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Introduction

Takatoshi Ito and Anne O. Krueger

The rapid growth of the East Asian newly industrializing economies (NIEs)—Hong Kong, Korea, Singapore, and Taiwan—has astonished the entire world since the 1960s. Although the four economies share many common characteristics, there are also significant differences. The Korean and Taiwanese governments were committed to export-led growth, while Hong Kong was a prototype free-market economy. Korea grew with interlinked big corporations, while Taiwan's growth was more centered on small and medium-sized firms. All four, different as they are, achieved sustained real rates of economic growth substantially in excess both of any previously experienced and of those believed the maximum attainable, and all four achieved those rates with even more rapid growth of exports and imports.

Since that time, researchers have analyzed various aspects of that growth. Several obvious characteristics can easily be identified. All four countries relied on their comparative abundance in (and therefore comparative advantage in products using) unskilled, but highly trained, labor, and exports were a leading growth sector, growing at the unheard of rates of 30–40 percent per year for several decades. Clearly, trade policies played a major role in the success of the East Asian countries. So, too, did their focus on increasing educational opportunities for their people, as the rising average educational attainment of the labor force clearly contributed to growth. All four also achieved very high rates of savings and investment. In the case of Korea, borrowings from abroad became large, as investment exceeded saving, in the 1970s. However, Korea successfully paid back the debt by growing the economy even faster, and growth spurred saving.

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While East Asian growth was exceeding all expectations of outside economists and observers, neoclassical economic growth theory was well developed by the 1970s, with little new research being undertaken. For many economists (and other observers), neoclassical theory seemed unsatisfactory in that it predicted a slowing down of growth rates due to diminishing returns to additional factor accumulation per person. Sustained high growth rates in Japan (in the 1950s and 1960s) and in the four NIEs seem to contradict this prediction. Robert Solow's seminal contribution shows that, within the context of a neoclassical model, a large part of growth originated in the "residual." Some economists took the residual to be technological change; others identified it with economic policies (especially after the East Asian experience). Others noted that it might be interpreted as a measure of our ignorance, containing all the elements contributing to growth other than factor accumulation per se. And, indeed, as estimates were made of the contribution of increasing human capital, improved efficiency of resource allocation, and other factors to growth, the residual did get smaller.

By the 1980s, however, the tension between neoclassical theory and growth experience was evident to many. Out of this emerged an approach to growth which has come to be characterized as "endogenous" growth theory. Starting with the observation that growth rates for individual countries are highly correlated for long periods of time and do not show the tendency to decelerate that neoclassical theory appears to predict, a number of economists developed models in which there are increasing returns to a factor or factors of production. These factors might be the accumulation of knowledge, the development of new ideas, or even experience with production techniques and processes (as, perhaps, in the infant-industry argument).

The appeal of the new approach lay in its square confrontation with the facts of development: growth rates do tend to be correlated. There has followed a host of research, which has gone in several directions. Some economists have attempted to provide direct tests of the "convergence" hypothesis that appears central to neoclassical theory. Those tests, to date, have yielded mixed results. Other economists have developed econometric estimates, based on cross-sectional data across countries and over time, of the rates of growth of output as a function of the variables identified by theory: factor accumulation (including both physical and human capital), political environment (number of assassinations), and economic policies (including export growth, government expenditures, and inflation rates).

To date, considerable progress has been made, although there is as yet no definitive consensus as to the role of increasing returns (or what those returns might emanate from) and the role for government policy in the growth process.

In these circumstances, it seemed natural to hold the fourth annual National Bureau of Economic Research–East Asia Seminar in Economics (EASE) on the East Asian experience in light of endogenous growth theory. The conference was held in San Francisco from June 16 to 19, 1993. This volume contains the results of that conference.

The first paper, by Anne O. Krueger, provides an overview of the East Asian growth experience. Krueger starts by reviewing the overall macroeconomic aggregates that show just how well East Asian NIEs did. As can be seen in table 1.1, the average annual rate of growth of real per capita income exceeded 6 percent in each of the four countries, compared to an average of 2.2 percent annually for all middle-income developing countries. She concludes that, whether there is "endogenous growth" or not, any understanding of the East Asian experience, and especially of the rapid acceleration of economic growth after policies were changed, must take into account the role of economic policy in affecting growth rates. In the East Asian case, "traditional development policies" of import substitution had earlier been followed; it was changes in these policies which immediately preceded the transition to rapid growth.

The second paper, by T. N. Srinivasan, focuses directly on endogenous growth theory and on efforts to test it empirically. Srinivasan provides an excellent comparison and evaluation of the older neoclassical growth models and the newer endogenous models and reviews a wide range of empirical research results. He, too, concludes that the role of policy is important but that, to date, efforts to understand growth have focused on the macroeconomic variables and have not, as yet, addressed the underlying microeconomic processes by which it has taken place.

After the overview of the growth experience of the East Asian countries and of endogenous growth theory provided by the first two papers, attention in the next section turns to experience in individual countries. An overarching question posed in many of the papers focuses on the role of trade and an "outward orientation" in accounting for the stellar performance of the East Asian countries.

The first paper in the second section, by Shang-Jin Wei, focuses on one of the potentially important reasons for China's rapid growth. Wei uses city-level data on exports, foreign investment, and growth of individual Chinese cities to analyze the association between more rapid growth rates and more exports or foreign direct investment. During the 1980s, Chinese cities with higher growth rates were indeed those with more exports. Wei finds that by the late 1980s, foreign investment contributed significantly to differentials in growth rates, and did so through technological or managerial spillovers, rather than because of the magnitude of physical investment. Perhaps even more surprising, Wei's cross-sectional data suggest that the very high growth rates of the coastal cities in China can be explained entirely by their export performance and their attraction of direct foreign investment.

