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【Article】

Exchange Rate Management and Capital Inflows In Selected East Asian Countries

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Abstract

Exchange rate management has become a hot debate in academic circles that examines the merits of fixed versus floating regimes. The 1997-98 Asian crisis has refocused attention on the exchange rate management of the East Asian countries. Most views expressed criticize the pre-crisis U. S. dollar-pegged-rate regime as one cause of the crisis.

This article examines exchange rate management in the selected East Asian countries from the viewpoint of stability of capital flows. The study's main findings are as follows: First, the significantly large super-risk premiums against the U. S. were found in the pre-crisis Asian sample countries with the de facto dollar peg regimes. Second, a regression analysis verified the correlation between the super risk premium and the short-term capital inflow. Third, a simulation analysis showed that an alternative inflation-slid management would have had a depressing effect on capital inflows while the basket peg system would not have.

1. Introduction

Exchange rate management is a crucial component of macroeconomic policy. Since the postwar period, there has been a long-term debate over the merits of fixed versus floating exchange rates. The 1997-98 Asian crisis has refocused attention on exchange rate management of East Asian countries. Most views expressed criticize the pre-crisis US dollar-pegged-rate regime as a cause of the crisis. It is said that this regime induced short-term external over-borrowing and caused the appreciation of real exchange rates and the subsequent loss of competitiveness.

This paper examines exchange rate management in the selected East Asian countries from the viewpoint of stability of capital flows. Specifically, the two main questions are these: whether the dollar peg system did in fact induce the external over-borrowings in the pre-crisis Asian countries, and if so what alternative exchange rate managements would have been preferable in stabilizing capital flows. The strategic implication of our findings is that the inflation slide, rather than the basket pegging, would have been more preferable than the simple dollar pegging in exchange rate management from the viewpoint of stabilizing capital flows.

The rest of the paper is organized as follows. Section 2 reviews the previous studies and assessments on exchange rate management in the Asian countries, especially in the context of short-term capital inflows. On the relationship between exchange rate regime and short-term capital inflows, Section 3 presents a theoretical framework, and Section 4 conducts empirical analyses

including regression and simulation analyses. Section 5 presents some concluding remarks.

2. Previous Studies and Assessments on Exchange Rate Management

In this section, we briefly review the previous studies and assessments on exchange rate management in the East Asian countries. First, we review the analyses of the pre-crisis de facto exchange rate regimes : the dollar peg regime. Second, we show the general assessments of the pre -crisis dollar peg regime in the context of the Asian crisis. Third, we focus on the recent studies on the relationship between exchange rate regimes and capital inflows.

2. 1. De Facto Exchange Rate Regimes

The IMF classification on exchange rate arrangements did not necessarily reflect the actual exchange rate managements, since it was based on member countries' formally announced regimes. For example, the pre-crisis exchange rate arrangements of Indonesia, Korea, and Malaysia were classified as the "Managed Float," that of Philippines as the "Independent Float," and that of Thailand as the " Pegged to Currency Composite," although all of them appeared to be a dollar peg regime.

Frankel and Wei (1994) and Kawai (1997) presented their own analysis of the de facto exchange rate regimes. Frankel and Wei (1994) estimated the weights placed on major foreign currencies in their exchange rate policy during the period between 1979 and 1992, while Kawai (1997) estimated them during the period between 1990 and 1996 using the same method as that of Frankel and Wei. According to their estimations, for example, the weight on the US dollar is 0.91 (Frankel and Wei (1994)) and 0.789 (Kawai (1997)) for Thailand. The weight on the US dollar is nearly equal to one for Indonesia, Korea, and Philippines. Thus, the estimation indicates that these countries have adopted the de facto U.S. dollar-pegged-rate system. This outcome seems to be the consensus among researchers and policymakers.

2. 2. Dollar Peg Regime and the Asian Crisis

We next review the assessments of the de facto U.S. dollar-pegged-rate system in the context of the Asian crisis. We first summarize the comments of international organizations on the dollar peg regime, most of which blame the regime as one cause of the crisis.

The World Bank(1998)stated that in most of the ASEAN countries, informal pegs to the U.S. dollar—which make nominal rates predicable—encouraged unhedged short-term external borrowing due to large interest rate differentials. To further complicate matters, they also added that because the yen depreciated against the U. S. dollar throughout much of 1996, the pegged currencies lost competitiveness against the important yen market. Along these lines, the World Bank (2000) suggested that a flexible exchange rate absorbs shocks from capital inflows and outflows.

