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Effect of a Slowdown in Industrial Economies on Selected Asian Countries 1/

Prepared by Susan M. Schadler

Approved by Bijan B. Aghevli

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I. Introduction

With the slowdown of growth in industrial countries in 1985, developing countries have faced a more difficult environment in which to maintain momentum in reducing external imbalances, service external debt and sustain growth. Although the debt servicing burden has been eased somewhat by a reduction in interest rates on dollar denominated debt, estimates for 1985 and projections for 1986 suggest that growth in industrial countries has fallen to less than half of the rate achieved in 1984, while commodity prices have declined significantly in 1985 and are projected to stay at this low level through 1986.

The adverse implications of this environment for economic performance of developing countries are stressed in several recent studies of the links between economic developments in industrial countries and in developing countries. In particular, on the basis of a small simulation model designed to investigate medium-term developments in the balance of payments and debt profiles of several developing countries, Cline (1984) finds growth in industrial countries to be the most important factor influencing current account positions and the ratios of debt to exports in the developing countries. A number of other studies, including Morgan Guaranty Trust Co. (1983) and Leven and Roberts (1983), come to the same conclusions on the basis of similar approaches. Dornbusch (1985) adopts a different approach that examines the effects of performance in industrial countries on the welfare of indebted developing countries, measured in terms of current real income. He argues that developments in real interest rates in industrial countries and the terms of trade of developing countries are the critical factors affecting the welfare of indebted countries; growth in industrial countries plays a role mainly insofar as it affects the terms of trade. A third approach, adopted by Sachs and McKibbin (1985), brings out the

1/ I would like to thank Bijan Aghevli and Leslie Lipschitz for useful discussions while preparing this paper and Toshiki Yotsuzuka for his help on an earlier version.

importance of the policy mix in industrial countries on the current account and overall external position of developing countries; they conclude that a mix of tight fiscal policy and relatively easy monetary policy is optimal for improving the external position of developing countries.

The purpose of the present paper is to examine the links between developments in industrial countries and performance in a group of six Asian countries from a perspective that is somewhat broader than previous studies. 1/ A simple model is developed that is designed to investigate these links taking into account developments in both the countries' external positions and their domestic economies. Furthermore, unlike earlier studies, the present paper explicitly examines the role of policies in developing countries in offsetting the effects of slower industrial country growth. The specific question addressed in this study is that of how a slowdown of growth in industrial countries more severe than that in 1985 would affect the current accounts, debt positions and growth in these six Asian countries in 1985 and 1986. In particular, how much would a further reduction in export market growth weaken the current account position of developing countries and thereby enlarge debt and the debt service burden? Would the negative effects of slower industrial country growth be mitigated in part by lower interest rates? Would countries have access to financing for larger external deficits or would they be forced to adopt more stringent policies in order to strengthen adjustment and to contain the deterioration in their current account positions? How would more stringent policies in the developing countries affect their growth?

This paper addresses these questions by providing estimates of the impact of a slowdown of growth in industrial countries on the current account positions, debt profiles, and GNP growth rates of six Asian countries. The estimates are derived from a simple model that determines domestic income, absorption, and the external current account. The model is simulated under various assumptions about both economic performance in industrial countries and policy reactions in the Asian countries. Specifically, we compare the outcome for the current account position, debt servicing burden and GNP growth of the six Asian countries in a high- and low-growth scenario. The high-growth scenario is based on the October 1985 World Economic Outlook (WEO) projections for industrial countries; (growth of about 3 percent in 1985 and 1986, inflation of about 4 percent, short-term dollar interest rates of 8 percent, and a frozen configuration of exchange rates). The low

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1/ The countries included are India, Indonesia, Korea, Malaysia, Philippines, and Thailand. Together, these countries account for just over 50 percent of total GNP of the developing countries in Asia and 90 percent excluding China. Despite its importance, China was excluded because it was believed that its economic structure was not well represented by the type of behavioral relationships specified in the model.

growth scenario assumes growth in industrial countries of 1 percent, inflation of 2½ percent, interest rates of 6 percent, and a 2½ percent per annum depreciation of the dollar against other major currencies. 1/ As the model is highly aggregated, it does not focus on many specific aspects of the six countries under study. Therefore, estimates discussed in this paper provide only rough orders of magnitude of the effects of a slowdown in industrial countries on the Asian countries.

In general, the results of the present paper point to a somewhat smaller effect from a slowing of industrial country growth on the current account position of developing countries than the other studies mentioned above. This discrepancy arises mainly because other studies have failed to endogenize the effect of slower growth of exports or a deterioration in the terms of trade on income and domestic demand in developing countries. This failure distorts the results in two ways: first, it tends to overstate the impact of slower growth in industrial countries on the current account positions of developing countries by not accounting explicitly for the effect of slower growth of export receipts on import demand; second, it does not take into account the effects of shifts in the policy stance of developing countries in response to external changes that influence the trade-off between current account adjustment and growth. The model developed in this paper attempts to eliminate this source of possible distortion by including explicitly the influence of demand management policies on domestic absorption.

