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# CHILD MULTI DIMENSIONAL POVERTY IN CHINA

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# EXECUTIVE SUMMARY

## 1. Background

The Chinese government reported eradicating rural extreme poverty at the end of 2020, a significant achievement. Goal 1 of the United Nations Sustainable Development Goals (SDG) is to end poverty in all its forms everywhere, and Goal 1.2 is to “reduce at least by half the proportion of men, women, and children of all ages living in poverty in all its dimensions according to national definitions by 2030.” Measures of child poverty in China from both monetary and multidimensional perspectives would be timely for China’s post-2020 anti-poverty policy agenda.

## 2. Purpose and Objective

The purpose of this report is to inform policymakers and the public about the levels, trends, and patterns of child multidimensional poverty in China, and how they compare with child income poverty. This report has four specific objectives. First, it presents the level and intensity of child multidimensional poverty in national, rural, urban, and migrant populations and how they changed from 2013 to 2018. Second, it compares child multidimensional poverty by gender and age groups to see if significant group differences existed, and whether such differences—if any—changed over time. Third, it investigates the overlap and divergence of child multidimensional poverty and income poverty in the respective national, rural, urban, and migrant populations, and across 2013 and 2018. Fourth, it classifies children into four mutually exclusive groups (non-poor, multidimensional poor only, income poor only, and both multidimensional and income poor) and investigates which demographic and socioeconomic characteristics were significantly associated with a child’s odds of being in any of these groups in 2013 and 2018.

## 3. Methodology

Building on the ecological systems theory of child development and the capability approach, this study uses the Alkire-Foster (AF) method to estimate child multidimensional poverty in China. Defining a child as anyone younger than 18 years, this study measures child multidimensional poverty based on seven dimensions, namely water, sanitation, shelter, education, health, information, and consumer durables. One or more indicators are used to define each dimension. If a child was deprived in any of the indicators within a dimension, the child was considered deprived in this dimension. Equal weights are assigned to each dimension. Based on statistical tests established in the literature, we set the cutoff of multidimensional poverty as deprivation in two or more dimensions out of the total seven dimensions. If a child is deprived in two or more dimensions, the child is defined as multidimensional poor; otherwise, the child is considered non-multidimensional poor. Following the AF method, we estimate the child multidimensional poverty headcount ratio (H), deprivation intensity (A), and multidimensional poverty index ( $M_0$ ).

To investigate the overlap and divergence of child multidimensional and income poverty, this study adopts the official national rural poverty line of 2,300 yuan in 2010 prices. We convert the 2010 line to 2013 and 2018 national rural poverty lines using the adjusted Consumer Price Indexes (CPIs) by considering both the general and food CPIs. The urban poverty lines are estimated as 1.4 times that of the national rural poverty lines. Household per capita income is used to measure income poverty. Children are assumed to share household income equally with other household members. If a child lives in a household whose per capita income falls below the poverty threshold, then

the child is considered income poor; otherwise, the child is considered non-income poor.

Based on the estimated child multidimensional and income poverty rates, this study classifies children into four mutually exclusive groups: non-poor, multidimensional poor only, income poor only, and both multidimensional and income poor. We use logistic regressions to examine which demographic and socioeconomic characteristics were significantly associated with the likelihood of falling into poverty groups.

The China Household Income Project (CHIP) 2013 and 2018 datasets are used for the analysis. The unit of analysis is the child. CHIP 2013 included 9,720 children nationally, among whom 6,506 were rural children, 2,727 were urban children, and 487 were migrant children. CHIP 2018 included 12,027 children nationally, among whom 5,678 were rural children, 4,798 were urban children, and 1,551 were migrant children.

## 4. Findings and Conclusions

The report offers four main findings. First, the share of children in multidimensional poverty declined nationally from 49 per cent in 2013 to 19 per cent in 2018. Large disparities were found in multidimensional poverty rates across rural, urban, and migrant children, with rural children persistently more likely to be in multidimensional poverty than their urban and migrant peers. The disparity gaps narrowed somewhat between 2013 and 2018.

Second, in terms of gender and age group differences, the multidimensional deprivation intensity was lower for boys than for girls in rural China in both years, but gender difference was not found in the multidimensional poverty rates in rural areas, nor was there any significant gender difference in any of the multidimensional poverty measures among urban and migrant children. No age group differences were detected in 2013 in the national population, but in 2018,

young children (i.e., 0-5 years old) had significantly lower multidimensional poverty rates while older children (i.e., 15-17 years old) had higher multidimensional poverty rates. This was driven by rural age group differences, as no age group differences were detected in the urban or migrant populations.

Third, by comparing child multidimensional and income poverty, we find that the child multidimensional poverty rate was much higher than the income poverty rate across rural, urban, and migrant population groups and in both 2013 and 2018. Rural children were more likely to be in poverty—either multidimensional poverty or income poverty or both—than their urban and migrant peers in both years, despite narrower gaps in 2018 than in 2013. Child multidimensional poverty overlapped with income poverty to some extent, and the overlap was greater in 2013 than 2018. Still, even rural children in higher income quintile groups had relatively high multidimensional poverty rates as compared to urban and migrant children.

Fourth, across population groups and years, low education attainment of household head was persistently associated with greater odds of children being in poverty. Rural children in the western region were more likely to be in poverty as compared to rural children in the eastern or central region or urban and migrant children in any region.

## 5. Recommendations

This report makes four policy recommendations. First, this study shows that measuring child poverty using income and multidimensional measures provide richer information regarding the monetary and material deprivations among children, and their variations across different population groups, than when only monetary measures are used. As the Chinese government works to design its post-2020 poverty measurement and monitoring systems, child-specific measures—including both

monetary and multidimensional ones—should be a focus. It is essential to design and carry out nationally representative, longitudinal survey data collection focusing on children and their families in order to provide accurate and dynamic monitoring of child poverty that would inform policy decisions on an ongoing basis.

Second, this study finds substantial declines in child poverty from 2013 to 2018, yet rural children remain much more likely to be in income or multidimensional poverty, or both, than their urban and migrant peers. There needs to be continued and expanded support to improve the economic resources and living conditions of rural children and their families, especially in the western region, but also in central and eastern regions. These include benefits that specifically target children, such as child allowances, and target families with children, such as childcare subsidies. These also include in-kind benefits such as nutrition, childcare, education, and health. These policies and programs should be devised from a child-centered perspective in order to build a strong foundation that would support the growth and development of children, especially rural children from less developed regions.

Third, the child-centered policies and programs should be sensitive to the specific needs of different child subgroups such as age and gender. In terms of age, early childhood is a particularly important stage that has received increasing attention and interventions in China. Existing experimental programs that focus on nutrition, parenting training, and early education and development should be expanded to support the growth and development of all children, with a particular focus on children from poor rural areas, while paying special attention to the needs of early childhood and girls who tend to have fewer resources and opportunities than boys.

Lastly, despite the declines in child poverty from 2013 to 2018, the rural-urban-migrant gaps persisted. The *Hukou* system still restricts rural

and migrant children and their families from fully accessing higher-quality education and health care, and having greater opportunities for upward mobility. Structural changes to the *Hukou* system, as well as social welfare systems, that enable equal access can help to narrow these gaps and support all children to reach their full potential.

# CHAPTER 1: INTRODUCTION

## 1.1 Context:

### Child Poverty in China

On November 23, 2020, the Chinese government announced that all 832 counties formerly identified as poor were off the poverty roll, officially reporting achieving its ambitious goal of eradicating rural extreme poverty by the end of 2020. Rural extreme poverty is measured based on the official national poverty line of 2,300 yuan per person per year in 2010 prices. This initiative covers all who fall below the national poverty line, including children. Achieving this goal is a significant achievement for China and benefits nearly all children who live in poor rural households.

Goal 1 of the United Nations Sustainable Development Goals (SDG) is to end poverty in all its forms everywhere. Among the specific targets set under this goal, SDG 1.2 goes beyond monetary poverty and aims to “reduce at least by half the proportion of men, women, and children of all ages living in poverty in all its dimensions according to national definitions by 2030.” This not only requires countries to adopt a national measurement for non-monetary poverty, but to do so for different population groups. Understanding poverty in multiple dimensions can help governments to construct their national measurements of non-monetary poverty, including for children.

Despite its achievements in poverty reduction, child poverty has not received a specific policy focus in China, nor has it been much studied empirically (Qi & Tang, 2015; Qi & Wu 2015). While few studies have examined child poverty using monetary measures such as income and consumption (Gordon, Nandy, Pantazis, Pemberton, & Townsend, 2003; Qi & Tang, 2015; Qi & Wu, 2015), even less research has been done on child multidimensional poverty in China (Qi &

Wu, 2014, 2015, 2016, & 2019; Wang, Wong, & Xu, 2014; Wang, Zhou, & Shang, 2015).

In order to capture the living conditions of children and understand how poverty affects child wellbeing, a multidimensional poverty measurement is needed (Gordon et al., 2000; Hagenaars, 1987). A multidimensional measurement of material deprivation is especially essential for understanding child poverty, because childhood experiences of deprivations in, for example, access to quality education, health care, shelter, water, or sanitation, can prevent children from reaching their full human development potential (Qi & Wu, 2019; Singh & Sarkar, 2015).

## 1.2 Purpose of this Report

The purpose of this report is to inform about the levels, trends, and patterns of child multidimensional poverty in China, and how they compare with child income poverty. Specifically, this study uses the China Household Income Project (CHIP) 2013 and 2018 datasets to provide evidence on child multidimensional and monetary poverty in China. These results can offer much needed evidence to inform China’s construction of multidimensional poverty measures, particularly for children, to meet SDG 1.2. The report is especially timely as the Chinese government works to develop its post-2020 anti-poverty agenda, possibly with children as one particular group of focus.

## 1.3 Roadmap of the Report

The rest of this report unfolds as follows. Chapter 2 presents the theoretical foundations, analysis framework, and a literature review on child multidimensional poverty in China. Chapter 3 introduces the methodology and data, including a discussion of their strengths and limitations.

Chapter 4 presents the results on the level and intensity of child multidimensional poverty in national, rural, urban, and migrant populations and how they changed from 2013 to 2018. This chapter further examines on which dimensions and indicators children were deprived. It then compares child multidimensional poverty by gender and age groups to see if significant group differences existed and whether such differences—if any—changed over time.

Chapter 5 investigates the overlap and divergence of child multidimensional and income poverty. This chapter first compares the child multidimensional and income poverty rates in the respective national, rural, urban, and migrant populations and across 2013 and 2018. It then maps the child multidimensional poverty rates along the income distribution to show the extent to which children in different income groups experienced multidimensional poverty. Furthermore, this chapter classifies children into four mutually exclusive groups (non-poor, multidimensional poor only, income poor only, and both multidimensional and income poor) and examines how these distributions varied by population groups and changed over time. Lastly, this chapter investigates which demographic and socioeconomic characteristics were significantly associated with child poverty within each population and in the respective two years.

Chapter 6 concludes this report by summarizing the key findings and discussing policy implications.

# CHAPTER 2: THEORETICAL FOUNDATIONS, ANALYSIS FRAMEWORK, AND LITERATURE REVIEW

## 2.1 Theoretical Foundations

This study of child multidimensional poverty builds on two theoretical foundations. First, Bronfenbrenner's (1992) ecological systems theory of child development states that four levels of environment are key factors that determine child development, ranging from microsystems (the immediate environment that children are immersed in such as family and school) to mesosystems (i.e., the connection between two or more microsystems), exosystems (i.e., the association between two or more settings), and macrosystems that are broader cultural and social contexts (Eamon, 2001). Material deprivations in the microsystems, such as lack of shelter or health care, can have the most direct and long-lasting detrimental impacts on child development (for example, Baker, Taylor, & Henderson, 1998; Currie & Yelowitz, 2000; Galpin, Walker, & Dubiel, 1992; Mann, Wadsworth, & Colley, 1992; McCallion et al., 1996; WHO & UNICEF, 2000).

Second, since the 1980s, the contributions of Martha Nussbaum, Amartya Sen, and others have led to a questioning of the philosophical basis and a broadening of the conceptualization of poverty. The "capability approach," which emerged from this debate, established that the conceptualization of poverty should not be limited to low income or consumption, because this does not adequately capture other valuable aspects of human wellbeing (see, for example, Nussbaum & Sen, 1993; Sen, 1985). The re-conceptualization of poverty led to

a strong emphasis on complementary measures of poverty beyond income poverty, including new methods to construct multidimensional measures of poverty.

## 2.2 Analysis Framework

Several analytical models have been established and used in the literature to measure multidimensional poverty. These include the multidimensional poverty index (MPI), the Bristol method, and Multiple Overlapping Deprivation Analysis (MODA). Following the literature that examines child multidimensional poverty in China and based on available measures in the dataset used for this study, we use the Alkire-Foster (AF) method (Alkire & Foster, 2007) to estimate child MPI in China. Estimation of MPI using the AF method requires identification of dimensions, indicators within each dimension, weights assigned to each dimension and indicator, and cutoff points to identify those who are considered multidimensional poor versus non-poor. Chapter 3 details how we constructed the child MPI measure for China.

## 2.3 Literature Review

**Child Multidimensional Poverty in China: Patterns and Trends.** The existing literature has established a clear overall trend of declining child multidimensional poverty rates from the 1990s to 2013 in national, rural, and urban populations. Rural children were much more likely to experience

multiple deprivations compared to their urban peers, but the rural-urban disparities narrowed over time.

Qi and Wu (2015, 2016, 2019) used nationally representative datasets to study the patterns and trends of child multidimensional poverty in China. Using the China Health and Nutrition Survey (CHNS) 1989-2009 data, Qi and Wu (2015) measured child multidimensional poverty in the dimensions of nutrition, water, sanitation, shelter, education, health, and information with a cutoff of two out of these seven dimensions. Their findings reveal that, in the national sample, the share of children experiencing multidimensional poverty declined from 64 per cent in 1989 to 19 per cent in 2009. The rural child multidimensional poverty rates were much higher, ranging from 70 per cent in 1989 to 21 per cent in 2009, as compared to the urban rates which ranged from 45 per cent in 1989 to 9 per cent in 2009. Using also the CHNS, but for the years 1989-2011, and defining a slightly different set of dimensions (i.e., nutrition, water, sanitation, shelter, health, education, participation, and protection), while taking two out of eight dimensions as the cutoff, Qi and Wu (2016) revealed that the share of children experiencing multidimensional poverty declined from 75 per cent in 1989 to 9 per cent in 2011. Qi and Wu (2019) used the China Family Panel Study (CFPS) 2014 data and found that rural children suffered substantially more from multidimensional poverty than their urban peers.

