

Measures for Possible Use of Regional Monetary Units for Surveillance and Transaction

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Chai, Hee-Yul (Kyonggi University)
Moon, Woosik (Seoul National University, KIEP)
Rhee, Yeongseop (Sookmyung University)
Yoon, Deok-Ryong (KIEP)

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I. Introduction

□ Background

- The secretariat of ASEAN posted the “Terms of Reference for Regional Monetary Unit for Surveillance and Transactions” for the Research Group 2008. According to the secretariat, the ideas on regional monetary units (RMUs) should be developed further to promote and deepen regional financial cooperation.

- RMUs have been regarded as a useful benchmark indicator for the Asian monetary authorities to monitor exchange market development. For private-sector participants, well-designed regional monetary units will prove to be useful as the denomination of market transactions. The widespread and voluntary use of RMUs may help to mitigate the risk of a crisis like that seen in Asia in 1997–98, as well as promote closer regional integration.

- The ASEAN+3 Research Group in 2006/2007 already conducted research titled, “Toward Greater Financial Stability in the Asian Region: Exploring Steps to Create Regional Monetary Units”. This study proposed RMUs for surveillance and RMUs for transactions, reviewed options in forming RMUs and showed the roadmap of various RMUs converging to one. The research group will continue to study RMUs from an academic perspective in order to follow up on remaining issues that were not fully discussed in the previous research. The research in 2007/2008 should focus especially on how to use the RMU for surveillance and transactions.

- This report will be the basis of the research report of Korea’s team for the ASEAN+3 Research Group Meeting 2007/2008.

□ Objectives

- The two main research topics are as follows:
 - First, RMU for Surveillance in East Asia: Utilities, Limitations, and Possible Modalities;
 - Second, East Asian RMU for Transaction: Possible Roles in Public and Private Transaction and Needed Infrastructure

- Asian countries have been dealing with monetary and financial cooperation in East Asia. In the process of regional economic and monetary cooperation, there are two possible strategies: a top-down strategy and a bottom-up strategy.

- These two main research topics are closely related to existing needs in the region. These topics will readily yield support from countries, because these are very practical issues. These topics are also aligned with the current bottom-up strategy of Asian countries. This approach, however, reminds us of the possible weaknesses of the strategy.

- A top-down strategy means that political leaders first set the vision, with institutionalization leading to implementation. This strategy is dependent on consensus among the political leaders. The representative example is European integration. European leaders set economic and monetary integration as a long-term vision through the Shuman Plan. This vision was officially confirmed by the Rome Treaty in 1958. The monetary integration has proceeded through the Snake System, Werner Plan, European Monetary System, and Maastricht Treaty, and finally came to fruition. The primary characteristic of this strategy is a strong willingness of political leadership. European leaders have pushed the vision forward whenever they have encountered difficulties.

- The bottom-up approach implies that the integration process follows the need for market or societal opinion. Political leaders often use this strategy if there is not a clear consensus among the leaders. Asian countries use this strategy.

Asian countries responded with the CMI and the ABMI after the financial crisis of 1997. These countries are trying to multilateralize the CMI in order to make it function. There is no clear vision, however, on what would happen beyond this step. They seem to be “rolling the ball as long as it rolls”. Integration via this strategy proceeds continuously if, only if, there is sufficient support and need. Therefore, the integration initiative develops differently from sector to sector according to the existing support. This strategy can fail due to the lack of future and due to the mismatching of different integration initiatives despite respective levels of progress.

- In the official arena, the RMU can be used for surveillance, credit facility, and exchange rate mechanisms. The private sector can use the RMU as well. The aforementioned research topic deals with the RMU’s role for surveillance and private use. As we can see in the European experience, however, private use of the RMU can be stimulated only if the regional currency is used actively in the official sector. Therefore, the research should address the relationship between official use and private use. The research should also include other roles of the RMU, as well as its impacts on private use. The research of this year, however, cannot encompass all of the important factors of the RMU. Therefore, the research will focus on the main issues required by the secretariat of ASEAN.

- Output and the structure of the study
 - This study aims to explore RMU’s role for surveillance and transactions.

 - Chapter II discusses the measures for calculating and utilizing RMUs for surveillance. It examines and builds upon the concept of surveillance utilizing the various economic and financial indicators, including RMUs, in order to achieve and maintain economic and financial stability in the region

 - Chapter III will discuss possible roles and policy coordination. We will develop the possible roles of RMU as a means for policy coordination.

- Chapter IV considers the desirable roles of the private sector to enhance the transactions denominated by RMUs in the financial market.
- Chapter V summarizes the main results and provides major conclusions.

