Chapter 9
Dynamics in a Non-Scale R&D Endogenous Economic Growth for Chinese Development

Qiong He
Xiamen University, China

ABSTRACT
By introducing nonlinear technology gap into Jones (1995b), this chapter constructs an R&D non-scale growth model that includes endogenous human capital and technological progress. The goal is to take the model's implications to the data to explaining the Chinese economic development experiences at period 1979-2004. Our model suggests that the technology gap has the block neck effect on the economic development. The market competitive equilibrium solution shows that R&D and technology spillover can enhance the steady state growth rate. The mode's transitional dynamics is also analyzed on the effects of human capital, capital, technological progress and intersectional labor movements on economic growth, technological progress has the most effect on the economic development, and more human capital shift into R&D sector from final goods sector.

1. INTRODUCTION
‘Development miracles’ constitute one of the most intriguing phenomena associated with modern economic growth. The fast-growing economy in China is truly staggering. China averaged output growth rate over 9 percent per year during 1978-1999. Figure 1 illustrates the growth experience of the miracle country. Figure 1 reveals an interesting feature of miraculous experience: the sharp increase of output per work was characterized by growth rates that did not peak at the beginning of the convergence process but later on, thus giving way to a hump-shape growth path.

Since the influential paper by Lucas (1993), there has been surging interest in theoretical research attempting to explain development miracles. Since Lucas (1993), there has been surging interest in theoretical research attempting to explain development miracles. The underlying characteristics of China economic growth are focused widely. Liu, et al.(2004) consider that
Rapid economic growth in China is not isolated at the end of the 20th century, which is a pattern of global economic growth in the whole of Asia, especially East Asian economies. Stiglitz (1996) mainly discussed the phenomenon of rapid economic growth of East Asian countries from the perspective of the government’s policy. Maddison (1998), Bhattasali (2001), and World Bank (1997) consider that the Chinese rapid growth mainly relies on the Total Factor Productivity. However, some scholars believe that China’s economy is a high growth, low-efficiency model. Young (1995b) considers that East Asian new-industrialized countries are not high productivity growth, although output and manufacturing export growth are very fast. Sachs, Woo (1997) point out that Chinese economic growth in the reform period is consistent with East Asian economic model, which there is no technological progress.

However, if China’s economic growth is purely for non-efficiency material input as the pillar, then, as Krugman (1994) predicted, China’s economic growth will also as ‘rabbit’s tail’ as other East Asian countries. A number of papers are able to reproduce. However, growth models have not in general been able to predict the variable convergence speed needed to generate the adjustment path of output growth rate.

In this chapter, we propose a model in which the complementarities between human capital and endogenous technology, and technology are able to replicate and explain development miracles. Despite human capital and technical progress are indeed complementary, there have been few attempts in the theoretical literature to explore growth models with these engines. Our model is a hybrid R&D-based model a Jones (1995) and Papageorgiou, Perez-Sebastian (2006) in which technical progress is enhanced through innovation and imitation, and human capital is enhanced through formal education. We choose a schooling-based human capital technology following the approach suggested by Klenow, et al. (1997). Our choice of schooling technology is based on the Mincerian approach (Mincer, 1974) that has recently been revived by Papageorgiou, Perez-Sebastian (2006).

The hybrid R&D-based non-scale growth model has been explored by Eicher and Turnovsky (1999a, 2001) and Perez-Sebastian (2000). Unlike us, those authors do not consider human capital. Further, there are a few literatures that investigate the relationship between human capital.
13 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the product's webpage:
www.igi-global.com/chapter/dynamics-non-scale-endogenous-economic/46547?camid=4v1

www.igi-global.com/e-resources/library-recommendation/?id=1

Related Content

Energy, Environment and Socio-Economic Development: Africa’s Triple Challenge and Options
www.igi-global.com/chapter/energy-environment-socio-economic-development/60569?camid=4v1a

Architecting Enterprises for IT-Enabled Value Creation
www.igi-global.com/chapter/architecting-enterprises-enabled-value-creation/75232?camid=4v1a

Environmental and Social Impact of Stormwater Outfalls at Lake Michigan Beaches
www.igi-global.com/article/environmental-social-impact-stormwater-outfalls/47032?camid=4v1a

Value Creation with Wood-Based Energy Business Models
www.igi-global.com/chapter/value-creation-with-wood-based-energy-business-models/95012?camid=4v1a