Two other studies examined child multidimensional poverty in China using regional datasets. Using data from a sample of 7,936 rural children from Sichuan, Yunnan, Henan, and Xinjiang and measuring multidimensional poverty in five dimensions (i.e., subsistence, health, protection, development, and participation), Wang, Zhou, and Shang (2015) found the rural child multidimensional poverty rate to be 14 per cent in 2010. The study assigned

equal weight to each dimension and equal weight to each indicator within each dimension and used 30 per cent of the weighted dimensions as the cutoff to define multidimensional poverty.

**Child Multidimensional Poverty in China: Sociodemographic Predictors.** The literature has revealed a set of sociodemographic characteristics associated with child multidimensional poverty in China. For example, Qi and Wu (2016) found that factors correlated with children's multidimensional poverty in China included a child's young age, being an ethnic minority, parents' low education attainment, parents' poor health, parents employed in non-state work units (vs. state-owned work units), parents being manual workers, families with more children, rural *Hukou* status, and low household income. Among these risk factors, rural *Hukou*<sup>1</sup> status and parental employment in non-state work units were found to have the largest impact on children, raising the probability of multidimensional poverty by around 16 per cent and 13 per cent, respectively. These results are consistent with those found in other studies (Leu, Chen, & Chen, 2016; Wang, 2014). Wang, Zhou, and Shang (2015) also showed that children with disabilities, infected by HIV/AIDS, and from ethnic minority groups suffered from the most severe multidimensional deprivations.

**Child Multidimensional Poverty in China: Gender and Age Group Differences.** Only two existing studies examined gender differences in child multidimensional poverty in China, providing mixed findings. Using the 2011 Family and Children Survey of Beijing based on 34 indicators, Wang (2014) showed that child gender was not associated with the likelihood of falling into multidimensional poverty or severity of deprivation. Using the same dataset and adding a dimension of quality of life, which included the indicators of physical health, family relations,

<sup>1</sup>—*Hukou* is the household registration system in mainland China. *Hukou* officially identifies an individual as a permanent resident of an area, distinguishing rural and urban residents, and is connected to social benefits provided by the government.

# CHAPTER 3: METHODOLOGY

psychological wellbeing, self-esteem, and self-efficacy, Wong, Wang, and Xu (2015) found that girls were more likely to be deprived in physical development, whereas boys had more disadvantages in psychological wellbeing. No existing study has examined the age group difference in child multidimensional poverty in China.

**Child Multidimensional Poverty in China: Comparison with Income Poverty.** Only one existing study compared child multidimensional poverty with income poverty in China using national household survey data. Using the CFPS 2014 data, Qi and Wu (2019) found large and significant disparities in child multidimensional poverty rates between rural and urban areas (79.7 per cent vs. 49.1 per cent for rural and urban areas if using the cutoff of two out of 16 indicators<sup>2</sup>). These poverty rates were substantially higher than the income poverty rates (19.5 per cent and 20.1 per cent in rural and urban China, respectively) estimated based on the Minimum Livelihood Guarantee (MLG or *Dibao*)<sup>3</sup> line in each province as the poverty line. The urban poverty rate was slightly higher than the rural poverty rate based on the *Dibao* line, because the urban *Dibao* line was much higher than the rural line across localities. Findings from this study suggest that using income poverty measures only does not reflect the multidimensional deprivations experienced by

a substantial group of children, with the omission especially severe in rural China as shown by the larger discrepancy between the estimated child multidimensional poverty rate and income poverty rate in rural areas, as compared to urban areas.

The existing literature on child multidimensional poverty in China can be extended in at least two ways. First, the existing evidence is somewhat outdated. The most recent findings on child multidimensional poverty were based on the 2014 CFPS data. Second, as mentioned above, only one existing study compared the estimates of child multidimensional poverty and income poverty using national survey data. This report presents analysis based on the China Household Income Project (CHIP) 2018 data to provide updated evidence and compares these results with those from CHIP 2013 to track trends over time. It also examines the convergence and divergence of child multidimensional poverty and income poverty to offer a fuller picture of child poverty in China.

## 3.1 Child MPI in China: Measurement Design

### 3.1.1 MPI Dimensions and Indicators

This study defines a child as anyone younger than 18 years. Building upon the global MPI analytical framework and relevant empirical studies that examined MPI in China (Alkire & Shen, 2017; Feng, 2019; Feng & Di, 2017; Shen, Alkire, & Zhan, 2018), this study measures child multidimensional poverty based on seven dimensions, including water, sanitation facilities, shelter, education, health, information, and consumer durables. One or more indicators are used to define each dimension. If a child was deprived in any of the indicators within a dimension, the child was considered deprived in this dimension.

Table 1 presents the dimensions, indicators for each dimension, deprivation cutoffs, and weights assigned for each indicator. We selected seven dimensions through the following procedures. First, the global MPI constructed jointly by the Oxford Poverty and Human Development Initiative (OPHI) and the United Nations Development Programme (UNDP, 2010) uses three dimensions, including health (with the indicators of nutrition and child mortality), education (with the indicators of years of schooling and school attendance), and living standards (with the indicators of cooking fuel, sanitation, drinking water, electricity, shelter, and assets). We adopted the health and education dimensions and elevated water, sanitation, shelter, and assets (renamed “durable goods” in this study) from being indicators to dimensions, following the literature on multidimensional poverty in China (e.g., Qi & Wu, 2019; Wang &

Alkire, 2009). A very small proportion (i.e., less than 0.1 per cent) of households in the CHIP sample had no electricity in either 2013 or 2018, so this indicator was dropped. We also added the dimension of information to reflect children’s rights to access information (UNCRC, 1989).

Next, specifically, the water dimension is measured by whether a household has access to an improved water source. The sanitation dimension is measured by two indicators—access to sanitary toilet facilities in or near the home, and clean cooking fuel. The shelter dimension is measured by overcrowding and dwelling quality (as reflected by primary construction materials). In the education dimension, we dropped the years of schooling indicator because it measures education deprivation for adults rather than for children. We replaced it with the current school attendance status of children between ages 6 and 16, the compulsory education age range in China. In the health dimension, as measures of nutrition and child mortality are unavailable in the CHIP data<sup>4</sup>, we replaced them with whether a child has medical insurance and access to a healthcare facility. The information dimension is captured by whether a household has access to the Internet via a computer or a mobile phone. The durable goods dimension is measured by whether a household has any of the following durable goods: washing machine, air conditioner, water heater, refrigerator, motorcycle, or vehicle; a household is considered deprived in this dimension only if it had none of these durable goods.

2—The indicators include having no medical insurance (in the dimension of health), underweight and stunting (in the dimension of nutrition), having no care from any caregiver at day time or night time, not living with father or mother for more than six months last year, and having no *Hukou* (in the dimension of child care and protection), child 6-16 year old not in school, child 2-6 year old not in kindergarten, and taking longer than one hour from home to school (in the dimension of child education), and having no clean drinking water, no flush toilet at home or in village or community, no clean cooking fuel, no electricity or electricity cut frequently, and child older than 12 living with parents in the same room (in the dimension of household facility). The authors reported deprivations in indicators instead in dimensions.

3—Minimum Livelihood Guarantee, or *Dibao*, is China’s largest social assistance program. The *Dibao* line varies by province, and within each province by city and county and across urban and rural areas, with the urban line usually higher than the rural line within each province, city, and county. Because Qi and Wu (2019) used the provincial average rural and urban *Dibao* lines as the respective rural and urban poverty lines to estimate income poverty rates, the urban poverty lines were higher than the rural poverty lines, which yielded the counterintuitive results of urban income poverty rates higher than rural income poverty rates.

4—Information on child nutrition (i.e., underweight and stunting) is available in CHIP 2018 but not 2013 data. In order to have consistent measures of child MDP for comparison across years, this study excludes nutrition as a dimension. Information on child mortality is unavailable in either CHIP 2013 or 2018.



**Table 1. Dimensions and Indicators of Child Multidimensional Poverty in CHIP 2013 and 2018 Data**

| Dimensions            | Indicators                        | Deprivation Cutoff<br>A child is deprived if...   | Weights |
|-----------------------|-----------------------------------|---|---------|
| Water                 | Improved water source             | Household has no piped water OR obtains water from unprotected sources, OR obtaining drinking water takes more than half an hour, OR has irregular or fixed-time water supply, OR water shortage lasted more than 15 consecutive days in the past year. | 1/7     |
| Sanitation facilities | Toilet facilities in or near home | Household has non-sanitary toilet OR no toilet at home OR uses a public toilet.   | 1/7     |
|                       | Cooking fuel                      | Household uses firewood and/or coal.  |         |
| Shelter               | Overcrowding                      | Child lives in a house with less than 15 square meters per person.  | 1/7     |
|                       | Dwelling quality                  | Household primary construction materials are bamboo, grass, and/or adobe.   |         |
| Education             | Not currently attending school    | Child between 6-16 years old does not attend school.  | 1/7     |
| Health                | Medical insurance                 | Child has no medical insurance.   | 1/7     |
|                       | Healthcare facility               | There is no health care provider in the community.  |         |
| Information           | Computer or mobile phone          | Household has no Internet-connected computer or mobile phone.   | 1/7     |
| Consumer durables     | Ownership of durable goods        | Household has none of the following durable goods: washing machine, air conditioner, water heater, refrigerator, motorcycle, or vehicle.  | 1/7     |

**Note:** In the dimensions of sanitation facilities, shelter, and health, if a child was deprived in either indicator within a dimension, the child was considered deprived in this dimension.

Equal weights are assigned to each dimension (1/7). Eight of the ten indicators are measured at the household level, in which case the child takes the value of the household-level indicator. Two indicators are measured at the individual child level (i.e., child between 6-16 years old does not attend school and child has no medical insurance).<sup>5</sup>

### 3.1.2 Multidimensional Poverty Cutoff and Validity Test

Two dimensions, out of the total seven dimensions, are set as the cutoff of being multidimensionally poor. This is determined using ANOVA and logistic regressions, following Gordon et al. (2000) and Qi and Wu (2014, 2015, 2016). Specifically, we first define a child as living in multidimensional poverty if s/he experienced deprivation in one or more dimensions. ANOVA and logistic regressions are used to examine group differences in the multidimensional poor versus non-poor children in terms of family income (Gordon et al., 2000). Then multidimensional poverty is re-defined if a child experienced deprivation in two or more, three or more, until seven dimensions of deprivations, and the same set of analysis is conducted for each definition of multidimensional poverty. The definition with the number of deprivations that has the largest F value from ANOVA tests and the largest Chi-Square value from logistic regressions is chosen as the cutoff for child multidimensional poverty.

Our analysis indicates that setting the cutoff at two dimensions leads to the largest ANOVA and

Chi-square values. As a result, we set the cutoff of multidimensional poverty as deprivation in two or more dimensions out of the total seven dimensions. In other words, if a child is deprived in two or more dimensions, the child is defined as multidimensional poor; otherwise, the child is considered non-multidimensional poor.

To ensure the choices of dimensions and indicators truly reflect multidimensional poverty, rather than other concepts, we use logistic regressions to test the validity of these dimensions of child multidimensional poverty. Following Gordon (2006), Gordon and Nandy (2012), Guio, Gordon, and Marlier (2012), and Qi and Wu (2014), we conduct a validity test by regressing each of the dimensions as independent variables against household income as the dependent variable.<sup>6</sup> A significant relationship indicates that the dimension successfully captures child multidimensional poverty status. Our results show that all seven dimensions passed the validity tests in both 2013 and 2018.

### 3.1.3 Estimating MPI Using Alkire-Foster (AF) Method

After deciding the dimensions, indicators, and cutoff for measuring child multidimensional poverty as described above, we use the Alkire-Foster (AF) method to estimate child MPI in China. Specifically, as shown in the equation below, MPI ( $M_0$ ) combines the information on the multidimensional poor and calculates the adjusted headcount ratio. It combines two aspects of poverty: H is the headcount ratio of

<sup>5</sup>—The relatively low number of child-level indicators is because CHIP is a household survey focusing on household resources and wellbeing instead of focusing on children.

<sup>6</sup>—The logarithm of total household equivalized disposable income was used, which was equivalized by assigning a weight of 1 for the first adult household member, 0.5 for the second and subsequent person 14 years or older, and 0.3 for each child younger than 14 years old, according to the OECD-modified scale in Hagenaars, de Vos, & Zaidi (1994).

children experiencing multidimensional poverty, and  $A$  is the deprivation intensity, or the average percentage of dimensions in which poor children are deprived (Alkire et al., 2015). The child MPI can also be disaggregated by population subgroups such as age groups and gender.

$$M_o = H \times A \quad (\text{Equation 1})$$

where:

$M_o$  is the multidimensional poverty index;

$H$  is the headcount ratio;

$A$  is the deprivation intensity.

$H$  and  $A$  are calculated by the following two equations, respectively.

$$H = \frac{q}{n} \quad (\text{Equation 2})$$

where:

$H$  is the headcount ratio;

$q$  is the number of children who had deprivations in  $k$  dimensions ( $k \geq 2$  in this study);

$n$  is the total number of children.

$$A = \frac{1}{q} \sum_{i=1}^n c_i(k) \quad (\text{Equation 3})$$

where:

$A$  is the deprivation intensity, calculated by taking the mean of the number of deprived dimensions among children experiencing multidimensional poverty.

$c_i$  represents each child.

### 3.2 Child Multidimensional versus Income Poverty

This study also investigates the overlap and divergence of child multidimensional poverty and income poverty. In the literature that examines income poverty in China, household disposable income is usually assumed to be shared equally within the household, and those whose household per capita income fall below the poverty threshold are considered to be income poor. In this study, children are assumed to share household income equally with other household members. If a child lives in a household whose per capita income falls below the poverty threshold, then the child is considered income poor; otherwise, the child is considered non-income poor.

