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The Macroeconomics of Successful Development: What Are the Lessons?

1. *Introduction*

Rapid economic growth is the overriding medium- and long-term macroeconomic objective of developing countries. In the short run, high interest rates, exchange-rate movements or a surge in the price level may generate concern, but ultimately most developing societies judge their performance by the rate of increase in per capita income.

There is an interesting contrast here between the developing and the advanced industrial economies. In the United States and Western Europe, GDP growth per se figures less prominently in the policy debate. Headlines, elections, and academic careers revolve around the problems of inflation, cyclical fluctuations, and unemployment. Long-term growth has lower social priority, perhaps because the stability, security, and qualitative aspects of economic life are not well captured by growth accounting. Among developed countries differences in incomes are also smaller and thus there is no dramatically higher foreign standard of living to "catch up with." In this respect, Japan's economic outlook still retains aspects of a developing country perspective, as the motive of "catch-up" dominated much of postwar economic policy.

Economic theories of growth have changed in the causal mechanisms they emphasize. Neoclassical growth theory distinguished broadly between capital accumulation and technical progress as the mechanisms

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leading to higher labor productivity. Early adaptations of this model in the development literature focused not only on the role of saving, but also introduced foreign exchange as a critical constraint on capital accumulation. Since capital goods generally had to be imported, an increase in domestic saving would raise investment only to the extent that it could be translated into increased availability of foreign exchange.[1]

In the 1950s and 1960s the transformation of domestic saving into foreign exchange was considered difficult, due to fixed exchange rates and/or sharply diminishing returns to exports of primary products. Import substitution was therefore seen as the most promising escape from the foreign exchange constraint of the two-gap model. It was also widely believed that import substitution would lead to more technical progress through "learning by doing" and the introduction of foreign technology.

These views came full circle in the 1970s. Several countries, most notably Korea, demonstrated that rapid growth of manufactured exports was a feasible alternative solution of the foreign exchange problem. World-market orientation, previously associated with a specialization in primary products, came to be seen as compatible with industrialization. It also became clear that exporting was a powerful way to exploit scale economies, stimulate x-efficiency, and encourage the absorption of foreign know-how. These views placed new emphasis on "right" relative prices in general, and real exchange rates (the relative price of tradables) in particular.[2]

This article explores the lessons of recent development experience by drawing on several different kinds of evidence. Section 2.1 provides time-series contrasts between high- and average-performing economies. Section 2.2 presents cross-sectional relationships between performance and various potential correlates during three different historical periods. Sections 3 and 4 seek deeper, qualitative evidence from the success stories of South Korea and Turkey. Korea has grown rapidly for a quarter century, weathering internal and external crises and policy changes with extraordinary resilience. Turkey has also grown reasonably fast, but the high point of its story is a dramatic policy turnaround in the 1980s. Turkey's "adjustment with growth" is a model of the kind of adjustments Secretary of the Treasury James Baker has in mind in calling for increased lending to other large debtor nations. Concluding observations are offered in section 5.

1. For the conceptual framework and application of the two-gap model, see for example Chenery, et al. (1971).
2. For an analysis of the new paradigm see Dervis and Page (1984).

2. *Comparative Perspectives on Successful Development*

2.1. PATTERNS OF AVERAGE AND SUCCESSFUL GROWTH

This section reviews two decades of data for twenty "middle income" countries: all those with at least 5 million people in 1980, no significant exports of oil, and per capita income levels between US$470 and US$3770 by 1984. The panel's overall per capita growth rate of 2.5 percent per annum between 1965 and 1985 is slightly below the average of all developing countries (2.9 percent), but its seven best-performing economies grew nearly twice as fast as the average developing country, 5.0 percent. We shall explore in some detail how these countries' performance differed from the average.

Sharp policy changes and volatile growth rates make it difficult, however, to measure growth in a developing economy. Many countries have grown respectably over long periods, only to give up in a dramatic "crash" the results of many years of expansion. Others have grown at the cost of mortgaging a substantial part of their capital stock to foreign creditors. Still others have achieved rapid output growth, but have seen their purchasing power in international prices decline due to devaluations or terms-of-trade losses.

Mexican national accounts, for example, show a healthy 4 percent annual growth in GDP per capita over much of the 1960s and 1970s. But the events of the 1980s have demonstrated that Mexico's real exchange rate was overvalued in the late 1970s. In addition, since factor payments abroad rose from less than 1 percent of GDP in the mid-1960s to around 8 percent in the 1980s, Mexico's national *income* grew much more slowly than production. Combining real exchange rate and terms-of-trade effects with changes in net factor income flows, Mexico's real purchasing power grew at no more than half the rate indicated by long-term GDP growth rates. Similar adjustments to the GDP growth rates of the twenty major developing countries in our panel are reported in table 1. As the table shows, the differences between the national- and international-price-based indexes can be substantial indeed.

In the analysis that follows, we use conventional *International Financial Statistics* measures of real growth, because the unfamiliarity of the adjusted growth rates presented in table 1 would make results more difficult to interpret. Clearly, however, growth measurement in developing countries deserves attention. Some countries, such as Yugoslavia, look very different when ranked by purchasing power growth. These examples also argue for caution in defining and analyzing "success." Balance of payments, debt, net wealth, and productivity indicators are all essential for judging the sustainability of growth.

The panel's growth over time is illustrated in figure 1. This figure, and others that follow, are designed to locate the performance of the seven fastest-growing countries within a "band" of typical performance. The edges of the band identify the values of an indicator (such as the GDP growth rate in figure 1) for the 33rd percentile and 67th percentile of the panel in each year, *when ranked by this indicator.* The "A-Group" curve tracks the *average* value for the seven most rapidly growing economies, that is, ranked by per capita GDP growth over the whole period (see

Table 1 MEASURES OF GROWTH IN GDP PER CAPITA, 1965–1985 (Percent per annum)

	Real per capita GDP growth				*1965–1985 International purchasing power growth*		
	1965–1985		1979–1985		Raw		Debt-adjusted
Country	rate	rank	rate	rank	rate	rank	rate
Taiwan, Province of China*	8.6	1	5.2	1	7.9	2	
Korea*	6.9	2	4.1	2	8.4	1	8.2
Brazil*	4.3	3	−0.1	10	3.2	4	3.0
Thailand*	4.3	4	3.5	3	3.5	3	3.4
Portugal*	4.0	5	1.9	4	2.8	5	2.4
Greece*	3.8	6	0.3	8	2.7	6	2.5
Yugoslavia*	3.5	7	0.2	9	1.6	8	1.4
Turkey	2.9	8	1.7	5	1.4	9	1.3
Colombia	2.4	9	0.7	6	0.7	10	0.6
Dominican Republican	1.9	10	−0.5	11	−1.4	17	−1.7
Philippines	1.5	11	−1.9	15	0.5	11	0.3
Morocco	1.4	12	0.4	7	−0.3	14	
Bolivia	1.4	13	−4.5	19	−2.7	19	−3.3
Guatemala	0.9	14	−3.2	17	2.0	7	1.9
South Africa	0.8	15	−0.7	12	0.0	13	
Zimbabwe	0.6	16			0.5	12	
Argentina	0.4	17	−3.1	16	−0.9	15	−1.1
Chile	0.4	18	−0.7	13	−1.9	18	−2.5
Zambia	0.3	19	−1.6	14	−3.2	20	−3.9
Ivory Coast	−0.1	20	−3.5	18	−1.2	16	−1.9
Panel Mean	2.5		−0.1		1.2		0.9
A-Group Mean	5.0		2.2		4.3		4.0

Note: International purchasing power is calculated as nominal GDP deflated by the average wholesale price index of five major industrial countries converted to domestic currency using official exchange rates. Debt-adjusted index subtracts from international purchasing power GDP interest obligations on foreign debt.

*A-group (seven most rapidly growing) countries.

Figure 1 GDP GROWTH (percent per annum)

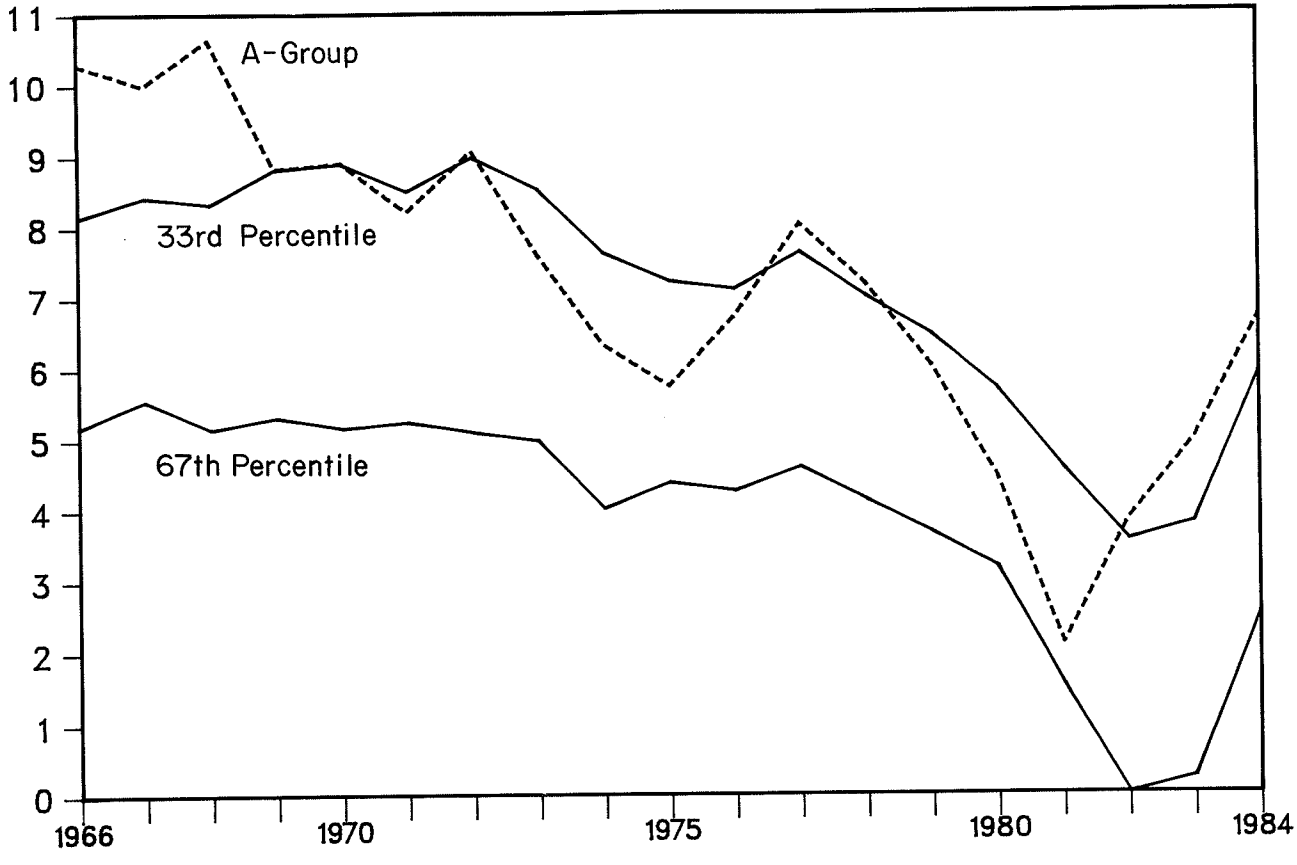


table 1). As it is customary to assign A's to the top third of students in America's colleges, we call these seven high-performing countries the "A" economies for short. All three lines reflect three-period moving averages, except for the 1984 data point, which shows a single-year value.

Figure 1 shows that before 1973 output grew at a remarkable 5-plus percent rate for two-thirds of the countries in the panel, and at a 8-plus percent rate for the top third. Noticeable deceleration set in following the oil shocks of 1973 and 1979. The second shock, of course, was aggravated by a worldwide recession and escalating debt burdens. After 1979, growth rates fell by around four percentage points; most countries did not begin to recover until 1983 and then did so slowly. Against this background, the A-economies performed consistently well—their average growth rate is at or above the 67th percentile band, and especially strong in recent years. They were more sharply affected by each shock than other economies, but achieved recovery faster and experienced compensating spurts of very rapid growth.

One element of the success of the A-countries is consistently high investment—above the band of typical performance in each of the twenty years (see figure 2). But surprisingly, investment is not well correlated with growth over time; investment rates generally rose from the 1960s until 1979, while growth gradually declined. As our case studies also show, deteriorating returns to investment became a fact of life in several developing countries over the 1970s and eventually created serious problems when the real cost of capital rose in the 1980s.

All told, typical investment rates rose by approximately four percentage points over the 1970s. About half of this increase was financed from abroad, as current account deficits widened by around two percentage points (see figure 3). All countries, including the A-countries, participated aggressively in foreign borrowing. Indeed, before 1975 the A-group average consistently figured in the third of the sample with the largest current account deficits. The A-group again increased borrowing in the late 1970s, but less sharply than the sample as a whole, and its deficits moved toward the median from the high-deficit extreme. Korea offers a model case where such restraint later helped to maintain creditworthiness.