II. RMU for Surveillance in East Asia

1. Issues to be discussed

- Monitoring and surveillance are the keys to induce coherent policy formation and strengthen regional monetary and financial cooperation.
 - Monitoring and surveillance would provide prompt and relevant information for assessing the situation of countries in trouble and the potential contagious effects of a crisis to neighboring countries.
 - A joint exercise based on a region-wide monitoring and surveillance system would facilitate closer examination of macroeconomic and financial vulnerabilities in the region.
 - Regional monitoring and surveillance processes would contribute to ensuring effective implementation of high-quality accounting and auditing standards, strong disclosure requirements, credible rating agencies, and appropriate corporate governance.
 - Regional monitoring and policy surveillance, in addition to regional facilities, would greatly contribute to the further development of financial markets and institutions in the region.

- Currently, a joint effort for a regional monitoring and surveillance system is being examined within the ASEAN+3 framework.
 - There have been some achievements in the ASEAN+3 framework: A monitoring system that allows early detection of any irregular movement of key economic and financial indicators, and peer review that involves an exchange of views and discussion, and joint formulation of policy responses to any issues emerging from the monitoring exercise.
 - These are, however, limited only to the extent of peer review.
 - Discussions of RMU brought a new possibility for monitoring and surveillance using a regional currency in East Asia.
- Issues regarding monitoring and surveillance according to the scope of IMF surveillance.
 - Policy advice: The Fund offers advice and proposals and also serves as a sounding board for policy dilemmas faced by member countries.
 - Policy coordination and cooperation: The Fund facilitates policy consultation among groups of countries by providing inputs such as reliable data, forecasts and analysis, and machinery through which policy coordination can take place.
 - Information gathering and dissemination: The Fund maintains databases that are useful for policy formulation, and disseminates information that can benefit private market participants and the general public.
 - Technical assistance and aid: In many developing countries, surveillance is tantamount to providing technical assistance, due to the scarcity of expertise in macroeconomic policy-making.

- Identification of vulnerabilities: This is an extension of the information and policy advice role that is particularly relevant when a country's policies are likely to be unsustainable. In this context, early warnings and policy advice given by the Fund to vulnerable countries play a role in formulating prompt corrective policy measures.
 - Delivering the message: The Fund provides countries with policy prescriptions on numerous topics, from the advantages of moving toward a system of indirect instruments of monetary control to the need to liberalize labor markets. By doing so, the Fund provides a way in which the prevailing consensus of the economics profession is disseminated to governments and policy-makers throughout the world.
- Issues to be discussed here are how to use RMU effectively for monitoring and surveillance.
- Macroeconomic Surveillance: A combination of gathering and disseminating information, and identification of vulnerabilities in the scope of the IMF surveillance.
 - The macroeconomic surveillance based on the RMU: The most interesting role of regional currency is its use as a divergence indicator for exchange rates. The problems with this role are how to take account of the different exchange rate systems of participating countries and how to find out the most agreeable base year and the composition of the RMU. Another thing to think about is how to complement the divergence indicator for surveillance if the RMU were to be adopted as a divergence indicator.

2. Basics of RMU

- RMU is a basket of currencies of Asian countries, and to estimate the value of the RMU against the US dollar and the value of each currency against the RMU, the following information is needed:
 - the weight and the amount of each currency in the RMU (For exhibition, provide the weight using GDP based on PPP-value)
 - the base year (for exhibition, assume 2000)
 - the group of countries to be included in the RMU (for exhibition, include ASEAN5+3)

- Additional explanation of the weight and the amount of each currency in the RMU
 - In terms of GDP based on PPP-value in 2000, the weights of China, Japan, and Korea are respectively 46.14%, 31.51%, and 6.83%. Since 1 RMU is set to be \$1.00 at the benchmark year of 2000, this means that 1 RMU includes the Chinese yuan equal to \$0.4614, the Japanese yen equal to \$0.3151, the Korean won equal to \$0.0683, as well as other currencies.
 - In 2000, the exchange rate of the Chinese yuan against the US dollar was \$1 = 8.3 yuan, and $3.83 (= 8.3 \times 0.4614)$ units of the Chinese currency are 1 RMU. Likewise, $33.97 (= 107.8 \times 0.3151)$ units of the Japanese currency or $77.26 (= 1130.6 \times 0.0683)$ units of the Korean currency are 1 RMU.

