

Exchange Rate Policies in a Small Open Emerging Economy: Lessons from the East Asian Currency Crisis

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Paper prepared for Claremont-IIE Workshop on the Political Economy of Intermediate Exchange Rate Regimes held at Institute for International Economics, Washington D.C. November 3, 2004. I thank John Williamson, Thomas D. Willett for their helpful comments at the Claremont-IIE Workshop, and Jeong Ho Hahm, Seung-Cheol Jeon, Daesoo Kim, Jaerang Lee, Young Jun Choi for their helpful discussions at the Bank of Korea seminar.

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Exchange Rate Policies in a Small Open Emerging Economy: Lessons from the East Asian Currency Crisis

In a small open emerging economy where there is no channel to influence determination of exchange rates of key currencies, important determinants of an exchange rate of its currency, while capital markets are opened but still not sufficiently developed enough to hedge market risks, an appropriate exchange rate policy is crucial to maintaining the stability of the financial market, to sustaining economic growth, and to escaping currency crisis. After the East Asian crisis, some countries such as China and Malaysia limited the flexibility of their exchange rates, while some other countries such as Korea and Thailand adopted free floating regimes.

If complete free floating of exchange rates could not guarantee automatic adjustments of capital flows enough to escape severe misalignment in a small open emerging economy amidst volatile international financial markets, sometimes some minimum interventions, if necessary, seem to be inevitable, within the limit to maintain the independence of monetary policy and the flexibility of exchange rates, not due to the fear of floating, but in order to prevent severe mid-term misalignment and excessive short-term volatilities.

In addition, regional exchange rate policy cooperation is necessary to avoid exchange rate disparities and another regional currency crisis, in particular, in East Asian emerging economies having similar economic structures and development strategies, i.e. an export-oriented economy. In order to enhance regional exchange rate policy cooperation, it seems important to establish some systematic channels such as macroeconomic policy dialogue among finance ministers and central bankers in the region to increase mutual understanding on the macroeconomic situations of each country.

Key words: Exchange Rate, Currency Crisis, East Asia

JEL Classification: F31 F33 F42

I. Introduction

A small open emerging economy can be defined as an economy having following characteristics: First, there is no channel to influence determination of exchange rates of key currencies although those are important determinants of an exchange rate of its currency, i.e., there may be so-called 'benign neglect'. And the degree of the influence of foreign investments on domestic financial market is often high, and as a result, volatilities in the foreign exchange market and capital markets are often very high. In that sense, it may be called a small economy. Second, capital markets are substantially opened, and in that sense, it may be defined as an open economy. Third, financial markets, although substantially opened, are still not sufficiently developed, in particular, in the financial derivative markets, enough to hedge market risks. In that sense, those market may be called emerging markets. Most East Asian countries, broadly categorizing, have such characteristics of small open emerging economy.

In such a small open emerging economy, an appropriate exchange rate policy is crucial to maintaining the stability of the financial market, to sustaining economic growth, and to escaping currency crisis. An issue is which regime, among fixed, intermediate and floating ones, is appropriate for East Asian countries as a small open emerging economy.

Before the East Asian currency crisis in 1997, most East Asian countries adopted a managed exchange rate regime. After the crisis, East Asian countries changed their exchange rate regimes: Some countries such as China and Malaysia much more limited the flexibility of their exchange rates, while some other countries such as Korea and Thailand increased the flexibility.

Considering opened and globalized capital markets, an increase in the flexibility in exchange rate management would be inevitable. However, one of key points here is whether

complete free floating of an exchange rate could guarantee automatic adjustments of capital flows and of the current account with only one price variable, i. e. an exchange rate in a small open emerging economy. Otherwise, some minimum interventions, if necessary, seem to be inevitable to prevent severe mid-term misalignment and excessive short-term volatilities, in principle, within the limit to maintain the independence of monetary policy and the flexibility of exchange rates amidst volatile international financial markets.

Another issue learned from the lessons from the East Asian currency crisis, regional exchange rate policy cooperation is necessary. Before the East Asian currency crisis in 1997, East Asian currencies were mostly pegged to US dollar. As a result, a lot of criticism on dollar-peg and rigid exchange rate policy managements were raised as important causes of the crisis. In particular, during the period of weak yen from mid-1995 to mid-1997, the dollar-peg forced East Asian currencies appreciate against yen, which played as one of important causes of the crisis through an increase in the current account deficit in East Asia.

After the crisis, East Asian currencies partly deviate from the dollar-peg and lean to yen after the crisis. However, yen has become strong after the crisis and, as a result, East Asian currencies have also become strong against dollar and, in particular, against Chinese yuan, whose exchange rate has been fixed since 1994, while Chinese economic competitiveness has become strong.

In fact, deterioration of the current accounts before the crisis in some East Asian countries such as Korea, Thailand, Indonesia, an important cause of the crisis, was not due to their currencies' peg to dollar itself, but due to peg to a strong currency and as a consequence, their appreciation. Recent leaning to strong yen and appreciation of East Asian currencies against dollar and, in particular, against yuan, shows similar effects, i.e. deterioration of the current accounts in some East Asian countries such as Korea, Thailand, Indonesia again as before the

crisis.

East Asian emerging economies have similar economic structures and development strategies, i.e. an export-oriented economy. Accordingly, appreciation of some countries' currencies against the other neighbor countries' currencies may result in deterioration of their export competitiveness. In that sense, both appreciation of some East Asian countries' currencies against Japanese yen before the crisis and recent their appreciation against yuan of China, a newly emerging economy, have similar structures and, as a consequence, are expected to result in similar effects.

Disparities in exchange rates in East Asia, mainly resulted from different exchange rate regimes and different exchange rate policies, are becoming important issues. An issue has been raised on the needs of cooperation in exchange rate policies, for instance, cooperative intervention etc, to avoid exchange rate disparities and another crisis.

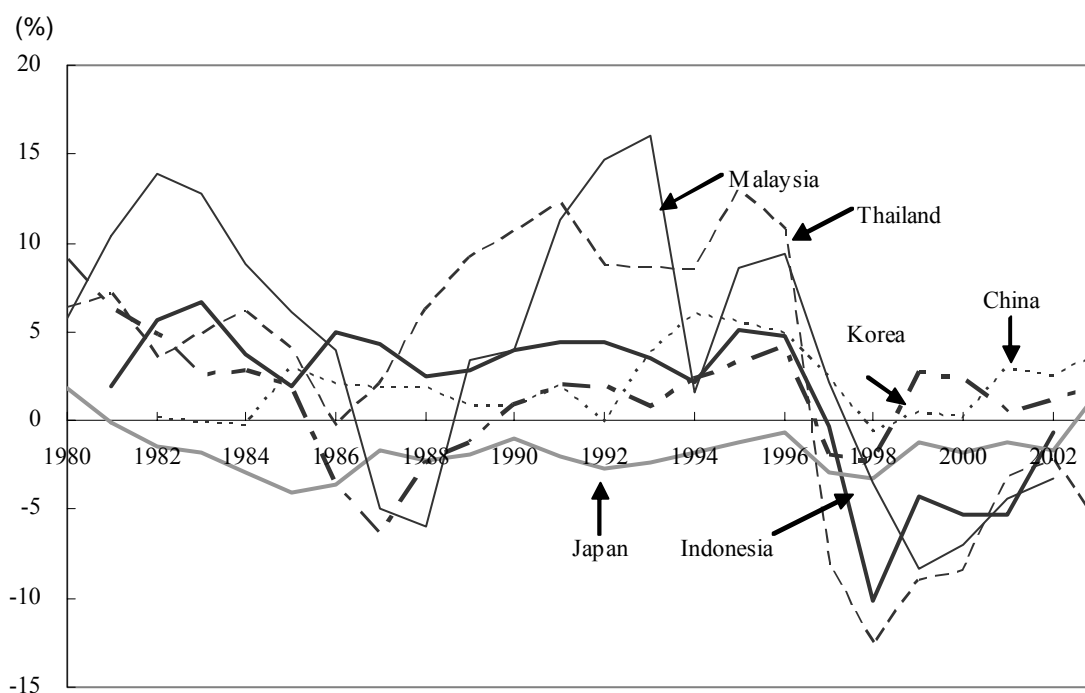
In the following section II, exchange rate policies in East Asia before the currency crisis will be reviewed. And changes in exchange rate policies in East Asia after the currency crisis and their effects will be examined in section III and in section IV respectively. Finally, as a conclusion, lessons from East Asian experiences of exchange rate policies will be explored in section V.

II. Exchange Rate Policies and Currency Crisis in East Asia

1. Capital Inflows, Appreciation and Current Account Deficits

As capital markets in East Asia began to open since the late 1980s, foreign investments in the East Asian capital market began to increase. As a result, ratios of capital account to GDP having declined until the mid-1980s due to external debt problems occurred mainly in the Latin America in the early 1980s also began to increase since the late 1980s. Components of capital inflows also began to change. Until mid-1980s, i.e., before the opening of the capital market, official and commercial loans and bank loans were main components of capital inflows to finance the current account deficits, but since the late 1980s, capital inflows began to be mainly composed of foreign direct investments and short-term portfolio investments.

