

I AGRICULTURAL GROWTH AND THE ECONOMIC TRANSFORMATION

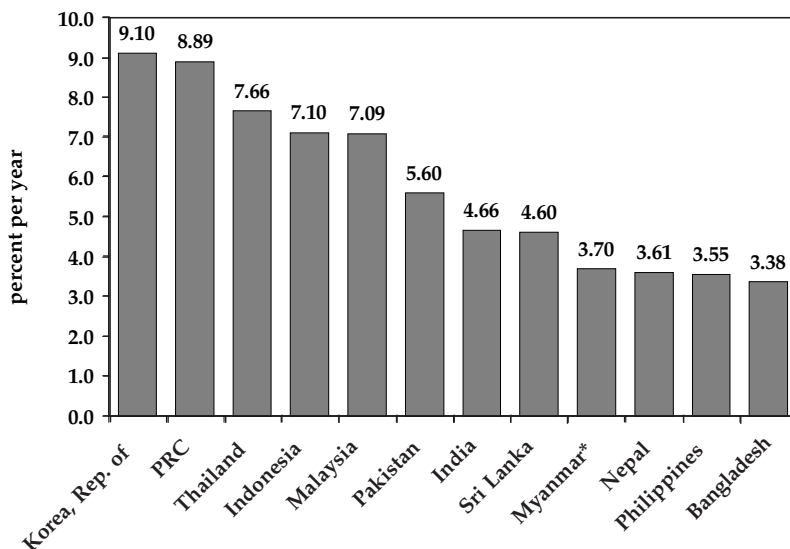
INTRODUCTION

Recent studies of the rapid economic transformation in East and Southeast Asia attribute the changes to pro-growth macroeconomic and trade policies, including low trade barriers, liberalized and competitive domestic markets, high domestic savings rates complemented by private capital inflows, and critical investments in infrastructure and education (see, for example, Collins and Bosworth 1997; Rohwer 1995; World Bank 1993a). These studies provide important insights into the sources of economic growth in Asia, but with few exceptions, the role of agriculture and the rural economy in the transformation is neglected. Thus, there is a missing link in the understanding of the preconditions necessary for successful economic development strategies. In this chapter, therefore, the economic growth performance in Asian countries in recent decades is summarized, the sources of economic growth are examined, and the crucial role of growth in agriculture and the rural economy as a prerequisite to the launch of broad-based economic growth is highlighted.

Many of the Asian developing economies had spectacular growth over the past three decades, and particularly after 1980, until the financial and economic crisis beginning in 1997 temporarily disrupted this growth (the causes and implications of the East and Southeast Asian crisis are explored in detail in Chapter IX). Figure I.1 and Table I.1 show the growth in gross domestic product (GDP) of the 13 largest Asian developing

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Figure I.1: Growth in GDP, 1967-95 (percent per year)



Note: Growth rates are 3-year centered moving averages.

Source: WDI 1998.

Table I.1: Total GDP in million US dollars (constant 1987)

| Year | 1970 | 1995 | 1967-80 | 1980-89 | 1989-95 | 1980-95 |
|----------------|---------|---------|---------|---------|---------|---------|
| Bangladesh | 10,784 | 24,165 | 2.30 | 4.32 | 4.33 | 4.32 |
| PRC | 75,472 | 577,486 | 7.35 | 9.84 | 10.87 | 10.25 |
| India | 133,961 | 407,880 | 3.58 | 5.84 | 5.26 | 5.61 |
| Indonesia | 24,851 | 139,321 | 7.42 | 6.08 | 7.95 | 6.83 |
| Korea, Rep. of | 30,870 | 254,426 | 10.04 | 8.76 | 7.59 | 8.29 |
| Malaysia | 10,865 | 62,655 | 7.40 | 5.53 | 8.80 | 6.82 |
| Myanmar* | 36,087 | 87,904 | 4.69 | 1.08 | 5.56 | 2.85 |
| Nepal | 1,784 | 4,463 | 2.41 | 4.35 | 5.13 | 4.66 |
| Pakistan | 13,527 | 49,810 | 5.35 | 6.54 | 4.75 | 5.82 |
| Philippines | 18,577 | 43,162 | 5.48 | 1.47 | 2.58 | 1.91 |
| Sri Lanka | 3,093 | 9,275 | 4.83 | 4.38 | 4.46 | 4.41 |
| Thailand | 17,420 | 107,921 | 7.24 | 7.48 | 8.86 | 8.03 |
| Viet Nam | – | 59,947 | – | – | 7.82 | – |

Note: For Myanmar, constant GDP values are only given in the local currency unit.

Source: WDI 1998.

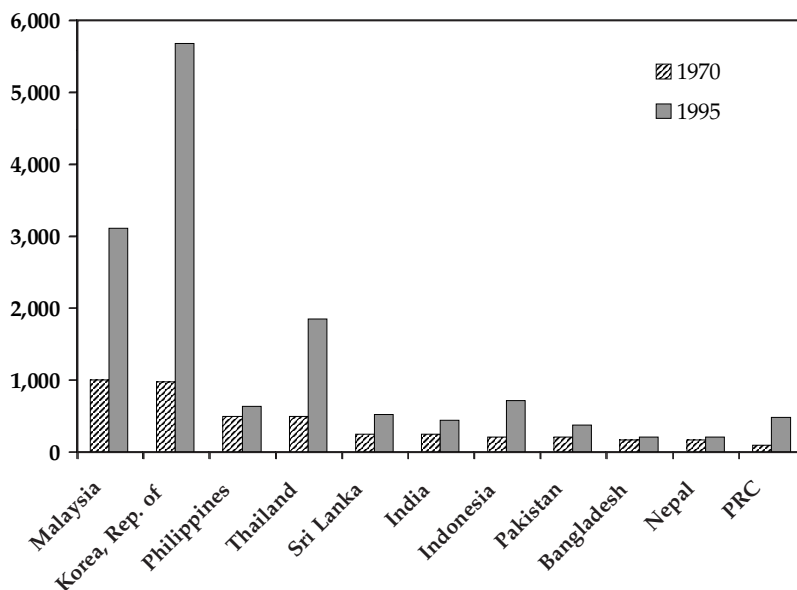
economies (Viet Nam is not shown in Fig. I.1). Based on economic growth rates, the countries can be divided into three groups. The first is the group of very rapidly growing East and Southeast Asian countries, led by the People's Republic of China (PRC), with a growth rate of over 10 percent per year after 1980. Indonesia, the Republic of Korea, Malaysia, and Thailand grew at rates of 6.8–8.3 percent per year during 1980–95 and except for Korea, each of these countries grew significantly faster during the latter part of this period. Although a full time series on GDP is not available, Viet Nam also belongs to this group, at least for the 1989–95 period, with an annual rate of growth of 7.8 percent. The second group is the South Asian countries, which achieved moderate economic growth compared to East Asia, but still performed strongly compared to developing countries outside Asia. During 1980–95, Pakistan grew at 5.8 percent per year, India at 5.6 percent, and Bangladesh, Nepal, and Sri Lanka clustered at 4.3–4.7 percent per year. Finally, Myanmar and the Philippines had slow growth, 2.9 percent and 1.9 percent per year, respectively.

