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# Prospects for Financial Integration and Exchange Rate Policy Cooperation in East Asia

Yung Chul Park

December 2002

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Is currency union a realistic goal or a distant dream for East Asia?

This study assesses prospects for financial integration and exchange rate policy cooperation in light of the Chiang Mai Initiative.

Stabilizing exchange rates of regional currencies would advance free trade. But as Europe's experience shows, monetary unification will always essentially be a political process.

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and Exchange Rate Policy Cooperation  
in East Asia**

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## PREFACE

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The ADB Institute aims to explore the most appropriate development paradigms for Asia composed of well-balanced combinations of the roles of markets, institutions, and governments in the post-crisis period.

Under this broad research project on development paradigms, the ADB Institute Research Paper Series will contribute to disseminating works-in-progress as a building block of the project and will invite comments and questions.

I trust that this series will provoke constructive discussions among policymakers as well as researchers about where Asian economies should go from the last crisis and recovery.

Masaru Yoshitomi  
Dean  
ADB Institute

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# Prospects for Financial Integration and Exchange Rate Policy Cooperation in East Asia

Yung Chul Park

## 1. Introduction

A regional financial arrangement for financial cooperation and policy coordination, as can be inferred from the European experience, in general comprises the following three institutional components: a mechanism of short-term liquidity supports for the members experiencing balance of payments deficits; a mechanism of surveillance for monitoring economic and policy developments in the member countries and for imposing policy conditionality on those countries receiving financial support; and a regional collective exchange rate system designed to stabilize bilateral exchange rates of the member countries.

The financing and surveillance mechanisms for a potential East Asian financial arrangement are extensively analyzed in Bergsten and Park (2002). This paper discusses possibilities of and prospects for constructing a regional collective exchange rate system for East Asia with a view to adopting eventually a common currency. For this purpose, sections 2 and 3 analyze the behavior of nominal as well as real exchange rates and also exchange rate policy of a number of East Asia countries. Except for Malaysia and the People's Republic of China (PRC), other East Asian countries including Indonesia, Korea, the Philippines, and Thailand shifted to free floating after the 1997-98 crisis. However, the available evidence indicates that they seem to have been *de jure* floaters. Section 3 reviews some of the reasons why these countries have been reluctant floaters and the objectives of their foreign exchange market intervention.

Insofar as East Asian policymakers do not appear to have much confidence in the free floating regime, they are likely to turn to various intermediate regimes as a viable alternative system. Assuming the ultimate objective of exchange rate policy coordination in East Asia is to establish a common currency area (CCA), then it would follow that at a certain stage of integration, the East Asian floaters will have to return to a non-floating regime. In order to identify such a system, section 4 discusses advantages and disadvantages of various intermediate regimes. The seeming preference for non-floating systems may give the impression that possibilities of constructing a collective exchange rate system are greater in East Asia than in any other regions. However, this is not the case.

On the assumption that the thirteen East Asian countries participating in the Chiang Mai Initiative (CMI) are committed to monetary integration in the long-run by following in the footsteps of the European Union, section 5 examines whether the East Asian countries qualify as an optimum currency area. Most of the available studies on East Asian monetary integration, which focus on similarities of the economic structure and whether there has been synchronization of business cycles with the expansion of intra-regional trade, conclude that East Asian countries are as well qualified as European countries were some twenty years before for a CCA.



Section 6 and 7 discuss the progress of financial liberalization in East Asia during the past decade to see whether financial market opening has contributed to financial intergration and in so doing developed conditions favorable for constructing a CCA in the region in the long run. These two sections provide several pieces of empirical evidence suggesting that in contrast to trade liberalization, financial liberalization has steered East Asia toward global rather than regional integration. This empirical evidence therefore casts some doubts as to feasibility as well as viability of creating a CCA in the region.

Section 8 argues on the basis of the analysis of the preceding two sections that future prospects for regional cooperation for financial integration are not as promising as they may appear because East Asian ties with global financial markets will deepen and the cost of constructing regional capital markets are likely to outweigh the benefits accruing from such efforts. As the European experience shows, however, monetary integration can be an endogenous process, and by adopting a region-wide common exchange rate system, East Asia could lay the foundation for a common currency area in the long run. In order to examine this possibility, section 9 is devoted to a discussion of whether East Asian countries could agree to a collective exchange rate system. In view of the diversity of exchange rate systems at present and the difficulty of identifying a non-floating regime acceptable to all East Asian countries a collective exchange rate system is not likely to emerge in the near future.

## **2. The Behavior of Exchange Rates in East Asia**

### **2.1. Overview**

A large number of recent studies have shown that a nominal exchange rate fixed at an untenable level was one of the major causes of recent financial crises in Mexico, East Asia, and Russia. For a while after the eruption of the East Asian crisis, the flexible exchange system became the accepted norm in the new international financial architecture. For some EMEs (emerging market economies) currency unions and currency boards were an alternative regime, but mostly under unusual circumstances. With the collapse of Argentina, viability of currency boards has waned, and, at present, there is general consensus that hard pegs could not be sustainable unless they were supported by a national consensus. Since it would be difficult to obtain such a consensus, currency boards are thought to be overly constraining to many EMEs.

The overwhelming support for flexible rates, however, did not last very long. Williamson (2000) and Frankel (1999) argue that intermediate regimes such as the BBC (Basket, Band, and Crawl) system are more likely to be appropriate than the corner solutions for many EMEs. In particular, Williamson has been a staunch supporter of non-floating regimes for EMEs advocating several intermediate systems with soft edges in his recent book (2000). Fischer (2001) holds that developing countries which are not exposed to capital flows could choose from a wide range of intermediate regimes and that flexible exchange rate systems suitable for EMEs could include crawling bands with wide ranges.

Frankel (1999) argues that “no single currency regime is right for all countries at all times”. A recent survey of IMF research on exchange rate regimes by Zettelmeyer

(2001) shows that intermediate regimes are not likely to disappear and that they may be suitable for a large number of developing countries which do not actively participate in international financial markets. The IMF view is that the intermediate regimes may serve as temporary systems, but in the long run the choice for these countries comes down to either floats or hard pegs. Williamson (2000), on the other hand, argues that intermediate regimes could be a permanent option to a wide range of emerging market economies. Underlying this is the belief that flexible rates could be misaligned, making it difficult for emerging market economies to maintain their export competitiveness and hence to sustain rapid growth.

Reflecting these contrasting views on exchange rate regimes and policies, many countries in East Asia have been reluctant to accept the advice of the IMF and the economic profession in general. Malaysia decided to adopt a fixed exchange rate system in the midst of a crisis, PRC continues to adhere to what they call a managed floating system, and other East Asian countries intervene extensively to stabilize their nominal exchange rates. Baig (2000) and Hernandez and Montiel (2001) show that the currencies of the East Asian crisis countries have been relatively more stable since the early 1999, compared to a representative sample of other floating currencies (see Table 1). Their interpretation of this evidence is that many East Asian countries have reverted back to the old regime of pegging their currencies to the dollar. On the question of intervention, Williamson (2000) is more specific:

Where the authorities of a country do not announce any objectives that would permit a judgment that they had succeeded or failed, but where they nevertheless have views about where the exchange rate ought to be, and are prepared to act on those views. They announce no parity or band, but they typically worry if the rate depreciates a lot, and they intervene, or change interest rates, or sometimes seek to influence the flow of capital, with a view to having an impact on the exchange rate. And they may certainly worry about the exchange rate appreciating so much as to threaten their country's competitiveness, as has been the case in Korea. (p.29)

An important starting question is why these emerging market economies in East Asia have so little confidence in the flexible exchange rate system. It is perhaps too early to assess the effects of the flexible exchange rate system on East Asia's recent recovery. However, judging from the available evidence, contrary to expectations, the free-floating system has not clearly enabled East Asian countries to reduce their vulnerability to future crises or their holdings of reserves.

As part of the IMF conditionality for its liquidity support after the financial crisis broke out toward the end of 1997, Korea, Indonesia, and Thailand agreed to eschew a managed floating system in favor of a flexible exchange rate regime. Immediately after the crisis the Korean won-dollar exchange rate jumped up to almost 2000 won per U.S. dollar, clearly overshooting an equilibrium level. Since then the nominal exchange gradually appreciated to fluctuate between 1,200 and 1,300 until the end of 2001 before appreciating again. Similar developments have also taken place in other floating economies (see Figure 1).

As a background of an analysis of the extent and objectives of foreign exchange market intervention, this section examines the behavior of the bilateral-dollar exchange

rates before, during, and after the crisis in the five East Asian countries—Indonesia, Korea, Malaysia, the Philippines, and Thailand.

## 2.2. Volatility of the Nominal Exchange Rates

As shown in Table 1, Indonesia, Korea, the Philippines, and Thailand are officially classified as independent floaters. This official classification may be misleading in view of the growing evidence that they have returned to exchange rate policies similar to those of the pre-crisis period which sought to stabilize their bilateral dollar exchange rates. In the spectrum of exchange rate regimes from hard pegs to free floating, it appears these countries have moved toward the hollow middle. Nevertheless, as shown in Figure 1 which depicts daily movements of the local currency-dollar exchange rates, the regime shift to the free floating system has resulted in an increase in volatility of nominal dollar exchange rates in the four countries.

**Table 1. Exchange Rate Flexibility \***

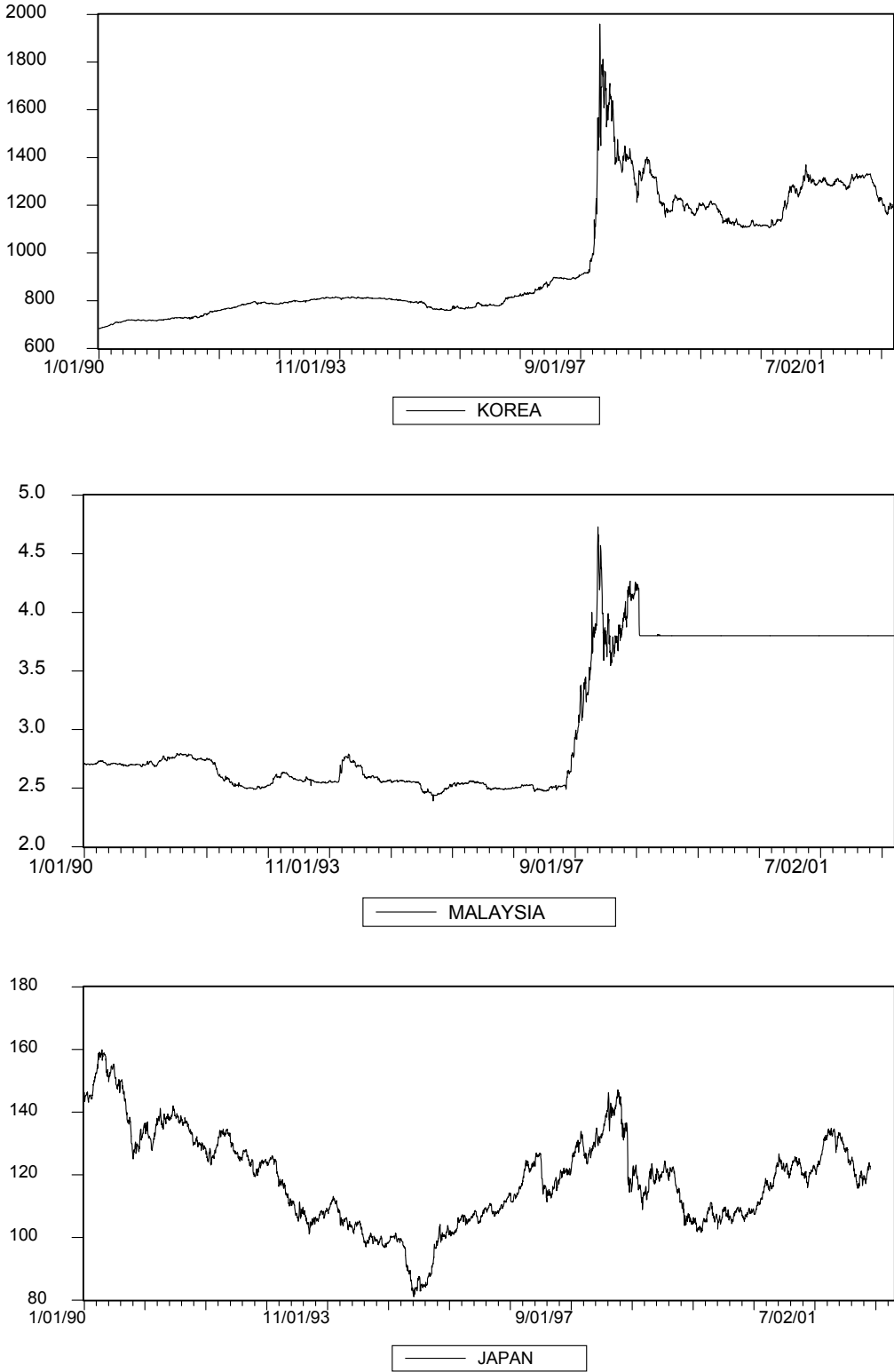
Country	Indonesia	Malaysia	Philippines	Korea	Thailand
IMF Classification	Independent floating	Fixed peg	Independent floating	Independent floating	Independent floating
Flexibility Index					
1990	0.031	0.053	0.138	0.508	0.043
1991	0.017	0.092	0.026	0.582	0.037
1992	0.011	0.079	0.040	0.705	0.037
1993	0.023	0.090	0.070	0.288	0.039
1994	0.065	0.260	0.041	0.149	0.030
1995	0.037	0.099	0.059	0.492	0.044
1996	0.046	0.059	0.006	0.071	0.013
1997	0.344	0.202	0.171	0.542	0.328
1998	0.523	0.238	0.221	0.829	0.398
1999	0.706	0.451	0.391	0.781	0.390
2000	0.171	0.000	0.058	0.452	0.060
2001	0.314	0.000	0.160	0.352	0.191

\* Standard Deviation of Exchange rate changes (SDEX)

SDEX = Standard deviation of the ratio of changes in reserves over lagged monetary base

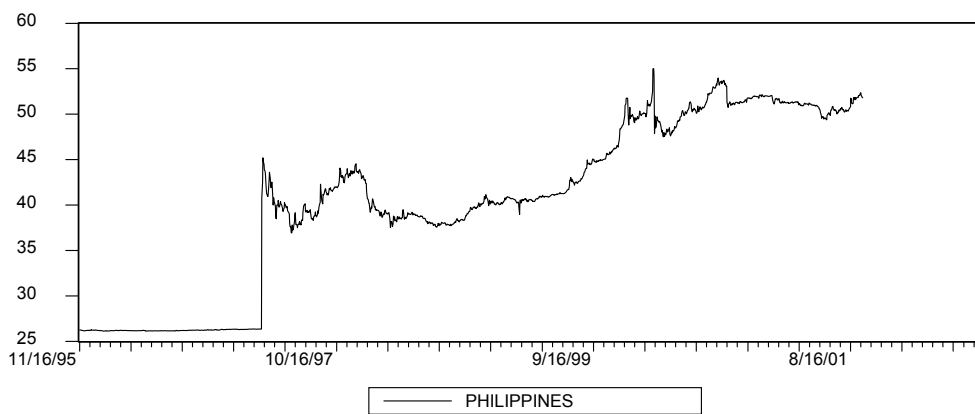
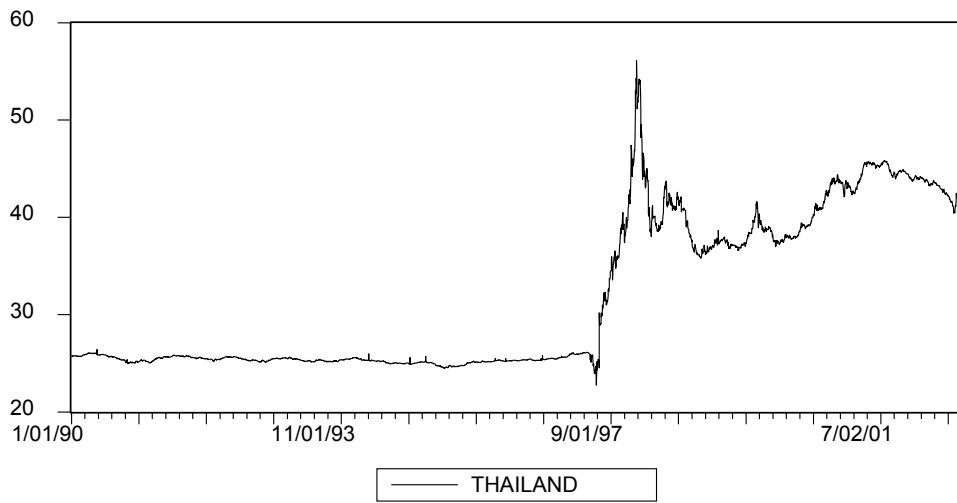
Source : Baig (2001)

**Figure 1. Movements of the Nominal Exchange Rates of Korea, Malaysia, Japan, Thailand, Indonesia, and the Philippines**



Source: Pacific Exchange Rate Service (<http://pacific.commerce.ubc.ca/xr/data.html>)

Figure 1 (cont.)



Source: Pacific Exchange Rate Service (<http://pacific.commerce.ubc.ca/xr/data.html>)

For a more formal analysis of changes in volatility of the exchange rates in these countries before and after the crisis, GARCH (generalized autoregressive conditional heteroskedasticity) variances of the daily changes in the exchange rate changes are estimated. The empirical examination follows a GARCH (1,1) model that consists of the following two equations:

$$\Delta s_t = c_0 + \sum_{i=1}^m \alpha_i \Delta s_{t-i} + u_t, u_t / \Omega_t - (0, h_t) \quad (1)$$

$$h_t = c_1 + \beta_1 u_{t-1}^2 + \beta_2 h_{t-1} + \varepsilon_t \quad (2)$$

where  $s_t$  is the log of the exchange rate of a local currency per U.S. dollar, and  $\Delta$  is a first difference operator;  $u_t$  is an error term of the mean equation (1) and  $h_t$  is a conditional variance of  $u_t$ ;  $\Omega_t$  represents a set of information available at time  $t$  and  $\varepsilon_t$  is an error term of the variance equation. Equations (1) and (2) are estimated for the four East Asian countries which shifted to free floating in 1997 from a managed floating system (a fixed regime in the case of Thailand) and the values of the conditional variances across the different exchange rate regimes are examined for comparison.

The sample period for the managed floating or fixed regime runs from 1995 to April 30, 1997, while the sample period for the free floating regime is two years from January 1, 1999 to August 31, 2002. The first few months of the 1997 crisis were excluded from the sample even though exchanges rates were allowed to freely float in all four countries during this period, because the inclusion of the earlier period of crisis could overstate exchange rate volatility and then skew the results. The length of dependent lags in equation (1) follows the Schwarz information criterion.

The results of estimation of equations (1) and (2) are reported in Table 2. They suggest that volatility of the exchange rate under the free floating system is much greater than under the managed floating regime in all four countries. In particular, the increase in volatility has been most conspicuous in the Philippines where volatility is about 283 times higher than that of the managed floating period. A similar development is also found in Thailand and Indonesia where volatility increased by more than 20 times after the crisis. Since the exchange rates of the three Southeast Asian economies were very stable prior to the East Asian crisis, these results are not surprising.

In contrast, however, volatility of the nominal exchange rate of the Korean won has not increased as much as it has in the other three countries, although it was much higher before the crisis. Nevertheless, volatility of the won-dollar exchange rate in the free-floating period is still 9 times as large as it was during the managed floating period.

As for the factors that have contributed to the volatility increase, the regime shift tops the list, to be followed by the increase in volatility of capital flows. Prior to the financial crisis, the five East Asian countries saw a sharp increase in capital inflows. After the crisis, net capital inflows have been negative except for Korea where they have been positive but displayed a great deal of volatility. Changes in the volatility of net portfolio capital flows measured by the ratio of the standard deviation of net portfolio capital flows of the managed to that of the floating exchange rate regime have risen in all five countries, notably in Thailand, suggesting an increase in instability of capital movements (Park and Song 2001).

**Table 2A. GARCH Estimation of Exchange Rate Volatility**

GARCH(1,1) model

Variable	before the crisis (1995:12:01-1997:04:30)				after the crisis (1999:01:01-2002:08:31)			
	Korea	Thailand	Indonesia	Philippines	Korea	Thailand	Indonesia	Philippines
$C_0$	0.000332 (2.259)	0.000121 (1.209)	0.000166 (1.191)	1.90E-05 (0.815)	-0.000128 (-1.063)	-5.25E-05 (-0.463)	0.000152 (0.306)	0.000138 (1.592)
$\Delta s_{t-i}$	0.044 (0.698)	-0.093 (-1.059)	-0.370* (-7.592)	-0.174* (-3.224)	0.084* (3.048)	0.011 (0.323)	-0.0379 (-0.998)	-0.0823* (-2.776)
$C_1$	1.24E-06* (7.149)	5.07E-07* (6.889)	2.67E-06* (4.793)	5.85E-08** (2.485)	2.92E-07* (6.241)	1.34E-07* (4.681)	8.70E-06* (7.796)	6.75E-07* (7.798)
$u^2_{t-1}$	0.2221* (5.980)	0.3013* (4.322)	0.265* (3.673)	0.150* (2.936)	0.102* (10.440)	0.079* (13.477)	0.078* (8.408)	0.433* (17.248)
$h_{t-1}$	0.639* (15.574)	0.591* (11.633)	0.436* (5.275)	0.600* (6.166)	0.892* (139.881)	0.920* (201.534)	0.888* (77.214)	0.702* (58.374)
Average of variance	8.24E-06	3.93E-06	8.79E-06	2.52E-07	7.41E-05	7.59E-05	0.000263	7.14E-05

() Z-statistics

\*, \*\*, \*\*\* : Significant at 1%, 5%, and 10% level

**Table 2.B. The Increase of Volatility after the Crisis**

Korea	Thailand	Indonesia	Philippines
8.99	19.32	29.89	283.35

Capital account liberalization has also speeded up integration of East Asia's capital markets into major international financial markets. As a result of the increased pace of global integration, external shocks originating in the New York and London markets are transmitted to East Asia's financial markets, in particular the equity market, more extensively and at a faster speed than before (see section 8 for a detailed analysis).

