Working Paper 06-03

Regional Currency Unit in Asia: Property and Perspective

Woosik Moon, Yeongseop Rhee and Deokryong Yoon

KIEP Korea Institute for International Economic Policy

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Price USD 2

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KIEP Working Paper 06-03
Published October 25, 2006 in Korea by KIEP

Executive Summary

This paper examines different properties of the regional currency unit (RCU) in Asia and estimates the value of the RCU as a weighted average of East Asian currencies according to the method used to calculate the ECU under the EMS. The basket feature of the RCU yields benefits and costs. First, the use of the RCU central rate can make the intervention burden of a central bank less onerous than the use of a bilateral exchange rate. Also, for any given band of margins, a basket unit offers more flexibility than a bilateral exchange rate. Another advantage of using the RCU is that the variance of RCU exchange rates is smaller than the variance of exchange rates of component countries. However, the usefulness of the RCU as a unit of account for domestic transactions and contracts will be very limited because of information costs and uncertainty about the value of the RCU. Also, theintroduction of the RCU raises the important problem of asymmetry for foreign exchange market intervention. Once such a problem is solved, the RCU can be then used as a divergence indicator to monitor the exchange rates of Asian currencies between themselves and against the US dollar or the euro. The creation of the RCU is a good way to coordinate policies and assure exchange stability between Asian countries.

JEL classification: E58; F31; F41

Key words: Regional Currency Unit, ECU, parallel currency, Asian monetary integration

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Property and Perspective

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I. Introduction

In a recent meeting of the ADB held at Hyderabad, India on May 3, 2006, finance ministers from Korea, China, and Japan announced that they would take steps to coordinate their currencies in a way that would ultimately produce a common regional currency similar to the euro. They also added steps to study all related issues, including the creation of a regional currency unit (hereafter RCU) that had often been referred to as the Asian Currency Unit (ACU). Although Asian monetary union is a distant goal, the idea of a RCU could be an important step toward realizing monetary union in Asia. Indeed, the RCU was supported strongly by Kuroda (2006), president of the ADB, as a way to facilitate regional monetary union in Asia, and following his hope, the ADB is working toward calculating the value

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of RCU and publishing it on its website (Asia Pacific Bulletin 2006).

The idea of a basket currency has been a top policy concern of the Japanese government for a long time, although it has implied that it wanted to include external currencies such as the dollar and the euro in the basket. However, Japan recently changed its proposal so as to include only internal currencies such as the Korean won and the Chinese yuan (Moon, Rhee and Yoon 2005). Its recent proposal to introduce a RCU reflects this change in Japan's attitude toward a regional currency. Since then, many academics have suggested developing the RCU as a parallel currency in Asia to further monetary integration in Asia. For instance, Ogawa and Shimizu (2005) proposed using the RCU as a deviation indicator for the coordination of exchange rates in East Asia. Eichengreen (2005) considered that the introduction of a RCU would help foster monetary and financial integration in Asia, catalyze Asian bond markets, and serve as an Asian exchange rate arrangement similar to the European Exchange Rate System. Given that there has not been much progress in achieving monetary integration in Asia, aside from the recent CMI that ended up in the creation of a multilateral support system, the RCU would certainly serve as an effective instrument for breaking the current standstill.

The introduction of a RCU, however, poses many important technical questions such as what currencies to include in the basket, what weights to attribute to the component currencies, and what institution to use to publicize the RCU value.

The objective of this paper is to examine the properties of a RCU and its future prospects as a basket currency, drawing parallels with the ECU. To this end, this paper will also try to estimate a RCU

value as a weighted average of East Asian currencies according to the method used to calculate the ECU under the EMS. This paper focuses, however, on the characteristics of RCU as composite currency not on the process of monetary integration.

The organization of this paper is as follows. Section 2 briefly touches on the history of basket currency, in particular the ECU. Section 3 examines the properties of the RCU and section 4 calculates the value of the RCU after addressing some technical questions such as determination of weight and currency composition. Section 5 tries to forecast the future direction of the development of the RCU. A conclusion and summary are provided in section 6.

II. History of Basket Currencies and ECU

The creation of basket currencies goes with the monetary instabilities that occurred with the collapse of the Bretton Woods (BW) system. In particular, with the advent of a floating exchange rate system in 1973, both official agencies and private institutions started to use an artificial currency unit based on the concept of a basket of a number of currencies. The first such use of the basket concept was the European Composite Unit (EURCO), first introduced in September 1973 by a group of eight private European banks to protect the issuer and investor against exchange rate fluctuation risks. EURCO consisted of fixed amounts of the currencies of the nine EC member countries including Germany, France, the United Kingdom, Italy, the three Benelux countries, Denmark, and Ireland. The composition of EURCO and the weight of each component currency, which were calculated on the basis of economic shares of each member countries, are listed in the following table.

Loans taken out in EURCO were regarded as investments into a fund with a portfolio composed of fixed amounts of bonds denominated into different national European currencies. If certain component currencies are expected to depreciate, then loans taken out in EURCO were preferable to loans denominated in weak currencies, while less attractive than those in strong currencies. At the level of international investment, however, EURCO's utility was inconvenienced by the fact that the US dollar was not included in the component currencies, which ended up limiting its use.

The basket concept of EURCO was soon applied to the Special

Table 1. Composition and Weight of EURCO

Component Currencies	Currency Amount	Weight (percent)
DEM	0.828	28.9%
FRF	1.15	22.3%
GBP	0.0885	14.6%
ITL	109.00	9.0%
NLG	0.286	10.1%
BEF	3.66	9.5%
DKK	0.217	2.7%
IEP	0.00759	1.0%
LUF	0.14	1.0%

Drawing Right (SDR). The SDR was initially created in 1969 to solve the credibility problem of the US dollar in the 1960s and to provide international liquidity. The value of one SDR was defined in the gold weight equivalent of one US dollar of that period, i.e. 1 SDR = 0.888671 gram of fine gold = 1 USD. However, with most currencies moving to a floating system, in June 1974 the IMF decided to fix the value of SDR on the basis of the basket standard and to use it for settlement between central banks. The SDR did not fulfill its expectations because the SDR neither functioned as a new international reserve asset nor supplemented the US dollar. Currently, the SDR is assumed to serve as an official unit of account and reserve asset, but its function as a reserve asset has turned out to be very weak. Similar attempts around the world have subsequently been made, leading to the creation of basket currencies such as the Arab Currency Rated Unit (ARCRU) created in November 1974, the Asian Monetary Unit (AMU) created in December 1974 by a group of India, Pakistan, Sri

Lanka, Nepal, and Iran, and the European Unit of Account (EUA), the immediate predecessor of the ECU, in 1975 (Bordo and Schwartz 1989, p.9). The EUA was a basket of fixed amounts of the same nine European currencies as EURCO (Table 2) and its value was set to be 1 SDR at the beginning.

Table 2. Composition and Weight of EUA

Component Currencies	Currency Amount	Weight (percent)
DEM	0.828	27.3%
FRF	1.15	19.5%
GBP	0.0885	17.5%
ITL	109.00	14.0%
NLG	0.286	9.0%
BEF	3.66	7.9%
DKK	0.217	3.0%
IEP	0.00759	1.5%
LUF	0.14	0.3%

The EUA was since in use in various European institutions. In fact, given the supra-national character of the European Community, there was a strong need for Community institutions to use, whenever possible, the unit of account concept in various fields of their activities. With the inception of the EMS in 1979, the EUA was replaced by the ECU. The ECU basket was identical to that of the EUA The initial weights of the currency components of the ECU when this unit was still the EUA were not arbitrary but rather calculated on the basis of criteria that reflected the relative economic importance of the member countries: GNP, intra-regional trade, and

share in the short-term financial support mechanism (EMCF).

