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1 East Asian Experience and Endogenous Growth Theory

Anne O. Krueger

The spectacularly rapid growth of the East Asian countries has focused the attention of all analysts of growth and development on the lessons that may be learned of relevance for other countries. On some issues, there is by now fairly widespread agreement. On others, those concerned with development remain divided. No part of the literature, however, confronts endogenous growth theory with the analysis of the East Asian experience.

In this paper, the East Asian experience is reviewed with respect to the salient characteristics of growth and to the current state of understanding of that experience, drawing largely on accumulated research and analysis. Then, in that light, the experience is examined in terms of its relevance for endogenous growth theory.

To set the stage, an initial section briefly reviews the salient characteristics of East Asian growth. A second then examines the policy regimes under which growth occurred. The third section provides an assessment of the current state of knowledge with regard to understanding the East Asian experience. In light of that analysis, a final section considers the relevance of endogenous growth theory.

1.1 East Asian Growth¹

By now, the salient characteristics of East Asian growth have received so much attention that a very brief review will suffice. In broad terms, Japan,

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1. All data in this section for which a source is not otherwise indicated are taken from World Bank (1992, various indicators tables).

Korea, Singapore, Taiwan, and Hong Kong have all experienced sustained rates of economic growth well in excess of those earlier thought attainable.² Each started from a relatively low per capita income;³ each adopted policies which resulted in rapid growth of exports; each had fairly conservative monetary and fiscal policies; each government provided infrastructure consistent with rapid growth; the educational attainments of the labor force rose rapidly—there was a rapid shift of the labor force from agricultural to industrial employment; and once rapid growth began, savings and investment rates rose. All were and are regarded as resource-poor economies, although Taiwan and Korea were net exporters of primary commodities in the 1950s.

Table 1.1 provides data on their comparative growth rates and per capita GDPs over the 1965–90 period. As can be seen, all five East Asian economies have grown exceptionally rapidly by world standards. Middle-income countries as a group are estimated by the World Bank to have experienced per capita income growth of 2.2 percent over that same period, while other OECD countries grew at 2.4 percent, compared with Japan's 4.1 percent.

Table 1.2 provides data on the rate of growth of GDP and of exports in each country. As can be seen, in each country in each time period covered, the rate of growth of exports exceeded that of GDP, except for Hong Kong in the period right after the oil price increase of 1973 and Singapore in the 1963–70 period.⁴ Table 1.4, which gives the share of exports in each country's GDP for selected years over the period, again reflects the growing importance of trade as growth took place.

Since rapid growth of exports (and the policies under which it took place) is a central feature of the East Asian economies, it is worthwhile to examine this aspect somewhat more closely. Inspection of data on growth of Korean exports will suffice. Table 1.3 gives data on Korea's exports.

The dramatic increase in exports shows up even more clearly from the very small base. From \$33 million in 1960, exports grew almost 20-fold to \$882 million in 1970, and then grew almost 10-fold over the following decade, reaching \$17 billion in 1980; growth tapered off still more over the 1980s, with

2. In the 1960s, Chenery and others developed the "two-gap" model of developing countries' growth, in which either the rate of savings or the availability of foreign exchange was thought to be the binding constraint on overall growth. As they developed that model, Chenery and Strout (1966) assumed there was a third constraint, which they described as the maximum attainable rate of growth, and suggested that the number was between 6 and 8 percent. All East Asian countries exceeded that rate for extended periods of time, with Taiwan and Korea each achieving periods of a decade or longer with rates in excess of 10 percent.

3. In the Japanese case, there was debate in the 1950s as to whether Japan was a developed or a developing country (see Higgins 1959, the classic text of that period, for the argument).

4. Exports can exceed 100 percent of GDP because GDP is a value-added concept and exports are measured in value of output. In Singapore's case, there is a very large entrepot trade and, in addition, oil refining is a large industry as petroleum is imported and reexported in various refined forms. In Hong Kong's case, the rapid growth in exports in the 1980s reflects the rapid increase in imports from the People's Republic of China for reexport. Singapore did not separate from Malaysia until 1965, which biases Singaporean statistics for the 1963–72 period.

Table 1.1 Economic Growth of East Asian NICs

Country	GDP per Capita (1990 U.S. \$)		Average Annual Rate of Growth of Per Capita Income 1965–90
	1965	1991	
Hong Kong	2,544	13,430	6.2
Japan	9,828	26,930	4.1
Korea	970	6,330	7.1
Singapore	2,312	14,210	6.5
Taiwan	995 ^a	8,800 ^b	8.1
All middle-income countries	1,353	2,220	2.2

Sources: For Hong Kong, Japan, Korea, and Singapore: World Bank (1992, world development indicators, table 1); World Bank, *World Bank News*, April 29, 1993, for 1991 data.

^a1965 per capita income for Taiwan derived from International Monetary Fund (IMF), *International Financial Statistics* (Washington, D.C., May 1976), China page. Converted to 1990 prices by using the IMF index of dollar export unit values.

^bPer capita income for Taiwan is in current dollars for 1991 from the *Economist* survey, October 19, 1992, 5.

Table 1.2 Growth of Real GDP and Exports by Country, 1953–91

Countries	1953–62	1963–72	1973–80	1981–91
Hong Kong				
GDP	12.84 ^a	11.74	10.13	6.68
Exports	6.91 ^a	14.04	9.79	13.62
Japan				
GDP	8.31	9.39	4.08	4.25
Exports	16.27	15.84	6.16	4.34
Korea				
GDP	3.85 ^a	9.14	8.34	9.31
Exports	16.14	30.32	17.57	11.60
Singapore				
GDP	n.a.	10.30	8.08	7.07
Exports	0.27	6.05	29.13	9.47
Taiwan				
GDP	7.32	10.95	8.38	7.83
Exports	17.90	27.65	22.64	9.42

Sources: For Hong Kong: United Nations (various years, b). For Japan, Korea, and Singapore: IMF, *IFS CD-ROM* (Washington, D.C.). For Taiwan: data kindly provided by J. Chou and T.-S. Yu of Chung-Hua Institution for Economic Research.

Note: n.a. = not available.

^aAverage nominal change without 1952–53.

exports “only” increasing by a factor of 3.78. It should be noted that imports also rose dramatically, although the proportionate size of Korea’s trade deficit fell sharply over time. Nonetheless, imports as a percentage of GDP rose from around 10 percent in the mid-1950s to over 30 percent by the late 1980s (see table 1.4).

Table 1.3 Evolution of Korean Exports and Imports, 1960–90

Year	Level (million U.S. \$)		Share of GNP (%)	
	Exports	Imports	Exports	Imports
1960	33	306	3.3	13.3
1965	175	416	8.5	15.8
1970	882	1,804	13.9	23.5
1975	5,003	6,674	28.3	37.0
1980	17,214	21,598	35.2	42.9
1985	26,442	26,461	35.8	34.5
1990	63,123	65,127	31.8	32.3

Source: IMF (1990, 1991, Korea pages).

Note: Both exports and imports are reported f.o.b. and are from balance-of-payments data. Exports and imports cover both goods and nonfactor services. Shares of GNP were calculated from the national income accounts.