The remainder of this paper includes a description of the model in Section II, the results of the simulation in Section III, and some concluding observations in Section IV.

II. Description of the Model

The model consists of behavioral equations for variables that determine the current account position and the growth of GNP. Equations for export supplies and prices and import demand are specified; these, together with the net noninterest service and transfer accounts and interest payments, determine the current account. GNP is equal to the sum of net exports, net factor payments from abroad, and domestic demand (consumption plus investment of the private and public sectors). Domestic demand adjusts so as to gradually eliminate deviations of the external current account from a sustainable position. The speed of this adjustment is determined by the stance of macroeconomic policies.

1/ The assumption that lower interest rates would accompany lower growth reflects the view that a reduction in credit demand would reduce interest rates. It would also be possible to argue that lower interest rates would stimulate demand and therefore be consistent with higher growth.

Before describing the model in detail, it is worth noting several characteristics particular to Asian economies that affect their sensitivity to slower growth in industrial countries. First, for Asian countries taken together, net external borrowing is not a binding constraint--the countries as a group could finance a larger current account deficit than that resulting from the high-growth scenario. In the present model, this assumption is implicit in the lag with which domestic demand adjusts to the change in income growth; the longer the lag, the greater the deterioration in the current account following the slowdown in foreign growth. Were it assumed that net external borrowing did impose a binding constraint on the current account, the adjustment of domestic demand to the slowdown in income growth would have to be immediate. In that case, financial policies would have to be tightened sufficiently to contain absorption and thus reduce imports by the same amount as the decline in exports. 1/

Second, the experience of Asian countries suggests that, in the short term, GNP growth is largely demand-determined; disturbances such as a slowdown in foreign demand for Asian exports are generally immediately reflected in GNP growth. The alternative of assuming that rapid price adjustments would maintain the growth of demand at the rate of growth of capacity would, of course, imply a weaker impact of a slowdown in external demand on GNP growth of the Asian countries. 2/ It should be emphasized that the present approach is not suitable for a long-run analysis because of its scant attention to supply-side considerations.

The model is presented in Table 1. There is a single model for the six Asian countries together, so that each equation should be regarded as a weighted average of that equation for each country. Variables expressed in value terms are given in U.S. dollars. The Asian countries are assumed to fix the values of their currencies to a basket of major currencies with a weight of about one half for the dollar. For ease of presentation, the model is written in level form but is simulated in percentage change form (first difference of logarithms).

The first group of equations describe the output and prices of manufactured exports which are assumed to be imperfect substitutes for domestically produced and consumed goods--hereafter called nontraded goods. There are three types of exports. The first, manufactured exports, is assumed to be imperfectly substitutable for manufactured goods produced outside the region; Asian countries have some monopoly

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1/ In contrast, Sachs and McKibbin assume that developing countries are constrained by a given amount of external lending that industrial countries decide to undertake. This is a reasonable approach when considering LDCs as a group as opposed to the subset of LDCs included in the present exercise.

2/ Of course, the terms of trade effect of a fall in prices would still exert a substantial negative effect on income growth and the current account.

Table 1. Summary of the Model 1/

1. Exports of manufactures

(1a) $x_N^d = a_0 - a_1 (p_N - p_W) + a_2 y_W$

(1b) $x_N^s = a_3 + a_4 (p_N - p_Y) + a_5 y^*$

Reduced forms

(1a') $x_N = a_0' - a_1' (p_Y - p_W) + a_2' y_W + a_3' y^*$

(1b') $p_N = a_4' + a_5' p_Y + a_6' p_W + a_7' y_W - a_8' y^*$

2. Exports of primary commodities

(2a) $p_C = b_1 T + b_2 y_W + b_3 y_{W,t-1} + b_4 (p_W + 0.5 e_W)$

(2b) $x_C = b_5 T + b_6 (p_C - p_Y)$

3. Imports

(3a) $m = c_0 - c_1 (p_M - p_A) + c_2 abs$

(3b) $p_M = c_3 p_W + (1 - c_3) p_O$

4. Services and transfer account of the balance of payments

(4) $NS = X_s + WR + i (R + PFA) + OT - M_s - i \cdot Z - DIR$

1/ Small letters denote logarithms of variables. Superscript d denotes demand and superscript s supply.

