

Analysis over factors of innovation in China's fast economic growth since its beginning of reform and opening up

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Abstract The technological progress makes great contribution to the rapid economic growth of China during its past three decades of reform and opening up. An empirical analysis conducted over China's total factor productivity certifies this conclusion but it also reveals that China's TFP growth rate is not very high. We further explore the various stages of change of China's total factor productivity and the causes of these changes and finally take an analytical calculation over the present flaws of China's innovation system and offer some advices.

Keywords Total factor productivity (TFP) · China, reform and opening up · Institutional innovation · Solow residual

1 Introduction

In 1978, China began to adopt the policy of “internal reform and external opening up.” Now, it has generally transformed itself from a closed and central-planned economy to a market-oriented economy that is connected to the world, with its annual economic growth maintaining at a high rate of nearly 10 %. During the past three decades from 1978 to 2008, its GDP calculated at constant prices has increased by 16.5 times, with an annual growth rate of 9.7 %. If calculated by nominal value, its GDP growth rate reached the level of annual 15.8 %.

As a result of this continuous fast economic growth, China's economy is playing a more and more important role in the world. In 2010, China's total GDP reached RMB 40 trillion Yuan, an equivalent of around 5.9 trillion US dollars, second only to the USA, and its GDP in 2010 accounted for 9.3 % of the overall GDP of the world, a tremendous increase from a mere 1.8 % in 1978.

This China miracle can be attributed to many factors, such as the effect of institutional innovation created by the policy of “reform and opening up,” the influx of FDI, the increase in domestic fixed asset investment, relatively stable exchange rate and its foreign trade. However, it is no doubt that the uplifting of its productivity, which is symbolized by its technological innovation, makes a great contribution to this huge growth.

As a symbol, China's GDP per person employed has increased by a large share. The statistics conducted by the World Bank reveals that the GDP created by each person employed in China in 2008 already reached the level of 10,378 US dollars (calculated by constant 1990 PPP US dollar), approaching the level of upper middle-income countries (13,158 US dollars). Nevertheless, just 8 years before, in the year 2000 when this century began, China had not been able to reach the level of lower middle-income countries. In *the 2011–2012 List of Global Competitiveness Ranking* made by the famous Davos World Economic Forum, China ranks the 26th of the world, not only maintaining its impetus of constant rise since 2005, but also taking a leading position in the BRICS (Schwab 2011).¹

In the field of researches of Basic & Applied Sciences, China has also made enormous achievements, which have

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¹ South Africa, 50; Brazil, 53; India, 56; Russia, 66; furthermore, China's position descends to the 29th in the next year (Schwab 2012).