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# 3 Perspectives on Korea's External Adjustment: Comparison with Japan and Taiwan

Bon Ho Koo and Won-Am Park

## 3.1 Introduction

Current account imbalances among major countries in the first half of the 1980s were larger than at any time since the early post-World War II period. In the early 1980s, there was concern about the apparent misalignment of currencies, inappropriate monetary and fiscal policies of major countries, and unfair trade practices and exchange rate manipulation by some developing countries. In order to correct these imbalances, the Japanese yen rose rapidly after the Group of Five's Plaza Agreement in September 1985. The decline of the dollar, however, did not significantly reduce current account imbalances. U.S. trade relations with Japan have been the dominant issue in international economic policy. With the yen's appreciation, more attention was paid to movement in the balance of payments of the East Asian newly industrializing countries (NICs)—Korea, Taiwan, Hong Kong, and Singapore. These countries are most often accused of manipulating their exchange rates, taking advantage of the yen's appreciation but not opening up their markets. In particular, U.S.-Korean economic relations have been strained by a growing number of conflicts over trade and macroeconomic policy.

Korea accumulated large current account surpluses during 1986–88, due mostly to “three lows”—low dollar, low oil prices, and low international interest rates. As this good fortune began to disappear after 1989, Korea's current account deteriorated to record a deficit of more than 3 percent of GNP in 1991, compared with a surplus of 8.2 percent of GNP at its peak in 1988. This sharp turnaround in Korea's current account is unique in that it reverted to a large deficit while Japan and Taiwan, the neighboring nations with which Korea is most often compared, maintained their surpluses. The natural question is, Why

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did Korea's current account turn so sharply and show a huge deficit in 1991? Further questions could be raised: Was such a big turnaround inevitable when the "three lows" disappeared after 1989, and was it foreshadowed by the huge surpluses during 1986–88? Was it the result of policies aimed at reducing the current account surplus in response to foreign pressure and thus avoidable? And was it possibly even desirable for Korea to make such a turnaround and post a current account deficit?

This paper deals with these questions by focusing on Korea's structural adjustment and policy responses after the current account surplus emerged in 1986. It considers various policy responses made by Korean policymakers and accepts the viewpoint that both expenditure-switching and expenditure-expanding policies have worked to reduce the current account surplus. Special attention is paid to the stabilizing feedbacks of assets markets, in particular land and equities, on goods and asset prices and hence on savings and investment.

This paper is organized as follows. In section 3.2, we provide an overview of Korea's current account balance in comparison to those of Japan and Taiwan from the perspectives of export-import balance and saving-investment balance, respectively. Section 3.3 reviews the actual policy responses to emerging surpluses in the current account and attempts to evaluate these policies in comparison to those of Japan and Taiwan. The role of assets markets in the balance of payments adjustment is highlighted in section 3.4. In section 3.5, we estimate the "conventional" export and import equations and assess the importance of adjusting the real exchange rate and domestic and foreign demand. The last section pulls the results together for an overall assessment and derives implications for future policy debates between the United States and Korea.

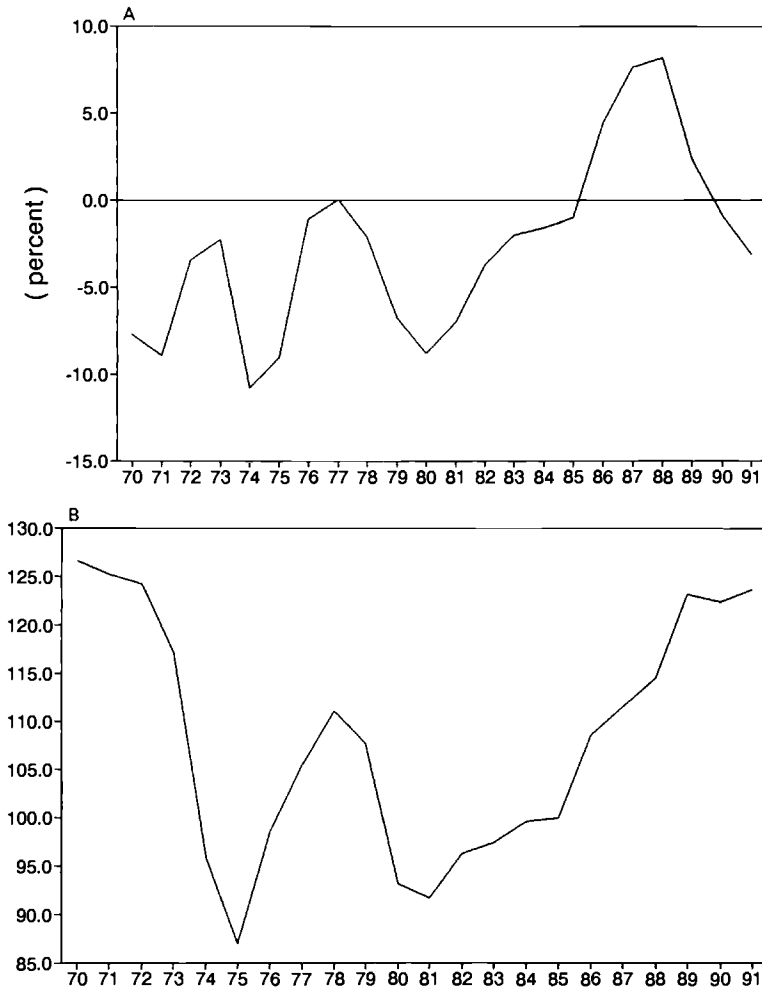
### **3.2 An Overview of Korea's Current Account in Comparison with Japan and Taiwan**

Fluctuations in the current account can be examined from two different perspectives. One, related to the elasticity of income and relative price, examines export and import behavior. The other, related to the income-expenditure approach, examines savings and investment behavior as a mirror image of the current account. While the former approach takes into account the effect of relative prices on trade, the latter approach attempts to distinguish between permanent and transitory (disposable) income. Since private consumption responds more to changes in permanent income, the latter approach divides private savings into permanent and transitory components. For example, favorable external conditions improve the current account by increasing foreign demand or strengthening external competitiveness. They can also boost domestic savings by increasing transitory income. Whether through improved external demand and competitiveness or through enhanced domestic savings with temporary changes in domestic demand, changing external and internal

conditions may explain the behavior of Korea's current account. This section will examine both approaches and review exports and imports on the one hand and savings and investment on the other.

### 3.2.1 Exports and Imports

Figure 3.1, panel A, presents movements in Korea's current balance for the last two decades. It clearly shows that the oil shocks of 1974 and 1979–80 set back the current account. But despite these shocks, Korea was almost able to balance the current account in 1977 and again in 1985. In order to distin-



**Fig. 3.1 Trade patterns in Korea, 1970–91: A, current account/GNP ratio; B, terms of trade (1985 = 100); C (on p. 56), real trade balance (in 1985 base)**

Source: *Monthly Bulletin* (Seoul: Bank of Korea, various issues).

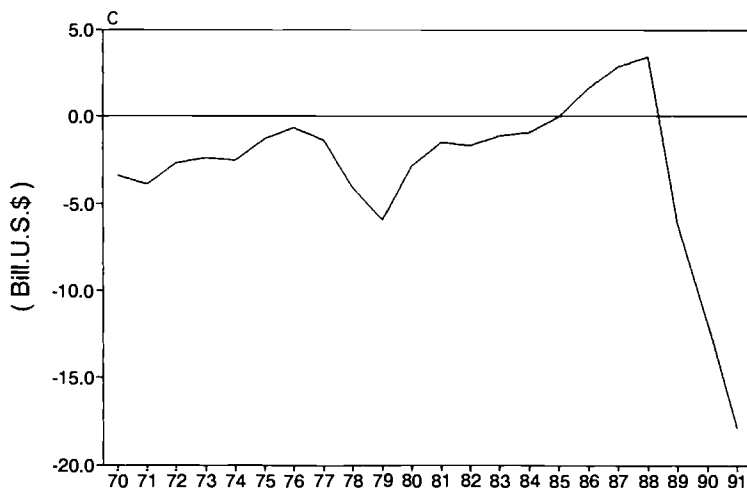
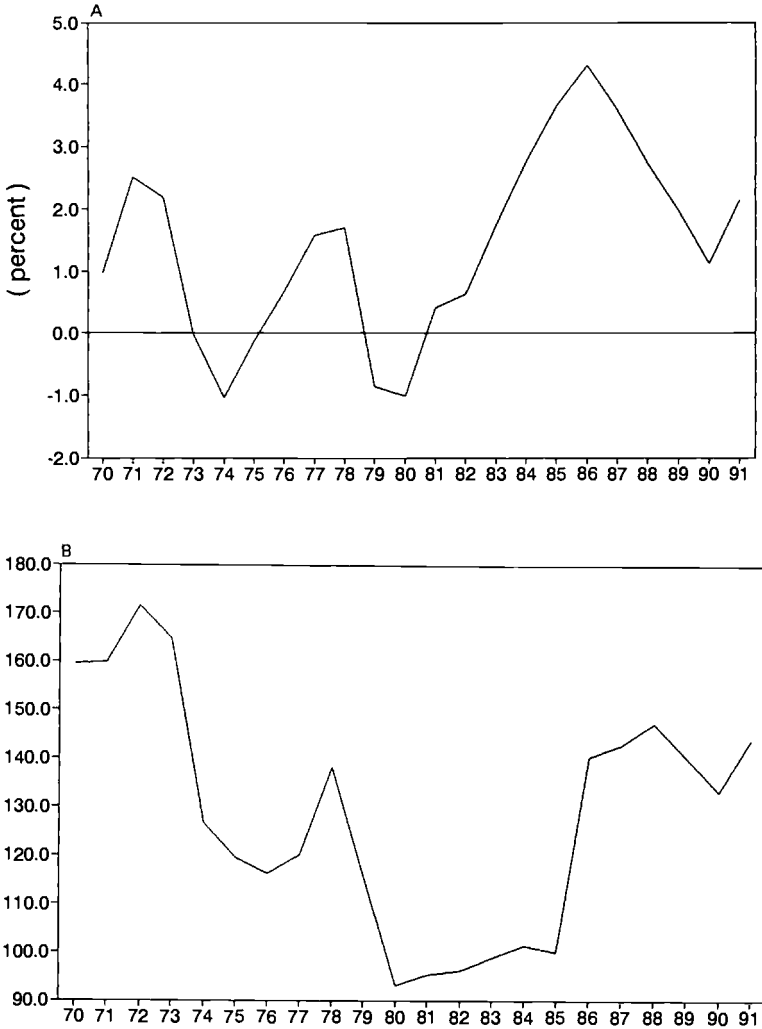


Fig. 3.1 (continued) C, real trade balance (in 1985 base)

guish between nominal and real trade balance, changes in trade account were divided into changes in the terms of trade and in trade volumes in panels B and C. The two oil shocks were associated with drastic deterioration in terms of trade, and the “three lows” with its improvement. The real trade balance, which is equivalent to real exports minus real imports in 1985 dollars, showed a trend of steady improvement up to 1988, except for the years 1977–79. Therefore, it can be concluded that large swings in the terms of trade appear to explain, for the most part, fluctuations in the current account/GNP ratio until 1988. The experiences of Japan and Taiwan are shown in figure 3.2 and figure 3.3, respectively. The adjustment pattern of the current account in each country looks much the same. There was a steady move toward a current account surplus before 1985, though it was interrupted by the two oil shocks.