The A-group generally used resources for private, rather than public, purposes. A look at the ratio of government expenditure to GDP reveals striking contrasts among different countries (see figure 4). At the upper edge of the band the ratio of government expenditures to GDP rose from 20 percent to nearly 30 percent. At the lower edge the ratio continued low, fluctuating between 15 and 18 percent. The A-countries remained at the low extreme throughout—only in the early 1980s did their expen-

Figure 2 INVESTMENT/GDP (percent)

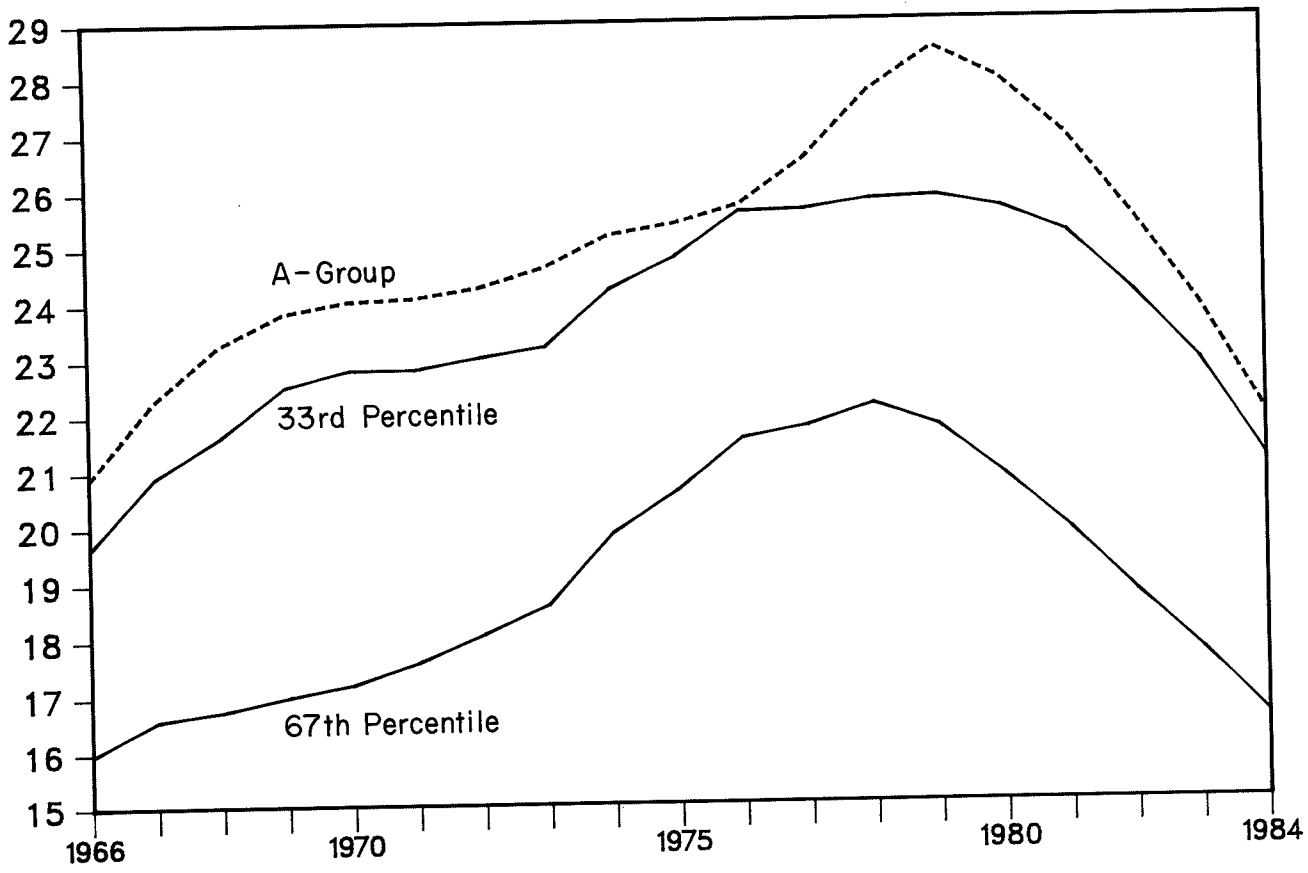


Figure 3 CURRENT ACCOUNT/GDP (percent)

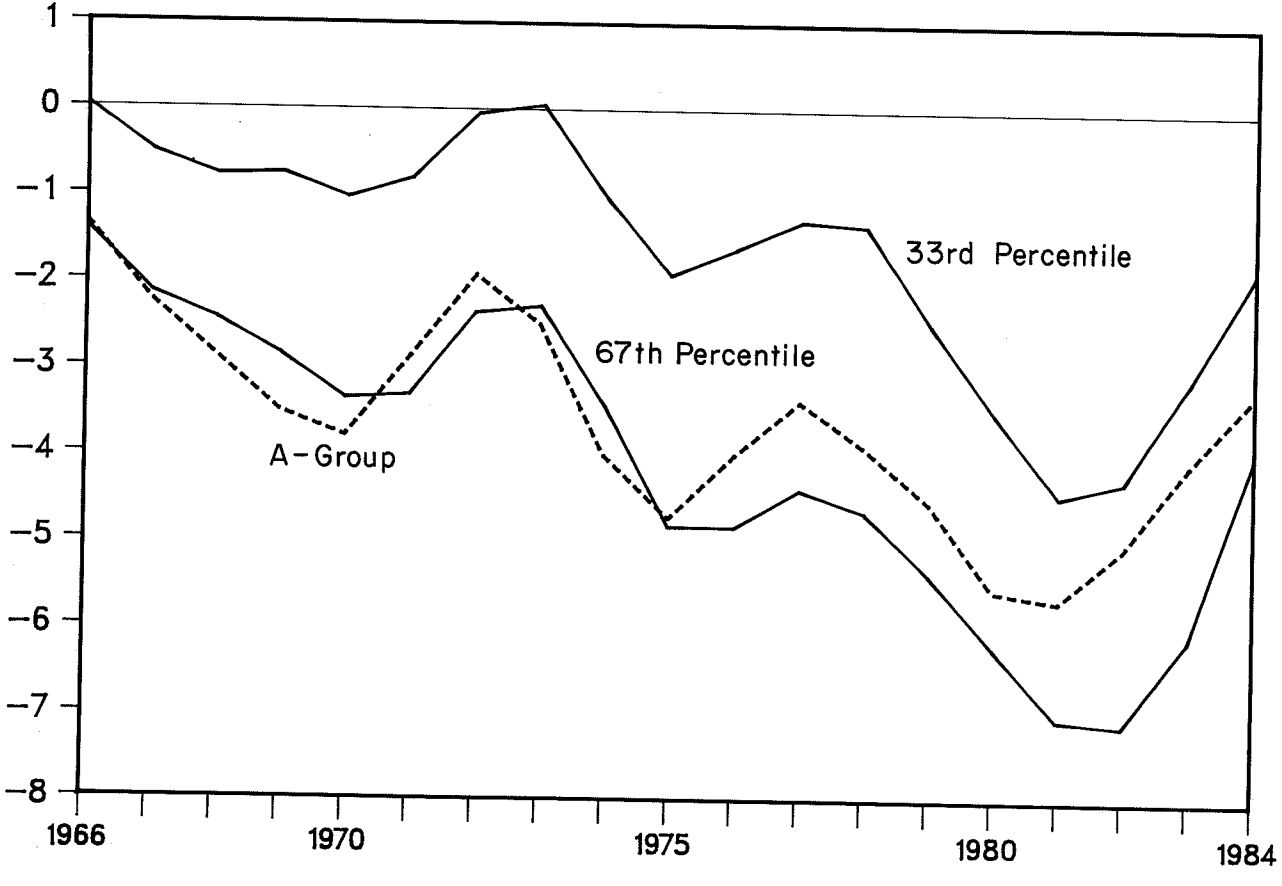
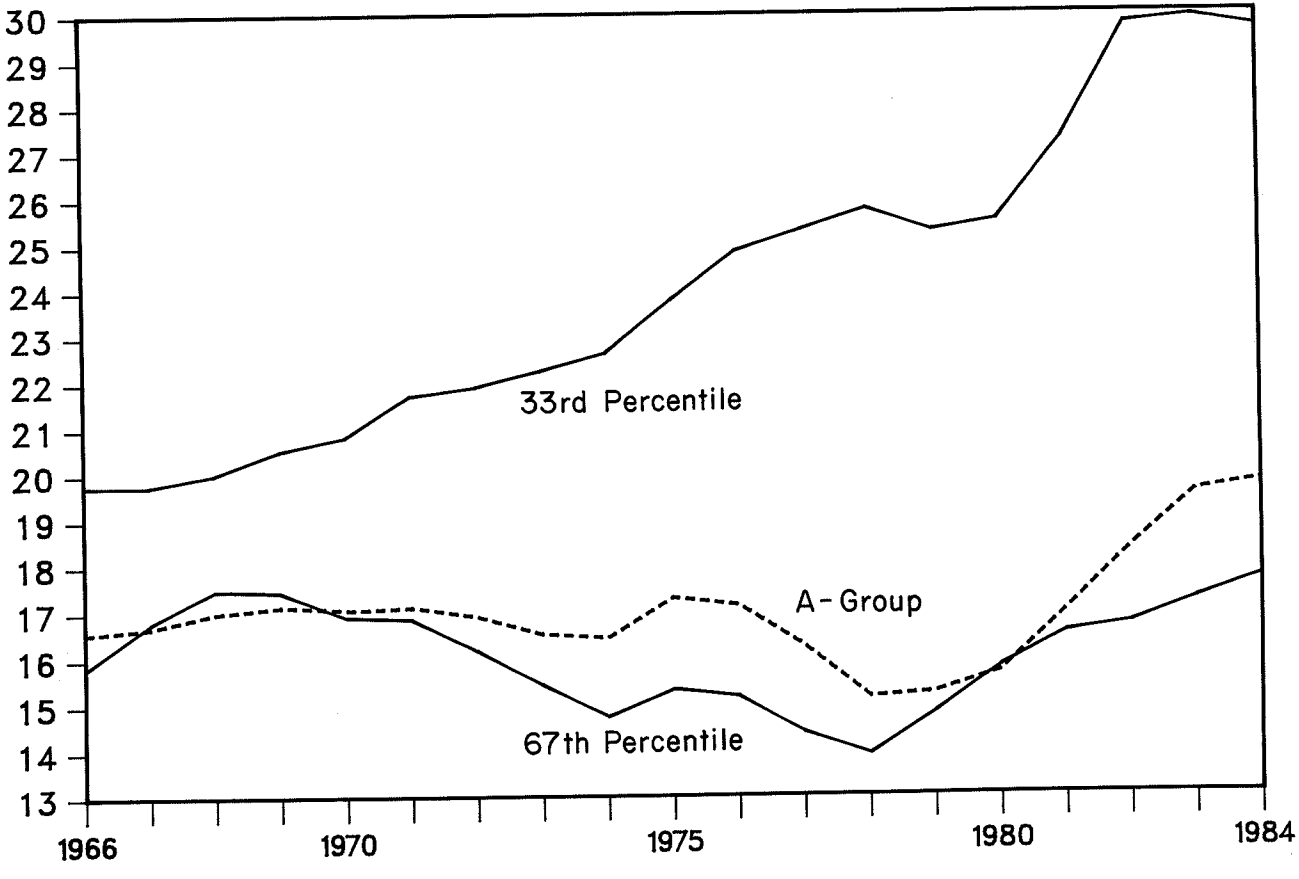


Figure 4 GOVERNMENT EXPENDITURE/GDP (percent)



diture rates begin to climb. Interestingly, countries at the bottom end of the expenditure range generally increased their public spending in the 1980s, while countries at the top end decreased theirs. Prior control over government expenditures may have provided low-expenditure countries with greater flexibility for applying stimulus during the recession of the 1980s. Similar, but much less extreme, patterns are evident in the time path of fiscal deficits (see figure 5). Initially, the A-countries are toward the low-deficit end, but show a greater tendency to use deficits countercyclically in both the mid-1970s and the early 1980s.

Consider, finally, three indicators of external linkage. Figure 6 shows the ratio of exports to GDP. For all economies this ratio rises sharply between the late 1960s and the mid-1970s. For most economies, however, it subsequently declines, and the countries at the bottom end are only slightly more open in 1984 than in 1966. The A-economies, however, follow a highly atypical pattern. Starting as clearly "closed" in the 1960s, they experience a rapid rise in export shares and achieve a median level of openness by the mid-1970s. But while other countries' export ratios thereafter decline, those of the A-group again accelerate in the 1980s to yield exceptionally high integration with world markets by 1984. As we shall see, this spurt of export growth was particularly important in minimizing the effects of the debt crisis. The relationship between strong export performance and debt management figures prominently in both the Korean and Turkish success stories. The evidence also suggests that it is the rate of export expansion rather than the initial *level* of openness that is positively correlated with rapid growth, a conclusion that is also well supported by our case studies.

Figure 7 shows that the export success of the A-economies is not a product of unusual devaluations. This figure tracks the evolution of the nominal exchange rate deflated by the ratio of the domestic wholesale price index to a world-wide index.[3] A devaluation and/or more rapid inflation abroad than at home increase the index. According to figure 7, the A-countries participate in the general rounds of depreciation that occur from 1970 to 1972, from 1977 to 1979, and from 1982 on, but remain within typical range.

Finally, figure 8 shows the-terms-of-trade changes encountered by the sample during the 1966–1984 period. The diagram is dominated by fluctuations in the price of oil, with sharp terms-of-trade deteriorations following the shocks of 1973 and 1979 and strong recoveries reflecting oil price declines in the late 1970s and from 1980 on. The A-countries expe-

3. An export-weighted index of the U.S., German, French, and British wholesale price indexes converted into U.S. dollars.

Figure 5 GOVERNMENT SURPLUS/GDP (percent)

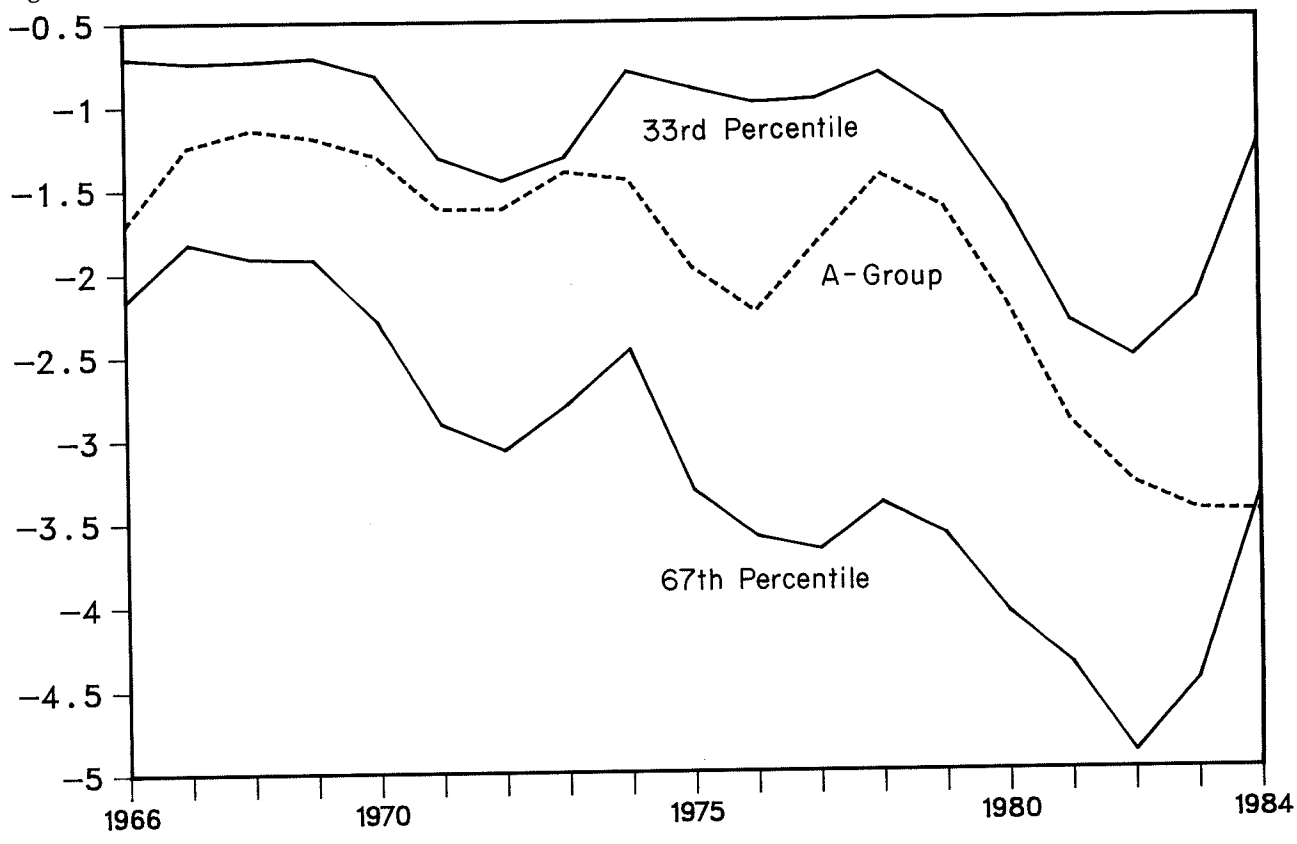


Figure 6 EXPORTS/GDP (percent)