<Figure 1> Capital Account/GDP



According to an increase in capital inflows, exchange rates having been depreciated until mid-1980s to boost exports in East Asia began to appreciate since the late 1980s. As a result, the current account began to turn to deterioration since the late 1980s.

In the balance of payments account identity as the followings, the sum of the current account (CA) and the capital account (KA) of the balance of payments is equal to a change in the official foreign exchange reserves (FR). This identity means a long-run adjustment process of capital inflows through which capital inflows are, in the long run, adjusted through the current account deficit (ΔCA) and a change in the official foreign exchange reserves

Suppose there is no change in foreign exchange reserves, there is the current account deficits equal to the amount of capital inflows. On the other hand, suppose the current account is zero, the amount of an increase in foreign exchange reserves is equal to the amount of capital inflows. It is substantially influenced by foreign exchange market intervention and exchange rate policies how much, among the amount of capital inflows, are adjusted through the current account and a change in foreign exchange reserves.

$$CA_t + KA_t \equiv FR_{t+1} - FR_t$$

$$KA_t \equiv \Delta CA_t + FR_{t+1} - FR_t$$

Here some issues may be raised; First, as in the following national income identity, the current account deficits ($\Delta CA \equiv \Delta (X-M)$) lead to a decrease in the growth rate and to an increase in the unemployment rate¹. Among the components of capital inflows, FDI, compared with short-term portfolio investments, may relatively more reduce these adverse effects.

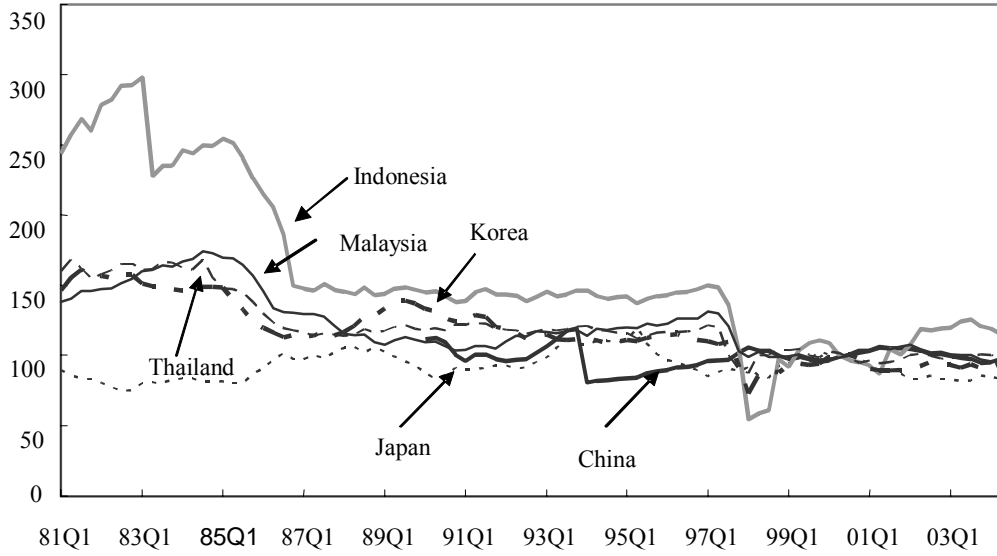
$$Y \equiv C + I + G + X - M$$

¹ If domestic demands such as consumption and investment increase with help of a decrease in inflation rate resulted from appreciation of currency, negative effects on the growth rate may be reduced.

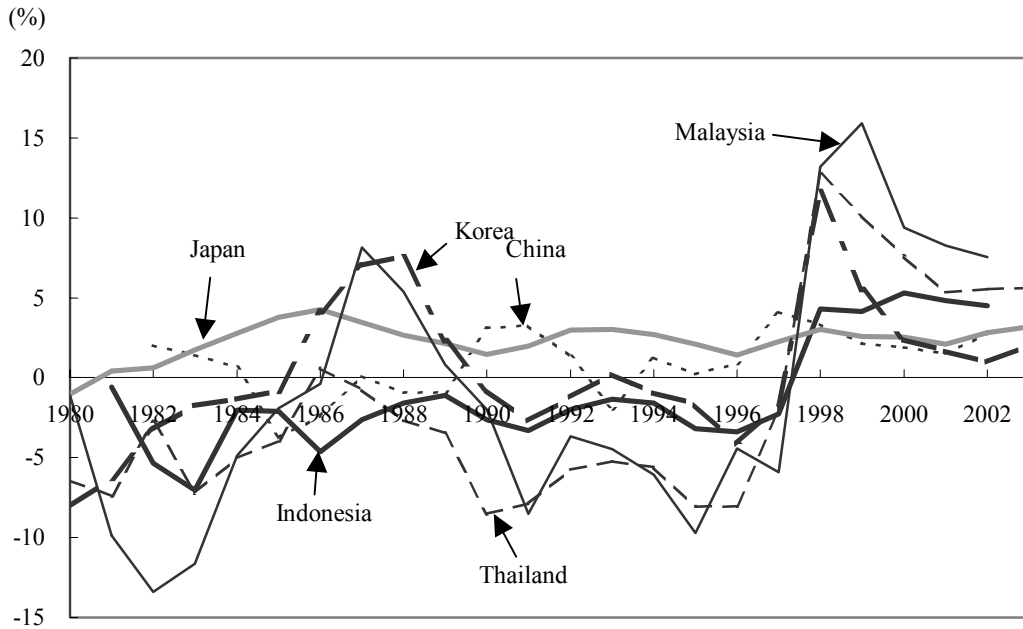
Second, in the long run, the current account deficits and a decrease in the growth rate resulted from capital inflows may discourage the incentives for capital inflows and then an external equilibrium of zero current account may be achieved in spite of no intervention in the foreign exchange market in the case of complete financial markets. However, it takes time to reach an external equilibrium, and, as a result, during the period of adjustments, domestic production facilities may be severely damaged and consumer attitudes may be considerably changed. More often financial markets are not complete. As a result, sometimes it may not be easy to return to an external equilibrium. That means there may be possibilities of mid-term ‘misalignment’. More importantly, it is still questionable how much capital flows, amidst highly volatile and uncertain international capital movements including frequent huge speculative attacks on the capital markets of small open economies, can be automatically adjusted with freely floating exchange rates in a small open emerging economy.

In fact, causality between exchange rates and the current account was changed after the opening of the capital markets. Before the opening of the capital markets, according to empirical studies, the current account caused exchange rates since exchange rates were partly managed to improve the sustained current account deficits at that time in East Asia. But after the opening of the capital markets, capital inflows, in particular, short-term portfolio investments cause exchange rates and exchange rates cause the current account (Oh, 1997).

< Figure 2 > REER(Quarterly)
(2000=100)



<Figure 3> Current Account/GDP



2. Accumulation of External Debts, Reversal of Capital Inflows and Currency Crisis

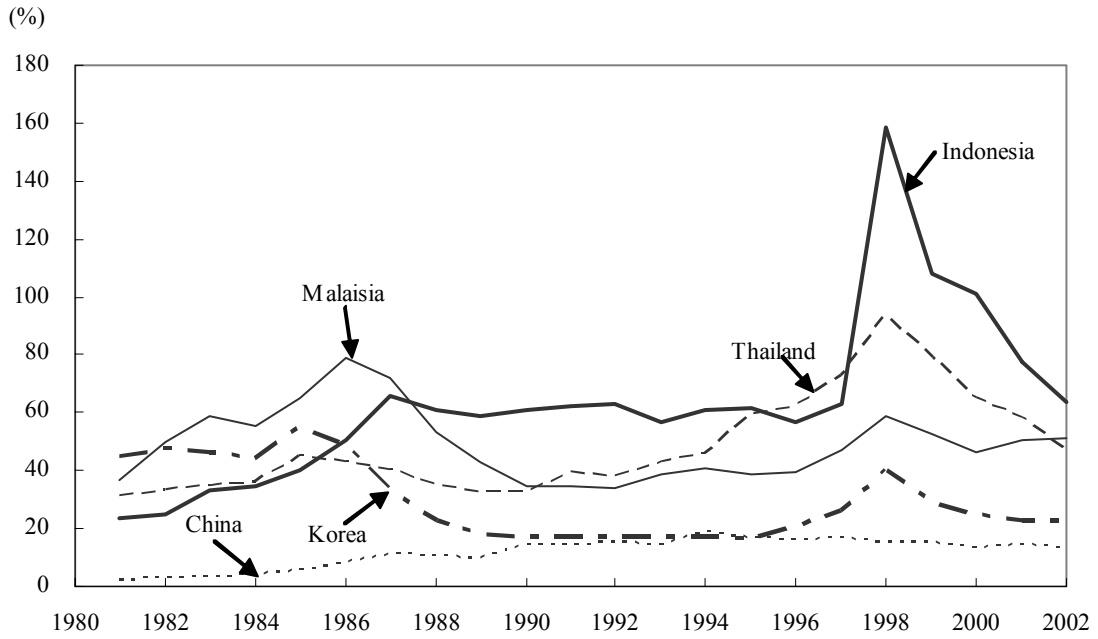
An increase in the current account deficits resulted in an increase in external debts. As the following identity, a change in net foreign asset (NFA) is equal to the current account. Deterioration of the current account means a decrease in the stock of NFA. The current account deficits would be financed by a decrease in the foreign exchange reserves or an increase in foreign liability. If NFA is negative, i.e. foreign liabilities are larger than foreign assets, those are external debts.