Movements in the terms of trade, however, differed somewhat among the three countries. Fluctuations were larger in Japan than in Korea and Taiwan. But in all three countries, the terms of trade showed a trend of deterioration in the 1970s and a trend of improvement in the 1980s. Despite the reversed trend in the terms of trade, real trade balance improved quite steadily up to 1985. This trend was more pronounced in Japan and Taiwan than in Korea. Therefore, if there is a secular trend in net real exports due to technological change and other structural reasons that is not captured in the conventional export and import equations, one may find more evidence for it in Japan and Taiwan than in Korea.

The post-1985 adjustment pattern in trade balance could be characterized by a sharp decline in real trade balance with improvement in terms of trade in all three countries. In Japan and Taiwan, terms of trade improved sharply during 1986–87, and the decline in real trade balance began in 1986. In contrast,



**Fig. 3.2 Trade patterns in Japan, 1970–91: A, current account/GNP ratio; B, terms of trade (1985 = 100); C (on p. 58), real trade balance (in 1985 base)**  
 Source: *International Financial Statistics* (Washington, D.C.: IMF, various issues).

Korea enjoyed gradual improvements in both terms of trade and real trade balance during 1986–88 but experienced a sudden and drastic reduction in real trade balance during 1989–91.

This sharp reduction in real trade balance distinguishes the Korean experience with external adjustment from those of Japan and Taiwan. The decrease in Korea's real trade balance shown in figure 3.1, panel C, is so sharp as to be called excessive, especially when we consider that Korea's improvement in real

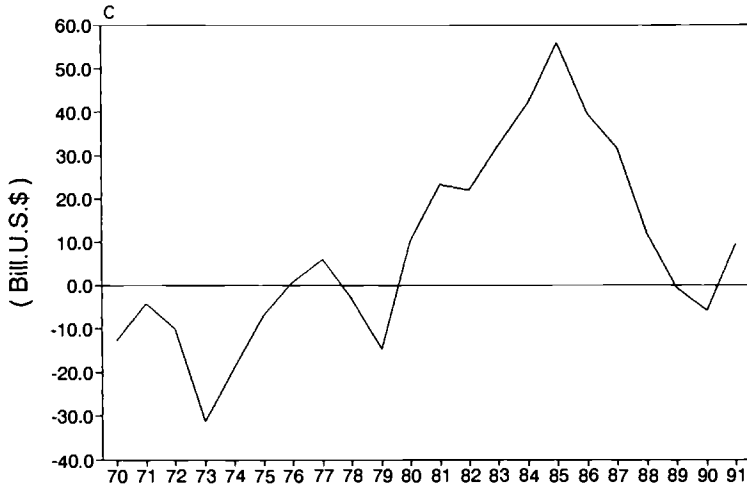


Fig. 3.2 (continued) C, real trade balance (in 1985 base)

trade balance during 1970–85 was very slow compared with Japan and Taiwan.

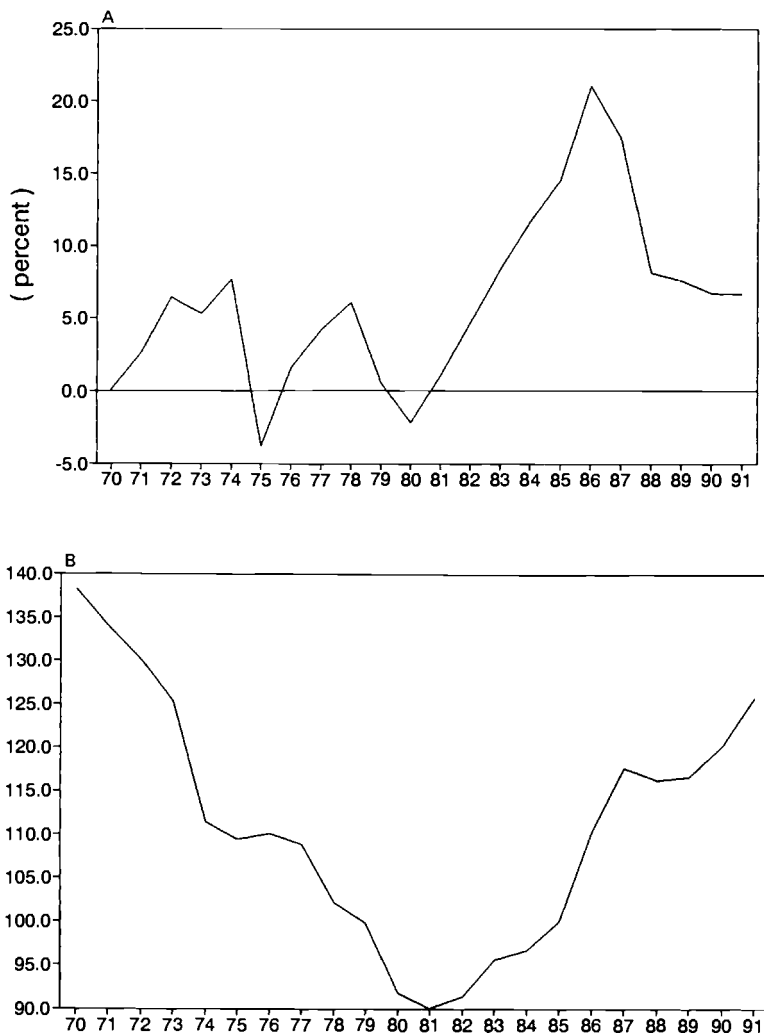
Why did Korea experience such a sharp turnaround in real trade balance during 1988–91? The rest of this paper attempts to find some answers that emphasize both the expenditure-expanding and expenditure-switching policies taken in response to the emerging current account surpluses in Korea.

### 3.2.2 Savings and Investment

We now turn to the gap between income and expenditure. Figure 3.4 shows the savings and investment behavior of the private and government sectors and the effect of such behavior on Korea's current account. During the past two decades, the current account showed a strong positive correlation with the saving-investment balance of the private sector. The government budget was also positively correlated with the current account, but its correlation was not as strong as that of net private savings (the gap between private savings and investment). Net government savings exhibited a strong increasing trend until 1988.

In Taiwan, the current account also showed a strong positive correlation with the saving-investment balance of the private sector, but a very weak correlation with the government budget (figure 3.5). However, the Taiwanese government budget did not visibly improve or deteriorate, unlike budget trends in Japan and Korea.

The Japanese case is more subtle. While the current account was strongly correlated with private sector savings and investment in Korea and Taiwan, it did not show such a strong correlation with net private savings in Japan, as



**Fig. 3.3** Trade patterns in Taiwan, 1970–91: A, current account/GNP ratio; B, terms of trade (1985 = 100); C (on p. 60), real trade balance (in 1985 base)  
*Source: Financial Statistics* (Taipei: Central Bank of China, various issues).

shown in figure 3.6. The current account was positively correlated with net private savings in the 1970s, while the government budget surplus was negatively correlated with both the current account and net private savings. However, this pattern of correlation among the current account, net private savings, and government budget certainly changed in the first half of the 1980s. During this period, net private savings changed only a little, but the government deficit decreased remarkably. Therefore, increases in the Japanese current account in



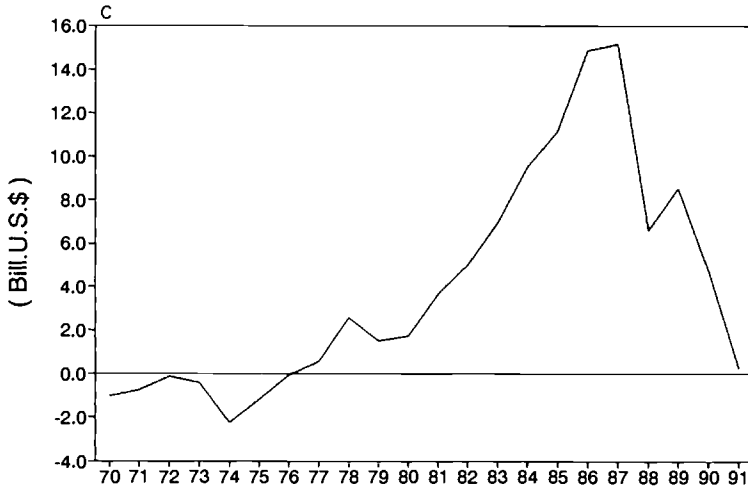


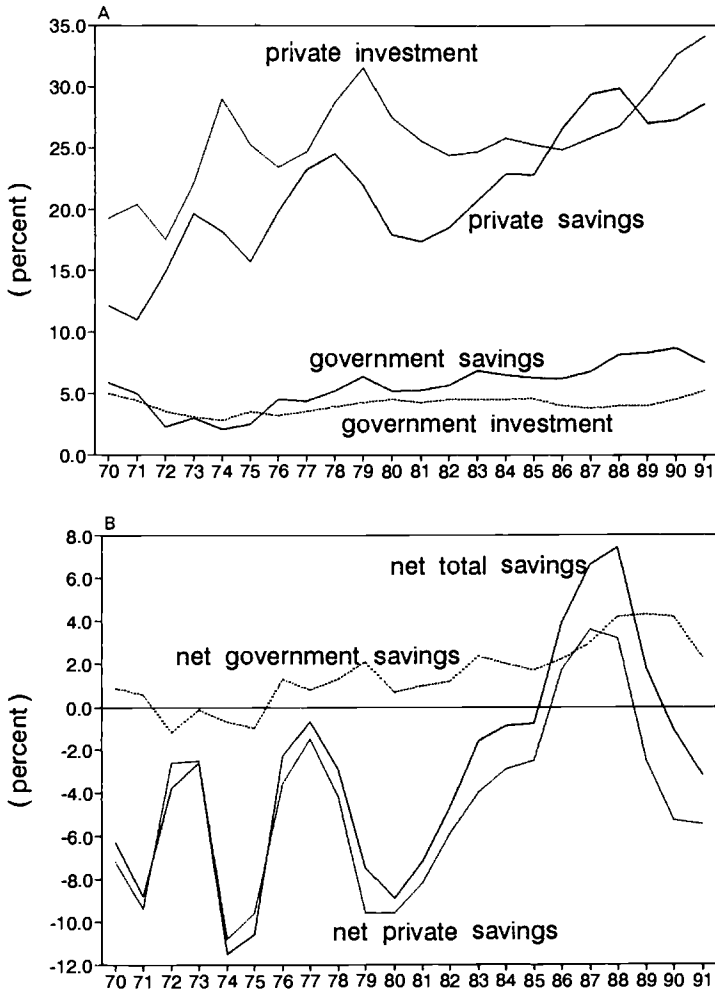
Fig. 3.3 (continued) C, real trade balance (in 1985 base)

the 1980s correspond to Japanese fiscal policy. This well-known trend in the Japanese government budget coupled with the opposite trend in the U.S. budget has been the basis for the Mundell-Fleming view of both the Japanese and U.S. current accounts in the early 1980s (see Sachs and Roubini 1987; Ueda 1988).