Similar trends can be observed with respect to annual growth of per capita GDP (Figure I.2, Table I.2). The PRC experienced the largest rate of growth, at 8.8 percent per year during 1980–95, even accelerating its annual rate of growth from the 1980s (8.3 percent) to the 1990s (9.6 percent). Only the Republic of Korea came close to this rate of growth in per capita GDP, at 7.1 percent per year during 1980–95, but its growth slowed down between the 1980s and the 1990s. Indonesia and Thailand, on the other hand, experienced accelerated growth, albeit at lower average levels of 4.9 percent and 6.5 percent annually, respectively. Malaysia achieved the most rapid improvement in its per capita growth rate, from 2.8 percent per year during 1980–89 to 6.2 percent annually during 1989–95, despite its rapid rate of population growth of 2.6 per year over the 1980–95 period. Viet Nam appears again at the lower end of the rapidly growing group, at 5.6 percent per year during 1989–95.

In the group of South Asian countries, the combination of higher population growth and lower GDP growth led to slower per capita GDP growth during 1980–95, ranging from a

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Figure I.2: GDP per capita, 1970 and 1995 (constant 1987 US\$)



Source: WDI 1998. FAO FAOSTAT. 1998 (Population DataBase).

Table 1.2.: GDP per capita, (percent per year)

| Year | 1967-80 | 1980-89 | 1989-95 | 1980-95 | 1967-95 |
|----------------|---------|---------|---------|---------|---------|
| Bangladesh | -0.50 | 2.02 | 2.74 | 2.31 | 0.99 |
| PRC | 5.18 | 8.25 | 9.59 | 8.79 | 7.10 |
| India | 1.34 | 3.61 | 3.39 | 3.52 | 2.50 |
| Indonesia | 4.98 | 4.05 | 6.28 | 4.93 | 4.96 |
| Korea, Rep. of | 8.01 | 7.46 | 6.59 | 7.11 | 7.53 |
| Malaysia | 4.82 | 2.79 | 6.22 | 4.15 | 4.46 |
| Myanmar* | 2.36 | -0.94 | 3.71 | 0.90 | 1.57 |
| Nepal | -0.02 | 1.68 | 2.37 | 1.96 | 1.04 |
| Pakistan | 2.59 | 3.03 | 1.91 | 2.58 | 2.58 |
| Philippines | 2.70 | -0.85 | 0.37 | -0.37 | 1.05 |
| Sri Lanka | 2.95 | 2.89 | 3.41 | 3.09 | 3.03 |
| Thailand | 4.32 | 5.58 | 7.76 | 6.45 | 5.45 |
| Viet Nam | - | - | 5.64 | - | - |

Note: For Myanmar, GDP values are from the local currency unit. Growth rates are 3-year centered moving averages.

Source: WDI 1998. FAO FAOSTAT. 1998 (Population DataBase).

low of 2.0 percent annually in Nepal to a high of 3.5 percent per year in India. Growth in per capita GDP accelerated in Bangladesh, Nepal, and Sri Lanka, but decelerated in India (slightly) and in Pakistan (considerably). The annual rates of growth of per capita GDP in Myanmar and the Philippines improved from negative rates in the 1980s to positive growth in the 1990s. The rates of growth for the full period, however, were only 0.9 percent per year in Myanmar and negative 0.4 percent per year in the Philippines.

SOURCES OF ECONOMIC GROWTH IN ASIA

Considerable controversy remains about the relative contributions of technical progress and capital accumulation and the role of government policies in stimulating economic growth in Asia, but some areas of consensus are emerging. A substantial debate on the sources of economic growth in Asia was set off by Krugman (1994), who argued, drawing upon research by Young (1994, 1995) and Kim and Lau (1994), that the spectacular economic growth in East Asia was almost solely due to growth in capital and labor inputs, with virtually no contribution from productivity growth. A brief summary of this debate provides a useful base of comparison for the analysis of the contribution of productivity growth to agricultural output growth.

Analysis of total factor productivity (TFP) attempts to measure the amount of increase in total output that is not accounted for by increases in total inputs. Total factor productivity is computed as the ratio of an index of aggregate outputs to an index of aggregate inputs. Growth in TFP is therefore the growth in total output less the growth in total inputs (see Box I.1). Analyses of the contribution of TFP to general economic growth in Asia have produced a wide range of results, seemingly linked to the degree of adjustments made to account for input quality.

Young (1995) found, based on careful adjustments to input quality, that TFP growth accounted for about

Box I.1: Measuring TFP

Total factor productivity is the ratio between real output and real factor inputs. TFP can be estimated directly based on a production function, but more often it is estimated using a growth accounting framework derived from an underlying production function. TFP computed from growth accounting is the residual between output growth and input growth.

Measurement of inputs can be difficult, with particular problems related to the measurement of capital inputs, including their aggregation, the valuation of capital, depreciation methods, and capacity utilization. Labor inputs can also be difficult to measure, because of the influence of education in improving the labor force quality and productivity. If capital and labor are not measured correctly, the quality changes in inputs will also be included in the growth accounting residual. If there are underadjustments in input quality improvement (as is often argued for developed countries), measured TFP will be higher than actual TFP. If there are overadjustments in quality (which Chen [1997] persuasively argues may often be the case for developing countries), measured TFP will underestimate actual TFP.