$$NFA_{t+1} \equiv NFA_t + CA_t \qquad CA_t \equiv NFA_{t+1} - NFA_t$$

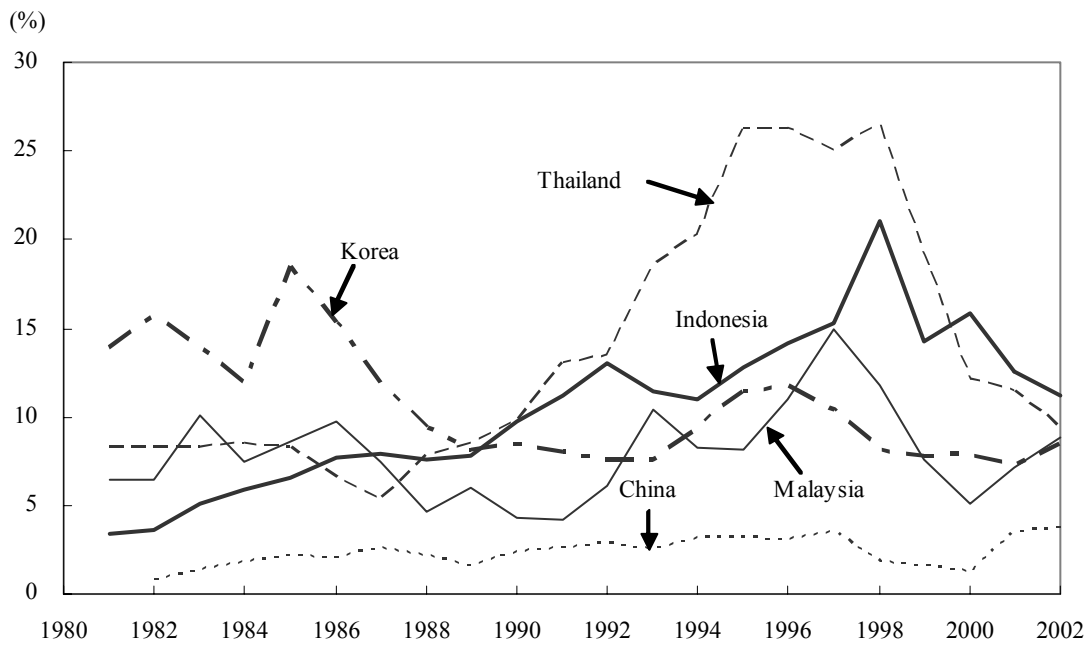
Accordingly, an increase in the current account deficits resulted in a huge increase in external debts and a substantial depletion of foreign exchange reserves in East Asia. In particular, an increase in short-term external debts was substantial due to an increase in trade credits and short-term bank loans to finance the current account deficits.

An increase in the current account deficits and external debts together with a depletion of foreign exchange reserves brought to an increase in the market pressure toward depreciation and to an increase in incentives for speculative attacks. In such fragile and uncertain market environments, with external shocks, inflows of capital which had sustained since the late 1980s reversed to sudden and massive outflows. Some East Asian countries which already could not meet the sudden and massive outflows of capital or could not defend their currencies against speculative attacks with a handful amount of foreign exchange reserves could not escape currency crisis.

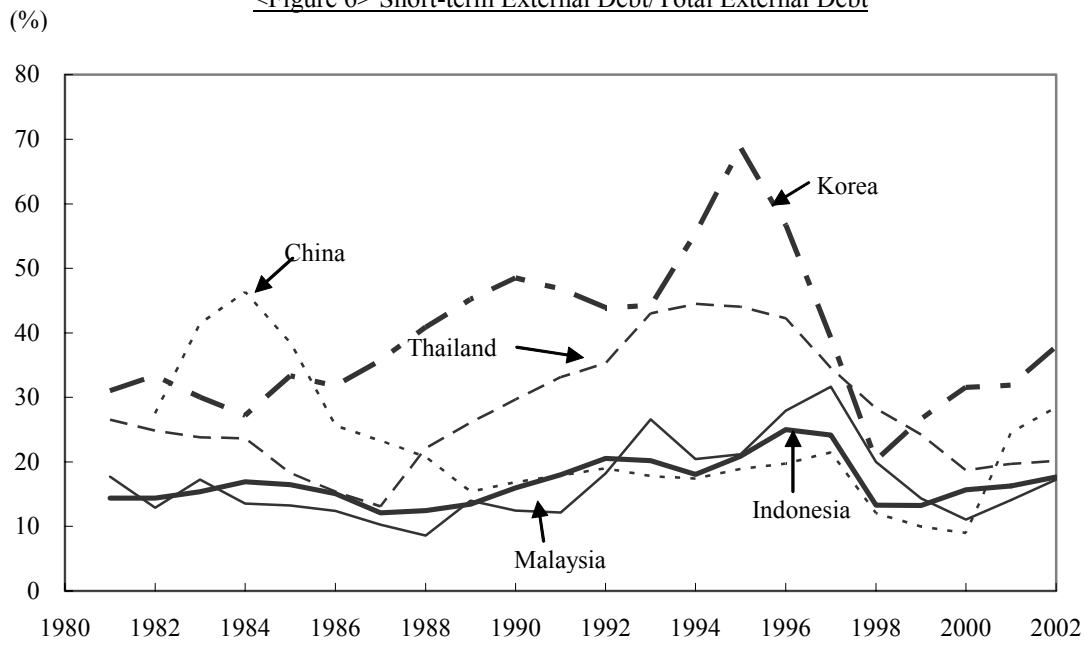
<Figure 4> Total External Debt/GDP



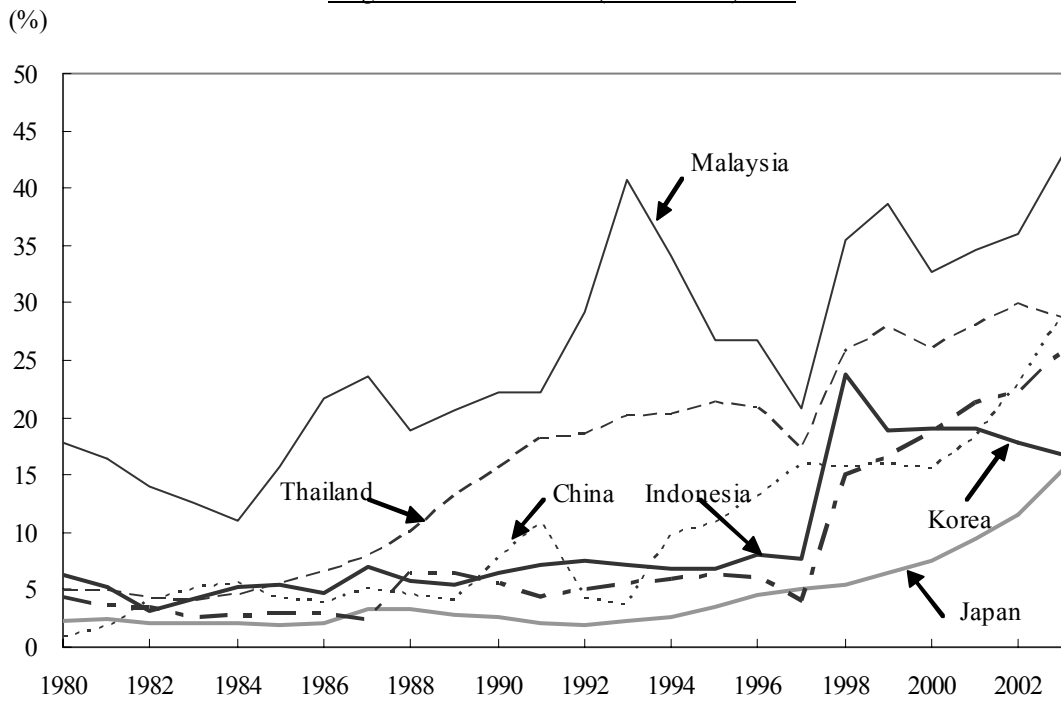
<Figure 5> Short-term External Debt/GDP



<Figure 6> Short-term External Debt/Total External Debt



<Figure 7> Total Reserve(Minus Gold)/GDP



III. Changes in Exchange Rate Policies after the Currency Crisis in East Asia

Before the East Asian crisis, most East Asian countries, except Japan adopting independently floating, managed their exchange rates policies with managed exchange rate regimes in terms of narrow classification, i.e. with intermediate regimes in terms of broad classification.

