



The impacts of structural transformation and industrial upgrading on regional inequality in China

Tsun Se CHEONG*, Yanrui WU

Business School, University of Western Australia, 35 Stirling Highway, Perth, WA 6009, Australia

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ABSTRACT

China has achieved unprecedented success in economic growth since the initiation of economic reforms. The high growth could partly be attributed to the successes in structural transformation of the economy and industrial upgrading of the manufacturing sector toward high value-added products. However, regional inequality in China has increased considerably behind the scenes. In order to have sustainable economic growth, it is thus crucial to investigate the impacts of both structural transformation and industrial upgrading on regional inequality. This paper contributes to the literature by employing a database compiled at the county-level. Decompositions are performed for different spatial groupings so as to provide a clear view of evolution of regional inequality. In addition, the contributions of the major industries to inequality in industrialization are examined by using another database of value-added compiled at the provincial level. The results may have important policy implications for the formulation of a comprehensive and coherent strategy in managing inequality while promoting structural transformation and industrial upgrading.

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1. Introduction

Following the initiation of economic reform in 1978, China has experienced rapid growth and is often cited as a ‘miracle’ in economic development. Gross domestic product (GDP) increased from 365 billion Yuan in 1978 to 51.89 trillion Yuan in 2012, while GDP per capita increased from 381 Yuan to 38,420 Yuan in that period (*State Statistical Bureau, 2013*). Of this unprecedented success, *Yu (2012)* suggests that the rapid economic growth can be attributed to the successes in structural transformation and industrial upgrading.

The strong economic growth not only has benefited China, but also has driven the economic growth of nearby countries (*Saari, 2007*). Moreover, China’s economic growth has contributed significantly to the decline of global inequality (*Hung & Kucinskis, 2011*) and global poverty (*Dollar, 2007; Goh, Luo, & Zhu, 2009*). However, regional inequality in China increased dramatically behind the scenes (*Cheong, 2012a*). Many scholars have argued that inequality can lead to different kinds of social dysfunction, such as crime, racism, drug abuse, mental illness, and loss of social capital and trust in society (see *Wilkinson & Pickett, 2009*, for a survey). Furthermore, many studies report that inequality is correlated with political instability (*Acemoglu & Robinson, 2001; Alesina & Perotti, 1996; Dutt & Mitra, 2008; Muller & Seligson, 1987*).

For the case of China, *Zhuang (2008)* warns that, ‘The persistence of inequality and rising gaps in income and consumption between the rich and poor would make reforms more difficult; trigger social tensions; and pose a clear and present danger to social

* Corresponding author. Tel.: +61 8 64885639.

E-mail addresses: james.t.s.cheong@gmail.com (T.S. Cheong), yanrui.wu@uwa.edu.au (Y. Wu).

and political stability and, therefore, to the very sustainability of the growth process itself.' This argument is supported by the fact that the number of mass incidents in China (including protests, demonstrations and clashes with police) increased from 10,000 in 1993 to 87,000 in 2005 (Wen, 2007). Similarly, Wang and Hu (1999) suggest that inequality may lead to economic and social instability, and may even affect the unity of China. Cheong and Wu (in press) also find that there is a positive correlation between regional inequality and crime rates in China. Therefore, it calls for an in-depth study on regional inequality so that policies can be formulated to mitigate inequality.

In fact, the problem of regional inequality has attracted the attention of researchers from different disciplines, and many studies have been carried out to examine regional inequality in China. However, most of the studies have been based on provincial level data, while only a few studies have investigated inequality using county-level data (Cheong, 2012b). The main objective of this paper is to fill the void in the literature and provide a thorough examination of the impacts of structural transformation on regional inequality in China by using a county-level database. In the second part of this study, the focus will turn to industrialization itself, and the disparity in industrial upgrading will be evaluated through an examination of value-added of the major industries. Decompositions of inequality are performed in the vertical and horizontal directions. Decompositions are first applied vertically to different groupings at various spatial levels, while another set of decomposition is applied horizontally so as to determine the contributions of the different industrial sectors.

This paper is structured as follows. Section 2 presents a review of the literature and other relevant information on industrialization and industrial upgrading. Section 3 provides a discussion of the research methods. Section 4 describes data issues. Section 5 presents the findings and discussions. Further analysis at the industrial sub-sector level is reported in Section 6, while Section 7 concludes.