Finally, several recent studies provide some evidence that foreign portfolio investors operating out of the equity market in East Asia have exhibited a tendency to engage in positive feedback trading: buying when the market is booming and selling when it is slumping. There is also evidence that foreign investors have a propensity to move together in a herd (Choe, Kho, and Stulz, 1998, Kim and Wei, 1999, Park and Park, 1999). The positive feedback trading and herd behavior of foreign portfolio investors who hold as a group a growing share of the total market capitalization of East Asian equities are likely to have, in part, been responsible for increasing instability of

the stock markets, which appears to have spilled over into the foreign exchange market, amplifying volatility of the nominal exchange rate.

### **3. The Behavior of the Nominal and Real Effective Exchange Rates:**

#### **Foreign Exchange Market Intervention**

One might argue that the increase in volatility of the nominal exchange rate that is expected with the regime shift has not been excessive compared to that of other floating currencies. For example, it is evident that the nominal exchange rates of the Thai baht and Korean won have been relatively more stable than the yen-dollar exchange rate, although volatility of Indonesian rupiah has been four times higher than that of the yen. The East Asian experience therefore partly confirms the findings of Calvo and Reinhart (2000a and b) that the exchange rate variability in emerging market economies after moving to the floating regime has been much lower than that of the advanced floaters, raising the suspicion that the authorities of Thailand and Korea have been engaged in the foreign exchange market intervention.

Do authorities of the four East Asian countries intervene in the foreign exchange market, and, if they indeed do, what are their objectives? What are the instruments of intervention? There is some evidence that the policy authorities of the crisis countries have stepped into the foreign exchange market to reduce volatility of the nominal exchange rate, although it is difficult to judge whether they have had a clear idea as to the appropriate level. It is evident that all four East Asian floaters—Indonesia, Korea, the Philippines, and Thailand—have continued to manage their dollar exchange rates, certainly much more actively than pure floaters (Baig 2001, Hernandez and Montiel 2001). In McKinnon's view (2000), the East Asian countries with a free floating system really intervene extensively to stabilize their nominal exchange rates to the point where all of the East Asian countries except for Japan have more or less pegged their currencies to the U.S. dollar.

A piece of prima facie evidence of market intervention is, of course, the massive accumulation of foreign exchange reserves in these countries. The level of reserves shot up to 35 percent of GDP in Malaysia (highest) and 18.8 percent both in Indonesia and the Philippines (lowest) in 2001 from a 1997 average of 11 percent of the five countries (see Table 3C) and was more than twice as large as the volume of short-term foreign debt in 2001 except for Indonesia (see Table 3D). Between 1998 and 2001 all five countries recorded large surpluses in their current accounts. Malaysia leads the group by accumulating a surplus equivalent to 8 percent of its GDP in 2001, followed by Thailand, the Philippines, and 2.0 percent of Korea (see Table 3B). Had the authorities of the crisis countries refrained from market intervention, the nominal exchange rates might have appreciated much more than otherwise, possibly even choking off the ongoing recovery from the crisis. Therefore, the reserve accumulation appears to have been the major objective of the authorities' intervention, which has in turn required generating current account surpluses by stabilizing a nominal or real effective exchange rate below an equilibrium level.

Baig (2000) shows that while the volatility of the exchange rate has increased, that of the interest rate and reserves has decreased in the crisis countries as expected in a free floating regime. However, changes in an index of exchange rate flexibility (the



ratio of standard deviation of exchange rate changes (SDEX divided by SDEX + standard deviation of the ratio of changes in reserves over lagged monetary base) suggest that there has been a decrease in the flexibility in the East Asia floaters after a sharp increase in 1998, approaching close to the pre-crisis level (see Table 1).

Measures of market intervention developed by Bayoumi and Eichengreen (1998) and Glick and Wihlborg (1997) also indicate a similar development. As shown by Park and Song (2001), the two indices of market intervention hardly changed between the two different exchange rate regimes in the four East Asian countries. A recent study by Park, Chung, and Wang (2001), using intra-day data over the 10 days from September 10 to 20 in 1999, shows that large changes in the nominal exchange rate disappeared within a few minutes. Unlike in other free-floating regimes, intra-day exchange rate movements in Korea did not show any volatility clustering, indicating that the Korean authorities were actively smoothing out large changes in the nominal exchange rate.

These pieces of evidence confirm that like many other emerging market economies, Korea, Thailand, Indonesia, and the Philippines have moved to the hollow middle of the exchange rate regimes, although they are officially classified as floaters. What are then the aims of the market intervention in these economies? In general, there are three different objectives of the market intervention: stabilization of high-frequency exchange rate movements and adjustment of the nominal or real effective exchange rates.

### **Smoothing-out Operations**

Smoothing-out operations for high frequency exchange rate movements such as those the Korean authorities were engaged in may be necessary after a crisis to stabilize market expectations, as they could help market participants establish their expectations on the future movements of both the real and nominal exchange rates by minimizing the effect of noise trading (Hernandez and Montiel, 2001).

**Table 3A. Five Asian Economies:<sup>(1)</sup> External Financing**

	1978	1979	1980	1981	1982	1983	1984	1985	1986
Current account balance	-6	-7.9	-8.9	-15.5	-17.6	-18.4	-8.7	-5.3	1
External financing, net	3.4	10.6	11.3	18.1	23.4	21.2	12.8	10.2	-3.9
Private flows, net	1.7	7.3	7.7	11.8	14.5	14.8	8.7	6.4	-5.5
Equity investment. Net	0.2	0.4	0.5	1.1	0.6	0.9	1	1	1.2
Direct investment. Net									
Portfolio investment. Net									
Private creditors, net	1.5	6.9	7.2	10.7	13.8	13.9	7.7	5.5	-6.6
Commercial banks, net	1.5	6.1	5.5	9.9	11.8	8.3	6.1	1.9	-6.8
Nonbanks, net	0.1	0.8	1.7	0.8	2	5.5	1.6	3.6	0.2
Official flows, net	1.7	3.3	3.7	6.3	9	6.4	4.1	3.7	1.6
IFIs	1.4	1.3	1.9	3.2	2.1	4	1.7	1.3	0.9
Bilateral creditors	0.3	2	1.8	3	6.8	2.4	2.3	2.4	0.7
Resident lending/other, net <sup>(2)</sup>	-0.7	0.5	0.8	-3.3	-8.4	-1.6	-0.5	-4.3	2.4
Reserves (- = increase)	-0.6	-3.2	-3.3	0.6	2.6	-1.2	-3.6	-0.6	0.4
E = estimate, f = IIF forecast									

Source: Institute for International Finance Data.

(1) Indonesia, Malaysia, Philippines, Korea and Thailand.

(2) Including net lending, monetary gold, and errors and omissions.

(cont.)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Current account balance	9.3	12.1	-0.5	-16.8	-25.4	-16.1	-13.6	-22.3	-39.3	-54.6	-27.3
External financing, net	-6.5	1.8	17.2	26.9	29.8	33.9	55.3	54.8	98.3	119.8	42.2
Private flows, net	-7.1	3	15.2	22.1	27.7	25.2	49.4	48.4	94.8	121.7	6.6
Equity investment. Net	2.2	4.4	7.6	5.5	4.1	11.3	24.6	15	16.1	20	6.2
Direct investment. Net				2.7	4.5	4.5	4.2	4.8	4.1	4.8	6.8
Portfolio investment. Net				0.7	-0.3	6.9	20.4	10.2	12	15.2	-0.7
Private creditors, net	-9.3	-1.4	7.6	16.6	23.6	13.9	24.7	33.4	78.7	101.7	0.5
Commercial banks, net	-8.9	-1.5	5.7	18.4	19.4	7.2	13.7	30	64.7	69.4	-16.9
Nonbanks, net	-0.4	0.1	1.9	-1.8	4.2	6.7	11	3.4	14	32.3	17.4
Official flows, net	0.6	-1.2	2	4.8	2.1	8.7	5.9	6.4	3.4	-1.9	35.6
IFIs	0.7	-0.8	0.7	-0.7	0.6	2.2	1.1	-0.6	-0.4	-2.1	22.5
Bilateral creditors	-0.1	-0.4	1.4	5.5	1.5	6.4	4.9	6.9	3.8	0.2	13
Resident lending/other, net <sup>(2)</sup>	0.9	-4	-7.7	-3.7	5.3	1.2	-21.8	-27.9	-44.8	-46.8	-47
Reserves (- = increase)	-3.7	-9.9	-9	-6.4	-9.6	-19	-19.9	-4.6	-14.1	-18.4	32.1

E = estimate, f = IIF forecast

(cont.)

	1997	1998	1999	2000e	2001f	2002f
Current account balance	-27.3	69.9	62.7	47.1	32	28.3
External financing, net	42.2	-13.8	2.7	13.6	-2.4	7.6
Private flows, net	6.6	-38.3	1.3	10.8	2.7	9
Equity investment. Net	6.2	16.6	37.1	25.5	18.9	19.6
Direct investment. Net	6.8	13.3	16.6	14.1	8.6	7.8
Portfolio investment. Net	-0.7	3.3	20.5	11.4	10.2	11.8
Private creditors, net	0.5	-54.9	-35.8	-14.6	-16.2	-10.5
Commercial banks, net	-16.9	-48.4	-32.2	-15.5	-9.1	-7
Nonbanks, net	17.4	-6.5	-3.6	0.9	-7.1	-3.6
Official flows, net	35.6	24.5	1.3	2.8	-5.1	-1.5
IFIs	22.5	19.7	-5.2	1.9	-8.7	-4
Bilateral creditors	13	4.9	6.6	0.9	3.6	2.5
Resident lending/other, net <sup>(2)</sup>	-47	-16.7	-28.6	-31.7	-18.2	-19.8
Reserves (- = increase)	32.1	-39.4	-36.8	-28.9	-11.4	-16

E = estimate, f = IIF forecast

**Table 3B. Current Account Surpluses as of GDP (%)**

Quarter	Indonesia	Malaysia	Philippines	Korea	Thailand
1994.1	-3.09	-8.86	-4.08	-2.26	-2.99
1994.2	-1.36	-5.39	-7.05	-0.30	-7.76
1994.3	-0.35	-8.11	-3.89	-1.47	-5.18
1994.4	-2.02	-7.85	-3.55	-0.09	-5.53
1995.1	-3.76	-8.12	-4.28	-3.07	-5.69
1995.2	-3.95	-14.35	-5.24	-2.08	-9.38
1995.3	-3.40	-11.01	1.05	-1.64	-7.14
1995.4	-2.30	-5.71	-2.57	-0.49	-9.23
1996.1	-3.83	-5.53	-4.05	-3.59	-7.54
1996.2	-4.68	-2.84	-9.77	-3.93	-10.60
1996.3	-3.62	-4.30	-0.21	-5.63	-7.78
1996.4	-1.71	-6.47	-5.10	-4.45	-5.71
1997.1	-3.76	-2.77	-2.45	-6.29	-4.70
1997.2	-1.79	-11.23	-7.48	-2.19	-6.84
1997.3	-2.35	-3.01	-7.37	-1.62	-2.05
1997.4	-0.47	-3.18	-3.69	3.52	9.41
1998.1	4.46	6.41	-0.18	15.88	16.21
1998.2	3.23	11.42	1.07	14.20	10.15
1998.3	8.00	17.42	3.15	11.91	12.59
1998.4	2.33	18.72	4.93	9.47	12.01
1999.1	4.80	15.98	8.73	6.74	12.70
1999.2	2.49	16.74	7.09	6.31	7.44
1999.3	5.10	17.98	13.97	6.47	10.09
1999.4	4.02	13.16	11.61	4.84	10.38
2000.1	4.74	12.90	8.15	1.50	10.13
2000.2	3.58	7.76	11.33	2.57	5.42
2000.3	5.91	8.31	14.59	3.59	7.41
2000.4	6.73	8.62	15.67	2.85	7.56
2001.1	5.68	8.52	9.62	2.77	4.67
2001.2	4.06	7.41	-0.02	3.64	3.72
2001.3	6.05	8.69	2.82	0.98	6.02
2001.4	3.04	6.66	3.23	0.92	7.17
2002.1	3.19	8.73	13.18	1.66	5.78

Source: Asia Recovery Information Center (<http://aric.adb.org/>)

**Table 3C. Gross International Reserves as of GDP**

unit: %

Ratio (Reserve/GDP)	Indonesia	Malaysia	Philippines	Korea	Thailand
1990	6.52	22.12	2.09	5.86	15.59
1991	7.22	22.15	7.16	4.64	17.83
1992	7.51	29.15	8.31	5.44	18.27
1993	7.13	40.67	8.60	5.85	19.55
1994	6.86	34.08	9.39	6.37	20.30
1995	6.78	26.72	8.59	6.68	21.39
1996	8.03	26.83	12.11	6.55	20.68
1997	7.69	20.72	8.86	4.27	17.32
1998	23.80	35.22	14.17	16.36	25.76
1999	18.71	38.79	17.38	18.23	27.91
2000	18.60	33.05	17.46	21.02	26.21
2001	18.75	34.81	18.82	24.34	28.20

Source: Asia Recovery Information Center (<http://aric.adb.org/>)

**Table 3D. Short-term External Debt as of GIR (Gross International Reserve)**

Quarter	Indonesia	Malaysia	Philippines	Korea	Thailand
1995.1		27.53		217.61	
1995.2		24.90		223.04	
1995.3		24.31		215.44	
1995.4		26.90		220.01	145.62
1996.1		28.13		228.19	
1996.2		35.96		224.27	
1996.3		37.96		254.07	
1996.4	233.96	37.01	71.85	274.17	126.53
1997.1		45.93		339.75	
1997.2		53.50		303.58	
1997.3		66.74		322.99	
1997.4	218.24	59.77	116.15	312.05	146.27
1998.1		52.44	113.07	180.29	
1998.2		55.27	90.45	82.86	
1998.3		38.60	88.54	65.38	
1998.4	110.51	36.88	77.88	59.06	98.66
1999.1		30.84	59.61	54.70	87.62
1999.2		26.33	53.14	50.46	76.65
1999.3		24.54	52.10	52.85	67.84
1999.4	67.31	19.30	43.42	53.01	57.36
2000.1		15.93	42.31	53.20	56.80
2000.2	29.63	15.54	44.01	53.84	54.25
2000.3		16.00	43.16	54.15	48.22
2000.4		15.58	45.56	49.85	45.90
2001.1		17.52	40.90	48.91	45.91
2001.2		18.61	42.73	47.15	48.95
2001.3		18.10	47.36	42.90	45.78
2001.4		20.70	45.00	38.08	41.37
2002.1		22.24	37.14	38.84	40.06
2002.2		19.06		42.46	37.20

Source: Asia Recovery Information Center (<http://aric.adb.org/>)

If moderating volatility of the nominal exchange rate is the main objective, then Hernandez and Montiel (2001) argue that the exchange rate smoothing would lead to substantial fluctuations in the stocks of foreign reserves domestic interest rates. However, they do not find any evidence that the four East Asian countries have used their reserves as an instrument of smoothing-out operations; instead, the stocks of reserves have exhibited a systematic tendency to increase over time in all four countries.<sup>1</sup>

According to Hernandez and Montiel, the interest rate volatility decreased in the post-crisis relative to the pre-crisis period in Korea and Thailand, whereas it rose in Indonesia and the Philippines. The evidence is therefore not conclusive as to whether the authorities of these countries were intervening in their domestic securities market to stabilize the nominal exchange rates. If either the reserve or domestic securities market intervention was not directed to the smoothing-out operations, then the logical conclusion is that capital controls may have been the most frequently used instrument of intervention in these economies.

### **Stabilizing its Nominal Effective Exchange Rate (NEER)**

The four East Asian countries may not have been as concerned about stabilizing their bilateral dollar exchange rates as they may have been about stabilizing either their nominal or real effective exchange rates. These countries may have had good reasons to peg their exchange rates to, or to manage against, a basket of currencies of the countries with which they have established extensive trade relations. Hernandez and Montiel (2001) speculate that the four countries may have preferred a basket pegging to fixing to the U.S. dollar because as their trading partner the United States has declined in importance and they may want to use the nominal effective exchange rate as a nominal anchor.

However, Hernandez and Montiel do not find evidence that of the East Asian countries which they analyze were managing their bilateral exchange rates vis-à-vis the U.S. dollar to stabilize their trade-weighted nominal effective exchange rates. They do not identify the currencies included in the baskets of the four countries, but assuming that the baskets contain the U.S. dollar, yen, and the Euro, the authorities of these countries would manage their bilateral dollar exchange rates to offset fluctuations in the U.S. dollar-yen or the U.S. dollar-Euro bilateral exchange rates. When the yen depreciates, vis-à-vis the U.S. dollar, for example, as it has in recent periods, one would expect in all four countries an intervention to engineer a depreciation of the bilateral-dollar exchange rate so that the nominal effective exchange would remain relatively stable. Hernandez and Montiel show that the bilateral-dollar exchange rates were not

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<sup>1</sup> Baig (2001) also finds similar evidence. Volatility of foreign exchange reserves has declined substantially during the post-crisis period in Korea. The Korean authorities, it appears, have not resorted to the use of reserves to moderate the movements of the nominal exchange rate. Instead, they have relied on a few state-owned banks to intervene in the market, using their own holdings of foreign exchange, which are not counted as part of the central bank foreign reserves. If their interventions were not effective, the Korean authorities made it known that they would step in through sterilized intervention to reduce instability of the foreign exchange market. When the yen depreciation recently led to a simultaneous depreciation of the Korean won, the central bank was able to calm down the market by simply announcing their intention of conducting sterilized intervention.



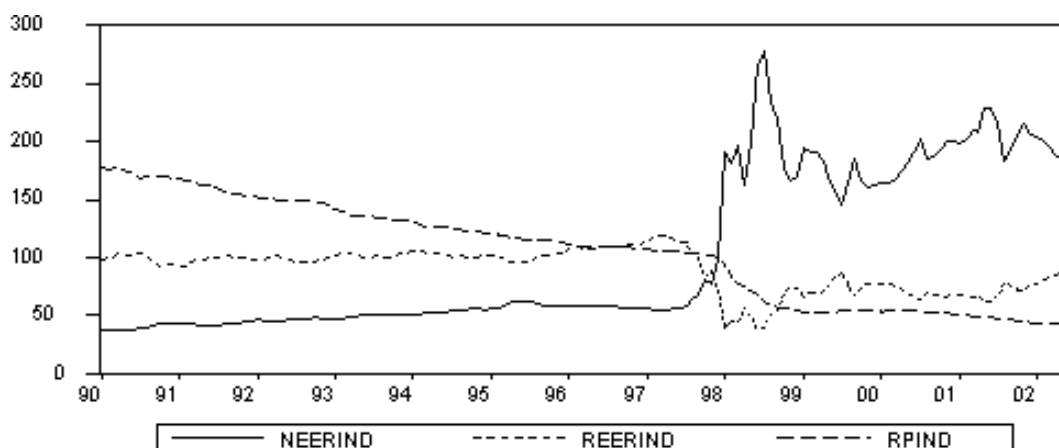
adjusted to offset fluctuations in the exchange value of the dollar against the currencies of other trading partners.

However, the empirical evidence provided by Hernandez and Montiel is not supported by the NEER data on the five East Asian countries estimated by ADB's Regional Economic Monitoring Unit. The ADB data show that their NEERs have become relatively more stable in the post-crisis period than before except for the Philippines (see Figure 2). As shown in Table 4, the variances of the NEERs for Indonesia, Korea, and Thailand have all declined in the post-crisis period. The variance of the Philippines has risen marginally, whereas that of Malaysia has remained unchanged. This finding is also corroborated by the recent empirical evidence that most of the East Asian countries including those examined in this paper have implicitly and rather loosely pegged their currencies to a currency basket that contains the U.S. dollar, the euro, and the yen (Kawai 2002).

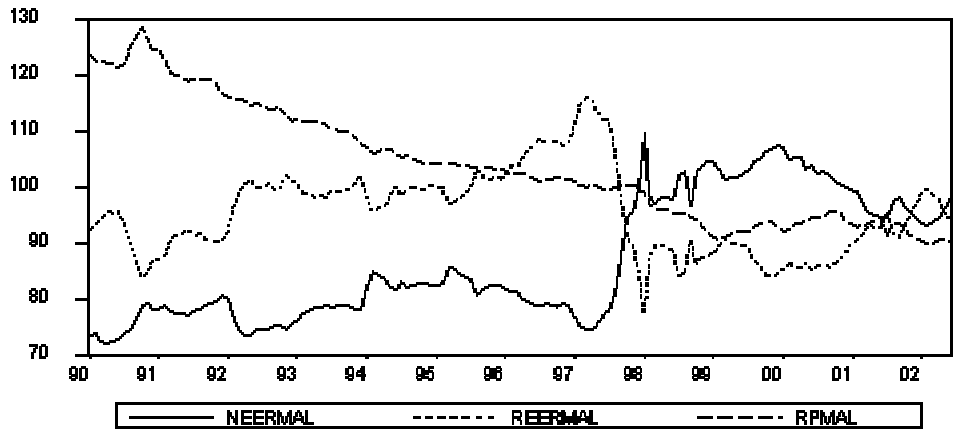
If the bilateral-dollar exchange rate was managed to stabilize the NEER, then the correlation between the bilateral exchange rate and the yen-dollar or the euro-dollar exchange rate should be high in each country. As presented in Table 5 in the post-crisis period, the coefficients of correlation rose vis-à-vis the yen-dollar exchange rate in Indonesia, Korea and the Philippines; with regard to the euro-dollar exchange rate the correlation coefficients were also higher in all countries except Korea. These pieces of evidence provide some support for the argument that the authorities of these countries have been engaged in NEER stabilization.

