

ASIAN CURRENCY CRISIS AND THE ROLE OF JAPAN

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I. ASIAN CURRENCY CRISIS AND ITS FEATURES

THE Asian currency crisis, which began in Thailand with the depreciation of the Thai baht in May 1997, led to the overall economic slump in East Asian economies, and is now spreading to impact on the global economy as a whole. Most East Asian economies registered substantially lower growth rates in 1998 than in the past, and recovery is expected to be slow, extending over several years. Industrial countries, especially Japan and the United States, also started to be affected through a decline in their exports to East Asia. The rates of East Asian growth for 1996 to 1998 (estimates) are shown in Table I. Particularly noteworthy are the falls in the growth rates in 1998 for the Republic of Korea, Indonesia, Thailand, and Malaysia in contrast with 1997 when most of the countries, except Thailand, enjoyed relatively high economic growth. Thailand triggered the present Asian currency crisis with the drastic fall in the Thai baht from 26 to 39 baht against the U.S. dollar between May and November in 1997. As shown in Table II, the depreciation of the currencies is predicted to range from 0 to -61.0 per cent in 1998, with stable currencies in Hong Kong, Taiwan, Singapore, and China contrasting

TABLE I
GDP GROWTH RATES FOR EAST ASIAN ECONOMIES

	1996	1997	1998
Rep. of Korea	7.1	5.5	-3.1 ^a
Taiwan	5.7	6.8	5.3 ^b
Hong Kong	5.0	5.3	-1.3 ^b
Singapore	6.9	7.8	1.2 ^b
Philippines	5.7	5.1	0 to 2.0 ^c
Indonesia	8.0	4.6	-12.0 to -15.0 ^c
Thailand	6.4	-0.4	-6.0 to -8.0 ^c
Malaysia	8.6	7.8	-2.0 to -4.0 ^c
China	9.6	8.8	7.3 ^b

^a Korea Development Institute's "Pessimistic Scenario," May 1998.

^b Consensus Economics Inc., July 1998.

^c SRIC Corporation, July 15, 1998.

TABLE II
THE RATE OF CHANGE IN EXCHANGE RATES FOR
EAST ASIAN ECONOMIES (IMF STYLE)

	(%)		
	1996	1997	1998
Rep. of Korea	-4.1	-13.3	-39.0
Taiwan	-3.6	-3.2	-12.6
Hong Kong	0.0	0.0	0.0
Singapore	0.5	-9.1	-6.0
Philippines	-2.0	-11.0	-27.5
Indonesia	-4.0	-18.8	-61.0
Thailand	-1.7	-18.0	-32.1
Malaysia	-0.5	-9.5	-18.5
China	1.2	1.2	0.0

Source: Project LINK, May 1998.

with sharp declines in Indonesia, Korea, Thailand, Malaysia, and the Philippines.

Since the currency depreciations in this region still persist, although basically halted after the agreement with the International Monetary Fund (especially for Thailand, Korea, and Indonesia), some uncertainty for overall recovery still prevails, and depends on the prospects for economic growth and currency stability in China and Japan.

The sudden emergence and rapid diffusion of the present Asian currency crisis since May 1997 can be attributed to several factors (Adams 1998; Klein 1998; Komine 1998)

Firstly, it is commonly pointed out that excessive accumulation of short-term foreign capital based on growing optimism and the resultant asset price bubble in stock and real estate markets led to a sudden crash of asset prices and a massive flight of foreign capital once speculators began to realize that prices were far above stable values.

Secondly, the above optimism on growth and higher profits were partly accounted for by the dollar-peg policy maintained in most East Asian countries, though the rigidity of the peg varied from country to country. Because of the concern over the rise in debt after currency devaluation, most East Asian countries have tended to stick to their dollar-peg policy, leading to a widening gap between the real and nominal values of their currencies. The export-oriented growth of East Asian countries in the 1980s has already leveled off due to the significant devaluation of the Chinese yuan in 1994 and the gradual fall of the Japanese yen since 1996 against the U.S. dollar.

Another factor contributing to the excessive optimism of foreign speculators was the inflow of foreign direct investment (FDI), especially into ASEAN nations, from Japan and other industrial nations, as well as capital flowing in from Taiwan, Hong Kong, and Singapore. Since FDI tends to aggravate current account balances, espe-

TABLE III
CHANGES IN FOREIGN DIRECT INVESTMENT FOR EAST ASIAN ECONOMIES

	(% compared to previous year)					
	1992	1993	1994	1995	1996	1997
Rep. of Korea	-35.9	16.7	26.1	47.5	65.0	117.6
Taiwan	-17.8	-16.9	34.4	79.4	-15.9	73.4
Hong Kong	8.9	9.9	7.5	9.9	5.3	—
Singapore	17.8	17.2	44.1	20.8	18.4	-1.8
Philippines	-63.5	83.1	356.2	-21.2	-48.3	106.1
Indonesia	17.6	-21.1	191.3	68.2	-25.0	13.0
Thailand	100.9	-57.2	37.1	180.7	-20.4	-19.1
Malaysia	12.5	-65.0	76.9	-15.5	86.5	-41.0
China	151.9	150.0	22.7	11.1	12.9	7.0

Source: Japan, EPA (1998, p.18).

cially through the increase in imports, growing current account deficits due to negative factors, such as the weakening of competitiveness due to higher real exchange rates or overinvestment in nonproductive sectors (such as Korea's foreign investment abroad based on short-term foreign capital) were masked by an optimistic "FDI myth" which, however, had already been leveling off since the early 1990s, as shown in Table III. The falling tendency of the current account can be partly accounted for by Japan's recession since 1992, and the yen's gradual decline since 1996 (standing at 145 yen to the dollar in August 1998, the lowest since 1990).

Thirdly, often pointed out is the fragility of the financial systems, especially in the East Asian countries with the greatest currency falls such as Thailand, Indonesia, and Korea. This weakness in the financial systems, which had been protected by the dollar-peg system, resulted in an excessive fall under the pressure of foreign speculators once they began to lose confidence in the financial system of the economy. In accordance with IMF proposals, structural reforms are under way in the above three nations and similar moves can also be seen in other East Asian countries. With the growing trend of globalization in financial markets, the prospect of economic recovery from the current financial crisis will depend greatly on their efforts to strengthen their financial systems while keeping their markets open to world trade.

In sum, the Asian currency crisis observed so far has much resemblance to the Mexican and other Latin American currency crises with their bubbles in asset prices, dependence on foreign capital (whether short- or long-term), and a significant amount of capital flight after the collapse of the bubble and sudden drop in exchange rates. However, there are also fundamental differences between East Asia and Latin America in terms of the consumption and savings behavior of the people, and fiscal discipline of the governments. The foreign debt-export ratios in Latin America in 1982 and East Asia in 1996 are compared below.

	Mexico	Brazil	Chile	Thailand	Indonesia	Korea
1982	311.5	392.8	335.9	129.7	124.6	178.8
1986	196.5	294.4	183.7	87.4	232.2	53.4
1996	136.4	293.2	141.3	120.5	221.4	87.8

Source: Japan, EPA (1998); originally World Bank and OECD data.

These differences can be regarded as a favorable factor in East Asia for faster economic recovery after the present currency crisis, although this will depend on the degree of currency devaluations and negative asset impact, and the ability of social and political systems to endure the restructuring period.

II. SCENARIOS OF RECOVERY AND THE ROLE OF JAPAN

A. *The Model*

In order to evaluate the losses caused by the East Asian currency crisis and explore the possibility of economic recovery, a global econometric multi-sectoral model was used for alternative scenario analysis. This model, termed the EITF,¹ covers thirty-six nations and regions with thirty-five sectoral variables for output, imports and exports, investment, employment, and prices; up to now disaggregated models have been completed for each of the industrial countries (G7) and nine Asian countries (A9) as shown in Tables I and II. For the remaining countries and regions, a national model has not yet been disaggregated, but imports and exports are disaggregated into the same sectoral divisions so as to enable consistent sectoral trade analysis on a global basis. Exchange rates are endogenized for all industrial countries, except for the United States, but they are treated as exogenous variables for other countries and regions. Fiscal and monetary policy variables and foreign direct investment are made exogenous to enable the assessment of the impact of those policy variables.²

The theoretical framework of the model was discussed in a joint paper presented at the 1996 LINK meeting in Lausanne (Adams et al. 1996). As reported in the paper, the model has a flexible system, and it can also be used as a submodel of the NIRA-LINK model which has many more disaggregated sectors for output,

¹ The model is called EITF after the names of four institutions engaged in the modeling: the Economic Research Institute for Northeast Asia (ERINA), the International University of Japan (IUJ), the University of Tsukuba, and the Foundation for Advancement of International Science (FAIS).

² The EITF model is composed of two blocks: national model block and world trade block. The two blocks are integrated within a system of world economy where the flows of sectoral output and external trade are linked with each other in the framework of international Leontief input-output system. As a dual of this system, producers' and factor prices of each country are also interrelated internationally, including real exchange rates which are explained by purchasing power parity (PPP), saving-investment balance, and interest rate differential. For non-Asian developing economies, the I-O type disaggregation is to be conducted in the near future. For details, see the report of Japan Industrial Policy Research Institute (Shishido et al. 1996).

employment, capital stock, and imports and exports (some sixty to eighty sectors) for the United States and Japan, with seventy-five member country models used to construct the main Project LINK model.

B. *Impact of the Asian Currency Crisis*

Because of the high degree of uncertainty still prevailing, we will focus our attention on only three East Asian countries: Korea, Indonesia, and Thailand. All of them requested special assistance from the IMF, and minimum amounts of loans were provided in collaboration with industrial countries including Japan.