Given these measurement uncertainties, it is useful to note that biases are likely to be relatively low in measuring TFP in developing-country agriculture because capital and labor are relatively undifferentiated and change slowly over time compared to the nonagricultural sector. Moreover, despite a range of methods used to adjust for input quality improvements, there is strong agreement across studies in the key conclusions regarding patterns of TFP growth in agriculture.

(Chen 1997; Evenson, Pray, and Rosegrant 1999)

one third of general economic growth from 1966 to 1990 in Hong Kong, China; 28 percent in Taipei, China; 17 percent in Republic of Korea; and only 2 percent in Singapore. Other recent estimates for similar time periods establish a range for the contribution of TFP to economic growth of 32–46 percent for Hong Kong, China; 15–40 percent for Taipei, China; 9–37 percent

for Republic of Korea; and -2 percent to 23 percent for Singapore (World Bank 1993a; Drysdale and Huang 1995; Kim and Lau 1994). For the PRC, alternative estimates indicate that TFP growth has contributed 24–28 percent of total economic growth; for Indonesia, 23–31 percent; for Malaysia, -8 percent to 24 percent; for the Philippines, -21 percent to 4 percent, and for Thailand 27–37 percent. There is less information on growth in TFP in South Asia (see Box I.2).

What can be learned from these results, aside from the difficulties inherent in the measurement of TFP? Based on the lower range of the estimates for the East Asian countries, Krugman (1994) argues that the results showed that the “East

Box I.2: Productivity Growth in South Asia

Compared to the explosion of studies on TFP growth in East and Southeast Asian economies in recent years, there has been relatively little work on South Asia. The available evidence, however, shows that economic growth has been slower in South Asia than in East Asia (2.7 percent increase in output per worker in South Asia, 1973–94, compared to 4.2 percent in East Asia, according to Collins and Bosworth [1997]). TFP growth of 1.3 percent per year has, however, been as high or higher over this period than in many East Asian countries, and has contributed a higher percentage to overall economic growth. Ali and Hamid (1996) find for Pakistan that the share of capital in the growth of the manufacturing sector was about 60 percent, the share of labor about 10 percent, and the share of technical change was a high 36 percent during 1973/74–1994/95. In the agriculture sector, on the other hand, technical efficiency only contributed 21 percent to growth during the same period. Sahota et al. (1991) find, based on a growth accounting framework, that TFP growth in the manufacturing sector in Bangladesh was actually declining between 1975/76 and 1984/85, and that the New Industrial Policy of 1982 had little impact on growth of total factor productivity.

Asian growth miracle" was in fact based on capital and labor accumulation similar to economic growth in the Soviet Union in the 1950s and 1960s, rather than on increases in productivity. Moreover, Krugman argues through analogy with the Soviet growth experience in the 1950s and 1960s that input-driven economic growth cannot be sustained. But Chen (1997) offers an alternative interpretation of the East Asian growth experience, noting that the relatively low TFP contribution reflects the importance of technological change embodied in inputs, such as quality improvements, together with economies of scale, increased capacity utilization, and structural transformation.

Modern growth theory shows that growth based on economies of scale and human capital accumulation can in fact be sustainable (see, for example, Lucas 1993). Moreover, a static view of sources of growth is inappropriate. The available evidence typically indicates that technological change is the major source of growth for industrialized countries and relatively unimportant in the early stages of growth in developing countries. The contribution of TFP growth should therefore increase over time as the East Asian economies continue to develop (Chen 1997). Rapid productivity growth through adoption and adaptation of technology from abroad is likely to depend on the stage of growth of an economy. Growth in the early stages of development may be primarily associated with physical and human capital accumulation. A significant potential for productivity growth through borrowing and use of technology may be possible only when a country has crossed a development threshold (Collins and Bosworth 1997). Grossman and Helpman (1994) argue that even if technological progress is the main driving force of long-term growth, factor accumulation will play an important role during a possibly prolonged transition phase.

In fact, studies that have disaggregated Asian TFP growth by subperiod confirm that the contribution of TFP to economic growth has increased over time. Chen et al. (1988) find that the contribution of TFP to industrial growth in the PRC increased from 14 percent in 1957–78 to 68 percent during 1978–85.

Borensztein and Ostry (1996) estimate negative TFP growth for the PRC during 1953–78, but positive growth of 3.8 percent per year from 1979 to 1993, accounting for more than 40 percent of GDP growth. Osaka (1997) finds that the Republic of Korea shifted from negative TFP growth before 1980 to a strong positive contribution from TFP thereafter, and that the Philippines and Thailand shifted from negative to positive TFP growth in the mid-1980s. Collins and Bosworth (1997) also show a remarkable increase in the contribution of TFP to overall growth in many East and Southeast Asian economies beginning in the mid-1980s. Comparing the periods 1973–84 and 1984–94, growth in TFP nearly doubled in Indonesia and Republic of Korea and more than tripled in Malaysia, Singapore, Thailand, and Taipei, China.

In summary, factor accumulation has been the primary source of growth in the East and Southeast Asian economies, while TFP growth has been a low to moderate contributor to overall economic growth. TFP growth is becoming an increasingly important source of economic growth as these economies continue to grow, however. Although it is difficult to generalize from the wide range of results, Indonesia, Malaysia, and Singapore seem to have relied relatively more on input-driven growth (with strong input quality improvements in the latter two countries), while Hong Kong, China; Republic of Korea; and Taipei, China have relied more heavily on technology-driven growth. Over the past ten to 20 years, many of the East and Southeast Asian countries have begun a shift of emphasis from capital accumulation to technology-based growth.

EXPLAINING ECONOMIC GROWTH

Explanations of productivity growth and overall economic growth in Asia have focused on a number of factors, including openness to trade, institutional quality, direct foreign investment, financial development, and macroeconomic policies. Collins and Bosworth (1997) note the difficulties in sorting out the impacts of the relevant policies and variables

affecting economic growth. Much of the analysis of sources of growth implicitly or explicitly treats policies and underlying processes as affecting TFP growth, rather than factor accumulation; the latter, as shown above, has accounted for the lion's share of economic growth in East Asia. It may be more important to identify the policies that best promote high rates of savings and investment rather than policies that promote TFP growth (although there may also be considerable congruence between policies that promote TFP and those that induce high savings and investment). The available measures used to represent trade regimes, industrial targeting, and fiscal, monetary, and exchange-rate policy tend to be simple or highly aggregated and may capture differences poorly and be subject to measurement error. Moreover, it is difficult to separate the effects of policies that are implemented simultaneously.