<Table 2-1> Weights and Amounts of Asian Currencies in the RMU, 2000

	weight (%)	exchange rate/\$	Currency amount
Korea	6.83 (6.29)	1130.6	77.26
Japan	31.51 (25.51)	107.8	33.97
China	46.14 (53.33)	8.3	3.83
Singapore	0.90 (0.86)	1.7	0.02
Thailand	3.69 (3.55)	40.1	1.48
Philippines	2.92 (2.94)	44.2	1.29
Malaysia	1.99 (1.62)	3.8	0.08
Indonesia	6.02 (5.88)	8421.8	506.59

Note: () is for 2005.

□ Calculation of RMU

- Using the amount of each currency in Table 1, the value of the RMU in terms of the US dollar is defined as follows:

$$RMU^{\$} = \sum_j \alpha_j S_j^{\$}, \quad (1)$$

where α_j is the amount of currency j , and $S_j^{\$}$ is the value of currency j in terms of the US dollar. (This is the inverse of a usual expression of foreign exchange rate: e.g., 1RMU = \$0.9876)

- The value of RMU in terms of each national currency i can be defined as a weighted sum of the official exchange rates of currencies so that

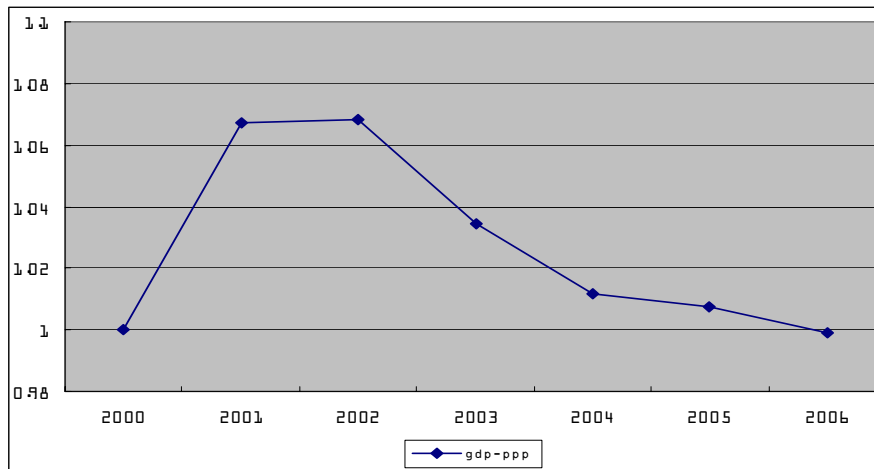
$$RMU^i = \sum_j \alpha_j S_j^i, \quad (2)$$

where S_j^i is the value of currency j in terms of currency i .

3. Surveillance Using RMU

- Since the RMU is a basket of currencies of Asian countries, it can be used as an indicator to show how Asian currencies are moving collectively against external currencies such as the US dollar or the euro.

- Trend of RMU against US Dollar

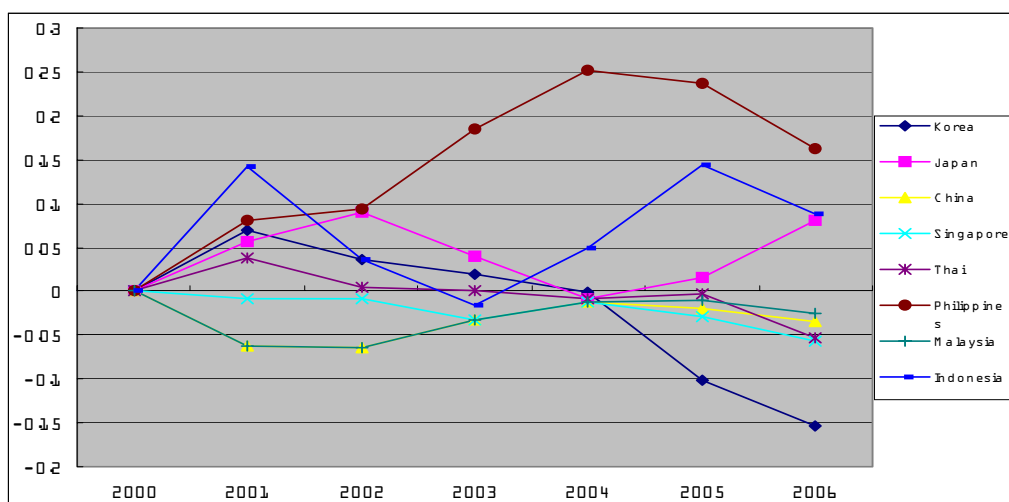


- The RMU is also an appropriate tool for identifying misalignment and excess volatility of an Asian currency vis-à-vis other regional currencies, and it can be used as a divergence indicator.