The literature on income poverty in China often uses three poverty thresholds, including the World Bank line of \$1.90 a day (in 2011 purchasing power parity, or PPP), China's official national rural poverty line of 2,300 yuan in 2010 prices set in 2011, and local *Dibao* lines for each province and municipality. To provide appropriate policy implications in the national context, this study adopts the official national rural poverty line of 2,300 yuan in 2010 prices. We convert the 2010 line to 2013 and 2018 national rural poverty lines using the adjusted Consumer Price Indexes (CPIs) by considering both the general and food CPIs, following Li, Zhan, and Shen (2020). Following Ravallion and Chen (2007), the urban poverty lines are estimated as 1.4 times that of the national rural poverty lines. The poverty lines are 2,716 yuan in rural areas and 3,803 yuan in urban areas in 2013, and 2,958 yuan in rural areas and 4,141 yuan in urban areas in 2018.

Based on the estimated child multidimensional and income poverty rates, we classify children into four mutually exclusive groups: non-poor, multidimensional poor only, income poor only, and both multidimensional and income poor. We use logistic regressions to examine which demographic and socioeconomic characteristics

were significantly associated with the likelihood of falling into poverty groups.<sup>7</sup>

We consider a rich set of demographic and socioeconomic characteristics at the child, household head, and household levels. Child demographics include child's gender, age, and ethnic minority status. Household head demographics include household head's age, gender, ethnic minority status, marital status, education level, employment status, self-reported health status, and communist party membership. Household characteristics include mean age of children in the household, number of children (younger than 18 years old), number of older adults (60 or older), number of working-age adults (between 18 and 59), number of members reporting poor health, number of members with physical disability, household registration (*Hukou*) and residence status, and region (eastern, central, and western).

### 3.3 Data: China Household Income Project (CHIP) 2013 and 2018

This study uses CHIP 2013 and 2018 datasets to estimate child multidimensional and income poverty in China. CHIP is a repeated national cross-sectional study under the auspices of the School of Economics and Business Administration at Beijing Normal University. CHIP remains one of the best data sources on household income and living conditions in China.

The CHIP samples were drawn from larger National Bureau of Statistics (NBS) samples which use a multistage stratified probability method to

achieve national representativeness. Since 2012, NBS has been using a unified, residence-based sampling frame, which is stratified by rural and urban areas in each province and based on the 2010 census. Rural-to-urban migrants, defined as those with rural *Hukou* but living in urban areas, are included in the urban sampling frame. In this study, rural residents are considered to be the rural sample, urban residents with urban *Hukou* are considered to be the urban sample, and urban residents with rural *Hukou* are considered to be the migrant sample.

Survey participants of CHIP 2013 come from 15 provinces in eastern, central, and western China. The 2018 dataset additionally includes the province of Inner Mongolia<sup>8</sup>. To make the analysis based on the CHIP samples representative of the national picture, the CHIP team constructed sampling weights for each wave, taking into consideration population distributions by region, and within each region, urban-rural-migrant population sizes. All analyses in this study are weighted and thus can be considered nationally representative at the national and urban-rural-migrant subgroup levels.

CHIP collects rich information about the multidimensional living environment of households, including condition of dwelling, drinking water, sanitation facilities, cooking and heating fuel, and infrastructure in the community. It also contains detailed information regarding household income, which enables the comparison of child multidimensional and income poverty. CHIP also collects a wide array of individual and household demographic and socioeconomic characteristics, enabling investigation of potential predictors of poverty (Gustafsson, Li, & Sato, 2014).

7—In the national and rural samples, multinomial logistic regressions are used to estimate predictors for falling into the groups of multidimensional poor only, income poor only, and both multidimensional and income poor, compared to the non-poor group. In the urban and migrant samples, due to the small sample sizes of the three respective poverty groups, logistic regressions are used to examine the likelihood of being in the poor group (i.e., the three poverty groups combined into one) compared to the non-poor group.

8—Future research can test whether the results might be different if Inner Mongolia is excluded from the CHIP 2018 sample.

Compared to other nationally representative datasets, such as the China Health and Nutrition Survey (CHNS) and China Family Panel Study (CFPS), CHIP has a larger sample size and richer information in household income and various measures of living conditions and material deprivation. CHIP is a household-level survey that does not contain many child-level measures, thus limiting its capacity for measuring child multidimensional poverty. This limitation also applies to other household-level surveys.

This study focuses on child multidimensional and income poverty. Therefore, the unit of analysis is the child, despite that only two indicators are measured at the child level. This is done by assuming children take the values of the household-level indicators for other indicators. Household income is assumed to be shared equally among household members including children. Children are defined as those younger than 18 years old. CHIP 2013 included 9,720 children nationally, among whom 6,506 were rural children, 2,727 were urban children, and 487 were migrant children. CHIP 2018 included 12,027 children nationally, among whom 5,678 were rural children, 4,798 were urban children, and 1,551 were migrant children.

## CHAPTER 4: CHILD MULTIDIMENSIONAL POVERTY IN CHINA: PATTERNS AND TRENDS

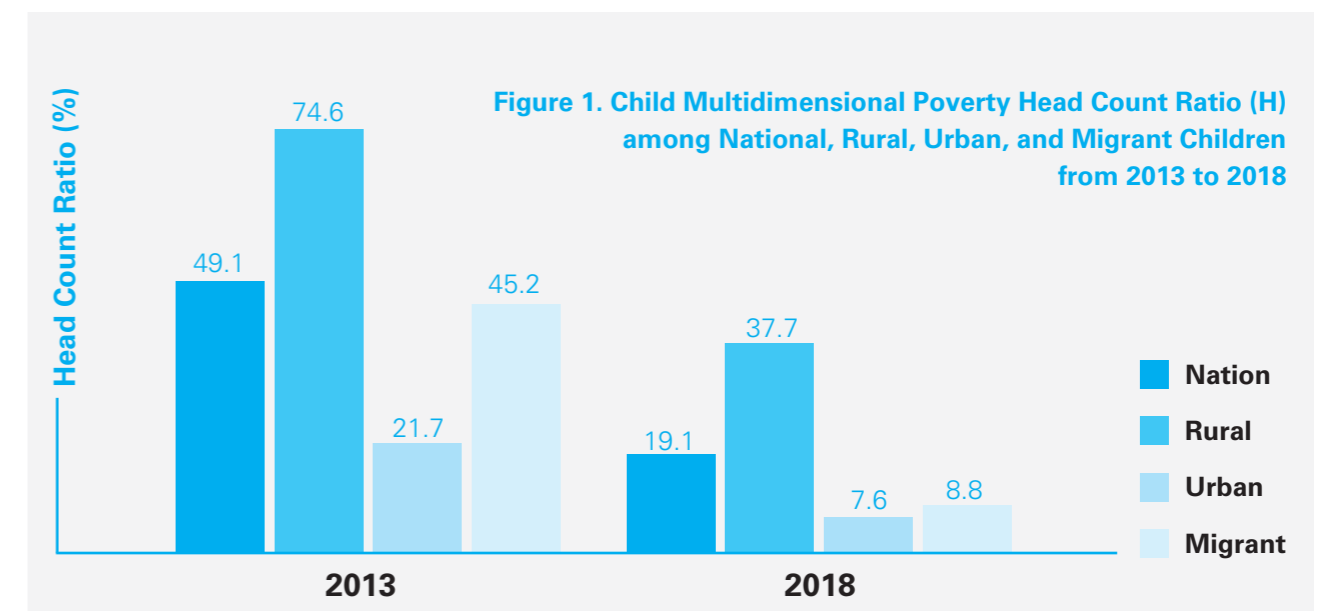
In this chapter, we first present the results on child MPI in the respective national, rural, urban, and migrant samples and how they changed from 2013 to 2018. We further examine on which dimensions and indicators children in China were deprived. We then compare child MPI by age and gender groups to see if significant group differences existed and whether such differences—if any—changed over time.

### 4.1 Child MPI in China: From 2013 to 2018

Figures 1-3 present the estimated child MPI in China in the respective national, rural, urban, and migrant samples and how they changed from

2013 to 2018. Specifically, Figure 1 presents the child multidimensional poverty incidence rates (H, the head count ratio), Figure 2 presents the intensity (A, the average percentage of indicators in which poor children are deprived) of child multidimensional poverty, and Figure 3 presents the multidimensional poverty index, the MPI ( $M_0$ , the adjusted headcount ratio).

Figure 1 shows that **nationally, the share of children in multidimensional poverty declined from 49 per cent in 2013 to 19 per cent in 2018.** The multidimensional poverty head count ratio (H) for rural children was substantially higher than those among urban and migrant children in both years. In 2013, the multidimensional poverty head count ratio was 75 per cent for rural children versus 22 per cent and 45 per cent for urban



and migrant children, respectively. In 2018, the multidimensional poverty head count ratio for rural children declined to 38 per cent, while those for urban and migrant children declined to 8 per cent and 9 per cent, respectively. This indicates that, **although the share of children experiencing multidimensional deprivations declined from 2013 to 2018, the gap between rural children and their urban and migrant peers persisted.**

Notably, **the pace of decline in the multidimensional poverty head count ratio for migrant children during this period was faster than among rural**

and urban children, possibly due to increased household income and access to basic public services in urban areas for migrant families during this period (Li & Wu, 2020). In 2013, the multidimensional poverty head count ratio for migrant children was 45 per cent versus 22 per cent for urban children. By 2018, the multidimensional poverty head count ratio for migrant children dropped substantially to 9 per cent, very close to the rate (8 per cent) among urban children.

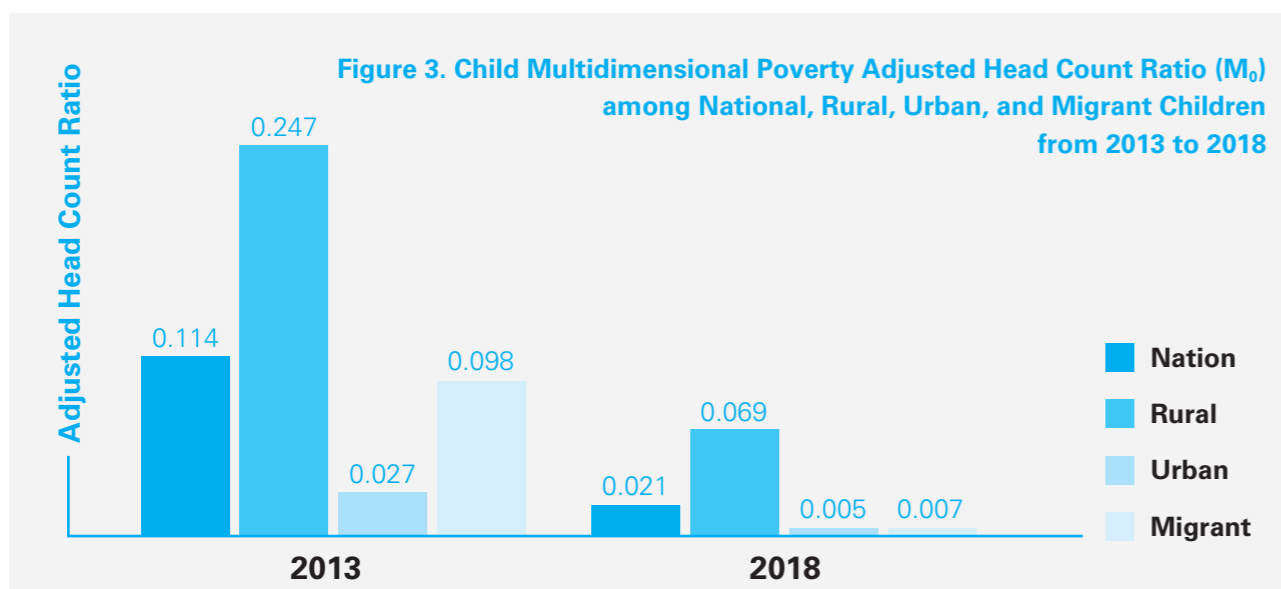
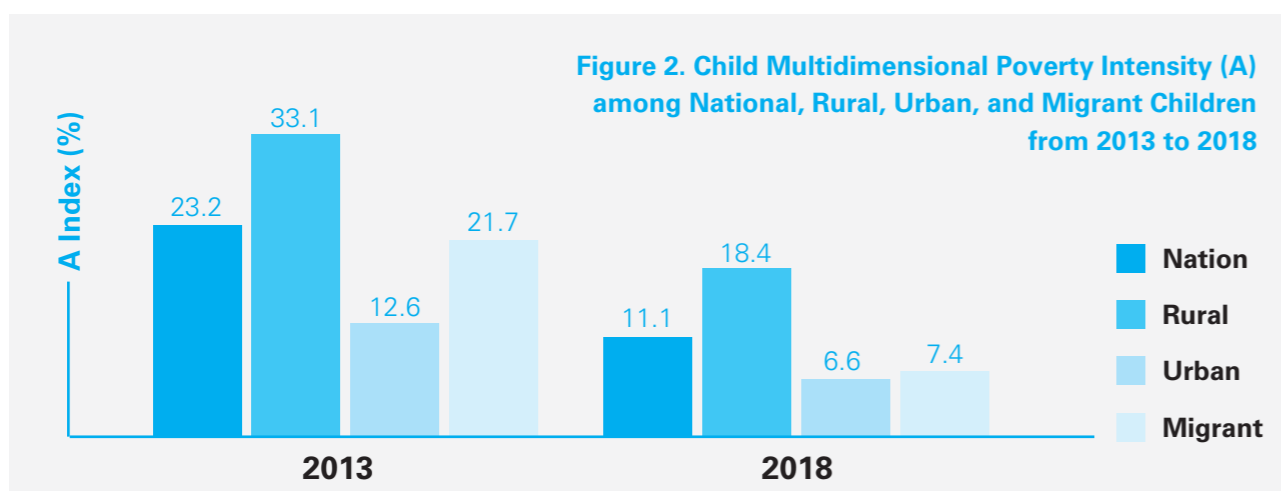


Figure 2 (child multidimensional poverty intensity) and Figure 3 (MPI, or the adjusted headcount ratio) reveal similar patterns to those in Figure 1 (child multidimensional poverty incidence). Both the intensity and MPI declined substantially from 2013 to 2018, but the rural-urban disparity persisted. Specifically, Figure 2 reveals that, on average, rural children in multidimensional poverty were deprived in 2.3 (33 per cent) out of the total seven dimensions in 2013, compared to 0.9 (13 per cent) among urban children and 1.5 (22 per cent) among migrant children. The disparities in deprivation intensity narrowed somewhat in 2018: rural children in multidimensional poverty were deprived in 1.3 (18 per cent) out of the total seven dimensions, as compared to 0.5 (7 per cent) among urban and migrant children, respectively.