Nevertheless, there is a fairly strong consensus in the literature on the importance to East Asian growth of conservative fiscal policies and sound exchange-rate policies as crucial components of macroeconomic stability, relatively low anti-export bias, and investment in education. The relative importance of these policies and the role of trade policy compared to investment incentives and the role of industrial policy remain open to debate. Collins and Bosworth (1997) find that fiscal discipline (low budget deficits) and exchange-rate stability are associated with higher economic growth. Krueger (1995) and World Bank (1993a) emphasize the importance of market-oriented policies. Amsden (1994) and Fishlow et al. (1994) argue that selective intervention and industrial policy have been important contributors to growth. Sachs and Warner (1995) find that export orientation and open trade policies are the most important government policies, while Rodrik (1995) argues that export promotion policies have not played a significant role. Other analyses emphasize the role of institutions in explaining economic growth in Asia. Rodrik (1997) stresses the primacy of institutional quality in explaining the differential growth performance among East Asian countries. In the following sections, we briefly review the evidence on the role of policies in economic growth in Asia.

Prudent Macroeconomic Policies

Although country experiences vary, most authors agree that all East Asian newly industrializing economies (NIEs), (the so-called “tiger” economies of Hong Kong, China; Singapore; Republic of Korea; and Taipei, China) and the Southeast Asian NIEs (Indonesia, Malaysia, and Thailand) had relatively small fiscal deficits and inflation rates were typically moderate, although not particularly low. Real interest rates have been quite stable, and black market exchange-rate premiums were comparatively low. The rapidly growing East Asian economies also achieved realistic real exchange rates. During 1978–86, the government deficit was 3.5–6.5 percent of GDP in Thailand and reached 15.5 percent in Malaysia during 1981–82. Inflation averaged 20 percent in Korea during 1974–81 and reached 40 percent in Indonesia in 1974. However, deficits and inflationary pressure were countered rather quickly in all the East Asian economies (Collins and Bosworth 1997; Rodrik 1997). Collins and Bosworth (1996) also show that the East Asian countries with smaller budget deficits and more stable exchange rates tended to grow faster, with smaller deficits supporting the accumulation of capital per worker and exchange-rate stability favoring productivity growth.

Market-oriented Policies

Market-friendly policies have played an important role in the growth experience of the East Asian NIEs. They can be considered as an intermediate approach, more proactive than laissez-faire policies and more cautious than active industrial policy. Market-oriented policies focus on the liberalization of trade, accompanied by decreased government regulation and intervention, and thus less rent seeking, all conducive to the functioning of a market economy. The East Asian exporters also faced fairly uniform incentives for exporting commodities across industries. Moreover, both imports and capital flow were gradually liberalized and the fiscal deficit was comparatively

low. The share of government expenditures in GDP was relatively small.

The governments in all East Asian countries invested heavily in infrastructure and human capital to support rapid increases in manufactured output and exports. In addition, there was also little intervention in the labor market. Interventionist policies in the labor market, when they were adopted, appear to have been rather harmful for economic growth (Krueger 1995). World Bank (1993a) summarizes the market-oriented approach adopted by the NIEs as encompassing macroeconomic stability, human capital formation, openness to international trade, and an environment conducive to private investment and competition.

Open Trade Policies

Rapid growth in exports has been a central feature of the East Asian NIEs. Outward-oriented trade policies were accompanied by stable exchange-rate regimes. In the early 1960s trade policies focused on import substitution (with the exception of Hong Kong, China), followed in the mid- to late 1960s by export-promotion policies, in particular in Republic of Korea; Singapore; and Taipei, China (Collins and Bosworth 1997). Sachs and Warner (1995) conclude that open trade policies and related reforms represent the key to economic growth in developing economies. Utilizing a time-series regression analysis, the authors show that a high labor-to-land ratio (a given in most Asian economies) and high per capita income encourage early liberalization policies in developing countries. (However, some labor-intensive economies, like Bangladesh, India, Pakistan, and Sri Lanka, remained protectionist).

“Open” economies grew at 4.5 percent per year during the 1970s and 1980s, whereas closed economies grew only at 0.7 percent per year. Poor open economies grow faster than rich ones, a tendency that cannot be observed for closed economies. Finally, poor trade policies affect trade both directly and indirectly by limiting the rate of investment in physical capital.

Among the Asian economies, Hong Kong, China; Malaysia; Singapore; and Thailand can be considered as open economies throughout the past two to three decades; Taipei, China is considered as open after 1963, the Republic of Korea after 1968, and Indonesia after 1970. All other Asian economies only opened to trade in the late 1980s or early 1990s. Bangladesh was still considered a closed economy in 1994. More recently, the East Asian NIEs have started to shift away from extensive use of selected export-promotion policies.

Industrial Policy

Some analysts argue that industrial policies in the form of “soft” strategic interventions (as undertaken by the East Asian NIEs) can promote selected industries in order to create spillover benefits, enhance the overall competitiveness of the industry, and raise the future technological level of the economy (Wade 1994). Industrial policies include protectionist policies; export promotion; targeted credit and tax subsidies; and other industrial, technology, and education policies designed to support specific industries or sectors. Fishlow et al. (1994) attribute a very large role to industrial policies in the East Asian NIEs. Rodrik (1997) suggests that the comparatively poor performance of growth of investment as a share of GDP since the 1960s in Hong Kong can be attributed to its noninterventionist policies. But the experience with industrial policy in the East Asian NIEs is quite mixed, and even when industrial policies generate short-term benefits, they may be costly in the longer term. Whereas Hong Kong, China did not use any industrial policies, Thailand implemented few interventionist policies, Singapore relied on selected interventions; Taipei, China adopted a moderate number; and Japan and the Republic of Korea pursued highly interventionist policies. The Korean government focused on large conglomerates, whereas small, entrepreneurial firms were favored in Taipei, China (Rodrik 1994). Although foreign direct investment (FDI) is typically considered a primary way to

transfer modern technology, the East Asian NIEs have also not adopted this strategy uniformly. Only Singapore actively encouraged FDI, Hong Kong adopted a *laissez-faire* approach, the Republic of Korea managed FDI carefully, and Japan practically prohibited FDI.