Since there have been no empirical models explicitly analyzing in quantitative terms the causal relationship between negative asset effects and exchange rate devaluation for East Asian countries, we made a rough estimate to measure the negative impact on real domestic demand after considering the changes in real net exports due to the currency devaluation. The simulation was conducted for the period 1997 to 2005. We tentatively used the assumptions of the Project LINK meeting in June 1998 for the exchange rate changes and GDP growth rates of the three analyzed East Asian countries. After these assumptions were compared with normal growth trend values, the differences were installed as parameters for the sensitivity analysis of the currency crisis. In other words, these negative asset effects, calibrated against actual values, including loss in liquidity due to sudden capital flight and increase in debt burden due to currency devaluation, were installed as parameters of private consumption and gross investment. The global results of this

TABLE IV
IMPACT OF THE EAST ASIAN CURRENCY CRISIS ON MAJOR ECONOMIES
IN TERMS OF PER CENT DEVIATION OF REAL GDP FROM BASELINE

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Japan	0.00	-0.07	-0.15	-0.17	-0.24	-0.30	-0.44	-0.42	-0.52
U.S.A.	-0.02	-0.19	-0.30	-0.33	-0.30	-0.49	-0.11	-0.03	-0.07
Canada	-0.03	-0.24	-0.35	-0.45	-0.53	-0.63	-0.73	-0.70	-0.76
U.K.	-0.02	-0.24	-0.58	-0.92	-1.11	-1.22	-1.25	-1.15	-1.01
France	-0.03	-0.13	-0.18	-0.20	-0.23	-0.32	-0.39	-0.48	-0.58
Germany	-0.03	-0.12	-0.13	-0.18	-0.22	-0.29	-0.29	-0.30	-0.34
Italy	-0.03	-0.18	-0.38	-0.36	-0.41	-0.48	-0.60	-0.72	-0.96
Rep. of Korea	-3.30	-11.13	-14.07	-12.44	-11.18	-10.99	-11.76	-12.73	-13.79
Taiwan	0.04	-0.04	-0.11	-0.21	-0.33	-0.45	-0.56	-0.59	-0.75
Hong Kong	0.06	0.14	-0.08	-0.10	-0.19	-0.22	-0.41	-0.46	-0.61
Singapore	-0.04	-0.36	-0.75	-1.11	-1.42	-1.75	-2.05	-2.20	-2.41
Philippines	-0.03	-0.17	-0.24	-0.32	-0.40	-0.48	-0.57	-0.64	-0.75
Indonesia	-2.14	-11.53	-19.58	-24.22	-27.44	-29.85	-31.59	-32.93	-34.01
Thailand	-6.81	-14.61	-20.41	-23.38	-24.88	-24.97	-25.01	-24.10	-23.37
Malaysia	0.10	0.21	-0.04	-0.27	-0.43	-0.70	-0.88	-0.95	-1.21
China	-0.03	-0.05	0.05	-0.01	-0.11	-0.11	-0.32	-0.25	-0.40

Note: Baseline assumes normal trend without currency crisis.

scenario on the three East Asian countries are presented in Table IV. For simplicity, we disregarded the financial turbulence of other East Asian countries. Because of this the results in Table IV tend to underestimate the present East Asian currency crisis.

This table should be read carefully as it represents the direct and indirect effects of export price changes and output drops due to negative asset effects that originated in the three East Asian countries. As shown in the table, these effects have tended to spread fairly uniformly regardless of the regional distances from East Asia. Japan and the United States, relatively higher than other G7 countries, showed similar negative response patterns during the time of our research. European countries showed diverse negative responses with higher negative values for the United Kingdom and Italy, but a lower negative value for Germany.

The three analyzed East Asian countries clearly show the highest negative responses which are around 15 to 30 per cent. Other East Asian countries also show fairly diverse response patterns with a relatively higher value for Malaysia and a lower value for China. The reason for China's low response is due to its relatively low dependence on external trade and larger scale of economy.

In sum, the international impact of the currency devaluations of the three East Asian countries has been significant, spreading globally with fairly strong effects on output, income, and employment.

In Figure 1 we can evaluate the impact of the crisis on major variables of the three East Asian economies, Japan, and the United States. The fall in Indonesia's GDP and exchange rate are the greatest among the three, while Korea and Thailand show similar falls in both GDP and exchange rate, although Thailand's fall started one year earlier.³ Regarding exports, Indonesia shows the highest increase, followed by Korea. Thailand, however, shows a falling trend in exports, implying that inflationary pressure caused by devaluation offset the fall in the Thai baht. The effect of price hikes is also strong in Korea, but not as high as in Thailand. Indonesian price levels have tended to fall because of greater fall in demand rather than cost-push pressure caused by currency depreciation. Regarding Japan, the Asian currency crisis led to a significant fall in Japanese exports due to a decrease in import demand from East Asia and an increase in Japan's relative export prices. The current account surplus also fell significantly while domestic consumption and investment shrank following the decline in exports. The yen, which is endogenized, also fell as a result of a decline in the current account surplus.

The United States was also affected significantly, recording a drop in GDP similar to Japan and ranging from 0.02 to 0.5 per cent. Its negative response in exports was a little weaker than in Japan, while consumer prices declined more significantly. Imports increased significantly reducing the current account surplus. This

³ Regarding Figures 1 to 4, supporting tables are available from the Economic Research Institute for Northeast Asia (ERINA) on request.

Fig. 1. Effects of the Currency Crisis on Japan, the United States, and Three East Asian Countries: Per Cent Deviation from Baseline

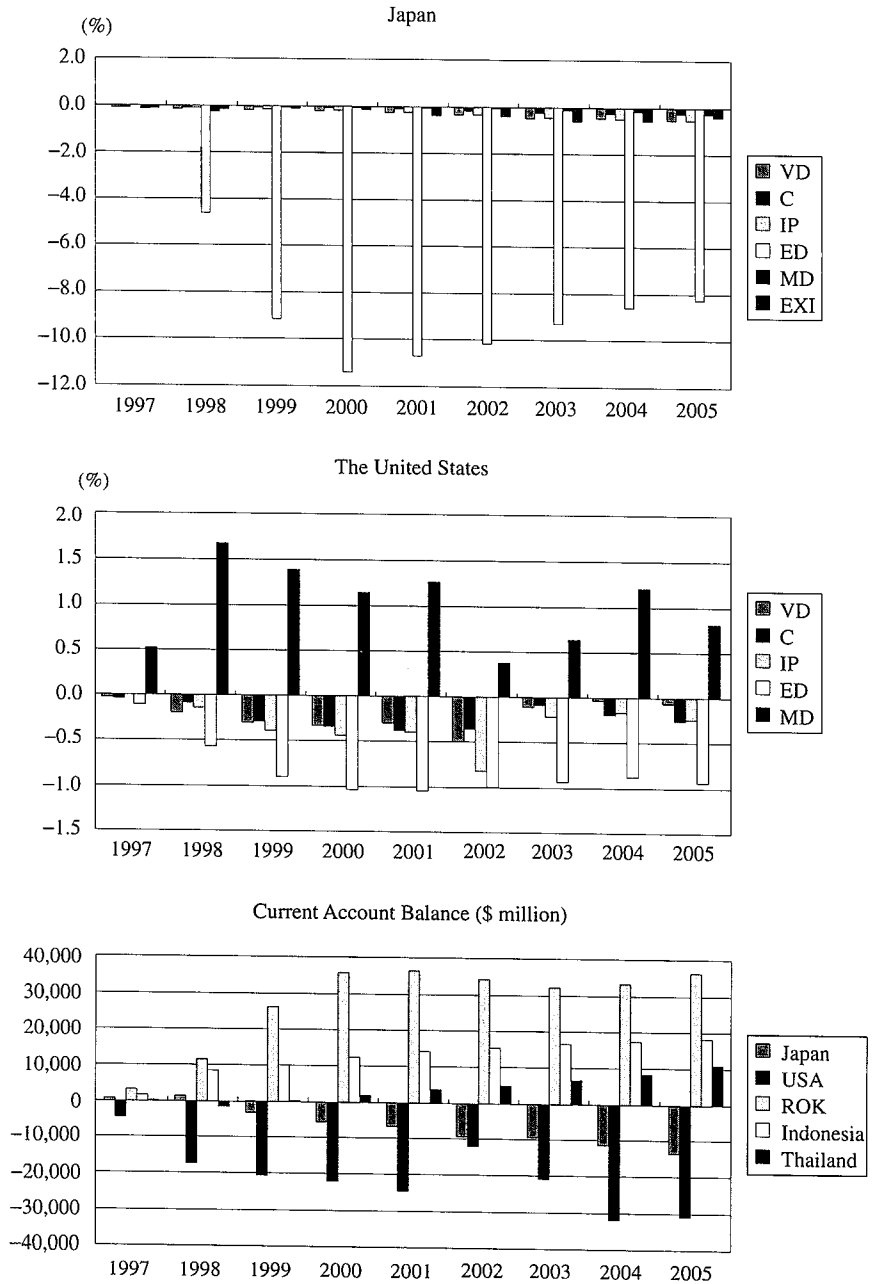
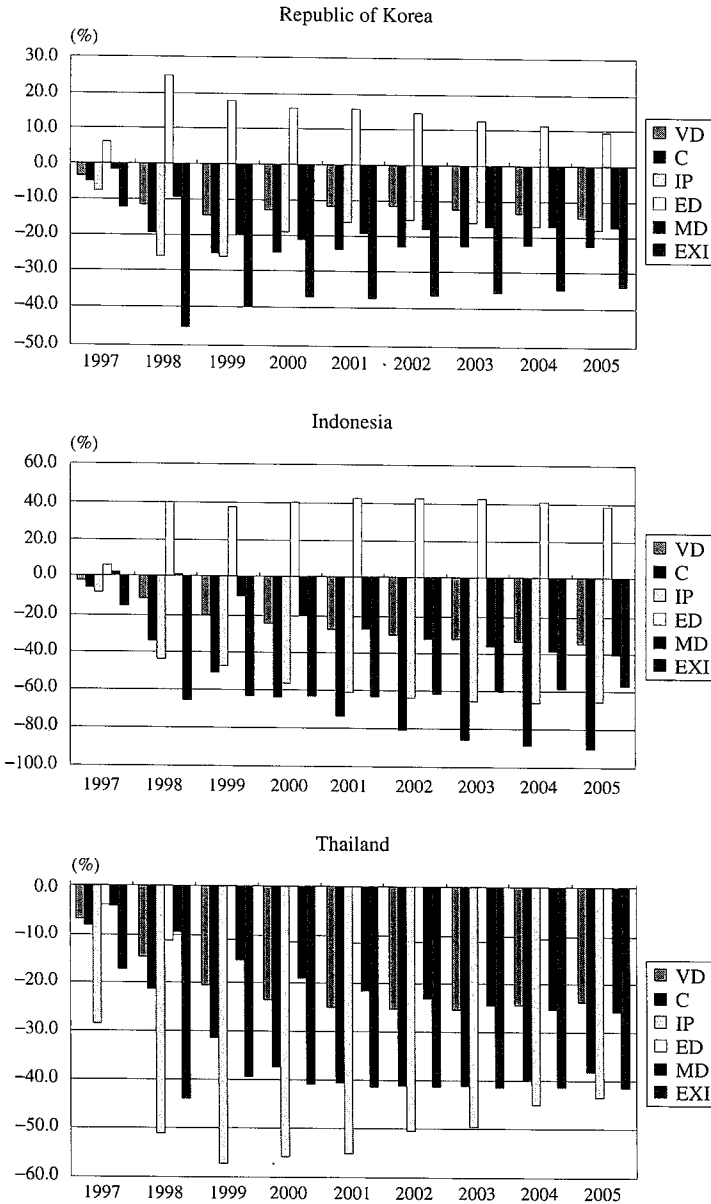


Fig. 1 (Continued)



Note: VD = real GDP; C = real private consumption; IP = real business investment; ED = real exports of goods and services; MD = real imports of goods and services; and EXI = exchange rate index (U.S.\$/local currency). ROK denotes the Republic of Korea.

response pattern is in sharp contrast to Japan where imports fell only slightly, with a significant fall in the current account surplus, mostly due to the even greater fall in exports.