5. Domestic prices 1/

(5a) $N^d = ABS - M$ 2/

(5b) $n^s = d_0 + d_1 (p_D - p_T) + d_2 y^*$

Reduced form

(5a') $p_D = d_0' + d_1' p_T + d_2' (abs) - d_3' m - d_4' y^*$

(5c) $p_Y = w_1 p_N + w_2 p_C + w_3 p_O + (1 - w_1 - w_2 - w_3) (p_D - e)$

(5d) $p_A = w_4 p_W + w_5 p_O + (1 - w_4 - w_5) (p_D - e)$ 1/

(5e) $p_T = w_6 p_N + w_7 p_C + (1 - w_6 - w_7) p_O$

6. Income and absorption

(6a) $\Delta abs - \Delta abs_{t-1} = g (q \Delta y_R - \Delta abs_{t-1})$

(6b) $y_R = y + p_Y - p_A$

7. Official reserves, current account, debt, and GNP

(7a) $R = 3.2 (M \cdot PM/12)$

(7b) $CA = P_N \cdot X_N + P_C \cdot X_C + P_O \cdot X_O - P_M \cdot M + NS$

$M_s + OT - i \cdot Z(-1)$

(7c) $Z = Z_{t-1} - CA - DI + \Delta R$

(7d) $Y = ABS + X_N + X_C + X_O + NS/P_Y - M + EO$

1/ In terms of U.S. dollars.

2/ To derive the reduced form for non-traded goods prices, equation (5a) is expressed in logarithmic terms.

Endogenous variables

X_N = volume of manufactured exports
P_N = dollar price of manufactured exports

X_C = volume of primary commodity exports excluding oil and LNG
P_C = dollar price of primary commodity exports excluding oil and LNG

M = volume of total imports
P_M = dollar price of total imports

X_s = receipts from nonfactor services
WR = workers' remittances
M_s = payments for nonfactor services
OT = official transfers
DIR = remittances for direct investment
NS = net services and transfers

Y = real GNP
ABS = real domestic absorption
Y_R = real income
N = real value of domestically produced and consumed goods

P_Y = GDP deflator expressed in terms of dollars
P_A = absorption deflator expressed in terms of dollars
P_D = deflator for domestically produced and consumed goods
P_T = price of traded goods produced domestically

Z = external debt at the beginning of the period
CA = external current account expressed in terms of U.S. dollars
DI = direct foreign investment
R = official holdings of foreign exchange reserves

Exogenous variables

P_W = price level in industrial countries
Y_W = real GNP in industrial countries
i = U.S. dollar interest rate

X_O = volume of oil and LNG exports
P_O = dollar price of oil and LNG

Y^* = capacity output
T = time trend

E = exchange rate (Asian country currency units per U.S. dollar)
E_W = exchange rate between the dollar and a weighted average of other major currencies (U.S. dollar per unit of other major currencies)
EO = errors and omissions of the national accounts
PFA = privately held foreign assets (assumed constant over the simulation period)

power in setting the price of these goods. Equation (1a) describes the demand for manufactured exports as a function of their price relative to the price level in industrial countries and of demand in industrial countries. The supply of manufactured exports is a function of the price of manufactured goods relative to the GNP deflator and of production capacity. 1/ Combining these two equations produces the reduced forms (1a') and (1b') for the quantity and price of manufactured exports. The second type of export, non-oil primary commodities, is assumed to be a perfect substitute for goods produced outside the region. As Asian countries are relatively small producers of these commodities, their dollar price (equation 2a) is determined exclusively by foreign variables--growth in industrial countries and the price level in industrial countries. The supply of primary commodity exports by Asian countries (equation 2b) grows with a trend and responds to shifts in the world price of primary commodities relative to the GNP deflator. The third type of export is oil (and LNG), both the price and output of which are exogenously determined.

The quantity of imports (equation 3a), both oil and non-oil, is determined by the level of domestic absorption and the price of imports relative to the domestic absorption deflator. The price of imports is a weighted average of the price level in industrial countries and the price of oil.

On the services and transfers account, nonfactor service receipts are assumed to remain a fixed proportion of the value of total merchandise exports. Similarly, nonfactor service payments are assumed to remain a fixed proportion of the value of merchandise imports. Workers' remittances and official transfers are assumed to grow by 3 percent per annum. Equation (4) shows the overall balance on services and transfers accounts.

The price of nontraded goods is assumed to adjust to equilibrate the supply and demand for these goods. Equation (5a) defines the demand for nontraded goods as the difference between absorption and imports and equation (5b) specifies the supply of nontraded goods as a function of their price relative to the price of traded goods and of production capacity. Equation (5a') is the reduced form equation for the price of nontraded goods. The GNP deflator (equation 5c) is a weighted average (according to production shares) of the three types of exports and nontraded goods expressed in U.S. dollars. The deflator for absorption (equation 5d) is a weighted average (according to absorption shares) of imports and the price of nontraded goods.