Table 3 shows the economic importance of member countries and weights of currency components in the ECU after 1989. In practice, the weights did not exactly fit the economic importance because they fluctuated whenever the exchange rates changed.

Table 3. Economic and Currency Weights of Member Countries in the ECU

	Percent of EC GNP	Percent of Intra EC Trade	Percent of EC financial support	Weights after 1989 revision
DEM	26.2	24.9	19.51	30.10
FRF	20.5	16.9	19.51	19.00
GBP	15.5	12.7	19.51	13.00
ITL	17.6	12.1	13.00	10.15
NLG	5.0	11.8	6.50	9.40
BLF*	3.4	10.9	6.50	7.90
DKK	2.4	2.4	2.91	2.45
IEP	0.7	1.9	1.12	1.10
GRD	1.1	1.0	1.68	0.80
ESP	6.7	4.2	8.13	5.30
PTE	0.8	1.3	1.63	0.80

Note: * The weight of the Luxembourg franc was integrated into the Belgium franc.

The weights of the currencies are thus subject to reexamination. In fact, the procedure for reexamining the weights of the currencies in the basket is twofold. One is a periodic reexamination, the first of which took place 6 months after the start of the system. Subsequent reexaminations were scheduled to take place every five years. The other is reexamination upon request, if the weight of any currency

has changed by 25 percent or more. After the launch of the EMS, there were two revisions made to the weights, one in 1984 when Greece decided to join the EMS and another in 1989 when Spain and Portugal entered into the EMS. In 1993 when the Treaty on European Union entered into force, however, the weights were frozen in preparation for the introduction of a single currency. Table 4 summarizes the details of readjustment.

Table 4. Readjustment of ECU Basket

	1979. 3. 7	1984. 9. 17	1989. 9. 21
DEM	0.828	0.719	0.6242
FRF	1.15	1.31	1.332
GBP	0.0885	0.0878	0.08784
ITL	109	140	151.8
NLG	0.286	0.256	0.2198
BEF	3.80	3.85	3.301
DKK	0.217	0.219	0.1976
IEP	0.00759	0.00871	0.008552
LUF	(*)	(*)	0.13
GRD	-	1.15	1.44
ESP	-	-	6.885
PTE	-	-	1.393

Note: The weight of the Luxembourg franc was integrated into the Belgium franc until 1989.

In the framework of the EMS, the ECU was created against the deposits of central banks with the European Monetary Cooperation fund (EMCF). The EMCF was set up in April 1973 in the framework of the Snake system. Its role remained largely formal and was

confined to accounting functions. They were required to deposit 20 percent of their gold holdings and 20 percent of their dollar reserves.

There has been a sizable increase in the total quantity of ECU, from a mere 25 billion ECU at the end of 1979 to nearly 55 billion ECU at the end of 1994. However, the use of the ECU has been rather limited, though the ECU was conceived to play a central role in the function of a new European monetary system by the initial designers of the EMS.

Since the latter part of the 1980s, there has been widespread private use of ECU. For example, at the end of 1994, the outstanding value of ECU-denominated securities accounted for 4 percent of the world's securities. This encouraged many people to grope for the possibilities of developing the ECU as a parallel currency that would circulate together with national currencies and thereby create a single European currency (Aglietta 1986; De Grauwe 1994).

III. Features of a Regional Currency Unit

In this section, we attempt to clarify the features of a RCU in Asia, drawing parallels with those of ECU. According to the standard basket valuation of the ECU, the official price of the Asian basket in terms of currency i can be defined similarly as a weighted sum of the official exchange rates of currency so that

$$RCU^i = \Sigma_j \alpha_j S_j^i, \quad (1)$$

where RCU^i = the official price of the basket currency in terms of currency i

α_j = the amount of currency j in the basket

S_j^i = the value of currency j in terms of currency i.

The value of a RCU in terms of any currency in its basket is equal to the sum of amount of that currency and of the amounts of the other components, converted into that currency.

To understand the properties of the basket currency, imagine a basket composed of the three East Asian currencies, JY, KW, and CY. Assume now that (i) each currency's weight is respectively $33\,{}^1\!/_3\%$ in the basket and that the current exchange rates at the market are (ii) 1 JY = 2 KW = 3 CY. Then, 1 unit of Asian currency unit is defined as

$$1\ RCU = 1\ JY + 2\ KW + 3\ CY.$$

And the value of the basket in terms of each national currency is

1 RCU = 3 JY = 6 KW = 9 CY.

Suppose that there is an exchange rate fluctuation between national currencies such that JY revalues 100% against KW and CY. Then 1 JY = 4 KW = 6 CY. And the value of the basket in each national currency changes:

1 RCU (in JY) = 1 JY + 0.5 JY + 0.5 JY
= 2 JY (JY appreciates by 33 1/3%)
1 RCU (in KW) = 4 KW + 2 KW + 2 KW
= 8 KW (KW depreciates by 33 1/3%)
1 RCU (in CY) = 6 CY + 3 CY + 3 CY
= 12 CY (CY depreciates by 33 1/3%).

The above example can be used to clarify some important characteristics of a RCU.

(1) When a currency depreciates (appreciates) against the other currencies in the basket, the depreciation (appreciation) against the RCU will typically be lower. For instance, JY appreciated by 100% against KW and CY, while it appreciated only by 33 1/3% against the RCU. Inversely, KW and CY depreciated by 100% against JY but only by 33 1/3% against the RCU. This implies that it will be less onerous for countries to keep within a certain margin of a central rate against the RCU than to maintain bilateral exchange rates against other currencies.

(2) The variance of RCU exchange rates is likely to be lower than the variance of individual bilateral exchange rates of component countries, because the RCU is the weighted average of each national

currency (Steinherr 1989). For instance, in the case of the EMS, each member country's exchange rate in ECUs had a much lower variance than its dollar rate (Jozzo 1989, p.151). This implies that ECU could easily replace the dollar on pure portfolio grounds. But as pointed out by Johnson (1994), a basket composition based on trade or income shares is not be the optimal portfolio from an investor's point of view.

Table 5. Exchange Rate Variability by Coefficient of Variation (Jan. 1979-April 1987)

	DM	Dfi	ITL	FF	BFR	Stg	ECU	US$	Yen
Dfi	1.74								
ITL	14.90	13.73							
FF	13.25	12.08	3.70						
BFR	10.92	9.78	5.76	3.41					
Stg	11.75	11.00	10.46	9.52	9.76				
ECU	6.64	5.53	8.47	6.76	4.99	8.05			
US	18.03	18.89	27.19	26.63	25.32	20.93	21.38		
Yen	16.11	17.23	29.15	27.32	27.74	26.33	21.80	16.26	
SFR	4.76	5.69	18.05	16.45	14.16	15.21	10.36	15.00	13.74

Note: Coefficient of variation × 100 = standard deviation of monthly average bilateral exchange rates for each currency considered divided by the average rate over the period.

Source: Jozzo (1989)

Indeed, Shimizu and Ogawa (2004) examined the risk properties of RCU-denominated Asian bonds by comparing them with those of local currency denominated bonds issued in East Asian countries. They found that that RCU bonds could lower the foreign exchange

risk for both US and Japanese investors because of the portfolio effects.

(3) However, the usefulness of a RCU as a unit of account for domestic transactions and contracts will be very limited, because when there is a change in the bilateral rates between currency *i* and the other currencies, all the parities of the national currencies with respect to the RCU would also change. Moreover, the use of a RCU as a medium of exchange will be hampered because it requires the collection of more information than the use of national currencies. For example, if a Korean exporter to Japan expects to receive his payment in JY, he only needs to forecast the JY/KW rate to know his future receipts in KW. If he expects to be paid in the RCU, he will have to forecast all JY/KW, CY/KW rates (De Grauwe and Peters 1978).