After the crisis, since rigid exchange rate regimes were pointed out as an important cause of the crisis, they changed their exchange rate regimes: Korea, Thailand and Indonesia newly adopted a free floating exchange rate regime respectively, while China and Malaysia maintain a fixed exchange rate regime pegging to US dollar. And degrees of intervention in the foreign exchange market are also varied from country to country.

According to the empirical assessments on the East Asian exchange rate managements, basically based on Calvo and Reinhart(2002) methodology, flexibility of exchange rates increased in Korea, Thailand and Indonesia after the crisis. In particular, Korean case is mostly assessed as a freely or independently floating regime (Reinhart and Rogoff, 2004; Kim, Kim and Wang, 2004)), while some assess it as a managed floating (Willett, 2004).

<Table 1> Exchange Rate Regimes in East Asia

	Before the Crisis		After the Crisis	
	IMF (<i>De Jure</i>) ¹⁾	Reinhart and Rogoff (<i>De Facto</i>) ²⁾	IMF(<i>De Jure</i>) ¹⁾	Reinhart and Rogoff (<i>De Facto</i>) ²⁾
Korea	Managed floating	Crawling peg to US dollar	Independent floating	Freely floating
Japan	Independent floating	Independently floating	Independent floating	Independently floating
China	Managed floating	Peg to US dollar	Limited flexibility wrt US dollar	Peg to US dollar
Malaysia	Managed floating	Limited flexibility wrt US dollar	Pegged to US dollar	Pegged arrangement
Thailand	Limited flexibility wrt a basket	Peg to US dollar	Independent floating	Managed floating
Indonesia	Managed floating	Crawling peg to US dollar	Free floating	Freely floating

Sources: 1) Frankel et.al. (2002) and IMF, *Annual Report on Exchange Arrangement and Exchange Restriction*.

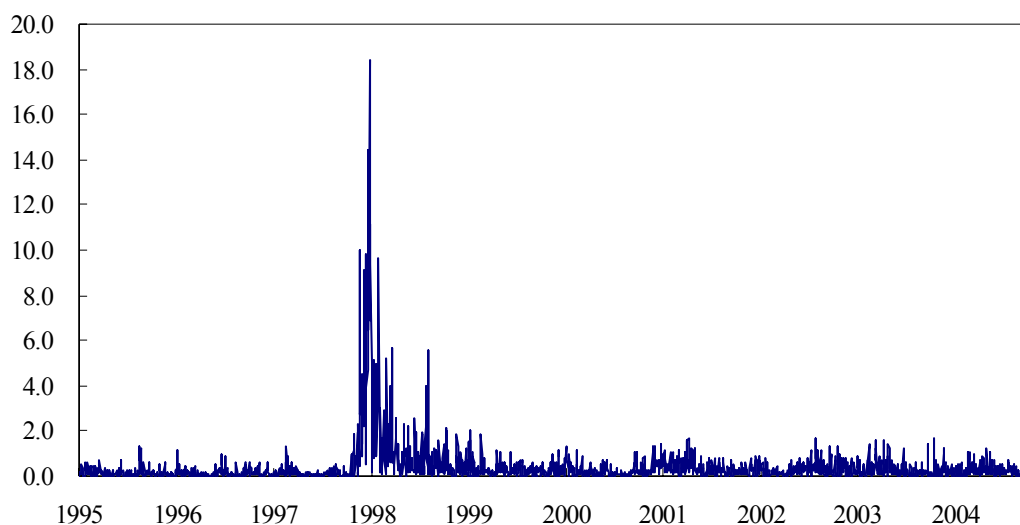
2) Reinhart and Rogoff (2004)

VI. Effects of Changes in Exchange Rate Policies in East Asia

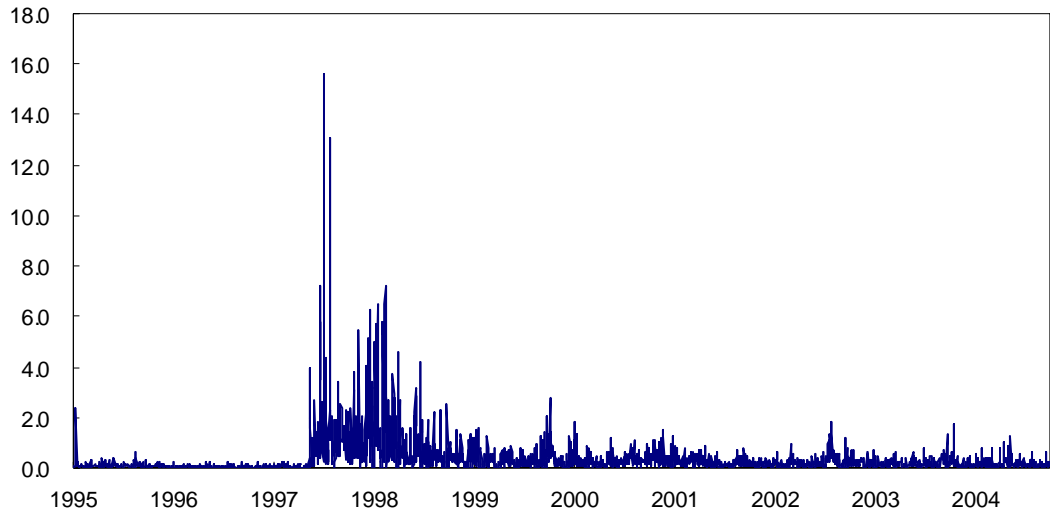
1. Changes in Volatilities of Exchange Rates before and after the Crisis

As exchange rate regimes became freely floating in Korea, Thailand and Indonesia after the Crisis, the exchange rates volatilities of their currencies substantially increased. Rates of daily percentage changes in the Korean won/dollar exchange rates increased from 0.15-0.16 before the crisis to 0.28-0.37 after the crisis, those in the Thai baht / dollar exchange rates increased 0.06-0.10 before the crisis to 0.19-0.36 after the crisis, and those in the Indonesian rupiah/dollar increased from 0.08 before the crisis to 0.26-1.28 after the crisis. In terms of standard deviations of the rates of changes in exchange rates, volatilities also increased. Those increased from 0.17-0.21 to 0.22-0.32 in the Korean won/dollar exchange rates, from 0.06-0.22 to 0.19-0.38 in the Thai baht/dollar exchange rates, and from 0.10-0.12 to 0.30-1.54 in the Indonesian rupiah/dollar exchange rates.

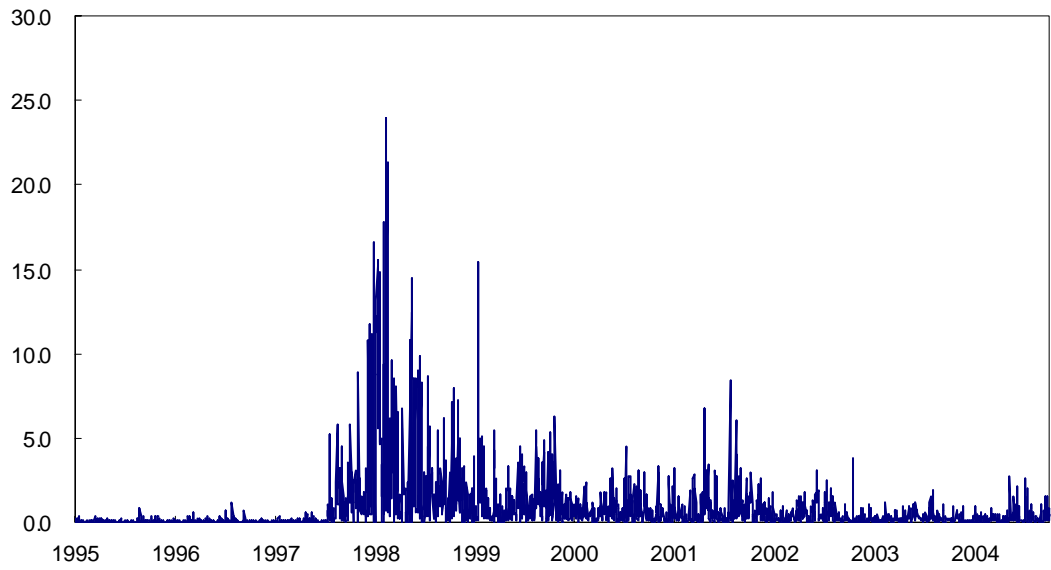
<Figure 8> Daily Volatility of Exchange Rates of Korean Won