The correlation coefficients among net private savings, net government savings, and the current account are reported in table 3.1. They confirm the observations on sectoral net savings and their relationships from figures 3.4–3.6.

While the accounting identity linking budget deficits and the current account cannot be denied, budget deficits need not always be reflected in corresponding changes in the current account. Related to this point may be the two issues of whether budget deficits affect national savings and whether national savings affect the current account. Regarding the first issue, an influential school of “Ricardian equivalence” argues that government deficits will be offset by increases in private savings. According to this view, only temporary changes in government spending will create current account movements, not permanent changes in government spending or any changes in government taxes. Regarding the second issue, the empirical evidence suggests that the link between national savings and the current account has been very weak in OECD countries.

Some very tentative evidence on these two issues is shown in table 3.1. Budget deficits affected national savings in Korea and Japan to a larger extent than in Taiwan. This could imply that if the Ricardian view holds anywhere, it is more likely to hold in Taiwan than in Korea or Japan. On the other hand, national savings spilled over into current accounts in Korea and Taiwan, but not in Japan. Of course, these differing experiences could be explained by the dif-

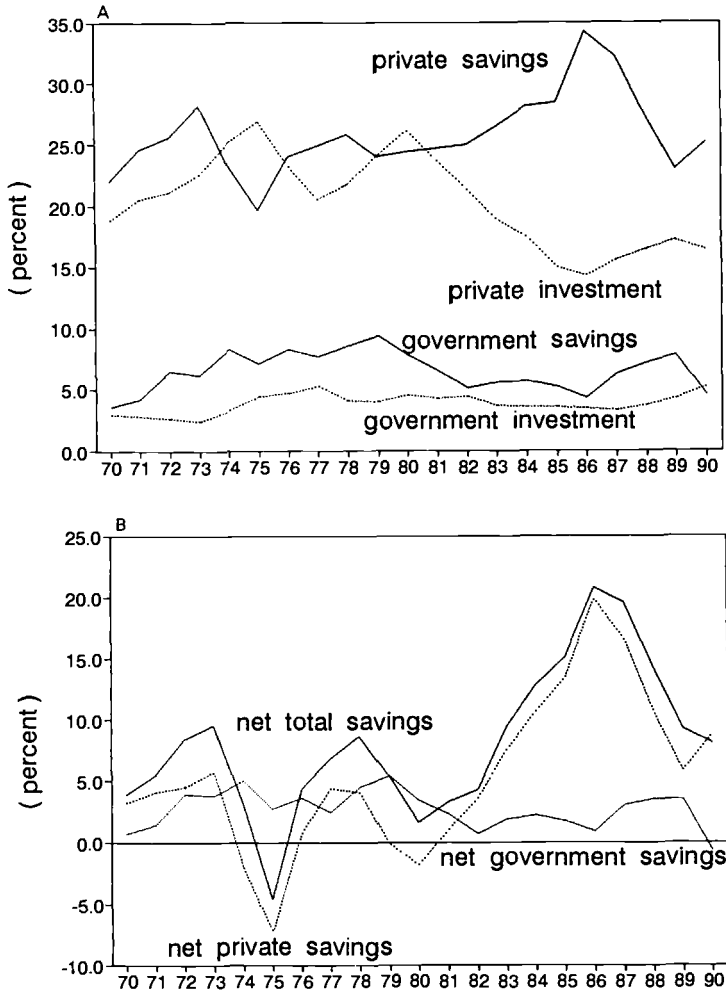


**Fig. 3.4 Savings and investment in Korea, 1970-90: A, savings and investment; B, net savings (savings - investment)**

*Source: National Accounts (Seoul: Bank of Korea, 1991).*

ferent investment behavior in each country, particularly its correlation with savings as shown in table 3.1.

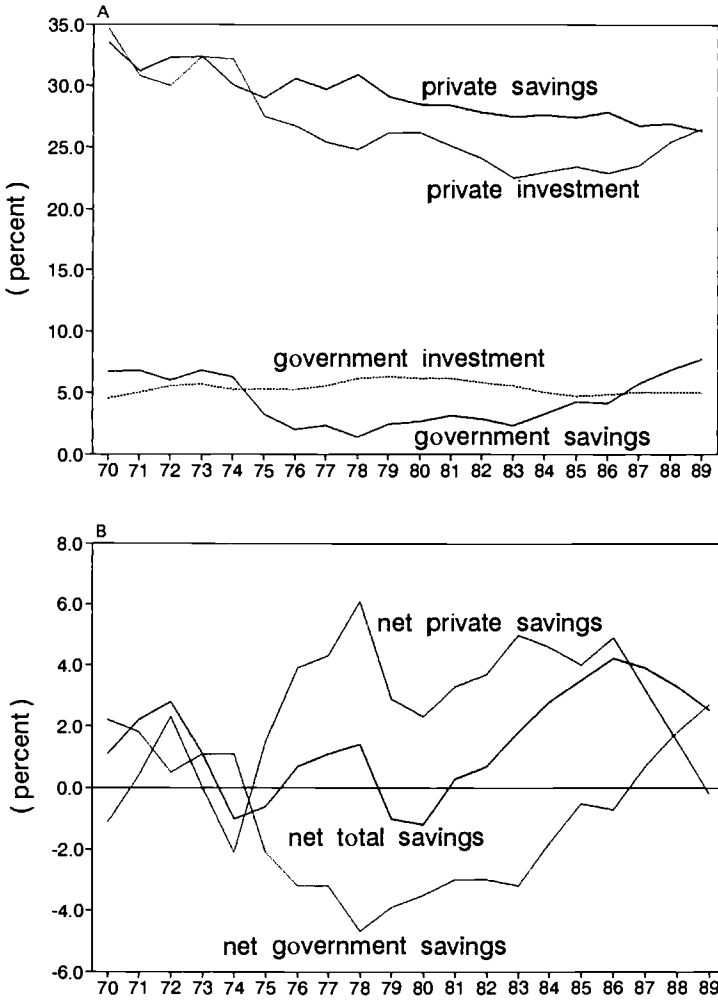
If we pay more attention to the post-1985 experience, we can recognize several changes in savings and investment behavior. First, private saving-investment balance played a great role in reducing current account surpluses in all three countries. Even in Japan, the excess of private savings over investment as a ratio of GNP declined by 5 percentage points during 1986-89, while net government savings increased by 3.5 percentage points during the same



**Fig. 3.5 Savings and investment in Taiwan, 1970–90: A, savings and investment; B, net savings (savings – investment)**

*Source: Taiwan Statistical Data Book (Taipei: Council for Economic Planning and Development, 1991).*

period. The increasing role of private savings and investment in the post-1985 period seems to be related to the post-1985 changes in exchange rates and other asset prices. Although no simple model, including the Mundell-Fleming model, could explain their movements after 1985, a number of authors have emphasized the changes in land and stock prices that were triggered by large surpluses in the current account and exchange rate changes. We will return to this topic in section 3.4. Increases in land and stock prices encouraged investment in construction and facilities and consumption via wealth effects.



**Fig. 3.6 Savings and investment in Japan, 1970-89: A, savings and investment; B, net savings (savings - investment)**

Source: *Annual Report on National Accounts* (Tokyo: Economic Planning Agency, 1991).

Second, fiscal policy played a major role in reducing the current account surplus in Korea and Taiwan, but not in Japan. For instance, in Taiwan net government savings as a ratio of GNP changed little during 1987-89 but declined sharply by more than 4 percentage points in 1990. The Korean case is almost the same: net government savings changed little during 1988-90 and then declined markedly by 2 percentage points in 1991.

Third, we can find differences in the adjustment of private savings and private investment among the three countries. In Taiwan, private savings played a

**Table 3.1** Correlation Coefficients for National Savings, Government Budget, and Current Account

	Korea	Taiwan	Japan
Net private savings vs. current account	0.96	0.97	0.28
Net government savings vs. current account	0.71	-0.14	0.44
Net government savings vs. national savings	0.88	0.28	0.72
National savings vs. current account	0.78	0.80	0.03
National savings vs. national investment	0.67	-0.41	0.88

Source: Figs. 3.4–3.6.

greater role in reducing the surplus than private investment. During 1986–90, the private savings ratio declined by 9 percentage points, but the private investment ratio increased by only 2 percentage points. Korea's experience with private savings and investment is in direct contrast with the Taiwanese case in that private investment played a greater role than private savings in Korea. While the current account surplus fell during 1988–91, the private investment ratio increased by about 7.5 percentage points and the private savings ratio decreased by only 1.5 percentage points. In Japan, the private investment ratio began to rise after 1986 whereas private savings has continued to decrease since the early 1970s.