The absorption equation (6a) plays a central role in determining the effect of a slowdown in the growth of export receipts on both the

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1/ Note that both the absorption and GNP deflators are expressed in U.S. dollars.

current account position and GNP growth rate of Asian countries. 1/ The equation is specified to capture in the simplest way possible the role of demand management policies in determining the speed with which a deceleration in real income growth (owing to a slowdown in export growth or a deterioration in the terms of trade) affects the growth of domestic absorption. It is assumed that the objective of policymakers is to reduce the current account deficit as a proportion of GNP from about 2½ percent in 1984 to about 2 percent in 1986. Given the range of projected rates of growth of real income, achieving this objective would imply that the growth of absorption be constrained to a rate approximately 5 percent below that of real income. In other words, the rate of growth of absorption consistent with the policy objective (Δa^*) is given as

$$\Delta a^* = 0.95 \ (\Delta y_R)$$

It is further assumed that the growth of actual absorption adjusts with a lag to this "desired" rate, with the speed of adjustment determined by the stance of demand management policies. Therefore, the adjustment coefficient (g) in equation (6a), which denotes the speed with which the actual increase in absorption moves toward the rate that would be consistent with policymakers' underlying objectives for external adjustment, implicitly represents the stance of demand management policies. In the case of decelerating real income growth, a higher value for g implies more restrictive demand management policies and correspondingly a faster pace of adjustment. 2/

Official holdings of international reserves (equation (7a)) are assumed to increase so as to maintain an import cover equivalent to that observed in 1984--that is, 3.2 months of imports. The final three equations in the model are identities. Equation (7b) defines the current account as the difference between the value of exports and the value of imports plus net services and transfers. Equation (7c) expresses external debt at the end of the period as debt in the previous period plus the current account deficit less direct foreign investment inflows plus the desired accumulation of official foreign exchange reserves, all in the current period. Based on a breakdown of debt by characteristics

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1/ The absorption equation is presented in Table 1 in rate of change form because there is no exact correspondence between the rate of change form and level form of the equation.

2/ While the effect of variations in the stance of policies on prices (through the effect of absorption on the price of nontraded goods) and the current account (through the effect of absorption on imports) is evident, the stance of policies is assumed not to affect the exchange rate. Rather, each country is assumed to fix the value of its currency to a basket of industrial country currencies and to have sufficient reserves to be able to offset any market pressures in the foreign exchanges.

provided by the World Bank, it is assumed that 44 percent of total debt bears a fixed interest rate of 5.2 percent and the other 56 percent of debt bears a rate ½ percentage point over LIBOR. For the purpose of calculating debt service, the shares of both fixed and floating rate debt as well as long- and short-term debt are assumed to remain at their 1984 levels. Equation (7d) defines GNP as absorption plus exports plus net services and transfers inflows less imports.

The values of the parameters used in the simulations, given in Table 2, are drawn from various studies of Asian economies. For the manufactured export volume and price equations, the import demand equation, and the nontraded goods price equation, parameter values are representative of estimates from Aghevli and Khan (1980) for India, Korea, and Philippines and by Lipschitz (1984) for Korea. Estimates of the parameters in the non-oil primary commodity price equations are taken from Chu and Morrison (1984). The supply elasticity for primary commodities is an average value for a variety of commodities covered by Askari and Cummings (1977). The adjustment parameter in the absorption equation (g) is set at 0.5 on the basis of calculations of its average value during the first half of the 1980s; alternatively, in the simulation that assumes a more rapid adjustment to disturbances in real income growth, it is set at 0.9.

In principle, the model should incorporate the effects of slower growth in the industrial countries on other critical variables in these countries (in particular, interest rates, exchange rates, and prices). In practice, this would extend the scope and complexity of the exercise beyond what is feasible at the present time. A partial approach has therefore been adopted in which the effects of changes in industrial country growth, interest rates, and inflation, and the value of the dollar relative to currencies of other industrial countries are investigated both jointly and individually.

The model examines only the first round effects of the slowdown in industrial economies. Specifically, the effect of slower external growth on export prices and volumes is considered, but the second round effects of these price and volume changes on demand in industrial countries are ignored. These effects would obviously tend to mitigate the slowdown in external growth, although probably over a longer period of time than considered here.

III. Results of the Simulations

The simulations have been run on a yearly basis for the period 1985-86, using actual 1984 data as a starting point. Table 3 summarizes the assumptions concerning the key variables in the industrial countries, oil prices, and oil exports used in the simulations. Two sets of assumptions are shown and the results of the simulations are reported as deviations of the results of the low-growth scenario from those of the high-growth case.

