# Is urbanization narrowing the urban-rural income gap? A cross-regional study of China

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## A B S T R A C T

This study applies bootstrap panel Granger causality to test the relationship between urbanization and the urban-rural income gap in China. We find that patterns of interaction between urbanization and the urban-rural income gap vary according to different regions. Empirical results show that urbanization does Granger-cause an urban-rural income gap, mainly in the Eastern region of China. In one-third of all provinces, the urbanization levels have a significant impact on the urban-rural income gap; however, the urban-rural income gap does not play a significant role in urbanization. The Eastern region's result is also in line with Kuznets's (1955) theory. These results could help regional governments develop fair policies for urban and rural income distribution in the process of urbanization of different regions.

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## 1. Introduction

In general, China follows a worldwide trend toward urbanization in which an increasing share of the population is residing in cities in the reform epoch, and the country is continuously urbanizing with quite distinctive traits (Zhang, 2008). China is a developing country that has many differences and a diversity of regional economic development levels. The differences in historical development as well as in the country's industrial policies will result in different levels of city development among regions, which lead to different city performances (Li, Du, & Wang, 2008). There are significant differences between the urban and rural regions regarding personal income. It is common in developing countries for the relationship between the state and peasants to be coercive and urban-biased between rural and the urban sectors (Cai, 2007). Economic growth creates strong pressures toward the centralization of nonagricultural production in urban centers and toward agricultural specialization in rural regions. Given an initial

concentration of the population in rural regions, the resulting urban-rural imbalance in the supply and demand for labor results in a sharp disparity between city and countryside occupational structures and an excess of urban (over rural) income that induces countryside-to-city migration. The objective of this study is to examine the causal relationships between China's urbanization and the urban-rural income gap. China represents approximately one-fifth of the world's population, the population size in most provinces exceeds that of many countries in the world, and it has typically two types of economic structures with urban and rural features. The rural population is approximately three times that of urban regions; however, most of the national wealth is concentrated in the urban regions in China. With the development of urbanization, urban economic growth is faster than that of rural regions. Since 1978, China has experienced a rapid and unprecedented process of urbanization, created by the history's largest flow of rural-urban migration in the world. In the pre-reform period, policies were giving urban development more priority and opportunities compared with rural development, and the urban industry was considered more important than agriculture in rural regions. China's urbanization level has increased from 17.9% to 51.0% during the period 1978–2011; however, the government's policies have

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given preference to urban regions in the long term, and the urban-rural income gap in regions has grown. During the period 1978–2010, China's per capita annual urban-rural household income gap ratio has increased from 2.57:1 to 3.23:1. This trend of a widening urban-rural income gap is consistent with the rising Gini index in the Chinese economy. Urban-rural income inequality remains the major source of the overall income disparity in China. The North-Eastern region used to be the country's heavy-industry base in the planning era and encountered more difficulties in making the transition to a free market. The region's smaller urban-rural income gap, as a lingering legacy from the planning era, reflects the region's lower urban income rather than a higher rural income, compared with the eastern region (Li, 2012). From 1992 onward, rural industrialization has rapidly developed and has led to many surplus labor transfers to the city to narrow the gap between urban and rural regions. Since 1998, China has cleared the grain channel and improved the grain price formation mechanism to increase farmers' income. In 2004, the government reduced the agriculture tax and increased the grain subsidy. A few policy initiatives were designed to narrow the urban-rural disparity until the "socialism new countryside" programs could be launched. This bias in government policy-making can only be explained by the weak position of farmers as a lobby group (Wan, 2007).