These different patterns of adjustment in private savings and private investment seem to be attributable to different policy responses to a current account surplus. Korea's high investment and high growth policy accounts for its modest decreases in private savings compared to Taiwan, which will be discussed again in the next section. Empirical studies of savings behavior for Korea point to income growth as the major determinant (Collins and Park 1989). Because economic growth in Korea was rapid but variable, the perceived income growth during the external adjustment period, when the surplus was being reduced, could explain modest changes in private savings. According to the permanent income hypothesis of consumption, if income changes are perceived to be transitory, consumption changes little. Thus savings and growth should be highly correlated.<sup>1</sup>

### 3.3 Korea's Policy Responses to the Current Account Surplus

As shown in figure 3.1, Korea's current account moved steadily toward a surplus during 1970–85. As the current account surplus materialized in 1986 and expanded until 1988, one could have safely said that Korea had a structural surplus in the current account. Although there is no widely accepted definition of a structural surplus, it can be defined as a surplus that can be explained by

1. Collins (1988) compares savings and investment behavior in Korea and Japan using the same reasoning.

a structural model and is expected to persist over a few years unless external and internal conditions change in an unusual fashion. If Korea had a structural surplus, it might have maintained a balance or a small surplus even after the "three lows" disappeared. In fact, the current account turned from a surplus of 8.2 percent of GNP in 1988 to a deficit of 3.1 percent of GNP in 1991. This sharp turnaround in the current account undoubtedly challenges the view that Korea has a structural surplus in the external account.

If policymakers believed that Korea had a structural surplus and that the mounting surpluses after 1986 were transitory, due to unusually favorable external conditions, their response to the current account surplus should not have been to trim it. Only if they believed that the surplus would persist even under the fading of the "three lows," should they have moved to trim it.

### 3.3.1 How Should Korea Have Adjusted?

It should not be surprising that Korea's current account turned into a deficit. It is natural to have current account deficits after four years of surpluses. Furthermore, some outsiders such as Balassa and Williamson (1990) and some diplomats in the U.S. State Department contended that Korea should eliminate its current account surplus.<sup>2</sup> So, if Korea's extended adjustment is considered to be very surprising, it is because Korea adjusted extremely rapidly, not because its external balance turned into a deficit. The previous section showed how rapid Korea's external adjustment was, particularly in comparison to Japan and Taiwan.

How then should Korea have adjusted to the current account surplus? It is certainly a counterfactual exercise that may hold under a specific set of assumptions on imagined situations. For this reason, we do not carry out counterfactual exercises. Instead, we will recall the policy plans advocated by Korean policymakers in the midst of mounting surpluses in the current account and compare them with the policies that were actually implemented. As Korean Minister of Finance Il SaKong (1989) and Dornbusch and Park (1987) suggested, Korean policymakers seemed to prefer market liberalization to a macroeconomic adjustment centering on the exchange rate and fiscal policy. The case for market liberalization was that it would eliminate market distortions and increase imports. The case for abstaining from appreciating the won was made in light of labor unrest and sharp increases in domestic wages. However, the actual policy responses seemed to be different. We review Korea's actual policy responses in the following subsections, paying special attention to whether the initially asserted priorities were maintained.

2. Balassa and Williamson (1990) argue that Korea would do better to expand investment and consumption, with the current account in deficit, because of its high marginal product of capital, creditworthiness, and low level of consumption. Searching for the optimal level of investment, consumption, and external debt and considering the adjustment costs to negate a simple neoclassical proposition that investment should expand until the marginal product of capital is equal to the interest rate, Park and Anne (1988) found that an external surplus might be optimal for Korea.

### 3.3.2 Monetary Policies

With the expansion in the money supply through the external surplus, the authorities sought to maintain price stability and appropriate growth by controlling the money supply. Each year, the authorities set the target range of  $M_2$  growth on the basis of their projections of real economic growth, inflation rate, and income velocity of money. Although the  $M_2$  growth rate exceeded the target range in some years, money growth was close to the target. However, this does not indicate that monetary stances have been restrictive.

Table 3.2 compares money growth in Korea with that in Japan and Taiwan. Korea's  $M_2$  growth was maintained well above 18 percent per year during 1987–91 due to the external surplus, after it registered exceptionally low growth of 11.3 percent per year during 1984–85. In contrast, Japan and Taiwan experienced a slight increase in money growth during 1986–88 and a sharp reduction in recent years. Taiwan's  $M_2$  growth dwindled to 11 percent in 1990 and Japan's  $M_2 + CD$  growth shrank strikingly to 3.6 percent in 1991.

Table 3.3 shows movements in interest rates that may reflect not only monetary changes but also fiscal changes. Both nominal and real interest rates dropped with monetary expansion during 1986–87 in the three countries. Afterwards, both nominal and real interest rates began to rise with monetary contraction. In Korea, nominal interest rates continued to rise with loose monetary policy, but this reflects heightened inflation since real interest rates had been stabilized.

As was mentioned before, the interesting thing about Korea's monetary management is that the current account's slide into deficit did not bring about a noticeable reduction in money growth. Table 3.4 shows the sectoral increase in Korea's  $M_2$  supply. The money supply through the external sector, reflecting changes in the current account, expanded steadily during 1986–88 and then contracted during 1989–90. Money supply through the external sector decreased in 1991. However, this did not lead to a perceivable reduction in money growth for the following reasons:

First, private sector credit expanded considerably after 1989 to meet the increase in indirect financing by the corporate sector, due to the stock market slump. Second, government credit declined after 1987, but less after 1989. Actually, the government sector contributed to the money supply in 1991, since

**Table 3.2 Money Growth (daily average balance; % per annum)**

	1984–85	1986	1987	1988	1989	1990	1991
Korea ( $M_2$ )	11.3	16.8	18.8	18.8	18.4	21.2	18.6
Taiwan ( $M_2$ )	22.6	23.2	26.8	22.1	16.9	11.1	15.4
Japan ( $M_2 + CD$ )	8.1	8.7	10.4	11.2	9.9	11.7	3.6

Sources: *Monthly Bulletin* (Seoul: Bank of Korea, March 1992); *Economic Statistics Monthly* (Tokyo: Bank of Japan, March 1992); *Financial Statistics Monthly* (Taipei: Central Bank of China, March 1992).

**Table 3.3** Interest Rates<sup>a</sup> (% per annum)

	Nominal Interest Rates			Real Interest Rates <sup>b</sup>		
	Korea	Taiwan	Japan	Korea	Taiwan	Japan
1985	14.2	6.3	6.5	11.7	6.2	4.8
1986	12.8	4.0	4.8	10.0	3.6	3.9
1987	12.8	4.1	3.5	8.5	3.3	3.0
1988	14.5	4.9	3.6	9.2	2.8	2.6
1989	15.2	7.3	4.9	8.1	4.0	2.9
1990	16.4	10.5	7.2	8.4	6.4	4.4
1991	18.9	7.4	7.5	—	—	—

Sources: *Monthly Bulletin* (Seoul: Bank of Korea, march 1992); *Economic Statistics Monthly* (Tokyo: Bank of Japan, March 1992); *Financial Statistics Monthly* (Taipei: Central Bank of China, March 1992).

<sup>a</sup>Corporate bond yields for Korea, interbank call loans for Taiwan, and collateral and unconditional call rates for Japan.

<sup>b</sup>Real interest rates = nominal interest rates - centered 3-year CPI inflation rates.

**Table 3.4** Sectoral Increases in Korea's  $M_2$  Supply (end of year; billion won)

	Government Credit	Private Credit	External Sector	Other	Total
1985	40	6,462	-1,595	-1,047	3,860
1986	170	6,765	2,424	-4,091	5,268
1987	-1,656	6,115	9,030	-7,043	6,446
1988	-2,174	8,642	10,212	-8,021	8,659
1989	-1,993	16,871	2,365	-7,543	9,699
1990	-1,458	19,068	118	-7,660	10,070
1991	778	20,840	-3,117	-3,463	15,038

Source: *Monthly Bulletin* (Seoul: Bank of Korea, February 1992).

the budget has been in deficit since 1990. Finally, the "other" sector's absorption declined substantially in 1991; this was associated with the redemption of the monetary stabilization bonds. Issues of bonds such as the monetary stabilization bonds, bonds for foreign exchange balance fund, and treasury bonds were the primary tools for monetary control. The most conspicuous use of this control was the sharp increase in the issuance of monetary stabilization bonds during 1987-88, which was concentrated in secondary banks. However, the bearish stock market and the consequent shortage of funds for institutional investors necessitated the redemption of these bonds after 1989.

If monetary restraint is needed for Korea to achieve price stability and stable growth, the experiences of Taiwan and Japan suggest that government credit should be curtailed and private credit should grow at a moderate rate. In Taiwan, confronted with stock market slumps as is Korea, private credit increased moderately but government credit diminished in 1990. The external sector absorbed the money supply, but this phenomenon stems from drastic increases in



short-term capital outflows rather than from a worsening of the current account. The Japanese monetary contraction in 1991 can also be explained by drastic decreases in government credit and moderate increases in private credit. The external sector did not contribute to the monetary contraction during the same year, as the overall balance turned into a surplus for the first time since 1983.

### 3.3.3 Fiscal Policies

Fiscal expansion is an effective way of reducing the current account in the absence of Ricardian equivalence. Table 3.5 shows that Korea's fiscal policy became expansionary after 1989. Government revenue as a percentage of GNP increased steadily after 1989. However, government expenditure expanded more, resulting in a budget deficit of almost 1 percent of GNP in 1990. This was expected since Korea's fiscal policy has been countercyclical (Corbo and Nam 1986). With economic setback and increasing demand for national welfare in 1989, the government implemented fiscal expansion.

The importance of fiscal policies can be gathered from Korea's experiences with external adjustment in 1991. As we have seen above, fiscal expansion led to monetary expansion. Also, the current account deterioration in 1991 seems to be attributable mostly to decreases in net government savings, as net private savings changed little in that year.

The external adjustment in Japan and Taiwan offers another example of the importance of fiscal policy. Fiscal policy has been a major determinant of the Japanese current account, as the large budget deficits in the 1970s virtually disappeared in the 1980s. This has been discussed in the previous section. The sharp decline in Taiwan's net government savings in 1990 offset an increase in net private savings. This resulted in a continuous decline in the current account surplus as a percentage of GNP in 1990, although there has been little correlation between the government budget and national savings in Taiwan (see table 3.1).