Table 1.4 Share of Exports and Imports in GDP, Various Years (%)

Country	1953	1963	1973	1980	1990
Hong Kong					
Exports	109.13	67.14	89.26	95.71	135.15
Imports	154.61	99.74	85.53	100.61	129.72
Japan					
Exports	6.54	7.82	8.92	12.23	9.77
Imports	12.36	9.66	9.25	13.32	7.97
Korea					
Exports	2.11	4.76	29.13	34.03	30.96
Imports	9.92	15.91	32.12	41.47	31.52
Singapore					
Exports	n.a.	124.55	87.28	165.21	149.52
Imports	n.a.	153.41	122.62	204.67	172.81
Taiwan					
Exports	8.64	15.22	41.60	47.76	42.70
Imports	12.00	16.60	35.35	47.71	34.86

Sources: For Hong Kong: United Nations (various years, b); United Nations (1954a) for 1953; United Nations (1964a) for 1963. For Japan, Korea, and Singapore: IMF, *IFS* CD-ROM (Washington, D.C.). For Taiwan: data kindly provided by J. Chou and T.-S. Yu of Chung-Hua Institution for Economic Research.

Phenomenal growth was, of course, accompanied by a major change in the economic structure of each country. Not only did the importance of trade increase markedly as a share of GDP, as reflected in table 1.4, but the relative importance of urban activities increased greatly in Korea, Taiwan, and Japan, while that of the rural areas diminished. Over the 1965–90 period, agriculture's share of GDP fell from 38 to 9 percent in Korea, from 10 to 3 percent in

Japan,⁵ and from 24 to 4 percent in Taiwan. Since Hong Kong and Singapore were city-states, there was little agriculture at the beginning of the period.⁶ Over that same period, manufacturing as a percentage of GDP rose from 25 to 45 percent in Korea, from 22 to 24 percent in Taiwan, from 24 to 37 percent in Singapore, and fell from 44 to 42 percent in Japan and from 40 to 26 percent in Hong Kong.

In all countries, savings and investment rose as a percentage of GDP, at least until the 1980s, as indicated in table 1.5. The most dramatic increases were in the poorest countries, although even Japan's investment rate rose from an already highly respectable 24 percent of GDP in 1953 to a peak of 38 percent in 1973, before falling back to 32 percent at the beginning and end of the 1980s. Korea, Taiwan, and Singapore experienced fairly sizable capital inflows to sustain rates of investment above those of savings, whereas Japan's current account was very close to balanced until the 1980s, when sizable capital outflows were experienced.

Table 1.6 provides cursory data on the size of the government sector, as reflected by the share of government expenditures in GDP and by the magnitude of the fiscal deficit. As can be seen, the share of government expenditures was fairly small relative to most other countries, and where there were fiscal deficits, they tended to be comparatively small.

All five economies are regarded as having had fairly egalitarian distributions of income over the years of rapid growth. Except for Korea in the 1970s (see sec. 1.2 below for further discussion) there is no evidence of increasingly unequal distribution of income and, indeed, real wages rose rapidly in all five. Over the two decades following 1970, real earnings per employee rose at average annual rates of over 8 percent in Korea, 2.5 percent in Japan, 7.4 percent in Taiwan, 4 percent in Singapore, and 5.5 percent in Hong Kong.

Despite all these similarities, there are a number of significant differences among the East Asian countries. Japan's economy, of course, is much larger than any of the others, both because Japan's population of 124 million greatly exceeds that of any of the others, and because of Japan's much higher per capita income (see table 1.1). At the opposite end are the city-states of Hong Kong and Singapore, with populations of 5.8 million and 3.0 million, respectively. Although their per capita incomes are relatively high, their small size and absence of significant agriculture differentiates them not only from other East

5. As late as 1960, agriculture's share of GDP in Japan still stood at 13 percent. The percentage of the population still engaged in agriculture at that time was even greater; even in 1965, 27 percent of the labor force was employed in agriculture. Until the 1960s, Japanese economic growth was enhanced by Japan's ability to attract farm workers to off-farm employment. See Anderson and Hayami (1986, chap. 1) for details.

6. Some analysts have contended that the absence of a rural sector provided a major advantage for Hong Kong and Singapore. It is true that growth of agricultural output was slower than that of industrial output in the other three East Asian economies (in Korea, agricultural output grew at an average annual rate of just under 3 percent over the 1965–90 period, while industrial production grew at an average annual rate in excess of 14 percent).

Table 1.5 Savings, Investment, and the Foreign Balance in GDP, 1953–90 (%)

Country	1953	1963	1973	1980	1990
<i>Hong Kong</i>					
Savings	n.a.	n.a.	n.a.	n.a.	n.a.
Investment	n.a.	n.a.	20.61	30.61	28.53
Current account balance	n.a.	n.a.	n.a.	n.a.	n.a.
<i>Japan</i>					
Savings	20.18	21.62	25.46	18.13	n.a.
Investment	24.26	33.75	38.07	32.24	32.75
Current account balance	-0.11	-1.11	-0.03	-1.01	-1.22
<i>Korea</i>					
Savings	n.a.	n.a.	16.44	15.08	n.a.
Investment	15.61	18.23	25.50	31.73	36.95
Current account balance	-3.23	-3.72	-2.25	-9.23	-0.90
<i>Singapore</i>					
Savings	n.a.	n.a.	27.11	30.46	n.a.
Investment	n.a.	17.46	39.20	46.34	39.14
Current account balance	n.a.	-11.85	-15.25	-16.63	8.46
<i>Taiwan</i>					
Savings	14.46	19.06	34.36	32.23	29.88
Investment	14.04	18.28	29.09	33.80	22.40
Current account balance	0.40	0.78	5.28	-1.56	7.47

Sources: For Hong Kong: United Nations (various years, b); United Nations (1954a) for 1953; United Nations (1964a) for 1963. For Japan: 1953 investment from United Nations (1958b); other data from IMF, *IFS* CD-ROM (Washington, D.C.). For Korea: 1973 savings from United Nations (1974b, vol. 3); 1980 from *1986 Korea Statistical Yearbook*; others from IMF, *IFS* CD-ROM (Washington, D.C.). For Singapore: savings from United Nations (various years, b); others from IMF, *IFS* CD-ROM (Washington, D.C.). For Taiwan: data kindly provided by J. Chou and T.-S. Yu of Chung-Hua Institution for Economic Research.

Note: n.a. = not available.

Asian countries but from most of the developing world. In between the giant and the small city-states are Korea, population 43 million, and Taiwan, population 22 million.

Hong Kong experienced substantial immigration throughout the period, with an average annual rate of growth of total population of 2 percent over the 1965–80 period, and 1.4 percent thereafter, despite the much lower natural rate of population growth.⁷ Singapore also experienced immigration, although the authorities appear to have been able to regulate the flow of migrants and to decide on the numbers to be admitted. Hence, population growth was 1.6 percent annually from 1965 to 1980, and 2.1 percent annually during the 1980s, when more immigration was permitted. Korea, by contrast, started with the demographic characteristics of a poor country. The average annual rate of population growth fell to 2.0 percent in the late 1960s and 1970s, and to 1.1 percent during

7. Gross migration into Hong Kong exceeded net migration because a considerable number of Hong Kong residents moved on to other destinations. See Krause (1988) for particulars.