The IMF (1998) identified the excessively long maintenance of pegged exchange rate regimes as a factor in the Asian crisis. The pegged regimes complicated the response of monetary policy to overheating pressures, and came to be viewed as implicit guarantees of exchange value, encouraging short-term external borrowing and leading to excessive exposure to foreign exchange

risk. The IMF (1998) also suggested that adjustable pegs have become increasingly difficult to maintain in the face of large-scale financial flows, and that for some economies the balance of costs and benefits may be shifting in favor of greater exchange rate flexibility, partly because of the advantages of avoiding the risk that a fixed rate may encourage excessive foreign currency exposure.

The ADB (1998) explained that the pegged exchange rate contributed to the current account deficits and rising real exchange rates, the combination of which provided a vital ingredient for the financial crisis. They attributed the rising real rate to a combination of factors that included higher domestic inflation in relation to the world average ; appreciation of the U. S. dollar, to which these currencies were pegged ; depreciation of the Japanese yen ; and devaluation of the PRC currency in 1994. They also pointed out that the high interest rates of the affected countries, along with pegged exchange rates, created a false sense of security among many investors that they could earn relatively high rates of return without any exchange rate risk.

After all, most of the views criticize the pre-crisis U. S. dollar-pegged-rate regime because of its moral hazard in inducing short-term external borrowing and its tendency to cause the appreciation of real exchange rates with the loss of competitiveness ; they favor greater exchange rate flexibility.

2. 3. Exchange Rate Regimes and Capital Inflows

We next concentrate on the recent studies that describe the relationship between exchange rate regime and capital inflows. We are specifically interested in whether the dollar peg regime had induced the external over-borrowings before the crisis.

Ogawa and Sun (2001) analyzed how the de facto dollar peg system influenced capital inflows in the Asian countries, in particular Thailand, Korea, and Indonesia, which faced severe crises in 1997. They first regressed capital inflows by explaining variables such as interest rates, foreign exchange risks, export growth rate, and rate of change in stock prices, then used an instrumental variable method to take into account how instrumental variables such as domestic interest rates, export growth rates, and rate of change in stock prices are influenced by other variables. From the regression analysis, they found that responsiveness of capital inflows to the foreign exchange risk against the US dollar is much larger than responsiveness of capital inflows to the foreign exchange risk against the yen in the case of Thailand and Korea.

They next conducted a simulation analysis of the capital inflows with the assumption that the monetary authorities of the sample countries had adopted a currency basket peg system instead of the de facto dollar peg system. They concluded that a currency basket peg system would have had a depressing effect on capital inflows to Thailand and Korea during the analyzed period (from 1985 to 1996), and that it would also have had a slightly depressing effect on capital inflows to Indonesia. They interpreted the result in such a way that the currency basket peg system would have increased foreign exchange risk against the US dollar, whereas it would have decreased foreign exchange risk against the yen, and that the asymmetry in the responsiveness between foreign exchange risks against the US dollar and the yen would have decreased capital inflows under the currency basket peg system. They then concluded that capital inflows would have been more stable under the currency basket peg system.

McKinnon (2000 and 2001) showed an analytical framework that the super risk premium, which is

composed of the currency risk premium and the probability of an exchange rate regime change, represents the margin of temptation for banks to over-borrow in foreign exchange beyond what they might do if forced to hedge. McKinnon (2001) found that in the pre-crisis period, the super risk premiums of the Asian crisis countries were large enough to contribute to the unhedged over-borrowing. The theoretical framework above, including the comment on the relationship between the super risk premium and the exchange rate regime, will be described in detail in the following section.

3. Theoretical Framework

In this section we show a theoretical framework on the relationship between exchange rate regime and short-term capital inflows. Our major concern is in what way the dollar peg regime had induced the external over-borrowings before the crisis. First, we simply summarize the framework presented by McKinnon (2000 and 2001), the one of the super risk premium representing the margin of temptation of the external over-borrowings. Then, we examine the relationship between exchange rate regime and the super risk premium.