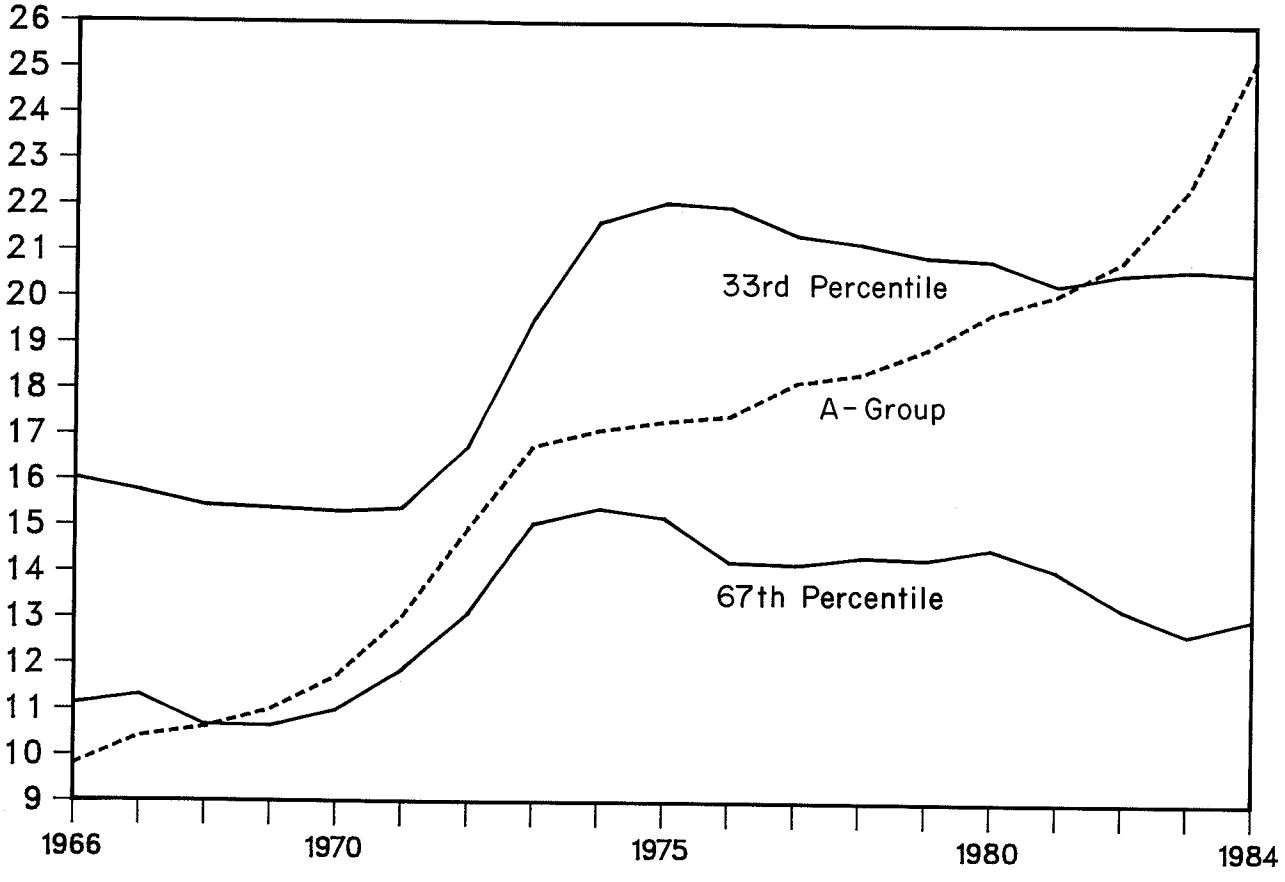


Figure 7 REAL EXCHANGE RATE DEPRECIATION (percent per annum)

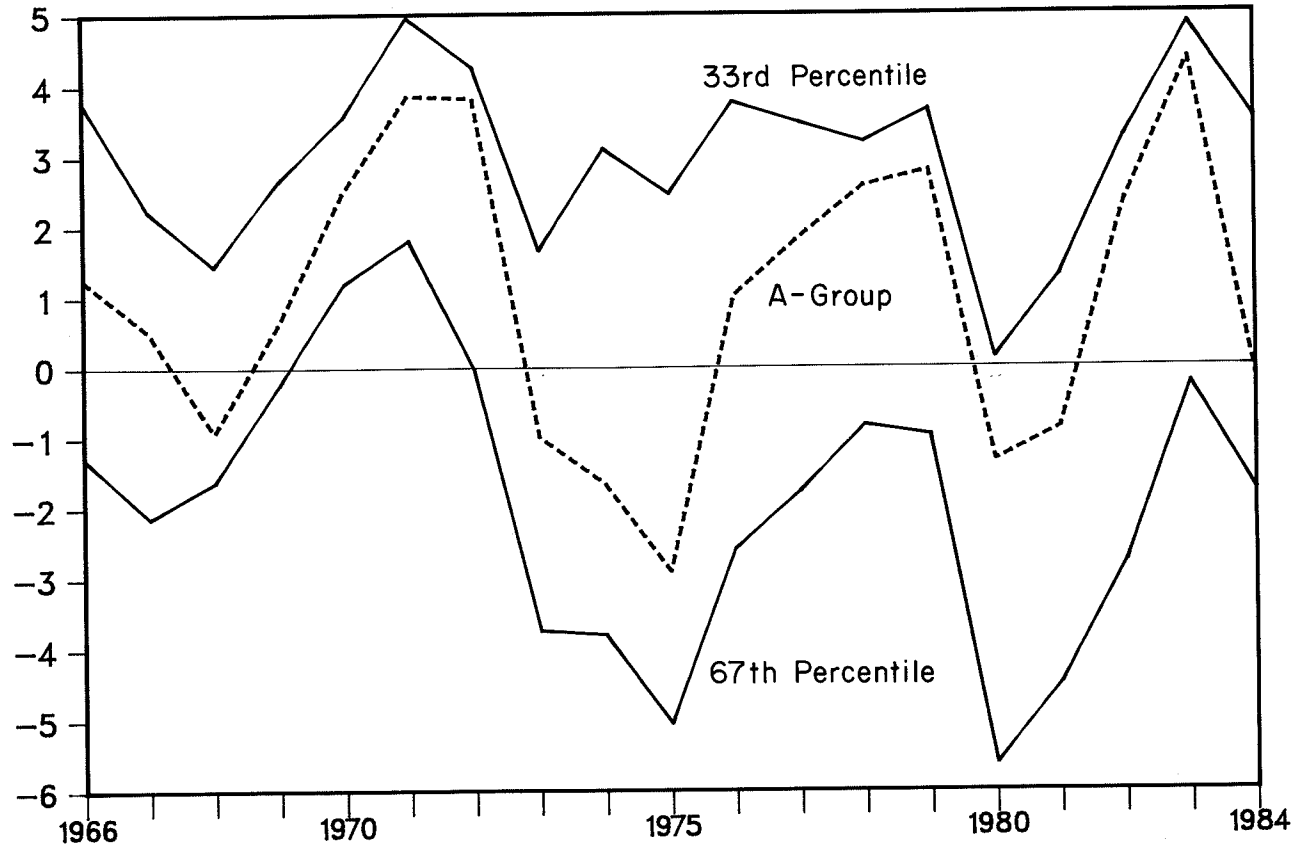
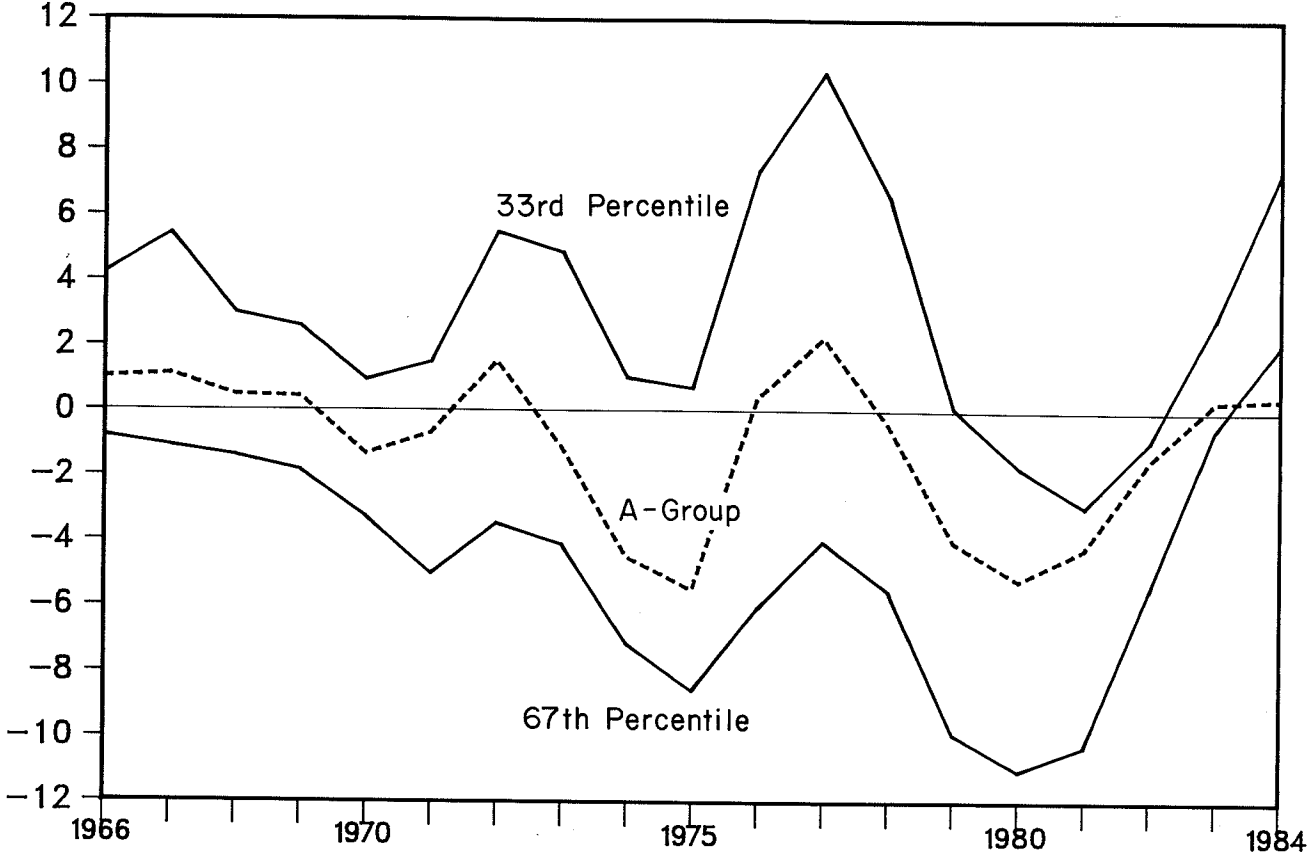


Figure 8 TERMS OF TRADE CHANGE (percent per annum)



rience terms-of-trade effects squarely in the middle of the typical range. In other words, the fastest-growing countries did not do well simply because they faced an easier external climate or because they devalued aggressively.

2.2. STATISTICAL CORRELATES OF SUCCESS

To permit a more formal analysis of the correlations between growth and the factors discussed above, three parallel data sets (for the years 1965–1973, 1974–1979, and 1980–1985) were constructed by averaging, for each country, the within-period values of the variables plotted in figures 1–8, as well as other relevant indicators. Since each of the periods spans a global business cycle, the averages permit us to concentrate on factors associated with intermediate-term growth as opposed to intracycle dynamics. Comparable cross-section regressions were run for each of the three time periods, using the twenty countries as observations.[4]

The results (see table 2) differ substantially and systematically across periods. In the earliest period, the investment rate is the only consistently significant variable. Its coefficient indicates that a 1 percent increase in the investment is associated with a 0.30 to 0.45 percentage-point increase in GDP growth, or a gross return to investment in the 30 to 45 percent range. In this period, indebtedness, the export ratio, the terms of trade, and fiscal variables have insignificant coefficients and often unexpected signs. A slightly significant positive coefficient (0.35) for the growth rate in the five years prior to 1965 indicates autocorrelation in growth, but multicollinearity between prior growth and the investment rate makes it statistically difficult to disentangle these effects.