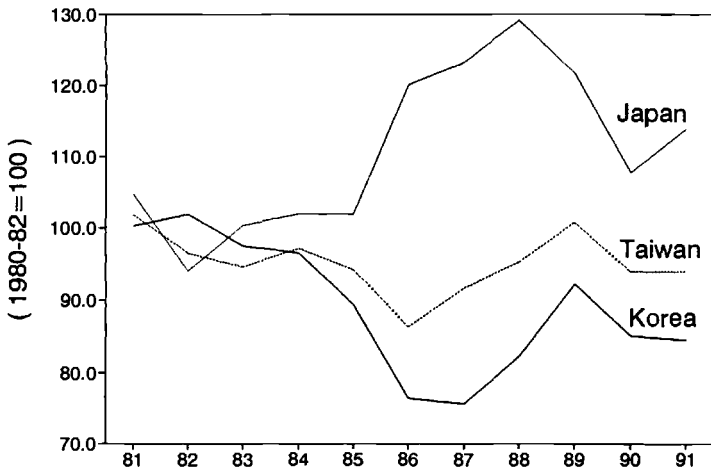
### 3.3.4 Exchange Rates and Wages

Exchange rate policy and its impact on the current account have been a focal point of concern for both policymakers and researchers around the world. After a decade of huge swings in exchange rates and trade balances in the G-3 coun-

**Table 3.5 Consolidated Public Sector Budget in Korea (% of GNP)**

	1980-82	1983-85	1986	1987	1988	1989	1990
Revenues	19.8	18.6	17.5	17.8	18.3	18.5	18.9
Expenditure and net lending	23.9	19.9	17.6	17.6	17.0	18.5	19.8
Surplus	-4.1	-1.2	-0.1	0.2	1.3	0.0	-0.9

*Source: Government Finance Statistics in Korea (Seoul: Ministry of Finance, 1991).*



**Fig. 3.7 Real effective exchange rates, 1981-91**

Source: *World Financial Markets* (New York: Morgan Guaranty Trust Company, various issues).

Note: The 1991 value is the average up to the third quarter. Higher values mean real appreciation.

tries—the United States, Japan, Germany—the verdict is now that exchange rate changes have worked (Krugman 1991). The same verdict could be reached in the case of Korea.

Figure 3.7 shows the movements in real effective exchange rates of Korea, Taiwan and Japan using data from Morgan Guaranty Trust instead of our own calculations. According to these figures, Japanese real appreciation during 1985-88 was followed by Taiwanese real appreciation during 1986-89 and then by Korean real appreciation during 1987-89. The real effective exchange rates of Korea and Taiwan appreciated by 21 percent and 17 percent during 1986-89 and then returned almost to the 1985 level in 1991. The real effective exchange rate of Japan appreciated by 26 percent during 1985-88 and then depreciated by 11 percent from 1988 until the third quarter of 1991, so that overall it still appreciated compared with the 1985 level.

The above comparison among the three countries based upon gyrations in real effective exchange rates might be misleading once changes in unit labor costs are taken into consideration. Table 3.6 reports the annual percent change in manufacturing unit labor costs. Although the Korean won showed the lowest rate of appreciation vis-à-vis the U.S. dollar, the sharp rise in Korea's wages, stemming from political and social changes since 1987, significantly raised unit labor costs in won terms. As a result, unit labor costs in dollar terms in all three countries rose to almost the same degree in the second half of the 1980s. Thus, it is wrong to say that Korea was slow to appreciate its currency in the face of the yen's appreciation.

In addition, if we consider that Korea relied on real depreciation in the first

**Table 3.6** Unit Labor Costs in Manufacturing (annual changes; %)

	1979-90	1979-85	1985-90
Exchange rate (U.S. dollar/ national currency)			
United States	—	—	—
Japan	3.8	-1.5	10.5
Korea	-3.4	-9.3	4.2
Taiwan	2.7	-1.7	8.2
Unit labor cost (dollar basis)			
United States	2.1	3.9	-0.1
Japan	4.1	-0.8	10.3
Korea	3.9	-1.9	11.3
Taiwan	8.0	5.3	11.4

Source: Neef and Kask (1991).

half of the 1980s, it is fair to say that Korea has experienced the sharpest turn-around in external competitiveness and real exchange rates in the second half of the decade. Undoubtedly, this is responsible for the drastic deterioration in the real trade balance shown in figure 3.1.

### 3.3.5 Market Opening

As stated before, Korean policymakers placed top priority on market liberalization as opposed to rapid appreciation of the won as a means of external adjustment. As far as liberalization is concerned, they emphasized trade liberalization more than financial liberalization, following trade-account-first arguments for opening up the external sector. There is much evidence that Korea accelerated both trade and financial liberalization (Kim 1991; Nam 1992; Lee 1992), although these efforts in the latter half of the 1980s were played down by some writers such as Yoo (1991) and Reisen and Yêches (1991).<sup>3</sup> Table 3.7 shows that import liberalization has been maintained or even accelerated in the latter half of the 1980s. However, trade liberalization does not seem to be the most important reason for the drastic increase in imports in the latter half of the 1980s. In section 3.5, we test whether import liberalization and other policy responses have produced a structural break in import equations after 1985 and reject such a structural-break hypothesis. To preview the conclusions of section 3.5, macroeconomic adjustments through expenditure-expanding and expenditure-switching policies rather than through the microeconomic policy of trade liberalization seemed to play the major role in reducing the current account after 1988.

3. According to Yoo (1991), the apparent consistency in the protection structure seems to indicate that the strength of the government influences on the protection structure was not substantially affected. Reisen and Yêches (1991), looking at the curb market rates, contend that the degree of financial openness declined during 1985-87 and remained below its 1985 peak up to 1990.

**Table 3.7** Import Liberalization in Korea (%)

	Average Rate of Legal Tariffs	Degree of Liberalization from Quotas <sup>a</sup>
1970	58.5	46.3
1975	48.1	41.6
1980	34.4	57.4
1985	26.4	78.2
1990	14.1	96.4

Source: Kim (1991).

<sup>a</sup>Represents the degree of import liberalization from quotas according to the trade program and special laws. It is for the second half of each year in 1970 and 1975 and for the second half of the year and the first half of the following year in 1980, 1985, and 1990.

Why did macroeconomic adjustments to reduce the trade surplus take precedence over microeconomic reforms to liberalize trade? This can be explained by the current practice of bilateral negotiations between the United States and Korea. U.S. trade policy has recently been expanded to cover issues such as exchange rate and financial policy in Asian countries. The evolution of U.S.-Korea trade frictions into financial policy talks might be understandable if one reckons with the complementary trade structure between the United States and Korea. Park and Park (1991) among others, by showing that trades among the United States, Japan, and East Asian NICs are complementary rather than substitutable in nature, argue that the East Asian NIC trade imbalances with the United States and Japan will not disappear easily. As U.S. exports to Korea are concentrated in natural-resource-based products and highly capital- and technology-intensive products, bilateral U.S.-Korean trade imbalances may remain significantly unchanged as long as agricultural trade is restricted and modest surpluses in overall trade are maintained.<sup>4</sup> However, as Frankel (1991b) writes, it is unusual for one nation to include such macroeconomic and sovereign matters as financial and exchange rate policy along with standard trade issues when conducting bilateral trade negotiations with another country.

### 3.3.6 Investment Policy

In addition to the above-mentioned policy responses, Korea's high-growth policy played a dominant role in external adjustment. As shown in table 3.8, facility investment increased sharply during 1986–87 and was followed by sharp increases in construction investment during 1989–90. In the face of economic setbacks in 1989, with sluggish exports and rapid wage hikes, Korea relied once again on a high-growth policy by boosting investments. The government announced the plan for the “new cities” on the outskirts of Seoul. By

4. Sachs and Boone (1988) argue that the Japanese liberalization of agricultural trade could lead to an improvement in the trade balance as Japanese land prices are stabilized, just as the Japanese financial liberalization in the early 1980s led to a higher trade surplus.

**Table 3.8** Growth of Fixed Investment (at constant prices; % per annum)

	1985	1986	1987	1988	1989	1990	1991
<b>Korea</b>							
Total fixed investment	4.7	12.0	16.5	13.4	16.9	24.0	11.9
Construction	4.9	3.1	14.0	13.8	18.5	29.1	11.2
Facility	4.5	23.9	19.4	13.0	15.2	18.4	12.8
<b>Taiwan</b>							
Total fixed investment	-5.8	10.1	18.6	14.6	15.3	7.7	9.3
Construction	3.6	7.5	12.3	13.2	10.0	7.5	9.4
Facility	-13.8	12.9	24.6	15.8	19.8	7.8	9.1
<b>Japan</b>							
Total fixed investment	5.3	4.8	9.6	11.9	8.9	—	—
Construction	1.5	4.2	9.1	8.5	4.2	—	—
Facility	11.6	5.6	10.2	16.8	15.3	—	—

Sources: *National Accounts* (Seoul: Bank of Korea, 1991); *Quarterly National Economic Trends* (Taipei: Directorate-General of Budget, Account and Statistics, February 1992); *Annual Report on National Accounts*, (Tokyo: Economic Planning Agency, 1991).

providing more housing, the government was allegedly attempting to stabilize housing prices. The government also attempted to increase facility investments to expedite structural adjustment and enhance export competitiveness.

The result was rapid growth in both fixed investment, which increased by 24 percent in 1990, and construction investment, which rose by 29 percent in the same year. The rapid rise in construction investment along with real appreciation spurred rapid growth in the production of nontraded goods. This high-growth policy, which was induced by large increases in investment, will lead to a current account deterioration unless it is completely offset by a rise in savings caused by temporary increases in income.

The rapid growth of construction investment in Korea cannot be attributed solely to the government plan for the new cities. The skyrocketing of housing prices would certainly have led to such high growth in construction investment that the role of assets markets in external adjustment would be strengthened. However, since the skyrocketing of housing prices in Taiwan and Japan led to relatively moderate growth in construction investment compared with Korea, the authorities seemed to have played a crucial role in boosting construction investment in Korea.

### 3.4 Exchange Rates, Assets Markets, and Current Account

In the foregoing, we emphasized the role of exchange rates in external adjustment. Besides the conventional Keynesian income-expenditure mechanism, the effects of real exchange rates on trade flows and of real interest rates on savings and investment are important in external adjustment. If frequent changes in domestic demand and relative prices lead to temporary changes in

real growth, this does not change the permanent portion of consumption, so that savings out of increases in income also change frequently.

In addition to the above-mentioned mechanism in external adjustment, similar experiences in the assets markets of Japan, Taiwan, and Korea—for example, the skyrocketing of land and stock prices after 1985—have drawn attention to the role of assets markets and wealth in external adjustment. Table 3.9 shows the movement of land and stock prices in the 1980s. In Korea, stock prices soared almost fivefold during 1985–91, but had risen only 30 percent during 1980–85. Land prices almost tripled during 1985–91, but had risen approximately 60 percent during 1980–85. Japan and Taiwan also witnessed sharp increases in land and stock prices in the second half of the 1980s.