**Figure 2. NEER, REER, and RP (Relative Prices)**

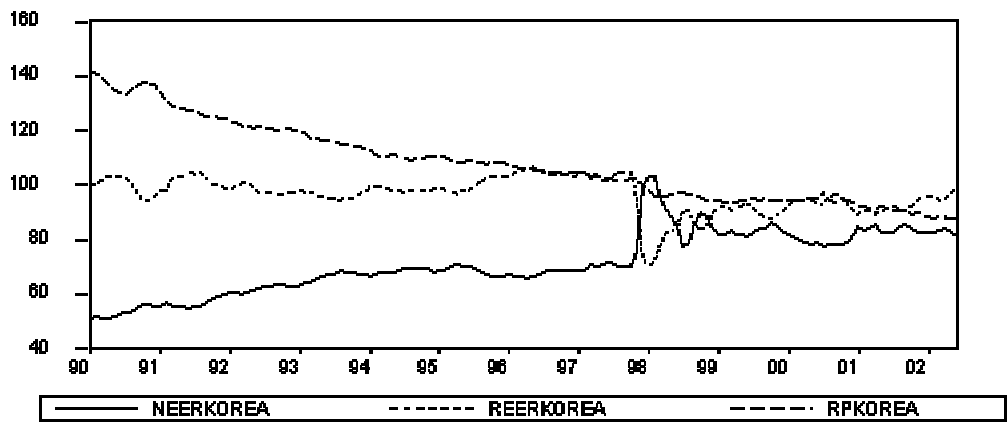
(1) Indonesia



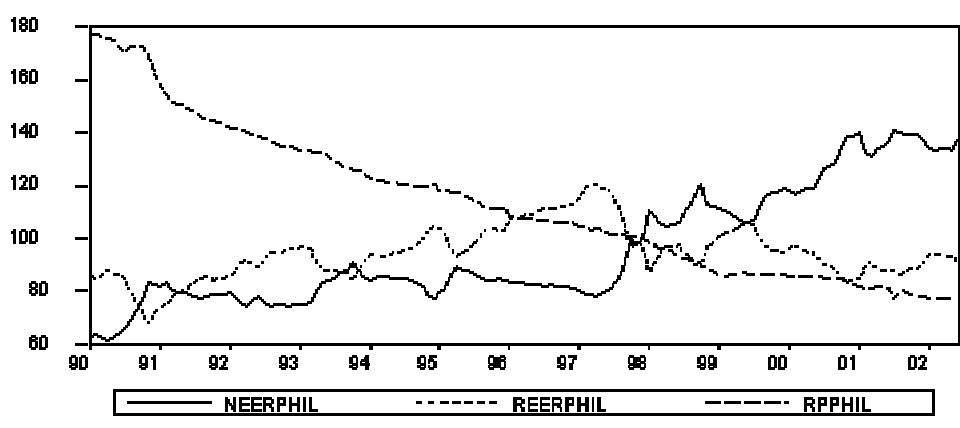
(2) Malaysia



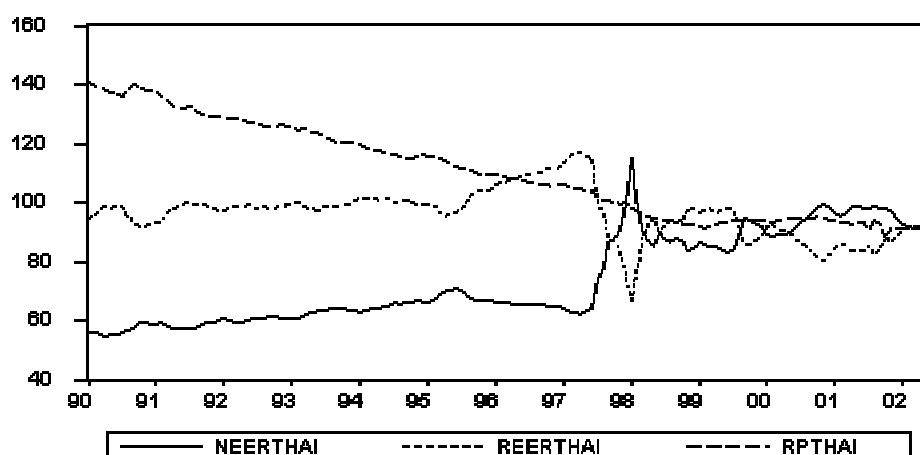
(3) Korea



(4) Philippines



(5) Thailand



Source: ARIC, ADB-REMU

**Table 4. Log Variances of the Component Series of REERs**

Country	period (before: 1990:01-1997:04) (after: 1999:01-2002:06)	variance			covariance (NEER, RP)
		REER	NEER	RP	
Indonesia	before	0.0027	0.0202	0.0265	-0.0219
	after	0.0135	0.0109	0.0134	-0.0053
Malaysia	before	0.0044	0.0019	0.0052	-0.0017
	after	0.0024	0.0019	0.0003	0.0003
Korea	before	0.0010	0.0096	0.0081	-0.0082
	after	0.0007	0.0008	0.0008	-0.0003
Philippines	before	0.0154	0.0073	0.0251	-0.0091
	after	0.0042	0.0088	0.0018	-0.0032
Thailand	before	0.0028	0.0040	0.0079	-0.0047
	after	0.0031	0.0027	0.0003	0.0000

Source: ARIC (Asia Recovery Information Center) (<http://aric.adb.org>).  
 ADB-REMU (Asian Development Bank-Regional Economic Monitoring Unit)  
 ([www.adb.org/REMU](http://www.adb.org/REMU))

**Table 5. Correlation Coefficients of East Asia Nominal Exchange Rates vis-à-vis the Yen-dollar and Euro-dollar Exchange Rates**

		Indonesia	Malaysia	Philippines	Korea	Thailand
Yen/\$	before (1990:01-1997:04)	-0.76	0.66	-0.30	-0.56	0.78
	after (1999:01-2002:07)	0.64	0.61	0.56	0.85	0.53
Euro/\$	before (1993:01-1997:04)	-0.42	0.62	0.62	0.60	0.59
	after (1999:01-2002:07)	0.69	0.21	0.84	0.39	0.85

### **Stabilizing the Real Effective Exchange Rate (REER)**

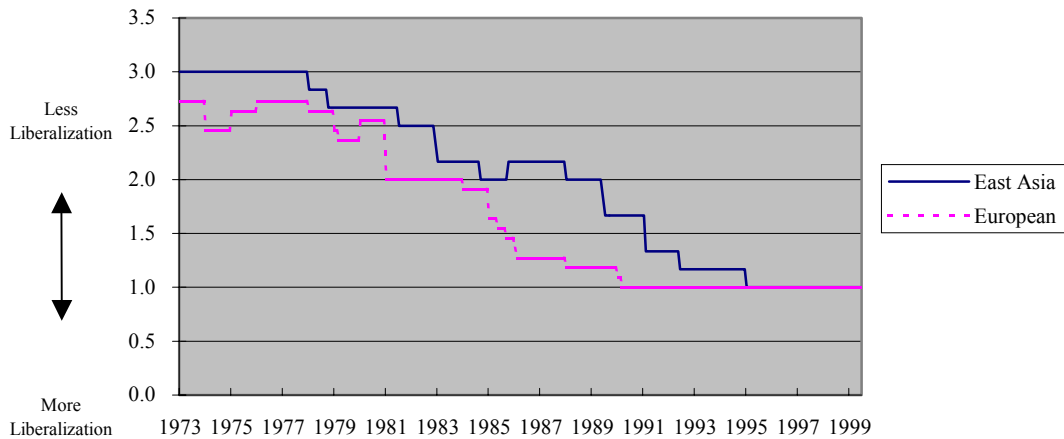
Since Korea and other crisis-hit countries in East Asia have followed export-led development strategies and are likely to continue to do so, one might conjecture that East Asian policymakers have intervened in the foreign exchange market to stabilize their real effective exchange rates. In sharp contrast to the increase in volatility of the nominal exchange rates, the real effective exchange rates of Korea, Malaysia, the Philippines, and Thailand all displayed greater stability in the post-crisis compared to the pre-crisis period (see Figure 3). Indonesia is the only exception. Have the authorities of these countries been engaged in managing the NEER to offset variability of the ratio of domestic to weighted trade-partners' price levels—one of the two constituent series of the REER—to stabilize the real effective exchange rate?

In terms of coefficients of variation (from mid-1996 through end-2000) as a measure Hernandez and Montiel show that volatility of the REER increased substantially in Indonesia and Korea, has decreased in Malaysia, and has remained largely unchanged in the Philippines and Thailand. Once again, their finding is not supported by the ADB data set. Volatility has decreased in Malaysia, Korea, and the Philippines. It has marginally increased in Thailand whereas, as in Hernandez and Montiel, it has risen markedly in Indonesia.

As noted earlier, in the post-crisis period, the decrease in variance of the NEER was large in Indonesia and Korea; in other countries it was relatively small. However, in all five countries there was a substantial decrease in variability of the relative prices (see Table 4). Stability of the relative prices has been the major development that has contributed to the stability of the REER in Korea, Malaysia, the Philippines, and Thailand. Given the large size of the pre-crisis covariance between the NEER and the relative prices, it appears that the Indonesian authorities were able to offset to some extent a high degree of variability of the relative prices by adjusting the NEER in the pre-crisis period, but they have not done so in the subsequent period (see Table 4). Indeed, the sharp decrease in the value of covariance in the post-crisis period in all five

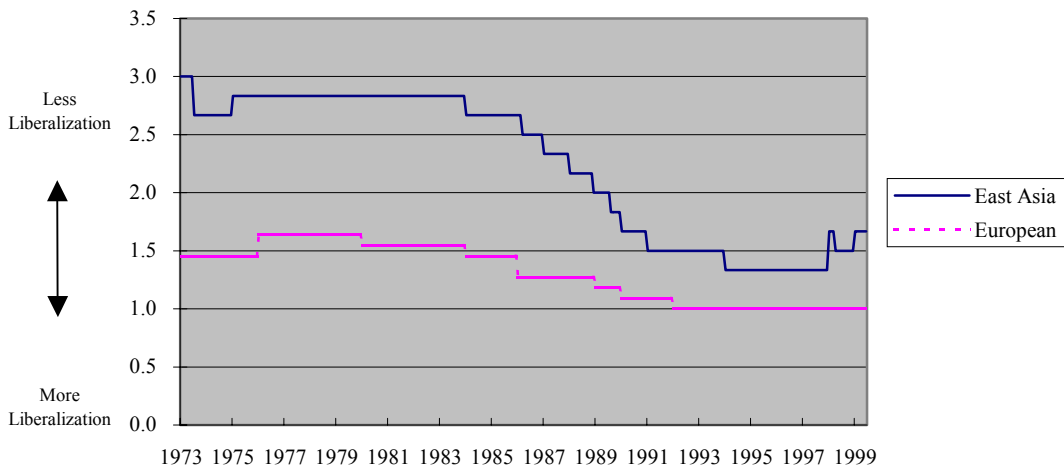
countries suggests that stability of the relative prices has reduced the need to smooth out changes in the real effective exchanges.

**Figure 3A. Domestic Financial Sector**



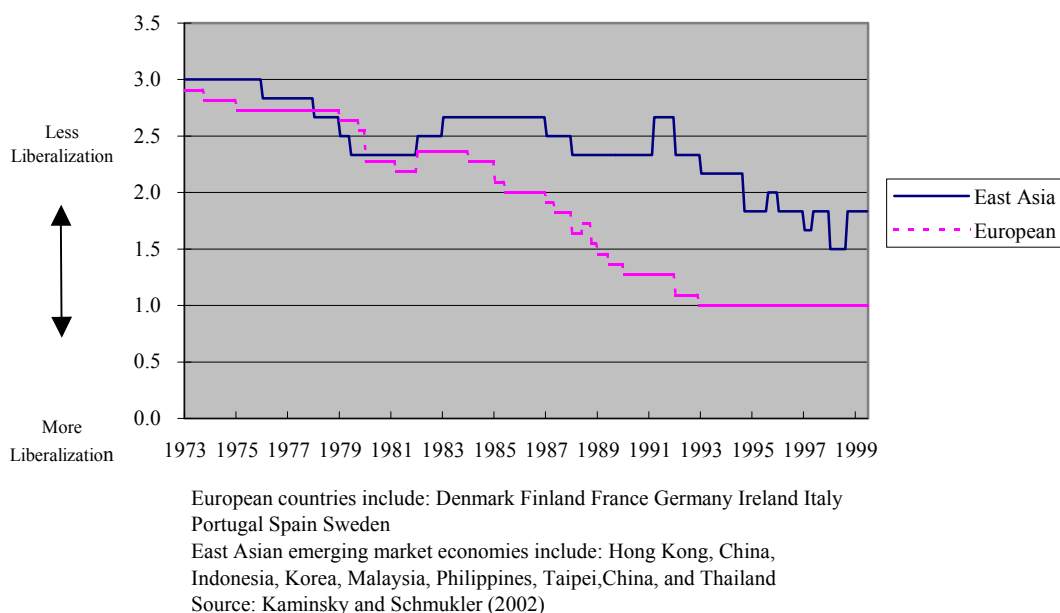
European countries include: Denmark Finland France Germany Ireland Italy Portugal Spain Sweden  
 East Asian emerging market economies include: Hong Kong, China, Indonesia, Korea, Malaysia, Philippines, Taipei,China, and Thailand  
 Source: Kaminsky and Schmukler (2002)

**Figure 3B. Stock Market**



European countries include: Denmark Finland France Germany Ireland Italy Portugal Spain Sweden  
 East Asian emerging market economies include: Hong Kong, China, Indonesia, Korea, Malaysia, Philippines, Taipei,China, and Thailand  
 Source: Kaminsky and Schmukler (2002)

**Figure 3C. Capital Account**



### **Fear of Depreciation or Appreciation?**

As documented by many authors, the massive exchange rate depreciations in all five countries immediately after the crisis threatened widespread insolvency of firms and financial institutions as they were heavily burdened with the currency and maturity mismatches in their balance sheets. Given this traumatic experience, the fear of depreciation may have influenced exchange rate policies of these countries. Since practically all of their foreign liabilities are denominated in the U.S. dollar, the fear of depreciation, if indeed there were, would have let the bilateral-dollar exchange rates appreciate much more than they actually have in the post-crisis period. The large increases in foreign reserves also deny that the fear of depreciation has had any bearing on exchange rate policies of the five East Asian countries.<sup>2</sup>

On the contrary, these countries appear to have restrained appreciation of their real effective exchange rates for fear of staving off recovery from the 1997-98 crisis and for the prevention of future crises. Immediately after the crisis, both the nominal and real effective exchange rates depreciated in all five countries. Export earnings rose sharply as real depreciation improved their export competitiveness. With depressed domestic demand, the increase in exports resulted in large current account surpluses and foreign reserves. Keeping the REERs below their equilibrium values or slowing down their appreciation in the post-crisis period may therefore have been the most effective means of engineering a fast recovery and as Hernandez and, Montiel (2001) note, of

<sup>2</sup> Monetary policy was tightened in the midst of recession in Thailand in 2000 in order to slow down depreciation of the baht by attracting capital inflows (see Bhanupong 2002).

building a war chest of foreign reserves. Fortunately, the relative prices in these countries have remained comparatively stable after the crisis, reducing the frequency and extent of adjustment of the NEERs to stabilize the REERs.

### **Monetary Independence**

One advantage of the flexible exchange rate system is that it allows the monetary authorities a measure of independence in conducting monetary policy, which may in turn help stabilize indirectly the nominal exchange rate. Borenzstein et al. (2001) examine the effects of changes in the U.S. interest rate on local interest rates of other countries, and find that the magnitude of the effect is much smaller under the free floating regime than the currency board system, indicating a higher degree of monetary autonomy in a more flexible exchange rate regime. Their analysis includes Mexico, Singapore, Australia, Canada, and New Zealand for the free-floating system, and Hong Kong, China and Argentina for the currency board system. Extending their approach to the panel data of 47 countries, Goldfajn and Olivares (2001) found a similar result. In contrast, Edwards and Savastano (1998) found that the Bank of Mexico systematically adjusted its monetary policy in response to changes in the exchange rate even during the free-floating regime. As shown by Park and Song (2001), there is little evidence that Korea and other East Asian countries have gained any noticeable monetary autonomy after adopting a free floating system. It is not clear, however, whether this lack of independence is the result of market intervention or other developments.

## **4. Intermediate Regimes for East Asia**

The discussion in the preceding section suggests that for all practical purposes, the East Asian floaters have moved to the hollow middle of the spectrum of the exchange rate regimes, although their preferences for a variety of intermediate regimes are not known. As discussed in Bergsten and Park (2002), there has been growing interest in economic integration in East Asia, which has led to the CMI agreement on bilateral swaps and discussions of the possibilities of creating a CCA among the ASEAN+3 as a long-run objective. These developments have stimulated much research on whether East Asia, defined by the ASEAN+3 group, constitutes a natural common currency area and also on the process through which full monetary integration could be achieved.

As will be discussed in section 5, the thirteen countries of this grouping do not necessarily constitute an optimal currency area, but neither did the EU in the 1970s and 1980s. Assuming that the ASEAN+3 could agree to launch a long-term plan for integration with the ultimate objective of adopting a single currency, then the plan would require building consensus on a collective exchange rate system acceptable to the region as a whole as a first step toward full monetary integration.

Whatever its merits, East Asian countries would not find it practical or politically possible to accept a currency board, because the system faces an implementation problem of choosing the currency to peg to, and it is completely lacking a domestic lender of last resort. If indeed one of the objectives of exchange rate policy coordination in the ASEAN+3 group is to form a CCA, at a certain stage of negotiation in the future the East Asian floaters will have to revert back to a non-floating intermediate regime.

Intermediate arrangements, such as crawling pegs with wider bands or the BBC (Band-Basket-Crawl), have their share of problems. For a BBC system to serve as an effective mechanism for stabilizing the nominal exchange rate, market participants should be persuaded that the authorities are committed to the arrangement. There is also the problem of managing the system when the exchange rate reaches the limits of the band. For example, when the exchange rate is driven to the depreciation limit, speculators begin to test the resolve of the authorities to maintain the band. In such a case, the BBC system runs into the same problems fixed exchange rate systems often do.

In recognition of these weaknesses of managed floating, three other non-pure floating regimes have been proposed for emerging market economies. They are: (i) modified BBC regimes (Williamson 2000), (ii) managed floating with reserve intervention (Dooley, Dornbusch, Park 2002), and (iii) managed floating plus (Goldstein 2001). Williamson's three modified intermediate regimes are less prone to crises as they relax the obligation of intervention when the exchange rate moves out of a predetermined band. The three new intermediate regimes are: the reference rate system in which the authorities do not have to defend a parity on an equilibrium exchange rate but are not allowed to push their currencies away from the parity; soft margins in which authorities target a moving or geometric average of current and past market exchange rates to remain within a predetermined band rather than targeting the market exchange rate to remain within a predetermined band at all times; and monitoring bands that require hands-off policy within a pre-announced band, but allow intervention without obligation to intervene once the rate goes out of the band to bring it back within.

These modified versions may be more effective than old systems in reducing vulnerability to speculative attacks but they are as heavily criticized as the old ones. One problem with the modified BBCs is that they may not be free from the traditional criticism of intermediate regimes in general that a reference rate or an equilibrium exchange rate cannot be easily defined or estimated for actual implementation of exchange rate policy insofar as some of the economic fundamentals that presumably determine the exchange rate are not easily identifiable. Even when a set of fundamentals can be classified, in reality it may not be easy to observe changes in these variables as a whole that may dictate changes in the equilibrium exchange rate around which a soft margin is to be established. This problem has become more complicated with the deregulation of capital account transactions. Another criticism of the modified BBC is that they may not still be flexible enough to deal with large and unexpected shifts in capital movements and investor sentiments.

A third problem with Williamson's modified versions is related to their ability to induce stabilizing speculation which has yet to be established. On this issue, Goldstein (2001) argues that since the modified versions remove the obligations of the authorities to defend the edges of the zones, their ability to attract stabilizing speculation becomes even more remote (Goldstein 2000).

Finally, there is the problem that they do not provide a clear nominal anchor. In the modified intermediate regimes, the band serves as a weak nominal anchor for the exchange rate. Fischer (2001) is questioning whether such an anchor is preferable to inflation targeting. More important, all of the new BBC proposals for an operational



intermediate regime have not been tested to determine their viability, and hence there is no way of knowing how serious these problems would be in a real setting.

The managed floating with reserve intervention has no exchange rate target or band: market forces as in pure floating essentially determine exchange rates. It has an inflation target as a nominal anchor. The major difference between the reserve intervention and pure floating is that the former allows monetary authorities to intervene in the foreign exchange market for smoothing-out operations with foreign currency reserves as an intervention instrument. In this scheme, policy authorities would intervene in the market if the nominal exchange rate changes in either direction by more than a certain percentage over a predetermined period; say 5 percent over a week period. For the intervention purpose, the authorities would buy or sell foreign reserves within a predetermined band of reserve changes, for example, within a range of 15 percent on both sides of an appropriate level of reserves. If reserve losses or gains exceed the limit, then the authorities would cease their smoothing-out operations on the assumption that the observed changes in the exchange rate are driven by changes in economic fundamentals, not by noise trading or other speculative activities.

Goldstein's managed floating plus (2002) has no publicly announced exchange rate target, but the authorities are allowed to engage in smoothing-out operations. The plus refers to an additional component—"an aggressive set of measures to reduce currency mismatch" (p.44). Goldstein argues that unless measures to discourage currency mismatching are put in place, inflation targeting will be dominated by exchange rate considerations simply because large exchange rate movements cannot and will not be ignored.

Both proposals for managed floating are designed to minimize volatility of the pure floating system with inflation targeting by specifying the objective and modus operandi of market intervention. Goldstein's proposal uses interest rate policy whereas Dooley, Dornbusch, and Park (2002) would rely on foreign reserves for intervention. Goldstein emphasizes the importance of preventing or limiting currency mismatch and for this purpose proposes a number of measures ranging from "publication of data on indicators of currency mismatch, to regulatory provisions limiting banks net open position in foreign currency, to the development of better hedging mechanisms and deeper capital markets"...(p.49). However, a system of prudential regulation and supervision would normally include all these measures, and in this sense the major difference between the two proposals rests on the method of intervention.

The preceding discussion of viability of various intermediate exchange rate regimes suggests that there is no ideal system for all East Asian emerging market economies. It appears that managed floating with reserve intervention or managed floating plus may as Goldstein puts it, be "the least worst of available exchange rate regime options to East Asian emerging market economies."

## **5. Common Currency Area in East Asia**

### ***5.1. Overview***

In designing the structure of the CMI, the architects of the initiative did not have in their mind laying the groundwork for a common currency area in East Asia.