Figure 3 reports that the MPI had a value of 0.25 among rural children in 2013, which declined to only 0.07 by 2018. This means that, in 2013, rural children in multidimensional poverty experienced 25 per cent of the total deprivations that would have been experienced if all rural children were deprived in all dimensions, which had a substantial reduction to 7 per cent by 2018. During the same period, the decline for urban children was from

3 per cent to 1 per cent, and that for migrant children was from 10 per cent to 1 per cent.

## 4.2 Deprivations by Dimension and Indicator

Table 2 displays the proportions of children in the national sample who were deprived in each dimension and each indicator based on the measures and cutoffs presented in Table 1. **The head count ratios of children deprived in the seven dimensions and 10 indicators all declined from 2013 to 2018.** Table 2 also reveals that large proportions (i.e., around 45 per cent) of children experienced deprivations in sanitation facility (mainly toilet facility) and information in 2013. The deprivation of information decreased substantially to 12 per cent in 2018. Although the deprivation of sanitation facilities also declined, a large proportion (31 per cent) of children still experienced it in 2018, most likely driven by deprivations in this indicator in rural areas.

**Table 2. Percentage of Children Deprived by Dimension and by Indicator in CHIP 2013 and 2018 (per cent)**

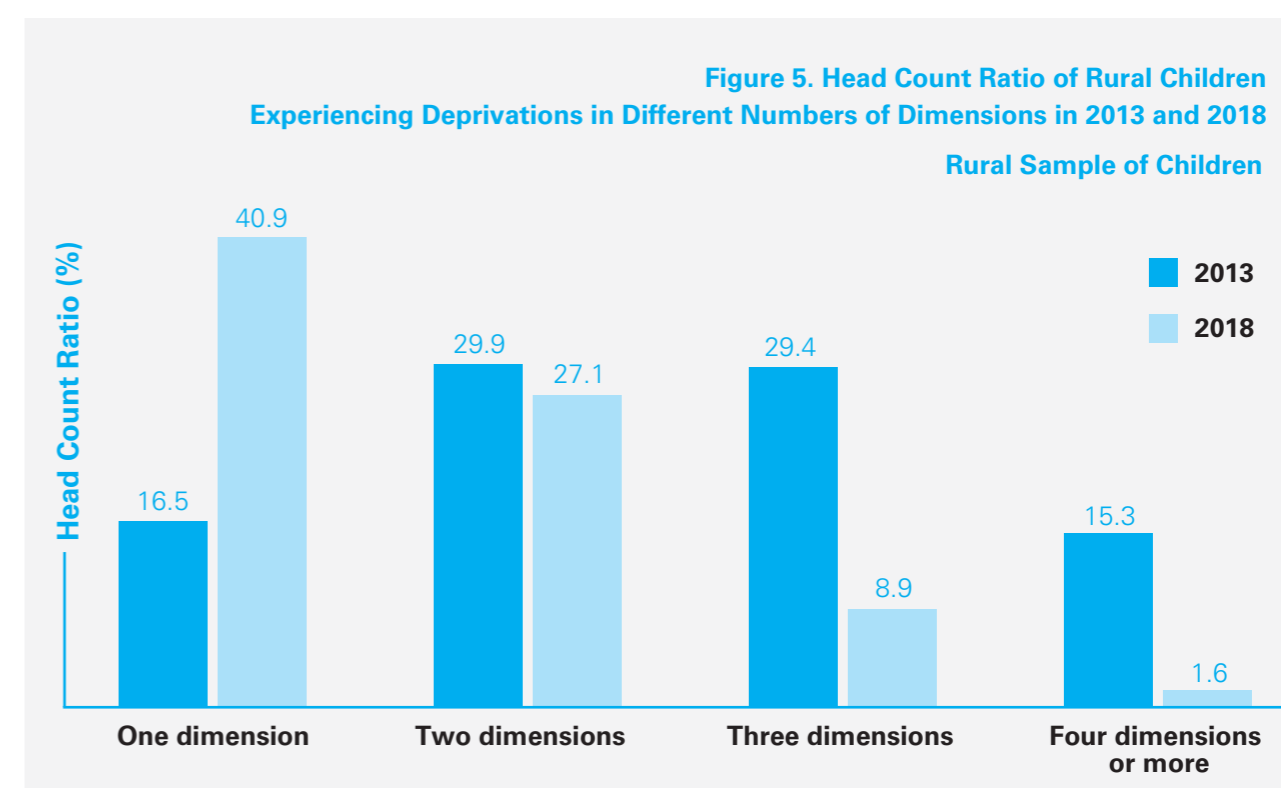
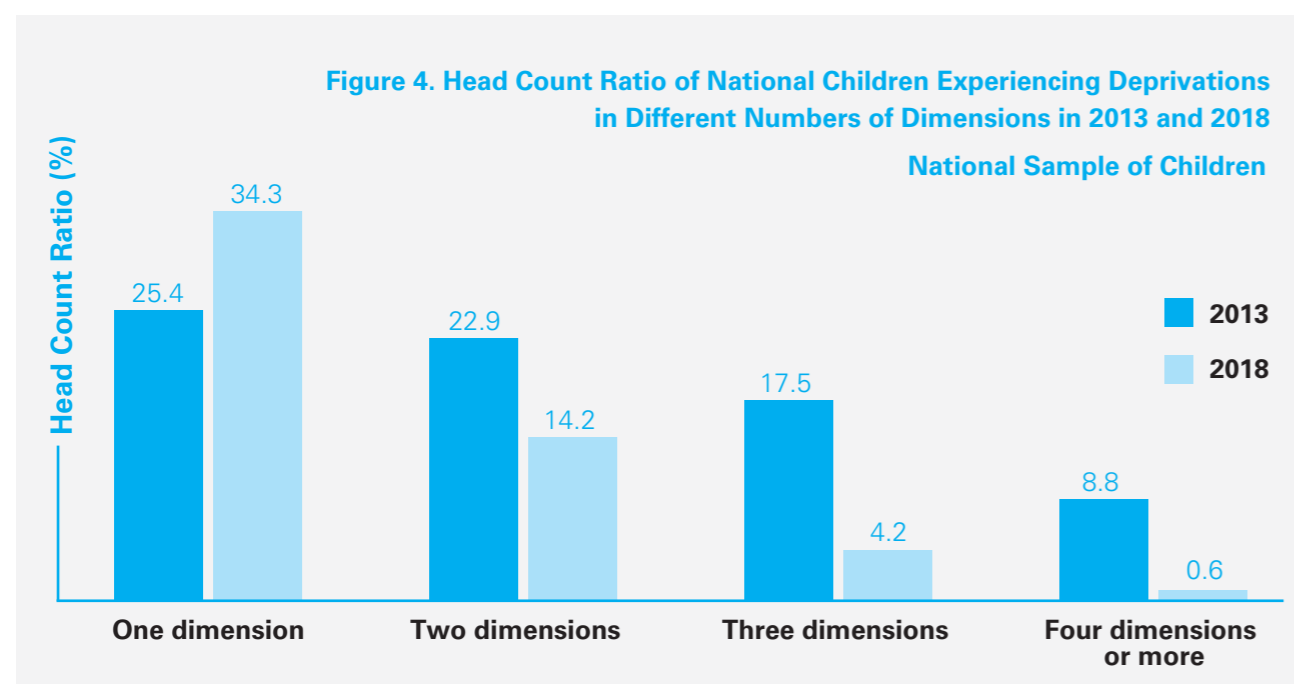
| Dimensions          | 2013<br>(n=9,720) | 2018<br>(n=12,027) | Indicators          | 2013<br>(n=9,720) | 2018<br>(n=12,027) |
|---------------------|-------------------|--------------------|---------------------|-------------------|--------------------|
| Water               | 25.29             | 11.47              | Water source        | 25.29             | 11.47              |
|                     |                   |                    | Sanitation facility | 44.39             | 30.99              |
| Sanitation facility | 44.39             | 30.99              | Toilet facility     | 40.50             | 27.53              |
|                     |                   |                    | Cooking fuel        | 27.47             | 14.14              |
| Shelter             | 13.78             | 9.91               | Overcrowding        | 12.68             | 9.37               |
|                     |                   |                    | Dwelling quality    | 1.32              | 0.88               |

**Table 2. Percentage of Children Deprived by Dimension and by Indicator in CHIP 2013 and 2018 (per cent)(cont.)**

| Dimensions        | 2013<br>(n=9,720) | 2018<br>(n=12,027) | Indicators               | 2013<br>(n=9,720) | 2018<br>(n=12,027) |
|-------------------|-------------------|--------------------|--------------------------|-------------------|--------------------|
| Education         | 6.98              | 0.24               | Not attending school     | 6.98              | 0.24               |
| Health            | 24.17             | 14.01              | Medical insurance        | 10.56             | 1.99               |
|                   |                   |                    | Healthcare facility      | 15.15             | 11.86              |
| Information       | 45.03             | 11.62              | Computer or mobile phone | 45.03             | 11.62              |
| Consumer durables | 3.59              | 0.28               | Consumer durables        | 3.59              | 0.28               |

Figures 4-7 show head count ratios of children experiencing deprivations in different numbers of dimensions in 2013 and 2018 among the respective national, rural, urban, and migrant samples of children. The findings in national (Figure 4) and migrant (Figure 7) children are very similar. **In the national and migrant samples, the share of children experiencing deprivations in two or**

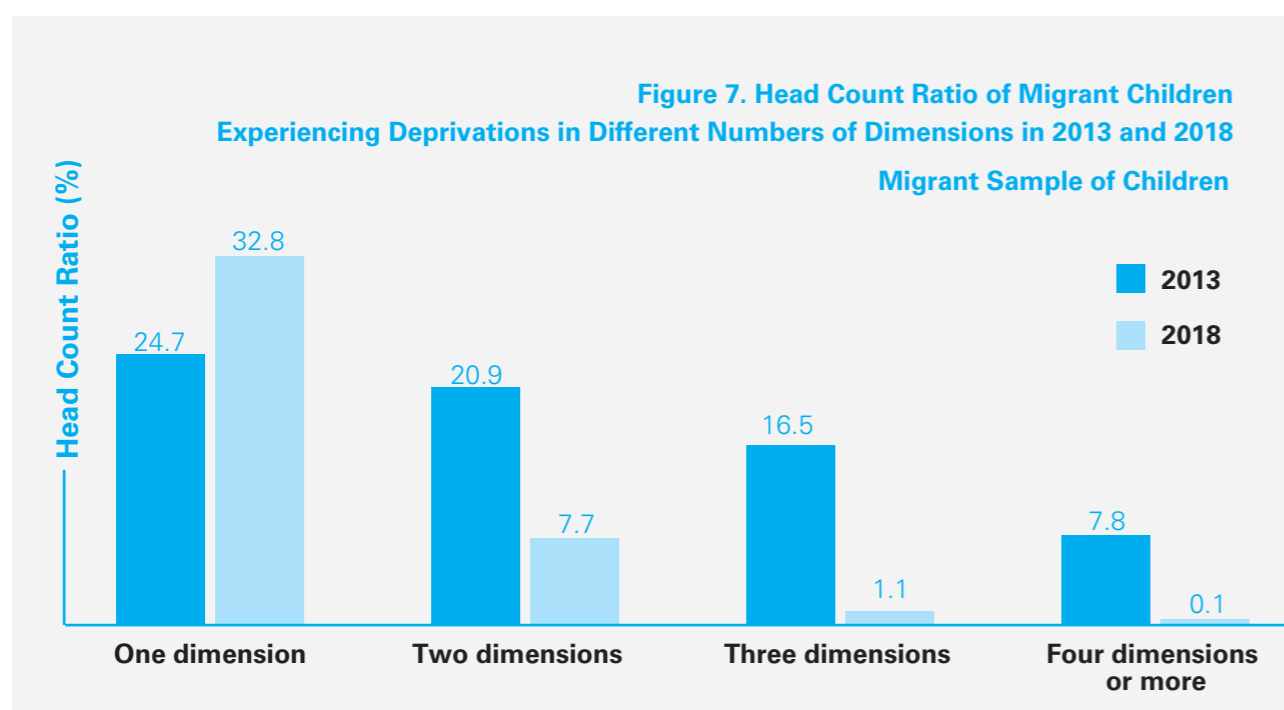
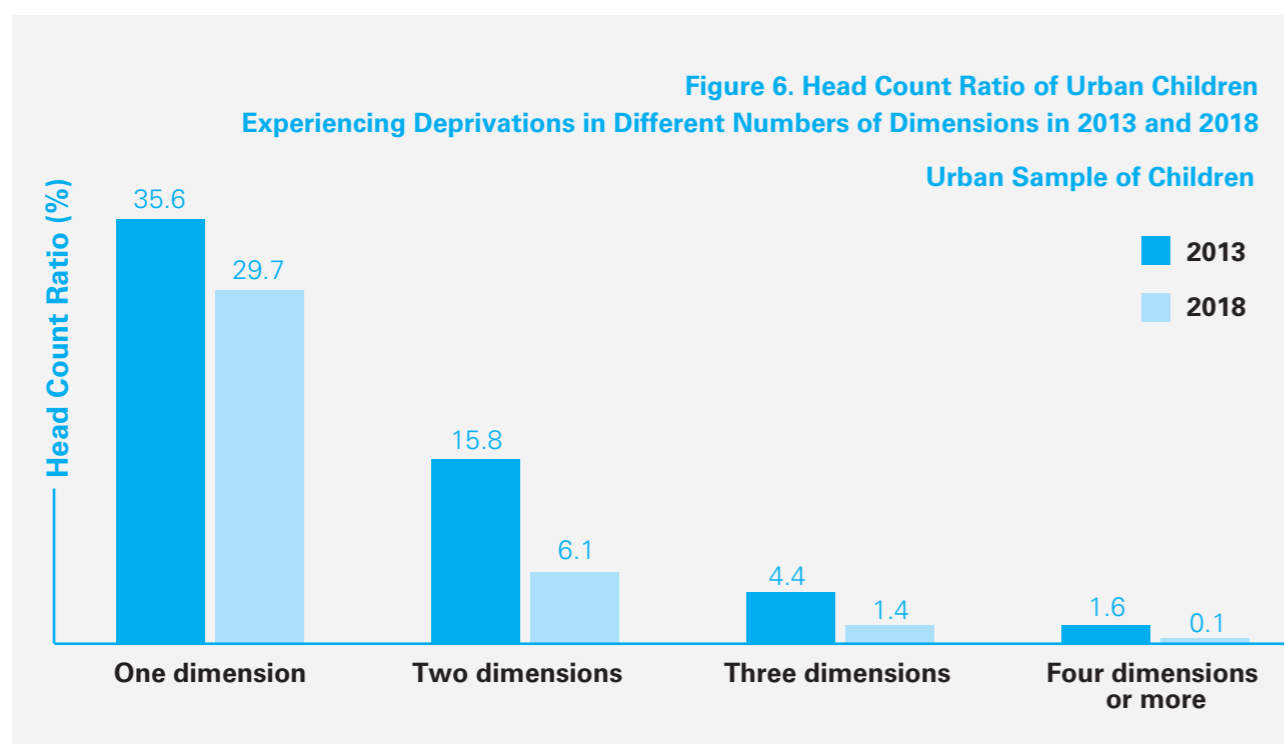
**more dimensions declined from 2013 to 2018, indicating a reduction of multidimensional child poverty incidence during this period.**