Kanbur and Zhang (1999) find that in relative terms, the contribution of rural-urban inequality is much higher than that of inland–coastal inequality; however, the overall trend is very different. The rural-urban contribution has not changed substantially over time; however, the inland–coastal contribution has increased due to the role of labor migration during the 1980s and 1990s. Su (2002) finds that an accelerated pace of urbanization is a strategic measure to reduce the income difference between urbanites and peasants. Hu (2002) shows that the improving trade conditions and increasing rural-to-urban labor mobility in China may explain the widening income gap between the coastal region and the hinterland. Lu and Chen (2004) show that urbanization significantly decreases statistical urban-rural inequality and that the growing urban-rural inequality is due to urban-biased local governmental economic policies. Yao (2005) shows that there is a negative correlation between urbanization and the urban-rural income gap and that urbanization is the Granger cause of the urban-rural income gap in China. Cheng and Li (2007) show that urbanization and urban bias are the Granger causes of urban-rural inequality and that the impact responses are positive; urban-rural inequality is also the Granger cause of urbanization and has a negative impact on urbanization. Huang (2009) shows that the urban-rural income gap is the joint result of the rural population proportion and the urban-rural income ratio. Therefore, the process of rural-to-urban migration does not necessarily reduce the degree of income inequality. Guo (2009a) shows that when the urban-rural income gap is higher, urbanization will expand the income gap between urban and rural regions; otherwise, accelerated urbanization can effectively narrow the urban-rural income gap. Guo (2009b) shows that the effect of urbanization on the rural-urban income gap also depends on the level of the rural-urban income disparity itself. The urbanization process will enlarge the rural-urban income disparity when the level of the rural-urban income disparity is high and will reduce the disparity when it is low. Zhou (2009) finds that the changes in income inequality caused by urbanization have entered a decreasing phase since 2001 and that urbanization is causing the rural low-income population to decrease. However, the urban low-income population is increasing, and urbanization has recently begun to reduce the income inequality growth rate in the countryside. Cao, Chen, and Ma (2010) show that the urban-rural income gap in China exhibits clear periodic volatility; however, the gap continues to widen, and

urbanization plays a significant role in narrowing the urban-rural income gap. Liu, He, Wu, and Webster (2010) consider that landless farmers lose their rural identities because they no longer partake in agricultural activities. However, these farmers remain rural villagers and are not completely entitled to official urban identities and the associated benefits. A gap between the two institutional systems has emerged and resulted in the mixed rural-urban characteristics of urban villages. Zhou, Q, and Lu (2010) show that the level of urbanization has a significant threshold effect on the urban-rural income gap. Once the level of urbanization overcomes that threshold value, urbanization will significantly narrow the urban-rural income gap. At present, the urbanization of China across regions ranges from low to high, the urbanization of the northeast and east regions has overcome this threshold value, and the middle and west regions are also close to the threshold value; thus, accelerating urbanization would be an important way to narrow the urban-rural income gap. Xing (2010) finds that urbanization has both positive and negative effects on shrinking the urban-rural income gap. In most provinces and regions in China, the urbanization process can effectively narrow the urban-rural income gap. Mao (2011) shows that urbanization is an important factor in narrowing China's urban-rural income gap. Wang (2011) finds that urbanization has enlarged the income gap, and when the urbanization rate grows by 1 percent, the income gap grows by 0.39 percent. He also finds that there are substantial spatial interaction effects among neighboring provinces in the urban-rural income gap indicator for China. Lu and Kuang (2011) show that urbanization does not affect changes in the income gap between urban and rural residents; on the contrary, the income gap between urban and rural residents will accelerate the process of urbanization. Li (2011) shows that the expansion of the urban-rural income gap can accelerate the process of urbanization, and urbanization in turn has a long-term impact on the income gap between urban and rural regions. Song, Thisse, and Zhu (2012) find that if the technological gap is large enough, high migration costs can sustain an industrial core and an agricultural periphery, whereas the city will grow when such costs are low. In this case, lowering household registration costs narrows the income gap between rural and urban regions.

However, previous studies have not clearly shown the interaction relationship between urbanization and the urban-rural income gap. In this study, we use the bootstrap panel Granger causality approach and try to identify the interaction patterns by conducting tests in 30 Chinese provinces with different income levels. We apply panel causality analysis, which considers cross-sectional dependency. Furthermore, by comparing the results from the panel causality analysis with those from the Toda-Yamamoto time series causality approach, Nazlioglu, Lebe, and Kayhan (2011) indicate that the choice of statistical method is important in causality analysis. As Granger (2003) claims, it is possible to have cointegration at the aggregate level and not at the disaggregate level and vice versa. Cross-sectional aggregation occurs when a number of micro variables are aggregated to obtain a macro variable; therefore, results based on aggregated data are somewhat doubtful. Furthermore, conventional time-series data tests not only fail to consider cross-sectional information but also have lower power. To increase the power of testing for relationships, many researchers have developed the use of panel data. In our study, by utilizing information on both intertemporal dynamics and individuality, the power of econometric results is greatly improved. In addition, most previous studies have utilized asymptotic methods in the estimation and testing of parameters. It is well known that these methods lose power when the probability distributions are non-normal. Because it is well established that time series are non-normally distributed (Chunchachinda, Dandapani, Hamid, &