### 3.4.1 Why Did Land Prices Soar?

There have been different interpretations regarding the recent rise in land and stock prices. Frankel (1991a) attempted to explain high Japanese land and stock prices on the basis of the fundamentals valuation equation. According to this equation, ruling out the possibility of a speculative bubble, the price of land should equal the present discounted value of future rents. If rents are expected to grow at rate  $g$ , which may be close to the GNP growth rate, then the price/rental ratio should be:

**Table 3.9** Increases in Land and Stock Prices<sup>a</sup> (% per annum)

	Land Prices Nation-wide		Stock Prices		
	Korea	Japan <sup>b</sup>	Korea	Japan <sup>c</sup>	Taiwan
1980	11.7	19.3	-9.8	5.4	-2.4
1981	7.5	14.2	16.1	16.5	0.3
1982	5.4	7.0	-3.4	-0.7	-13.0
1983	18.5	2.9	4.7	18.1	37.1
1984	13.2	4.3	3.3	26.0	33.3
1985	7.0	8.2	5.3	22.3	-14.5
1986	7.3	25.8	64.0	32.7	26.7
1987	14.7	33.8	83.3	48.3	126.0
1988	27.5	10.1	66.0	8.7	143.7
1989	32.0	15.8	32.5	20.4	65.6
1990	20.6	—	-18.7	-15.2	-21.4
1991	12.8	—	-11.9	-15.4	-27.3

Sources: *Land Price Statistics* (Seoul: Ministry of Construction, December 1991); *Annual Report on National Accounts* (Tokyo: Economic Planning Agency, 1991); *Principal Economic Indicators* (Seoul: Bank of Korea, various issues); *Economic Statistics Monthly* (Tokyo: Bank of Japan, March 1992); *Financial Statistics Monthly* (Taipei: Central Bank of China, March 1992).

<sup>a</sup>Annual average.

<sup>b</sup>Value of land.

<sup>c</sup>Tokyo stock price index compiled by Tokyo Stock Exchange.

$$(1) \quad \text{price of land/rent} = \frac{1}{r - g},$$

where  $r$  is real interest rates. According to this formula, a small percentage change in real interest rates or the rental growth rate can explain sharp changes in the price of land or the land price/rental ratio. However, as Frankel (1991a) admits, the fundamentals valuation equation does not seem to explain the recent rise in Japanese land prices, since expectations of future economic growth are lower and real interest rates are higher than before.

A number of authors point out the possibility of a speculative bubble in the second half of the 1980s. The Japanese economic boom together with the appreciation of the yen was popularly called the "bubble economy." It is possible that the short-term movements of land and stock prices exhibited the properties of a speculative bubble when financial markets were characterized by saddle-path stability. However, adjustments along the saddle path must be distinguished from a speculative bubble, because the former converges into a steady state. To make the bubble story more convincing, one must explain not only short-term movements, but also medium- to long-term movements in land prices. As yet, there seems to be no good model which explains how a speculative bubble gets started and why it collapses.

The more popular view is, as Dekle (1991) points out in his comments on Frankel (1991a), that excess Japanese liquidity raised land and stock prices. The excess liquidity was created by Japan's loose monetary policy intended to prop up the dollar, while the increased exchange rate risk limited capital outflows from Japan. The excess liquidity flowed into the real estate and stock markets, bidding up the prices of these assets.

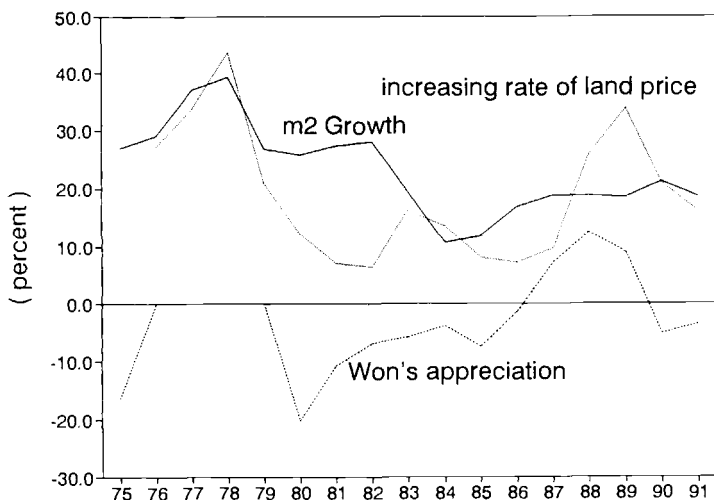
This explanation for soaring land prices which emphasizes excess liquidity and the public's portfolio choices might even hold for Korea and Taiwan. However, the exchange rate could directly affect land prices in these countries, as liquidity changes cannot account for changes in the exchange rate under the managed float system and capital immobility. Figure 3.8 clearly shows that land price movements are closely related to both money growth and currency appreciation in Korea.

In the following, we construct a simple model for Korea's land prices and current account in the framework of a two-sector general equilibrium portfolio balance model. The roles of both excess liquidity and the exchange rate are highlighted in this model.

### 3.4.2 A Model for Korea's Land Prices and Current Account

We present a very simple model for Korea's land prices and current account that captures the linkages between assets markets and the real sector. For the sake of simplicity, the model assumes full employment, a fixed exchange rate, purchasing power parity, rational expectations, and only two assets of domestic money and real estate.

The real exchange rate ( $q$ ) is defined by the relative price of tradable goods



**Fig. 3.8 Money ( $M_2$ ) growth, currency (won) appreciation, and rate of land price change in Korea, 1976–91**

Sources: *Monthly Bulletin* (Seoul: Bank of Korea, various issues); *Land Price Statistics* (Seoul: Ministry of Construction, various issues); *International Financial Statistics* (Washington, D.C.: IMF, April 1992).

Note: Nationwide land prices are used. The won's appreciation refers to its appreciation vis-à-vis the U.S. dollar.

( $EP^{T^*}$ , for  $E$  the nominal exchange rate and  $P^{T^*}$  the foreign currency price of traded goods) and home (nontradable) goods ( $P^H$ ):

$$(2) \quad q = \frac{EP^{T^*}}{P^H}$$

The production ( $Y$ ) and demand ( $C$ ) functions for both goods are specified as functions of the real exchange rate ( $q$ ) and real wealth ( $a$ ):

$$(3) \quad Y^T = Y^T(q), Y^T_q > 0; Y^H = Y^H(q), Y^H_q < 0,$$

$$(4) \quad C^T = C^T(q, a), C^T_q < 0, C^T_a > 0; C^H = C^H(q, a); C^H_q > 0, C^H_a > 0,$$

where a subscript denotes differentiation with respect to that variable.

The real wealth of the public, measured in units of tradable goods, is composed of domestic money ( $M$ ) and real estate ( $Z$ ), whose physical stock is fixed and whose price is denoted as  $P^Z$ .

$$(5) \quad a = \frac{1}{EP^{T^*}}(M + P^ZZ).$$

Equilibrium in the market for home goods ( $Y^H = C^H$ ) requires a negative relation between the real wealth of the public and the real exchange rate:

$$(6) \quad a = V(q), V_q < 0.$$



It is assumed that the domestic money stock changes only with changes in international reserves, which in turn adjust to the current account under the current Korean practice of concentrating foreign exchange in the vaults of the central bank.

$$(7) \quad \dot{M} = EP^{T^*}(Y^T - C^T) = EP^{T^*}f(a), f_a < 0.$$

The demand for each asset depends on the expected relative rates of return on the two assets. Thus, when  $E$  is fixed,

$$(8) \quad \dot{\rho} = \rho L\left(\frac{m}{\rho Z}\right), L' < 0,$$

where  $\rho = P^*/E$  and  $m = M/E$ .

The system can be represented by a set of state variables  $m$  and  $\rho$ . Figure 3.9 illustrates the phase diagram for two state variables of real balances and a real estate (hereafter referred to as land) premium. When  $\dot{m} = 0$ , equation (7) determines the unique steady-state value of real wealth at  $\bar{a}$ . We know from (5) that  $P^{T^*}\bar{a} = m + \rho Z$ . Thus, the  $\dot{m} = 0$  locus is downward-sloping. The  $\dot{\rho} = 0$  locus should be upward-sloping from (8). Therefore, the saddle path is also upward-sloping in figure 3.9.

### 3.4.3 Impact of Yen Appreciation, Won Appreciation, and Excess Liquidity

We now consider the impact of changes in liquidity and exchange rates on land prices (more exactly, premiums on the land price) and wealth, which in turn influence savings and the current account.

The yen's appreciation brings about an increase in  $P^{T^*}$ , which represents the price of foreign goods in dollars. With an increase in  $P^{T^*}$  the  $\dot{m} = 0$  locus shifts upward in figure 3.9. The land price premium jumps immediately to point B on the new saddle path. As the economy moves toward the new steady state along the saddle path, the land price premium continues to increase and the real balance increases as the current account improves with the yen's appreciation. The land price premium undershoots the steady-state level.

Next consider the appreciation of the won, whose exchange rate vis-à-vis the U.S. dollar was assumed to be fixed. The real balance increases when the won appreciates. The land price premium jumps immediately to point C and then returns to the initial steady-state level, because the steady-state equilibrium is not affected by the won's appreciation. The land price premium overshoots the steady-state level. The real balance declines with the worsening in the current account, as the economy moves along the saddle path.

The impact of won appreciation following yen appreciation that has actually been observed in previous years might be a combination of the two effects mentioned above. When the yen appreciates, Korea's current account improves with rising land prices. However, as yen appreciation is followed by won appreciation, land prices shoot up even further. The consequent increases in the real value of wealth along with real appreciation worsen the current account.