Specifically, in both the national and migrant samples, in 2013, around one fourth of children experienced deprivation in one dimension, followed by two dimensions (around 20 per cent), three dimensions (around 17 per cent), and four or more dimensions (around 8 per cent). In 2018, a larger proportion of children experienced one dimension of deprivation only (around one third) compared to 2013 (one fourth), followed by two dimensions (14.2 per cent in the national sample and 7.7 per cent in the migrant sample), and much smaller proportions of children suffered from three or more dimensions of deprivations (4.8 per cent in the national samples and 1.2 per cent in the migrant samples).

(41 per cent) experienced only one dimension of deprivation, followed by two dimensions (27 per cent), three dimensions (9 per cent), and four or more dimensions (2 per cent). **These changes reflect a dramatic decline in multidimensional child poverty in rural China from 2013 to 2018.**

The patterns are different in the rural (Figure 5) and urban (Figure 6) samples. Among rural children, in 2013, the majority experienced deprivations in two or three dimensions (around 60 per cent in total), with about 16 per cent deprived in either one or four or more dimensions. This pattern changed dramatically in 2018, when the majority of children



**The declines in child multidimensional poverty from 2013 to 2018 were much less dramatic in urban China.** In 2013, about 36 per cent of urban children experienced deprivation in one dimension only, followed by two dimensions (16 per cent), three dimensions (4 per cent), and four or more dimensions (2 per cent). The head count ratios in each of these four categories declined slightly by 2018, with the largest group still being those suffering from deprivation in one dimension (30 per cent).

### 4.3 Child MPI in China: Gender Differences

**Table 3. Child Multidimensional Poverty by Gender Groups in CHIP 2013 and 2018**

|                 | N     | Head count ratio (H in %) | Deprivation intensity (A in %) | Adjusted head count ratio ( $M_0=H*A$ ) |
|-----------------|-------|---------------------------|--------------------------------|---|
| <b>2013</b>     |       |                           |                                |   |
| <b>National</b> |       |                           |                                |   |
| Boys            | 5,216 | 49.36                     | 23.17                          | 0.114                                   |
| Girls           | 4,504 | 48.70                     | 23.28                          | 0.113                                   |
| <b>Rural</b>    |       |                           |                                |   |
| Boys            | 3,532 | 73.94                     | 32.68*                         | 0.242                                   |
| Girls           | 2,974 | 75.47                     | 33.66                          | 0.254                                   |
| <b>Urban</b>    |       |                           |                                |   |
| Boys            | 1,428 | 21.01                     | 12.37                          | 0.026                                   |
| Girls           | 1,299 | 22.43                     | 12.81                          | 0.029                                   |
| <b>Migrant</b>  |       |                           |                                |   |
| Boys            | 256   | 48.89                     | 22.34                          | 0.109                                   |
| Girls           | 231   | 40.87                     | 20.96                          | 0.086                                   |

**Table 3. Child Multidimensional Poverty by Gender Groups in CHIP 2013 and 2018(cont.)**

|                 | N     | Head count ratio<br>(H in %) | Deprivation intensity<br>(A in %) | Adjusted head count ratio<br>( $M_0=H*A$ ) |
|-----------------|-------|------------------------------|-----------------------------------|--|
| <b>2018</b>     |       |                              |                                   |  |
| <b>National</b> |       |                              |                                   |  |
| Boys            | 5,622 | 18.34*                       | 10.91*                            | 0.020                                      |
| Girls           | 6,405 | 19.88                        | 11.39                             | 0.023                                      |
| <b>Rural</b>    |       |                              |                                   |  |
| Boys            | 3,005 | 36.49                        | 17.94*                            | 0.065                                      |
| Girls           | 2,673 | 39.00                        | 18.81                             | 0.073                                      |
| <b>Urban</b>    |       |                              |                                   |  |
| Boys            | 2,557 | 7.26                         | 6.62                              | 0.005                                      |
| Girls           | 2,241 | 7.93                         | 6.64                              | 0.005                                      |
| <b>Migrant</b>  |       |                              |                                   |  |
| Boys            | 843   | 8.48                         | 7.10                              | 0.006                                      |
| Girls           | 708   | 9.22                         | 7.71                              | 0.007                                      |

**Notes:** T test is used to detect significant differences across the gender groups; significance level is indicated as follows: \*  $p < 0.05$ .

Table 3 compares the child multidimensional poverty in the respective national, rural, urban, and migrant samples across gender groups (boys vs. girls) and tracks how they changed from 2013 to 2018. Overall, we find few gender differences in child multidimensional poverty. The multidimensional deprivation intensity was higher for girls than for boys in rural China in both years, indicating that rural girls on average experienced deprivations in more dimensions than rural boys, though the magnitude of the difference remained small. Gender difference was not found in the child multidimensional incidence rate or the adjusted head count ratio in rural areas, nor was there any significant gender difference in MPI among urban and migrant children.

#### 4.4 Child MPI in China: Age Group Differences

Table 4 displays the child multidimensional poverty incidence rates by child age groups and their changes from 2013 to 2018. We group children into three age groups: 1) 0-5 years old; 2) 6-14 years old; and 3) 15-17 years old. The age group of 6-14 years old is used as the reference group to test between-group differences. We find that, in the national sample, no age group differences are detected in 2013, but in 2018, young children (i.e., 0-5 years old) had significantly lower multidimensional poverty rates while older children (i.e., 15-17 years old) had

higher multidimensional poverty rates.<sup>9</sup> In the rural sample, compared to children 6-14 years old, young children had lower multidimensional poverty rates in 2013 (but not in 2018) while older children had higher multidimensional poverty rates

in 2018 (but not in 2013). Significant age group differences in child multidimensional poverty rates are not detected among urban or migrant children in either 2013 or 2018.

**Table 4. Child Multidimensional Poverty Incidence Rate by Age Groups in CHIP 2013 and 2018**

|                 | 2013  |                            | 2018  |                            |
|-----------------|-------|----------------------------|-------|----------------------------|
|                 | N     | Incidence Rate<br>(H in %) | N     | Incidence Rate<br>(H in %) |
| <b>National</b> |       |                            |       |                            |
| 0-5 years old   | 2,577 | 47.69                      | 2,602 | 16.45**                    |
| 6-14 years old  | 5,278 | 49.98                      | 6,952 | 19.27                      |
| 15-17 years old | 1,865 | 48.24                      | 2,473 | 21.30*                     |
| <b>Rural</b>    |       |                            |       |                            |
| 0-5 years old   | 1,779 | 70.49***                   | 1,056 | 35.91                      |
| 6-14 years old  | 3,474 | 76.58                      | 3,410 | 37.18                      |
| 15-17 years old | 1,253 | 75.10                      | 1,212 | 40.56*                     |
| <b>Urban</b>    |       |                            |       |                            |
| 0-5 years old   | 675   | 20.45                      | 1,138 | 6.64                       |
| 6-14 years old  | 1,507 | 22.43                      | 2,628 | 7.67                       |
| 15-17 years old | 545   | 21.18                      | 1,032 | 8.37                       |
| <b>Migrant</b>  |       |                            |       |                            |
| 0-5 years old   | 123   | 45.97                      | 408   | 10.25                      |
| 6-14 years old  | 297   | 46.51                      | 914   | 7.59                       |
| 15-17 years old | 67    | 38.08                      | 229   | 11.22                      |

**Notes:** We test whether the 0-5 and 15-17 years old groups had significantly different poverty incidence rates as compared to the 6-14 years old group. Significance level is indicated as follows: \*  $p < 0.05$ , \*\*  $p < 0.01$ , and \*\*\*  $p < 0.001$ .

<sup>9</sup>—This report does not fully capture the deprivations experienced by children aged 0-5 due to lack of measures such as nutrition and early childhood education. In comparison, we measured whether children aged 6-16 were attending school, which increased the chance that children in the 6-16 age group might be estimated to be in multidimensional poverty.

In summary, results in this chapter show that child multidimensional poverty incidence rate, intensity, and adjusted head count ratio (MPI) all declined substantially from 2013 to 2018, but rural children remained disproportionately experiencing multidimensional poverty as compared to their urban and migrant peers. The pace of decline in the multidimensional poverty rates for migrant children during this period was faster than among rural and urban children.

Regarding gender group differences, boys and girls had similar child multidimensional poverty incidence rates and MPI across samples and years. The only gender difference identified was that the multidimensional deprivation intensity was higher for girls than for boys in rural China in both years. No age group differences were detected in 2013 in the national sample, but in 2018, young children (i.e., 0-5 years old) had significantly lower multidimensional poverty rates while older children (i.e., 15-17 years old) had higher multidimensional poverty rates. This is driven by age group differences in the rural sample as no age group differences were detected in the urban or migrant samples.

## CHAPTER 5: CHILD MULTIDIMENSIONAL VERSUS INCOME POVERTY IN CHINA

In this chapter, we investigate the overlap and divergence of child multidimensional and income poverty. First, we compare the child multidimensional and income poverty rates in the respective national, rural, urban, and migrant samples and across 2013 and 2018. Next, we map the child multidimensional poverty rates along the income distribution to show the extent to which children in different income groups suffer from multidimensional poverty. We then classify children into four mutually exclusive groups (non-poor, multidimensional poor only, income poor only, and both multidimensional and income poor) and examine how these distributions varied by sample and changed over time. Lastly, we investigate which demographic and socioeconomic characteristics were significantly predictive of child poverty within each sample and in the respective two years.

### 5.1 Child Multidimensional and Income Poverty Rates: A Comparison

Table 5 presents a comparison of child multidimensional and income poverty rates in the respective national, rural, urban, and migrant samples from 2013 to 2018. This comparison reveals that the child multidimensional poverty rate was much higher than the income poverty rate across all samples and in both 2013 and 2018. Both poverty rates declined from 2013 to 2018

in the national, rural, and migrant samples, with the magnitude of the reduction greater in child multidimensional poverty rate than in the income poverty rate. The urban child multidimensional poverty rate also declined substantially from 2013 to 2018, but the urban child income poverty rate remained at 1.15 per cent in both years. These findings demonstrate that multidimensional poverty measures capture more deprivations and hardships experienced by children than income poverty measures based on the official national rural poverty line currently adopted by the Chinese government.

Specifically, in the national sample, the child multidimensional poverty rate was 49 per cent in 2013, much higher than the income poverty rate of 6 per cent. By 2018, the poverty rates declined to 19 per cent and 3 per cent, respectively, with the magnitude of the reduction greater in the child multidimensional poverty rate than in the income poverty rate. **Rural children had much higher multidimensional and income poverty rates than their urban and migrant peers. This disparity persisted despite some narrowing from 2013 to 2018.**



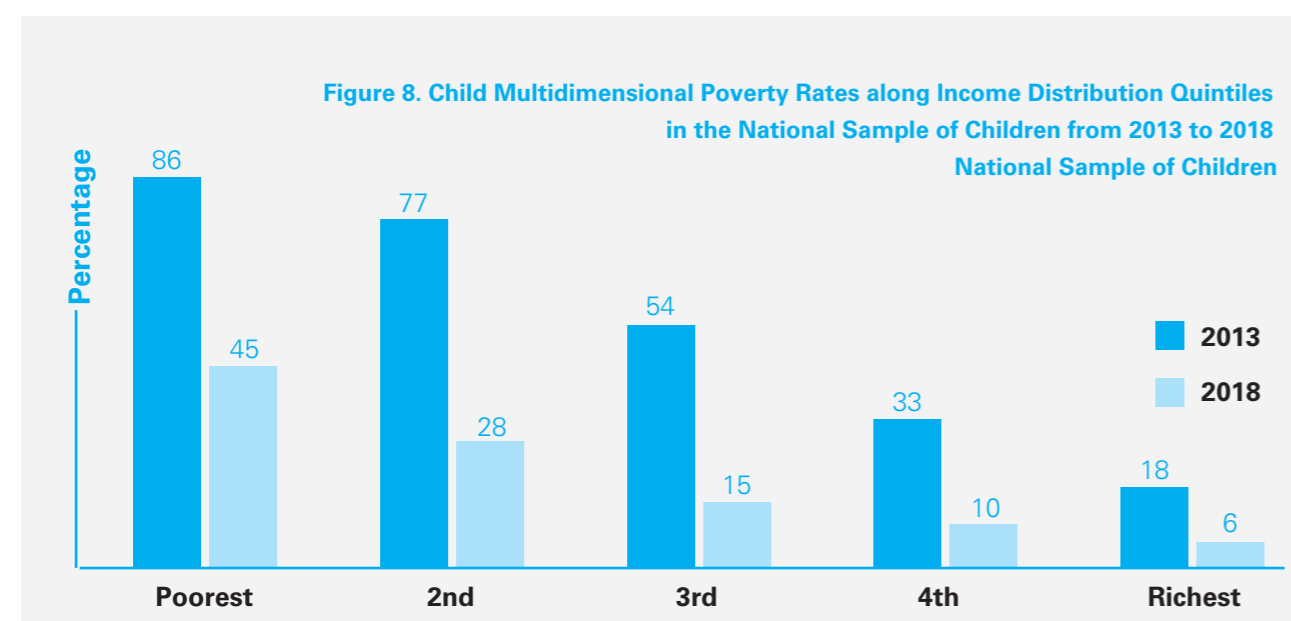
**Table 5. Comparison of Child Multidimensional and Income Poverty Rates in 2013 and 2018 (per cent)**

| Poverty Definition | 2013             |        | 2018             |        |
|--------------------|------------------|--------|------------------|--------|
|                    | Multidimensional | Income | Multidimensional | Income |
| National           | 49.05            | 5.79   | 19.06            | 3.29   |
| Rural              | 74.64            | 10.95  | 37.67            | 6.91   |
| Urban              | 21.69            | 1.15   | 7.57             | 1.15   |
| Migrant            | 45.22            | 2.33   | 8.82             | 0.98   |