3. 1. Super Risk Premium Presented By McKinnon

We here summarize the framework of the super risk premium presented by McKinnon (2000 and 2001). He defines the super risk premium, ρ_{super}, representing the margin of temptation for banks to over-borrow in foreign exchange in the following way.

$$\rho_{super} = \rho_{currency} + E\hat{e}_{regime\ change} = i - i^* - E\hat{e}_{predictable}$$

The super risk premium, ρ_{super}, has two components : the currency risk premium, $\rho_{currency}$, as ordinarily defined, representing the extra return that investors require to hold domestic rather than foreign currency assets, and the possibility that the regime could change through a discrete devaluation, $E\hat{e}_{regime\ change}$. It can be rewritten into the interest rate differential (the domestic rate i minus the international rate i^*) minus the predictable depreciation of the domestic currency, $E\hat{e}_{predictable}$. This equation comes from the following equations for ordinary interest rate parity and decomposition of $E\hat{e}$, the expected depreciation of the domestic currency :

$$i = i^* + E\hat{e} + \rho_{currency},$$

$$E\hat{e} = E\hat{e}_{predictable} + E\hat{e}_{regime\ change}$$

McKinnon (2000 and 2001) explains the super risk premium defined above as follows : in the premature monetary markets in the emerging economies, the decision-making horizon of the bank with moral hazard is sufficiently short that it ignores unpredictable changes in the exchange rate. When borrowing unhedged in foreign currency, the domestic banks with deposit insurance and other government guarantees tend to ignore the risks of large devaluations whose timing is uncertain. They also ignore ongoing volatility in the exchange rate as measured by $\rho_{currency}$. They will only cover the predictable component of the expected depreciation within the existing currency regime. Therefore, the super risk premium, the interest rate differential discounted only by the predictable depreciation, represents the margin of temptation for banks to over-borrow in foreign exchange.

3. 2. Exchange Rate Regime and Super Risk Premium

Following the above framework, we then examine the relationship between exchange rate regime and super risk premium. Our major concerns are whether the post-crisis dollar peg regime in the Asian crisis countries had caused the larger super risk premium, the greater margin of temptation to over-borrow and, if so, which alternative regimes would have minimized the super risk premium.

The $E\hat{e}_{\text{regime change}}$ component of the super risk premium would seem to be higher under a dollar peg regime than under other regimes with greater flexibility. The dollar pegging creates the pressure to probably cause a large discrete devaluation, by overvaluing the local exchange rates in real terms through misalignments from both basket peg rates and purchasing power parity rates. While the large $E\hat{e}_{\text{regime change}}$ gives the upward pressure on the interest rate on assets denominated in the domestic currency, it does not lead to any changes in the $E\hat{e}_{\text{predictable}}$ because the domestic banks with moral hazard ignore the risks of discrete devaluation and cover only the predictable change within the existing dollar peg regime. The dollar peg regime would, therefore, seem to enlarge super risk premium.

What kinds of the alternative regimes would have minimized the super risk premium? McKinnon (2001) argues that moving from a "good fix" to a floating exchange rate need not reduce the super risk premium and the margin of temptation for international over-borrowing because, under greater but uncertain exchange rate flexibility, ρ_{currency} will increase even if $E\hat{e}_{\text{regime change}}$ declines. As for the "good fix," McKinnon (2001) also posits that it will be rewarded with a lower ρ_{currency}, and a low $E\hat{e}_{\text{regime change}}$, and that a more flexible but controlled exchange rate—perhaps a downward crawl—seems more likely to be the best way of coping with an unfortunate situation.[1] To be specific, the key for minimizing the super risk premium is to pursue the better exchange rate targeting, as opposed to simple dollar pegging. This paper discusses two kinds of the targeting—the basket pegging and the inflation slide—as candidates of the better exchange rate targeting, and puts them into the simulation tests in the following section.

4. Empirical Studies on Selected East Asian Countries

We next turn to empirical analyses on the selected East Asian countries. Here we focus, as sample countries, on the hardest-hit crisis countries among the East Asian countries : Indonesia, Korea, the Philippines, Malaysia, and Thailand. We also select the United States and Japan as foreign influences for the sample countries because all of the countries mentioned above trade heavily with the United States and Japan.

We here take three steps in our analyses, following the theoretical framework in the previous section. First, we examine the trends of the super risk premium of the sample countries during the pre-crisis period, considering their relations with exchange rate regimes. Second, we conduct a regression analysis to verify the relationship between the super risk premium and capital inflows during the pre-crisis period. Third, we conduct a simulation analysis of capital inflows with the assumption that the sample countries had adopted the basket pegging and the inflation slide as exchange rate targeting instead of the de facto U. S. dollar peg system during the pre-crisis period.

All data through the empirical studies come from the IFS and DTSY of IMF (IMF, 2000 and 2001). We use quarterly data in all of the analyses due to a constraint on data, the sample period of which is

from the first quarter of 1987 to the first quarter of 2001.