The second period, following the oil shock of 1973, produces a better statistical fit. The investment ratio is still important, although the gross rate of return declines into the 0.20 to 0.25 range. International debt and the government deficit are now clearly negatively correlated with growth. Debt presumably affects growth by constraining imports of raw materials and capital goods; the deficit variable suggests fiscal crowding-out. Finally, the regression confirms the importance of terms-of-trade effects during the 1974–1979 period; a 1 percent decline in the terms of trade typically reduced growth by 0.2 percentage points.[5]

4. Since no attempt is made to estimate a full, simultaneous model of the growth process, the direction of causality in the regressions is not always clear. Nevertheless, the variables on the right-hand side (investment, government spending, and the like) are generally policy-determined in developing countries and therefore likely to be exogenous.
5. Using the coefficients of this model, it is possible to make a very rough benefit-cost calculation for external borrowing during the 1970s. A country borrowing 1 percent of its GDP in 1979, for example, would have gained a stream of income of about 0.2 percent of

Table 2 REGRESSION OF PER CAPITA GROWTH RATES ON POTENTIAL CORRELATES

Eq	R^2	Debt/ GDP ratio	Investment/ GDP ratio	Export/ GDP ratio	Terms of trade change	Gov. expend/ GDP	Gov. surpl./ GDP	Prior GDP growth	Real exchange deprec.	Population growth	Log GDP/ capita	Log population
					1965–1973 period							
1	0.209	−0.017	0.313**	−0.047	−0.014							
2	0.317	0.067	0.405*	−0.016	−0.213	−0.313***						
3	0.328	0.071	0.378**	−0.010	−0.220	−0.237	0.377					
4	0.436	0.091	0.188	−0.074	−0.073	−0.151	0.590	0.350***				
5	0.460	0.101	0.457*	−0.038	−0.078	0.026	1.462***		−0.356***			
6	0.455	0.029	0.275***	0.086	0.215	−0.270	0.360			−1.275***		
7	0.329	0.070	0.383**	−0.013	−0.226	−0.237	0.347				−0.297	
8	0.329	0.072	0.395	−0.018	−0.219	−0.249	0.345					−0.341
					1974–1979 period							
1	0.423	−0.066**	0.203**	0.023	0.156***							
2	0.606	−0.051***	0.213*	0.023	0.175**	−0.129*						
3	0.758	−0.049**	0.238*	0.019	0.209*	0.000	0.459*					
4	0.790	−0.043**	0.198*	0.006	0.227*	0.022	0.434**	0.189***				
5	0.788	−0.043***	0.259*	−0.001	0.198*	−0.022	0.384*		−0.099			
6	0.758	−0.049**	0.237*	0.020	0.210*	−0.001	0.455*			−0.035		
7	0.783	−0.047**	0.281*	−0.005	0.202*	0.020	0.511				−2.059	
8	0.779	−0.042***	0.196*	0.040	0.211*	−0.008	0.414*					1.341
					1980–1985 period							
1	0.545	−0.060*	0.137	0.164**	−0.011							
2	0.597	−0.056*	0.160	0.140**	0.015	0.082***						
3	0.639	−0.063*	0.150	0.140**	0.049	0.149*	0.301					
4	0.639	−0.063*	0.146	0.138***	−0.052	0.152***	0.296	0.033				
5	0.639	−0.062*	0.160	0.135***	−0.050	0.151**	0.293		−0.020			
6	0.679	−0.062*	0.057	0.169**	−0.051	0.126***	0.287			−0.980		
7	0.644	−0.063*	0.159	0.139***	−0.033	0.153**	0.312				−1.042	
8	0.648	−0.070*	0.177	0.129***	−0.077	0.156**	0.360***					−1.030

*Significant at .025 level. **Significant at .050 level. ***Significant at .100 level.

Over the deep global business cycle since 1979 the correlates of growth change once again. Debt becomes the most important (negative) correlate of growth. The second most important variable is the export ratio, which did not play much of a role in the earlier periods. Now, presumably for the same reasons that make debt important, the ability to earn foreign exchange is closely associated with growth performance. In this period government expenditure becomes positively associated with growth and the significance of crowding-out recedes.

Some variables that might have mattered do not. Population growth is generally insignificant: in two of the three periods it reduces per capita income growth roughly point for point, suggesting that output is independent of population; in the third it also reduces per capita income growth but only slightly.[6] Neither the level of per capita income nor country size (measured in terms of population) matter. Country-specific factors, as captured by the growth rate during the previous period, are mildly significant early on, but their importance declines over time. Finally, although the coefficient of real exchange-rate depreciation is not statistically significant, all three regressions associate depreciation with lower, rather than higher, growth. There may be variables missing here: factors that contribute to domestic growth could also improve international competitiveness and thus limit the need to devalue.

In sum, countries that grew rapidly throughout the past two decades have had to excel in several dimensions. Early on, high rates on investment and favorable domestic preconditions were the most significant correlates of success. Between 1973 and 1979 fast growth called for high investment and frugal fiscal policies. After 1979, debt and especially the financing of debt through high exports became paramount. All of these issues are more concretely explored in the case studies that follow.

3. *South Korea: The Twenty-five Year Boom*

In the late 1950s, on the eve of a spectacular economic takeoff, South Korea's economic prospects looked bleak. Korea had meager endowments: the bulk of Korea's industry, power sources, and minerals had been lost to North Korea, and there was great population pressure on the limited agricultural lands in the south. Education beyond elementary school had not been generally available under Japanese colonial rule

GDP, would have paid interest of roughly 0.1 percent of GDP, and would have lost 0.06 points from its growth rate between 1980 and 1985. Evaluated at a 10 percent discount rate, this works out to a benefit-cost ratio of around ⅔ for external borrowing in the late 1970s.

6. These results are very similar to those reported by Paul Romer elsewhere in this volume.

(1910–1945) and Koreans had had little experience in owning or managing industrial firms. In the late 1950s exports covered only a fraction of the cost of imports, the bulk being financed by American aid. There was also political instability: after the corrupt Syngman Rhee government fell in 1960, a brief attempt at democracy ended in a military coup. Hindsight has helped some writers to see these problems as advantages, but surely South Korea's success cannot be attributed to endowments, with the possible exception of Confucian culture.

Some key statistics of the Korean takeoff are presented in table 3. The growth rate of GDP accelerated sharply after 1960 and has been high compared to international averages ever since. (In 1986, which is not shown in the table, Korea grew by 12 percent.) The initial spurt of growth was produced by giant productivity gains and required relatively little investment—the 1960s' incremental capital-output ratios (ICOR) of about 2 or even less are extraordinarily low by comparative standards. In the 1970s, however, Korea's ICOR was no longer unusual, and growth was driven by accelerating investment—reaching 30 percent of GDP in the latter half of the decade. The common feature of both periods is the rapid expansion of trade, particularly exports; Korea was an unusually closed economy in the later 1950s, and a very open one in 1985.

Productivity change was very important in the growth process (Kim and Park 1985). Total factor productivity growth contributed 4.3 percent in the 1960s and 2.9 percent in the 1970s and early 1980s to an overall growth rate of around 8 percent in both subperiods. Labor supply growth contributed about three percentage points in each subperiod, due in part to rapid progress in education and the fact that Koreans took little of their increased wealth as leisure; the Korean workweek is still the world's longest. Capital growth was of lesser but increasing importance,

Table 3 BASIC STATISTICS OF KOREAN GROWTH

Period	*GDP growth rate*	*Investment/ GDP (percent)*	*ICOR*	*Export/ GDP (percent)*	*Import/ GDP (percent)*	*Govt. exp./ GDP (percent)*
1956–60	3.3	10.9	3.3	0.6	9.0	
1961–65	6.5	13.1	2.0	3.1	12.9	11.0
1966–70	12.7	23.4	1.8	8.2	20.6	17.2
1971–75	9.0	23.0	2.5	19.9	27.6	15.3
1976–80	7.6	29.2	3.8	26.1	30.2	16.4
1981–85	7.6	29.3	3.8	30.0	32.4	17.9

Sources: Korean Traders Association (1985); World Bank (1987), and authors' calculations.
Note: Population 1984: 40.1 million. GDP/capita, 1984: US$2,110.

contributing 1.1 and 2.1 percent, respectively, in the 1960s and 1970s. The changing sources of Korean growth reflect changing directions in economic policy. As we show, in the mid-1970s Korea moved from an aggressive, though surprisingly neutral, industrial policy to a sector-specific development strategy targeted on heavy industry.

Why was Korean growth so consistently high? Equal credit appears to be due to policy and the inherent resilience of the economy. The main macroeconomic policies—with respect to the exchange rate, financial resources, and demand management—were generally sound. In addition, Korean innovations in industrial policy (particularly export promotion) helped to integrate the economy with world markets, saved the country from a serious debt crisis, contributed to the inflow of technology, and raised productivity growth (Westphal 1978). The key policies are reviewed in some detail later, but an equally important part of the story is the Korean economy's remarkable responsiveness to economic signals. As the final section argues, the secret of Korea's success is as much the resilience of its economy as the particular sequence of policies followed.

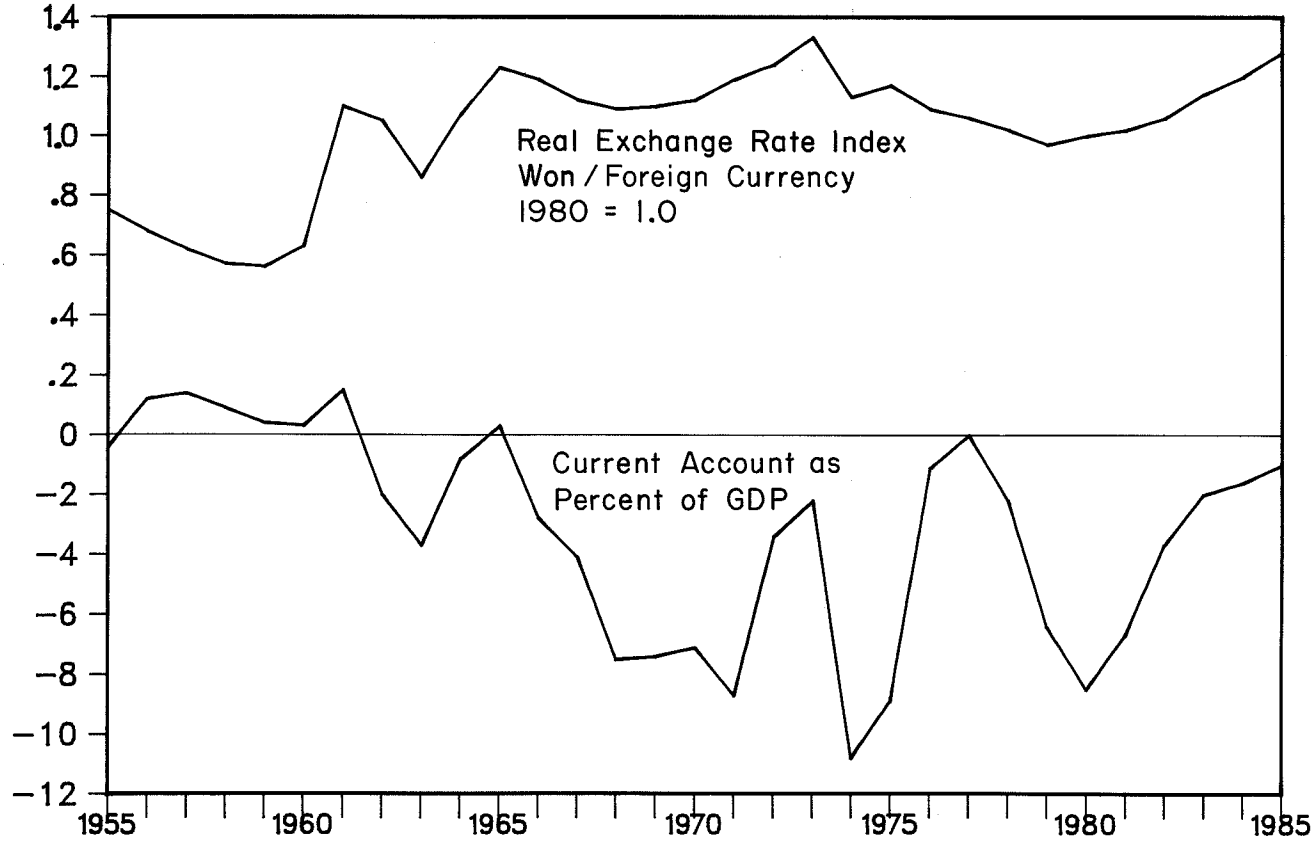
3.1. SOUND FUNDAMENTALS: EXCHANGE RATES, RESOURCE MOBILIZATION, ADJUSTMENT

3.1.1. Exchange Rate Policy. Until the late 1950s Korea filled as much as 90 percent of its foreign exchange requirements through U.S. aid and military procurement. Since some U.S. payments were tied to local services valued in local currency, there was a strong incentive to overvalue; in 1960 the won is estimated to have been overvalued by a factor of two.[7] After the fall of the Rhee government in 1960 the won was devalued and Korea began to dismantle the intricate system of multiple exchange rates, export bounties, and windfall taxes that had evolved under overvaluation. It is extremely important that, from 1964 on, Korea's real exchange rate fluctuated near equilibrium values, except for a brief period during the Heavy and Chemical Industry (HCI) drive of the 1970s (on which more later). By contrast, Turkey did not implement its first significant exchange-rate adjustment until a decade later.

The problem of overvaluation was addressed in two devaluations in the early 1960s. The effects of the first were eroded by inflation (see figure 9), but the second was followed by the adoption of a managed float. The float remained in effect until 1974, at which time Korea again devalued, fixed the nominal exchange rate, and adopted a highly expan-

7. This assumes that the exchange rate was at an equilibrium level in the early 1970s and early 1980s, and translates back to 1950s prices using purchasing power parity rules. See Krueger (1979).

Figure 9 EXTERNAL INDICATORS



sionary investment policy. The real value of the won then rose over the next six years and, in conjunction with the second oil shock, necessitated a large devaluation and sharply contractionary monetary measures in 1980. Since 1980, Korea has been using a crawling peg; in the early 1980s the won depreciated against the dollar; since 1985 it has appreciated slightly.

Control over the balance of payments was relatively easy to maintain. The government has exercised, and continues to exercise, strict control over the capital account; all significant foreign borrowing and lending require central bank approval. The current account, in turn, has been highly responsive to exchange rate movements, as even a casual inspection of figure 9 indicates. In the seven years since 1960 when the real exchange rate was high (over 250 won/dollar, in 1965 purchasing power parity terms) the average growth rate of exports was 43.5 percent; in the seven years when it was low (under 200 won/dollar) the average growth rate of exports was 16.0 percent.

3.1.2. Resource Mobilization and Finance. Until recently the Korean domestic financial system was an archetypical example of "repression."[8] Five large state-controlled banks accounted for nearly all formal commercial credit, and bond and equity markets were nearly nonexistent. Commercial bank credit was offered at very low interest rates and was strictly rationed; small and medium enterprises and consumers were forced into an informal "curb" market where lending rates exceeded bank rates by twenty percentage points or more.

How did such an unpromising financial system fund an ambitious investment program? As table 4 shows, initially the savings gap was filled with borrowed resources. Nearly three-quarters of investment in the late 1950s, and roughly half in the 1960s, was financed from abroad. Before 1965, the bulk of the financing consisted of transfers from the United States; Korea received aid on the order of 10 percent of GDP. A significant portion of this was channeled into investment through government saving—at the beginning of the takeoff, government saving financed roughly half of investment. As aid flows declined, Korea began to borrow. In the late 1960s, long before it became fashionable elsewhere, Korea's foreign borrowing assumed equal importance with government saving, each financing around 30 percent of investment. Domestic private saving did not become the dominant source of funds for investment until the mid-1970s.

8. In the late 1960s, as described later, Korea did raise interest rates in a successful attempt to attract funds into the organized sector. True financial liberalization did not begin, however, until the early 1980s.