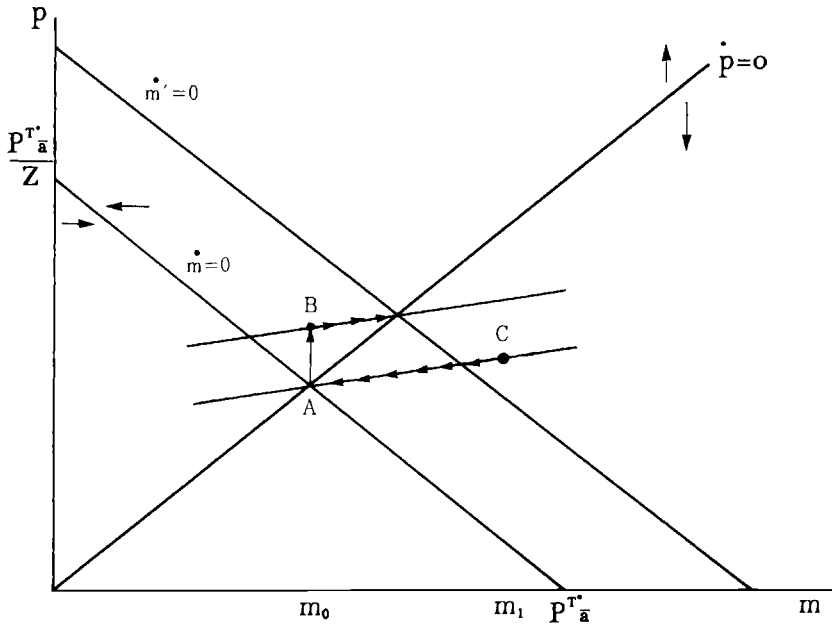


Fig. 3.9 Impact of yen appreciation, won appreciation, and excess liquidity

Short-term movements in land prices characterized by overshooting may look like a speculative bubble, but this overshooting phenomenon of land prices must be distinguished from a speculative bubble since the steady-state equilibrium is not affected.<sup>5</sup>

We can also explain why excess liquidity bids up land prices. In figure 3.9, the impact of the exogenous once-and-for-all increases in money is the same as that of won appreciation. The exogenous increases in domestic money stem from budget deficits, increased private-sector financing, or deterred capital outflows due to exchange rate risk. As we endogenize these money growth mechanisms, we can derive deeper implications. However, we do not elaborate on these various money supply processes.<sup>6</sup>

### 3.5 The Conventional Econometrics of Korea's Trade Balance

In this section, we offer the "conventional" econometric analysis of exports and imports, which focuses on the role of income and relative prices. Conven-

5. Kim and Suh (1991) detected a growing rational bubble in land prices both in Korea and Japan. However, they only address the question of whether speculation causes the actual price to deviate from a *given* long-run equilibrium price.

6. Park (1992) contains a discussion of the relationship between the exchange rate premium and inflation in dual exchange markets under various money supply processes, which could be extended to our analyses on land prices.

tionally, equations for export and import volume include in the right-hand side foreign and domestic income variables with no lag and a relative price variable with ad hoc lags. There may be caveats about the estimated coefficients for income and price elasticities since the demand and supply sides are not modeled simultaneously (Riedel 1988). Nevertheless, many authors point out that the large estimated income elasticities in the demand equations may reflect supply-side phenomena (Krugman 1989; Muscatelli, Srinivasan, and Vines 1990). These conventional demand equations have displayed accurate forecasting performance and successfully tracked the impact of exchange rates on the trade balance (Krugman and Baldwin 1987).

The equations for export and import volume are estimated from 1973:1 to 1985:4 and then tested for a structural break after 1985:4. The equation for export price is also estimated to examine Korean exporters' pricing to market. Tables 3.10 and 3.11 report the estimation results. The income elasticity of real exports and of real nonoil imports are 2.5 and 1, respectively. The price elasticity of real exports is estimated at 0.3 in the short run (in one quarter) and 2.1 in the long run (within two years). The price elasticity of real nonoil imports is 0.4 in the short run, adding up to 1 within one year. The estimation result for

**Table 3.10** Determinants of Export and Nonoil Import Volume in Korea<sup>a</sup>

	Export Volume	Nonoil Import Volume
Income <sup>b</sup>	2.52 (5.43)	0.97 (11.03)
Real exchange rate <sup>c</sup> (sum of lags)	2.10	-0.98
Lags: 0	0.34 (2.43)	-0.41 (-3.37)
1	0.34 (3.11)	-0.28 (-6.14)
2	0.34 (3.27)	-0.17 (-3.56)
3	0.31 (3.01)	-0.09 (-1.40)
4	0.29 (2.68)	-0.03 (-0.64)
5	0.23 (2.40)	
6	0.17 (2.18)	
7	0.09 (2.02)	
$\bar{R}^2$	0.99	0.96
D-W	2.02	1.48
$\rho$	0.86 (17.15)	

Note: Figures in parentheses are *t*-values.

<sup>a</sup>The equations are estimated in logarithmic form for 1973:1–1985:4 using second-degree polynomial distributed lags (PDL), far restrictions. The Cochrane-Orcutt procedures are applied when necessary. Constant and seasonal dummies are included but not reported.

<sup>b</sup>1985 trade-weighted real GNP of the United States, Japan, Germany, and the United Kingdom for the export equation and nonagricultural real GNP for import equation.

<sup>c</sup>1985 trade-weighted WPI of four countries in dollar terms/export unit price in dollar terms for export equation and nonoil import price in won/CPI for import equation.

**Table 3.11** Determinants of Export Prices in Korea<sup>a</sup>

	Export Unit Price (\$)
Manufacturing wages	0.23 ( 6.67)
Won's exchange rate with dollar	-0.34 (-7.13)
Import unit price (\$)	0.47 ( 6.10)
$\bar{R}^2$	0.99
D-W	1.49
$\rho$	0.76 ( 6.03)

Note: Figures in parentheses are *t*-values.

<sup>a</sup>The equation is estimated in logarithmic form for 1973:1-1985:4 using second-degree PDL, far restrictions. The Cochrane-Orcutt procedures are applied when necessary. Constant and seasonal dummies are included but not reported.

the export price equation shows that the aggregate pass-through rate of exchange rate changes is 34 percent in Korea.

These tables suggest several interesting points. First, in Korea, income elasticity turns out to be quite high for exports and relatively low for imports. This confirms the theory that fast-growing countries show high income elasticities of demand for their exports, while showing low income elasticities of demand for imports.<sup>7</sup> The high income elasticity of exports implies that U.S. budget cuts and the consequent decline in U.S. growth will directly affect Korea's exports and real growth, although the simple Mundell-Fleming transmission channel will not work because of capital controls, the weak response of savings to real interest rates, and the mild response of exports to the real exchange rate.

Second, the price elasticity of exports and imports is not low compared with U.S. and Japanese figures, although the estimated value of price elasticity depends on how the real exchange rate is defined. The long-run price elasticities of 2 and 1 for exports and imports, respectively, are actually higher than the U.S. and Japanese figures reported in Krugman and Baldwin (1987) and Krugman (1991) for the United States, and Ueda (1988) for Japan. This implies that external competitiveness or the real exchange rate is important to Korea's trade and resource allocation.

Finally, Korean exporters pass only 34 percent of exchange rate changes through to the dollar price of exports and only 23 percent of wage changes. The pass-through rate of Korea's major competitors in the U.S. market was estimated to be 60 percent with the presence of a two-year lag (Mann 1986).<sup>8</sup>

7. According to Ueda (1988), Japanese income elasticities for exports and imports are much the same as those in Korea. Krugman and Baldwin (1987) shows that U.S. income elasticity for exports is as high as 2.5, while that for imports is even higher at approximately 2.8. The more or less standard view is that U.S. income elasticity for exports is 1.2 and for imports is 1.8 (Krugman 1991).

8. Other experiments using a more broadly based exchange rate measure and bilateral trade weights produced a long-run pass-through estimate of around 90 percent.

**Table 3.12 Likelihood Ratio Tests for Structural Break at 1985:4**

	Export Volume	Import Volume <sup>a</sup>		Export Unit Price
		CPI	WPI	
Likelihood Ratio	15.72*	6.99	13.82 <sup>b</sup>	20.51**

<sup>a</sup>Real exchange rate in import equation is defined as import unit price in won currency divided by the CPI and WPI, as labeled.

<sup>b</sup>Significance level is 5.5 percent. Thus the hypothesis of no structural break is almost rejected at the 5 percent significance level.

\*Hypothesis of no structural break is rejected at the 5 percent significance level.

\*\*Hypothesis of no structural break is rejected at the 1 percent significance level.

Profit margins of foreign firms fall below normal levels as the dollar depreciates and rise above normal levels as it appreciates. To maintain competitiveness in foreign markets, Korean exporters must adjust profit margins more than foreign competitors do.

We now turn to the question of whether Korea's export and import behavior and exchange rate pass-through relationships may have changed after the Plaza Agreement of September 1985. Table 3.12 shows the test for a structural break between the periods 1973:1–1985:4 and 1986:1–1991:4.<sup>9</sup> The hypothesis of no structural break is rejected at the 1 percent significance level in the case of export prices and rejected at the 5 percent significance level in the case of export volume. Interestingly enough, the test results for import behavior turn out to be very sensitive to the choice of domestic price index between CPI and WPI. During the pre-1985 period, the choice between the two price indexes was not important, as both equations tracked the actual performances very well. During the post-1985 period, the tracking ability of the import equation, which includes the WPI, declined markedly. If the CPI is used, however, the hypothesis of no structural break in import behavior is accepted quite well.

Many people in Korea contend that the rapid expansion in imports after 1988 stems from such structural changes as accelerated import liberalization, as evidenced by the sharp increase in consumer goods imports and the greater propensity to import out of increases in income. However, it is very important to note that the simple structural break test does not support such a contention. If we consider the rapid rise in the CPI relative to the WPI in the post-1985 era, the rapid expansion of imports in recent years could be well explained by the import volume equation, which stresses the effects of income expansion

9. The break point at the last quarter of 1985 has been chosen somewhat arbitrarily. We obtained similar results when we chose 1985:3 or 1986:1 as the break point. However, we could not let the data alone determine the break point, because developing countries generally suffered from structural instabilities. Indeed, the break point of each equation was found well before 1985:4, without any relationship to the Plaza Agreement of September 1985.

and real appreciation rather than import liberalization and other structural changes after 1986.

Do the structural breaks in Korea's exports and pricing-to-market behavior imply that Korean firms priced to market more frequently in the post-1985 period than before in order to retain their market position abroad? The answer is no. The out-of-sample static forecasts over the post-1985 period traced remarkably well the actual numbers of export volume and export unit price. Quite contrary to expectations, even the out-of-sample dynamic forecasts underpredicted actual performances.

### **3.6 Concluding Remarks and Prospects**

This paper showed that huge swings in Korea's current account in the post-1985 period could be explained by macroeconomic adjustments rather than microeconomic policy. The conventional adjustment policy of both expenditure-expanding and expenditure-switching did work well in Korea, as Krugman (1991) argued they did for the G-3 countries. Korea's responses to external surpluses, such as investment policy and other domestic demand-expanding policies combined with exchange rate policy, worked remarkably well to reduce the external surplus and finally led to a large deficit. This paper also emphasized the role of assets markets such as the real estate and stock markets, which facilitate adjustments in the real exchange rate. The role played by assets markets supplements the conventional view of external adjustment, which emphasizes either the Keynesian income-expenditure mechanism or the roles played by interest rates and exchange rates in the Mundell-Fleming framework.

