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*World Development* Vol. 37, No. 4, pp. 874–888, 2009

0305-750X/$ - see front matter

doi:10.1016/j.worlddev.2008.07.008

# Can China's Growth be Sustained? A Productivity Perspective

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**Summary.** — China's gradual approach to economic transition has resulted in sustained high growth. However, in recent years Chinese economists have increasingly referred to the growth pattern as "extensive," generated mainly through the expansion of inputs. Our investigation of the Chinese economy during the reform period finds that reform measures often resulted in one-time level effects on total factor productivity (TFP). China now needs to adjust its reform program toward sustained increases in productivity. Market and ownership reforms, and open door policies have improved the conditions under which Chinese firms operate, but further institutional reforms are required to consolidate China's move to a full-fledged market economy.


*Key words* — growth accounting, total factor productivity, economic reform, China, Asia

## 1. INTRODUCTION

The past three decades have witnessed miraculous achievement in the economic development of China. Since the economic reform process started in 1978, Chinese *per capita* income has increased eightfold. But the piecemeal and gradual reform strategy pursued by China means that the market still has not permeated the entire economy. Property rights and related institutions are far from the ideal textbook model. However, as in the East Asian NICs, key ingredients of China's reform strategy have been education, high savings, and export orientation. A controversial aspect of the present strategy is also the attempt to preserve an undervalued currency to promote export.

While China's specific approach to economic transition has been successful in promoting rapid economic growth, in recent years economists have been increasingly concerned about the pattern of "extensive" growth (Wu, 2006), a term often used to describe Soviet growth during the Cold War period. Its main characteristic is growth generated mostly through the expansion of inputs and only marginally through increased productivity (Ofer, 1987). From the late 1970s to the early 1990s, China's growth depended more on productivity growth and less on increased capital than other East Asian NICs at a comparable stage of their development. However, since then growth in capital inputs has exceeded GDP growth, often substantially. Some recent studies have reported a prolonged slowdown in total factor productivity growth (Zheng & Hu, 2006).

This situation might have been due to the fact that China's productivity growth before the mid-1990s was driven mainly through one-time dramatic improvements in policies. But changes in policies may temporarily affect a country's growth rate by affecting the level of total factor productivity (TFP) without affecting its growth rate in the long run. Klenow (2001) notes "China is a fast grower not because its institutions are among the best but because it has improved its institutions so much in the last two decades." Several studies have predicted that if China does not keep its reform momentum, its productivity as well as *per capita* income growth might slow down.

There are two major aspects of China's recent economic development that have been particularly worrisome. At the macro level the growth has been mainly investment-driven, creating a series of imbalances in the economy. Stabilization measures have been taken to prevent rapid economic growth from becoming overheated. At the micro level, the financial performance of many firms is poor, with low efficiency and lack of technological innovations. There is an expanding literature trying to explain this pattern of development, discussing whether extensive growth is sustainable and what China's future development strategy should be. In this paper, we approach the issue of sustainability regarding China's growth

* We would like to thank the participants in the SSE.LSE-CCER conference in Stockholm, November 2006, in particular Patrik Gustavsson-Tingvall and Linda Yueh, for useful comments. We have also benefited from the seminars at Center for China Studies, Tsinghua University, China Center for Economic Research, Peking University, and several other universities in China, as well as at Göteborg University and Oslo University. Financial support from Stiftelsen för ekonomisk forskning i Västsverige is gratefully acknowledged. We appreciate the support and inspiration of Lennart Hjalmarsson. We also thank Yuning Gao, Qingfeng Zhang, and Xing Wei for research assistance. We gratefully acknowledge that three anonymous referees provided constructive reviews with valuable suggestions. Final revision accepted: July 22, 2008.

through a productivity perspective, which is something touched upon in several studies but yet to be fully explored.[1]

Although savings and investment are considered to be central in the theory of economic development (Lewis, 1954), a growing body of research suggests that, even after physical and human capital accumulation are accounted for, TFP seems to explain the bulk of cross-country differences in the level and growth rate of GDP *per capita* (Easterly & Levine, 2001). Several studies have pointed out that differences in physical and intangible capital cannot account for the large income differences across countries today. Savings-rate differences are of limited importance. What is most important is TFP, and a theory of TFP growth is needed to understand the large international income differences (Prescott, 1998). More effort toward modeling and quantifying TFP is required (Easterly & Levine, 2001), and many argue that TFP should be the focus of growth research (e.g., Klenow, 2001).[2]

In the next section, we characterize China's growth pattern by decomposing growth into factor accumulation and TFP growth, and we review the literature on Chinese TFP growth. In Section 3, we examine the process in which capital is accumulated, and analyze the determinants of China's high rate of accumulation. In Section 4, we assess whether capital is allocated and utilized efficiently. In Section 5, we summarize what we have learned about the Chinese growth pattern from a productivity perspective and comment on policy challenges in improving the allocation of factors and the efficiency of their utilization. Section 6 concludes.