(4) There is also the problem of the uncertainty about the value of a RCU due to its variable weight. In fact, the share of currency *i* in the basket decreases (increases) when it depreciates (appreciates) in terms of the RCU. In the above example, the share of JY in the basket as it appreciated by 100% against all other currencies went up from a mere $33\,{}^{1}\!/_{3}\%$ to 50%, while the shares of KW and CY went down to 25%. This feature leads to some problems. If the currency amounts are left unchanged, the strong currencies will continuously increase in importance in the valuation of the RCU. In the extreme case of when currency *i* continues to appreciate against all the currencies, its share continues to increase such that the value of the basket currency will be determined only by the appreciating currency.

In the EMS, this was unacceptable for political reasons. As a result, it was decided that every five years the currency amounts would be changed so as to maintain shares that were relatively stable

in the long run. However, this implies that if the RCU followed a similar way to the ECU, the amounts of the weak currencies would be increasing while those of strong currencies would decrease. This makes the use of a RCU unattractive because of the uncertainty it introduces into the future value of a RCU.

(5) If the RCU is to be expected to play a role in the future exchange rate arrangement in Asia, there arises the important problem of asymmetry. The reason is that a change in a bilateral exchange rate affects the RCU rate of a currency with a larger weight less than that of a currency with a smaller weight. In other words, the larger the share of the currency, the lower is its depreciation (appreciation) against the RCU.

Suppose that the share of JY in the basket rises twice to $66\,^{2}/_{3}\%$, while the shares of KW and CY decrease by half. Then the RCU will be constructed by 1 RCU = 2 JY + 1 KW + 1.5 CY and its value in national currencies will be:

1 RCU (in JY) = 2 JY + 0.5 JY + 0.5 JY = 3 JY
1 RCU (in KW) = 4 KW + 1 KW + 1 KW = 6 KW
1 RCU (in CY) = 6 CY + 1.5 CY + 1.5 CY = 9 CY.

The new value of the RCU in each national currency when the share of the JY rises twice will be equal to the value of the RCU when the shares of each national currency are equal to each other. Assume now that, as before, JY appreciates by 100% against KW and CY. Then it yields:

1 RCU (in JY) = 2 JY + 1 × (1/4) JY + (3/2) × (1/6) JY = 2.5 JY
(JY appreciates by 16 2/3%)
1 RCU (in KW) = 2 × 4 KW + 1 KW + (3/2) × (2/3) KW = 10 KW
(KW depreciates by 66 2/3%)
1 RCU (in CY) = 2 × 6 CY + 3/2 CY + 3/2 CY = 15 CY
(CY depreciates by 66 2/3%).

Insofar as the band of exchange rate fluctuation is concerned, a country like Japan, with higher share in the basket, will have smaller exchange rate fluctuations of its currency in terms of the RCU, while countries like Korea and China will have to face larger fluctuations of their exchange rates in terms of the RCU. Thus, if there is an intervention band such as a target zone, there arises the asymmetric case where the country with the smaller share will have to intervene, while the country with a higher share will not need to do so. Thus in terms of the burden of intervention, the bilateral exchange rate parity system can be considered more equitable than the RCU system (EC 1978).

The question of equity or symmetry was in fact the most important element of the EMS, because all these institutionalization efforts and initiatives of the EMS were accompanied by the efforts to strengthen the symmetry. These include for example unlimited short term finance at no interest lent from a country with a strong currency to a country with a weak currency when there is an exchange market intervention. Also, a country with weak currency could borrow in strong currency but pay the loan back in ECU. If devaluation happens, the country with strong currency suffers a loss while the country with weak currency gains. For instance, it is estimated that

the Bundesbank in Germany suffered a loss in excess of 1 billion DMs in its VSTFF lending facility during the 1992-3 ERM crisis, because its claims were denominated in ECU while lent in DM (Collignon et al. 1994). The revision of divergence indicator was also a reflection of symmetry between the EMS countries. A divergence indicator was developed on the basis of the ECU to trigger automatic foreign exchange intervention. For instance, when the exchange rate of one country deviates +/- 2.25 percent from the ECU central rate, the country concerned should intervene to stabilize the market. The intervention obligation burden was unequal between countries with large shares in the ECU basket and those with small shares. Thus, the divergence indicator was soon adjusted to be 2.25%×(1-basket weight) so that countries with large shares in the basket would have to intervene when their exchange rate moves even within a narrower margin compared to countries with small shares in the basket. Indeed, it is said that the development of the EMS since the fall of the BW system was a history of coping with the asymmetry.

(6) For any given band of margins, however, a basket unit offers rather more flexibility than a bilateral exchange rate. For, with margins of x percent against the basket, it is possible for one member currency to move by more than x percent against another, provided that this movement is offset, at least to some extent, by movements in the opposite direction against other currencies, without the intervention limits against the basket being breached. Moreover, a regime with a basket unit might be a little less vulnerable to speculation, since, although market participants would know when a particular currency reaches its upper or lower intervention limit, they would not know for certain in which currency the central bank

concerned would intervene (EC 1978).

Suppose first that while the share of JY remains at 2/3 of the basket, the shares of KW and CY respectively account for 2/9 and 1/9 of the basket. Then the value of the RCU in each national currency will be the same as before the change of the shares. Thus, 1 RCU = 3 JY = 6 KW = 9 CY. Suppose now that the CY depreciated 100 percent vis-à-vis all other currencies such that 1 JY = 2 KW = 6 CY from 1 JY = 2 KW = 3 CY. Then the value of the RCU in each currency would be:

1 RCU (in JY) = 2 JY + (4/3) × (1/2) JY + (1/6) JY = 2 5/6 JY
(JY appreciates by 1/(3×6) against the RCU)
1 RCU (in KW) = 2 × 2 KW + 4/3 KW + (1/3) KW = 5 2/3 KW
(KW appreciates by 1/(3×6) against the RCU)
1 RCU (in CY) = 2 × 6 CY + (4/3) × 3 CY + 1 CY = 17 CY
(CY depreciates by 8/9 against the RCU).

Thus China will only have to intervene to stabilize its exchange rate vis-à-vis the RCU, but it is not clear whether China will intervene in JY or KW.

IV. Calculation of the RCU

1. Methodology

We estimate the RCU according to the method used to calculate the ECU under the EMS. There are several issues to be addressed in designing the RCU. One of the most important issues is to determine the component currencies to be included in the RCU. For practical purposes, we first calculate the value of the RCU including only three Northeast Asian countries (Korea, Japan and China). Clearly these countries are supposed to have leading roles in introducing the RCU and promoting monetary integration in Asia. Being both symbol and instrument of the monetary integration process of Asia, however, the RCU basket is generally called on to contain all the Asian currencies of the future member countries of a monetary union in Asia. A natural selection of the member countries would therefore be ASEAN+3. In the study, however, we include only advanced ASEAN5 (Indonesia, Malaysia, the Philippines, Singapore, Thailand) + 3 (China, Japan, Korea). A reason for this is that ASEAN countries are so diverse in their economic development and degree of democracy that including all ASEAN currencies would make the use of the RCU extremely difficult and related policy coordination extremely complicated. Moreover, the other 5 ASEAN countries (Brunei, Cambodia, Laos, Myanmar, Vietnam) do not contribute to the bilateral swap arrangement of the CMI. However, changing this study to encompass all of ASEAN+3 affects little.[1)]

The second issue to consider is to choose the weight of each

component currency in the RCU. Generally speaking, the weight of the basket is supposed to represent the weight of the country's economic importance and contribution to economic cooperation in the region. Several factors are used for the choice of the weight in this study:

- relative weight of each country's nominal GDP
- relative weight of each country's GDP measured at purchasing power parity
- relative weight of each country's intra-regional trade
- relative weight of each country's bilateral swap arrangement of the CMI
- a combination of all four.