Table 2: Parameter Values

Exports 1/

a'(1) = 0.40	b(1) = 0.12
a'(2) = 2.22	b(2) = 0.90
a'(3) = 1.54	b(3) = 0.60
a'(5) = 0.25	b(4) = 1.40
a'(6) = 0.75	b(5) = 0.45
a'(7) = 1.30	b(6) = 0.30
a'(8) = 0.90	

Imports

c(1) = 0.50
c(2) = 1.30
c(3) = 0.82

Domestic prices 1/

d'(1) = 1.00	w(1) = 0.13	w(5) = 0.07
d'(2) = 1.00	w(2) = 0.06	w(6) = 0.49
d'(3) = 0.23	w(3) = 0.08	w(7) = 0.31
d'(4) = 1.15	w(4) = 0.19	

Absorption

g = 0.50
g = 0.95

1/ Note that a'(0), a'(4) and d'(0) drop out of the equations when they are expressed in rate of change form.

Table 3. Assumptions for Exogenous Variables for Simulations

(Percentage changes except where indicated)

	Industrial country growth	U.S. interest rate 1/	Industrial country inflation	Exchange rate 2/	Oil exports 3/	Oil price
			High-growth case (based on WEO projections)			
1984	4.9	11.3	4.0	100.0	...	-2.0
1985	3.0	8.5	4.0	102.5	-5.6	-3.0
1986	3.0	8.0	4.0	102.5	3.4	-0.5
			Low-growth case			
1984	4.9	11.3	4.0	100	...	-2.0
1985	1.0	6.5	2.5	97.5	-7.8	-4.0
1986	1.0	6.0	2.5	97.5	2.4	-1.0

1/ Six-month London Interbank Offer Rate on U.S. dollar deposits.

2/ Index of the exchange rate of the dollar against currencies of other industrial countries (foreign currency per dollar).

3/ These assumptions deviate from the WEO forecasts which show a larger decline of oil exports in 1985 and larger increases thereafter. The adjustments were made in order to smooth the oil export receipts during the simulation period with the constraint that the implied volume of oil exports in 1986 would be equal to the WEO projection.

The simulation results (shown in Table 4) indicate that, assuming a broadly unchanged stance of demand management policies in Asian countries, a slowdown in growth in industrial countries, even if accompanied by an easing of interest rates, a lowering of inflation and a depreciation of the dollar, would worsen the current account position, and lower growth in Asian countries relative to the outcome of the high-growth scenario; the current account deficit worsens by $2.4 billion (over ½ percent of GNP) in 1985 and by $5.2 billion (over 1 percent of GNP) in 1986, while GNP growth drops by almost 1 percentage point in 1985 and almost 1½ percentage points in 1986. Although lower interest rates on the existing stock of debt initially improve the debt service ratio by almost ½ percentage point in the low-growth relative to the high-growth scenario, the higher level of debt associated with larger current account deficits erodes this improvement by 1986, when the debt service ratio is almost 1 percentage point above that in the high growth scenario. With respect to inflation, however, lower growth in industrial countries unambiguously improves performance; the domestic absorption deflator decelerates by over 2½ percentage points in 1985 and almost 4 percentage points in 1986 in the low-growth relative to the high-growth scenario.

These results can be put in perspective by relating them to the October 1985 WEO forecasts, which show the current account deficit for the six Asian countries remaining at the 1984 level of about $10½ billion (2.3 percent of GNP) in 1985, but declining to $9½ billion (2.0 percent of GNP) in 1986; the debt service ratio is expected to remain at about 22 percent through 1986, while growth is projected to be in the range of 4½-5 percent through 1986. Using these projections as a base, the low-growth scenario would result in an enlargement of the current account deficit to about $13 billion in 1985 and almost $15 billion in 1986, a decline in the debt service ratio to about 21½ percent in 1985 but an increase to almost 23 percent in 1986, and a reduction in growth to less than 4 percent in 1985 and about 3 percent in 1986. 1/

To get a better understanding of the linkages between industrial and developing countries, it is useful to trace the channels by which slower growth affects the Asian countries. The main direct impact

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1/ These are not necessarily the actual levels or growth rates that result from the simulation. Rather they are the values that result if the difference between the simulation results in the high- and the low-growth cases is superimposed on the WEO forecasts. As the simulations do not account for a variety of factors that bear on the actual outcome (such as specific policy intentions and supply-side disturbances), the simulation results are not meant to be forecasts and are reported only as changes from the base case which uses the October 1985 WEO forecasts for the exogenous variables.