C. Japan's Role

In response to the growing demand for Japan to pursue a more expansionary policy to offset the current economic slump in East Asia, our model scenarios assume the following Japanese policy packages.⁴

Case A: Increase in public investment, cut in income tax as a stimulus to consumption, and corporate tax reduction for business investment.

Case B: Along with the measures in Case A, monetary policy addressing a higher yen with an appropriate interest hike so as to reduce the trade surplus and stimulate Asian exports.

Case C: Along with the measures in Case B, an increase in official development assistance (ODA) from Japan to stimulate East Asian investment and exports through FDI.

Case A: fiscal expansion

In this scenario Japan's stimulus package includes: (a) an increase in public investment by 1.5 to 2.0 per cent of GDP, (b) an increase in private consumption by 2 to 3 trillion yen through tax cuts, and (c) an increase in business investment

TABLE V

PER CENT DEVIATION OF REAL GDP FROM CURRENCY CRISIS SCENARIO

A. Japan's Fiscal Policy Package (Case A)

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Japan	0.00	1.86	3.69	4.60	5.29	5.51	6.20	6.57	6.83
U.S.A.	0.00	0.04	0.16	0.30	0.43	0.48	0.54	0.39	0.37
Canada	0.00	0.03	0.05	0.10	0.16	0.21	0.26	0.34	0.39
U.K.	0.00	0.03	0.11	0.20	0.26	0.31	0.32	0.40	0.36
France	0.00	0.03	0.05	0.06	0.05	0.04	0.04	0.04	0.04
Germany	0.00	0.03	0.01	0.01	0.01	0.01	0.02	0.02	0.03
Italy	0.00	0.02	0.03	0.05	0.04	0.02	-0.01	-0.03	-0.08
Rep. of Korea	0.00	0.10	0.24	0.37	0.50	0.59	0.71	0.85	1.06
Taiwan	0.00	0.16	0.28	0.42	0.59	0.76	0.96	1.25	1.51
Hong Kong	0.00	0.03	0.04	0.08	0.11	0.12	0.17	0.21	0.33
Singapore	0.00	0.06	0.09	0.18	0.28	0.35	0.43	0.54	0.65
Philippines	0.00	0.01	0.02	0.03	0.03	0.04	0.06	0.08	0.11
Indonesia	0.00	0.03	0.09	0.21	0.32	0.41	0.50	0.60	0.72
Thailand	0.00	0.08	0.16	0.24	0.35	0.41	0.52	0.55	0.74
Malaysia	0.00	0.08	0.12	0.22	0.31	0.35	0.40	0.42	0.43
China	0.00	0.00	0.02	-0.07	-0.14	-0.23	-0.26	-0.35	-0.25

⁴ In our model, exchange rates are endogenized for industrial countries (G7) except the United States.

Fig. 2. Case A for Major Variables of Five Countries: Per Cent Deviations from Currency Crisis Scenario

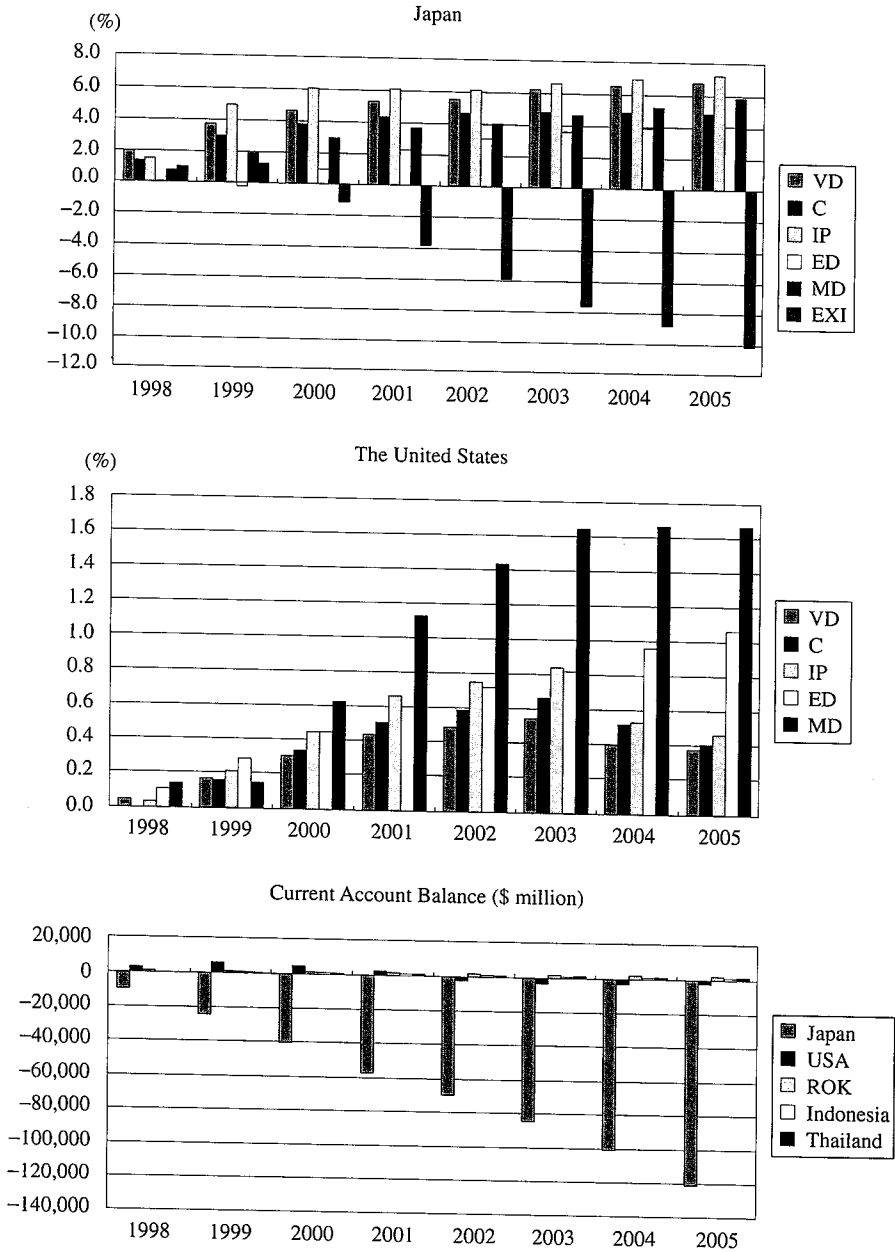
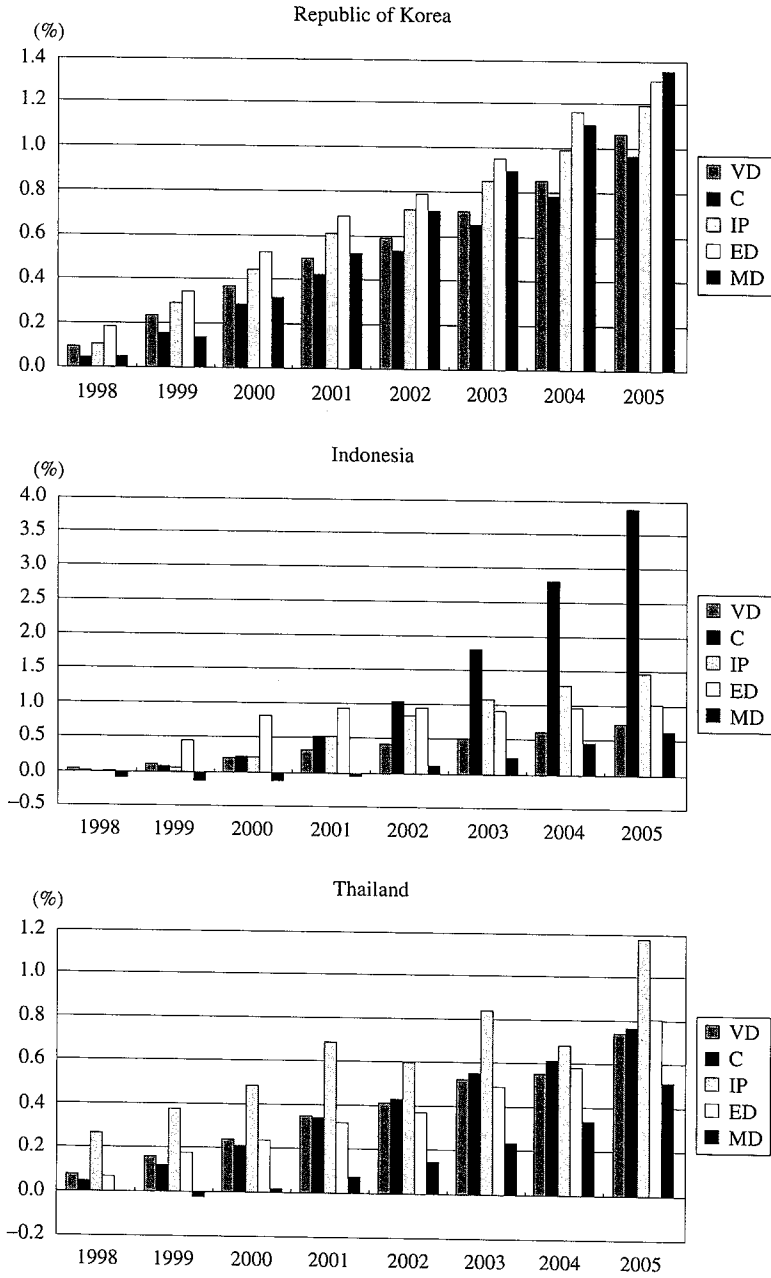


Fig. 2 (Continued)



Note: See Note to Figure 1.

by 1.5 trillion yen after 1999 through corporate tax cuts (all are in 1990 prices).

As shown in Table V-A and Figure 2, Japan's real GDP starts to accelerate by 1.9 per cent in 1998 to about 5 per cent in 2002 in terms of the deviation from the standard forecast. GDP growth rate accelerates each year by 1.9 per cent, 1.8 per cent, 0.9 per cent, 0.7 per cent, and 0.2 per cent, respectively from 1998 through 2002. This substantial stimulus package creates not only domestic demand but also GDP growth in other G7 and A9 countries. As shown in the table, the United States experiences the largest impact among the G7 with acceleration of 0.4 to 0.5 per cent. Other industrial countries generally experience much less impact.

Among Asian economies, Korea, Taiwan, Indonesia, Thailand, and Malaysia show fairly substantial increases in GDP, averaging 0.2 to 0.7 per cent. China, however, shows rather negative response, except for the first two years, mostly because of the yen's decline.

Since we assume an accommodating monetary policy, the model indicates a very slight increase in interest rates and a substantial fall in the exchange rate of the yen, which shows about a 7.0 per cent fall in 2003 though it appreciates slightly for the first two years. Since the yen's depreciation is an unwelcome by-product, especially for the countries in East Asia, we simulated another scenario (Case B) which induced the yen's appreciation.