Finally, it is important to choose the base year. One of the most popular ways is to choose the year when a fundamental equilibrium of both internal and external sectors is achieved. Since the internal equilibrium of each country is very difficult to figure out, we choose a base year so that total international transactions of the member countries are as close to being balanced as possible and their balances with the rest of the world are also as small as possible. For an estimation of the study, the year 2000 is chosen as the benchmark year.

Since the RCU is a basket of currencies of Asian countries and can be used as an indicator to show how Asian currencies are moving

1) The alternative is to consider ASEAN as one nation in the calculation of the RCU. This implies however that ASEAN will create its own basket or single currency, which is not very realistic.

collectively against external currencies, the choice of the external currencies in terms of which the RCU value is measured is important. The paper uses the US dollar for exhibition. Inclusion of the euro slightly changes the results but basic implications remain intact.

To estimate the value of the RCU against the US dollar and the value of each currency against the RCU, we first need to determine the weight and the amount of each currency in the RCU. Table 6 shows the weight and the amount of each currency in the RCU for three Northeast Asian countries.

In terms of nominal GDP at the year of 2000, Japan is granted the highest weight of 74.87 percent and is followed by China at 17.05 percent and by Korea at 8.08 percent. Since 1 RCU is set to be $1.00 at the benchmark year of 2000, this means that 1 RCU includes the Japanese yen as equal to $0.7487, the Chinese yuan at $0.1705, the Korean won at $0.0808, and other currencies. In year 2000, the exchange rate of the Japanese yen against the US dollar was $1 = 107.8 yen and 80.71 (= 107.8 × 0.7487) units of the Japanese currency is included in 1 RCU. Likewise, 1.42 (= 8.3 × 0.1705) units of the Chinese currency and 91.31 (= 1130.6 × 0.0808) units of the Korean currency are included in 1 RCU. At the year of 2005, the weight of Japan decreases but is still the highest, and those of China and Korea increase a little bit. If the amount of each currency in the RCU is fixed as in the case with the ECU, the share of the currencies depreciating against other currencies will decline. For example, if the Japanese yen depreciates and the exchange rate against the US dollar becomes $1 = 110 yen from $1=107.8 yen, its weight decreases to 73.37 percent (= 80.71 unit / 110) from 74.87.

Table 6. Weights and Amounts of Three Northeast Asian Currencies in the RCU, 2000

	Currency Weight (%)				US dollar rates	Currency Amount (unit)			
	PPP-GDP	Nom-GDP	Intra-trade	CMI-swap		PPP-GDP	Nom-GDP	Intra-trade	CMI-swap
Korea	8.09 (7.39)	8.08 (10.77)	22.41 (20.75)	(26.67)	1130.6 (1024.13)	91.45 (75.69)	91.31 (110.30)	253.38 (237.29)	(273.10)
Japan	37.30 (29.97)	74.87 (65.17)	48.61 (40.20)	(47.62)	107.8 (110.25)	40.21 (33.04)	80.71 (71.85)	52.40 (43.49)	(52.50)
China	54.61 (62.64)	17.05 (24.06)	28.98 (39.05)	(25.71)	8.3 (8.1922)	4.53 (5.13)	1.42 (1.97)	2.41 (3.24)	(2.11)

Note: ( ) is for 2005 except intra-trade for 2004.

In terms of GDP measured by PPP, China is the highest with 54.61 percent and Japan is next with 37.30 percent, followed by Korea at 8.09 percent in year 2000. For year 2005, China's weight increases to 62.64 percent while Japan's weight decreases to 29.97 percent. The corresponding amounts of each currency in the RCU can be calculated in a similar way and are shown in the column of PPP-GDP on the right part of Table 6.

In terms of intra-trade share, Japan was the highest, China the second, and Korea the third in 2000. In 2005, the shares of China and Japan became similar to each other. Compared to the nominal GDP and the PPP-GDP measures, the weights based on the intra-trade shares among the countries were relatively balanced. In terms of CMI bilateral swap arrangements, Japan's share is the highest, Korea the next, China the third. Again, the weights of each country are less variant than the cases using nominal GDP and PPP-GDP. The corresponding amounts of each currency in the RCU based on

intra-trade shares and CMI contributions appear in the last two columns of Table 6.

Using the amount of each currency in Table 6, the value of the RCU in terms of the US dollar is defined as follows:

$$RCU^{\$} = \Sigma_j \alpha_j S_j^{\$}, \quad (2)$$

where α_j is the amount of currency j, $S_j^{\$}$ is the value of currency j in terms of the US dollar. Of course the value of the RCU calculated using (2) is $1.00 at the base year of 2000 because it is set that way. However, the value of the RCU will change with the exchange rate fluctuation against the US dollar. For example, substituting the exchanges rates of Asian currencies against the US dollar of Table 7 into (2) yields 1 RCU = $1.0073 (or $1 = 0.9927 RCU) in the year of 2005 when the PPP-GDP weights are used:

$$RCU^{\$} = 91.45 \times \$1/1024.13 + 40.21 \times \$1/110.25 + 4.53 \times \$1/8.1922 = \$1.0073.$$

Table 7. Value of the RCU in US dollar and National Currencies, 2005

	PPP-GDP	Nom-GDP	Intra-trade	CMI-swap
$/RCU rate	1.0073	0.9940	1.0163	1.0179
RCU/$ rate	0.9927	1.0060	0.9839	0.9824
won/RCU rate	1031.61	1017.99	1040.83	1042.51
Yen/RCU rate	111.06	109.59	112.05	112.23
Yuan/RCU rate	8.2521	8.1431	8.3258	8.3392

Note: CMI-swap is scale-adjusted to be unity at 2000.

Alternatively, we can calculate the value of RCU in terms of each national currency. For example, Table 7 shows that the value of the RCU in terms of the Korean won in 2005 using the PPP-GDP measure is 1 RCU = 1031.61 won:[2)]

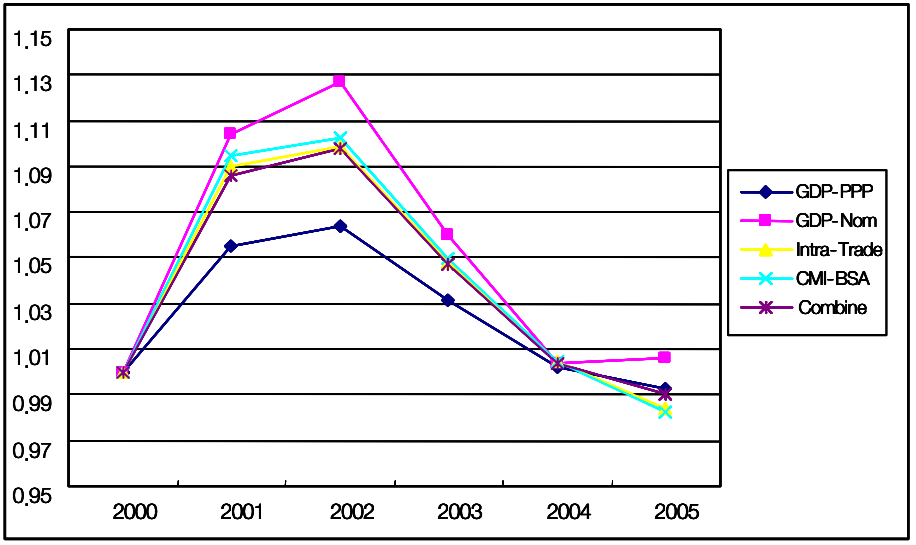
$$RCU^{i} = 91.45x1024.13/1024.13+40.21x1024.13/110.25+4.53x1024.13/8.1922$$
$$= 1031.61 \text{ won}.$$

2. Result for +3 Countries

We first present the result for three Northeast Asian countries, Korea, Japan and China. Figure 1 shows the trend of the RCU value in terms of the US dollar from the year of 2000 to the year of 2005 using five different measures of weights. Two features are noteworthy. One is that the RCU value based on nominal GDP fluctuated the most and that based on PPP-GDP fluctuated the least. Since China takes the largest share in the PPP-GDP measure and the yuan was nearly fixed against the US dollar during this period, the corresponding RCU value should be stable compared to other cases. In contrast, Japan's share is much larger than China's in the nominal GDP measure, and the yen has been volatile against the US dollar. Hence, the corresponding RCU value should fluctuate more compared to others.