Table 4. Simulation Results Assuming the Maintenance of Moderately Restrictive Financial Policies in Asian Countries 1/

(Difference for key variables of the Asian Countries between the low- and high-growth scenarios; percentage point differences except where indicated)

	1985	1986
CA/GNP	-0.6	-1.1
CA 2/	-2.4	-5.2
Export volume growth	-2.7	-2.3
Import volume growth	-0.8	-1.8
Terms of trade 3/	-1.5	-2.9
Debt service ratio 4/	-0.4	0.9
Debt/exports	10.66	22.13
GNP growth	-0.9	-1.4
Absorption growth	-0.6	-1.2
Real income growth	-1.3	-1.8
Inflation 5/	-2.7	-3.9

1/ Based on g = 0.5.
2/ Billions of dollars.
3/ Index point differential.
4/ Ratio of total debt service payments to receipts from exports of goods and services.
5/ Absorption deflator.

arises through lower growth in the export receipts of the Asian countries. Owing to a dampening of both export volume growth and export price increases, the growth of total export receipts drops by about 5 percentage points in the low-growth scenario relative to the high-growth scenario. These changes produce secondary effects: a lowering of the growth of real income (by over 1 percentage point in 1985 and almost 2 percentage points in 1986) and, consequently, a reduction in the growth of absorption (by ½ percentage point in 1985 and 1 percentage point in 1986), and in the growth of import volume (by almost 1 percentage point in 1985 and almost 2 percentage points in 1986). However, the reduction in import growth is not sufficient to prevent a significant deterioration in the current account position.

The weakening of the current account position and GNP growth rate of the Asian countries in the low-growth relative to the high-growth scenario largely reflects the domination of the effects of the slowdown in growth in the industrial countries over the effects of lower interest rates; lower inflation in industrial countries and a depreciation in the value of the dollar exert only small negative influences on both GNP growth and the current account position. To illustrate the relative magnitudes of the individual control variables on performance in the Asian countries, Tables 5 and 6 provide the partial impacts of lower growth in industrial countries, a decline in U.S. interest rates, a lowering of U.S. inflation, and a depreciation of the dollar against other major currencies. 1/ Each of the four simulations show the results of varying one control variable between its high- and low-growth values, while holding the values of all other control variables at levels consistent with the high growth scenario.

It is evident that lower growth in industrial countries is the main influence behind the deterioration in both the current account position and GNP growth in the low-growth scenario. For both variables, the outcome, when a slowdown in industrial country growth is considered by itself, is almost identical to the outcome in the overall low-growth scenario; the current account deficit as a proportion of GNP worsens by over ½ percentage point in 1985 and by over 1 percentage point in 1986, and GNP growth slows by about 1 percentage point in both 1985 and 1986.

By contrast, the effects of the individual changes in the other control variables are small. A lower rate of inflation in industrial countries (2.5 percent compared with 4 percent in the high-growth scenario), with all other control variables assuming their values in the high-growth scenario, would have a very small negative effect on both the current account position and GNP growth of Asian countries. This

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1/ The results from the individual simulations do not add up to the results from the simulation reported in Table 2 because individual simulations showing the effects of a change in oil prices and volumes are not included.

Table 5. The Separate Impacts of Lower Growth in Industrial Countries and a Decline in U.S. Interest Rates 1/

(Differences for in key variables of the Asian Countries between the low- and high-growth scenarios; percentage point differences except where indicated)

	Slower growth in industrial countries only		Lower interest rates major currencies only	
	1985	1986	1985	1986
CA/GNP	-0.7	-0.2	0.2	0.1
CA 2/	-2.9	-5.6	0.9	0.7
Export volume growth	-2.0	-1.8	--	--
Import volume growth	-1.4	-2.5	0.3	0.2
Terms of trade 3/	-2.0	-2.0	--	--
Debt service ratio 4/	0.9	2.1	-1.5	-1.6
Debt/exports	7.9	18.45	--	-0.4
GNP growth	-0.9	-1.3	0.4	0.1
Absorption growth	-0.7	-1.2	0.2	0.2
Real income growth	-1.4	-1.9	0.4	0.1
Inflation 5/	-1.0	-1.8	0.1	0.1

1/ Assumes maintenance of moderately tight policies in Asian countries (g = 0.5).
2/ Billions of dollars.
3/ Index point differential.
4/ Ratio of total debt service payments to receipts from exports of goods and services.
5/ Absorption deflator.

Table 6. The Separate Impacts of Lower Growth in Industrial Countries and a Decline in U.S. Interest Rates 1/

(Differences for in key variables of the Asian Countries between the low- and high-growth scenarios; percentage point differences except where indicated)

	Decline in inflation in industrial countries only		Depreciation of the dollar against other major currencies only	
	1985	1986	1985	1986
CA/GNP	-0.1	-0.1	--	0.1
CA 2/	-0.3	-0.5	-0.1	-0.3
Export volume growth	-0.2	-0.1	-0.1	-0.1
Import volume growth	0.1	-0.1	0.4	0.8
Terms of trade 3/	-0.1	-0.2	0.6	1.7
Debt service ratio 4/	0.3	0.6	-0.1	-0.3
Debt/exports	2.18	4.25	--	-1.9
GNP growth	-0.2	-0.2	--	--
Absorption growth	-0.2	-0.1	--	0.2
Real income growth	-0.2	-0.2	0.1	0.3
Inflation 5/	-0.9	-1.2	-0.6	-0.2