What do Korea's past experiences with external adjustment mean for the future? According to our estimates regarding the income elasticity of Korean exports (approximately 2.5), future U.S. budget cuts or sluggish world economic growth would have an enormous impact on Korea's exports. On the other hand, if G-5 growth recovers, a good case can be made for a surplus in Korea's current account aided by adopting policies to reduce domestic demand and depreciate the real exchange rate. Then the impending issue will be whether Korea has a structural surplus with high savings. The related issue will be whether Korea's current account surplus is desirable from the perspectives of welfare maximization and U.S.-Korea trade frictions. Balassa and Williamson (1990) provide some answers to this question, arguing that Korea would do better to expand investment with the current account in deficit because of its high marginal product of capital, creditworthiness, and trade frictions with the United States. In a sense, a model that can completely determine the optimal level of the current account will never exist. Recommendations for high growth are well taken, but there still remains the basic question of why high growth with a modest surplus is not desirable.

Once a current account surplus emerges, the U.S. Treasury will accuse Korea of “manipulating” its exchange rates. What the United States seems to mean by accusations of exchange rate manipulation is that Korea needs to appreciate its currency more rapidly by liberalizing its financial market. However, as Frankel (1991b) asserts, it is perfectly appropriate for a small country to seek exchange rate stability if it so desires.

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## Comment

Bih Jane Liu

This is a very informative and stimulating paper. It not only studies the different adjustment patterns of current account, real trade balance, and terms of trade among Korea, Japan, and Taiwan, but also develops a theoretical model to explain the sharp increases in land and stock prices in recent years in Korea. I learned a lot from reading this paper. To fulfill my duty as a discussant, I would like to raise some questions and also offer some comments and suggestions.

My first question is related to the study of the changes in the level of current account in this paper. Although the level of current account reflects saving and investment behavior on one hand and export and import behavior on the other and is hence an important indicator of changes in these behaviors, it may be the composition rather than the level of current account that is more crucial in



determining the dynamic impacts of current account on the domestic economy. For example, the same level of current account but a different composition may create dramatically different impacts on the domestic economy. Therefore, to study the effects of the current account without looking into the details of changes in current account composition may run the risk of missing some important information regarding structural change in the economy.

Another question, which is somewhat related to the first, stems from the authors' apparent preference for Korea to have a modest current account surplus. What is the rationale for such a preference? As pointed out by Kenen (1985) that to pursue a current account surplus may lose efficiency. Moreover, a current account surplus says only that trade in goods and services and flows in investment income contribute more to the national income at home than abroad, but it may not necessarily imply that there is an increase in domestic income. Take the trade balance of Taiwan in 1985 as an example. It increased significantly in 1985, from U.S. \$8.5 billion (U.S.) to \$10.6 billion (U.S.). This increase in trade surplus was attributed mainly to the decrease in imports, especially those of intermediate materials, capital equipment, and machinery due to the slack demand of domestic investment. Thus, 1985 was also the year that the Taiwanese government worried about the adverse effects of insufficient capital formation on economic growth.

My second observation concerns this paper's examination of the fluctuation of the current account from two perspectives, export versus import behavior and saving versus investment behavior. These two perspectives, in fact, emphasize the ability of country-specific factors to explain the adjustment patterns of the current account. If we look at figures 3.1–3.3, it seems that the adjustment patterns of current account and real balance of trade all look much the same, although the adjustment speeds are rather different for the different countries. Thus, there are really two questions worth discussing here. One main question is, Why do different countries have different adjustment speeds? Or more specifically, Why was the adjustment speed of real trade balance in Japan and Taiwan before 1989 faster than that in Korea, while the opposite trend holds after 1989? This has been discussed in this paper by using country-specific factors. The other question is, Why do these three countries exhibit such similar adjustment patterns? Some common explanatory factors might exist. As we all know, big international events in recent years—the gradual opening of mainland China and Eastern European markets, the Gulf war, the unification of East and West Germany, and the formation of a single European market—have had significant implications not only on politics but also on international trade relations and the direction of foreign direct investment. To what extent and in what way will these factors influence the adjustment pattern of current account? It seems to me that this paper is more concerned with the effects of country-specific factors than with those of common international factors. The paper would be more complete if common factors could also be taken into account.

Third, in section 3.5, the authors use the likelihood ratio to test whether Korea's export and import behavior and exchange rate pass-through relationship have a structural break between the periods 1973–85 and 1986–91. I have several questions about this test.

The first one is why this paper chooses 1985:4 as the break point. It seems that the fact that the real trade balance in Korea turned into surplus in 1985 or that the Plaza Agreement was signed in 1985 could not explain why 1985 was the year that structural change occurred. I suspect that one may probably obtain similar conclusions when choosing 1986:1 or 1985:3 as the break point. That is, instead of choosing the turning point arbitrarily, why not let the data endogenously determine the turning point? In fact, the likelihood ratio test can do this job.

The second question has something to do with the limits of the likelihood ratio test. As Quandt (1960) pointed out, the likelihood ratio test can be used to test the hypothesis that no switch occurs against the single alternative that one switch takes place. In other words, the likelihood ratio test can only test for abrupt changes and not for gradual changes. Moreover, the acceptance of the null hypothesis (i.e., no switch occurs) under the likelihood ratio test may not imply that there is no structural change at all, and the rejection of the null hypothesis may not imply that the break point studied is the only point where structural break has occurred. For these reasons, I would suggest that a CUSUM test or CUSUM square test, introduced by Brown, Durbin, and Evans (1975), may be more suitable because these tests use recursive residuals and thus allow a point-by-point analysis which enables users to see both abrupt and gradual changes. In addition, these tests can be used to investigate the approximate sample periods in which changes occur. And this can let us test whether the structural change in Korea lasted only a short time, say from 1985 to 1989, and then returned to the original pattern after 1990. Although CUSUM and CUSUM Square tests have some limitations too, these tests may give a more complete picture of export and import behavior than the likelihood ratio test does.

Last, in sections 3.4.2 and 3.4.3, this paper concluded that yen appreciation followed by won appreciation caused land prices to soar which in turn worsened the current account. Would this result also hold in the case of flexible exchange rate with or without the sterilization operation by the central bank? And to what extent may the result of this model be used to explain the sharp increase of stock and housing prices in Taiwan during 1988–90?

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## Comment Hiroo Taguchi

The paper by Koo and Park examines from various perspectives the background of the turnaround of Korea's current account balance. The Korean experience since the mid-1980s, as they describe it, seems to have much in common with that of Japan and, provided my understanding is correct, I agree with most of the authors' basic arguments.

They argue that microeconomic policy played only a relatively modest role in curtailing the current account surplus. This is also true in the Japanese case, although action to make the Japanese market more accessible to foreign exporters is very desirable and may lead to greater horizontal division of labor in the long run.

I also broadly agree with their assessment that the appreciation of the won and the yen played an important role in the adjustment process in their respective countries. In Japan's case, the appreciation of the yen after the Plaza Agreement and resultant change in relative prices worked in favor of increased imports and, with regard to industry, in favor of domestic demand-oriented industries, notably services, which is where the investment boom of the late 1980s in Japan saw its origins. This shift of resources toward domestic demand-oriented industries contributed, at least in the short run, to a decrease in the trade and current account balances. However, the long-term impact is less obvious. While investment in service industries does not directly increase export capacity, it may in the long run have a positive impact on exports by promoting the efficiency of the economy as a whole and, by stabilizing overall price levels, may assist in stabilizing wages.

Another important common feature is that the turnaround in respective current accounts stemmed from increases in overall private investment in the late 1980s. Rises in asset prices are likely to have contributed in both Korea and Japan. However, the similarity between developments in Japan and Korea seems to end there.

As I understand it, in the last several years, there has been quite a difference in the basic strategy of monetary policy in Korea and Japan. Korea, facing a decrease in export growth as a result of the appreciation of the won, relaxed monetary policy in late 1989. The official discount rate was lowered from 8 to

7 percent, and while nominal interest remained high, this was due to higher inflation, as Koo and Park rightly point out in their paper.

On the surface, this resembles the now much-criticized monetary policy action in Japan in the aftermath of the substantial appreciation of the yen. However, an important difference is that prices and wages were extremely stable in Japan at that time. Japan's year-on-year CPI inflation rate was actually negative when the Bank of Japan lowered the official discount rate (ODR) in early 1987, and it remained at around zero for quite a long time thereafter. In Korea, the corresponding figure had risen from 5.5 to 6 percent before the ODR was lowered in 1989, and it continued to rise thereafter. Referring to table 3.6, Koo and Park argue that the won's appreciation was not small if the increase in unit labor cost (ULC) is taken into account. They may be right. But I am tempted to read that table in a slightly different way: wages and ULC in Korea maintained a high tempo of increase despite the appreciation of the won. This development, at least to me, seems to have stemmed from easy monetary policy and was the fundamental reason why Korea's current account balance turned around so suddenly.

I do not intend to argue that that was wrong, since I am not able to evaluate Korea's long-term growth potential; neither am I sufficiently informed about the social and political background. The only thing I would like to say is that this reaction to the appreciation of the won resembles Japan's policy reaction to the appreciation of the yen in 1970, when Japan tried to inflate away the current account surplus, which I believe was a serious mistake.

This brings me to the normative aspects regarding current account adjustments. It was not clear, at least not to me, whether the authors believed that adjustment was necessary, or to what degree desirable. Is it not possible to argue that it would have been better for the long-term development of Korea if it had maintained the surplus and avoided accelerated inflation and responded to foreign pressure by liberalizing goods and capital markets more rigorously? Putting a related question from a different angle, in Japan's case it is often maintained, and I have certain sympathy with the view, that it is natural and desirable from a global point of view that Japan is recording current account surpluses at this moment, considering that its population is aging rapidly, a fact which will very likely lead to a considerable drop in net savings in the early twenty-first century. I think it would be very interesting to hear whether similar arguments for the desirability of maintaining a current account surplus exist in Korea and, if so, what Koo and Park's views are.

My final comments pertain to the pricing behavior of firms. In chapter 5 of this volume, which discusses the price elasticity of Korea's trade, Jwa argues that Korean exporters have to adjust profit margins more than foreign competitors do. It was, however, not clear to me why they have to do so. I would like the authors to elaborate somewhat more on this point. Moreover, since a major objective of the paper is to review the Korean experience in comparison with those of Japan and Taiwan, it would enrich the study if they compared Korea's

pricing strategy with those in Japan and Taiwan. This should be particularly interesting because industrial structure, especially of export industries, differs quite considerably among these three countries: in Korea, a small number of giant industrial groups dominate the economy, Taiwan is characterized by many small, independent firms, and Japan's industrial structure lies somewhere between.