Case B: monetary policy addressing a higher yen with an interest rate hike

In this scenario we assumed nonaccommodating fiscal policy with somewhat higher crowding-out effect on interest rates and the yen's appreciation (Mundell-Fleming effect). The discount rate of the Bank of Japan is assumed to be raised by 2 percentage points from 1998 through 2005, and the constant term parameter of

TABLE V (Continued)

B. Japan's Fiscal, Monetary, and Exchange Rate Policy Package, Addressing a Higher Yen with Interest Rate Hike (Case B)

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Japan	0.00	1.45	2.56	2.62	2.84	2.58	3.04	3.02	3.02
U.S.A.	0.00	-0.18	-0.22	-0.22	0.09	0.22	0.20	0.33	0.06
Canada	0.00	0.00	-0.02	0.04	0.16	0.29	0.49	0.57	0.59
U.K.	0.00	0.05	0.17	0.34	0.55	0.67	0.79	0.67	0.54
France	0.00	0.08	0.16	0.23	0.29	0.34	0.42	0.51	0.59
Germany	0.00	0.10	0.12	0.18	0.26	0.28	0.33	0.38	0.36
Italy	0.00	0.03	0.12	0.24	0.35	0.46	0.62	0.85	1.28
Rep. of Korea	0.00	0.06	0.20	0.50	0.85	1.12	1.38	1.56	1.77
Taiwan	0.00	0.12	0.16	0.27	0.52	0.69	0.96	1.03	1.19
Hong Kong	0.00	-0.04	-0.04	0.15	0.19	0.37	0.40	0.64	0.58
Singapore	0.00	-0.03	-0.07	0.02	0.32	0.58	0.95	1.18	1.25
Philippines	0.00	0.05	0.12	0.23	0.30	0.38	0.48	0.57	0.66
Indonesia	0.00	-0.01	-0.02	0.02	0.09	0.18	0.25	0.33	0.40
Thailand	0.00	-0.01	0.00	0.14	0.14	0.40	0.35	0.71	0.61
Malaysia	0.00	-0.06	-0.15	-0.13	0.18	0.34	0.66	0.89	1.04
China	0.00	0.38	0.73	1.37	1.18	1.74	1.48	2.13	1.73

Fig. 3. Case B: Japan, the United States, and Three East Asian Countries

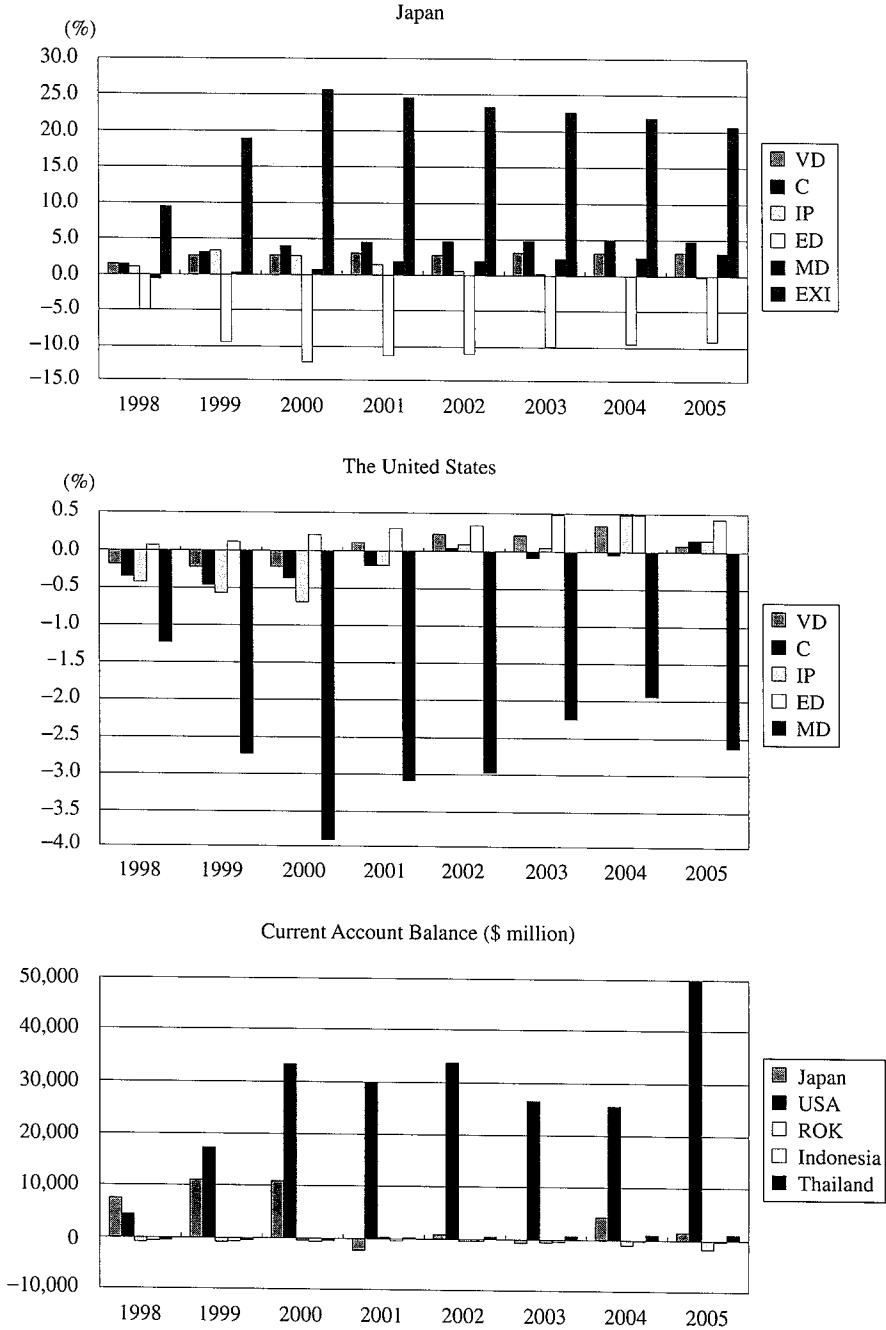
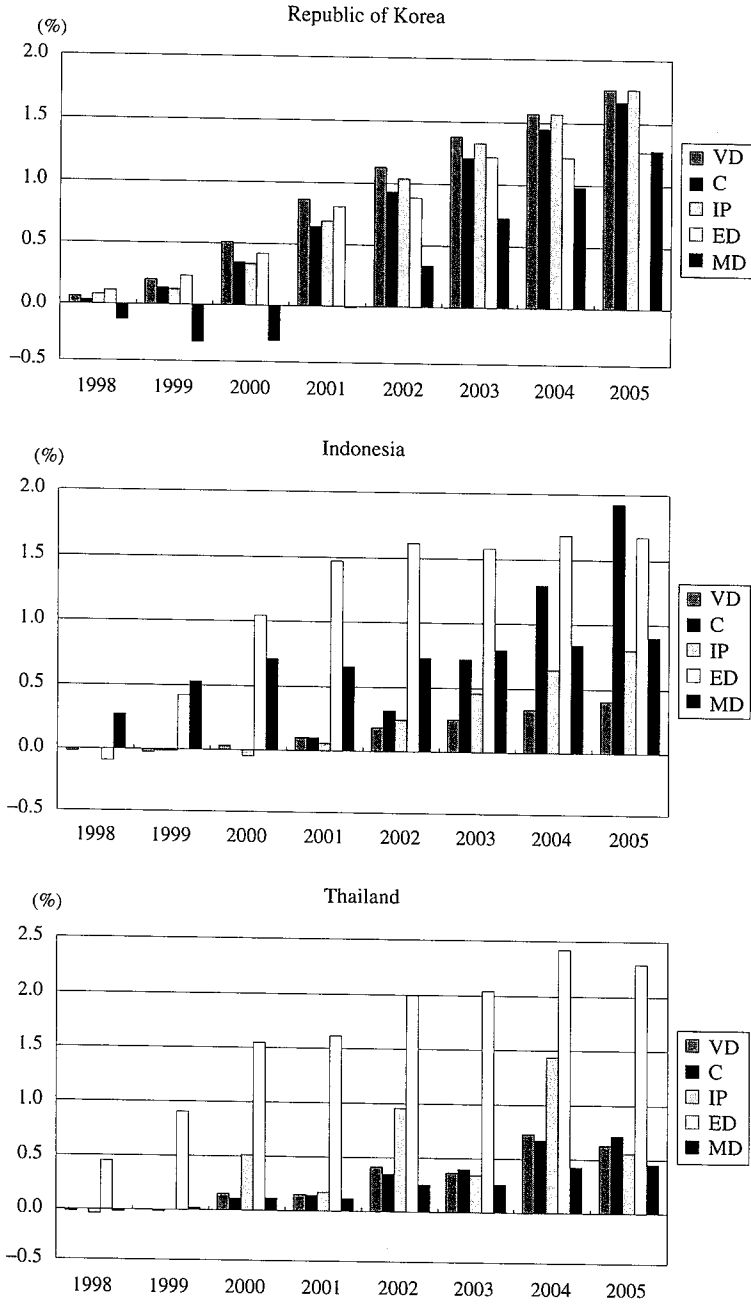


Fig. 3 (Continued)



Note: See note to Figure 1.

the exchange rate function is gradually adjusted upwardly after 1998 to around 20 per cent. This joint effect of an interest rate hike and government intervention in the exchange market results in a yen appreciation of around 25 per cent by 2005 which offsets the roughly 11 per cent devaluation of Case A in the same year.

As shown in Table V-B and Figure 3, Japan's GDP growth is reduced significantly, 2 to 3 per cent in terms of deviation from the baseline after 2000, while many European and East Asian countries tend to enjoy substantial increases, especially the United Kingdom, Germany, Korea, the Philippines, and China. The Chinese gain is particularly notable since it showed a negative impact in response to Japan's fiscal expansion in Case A. The Philippines also shows a similar response pattern with a higher positive effect in Case B compared to a modest one in Case A.

As for the three analyzed East Asian countries, Korea's positive response is quite high, next after China's, implying that both countries export a substantial amount of products in competition with Japan, while Indonesia and Thailand tend to export less competitive products. The latter two countries show rather negative responses, implying that their negative income effect due to Japan's decline in GDP is greater than their positive price effect caused by the yen's appreciation.

As shown in Figure 3, Korea shows no significant changes in its current account, while prices tend to show an inflationary trend due to the rise in import prices especially those in imports from Japan.

Indonesia's current account declines slightly because of its higher imports in current prices and lower increase in exports. The absorption deflator tends to rise due to higher import prices. These responses imply that the yen's appreciation is not a significant remedy for Indonesia, although there are significant increases in its exports and weak but positive responses in GDP.

Thailand shows a gain in the current account surplus, real exports, and GDP, although price increases are more significant than in Indonesia.