4. 1. Trends of Super Risk Premium

We start by examining the trends of the super risk premiums in sample countries and determining whether the pre-crisis dollar peg system had enlarged the super risk premium, the margin of temptation to over-borrow. We calculate two kinds of super risk premiums—those against the United States and Japan—in the following way (taking Indonesia as an example).

$$SPUI = ITI - ITU - RPU,$$
$$SPJI = ITI - ITJ - RPY$$

where SPUI and SPJI are the super risk premiums of Indonesia against the United States and Japan respectively, ITI, ITU and ITJ are short-term interest rates of Indonesia, the United States and Japan respectively, RPU and RPY are the predictable changes of Indonesian currency (rupiah) per U. S. dollar and Japanese yen. As for data on interest rates, we use money market rate in Indonesia, Korea, Malaysia, Thailand, and Japan, and the Treasury Bill rate in the Philippines and the United States. Because data on the predictable exchange rate change is unavailable, we use, as a proxy variable, the actual change from the previous quarter to the current quarter, keeping in mind that the banks with moral hazard only cover the short-term horizon within the existing currency regime.

Figures 1 and 2 indicate the pre-crisis trends against the United States and Japan. We observed the following. During the pre-crisis period from 1990 to 1996, the super risk premiums against the United States almost keep positive positions, sometimes around 10 or 20 percent in all of the sample countries. The super risk premiums against Japan, on the other hand, do not show clear positions, except that they amount to clearly positive positions after the middle of 1995. We interpret the observations above in the following way. The pre-crisis positive positions of the super risk premium against the U. S. would be explained in such a way that the interest rate differentials could not be offset by the expected depreciation of local currencies because the banks only predict the rate on the short-term horizon under the de facto dollar peg system. The positive positions of the super risk premium against Japan after the middle of 1995 could mainly be explained by the sharp depreciation of the yen (appreciation of local currencies) in that period.

4. 2. Regression Analysis of Capital Inflows

The second step of our empirical studies is to conduct a regression analysis to prove that the large super risk premium, the margin of temptation to over-borrow, significantly accelerated short-term capital inflow to the Asian countries during the pre-crisis period. Malaysia, which has no quarterly data on capital flows, is excluded in this regression analysis. We specify the simple regression model in the following way (taking Indonesia as an example).

$$SCFI / GDPI = \alpha 1\, SPUI + \alpha 2\, SPJI$$

where SCFI is short-term capital inflow of Indonesia, GDPI is gross domestic products of Indonesia, SPUI and SPJI are the super risk premiums of Indonesia against the United States and Japan respectively. We use a ratio of short-term capital inflow in terms of GDP to eliminate an increasing trend in capital inflow. The regression model is multivariate ordinary least squares for each country. Regressions are estimated by correcting for first order serially correlated errors when necessary. We

