion of multidimensional poverty is that the contents of each dimension are not totally substitutable (Bourguignon & Chakravarty, 2003). Another method of estimating multidimensional poverty, called the counting approach (Atkinson, 2003), identifies the number of deprived dimensions. In this approach, a deprivation cutoff is specified for each dimension and then individuals or regions that fall below the cutoff are identified. A decision on whether a person or region is poor is ultimately based on a predefined minimum number of dimensions of deprivation. This "dual cutoff" identification system gives clear priority to those with multiple deprivations, and is well suited for populations and places with many existing disadvantage dimensions (Alkire & Foster, 2011). The method is limited, however, in that interactions among different dimensions are neglected. Guided by a well-known and widely used conceptual framework of sustainable livelihoods proposed by the Department for International Development in the UK (DFID, 1999–2005), this research tried to develop a method for identification of multidimensional poverty in rural China by building an indicator system and improving the existing integration method through method inference, content comparison and indicators selection and tested.

Identification of poverty generally targets either people/households directly or geographic regions of different scales. Different target strategies are essential for the effectiveness of antipoverty programs (Krishna, 2007; Neto, 2001; Nhate & Simler, 2003). Investigations of poverty in countries or regions with small or scattered populations of poor people tend to identify and target people and households, whereas countries or regions with large populations of poor people concentrated in particular areas, as in China, tend to target geographic units. The latest official data indicate there are still more than 100 million poor people living in rural China, and they are densely concentrated in western mountainous regions (Cao et al., 2009; Glauben et al., 2012; Yue, Li, & Wang, 2005). The characteristics of Chinese rural poverty make it necessary for government to implement antipoverty projects based on data from geographic targeting. Therefore, this paper is going to carry out a geographic identification at county level, which is also the basic geographic unit for China's past designation of poor areas.

Generally speaking, the main aim of this research is to try to improve the effectiveness of poverty reduction programs in rural China by understanding persistent poverty from a multidimensional and dynamic perspective. Also, by proposing an improvement in the method for multidimensional poverty measurement, this research would like to make a contribution to poverty measurement internationally, especially for those developing countries which have significant persistent poverty and relatively concentrated spatial distribution of them but lack of data from individual or household level. Section 2 introduced the DFID framework, indicator system, methodology, data and resources. Section 3 was result analysis, including single dimensional, multidimensional results and comparison and appraisal of results. Section 4 is the conclusion and discussion.

2. Methodology and data

2.1. Framework basis

The Sustainable Livelihoods Approach, an integrative analysis framework developed within the past 20 years to understand the causes of poverty and to provide multiple solutions, considers both the factors leading to poverty and the complex problems associated with it (Chambers & Conway, 1992; Ellis, 2000; Roberts & Yang, 2003). Livelihoods analysis frameworks emphasizing different aspects of poverty have been proposed by various international groups and institutions (Cannon, Twigg, & Rowell, 2003; Frankenberger, Drinkwater, & Maxwell, 2000; Hulme, Moore, & Shepherd, 2001; IFAD). The approach developed by the DFID is one of the most widely applied (Li et al., 2007, 2012; Sharp, 2003). This framework (Fig. 1) integrates five sets of data called the vulnerability context, livelihood assets, transforming structures and processes, livelihood strategies, and livelihood outcomes (DFID, 1999–2005). The vulnerability context means that the external environment in which people exist is generally vulnerable. It can be critical trends, shocks and seasonality over which people have limited or no control. The livelihood assets refer to the categories of assets that people require to achieve positive livelihood outcomes, including financial, human, social, physical and natural capital. The transforming structures and processes are the institutions,