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International spillovers, productivity growth and openness in Thailand: an intertemporal general equilibrium analysis

Xinshen Diao[a], Jørn Rattsø[b,*], Hildegunn Ekroll Stokke[b]

[a]International Food Policy Research Institute, Washington, DC, United States
[b]Department of Economics, Norwegian University of Science and Technology, N-7491 Trondheim, Norway

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Abstract

Thailand has experienced economic growth well above world averages from 1960 to the recent crisis. While the controversy over Thailand and East Asian growth has discussed the role of capital accumulation versus productivity, we analyze the general equilibrium interaction between productivity and investment in an intertemporal growth model. The high growth is understood as a prolonged transition path with gradual tariff reduction and endogenous productivity driven by foreign spillover feeding capital investment. Counterfactual analyses show how protection would have reduced growth with productivity and investment slowdown, while shock liberalization would have raised immediate growth with faster convergence to steady state.

JEL classification: O41; O47; O53
Keywords: Intertemporal growth modeling; Endogenous productivity growth; Foreign technology spillover; Trade and growth; Thailand

1. Introduction

Income differences across countries cannot be understood only as a result of different availability of production factors. The empirical evidence that capital stocks per worker

* Corresponding author. Tel.: +47 73591934; fax: +47 73596954.
E-mail address: jorn.rattso@svt.ntnu.no (J. Rattsø).

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explain limited part of the income differences among nations now is widely accepted. The attention therefore is turned to productivity and technology and productivity differences between countries are substantial, as documented by Hall and Jones (1999). Acemoglu and Ventura (2002) find that the world income distribution is remarkably stable over time. It follows that differences in income levels are permanent, while differences in growth rates are mostly transitory. A corollary to this is that miracle growth countries cannot produce miracles over long periods. Growth rates will decline again to world normals.

The sources of the remarkable growth in Thailand and East Asia have been controversial and empirical studies have constructed a horserace between factor accumulation and productivity growth. While the conventional view has recognized high productivity growth associated with openness as part of the explanation (Klenow and Rodriguez-Clare, 1997), both empirical (Young, 1994) and theoretical (Baldwin and Seghezza, 1996) studies have argued that capital accumulation has been the main driving force. This debate is hard to understand from a general equilibrium point of view, since both factor accumulation and productivity are endogenous. The conventionally calculated residual underestimates the productivity effect when productivity improvements contribute to higher capital accumulation. Hulten (2001) shows how this induced capital accumulation effect can be calculated. He reports that this measure of the productivity effect accounts for about 50% of output growth in the East Asian economies studied by Young.

The present paper addresses the growth process of Thailand in this context. We suggest that the interplay between accumulation and productivity is investigated in an intertemporal general equilibrium framework. Openness and trade policy are assumed to be important for productivity spillover and cost of capital goods. The focus is on endogenous productivity growth in transition towards long-run balanced growth. Thailand has had economic growth of about 6–8% and well above world averages from 1960 to the recent crisis, in transformation from a 'rice economy' to industrialization with labor-intensive exports.

The literature on endogenous productivity growth points to the role of research and development and innovation. But these sources of productivity growth do not seem to be of great relevance for Thailand. Resource input to research and development is concentrated to the most developed countries of the North. Innovation is the result of R&D and certainly requires advanced skills, again not characterizing the local growth process. Human capital development and skill accumulation are important ingredients in recent models of endogenous growth. While education and skill levels have been rising in Thailand, the low-tech labor-intensive industries do not indicate that this is a major growth factor. Our analysis addresses productivity growth generated by learning by doing, technology adoption and foreign technology spillover. Based on recent econometric evidence for Thailand, our understanding is that productivity growth has been related to the increased openness of the economy. Greenaway et al. (2002) supply broader evidence about openness and growth.

Thailand's growth experience is analyzed as an interaction between endogenous productivity growth and capital accumulation with increased openness of the economy. This mechanism explains the extended transition growth above long-run balanced growth rates. To investigate the transition path and the role of openness, we have developed an