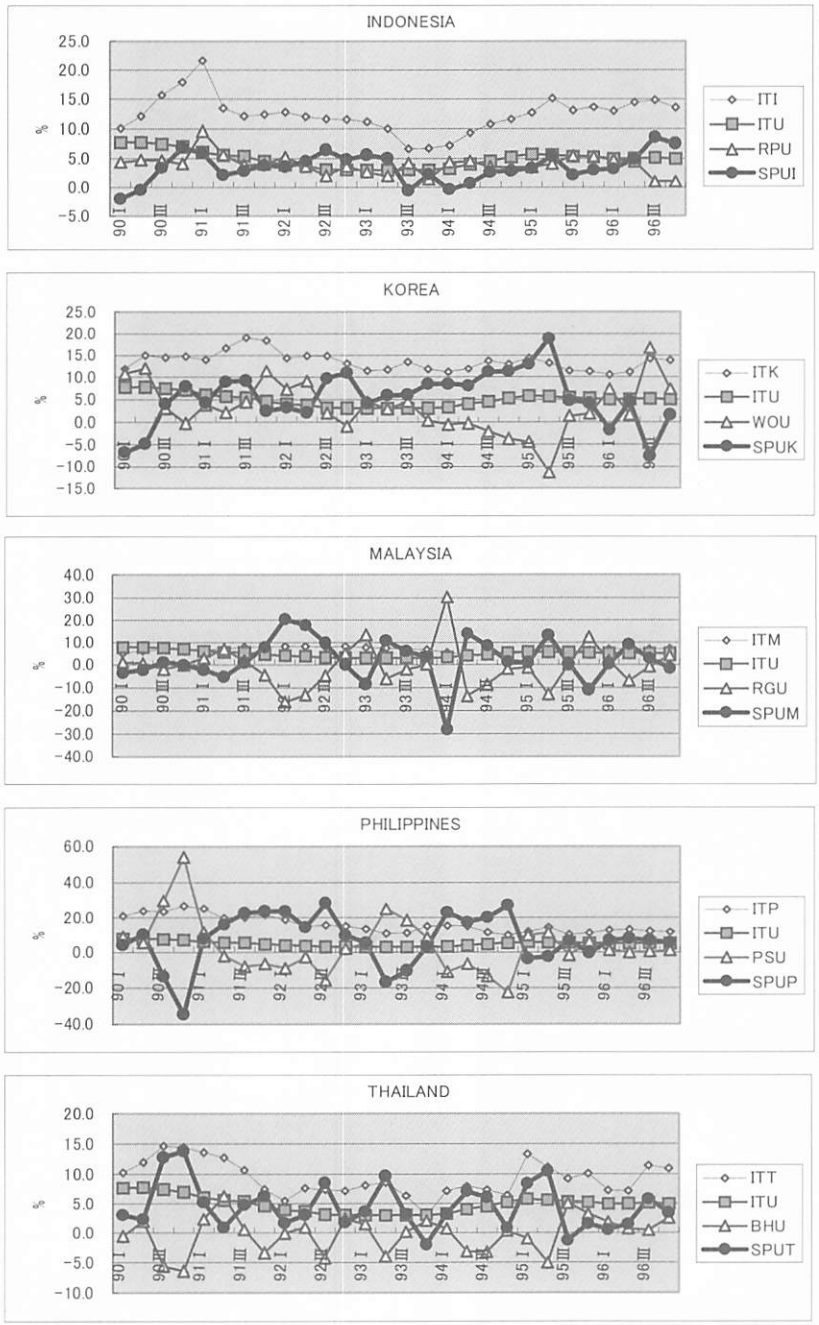

Fig. 1 Super Risk Premium against U.S. in 1990-1996

Note: IT: Interest Rate, SPU: Super Risk Premium againist U.S., I: Indonesia, K: Korea, M: Malaysia, P: Philippines, T: Thailand, U: United States, RPU: Rupiah/$, WOU: Won/$, RGU: Ringgit/$, PSU: Peso/$, BHU: Baht/$.
Source: IFS(IMF).