Case C: Japan's ODA and export promotion through FDI

This third scenario is a more aggressive model which includes the above fiscal and monetary policy packages. In Case C we assume much stronger direct effects of Japan's ODA on the three East Asian economies. This scenario assumes a massive increase in Japan's ODA which encourages FDI from industrial and Asian economies to expand exports due to much lower export prices. In this "comprehensive approach" of Japanese government strategy, individual aid programs are reorganized aiming at the promotion of the export-oriented FDI. If an appropriate cooperation scheme between donor countries, Asian recipient countries, and international institutions, such as the Asian Development Bank, is implemented, long-term financial assistance can be provided to the above three countries.

We tentatively assume that between 1999 and 2005 Japan extends long-term loans to the above three countries which amount to 120 billion dollars in current

prices, or 20 billion dollars annually. These long-term loans at low interest rates are aimed at encouraging both local and foreign firms to promote domestic demand and exports as experienced in East Asia after the early 1980s. Accordingly, the policy package in this scenario assumes an increase in private consumption and investment as well as a gradual increase in exports up to about 20 per cent by 2005.

Table V-C and Figure 4 indicate the results of the simulation in Case C which includes both increments of ODA and exports in addition to the policy measures in Cases A and B. In other words, Case C is the most comprehensive policy package which includes Japan's fiscal and monetary stimuli and external aid for export promotion. For Korea, however, the export promotion adjustment was not implemented because it already benefited well in Case B.

Most noticeable in Table V-C are the strong recoveries of the three Asian countries from the heavy damage of the currency crisis. This indicates the overwhelming influence of ODA on domestic and external demand creation as compared with Japan's fiscal and monetary stimuli in the previous scenarios.

Japan also benefits better than in Case B as a result of the spillover from the East Asian recovery. The United States also gains significantly during the latter half of the simulation period as a result of the increase in exports to East Asia. All other industrial economies show similar gains, most of which are higher than those of the United States.

Regarding East Asia, the targeted three East Asian countries show the highest gains, ranging from 10 to 30 per cent. Particularly noticeable is Thailand's gain in GDP after 2002 which even exceeds the GDP loss in the currency crisis shown in Figure 1. Korea and Indonesia also exhibit satisfactory recoveries in terms of GDP.

As for the other East Asian economies, gains in this scenario are generally high-

TABLE V (Continued)

C. Japan's Fiscal, Monetary, Exchange Rate, and ODA Policy Package (Case C)

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Japan	0.00	1.47	2.64	2.72	2.96	2.71	3.18	3.27	3.26
U.S.A.	0.00	-0.19	-0.42	-0.18	0.02	0.34	0.33	0.56	0.44
Canada	0.00	0.01	0.02	0.13	0.29	0.46	0.72	0.91	0.96
U.K.	0.00	0.07	0.22	0.48	0.78	0.95	1.14	1.09	0.96
France	0.00	0.09	0.18	0.27	0.34	0.41	0.51	0.65	0.79
Germany	0.00	0.10	0.12	0.21	0.27	0.32	0.37	0.45	0.46
Italy	0.00	0.05	0.14	0.29	0.42	0.55	0.76	1.09	1.63
Rep. of Korea	0.00	3.48	8.03	10.40	11.26	11.34	11.17	11.03	11.05
Taiwan	0.00	0.14	0.23	0.39	0.68	0.86	1.24	1.45	1.63
Hong Kong	0.00	-0.03	0.04	0.20	0.29	0.49	0.56	0.93	0.92
Singapore	0.00	0.04	0.10	0.39	0.83	1.24	1.74	2.21	2.40
Philippines	0.00	0.05	0.16	0.27	0.37	0.47	0.60	0.74	0.87
Indonesia	0.00	3.37	7.32	11.57	15.31	18.70	21.76	23.41	24.61
Thailand	0.00	6.02	13.90	18.41	23.17	27.49	31.66	34.64	35.88
Malaysia	0.00	-0.05	-0.13	0.10	0.46	0.72	1.12	1.58	1.87
China	0.00	0.40	0.80	1.34	1.26	1.76	1.56	2.28	1.85

Fig. 4. Case C: Japan, the United States, and Three Asian Countries

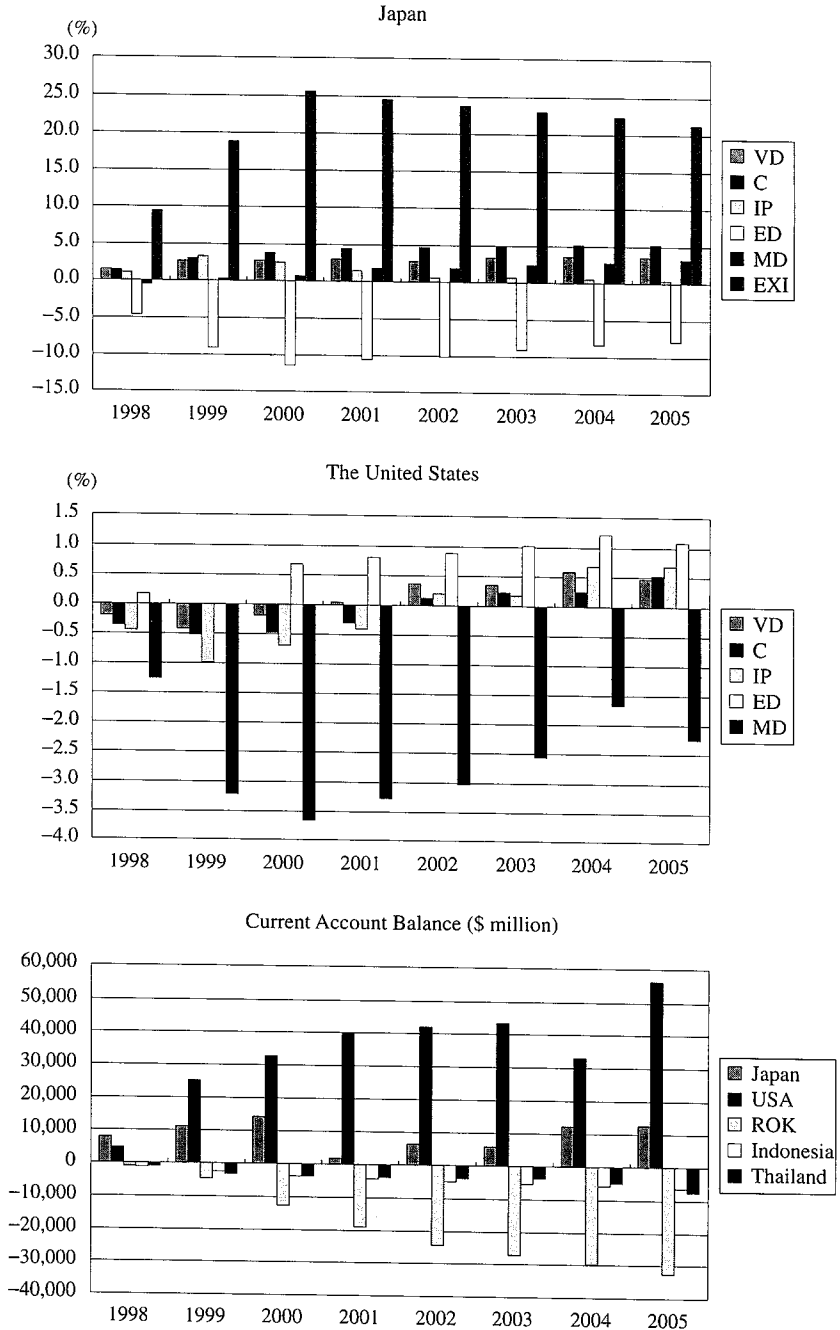
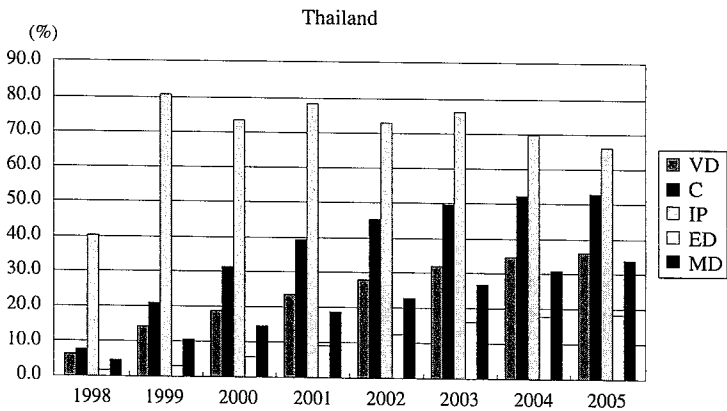
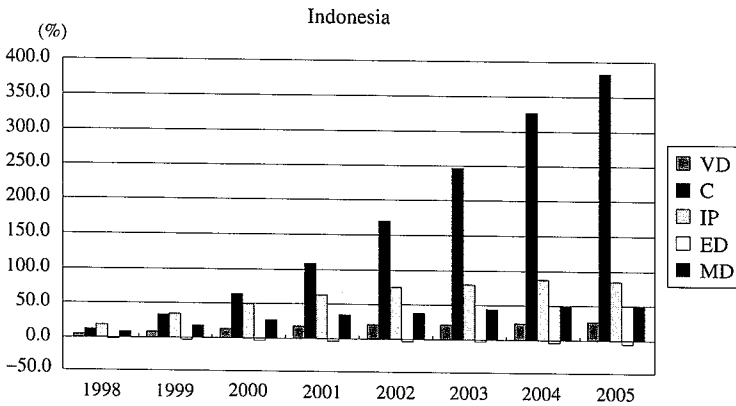
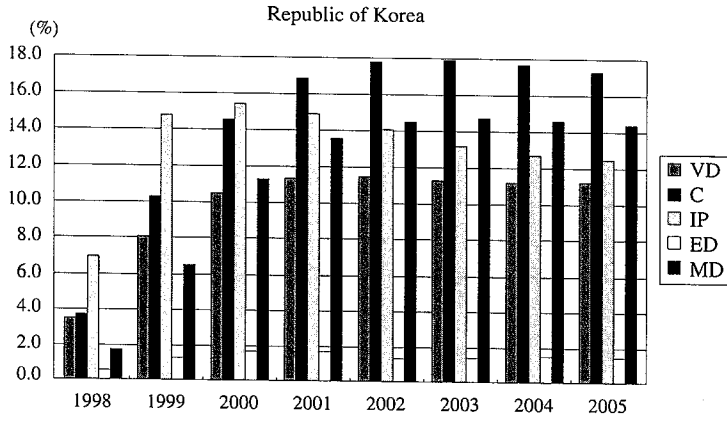


Fig. 4 (Continued)



Note: See note to Figure 1.

er than those in the industrial economies. The highest gains are observed for China, amounting to 1 to 2 per cent, almost half the Japanese gains.