Table 1.6 Government Expenditures and Fiscal Balance as a Percentage of GDP

Country	1953	1963	1973	1980	1990
<i>Hong Kong</i>					
Government expenditure	11.93	n.a.	5.63	6.56	7.90
Fiscal surplus	2.87	n.a.	1.51	3.82	n.a.
<i>Japan</i>					
Government expenditure	16.03	14.81	10.39	18.38	15.91
Fiscal surplus	5.62	-0.79	-1.62	-7.02	-1.60
<i>Korea</i>					
Government expenditure	11.98	11.95	13.06	17.25	16.79
Fiscal surplus	-6.40	0.02	-0.49	-2.23	-0.70
<i>Singapore</i>					
Government expenditure	n.a.	16.59	15.56	20.04	22.34
Fiscal surplus	n.a.	-0.39	-0.12	2.14	11.30
<i>Taiwan^a</i>					
Government expenditure	16.32	18.86	19.46	23.16	27.37
Fiscal surplus	0.57	-0.71	2.38	1.58	1.02

Sources: For Hong Kong: United Nations (various years, b); United Nations (1954a) for 1953; United Nations (1964a) for 1963. For Japan: 1953 fiscal surplus from United Nations (1958a); others from IMF, *IFS* CD-ROM (Washington, D.C.). For Korea: 1953 data from United Nations (1959b); others from IMF, *IFS* CD-ROM (Washington, D.C.). For Singapore: IMF, *IFS* CD-ROM (Washington, D.C.). For Taiwan: data kindly provided by J. Chou and T.-S. Yu of Chung-Hua Institution for Economic Research.

Note: n.a. = not available.

^aAll data are fiscal-year based except for 1953 which is calendar-year based.

the 1980–89 period. Taiwan as well experienced a demographic transition, although continuing immigration was also a factor, especially in the 1950s. Japan's demographic characteristics are typical of those of developed countries, with an annual population growth rate of less than 1 percent throughout the period since 1960.

Thus, the similarities among the East Asian economies center on their growth performance and on their emergence as major exporters in the world economy. Size, economic structure, demographic status, developmental status, and, as will be seen below, many aspects of economic policy differentiate them.

1.2 Economic Policies in the East Asian Countries

As with any description of the overall features and growth experience of East Asian countries, any account of economic policies encounters both similarities and key differences. The histories of the different economies are significantly different and provide important clues as to interpretation of growth experiences. I therefore start with a brief account of the key features for each country. Thereafter, attention turns to a comparative analysis of the trade and

payments regime, regulation of labor and capital markets, monetary and fiscal policies, and the role of government in each economy, since those are the variables on which most analysts attempting to explain East Asian success focus.

1.2.1 Japan

Japan's economic history needs little comment. In many regards, the most salient characteristic of Japan's economic history since the end of World War II has been its continuity. Although much of the Japanese economy had been heavily damaged by World War II, economic recovery began rapidly.

For present purposes, the key questions concern the trade and payments regime and the role of government in the export drive. Turning first to the trade and payments regime, Japanese productive capacity was seriously impaired by the end of World War II. With excess demand for imports and little productive capacity for exporting, Japan (like the European countries) imposed quantitative restrictions on imports, allocating scarce foreign exchange through administrative measures. Starting in the 1950s, Japan began liberalizing its trade and payments regime, albeit at a slower pace than did the European countries.

By the 1980s, there were no remaining formal restrictions on imports. However, arguments had risen among economists as to the extent to which "informal" arrangements restricted imports. As analyzed by Lawrence (1991) and others, there is little question that the import regime itself is open and that restrictions, if there are any, take the form of industrial organization arrangements in production (among *keiretsu*) or distribution. For present purposes, the arrangements guiding exports are of even greater concern. Here, too, the evidence is mixed. On one hand, there was a uniform exchange rate applicable to all export transactions.⁸ On the other hand, there seems to have been credit rationing at least until the 1980s, and exporters apparently had preferential access to credit. Perhaps even more significant but difficult to document is the extent of bureaucratic support of exporters: the role of the Ministry of Industry and Trade in support of individual industries or groups of industries remains subject to contention. Discussion of this issue is deferred to section 1.3 below. At this stage, all that needs to be noted is that Japanese tariffs on nonagricultural imports fell and reached low levels approximately equal to those of Europe and the United States by the 1980s. That phenomenon, combined with a uniform exchange rate, restricted considerably the scope of bureaucratic "intervention" in support of particular industries.

1.2.2 Korea

The Korean experience is the best documented among the East Asian developing countries (see Mason et al. 1980; Kim 1991; Krueger 1980; Frank, Kim,

8. The yen-dollar exchange rate remained constant from the late 1940s to 1971. Given Japan's low rate of inflation, this implied a slow real appreciation of the purchasing power parity (PPP) yen-dollar exchange rate. In more recent years, of course, the yen has appreciated relative to the dollar in nominal terms.

and Westphal 1975; Cole and Lyman 1971). After a hyperinflation associated with the end of World War II and the departure of the Japanese after 45 years of colonization, the Korean economy was devastated by still further disruptions. The first came in the form of partition from North Korea, which had most of the manufacturing and generated much of the power supply for the entire peninsula. Distribution of formerly Japanese-owned assets and initial reconstruction and recovery from partition had not yet been completed when the Korean War broke out.

When hostilities ended in 1953, South Korea was among the poorest countries in Asia. With few natural resources and the highest ratio of people to arable land of any country in the world, there seemed little prospect for economic growth. Indeed, the domestic savings rate was close to zero, and only U.S. foreign aid permitted some investment. The current account deficit, financed by foreign aid, equaled around 10 percent of GDP in each year from 1954 to 1959, with exports fluctuating at around 3 percent annually.

Although growth averaged between 3 and 4 percent during that period, what is notable is how slow it was given the opportunities that reconstruction creates. For present purposes, however, it is noteworthy that Korean economic policies were typical of many developing countries at that time; if anything, they were slightly worse than most. There were multiple exchange rates, with the official rate set far below any realistic level (in order to argue for larger inflows of foreign aid) and consequently a flourishing black market; quantitative restrictions on imports were severe. Inflation was at that time at a rate among the highest in the world; the public-sector deficit was large, in part again in order to provide a case for more foreign aid; the labor market was regulated, with a high minimum wage relative to agricultural workers and a recorded unemployment rate of around 25 percent in urban areas.

Between 1958 and 1963, policies changed markedly. From an inner-oriented economy, incentives for exporting were greatly increased both through a change in the nominal exchange rate greater than that in prices and through the addition of export subsidies and incentives (which applied to all commodities which were exported) to offset the bias toward import-competing industries inherent in the trade regime.⁹ Quantitative controls on imports were significantly relaxed (and then dismantled further in discrete steps over the next 30 years), with exporters able to import needed inputs without significant restriction.¹⁰

Budgetary reforms resulted in much smaller fiscal deficits starting in the

9. For an analysis of the impact of all interventions on the rates of effective protection received by various Korean industries in the late 1970s, see Nam (1980). See also the comments by Corden on that paper, in which he puzzles over the apparently "low" rates of protection reported by Nam.

10. Starting in the early 1970s, the Korean authorities began protecting domestic agriculture. The rate of protection rose and, by the 1980s, was high by any standard. That set of policies was not adopted in order to promote economic growth and was probably detrimental to it. For purposes of the present paper, however, policies toward the agricultural sector have little relevance and are not further discussed here.

mid-1960s, and inflation fell from its earlier levels to an average of around 10 percent in the late 1960s.

These, and other reforms, have been thoroughly analyzed elsewhere, as have their consequences.¹¹ Savings and investment rates rose markedly, the rate of inflation fell, the current account even became positive for a period in the late 1980s, and rapid growth continued. For present purposes, there are two key points. First, all analysts agree that the change in policies was a key variable in permitting the rapid rate of growth that Korea experienced over the next three decades. Second, and equally important, opening up the trade regime played a key role in that transformation.