Nevertheless, formation of regional financial arrangements such as the EMS is motivated by the need to stabilize regional financial and foreign exchange markets. If indeed the policymakers of the ASEAN+3 contemplate possibilities of adopting a single currency in the future as part of their cooperative efforts, then questions would arise as to whether East Asia qualifies as a common currency area.<sup>3</sup>

Since the early 1990s, there has been a clear trend toward shrinking of independent currencies relative to independent countries. With the advent of the Euro, this trend has become more visible; more and more countries are either joining the existing common currency areas such as the EMU or creating new currency unions. Barro (2001) estimates that 60 countries out of nearly 200 independent countries are members of currency unions or use other currencies such as the U.S. dollar or the Euro.

What then are the developments in the global economies that have induced a large number of countries in particular, smaller ones, to give up their national monies in favor of adopting foreign currencies as their monetary standards? One development has been growing trade expansion and integration. With sustained liberalization of trade and opening of domestic financial markets, a growing number of emerging market economies have been integrated or integrating into regional as well as global markets for goods and services and for financial assets. Smaller emerging market economies appear to be prepared to join a CCA or adopt a foreign monetary unit more than before in order to reduce exchange rate risks and transactions costs of trade in goods and services that have increased with the global and regional economic integration.

The second development is that the benefits of independent monetary policies have declined in many countries. There has been a growing awareness that monetary policy cannot be used to take advantage of the trade-off between inflation and unemployment. Since monetary policy cannot easily mitigate real disturbances, there is widespread consensus that monetary authorities should concentrate on stabilizing prices rather than influencing employment or output movements. Reflecting this reevaluation of the role of monetary policy, central banks in many countries including emerging market and developing economies have become much more independent than before. As a result, many smaller countries now find it easier to give up their monetary independence than before.

The third development is the “original sin” or the incompleteness in financial markets argument. According to Eichengreen and Hausmann (1999), practically all emerging market economies, not to mention of other developing countries, cannot use their own currencies to borrow abroad or to obtain long-term finance even from domestic financial markets. This inability causes financial fragility because financial institutions and firms are exposed to currency and maturity mismatch problems. As a result, when the currency depreciates, the currency mismatch causes deterioration in the balance sheets that could easily threaten insolvency of financial institutions and firms. If policy authorities defend the fixed exchange rate and as a result a speculative attack ensues, then borrowers are likely to default on their short-term borrowings. Eichengreen and Hausmann (1999), therefore, argue that countries that are not able to secure foreign

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<sup>3</sup> See Yam (1999), Murase (2002) and Sakakibara (2002) for the advocacy of monetary integration in East Asia.

loans denominated in local currencies will be better off by joining a currency union or using the currency of a large country.

Since the early 1990s, many of the East Asian countries have made great strides in deregulating and opening domestic markets including financial markets to foreign competition. Trade and financial liberalization has seen a large increase in intra-regional trade and investment. In terms of importing country data, intra-regional trade in East Asia (ASEAN+3 and Taipei,China) was more than 45 percent of the region's total trade in 1998 when the entire region was in a deep crisis. There is every indication that this trend will continue. The growing integration of intra-regional trade in goods and services has increased the demand by the business community in the region for stabilizing bilateral exchange rates of East Asian currencies.

Policymakers of these countries realize that stabilizing intra-East Asian exchange rates will help increase intra-regional trade and capital movements. This interest in regional growth and integration has naturally led to the search for regional collective exchange rate arrangements.

The East Asian crisis of 1997 has also brought home to the region the need for establishing a region-wide mechanism of defence against future financial crises. One such arrangement could be, of course, an East Asian Monetary Union. Since creating an EMU equivalent in East Asia is at best a long-term objective, East Asian countries may have to consider other arrangements, such as pegging to a common basket or an exchange rate mechanism similar to the EMS as a transitional regime.

Before considering the possibilities of introducing an Asian Monetary System (AMS) or common basket pegging, however, it may be in order to examine whether the ASEAN+3 as a group satisfy some of the criteria for a CCA or have the potential of doing so in the future.

## ***5.2. Traditional Criteria for an East Asian Currency Union***

Does East Asia satisfy all or some of the conditions for an optimum currency area (OCA)? What would be the benefits and costs of monetary integration in East Asia? The theory of an optimum currency area (Mundell, 1961) suggests that the relative share of an intra-regional trade, the nature of shocks, flexibility of factor markets, and economic sizes of participating countries are important factors in determining the benefits and costs of monetary integration.

In order to test empirically whether eight East Asian countries (Hong Kong, China, Indonesia, Korea, Malaysia, the Philippines, Singapore, Thailand, and Taipei,China) qualify as an optimum currency area, Eichengreen and Bayoumi (1999) estimate an equation of exchange rate variability between a pair of countries which is a function of symmetric output disturbances, the dissimilarity of the export product composition, the ratio of bilateral exports to GDP, and economic size over the 1976-95 period for Japan and its 19 trading partners. Using the predicted level of exchange rate variability between a pair of countries (the standard deviation of the change in the log of the bilateral exchange rate between two countries), they devise an OCA index of which smaller values suggest that countries are good candidates for an OCA. According to Eichengreen and Bayoumi, the estimated equation shows "the theory of OCA does a credible job of explaining the exchange rate policies of Japan's principal trading

partners and that small open economies like Hong Kong, China and Singapore could benefit more than other East Asian countries by pegging to other East Asian currencies (p.353).”

Using a structural VAR model, Eichengreen and Bayoumi (1999) also analyse time series for prices and output to determine whether disturbances are aggregate demand or supply shocks. They find that compared to Europe, the magnitude of aggregate demand shocks is less than half in East Asia whereas there is not much difference in aggregate supply shocks over the 1972-89 period. These pieces of empirical evidence suggest that demand and supply shocks in East Asia are smaller and more symmetric than in Europe. In addition, the large increase in intra-regional trade and investment and the relative flexibility of wages and prices in East Asia suggest the conclusion that judged from traditional criteria, East Asia qualifies as an OCA as much as Europe does. In a recent paper, Bayoumi, Eichengreen, and Mauro (2000) apply Eichengreen-Bayoumi model to the ASEAN data. Not surprisingly, they find that in terms of the OCA criteria, ASEAN is as well positioned for forming a currency union, as Europe was a few years before it entered into the Maastricht Treaty.

In a recent empirical study, Baek and Song (2001) extend the time period and coverage of countries in testing Eichengreen and Bayoumi’s model for East Asia. They find that the 15 East Asian countries do not share the degree of similarity in the economic structure comparable to that of the EU members; in contrast, however, the share of intra-regional trade, share of manufactures in exports, and openness (the ratio of trade to GDP) of the 15 East Asian economies are close to those of the EMU. A relative measure of intra-regional trade rose to 45 percent in 1999 from about 40 percent in 1990 (Kawai and Urata 2002). Another measure of intra-regional trade development, which is known as the trade intensity index, however, shows that trade interdependence among the East Asian countries has not increased very much since the early 1980’s (Goto 2002).

Baek and Song (2001) also show in terms of the output and price data of the 15 East Asian countries that supply shocks are similar across Hong Kong, China, Korea, Indonesia, Thailand, and Malaysia, whereas demand shocks are correlated at the five percent level among Korea, Indonesia, Thailand, Malaysia, and Taipei, China. The average size of supply disturbances is twice as large as that of the EMU. For demand disturbances, the East Asian average is eight times the European one. Compared to the EMU members, however, the sample East Asian countries show faster speed of adjustments to supply and demand disturbances.

Goto (2002) uses a principal component analysis to measure the degree of synchronization of real disturbances (no distinction between demand and supply) among Asian countries in terms of an investment equation, which has the real interest rate, the level of income, and a time trend as explanatory variables. The principal component analysis of the error terms of the sample countries, which are assumed to be proxy variables for real disturbances, show that real disturbances of Indonesia, Korea, Malaysia, the Philippines, Singapore, and Thailand are very much synchronized.

Goto (2002) also presents a number of recent statistics which suggest that there has been a substantial increase in labor mobility in East Asia. According to the International Labor Organization (ILO), for example, intra-Asian migration increased to 6.5 million in 1997 from about one million. The migration took place mostly from

Indonesia and the Philippines to Japan, Hong Kong, China, Singapore, and Taipei, China.

Baek and Song (2001) also use the model developed by Bayoumi and Prasad (1997) designed to measure the degree of labor mobility.<sup>4</sup> Their results show that labor mobility is low in East Asia. By combining these pieces of evidence presented by Baek and Song (2001) and Goto (2002), one may conclude that the nine countries of East Asia that include Japan, Korea, Hong Kong, Indonesia, Malaysia, Thailand, Singapore, Taipei, China, and PRC are as plausible candidates as the EMU members were for an OCA.

Lee, Park, and Shin (2002) extend the analysis of Eichengreen and Bayoumi by improving their methodology. In their study, changes in aggregate output in each country are decomposed into three components: a world common, a region-specific, and a country-specific factor. A dynamic factor model then explains fluctuations in output.<sup>5</sup>

As the Maastricht Treaty of 1991 may have influenced the nature of regional co-movements of output, the entire sample period is divided into two sub-sample periods: 1978-1990 and 1990-1999. Lee, Park, and Shin (2002) then estimate the shares of the variances accounted for by the world, the region and the country-specific factors; volatility of growth rates of output for each country; and volatility of output decomposed into shares of variances.

In terms of volatility, the size is much larger for the East Asian than European region. In the former period the average volatility of the East Asian countries (3.113) is about 1.75 times higher than that of the European countries (1.770). In the latter period, it increases in both regions, the difference widening in the latter period, so that the average volatility in the East Asian region (3.888) is almost twice as large as that of the European region (1.983). This shows that the East Asian region consists of more volatile countries and, if this is due to non-policy related shocks, more active implementation of monetary policies may be called for.

In the East Asian region, the share of the variance in output accounted for by the country-specific factor significantly decreases in the latter period. This decrease is compensated for mostly by the increase in the importance of both the region and the world common factors. The same phenomenon is observed in the European region: However, the decrease in the share of the variance explained by the country-specific factor is relatively more absorbed by the growing significance of the world common factor.

The relative increase in the importance of the world common factor in the latter period reflects globalization of the world economy.<sup>6</sup> The increase in the share of the variance accounted for by the region common factor may explain deepening integration

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<sup>4</sup> In this model, an average growth rate of labor productivity in a given industry of a country is explained by industry and country dummy variables respectively. If productivity differences among countries are caused by demand and supply shocks with high labor mobility, they tend to be eliminated by migration of labor from countries with higher to lower productivity. Given a high degree of labor mobility, industry-specific factors will dominate country-specific factors in explaining productivity changes.

<sup>5</sup> The dynamic factor model has been used by many studies, as Stock and Watson (1991) popularized its application. Other studies based on the dynamic factor model include Geweke (1977), Geweke and Singleton (1980), Sargent and Sims (1977) and Gregory, Head and Raynauld (1997).

<sup>6</sup> Gregory, Head and Raynauld (1997) and Kose, Otrok and Whiteman (2001) both find that the world common factor is an importance source of volatility in output.

in both Europe and East Asia in the latter period. The surge of the region common factor in the East Asian region in the latter period relative to Europe, however, may be related to the following two developments.

One development is the 1997-98 East Asian crisis, which started in Thailand and then spread to other countries in the region. This crisis contagion obviously has amplified the significance of the region common factor. Another is that East Asia has managed a greater degree of trade and capital account liberalization in the post-crisis period than the European region which by then had reached a mature stage of integration (see Figure 3).

Focusing on the latter period, although it is somewhat exaggerated by the crisis, the East Asian region seems to be better prepared for a currency union than Europe: the share of the region common factor is over .5 on average, indicating that the regional co-movement explains more than a half of the fluctuation in the individual country's output. In Indonesia (.888), Malaysia (.845), Korea (.792), Hong Kong (.738), Thailand (.604), and the Philippines (.585), which were heavily affected by the crisis, their movements of output are closely linked to the region common factor.

Lee, Park, Shin (2002) also examine the extent to which business cycles are synchronized across countries in East Asia. They estimate an equation where the fraction of an economy's output change related to regional common shocks is explained by the level of intra-regional trade, similarities of both trade and industry structures, the level as well difference in per capita GDP. In the East Asian group, changes in the shares of intra-regional trade, and similarities of trade and industry structures have no significant effects on output co-movements, but the period dummy for the 1990s is positive and statically significant, suggesting that shocks that were specific to the 1990s explain most of the variations in output co-movements in East Asia.

## **6. Financial Integration in East Asia**

### **6.1. Overview**

Trade liberalization has brought about intra-regional trade integration that will bolster the causes for monetary integration in East Asia. Will financial liberalization lead to a similar development? To answer this question, this section examines empirically whether East Asian countries have gravitated to integration within the region or with global financial markets in the process of financial liberalization since the early 1990s. As shown in Figures 3A, B, C, East Asian countries have made great strides in deregulating and opening domestic financial markets over the past three decades. Compared to a sample of nine European countries, the six East Asian countries have been lagging behind in liberalizing capital account transactions. They have been also slow in opening stock markets, but as far as the overall degree of domestic financial deregulation they had reached on average the European level by 1995.

Financial market deregulation and opening facilitate migration of real capital in the long-run and cross-border financing of current account imbalances in the short-run, thereby reducing the costs of adjustments to shocks to demand and supply. Financial liberalization also allows an extensive sharing of the risks associated with

macroeconomic shocks across countries as it broadens the range of portfolio diversification by including foreign bonds and equities in individual portfolios.

In general, countries that liberalize and open their financial markets would have incentives to integrate themselves with those economies with dissimilar structural characteristics and exposed to asymmetric shocks. This is because heterogeneity of the countries to be integrated with increases the scope and cost of adjustments to adverse external shocks. Given the dissimilarity, an adverse terms of trade shock, for example, affects not all, but only some of the financially integrated countries. This means that the countries adversely affected by the shock would have a smaller burden of adjustment as their unemployed capital migrate to, and they are also able to borrow to finance their current account deficits more readily from, those unaffected countries. If countries are homogeneous they are not likely to reap the benefits of liberalization through financial market integration as much as they would if they were heterogeneous.

With financial market opening, domestic residents can diversify their portfolios in terms of assets issued by firms and financial institutions of other countries in addition to domestic ones. This possibility of enhancing portfolio diversification across a large array of assets means that a country suffering an adverse terms of trade shock could share some of the loss with other countries to the extent that it holds claims on their output. The amount of the loss that could be shared should increase, if this country holds diversified portfolios of bonds and equities of those countries with different structural characteristics, that is, with lower correlations of macroeconomic variables.

Consideration of the benefits of financial liberalization raises questions as to whether in the process of capital account liberalization financial markets of East Asia would be integrated with one another or into the markets of Europe and North America. While many of the East Asian countries appear to share similar characteristics as they are export-oriented economies, their financial markets and institutions vary a great deal. Furthermore, minority stockholders and creditor rights are not well protected in general and the availability of regional securities suitable for portfolio investment is limited. These considerations make it difficult to judge whether financial market openings in East Asia since the early 1990s have induced integration of regional financial markets into global financial markets or among themselves: the direction of integration is an empirical issue.

This study presents three different types of analysis on the direction of integration. They are: capital movements within the East Asian region and between East Asia and two other regions; statistical measures of integration including a cointegration test and decomposition of error variances of stock returns and interest rates; and the degree of penetration of foreign financial institutions of East Asian financial services industry. The first two types are presented in this section and the third in section 7.

At the outset, it should be noted that all these empirical tests are subject to technical limitations as a means of identifying the direction of integration. As such, the results of the empirical examinations in this section should be interpreted as preliminary evidence indicating the general trend of financial integration.

## ***6.2. Intra-regional Capital Movements in East Asia***

For a measure of regional integration in East Asia, one would need information on intra-regional capital flows in East Asia relative to inter-regional flows between East Asia and the rest of the world. Reliable data on intra- or inter-regional capital flows are not available. East Asia as it is defined to include the ASEAN members, Taipei, China, Hong Kong, China, PRC, Korea, and Japan has always been a net saver to the rest of the world. This balance of payment characteristic together with underdevelopment of financial markets suggests that the level of financial transactions including bank lending and trade in regional securities between different countries in East Asia is likely to have been small, in particular when large Japanese bank lending to and direct investment in other East Asian countries are excluded.

Furthermore, since the outbreak of the 1997-98 crisis, Japanese bank lending and FDI to other East Asian countries have fallen dramatically (see Tables 6 and 7). So too were Korea's and Taipei, China's FDIs to other East Asian countries (see Tables 8 and 9). Singapore's FDI data are rather sketchy, but its FDI to Malaysia and Indonesia declined during the post-crisis period from 1997 to 1999 (see Table 10). In view of these developments, it would be reasonable to assume that intra-regional financial flows in East Asia have been smaller than inter-regional flows between East Asia on the one hand and North America and Europe on the other. This feature of inter-regional capital movements has become more visible with the increase in current account surpluses of Indonesia, Malaysia, Korea, and Thailand and provides a piece of indirect evidence that East Asian countries have possibly forged tighter financial links with North America and Europe than with their neighboring economies in the process of financial liberalization (see Park and Bae 2002).

## ***6.3. Statistical Measures of Financial Integration in East Asia***

Given the extent to which the East Asian countries have managed to liberalize their capital account transactions in recent years, one might expect that financial markets of these economies may have become more closely tied with one another than in the past. However, the available empirical evidence does not support this expectation.

Regionally integrated financial markets have not yet emerged and the prospects for further financial liberalization in East Asia are not promising (Park and Song 2002).

### **Cointegration Test**

In a given region, financial liberalization and market opening would, other things being equal, lead to an increase in cross-border banking and securities transactions between the countries in the region as well as with the rest of the world. With the increase in intra-regional capital flows, financial prices of different countries in the region would tend to move together more than before financial markets were deregulated and opened. In general, one could argue that countries are highly integrated financially if their financial prices move together: the higher the degree of correlation of financial price movements, the higher is the degree of financial integration.



**Table 6. Japan's International Bank Lending**

	1995.6		1996.6		1999.12		2001.6	
	Amount	Share	Amount	Share	Amount	Share	Amount	Share
Developed Countries	30308	0.182	26526	0.159	528335	0.667	728725	0.752
Asia	107976	0.649	115471	0.693	65050	0.082	51934	0.054
Indonesia	20512	0.123	21622	0.130	12491	0.016	9626	0.010
Korea	20874	0.125	22512	0.135	12592	0.016	10110	0.010
Malaysia	6091	0.037	8131	0.049	6029	0.008	5843	0.006
Philippines	1147	0.007	1402	0.008	2921	0.004	3066	0.003
Thailand	32628	0.196	37552	0.225	13075	0.016	7979	0.008
Sub total	81252	0.488	91219	0.547	47108	0.059	36624	0.038
<b>Total</b>	<b>166368</b>		<b>166701</b>		<b>792676</b>		<b>969425</b>	

Source: Bank for International Settlement, The BIS Consolidated International Banking Statistics, Various Issues

**Table 7. Japan's Overseas Direct Investment by Region\***

(Unit: U.S. million Dollar)

	1997	1998	1999	2000	2001 (1st half)
Asia	12,181	6,528	7,162	5,931	2,762
Korea	442	303	980	813	355
Hong Kong, China	695	602	971	936	92
Taipei, China	450	224	285	510	146
Singapore	1,824	636	962	424	418
Thailand	1,867	1,371	816	931	512
Philippines	524	379	617	458	93
Indonesia	2,514	1,076	918	414	191
Malaysia	791	514	526	232	104
PRC	1,987	1,065	751	995	752
Viet Nam	311	51	99	21	49
India	434	257	208	168	36
Sri Lanka	270	36	19	11	13
Pakistan	62	9	-	-	-
North America	21,389	10,943	24,770	12,271	3,223
Latin America	6,336	6,463	7,437	5,232	2,245
Middle East	471	146	113	19	1
Europe	11,204	14,010	25,804	24,406	4,966
Africa	332	444	515	53	123
Oceania	2,058	2,213	893	667	380
Total	53,972	40,747	66,694	48,580	13,699

Note: \* Report-Accepted Basis

Source: JETRO. 2002. *Jetro Investment White Paper 2002*.JETRO. 2000. *Jetro Investment White Paper 2000*.

**Table 8. Korea's Overseas Direct Investment by Region\***

(Unit: U.S. million Dollar)

	1997	1998	1999	2000	2001	Outstanding at the end of 2001
Asia	1,575	1,531	857	849	-317	10,882
Malaysia	-7	21	2	-13	10	323
Viet Nam	92	50	15	36	31	638
Singapore	23	129	154	72	20	508
India	105	115	14	15	8	475
Indonesia	154	58	75	61	-363	1,061
Japan	62	22	34	34	75	527
PRC	695	665	221	307	-274	4,382
Thailand	184	89	4	17	28	500
Philippines	30	33	77	62	42	505
Hong Kong, China	52	371	203	239	72	1,269
Middle East	68	6	0.9	27	17	246
North America	826	686	935	1,179	342	8,286
Latin America	251	224	183	1,411	76	2,722
Europe	357	1,033	204	139	1,741	5,387
Africa	92	91	20	20	13	515
Oceania	120	102	36	61	11	669
Total	3,289	3,674	2,236	3,686	1,883	28,706

Note: \* Actual Investment

Source: The Export-Import Bank of Korea. 2002. *Overseas Direct Investment Statistics Yearbook 2002*.

