



A multidimensional child poverty index in China



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ABSTRACT

This paper analyses the multidimensional child poverty status and its dynamic changes in China from 1989 to 2009 using the China Health and Nutrition survey data. Built on the Alkire–Foster methodology, the adjusted child poverty headcount ratio is calculated which measures not only the traditional headcount ratio of child poverty but also the average deprivation intensity among poor children. The overall poverty rates declined over years from 1989 to 2009 in national wide and among provinces, where the key driver was the reduction of the poverty headcount ratio. With the property of decomposition for the adjusted headcount ratio, this study also examines the provincial and regional contribution to the national poverty reduction. Provinces in the middle region of China received the biggest reduction of child poverty rate, and the regional gap of child poverty has been narrowed down, but more effort of poverty reduction should be made to the poorest provinces and rural areas.

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1. Introduction

Child poverty is an under researched topic in China (Qi & Wu, 2014; Qi & Tang, 2015), and the existing few studies dominantly defined and measured child poverty using the income indicator only. Begum et al. (2012), for example, estimated the child poverty rate in China using three waves of the China Household Income Project (CHIP survey) in 1988, 1995 and 2002. Child poverty in this study was defined as those living in households with disposable income lower than the one-dollar a day poverty line. Similarly, the World Bank (2009) applied its dollar-a-day poverty line, two-dollar a day and three-dollar a day poverty thresholds to estimate the scale of child poverty in urban China in 2003. However, the uni-dimensional income-based measure has many drawbacks in the measurement of child poverty. It is not known how children living below income poverty lines experience poverty or whether their basic rights as ratified in UNCRC (1989) have been fulfilled or not. Child poverty is a multidimensional concept that has many manifestations. Child poverty means not only insufficient household resources but also material and social deprivation – hunger, malnutrition and the lack of access to water, sanitation, education, health, shelter, and information (Gordon et al., 2003a,b).

Consequently, this paper will contribute to filling the existing knowledge gap in academic research by measuring the changes in the extent and nature of multidimensional child poverty in China from 1989 to 2009 using the China Health and Nutrition Survey dataset (CHNS). The Alkire–Foster multidimensional poverty method is applied

in this paper which directly measures the extent of material deprivations in children's living standards rather than the indirect household income levels (Alkire & Foster, 2011). In addition, it scientifically decides an optimum poverty cut-offs using General Linear Models in the application of the Alkire–Foster methodology rather than an arbitrary decision by authors' value judgements. The adjusted poverty headcount ratio derived from the AF method investigates not only the absolute poverty rate but also the average deprivation intensity, and it has a useful property of decomposition into several subgroups, which facilitates this study to compare the contribution of different provinces or urban and rural regions to the overall poverty status.

This paper is organised as follows: Section 2 briefly reviews the concepts and measures of child poverty and in particular discusses the Alkire–Foster multidimensional poverty index measure and its application; Section 3 firstly introduces the CHNS dataset, followed by a detailed introduction of each step in the measurement of child poverty by a multidimensional poverty index measure; Section 4 shows the results on the changes in the extent of child multidimensional poverty and deprivation by wave and region. Section 5 finally summarises the main findings of this paper.

2. Literature

Child poverty has been recognised as a multidimensional concept (Roelen & Gassmann, 2008; Minujin & Delamonica, 2012; Minujin & Nandy, 2012). The multidimensionality of the concept of child poverty is reflected in the Convention on the Rights of the Child (UNCRC) (Pemberton et al., 2012). The Convention is the first legally binding international instrument that stated children's rights mainly in three dimensions, i.e. survival and development rights, the rights of being

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protected and the rights of participation (UNCRC, 1989). On the basis of human-rights framework, United Nations defined child poverty as those 'deprived of nutrition, water and sanitation facilities, access to basic health-care services, shelter, education, participation and protection, and that while a severe lack of goods and services hurts every human being, it is most threatening and harmful to children, leaving them unable to enjoy their rights, to reach their full potential and to participate as full members of society.' (UNGA, 2006, para 460). The multidimensionality of child poverty makes it particularly important to look beyond the traditional uni-dimensional child poverty measurement approach using income or consumption indicators, but to focus on the effects of inadequate public service provisions for children (Roelen & Gassmann, 2008; Minujin & Delamonica, 2012). Sen (1981, p. 25) argued that '... direct method is superior to the income method ... it could be argued that only in the absence of direct information regarding the satisfaction of the specified needs can there be a case for bringing in the intermediary of income, so that the income method is at most a second best.' UNICEF also stated that, 'measuring child poverty can no longer be lumped together with general poverty assessments which often focus solely on income levels, but must take into consideration access to basic social services, especially nutrition, water, sanitation, shelter, education and information.' (UNICEF, 2007, p.1). This calls for a direct measure of children's material and social deprivations, which has the advantage of showing the material and social consequences for children of the long-run financial situations of the family (Goodman & Myck, 2005).