1.2.3 Taiwan

In most regards, Taiwan's economic growth has been similar to Korea's. Taiwan's growth rate, averaging 8.1 percent annually over the entire 1965–90 period, was even more spectacular than Korea's. Taiwan's economic circumstances in the late 1940s were as unpromising as Korea's appeared to be a decade later, although Taiwan's endowment of agricultural resources per man was significantly greater than Korea's. Both governments had significant national security concerns, receiving sizable American support but also devoting considerable national resources to defense expenditures.

Policy reforms in Taiwan, however, began in the early 1950s, and rapid growth started a half a decade earlier than in Korea. Again, a realistic exchange rate and an outer-oriented trade regime were hallmarks of economic policy, and rapid export growth as seen in section 1.1 was a key characteristic.

There were a few significant differences between Taiwan and Korea that deserve mention. First, much has been made of Korea's economic structure, in which large *chaebol* (industrial conglomerates) were key factors in growth. By contrast, most Taiwanese exporting companies were small by most international standards. Second, Korea (like Japan) did not encourage or experience very much direct foreign investment, at least through the 1970s.¹² Taiwan, on the other hand, was highly receptive to direct foreign investment.

1.2.4 Hong Kong

Hong Kong represents a quintessential case of *laissez faire*. The British authorities in effect did not undertake interventionist economic policies, but rather permitted free trade and exercised virtually no exchange control over the Hong Kong dollar. Except for investments in infrastructure and education, it is generally agreed that the Hong Kong authorities did not intervene in domestic economic activity.

11. See especially Mason et al. (1980).

12. There was a large capital inflow financed by borrowing from private commercial banks. That borrowing was regulated by the Korean authorities, both in order to achieve macroeconomic balance and to prevent arbitrage between the foreign interest rate and domestic rates translated at the official exchange rate. See Krueger (1980) for an analysis.

1.2.5 Singapore

Singapore, like Hong Kong, is a city-state, and as such has virtually no agricultural economic activity. It had adopted policies of import substitution in the 1950s, and then continued those policies when it became part of the Federation of Malaysia in 1963. The merger lasted only until 1965. Thereafter, policy was shifted from import substitution to an outward orientation.¹³

Singapore's growth since 1965, like that of the other East Asian NICs, has been export led; there has been virtually free trade. To the extent that Singaporean policy was interventionist, it was so largely with respect to land rights and utilization. Given Singapore's geography, the government exercised considerable control over allocation of land and as such did affect economic activity.

The government has also directly controlled immigration policy, and has maintained a compulsory savings scheme. With respect to the former, it has restricted immigration, estimating the number of additional workers for which there is demand and issuing immigration permits accordingly. In the mid-1980s, there was a significant, but short-lived, change in the way this was done, as the government believed it could accelerate the rate of increase in the real wage by restricting immigration, and thus encourage the shift of Singaporean industry to higher value-adding activities. Instead, the result was the virtual stagnation of economic activity and the rapid (within a year) reversal of policy once the effects became evident.

Singapore has encouraged a high savings rate through its Workers Provident Fund, which imposes a very high rate (50 percent) of compulsory savings on earnings in Singapore. These are then deposited in individual accounts and may be withdrawn only under very restricted circumstances.

1.2.6 Trade and Payments Regime¹⁴

Common to all East Asian policy regimes was the commitment to integration with the world economy and, subsequently, to facilitating exports. Although a variety of policy measures—preferential access to rationed credit, tax breaks, etc.—were designed to stimulate export growth, those measures were almost entirely uniform and across the board, applying to any would-be exporter. The hallmark of trade policy, therefore, was a lack of discrimination among export activities.¹⁵ Policymakers in each country seem to have been

13. See Aw (1991) for an account.

14. There have been several terms used to describe East Asian trade policies. These include "outer oriented" (as contrasted with "inner-oriented" import substitution) and "export promotion." In most empirical analyses of East Asian trade and payments regimes, researchers have found very little bias of the trade regime toward exports: what has been different in East Asia is that exports were not discriminated against, and policies have been relatively uniform across exportables. Hence, the terms "outer oriented" and "export oriented" will be used synonymously here to denote the absence of discrimination in favor of import substitution.

15. It should be recalled that even Japan was perceived as a poor country in the large international economy in the 1950s and 1960s. It is often forgotten that Japanese exports were not always

committed to increasing exports, with little regard for the nature of the commodity or service to be exported.

Moreover, as exports grew in importance in each of the East Asian countries, policymakers increasingly found that it was costly to rely on tax credits, credit rationing, or export subsidies, and there was a tendency to rely increasingly on a uniform exchange rate as the principal means of encouraging exports. Indeed, the Japanese economic growth strategy was once described (Corden 1985) as being one of “export promotion” through “exchange rate protection,” by which was meant the maintenance of an “undervalued” exchange rate.

The outer-oriented trade policies were, in turn, accompanied by exchange rate regimes which provided exporters reasonable assurance that the real value of their export earnings, relative to domestic costs, would not be affected by vagaries of exchange rate policy. In Korea, as already seen, this policy was effected in early years by adjusting tax credits, interest subsidies, and export subsidies, but the exchange rate came increasingly to be used for the purpose. In Singapore and Hong Kong, a unified exchange rate was used throughout. Taiwan by the early 1960s had achieved a unified and realistic exchange rate (see Kuo 1983).

On the import side, there was more variability. Hong Kong, of course, had free trade throughout. Singapore, too, rapidly achieved very low tariffs on all imports. At the opposite end of the spectrum was Korea, which began the export-oriented drive with a highly restrictive import regime. However, starting as early as 1960, mechanisms were established so that exporters could import duty-free intermediate goods and other commodities and services used in the production of exportables.¹⁶ Thereafter, the import regime was liberalized: quantitative restrictions were liberalized and then abandoned, except on luxury good imports where there was no competing domestic industry, and tariff rates fell over time.¹⁷ Japan, too, liberalized imports: quantitative restrictions were abandoned by the late 1960s—about 10 years after Europe. To what extent Japan has protected imports through nontariff and nonborder measures is a subject that is still the subject of dispute, although the consensus appears to be that such constraints as exist are largely nonborder and nongovernmental.¹⁸ Certainly, Japanese import restrictions have diminished greatly over the past several decades, and exporters have been able to import inputs into export without cost or bureaucratic delays.

Liberalization of capital account transactions has also taken place in all the East Asian countries except Hong Kong (which never had any), although at varying paces. In general, inward capital flows were liberalized earlier and

as important on the world stage as they are now: indeed, as late as 1952, the value of Japan's exports was less than that of India's.

16. See Krueger (1980) for a description.

17. See Kim (1991) for a full account.

18. See the collection of papers in Krugman (1991).

more completely than outward flows. Japan and Korea tended to discourage direct foreign investment (DFI), while Singapore explicitly encouraged DFI as a key component of its development strategy (see Aw 1991 for an account).

The broad picture, then, is that all East Asian exporters had fairly uniform incentives for exporting across virtually all industries and activities. Although occasional episodes of intervention can be found, some of them proved to be major policy mistakes, and in any event the degree of intervention was small contrasted with that in inner-oriented developing countries.

As noteworthy as the uniformity of incentives for exporting is the trend toward greater liberalization over time of both imports and capital flows. All were liberalizing imports over time, although the pace and extent of liberalization varied among them. Capital controls were gradually relaxed on capital inflows, with positive inducements for those flows in some instances. In more recent years, those controls, too, have been liberalized. In Japan, the entire capital account is now largely free of control; in the other NICs (except Hong Kong), the process of liberalization continues but is not yet complete. In section 1.3, the role of governmental industry-specific intervention is further analyzed.