<Figure 9> Daily Volatility of Exchange Rates of Korean Won



<Figure 10> Daily Volatility of Exchange Rates of Korean Won



<Table 2> Rates of Daily Changes in Exchange Rates of East Asian Currencies¹⁾

	95	96	97 ²⁾	98 ³⁾	99	2000	2001	2002	2003	2004 ⁴⁾
Korean won	0.16	0.15	0.93 (0.16)	1.02 (0.65)	0.29	0.29	0.37	0.31	0.29	0.28
Thailand baht	0.10	0.06	1.04 (0.49)	0.94 (0.50)	0.36	0.34	0.23	0.24	0.19	0.19
Indonesian rupiah	0.08	0.08	1.00 (0.08)	3.11 (1.81)	1.28	0.70	0.80	0.43	0.26	0.34

Notes: 1) Absolute value of price of the end of day(t) minus price of the end of day(t-1)/ price of the end of day(t-1)(%)

2) Data in parenthesis indicate average volatility from January to June 1997

3) Data in parenthesis indicate average volatility from July to December 1998

4) From January to September 2004

<Table 3> Daily Volatilities of Exchange Rates of East Asian Currencies¹⁾

	95	96	97 ²⁾	98 ³⁾	99	2000	2001	2002	2003	2004 ⁴⁾
Korean won	0.191	0.172	2.505 (0.205)	1.213 (0.752)	0.308	0.300	0.315	0.276	0.311	0.223
Thailand baht	0.216	0.057	1.775 (1.045)	1.240 (0.480)	0.376	0.309	0.186	0.253	0.199	0.193
Indonesian rupiah	0.107	0.121	2.104 (0.101)	3.930 (1.805)	1.543	0.736	1.061	0.513	0.298	0.431

Notes: 1) Standard deviations of difference in log exchange rates

2) Data in parenthesis indicate average volatility from January to June 1997

3) Data in parenthesis indicate average volatility from July to December 1998

4) From January to September 2004

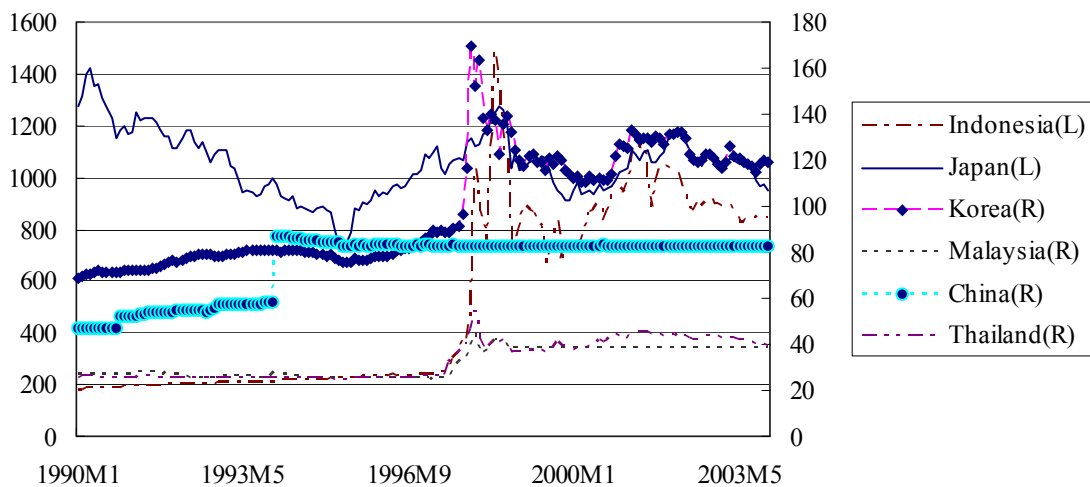
2. Movements of Exchange Rates before and after the Crisis

Before the crisis in 1997, some East Asian currencies such as Korean won, Thai baht and Indonesian rupiah were relatively strongly pegged to the US dollar, while Chinese yuan and Malaysian ringgit were fixed and Japanese yen was much more depreciated from mid-1995 to mid-1997 than other East Asian currencies such as Korean won, Thai baht and Indonesian rupiah. Such depreciation of Japanese yen from mid-1995 to mid-1997 reflected prolonged stagnation of the Japanese economy at that time and sharp devaluation of Chinese yuan in 1994.

After the crisis, yen has turned to be strong reflecting a sustained increase in the deficit of the current account in the US. Chinese yuan and Malaysian ringgit have been fixed. However, other East Asian currencies have shown concurrent movements with Japanese yen reflecting an increase in their correlation with yen.

In such a way, an exchange rate of yen/dollar strongly influences exchange rates of East Asian currencies, while it is determined in the international financial market regardless of fundamentals of the East Asian economy.

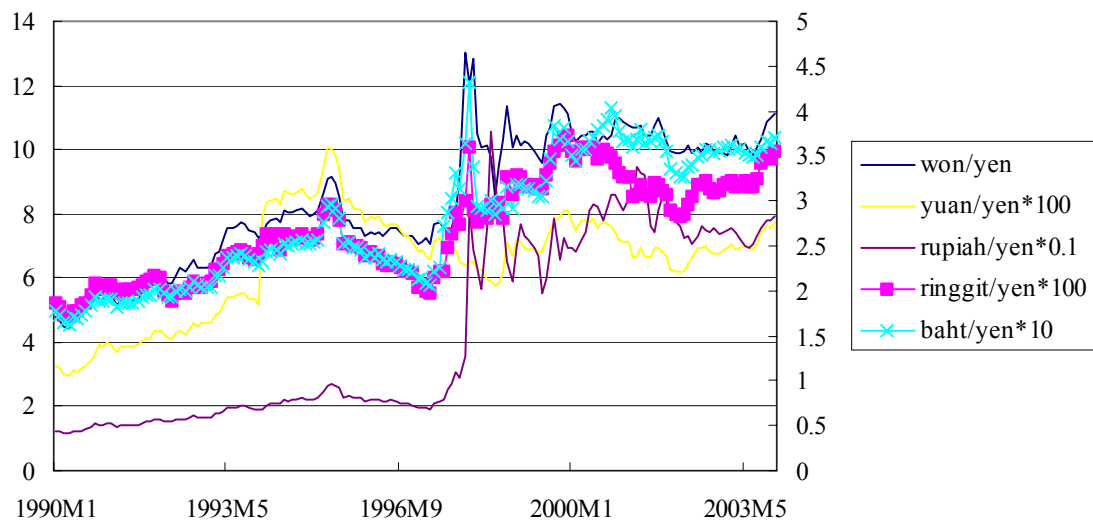
<Figure 11> East Asian Currencies per Dollar



Before the crisis, in particular, during the period from mid-1995 to mid-1997, East Asian currencies were strongly pegged to dollar, while yen was depreciated. As a consequence, East Asian currencies were appreciated against yen during the period from mid-1995 to mid-1997.

After the crisis, East Asian currencies are deviated from the dollar-peg and lean to yen. Accordingly, East Asian currencies show almost concurrent movements, i.e. ‘coupling’ with Japanese yen reflecting an increase in their correlation with yen in the overall post-crisis period. Of course, from period to period, they show some ‘decoupling’ with yen, in particular in 2003.

<Figure 12> East Asian Currencies per Yen

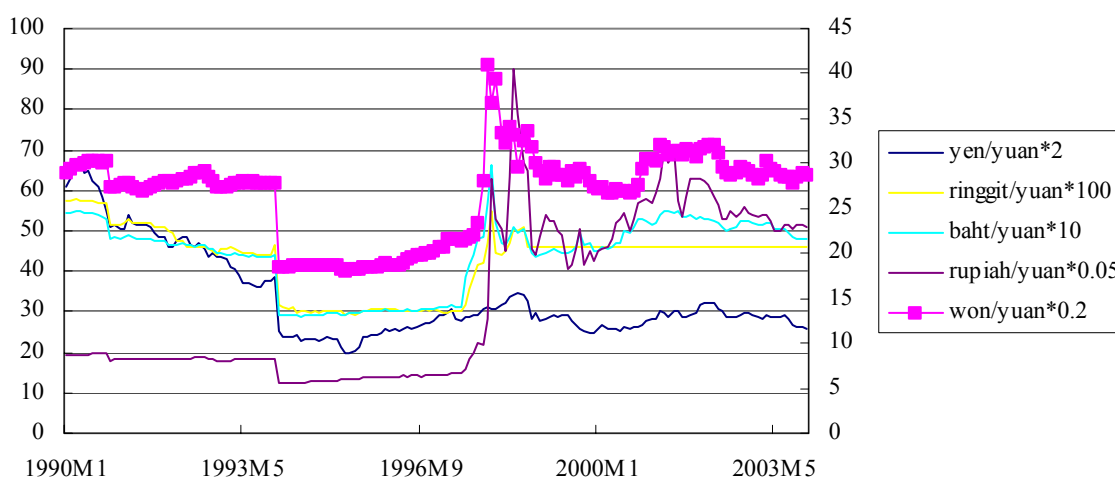


Against yuan, East Asian currencies were appreciated yuan in 1994 reflecting the measure of sharp devaluation of yuan in 1994. Since then, East Asian currencies were stable against yuan before the crisis because East Asian currencies were pegged to dollar and an exchange rate of yuan/dollar also was fixed.