**Table 9. Taipei,China's Overseas Direct Investment by Region\***

(Unit: U.S. million Dollar)

	1997	1998	1999	2000	2001
Asia	819	581	836	851	815
Hong Kong, China	214	69	122	111	96
Japan	32	30	122	312	169
Singapore	230	158	325	220	378
Philippines	127	39	29	13	46
Indonesia	56	20	7	34	6
Thailand	58	131	113	50	16
Viet Nam	85	110	35	54	31
Korea	0.3	2	81	93	12
America	1,916	2,637	2,268	3,946	3,461
Europe	59	34	61	62	46
Oceania	28	8	41	148	63
Africa	-	36	41	7	6
Total	2,894	3,296	3,269	5,077	4,391

Note: \* Approval Basis

Source: Investment Commission, MOEA of Taipei,China. 2001/12. *Statistics on Overseas Chinese & Foreign Investment, Outward Investment, Indirect Mainland Investment.*

**Table 10. Singapore's Investment Abroad, 1997-1999**

	1997	1998	1999
Singapore's Investment Abroad (\$M)			
Total	158,566	177,949	191,031
Total Direct Investment	75,807	75,622	84,219
Direct Equity Investment	57,191	53,211	58,754
Direct Investment	41,478	39,899	45,293
Portfolio Investment	23,277	36,155	35,965
Other Foreign Assets	59,482	66,172	70,847
Destination of Singapore's Total Direct Investment Abroad (\$M)			
Top 8 Investment Destinations based on 1999 (Stock as at Year-End)			
PRC	10,477	12,186	12,625
Hong Kong, China	8,113	7,668	8,399
Malaysia	8,908	8,610	7,940
Belgium	1,751	3,261	6,151
Indonesia	6,519	4,485	4,517
British Virgin Islands	2,901	3,993	4,368
United States	2,905	3,064	4,285
Mauritius	2,485	3,222	4,072

Source: <http://www.singstat.gov.sg/>

This measure of correlation is not likely to be reliable, unless countries are on a fixed exchange rate system. When exchange rate regimes vary from country to country as in East Asia, the correlation of financial prices between countries may not be a good indicator of financial integration. However, before the 1997 crisis, most of the East Asian countries pegged their currencies to the U.S. dollar and managed their dollar exchange rates to fluctuate within a relatively narrow band. As noted in section 3, although most of the East Asian countries except for Malaysia moved to free floating in the aftermath of the crisis, in reality they have been de jure floaters, intervening extensively in the foreign exchange market to stabilize nominal exchange rates. McKinnon (2001) argues that all of the East Asian countries have more or less continued to peg their currencies to the dollar. In the following discussion, it is assumed that financial liberalization would lead to greater congruity of movements of financial prices in East Asia, given the prevalence of foreign exchange market intervention in the region.

A recent study by Park and Song (2001) which estimates cointegrating relationships between the financial variables of East Asian countries finds little evidence of financial integration among the five Southeast Asian countries—Indonesia, Malaysia, the Philippines, Singapore, and Thailand in the 1990s. In contrast, however, there are several empirical studies showing that the financial markets of the East Asian countries became increasingly integrated with the markets of developed countries in the

1980s (Glick and Hutchison, 1990, Cheng and Mak, 1992, Bekaert and Harvey, 1995, and Kuen and Song, 1996).

Using the cointegration technique, this section examines whether and how closely East Asian financial markets were integrated with one another before and after the 1997-78 crisis. If the financial markets of a given group of countries are integrated and interdependent, there are likely to be cointegrating relationships between the financial variables of these countries. Among several methods of estimating the cointegrating relationship, this study makes use of the maximum likelihood (ML) estimation proposed by Johansen (1988 and 1991).

In order to examine the extent to which financial integration has proceeded with financial market liberalization this study focuses on interactions between the bond and stock markets of Thailand, Indonesia, Malaysia, Korea, the Philippines and Japan. The frequency of stock prices is daily and the sample periods run from January 1, 1994 to April 30, 1997 (pre crisis) and January 1, 1999 to June 30, 2002 (post crisis).<sup>7</sup> The equity price in each country is represented by a major stock price index. The variables are in natural log form. The cointegration test is applied to a sample of five East Asian countries pair-wise; that is, the existence of cointegration in the stock prices of pairs of the five East Asian countries is examined. If there exists a cointegration relationship between a pair of the sample countries, then there is a long-run relationship between the stock prices of the two countries concerned. The order of lag used in the ML estimation is 4.

Table 11A reports the trace statistics of ML estimation suggested in Johansen (1988 and 1991), which can be used to determine the number of cointegration vectors. According to the statistics, there was only one cointegrating relationship—that between stock prices of Indonesia and Korea—after the crisis, which appears to be a spurious relationship because of limited flows of capital between the two markets.<sup>8</sup> Therefore the estimation suggests that there has been little progress in financial market integration in East Asia.

The interest rate data used in the estimation are daily market interests from Datastream. The sample periods are the same as in the stock market estimation. Table 13B presents the trace statistics. There were six cointegration relationships among the five East Asian countries during the pre-crisis period. The number fell to four in the post-crisis period, suggesting that the strength of regional financial integration relative to global integration of East Asian financial markets has declined. Notice that when both null hypotheses are rejected at the five and one percent critical value, as in Table 11B, this means that there is no unique cointegrating vector.

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<sup>7</sup> The daily interval is chosen to increase the number of sample points but it may be subject to market friction problems.

<sup>8</sup> Since cointegration methods can be applied only to nonstationary variables, the Augmented Dickey-Fuller (ADF) test is applied in order to test the existence of a unit root in each variable. Although the ADF test is widely used because it takes into account autocorrelation, it has been pointed out that the choice of a proper order of autocorrelation is arbitrary. Therefore the ADF test is conducted on various orders of autocorrelation. The null hypothesis of the test is the existence of a unit root (i.e., nonstationary). A trend stationary process as well as a stationary process around a constant term is considered an alternative hypothesis.

**Table 11A. Cointegration Tests of Stock Prices of East Asian Countries**

Classification	Pre-crisis		Post-crisis	
	$H_0: r=0$	$H_0: r \leq 1$	$H_0: r=0$	$H_0: r \leq 1$
Indonesia, Japan	19.66	4.97	18.36	3.80
Indonesia, Korea	9.14	3.21	26.49*	3.15
Indonesia, Malaysia	13.5	3.12	20.77	4.69
Indonesia, Thailand	6.9	2.6	17.04	3.19
Indonesia, Philippines	20.53	5.85	16.80	5.70
Japan, Korea	17.86	4.55	18.09	4.25
Japan, Malaysia	16.87	4.68	19.75	6.00
Japan, Philippines	16.18	3.42	18.99	5.42
Japan, Thailand	13.86	2.85	17.86	4.65
Korea, Malaysia	16.37	4.61	19.95	4.53
Korea, Philippines	13.20	3.62	9.19	3.36
Korea, Thailand	18.42	1.46	12.84	2.83
Malaysia, Philippines	18.50	4.80	14.23	6.30
Malaysia, Thailand	11.52	1.82	17.59	6.14
Philippines, Thailand	12.72	1.48	13.32	3.85
<b>5% Critical values</b>	<b>25.32</b>	<b>12.25</b>	<b>25.32</b>	<b>12.25</b>
<b>1 % Critical values</b>	<b>30.45</b>	<b>16.26</b>	<b>30.45</b>	<b>16.26</b>

Note: 1) Figures indicate trace statistics in Johansen (1998, 1991). 2)  $r$  is the number of cointegration vectors. (3) pre-crisis: January 1, 1990-April 30, 1997, post-crisis: January 1, 1999 – August 30, 2002.

**Table 11B. Cointegration Tests of Interest Rates of East Asian Countries**

Classification	Pre-crisis		Post-crisis	
	<i>H0 : r=0</i>	<b>H0 : r•1</b>	<b>H0 : r=0</b>	<b>H0 : r•1</b>
<b>Null Hypothesis</b>				
Indonesia, Japan	12.1	3.45	29.5**	7.90**
Indonesia, Korea	9.09	2.97	15.18	1.25
Indonesia, Malaysia	36.25**	11.57**	77.8**	15.72**
Indonesia, Philippines	10.33	3.37	22.4**	4.25*
Indonesia, Thailand	33.97**	2.92	69.95**	15.29**
Japan, Korea	13.7	1.96	13.87	0.92
Japan, Malaysia	9.88	1.08	35.33**	12.79**
Japan, Philippines	3.76	1.76	19.68*	3.63
Japan, Thailand	32.64**	1.07	39.42	10.07
Korea, Thailand	30.23**	1.67	10.07	1.14
Korea, Malaysia	6.0	0.5	28.15**	0.91
Korea, Philippines	4.52	1.62	7.8	0.34
Malaysia, Philippines	18.34*	2.38	26.15**	2.7
Malaysia, Thailand	29.07**	1.11	106.53**	22.62**
Philippines, Thailand	38.57**	2.82	33.87**	3.57
<b>5% Critical values</b>	<b>15.41</b>	<b>3.76</b>	<b>15.41</b>	<b>3.76</b>
<b>1% Critical values</b>	<b>20.04</b>	<b>6.65</b>	<b>20.04</b>	<b>6.65</b>

Note: 1) Figures indicate trace statistics in Johansen (1998, 1991). 2) r is the number of cointegration vectors. 3) Pre-crisis: January 1, 1990-April 30, 1997, post-crisis: January 1, 1999 – August 30, 2002.



## Variance Decomposition

The second empirical test examines the extent to which financial prices (the interest rate and stock return) are influenced by shocks that are global, regional, or country specific. For this purpose, changes in the interest rate and stock return of each country in East Asia and Europe are decomposed into the following three components: a world common, a region common, and a country specific component. The world common component is a factor that affects changes in the financial variables of all countries in both regions; the region common factor influences only the countries belonging to either region; and the effect of the country specific factor is restricted to the country in question. The decomposition is carried out in terms of a dynamic factor model.<sup>9</sup> Another decomposition estimation in terms of a VAR model is presented in the appendix to this section 6.

Let  $Y_{jt}^r$  denote the interest rate or the stock return at time  $t$  for country  $j$  belonging to region  $r$ . There are three regions: East Asia ( $r_1$ ), Europe ( $r_2$ ), and North America ( $r_3$ ). Let  $W_t$  be an unobservable component of the world economic activity common to all countries (the world common factor) and  $R_t^r$  be an unobservable component common to each country belonging to the same region  $r$  (the region common factor). It is then assumed that the interest rate and the stock return of each country can be decomposed into the three separate components:

$$Y_{jt}^r = \alpha_{wj} W_t + \alpha_{rj} R_t^r + \varepsilon_{jt} \quad (1)$$

Where  $\varepsilon_{jt}$  represents a country specific factor to country  $j$ . The coefficients,  $\alpha_{wj}$  and  $\alpha_{rj}$ , are the impact coefficients of  $W_t$  and  $R_t^r$  for country  $j$ . Differences in the impact coefficients across countries imply that the world common and the region common factors have different effects on each country.

Following Stock and Watson (1991) it is assumed that the three factors follow a stationary univariate autoregressive process. More specifically these processes are assumed to be first-order:

$$W_t = \rho_w W_{t-1} + \eta_t^W \quad (2)$$

$$R_t^r = \rho_r R_{t-1}^r + \eta_{rt}^R \quad (3)$$

$$\varepsilon_{jt} = \rho_j \varepsilon_{jt-1} + \eta_{jt}^\varepsilon \quad (4)$$

Where the error terms,  $\eta_t^W$ ,  $\eta_{rt}^R$  and  $\eta_{jt}^\varepsilon$  are uncorrelated both serially and contemporaneously (no explicit co-movements among the factors). The error terms are the fundamental sources of shocks in the economy.

In order to detrend the series, the interest rate data are first-differenced, whereas the stock return data are first differenced in logarithms. For each detrended series, the sample mean is removed and the variance is standardized to one to ensure that all series receive equal weights in estimating the effects of the common factors. Since the estimation is carried out by minimizing the variance of the country-specific factor, those

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<sup>9</sup> The model is the one used in Lee, Park, and Shin (2002). The author is grateful to his coauthors for the estimation of the model.

countries with a high variance can overly influence the estimation procedure if the variance of the series is not equalized across countries. By standardizing the series, all countries receive an equal treatment irrespective of their sizes.

The variances of the error terms in equation (2) and (3), and the coefficients in equation (1) cannot be separately identified. For example, by setting the variance of  $\eta_t^w$  arbitrarily smaller than otherwise, the magnitude of the world common factor becomes also smaller. In this model this bias results in a larger estimate of the coefficient,  $\alpha_{wj}$  for all countries. To avoid this problem, the variances of  $\eta_t^w$  and  $\eta_{rt}^R$  are normalized to unity. Although the normalization affects the magnitudes of the estimated coefficients, this effect does not cause any problems because the decomposition exercise focuses on the relative sizes of the variances.

The dynamic factor model consisting of equation (1), (2), (3) and (4) is transformed into the usual state-space/measurement equation form to measure the quantitative influence of variations in the three common factors on changes in the interest rate and the stock return in each country.<sup>10</sup>

Let  $S_j^f$  denote the share of the variance of the interest rate or the stock return of country  $j$  accounted for by variations in the factor  $f = w, r, \varepsilon$ . Under the assumption that the world common, the region common, and the country-specific factors are orthogonal, the variance of a financial variable of country  $j$  can be decomposed into the following three terms:

$$\sigma_j^2 = \alpha_{wj}^2 \sigma_w^2 + \alpha_{rj}^2 \sigma_r^2 + \sigma_\varepsilon^{j2} \quad (5)$$

where  $\sigma_f^2$ , ( $f = w, r$ ) and  $\sigma_\varepsilon^{j2}$  are the variances of the world common, the region common, and the country-specific factors respectively. By normalizing to unity of the innovations to the world common, the region common, and the country-specific factors  $S_j^f$  are derived as follows:

$$S_j^f = \frac{\alpha_{jf}^2 \sigma_f^2}{\alpha_{wj}^2 \sigma_w^2 + \alpha_{rj}^2 \sigma_r^2 + \sigma_\varepsilon^{j2}} = \frac{\frac{\alpha_{jf}^2}{1 - \rho_f^2}}{\frac{\alpha_{wj}^2}{1 - \rho_w^2} + \frac{\alpha_{rj}^2}{1 - \rho_r^2} + \frac{\sigma_\eta^{j2}}{1 - \rho_j^2}}, \quad f = w, r \quad (6)$$

and

$$S_j^\varepsilon = \frac{\frac{\sigma_\varepsilon^{j2}}{1 - \rho_j^2}}{\frac{\alpha_{wj}^2}{1 - \rho_w^2} + \frac{\alpha_{rj}^2}{1 - \rho_r^2} + \frac{\sigma_\eta^{j2}}{1 - \rho_j^2}} \quad (7)$$

where  $\sigma_\eta^{j2}$  is the variance of  $\eta_{rt}^\varepsilon$ .

Estimates of the shares of the variances accounted for by the world common, the region common, and the country specific factors are used to determine whether financial

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<sup>10</sup> For a detailed derivation and a numerical maximization method of the model, see Lee, Park, Shin (2002).

markets of individual countries in a given region are more integrated with one another or with global financial markets. For example, a large value of the share accounted for by the region common factor implies a relatively high degree of financial integration at the regional level. Likewise, a large value of the share explained by the world common factor means that financial markets of individual countries are more closely linked with global financial markets than the markets of neighboring countries in the same region.

The model is estimated with monthly data of the interest rates and stock returns of six East Asian countries (Japan, Korea, Indonesia, Malaysia, Thailand, and the Philippines) and thirteen European countries over the period divided into, the pre-crisis period from February 1994 to April 1997 and the post-crisis running from January 1999 to April 2001.<sup>11</sup> The European countries are: Germany, Austria, Belgium, Denmark, France, Ireland, Netherlands, Finland, Spain, Switzerland, and the United Kingdom.

In Table 12, the shares of the variances of the interest rates accounted for by the world common, the region common factor, and country specific factors are presented for both East Asia and Europe. Similar figures for the stock returns are shown in Table 13.

The zero shares in these tables represent corner solutions (since parameter values are estimated by maximizing a likelihood function), implying that the effects of the factors in question are very small. This unrealistic result follows from deriving a large number of parameter values from a single likelihood function. This problem could be avoided by adopting a Bayesian framework, which is essentially equivalent to restricting the parameter values to be interior. Once again, the results of the variance decomposition exercises in this section should be interpreted as depicting a general direction of financial integration in both East Asia and Europe.

As far as the interest rate decomposition is concerned, the most significant development in East Asia is that the effects of local factors have increased substantially in the post-crisis period in all East Asian sample countries at the expense of both the world and region common factors. Indonesia is the only exception (see Table 12). The influence of the world common factor has declined in the post-crisis period, but somewhat less than that of the regional common factor.

The dominance of the country specific factor could be explained by the under development and relative lack of openness of bond markets in East Asia. Another explanation is that alternations of the interest rates are likely to have been dictated by the domestic policy objective of sustaining recovery from the 1997-98 crisis. Since the observed changes in both the world and regional factors are marginal, they do not help determine whether the direction of financial integration has been regional or global.

In the European region, local factors have dominated changes in the interest rate, and more so in the post-crisis period. As for the relative importance of the world and region common factor, in nine out of the thirteen European sample countries, the influence of the global factor has increased in the post-crisis period as compared to the three countries for the region common factor. In view of the deepening of monetary integration with the advent of the euro in recent years in Europe, one would expect a

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<sup>11</sup> The monthly data are chosen because the dynamic factor model can be easily overloaded with a large number of sample points of variables with a shorter interval.

substantial increase in the significance of regional factors. The estimation results of the dynamic factor model do not confirm to such an expectation.

In contrast to the case of the interest rate, the decomposition of stock returns in Table 13 shows that there has been an almost 20 percent decrease on average in the influence of the domestic factor in the post-crisis period in East Asia, which has been compensated for by the concomitant increase in both the world and region common factor. In five of the six East Asian sample countries the global component has gained as opposed to four in the case of the region common factor.

**Table 12. Decomposition of Interest Rates Variations**

**A. East Asian Countries**

	Period: 1994:1-1997:4			Period: 1999:1-2002:4		
	World	Region	Country	World	Region	Country
Japan	0	0.0016	-0.9984	0.1047	0.0731	0.8222
Malaysia	0.0142	0.0016	-0.9842	0.0002	-0.0037	0.9961
Philippines	0.2363	0.7637	0	0.0001	0.0006	0.9993
Thailand	0.0065	-0.3598	-0.6336	0.0112	0.0041	0.9847
Korea	0.038	-0.061	0.901	0.0105	-0.0081	0.9815
Indonesia	0.0216	0	0.9784	0.0117	0.0069	0.9814
Average	0.0528	0.1980	0.7493	0.0231	0.0161	0.9609

## B. European Countries

	Period: 1994:1-1997:4			Period: 1999:1-2002:4		
	World	Region	Country	World	Region	Country
Denmark	0.2294	0.3566	0.414	0.007	-0.0004	0.9925
Finland	0.004	-0.7456	0.2505	0.0041	0.5207	0.4752
France	0.2981	0.0262	0.6757	0.0251	0.025	0.9499
Germany	0.0763	0.1076	0.8161	0.0061	0.9939	0
Ireland	-0.004	0.0578	0.9382	-0.0074	0.0006	0.992
Italy	-0.0544	-0.0029	0.9427	-0.0075	-0.0001	0.9924
Norway	0.0348	-0.0281	0.9371	0.0001	0.0094	0.9904
Netherlands	0.083	-0.0114	0.9056	0.0111	0.0028	0.986
Portugal	0.0303	-0.0037	0.966	0.0752	-0.0051	0.9197
Spain	0.0764	-0.0253	0.8983	0.3037	-0.0144	0.6819
Sweden	0.0045	0.0025	0.993	0.0756	0	0.9244
Switzerland	0.0605	-0.0008	0.9387	0.0041	0.0019	0.9939
UK	0.0325	0.0049	0.9626	-0.0055	0.0004	0.9941
Average	0.0760	0.1056	0.8183	0.0410	0.1211	0.8379

**Table 13. Decomposition of Stock Return Variations**

## A. East Asian Countries

	Period: 1994:1-1997:4			Period: 1999:1-2002:4		
	World	Region	Country	World	Region	Country
Indonesia	0.0399	0.7843	0.1758	0.1087	0.1664	0.7249
Japan	0.0016	0.8845	0.1139	0.9038	0.0962	0
Malaysia	0.0153	0.0489	0.9358	0.0015	0.4234	0.5751
Philippines	0.0068	0	0.9932	-0.0913	0.7742	0.1345
Thailand	-0.0004	0.0072	0.9925	-0.0141	0.1121	0.8738
Korea	0.0094	0.0921	0.8985	0.3317	0.3498	0.3186
Average	0.0122	0.3028	0.6850	0.2419	0.3204	0.4378

## B. European Countries

	Period: 1994:1– 1997:4			Period: 1999:1-2002:4		
	World	Region	Country	World	Region	Country
Germany	0.0312	-0.0035	0.9653	-0.0006	0.9994	0
Austria	0.0464	0.01	0.9436	-0.0001	0.0008	0.9992
Belgium	0.0389	0.0005	0.9606	-0.0055	0.0154	0.9791
Denmark	0.1738	-0.4475	0.3787	0.0001	0.0042	0.9957
France	0.0111	0.0178	0.9711	-0.0053	0.214	0.7807
Ireland	0.1719	-0.5532	0.2749	0.0004	0.0011	0.9985
Netherlands	0.0023	0.0105	0.9871	0.0013	0.1626	0.8362
Finland	0.0814	-0.9186	0	0.0005	0.028	0.9716
Spain	0.2433	-0.1968	0.56	0.0104	0.0346	0.955
Switzerland	0.4743	-0.0942	0.4314	0.0001	0.0042	0.9957
U.K.	0.0155	0.028	0.9565	-0.0005	0.1965	0.803
Average	0.1173	0.2073	0.6754	0.0023	0.1510	0.8468

In Europe, however, the opposite development has taken place: on average, the domestic influence has risen in the post-crisis period by almost 20 percent. In all eleven sample European countries, the effects of the global factor have become weaker in the post-crisis period. However, the country specific factor has emerged as the dominant component in many of the smaller European countries, whereas in the U.K., Germany, and France the regional common factor has surged in importance in the post-crisis period.

## Appendix to Section 6

### VAR Variance Decomposition

Let  $R_{j,t}$ ,  $R_{US,t}$ , and  $R_{JP,t}$  be the weekly returns at time  $t$  of the market portfolios of an East Asian country  $j$ , US, and Japan, respectively. Then, for each East Asian market, the following trivariate VAR model is constructed:

$$Y(t) = D(T) + \sum_{s=1}^m B(s)Y(t-s) + u(t), \quad t = 1, \dots, T \quad (1)$$

where  $Y(t)$  is a 3x1 vector consisting of  $R(t)$ ,  $V(t)$ .  $D(t)$  is a 3x1 vector of constants,  $B(s)$  is a 3x3 coefficient matrix, and  $u(t)$  is a 3x1 vector of serially uncorrelated random residuals with a zero mean and finite variance.

