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Effect evaluation of the Pearl River Delta Region´s industrial transformation and upgrading: An approach of Boston matrix and location quotient

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The Pearl River Delta Region is one of most economically dynamic regions and the world famous manufacturing and export center in China. It has been affected seriously by the 2008 global financial crisis. In order to cope with the impact of the financial crisis and change the extensive pattern of economic development in the past, the Guangdong Provincial Government first proposed the policy of ‘industrial transformation and upgrading’ in 2008, and the Pearl River Delta Region has become the forefront of this programme since then.

There are two meanings for industrial transformation and upgrading: accomplishing the transformation and upgrading from processing manufacturing industry to advanced manufacturing industry; accomplishing the transformation and upgrading from industrial-based economy to service-based economy. For the transformation and upgrading manufacturing industry, there are three main aspects: first, the appreciation of traditional labor-intensive manufacturing through brand creation, technological innovation and management system innovation, product added value and competitiveness increase ; second, the development of capital-intensive manufacturing, such as petrochemical industry, automobile industry, shipbuilding industry, iron and steel industry, communications equipment industry; third, the transformation to technology-intensive manufacturing, such as electronic information technology, computer software, biomedicine, new materials and other high-tech

industries. In addition, modern service industry has become an important engine of a country or a region's economic growth. The proportion of service industry to GDP, is an important indicator determining a country or a region's economic development degree.

This paper is intended to examine the Achievements of industrial transformation and upgrading in the Pearl River Delta Region since 2008. In this context, nine cities in the Pearl River Delta Region are taken into account, including Guangzhou, Shenzhen, Foshan, Zhuhai, Dongguan, Zhongshan, Huizhou, Jiangmen and Zhaoqing. The 2008 and 2014 Guangdong Statistical Yearbook data are used to make quantitative analysis. Industries are classified into three main industries and subdivided into seven industry categories, including agriculture, labor-intensive manufacturing, capital-intensive manufacturing, technology-intensive manufacturing, other industries and construction industry, producer services, other services.

First, an approach of Boston matrix is used to analyse the proportion and growth of each industry category within the region. Industry categories are divided into four types according to their position in the Boston matrix: Strong industries, industries with high proportion and high growth rates; Mature industries, industries with high proportion but low growth rates; Emerging industries, industries with low proportion but high growth rates; Weak industries, industries with low proportion and low growth rates. The studies show that on the whole, proportion and growth of tertiary industry are significantly higher than that of secondary industry, which indicates that other services is the strong industry within the region, and the producer services is the emerging industry within the region. As for the manufacturing industry, proportion and growth of the labor-intensive manufacturing decrease, while proportion of capital-intensive manufacturing and technology-intensive manufacturing gradually increase, and have higher growth rate compared to the labor-intensive manufacturing. Thus, labor-intensive manufacturing is a weak industry, capital-intensive manufacturing tends to develop into an emerging industry, and technology intensive manufacturing is a mature industry. However, situations differ in each city.

Second, an approach of location quotient is used to analyse the spatio-temporal evolution and the total functional scale of the basic functional sector of each city in the

region. The results prove that hierarchical division of functions inside the Pearl River Delta city of differentiation is more obvious from 2008 to 2014, showing a clear gradient pattern, but the transformation and upgrading of a city's basic functional sector is not equivalent to the increase of a city's total functional scale. Judging from the current situation, even though a city was going through industrial transformation and upgrading, its total functional scale can still rank rearward.

The conclusion can be drawn that the Pearl River Delta Region's industrial transformation and upgrading has achieved certain success since 2008. The goal of transforming from processing manufacturing industry to advanced manufacturing industry and transforming from industrial-based economy to service-based economy have basically been realized. However, higher value-added hierarchy of a city's basic functional sector is not equivalent to larger total functional scale. That is to say, currently the economic benefit of the Pearl River Delta Region's industrial transformation and upgrading has not yet appeared. The Pearl River Delta Region still need to go through a very long process of development to accomplish converting from the 'transformation' of industry category to the 'upgrading' of economic scale