2) Alternatively we can use the triangular arbitrage condition such that $RCU^{i} = RCU^{\$} \times S_{\$}^{i}$, where $S_{\$}^{i}$ is the value of the US dollar in terms of currency i, i.e., the exchange rate of currency i against the US dollar. Thus, for the value of the RCU in Korean won, we have: $RCU^{i} = RCU^{\$} \times S_{\$}^{i} = \$1.0073 \times 1024.13 \text{ won} = 1031.61 \text{ won}$.

Figure 1. Trend of RCU/$ Rate for +3 Countries

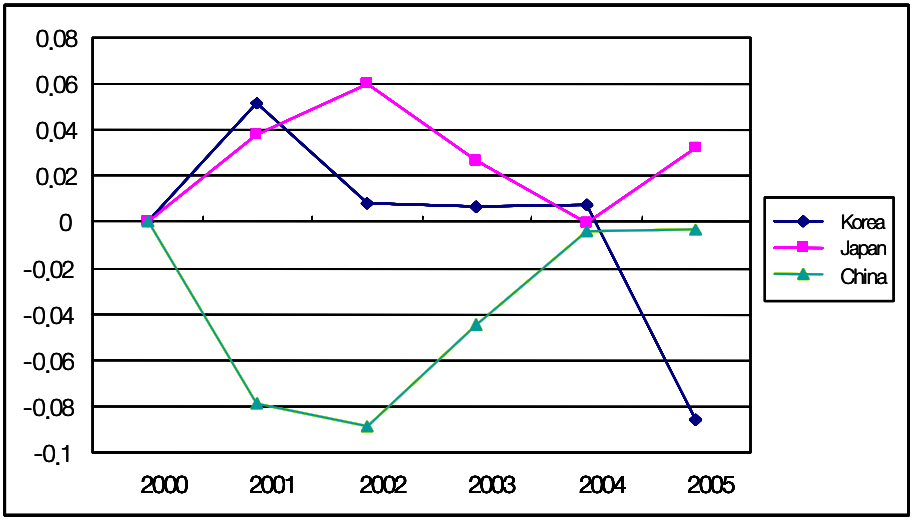


The other feature is that the trends of the RCU look very different according to the choice of the benchmark year. If the year of 2000 is selected as the base year, the RCU value in 2005 returns to a value very close to the starting point after losing its value in 2001 and 2002. However, if we choose the year of 2000 as the base year, the RCU steadily gains in value by about 10 percent to the year of 2005.

Figure 2 shows the RCU rate in national currencies using the average value of four different weights. The figure shows that even among three currencies, there have been huge deviations. In 2002, there was 15 percent deviation between the Chinese yuan and the Japanese yen and in 2005, 12 percent deviation between the Korean won and the Japanese yen. Appendix I presents the RCU rate of each national currency using four other different measures of weights. Although there are slight differences, all these figures show a very

similar feature in that there are large deviations among three Northeast Asian currencies.

Figure 2. RCU Rate of +3 Currencies: Combination



3. Result for ASEAN+3 Countries

We now repeat the same calculation for ASEAN5+3 countries. Table 8 summarizes the weight and the amount of each currency in the RCU for eight Asian countries.

Although five new currencies are added to the basket, the shares of the three Northeast Asian countries remain dominant. Figure 3 shows the value of the RCU in US dollars from the year of 2000 to the year of 2005 using five different measures of weights. Again, the RCU value based on nominal GDP fluctuated the most and that based on PPP-GDP the least.

Table 8. Weights and Amounts of Asian Currencies in the RCU, 2000

	Currency Weight (percent)				US dollar rates	Currency Amount (unit)			
	PPP-GDP	Nom-GDP	Intra-trade	CMI-swap		PPP-GDP	Nom-GDP	Intra-trade	CMI-swap
Korea	6.83 (6.29)	7.45 (9.76)	13.64 (13.87)	(17.28)	1130.6 (1024.13)	77.26 (64.44)	84.26 (99.95)	154.21 (158.62)	(177.01)
Japan	31.51 (25.51)	69.09 (59.05)	29.59 (26.87)	(30.86)	107.8 (110.25)	33.97 (28.13)	74.48 (65.11)	31.89 (29.07)	(34.03)
China	46.14 (53.33)	15.73 (21.80)	17.64 (26.11)	(16.67)	8.3 (8.1922)	3.83 (4.37)	1.31 (1.79)	1.46 (2.17)	(1.37)
Singapore	0.90 (0.86)	1.33 (1.36)	14.01 (11.13)	(4.94)	1.7 (1.6646)	0.02 (0.01)	0.02 (0.02)	0.24 (0.19)	(0.08)
Thailand	3.69 (3.55)	1.79 (2.16)	6.36 (6.43)	(7.41)	40.1 (40.277)	1.48 (1.43)	0.72 (0.87)	2.55 (2.59)	(2.98)
Philippines	2.92 (2.94)	1.11 (1.10)	3.28 (2.86)	(6.79)	44.2 (55.0855)	1.29 (1.62)	0.49 (0.61)	1.45 (1.60)	(3.74)
Malaysia	1.99 (1.62)	1.31 (1.48)	10.04 (8.28)	(4.94)	3.8 (3.7868)	0.08 (.06)	0.05 (0.06)	0.38 (0.31)	(0.19)
Indonesia	6.02 (5.88)	2.19 (3.29)	5.45 (4.45)	(11.11)	8421.8 (9707.0)	506.59 (570.55)	184.14 (319.25)	459.08 (397.80)	(1078.56)

Note: ( ) is for 2005 except intra-trade for 2004.