1.2.7 Monetary and Fiscal Policies

Relative to most developing countries, the share of government expenditures in GDP of the East Asian NICs and of Japan was relatively small.¹⁹ Moreover, all of them have undertaken tax reform and other measures to insure that their fiscal deficits will be relatively small.

Of the NICs covered here, the largest fiscal deficit in any country in the 1980s was 3.34 percent of GDP in Korea in 1983. However, Korea's fiscal balance turned positive in the mid-1980s. Singapore averaged a fiscal surplus, Hong Kong did not have its own budget, and Taiwan has generally had a fiscal surplus (see table 1.6). Japan, along with Germany, has run the smallest fiscal deficits among OECD countries.

This has been reflected in relatively stable price levels. During the 1980s, the GDP deflator rose at an annual average rate of less than 4 percent in Japan, 8 percent in Korea, and 7 percent in Singapore.²⁰

In all countries, fiscal reforms were undertaken almost continuously. Korea had been a high-inflation country in the 1950s; a major fiscal reform in 1964 was an important component of the overall policy reform in that country. The tax system has been almost continuously reformed since that time, as the Korean tax system seems to have been unusually inelastic with respect to income (see Tanzi and Shome 1992). Taiwan also managed reforms, although they

19. See Kuznets (1988, S24–S27) and Tanzi and Shome (1992) for an analysis and comparative figures.

20. Data are from IMF (1991, GDP deflators table, 164–65, and fiscal deficits, 154–55).

appear to have been as much on the side of restricting government consumption as on tax reform (see Kuo 1983, 17–19).

1.2.8 Regulation of Labor and Capital Markets

Although less attention has been devoted to analyses of the labor and capital markets than to the trade regime, many observers have at least noted that there was little intervention in the labor market in most of the East Asian countries. It is almost tautological that, given the reliance on an outward orientation and the growth of labor-intensive manufactured exports, growth rates could have been severely reduced had artificially high real wages or regulations driving up labor costs been enforced.

One of the striking characteristics of the early Korean policy reforms was the freeing of the labor market and the subsequent increase in urban employment and emergence of labor-intensive manufactured exports (see Frank et al. 1975 and Krueger 1987 for an account). Taiwan, also, has had a relatively free and flexible labor market (see Kuznets 1988, S27ff). Hong Kong's rapid immigration supported a very flexible labor market there. Singapore's policy of permitting immigration has already been cited, although there were labor market (and wage) regulations. And Japan, as well, has had a relatively competitive labor market.

In addition, most East Asian countries have focused heavily on education and improving the quality of the labor force. In 1982, for example, Taiwan had 85 percent of the relevant age group enrolled in secondary school, South Korea had 89 percent, and Japan had 92 percent. The average for all industrial market economies was 87 percent, and for middle-income developing countries, 51 percent.²¹

The picture is considerably less clear when it comes to capital markets, especially in the early years of rapid growth. There was extensive credit rationing in both Japan and Korea, although real interest rates were always positive in Japan, and positive after 1964 in Korea.²² As already mentioned, the Korean authorities regulated the total net inflow of private foreign commercial bank financing and allocated the (relatively low interest) credit among domestic producers, favoring exporters.

Savings rates rose dramatically in all East Asian countries. Taiwan's average saving as a percentage of income was less than 5 percent in the 1950s, as was Korea's. Each had savings rates in excess of 30 percent by the 1980s. Japan started from a somewhat higher base but also realized savings rates of the same order of magnitude. Data are not available for Hong Kong, and Singapore's

21. See Kuznets (1988, S21).

22. On Taiwan, see Kuo (1983, 17). On Korea, see Frank et al. (1975). In Korea, there also seems to have been a policy under which borrowers received only a part of their financing from banks at regulated interest rates, and had to resort to curb market financing at truly free rates for the remainder. This may have confronted borrowers with a "true" social marginal cost of funds at the margin. See Hong (1981).

savings performance was conditioned by the compulsory savings scheme mentioned above. Whether the East Asian countries simply have high marginal propensities to save, or whether positive real interest rates and other institutions surrounding savings behavior were responsible, is not definitively established.²³

1.2.9 Role of Government

Some characteristics of government policies have already been mentioned: the relatively small share of the government in total expenditures, relatively small fiscal deficits, policy reforms achieving realistic real exchange rates and relatively and increasingly open trade and payments regimes, the move toward positive real interest rates and reduced reliance on quantitative allocation of credit, and the failure to restrict the flexibility of the labor market.

Another key characteristic has been noted by virtually all analysts: all East Asian governments have attempted, for the most part successfully, to provide infrastructure in support of production activities. The high educational attainments of the populations, and the importance of the resulting quality of the labor force as an enabling factor in rapid growth, have already been mentioned. In addition, governments in all East Asian countries devoted much of their efforts to provision of adequate infrastructure—telephone, mail service, port capacity, electricity and power, railroads and roads—to support rapid increases in manufactured output and exports. Relative to other developing countries, Korean, Taiwanese, and Singaporean infrastructure were impressive to all who visited in the 1960s and 1970s.

The authorities also seem to have paid considerably more attention to equity issues than have those in some other developing countries. Income distribution was, and remained during rapid growth, relatively more equal in Taiwan, Korea, and Japan, than in other countries at comparable stages of development.²⁴

1.3 Determinants of Growth Rates in the Development Literature

In the development literature, most analysts have noted the points mentioned above. All would agree that growth in the East Asian countries was export oriented and that the outer orientation was a necessary condition for the very rapid and successful growth performance of East Asian countries.²⁵ Controversy over outward orientation does not focus on its importance, but rather on the extent to which that orientation was the consequence of uniform incentives, thus approximating the textbook “free trade” case, or whether instead “picking the winners” on a selective basis was an important component of policy. Attention returns to that issue below.

23. See Deaton (forthcoming).

24. See Kuznets (1988, S14–S17).

25. See, e.g., World Bank (1991) for a summary of the consensus argument.

When countries shifted their policies toward an outer orientation, attention was paid to maintaining a realistic real exchange rate for exports. The importance of the real exchange rate as a necessary condition for successful growth is again unchallenged.

Having agreed that outward orientation was a necessary condition for rapid economic growth, analysts have then considered the extent to which it was sufficient. Clearly, it was not. High rates of investment, provision of infrastructure, a well-functioning labor market, and the overall policy framework conducive to efficient production were clearly major contributing factors.

For present purposes, what is important is that the focus of discussion in the development literature is on the differences in policy between outer-oriented and other developing countries as a key factor in differential growth performance. All observers would agree that a very large, if not necessarily quantifiable, percentage of East Asia's above-average growth performance is attributable to policies adopted in those countries, in contrast to the inner-oriented, selective interventions in many other developing countries.²⁶

While there are differences over whether, e.g., the Japanese or Korean governments intervened to assist exporters,²⁷ the change in fortunes in Korea, Taiwan, and Singapore after policies were changed, and their dramatic growth rates and performance was too pronounced not to be associated with a shift in policies.

Recent studies have tended to support the view that, where there was intervention in Korea and Taiwan, it was harmful rather than helpful. Yang (1993), for example, attempted to link total factor productivity growth rates by industry to the amount of support they received (through credit rationing, etc.) from the government. He found a strong negative correlation. He also analyzed the support of the Taiwanese government for firms in the 1980s and found that they had little influence on firms' behavior. Yoo (1990) undertook a detailed analysis of the Korean government's efforts to promote heavy and chemical industries in the 1970s and concluded that those efforts retarded growth significantly. To the extent that these findings are robust, they support the view that growth would have been even faster in the absence of these interventions.