Regarding variables in Figure 4 other than GDP, the Japanese current account increases, compared with Case B, mainly due to the increase in exports to East Asia. The yen also rises very slightly. The United States current account improves by around 10 billion dollars, reflecting the significant increase in its exports.

Regarding East Asia, the recovery of Korea's GDP is accompanied by a faster increase in export and a deterioration in the current account since imports grow faster than exports, mostly because of stronger domestic demand. As it is assumed that ODA stimulates FDI, which usually leads to a reduction in the current account, this result should not be regarded as an unhealthy fall in the surplus.

In Thailand a similar improvement can be observed. Exports increase significantly as against Case B, while imports grow much faster, thus reducing the current account balance. Prices also show a slight tendency to rise.

Indonesia's response in GDP is also impressive, as strong as that in Korea during the first half, and exceeds it thereafter. Exports, however, show a slightly negative response, reducing the current account due to higher domestic prices. Although not shown explicitly in Figure 4, these sensitive Indonesian price responses also tend to offset external and domestic demand and GDP growth, while some export sectors do show significant increases.

Summary of policy scenarios

The above scenarios are summarized in Table VI which shows the percentage of deviation distinguishing the percentages for the currency crisis and Japan's contributions to the above three cases (Cases A, B, and C) for five countries (Japan, the United States, Korea, Indonesia, and Thailand).

The last row (D) represents the net gain (+) or loss (-) for each country in terms of the percentage of real GDP: i.e., $D = (\text{Case C} - \text{baseline})/\text{baseline} \doteq \text{currency crisis (CR)} + \text{Japan's total contribution (C)}$.

As easily seen in the fourth row (C), Japan's net gains in the first half (1998–2001) are noticeable, while they tend to level off in the latter half (2002–2005) due to the gradual increase in the loss caused by the Asian currency crisis.

The United States, unlike Japan, suffers in the first half, but recovers strongly in the second half, offsetting the loss in the first half.

Regarding the three East Asian countries, all of them tend to recover steadily in Case C, as already mentioned, so that net losses in row D tend to lessen substantially. Korea's recovery is also accelerated by Japan's policy package in Case B. But Indonesia's recovery is relatively low among the three economies, even in Case C, because of its relatively higher price responses, especially in exports. There might be room remaining for further demand expansion in this country, but it appears to be unlikely because of growing inflation and current account constraints.

TABLE VI
SUMMARY OF JAPAN'S POLICY SCENARIOS FOR JAPAN, THE UNITED STATES, AND THREE EAST ASIAN COUNTRIES: PER CENT DEVIATION OF REAL GDP FROM CURRENCY CRISIS SCENARIO

	1997	1998	1999	2000	2001	2002	2003	2004	2005
1. Japan									
CR	0.00	-0.07	-0.15	-0.17	-0.24	-0.30	-0.44	-0.42	-0.52
A	0.00	1.86	3.69	4.60	5.29	5.51	6.20	6.57	6.83
B	0.00	1.45	2.56	2.62	2.84	2.58	3.04	3.02	3.02
C	0.00	1.47	2.64	2.72	2.96	2.71	3.18	3.27	3.26
D	0.00	1.39	2.48	2.54	2.71	2.41	2.72	2.84	2.73
2. U.S.A.									
CR	-0.02	-0.19	-0.30	-0.33	-0.30	-0.49	-0.11	-0.03	-0.07
A	0.00	0.04	0.16	0.30	0.43	0.48	0.54	0.39	0.37
B	0.00	-0.18	-0.22	-0.22	0.09	0.22	0.20	0.33	0.06
C	0.00	-0.19	-0.42	-0.18	0.02	0.34	0.33	0.56	0.44
D	-0.02	-0.38	-0.72	-0.51	-0.28	-0.15	0.21	0.53	0.37
3. Rep. of Korea									
CR	-3.30	-11.13	-14.07	-12.44	-11.18	-10.99	-11.76	-12.73	-13.79
A	0.00	0.10	0.24	0.37	0.50	0.59	0.71	0.85	1.06
B	0.00	0.06	0.20	0.50	0.85	1.12	1.38	1.56	1.77
C	0.00	3.48	8.03	10.40	11.26	11.34	11.17	11.03	11.05
D	-3.30	-8.04	-7.17	-3.34	-1.18	-0.90	-1.90	-3.10	-4.26
4. Indonesia									
CR	-2.14	-11.53	-19.58	-24.22	-27.44	-29.85	-31.59	-32.93	-34.01
A	0.00	0.03	0.09	0.21	0.32	0.41	0.50	0.60	0.72
B	0.00	-0.01	-0.02	0.02	0.09	0.18	0.25	0.33	0.40
C	0.00	3.37	7.32	11.57	15.31	18.70	21.76	23.41	24.61
D	-2.14	-8.54	-13.70	-15.45	-16.33	-16.73	-16.71	-17.23	-17.77
5. Thailand									
CR	-6.81	-14.61	-20.41	-23.38	-24.88	-24.97	-25.01	-24.10	-23.37
A	0.00	0.08	0.16	0.24	0.35	0.41	0.52	0.55	0.74
B	0.00	-0.01	0.00	0.14	0.14	0.40	0.35	0.71	0.61
C	0.00	6.02	13.90	18.41	23.17	27.49	31.66	34.64	35.88
D	-6.81	-9.47	-9.35	-9.27	-7.48	-4.34	-1.27	2.19	4.13

Note: CR = currency crisis scenario vs. baseline; A = Case A; B = Case B; C = Case C; and D = Case C minus baseline.

III. THE SECTORAL ASPECT OF THE ASIAN CURRENCY CRISIS AND JAPAN'S ROLE

A. The Currency Crisis Scenario

The Asian currency crisis, though limited only to three East Asian economies in the present paper, is having a deep global impact on both industrial and developing economies as observed in Table IV. In this section we focus on more disaggregated aspects of this currency crisis by taking up in Table VII the sectoral output for

TABLE VII
 CHANGES IN SECTORAL PRODUCTION UNDER CURRENCY CRISIS SCENARIO FOR JAPAN, THE UNITED STATES, AND
 THREE EAST ASIAN COUNTRIES: PER CENT DEVIATION FROM BASELINE

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Food, tobacco	-0.01	-0.04	-0.05	-0.08	-0.12	-0.16	-0.20	-0.21	-0.26
Textiles, apparel	0.01	0.01	-0.02	-0.05	-0.06	-0.09	-0.13	-0.14	-0.17
Wood products	0.00	0.00	0.01	0.02	0.04	0.06	0.09	0.11	0.14
Furniture	0.02	0.04	-0.03	-0.06	-0.09	-0.11	-0.10	-0.07	0.01
Pulp, paper products	0.01	-0.01	-0.02	-0.07	-0.14	-0.19	-0.23	-0.19	-0.23
Printing, publishing	0.03	0.07	-0.04	-0.10	-0.17	-0.28	-0.36	-0.43	-0.47
Chemicals	0.00	-0.08	-0.24	-0.31	-0.37	-0.49	-0.61	-0.65	-0.78
Petroleum, coal products	-0.05	-0.23	-0.42	-0.52	-0.56	-0.62	-0.68	-0.75	-0.83
Rubber products	0.06	-0.18	-1.25	-1.75	-2.16	-2.98	-3.64	-4.11	-4.75
Leather products	0.00	0.00	0.01	-0.01	-0.02	-0.02	0.00	0.04	0.02
Nonmetallic products	-0.01	-0.15	-0.44	-0.62	-0.85	-1.11	-1.29	-1.34	-1.57
Iron & steel	-0.35	-1.15	-1.42	-1.39	-1.40	-1.52	-1.65	-1.84	-2.10
Nonferrous metals	-0.04	-0.21	-0.22	-0.24	-0.21	-0.29	-0.33	-0.30	-0.44
Metal products	0.02	-0.05	-0.09	-0.20	-0.26	-0.41	-0.50	-0.52	-0.77
General machinery	-0.10	-0.63	-0.82	-0.93	-0.96	-1.27	-1.22	-1.16	-1.42
Electrical machinery	0.00	-0.07	-0.09	-0.11	-0.12	-0.20	-0.22	-0.21	-0.29
Motor vehicles	0.33	0.93	1.00	1.12	1.30	1.06	1.30	1.16	0.89
Aircraft	0.05	0.12	0.07	0.01	-0.02	-0.09	-0.18	-0.19	-0.24
Other transport equipment	0.00	-0.03	-0.07	-0.14	-0.21	-0.31	-0.43	-0.52	-0.63
Precision instruments	-0.04	-0.35	-0.58	-0.62	-0.56	-0.86	-0.90	-0.84	-1.02
Other manufacturing	0.03	0.01	-0.07	-0.21	-0.30	-0.45	-0.62	-0.63	-0.88

1. Japan

TABLE VII (Continued)

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Food, tobacco	-0.02	-0.13	-0.20	-0.27	-0.30	-0.46	-0.38	-0.43	-0.53
Textiles, apparel	-1.17	-5.35	-5.10	-3.88	-3.67	-2.75	-2.40	-1.79	-1.51
Wood products	-0.06	-0.58	-1.22	-1.40	-1.84	-2.29	-2.39	-2.65	-3.13
Furniture	0.04	-0.06	-0.20	-0.15	-0.06	-0.30	-0.06	-0.09	-0.53
Pulp, paper products	-0.03	-0.28	-0.41	-0.41	-0.22	-0.26	0.25	0.57	0.70
Printing, publishing	-0.01	-0.29	-0.70	-0.91	-0.47	-0.42	0.80	1.47	1.85
Chemicals	-0.05	-0.26	-0.40	-0.47	-0.50	-0.52	-0.48	-0.43	-0.43
Petroleum, coal products	-0.03	-0.24	-0.28	-0.32	-0.33	-0.50	-0.48	-0.38	-0.48
Rubber products	-0.74	-3.36	-2.72	-2.42	-2.55	-1.99	-1.21	-0.87	-0.67
Leather products	-0.47	-2.14	-2.21	-2.12	-3.08	-4.01	-4.76	-5.13	-5.48
Nonmetallic products	-0.26	-1.13	-1.06	-0.95	-0.92	-0.78	-0.38	-0.22	-0.26
Iron & steel	0.09	0.26	0.42	0.52	0.70	0.61	0.89	1.03	1.01
Nonferrous metals	-0.01	-0.04	0.22	0.45	0.68	0.66	0.97	1.09	0.89
Metal products	0.01	0.00	-0.03	0.00	0.05	-0.03	0.13	0.18	0.15
General machinery	0.10	0.33	0.48	0.61	0.82	0.86	1.25	1.45	1.58
Electrical machinery	-0.37	-1.49	-1.24	-1.10	-1.11	-0.94	-0.95	-0.90	-0.72
Motor vehicles	0.40	1.60	1.61	1.70	1.93	1.71	2.03	1.80	1.53
Aircraft	0.10	0.43	0.86	1.09	1.35	1.34	1.52	1.62	1.45
Other transport equipment	-0.33	-1.31	-1.04	-0.72	-0.50	-0.45	-0.04	-0.09	-0.16
Precision instruments	0.27	0.76	0.56	0.49	0.79	0.19	0.98	1.32	1.15
Other manufacturing	-0.39	-1.35	-0.47	-0.34	-0.76	-0.16	-1.24	-1.71	-2.05