## 5.2 Child Multidimensional Poverty Rates along the Income Distribution

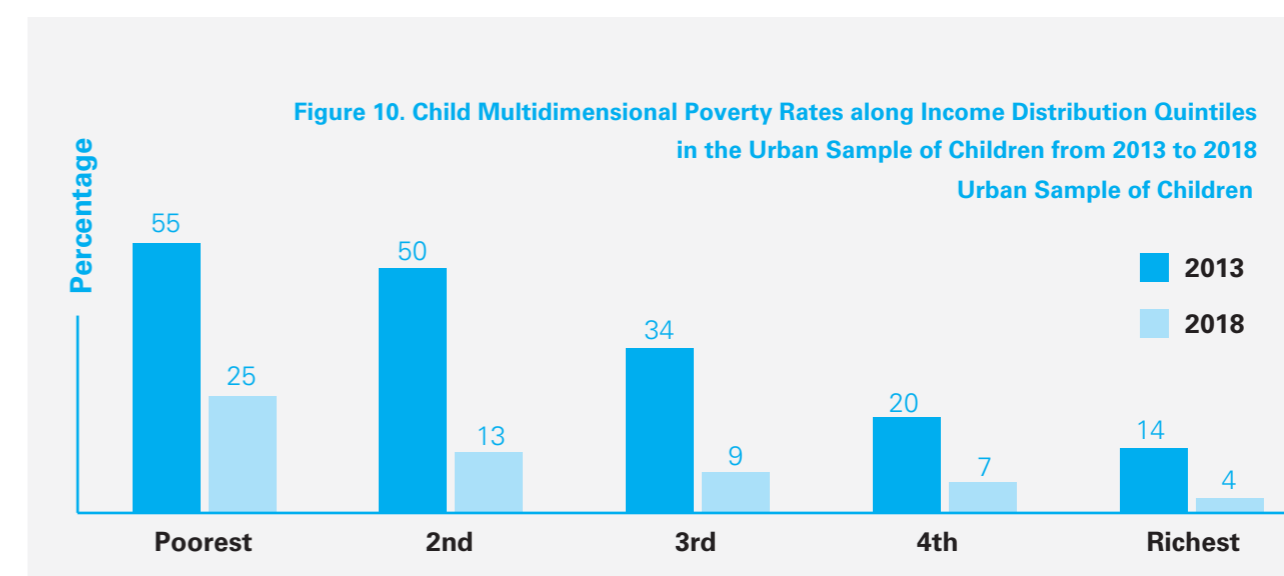
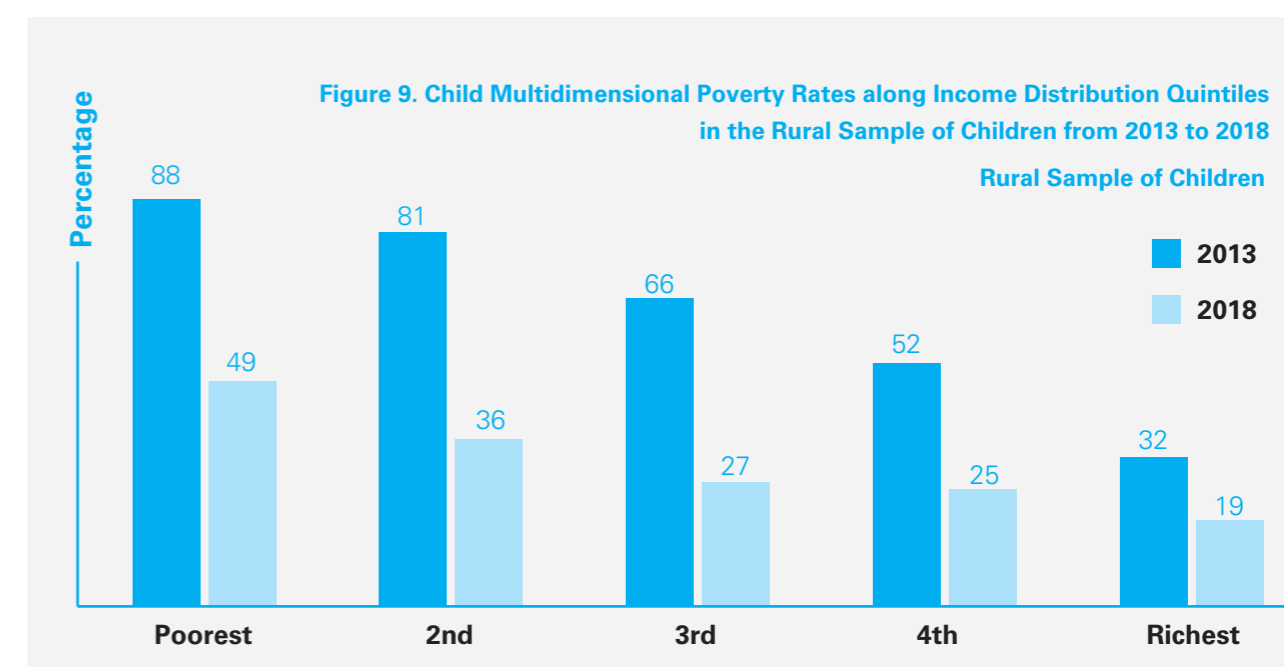
Figures 8-11 map the child multidimensional poverty rates along income distribution quintiles, calculated based on household per capita income, to show the extent to which children in different income groups suffer from multidimensional poverty in the respective national, rural, urban, and migrant samples and how they changed from 2013 to 2018. Overall, as expected, **child multidimensional poverty rate (H) became**

**lower as household incomes became higher in nearly all samples** (except for in the migrant sample in 2018), **manifesting a strong correlation between child multidimensional and income poverty**. It is important to note that, child multidimensional poverty existed even among the top income quintile group, demonstrating the importance of studying not only income but also multidimensional deprivations for all population groups. **From 2013 to 2018, child multidimensional poverty rates declined substantially in all income quintile groups within the respective populations.**



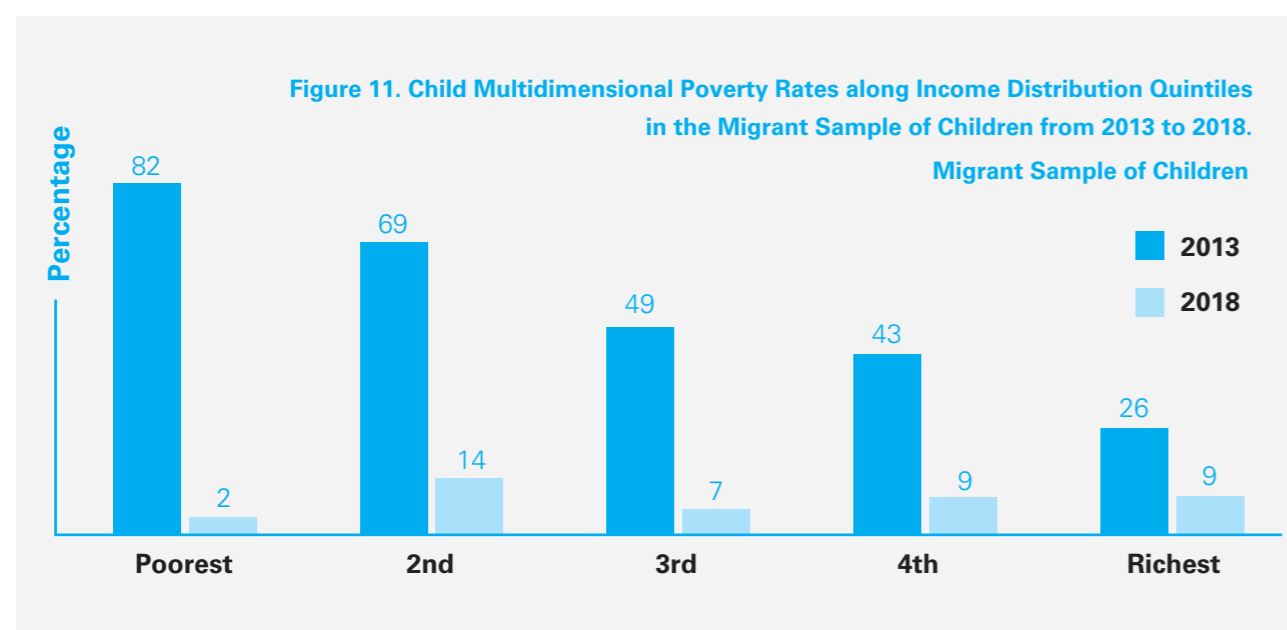
Specifically, rural children had much higher multidimensional poverty rates along the income distribution than their urban and migrant peers in both years. Despite declines during this period, the multidimensional poverty rate among the fourth income quintile of rural children was still 25 per cent in 2018, equivalent to the rate among the lowest income quintile of urban children in that year. In comparison, the multidimensional

poverty rate among the lowest income quintile of rural children was 49 per cent in 2018, while that among the highest income quintile of urban children was only 4 per cent (the rate was 19 per cent among the highest income quintile of rural children). These results reveal the persistent rural-urban gap in child multidimensional poverty along and across the income distributions.



Across the samples, the migrant children saw the greatest declines in multidimensional poverty rates along the income distribution from 2013 to 2018. In 2013, the migrant child multidimensional poverty rates were slightly below those among the rural children but much higher than among the urban children along the income distribution

groups. By 2018, migrant children had significantly lower multidimensional poverty rates along the income distribution as compared to their rural peers. Surprisingly, the lowest income group of migrant children had the lowest multidimensional poverty rate (2 per cent) in 2018 as compared to all other groups.



### 5.3 Distribution of Child Multidimensional and Income Poverty Groups

Next, we classify children into four mutually exclusive groups according to their multidimensional and income poverty status, including non-poor, multidimensional poor only, income poor only, and both multidimensional and income poor, to examine how they varied by sample and changed over time. Table 6 presents the frequency distributions of these four groups in the respective national, rural, urban, and migrant samples and how they changed from 2013 to 2018.

**Table 6. Frequency Distribution of Income and Multidimensional Poverty Groups in 2013 and 2018 (per cent)**

|             | Non-poor | Multidimensional poor only | Income poor only | Multidimensional and income poor |
|-------------|----------|----------------------------|------------------|----------------------------------|
| <b>2013</b> |          |                            |                  |                                  |
| National    | 50.16    | 44.05                      | 0.79             | 5.00                             |
| Rural       | 24.39    | 64.66                      | 0.96             | 9.99                             |
| Urban       | 77.52    | 21.34                      | 0.80             | 0.35                             |
| Migrant     | 54.61    | 43.06                      | 0.17             | 2.17                             |
| <b>2018</b> |          |                            |                  |                                  |
| National    | 79.11    | 17.59                      | 1.83             | 1.46                             |
| Rural       | 59.00    | 34.09                      | 3.33             | 3.57                             |
| Urban       | 91.52    | 7.33                       | 0.91             | 0.24                             |
| Migrant     | 90.20    | 8.82                       | 0.98             | 0.00                             |

**Note:** Child multidimensional poverty is measured by the incidence rate (H); child income poverty is measured using the national rural poverty line of 2,300 yuan per person per year in 2010 prices, with the urban line calculated at 1.4 times that of the rural line.

Results in Table 6 show that, in 2013, among national children, 50 per cent were non-poor, followed by multidimensional poor only (44 per cent), both multidimensional and income poor (5 per cent), and income poor only (0.8 per cent). In 2018, a slightly different picture was found – the majority of national children (79 per cent) were non-poor, followed by multidimensional poor only (18 per cent), income poor only (2 per cent), and both multidimensional and income poor (1 per cent). The findings indicate that **child poverty as a whole declined substantially from 2013 to 2018**. Despite a slightly greater share of children suffering from income poverty only in 2018 (2 per cent) as compared to 2013 (0.8 per cent), the shares of the multidimensional poor only (from 44 per cent to 18 per cent) and both multidimensional and income poor (from 5 per cent to 1 per cent) declined significantly during this period.

Comparing the patterns across the rural, urban, and migrant samples, we find that **higher proportions of rural children were in the groups of income poor only, multidimensional poor only, and both multidimensional and income poor than their urban and migrant peers in these three groups in both 2013 and 2018**. One observation to note is that in 2013, a smaller proportion of migrant children (0.2 per cent) were in the income poor only but a larger proportion of them (2 per cent) were in the group of both multidimensional and income poor. However, this pattern is reversed to be 1 per cent versus 0 per cent in 2018, suggesting an improvement in the multidimensional living conditions for migrant children during this period.

Table 6 also reveals that **child income poverty overlapped with multidimensional poverty to a greater extent in 2013 than 2018**, as

indicated by the larger proportions of the group both multidimensional and income poor in all samples in 2013 than 2018. Indeed, the closer the income poverty rate gets to zero (which is more the case in 2018 than in 2013), the more inadequate it becomes for proxying non-income dimensions of deprivation. In both years, the multidimensional measure captured a much larger share of children who were deprived than the income poverty measure based on the official national rural poverty line.