There is some evidence that industrial policy, in particular concerning directed credit and export promotion, and particularly in Japan, Republic of Korea, and Taipei, China, resulted in higher and more equal growth (World Bank 1993a). However, the positive effects were limited and it is difficult to transfer the experience to other developing countries. Lee (1992) for example, finds that trade restrictions and subsidized credit had adverse effects on growth in TFP in the Republic of Korea. There is also new evidence that, during the period 1960–90, Japanese industrial policies increasingly diverted resources away from high-growth sectors toward declining industries and did not have a positive impact on TFP growth within sectors. Similar results have been found for Taipei, China during the 1980s (Datt 1998).

Moreover, attempts to transfer the lessons of industrial policy to the rest of developing Asia have been largely unsuccessful. The extraordinary cost of mismanaged directed credit has been shown by the East Asian financial crisis (see Chapter IX). Direct picking of winners through industrial policy has also not fared well. In Malaysia, heavy industry was particularly promoted after 1981 when the Heavy Industries Corporation of Malaysia (HICOM) was created to target large-scale, capital-intensive iron and steel and other heavy industry companies. By 1988, nine companies had been involved in steel, cement, motor vehicles, and motorcycle engine manufacturing. But poor management, low profitability, and budgetary concerns rang in the end of the HICOM period at the end of the 1980s. Indonesia used public investments to promote industries designated as having high potential for technological learning. These investments were not linked up with private-sector efforts and were generally unsuccessful (World Bank 1993a).

Picking winners and providing protection to some industries also by definition penalizes other industries. As will

be shown in Chapter IV, a clear example of this is the rural nonfarm sector, which has largely been ignored by policymakers and has suffered as a result of macroeconomic policies that discriminated against the agricultural sector. The few attempts to assist the rural nonfarm economy have generally favored manufacturing rather than service activities and large- rather than small-scale units of production, encouraging more capital-intensive patterns of development than is optimal. In summary, the industrial policy approach has not been successfully transferred from the early industrializing East Asian economies to the rest of developing Asia because of intrinsic difficulties. Industrial policies that have been implemented have not been based on a sound analysis of market failures they were intended to correct; they were not selective in addressing specific market failures; they ignored market signals in attempting to achieve efficiencies; they underestimated the informational requirements necessary for effective intervention; they overlooked the limited capacities and capabilities of government; and they overestimated the human and other resources available to build efficient industries (Jomo 1996).

Investment in Education

Human capital makes investment more productive, facilitates the adoption of modern technology, and enables the establishment of an efficient bureaucracy. All of the East Asian NIEs as well as Malaysia and Thailand had virtually universal primary schooling by 1960. Literacy rates were exceptionally high in all the countries except for Singapore (Rodrik 1994). According to Rodrik (1994), the initial conditions of high levels of primary-school enrollment and equality around 1960 can explain a large share of the growth of Republic of Korea, Malaysia, Taipei, China, and Thailand.

Most East Asian countries continued to invest heavily in education: in 1982, 85 percent of children in Taipei, China attended secondary school, 89 percent in Republic of Korea, and 92 percent in Japan, compared with 87 percent for all

industrial market economies (Krueger 1995). Even Indonesia achieved a secondary enrollment rate of 46 percent by 1987. Only in Thailand was the secondary enrollment rate a low 28 percent, well below the 36 percent prediction based on its per capita income in 1987 (World Bank 1993a). Collins and Bosworth (1997) find that the contribution of improvements in education has been relatively large in East Asian countries compared to other regions in Asia, but remains a relatively small part of the growth story. Young (1995), on the other hand, discerns an important role for educational attainment in the exceptionally rapid income growth in the newly industrializing economies of Asia, in addition to large increases in labor-force participation and capital stock.

Institutional Issues

Good governance and strong institutional performance in the public sector are important for economic growth. The structure and orientation of the bureaucratic-institutional framework varies widely in Asia; bureaucracies have evolved from a series of different approaches and differ not only across countries but also across agencies within countries. Evans (1998) argues that successful growth has demanded a high level of bureaucratic capacity, close coordination between the public and private sectors, and the need to avoid rent-seeking behavior. Although East Asian bureaucracies have often been characterized as being relatively effective, all East and Southeast Asian bureaucracies, with the possible exception of Singapore, are characterized by considerable inefficiency (Evans 1998). As will be described in Chapter IX, the East Asian crisis has revealed fundamental weaknesses in governance in many Asian economies. Rodrik (1997) examines the impact of institutional quality measured by an index constructed from several factors:

- the quality of the bureaucracy, including autonomy from political pressure and expertise and efficiency in the provision of government services;

- rule of law, including soundness of political institutions, strong judicial system, and orderly succession of political power;
- risk of appropriation, with low values indicating high possibility of confiscation and nationalization; and
- repudiation of contracts by government, with low values indicating high risks (Knack and Keefer 1995, cited by Rodrik 1997).

Based on this index, Rodrik (1997) finds that Japan, Singapore, and Taipei, China are ranked high in the institutional quality scale, while Indonesia and the Philippines, both known for weak institutions, score particularly low. His analysis indicates that institutional quality, initial income, and initial education account for a large part of the differences in the growth experience of the East Asian countries. In the absence of superior institutions, Japan and Singapore would have been predicted to grow at rates below the regional average, whereas poor institutions are the primary culprits for low economic growth in Indonesia and the Philippines.

Overall, the evidence indicates that accumulation of physical and human capital was the most important factor in the East Asian growth experience, but that in most countries, productivity growth has also played a significant and increasing role in economic growth. Fiscal discipline, market-oriented policies, open trade policies, investment in education, and institutional quality have played a crucial role in economic growth, supporting both factor accumulation and productivity growth. Industrial policy has been less important to economic growth and may have negative long-term effects. In the next section, the role of growth in the rural and agricultural economy in establishing the preconditions for rapid economic growth is explored.