2. The United States

TABLE VII (Continued)

	1997	1998	1999	2000	2001	2002	2003	2004	2005
3. Republic of Korea									
Food, tobacco	-3.70	-14.22	-20.56	-19.32	-17.73	-17.12	-17.17	-17.37	-17.62
Textiles, apparel	15.68	56.70	39.35	35.45	34.14	32.26	28.17	25.69	22.47
Wood products	14.96	73.38	89.47	87.47	78.30	26.28	-9.27	-30.17	-38.27
Furniture	-4.44	-12.89	-1.33	5.21	11.74	12.67	8.27	3.12	-0.99
Pulp, paper products	-1.56	-0.65	3.72	2.44	4.24	4.94	2.95	0.58	-1.70
Printing, publishing	-1.53	-4.71	-8.60	-8.75	-7.69	-7.14	-7.31	-7.70	-8.14
Chemicals	0.94	6.11	-0.15	-0.14	0.94	0.37	-1.82	-3.70	-5.65
Petroleum, coal products	-1.47	-5.94	-9.48	-10.80	-11.15	-11.11	-11.26	-11.59	-12.02
Rubber products	-3.25	-10.11	-12.12	-9.26	-5.88	-4.73	-5.83	-7.11	-8.05
Leather products	2.61	12.30	5.68	4.87	5.33	4.91	3.11	1.71	0.08
Iron & steel	-4.88	-16.02	-17.69	-13.75	-11.67	-11.63	-12.93	-14.45	-15.99
Nonferrous metals	-5.11	-14.88	-8.87	-7.96	-6.21	-6.21	-8.29	-10.40	-12.08
Metal products	-6.48	-21.65	-23.66	-18.78	-16.23	-15.70	-16.60	-17.70	-18.85
General machinery	-2.96	-9.71	-8.18	-4.36	-3.13	-3.21	-3.69	-4.01	-4.45
Electrical machinery	-3.74	-13.10	-13.48	-10.26	-8.84	-8.53	-8.99	-9.57	-10.19
Other transport equipment	-5.15	-17.82	-17.74	-12.15	-9.77	-9.33	-10.19	-11.39	-12.61
Precision instruments	11.59	46.60	28.29	28.02	29.79	23.37	17.23	11.29	7.82
Other manufacturing	0.18	6.24	2.26	6.04	7.68	7.17	6.28	5.85	5.54

TABLE VII (Continued)

	1997	1998	1999	2000	2001	2002	2003	2004	2005
4. Indonesia									
Food, tobacco	-3.88	-24.23	-42.45	-54.91	-63.13	-68.18	-71.24	-73.60	-74.69
Textiles, apparel	0.83	4.67	7.03	9.12	11.86	12.61	13.22	11.55	10.00
Wood products	-1.16	-3.31	-3.81	-3.55	-3.09	-2.37	-1.37	-0.64	-0.39
Pulp, paper products	0.01	-0.19	-0.12	0.41	0.78	0.68	0.84	0.99	0.80
Chemicals	-2.24	-13.10	-14.16	-17.74	-19.60	-20.77	-21.52	-21.68	-21.48
Rubber products	-4.82	-25.47	-25.29	-28.45	-31.62	-34.35	-35.77	-36.57	-36.45
Leather products	-1.60	-11.20	-22.48	-30.08	-35.33	-38.46	-39.72	-37.93	-30.41
Nonmetallic products	-6.95	-35.85	-39.09	-47.33	-52.10	-55.14	-57.11	-58.25	-58.69
Electrical machinery	0.33	-0.28	-2.60	-4.68	-6.09	-7.09	-7.64	-7.98	-8.00
Motor vehicles	5.55	27.39	29.12	29.57	27.89	25.02	22.99	20.17	17.09
Other transport equipment	6.08	32.18	29.65	28.73	26.87	23.04	18.20	13.06	8.61
5. Thailand									
Food, tobacco	-3.39	-8.47	-13.23	-15.27	-16.48	-16.06	-15.89	-14.53	-13.51
Textiles, apparel	-2.35	-4.95	-7.47	-9.02	-10.00	-9.99	-10.15	-9.60	-9.42
Wood products	-13.95	-23.17	-27.00	-29.43	-29.90	-29.58	-29.36	-28.18	-27.25
Pulp, paper products	-0.23	-1.82	-15.71	-20.81	-23.57	-25.06	-26.27	-26.79	-27.62
Chemicals	-4.27	-9.31	-17.25	-20.18	-21.75	-21.85	-21.86	-20.95	-20.30
Petroleum, coal products	-2.13	-2.02	2.12	7.41	12.51	16.85	20.18	22.76	24.71
Rubber products	-4.57	-10.66	-15.51	-17.68	-18.85	-18.94	-18.98	-18.37	-17.92
Nonmetallic products	-15.06	-27.59	-30.93	-31.27	-30.54	-28.93	-28.19	-26.35	-25.28
Iron & steel	-16.46	-28.44	-33.74	-33.76	-32.83	-30.72	-29.73	-27.29	-25.86
Nonferrous metals	-0.90	-1.91	-2.86	-4.29	-4.39	-4.46	-4.42	-4.34	-4.27
Metal products	-9.48	-15.08	-13.83	-11.12	-8.90	-6.95	-5.96	-4.54	-3.69
General machinery	-17.62	-30.49	-30.33	-30.37	-28.49	-25.03	-23.43	-19.86	-17.81
Electrical machinery	-2.07	0.82	4.82	9.75	14.13	16.67	18.88	19.94	20.19
Other transport equipment	-20.38	-38.74	-46.19	-47.36	-47.61	-45.14	-44.44	-41.06	-39.33

industrial economies and the three concerned East Asian economies. (For studies on industries, see Industrial Bank of Japan [1998].)

The Japanese sectoral output of manufacturing in Table VII shows a general downward tendency due to declines in exports, mainly to Asia. The falls are obviously due to the declines in both income and price effects. Hit particularly are Japanese rubber products, steel, general machinery, and precision instruments, while the automobile industry shows exceptional gains, mostly due to the rise in demand from the United States where the fall in producers prices tends to stimulate demand for both domestic products and imports because of the high price elasticity of demand for automobiles.

The United States shows more price sensitive responses, although exports generally tend to decline as stated earlier. Faced with increased competition from East Asia, U.S. consumption goods such as textiles, wood products, rubber and leather products, and miscellaneous manufactured products fall significantly, while increases are seen for steel, nonferrous metals, general machinery, automobiles, and aircraft. This change in the export pattern for the United States represents some indication of the structural shift in East Asia where, if the aftereffects of the present currency crisis persist for too long, factor intensity will shift back again toward labor as against capital.

In Korea a marked shift can be observed with strong negative impact on domestic demand-oriented sectors, such as food, printing and publishing, petroleum refining, steel, metals, and machinery, while positive responses are strong for competitive sectors with lowered export prices, such as textiles, wood products, leather products, precision instruments, and miscellaneous manufactured products.

Indonesia also shows a similar pattern in production structure, such as drastic falls in food, chemicals, rubber and leather products, and ceramics, while export-oriented sectors increase fairly substantially, such as textiles, automobiles, and other transport equipment, which are generally dominated by foreign firms.

Thailand's export responses, as shown before, are generally weak, even at much lower export prices, and this tendency is reflected in its production responses. Among manufacturing sectors there are only two sectors with positive responses: petroleum refining and electrical machinery. These sectors are dominated by foreign firms or joint ventures which can take advantage of the depreciation of the Thai baht.

B. Japan's Contribution Scenario: Case C

Because of space, we concentrate on the third scenario (Case C) and examine the changes in the sectoral output by comparison with the currency crisis scenario.

As shown in Table VIII, Japan shows in this scenario a fairly significant shift in its manufacturing output structure, since this scenario assumes a higher yen and lower East Asian currencies with wider differentials among exchange rates.

TABLE VIII
 CHANGES IN SECTORAL PRODUCTION UNDER JAPAN'S THIRD POLICY PACKAGE (CASE C) FOR JAPAN, THE UNITED STATES, AND THREE EAST ASIAN
 COUNTRIES: PER CENT DEVIATION FROM CURRENCY CRISIS SCENARIO

	1997	1998	1999	2000	2001	2002	2003	2004	2005
1. Japan									
Food, tobacco	0.00	0.47	1.00	1.29	1.65	1.80	1.97	2.02	2.08
Textiles, apparel	0.00	0.67	1.39	1.64	1.79	1.81	1.94	1.99	2.00
Wood products	0.00	-0.74	-1.50	-2.06	-2.49	-2.63	-2.95	-3.19	-3.38
Furniture	0.00	1.55	2.00	1.25	0.17	-1.08	-1.69	-2.88	-4.52
Pulp, paper products	0.00	0.53	0.44	-0.12	-0.49	-0.84	-0.97	-1.37	-1.91
Printing, publishing	0.00	1.55	3.98	5.50	6.17	6.33	6.53	6.76	6.81
Chemicals	0.00	0.68	0.96	0.75	0.70	0.56	0.84	0.94	0.94
Petroleum, coal products	0.00	0.38	1.23	2.37	3.43	4.35	5.07	5.67	6.07
Rubber products	0.00	-1.04	-3.88	-7.15	-9.78	-10.58	-10.94	-11.05	-11.79
Leather products	0.00	0.14	-0.01	-0.27	-0.53	-1.07	-1.56	-2.13	-2.49
Nonmetallic products	0.00	2.56	3.93	5.00	5.94	5.29	6.07	6.11	6.34
Iron & steel	0.00	0.47	1.15	1.60	1.99	2.04	2.29	2.45	2.66
Nonferrous metals	0.00	-0.57	-1.65	-2.56	-2.28	-2.20	-1.60	-1.29	-0.95
Metal products	0.00	1.83	1.58	1.13	1.66	1.53	2.93	3.46	4.13
General machinery	0.00	-0.94	-1.83	-2.94	-2.82	-2.94	-2.42	-1.96	-1.73
Electrical machinery	0.00	1.77	2.76	2.27	1.91	1.16	1.54	1.52	1.44
Motor vehicles	0.00	-3.21	-6.62	-8.26	-7.77	-7.07	-6.62	-5.94	-5.38
Aircraft	0.00	-0.32	-0.13	-0.49	-0.81	-1.42	-1.74	-2.02	-2.25
Other transport equipment	0.00	2.80	6.72	9.49	11.22	11.45	12.24	12.72	12.92
Precision instruments	0.00	1.56	3.38	3.85	3.81	3.41	3.85	4.45	4.70
Other manufacturing	0.00	3.45	5.15	5.16	5.74	5.39	7.01	7.45	8.02