26. Import substitution accomplished through automatic prohibition of imports once domestic production has begun or through very high tariffs at made-to-measure rates for different industries inherently differentiates strongly among activities. Discrimination among activities also occurs as authorities are involved in deciding which industries are next to be developed, especially in public-sector enterprises.

27. Amsden (1989) is perhaps the foremost proponent of the "interventionist" interpretation of Korean growth. See also Wade (1990). The catchphrase for East Asian policies as interpreted by these analysts has been "picking the winners." The argument is that other countries' policies are basically defensive (supporting existing industries) whereas East Asian countries' policies supported the development of new industries. For a bibliography of much of this literature, see Hicks (1989).

1.4 Determinants of Growth: Endogenous or Policy?

The split between neoclassical growth theory and development theory was in large part a consequence of the neoclassical conclusion that growth was necessarily subject to diminishing returns and that, save for (presumably exogenous) technical change, there was a tendency for convergence to a steady state in which per capita income would be constant. On that interpretation, “catch-up” could result in rapid growth for developing countries for a period of time, but would inevitably decelerate as the gap diminished.

Development economists noted that middle-income countries tended to grow more rapidly than low-income countries, an empirical regularity that sits uncomfortably with the catch-up, or convergence, hypothesis. Moreover, economies such as the Korean one showed no tendency for growth to decelerate: indeed, growth rates in the late 1980s exceeded those of a decade earlier.

To be sure, one might have argued that the per capita incomes of the East Asian NICs were so far below those of the developed countries that catch-up might be a process of many decades. If so, then neoclassical growth theory was in any event useless for understanding development if development was understood as a several-decade process of rapid growth. For purposes of understanding the development process, central questions focused on why growth rates differed among poor countries and on the factors discussed in section 1.3.

The hypothesis of endogenous growth theory—that the accumulation of knowledge or the presence of some other factor whose accumulation is not subject to diminishing returns or depreciation—changed that perspective. Under that hypothesis, once growth starts, there are factors that will contribute to the perpetuation of growth. Stated another way, growth rates are likely to be highly correlated over time.²⁸

Efforts to test endogenous growth theory and the importance of economic policy have been made using a variety of cross-country regressions. Even on a priori grounds, it might be expected that such efforts would provide at best only ambiguous results: (1) quantification of policy variables comparably across countries is difficult and inevitably contains arbitrary elements; (2) external events may have significantly different impacts on different countries and their growth rates (e.g., oil exporters and oil importers); (3) clearly, a number of factors such as rising savings rates do accompany growth; (4) there are relatively few observations of countries' growth over long time periods when policy consistency is required for the period of observation; (5) when growth rates are the variable to be explained, small errors in measurement of underlying aggregates such as GDP, not to mention comparability of measures across countries, may significantly affect the results; and (6) countries' initial economic structures are significantly different.

28. Romer (1986) was the first expositor of this view in its modern form. Earlier analysts had, of course, noted the nondepreciability of knowledge and the importance of technical change.

Nonetheless, a number of researchers have found significant relationships between a variety of variables and growth rates. Recently, Levine and Renelt (1992) evaluated much of this work, and demonstrated that few of the results were robust and that some could be altered by the addition of other explanatory variables. They then attempted to enter additional variables and examine which explanatory variables had consistently significant partial correlation coefficients with growth rates.

They summarized their findings, which are worth repeating here. First, they found a "positive and robust correlation" between average growth rates and the average share of investment in GDP. Second, there was a similar positive and robust correlation between the share of investment in GDP and the average share of trade in GDP. Third, they found that any growth rate regression that had been attempted using the share of exports in GDP as an explanatory variable could yield almost identical results if the share of imports, or the share of trade (exports plus imports), were used as the explanatory variable. Fourth, they found measures of trade policy (such as a measure of distortion in the real exchange rate) not to be robust once the share of investment in GDP was included in the regression.²⁹

They concluded that: "National policies appear to be a complex package, and future researchers may wish to focus on macroeconomic policy regimes and interactions among policies as opposed to the independent influence of any particular policy" (Levine and Renelt 1992, 960).

Without questioning this conclusion, two phenomena are evident: (1) the investment share and trade/export/import share of GDP are not policy variables, but rather the outcome of the interaction of policy with underlying behavioral relationships and (2) one can question whether one might not better attempt to undertake analyses of growth rates in individual countries.

For purposes of this analysis, therefore, time series of the major policy variables, used by Levine and Renelt, were gathered for Korea and Japan. The intent was to test whether, on an individual country basis, relationships might appear robust that do not do so in cross-country regressions.

Statistics were gathered first for Korea for the period 1953–90, with an exhaustive test of their relationship. Key variables that met the Schwarz criterion for selection of significantly related variables were the inflation rate, the investment share of GDP, exports as a percentage of GDP, the government fiscal surplus as a percentage of GDP, growth rate of population, and the real exchange rate.³⁰

The simple correlation matrix between these variables is given in table 1.7. As can be seen, the signs are all as might be expected, although only the invest-

29. They also found some support for the convergence hypothesis, were unable to correlate measures of fiscal policy with growth or the investment share, and failed to find robust relationships for other variables examined. (see Levine and Renelt 1992, 959).

30. In earlier regressions, Giacchino had included the growth rate of nominal domestic credit. It turned out to be positive and significantly correlated with growth, but was dropped because of the difficulty of interpretation of results when it was included.

Table 1.7 Simple Correlation Matrix between Korean Variables Meeting Schwarz Criterion

	GY	INF	INVTM	X	SUR	GOP	RER
GY	1.00						
INF	-0.24	1.00					
INVTM	0.36*	-0.29*	1.00				
X	0.30	-0.32*	0.86*	1.00			
SUR	0.04	-0.45*	0.27*	0.29*	1.00		
GOP	-0.53*	0.06	-0.65*	-0.72*	0.09	1.00	
RER	-0.46	-0.17	-0.12	-0.11	0.60*	0.54*	1.00

Notes: GY = rate of growth of real GDP. INF = annual rate of inflation. INVTM = share of investment in GDP. X = share of exports in GDP. SUR = fiscal surplus as a percentage of GDP. GOP = growth of population. RER = an index of the real exchange rate, calculated as in Frank et al. (1975) (base 1953).

*Significant at the 5 percent level.

ment share and the population growth rate were significant at the 5 percent level. When alternative combinations of variables were included in multiple regressions, the best results, according to the Schwarz criterion, came when current-period and lagged inflation and investment were included.³¹

However, much as in the cross-country findings, a number of equations (with different combinations of explanatory variables) appeared to perform at about the same confidence level. There was little difference in the criterion values. Interestingly, when a Chow test was used to test the hypothesis that the structure had changed over time, the hypothesis of structural change before 1980 could not be rejected. If the 1953–55 period was eliminated, the Chow test confirmed a structural break in 1980.