After crisis, East Asian currencies are appreciated against dollar reflecting an increase in their correlation with yen having become strong, while yuan is still fixed against dollar. As a

consequence, East Asian currencies are appreciated against yuan, in particular, since 2002 when East Asian currencies have been appreciated against dollar. Such disparities in exchange rates in East Asia are mainly resulted from different exchange rate regimes and different exchange rate managements.

<Figure 13> East Asian Currencies per Yuan



3. Changes in Influences of Dollar and Yen on East Asian Currencies before and after the Crisis

Empirical estimations are necessary to more correctly examine how much a degree of influences of dollar and yen on East Asian currencies has been changed after the crisis compared with before the crisis. Exchange rates of yuan and ringgit are fixed. Therefore, estimation on exchange rates of won, baht and rupiah are carried out.

It is estimated, using an equation of $\ln(\text{national currency}/\text{ssf}) = \text{constant} + \ln(\text{dollar}/\text{ssf}) + \ln(\text{yen}/\text{ssf})$, how much a degree of influences of dollar and yen on East Asian currencies has been changed after the crisis compared with before the crisis. Estimations were carried out in

two periods, i.e. from January 1990 to June 1997 before the crisis, and from July 1998 to December 2003 after the crisis.

Unit root tests on all the variables show that they all have a unit root (See appendix Table 1). Cointegration tests show that there is a cointegration relationship among Korean won, US dollar and Japanese yen in both periods. Accordingly, level variables are used in estimation. There is a serial correlation in OLS estimation and thus, AR1 estimation method is used.

There is no cointegration relationship in level variables among Thai baht, US dollar and Japanese yen in both periods, and among Indonesian rupiah, US dollar and Japanese yen in both periods (See appendix Table 2). Accordingly first differences are used in estimation.

Estimation results show that all three currencies show very close correlations with dollar before the crisis. Estimated coefficients range from 0.8-1.0. Won and baht show some correlations with yen. But rupiah shows no correlations with yen.

After the crisis, won and baht show an increase in correlation with yen, while maintaining correlation with dollar². However, in the case of rupiah, a correlation with dollar drastically decreases and one with yen sharply increases (See Table 4).

² Chinese yuan is pegged to US dollar and the influences of yuan on the exports of East Asian countries increase. Accordingly, some influences of yuan on East Asian currencies may be included in the correlation with dollar.

<Table 4> Influence of Dollar and Yen on East Asian Currencies before and after the Crisis

	1990.1=1997.6(Before crisis)						1998.7-2003.12 (After crisis)					
	const	dollar	yen	R2	D.W	RHO	const	dollar	yen	R2	D.W	RHO
won	2.55	0.77	0.21	0.99	1.9	0.98	2.43	0.72	0.32	0.94	1.64	0.73
t-value	13.51	11.16	2.2			78.95	8.55	4.61	2.31			5.95
baht	0	0.82	0.12	0.99	2.63		0	0.62	0.23	0.54	2.04	
t-value	1.34	86.8	11.7				0.14	5.97	2.58			
rupiah	0	0.97	0.02	0.99	2.39		0	0.1	0.77	0.13	1.8	
t-value	9	75.3	1.69				0.53	0.27	2.57			

Notes:1. Estimation equation: $\ln(\text{national currency/ssf})=\text{constant}+\ln(\text{dollar/ssf})+\ln(\text{yen/ssf})$

2. Among Korean won, US dollar and Japanese yen in both periods, there is a cointegration relationship. Accordingly level variables are used. Due to serial correlation, AR1 estimation method is used
3. Among Thai baht, US dollar and Japanese yen in both periods, there is no cointegration relationship in level variables. Accordingly first differences are used
4. Among Indonesian rupiah, US dollar and Japanese yen in both periods, there is no cointegration relationship in level variables. Accordingly first differences are used

4. Consequences of Exchange Rate Policies

East Asian emerging economies have similar economic structures and development strategies, i.e. an export-oriented economy. NIEs have severe competitions even with Japan in overseas markets, in particular, in the US market. Accordingly, appreciation of some countries' currencies against the other neighbor countries' currencies may result in severe impacts on their export competitiveness.

Before the crisis, in particular, from mid-1995 to mid-1997, appreciation of East Asian countries' currencies against Japanese yen due to the weakening of yen resulted in an increase in

the current account deficits in East Asia, which became an important cause of the crisis. After the crisis, recent appreciation against yuan of the currencies of some East Asian countries such as Korea, Thailand and Indonesia shows similar effects, i.e. a decrease in the current account surplus.

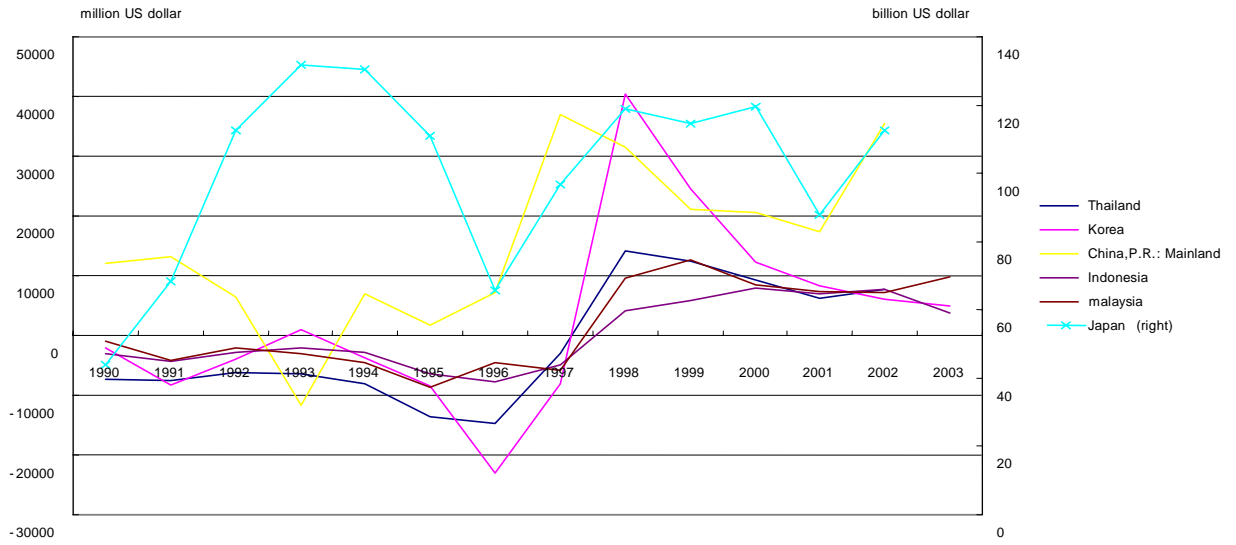
As a result, the US market occupation ratio in terms of the ratios of composition of US trade deficits by countries increased from 19.2% in 2000 to 23.1% in 2003 in China, and from 0.7% to 0.9% in Hong Kong only in East Asia, but decreased from 18.6% to 12.3% in Japan, from 2.8% to 2.4% in Korea, from 2.2% to 1.7% in Thailand, from 1.8% to 1.3% in Indonesia respectively during the same period. The ratio in Malaysia adopting a fixed exchange rate regime also decreased.

In order to see the influences of Chinese yuan on the exports of East Asian countries, simple VAR analyses have been carried out on each country³. As results of analyses, among Korea Malaysia Thailand Indonesia and Japan, Korean exports seem to be relatively largely influenced compared with other East Asian countries(see Appendix Figure 1).