1/ Assumes maintenance of moderately tight policies in Asian countries (g = 0.5).
2/ Billions of dollars.
3/ Index point differential.
4/ Ratio of total debt service payments to receipts from exports of goods and services.
5/ Absorption deflator.

effect arises mainly from a small deterioration in competitiveness that reduces export volume growth and a slight deterioration in the terms of trade. The effects of a 5 percent depreciation of the dollar against the currencies of other major countries are even smaller; although the implied appreciation of the Asian currencies against the dollar (consistent with the assumed basket peg) would lower export volume growth and raise import volume growth (relative to the overall high-growth scenario), the terms of trade would improve in the short run enough to almost offset any effect on the current account. 1/ One important effect of both the lowering of industrial country inflation and the depreciation of the dollar is to reduce inflation in the Asian countries by up to 1 percentage point in each year. In terms of its effects on inflation in Asian countries, the lowering of industrial country inflation is comparable to the decline in industrial country growth.

The decline in U.S. interest rates is the only element of the low growth scenario that exerts a significant mitigating influence on both the current account position and the GNP growth rate in the Asian countries; its effect on inflation, however, is negligible. Table 5 shows that the 2 percentage point decline in U.S. interest rates, when considered on its own, leads to an improvement in the current account by almost $1 billion in both 1985 and 1986 and a slight improvement in GNP growth. These effects reflect entirely the lower interest payments on external debt and the related improvement in real incomes and domestic demand. The debt service ratio falls by about 1½ percentage points in both years--more than offsetting the increase resulting from the changes in other control variables in 1985, but falling short of that increase in 1986.

The final major influence on the current account position and GNP growth of the Asian countries is the stance of their demand management policies. The specification of the absorption equation as a partial adjustment function lends itself easily to a consideration of the effects of changes in the stance of policies. Specifically, by increasing the value of the adjustment parameter g above the value of 0.5 used in the simulations thus far, the results of more restrictive demand management

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1/ The improvement in the terms of trade results from the effect of the appreciation of major currencies against the dollar on primary commodity prices; for industrial countries other than the United States lower domestic currency prices of commodities are assumed to boost demand and increase the world market (dollar) price. The model abstracts from the effect of a change in the configuration of exchange rates between major currencies on the Asian countries' import prices which could dampen the improvement in the terms of trade. Implicitly, the model assumes producers in all industrial countries price their exports in dollars, not local currencies. If these exports were priced in local currency, a depreciation of the dollar could increase the dollar prices of non-U.S. producers' exports and exert a depressing effect on the terms of trade in developing countries.

policies can be investigated. 1/ Table 7 shows the results of a simulation in which g is set at 0.9. In all other respects, the assumptions underlying the simulations correspond to those reported in Table 3. Broadly speaking, the results show that to the extent that the countries implement policies that hasten the adjustment of absorption to lower real income growth resulting from the deterioration in external developments, the worsening of the current account can be reduced, but at the sacrifice of some growth.

A comparison of the simulations using high and low values of g shows that the tightening of demand management policies has no effect on export performance which is determined almost exclusively by external developments. However, when a more rapid speed of adjustment of absorption is assumed, the slowdown in income growth has a substantially larger effect on import volume growth. Indeed, the slowdown in import volume growth in 1985 is three times as great when g = 0.9 as when g = 0.5; in 1986, the slowdown in import volume growth is twice as great. Thus, the deterioration in the current account position resulting from the weakening of external growth is minimal when g = 0.9--$0.6 billion in 1985 and $1.1 billion in 1986 or less than 1/2 percent of GDP in each year. However, under this scenario, the corresponding sacrifice in growth is considerable; GNP growth deteriorates by around 2 percentage points in both 1985 and 1986 under the more restrictive policy assumptions, but by only about 1 percentage point in each year under the less restrictive policy assumption. To put the cost of containing the deterioration of the current account by tightening policies in perspective, it is useful to compare directly the results of the simulations using the low-growth assumptions. This comparison shows that the more restrictive policies achieve a reduction in the ratio of the current account deficit to GNP of about 20 percent in each year

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1/ While there is a direct correlation between the stance of policies and the value of g, the relationship is, of course, not quantifiable. Rough calculations suggest that, for the countries under consideration, the adjustment parameter has varied between -0.4 and 1.2 during the past five years and that variations are related to cyclical developments and exogenous supply-side disturbances. Furthermore, the value of g measures the speed at which actual absorption growth is adjusted to desired absorption growth. Thus, a higher value of the coefficient reflects more restrictive policies when the growth of desired absorption is below the growth of actual absorption in the previous period; but a higher value for the coefficient reflects easier policies when the growth of desired absorption exceeds the growth of actual absorption in the previous period. In the following simulation, a more rapid speed of adjustment implies more restrictive policies; the deceleration of real income growth together with the underlying objective of reducing the current account deficit (given by the equation $\Delta a^* = 0.95\ \Delta y_R$) implies that desired absorption growth is less than the growth of actual absorption in the previous period.