Table 4 FINANCING KOREAN INVESTMENT

Period	Total investment/GDP (percent)	Sources of funds			External debt		
		Transfers (percent)	Foreign capital (percent)	Domestic saving (percent)	US$ (millions)	Relative to GDP (percent)	Relative to exports (percent)
1956–60	10.9	71.5	−0.8	29.4	0	0.0	
1961–65	13.1	47.2	7.8	45.0	206	6.9	117.7
1966–70	23.4	9.3	31.6	59.2	2245	25.6	254.5
1971–75	23.0	1.8	32.6	65.5	8456	40.0	169.0
1976–80	29.2	0.7	22.1	77.2	27365	43.8	159.0
1981–85	29.3	0.2	14.4	85.4	46700	54.2	176.6

Sources: IMF (1986), Kim (1985), World Bank (1987), and authors' calculations.

Korea borrowed earlier and more extensively than most developing countries, but maintained control over its debt. The key to the manageability of Korean debt was the very high productivity of investment, particularly in tradable goods. No one questions Korea's creditworthiness today, yet Korea debt service/GNP ratio is higher than Brazil's (6.6 percent vs. 5.5 percent in 1984). The debt service/export ratio, however, is less than half of Brazil's and, while Korea's debt/GDP ratio increased by 65 percent between 1970 and 1984, its debt service/export ratio *fell* by 22 percent.

Korea could have borrowed more than it did, but policy makers took decisive steps to control debt when it threatened to grow out of hand. In 1980, a combination of the second oil shock, the expansionary policies of the HCI drive, and political uncertainty drove the Korean current account into a deficit amounting to 10 percent of GDP. At the same time, the cost of capital rose abroad, while its productivity fell in Korea.

The government undertook sharp deflationary measures and embarked on a long-term program to stimulate household and corporate saving. Real interest rates were raised from previously negative levels and a very rapid expansion of nonbank financial institutions (investment companies, bond trusts, insurance companies) was promoted. These firms, offering higher and safer returns than the curb market, drew new funds into the formal financial system and evidently also increased the *net* flow of savings. The share of domestic private saving in financing investment rose at the expense of both foreign and government saving. Credit market liberalization offers an example of Korea's knack for reversing policies that come into conflict with economic reality.

While earlier financial liberalization might have had various beneficial consequences, the fact is that Korea financed its investments well. It borrowed heavily in international markets when the cost of capital was low, and used the funds to finance self-liquidating investments. It then took effective steps to increase domestic savings when external financing became costly.

3.1.3. Managing Adjustment. Korean macroeconomic management also deserves high marks. Policy makers have taken bold and sometimes risky steps to keep the economy operating at a high level, keeping the average rate of inflation at a relatively high 15 percent. But when inflationary pressures threatened loss of control, prompt contractionary measures were adopted. The HCI drive during the late 1970s represents the only significant departure from the generally impressive macroeconomic record.

An early example of sound macroeconomic management involves the

moderation of the growth spurt in the 1960s. Inflation accelerated in the mid-1960s due to the dramatic expansion of investment and export demand, the cost-push effects of devaluation, and the growth of the monetary base due to the improved balance of payments. In 1965 the government sharply raised interest rates and took steps to control monetary growth. (See figure 10.) These included increased reserve requirements and forced sales to (state-owned) banks of "stabilization" bonds and deposits.

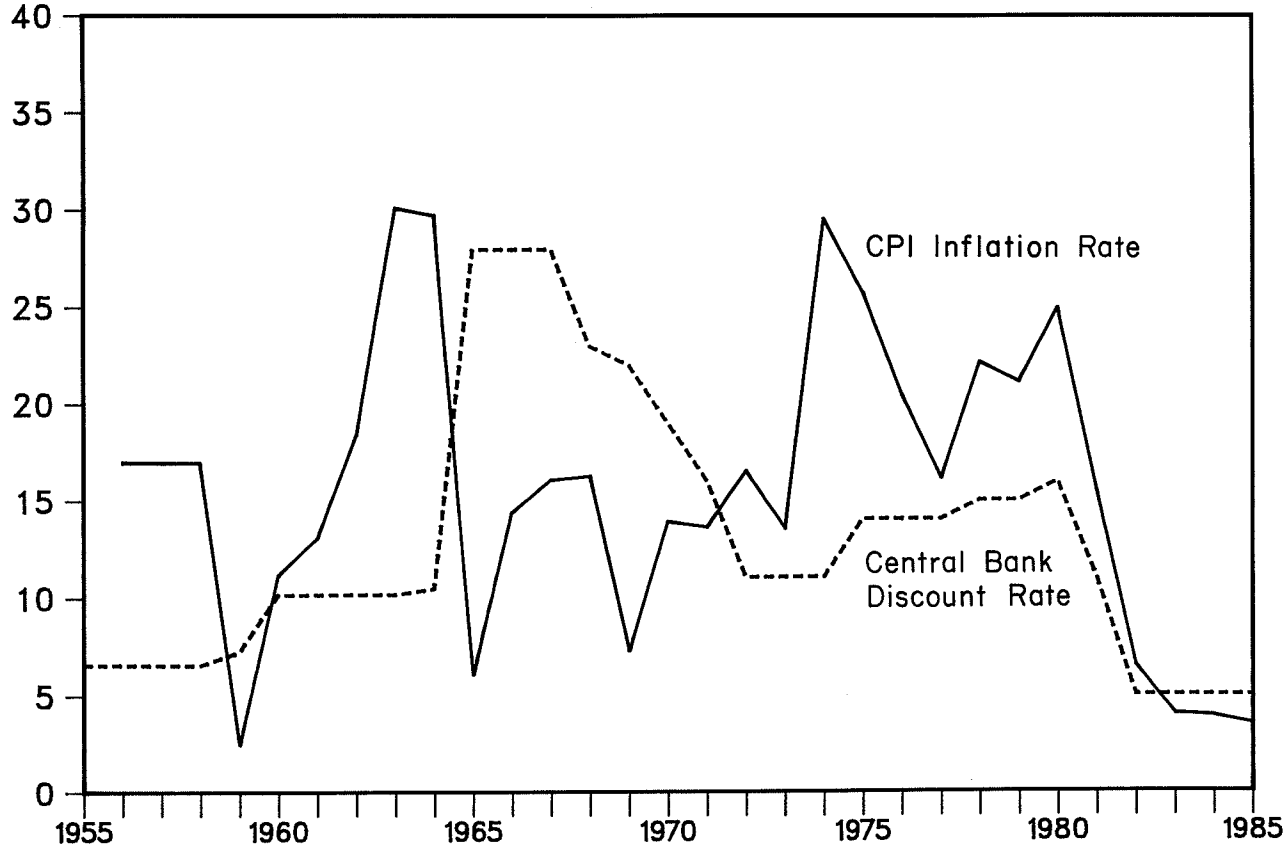
There is still doubt as to how well the supply of credit responded to the monetary policy measures (Kwack 1986), but the short- and long-run developments proved very positive. Growth moderated but remained high, and inflation was contained under 10 percent until the era of global inflation in the 1970s. From a microeconomic perspective, the high-interest rate policies highlighted Korea's comparative advantage in labor-intensive technologies and industries, and the ICOR fell to the remarkably low value of 1.8.

A second test of management came in 1974. Essentially, Korea offset the contractionary effects of the oil shock with investment financed from abroad. Investment rates climbed to 30 percent of GDP in 1974–1975, from 24 percent during the previous three years. Simultaneously, the rate of external borrowing rose from 5 to 10 percent of GDP. Investments went into energy-saving restructuring, new export opportunities in areas such as shipbuilding and construction, as well as basic intermediate goods industries. The boom eventually generated enough improvement in the trade balance (and in domestic savings) to eliminate virtually all of the current account deficit by 1977.

Riding the momentum of this recovery, Korea embarked on a questionable policy: a major investment drive in heavy and chemical industries. The motivations of this policy will be explored later, but its macroeconomic effect was to further increase the ratio of investment to GDP to 39 percent by 1979. Investment was encouraged by preferential credit at low interest rates. In effect, the government-controlled banks shifted funds from smaller firms to new large-scale projects, and the differential between bank rates and the curb market rose. Inflationary pressures mounted. Price controls were introduced over a wide range of intermediate and consumer products and the nominal exchange rate was held constant. By the end of the HCI period Korea faced substantial suppressed inflation, an appreciated high real exchange rate, and a significantly lower productivity of capital.

These developments combined with the second oil shock and the assassination of President Park in 1980 to create a major crisis. The government responded to the sharply worsening current account and accelerating

Figure 10 MACROECONOMIC INDICATORS



inflation with a 27 percent devaluation of the won, a commitment to gradual subsequent devaluations thereafter, and a broad package of contractionary measures including increased interest rates and curtailed growth of credit. In 1980, GDP *fell* by 3 percent and investment declined by more than 20 percent. Unlike in developed economies, however, labor markets responded dramatically to the contraction: real wages fell by 3 percent in 1980, as against a trend increase of about 7 percent per annum. With these sharp quantity and price changes, the bulk of the economy's adjustment was completed within a year, and growth resumed in 1981.

The contrast between policies after the first and second oil shocks illustrates the sensitivity of Korean decision-making to real circumstances. Between 1970 and 1980 Korea's debt had risen from 26 to 44 percent of GDP, world real interest rates had become positive, and Korea's ICOR had deteriorated from 1.8 to 4.3. While conditions in 1974 justified an aggressive gamble on growth, in 1980 they favored adjustment and deflation. Because of these measures Korea avoided a debt crisis in the 1980s and eventually moved its current account into surplus.

3.2. KOREAN SPECIALTIES: EXPORT PROMOTION, HEAVY INDUSTRY

The success of macroeconomic management notwithstanding, aggressive microeconomic policies are the hallmark of Korea's development strategy. Korea's case is not one of laissez-faire development; government played a central role through its pervasive control of the financial sector as well as trade policy and other instruments. The unusual feature of Korean intervention, however, is that it often simulated market signals and left a powerful role for private initiative. Arguably, government intervention drove Korean development in the direction of market signals, but with more skewed incentives—a more "peaked" reward function.

Before the 1960s, the main thrust of Korean development policy, as in Turkey until nearly two decades later, was import substitution. It was essentially impossible to import any product without political connections; Jones and Sakong (1980) aptly describe the period as fostering "zero-sum entrepreneurship." Although some exporters received direct cash bounties and such privileges as the right to borrow abroad and to import restricted commodities, the real race to be in was the competition for import permits.

This corrupt and ineffective system was replaced in the 1960s by wide-ranging automatic benefits for exporters. They received significant tax concessions (on income taxes, indirect taxes, and depreciation) and were

exempted from tariffs on all intermediate inputs. Importantly, the duty exemptions were subsequently extended also to the domestic intermediate suppliers of exporters. Both direct and indirect exporters received preferential treatment under nontariff barriers as well, and high wastage allowances (that is, excessive import permits for intermediate inputs) increased the value of their import privileges.

Exporters also received assured access to generous financing. Interest rates on export loans were lower than on other loans, and bank loans were below equilibrium rates to begin with. When the bank lending rate was raised from 10 percent to 26 percent in the late 1960s, the export lending rate remained at 8 percent. Special facilities were created for working capital loans to exporters. More generally, under explicit instructions from the government, banks used export performance as a criterion of creditworthiness.

Novel and sometimes bizarre measures were used to reinforce the export development effort. On taking office in 1961, President Park arrested nearly all leading businessmen and required them to build new plants and donate shares to the government. Not much ever came of these plants, but the president had made the point that he expected cooperation from the private sector. A powerful Economic Planning Board (EPB) became the coordinator of interministerial economic policy; its minister chaired the cabinet as Deputy Prime Minister. Economists with American Ph.D.s rose to leading positions in the bureaucracy, including to the head of EPB, other ministries, and the president's staff. Park took a personal interest in establishing and administering institutions such as monthly high-level trade promotion meetings, industry- and firm-level export targets, close surveillance of firm-level export performance, and special awards for export achievement (Rhee 1985). Quickly and thoroughly, the government focused the efforts of key economic agents—firms, banks, bureaucracy—on implementing the outward-looking strategy.

On the whole, the combination of export promotion with moderate import barriers resulted in a relatively neutral trade regime. While protection *could* have sharply distorted domestic production incentives, its actual effects have been estimated to be surprisingly benign.[9] Four factors minimized its impact. First, exporters and indirect exporters largely escaped protection. (Tariff exemptions granted were typically twice as large as tariffs actually paid.) Second, the tariff-equivalent of tariff and nontariff barriers was not very high—it was estimated in 1968 at 13 per-

9. The first major study is that of Westphal and Kim (1982). More recent studies include Nam (1985) and Young and Yoo (1983).

cent and since then the list of quantitative restrictions has been reduced.[10] Third, protection generally fell on final consumer goods and therefore had less effect on productive efficiency than it might have had if targeted on capital or intermediate goods. Fourth, protection was low in industries in which Korea had a strong competitive position: incentives for export exceeded incentives for domestic sales in the *exportables* industries by a much larger margin in Korea than elsewhere.

Despite, or perhaps because of, the success of export promotion, in the mid-1970s Korean priorities shifted to the development of Heavy and Chemical Industries (HCI). The motivation was partly political: the opening of U.S. relations with China and the threatened withdrawal of American troops prompted the government to seek an independent industrial base for defense. The economic justification was that the drive would accelerate changes in Korea's comparative advantage that were necessary given growing global competition in Korea's traditional industries, including potentially from China. It was argued that large-scale, risky investments would not, and indeed in the Korean financial context could not, be undertaken privately.

The targeted industries included fertilizers, steel, metal products, shipbuilding, machinery, and automobiles. A National Investment Fund was established in 1974 to provide capital and signal government priorities. Capital formation accelerated sharply, especially in HCI industries; nearly all HCI investments contemplated by an ambitious Third Five Year Plan (1977–1981) were completed in half the expected time, by 1979. HCI firms received subsidized credit, fiscal incentives, and increased protection, in many cases encroaching on the previously automatic exemption of downstream exporters from tariffs and import controls. Effective protection rates came to be widely dispersed, with high rates of protection facing targeted sectors and, in some cases, negative rates facing important traditional exporters.

The HCI drive sacrificed the balance of private initiative, tangible performance measures, and bureaucratic monitoring of earlier industrial policy. Interactive decision making between business and the bureaucracy diminished in proportion to the preference given to "key" industries; general export promotion targets and meetings were discontinued. The drive resulted in much unusable capacity, especially in the chemical and electrical machinery industries, and concentrated investment in the economy's most capital-intensive sectors.

10. Since Korean protection is largely due to quantitative restrictions, the level of protection tends to rise with the appreciation of the real exchange. Thus the level of protection was considerably higher in the late 1970s before the 1980 devaluation.

It is tempting to regard the HCI drive, as many Koreans now do, as an expensive policy error. Yet despite the problems associated with the policy, its goals were achieved. Exports of heavy and chemical industries surpassed 50 percent of exports in the early 1980s and are now growing rapidly. Steel, ships, electronics, and automobiles are among Korea's most dynamic industries. It is not easy to know when and on what terms these successes might have been achieved *without* the high-cost, premature investments of the late 1970s. The definitive evaluation of the HCI drive remains to be written.