IMPORTANCE OF AGRICULTURE IN PROMOTING THE TRANSFORMATION

Most Asian countries (Hong Kong, China and Singapore excepted) began as predominantly agrarian economies, in which the agricultural sector accounted for the largest share of GDP, employment and export earnings (see Chapter III). Under colonial regimes, agriculture was also geared to the production of tropical export crops (oil palm, rubber, tea, etc.), which benefited from significant investment in research and infrastructure development, while the food-crop sector was neglected. After independence, most Asian countries depended heavily on their export crops and inherited a stagnant, low-productivity food-crop sector. Coping with low and highly unstable prices for their exports and a growing inability to feed themselves was the key challenge for the newly formed governments. Not surprisingly, national food self-sufficiency became a primary policy goal for most Asian countries. With uncertain foreign exchange earnings and limited ability to pay for food imports, increasing domestic food production to assure food security was a priority.

Until the food problem was solved, the development of the nonagricultural sector was necessarily constrained. Labor and capital could not easily be freed from a technologically stagnant agriculture and any significant growth of the nonagricultural sector would increase the demand for food. Food prices (and hence industrial wages) would then be driven up in the face of an inelastic aggregate agricultural supply. Not only would this reduce the competitiveness of the nonagricultural sector, but it would effectively transfer resources back to the agricultural sector where they would be subject to diminishing returns (Mellor 1973). Food imports, which might have provided a way out of this trap, were constrained by low and unstable export earnings.

A technologically driven transformation of the agricultural sector was a necessary condition for national economic growth. An agricultural revolution was needed not only to overcome

the food constraint, but also to provide an engine of growth on the scale required to begin to transform the national economy. The nonagricultural economy was typically too small to play this role, even if it could have depended on cheap food imports. Even if the agricultural sector contains potential surpluses of capital, labor, and food output to fuel the rest of the economy, forced extraction of these resources from a stagnant agricultural sector would create widespread rural poverty and a drying up of these potential surpluses. Only a dynamic, rapidly growing agriculture can generate the sustained surpluses necessary to drive the economic transformation (Timmer 1988).

During the early stages of the transformation, agricultural growth contributed in several important ways. Foremost was its role in raising the living standards of the rural population, unleashing a massive increase in domestic demand for nonagricultural goods and services. This provided a nascent and growing market to spawn the growth of nonagricultural firms. The additional demand included input, service, and investment needs for a growing agriculture and, more importantly, it included growing consumer demands by millions of rural households as their incomes increased (Mellor 1976; Tomich et al. 1995).

Second, the agricultural sector provided relatively low-cost labor to the industrial and service sectors. Most of the labor required for the expansion of these sectors came initially from agriculture simply because there was almost no other source. Technological change in agriculture increases the output per unit of labor, allowing the release of labor to other sectors without causing stagnation in agriculture or driving up agricultural prices (Johnston and Mellor 1961; Timmer 1988).

Third, a growing agriculture was able to generate large amounts of capital to finance the nonagricultural sector. Part of this was through rural savings; savings rates have been exceptionally high in much of Asia. But part was extracted directly through taxes (particularly land and commodity taxes) and indirectly by turning the terms of trade against agriculture. These transfers have been highest during periods of rapid technological change in agriculture (Mellor 1973). They have

also been very large in some cases. In Japan, for example, agricultural land taxes provided up to 70 percent of the central government's total revenue during the late 19th century (Bird 1974), and in Taipei, China between 1911 and 1960 annual net capital transfers from agriculture were generally in excess of 25 percent of the total value of agricultural production (Lee 1971).

Fourth, agricultural growth fostered the development of the agroindustrial sector, particularly firms that supplied key inputs (machinery, fertilizer, cement, etc.), and that processed agricultural output (food industry, textiles, jute, etc.). These activities were often the spawning grounds for the development of private firms that later entered export markets. Their growth also fostered the development of managerial skills and urban infrastructure that permitted later diversification into new nonagriculturally related activities. In Taipei, China and Republic of Korea, for example, the employment structure of rural manufacturing shifted markedly after the 1960s from processing primary products (food processing, beverages, tobacco, wood and bamboo products) toward much greater concentration in the production of chemicals, paper, printing, metals, and machinery (Otsuka and Reardon 1998).

Fifth, agricultural growth generated additional foreign exchange earnings, through both increased exports and reduced imports, which were key to effective industrialization in the early stages. Many Asian countries regulated the use of foreign exchange in the early years of the transformation, giving high priority to important capital goods and intermediate production goods.

Sixth, agricultural growth transformed rural regions, providing more diversified sources of income for rural households and increased livelihood opportunities without spurring massive migration to the cities. Even before the explosive economic growth of the last decade, the rural nonfarm economy accounted for one third or more of rural employment in many Asian countries, as will be shown in detail in Chapter IV. Small towns have grown rapidly with agricultural growth and now have economies that are dominated by service establishments and agroindustry firms.

Studies of the links between agricultural growth and the rural nonfarm economy in Asia have estimated regional income multipliers at between 1.5 and 2.0, (that is, the increase in value added in the regional nonfarm economy for each dollar increase in agricultural value added), and employment elasticities at about 1.0 (that is, the percentage increase in rural nonfarm employment for a 1 percent increase in agricultural gross output). See, for example, Bell, Hazell, and Slade (1982); Hazell and Ramasamy (1991); Hazell and Haggblade (1991); and Gibb (1974). These spatial patterns of development have helped foster the creation of dense patterns of rural infrastructure, which in turn has contributed to further rounds of growth and has helped to reduce widening interregional inequalities. It has also helped to contain the growth of large cities in many Asian countries.