## 2. CHINA'S GROWTH PATTERN SINCE 1978

China has experienced three major waves of reform since 1978. The first was the reform of collective farming with the household-responsibility system and the upward price adjustment for some agricultural products, which resulted in a rapid increase in agricultural productivity and output for several years (Wen, 1993).[3] The second wave started in the middle of the 1980s and continued into the early 1990s, during which managers and workers in state-owned enterprises were gradually provided with greater incentives to improve efficiency. Township-village enterprises flourished, helping shift much of the rural labor force to industries (Goodhart & Xu, 1996). The third wave started with Deng Xiaoping's tour of Southern China in 1992. Many state and collective firms were privatized, foreign direct investment poured in, and exports accelerated.

A noteworthy feature of China's growth during 1978–95 was its reliance on productivity growth. Relative to other rapidly growing Asian economies at a comparable stage of development, China's growth during this period was less dependent on growth of capital and labor (World Bank, 1997). In most East Asian countries, growth of capital exceeded GDP growth, often substantially, but not in China where GDP grew faster than capital, suggesting that factors other than capital accumulation were important determinants of GDP growth during the early reform years.

Empirical studies estimate that TFP growth accounted for 30–58% of China's growth during 1978–95 (Maddison, 1998; World Bank, 1997). Hu and Khan (1997) found that an average TFP growth of 3.9% explained more than 40% of China's growth during the early reform period. However, Krugman (1994) pointed out that it is difficult to account for China's growth because the quality of the numbers is poor. Young (2003) also questioned the notion that Chinese growth during the economic reform period was very different from that of other countries, by focusing on the nonagricultural productivity. After adjusting official data, he found growth comparable to that previously experienced by other rapidly growing economies. After accounting for growth of labor (largely due to increased labor force participation), the shift of labor out of agriculture, and rising educational levels, he found nonagricultural labor productivity growth at 2.6% and TFP growth at 1.4% per year.

Although estimates of China's productivity growth during the reform period differ, several factors behind it can be identified. First, the success of the rural reform from the late 1970s to the early 1980s resulted in a temporary surge in TFP in agriculture. Second, industrial reforms provided individual firms, managers, and workers with greater incentives to improve efficiency, and especially township-village enterprises (TVEs) achieved higher efficiency levels and TFP growth than state firms (e.g., Goodhart & Xu, 1996; Woo *et al.*, 1994; Zheng, Liu, & Bigsten, 1998). Third, rising labor force participation rates, improvements in educational attainment, the transfer of labor out of agriculture, and the narrowing the technology gaps between China and developed economies also contributed to the TFP growth. However, some of these factors only had a one-time level effect on TFP. Agriculture productivity growth slowed significantly from around 1983 and industrial productivity even recorded a decline during 1993–96. So future TFP growth may not match the levels witnessed in the past (Heytens & Zebregs, 2003; Liu, 2000; Maddison, 1998), unless further reforms are undertaken.

As some economists predicted, while TFP growth was satisfactory up to the early 1990s, reports of productivity slowdown started to emerge around the year 2000. Jefferson, Rawski, Wang, and Zheng (2000) investigated industrial productivity during 1980–96 finding long-term productivity growth but at declining rates during the 1990s. Zhang (2002) also found a downward trend for the aggregate economy during 1993–98, noting that it had become increasingly difficult to maintain GDP growth for a given increase in investment. Zheng and Hu (2006) found that TFP growth fell dramatically

Table 1. *China: growth accounting with human capital 1978–95 and 1995–2005*

| | 1978–95 (pct per year) | | 1995–2005 (pct per year) | |
|---|---|---|---|---|
| *Average growth* | | | | |
| GDP | 10.11 | | 9.25 | |
| *Factors* | | | | |
| Capital | 9.19 | | 12.38 | |
| Quality adjusted labor | 3.60 | | 2.59 | |
| $TFP^{0.6}$ | 3.16 | | 0.79 | |
| $TFP^{0.5}$ | 3.72 | | 1.77 | |
| $TFP^{0.4}$ | 4.27 | | 2.74 | |
| | Share of total | | Share of total | |
| *Contribution to GDP growth* | | | | |
| Total GDP | 10.11 | | 9.25 | |
| Factors | 6.40 | 0.63 | 7.49 | 0.81 |
| Capital | 4.60 | 0.45 | 6.19 | 0.67 |
| Quality adjusted labor | 1.80 | 0.18 | 1.30 | 0.14 |
| $TFP^{0.5}$ | 3.72 | 0.37 | 1.77 | 0.19 |

*Note*: $TFP^{0.4}$ refers to the estimates using 0.4 as capital share, and so on so forth.