## 5.4 Sociodemographic Characteristics Associated with Child Poverty

Tables A1-A3 (see Appendix) present the results of estimating which demographic and socioeconomic characteristics were significantly associated with the relative risk ratios (or odds ratios) of a child being in poverty groups in 2013 and 2018. The reference group is the non-poor group and all regressions cluster standard errors at the province level to account for shared characteristics and collinearities within each province. In the national and rural samples, multinomial logistic regressions are run to estimate the relative risk ratios of being in one of the following three groups in comparison with being in the non-poor group: multidimensional poor only, income-poor only, and both multidimensional and income poor. In the urban and migrant samples, due to the small size of the poverty groups, logistic regressions are run to estimate the odds ratios of being in poverty (i.e., the three poverty groups combined into one) as compared to be non-poor.

The results show that, **across samples and years, low education of household head was persistently associated with greater odds of children being in poverty. Children in the western region of rural areas were more likely to experience poverty, but the**

**same pattern was not found among urban and migrant children.** Specifically, in both years among the national sample (Table A1), household head being unmarried and having primary school education level or less and having more members with physical disability in the household were associated with greater odds of being in poverty, especially in the most vulnerable group of being both multidimensional and income poor. Compared to urban children, rural children had persistently greater odds of being in poverty, especially being in the both multidimensional and income poor group. Migrant children, however, had greater odds of being poor than urban children in 2013, but this pattern was reversed by 2018.

**Among the rural sample, the patterns of demographic and socioeconomic predictors identified in the national sample mostly remained stable, with living in the western region the most persistent predictor of being in poverty in both years,** as shown in Table A2. Specifically, household head's low education (i.e., primary school or less) was associated with greater odds of being in any of the three poverty groups in 2013 but only multidimensional poverty in 2018. Number of household members with physical disability was associated with greater odds of being in multidimensional poverty (by itself or along with income poverty in 2013 and only along with income poverty in 2018). Having more children and living in the central region were both significant predictors of being in any of the three poverty groups in 2013 but not 2018.

As shown in Table A3, **in the urban sample, household head's low education (i.e., primary school or less) and number of children were significantly associated with greater odds of being in poverty in both years.** In the migrant sample, child age was associated with lower odds of being in poverty in 2013 but not in 2018. Household head being an ethnic minority and having low education (i.e., primary school or less) were associated with greater odds of being in poverty in 2013 but not in 2018. Household

head's self-rated health status was associated with greater odds of being in poverty in 2018 but not in 2013.

Overall, results in this chapter show that the child multidimensional poverty rate was much higher than the income poverty rate across all samples and in both 2013 and 2018. Rural children had much higher multidimensional and income poverty rates than their urban and migrant peers, and this disparity gap persisted despite some narrowing from 2013 to 2018. As expected, higher income quintile groups had lower child multidimensional poverty rates in nearly all samples. Still, rural children had much higher multidimensional poverty rates along the income distribution than their urban and migrant peers in both years.

Considering both multidimensional and income poverty, child poverty as a whole declined substantially from 2013 to 2018. Child income poverty overlapped with multidimensional poverty to a greater extent in 2013 than 2018. Regarding sociodemographic characteristics associated with child poverty, across samples and years, low education of household head was persistently associated with greater odds of children being in poverty. Rural children in the western region were more likely to experience poverty, but the same was not true for urban or migrant children in the western region.

# CHAPTER 6: CONCLUSION AND POLICY IMPLICATIONS

## 6.1 Summary of Findings

This study uses the China Household Income Project (CHIP) 2013 and 2018 datasets to provide evidence on the levels, trends, and predictors of child multidimensional and income poverty in China. Using the Alkire-Foster (2007) method to estimate child multidimensional poverty, we find that child poverty as a whole declined substantially from 2013 to 2018. Nationally, the share of children in multidimensional poverty dropped from 49 per cent in 2013 to 19 per cent in 2018. Large disparities were found in multidimensional poverty rates across rural, urban, and migrant children, with rural children persistently more likely to be in multidimensional poverty than their urban and migrant peers. The disparity narrowed somewhat from 2013 to 2018.

In terms of gender and age group differences, the multidimensional deprivation intensity was lower for boys than for girls in rural China in both years, but gender difference was not found in the multidimensional poverty rates in rural areas, nor was there any significant gender difference in any of the multidimensional poverty measures among urban and migrant children. No age group differences were detected in 2013 in the national population, but in 2018, young children (i.e., 0-5 years old) had significantly lower multidimensional poverty rates while older children (i.e., 15-17 years old) had higher multidimensional poverty rates. This was driven by age group differences in the rural population as no age group differences were detected in the urban or migrant populations.

Comparing child multidimensional and income poverty, we find that the child multidimensional poverty rate was much higher than the income poverty rate across rural, urban, and migrant population groups and in both 2013 and 2018. Rural children were more likely to be in poverty—either multidimensional or income poverty or both—than their urban and migrant peers in both years, despite narrower gaps in 2018 than in 2013. Child multidimensional poverty overlapped with income poverty to some extent, and the overlap was greater in 2013 than 2018. Still, even rural children in higher income quintile groups had relatively high multidimensional poverty rates as compared to urban and migrant children.

When both multidimensional and income poverty are considered, we find that child poverty as a whole declined substantially from 2013 to 2018. Across population groups and years, low education attainment of household head was persistently associated with greater odds of children being in poverty. Rural children in the western region were more likely to be in poverty as compared to rural children in the eastern or central region or urban and migrant children in any region.

## 6.2 Policy Implications

The findings have important policy implications to prioritize the measurement and addressing of child poverty and deprivations in China's national policies and programs. First, this study

shows that measuring child poverty using income and multidimensional measures provide richer information regarding the monetary and material deprivations among children and their variations across different population groups than when only monetary measures are used. Meanwhile, this study also shows that the lack of detailed information regarding nutrition, indoor pollution, disability, and mental health limited the understanding of child deprivation in these important dimensions. As China works to design its post-2020 poverty measurement and monitoring systems, child-specific measures—including both monetary and multidimensional ones—should be a focus. It is essential to design and carry out nationally representative, longitudinal survey data collection focusing on children and their families in order to provide accurate and dynamic monitoring of child poverty that would inform policy decisions on an ongoing basis.

The study finds substantial declines in child poverty from 2013 to 2018, which may partly be attributed to the policies and programs addressing rural extreme poverty during this period. However, despite the focus on rural poverty, rural children—especially those in the western region—remain much more likely to be in income or multidimensional poverty, or both, than their urban and migrant peers. In addition, this study also shows overlap between income and multidimensional poverty, especially among rural children who experience multidimensional poverty even among the highest income quintiles. These findings suggest that providing income support only is not enough. There needs to be continued and expanded support to improve the economic resources and living conditions of rural children and their families, especially those in the western region. These include benefits specifically targeting children, such as child allowances, and targeting families with children, such as childcare

subsidies. These also include in-kind benefits such as nutrition, childcare, education, and health. These policies and programs should be devised from a child-centered perspective in order to build a strong foundation that would support the growth and development of children, especially rural children from less developed regions.

Child-centered policies and programs should be sensitive to the specific needs of different child subgroups such as age and gender. In terms of age, early childhood is a particularly important stage that has received increasing attention and interventions in China. China has prioritized early childhood development under the National Plan of Action for Children (2011-2020)<sup>10</sup>, focusing on early childhood health, nutrition and education. Latest monitoring report released by the National Bureau of Statistics in 2020 shows positive results such as further decline in the infant and under five mortality rates, under five morbidity and developmental delay, vaccination, and enrollment in early childhood education for children between 3 and 6 years old. Programs should be expanded to support the growth and development of all children, with a particular focus on children from poor rural areas and paying special attention to the needs of early childhood and girls who tend to have fewer resources and opportunities than boys.

Despite the declines in child poverty from 2013 to 2018, the rural-urban-migrant gaps persisted, with rural children still much more likely to experience poverty and deprivations, especially those in the western region. It is important to bear in mind that such wide gaps cannot be removed in a short time and need to be addressed with willful policy decisions to promote equity and well-being. For rural children, inadequate and uneven resource allocation to essential public services leave them behind those living in the

10— National Bureau of Statistics of People's Republic of China (2020). 2019年《中国儿童发展纲要(2011-2020)》统计监测报告 [2019 Statistical Bulletin of the National Plan of Action for Children of China (2011-2022)] (in Chinese). [http://www.stats.gov.cn/tjsj/zxfb./202012/t20201218\\_1810128.html](http://www.stats.gov.cn/tjsj/zxfb./202012/t20201218_1810128.html) Accessed on 1 July 2021.

cities. Within the rural areas, resource allocation in the western region also lags behind the eastern and central regions. Structural changes that help bridge the rural-urban-migrant gaps as well as social welfare systems that enable equal access and rights can help narrow these gaps and support all children—especially those in rural areas of the western region—to reach their full potential.

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# APPENDIX

**Table A1. Multinomial Logistic Regressions on Predictors for Being in Income and Multidimensional Poor Groups in National Sample of Children**

|  | 2013              |                    |                    | 2018             |                    |                   |
|--|-------------------|--------------------|--------------------|------------------|--------------------|-------------------|
|  | Income poor only  | MDP only           | Income and MDP     | Income poor only | MDP only           | Income and MDP    |
| <b>Child characteristics</b>                         |                   |                    |                    |                  |                    |                   |
| Age  | 0.02<br>(0.03)    | -0.00<br>(0.01)    | 0.02<br>(0.02)     | 0.01<br>(0.02)   | 0.01<br>(0.01)     | 0.01<br>(0.02)    |
| Male (ref=female)                                    | 0.06<br>(0.11)    | 0.03<br>(0.05)     | 0.05<br>(0.11)     | -0.16<br>(0.09)  | -0.07<br>(0.05)    | -0.07<br>(0.10)   |
| Ethnic minority (ref=Han)                            | -0.34<br>(0.45)   | 0.17<br>(0.24)     | 0.96<br>(0.55)     | -0.64<br>(0.41)  | 0.14<br>(0.14)     | 0.28<br>(0.59)    |
| <b>Household head characteristics</b>                |                   |                    |                    |                  |                    |                   |
| Age  | -0.02<br>(0.01)   | 0.00<br>(0.00)     | 0.01<br>(0.01)     | -0.02<br>(0.01)  | -0.00<br>(0.01)    | 0.01<br>(0.01)    |
| Male (ref=female)                                    | -0.12<br>(0.51)   | 0.46***<br>(0.10)  | 0.99*<br>(0.42)    | 0.16<br>(0.23)   | 0.06<br>(0.11)     | 0.14<br>(0.29)    |
| Ethnic minority (ref=Han)                            | 0.78<br>(0.49)    | 0.13<br>(0.21)     | -0.63**<br>(0.24)  | 1.12**<br>(0.36) | 0.28<br>(0.19)     | 0.24<br>(0.20)    |
| Married (ref=unmarried)                              | -0.66<br>(0.34)   | -0.15<br>(0.12)    | -0.60**<br>(0.21)  | -0.79*<br>(0.35) | 0.09<br>(0.20)     | -0.70**<br>(0.23) |
| <b>Education level (ref. primary school or less)</b> |                   |                    |                    |                  |                    |                   |
| Junior high school                                   | -0.65*<br>(0.33)  | -0.31*<br>(0.15)   | -0.48**<br>(0.16)  | -0.42<br>(0.25)  | -0.22*<br>(0.10)   | -0.04<br>(0.22)   |
| Senior high school                                   | -0.71*<br>(0.32)  | -0.86***<br>(0.17) | -1.10***<br>(0.31) | -0.38<br>(0.33)  | -0.43**<br>(0.14)  | -0.81*<br>(0.34)  |
| More than senior high school                         | -2.62**<br>(0.93) | -1.01***<br>(0.16) | -2.02***<br>(0.54) | -0.72*<br>(0.36) | -0.93***<br>(0.17) | -1.24<br>(0.83)   |
| <b>Self-rated health status (ref. good)</b>          |                   |                    |                    |                  |                    |                   |
| Average  | 0.19<br>(0.36)    | 0.19*<br>(0.09)    | 0.25<br>(0.21)     | 0.16<br>(0.27)   | 0.22*<br>(0.11)    | 0.16<br>(0.23)    |
| Poor   | -0.11<br>(0.79)   | 0.25<br>(0.26)     | 0.25<br>(0.45)     | 0.59<br>(0.45)   | 0.24<br>(0.29)     | 0.78*<br>(0.36)   |