The VAR specification defines  $u(t)$  as an innovation in  $Y(t)$  in that it is the component in  $Y(t)$  that cannot be predicted from the past values of variables in the system. The moving average representation (MAR) is obtained by successive substitution on the right hand side of equation (1) as

$$Y(t) = F(t) + \sum_{s=0}^{\infty} A(s)u(t-s) \quad (2)$$

where  $F(t)$  is the corresponding 3x1 vector of constants and  $A(s)$  is a 3x3 matrix of coefficients. The MAR represents  $Y(t)$  as a linear combination of current and past one-step-ahead forecast errors.

While the estimated coefficients  $B(s)$  of the VAR provide little insights into the dynamic interactions among the variables, equation 2 (MAR) presents the information equivalent to that contained in the original estimates, but in a form relatively easy to understand. That is,

$$\sum_{s=0}^{\infty} A(s)u(t-s) = \sum_{s=0}^{\infty} A(s)(HH^{-1})u(t-s) = \sum_{s=0}^{\infty} C(s)e(t-s), \quad (3)$$

where  $C(s)=A(s)H$ ,  $e(t)=H^{-1}u(t)$  and the matrix  $H$  is such that  $HH'$  is a factorization of the covariance matrix  $u(t)$  by the Choleski decomposition method. With the weekly data, the k-week ahead forecast error of  $Y(t+k)$  at time  $t$  is

$$C(k-1)e(t+1) + C(k-2)e(t-2) + \dots + C(0)e(t+k) = \sum_{s=0}^{k-1} C(s)e(t+k-s). \quad (4)$$

The variance of the k-week ahead forecast error is  $\sum_{j=1}^n \sum_{s=0}^{k-1} [C^{i,j}(s)]^2$ . Then,  $\sum_{s=0}^{k-1} [C^{i,j}(s)]^2 / \sum_{j=1}^n \sum_{s=0}^{k-1} [C^{i,j}(s)]^2$  is a component of the error variance of the k-week ahead forecast of  $Y^i$ , which is accounted for by innovations in  $Y^j$ .

In the following analysis the MAR equation is used to compute the proportions of the forecasting error variance of an East Asian country index return,  $R_{i,t}$  that can be attributed to shocks originating in the US, Japanese, and local market returns,  $R_{US,t}$ ,  $R_{JP,t}$ , and  $R_{i,t}$ . Equation 1 is estimated with two lags and a constant term for the deterministic part  $D(t)$ . In view of the cross-equation nature of the hypothesis, it is also estimated with alternative lags of one, three, and four. The results are qualitatively similar, however.

### Vector Autoregression Results

Empirical estimation of the VAR model uses weekly market price index data of six East Asian countries (Indonesia, Malaysia, Philippines, Korea, Taipei,China, and Thailand) plus US and Japan from DataStream International for the period of running from 1990.4.4 to 2002.4.24. In this estimation a weekly interval, instead of a daily interval,

was chosen, because daily prices data suffer from market frictions such as the bid-ask bounce and trading hours are non-synchronous between the US and Asian countries. All price series are adjusted for dividends and expressed in local currency. The same analysis is repeated in terms of the common currency (US dollar): the results are very close to the one with the local currency. Weekly compounded returns are estimated by taking the log of price ratios.

In order to find a measure of the overall relative importance of weekly returns of the US and Japan in generating market returns of an East Asian market, say Korea, the variance of k-week ahead forecast error of the Asian market return is computed with the MAR and decomposed into shocks attributable to the US, Japan, and the East Asian local market returns. The shocks are orthogonalized so that they are uncorrelated both across time and across equations.

Table 14 presents a decomposition of the error variance of the market index return of each East Asian country for one-through four-week ahead forecasts. The first column is the forecast period. The second through fourth columns represent the proportions of the forecast error variance of an East Asian country explained by innovations of market returns of US (global factor), Japan (regional factor), and the East Asian country itself (local factor), respectively. The explanatory power of each innovation is measured in percentage so that the horizontal sum of each row is 100. The results show that in all six markets the forecast error variances of the market index returns are largely explained by local markets' own innovations. However, there is a clear distinction between the proportions of forecast error variances explained by the US and Japanese factors.

The share of the error variances of the sample countries' index returns attributable to the return innovations in the US are 5.4, 7.8, 9.6, 8.3, 6.9, and 9.8 percent for Indonesia, Malaysia, the Philippines, Korea, Taipei, China, and Thailand, respectively. These shares indicate that the return shocks originating in the US plays a reasonably significant role in explaining the variations in East Asian market index returns over a four-week horizon. In contrast, the Japanese shocks have little effects on East Asian market index returns. The corresponding figures for the Japanese factors are 2.9, 1.3, 0.7, 3.8, 1.9, and 0.6 percent.

On average, 90 percent of forecast error variances of the East Asian market index returns is attributable to the innovation in the local markets, 8 percent to the US market, and 2 percent to the Japanese market respectively. These results suggest that the US market has a stronger influence on the East Asian stock markets than the Japanese market, supporting in part the argument that East Asian financial markets have established closer ties with the markets of the U.S. and Europe than with Japan (or with one another).



**Table 14. Vector Autoregression Decomposition**

The table presents the results of variance decomposition of Asian market returns using the estimates of trivariate VAR for the US, Japan, and each of the six Asian markets. The estimation is based on weekly local index returns. The total return index data are from Datastream International. The sample covers the period of 1990.04.11 through 2002.4.17 (629 observations).

Period	Indonesia		
1	2.59	1.79	95.62
2	4.44	2.69	92.87
3	5.37	2.85	91.78
4	5.41	2.88	91.71
Malaysia			
1	7.68	1.03	91.29
2	7.84	1.21	90.96
3	7.81	1.25	90.94
4	7.81	1.25	90.94
Philippines			
1	6.37	0.39	93.24
2	8.80	0.47	90.73
3	9.62	0.67	89.70
4	9.65	0.67	89.68
Korea			
1	7.96	3.54	88.50
2	8.13	3.74	88.13
3	8.30	3.74	87.96
4	8.30	3.75	87.95
Taipei,China			
1	5.62	1.80	92.58
2	6.93	1.92	91.15
3	6.93	1.92	91.15
4	6.94	1.92	91.14
Thailand			
1	8.81	0.41	90.77
2	9.79	0.52	89.69
3	9.76	0.58	89.65
4	9.77	0.58	89.65
Average across countries in period 4			
	7.98	1.84	90.18

The results of variance decomposition are sensitive to the choice of ordering of endogenous variables, as the choice imposes a recursive structure in the model. For example, if the equations in the model are ordered according to the vector of endogenous variables in the system as  $Y_t = [R_{JP,t}, R_{US,t}, \text{ and } R_{jt}]$ , then a recursive structure is assumed that starts with  $R_{JP}$  and ends with  $R_j$ . Such an ordering of equations is equivalent to imposing a structure that  $R_{JP}$  is not contemporaneously correlated with any other variables,  $R_{US}$  is only correlated with  $R_{JP}$ , and  $R_{jt}$  is correlated with  $R_{JP}$  and  $R_{US}$ . The last variable in the sequence is contemporaneously correlated with the rest of the variables. Once the ordering is changed, the recursive relationship changes accordingly (see Hamilton 1994).

Table 15 shows the results of variance decomposition when the ordering of variables is changed to  $Y_t = [R_{JP,t}, R_{US,t}, \text{ and } R_{jt}]$ . As expected, the percentage of the error variance attributable to US shocks decreases, but only slightly. On average, 90 percent of the forecast error variances of the six East Asian market index returns are explained by the local shock, and 5 percent by both the US and Japanese market. The percentages of the error variances of the individual country index returns attributable to the US factor are 2.4, 4.9, 7.4, 3.9, 3.8, and 7.4 for Indonesia, Malaysia, the Philippines, Korea, Taipei, China, and Thailand, respectively. The corresponding figures for Japan are 6.0, 4.2, 2.9, 8.4, 5.1, and 2.9 percent. These results show that even when the ordering of variables is altered so that the Japanese market plays a more important role in the system of vector autoregression equations, the US market is as important as the Japanese market in affecting East Asian markets. For this reason, the ordering of variables as  $Y_t = [R_{US,t}, R_{JP,t}, \text{ and } R_{jt}]$  is chosen.

To see if there has been a change since the East Asian currency crisis in the relative importance of the US and Japanese influences on the Asian markets, the sample period was divided into two sub periods, before and after 1998.01.01 and the same analysis is conducted for both periods. Table 16 presents the results. Columns 2 through 4 represent the proportions of forecast error variances explained by the innovations in the returns of the US, Japan, and an East Asian local market for the pre-crisis period and columns 5 through 7 for the post-crisis period.

Table 16 also provides several interesting results. First, shocks originating in the US and Japan have become more significant in explaining the East Asian market returns. With the exception of Indonesia, which shows that the contribution of foreign market innovations decreases to 7.5 percent in the second sample period from 10.4 percent in the first crisis period, all other East Asian countries experience an increase in the foreign contribution to the forecast error variance which rose on average to 16.5 percent in the second period from 7.4 percent in the first period.

For the six countries as a whole, an average of only 7.9 percent of the foreign influence contributes to the forecast error variances of East Asian market returns by the fourth week in the first period. The corresponding figure increases to 15.0 percent in the second period. The impact of the foreign influence on East Asian market returns therefore significantly increases after the crisis.

**Table 15. Vector Autoregression Decomposition:  
Alternative Choice of Ordering Variables**

This table presents the results of variance decomposition of Asian market returns using the estimates of trivariate VAR for the Japan, the United States, and each of the six Asian markets. The estimation is based on weekly local index returns. The total return index data are from Datastream International. The sample covers the period of 1990.04.11 through 2002.4.17 (629 observations).

Period		Indonesia	
1	3.40	0.97	95.62
2	5.34	1.79	92.87
3	5.89	2.33	91.78
4	5.95	2.35	91.71
Malaysia			
1	3.89	4.82	91.29
2	4.19	4.86	90.96
3	4.22	4.85	90.94
4	4.22	4.85	90.94
Philippines			
1	2.31	4.45	93.24
2	2.34	6.94	90.73
3	2.93	7.37	89.70
4	2.93	7.39	89.68
Korea			
1	7.86	3.64	88.50
2	8.19	3.68	88.13
3	8.14	3.90	87.96
4	8.14	3.90	87.95
Taipei,China			
1	4.54	2.88	92.58
2	5.11	3.75	91.15
3	5.10	3.75	91.15
4	5.11	3.75	91.14
Thailand			
1	2.90	6.33	90.77
2	2.86	7.45	89.69
3	2.94	7.41	89.65
4	2.94	7.41	89.65
Average across countries in period 4			
	4.88	4.94	90.18

**Table 16. Vector Autoregression Decomposition Before and After the Asian Currency Crisis**

The table below presents the results of variance decomposition using the estimates of trivariate VAR for the U.S., Japan, and each of the six Asian markets estimated for each of the two subperiods (before the Asian currency period, 1990.4.11—1997.12.31, and after the Asian currency crisis period, 1998.01.07—2002.04.24), respectively. The estimation is based on weekly local index returns. The total return index data are from Datastream International. The sample covers the period of 1990.04.11 through 2002.4.17 (629 observations).

Forecast Period	1990.4.11 – 1997.12.31			1998.01.07 – 2002.04.24		
	Indonesia					
1	2.61	3.35	94.03	2.73	1.03	96.24
2	4.89	3.95	91.16	4.33	2.33	93.34
3	6.00	4.24	89.77	5.13	2.37	92.50
4	6.16	4.28	89.56	5.13	2.39	92.48
	Malaysia					
1	7.10	1.30	91.60	8.46	0.78	90.76
2	7.85	1.40	90.75	8.43	0.99	90.58
3	7.76	1.51	90.73	8.44	0.99	90.57
4	7.76	1.51	90.73	8.44	0.99	90.57
	Philippines					
1	4.48	0.20	95.32	10.25	0.83	88.92
2	6.43	0.21	93.36	13.00	1.04	85.96
3	6.63	0.39	92.98	14.77	1.26	83.97
4	6.69	0.40	92.92	14.78	1.26	83.96
	Korea					
1	3.86	1.39	94.76	12.93	7.80	79.27
2	4.05	2.24	93.71	14.27	7.67	78.06
3	4.06	2.60	93.35	14.53	8.53	76.95
4	4.07	2.60	93.34	14.54	8.56	76.90
	Taipei,China					
1	3.28	1.17	95.55	11.28	3.48	85.23
2	3.76	1.27	94.97	14.29	3.54	82.17
3	3.77	1.40	94.83	14.15	3.69	82.16
4	3.79	1.40	94.81	14.14	3.72	82.14
	Thailand					
1	5.43	0.19	94.38	12.96	0.75	86.29
2	5.87	0.69	93.44	14.47	0.77	84.76
3	6.30	2.38	91.32	13.73	1.90	84.37
4	6.30	2.38	91.31	13.75	1.91	84.34
	Average across countries in period 4					
	5.79	2.09	92.12	11.80	3.14	85.06

Second, a comparison of the US and Japanese contribution to the Asian market returns indicates that much of the increase in the foreign influence comes from the US market. For instance, in the pre-crisis sample period, the US contribution to variations in East Asian market returns on average is 5.8 percent whereas the Japanese contribution is only 2.1 percent. The corresponding figures in the post-currency crisis period are 11.8 percent and 3.1 percent for the US and Japan, respectively. On average, out of a 7 percentage point increase, the US accounts for 6 percentage points. This development underscores the increasing importance of the US market in determining the East Asian stock market returns.

## **7. Financial Liberalization and Penetration by Foreign Financial Institutions of East Asian Financial Markets**

According to the definition used in the General Agreement on Trade in Services (GATS), financial services include all insurance and insurance-related services, and all banking and other financial services. Financial services industry is made up of activities in various fields of finance including commercial banking, investment banking (notably underwriting and trading), insurance, derivatives, mergers and acquisitions, financial leasing, management consulting, asset management, accounting and auditing, financial data processing, and even law and telecommunications. Listing a full range of financial services is almost an impossible task as new financial services are constantly being created and provided. It will be shown that few East Asian financial institutions appear to have a comparative advantage in supplying these services.

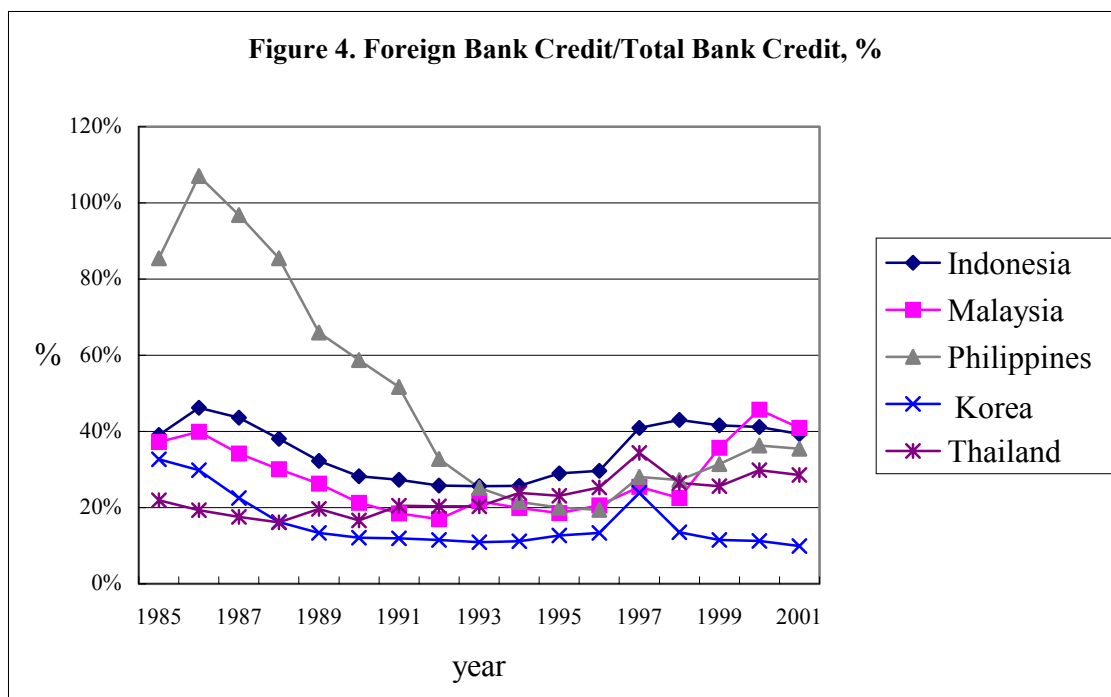
### **Banking Institutions**

As indicated by an IMF survey of international capital markets (2000), there has been a dramatic increase in foreign ownership of banks in most emerging market economies since the middle of the 1990s. Due largely to severe restrictions on entry, foreign bank penetration was traditionally low in East Asia. However, this has changed since the 1997-98 crisis (see Table 17). Notwithstanding the initial low degree of penetration, foreign bank control over assets of local banks jumped to 4.3 percent in 1999 from less than one percent in Korea in 1994. In Indonesia, it rose by more than ten times during the same period. On average, the foreign control in Korea, Malaysia and Thailand shot up to 6 percent in 1999 from 1.6 percent five years earlier.

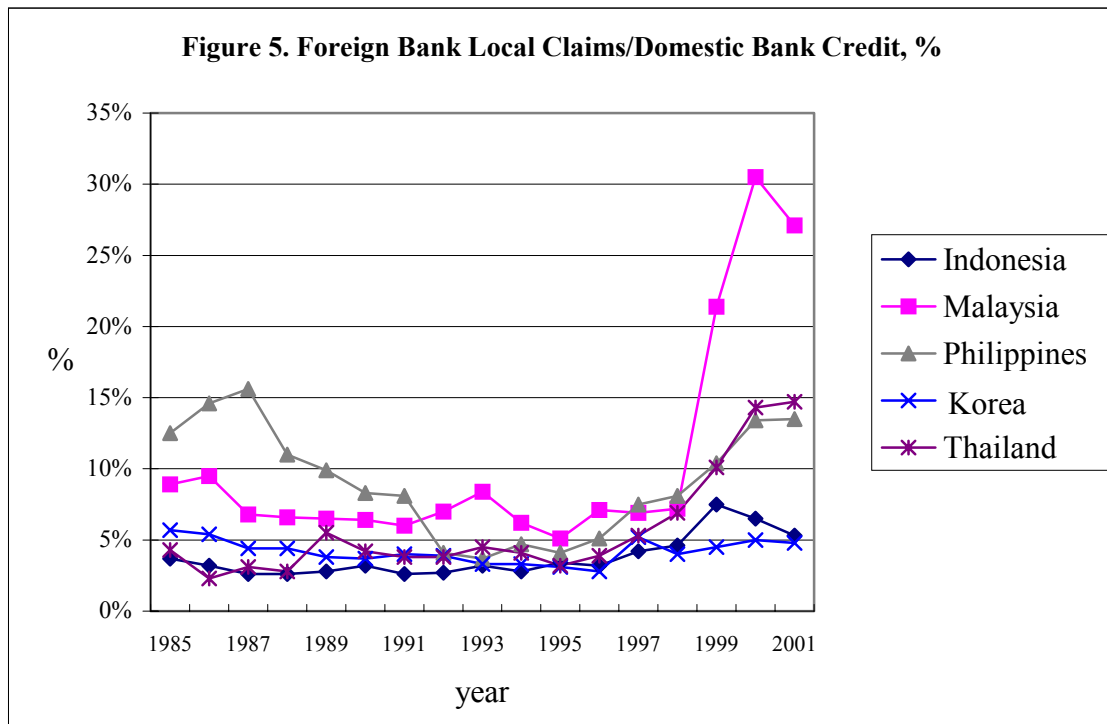
A similar development can be found in the lending behavior of BIS reporting foreign banks in East Asia. Lending in both local and foreign currencies of BIS reporting foreign banks in the nine East Asian countries are shown in Figures 4 to 6. As shown in Figure 4, between 1991 and 2001, foreign banks' credit as a share of total bank credit more than doubled in Malaysia: it rose to more than 40 percent after the 1997 crisis from an average of less than 20 percent over the 1990-96 period. In the Philippines the share jumped to 35.5 percent in 2001 after a sustained decline during the first half of the 1990s and in Thailand there has been a gradual increase in foreign banks share.

Figure 5 shows that foreign banks also made a substantial gain in penetrating the loan market where their share reached almost the 30 percent level in Malaysia. Only in Taipei, China and Korea, have foreign banks not been able to increase their loan market

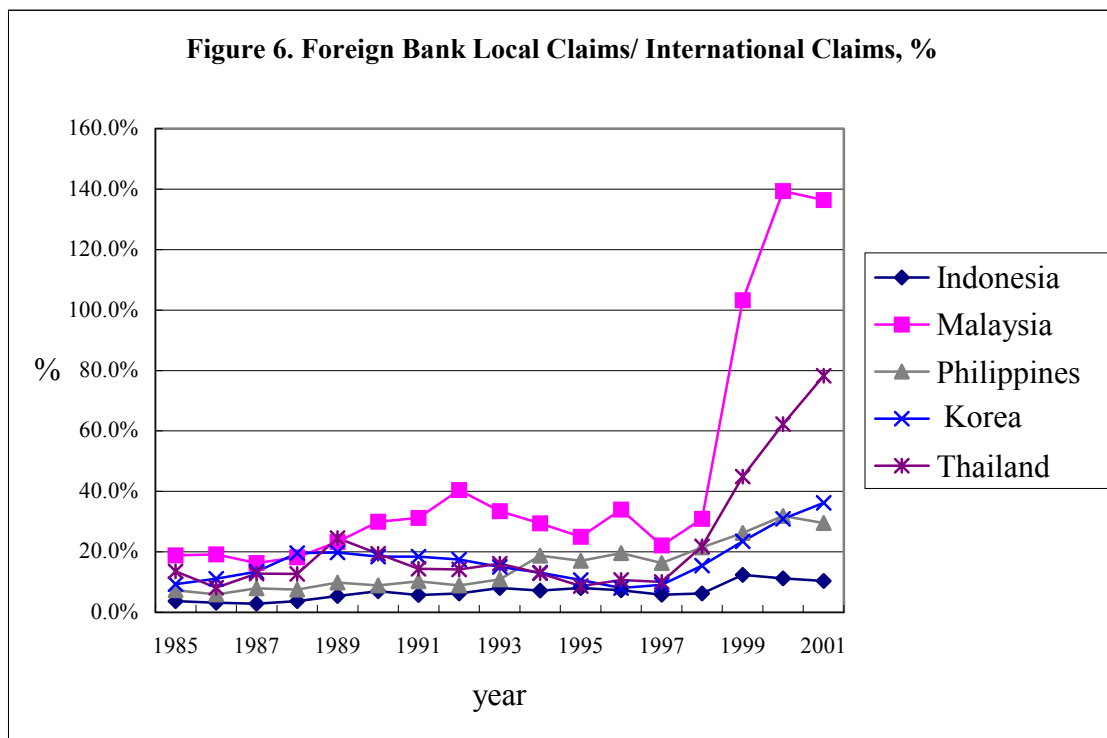
shares. Much of the increase in the market share of foreign banks in the Southeast Asian countries has come from the large increase in their local currency lending (Figure 6). Except for Malaysia, in all of the East Asian countries the absolute amounts of international claims of the foreign banks have declined, thereby lifting the ratios of local currency to international claims.