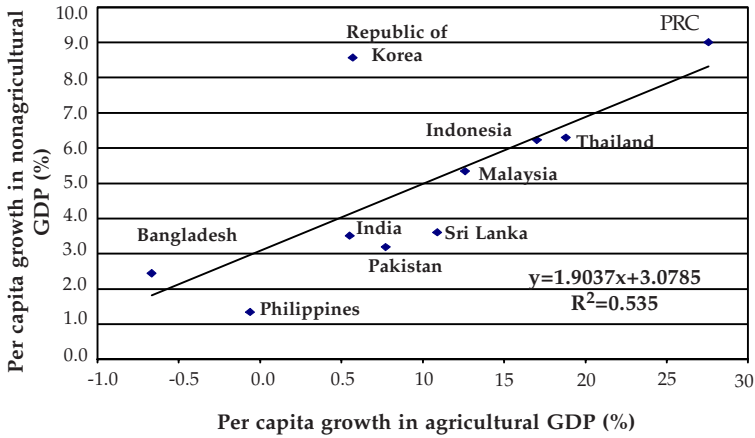
The relationship between growth in the agricultural sector and the combined manufacturing and service sectors can be seen in Figures I.3 and I.4. Those countries with higher agricultural growth also experienced higher growth in nonagricultural activities during 1970–95. Indonesia and Malaysia, for example, fall almost directly on the fitted line showing this relationship, with annual per capita average growth in agriculture of 1.70 percent and 1.26 percent, respectively, fueling growth in the manufacturing and service sectors of 6.23 percent per year and 5.34 percent per year. Bangladesh and the PRC are at the opposite ends of the range of per capita agricultural growth rates, with Bangladesh experiencing negative growth of 0.67 percent annually during 1970–95 and the PRC excelling at 2.76 percent per year, on average. In the South Asian countries of India, Pakistan, and Sri Lanka, per capita agricultural growth translated into lower than expected growth in the manufacturing and service sectors for many of the reasons detailed elsewhere in this chapter.

The Philippines, and even more so the Republic of Korea, are outliers in the general trend. In the Philippines, per capita agricultural growth was slightly negative, on average, during 1970–95 (–0.06 percent per year) but growth in the manufacturing and service sectors was far below average for Asian developing countries—and was the lowest for the countries depicted in the

graph—at 1.35 percent annually. Here, agricultural growth was highly inequitable and thus could not easily transform into nonagricultural growth; moreover, industrial policies themselves were not conducive to agricultural growth. In the Republic of Korea, on the other hand, growth in the manufacturing and service sectors took off rapidly, without supporting rapid growth in agriculture. This development was mainly due to the structure of the industrial sector in this country, with large industrial complexes concentrated in a few urban centers, demands for industrial products chiefly fueled by exports, and capital financed through large inflows (Mellor 1995). Thus, as Mellor (1995) points out, contrary to the evolution in most Asian developing countries, growing demands by the nonagricultural sector pulled agricultural production into faster growth. Per capita growth in agriculture accelerated during the 1980s, to 0.88 percent per year; but growth slowed down at the beginning of the 1990s, to -0.10 percent per year. When the outlier of Republic of Korea is taken out of the sample (Figure I.4) the estimated relationship indicates that about 88 percent of the growth one sector is associated with growth in the other sector. The estimated relationship suggests that for each 1 percent increase in per capita agricultural growth, growth in the manufacturing and service sectors accelerates by 2.1 percentage points.

Historically, all the rapidly growing economies in Asia (except island states like Hong Kong, China and Singapore) enjoyed successful agricultural revolutions prior to their industrialization. These agricultural revolutions derived from the intensification of key food crops (especially rice and wheat) through the spread of high-yielding varieties, fertilizers, pesticides, and massive investments in irrigation (see Chapters V and VI). Not all the countries that had successful agricultural revolutions went on to industrialize and grow rapidly, however. While agricultural growth was necessary during the early stages of the transformation, it was not sufficient to promote industrialization. Several other key factors are also needed to enable countries to successfully convert agricultural growth into national economic growth (Mellor 1976; Tomich, Kilby, and

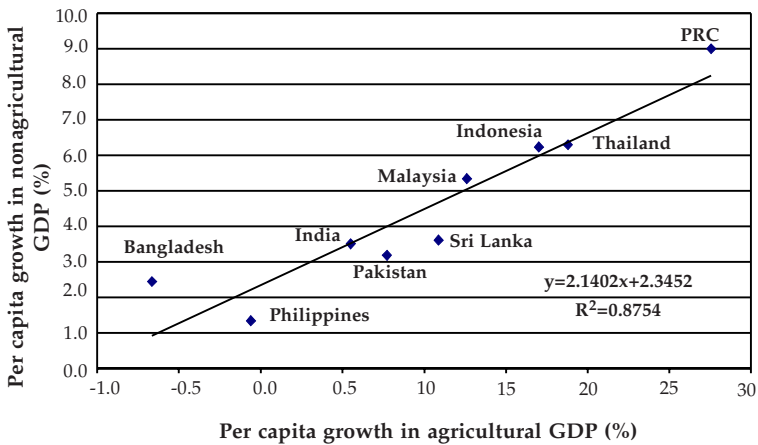
Figure I.3: Per capita growth rate, nonagricultural vs. agricultural GDP (with Republic of Korea), 1970–95



Note: Growth rates are 3-year centered moving averages.

Source: WDI 1998 and FAO FAOSTAT 1998

Figure I.4: Per capita growth rate, nonagricultural vs. agricultural GDP (without Republic of Korea), 1970–95



Note: Growth rates are 3-year centered moving averages.

Source: WDI 1998 and FAO FAOSTAT 1998

Johnson 1995; Ranis, Stewart and Angeles-Reyes 1990). These requirements can be clustered into three groups:

- Agricultural growth must be equitable, so that it puts increased purchasing power into the hands of the farming population. Small and medium-sized farm households spend much larger shares of incremental income on labor-intensive goods that are also nontradables; this leads to larger growth multipliers than if the additional income is concentrated in the hands of rural elites (Mellor 1995; Hazell and Roell 1983; King and Byerlee 1978). A prerequisite for equitable agricultural growth is an equitable distribution of land, with secure ownership and tenancy rights over land. Technologies should also be scale-neutral, and the required inputs should be available to all farmers regardless of size.
- A well-developed rural infrastructure is required to connect villages to local markets. This is needed for the efficient operation of agricultural input and product markets, and also to increase access to nonfarm goods and services to promote demand linkages (Hazell and Roell 1983). Rural infrastructure is also needed for growth of the rural nonfarm economy, particularly in small towns.
- As agriculture develops and food security diminishes as a major constraint, economies need to move quickly to open-market policies and to efficient credit institutions. Protecting domestic industries and overvaluing exchange rates penalize agricultural growth and impede the development of competitive industries that should be in the forefront of export-led growth. They also shield economies from the new technologies that are embedded in many imports and that have the potential to raise factor productivity significantly.