Figure 3. Trend of RCU/$ Rate for ASEAN5+3 Countries

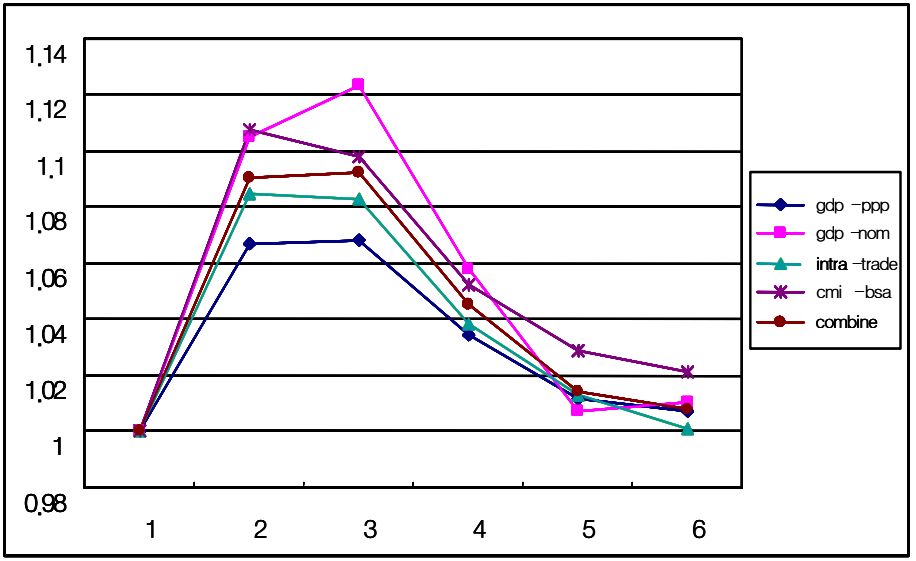
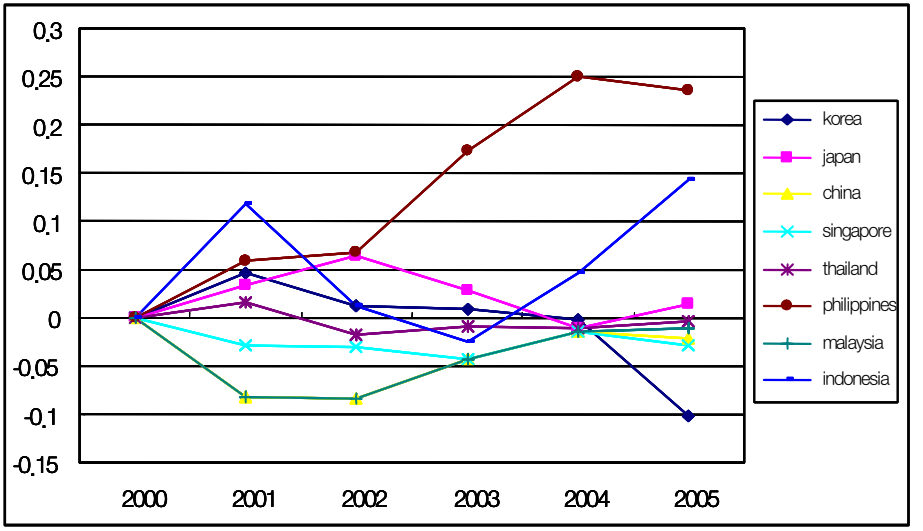


Figure 4 shows the value of the RCU in national currencies for ASEAN+3 countries.[3] From the base year of 2000 to 2005, the Korean won appreciated the most by roughly 10 percent. On the other hand, the Philippine peso depreciated by 25 percent and the Indonesian rupiah by almost 15 percent during this period. Another feature is that the deviations seem to widen: the Asian currencies currently have over 30 percent of the deviations among themselves. Thus, if Asian countries are to adopt a target zone system such as the EMS, it is obvious that Asian countries should adopt a wide band basket system, possibly +/-15 percent around the central rate (Moon, Rhee, and Yoon 2001). Moreover, if the RCU as calculated above is used as

3) Appendix II shows the RCU rate of Asian currencies using other measures of weights.

a divergence indicator, it implies that a country like the Philippines should intervene in the foreign exchange market to stabilize its currency vis-à-vis the RCU. Thus the creation of the RCU can be a good way to coordinate policies and assure exchange stability between countries.

Figure 4. RCU Rate of Asian Currencies: Combination



V. Strategies to Make the RCU a Parallel Currency in Asia

The creation of the RCU can play a pivotal role for monetary stability in Asia and speed up the road to create a monetary union in Asia. It means above all that at the official level, the RCU should be used to monitor exchange market development. Indeed, Kuroda (2006) expressed his intention to create the RCU as an indicator to monitor how Asian currencies are moving collectively vis-à-vis key external currencies such as the US dollar and the euro. At the same time, the RCU can be used in private capital markets as a denomination of market transactions such as bond issuance.

In order for the RCU to assume such a role, some important questions remain to be solved. First, there is the question about which institution will calculate and publish the value of the RCU. In the case of the ECU, it was the European Commission that daily calculated the official value of the ECU in its component currencies. During their telephone conversation sessions, which took place four times a day, the Central Banks of the Member States communicated to each other regarding their representative rates for the dollar on their markets. The rates taken from the exchange markets at 2:30 p.m. were then forwarded by the National Bank of Belgium to the Commission which then calculated an ECU equivalent, first in dollars and then in the basket currencies. When the exchange market of a Member State was closed, the other central banks agreed on a representative rate for that currency against the dollar. No ECU calculation took place when more than half of the exchange rates of

the Member States were closed. In the case of Asia, so far the ADB has been most active, announcing that it would calculate the value of the RCU. However, it is questionable whether the ADB is right for such a work, because the ADB represents the interests of more than 40 member countries in the Asian and the Pacific area, while the introduction of a RCU would concerns only ASEAN+3 countries or less. Moreover, as expressed by the ADB delegation, the ADB intends to use the RCU as an indicator to monitor how Asian currencies are moving collectively vis-à-vis key external currencies such as the US dollar and the euro. Then it is clear that the RCU should be the concern of future member countries of the AMS (Asian Monetary System). In this regard, it would be more appropriate to establish a secretariat or Asian monetary institute to publish such figures.

Second, the use of the RCU should be strengthened. In this regard, the creation of a regional exchange rate system is essential because the RCU could be extensively used only when there is an exchange rate arrangement among Asian countries.[4] That was exactly the case for the ECU. At the official level of the EMS framework, the ECU was used in the following way:

- as a unit of account for denominating the value of EMS countries
- as a reference unit for the operation of the divergence indicator
- as a denominator for operations in the intervention and credit mechanisms
- as a reserve asset (settlement instruments between central banks

4) See Choi and Yoon (2005) for the need of Asian Exchange Rate Arrangement.

of the member states)

Prior to the creation of the EMS, ideas for a new European parallel currency to contribute to monetary exchange stability were discussed extensively (Vaubel 1978). As indicated by Steinherr (1989, p.60), "EMS and ECU were not seen as two juxtaposed and independent innovations but as the two necessary and strongly mutually reinforcing pillars of the new regional monetary system to fulfill two expectations: creation of a European zone of monetary stability and greater independence from outside disturbances." Indeed, in the case of the EMS, the development of the ECU has benefited from the EMS and the official recognition by member countries of the ECU as an integral part of the EMS, though the reverse is certainly not true. Thus, the development of the RCU as a means of payment, a unit of account, and a store of value will depend on the development of an exchange rate arrangement in Asia.

The use of the RCU at the official level also leads to the private use of the RCU. In particular, it can help to promote a RCU denominated bond market in Asia, which is indispensable for eliminating the underlying causes of regional financial instability and coping with the global imbalance that originates from the continuing current account deficits of the US and surpluses of the East Asian countries.

Third, an Asian Exchange Stabilization Fund (AESF) should be established once the creation of Asian exchange rate arrangement is taken into serious consideration. A similar idea was already proposed under the name of Asian Monetary Fund (AMF) in 1997 by the Japanese government to support crisis-hit Asian countries. The main

function of the AMF was to provide emergency financial support and thereby prevent a possible financial crisis in Asia. Faced with strong opposition from the United States, this proposal did not survive, but the idea remained pertinent and ended up with the formation of the CMI (Moon, Rhee, and Yoon 2005). Though initially insufficient and bilateral, the swap arrangement has continued to be strengthened, and it was agreed upon to develop the swap into a multilateral arrangement in a recent ADB meeting at Hyderabad, India on May 2006. The AMF proposal and the CMI are by nature incomplete because they do not address the question of institutionalization of the exchange rate system in Asia. The objective of the AESF is more comprehensive in that it includes exchange rate stability in addition to liquidity support. In fact, the case of the EMS suggests that three pillars be combined into one institution: ECU, Provision of liquidity, and ERM. Thus, in Asia, once the RCU is created and once the provision of emergency liquidity can be strengthened through the CMI, then the next natural step will be to set up an appropriate exchange rate system. This could be carried out with the establishment of the AESF.

