



Productivity in Asia – Economic Growth and Competitiveness

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EDWARD ELGAR Publishing

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Economic growth and competitiveness in Asia has captured the interests of analysts, researchers, policy makers and business leaders for a long time. Over the past half century, the subsequent episodes of Japan's growth success, followed by the rapid rise of the four East Asian "tigers" (South Korea, Taiwan, Singapore and Hong Kong), the growth boom in Southeast Asia, and most recently the rapid acceleration of the Asian "dragon" (China) and the "elephant" (India), has brought forward the same questions over and over again: What are the sources of boom and bust in the region? And, what lessons are there to be learned for other countries inside and outside the region?

While many studies on Asia's growth miracles and failures have been undertaken, leading to a range of competing explanations, a comprehensive statistical framework to analyze the sources of growth over time and between countries has been missing. While all countries in the region have national accounts at different levels of detail and accuracy, a production account allowing productivity analysis at industry level, such as laid out in, for example, the OECD Productivity Manual (2001), has not been available for the region so far. This study, prepared by a consortium of researchers who organized themselves in

the "International Comparisons of Productivity among Asian Economies" (ICPA) projects, represents an important milestone on the way towards a comprehensive, international system of KLEM accounts, measuring the growth and contributions of capital (K), labor (L), energy (E) and materials (M) to gross output for East Asia. Productivity growth (called, total factor productivity growth) is measured as the residual output growth beyond the weighted growth of the inputs.

An important feature of this book is that all chapters provide results at the level of 32 sectors. This greatly helps to get better insights in the contributions of structural change to economic growth. Following a summary chapter, the first part of the book consists of five chapters providing the productivity accounts for Japan, U.S., China, South Korea and Taiwan. The chapters obviously represent different levels of sophistication of the accounts. In particular in the case of China, the large changes in the national accounting system have created important challenges for the authors to develop a consistent productivity account over time. As the authors stress, more work is needed to develop, for example, adequate producer prices to come up with more reliable real output series by industry in China.

The second part of the book includes a chapter with industry-level purchasing power parities for Japan, South Korea and Taiwan relative to the U.S. using the industry-of-origin approach to output which develops ratios of unit values between countries. The results of the chapter are used as an input in the final chapter, which provides measures of relative levels of total factor productivity (TFP), using the dual approach to growth accounting by obtaining TFP levels from the relative price levels of output and inputs. Such relative measures are useful for studying the sources of competitiveness between countries.

The studies provide a number of important insights. For example, the productivity slowdown in Japan during the 1990s appears to have been ubiquitous across almost all sectors, with the exception of communications and other services. Almost all U.S. industries have shown faster productivity growth, in particular machinery, construction and trade. Strikingly, even electrical machinery, which includes the electronics industry, has shown slower productivity growth in Japan than in the U.S.

The productivity accounts for China show that there have been increasingly large contributions of inputs (notably intermediate inputs) to output growth over time, and that the role of TFP has already been slowing significantly during

the 1990s. These results are striking in the light of the large role that has generally been ascribed to reallocations between enterprises of different ownership types. An update of the results into the 2000s will have to show whether the slow TFP growth in the 1990s (only 0.5% per year) was an anomaly, in part related to, for example, the loss of competitiveness due to the Asian financial crisis; or that Chinese growth has been more input driven than often assumed. Another interesting result is the relatively high level of China's TFP at about 60% of the United States, and only slightly below the level in South Korea. The authors explain this result from the success of market-based reforms and catch-up (p. 230), but also stress the need for more scrutiny of the price comparisons.

As the authors indicate, recent development in the growth accounts literature have provided new avenues for explaining differences in productivity growth and level across industries and between countries. Notably the analysis of the contributions of differences in the use of information and communication technology (ICT) and research and development (R&D) has been shedding new light on the sources of growth. Recent new initiatives in growth accounts in Japan, China and India will represent a new generation of growth analysis. This volume provides an important foundation on which these new studies can build.

Productivity & Data

RIETI has engaged in the revision and update of the Japan Industrial Productivity Database (JIP database), which was created to analyze Japan's economic growth and industrial structural change, in collaboration with Hitotsubashi University's "Research Unit for Statistical Analysis in Social Sciences" project.

The JIP 2009 database contains annual data on 108 sectors covering the entire Japanese economy from 1970-2006 that can be used for total factor productivity (TFP) analysis. The database includes detailed information on sectoral capital service input indices and labor service input indices. It also contains information

on real capital stocks and the nominal cost of capital by type of capital and by industry, annual nominal, and real input-output tables, and supplementary tables that include statistics on trade, outward FDI, and Japan's industrial structure. All real values are based on 2000 prices.

JIP Database is also used for a basic component of the STAN that was developed by OECD for the analysis of member states' industrial structures and productivity.