3.3. RECENT DEVELOPMENTS

Korea's response to the economic crisis of 1980 included, along with macroeconomic stabilization, a shift toward more neutral micro policy. This shift is in part a response to the increased complexity and sophistication of the economy, but changing political realities are also important. At home, there is more conventional lobbying now than in the past; it is increasingly difficult to use selective trade or financing measures for, say, export promotional purposes. Abroad, the instruments of aggressive industrial policy are no longer acceptable to trade partners. Thus, the government has eliminated most direct subsidies, sold the banks, begun to liberalize the financial system, and embarked on the steady reduction of quantitative trade barriers. Direct intervention still occurs, but is increasingly confined to the restructuring of a sizeable industry.

Korea's principal preoccupations include keeping the exchange rate favorable for export growth, reducing debt, creating financial institutions that can both generate and efficiently allocate savings, and improving education, research, and other elements of technological infrastructure. The appreciation of the yen since 1985 has provided an unusual opportunity: rapid progress is now being made on reducing debt, expanding new export industries, and liberalizing trade without any threat to economic growth or price stability.

3.4 RESPONSIVENESS OF THE KOREAN ECONOMY

Are the policy measures behind the Korean success story transferable? Some aspects of the broad outward-oriented strategy can and have worked in other countries—Turkey will provide a good example—but the success of Korean policies had much to do with the resilience of the Korean economy and with the time and context of their application.

Korea responds extraordinarily fast to changing economic signals. For example, between 1973 and 1977 Korean exports to Saudi Arabia expanded 37-fold (from $20 million to $671 million)—more than those of any other country. Another example: between 1970 and 1980, when de-

veloping countries were growing fast, the share of Korean exports going to these markets increased from 12 to 36 percent; between 1980 and 1985, when U.S. markets were growing fast, the share of the United States rose from 26 to 36 percent. A third example: ships, which accounted for 17 percent of exports in 1985, accounted for only 4 percent in 1980; clothing, which accounted for 22 percent in 1975, is now down to 14 percent.

The economy's responsiveness at the aggregate level is rooted in microeconomic flexibility. Consider the story of the Handok Company, a typically aggressive Korean conglomerate with 3,500 employees.[11] In 1971, 95 percent of its sales came from human-hair wigs. By 1976, its sales comprised paper products (51 percent), tuna (22 percent), wigs (16 percent) and watches (9 percent). In 1981 watches rose to 85 percent of sales. Watches were still important in 1985 (45 percent), but by then the company had become involved in manufacturing computers (41 percent) as well as liquid crystal displays (10 percent).

Korea's prominent conglomerates may, in fact, help to explain the economy's resilience.[12] Large, widely diversified firms emerged in part because such firms had good access to rationed credit during the 1960s and 1970s. Their size and importance increased during the HCI drive, since the targeted large-scale projects usually required the participation of large firms. They are now often regarded as a problem, for example, because they might try to buy up commercial banks and oligopolize credit. But conglomerates are very effective in shifting financial, managerial, and technological resources into their most profitable applications, and may be especially valuable in an economy with underdeveloped or repressed conventional factor markets.

Finally, some special circumstances helped to make Korea's strategy particularly effective. In the 1970s, Korea faced a more robust world market, less competition, and fewer barriers to traditional, labor-intensive exports than a country trying to duplicate its strategy would face today. Indeed, in some cases (for example, television receivers, steel, and automobiles) Korea was helped by trade barriers aimed at Japan. Korea benefited from following Japan in other ways as well; Korea copied Japanese technology and took over U.S. markets that had been opened earlier by Japan at considerable cost.

11. World Bank (1987).
12. The contrast with Taiwan, Province of China, is interesting (see for example, Tsiang 1984, and Scitovsky 1986). Here firms are much smaller, but the economy has also shown a remarkable ability to adjust. There were more domestic capital and managerial resources, and the government fostered a more market-oriented approach to development. While the economy has been just as successful as the Korean economy, its exports have a smaller share of the heavy industrial products which now make up the most dynamic component of Korean trade.

The Korean legacy is complicated because it supports both interventionist and neutral development strategies. Aggressive export promotion and more recently increasing neutrality have proved successful, while the results of the sectoral targeting have been mixed. The single dimension, intervention vs. neutrality, misses, in particular, the orientation and capability of the bureaucracy. In Korea's case, the combination of a remarkably "economic" economy, favorable external circumstances, competent bureaucracy, and freedom from political constraints produced excellent results. The cocktail was potent, but we cannot say how it would have tasted without one or more of its critical ingredients.

4. *Turkey: Crisis and Adjustment*

Unlike Korea, Turkey does not have a record of spectacular sustained growth. Before 1980, Turkish growth averaged around 5 percent (see table 5)—a respectable, somewhat above average performance. There were two slowdowns: a relatively minor one in 1970–1971 and a big crash in 1978–1980. Turkey's crash preceded the other crashes of the early 1980s, but its most startling feature was an exceptionally fast and strong recovery after 1981. Turkey's recovery in the early 1980s was supported by five structural adjustment loans from the World Bank (no other country got as many) and substantial IMF resources. Nonetheless, Turkey's performance surprised the international financial community because it took place in the Eastern Mediterranean, far from the East Asian "success zone," in a country that had pursued unusually inward-looking policies and had one of the lowest export-to-GDP ratios in the world (4 percent).

This discussion of Turkish macroeconomic policy concentrates on the spectacular adjustments of the early 1980s. It is nevertheless useful to

Table 5 BASIC STATISTICS OF TURKISH GROWTH

Period	*GDP growth rate*	*Investment/ GDP (percent)*	*ICOR*	*Export/ GDP (percent)*	*Govt. exp./ GDP (percent)*
1961–65	5.0	15.3	3.1	3.1	
1966–70	6.8	17.1	2.5	4.4	20.0
1971–75	7.7	18.1	2.3	5.2	21.7
1976–80	2.6	21.7	8.3	5.3	25.9
1981–85	4.8	20.8	4.3	12.0	24.3

Source: IMF, *International Financial Statistics*.

Note: Population 1984: 48.4 million. GDP/capita, 1984: US$1,160.

review Turkish policies in the 1960s and 1970s to set the background of the recent crash and recovery and to show, for comparison, how Turkey's earlier policies differed from Korea's.

4.1. MACROECONOMIC POLICY IN THE 1960S AND 1970S

Until the early 1980s, Turkish macroeconomic policy was a case study in the application of two-gap theory. For each five year plan an overall growth rate was chosen as the key social target. Given assumptions about the productivity of capital, the growth target would imply a particular investment rate. The growth and associated investment rates would then imply (1) a foreign exchange gap, to the extent that exogenously projected foreign exchange earnings fell short of the import requirements, and (2) a saving gap, to the extent that projected national saving fell short of investment. This basic model, augmented with a dynamic multisector input-output framework, was the intellectual foundation of the macroeconomic work of the State Planning Commission, the key agency responsible for the design of macroeconomic policy.

How were the "gaps" closed? In the 1960s, raw cotton, tobacco, hazelnuts, and dried fruit constituted about 70 percent of Turkey's exports, and it was widely believed that export revenues were limited by foreign demand. Foreign capital flows and exports were projected exogenously, and exports, in particular, were expected to grow more slowly than GDP. The resulting foreign exchange gap was then "closed" with import substitution targets, and the sectoral composition of import substitution became one of the key products of the macroeconomic plan. The plan also tended to take private domestic and foreign savings as given, and concentrated on increasing public saving. It was usually taken for granted that the exchange rate would remain fixed, and that import restrictions would be used, as necessary, to keep the balance of payments out of trouble.[13]

This approach operated fairly effectively in the 1960s, producing growth close to the planned 7 percent rate and inflation in the 5 to 8 percent range. There was no major crisis, but tension did gradually accumulate in foreign payments. Capital inflows were lower than projected, and the import substitution targets proved too ambitious. This led to excess demand for foreign exchange, a widening black market premium, and costly shortages of intermediate as well as final goods. Eventually, in 1970 Turkey devalued from 9 TL per US dollar to 15. With inflation run-

13. Krueger (1974) provides a detailed analysis of the external sector during this period.

ning at 10 percent, not far above world inflation, it was hoped that the real devaluation would erode only very gradually over time.

Events proved otherwise. For Turkey, as for most other countries, the 1970s turned out to be a decade of unprecedented external shocks. The first shock to hit Turkey was in fact favorable. In the mid-1960s large numbers of Turkish workers had emigrated to seek employment in Europe. From insignificant levels in earlier years their remittances climbed to $140 million in 1969 (about 26 percent of exports) and then to $1,200 million by 1973, increasing 70 percent annually. This was a bonanza equal to 5 percent of GDP. In addition, the devaluation, a favorable world environment, and some export promotion measures also led to rapid export growth, with exports reaching $1,300 million in 1973. Thus, in 1973 Turkey ran a large current account *surplus* for the first time in postwar history. Inflation was increasing, but otherwise prospects appeared good.

Then Turkey got hit very hard by the first oil shock. Between 1972 and 1976 oil imports rose from $125 million to $1 billion, representing an increase of 2.5 percent of GDP and nearly 50 percent of exports. Relative to foreign trade, Turkey had the largest oil shock among major middle-income countries. Even so, remittances continued to exceed the transfer of oil rent to OPEC countries; the oil shock merely took *back* in 1974–1975 what remittances had given in 1972–1973. Turkey's resource balance should have been where it was before the remittance explosion: tight but not really uncomfortable.

In the meantime, however, inflation had increased to 20–25 percent, and the 1970 devaluation had been eroded. Yet, as in many other countries, devaluation was perceived as the culprit rather than the cure, and the ruling conservative coalition chose to avoid adjustment through foreign borrowing. The government created tremendous incentives for borrowing by assuming the foreign exchange risk on most loans; thus, already low real dollar interest rates were translated into high negative rates for domestic borrowers. Given Turkey's low initial debt, foreign banks were happy to lend. Even after the World Bank and the IMF raised danger signals in 1976 and early 1977, lending continued, although spreads were raised and maturities shortened. Between 1974 and 1977 foreign capital financed half of all imports and debt rose by $8 billion, from 5 to 25 percent of GDP.

The politics of the time no doubt contributed to economic mismanagement. Competition between the left and right intensified during this period, with the left making a credible bid for political power in the 1977 elections. Extremist fringe elements on both sides engaged in violence, heightening tension and insecurity. In this setting, lower domestic ab-

sorption before the election could have led to a decisive victory for the left. In any event, the elections proved inconclusive, with neither side winning enough seats to form a stable government. The conservatives had bought modest political success at great economic cost.

The crisis hit with full force at the end of 1977 when foreign lending dried up. By then inflation had accelerated to 40 percent and the public sector deficit stood at a record 12 percent of GDP. The next two years were truly disastrous. Growth was negative, inflation moved into triple digits, and massive shortages developed. An adjustment effort launched in the spring of 1978, supported by the IMF, the World Bank, and a remarkably comprehensive debt rescheduling agreement concluded with the help of the OECD, failed in the absence of a clear political commitment to adjustment. Domestic political instability and violence intensified and triggered the flight of human and financial capital. Just then the second oil shock hit, adding $1.5 billion (66 percent of exports) to the oil bill. By the end of 1979, there was no gasoline for cars, no fuel for power plants, and no coffee for Turkish coffee.

4.2. ADJUSTMENT AND RECOVERY: THE TURKISH SUCCESS STORY

Recent economic history is full of examples of aborted adjustment, of seeming successes followed by crisis. It is very dangerous to call anything a success when changes in domestic policy or international events can quickly lead to reversals. Still, Turkey's macroeconomic performance in the 1980–1985 period can be confidently labeled a success. Starting from apparently hopeless initial conditions, growth averaged 4 percent and exports increased at an annual rate of 23 percent. Inflation is still relatively high (in the 30 to 40 percent range during 1985–1986) but it too has shown solid improvement over the 100 percent rate reached in 1980. Since 1981 Turkey has been current on all foreign obligations and now enjoys good access to voluntary commercial lending, something very few countries have been able to achieve. Whatever happens in the second half of the decade, from the viewpoint of the balance of payments, creditworthiness, and growth, the first half was an astonishing success.

The policy package put into effect in 1980 and reinforced in the following years was more than just a stabilization and adjustment package; it also marked a shift in development strategy from inward orientation toward export-led growth. The strategy included:

an initial maxi-devaluation overshooting the IMF recommended value;
a new exchange rate regime, involving daily adjustments, and a firm and

credible commitment to maintaining the real rate or even generating some further real depreciation;
liberalization of current account transactions through relaxation of most quantity restrictions (although high and differential tariffs were maintained);
some liberalization of capital account transactions (although no immediate move was made toward convertibility);
substantial export promotion, amounting to between 18 to 25 percent of the f.o.b. value of exports;
large increases in public sector prices aimed at equating domestic and border prices;
public commitment to the private sector and an announced desire to privatize much public sector activity (although no immediate actions were in fact undertaken);
increase in interest rates, setting real time deposit rates at positive levels and the deregulation of lending rates;
curtailment of trade union activity (although an explicit wage policy was not adopted).

Much of this package, including the maxi-devaluation, was announced in January, eight months before the military intervention of September 1980. Nonetheless the program was implemented by a military-backed government, in an atmosphere of limited political debate and, initially, no elections. For the first three years the armed forces had, reluctantly but fully, delegated economic policy to the Deputy Prime Minister (DPM) who also had the power to implement his decisions quickly. The program adopted was very clearly the DPM's program, although in most (not all) aspects it paralleled the recommendations of the IMF and the World Bank. It was a domestically conceived package backed by the international institutions.

At the end of 1982 the DPM resigned, at the occasion of major financial sector difficulties to which we shall return, but also in part to prepare for the November 1983 elections. A truly remarkable aspect of the political economy of this period is that this DPM—the architect of aggressive stabilization, a former World Bank official, a proponent of maxi-devaluation, privatization, and public sector price increases—won an absolute majority in the new parliament! The 1983 elections were not really free, as the old political parties were banned. Still, they were contested by three new parties. Moreover, in nationwide municipal elections five months later, now including representatives of the old left and right, Mr. Ozal won another resounding victory. In most countries the principal obstacle to

structural change is the belief that the required policies will be a severe political liability. In Turkey, Mr. Ozal turned adjustment into a substantive political asset.

One explanation of this puzzle lies in the economy's response to the policy package. Table 6 summarizes an exceptionally successful turnaround—the kind of "adjustment with growth" scenario that eludes so many other debtor nations. GDP contracted only in the beginning; thereafter growth climbed into the 4 to 6 percent range. Except in the first year, domestic absorption also continued to grow—more slowly than GDP to make room for improvement in the current account and to compensate for terms-of-trade losses, but still remarkably fast. Contrary to many of the Latin American debtors, Turkey did not have to run a current account surplus to overcome the crisis.