2. Industrialization and industrial upgrading in China

It is well known that a major feature of China's economic development is the dramatic change in sectoral composition of GDP due to structural transformation. The structural transform not only has radically altered the economic landscape of China, but also has led to an increase in regional inequality. Cheong and Wu (2013a) employ generalized method of moments (GMM) estimator in their analysis, and they find that industrialization and tertiary industry development both exert positive effects on regional inequality in China.

Basically, all the economic activities in China can be categorized into three strata of industries, namely, the primary industry, which refers to agriculture, forestry, animal husbandry and fishery and services in support of these industries; the secondary industry, which refers to mining and quarrying, manufacturing, production and supply of electricity, water and gas, and construction; and the tertiary industry, which refers to all other economic activities not included in the primary or secondary industries (State Statistical Bureau, 2013).

Since 1978, the percentage composition of the primary industry has declined from 28.2% to 10.1% in 2012 while the share of the secondary industry has remained more or less the same, being 47.9% in 1978 and 45.3% in 2012. The percentage of tertiary industry increased substantially from 23.9% in 1978 to 44.6% (State Statistical Bureau, 2013). An enormous reallocation of labor from primary sector to secondary and tertiary sectors can also be observed. The percentage of employed persons in the primary sector declined from 70.5% in 1978 to only 33.6% in 2012. The change is so dramatic that the percentage of the primary sector fell more than half of its initial value in the reform era. By contrast, the percentage of the secondary sector increased from 17.3% to 30.3%, whereas the percentage of the tertiary sector increased from 12.2% to 36.1% (State Statistical Bureau, 2013). Although the structural transformation in China was very successful and led to considerable improvement of the living standards of its people, however, inequality also increased substantially in this period. It is worth noting that Huang, Kuo, and Kao (2003) show that development in the secondary sector is the largest contributor to regional inequality in China. Therefore, our study mainly focuses on the impacts of industrialization on inequality.

The neoclassical model of Solow (1956) and Swan (1956) predicts that conditional convergence is possible and regional inequality will be reduced in the long run as the poor regions tend to grow faster than the rich regions. However, according to Kuznets (1955), inequality always increases with industrialization in the early stages of economic development. He suggests that, if the income distribution is more unequal for the non-agricultural sector than for the agricultural sector, or if the per capita income differential among the two sectors increases, or if both conditions are present, then the rise over time in the relative weight of the non-agricultural sector can exacerbate income inequality considerably. This evolution can be explained by the concentration of savings, and the structural shift from the agricultural sector to the non-agricultural sector. Therefore, it is often argued that an increase in regional inequality is inevitable in promoting economic growth through structural transformation, and so it is necessary to bear the pain of inequality in the process.

The new economic geography theory, which takes the effects of increasing returns to scale, geography, economies of scale, imperfect competition, localized spillovers, product differentiation, transportation costs, factor mobility, intermediate inputs and other elements into consideration, also suggests that regional inequality can be affected by many agglomeration forces (for example, see the best known works of Fujita, Krugman, & Venables, 1999; Krugman, 1991a, 1991b; Krugman & Venables, 1995). The coalescence of labor in a location can depress the wages of the workers. The firms would find it easier to recruit labor with specialized skills, and the training and recruitment-related costs can be reduced significantly. Therefore, firms are willing to concentrate their production in that region (this is called the home market effect). With the concentration of production in that location, the reduction in the consumer price index will then attract more workers to coalesce in that location (this is the price index effect), thereby reinforcing the agglomeration effects (Redding, 2010). These two effects combined can lead to industrial agglomeration which may exacerbate regional inequality.

In fact, many researchers report that industrialization in China not only has increased output significantly but also has led to a surge in inequality (Golley, 2002; Huang et al., 2003; Kanbur & Zhang, 2005; Pradhan, 2009; Rozelle, 1994, 1996; Tsui, 1996; Tsui, 2007; Wan, 2004; Yang, 2002; Yao, 1997). Rozelle (1994) points out that the policies that helped agriculture could reduce inequality, while those that promoted rural industrialization would increase inequality. In another article, Rozelle (1996) claims that the increase in inequality could be attributed to the expansion of the industrial sector. By using factor decomposition Tsui (1996) finds that the

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