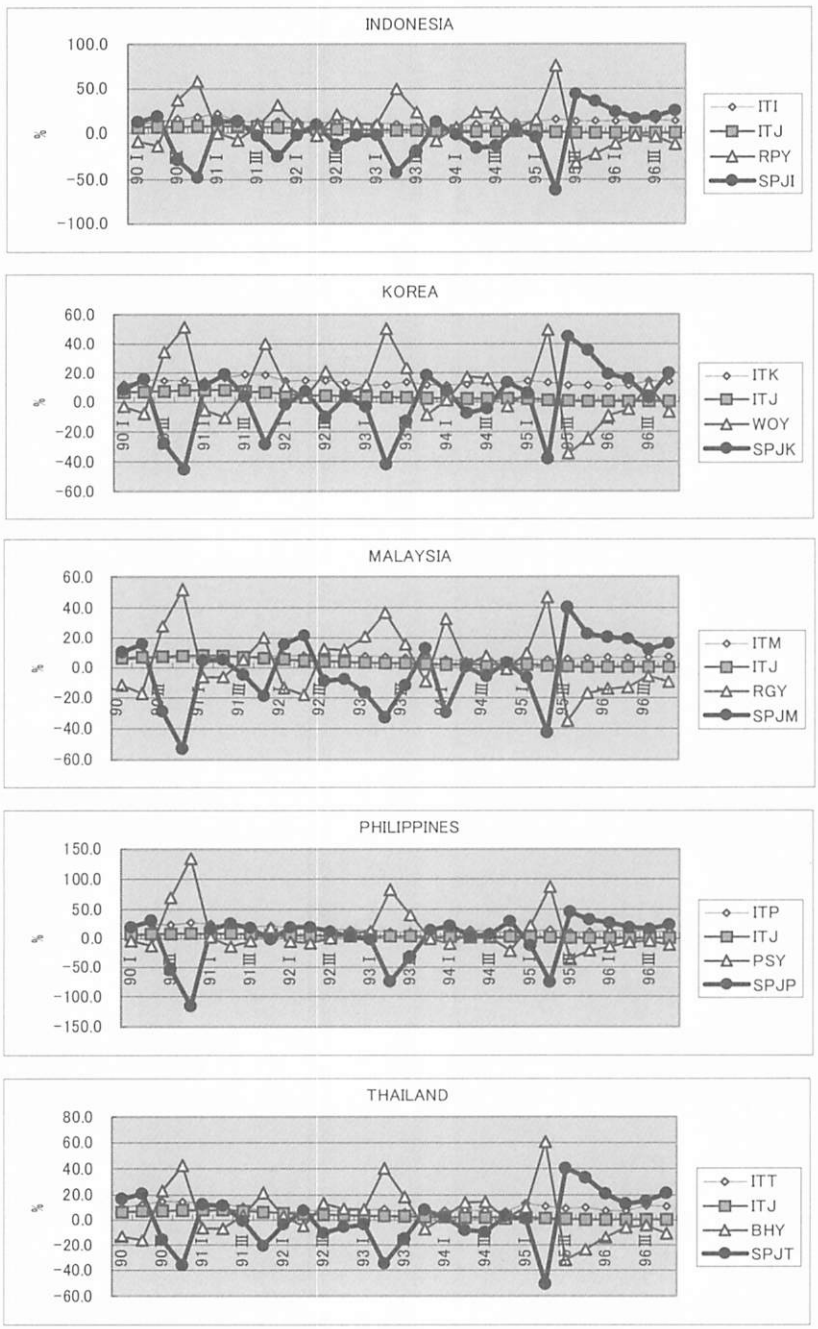

Fig. 2 Super Risk Premium against Japan in 1990-1996

Note: IT: Interest Rate, SPU: Super Risk Premium againist Japan, I: Indonesia, K: Korea, M: Malaysia, P: Philippines, T: Thailand, J: Japan, RPY: Rupiah/¥, WOY: Won/¥, RGY: Ringgit/¥, PSY: Peso/¥, BHY: Baht/¥.
Source: IFS(IMF).

add any dummy variables that show a representative deregulation of international capital transactions that are statistically significant to explaining variables. As for data on short-term capital inflow, we use "Other investments" in the financial account of the balance of payments, because international bank loans prevail in capital inflows to the sample countries. We also use "Portfolio and other investments" in Korea, the Philippines and Thailand. Data on "Portfolio investments" for Indonesia is not available due to missing values in the data. When conducting regression analysis, seasonal adjustments are made for the data that requires it.

We first test the stationarity of all the data series for the regression by using the unit root tests of Augmented Dickey-Fuller (ADF) test and the Philips-Perron (PP) test (for the test methodology, see Matsuura and McKenzie 2001). Table 1 reports that at the 5 percent significance level, all the data series are confirmed as stationary in either test, thereby suggesting that a regression analysis using all the data series is valid.

Table 2 reports the results of the regressions. We observed as follows: The coefficients of the super risk premiums against the U. S. are significantly positive in all the capital inflow functions (of both "Other investments" and "Portfolio and other investments"). The coefficients of the super risk premiums against Japan are significantly positive in the capital inflow functions of Korea and Thailand. The coefficients of the super risk premiums against the U. S. are larger than those against Japan in all the functions. From these observations, we could verify the correlation between the super risk premiums against the U. S. and short-term capital inflows in all the sample countries, and the correlation between the super risk premium against Japan and short-term capital inflows in Korea and Thailand. We could also see the dominant effects of the super risk premiums against the U. S. on the short-term capital inflows.

4. 3. Simulation Analysis

We finally turn to a simulation analysis to examine how such alternative exchange rate management tools as basket pegging and inflation slide would have affected the short-term capital inflows to the sample countries during the pre-crisis period. We then compare the capital inflows under the actual de facto dollar peg system with the results of the simulation. Here we set up two kinds of the simulation cases in the exchange rate management: case (1) of adopting the basket peg system, and case (2) of adopting the inflation slide.

As for case (1), we materialize the basket-pegged exchange rate as follows (taking the Indonesian rupiah as an example). We assume that a currency basket consists of only the U.S. dollar and the yen. We first calculate the basket-pegged rate on the Swiss franc (SWF) base.[2]

$$ES_{BP}\,(\text{Rupiah / SWF}) = \omega \times E\,(\text{U. S. dollar / SWF}) + (1-\omega) \times E\,(\text{Yen / SWF})$$

where ES_{BP} is the percentage change of basket-pegged rate for simulation, E is the percentage change of actual exchange rate, and ω is the weight on the U. S. dollar in a currency basket, which is calculated as a share of Indonesia's trade with the U. S. relative to Indonesia's trade with the U. S. and Japan. We then converted the basket-pegged rate into those on the U. S. dollar base and the yen base as follows.

$$ES_{BP}\,(\text{Rupiah / U. S. dollar}) = ES_{BP}\,(\text{Rupiah / SWF}) + E\,(\text{SWF / U. S. dollar})$$

$$ES_{BP}\,(\text{Rupiah / Yen}) = ES_{BP}\,(\text{Rupiah / SWF}) + E\,(\text{SWF / Yen})$$

As for case (2), we describe the inflation-slid exchange rate as follows (again taking the rupiah as

an example). We here assume that the monetary authorities care for only the differential of inflation rates between the U. S. and domestic currency. We first calculate the inflation-slid rate on the U. S. dollar base.