Table 7. Simulation Results Assuming a Tightening in the Policy Stance of Asian Countries 1/

(Difference for key variables of the Asian Countries between the low- and high-growth scenarios; percentage point differences except where indicated)

	1985	1986
CA/GNP	-0.2	-0.4
CA 2/	-0.5	-1.1
Export volume growth	-2.6	-2.1
Import volume growth	-2.5	-3.7
Terms of trade 3/	-1.6	-3.0
Debt service ratio 4/	-0.5	0.4
Debt/exports	8.6	16.0
GNP growth	-1.7	-2.2
Absorption growth	-1.8	-1.7
Real income growth	-2.1	-2.6
Inflation 5/	-3.1	-3.7

1/ Based on g = 0.9.
2/ Billions of dollars.
3/ Index point differential.
4/ Ratio of total debt service payments to receipts from exports of goods and services.
5/ Absorption deflator.

(relative to the outcome under less restrictive policies), but reduce the growth of real GNP by over a third in each year.

IV. Conclusion

The overwhelming importance of industrial country growth for developments in the current account positions and debt profiles of developing countries is emphasized in a number of recent studies examining the economic linkages between industrial and developing countries. The present paper has presented a highly aggregated framework for examining these linkages for six Asian countries. One important feature of the paper has been to broaden the focus of this type of investigation to include the effects of industrial country growth not only on the external position and debt profile of developing countries, but also on the growth rates of developing countries themselves. An additional feature of the paper has been to provide some indication of the role that policies in developing countries can play in offsetting the effects of slower growth in industrial countries on their own economies.

The results from this exercise speak for themselves and need little elaboration. Slower growth in industrial countries has an extremely important effect on the current account position, debt profile, and growth rates of developing countries. Changes in other important variables in industrial countries--in particular, a decline in interest rates--that generally accompany slower growth go only a small way toward offsetting these adverse developments. Although the weakening of current account positions and the increase in debt servicing burdens can be mitigated through policy adjustments in developing countries, this option can be exercised only at the cost of substantially lower growth.

One issue on which there has been considerable debate is whether the deleterious effects on developing countries of a slowdown of growth in industrial countries would be offset by an accompanying decline in dollar interest rates. An important difficulty in resolving this debate lies in establishing a uniform criterion for judging the costs for developing countries of lower growth in industrial countries relative to the benefits from lower interest rates. Dornbusch, for example, investigates the effects of developments in industrial countries on welfare in developing countries, calculated from an intertemporal utility function. In this approach, a reduction in the real interest rate on external debt significantly improves welfare, whereas, in the absence of specific distortions, slower growth in industrial countries only affects welfare to the extent that it worsens the terms of trade. Cline examines the effect of developments in industrial countries mainly from the perspective of the growth of debt in several major debtor countries and of the countries' ability to service that debt. In his model, he finds that the effect of a 1 percentage point reduction in OECD growth on the average current account position of 19 major debtor countries

over a four-year period would only be offset by a 7 percentage point decline in the interest rate they pay on external debt.

Results from the simulations presented in this paper, while not fully consistent with those from either of the other models, suggest conclusions similar to Cline's; over the period 1985-86, a 1 percentage point per annum slower growth in industrial countries would have to be matched by interest rates that, on average, were 5 percentage points lower if the current account position were to remain unchanged. This calculation of the relative sizes of the effects of lower interest rates and of slower growth is somewhat lower than Cline's for two reasons; first the simulations in the present paper indicate a somewhat smaller effect than in Cline's work of a slowdown in industrial country growth on the current account imbalances and, therefore, on the level of indebtedness of developing countries; second, the composition of countries, and therefore the structure of debt, considered in the present paper differs considerably from that included in Cline's work.

While the present paper does not explicitly address the linkages between specific policies in industrial countries and economic performance in developing countries, the simulation results do carry some important implications about these linkages. In particular, the manner in which the current large external imbalances among industrial countries are dealt with will play a significant role in determining current account positions and growth in developing countries. A substantial depreciation of the dollar would weaken the external position of the countries investigated in this paper. However, if such a depreciation were the result of a contraction in fiscal deficits and an easing of monetary policy in industrial countries so as to permit some decline in dollar interest rates, the adverse effects of the depreciation on countries' current account and debt positions could be more than offset. On the other hand, if the depreciation of the dollar took place with no policy adjustments in industrial countries, raising the possibility of higher interest rates, lower growth, and increased protectionism, the results for developing countries would be substantially worse than even the low growth scenario examined in this paper.

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