The next pair of papers deal with Taiwan's growth. Ji Chou estimates a modified neoclassical production function with human capital and endogenous factor accumulation and considers the role of exports in permitting realization of scale economies. He finds that a neoclassical specification of the production function which includes human capital fits the Taiwanese experience well after account is taken of the role of trade in permitting exploitation of economies of scale.

Chen-Min Hsu considers the role of public finance in permitting rapid growth in Taiwan, with the assistance of a simulation model. He estimates the effects of financing public investment in Taiwan through fiscal deficits and finds that crowding out of private investment would significantly reduce the rate of economic growth.

The next two papers analyze aspects of Korea's rapid economic growth. First, Chong-Hyun Nam examines the role of trade and exchange rate policies. He first traces the trade and exchange rate policies that were followed starting in the 1960s. He concludes that Korea's initial effort to encourage exports through (uniform) export subsidies was possible in part because the level of antiexport bias was low. He notes, however, that costs were paid in the form of retarded financial market development; moreover, the export subsidy strategy ran risks of provoking retaliation from foreign countries. He also concludes that maintenance of a realistic real exchange rate for exports was essential for rapid export growth, along with a high rate of investment, including adequate investment in infrastructure.

In their paper, Joon-Kyung Kim, Sang Dal Shim, and Jun-Il Kim assess the role of government in Korea's economic development. They analyze the role of government in supporting firms' export efforts, the export incentives, and aspects of risk sharing. They also briefly consider the controversial heavy and chemical industry drive, noting that it may have enabled producers to learn to cope with economies of scale but that criticisms center upon a number of aspects of those policies. They conclude that the support of education and training was highly important in Korea's growth and that the fact that there was an "international market" test permitted the government to support exporters and yet maintain incentives for economically efficient production.

The final paper in this section is by Hirohisa Kohama, who analyzes the characteristics of Japan's Official Development Assistance (ODA). Kohama shows that Japan's ODA has been allocated largely to countries with strong trading (primarily exporting) links with Japan and other Asian countries. In contrast with the aid programs of other industrialized countries, Japan's ODA is concentrated much more heavily on loans to social infrastructure projects. He suggests that an emphasis on aid to infrastructure is consistent with Japan's own experience and belief that infrastructure is important in initiating, supporting, and sustaining economic growth. He infers that Japan's ODA contributed to the economic growth of the NIEs.

Whereas the papers in the second section describe individual aspects of the growth experience in individual Asian countries, the three papers in the final section of the volume address the broader question of the relevance of endogenous growth theory for understanding the region's growth experience.

In the first paper, Hak K. Pyo estimates aggregate production functions for the United States and South Korea, using direct estimates of human capital, rather than proxy variables as had earlier been done. For both countries, the inclusion of human capital is, as expected, very important. Once he takes human capital accumulation and stock into account, he finds South Korea converging toward the levels in the developed countries, while he estimates constant returns to capital from U.S. data. His provocative interpretation of his findings is that developing countries which use their human capital well are enabled to converge with developed countries, whereas other developing countries which do not effectively employ their human capital are unable to do so. He concludes that this raises a key question requiring more research: Why are some developing countries unable to begin to accumulate and utilize effectively human capital?

Shin-ichi Fukuda and Hideki Toya also attempt to test the convergence hypothesis on East Asian data, examining the role of exports in economic growth. They start by demonstrating that the straightforward convergence hypothesis, that the rate of growth is negatively related to the initial level of per capita income, is rejected for East Asian data when account is taken of physical and human capital accumulation. However, they then include the share of exports in GDP in the regression estimates; while coefficients of other estimated variables are unaffected, the coefficient testing convergence changes significantly. They conclude that, given export-GDP ratios, East Asian countries do show conditional convergence, so that initially poorer countries tended to grow more rapidly than richer ones. In addition, they note that a higher export share also tends to lead to a higher growth rate, and they believe that this characteristic is part of what differentiated East Asia from Latin America. Finally, they examine the role of government consumption and find that it positively affected growth only when considered in conjunction with exports: they interpret this finding to mean that government consumption consisted of the provision of services which supported the growth of exports.

In the final paper, William Easterly presents a thorough cross-country convergence regression. According to his results, the rapid growth of the Asian "tigers" is not explained even after controlling for educational attainment and capital stock: residuals are still very large. He takes the view that this is not surprising since successful economies must have received large favorable shocks and that any ranking of countries by growth rates tends to have economies with prior favorable shocks at the top. Under his interpretation, those economies with high total factor productivity growth rates are the ones that are catching up with developed countries by adopting technology successfully, and total factor productivity growth is represented in large residuals.

As the reader will see, the papers included in this volume do not provide a clear-cut conclusion as to the relevance of endogenous growth theory in explaining the East Asian experience. Clearly a great deal more research, especially on the microeconomic aspects of growth, will be required before the avenues by which rapid growth occurs are reasonably well understood. Nonetheless, there is agreement that accumulation of physical and human capital was important, that outward-oriented trade strategies played a crucial role, and that government policies were supportive of export growth and factor accumulation. How these important observations link to theory is left for future research. The reader will find much that sheds light on the growth experience of East Asia, as well as much that is provocative for further research, in these papers.