VI. Summary and Conclusion

This paper examined different properties of a RCU and estimated the value of the RCU as a weighted average of East Asian currencies according to the method used to calculate the ECU under the EMS.

The basket feature of the RCU yields benefits and costs. First, the use of the RCU central rate can make the intervention burden of a central bank less onerous than the use of a bilateral exchange rate. Also, for any given band of margins, a basket unit offers more flexibility than a bilateral exchange rate. Another advantage of using a RCU is that the variance of RCU exchange rates is smaller than the variance of exchange rates of component countries. However, the usefulness of a RCU as a unit of account for domestic transactions and contracts will be very limited because of information costs and uncertainty about the value of a RCU. Also, the introduction of a RCU raises the important problem of asymmetry for foreign exchange market intervention. The reason is that the change in the exchange rates vis-à-vis the RCU will be smaller in a country with a larger weight than in a country with a smaller weight.

Once such a problem is solved, the RCU can be then used as a divergence indicator to monitor the exchange rates of Asian currencies between themselves and against the US dollar or the euro. The creation of the RCU is a good way to coordinate policies and assure exchange stability between Asian countries.

The RCU can be developed into a parallel currency as well. Drawing a parallel with the ECU, this paper suggested the establishment of Asian exchange rate system like the European

exchange rate system, and the Asian Exchange Stabilization Fund to facilitate monetary union in Asia.

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Appendix I: RCU Rate of +3 Currencies

Figure A-1. RCU Rate of +3 Currencies: PPP-GDP

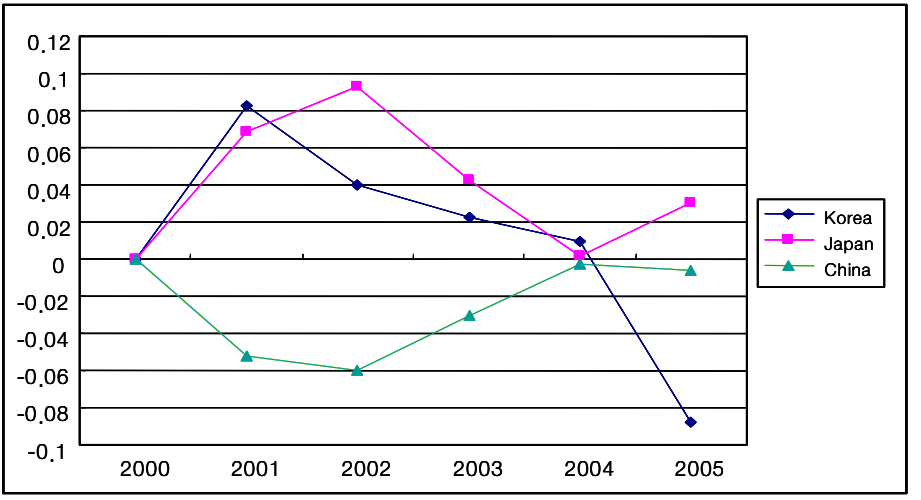


Figure A-2. RCU Rate of +3 Currencies: nominal-GDP

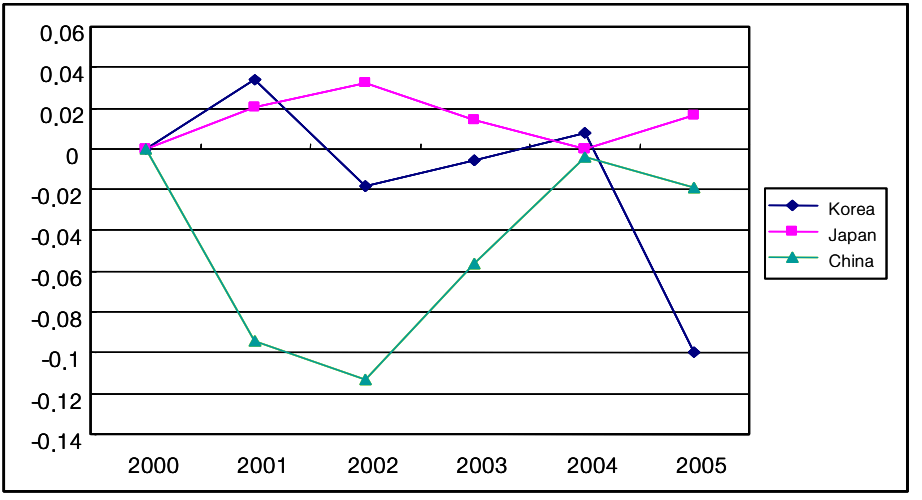


Figure A-3. RCU Rate of +3 Currencies: Intra-Trade

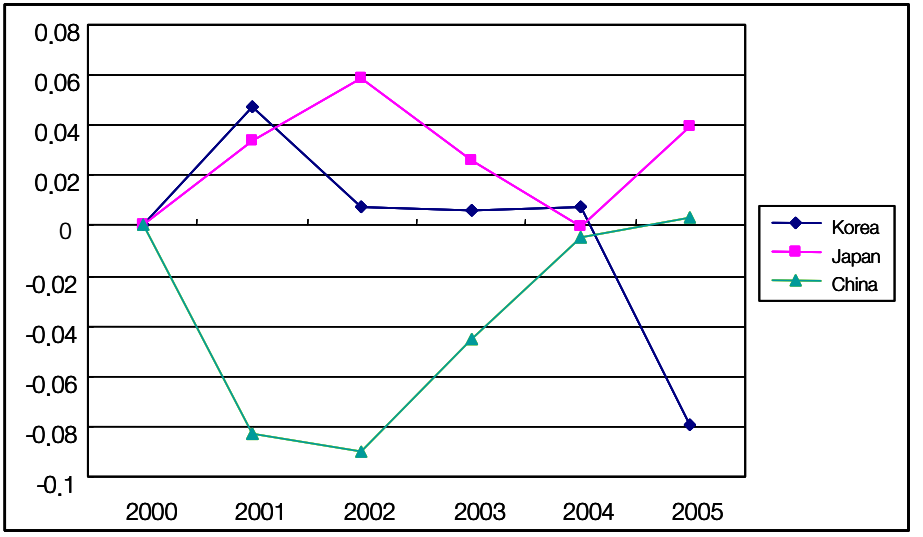
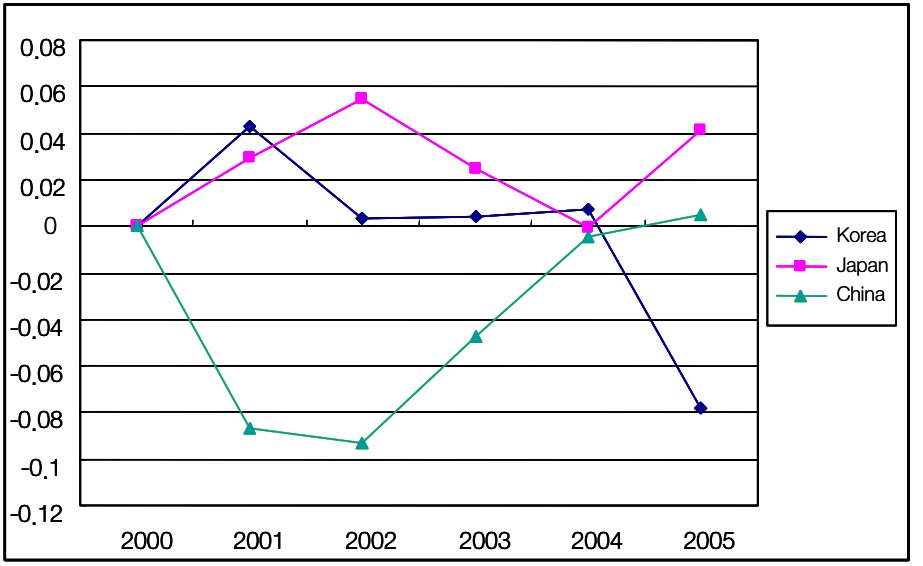


