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Understanding the inconsistent relationships between socioeconomic factors and poverty incidence across contiguous poverty-stricken regions in China: Multilevel modelling

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ABSTRACT

Understanding discrepancies in the effects of various socioeconomic predictors of poverty incidence across different contiguous poverty-stricken regions can provide new information for Chinese policymakers. However, no comprehensive statistical analysis exists. In this paper, we apply a multilevel model, together with systematic and high-quality poverty incidence data from China's 13 poverty-stricken regions in 2013, to explore spatial patterns in county-level poverty incidence and to estimate the effects of seven selected socioeconomic predictors of poverty incidence. Our results showed that rural income, urbanization, education (gross enrolment ratio of senior high school students), grain production and irrigated land ratio had a significantly negative association with poverty incidence. Nevertheless, in different regions, some predictors had larger effects on poverty incidence than others. Targeted region-specific poverty-alleviation policies based on these

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findings could effectively support on-going poverty reduction efforts in China.

1. Introduction

Moving everyone out of poverty before 2020 is one of the more important development goals of the Chinese government. Since the launch of pro-market reforms in 1978, China has made great achievements in reducing absolute poverty (Wang and Cai, 2007). According to official estimates, the rural poor population decreased from 250 million to 23.7 million between 1978 and 2005 (Wang and Cai, 2007). However, this enormous, overall progress against poverty does not ensure even poverty reduction across provinces (Ravallion and Chen, 2007), especially in the contiguous poverty-stricken regions (CPSR).

In 2011, China launched a new round of poverty alleviation and development (China Rural Poverty Alleviation and Development Program, 2011–2020), aiming to pull everyone out of poverty by 2020. China faces new challenges in this next phase of poverty reduction. For example, after the prior, rapid progress in poverty alleviation, the remaining poor are concentrated in remote and mountainous townships and villages (Wang and Cai, 2007) in well-known contiguous poverty-stricken regions. These areas are characterized by poor living and reproductive conditions, poor industrial levels and low educational attainment (Du et al., 2005), which are believed to be very difficult to eradicate. *Outline for Development-oriented Poverty Reduction for China's Rural Areas (2011–2020)* delineates the total 14 contiguous poverty-stricken regions. According to the poverty statistics, total 521 counties (86.8%) in the contiguous poverty-stricken regions were at the list of poorest of 600 counties in China (Zeng et al., 2013). The contiguous poverty-stricken regions become the main battlefield of poverty alleviation during the new phase. Therefore, the statistical analysis based on these specific regions is helpful to understand the mechanism of poverty occurrence in these areas.

Notwithstanding the spatial variation and socioeconomic factors identification in poverty reduction among Chinese provinces, which has been documented in several studies (Ravallion and Chen, 2007; Montalvo and Ravallion, 2010), to our knowledge no research reveals the spatial distribution and identifies socioeconomic factors of poverty incidence in the contiguous poverty-stricken regions. The new pattern of poverty in China that the remaining poor are concentrated in contiguous poverty-stricken regions suggest that we should look beyond the usual geographical level of province level to more specific geographical areas (contiguous poverty-stricken regions) that may be more representative of regional physical and economic characteristics. Evidence of concentrated rural poverty also suggests the need for regional integrity policies (regional development strategies, for example) that focus on structural conditions rather than individual deficiencies. Furthermore, the underlying focus of previous studies remains an essentially individual geographical unit, this neglects the wider geographical context, such as poor physical environments, natural resources and regional economic system.

The contiguous poverty-stricken regions proposed by the Chinese government is suitable to be used as geographical context in examining the effects of socioeconomic factors on county level poverty incidence. The contiguous poverty-stricken regions were chosen in this study, other than province or other geographical units, as geographical context in terms of two rationales: (1) contiguous poverty-stricken regions are the main battlefield of poverty alleviation during the new phase. To deepen understanding of the mechanism of predictors on poverty incidence over these regions will be helpful to propose localized suitable policy. (2) Although provinces are most important regional subdivisions in terms of their administrative and economic functions, the Chinese government is well aware of the importance to "break the boundary of province, comprehensive arrangement resources" in the contiguous poverty-stricken regions during the new phase of poverty alleviation. A previous study (Jiang, 2012) in Wuling mountain poverty-stricken region suggested that resources allocation and inter-sectional public administrative affairs were governed by each province will hamper regional economic development and poverty reduction.

In this study, we conducted a series analysis (variance component modelling, random intercept modelling and random slope modelling) to investigate the spatial pattern of poverty incidence in