Thus, for Korea, econometric tests showed much the same variables as Levine-Renelt, despite the apparent appropriateness of all the simple correlations. Similar procedures were followed for Japan (1951–90) with no structural change after 1971, Singapore (1961–90) with the possibility of structural change throughout, and Thailand (1951–90) with no structural change.³² How-

31. The estimated regression was

$$\begin{aligned} \text{GY} = & -13.548 - 0.133 \cdot \text{INF} + 0.095 \cdot \text{INF}_{-1} + 0.873 \cdot \text{INVTM} \\ & (4.677) \quad (0.048) \quad (0.031) \quad (0.120) \\ & - 0.471 \cdot \text{INVTM}_{-1} + 0.620 \cdot \text{SUR} + 0.018 \cdot \text{RER}, \quad R^2 = 0.532 \\ & (0.084) \quad (0.305) \quad (0.006) \end{aligned}$$

When growth of population was dropped as a variable from the regression, the estimated relation was

$$\begin{aligned} \text{GY} = & -15.000 - 0.137 \cdot \text{INF} + 0.104 \cdot \text{INF}_{-1} + 0.792 \cdot \text{INVTM} - 0.549 \cdot \text{INVTM}_{-1} \\ & (3.722) \quad (0.029) \quad (0.023) \quad (0.108) \quad (0.082) \\ & + 0.115 \cdot \text{EXPORTS} + 0.024 \cdot \text{RER} + 0.666 \cdot \text{SUR}, \quad R^2 = 0.589. \\ & (0.042) \quad (0.005) \quad (0.229) \end{aligned}$$

32. A printout of the data, obtained from the IMF, *IFS* tapes, and of the regression results, is available on request.

ever, in those cases, there were no consistent robust relationships, and those that appeared in one form or another had no economic meaning.

1.5 Conclusions

Anyone acquainted with the performance of the East Asian countries, and especially the NICs which earlier followed policies of import substitution, is convinced of the importance of policy reform and of outward orientation in the spectacular growth performance of those countries.

While interpretations differ, especially with regard to the nature of government intervention, there is virtual unanimity as to the importance of policy in the development process. The linkages between policy changes and growth, however, have not yet been modeled in satisfactory ways. Clearly, the hypothesis that appropriate policies are necessary for growth is consistent with a growth story which starts with appropriate policies (perhaps as a necessary condition), then focuses on rising savings and investment rates, other policy reforms,³³ increased technical efficiency, and other variables and behavioral relations.

The Levine-Renelt conclusion, that confrontation of theories with the data must be undertaken in the context of a multivariable explanatory model, however, appears to be confirmed when time-series data for individual countries are used. Results for the East Asian countries, although preliminary, are so negative that it is difficult to believe that further work will reveal strong robust relationships.

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33. It is possible to argue that there are virtuous and vicious circles of policy formulation, just as there may be of economic growth. See Krueger (1993) for the argument.

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Comment Geoffrey Carliner

Anne Krueger's paper presents a very useful review of the economic success of East Asia over the past four decades. The lessons which she draws from this outstanding performance reflects an emerging consensus among economists and others on five key aspects of economic growth. My comments briefly summarize these aspects and then discuss four other issues on which there is no consensus.

First, developing countries with an outward orientation, in which exports lead growth, grow considerably faster than countries that try to grow by import substitution. Competition in international markets seems to force domestic producers to become more efficient, to learn new technologies, to improve the skills of their employees. By contrast, firms that operate only in protected domestic markets can remain inefficient. With little competition from the rest of the world, they feel less pressure constantly to improve. Producing for world markets may also allow domestic firms to benefit more from economies of scale. Papers in this volume by Ji Chou, Chong-Hyun Nam, and Shin-ichi Fukuda present evidence on this point for the Asian NICs, and Shang-Jin Wei's paper shows that similar forces are at work in China.

Some governments have promoted an outward orientation by keeping import barriers low, especially on industrial inputs. Others have used export incentives to encourage domestic firms to compete abroad. More important to achieving an outward orientation is preventing the real exchange rate from becoming overvalued. Once the exchange rate becomes overvalued, exports will no longer be able to compete in foreign markets and imports will surge domesti-

cally. Even if the country avoids a balance of payments crisis, its outward orientation will be destroyed. The key to successful export-led growth is thus to keep the real exchange rate low, so that exports will stay highly competitive in foreign markets.

A second point of consensus is that having governments squander resources slows growth. In any case, wasteful government spending is likely to crowd out investment, but when such spending is financed by deficits or inflation, it is especially harmful to growth. When governments spend considerably more than they raise in taxes, printing money to finance the deficit often leads to high inflation and an overvalued exchange rate. Alternatively, if governments finance deficits with foreign borrowing, they risk a debt crisis down the road.

A third point of consensus is that a high rate of investment in physical and human capital, including infrastructure, stimulates growth. Whether or not capital shows dramatically increasing returns to scale, has large externalities, embodies new technology, or is complementary to inputs of other factors, having a lot of it increases labor productivity and raises growth.

This of course does not mean that any government investment scheme however misguided will raise living standards. Inefficient steel mills, oil refineries, and hydroelectric projects around the world provide strong evidence to the contrary. It does mean that government policies which raise the domestic saving rate and encourage investments that reflect market forces seem to be important ingredients to the East Asian miracle.

Raising domestic saving rates is important because most of the money for increasing the capital stock must come from home. Obtaining some money for investment from abroad is common among high-growth developing economies. However, borrowing to finance consumption is dangerous because once the money is spent there is no increase in output to help pay back the loan. The end result is all too often a debt crisis.

Fourth, the relatively equal distribution of income which existed in East Asian countries probably contributed to their impressive performance. Unequal income distributions probably hurt growth in other regions, for instance, Latin America. When the pie is divided equally, there seems to be less fighting about keeping large slices or cutting the slices differently. With less social and political conflict about the distribution of income, the country can devote its energy and design its government policies to promote growth. Fukuda's paper suggests that East Asia's political stability was an important source of rapid economic growth, compared, for instance, to Latin America.

The policy implications of this are not clear, however. Many countries are not lucky enough to have departing colonial landlords whose land can be confiscated and then redistributed (Korea and Taiwan) or a foreign occupation that forces massive redistribution on it (MacArthur in Japan). For countries which inherit very unequal distributions of income and wealth, it is not clear how much redistribution is possible without increasing social frictions to the point that growth declines.

Finally, there is a fifth point about which there is probably too little consensus: economists should maintain a strong sense of humility when offering recipes to promote growth. Although we may think we know some of the key ingredients, we may turn out to be wrong. For instance, many countries which adopted import substitution strategies during the 1950s and 1960s were simply following the advice of economists of the day. Moreover, as Easterly's paper emphasizes, we remain unable to explain a large fraction of the variation in growth rates among developing countries. Perhaps, as Easterly suggests, much of East Asia's success is due to luck rather than to good policies.

With the importance of humility in mind, let me now turn to four key issues about which economists do not agree. First is the role of government intervention. Hong Kong is well known for its almost complete lack of intervention, but as Nam and Kim, Shim, and Kim document, the Korean government intervened heavily in the allocation of credit and foreign exchange. Hirohisa Kohama's stories about the victories which private firms occasionally won over MITI only serve to emphasize how powerful MITI was in guiding resources, especially during Japan's high-growth period before 1973. Young and others have described the role of Singapore's government in raising the saving rate and attracting foreign direct investment that it thought was desirable.

Since Hong Kong grew rapidly with minimal government intervention, it is clear that at least in certain circumstances, the government's role in promoting growth need not be large. In fact, Nam, Young, and many others argue that interference with market forces by the government in Korea and elsewhere in East Asia actually retarded growth. However, Kohama and other observers have concluded that various market failures, especially in developing countries, justify a role for government. As Sebastian Edwards observed during a discussion at the conference, the question is not *whether* governments should intervene, but *how* they should intervene to raise growth.