One previous measurement of child poverty using direct measures of children's living standards was developed by Gordon et al. (2003b) who defined evidence-based dimensions, indicators and thresholds to measure the extent and nature of child poverty in developing countries. Seven dimensions were selected including food, safe drinking water, sanitation facilities, health, shelter, education, and information, which reflect children's basic needs. A child was defined as living in absolute poverty if they suffered from two or more severe deprivations of these seven dimensions (Gordon et al., 2003b). The severe deprivations refer to those circumstances that may lead to serious adverse consequences for the health and well-being of children. The headcount ratio of poor and severely deprived children was then computed and compared among developing countries by region and gender. This approach is also known as the Bristol approach (UNICEF, 2011).

Bristol approach is influential and has been widely applied in the subsequent studies of poverty measurement, however, as argued by Alkire and Roche (2011, p.4), 'the problem is that the headcount ratio remains unchanged when children that are already poor become deprived in an additional dimension, or when their level of deprivation in a particular dimension deteriorates.' Therefore, in order to reflect the average intensity and breadth of deprivation experienced by the poor, Alkire and Foster (2011) produced a new vector of deprivation counts among the poor, A , which represents the average deprivation share among the poor. A new poverty measure $M_0(H * A)$ is created to include two components, i.e. the headcount or percentage of child poverty (H) and the average deprivation share among the poor (A). According to Alkire and Roche (2011), this new measure could reflect the breadth, intensity and components of children's deprivations and improve the counting-based headcount measures of multidimensional child poverty.

The Alkire–Foster methodology has also been widely applied in academic research. Studies by Alkire and Seth (2013), Yu (2013), Santos (2013), and Battiston et al. (2013) investigate the multidimensional poverty status in India, China, Bhutan and Latin American countries respectively, and all find significant reduction of poverty population and their deprivation intensity in each country. However, all of them conclude with regional disparities in poverty reduction within each country. Papers by Batana (2013), Roche (2013), and Trani et al. (2013) target on two vulnerable groups: women and children, in Sub-Saharan African countries, Bangladesh, and Afghanistan respectively. Batana (2013) find education deprivation contributed the most to the overall women poverty, whereas the other two papers show children

were more vulnerable that on average they suffered from two or more deprivation dimensions especially in education and health.

3. Data and methods

3.1. Data

This paper relies on China Health and Nutrition Survey (CHNS) data,¹ collected by the Carolina Population Centre at the University of North Carolina at Chapel Hill and the National Institute of Nutrition and Food Safety at the Chinese Centre for Disease Control and Prevention. This longitudinal dataset was originally designed to analyse Chinese residents' health and nutrition conditions, but related information was also surveyed which can be used in our analysis on multidimensional child poverty, such as drinking water, toilet facilities, cooking fuel, electricity, education and information sources, etc. Therefore, this paper selects a child sample aged from 0 to 18, and analyses the various dimensions of their living condition.

The first wave of this survey was carried out in 1989, with subsequent waves in 1991, 1993, 1997, 2000, 2004, 2006, and 2009, and the whole survey investigated 26,000 individuals of 4400 households in nine provinces of China: Heilongjiang, Liaoning, Shandong, Jiangsu, Henan, Hubei, Hunan, Guizhou and Guangxi.² Although this survey does not cover provinces in northwest China, the existing nine provinces with different geographical and socioeconomic conditions have a national representation. This wide-range selection of investigation years and provinces facilitates this paper to observe the trend of the multidimensional child poverty index over years, and easily to compare the poverty status among provinces and regions with different economic growth rates.

This survey carried out a multistage, random cluster process to select the sample within the nine provinces. Firstly, four counties were chosen randomly in each province and stratified by their average household income, while another two cities including the provincial capital and a lower income city were also selected in each province. Secondly, villages and townships within each county, and urban and suburban regions within each city were randomly chosen then. From 1989 to 1993, there were 190 regional units in this survey, which increased to 216 units since 2000.

3.2. The Alkire–Foster method

The Multidimensional Poverty Index is constructed based on the Alkire–Foster method (Alkire & Foster, 2011; Alkire & Roche, 2011), and the following four sections will briefly describe the 12 steps of the AF approach, and how to apply them to the Chinese child poverty case.

Step 1: select unit of subject.

Usually, the unit of poverty analysis is based on each individual or household. In this study, Children aged from 0 to 18 are selected as the subject.

Step 2: select deprivation dimensions.

Step 3: select deprivation indicators within each dimension.

Step 4: define deprivation cut-offs for each indicator and dimension.

Step 5: select weights for each indicator and dimension.

These four steps define the multidimensional deprivation dimensions and whether a child was deprived according to deprivation thresholds. Section 3.3 of this paper will select deprivation dimensions based on common rights and previous literature, and will explain the deprivation thresholds in more details.

Step 6: sum the number of deprivation dimensions.

Step 7: select poverty cut-off.

Step 8: define and select children in poverty.

¹ <http://www.cpc.unc.edu/projects/china>.

² Heilongjiang province was not investigated until 1997, and Liaoning province missed the survey in 1997.

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