Source: BIS (2002)



Source: BIS (2002)



Source: BIS (2002)

**Table 17. Foreign Bank Ownership in Selected Emerging Markets<sup>1</sup>**

	Total Assets	Foreign Control <sup>2</sup>	Total Assets <sup>3</sup>	Foreign Participation	Foreign Control <sup>2</sup>	Foreign Control <sup>4</sup>
	December 1994	December 1994	December 1999	December 1999	December 1999	December 1999
	(In billion of U.S. dollar)	(In percent)	(In billion of U.S. dollar)	(In percent)	(In billion of U.S. dollar)	(In percent)
<b>Central Europe</b>						
Czech Republic	46.6	5.8	63.4	47.3	49.3	50.7
Hungary	26.8	19.8	32.6	59.5	56.6	80.4
Poland	39.4	2.1	91.1	36.3	52.8	52.8
Total	112.8	7.8	187.1	44.0	52.3	56.9
<b>Latin America</b>						
Argentina	73.2	17.9	157.0	41.7	48.6	48.6
Brazil	487.0	8.4	732.3	18.2	16.8	17.7
Chile	41.4	16.3	112.3	48.4	53.6	53.6
Colombia	28.3	6.2	45.3	16.2	17.8	17.8
Mexico	210.2	1.0	204.5	18.6	18.8	18.8
<b>Asia</b>						
Korea	638.0	0.8	642.4	11.2	4.3	16.2
Malaysia	149.7	6.8	220.6	14.4	11.5	11.5
Thailand	192.8	0.5	198.8	6.0	5.6	5.6
Total	980.5	1.6	1061.8	10.9	6.0	13.2

Source: IMF (2000)

<sup>1</sup> Ownership data reflected changes up to December 1999 while balance sheet data are the most recent available in Fitch IBCA's BankScope.

<sup>2</sup> Ratio of assets of banks where foreigners own more than 50 percent of total equity to total bank assets.

<sup>3</sup> For Central Europe and Asia available balance sheet data are in most cases for December 1998.

<sup>4</sup> Same as footnote 2 but at 40 percent level.

### **Provision of Capital Market Services**

While foreign bank penetration in East Asia is still lagging behind that in other emerging market economies, Western investment banks, in particular American and European ones, have established a monopoly position in providing two major capital markets services in East Asia: underwriting in the primary market and trading and consulting in the secondary market. While there are many areas of financial services other than securities underwriting and trading, it is hard to quantify the value of financial services provided and in many cases relevant data are difficult to find. For these reasons, this section focuses on well-reported investment banking to show the dominance of American and European investment banks in providing financial services in East Asia.



Western financial institutions, in particular American ones, have been by far the largest providers of financial services in global investment banking. This was confirmed by Euromoney's 1996 poll of polls. According to this poll, by which the top 20 investment banks were selected based on a compilation of 70 Euromoney polls and league tables produced in 1995, almost all of the selected investment banks were either American or European. Six years later, this dominance remained unchanged; only one Japanese investment bank made it into the list (see Table 18).

Table 18 also shows the dominance which American and European institutions held in providing the entire range of financial services. US-based financial institutions led in every category of services, followed by British-based ones. Not one single financial institution was based in Asia with the exception of Japan, and even then, the Japanese institutions were ranked dead last. The Euromoney polls in 2002 shows that American investment banks have solidified their dominance further; with Japanese investment banks having been largely driven out of the market for capital market services since 1995.

From the perspectives of East Asia, a more important development in regard to the role of Western investment bank is their growing dominance in East Asian international financing. Amounts of financing from international capital markets by East Asian countries grew rapidly before the crisis (Table 23A and B), but it was not local financial institutions but rather Western institutions that managed to control the vast share of the market for underwriting and distribution of the new issues. Table 19 classifies the capital market instruments issued in the six Asian countries during the 1991-2001 period by nationality of the lead managers or book runners who sponsored the new issues. It can be seen that out of US\$31.96 billion that was financed through capital markets for the 1998-2001 period by the six countries, 74 percent was undertaken by American and European investment banks and 6 percent by Japanese institutions. The cumulative figures for the 1991-1997 period show that Western institutions, compared to 30 percent by East Asian investment banks, managed 70 percent of the capital market financing.

Table 21 presents the distribution of lead managers by their parent countries and types of instruments issued in the six Asian countries during 1991-2001 period. American and European institutions accounted for more than 70 percent of all capital market financing, while Japanese institutions only 9 percent.

Table 22 lists the top 20 lead managers or book runners in the management of debt and equity issues. The total amount underwritten reveals a similar pattern of Western dominance, the American and European institutions representing 90 percent and the East Asian institutions only 10 percent. Table 23 divides the list of top twenty lead managers into two sub-periods before (1991-97) and after (1998-2001) the crisis; again there was little change in the dominance of Western lead managers.

**Table 18. Top 20 Investment Banks by Parent Country**

Issues of Euromoney in 1996 and 2002. Numbers in parenthesis are percentages.

Function Parent Country of Investment Banks	Overall Results		Underwriting		Trading		Advisory	
	1996	2002	1996	2002	1996	2002	1996	2002
US	8 (40)	11 (55)	8 (40)	9 (45)	8 (40)	10 (50)	8 (40)	10 (50)
UK	3 (15)	3 (15)	2 (10)	3 (15)	5 (25)	3 (15)	6 (30)	3 (15)
Europe	7 (35)	5 (25)	7 (35)	6 (30)	6 (30)	7 (35)	6 (30)	7 (35)
Japan	2 (10)	1 (5)	3 (15)	2 (10)	1 (5)	0 (0)	0 (0)	0 (0)
Total No. of Investment Bank	20 (100)	20 (100)	20 (100)	20 (100)	20 (100)	20 (100)	20 (100)	20 (100)

Source: Euromoney, January, 1996 and 2002

**Table 19A. Distribution of International Financing by Country and by Financial Instrument**

Panel A: International financing by year and country		(Unit: million U.S. dollars and %)											
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Total	
						Capital market financing							
Indonesia	242	100	285	1591	1545	1232	3223	0	767	76	450	9511 (8.73)	
Malaysia	0	0	475	1325	3509	749	3000	89	591	556	1600	11894 (10.91)	
Philippines	12	403	928	1112	1543	3020	2644	1919	623	1431	700	14335 (13.15)	
Korea	693	1179	2938	3214	9644	8533	4769	2137	4166	4304	3302	44880 (41.17)	
Taipei,China	139	1131	0	1766	1634	1051	1484	682	1502	3448	1693	14530 (13.33)	
Thailand	1378	84	2095	1782	1809	1358	3421	708	661	0	555	13852 (12.71)	
Total	2464	2897	6722	10790	19683	15943	18543	5535	8310	9814	8300	109002 (100.00)	

**Table 19B. International Financing by Year and Instrument**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Total
Bond	866 (35.15)	929 (32.06)	5058 (75.75)	7065 (65.48)	9177 (46.62)	3835 (24.05)	8818 (47.55)	2551 (46.09)	2460 (29.60)	4721 (48.10)	7177 (86.48)	52657 (48.31)
Equity	1598 (64.85)	1919 (66.22)	764 (11.37)	3568 (33.07)	5713 (29.02)	6962 (43.67)	2298 (12.39)	2976 (53.77)	3850 (46.33)	3584 (36.52)	989 (11.92)	34221 (31.39)
Capital market financing	0 (0.00)	50 (1.73)	900 (13.39)	157 (1.46)	4794 (24.35)	5146 (32.28)	7427 (40.05)	8 (0.14)	2000 (24.07)	1509 (15.38)	133 (1.60)	22124 (20.30)
Total	2464 (100.00)	2898 (100.00)	6722 (100.00)	10790 (100.00)	19684 (100.00)	15943 (100.00)	18543 (100.00)	5535 (100.00)	8310 (100.00)	9814 (100.00)	8299 (100.00)	109002 (100.00)

**Table 20. Distribution of Lead Managers by Their Parent Countries and Year**

	1991	1992	1993	1994	1995	1996	1997	1991- 1997	1998	1999	2000	2001	1998- 2001	Total
	Capital market financing													
US	100	0	756	412	2589	4614	5230	13700	1665	3469	4299	1396	10829	24529
UK	576	1790	2460	6102	8009	4298	8656	31890	1595	1668	3068	2995	9327	41217
Swiss	108	83	129	359	153	50	356	1238	18	0	0	0	18	1256
Other Europe	70	533	911	185	867	2412	1027	6005	252	543	556	2117	3468	9473
West Total	854	2406	4256	7058	11618	11374	15268	52834	3530	5680	7923	6508	23641	76475
	(34.65)	(83.08)	(63.31)	(65.41)	(59.02)	(71.34)	(82.34)	(68.58)	(63.77)	(68.35)	(80.72)	(78.40)	(73.97)	(70.16)
Japan	114	0	1592	494	2528	1616	1832	8177	100	781	200	919	2001	10177
Singapore	15	0	102	179	698	943	150	2087	317	385	1211	224	2137	4223
Hong Kong, China	724	406	722	2327	2115	1194	819	8308	231	692	259	175	1356	9664
Other Asia	758	84	50	732	2725	815	473	5637	1357	772	222	475	2825	8462
Asia Total	1611	490	2466	3732	8066	4568	3274	24208	2005	2630	1892	1793	8319	32527
	(65.35)	(16.92)	(36.69)	(34.59)	(40.98)	(28.66)	(17.66)	(31.42)	(36.23)	(31.65)	(19.28)	(21.60)	(26.03)	(29.84)
Total	2465	2896	6722	10790	19683	15942	18543	77042	5535	8310	9815	8301	31960	109002
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

**Table 21. Distribution of Lead Managers by Their Parent Country and Financial Instrument**

(Unit: million U.S dollars)

	Capital market financing				Loan financing	Total
	Bond	Equity	MTN	Total	Loan	
US	12234	7795	4500	24529	7213	31742
UK	18268	9849	13100	41217	7391	48608
Swiss	1019	237	0	1256	3068	4324
Other Europe	3864	1691	3917	9472	16526	25998
West Total	35385	19572	21517	76474	34197	110671
	(67.20)	(57.19)	(97.26)	(70.16)	(28.05)	(47.92)
Japan	8841	1337	0	10178	15440	25618
Singapore	1209	3015	0	4224	15072	19296
Hong Kong, China	5207	3908	550	9665	18167	27832
Other Asia	2014	6390	57	8461	39052	47513
Asia Total	17271	14650	607	32528	87730	120258
	(32.80)	(42.81)	(2.74)	(29.84)	(71.95)	(52.08)
Total	52657	34222	22124	109003	121927	230930
	(100.00)	(100.00)	(100.00)		(100.00)	(100.00)

Note: The distribution of international financing proceeds financed in six Asian countries during the period of 1991-2001 by the parent country of a lead manager. The financing schemes are categorized into capital market financing and loan financing. Capital market financing instruments include 1) Bond (bond with warrants, convertible bond, plain bond), 2) Medium Term Note, and 3) Equity (ordinary shares, preference shares, warrants). Loan financing instrument includes syndicate loans.

Source: Thomson Financial SDC database.

**Table 22. List of Top 20 Lead Managers**

(Unit: million U.S. dollars and % in parentheses)

Lead Manager	Amount	Parent Company	
Merrill Lynch International Ltd	8741	US	
Lehman Brothers	6050	US	
JP Morgan Securities Ltd	3819	US	
Morgan Stanley Dean Witter & Co	3606	US	
Daiwa Securities Co Ltd	3414	Japan	
Goldman Sachs (Asia)	2485	US	
Salomon Brothers Inc	2464	US	
SBC Warburg	2392	UK	
Warburg Dillon Read	2382	UK	
CS First Boston Limited	2344	US	
Nomura Securities Co Ltd	2300	Japan	
JP Morgan & Co Inc	1965	US	
Merrill Lynch & Co Inc	1941	US	
Deutsche Morgan Grenfell	1739	Germany	
Morgan Stanley International Ltd	1728	US	
Goldman Sachs International	1649	US	
Baring Brothers & Co Ltd	1543	UK	
UBS Securities Inc	1515	Swiss	
Credit Suisse First Boston Inc	1500	Swiss	
Jardine Fleming	1325	UK	
<hr/>			
Country	Amount	No.	
US	36792	11	(61.11)
UK	7641	4	(22.22)
Swiss	3015	2	(11.11)
Other Europe	1739	1	(5.56)
West Total	49186	18	(90.00)
<hr/>			
Japan	5714	2	(10.00)
Singapore	0	0	(0.00)
Hong Kong, China	0	0	(0.00)
Other Asia	0	0	(0.00)
Asia Total	5714	2	(10.00)
<hr/>			
Total	54900	20	(100.00)

**Table 23. List of Top 20 Lead Managers before and after the East Asian Currency Crisis**

(Unit: million U.S. dollars and % in parentheses)

1991-1997			
Country	Amount	No.	
US	23780	10	(50.00)
UK	7733	5	(25.00)
Swiss	1515	1	(5.00)
Other Europe	1739	1	(5.00)
West Total	34767	17	(85.00)
Japan	5164	2	(10.00)
Singapore	0	0	(0.00)
Hong Kong, China	0	0	(0.00)
Other Asia	1186	1	(5.00)
Asia Total	6351	3	(15.00)
Total	41118	20	(100.00)
1998-2001			
Country	Amount	No.	
US	16026	12	(60.00)
UK	2086	3	(15.00)
Swiss	2322	2	(10.00)
Other Europe	500	1	(5.00)
West Total	20934	18	(90.00)
Japan	550	1	(5.00)
Singapore	0	0	(0.00)
Hong Kong, China	0	0	(0.00)
Other Asia	704	1	(5.00)
Asia Total	1254	2	(10.00)
Total	22188	20	(100.00)

Note: The table presents the list of top 20 lead managers before and after Asian currency crisis. Lead managers are ranked by the issue proceeds financed in six Asian countries during the period of 1991-1997 and 1998-2001, respectively. The financial instruments used include 1) Bond (bond with warrants, convertible bond, plain bond), 2) Medium Term Note, and 3) Equity (ordinary shares, preference shares, warrants).

Source: Thomson Financial SDC database.



Financial institutions and corporates worldwide are making increasing use of derivatives. Exchanges-traded derivatives are currently estimated to be in the magnitude of several trillions of dollars, compared with several hundred billion dollars in the late 1980s. Trading volume of over-the-counter derivatives is even larger than exchange-traded derivatives. Institutions and corporates in East Asian countries are also increasingly relying on the use of derivative products to meet their diverse needs as their business activities are more and more internationalized and are becoming more complex.

It is, however, American and European institutions that dominate in the roles of brokers and dealers of derivative transactions. This is so even in the transaction of Asian derivatives including Asian interest rate swaps, currency swaps, currency options, etc., not to mention derivative products in more developed markets. According to the Risk Magazine (November 1996), most of the first-tiered derivative brokers and dealers were either American or European institutions when evaluated based on pricing ability, market-making reliability and liquidity, and innovation and speed of transaction before the 1997-98 crisis.

In fact, it was reported that no local financial institution was ranked as active brokers or dealers of Asian derivatives. Moreover, the role of providing tailor-made derivative products according to customer's needs, which requires highly-developed financial expertise and sophisticated financial technology and has become an increasingly important and lucrative area of the financial service industry, is played entirely by American and European institutions. The East Asian financial crisis and the non-performing loan problems of Japanese banks, which have curtailed their lending activities, have consolidated further the role of Western financial institutions in recent years in East Asia.

## **8. Prospects for Regional Financial Integration in East Asia**

### ***8.1. Implications of Financial Liberalization for Regional Economic Integration***

There has been a substantial increase in intra-regional trade in East Asia. Emergence of the PRC as a major trading partner and its entry into the WTO are likely to accelerate East Asia's trade integration. The APEC agreement on trade liberalization and prospects for concluding a number of bilateral free trade agreements have also contributed to the expansion of trade in East Asia. This expansion in regional trade is therefore expected to produce market pressures for closer coordination of economic policies including exchange rate policy in the region.

In contrast, however, financial liberalization and innovation in East Asia do not appear to have strengthened financial linkages among financial markets of individual East Asian countries. Instead, financial market opening has led to diversification and strengthening of East Asian financial ties with global financial markets. Trade liberalization has unleashed market forces gravitating East Asian economies to regional integration, financial liberalization to global financial integration.

While individual East Asian countries have made considerable progress in deregulating and opening their financial markets, they are still lagging far behind advanced countries in deregulating capital account transactions and collectively they have not been able to coordinate their liberalization efforts. As a result, they have

achieved very little in harmonizing legal systems for the protection of minority stock holders, regulatory systems, tax treatments of cross-border financial transactions, and standards of banking, accounting, auditing, disclosure, and corporate governance at the regional level. This lack of cooperation in regional harmonization of legal and regulatory systems and standard setting together with the pervasiveness of capital account controls has impeded financial integration in the region.<sup>12</sup>

One implication of the preceding analysis is that financial market opening in East Asia in itself may not produce any incentives to create regional financial arrangements such as the various ideas floated for an Asian Monetary Fund and a common currency area in the long run. As far as finance is concerned, most of the East Asian countries may benefit more from joining the U.S. dollar bloc than from forming an East Asian currency union. Realization of this possibility may in part explain the reason why the ASEAN+3 have not been able to make much progress in their negotiations for contracting additional bilateral swap arrangements, casting doubts as to the prospects for further expansion and consolidation of the Chiang Mai Initiative.

In the long run, financial integration through liberalization would facilitate mobility of real capital between countries in East Asia as evidenced by a large increase in intra-regional foreign direct investment prior to the 1997 crisis, in particular Japanese investment in PRC and ASEAN states. The increase in intra-regional capital mobility would contribute to integration of financial markets in East Asia. As opposed to this development, however, East Asia's portfolio preferences for Western securities, the growing dominance of Western financial institutions in supplying capital market services and advances in financial globalization would move East Asia to integration with global financial markets. Combining these developments, financial liberalization leaves uncertain as to whether it will generate market pressure for the East Asian countries to establish and remain in an East Asian common currency area (CCA).

As in trade, however, causality may run from currency union to financial integration: that is, a political decision to form a CCA could anchor exchange rate expectation and create incentives to establish regional capital markets, thereby forging closer financial linkages among East Asian countries. However, the formation of a currency union is not likely to weaken East Asia's financial linkages with advanced countries. In deciding whether to join a CCA, East Asian countries may therefore have to examine closely whether their collective efforts at monetary integration would deepen financial and trade integration in the region and help develop efficient regional financial markets that could survive competition vis-à-vis other global financial markets.

## ***8.2. Benefits and Costs of Establishing Regional Financial Markets***

Since the 1997-98 crisis, there has been a growing regional movement toward developing regional capital markets where bonds and equities denominated in local

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<sup>12</sup> While East Asian countries have been unable to coordinate their institutional reforms at the regional level, they have been pressured to adopt codes and standards for the financial sector regulation, accounting and corporate governance developed by advanced countries. Whatever its rationale, the effort of the advanced countries to graft the essentially Western systems and standards on to East Asia has not been wholly successful (see Park 2001).

currencies are issued and traded as part of their strategy to foster economic integration in East Asia. The Chiang Mai Initiative reflects such regional efforts for integration. In contemplating creation of regional financial markets and also supporting multilateral banks specialized in regional finance, East Asian policymakers will be faced with two fundamental questions related to benefits and costs of regional financial markets and institution and market building. Will regional financial markets help improve allocation of resources in East Asia? Will the development of regional financial markets reduce the likelihood of recurrence of financial crises in the future?

The lack of professional expertise on securities business, inadequacy of financial infrastructure including legal and regulatory systems, low standards of accounting, auditing and disclosure systems, and non-transparent corporate governance all have plagued the development of capital markets in East Asia. The cost of developing these legal, regulatory and informational infrastructures could be very high and hence may not justify the development of capital markets in small economies which are not likely to obtain scale economies and hence efficiency. The migration of stocks to international financial hubs that has risen in recent years increases the fixed overhead cost of maintaining market regulation, clearing, and settlements systems; it also reduces an order flow for local brokerage houses and business for local investment banks, accounting firms and credit rating agencies.

This cost consideration has generated interest in establishing East Asian regional stock exchanges and an East Asian regional bond markets. Although these markets may enable some of the East Asian countries to borrow in their own currencies, there is no guarantee that such a regional bond market based in East Asia will ever emerge; if they do, it is not clear whether they will be large and efficient enough to survive competition against global bond markets. Furthermore, a viable East Asian bond market will require support of a regional financial infrastructure that includes regional credit agencies, clearing and settlement systems, cross-border securities borrowing and lending mechanisms, credit enhancement and guarantee agencies, a centralized securities depository, and regional trading mechanisms. Tax treatments for securities transactions will also have to be harmonized at the regional level.

Starting from scratch, it will take many years, if not many decades, for the East Asian countries with diverse legal and regulatory systems and at different stages of financial development to resolve their institutional differences to establish the requisite regional financial infrastructures.

Bond issues in the proposed East Asian market would be denominated in regional key currencies. Tokyo is an obvious candidate for the location of a regional bond market and the Japanese yen could serve as a key currency. However, Tokyo has yet to develop into a regional financial center as it has failed to build the institutional infrastructure that could support such a market. The prospects for internationalization of the yen as an international transactions and reserve currency also do not appear to be promising (ADBI, 2001). And many countries in East Asia will be hesitant in issuing bonds in their own currencies in such a regional market for fear that trading in these bonds could erode their control over monetary policy. If these regional bonds are issued in foreign currency, then economies will not be able to free themselves from the currency mismatch problem.