ES_{IF} (Rupiah / U. S. dollar) = $CPI_{Indonesia} - CPI_{U.S.}$

where ES_{IF} is the percentage change of inflation-slid rate for simulation, CPI is the percentage change of consumer price index. We then calculate the inflation-slid rate on the yen base.

ES_{IF} (Rupiah / Yen) = ES_{IF} (Rupiah / U. S. dollar) + E (U. S. dollar / Yen)

The next step is to calculate the alternative super risk premiums against the U. S. and Japan, for example, by replacing RPU (in Section 4.1) with ES_{BP} (Rupiah / U. S. dollar) and ES_{IF} (Rupiah / U. S. dollar), and replacing RPY with ES_{BP} (Rupiah / Yen) and ES_{IF} (Rupiah / Yen). We then simulate short

Table 1 Unit Root Tests on Data for Regressions

Variables	ADF Statistic		PP Statistic	
	Intercept	Trend and intercept	Intercept	Trend and intercept
<Other Investments>				
SCFI/GDPI	-2.665*	-3.320*	-4.515***	-5.512***
SCFK/GDPK	-2.817*	-3.711**	-2.849*	-3.820**
SCFP/GDPP	-3.521**	-5.517***	-4.750***	-6.544***
SCFT/GDPT	-2.966**	-2.820	-3.922***	-4.418***
<Portfolio and Other Investments>				
SCFK/GDPK	-1.982	-3.845**	-2.040	-4.652***
SCFP/GDPP	-2.592	-5.898***	-3.555**	-6.672***
SCFT/GDPT	-2.933*	-3.128	-3.673***	-4.515***
<Super Risk Premium>				
SPUI	-3.362**	-3.178	-3.225**	-2.951
SPUK	-2.388	-2.533	-3.176**	-3.474*
SPUP	-3.769***	-3.746**	-3.682***	-3.642**
SPUT	-5.419***	-5.438***	-5.274***	-5.268***
SPJI	-4.762***	-4.762***	-5.355***	-5.375***
SPJK	-4.810***	-4.742***	-5.128***	-5.062***
SPJP	-5.086***	-5.088***	-4.868***	-4.868***
SPJT	-4.385***	-4.407***	-5.138***	-5.221***

Notes:
1) SCFI/GDPI, SCFK/GDPK, SCFP/GDPP and SCFT/GDPT are the ratio of short-term capital inflow relative to GDP in Indonesia, Korea, Philippines and Thailand. SPUI, SPUK SPUP and SPUT are the super risk premium against the U.S. of Indonesia, Korea Philippines and Thailand. SPJI, SPJK, SPJP and SPJT are the super risk premium against Japan of Indonesia, Korea, Philippines and Thailand.
2) The sample period is from the first quarter of 1987 to the forth quarter of 1996.
3) The lag truncation is one quarter in the ADF test, and three quarters in the PP test.
4) ***, **, and * indicate rejection of the null of nonstationarity at the 1 percent, 5 percent, and 10 percent significance levels with critical values taken from Davidson and MacKinnon (1993).
Source: IFS(IMF)

-term capital inflows by replacing SPUI and SPJI (in Section 4.2) with the alternative super risk premiums calculated above. In this simulation, we use the regression equation estimated in Section 4.2 (Table 2), because we assume that coefficients on the explaining variable in the regression equation are unchanged even if the monetary authorities change their exchange rate management.

Table 3 reports the results of the simulation. The main observations are as follows. First, in the case (1) of adopting the basket peg system, the simulated capital inflows (of both "Other investments" and "Portfolio and other investments") are clearly larger than the estimated capital inflows under the dollar peg system in all the sample countries. Second, in the case (2) of adopting

Table 2 Results of Regressions on Capital Inflow Functions

<Other Investments>

	SPU	SPJ	Adj R**2	AR(1)	D.W.
Indonasia	0.24 **	-0.00	0.24	YES	2.35
Korea	0.16 ***	0.03 **	0.69	YES	2.01
Philippines	0.25 ***	-0.00	0.16	YES	1.87
Thailand	0.97 ***	0.11 ***	0.33	NO	2.07