TABLE VIII (Continued)

	1997	1998	1999	2000	2001	2002	2003	2004	2005
2. The United States									
Food, tobacco	0.00	-0.08	-0.14	0.00	0.12	0.35	0.39	0.56	0.64
Textiles, apparel	0.00	0.36	1.13	1.57	1.47	1.72	1.41	1.85	1.36
Wood products	0.00	0.07	0.54	1.63	2.61	3.33	3.93	4.67	5.11
Furniture	0.00	0.00	-0.02	0.41	0.64	0.74	0.56	0.53	0.38
Pulp, paper products	0.00	-0.04	-0.07	0.45	0.76	0.91	0.64	0.53	-0.13
Printing, publishing	0.00	-0.46	-0.86	-0.14	0.43	0.90	0.29	-0.12	-1.28
Chemicals	0.00	0.07	0.15	0.28	0.42	0.54	0.63	0.70	0.67
Petroleum, coal products	0.00	0.14	0.16	0.42	0.60	0.59	0.59	0.74	0.56
Rubber products	0.00	1.20	2.86	4.34	5.25	5.07	4.68	4.11	3.30
Leather products	0.00	0.48	1.05	1.68	2.08	3.04	4.14	5.56	6.24
Nonmetallic products	0.00	0.71	1.67	2.80	3.43	3.55	3.30	2.97	2.42
Iron & steel	0.00	0.42	0.59	0.97	0.95	0.80	0.56	0.45	-0.05
Nonferrous metals	0.00	0.31	0.48	0.88	0.77	0.30	-0.24	-0.64	-1.32
Metal products	0.00	0.04	-0.02	0.11	0.16	0.19	0.15	0.21	0.08
General machinery	0.00	0.73	1.19	1.59	1.49	1.32	0.99	0.78	0.21
Electrical machinery	0.00	0.56	1.30	1.95	2.07	2.08	2.05	1.98	1.90
Motor vehicles	0.00	-0.54	-1.18	-1.44	-1.77	-1.86	-2.39	-2.60	-2.97
Aircraft	0.00	-0.11	-0.47	-0.74	-1.15	-1.52	-1.96	-2.19	-2.56
Other transport equipment	0.00	4.34	7.33	7.91	5.46	3.43	1.46	0.56	0.36
Precision instruments	0.00	0.29	0.28	1.42	1.76	2.11	1.90	2.38	1.59
Other manufacturing	0.00	2.41	5.10	6.23	6.39	6.11	6.93	6.10	6.32

TABLE VIII (Continued)

	1997	1998	1999	2000	2001	2002	2003	2004	2005
3. Republic of Korea									
Food, tobacco	0.00	3.49	9.03	11.87	13.04	13.14	12.92	12.62	12.40
Textiles, apparel	0.00	0.21	0.09	-0.34	-1.03	-1.85	-2.41	-2.65	-2.73
Wood products	0.00	5.18	9.97	12.10	11.74	10.67	9.60	8.84	8.02
Furniture	0.00	3.52	9.83	9.99	4.73	-1.02	-5.21	-7.92	-9.82
Pulp, paper products	0.00	4.16	10.19	13.46	13.59	12.07	10.42	9.27	8.63
Printing, publishing	0.00	2.36	6.19	8.67	9.57	9.46	8.93	8.37	7.90
Chemicals	0.00	3.28	7.28	9.26	9.65	8.96	8.59	8.39	8.56
Petroleum, coal products	0.00	1.37	3.87	6.05	7.45	8.37	8.79	8.95	8.96
Rubber products	0.00	3.21	8.29	10.81	11.22	9.79	8.74	8.22	8.41
Leather products	0.00	1.78	4.17	5.51	5.85	5.43	5.11	4.95	5.09
Iron & steel	0.00	5.12	11.35	13.84	14.55	14.13	13.66	13.45	13.49
Nonferrous metals	0.00	5.33	12.32	14.83	14.00	12.09	10.53	9.49	8.85
Metal products	0.00	6.35	13.96	16.43	16.83	16.31	15.63	15.15	14.94
General machinery	0.00	1.90	3.44	3.23	2.83	2.37	2.20	2.31	2.21
Electrical machinery	0.00	3.08	6.82	7.87	8.04	7.78	7.44	7.23	7.05
Other transport equipment	0.00	4.84	10.32	11.32	11.19	10.71	10.16	9.84	9.74
Precision instruments	0.00	3.39	7.15	7.11	4.89	2.12	0.20	-1.01	-1.91
Other manufacturing	0.00	3.48	7.29	7.64	7.01	6.38	5.99	5.81	5.69

TABLE VIII (Continued)

	1997	1998	1999	2000	2001	2002	2003	2004	2005
4. Indonesia									
Food, tobacco	0.00	6.57	18.18	37.42	59.94	85.06	109.47	128.73	140.87
Textiles, apparel	0.00	-0.91	-2.60	-0.83	0.10	1.94	3.46	3.90	3.94
Wood products	0.00	0.35	0.53	5.73	9.97	13.64	16.53	14.85	13.78
Pulp, paper products	0.00	-0.02	0.14	0.79	1.34	1.51	1.56	1.84	1.14
Chemicals	0.00	2.00	4.59	8.96	13.06	16.41	19.40	19.63	19.27
Rubber products	0.00	2.91	5.81	8.76	12.34	16.08	18.90	20.78	21.56
Leather products	0.00	5.76	14.58	23.63	32.90	42.42	52.65	64.45	82.32
Nonmetallic products	0.00	11.06	22.08	31.84	41.30	49.16	55.61	60.45	62.05
Electrical machinery	0.00	1.40	3.01	7.13	10.60	13.51	15.63	15.13	14.48
Motor vehicles	0.00	0.72	0.20	-0.18	-0.79	-0.93	-1.17	-1.41	-1.42
Other transport equipment	0.00	-0.20	-0.32	-0.56	-1.03	-1.35	-1.48	-1.44	-1.14
5. Thailand									
Food, tobacco	0.00	3.02	8.03	12.05	15.53	17.63	19.66	19.71	19.17
Textiles, apparel	0.00	2.04	4.49	8.34	13.36	18.95	24.49	28.32	29.89
Wood products	0.00	13.13	25.73	26.26	29.44	32.37	34.84	36.90	36.19
Pulp, paper products	0.00	3.43	8.98	12.45	15.95	19.94	24.10	28.06	31.79
Chemicals	0.00	4.96	11.39	15.36	19.80	24.04	28.26	31.22	32.40
Petroleum, coal products	0.00	1.86	1.89	-0.84	-3.31	-5.57	-7.69	-9.70	-11.84
Rubber products	0.00	4.15	9.52	12.10	14.36	16.26	17.83	18.90	19.02
Nonmetallic products	0.00	14.35	26.90	26.04	27.84	28.83	30.02	30.22	28.90
Iron & steel	0.00	20.41	39.83	40.73	44.32	46.75	49.46	50.25	48.56
Nonferrous metals	0.00	0.58	1.39	1.89	2.25	2.74	3.23	3.66	3.90
Metal products	0.00	8.42	12.58	9.01	8.56	8.08	7.66	6.87	5.13
General machinery	0.00	18.70	35.02	36.14	39.82	40.00	41.78	38.54	34.96
Electrical machinery	0.00	1.96	0.83	1.75	6.19	11.97	17.84	21.08	21.88
Other transport equipment	0.00	24.04	50.48	52.61	58.48	59.13	62.48	60.32	57.97

Significant increases are observed for precision instruments, miscellaneous manufactured products, ceramics, and printing and publishing, while declines are noticeable for automobiles, wood products, rubber products, and general machinery, some of which are shifting to overseas production, especially to East Asia. Low but steady growth is indicated for food, textiles, steel, and electrical machinery, as compared with the currency crisis scenario.

The United States shows relatively higher growth for rubber products, ceramics, transport equipment, and miscellaneous manufactured product, while declines are noted for automobiles and aircraft which are expected to shift to overseas production. A decline in textiles and wood products in the currency crisis scenario are substantially offset in this scenario.

Regarding East Asian countries, Korean output recovery is noticeable in almost all manufacturing sectors. Particularly noteworthy are food, paper products, steel, nonferrous metals, metal products, and transport equipment. The only exception is textiles which show a decline. Furniture and precision instruments tend to grow during the first half but decline later. Other than these sectors, Korean manufacturing successfully recovers to its previous growth path.

Indonesia shows a different pattern with highly diversified growth rates. However, if compared with the currency crisis scenario, fast growing sectors in Case C such as food, chemicals, rubber, and ceramics tend to compensate for the losses suffered from the currency crisis. It can be stated, therefore, that Indonesia also generally gets back on the track toward its previous growth path.

Thailand shows a similar recovering tendency in manufacturing but with more emphasis on competitive sectors such as textiles, steel, general machinery, and transport equipment where the FDI of foreign firms plays a large role.

IV. CONCLUDING REMARKS

The results of our simulation analysis on Japan's contributions can be summarized as follows:

Firstly, the Asian currency crisis, as observed so far, is of global importance in terms of world trade and world economic growth. It is spreading widely to both industrial and developing regions, thus leading to the danger of worldwide recession. To counter its effects international collaboration is urgently required. Although our study on the East Asian currency crisis is confined to the three Asian countries which have been most heavily hit by the crisis, the negative ripple effects caused by the falls in their GDPs are significant, i.e., -0.3 and -0.4 per cent in Japan's GNP and -0.4 and -0.6 per cent in U.S. GNP in 1998 and 1999 respectively. If the devaluations of the other East Asian countries, such as the Philippines, Malaysia, and Singapore, are included, the above effects should be raised by around 90 per cent resulting in negative figures of -0.6 and -0.8 per cent for Japan and -0.8

and -1.1 for the United States. These negative effects will grow rapidly if the crisis scenario in East Asia develops into a worldwide recession.

Secondly, at this time of global crisis, Japan, as the second largest economic power in terms of GDP and the largest creditor power in terms of net foreign asset, is now expected to play a role commensurate with its status. In this context we have assumed a full-strength Japanese policy package toward East Asia, including fiscal, exchange rate, and ODA policies. The impact of such a package is the acceleration of Japan's economic growth, in terms of deviation from the baseline, amounting to 1.5 and 2.7 per cent for 1998 through 2002, and 3 per cent thereafter. As a result, the GDPs of the three analyzed East Asian countries are substantially raised, almost offsetting the losses caused by the currency crisis between 1998 and 2003.

Thirdly, a Japanese policy package of promoting ODA to stimulate FDI and exports is overwhelmingly important as compared with other policy packages such as fiscal and exchange rate policies, although the latter two packages do contribute significantly to East Asian recovery through export expansion.

Fourthly, regarding East Asian changes in production structure, the scenario simulations indicate that exports are likely to become more competitive in labor-intensive sectors. However, at the same time, capital- and high tech-intensive sectors, e.g., steel, electronics, and automobiles, are likely to survive and strengthen due to the influence of increased FDI.

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