There is also the question of whether the East Asian bond markets could be more efficient in diversifying sources of corporate financing and opening new investment opportunities than global bond markets. The presumption is that East Asian bond markets could specialize in financing of regional corporations as participants in the regional markets would have better access to a large amount of more accurate information about prospects of economic and financial conditions of firms and financial institutions in the region than participants in global bond markets. However, this informational advantage may not be as significant as it may appear in view of the increased accessibility to not only macroeconomic but also sectoral and corporate information throughout East Asia as a result of the improvement in corporate governance, disclosure, and information technology.

While the advantage in gathering and assessing regional market information has become less important than before, the cost of raising funds through regional capital markets is likely to be higher in East Asia compared to global capital markets as evidenced by recent developments in the Japanese Samurai (yen denominated) and Shogun (foreign currency denominated) bond markets. Although it is expected that foreign borrowers would take advantage of the low interest rates and continuing deflation in Japan, the issuance of Samurai bonds has not reached the pre-crisis peak level (¥37.9 trillion) in 1996, while no Shogun bonds have been issued since 1994. One of the most important reasons for these inactivities is simply the higher cost of borrowing through these markets than the Euro-yen, Euro bond, or Yankee bond markets. Rhee (2001) shows that the difference in all-in-cost to a sovereign borrower of ¥20 billion between the Samurai and Euro-yen bonds is about 7 basis points (¥14 million). The lead time required from mandate to launch takes a few days in the Euro-yen issue, whereas it takes two to three months in the Samurai bond issue.

Inefficiency of the clearing and settlement process is another reason for the high cost of borrowing through the Samurai bond market. The Euro-yen bond market can clear through international clearing houses such as Euro Clear and Cedel, whereas the Samurai bond market is not eligible for such a global clearing. Furthermore, a regional clearing network in East Asia is yet to be created to link the Tokyo's clearing system with the region's financial centers such as Hong Kong, China and Singapore. As Rhee (2001) points out, one of the key issues related to the development of a regional bond market in East Asia may be the creation of a single central securities depository in East Asia for safekeeping, clearance, and settlements for all securities traded in the region.

There is also no reason to believe that the East Asian bond market will be better placed to safeguard the countries in the region from the recurrence of financial crisis in the future, unless it can be shown that this market will be less susceptible to speculation, herding and other market failures than international financial markets have been. Finally, efficiency considerations may in the end require integration of the East Asian regional bond markets with global bond markets. Given the size and efficiency disadvantages, it is difficult to argue that such a regional bond market could weather through the competitive pressure from global bond markets.

Claessens, Klingebiel, and Schmakler (2002) show that the process of developing capital markets itself could increase domestic firms' access to international capital markets. As more of listing trading, and capital raising migrate to international financial centers, where the investor base is large, market liquidity is abundant, and the

cost of capital is relatively lower. With the continuing deregulation of capital account transactions, a growing number of large and efficient firms will migrate to international financial centers for their capital market services. This migration will result in a smaller availability of liquidity to the firms remaining in local markets and hence reducing incentives further to develop local bond and equity markets: a vicious circle could set in.

With the competition from improvement in access to information, harmonization of legal and regulatory systems and standards, and advances in financial technology that allows remote access to capital market services offered by international financial centers, future prospects for developing robust capital markets in East Asian countries are not promising. One of the implications of globalization of finance is that East Asian countries will find it more difficult to convert their bank-oriented financial systems into market oriented ones. Another implication is that these bank-oriented systems will be increasingly specialized in catering to the credit needs of small and medium sized firms and households. This is because growing number of firms will leave the banking sector as they gain access to local capital markets. Some of these first comers will then migrate to international capital markets as they grow and meet requirements for cross-listing on and capital raising from international exchanges.

## **9. Exchange Rate Policy Cooperation in East Asia**

### ***9.1. Overview: Alternative Collective Exchange Rate Regimes***

Countries with similar structural characteristics and hence high correlation of business cycles will be good candidates for a CCA. Trade expansion, in particular that of intra-industry trade, works for synchronizing business cycles, thereby facilitating monetary integration. In contrast, however, financial market deregulation and opening is likely to tighten financial linkages among countries with heterogeneous rather than homogeneous structural characteristics as the East Asian experience indicates.

Combining trade and financial liberalization that has gathered forces since the 1990s, it is difficult to judge whether East Asian countries will have incentives to cooperate for monetary integration in the future. However, adoption of a single currency will in the end be dictated not only by economic but also political developments in East Asia to the extent that it is an endogenous process.

Assuming that the East Asian countries are firmly committed to establishing a currency union as a long-run objective, they will have to lay out a plan for building institutions, developing procedures for policy coordination and surveillance, and manage liquidity support over periods of time divided into several stages before actually adopting a common currency. The plan will also include the choice of a common currency and a collective exchange rate regime East Asian countries which will operate during the transition period. For a common currency, they have two alternatives: they could use one of the currencies of large countries such as the dollar, euro, and yen or they could create their own currency like in the EU.

McKinnon (2001) proposes dollarization of East Asia. In his view, the world is on a U.S. dollar standard. Trade in goods and services in East Asia is largely invoiced in terms of the U.S. dollar and so are financial flows. This reality means that by fixing

their exchange rates to the U.S. dollar, East Asian countries will have better chances of maintaining price stability as the pegging reduces the degree of pass-through of exchange rate changes into their domestic prices. The dollar also lowers the risk involved in foreign payments. McKinnon (2001) argues that the risk element is important in East Asia, because the bulk of the region's external borrowings are short-term and denominated in the U.S. dollar.

Barro (2001) lists a number of criteria for an OCA which include history of inflation, patterns of trade, co-movements of output, and variability of relative prices. These criteria suggest that some East Asian economies including the Philippines, Hong Kong, China, Singapore, and Taipei, China belong to a dollar area. There is no yen area beyond Japan and possibly for Indonesia.

As the European experience suggests, monetary integration is essentially a political process. Whatever the economic merits of using another currency as the region's monetary anchor, few countries, in particular Japan and PRC, will be able to accept the U.S. dollar as their currency. If joining the dollar bloc or for that matter any other currency bloc, is not a realistic option, then East Asia may emulate the European experience of creating a regional common currency. During the period of preparation for transition to a common currency area, which is likely to stretch over many years, East Asian planners may first begin implementation of their plan by searching for a region-wide common exchange rate system which could facilitate and speed up monetary integration in the region.

Given the wide divergence of political interests among PRC, Japan, and ASEAN, any unforeseen developments such as potential territorial and trade disputes could easily derail the integration movement in East Asia. Differences in the stages of development and the degree of trade and financial market liberalization, not to mention the extent of the diversity of exchange rate regimes, suggest that it would be almost unthinkable that the ASEAN+3 would be able to negotiate a collective exchange rate regime acceptable to all members. Monetary integration in East Asia is expected to be an evolutionary process, beginning with a system of policy dialogues and review, while maintaining a variety of exchange rate systems in the region, and then gradually moving onto deeper stages of integration. Over time, the non-binding policy reviews and dialogues could develop trust and help establish working relationships for policy coordination and financial support among the CMI countries, eventually creating a political and economic environment conducive to introducing a collective exchange rate system. After two years of discussion and negotiations for financial cooperation, the CMI countries may find it desirable to begin their search for a common exchange rate system for the region, as a transition before making the ultimate leap to a common currency.

As far as collective exchange rate systems are concerned, there appear to be three alternative regimes East Asia could consider for adoption. The East Asian countries could emulate the European experience by introducing an East Asian version of the EMS that includes Japan as a member. Another alternative is pegging to a common basket of currencies as the reference unit of account as Williamson (1999) suggests. If neither alternative is practical, then they may first agree to stabilize rather loosely to similar baskets consisting of major currencies. With deepening of integration, the CMI

countries may be able to broaden the scope in the conduct of exchange rate policy, which may in turn lead to the adoption of a common basket peg.

## ***9.2. Asian Monetary System (AMS)***

An East Asian exchange rate mechanism (ARM) may appeal to many policymakers in the region simply because they could be guided by the evolution and management of the EMS in taking the steps necessary to replicate the ERM in East Asia. The ERM was a transitional arrangement which eventually led to the advent of the Euro. In a recent paper, Wyplosz (2002) argues that the least costly and most feasible option for a collective exchange rate regime for East Asia is replication of the EMS for a number of advantages it has compared to other systems. In a counterfactual exercise for the Korean won, for example, Wyplosz shows that an Asian Monetary system (AMS) is as effective as pegging to a common basket in stabilizing the bilateral exchange rates of the regional currencies.

An AMS would have other advantages. One advantage is that the members of the AMS could manage common dollar and euro exchange rates. The system also fosters cooperation in monetary policy and other financial matters. Most important of all, the AMS members could make commitments to mutual unlimited support, which could strengthen the system's credibility and facilitate realignments of bilateral exchange rates of the participating countries by consensus.

However, it should be noted that the ERM was not an entirely successful arrangement as it was prone to currency crises especially when demand and supply shocks were asymmetric as was the case in 1987 and 1992-93 and the EU members began taking measures to deregulate capital account transactions. One should also realize that Europe had gone through long periods of debate on and experiments with different exchange rate arrangements from managed floating vis-à-vis the U.S. dollar, to a sequence of collective pegging arrangements, and to the "Snake" before settling on the EMS. By that time, many of the institutions necessary for a successful pegging arrangement such as the surveillance and financing mechanism were put in place. Nevertheless, it was a system that did not succeed overall, and there were fundamental flaws in the mechanism the EU member countries adopted to speed the process of full monetary integration in Europe.

In view of the European experience with the EMS, few people would recommend institutionalization of a similar system for East Asia at this stage of region's economic integration. Although many of the East Asian countries intervene in their foreign exchange markets, they are at least officially classified as floaters. Moving from quasi floating (or managed floating) to a system in which bilateral exchange rates among the member countries are tightly fixed as in the ERM is not a system which many East Asian countries would be able to manage. In order to support any East Asia Monetary system, the countries in the region should agree on a new monetary unit similar to the ECU whose value will be tied to a basket of specified amounts of Asian currencies. They would also have to establish an East Asian version of the European Monetary Cooperation Fund. There is also the problem of including the yen in the system. Because of the super economy status of Japan, the yen is likely to emerge as the dominant currency as the German mark did in the EMS. The yen's dominance may

result in the other East Asia countries having to fix their currencies to the yen, whereby creating a de facto yen bloc.

The EMS was sustainable because in part it was embedded with unlimited financial support along with capital controls in the weak currency countries (Wyplosz, 2002). In contrast, the limited amount of financing available through the CMI-BSA can hardly send a clear message to the market that any speculative attempt directed at a currency from the others in the region is going to fail because there is no collective commitment to provide unlimited support to fend off the speculation.

### ***9.3. Pegging to Currency Baskets***

If an East Asian version of the ERM is not a practical solution to East Asia's exchange rate policy coordination, then would pegging to currency baskets be a credible as well as a realistic alternative as many Japanese economists claim?

Pegging to a currency basket is a collective exchange rate system that may reduce a high degree of volatility in the short-run and prevent misalignment of the exchange rates, in the long run, which could result from free floating, for individual countries. For the region as a whole, the system could insulate itself from fluctuations in the value of the U.S. dollar vis-à-vis other major currencies, in particular from the impact of variability of the dollar/yen exchange rate. It is also a system that could lead to stability of intra-East Asian nominal and real effective exchange rates, moderating large changes in international price competitiveness of the East Asian countries. Stability of the intra-East Asian exchange rate could then help promote intra-regional trade and integration in East Asia.

Furthermore, exchange rate stability against key international currencies such as the dollar, the yen and the euro is considered of equal importance to exchange rate stability of the regional currencies, which significantly differs from the case of Europe.<sup>13</sup> In Europe, it was of utmost importance to defend regional parities given the high degree of regional trade interdependence. In this regard, despite increasing intra-regional trade dependence in East Asia, a plan to adopt a common basket peg would have in practice more merits than an East Asian version of the ERM.

There are two versions of basket pegging that are claimed to be appropriate to a group of East Asian countries. One version, which is here classified as a soft basket peg and mostly advocated by economists in Japan, is a collective system in which East Asian countries agree to currency baskets consisting of the U.S. dollar, the euro, and the yen and stabilize loosely their exchange rates vis-à-vis such baskets, that is, stabilizing their nominal effective exchange rates (NEER).<sup>14</sup>

The second version of the basket pegging is the one advocated by Williamson (2000) where the basket of the dollar, the euro and the yen is chosen as a common peg with almost equal weights. In this scheme, the participating countries essentially use the basket of the three currencies as a common unit of account in their conduct of exchange rate policy. Williamson argues that the nine East Asian countries he examines

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<sup>13</sup> East Asia is less economically self-contained than Europe. Many East Asian countries rely as heavily on the United States and Europe for export markets as they do on other Asian countries, including Japan. See further Eichengreen (2002).

<sup>14</sup> See Kawai (2002) and Ito (2001).



have reached the stage where they could benefit from the adoption of a common basket peg, because they are close competitors in world markets and their geographic distribution of trade is similar.

Targeting the nominal effective exchange rate (NEER) in either the soft or the common basket pegging may mean the use of the exchange rate as a nominal anchor. Hernandez and Montiel (2001) argue that some of the East Asian crisis countries may have legitimate reasons for choosing the NEER as the appropriate variable if they wish to select the exchange rate as a nominal anchor. One reason for this is related to the declining role of the U.S. dollar in East Asia and its instability vis-à-vis other major currencies. Another is their desire to prevent exchange rate overvaluation or undervaluation that could result from tight pegging to the U.S. dollar, assuming, of course, they attempt to stabilize some version of their nominal exchange rates.

The basked peg approach for East Asia has been criticized for a number of reasons. According to Kawai (2002) and Ito (2001), the soft basket pegging can ensure stable currencies with one another among the pegging countries. Contrary to their view, however, the soft basket peg does not necessarily ensure the stability of the NEERs of the participating countries. It is because each country is expected to peg its currency to a trade-weighted basket of the three currencies. Since the trade weights of the participating countries differ, the currency baskets would also differ between countries. In McKinnon's view (2002), the Japanese version of the basket peg has in part been motivated by Japan's desire to minimize variability of its real exchange rate against those of the U.S. and its East Asian trading partners.

The NEER targeting could also expose small open economies to the danger of destabilizing the domestic economy. In the short-run, the ratio between domestic and weighted trade-partners' price indices, one of the constituent series of the real effective exchange rate (REER), tend to be stable in most of the East Asian countries. Because of this stability, targeting the NEER is equivalent to minimizing the variance of the REER, at least in the short-run. In targeting the NEER, policy authorities could use sterilized intervention and capital controls in addition to monetary policy as instruments of adjusting the nominal exchange rate, usually the local currency-dollar exchange rate.

In small economies with an open capital account, both the NEER and inflation targeting in general cannot be pursued simultaneously. Targeting the NEER therefore means that monetary policy cannot be assigned to stabilizing the domestic economy, thereby introducing monetary instability. To the extent that monetary policy is mostly geared to stabilizing the NEER in economies with an open capital account, the domestic real interest rate would vary more than otherwise in response to shocks originating in domestic as well as external sources. This relative instability of the real interest rate then instills instability in the real sector of the economy, resulting in higher variability of output.<sup>15</sup>

In most East Asian countries, monetary policy is by far the most reliable instrument for stabilization of the domestic economy. It is therefore difficult to imagine that the East Asian policy authorities would assign monetary policy solely to stabilizing the nominal effective exchange rates. Only when sustaining domestic price stability is

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<sup>15</sup> Kawai and Takagi (2000) argue that an inflation target defined as a weighted average of inflation rates of the U.S., EU and Japan and pegging to a basket of the dollar, the Euro, and the yen are one and the same, if PPP holds.

not a serious concern, the interest rate could be changed to influence the nominal exchange rate. More importantly, it is shown in section 2 that volatility of the nominal exchange rate has been closely related to volatility of capital flows in East Asia. With further liberalization of capital markets, capital account transactions are likely to increase the range of movements of the nominal exchange rate more than before. The volatility of capital flows could therefore cause a higher degree of volatility of the real interest rates in economies with the NEER targeting.

In a world of capital mobility, the second instrument—sterilized intervention—loses much of its effectiveness and can be expensive as well, because the interest rate on local-currency bonds issued for sterilization is higher than that on foreign exchange reserves in many East Asian countries. As Williamson (2000) points out, neither the sterilized intervention nor monetary policy is powerful enough to assure success of stabilizing the NEER. As a result, countries in East Asia may have to turn to capital controls as a means of stabilizing the NEER. The advocates of the basket pegging are rather unclear on this issue. If indeed they accept capital controls as the second best instrument, the basket pegging opens up a new debate on the modality as well as effectiveness of capital control on which there is little agreement in East Asia.

From the perspective of building the groundwork for monetary integration in East Asia, the critical defect of the basket system is that the three major currencies, in particular the yen, are not part of the exchange rate arrangement designed to facilitate financial integration in East Asia. There is not, and will not be in the future, any commitment on the part of the central banks of the three currencies of unlimited interventions for supporting the East Asian basket pegging. In the absence of such a commitment, the basket approach with the CMI -BSAs would not be able to withstand determined speculation (Wyplosz, 2002).

Japan is expected to play a key role in steering East Asian financial and monetary integration. However, like the U.S. and EU, Japan will remain outside of the East Asian basket arrangement, and it is not clear whether it is prepared to intervene to sustain the pegging in other East Asian countries. As long as the yen is floating vis-à-vis the currency baskets of other East Asian economies, the basket pegging could delay monetary integration between Japan and the rest of East Asia. There is indeed no reason to believe that a region-wide basket pegging that excludes Japan would be more acceptable and expeditious in the monetary integration of East Asia than the East Asian Monetary System. Furthermore, the advocates of the basket peg do not articulate under what conditions Japan could fix its bilateral exchange rates vis-à-vis other East Asian currencies without making the yen the dominant currency of the region. This comes at the second stage of monetary integration after a period of the basket peg.

Finally, Wyplosz (2002) points out that the basket pegging with the CMI -BSAs may perpetuate Asia's tradition of eschewing institution building. Failure to build regional collective institutions including a financing system may in the end delay foundation of a currency union in East Asia. Even if the East Asian countries could agree to a single currency in the future, the system will be vulnerable to speculative attacks unless it can be tied down with expectation that they will succeed in creating a CCA.

Turning to the common basket peg, it should be noted that Williamson (1999) introduces the system as a reference rate or numeraire for exchange rate policies of East

Asian countries. He does not necessarily advocate a hard-peg to the common basket, which he considers impractical because the foreign exchange markets in some of the countries are less developed so that effective intervention to defend the cross rates in other participating countries may prove difficult. Furthermore, the diversity of preferences with regard to exchange rate regimes and inflation rates may not allow a tight pegging to the basket. Differences in patterns of trade would also make the common pegging impractical. In the common basket peg scheme, the East Asian countries only have to agree on a common unit of account for their exchange rate policy while maintaining a variety of exchange rate arrangements including intermediate regimes and a currency board. Williamson (1999) argues that this alone would be a very positive development for monetary integration. It is because the common unit of account could create an expectation that variation in the bilateral exchange rates of the dollar, euro, and yen would not affect the relative competitive positions of the East Asian countries.

While in theory Williamson's proposal may be appealing, it is highly questionable whether many East Asian floaters may be able to agree to a mechanism that will enforce the adoption of a common reference numeraire concerning exchange rate policy. The East Asian countries joining in region-wide efforts to integrate financial markets may agree to switch to a common basket peg in the future. However, unless bound by a multilateral agreement, few countries would be inclined to adopt a common reference rate voluntarily, since they are not likely to be pressured by the market to do so.

As far as Williamson's common pegging is concerned, Eichegreen and Bayoumi (1999) point out that defending a common peg would be much more difficult than introducing it. Success in defense requires an efficient institutional framework which facilitate (i) policy coordination among the participating member countries, (ii) a financing mechanism that will provide financial resources to the exchange rates of weak-currency members, and (iii) a surveillance mechanism which could impose policy conditionality on the countries receiving the financial support. In the absence of these institutional arrangements, the common pegging could create an East Asian version of the "Snake", not the EMS.

## **10. Concluding Remarks**

Where does the preceding discussion lead us in developing a collective exchange rate regime for East Asia? If indeed the East Asian countries are committed to taking cooperative actions to achieve monetary integration, then they will have to ask whether they are prepared to eschew their current exchange rate regimes in favor of a non-floating regional exchange rate regime. Several pieces of evidence suggest that some of the East Asian countries have implicitly adopted unannounced basket pegs for their currencies, although the baskets appear to be different between countries. However, little is known as to why they attempt to stabilize their NEERs, if indeed they do. Although most of the East Asian floaters are known to intervene in the foreign exchange market, they are not likely to shift to any old or new intermediate regimes, at least officially, anytime soon.

At this stage of discussion of financial cooperation, there is little expectation that the members of the CMI could agree to either pegging to a common basket or introducing an East Asian version of the EMS, not to mention dollarization. Nevertheless, to the extent that the ASEAN+3 are serious about negotiating free trade agreements among themselves and they realize stabilizing bilateral exchange rates of the regional currencies would advance their free trade cause, the ASEAN+3 are expected to discuss the future enlargement of the CMI by increasing the amounts of bilateral swaps and institutionalizing regional surveillance.

One important lesson of the European experience with the formation of the EMU is that monetary unification is essentially a political process. The economic criteria for a successful currency union may also be endogenous. Creation of a CCA even for a group of countries with diverse economic structures that are exposed to asymmetric shocks could lead to expansion of trade and synchronization of business cycles within the group. Even if the criteria for a successful CCA are endogenous, the political process of deepening monetary and financial integration will not prevail, unless it is supported by close coordination of financial and exchange rate policies among East Asian governments. If the East Asian countries realize political as well as economic advantages of belonging to a currency union, then the diversity of exchange rate regimes across the region may not pose an obstacle as serious as is often claimed. As Eichengreen (2002) notes, free floating is not inconsistent with the regional efforts to establish a currency union in East Asia, provided that these countries could improve efficiency and stability of their financial systems. Improving efficiency of soundness, and stability of financial markets and institutions will certainly help stabilize the foreign exchange market.

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