<Portfolio and Other Investments>

	SPU	SPJ	Adj R**2	AR(1)	D.W.
Korea	0.20 ***	0.05 ***	0.79	YES	2.14
Philippines	0.25 **	-0.00	0.27	YES	1.97
Thailand	1.53 ***	0.22 ***	0.31	NO	1.94

Notes:
1) SPU: Super risk premium of each currency against the U.S.
SPJ: Super risk premium of each currency against Japan
Adj R**2: Adjusted R-squared
AR(1): Adjusted for Autocorrelation by adopting Cochrane-Orcutt procedure
D.W.: Durbin-Watson Statistic
2) The sample period is from the first quarter of 1987 to the forth quarter of 1996.
3) *, **, *** indicate that the coefficient is significant at the 90, 95, and 99 percent levels, respectively.
Source: IFS(IMF)

Table 3 Means of Estimated and Simulated Values of Capital Inflows

<Other Investments: % of GDP>

		Indonesia	Korea	Philippines	Thailand
1987Q1-96Q4	estimated	1.02	1.48	2.37	5.18
	simulated(1)	2.19	1.69	3.37	6.47
	simulated(2)	0.88	0.97	1.61	3.61
1990Q1-96Q4	estimated	1.03	1.08	2.81	6.62
	simulated(1)	2.25	1.93	3.85	7.93
	simulated(2)	0.78	1.14	2.11	4.60

<Portfolio and Other Investments: % of GDP>

		Indonesia	Korea	Philippines	Thailand
1987Q1-96Q4	estimated	-	1.84	2.27	6.51
	simulated(1)	-	2.13	3.28	8.68
	simulated(2)	-	1.18	1.51	3.96
1990Q1-96Q4	estimated	-	1.31	2.67	8.08
	simulated(1)	-	2.40	3.73	10.27
	simulated(2)	-	1.38	1.97	4.79

Notes:
Simulated (1) is the case of adopting the basket pegging as exchange rate targeting.
Simulated (2) is the case of adopting the inflation slide as exchange rate targeting.
source: IFS and DTSY (IMF).

the inflation slide, the simulated capital inflows are clearly smaller than the estimated capital inflows under the dollar peg system, except for Korea (1990 Q 1−96 Q 4).

We interpret the observation above in the following way. In the case (1) of adopting a currency basket, the local currencies would have been influenced by the yen appreciation toward 1995, which would have made the super risk premiums larger and induced more capital inflows than those of the dollar peg system. Therefore, the adoption of the basket peg system does not seem to contribute to the stabilization of capital flows. In the case (2) of adopting the inflation slide, the local currencies would have depreciated more during all the pre-crisis analytical period, which would have moderated the super risk premiums and have had a depressing effect on capital inflows. In this sense, the inflation slide in exchange rate management appears to have a stabilizing effect on capital flows compared with the dollar peg management.[3]

5. Concluding Remarks

In this study we set out to examine, using empirical studies (Section 4), the pre-crisis exchange rate management in selected East Asian countries from the viewpoint of stability of capital flows.

First, we found the significantly large super risk premiums against the U. S. in the pre-crisis Asian sample countries with de facto dollar peg regimes. Second, we verified the correlation between the super risk premium and short-term capital inflows in the regression analysis. Third, the simulation results indicate that the alternative inflation-slid management would have had a depressing effect on capital inflows while the basket peg system would not have. Therefore, our studies imply that the inflation slide would have been more preferable than the simple dollar pegging in exchange rate management from the viewpoint of stabilizing capital flows.

Other analytical issues remain. First, we may improve the simulation method by considering the "general impact" of the changes of exchange rate policies on macroeconomic variables. This paper considers only the "partial impact" on capital inflows. The change of exchange rate management, however, may simultaneously influence domestic interest rates and the coefficients on the super risk premium. Second, the post-crisis trends of the super risk premiums and short-term capital inflows are an important frontier to be studied. The post-crisis period is, up to now, a little too short to acquire sufficient data for sophisticated analyses. We will, therefore, need to keep track of the upcoming trends on the relevant economic indices and policies.

Notes

(1) Concerning the evaluation on the pre-crisis dollar peg system, McKinnon (2000) argued that it looked like good fixes with purchasing power parity, price level stability, and fiscal balance. This evaluation is different from the views of international organizations and the result of our simulation analysis.

(2) We often use the Swiss franc as a numeraire because it is an independently floating currency of an advanced country, which carries little weight in Asian trade.

(3) Ohno (1999) also conducted counterfactual simulations over the pre-crisis period that show that, to stabilize competitiveness, proper adjustments for inflation by individual economies are more important than the choice of currency weights. He concluded that adoption of a common currency basket in the region does not add much stability.

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