Figure A-4. RCU Rate of +3 Currencies: CMI-BSA



Appendix II: RCU Rate of Asian Currencies

Figure A-5. RCU Rate of Asian Currencies: PPP-GDP

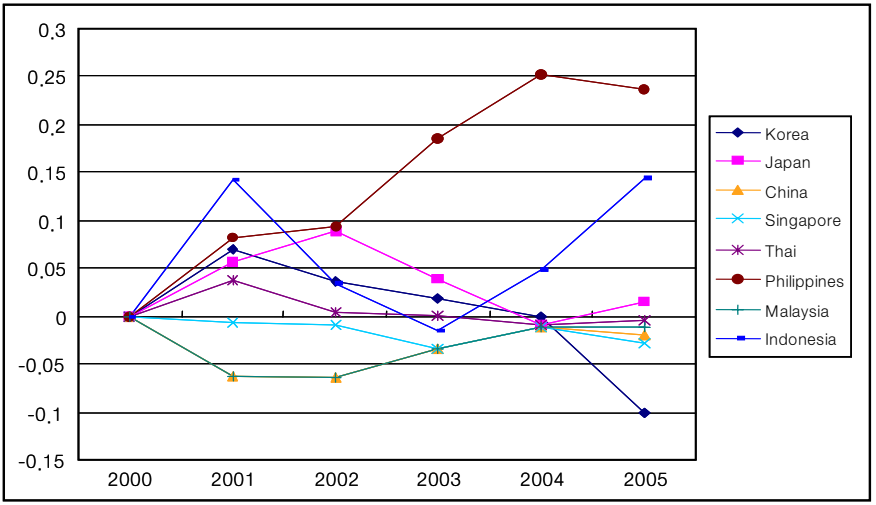


Figure A-6. RCU Rate of Asian Currencies: nominal-GDP

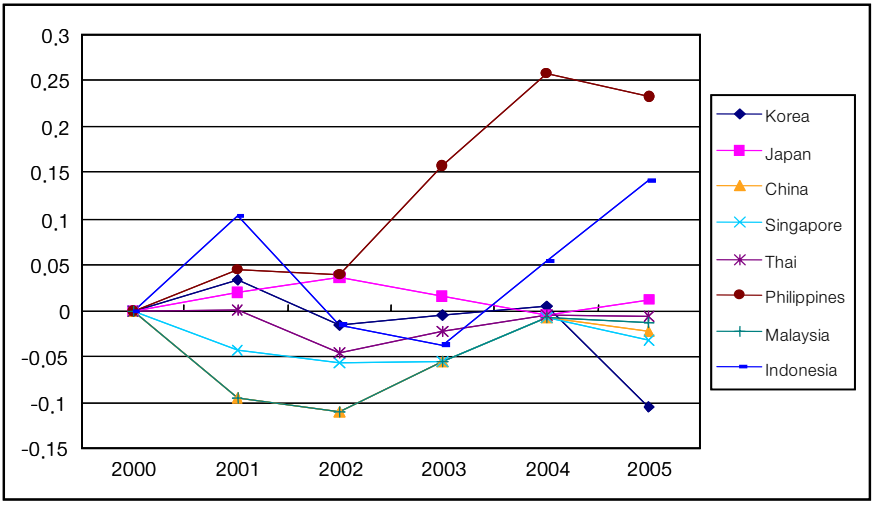


Figure A-7. RCU Rate of Asian Currencies: Intra-Trade

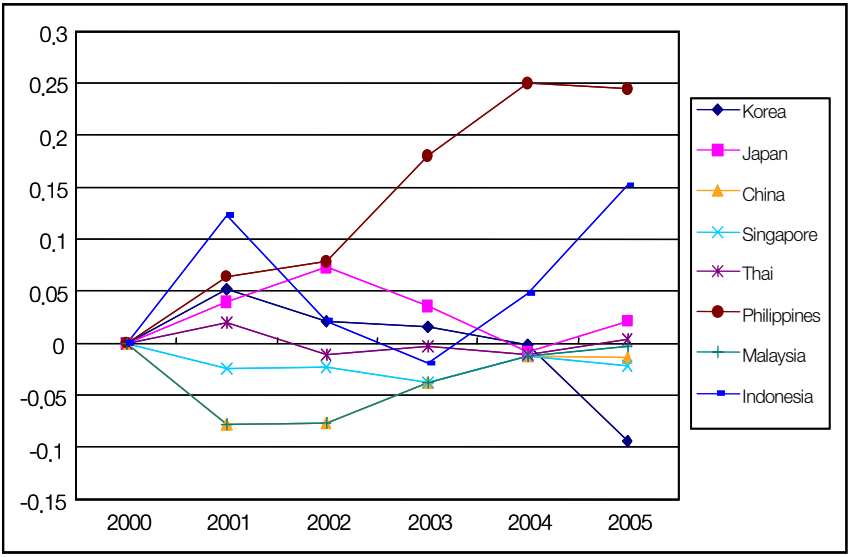
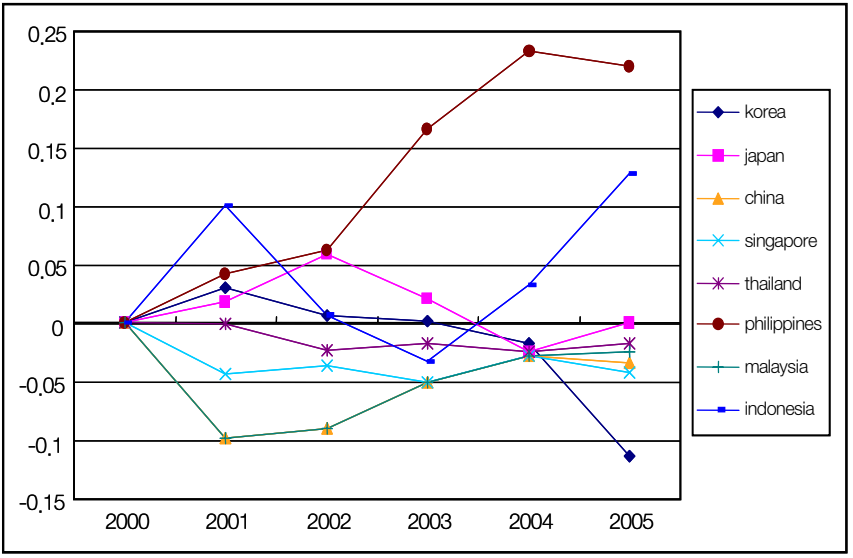


Figure A-8. RCU Rate of Asian Currencies: CMI-BSA



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Regional Currency Unit in Asia: Property and Perspective

Woosik Moon, Yeongseop Rhee and Deokryong Yoon

This paper examines different properties of the regional currency unit (RCU) in Asia and estimates the value of the RCU as a weighted average of East Asian currencies according to the method used to calculate the ECU under the EMS. The basket feature of the RCU yields benefits and costs. The usefulness of the RCU as a unit of account for domestic transactions and contracts will be very limited because of information costs and uncertainty about the value of the RCU. Also, the introduction of the RCU raises the important problem of asymmetry for foreign exchange market intervention. Once such a problem is solved, the RCU can be then used as a divergence indicator to monitor the exchange rates of Asian currencies between themselves and against the US dollar or the euro. The creation of the RCU is a good way to coordinate policies and assure exchange stability between Asian countries.

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9 788932 241784 94320
ISBN 89-322-4178-3
89-322-4026-4(세트)