The earliest emerging economies in Asia were successful in meeting these requirements. Several (Japan; Taipei, China; and Republic of Korea) had major land reforms that led to equitable agricultural growth and they invested heavily in rural infrastructure and pursued pro-growth macro and trade policies. The PRC had a successful agricultural revolution from a technical perspective, but was only able to take full advantage of it once the organization of agricultural activity changed to a "household responsibility system" that released labor to the nonagricultural sector and effectively put additional purchasing power into the hands of the rural masses.

India and the Philippines have both had successful agricultural revolutions, but have been slow to convert their results into rapid economic growth. In India, agricultural growth has been relatively equitable and rural infrastructure is well developed, but the country has only recently begun to open its markets and to move to pro-growth macro and trade policies. The results are encouraging, with national income now growing at more than twice the rate of recent decades. In the Philippines, on the other hand, agricultural growth has been highly inequitable, with most of the gains siphoned off by the rich, and rural infrastructure remains weak. Even if fully implemented, pro-growth macro and trade policies on their own seem likely to lead to enclave patterns of industrialization and disappointing overall growth (see also Figures I.3 and I.4).

The importance of agricultural growth in supporting broad-based economic transformation in "late-blooming" countries such as India and the Philippines is brought out by Robinson, Roe, and Yeldan (1998). The authors developed a dynamic computable general equilibrium model of an archetype (or stylized) South Asian economy in order to simulate the likely growth paths resulting from alternative macro, trade, and investment policies over the 30 years 1990 to 2020. Results show the clear superiority of trade liberalization policies over "business-as-usual" patterns in South Asia. But they also show that trade liberalization needs to be accompanied by some fiscal restructuring in order to maintain government investment after the loss of revenue from trade tariffs. Finally, and especially

important, the results show that government investment strategies do matter, even in a liberalized economy. In particular, in countries with a large agricultural base, there are sizable growth gains to be had from a pro-agriculture rather than a pro-industry public investment strategy. This result is consistent with similar findings by Adelman (1984), Yeldan (1989) and Adelman et al. (1989).

CHANGING ROLE OF THE AGRICULTURAL SECTOR

As the economic transformation of an economy proceeds, agriculture's share in GDP falls quite rapidly (see Chapter III) and its importance for economic growth diminishes. The nonagricultural sector becomes the primary engine of growth and is no longer dependent on resource flows from agriculture or on agriculture's demand linkages. The economic problem then is to absorb workers out of agriculture at a sufficiently rapid rate to stop their average productivity (and hence their incomes) from lagging too far behind the levels achieved in the nonagricultural sector. Typically, agriculture's share of total employment falls much more slowly than its share in national income, with the inevitable result that labor productivity (and hence per capita farm income) in agriculture lags behind the nonagricultural sector.

An important reason for this is that the employment elasticity in agriculture declines as commercialization proceeds, while the absolute size of the rural labor force continues to grow until quite late in the transformation process (Tomich, Kilby, and Johnston 1995). Improvements in labor productivity in agriculture require accelerated migration of workers to other sectors, either through rural-urban migration or economic diversification within rural areas, and labor productivity-enhancing investments in agricultural mechanization, larger farm sizes, and diversification into higher-value products. Many countries fail to manage this transformation at an adequate rate and are then confronted with an increasing political problem

of relatively low incomes in the farm sector. The tendency then is to introduce income support policies for farmers, which as the experience of many countries in the Organization for Economic Cooperation and Development (OECD) shows, can lead to a continuing structural imbalance and an increasing burden on the public purse. The agricultural transformation in Japan led into this trap; the Republic of Korea and Taipei, China are already progressing down the same path. In Chapter VII the likelihood of other developing countries of Asia following the same trajectory of increasing agricultural protectionism is discussed.

CONCLUSIONS

With the exception of the city-states of Singapore and Hong Kong, China, the Asian countries that grew earliest and fastest experienced rapid agricultural growth in the early stages of growth. This agricultural growth was broad-based, benefiting small and medium-sized farms in particular, and hence was dependent on an equitable distribution of land. It was also characterized by cost-reducing technological change that led to significant improvements in total factor productivity, as will be shown in more detail in Chapter V. Rapid agricultural growth of this type proved to be a powerful engine for general economic growth, particularly in the regions in which it occurred, and helped to ensure that the benefits of growth were distributed widely across income groups in rural areas. The sheer size of the agricultural sector in GDP and employment (see Chapter II) not only made development of the agricultural sector essential, but meant that the productivity gains that were achieved had economy-wide significance.

Rapid growth in agriculture freed up labor and capital for the nonfarm economy, maintained a downward pressure on the prices of food and key primary inputs for agro-industry, contributed to foreign exchange earnings (through reduced food imports and increased agricultural exports), and provided a

buoyant domestic demand for nonfarm goods and services. This led not only to rapid growth in the rural nonfarm economy, but also contributed importantly to the transformation of the urban economy.

The rapidly growing Asian economies began with a successful agricultural transformation, but as growth continued, matched this with stable macroeconomic policies, market-friendly policies, relatively open trade policies, and aggressive public investments in education and infrastructure. Countries that developed later or more slowly were less successful in adopting the green revolution, for example, because of unfavorable agroclimatic conditions, inappropriate farm-tenure structures, anti-agricultural policy biases, or failure to make the necessary public investments in research and rural infrastructure, and/or because their economies were not well positioned to exploit the potential growth linkage benefits emanating from agricultural growth. Economies with massive public intervention (for example, the centrally planned countries and India), or weak infrastructure, or that were inward-looking rather than export-oriented, were least successful in using the agricultural transformation revolution to stimulate a broader economic transformation.

The PRC is a good example of a country that enjoyed a widespread green revolution early on, but failed to capitalize on this for successful national economic growth until after the economy was liberalized. India and the Philippines also experienced limited national economic growth despite successful green revolutions, but their growth performance is improving as they reform and liberalize their economies. As economic growth proceeds and agriculture declines in relative size, economy-wide policies that support factor accumulation and productivity growth, including fiscal discipline, market-oriented policies, open trade policies, investment in education, and institutional quality are increasingly important in determining the pace of economic transformation.