4.3. THE ANATOMY OF EXPORT EXPANSION

Since export performance is the first and most important ingredient of the Turkish adjustment story, it is useful to analyze it in somewhat greater detail. There are some who argue that Turkey's export miracle boils down to proximity to the Iran-Iraq war and has little relation to domestic economic policies. But on close inspection the Turkish case is rather more an example of good exchange and incentive policies at work, similar to the policies that we have shown to be effective in Korea.

Table 7 summarizes export performance. Clearly the Iran-Iraq market contributed very substantially to overall growth. It is exports to these two countries that make aggregate growth spectacular. But exports to other markets also grew very rapidly. The 19 percent growth to these re-

Table 6 TURKISH ADJUSTMENT, 1980–1985 (percent growth per annum, except as noted)

Variable	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*	*Average 1980–85*
GDP	−0.7	4.4	5.0	3.7	5.8	5.1	3.8
Domestic absorption	−1.0	0.6	2.6	4.4	4.9	4.2	2.6
Total exports	28.7	61.6	22.2	−0.3	24.5	11.6	23.4
Manufactured exports	33.4	118.6	49.7	6.7	40.6	16.5	40.4
Wholesale prices	107.2	36.7	25.3	30.6	52.0	40.0	58.1
Cost of living	94.3	37.6	32.7	28.8	45.6	45.0	46.0
Current account (percent of GDP)	−6.0	−3.3	−1.8	−3.7	−2.8	−1.9	−3.3

maining markets achieved during the 1980–1985 period compares favorably to the performance of Brazil, Mexico, and even Korea. Moreover, exports to Iran and Iraq are also not wholly exogenous. India, Pakistan, and Egypt had similar geographic advantages without realizing such dramatic growth. Turkish supply response and appropriate incentive policies together with the extraordinary demand conditions explain the massive growth that took place.

Turkey's export expansion was based on the broad growth of manufactured exports, as summarized in the product detail shown in table 7. The most rapidly expanding sectors included metal products, chemicals, ceramics, glass, and motor vehicles, with total exports in these categories rising from an insignificant $192 million in 1979 to almost $3 billion in 1985. Half of that growth was in OECD markets.

Exchange rate policy and relatively slack domestic demand conditions, particularly in the early years, were clearly key factors behind the export performance. These were supplemented by export promotion measures, ranging from tariff rebates to heavily subsidized interest rates, averaging from 18 to 25 percent of the f.o.b. value of exports during most of the period. The centerpiece of Turkey's adjustment policy, as of Korea's trade policy in the 1960s, was an "exports first" strategy, and not an immediate liberalization program featuring sweeping reductions in import barriers. Without export promotion, Turkey's trade regime would still show a

Table 7 TURKISH EXPORTS (US$ millions, except as noted)

	1979	*1982*	*1985*	*Average growth per annum (percent)*	
By destination					
Iran and Iraq	125	1401	2040	59	
Other Middle East	108	1139	1198	50	
United States	104	252	506	30	19
Other OECD	1342	2304	3600	18	
Other countries	582	650	614	1	
By product					
Agriculture	1364	2165	1740	4	
Mining	132	175	244	11	
Agro industry	183	713	1237	38	
Textiles	390	1056	1790	29	
Other manufactures*	192	1637	2947	58	

*Includes principally steel, metal products, chemicals, ceramics, glass, motor vehicles.

strong antiexport bias, since high levels of protection continue. Like Korea, Turkey moved toward more neutral incentives with export subsidies compensating for high tariffs and remaining quantitative barriers. But this movement toward broad neutrality did not go very far in reducing the variance of effective incentives across subsectors. Some extreme variations implicit in massive quantity restrictions have disappeared, but incentives continue to differ, and much discretionary power is still exercised by the agencies administering incentive policies.

4.4. DEBT AND THE BALANCE OF PAYMENTS

In 1978 and 1979 Turkey's net external debt stood at about $13.5 billion, close to 25 percent of GDP at the average market exchange rate for those years. Turkey was not creditworthy and could not finance even essential imports. A few years later, however, Turkey could borrow commercial funds at favorable rates. The fascinating part of this story is that between

Table 8 DEBT AND BALANCE OF PAYMENTS INDICATORS (percent, except as noted)

Variable	*1978*	*1979*	*1980*	*Average 1981–84*	*1985*
Total net debt (US$ billions)	13.3	13.5	16.2	18.8	23.5
of which: Short-term	7.2	3.6	2.5	3.6	6.4
Debt/GDP	25.9	25.0	28.5	35.9	44.9
Debt/exports	326.0	270.0	255.0	187.0	179.0
Debt service/exports	27.9	27.1	21.1	25.5	32.5
Current account/GDP	−2.4	−2.0	−6.0	−2.3	−1.9

Table 9 TURKISH DEBT BY TYPE OF CREDITOR (US$ billions)

Creditor	*1979*	*1982*	*1985*	*Total increase 1979–1985*
Gross debt	15.7	20.0	26.1	10.4
World Bank	0.9	2.0	3.3	2.4
IMF	0.6	1.5	1.3	0.7
Bilateral, other multilateral	6.7	10.7	10.5	3.8
Commercial, including private short-term	7.5	5.9	11.0	3.5

1979 and 1985 net external debt had *increased* to $23.5 billion, or 45 percent of GDP. Turkey had gained access to international capital markets while almost doubling its debt/GDP ratio!

In effect, Turkey had used external financing to implement the adjustment program and to "grow" its way out of debt. Table 8 helps to explain how this "Baker before Baker" scenario unfolded. The first point to note is that the situation in the late 1970s had become critical because of the extremely low export/GDP ratio and the high proportion of short-term debt. This combination created a massive liquidity crisis, even though, in relation to the country's overall resources, the stock of debt was not really excessive. By renegotiating the term structure of its debt and by launching a successful export drive, Turkey changed the perception of financial markets, and regained access to voluntary commercial lending.

The IMF and especially the World Bank played a crucial role in helping to finance the adjustment process and protect domestic absorption levels (table 9). Between 1979 and 1985, 30 percent of the increase in total debt came from Bank–Fund resources. Bilateral creditors (mainly Germany and the United States) also made a critical contribution in the first years. Commercial banks and other private creditors increased their share later as Turkey regained creditworthiness.

In sum, the success of the "Baker before Baker" financial scenario can be attributed to three crucial elements:

a comprehensive domestic stabilization and adjustment effort, leading to a tripling of the share of exports in GDP;
large capital inflows from official and multilateral sources which protected domestic absorption during the early years and helped to reduce the political cost of the adjustment program;
a sufficiently low initial debt/GDP ratio to allow export expansion to lead to a viable debt/GDP/exports configuration, without a write-down of the stock of debt.

4.5. RESOURCE MOBILIZATION AND THE FINANCIAL SECTOR

Table 10 summarizes the aggregate net saving performance of the public and private sectors between 1980 and 1985. The public sector consists of public administration (central and local government and some extrabudgetary funds) and the State Economic Enterprises (SEEs). The consolidated public sector resource gap, which includes the current account plus capital account deficits of both government and SEEs, has to be financed by the sum of net private domestic and foreign saving.

Since much of the public sector deficit is "financed" with an inflation tax rather than voluntary lending, the public sector resource gap remains

a key macroeconomic problem. The excess of investment over saving of the SEEs amounted to 10 percent of GNP in 1980 and continued to be the key component of the public sector resource gap. The large real price increases for the SEEs' products realized in 1980–1981, and the much larger autonomy they were given to set prices, did help reduce their borrowing requirements by two to four percentage points of GNP. If the 2 percent of GNP surplus achieved by the public administration budget in 1981–1982 could have been maintained, the overall deficit could have been kept around 5 percent of GNP. Unfortunately tax revenues declined as a percent of GNP, leading to large domestic financing requirements. These, in turn, fueled monetary expansion and inflation, and put upward pressure on real interest rates.

Continued high inflation, in the 35 to 50 percent range, as well as very high lending rates, often exceeding 25 percent in real terms, have been the most troublesome aspect of Turkey's otherwise successful macroeconomic performance. The high real lending rates have decapitalized important segments of the industrial sector and have put a brake on private investment. Market lending rates (like Korea's curb market rates) have been high partly because of the inefficiency of financial intermediation and partly because of the persistence of preferential credit to some sectors, particularly agriculture. Unreasonably high market lending rates have been an unwelcome consequence of positive real deposit rates. As preferential lending programs are gradually phased out and the efficiency of banking improves, it will become feasible to offer positive returns to saving without lending rates above the real return on long-term capital. Of course, high public sector borrowing tends to keep rates high; a public sector deficit as large as in the 1983–1985 period is clearly incompatible with the private-investment-led growth that Turkish policy makers say they prefer.

Table 10 RESOURCE BALANCE AND SAVINGS GAPS (percent of GNP)

	1980	*1981*	*1982*	*1983*	*1984*	*1985*
Public administration	0.0	+2.2	+2.1	0.4	−1.8	−0.8
State economic enterprises	−10.1	−9.5	−7.1	−8.0	−6.2	−5.7
Total public sector resource gap	−10.1	−7.3	−5.0	−7.6	−8.0	−6.5
Net private sector	4.2	4.1	3.2	3.9	5.2	4.6
Net foreign savings (Current account balance)	5.9	3.2	1.8	3.7	2.8	1.9

4.6. SOCIAL AND POLITICAL ASPECTS OF ADJUSTMENT

As emphasized, the Turkish experience is unusual because of its moderate impact on domestic absorption and income. Absorption growth between 1980 and 1985 was sufficient to keep average *per capita* absorption approximately constant. It is probable, however, that wage earners in general and certainly government employees suffered a substantial decline in real income, perhaps as much 10 to 15 percent over the period. On the other side, the agricultural sector, and those urban capital owners and entrepreneurs who participated in the export drive, increased their real incomes.

The 1983 and 1984 election returns do not show, however, any clear relationship between voting patterns and changes in the distribution of income. Mr. Ozal's newly formed party, closely identified with his adjustment policies, won large majorities in all major cities, despite the decline in the real incomes of urban industrial workers and government employees. It is possible that these workers supported adjustment because of the substantial (if unmeasured) costs that severe shortages and queueing had inflicted during the economic crisis. Economic well-being may have declined less than measured real income once these factors are taken into account.

The export promotion aspects of the adjustment program have clearly played a role in its political success. Generous incentives to export activities helped to create, early in the adjustment process, interest groups with a direct stake in the program. The DPM needed the export lobby because his adjustment policies could not count on support from labor, left-of-center intellectuals, or traditional, domestic-market-oriented business groups. The combination of export subsidies with a cautious approach to import liberalization allowed a progressive political "conversion" of the business community which an abrupt import liberalization strategy would not have achieved.

The emphasis on exports had two further benefits. While the same current account results could have been achieved with fewer exports and fewer imports, international perceptions of creditworthiness are critically influenced by ratios of debt and debt service to exports. As is also evident from Korea's experience with debt, a high volume of trade can sustain larger current account deficits than a low volume of trade. In addition, spectacular export growth is a concrete and visible indicator of success. Too often, stabilization and adjustment yield their dividends only in the medium term. In Turkey, with exports more than doubling in 1981, the light at the end of the tunnel flashed almost immediately. As in

Korea, exports became a source of national pride and proof of international competitiveness, strengthening domestic political cohesion and foreign financial support. These positive perceptions have so far overshadowed worries relating to inflation, the financial sector, and income distribution.

Important challenges remain. With the hard days of the 1978–1980 crisis receding in memory, the pressure for increased domestic absorption has intensified, and 1986 witnessed a massive rise in public sector investment. GDP grew by more than 7 percent, but the current account deteriorated and exports declined. With debt/GDP ratios close to 50 percent, Turkey cannot afford large current account deficits. The impressive story of the early 1980s suggests that the country has the ability to implement effective economic policies and that the economy responds well to policy signals. It must be emphasized, however, that the economy's continued progress requires a much reduced public sector deficit, a more efficient financial sector, stronger national savings, and improvements in the distribution of income.

5. *Conclusions*

Development experience during the past two decades has resulted in the rethinking of the basic models of development economics and, in many countries, the directions of policy. Neoclassical two-gap models have given way to a focus on the efficiency and productivity associated with outward-oriented development. The case of Korea is an important part of the evidence on which the outward-oriented strategy rests. The case of Turkey, in turn, is beginning to provide a test of the theory. Here the outward-oriented paradigm was "imported" into an unusually inward-oriented country facing a massive crisis. Turkey's dramatic policy changes in the 1980s were inspired by the conceptual framework of outward-oriented theory and come close to representing an experimental test of its usefulness.

Both cases show that success with the outward-oriented approach requires, first of all, a realistic real exchange rate and a credible commitment to its maintenance—if necessary, through frequent subsequent adjustments. Korea established such a regime in the early 1960s; Turkey in the 1980s. The existence of a neutral (that is, not antiexport biased) trade regime also appears to be important; most academic writers recommend that neutrality be achieved by the elimination of import protection coupled with appropriate real devaluation. Both Korea and Turkey adopted policies leading to greater neutrality, but both primarily added export promotion instead of reducing import protection. The evident

preference for moving toward neutrality with "positive" rather than "negative" policies is common to the histories of other countries as well, and needs to be explained from a political economy perspective.

This article has also highlighted the important interaction between the debt problem and outward orientation during recent years. In cross-section regressions low debt and a high export ratio are the key correlates of success since 1979; the Korean and Turkish case studies confirm the importance of these variables and provide insight on the mechanisms that connect them. The interesting fact is that in Korea access to voluntary lending was improved, and in Turkey it was reestablished after a complete cessation of lending, with the help of *additional* foreign borrowing, that is, with rising debt/GDP ratios.

In both countries the trick was turned by investment in rapid export growth, promoted by outward-oriented policies. Export growth demonstrated to financial markets the economy's capacity to repay debt in globally marketable products and reduced the debt service burden relative to exports. Increased openness permitted both economies to borrow more while improving access to credit markets, testifying to the particularly crucial role of trade policy during this period. Borrowing, in turn, made it possible to achieve major structural adjustments *without* the sharp losses in absorption that were suffered by many indebted economies in recent years.

But it takes more than an outward-oriented philosophy to sustain rapid growth over many years. Since external conditions change, long-term success requires that policy makers adjust their strategy to changing realities. Thus, the Korean takeoff was initially driven by policies designed to improve productivity and increase investment, while later cheap foreign capital and eventually measures to generate additional private savings and exports played important roles. The key is that planners generally permitted global price and market signals to reach economic agents, who in turn responded quickly to changed real circumstances.