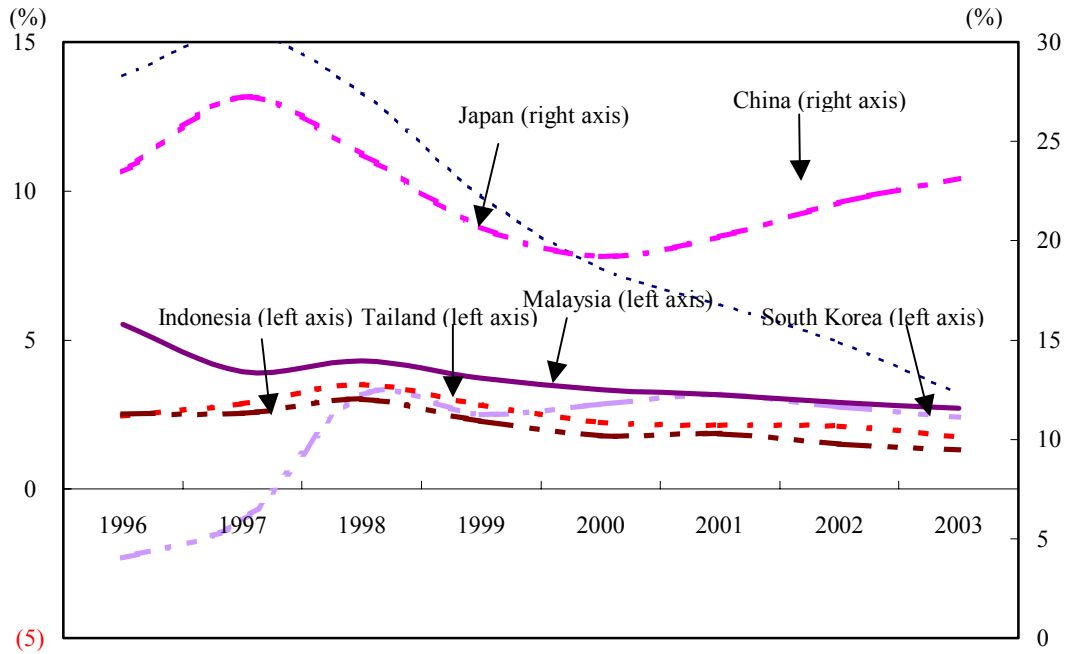
In that sense, both appreciation of some East Asian countries' currencies against Japanese yen before the crisis and recent appreciation of some East Asian countries' currencies against yuan of China, a newly emerging economy, have similar structures and, as a consequence, are expected to result in similar effects. Accordingly, disparities in exchange rates in East Asia are important issues in East Asia.

³ Three variables of real effective exchange rate of Chinese yuan, industrial production index of industrial countries (IPI) and exports of each country with two lags are used. All variables are transformed into log ones.

<Figure14> Current Accounts in East Asia



<Figure 15> Ratios of Composition of U.S. Trade Deficit by Countries



V. Lessons from East Asian Experiences for Exchange Rate Policies

In a small open emerging economy where there is no channel to influence determination of exchange rates of key currencies, important determinants of an exchange rate of its currency, that is, there may be so-called 'benign neglect'. While capital markets are opened and thus the degree of the influence of foreign investments on domestic financial market is often high, and as a result, volatilities in the foreign exchange market are often very high, but capital markets are still not sufficiently developed enough to hedge market risks, an appropriate exchange rate policy is crucial to maintaining the stability of the financial markets, to sustaining economic growth, and to escaping currency crisis.

An issue is which regime, among fixed, intermediate and floating one, is appropriate. Before the East Asian currency crisis in 1997, most East Asian countries adopted a managed exchange rate regime. In particular, East Asian currencies were mostly pegged to US dollar. After the East Asian crisis, 'two corner solutions' were suggested. Intermediate regimes were criticized. A lot of criticism on dollar-peg and rigid exchange rate policy managements were raised as important cause of the crisis. Accordingly, some East Asian countries such as Korea and Thailand adopted free floating regimes, while some other East Asian countries such as China and Malaysia, on the contrary, much more limited the flexibility of their exchange rates.

One of key points here is whether complete free floating of exchange rates could guarantee automatic adjustments of capital flows with only one price variable, an exchange rate enough to maintain an external equilibrium or, at least, to escape severe misalignment in a small open emerging economy. Otherwise, capital inflows may cause the current account deficit, and then the depletion of foreign exchange reserves or an increase in external debts. In the extreme cases

such as in the mid-1990 in East Asia, currency crisis may take place.

However, in the globalized financial markets, a fixed exchange rate regime is also impossible and inefficient. And, in addition, it reduces the independence of monetary policy. Accordingly, an increase in flexibility is essential in an open economy. Nevertheless, characteristics as a small and emerging economy can not be ignored. Considering such situations together, it may be argued that some minimum interventions, if necessary, seem to be inevitable, within the limit to maintain the independence of monetary policy and the flexibility of exchange rates, not due to the fear of floating, but in order to prevent mid-term misalignment and excessive short-term volatilities amidst volatile international financial markets.

Another issue learned from the lessons from the East Asian currency crisis, regional exchange rate policy cooperation is necessary. Before the East Asian currency crisis in 1997, East Asian currencies were mostly pegged to US dollar. Therefore, during the period of weak yen from mid-1995 to mid-1997, the dollar-peg forced East Asian currencies appreciate against yen, which played as one of important causes of the crisis through an increase in the current account deficit in East Asia.

After the crisis, East Asian currencies deviate from the dollar-peg and lean to yen. However, yen has become strong after the crisis and, as a result, East Asian currencies have also become strong against dollar and, in particular, against Chinese yuan, whose exchange rate has been fixed since 1994, while Chinese economic competitiveness has become strong.

In fact, deterioration of the current accounts before the crisis in some East Asian countries such as Korea, Thailand, Indonesia, an important cause of the crisis, was not due to their currencies' peg to dollar itself, but due to peg to a strong currency and as a consequence, their appreciation. Recent leaning to strong yen and appreciation of East Asian currencies against dollar and, in particular, against yuan, shows similar effects, i.e. deterioration of the current

accounts in some East Asian countries such as Korea, Thailand, Indonesia again as before the crisis.

East Asian emerging economies have similar economic structures and development strategies, i.e. an export-oriented economy. Accordingly, appreciation of some countries' currencies against the other neighbor countries' currencies may result in deterioration of their export competitiveness. In that sense, both appreciation of some East Asian countries' currencies against Japanese yen before the crisis and recent their appreciation against yuan of China, a newly emerging economy, have similar structures and, as a consequence, are expected to result in similar effects.

Disparities in exchange rates in East Asia are mainly resulted from different exchange rate regimes and different exchange rate managements. In these environments, it may be not easy for other East Asian countries only to maintain freely floating exchange rate regimes. Close cooperations in exchange rate policies, for instance, cooperative interventions etc, to avoid exchange rate disparities and another regional currency crisis is necessary. But, in order to have close cooperations in exchange rate policies such as cooperative interventions etc, first of all, exchange regimes and exchange rate policies should be more flexible in the region. In particular, considering a recent substantial increase in the Chinese influence in the region, an increase in the flexibility of Chinese yuan is essential.

However, an exchange rate is one of important macroeconomic policy variables with an interest rate and fiscal policy variables. Accordingly, it is almost impossible to reach exchange rate policy cooperations without considerations on the macroeconomic situations of each country. Therefore it is necessary to establish some systematic channels such as macroeconomic policy dialogue among finance ministers and central bankers in the region to increase mutual understanding on the macroeconomic situations of each country. As such mutual policy dialogue

will continue, mutual understanding on the macroeconomic situations of each country will also deepen, and, as a result, some practical and effective ideas on exchange rate policy cooperations could be suggested and implemented.

<Appendix>

<Table 1> Unit Root Test Results

	1990.1-1997.6	1998.7-2003.12
ln(won/ssf)	-3.093(-3.46)	-2.022(-3.48)
ln(baht/ssf)	-1.898(-3.46)	-3.001(-3.48)
ln(rupiah/ssf)	-1.957(-3.46)	-2.820(-3.48)
ln(dollar/ssf)	-1.935(-3.46)	-0.968(-3.48)
ln(yen/ssf)	-1.740(-3.46)	-2.707(-3.48)

Note: ADF test including constant and trend

Statistics in brackets denote 5% critical values

<Table 2> Johansen Cointegration Test Results

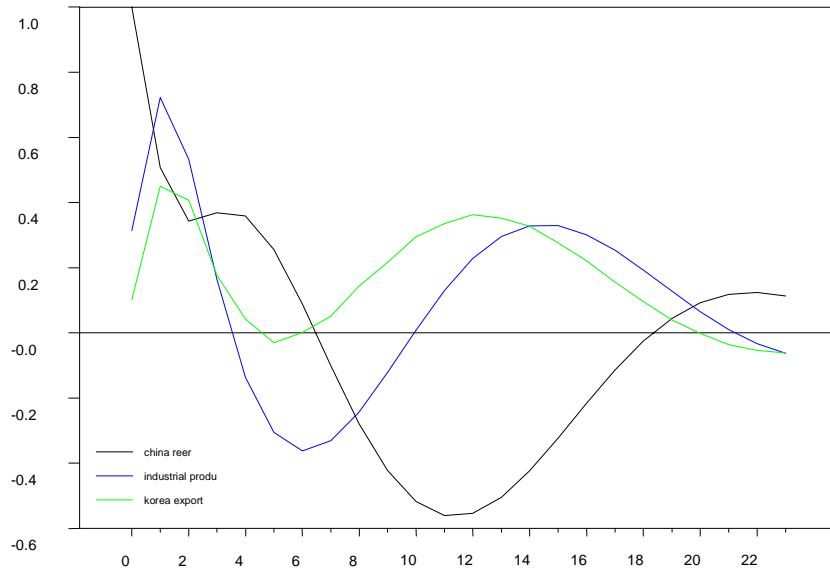
		Hypothesized No. of CE(s)	1990.1-1997.6	1998.7-2003.12
ln(won/ssf)	ln(dollar/ssf)	None	38.450(34.91)	36.895 (34.91)
ln(yen/ssf)		At most 1	14.647(19.96)	13.200(19.96)
ln(baht/ssf)	ln(dollar/ssf)	None	33.121(34.91)	33.937(34.91)
ln(yen/ssf)				
ln(rupiah/ssf)	ln(dollar/ssf)	None	23.123(29.68)	26.936(29.68)
ln(yen/ssf)				

Note: Likelihood Ratio.