Even if economists knew which specific policies promote growth, political forces may prevent governments from adopting such policies. Why did government intervention raise growth in Japan, Korea, and Singapore, or at least not lower it drastically, while governments in Africa, India, and the Philippines managed to strangle it? Does successful intervention require the right political institutions, such as an elite bureaucracy (which India had)? Or did East Asia's outward orientation impose a limit on government policy that kept it from inflicting too many distortions and lowering growth rates sharply?

A second issue about which there is no consensus is the role of foreign direct investment (FDI). Although it is now highly recommended as the best if not only way of importing modern technology and management practices, East Asia's experience does not support this view. Japan virtually prohibited FDI, Korea managed it very carefully, Hong Kong of course adopted a *laissez-faire* policy, and Singapore actively encouraged it, at least in certain industries. It is thus clear that FDI is not the only way to transfer technology. East Asia offers no lessons about whether it is the best way.

A third unresolved question is the effect of inflation on growth. Many economists recommend that inflation in developing countries should be no greater than the rate in the OECD. However, Japan and Korea both had annual inflation well above 10 percent during their high-growth years. And India, as T. N. Srinivasan observed at the conference, had the low inflation of the graveyard. The lessons seem to be that low inflation alone is of course not enough to achieve high growth, while extremely high inflation, for instance 500 percent annually, is so distorting that it severely inhibits growth. However, there is no consensus on the consequences of 10–30 percent inflation rates in developing countries.

A final area of uncertainty concerns the issues raised by the new growth economics. Srinivasan's theoretical paper shows that these issues were also raised by previous generations of growth economists. He also shows that models with increasing or decreasing returns to scale in production, externalities, and multiple equilibria are all plausible. Empirical papers in this volume by Chou, Fukuda and Toya, Nam, and Hak Pyo, as well as a large number of other recent studies, have not reached a consensus on these questions.

The only consensus on the new growth theory that does seem to be emerging, voiced by Paul Romer, Edwards, and others at the conference, is the diminishing return to further cross-sectional regressions for a large number of countries with growth rates as the dependent variable. As Krueger concluded, to understand the process of economic growth, we need to perform detailed studies of the economic history of a country, within a solid theoretical framework.

Comment Koichi Hamada

Like much of Krueger's work, this paper provides a clear overview of the central issues, in this case the economic development of varied East Asian economies. It also presents a basic framework for the discussions of this conference, even though many puzzles still remain, as I will discuss below.

I more than agree with Krueger's statement that, "the histories of the different economies are significantly different and provide important clues as to interpretation of growth experiences." Recent quantitative cross-country studies, many of which depend on the Summers-Heston data set, are very welcome but should be supplemented by careful country-by-country studies with, I would like to stress, more theoretical and structural thinking on the economy as well as on the political economy of the development process.

My impression is that the initial sections are very well written, while the latter sections could be substantiated by more structured arguments. Let me start with the relatively technical points.

1. The years of comparison should be chosen more carefully. For example,

in table 1.4 the year 1973 was the pre-oil crisis year when most of the NIEs were adversely affected. In table 1.5, the year 1980 was during the second oil crisis; in 1990 Japan's stock market crashed precipitously. Therefore, the balance of payments in the current account as well as the saving-investment balance may not reflect regular patterns. In particular, even before 1980, Japan had accumulated a large trade surplus.

2. We may divide these five countries into two groups. Japan, Korea, and Taiwan are countries that possess sufficient land area. Hong Kong and Singapore are spatially small countries—like points. They may not be “small countries” in the sense of trade theory, because the terms of trade are not conceivably special to those countries with substantial mass in production, but the trading patterns and macroeconomic features of these spatially small countries have much in common. These economies follow open trade policies almost by necessity because autarky is difficult with such small area. The monetary policy of these countries tends to be passive. We may add other city-states, for example, Monaco and Luxembourg, which can be regarded as “small countries” in the trade theory sense, to the list of countries for such a study.

3. The attempt to go back to time-series analysis of the development process is welcome. However, time-series analysis presents another problem, the problem of timing and causality. Regressions like those in footnote 31, though the results look quite reasonable, open up all the problems associated with lead-lag or contemporaneous relations between macroeconomic variables.

My major comments are related to the later sections of the paper. One of the central questions in the paper is how development policies affect growth performance. The following comments are not so much criticism of the approaches taken as speculation on how we can deepen our understanding of structural development.

In short, growth theory—old or new—leaves so many black boxes. This paper suggests how we might open these black boxes, but leaves the actual task of opening them to further research. After all, the growth theory used here is primarily single-sector analysis and cannot handle intersectoral movement of factors. The following are several links under investigation in the empirical analysis of endogenous growth, the links that connect possible exogenous determinants to economic development. The exact process by which these factors influence technical progress and the growth rate have not been explored enough.

1. Physical investment in equipment and machinery may lead to the acceleration of growth, presumably through the creation of technical and managerial skills, human capital, and their externalities. This link was relatively well explored by the empirical analysis of new growth theory.

2. At the conference, the link between export-oriented policy and Asian growth was emphasized. Liberalization of trade will be accompanied by less government regulation and intervention, and accordingly with less rent seeking, all of which are congenial to the functioning of a market economy.

3. Real exchange rate policy may change the relative price between traded and nontraded goods and accordingly affect the production mix between the traded and nontraded sectors as well as the production mix between the manufacturing and nonmanufacturing sectors. Those changes may well trigger the above two links, 1 and 2.

4. Education and investment in human capital is important. In this link, the capability of human capital to adapt foreign technology assumes a crucial importance. (For a study of the adaptation process of the postwar Japanese economy see Hamada and Honda 1992.) In East Asia, Confucian ethics may have played some role (Morishima 1982). Ethnic factors, legal systems, and the legacy of British and Japanese colonial policies, including their atrocities as well as their educational functions, should be objectively evaluated.

5. In this paper, the link between financial policy and development is largely neglected. The link between financial policy and financial repression will affect the amount of financial intermediation (McKinnon 1973, 1991).

6. Inflation, particularly its variability, is an important factor that affects economic growth.

In my opinion, there is a rich potential field of research that connects the information-oriented literature on screening, monitoring, verification, and bankruptcies to institutional development. Such research would give a clue to analyzing the questions arising from items 5 and 6 above. One can analyze the relationship between a monitoring technology such as the property right system and an enforcement mechanism on the one hand, and some degree of financial maturity on the other. Contracting debt always involves some agency costs or monitoring costs. The state of monitoring technology, with interaction between poolable and unpoolable risks, will determine the degree of financial intermediation, the incidence of bankruptcy, and capital movements. Financial repression is brought about by government interest ceilings but also by incompleteness of information and lack of proper monitoring schemes.

If it is more costly to write a real contract than to write a nominal contract, then more volatile inflation should lead to a deterioration in economic performance. Thus, by the analysis of asymmetric information, financial aspects and real aspects could be integrated; historical description would be combined with structural insight.

Studies of economic development started from descriptive, historical approaches, shifted then to more quantitative cliometrics and now to cross-country analysis. Needless to say, this trend is basically welcome. However, we know very little about the structural and incentive mechanisms linking possibly important factors to the process of development. Now may be the time to combine quantitative cross-country studies with the historical, institutional, country-specific study of the actual process of development. This does not mean that we should return to the mere description of history. Modern economic analysis, including, for example, the microeconomics of incomplete information, the macroeconomics seigniorage gain, and the political economy

of rent seeking, could make historical study more theoretical and operationally meaningful.

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