|  | 2013               |                    |                    | 2018                |                    |                     |
|--|--------------------|--------------------|--------------------|---------------------|--------------------|---------------------|
|  | Income poor only   | MDP only           | Income and MDP     | Income poor only    | MDP only           | Income and MDP      |
| <b>Employment status (ref. employed)</b>   |                    |                    |                    |                     |                    |                     |
| Unemployed                                 | 0.40<br>(0.48)     | 0.01<br>(0.15)     | 0.32<br>(0.22)     | 0.51*<br>(0.23)     | -0.04<br>(0.11)    | 0.12<br>(0.19)      |
| Retired                                    | -0.10<br>(0.66)    | 0.06<br>(0.25)     | -1.43<br>(0.97)    | -15.66***<br>(0.34) | 0.06<br>(0.31)     | -14.77***<br>(0.51) |
| Communist party membership                 | -0.15<br>(0.51)    | -0.12<br>(0.09)    | -0.34<br>(0.25)    | -0.42<br>(0.30)     | -0.28**<br>(0.09)  | -1.11*<br>(0.55)    |
| <b>Household characteristics</b>           |                    |                    |                    |                     |                    |                     |
| Number of children                         | 0.43**<br>(0.15)   | 0.44***<br>(0.08)  | 1.00***<br>(0.16)  | 0.04<br>(0.06)      | 0.15<br>(0.11)     | 0.30<br>(0.16)      |
| Number of older adults                     | 0.06<br>(0.23)     | -0.16**<br>(0.06)  | 0.16<br>(0.14)     | -0.05<br>(0.13)     | 0.07<br>(0.08)     | -0.11<br>(0.15)     |
| Number of working-age adults               | 0.40*<br>(0.16)    | -0.11*<br>(0.05)   | 0.28**<br>(0.10)   | 0.24**<br>(0.09)    | -0.07<br>(0.06)    | 0.11<br>(0.19)      |
| <b>Number of members reporting poor</b>    |                    |                    |                    |                     |                    |                     |
| health                                     | 0.45<br>(0.39)     | 0.30*<br>(0.15)    | 0.48*<br>(0.19)    | -0.19<br>(0.24)     | 0.13<br>(0.09)     | 0.09<br>(0.15)      |
| <b>Number of members with physical</b>     |                    |                    |                    |                     |                    |                     |
| disability                                 | 0.05<br>(0.28)     | 0.06<br>(0.08)     | 0.16*<br>(0.08)    | 0.09<br>(0.14)      | -0.02<br>(0.04)    | 0.31***<br>(0.06)   |
| <b>Hukou/residence status (ref. urban)</b> |                    |                    |                    |                     |                    |                     |
| Rural                                      | 0.62<br>(0.48)     | 1.85***<br>(0.21)  | 3.26***<br>(0.35)  | 1.37***<br>(0.30)   | 1.61***<br>(0.15)  | 2.26***<br>(0.45)   |
| Migrant                                    | -0.70<br>(0.77)    | 0.66*<br>(0.32)    | 1.61*<br>(0.75)    | -0.07<br>(0.43)     | -0.01<br>(0.27)    | -14.39***<br>(0.59) |
| <b>Region (ref. eastern)</b>               |                    |                    |                    |                     |                    |                     |
| Central                                    | 0.39<br>(0.36)     | 0.72*<br>(0.33)    | 1.12**<br>(0.40)   | 0.40<br>(0.40)      | 0.03<br>(0.27)     | 0.27<br>(0.62)      |
| Western                                    | 0.26<br>(0.35)     | 1.05**<br>(0.34)   | 1.93***<br>(0.57)  | 0.45<br>(0.33)      | 0.50<br>(0.32)     | 1.68*<br>(0.68)     |
| Intercept                                  | -4.10***<br>(0.95) | -1.84***<br>(0.48) | -8.45***<br>(1.03) | -3.77***<br>(0.68)  | -2.51***<br>(0.49) | -6.93***<br>(1.52)  |

**Note:** The reference group is non-poor in the multinomial logistic regressions. Log odds ratios are presented with standard errors in parentheses. All multinomial logistic regressions cluster standard errors at the province level. Significance levels are indicated as follows: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

**Table A2. Multinomial Logistic Regressions on Predictors for Being in Income and Multidimensional Poor Groups in Rural Sample of Children**

|  | 2013                |                    |                    | 2018             |                    |                   |
|--|---------------------|--------------------|--------------------|------------------|--------------------|-------------------|
|  | Income poor only    | MDP only           | Income and MDP     | Income poor only | MDP only           | Income and MDP    |
| <b>Child characteristics</b>                         |                     |                    |                    |                  |                    |                   |
| Age  | 0.02<br>(0.04)      | 0.00<br>(0.01)     | 0.02<br>(0.02)     | 0.01<br>(0.02)   | 0.01<br>(0.01)     | 0.00<br>(0.02)    |
| Male (ref=female)                                    | 0.13<br>(0.16)      | 0.00<br>(0.06)     | 0.03<br>(0.11)     | -0.16<br>(0.11)  | -0.06<br>(0.07)    | -0.09<br>(0.10)   |
| Ethnic minority (ref=Han)                            | -0.15<br>(0.56)     | 0.23<br>(0.35)     | 1.08<br>(0.63)     | -0.46<br>(0.51)  | 0.36<br>(0.24)     | -0.01<br>(0.99)   |
| <b>Household head characteristics</b>                |                     |                    |                    |                  |                    |                   |
| Age  | -0.02<br>(0.01)     | 0.00<br>(0.00)     | 0.01<br>(0.01)     | -0.01<br>(0.01)  | -0.00<br>(0.01)    | 0.01<br>(0.01)    |
| Male (ref=female)                                    | -0.24<br>(0.55)     | 0.68**<br>(0.23)   | 1.11*<br>(0.44)    | -0.20<br>(0.36)  | 0.06<br>(0.25)     | 0.25<br>(0.38)    |
| Ethnic minority (ref=Han)                            | 0.28<br>(0.56)      | -0.13<br>(0.29)    | -0.94**<br>(0.34)  | 1.03*<br>(0.46)  | 0.09<br>(0.16)     | 0.44<br>(0.59)    |
| Married (ref=unmarried)                              | -0.88<br>(0.47)     | -0.19<br>(0.16)    | -0.65*<br>(0.25)   | -0.76*<br>(0.37) | -0.03<br>(0.24)    | -0.74**<br>(0.27) |
| <b>Education level (ref. primary school or less)</b> |                     |                    |                    |                  |                    |                   |
| Junior high school                                   | -0.55<br>(0.35)     | -0.28<br>(0.19)    | -0.43*<br>(0.17)   | -0.46<br>(0.26)  | -0.15<br>(0.10)    | -0.02<br>(0.19)   |
| Senior high school                                   | -1.07*<br>(0.44)    | -0.86***<br>(0.20) | -1.10***<br>(0.33) | -0.55<br>(0.52)  | -0.30*<br>(0.15)   | -0.64<br>(0.36)   |
| More than senior high school                         | -14.52***<br>(0.56) | -1.19***<br>(0.22) | -1.83***<br>(0.52) | -0.23<br>(0.35)  | -0.75***<br>(0.19) | -0.65<br>(0.70)   |
| <b>Self-rated health status (ref. good)</b>          |                     |                    |                    |                  |                    |                   |
| Average  | 0.29<br>(0.41)      | 0.21*<br>(0.08)    | 0.28<br>(0.20)     | 0.06<br>(0.26)   | 0.22<br>(0.14)     | 0.11<br>(0.23)    |
| Poor   | -0.04<br>(0.93)     | 0.29<br>(0.32)     | 0.26<br>(0.50)     | 0.53<br>(0.55)   | 0.39<br>(0.29)     | 0.59<br>(0.42)    |

|   | 2013                |                   |                    | 2018                |                   |                     |
|---|---------------------|-------------------|--------------------|---------------------|-------------------|---------------------|
|   | Income poor only    | MDP only          | Income and MDP     | Income poor only    | MDP only          | Income and MDP      |
| <b>Employment status (ref. employed)</b>          |                     |                   |                    |                     |                   |                     |
| Unemployed  | 0.20<br>(0.58)      | 0.11<br>(0.15)    | 0.41<br>(0.21)     | 0.07<br>(0.32)      | -0.13<br>(0.14)   | 0.10<br>(0.23)      |
| Retired   | -13.95***<br>(0.65) | -0.81*<br>(0.38)  | -1.47<br>(1.02)    | -13.93***<br>(0.38) | -0.83<br>(0.78)   | -13.66***<br>(0.49) |
| Communist party membership                        | -0.46<br>(0.64)     | 0.02<br>(0.12)    | -0.25<br>(0.27)    | -0.12<br>(0.28)     | -0.36**<br>(0.13) | -1.10*<br>(0.54)    |
| <b>Household characteristics</b>                  |                     |                   |                    |                     |                   |                     |
| Number of children                                | 0.63**<br>(0.21)    | 0.47***<br>(0.11) | 1.04***<br>(0.19)  | -0.07<br>(0.10)     | 0.12<br>(0.11)    | 0.24<br>(0.15)      |
| Number of older adults                            | 0.09<br>(0.30)      | -0.20<br>(0.11)   | 0.13<br>(0.18)     | -0.08<br>(0.20)     | 0.05<br>(0.11)    | -0.11<br>(0.16)     |
| Number of working-age adults                      | 0.40*<br>(0.17)     | -0.14*<br>(0.07)  | 0.25*<br>(0.11)    | 0.23*<br>(0.10)     | -0.09<br>(0.08)   | 0.10<br>(0.20)      |
| <b>Number of members reporting poor health</b>    |                     |                   |                    |                     |                   |                     |
| health  | 0.51<br>(0.51)      | 0.30<br>(0.16)    | 0.48*<br>(0.21)    | -0.14<br>(0.25)     | 0.12<br>(0.09)    | 0.10<br>(0.15)      |
| <b>Number of members with physical disability</b> |                     |                   |                    |                     |                   |                     |
| disability  | -0.01<br>(0.40)     | 0.15*<br>(0.07)   | 0.20*<br>(0.10)    | 0.10<br>(0.15)      | -0.01<br>(0.05)   | 0.32***<br>(0.07)   |
| <b>Region (ref. eastern)</b>                      |                     |                   |                    |                     |                   |                     |
| Central   | 1.04**<br>(0.35)    | 1.02*<br>(0.41)   | 1.34**<br>(0.43)   | 0.25<br>(0.41)      | 0.13<br>(0.31)    | 0.25<br>(0.63)      |
| Western   | 1.05**<br>(0.35)    | 1.45***<br>(0.40) | 2.27***<br>(0.60)  | 0.45<br>(0.41)      | 0.82*<br>(0.40)   | 1.75*<br>(0.72)     |
| Intercept   | -4.08***<br>(0.90)  | -0.50<br>(0.56)   | -5.61***<br>(0.85) | -1.88**<br>(0.72)   | -0.90<br>(0.62)   | -4.54***<br>(1.08)  |

**Note:** The reference group is non-poor in the multinomial logistic regressions. Log odds ratios are presented with standard errors in parentheses. All multinomial logistic regressions cluster standard errors at the province level. Significance levels are indicated as follows: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.



**Table A3. Logistic Regressions on Predictors for Being in Poverty in Urban and Migrant Samples of Children**

|  | Urban              |                  | Migrant           |                  |
|--|--------------------|------------------|-------------------|------------------|
|  | 2013               | 2018             | 2013              | 2018             |
| <b>Child characteristics</b>                         |                    |                  |                   |                  |
| Age  | -0.01<br>(0.01)    | 0.02<br>(0.01)   | -0.04*<br>(0.02)  | 0.03<br>(0.03)   |
| Male (ref=female)                                    | -0.03<br>(0.07)    | -0.08<br>(0.09)  | 0.21<br>(0.15)    | -0.13<br>(0.13)  |
| Ethnic minority (ref=Han)                            | 0.25<br>(0.35)     | -0.49<br>(0.43)  | -0.20<br>(0.73)   | -0.76<br>(1.04)  |
| <b>Household head characteristics</b>                |                    |                  |                   |                  |
| Age  | -0.00<br>(0.01)    | 0.00<br>(0.01)   | -0.00<br>(0.02)   | -0.04<br>(0.02)  |
| Male (ref=female)                                    | 0.23<br>(0.17)     | 0.20<br>(0.14)   | 0.71<br>(0.36)    | -0.18<br>(0.35)  |
| Ethnic minority (ref=Han)                            | 0.21<br>(0.39)     | 0.64<br>(0.43)   | 1.71**<br>(0.62)  | 0.07<br>(0.73)   |
| Married (ref=unmarried)                              | -0.19<br>(0.20)    | 0.22<br>(0.28)   | -1.12<br>(0.66)   | -0.21<br>(0.67)  |
| <b>Education level (ref. primary school or less)</b> |                    |                  |                   |                  |
| Junior high school                                   | -0.26<br>(0.20)    | -0.21<br>(0.29)  | -0.83**<br>(0.29) | -0.65<br>(0.53)  |
| Senior high school                                   | -0.82***<br>(0.24) | -0.59*<br>(0.25) | -1.28**<br>(0.47) | -0.48<br>(0.55)  |
| More than senior high school                         | -1.04***<br>(0.28) | -0.95*<br>(0.42) | -0.85<br>(0.49)   | -1.24<br>(0.75)  |
| <b>Self-rated health status (ref. good)</b>          |                    |                  |                   |                  |
| Average  | 0.17<br>(0.14)     | 0.11<br>(0.20)   | -0.03<br>(0.56)   | 0.57**<br>(0.21) |
| Poor   | 0.30<br>(0.31)     | -0.11<br>(0.41)  | -0.78<br>(1.15)   | 0.41<br>(1.40)   |

|  | Urban           |                    | Migrant         |                  |
|--|-----------------|--------------------|-----------------|------------------|
|  | 2013            | 2018               | 2013            | 2018             |
| <b>Employment status (ref. employed)</b>   |                 |                    |                 |                  |
| Unemployed                                 | -0.01<br>(0.27) | 0.25<br>(0.17)     | 0.27<br>(0.74)  | 0.42<br>(0.29)   |
| Retired                                    | 0.24<br>(0.29)  | 0.28<br>(0.25)     | N/A             | N/A              |
| Communist party membership                 | -0.21<br>(0.15) | -0.20<br>(0.19)    | -0.81<br>(0.70) | -0.42<br>(0.77)  |
| <b>Household characteristics</b>           |                 |                    |                 |                  |
| Number of children                         | 0.31*<br>(0.14) | 0.33*<br>(0.14)    | 0.47<br>(0.34)  | -0.01<br>(0.24)  |
| Number of older adults                     | -0.09<br>(0.15) | 0.05<br>(0.11)     | -0.01<br>(0.27) | -0.03<br>(0.36)  |
| Number of working-age adults               | 0.04<br>(0.09)  | -0.01<br>(0.06)    | 0.08<br>(0.19)  | 0.13<br>(0.17)   |
| Number of members reporting poor health    | 0.23<br>(0.17)  | 0.25<br>(0.20)     | 0.72*<br>(0.36) | -1.23*<br>(0.58) |
| Number of members with physical disability | -0.15<br>(0.17) | -0.07<br>(0.12)    | 0.03<br>(0.34)  | 0.10<br>(0.18)   |
| <b>Region (ref. eastern)</b>               |                 |                    |                 |                  |
| Central                                    | 0.30<br>(0.42)  | 0.17<br>(0.30)     | -0.57<br>(0.47) | -0.79<br>(0.43)  |
| Western                                    | 0.41<br>(0.32)  | -0.01<br>(0.31)    | -0.11<br>(0.44) | -0.62<br>(0.50)  |
| Intercept                                  | -1.13<br>(0.84) | -3.23***<br>(0.90) | 0.57<br>(0.96)  | -0.22<br>(1.61)  |





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