Turkey's successes are more narrowly confined to the 1960s, before diminishing returns from import substitution had set in, and to the grand experiment in outward-oriented growth in the 1980s. The successes already achieved are substantial. It remains to be seen whether the exceptional policy adjustments effected in the 1980s will be repeated again in the face of some new environmental change.

Korean growth was more rapid than Turkish growth, regardless of the period used for comparison. One key difference is that the rate of investment is nearly 50 percent higher in Korea than in Turkey, contributing about two percentage points of additional growth. But even after controlling for policy, some unexplained differences remain. This is not a

negative comment about Turkish growth, which dominates that of most middle income countries. Rather, some aspects of the vitality and responsiveness of the Korean economy—and of the other "little dragons" of East Asia—are not well understood. Recent development experience and theory have generated some useful new bases for policy, but there is still much to be learned about the art of successful development.

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Comment

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The study of policy economics in developing countries is a somewhat special sort of dish. Farther from science than most branches of economics, but much, much closer to life, it reveals most of life's complexities. As in bringing up children, there are no hard-and-fast recipes that, once followed, guarantee success. An approach that works well in one case will fail in another. Perceptiveness in diagnosing problems, imagination in developing solutions, artfulness in blending toughness with flexibility—these are attributes that seem to help policy makers succeed.

How can one convey the subtlety and complexity of this field to those whose professional lives are spent in other vineyards? I do not know, but to set the mood I can note that one man—Rodrigo Gomez, as head of the Bank of Mexico—left his mark on the economic history of a country as few others have ever done. His tragic death occurred shortly before the first oil boom of the 1970s. My respectful epitaph for him is that, in terms of the rate of economic growth achieved, of success in controlling inflation, of maintenance of external and internal balance, and of broadening the skills and the participation of the poor, Mexico had a far, far better decade and a half (1956–1971) with Rodrigo Gomez and without oil than it later had with oil but without Rodrigo Gomez. (My highlighting of Rodrigo Gomez's name should be taken as my way of honoring this great master of the art of policy. It should not be taken as in any way diminishing the major and parallel role played by Antonio Ortiz Mena, who headed Mexico's Ministry of Finance for much the same period.)

Such heroes of economic policy do not come along very often, but they do every now and then. Interestingly, their record, viewed in terms of what economic science has to say about economic policy, is *always* mixed. But this is as it should be. Economic goals are not the only goals, nor are economic constraints the only constraints. The great practitioners of economic policy seem to know how to cede on economic objectives when they have to, how to recognize when political and social constraints are serious, and how to cope with those constraints so that only a small economic price is paid.

Can one *model* the perception, artfulness, imagination, the skill of Mr. Gomez in Mexico, or, to draw an apparent counterpart from the Dervis-Petri paper, of Mr. Ozal in Turkey? To me, at least, it is flat-out obvious

that we can't. Whatever we do with the figures from the national accounts, from the budget, from IFS and the UN, we will be super-oversimplifying, not just the reality with which we deal, but what is truly relevant about that reality. We are destined, when we work with such data, to perceive only dimly, like watching figures move about in the distance, at dusk, or in a fog.

Let's say that Mr. Gomez's 1965 budget contained at least a dozen elements that we all would regard as mistakes of economic policy. At one level, were they really mistakes, or were they trade-offs? And if they were trade-offs, were they good (cost-minimizing) prices paid for achieving good objectives, or were they excessive concessions made on behalf of dubious goals? Obviously, we will never know.

Thinking about these things makes one humble, but it also makes one a bit braver in one's own use of data. Policy analysis of LDCs is no place for methodological perfectionists, or for the faint of heart. But methodological issues can be very important, in spite of all that I have said. Even seeing things dimly is better than not seeing them at all. And there is a whole fine art to making comparative observations of LDCs.

Consider cross-section analysis. What in the world do Thailand, the Dominican Republic, Zimbabwe, Greece, and Bolivia have in common that merits their being put in the same regression analysis? Answer: For most purposes, nothing at all. He who puts them in the same regression should have a very good reason for doing so.

Cross-country regressions do not reveal anybody's behavior equation. They do not follow and describe a single piece of machinery through time. Instead, they are talking about different behaviors. And we economists must be aware of this all the way. We must face quite consciously the tremendous challenge of specifying our cross-country regressions in such a way that their coefficients can be given a meaningful interpretation. For reasons like these, I have myself come to prefer nonparametric tests and comparisons when doing cross-country work.

Perhaps because of its nonparametric style, I like the approach represented in Dervis and Petri's figures 2 thru 8. They show:

2. The "high growers" (that is, countries selected by the criterion of rapid growth) invest like "high investors" (countries selected by the criterion of high investment ratios).
4. "High growers" spend like "low spenders" (that is, those with low ratios of government expenditure to GDP).
6. "High growers" have had a fraction of exports in GDP that moved from below that of the "low exporters" to above the "high exporters"

(where the exporters are classed by their behavior over the whole period).

High growers have not:

8. enjoyed big terms-of-trade bonanzas.
7. experienced extraordinary exchange rate depreciation.
5. had extraordinary budget surpluses or deficits.
3. had any specially outstanding current account experiences.

In a way this tells me what I already know. But the conclusion is not that when you measure the data properly, you can get the results you expect. Rather I conclude that when the data are dealt with intelligently, so as to allow them to speak as clearly (through the haze) as they can, they come up confirming what the intuitions, inferences, judgments, and common sense of economists have told them for a long time.

I like the charts better than the regressions reported on in table 2 and the discussion surrounding them. On the whole, the variables in table 2 are pretty well vetted so that one can perceive the mechanism by which they might influence growth. We don't, however, have a reason to expect that a "population" exists in which there is a "true regression" and that what we're doing is sampling from that population. What we are doing in such regressions is much more crude and descriptive than that. Accordingly, we should not place too much weight on them.

The authors' interpretation of them bothers me more than the regressions themselves. The text exudes a certain naiveté. Variables pass from insignificant to significant as one moves from one period to the next, and that is taken as a sign that the underlying reality was changing. No attention is paid to what may be the most plausible first pass at an explanation. Maybe in periods where terms-of-trade change was insignificant, the terms-of-trade change didn't vary much across the sample. The same goes for debt risks in the early period, and maybe for the government expenditure and the government surplus variables as well.

I read the regressions as saying that debt, investment, exports, the terms of trade, and budget surpluses, where they do turn out significant, nearly always have the expected sign, perhaps even the expected magnitude. Much more than that it would be difficult to say.

One twit to the authors: static trade theory suggests that it is good for an economy when its real exchange rate is in (or moving toward) a sustainable equilibrium. It certainly comes nowhere near suggesting that rapid growth requires continual (?) depreciation of the real exchange rate.

Now exactly the recognition of complexity that leads me to be very wary about how cross-country evidence is used makes me happy with

the case studies of Korea and Turkey in sections 3 and 4, particularly their discussion of total factor productivity growth. This conceptual field deserves much more intensive plowing. We should pursue further the "sources of growth" (or "attribution of growth") breakdown.

We can systematically organize our data so as to attribute a part of the growth rate to growth of labor, a part to its changing quality mix, a part to physical investment, and then a big *residual.*

We've got to pay more attention to the residual in economic growth and try to understand it better. We already know that countries with outstanding growth rates have outstandingly high residuals. The forces of technical progress, economies of scale, improved resource allocation, and so on, that compose the residual are empirically important in explaining these success stories.

In addition, we know that within any country there are huge differences in the residual among industries over the course of, say, a decade. The 1920s was the decade of the rubber tire industry in the United States; the 1970s the decade of the computer revolution. In between came plastics, chemicals, pharmaceuticals, telecommunications, and many different technological revolutions within agriculture.

It is extremely important to appreciate that this is the way economic growth works. Technical advance is not a nice process that you replicate by adding $e^{\lambda t}$ to a production function. It is not exponential, it is not steady, it is not very predictable.

Innovation creates disequilibria in which profits are to be made. Factor rewards absorb some of the fruits for a while, but if economic forces are permitted or encouraged to do so, they will in the end compete away extraordinary rewards (factor rents) and the fruits of technical advance ultimately redound to the consumer.

The Dervis-Petri story of Korea is one in which good policy was seen to be highly compatible with this vision of the growth process. They should be congratulated for the perceptiveness with which they told that story, as well as that of Turkey.

Comment

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Comparative studies of economic performance are very useful for two reasons: (1) they suggest those issues and policies that may be most strategic in economic development, and (2) they may in fact help shape the

thinking of policy makers, who often look to the economic and political effects of policies adopted in other countries before making policy decisions themselves. This study is useful because in its cross-country analysis it confirms the importance of certain variables for successful economic performance, and also because it shows in some detail the actual policies of two countries that have successfully adjusted to the economic crisis of the eighties.

Section 2 highlights, through simple but illustrative techniques, the role of some key variables in economic growth. The analysis, for example, again shows the importance of investment levels for economic growth. I do think, however, that the specification of some of the variables in the cross-section correlations may not be correct.

For example, the use of average country values for the variable Debt/GDP for a whole period may not be warranted. A country with growing debt and, therefore, with a decreasing foreign exchange or saving constraint, may have the same Debt/GDP ratio as a country with a declining or constant debt. One would expect that the first type of country would grow faster, and that is why in the 1974–1979 period this variable has low statistical significance. In that period many Latin American countries used resources from foreign credit to grow. Countries with constant debt but with the same average level grew less. In 1980–1985, on the contrary, most countries in the region had constant and high debt ratios, and low growth. Not surprisingly, then, the statistical significance of the Debt/GDP ratio is better when there is probably less dispersion around the average in the country during that period.

One interesting result of the cross-section work is that the A countries seem to use more countercyclical policies. This shows the importance of the specifics of adjustment policies.

In Latin America there is growing evidence that countries like Brazil and Colombia increased investment in residential construction at the time they put adjustment programs in place, thus cushioning the impact on employment of decreased imports and decreased nonresidential investment related to decreasing imports and tight fiscal policies. I believe that Korea also promoted residential construction activity during the recession of the early eighties. This issue of countercyclical fiscal management although mentioned in the cross-sectional analysis, might have been analyzed also in the more-in-depth country studies.

In the case of Latin America, once high levels of excess capacity were reached in the 1980s, the deepest recessions occurred in countries where fiscal deficits were attacked primarily from the expenditure side, and where no countercyclical policies were attempted.

One result that seems puzzling at first sight is the lack of a statistical

relationship between exchange rates and growth. This result, however, is logical once one realizes that in countries with large increases in productivity exports can grow rapidly even in the face of constant revaluation of the exchange rate. This brings us to a discussion of a variable that is not sufficiently discussed in the paper: the capacity of a society for generating technical change.

My impression is that the capacity to generate technical change and adopt technology is the crucial variable for development, and that we have as yet done insufficient research to try to determine the types of policies that promote such capacity.

The Korea case study suggests that total factor productivity growth contributed about one-half of GDP growth. Studies for Latin America, on the other hand, show very little total factor productivity growth. That difference is the most interesting development question, and explaining it should be high on our research agenda.

The section on the detailed case studies of Korea and Turkey is particularly interesting. The policies followed and the problems generated by policy seem fairly similar in the two countries. One gets the impression that in both countries export liberalization and export promotion were crucial, and the starting point for sustained and rapid economic growth in the periods studied. This may have to do with the benefits of specialization once the first phase of import substitution is past.

It is interesting, in contrast, to observe that in both countries the liberalization of the financial sector was cut short by a crisis among financial intermediaries. It would appear that financial liberalization cannot have positive effects until there is equilibrium in other sectors of the economy and until substantial development of the institutions of the capital market has been achieved. The disastrous Latin American experience with financial liberalization in the late seventies and early eighties certainly coincides with the Korean and Turkish experiences. It is also interesting to note that Japan only started slowly on the road of financial liberalization after other sectors of the economy, including the balance of payments, were in equilibrium.

The Korean statistics on savings rates also are intriguing. Clearly interest rates do not explain the increases in savings, since these increased rapidly in 1971–1980 when interest rates were negative. Institutional development may be a more important explanatory variable. The description of export incentives also suggests high profits and low taxation in export firms. Was this one of the sources of increasing savings rates? What role did forced savings play (pension schemes)?

Finally, one is impressed by the similarity of the Turkish experience and that of some Latin American countries. The problems faced by Tur-

key now seem not unlike the problems faced by Brazil some years ago. Let me end by quoting the deputy governor of the Turkish Central Bank, Mr. Rusdu Saracogla. He ended a recent paper on adjustment in Turkey by stating that he "would like to mention the fact that prompt and sufficient assistance in the form of debt relief as well as fresh financing is essential for the success of any adjustment effort."[1]

Clearly Turkey's recent growth was helped by such assistance. In this there is a difference with Latin America, where no country, not even those that have followed policies similar to Turkey's, is receiving prompt or sufficient external financing.

Discussion

Susan Collins thought that the paper overemphasized the role of macroeconomic policy. She stressed the complexity of the adjustment in Korea after the second oil shock and suggested a closer investigation of "special resilience" in Korea. The recent real wage decline may have helped adjustment in Korea, but the willingness to accept such a decline may result from the fact that Korea has been able to generate increasing real wages over the longer run.

Patrick Minford questioned the causal relation between the investment-to-GNP ratio and growth. If capital is mobile, investment moves to where the opportunities exist. Then growth explains investment, not the reverse. If capital growth causes GNP growth, then large-scale government capital formation should help growth, which is clearly not the case.

Paul Romer agreed with Minford on the difficulty of pinning down the direction of causality, but thought that the issue was quite open and needed more data and empirical investigation.

Explanations of why not many governments adopt an export promotion policy were put forward by Julio Rotemberg. One explanation is that some interest groups that favor import substitution prevent the government from undertaking export promotion measures. An alternative explanation focuses on the direction of causality from growth to export promotion. It is quite possible that export promotion works when the country has opportunities to expand foreign markets, but not otherwise.

Stanley Fischer asked who the entrepreneurs are in Turkey. Martin Feldstein asked about the relationship between Korea's development and

1. Rusdu Saracogla, Economic Stabilization and Structural Adjustment: The Case of Turkey (IBRD and IMF Symposium on Growth-Oriented Adjustment Programs, Washington, D.C., February, 1987).

the absence of capital market liberalization. He also asked whether the commercial banks had participated in providing Turkish debt relief.

In response, Kemal Dervis said that there had been no commercial debt relief, though there was public debt relief. He stressed the remarkable role of one economic leader, who was largely responsible for the economic recovery of Turkey.

Peter Petri did not think that the absence of capital market liberalization had helped adjustment. Korea has grown despite, not because of, its failure to liberalize the capital market. As Collins pointed out, there was indeed a complex adjustment after the second oil shock in Korea, but the large real wage decline had played a significant part in the process. Commenting on the econometric issues, he agreed that investment is to some extent endogenous, but he believed there had been wide variations in investment among countries that were not due to differences in opportunity.