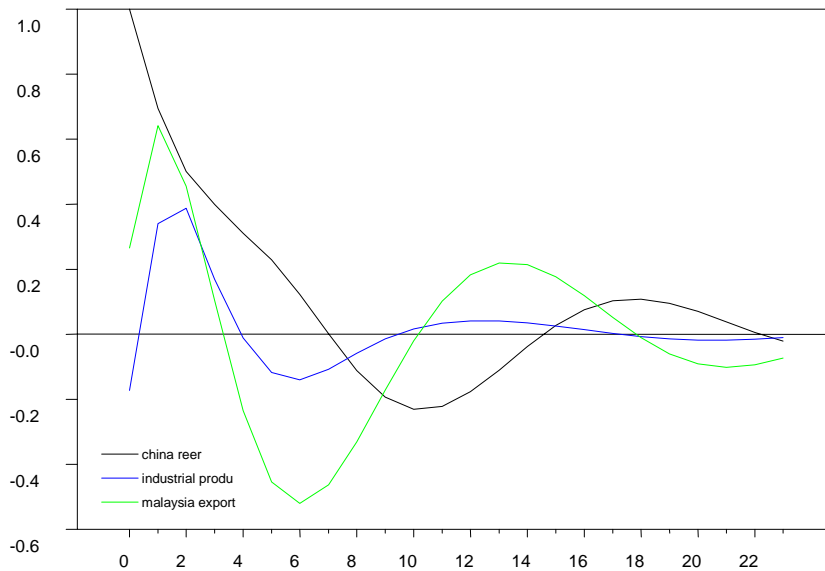
Statistics in brackets denote 5% critical values

Impulse Responses of East Asian Countries' Export to Chinese Yuan

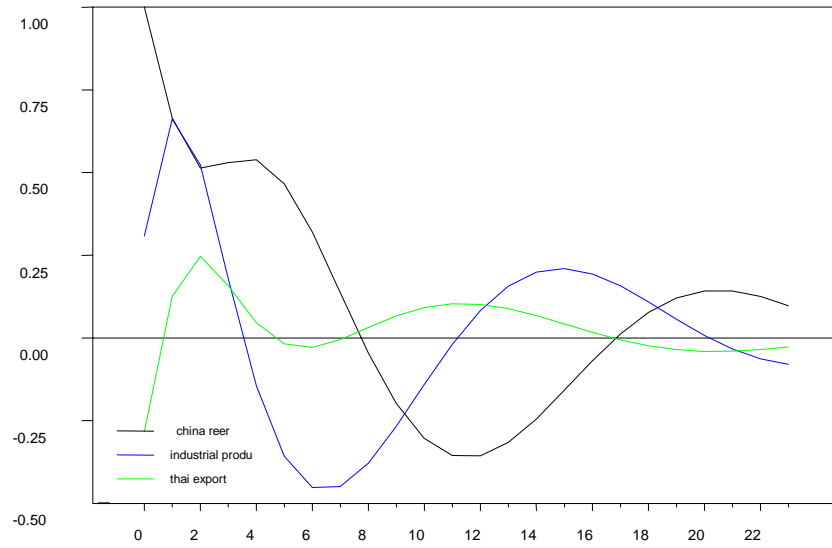
<Figure1> Plot of Responses to China REER



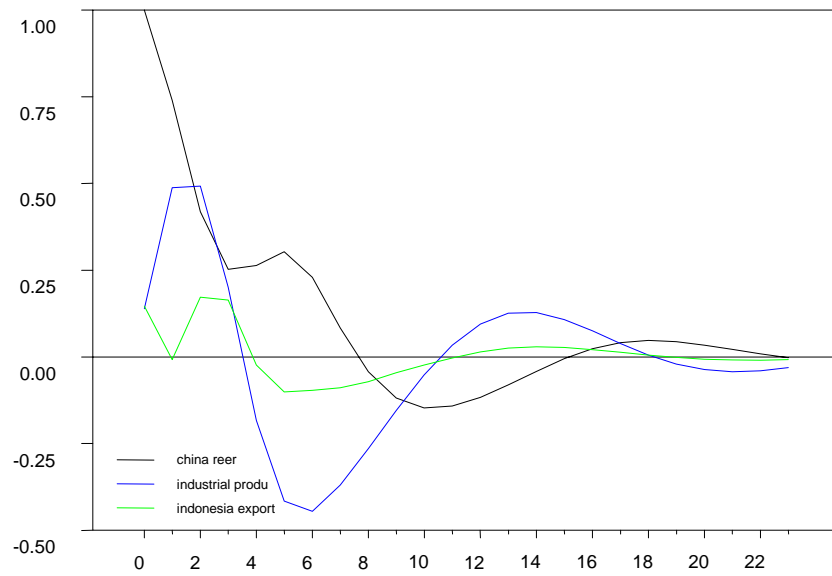
<Figure2> Plot of Responses to China REER



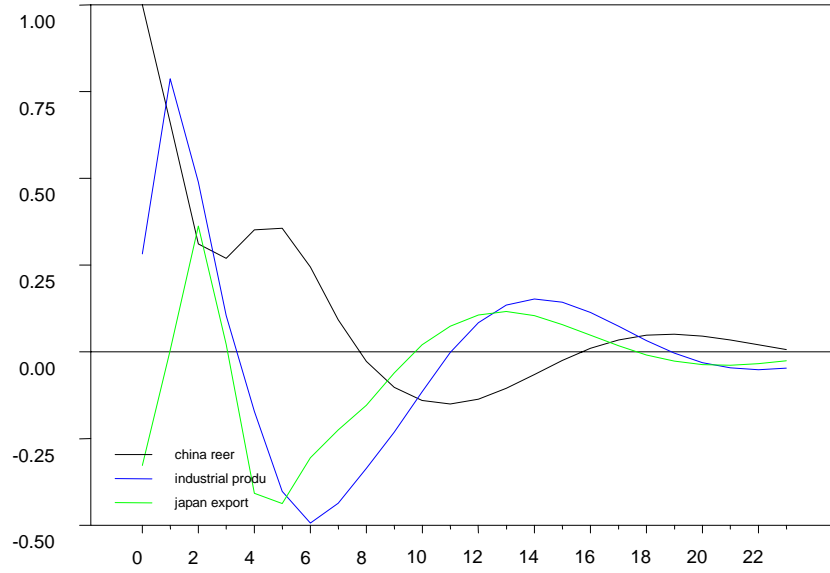
<Figure3> Plot of Responses to China REER



<Figure4> Plot of Responses to China REER



<Figure5> Plot of Responses to China REERr



References

- Calvo, Guillermo and Carmen Reinhart (2002), "Fear of Floating", , *The Quarterly Journal of Economics*", Vol 117, pp. 379-408.
- Eichengreen, Barry (2004), "Monetary and Exchange Rate Policy in Korea: Assessments and Policy Issues" *BOK Institute Working Paper No. 194*, The Institute for Monetary and Economic Research, The Bank of Korea.
- Kim S, S. H. Kim and Y. Wang (2004), "Fear of Floating in East Asia", paper presented at the KIEP conference, Seoul, Korea, August.
- Oh, Junggun (2004a), "Effects of Free Floating on the Foreign Exchange Market: The Korean Experience," paper presented to the Claremont Exchange Rate Workshop, Claremont Graduate School, Claremont, California, 1-2 April.
- Oh, Junggun (2004b), "Exchange Rate Disparities and Needs of Policy Cooperation in East Asia," paper presented at the WEAI conference, Vancouver, Canada, 30 June-3 July.
- Oh, Junggun (1997), "Capital Inflows and Their Effects on Current Accounts in East Asian Countries", *BOK Institute Working Paper No. 89*, The Institute for Monetary and Economic Research, The Bank of Korea, July (in Korean).
- Oh, Junggun. and C. Harvie(2001), "Exchange Rate Coordination in East Asia", *Journal of the Korean Economy*, Vol. 2, No. 2, Fall, pp. 249-296.
- Reinhart , Carmen M and Kenneth S. Rogoff(2004), "A Modern History of Exchange Rate Arrangements: A Reinterpretation", *The Quarterly Journal of Economics*", Vol 119 No. 1, February, pp. 1-48.

Willett, Thomas D.(2004), “Assessing Korea’s Post Crisis Managed Float”. *BOK Institute Working Paper No. 209*, The Institute for Monetary and Economic Research, The Bank of Korea.

Williamson, John (2003), “Exchange Rate Policy and Economic Development”.

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