- Construction of Divergence Indicator (D_i):

$$D^i = \frac{RCU_t^i - RCU_0^i}{RCU_0^i} \times 100, \quad 0: \text{base year, } t: \text{year at time } t$$

- Divergence of Asian Currencies against RMU: base year = 2000



- From the base year of 2000 to 2006, the Korean won appreciated the most: roughly 15 percent. On the other hand, the Philippine peso depreciated by 25 percent at 2005 and the Indonesian rupiah by almost 15 percent at 2005.
- Early warning signal (EWS): The RMU divergence indicator implies that a country like the Philippines (and Korea too) should intervene in the foreign exchange market to stabilize its currency vis-à-vis the RMU.
- Policy coordination: Another feature of the divergence trend is that the deviations seem to widen; the Asian currencies currently have more than 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 2000).

4. Problems to be resolved

- In order for the RMU to be widely used, the RMU should be used to monitor exchange rate development at the official level.

- The RMU is a good way to coordinate policies and assure exchange rate stability among countries in East Asia through monitoring deviations of regional currencies and it can induce collective response to external changes through monitoring how Asian currencies are moving collectively vis-à-vis key external currencies.
- The use of the RMU as a divergence indicator and an instrument for policy coordination necessitates stronger cooperation among regional countries.
- Regional countries should establish consensus on many technical issues of RMU, including assignment of currency weights, selection of base year, grouping of currencies included in the RMU, period of weight revision, and other factors.
 - The most important issue is to resolve the asymmetry problem. For example, the smaller the currency weight of a country is, the larger the exchange rate fluctuation of this country against the RMU will be, and, therefore, the higher the intervention burden will be (Moon et al. 2006).
 - For other factors, such as participating countries or base year, it would be natural to include ASEAN+3 countries and to take 2000 as the base year.
- To resolve the asymmetry problem and strengthen symmetry, we suggest the following:
- Providing weights using the combination of GDP based on PPP-value, intraregional trade, and contribution to regional monetary and financial cooperation (e.g., CMI contribution)
 - Setting an upper limit of 33.3% to the weight of the largest share of a currency

- Periodical revising the weights (every three years)
 - Introducing regional exchange rate cooperation mechanism with
 - Narrower band for countries with large share adjusted to be ***band width (1-basket weight)***
 - Intervention of both countries with strong and weak currencies
 - Unlimited borrowing of the strong currencies
 - Borrowing in strong currency and paying in RMU
- Another important problem is the variety of exchange rate systems: Different exchange rate systems among the countries can distort the meaning of divergence measured by RMU. Without an appropriate mechanism to reflect the differences between exchange rate systems, the divergence indicator may not function properly as a surveillance mechanism.
- Even though many countries declare their official exchange rate system as free-floating, most Asian countries have intermediate exchange rate systems: flexible systems with intervention. The frequency and degree of intervention, however, vary widely from country to country.
 - The countries with fixed exchange rate systems or countries that have a system close to a fixed exchange rate policy will show relatively small divergence, even though it does not necessarily imply the stability of their currencies. In this case, surveillance using RMU would lose its effectiveness.
 - The simplest way to solve the issue of different exchange rate policies is that all the countries to use the same system. This may not be a possible option in the

short term. Another way would be to include just the countries with free-floating systems in this surveillance system. The index for de-facto exchange rate systems, however, shows that most Asian countries use a kind of intermediate system and they differ only on degree. (See Appendix)

- The problem caused by exchange rate systems could disappear if the countries would take regional currencies as anchor currencies for their exchange rate policy. Currently, many Asian countries are still using the US dollar as an anchor currency for exchange rate policy. The different degrees of controlling exchange rates would not cause increasing divergence even if they would fix (or control the exchange rate) differently with a regional currency. Possible regional anchor currencies could be the RMU itself or the big currencies such as the Japanese yen or Chinese yuan.

III. RMU for Official Transactions: Possible Roles and Future Development

1. Issues to be discussed

- As witnesses to Europe's experience, many countries in East Asia believe that a monetary union is a very good way to establish peace and prosperity in the region. The problem is that they do not think that it is feasible in the near future. A monetary union in East Asia remains, obviously, a distant and long-term goal. Indeed, despite strong efforts to promote regional monetary and financial cooperation in East Asia since the outbreak of the currency crisis in 1997, little progress has been made. The CMI is the only achievement in the area of monetary cooperation.
- In a recent meeting of the ADB held in Hyderabad, India, on May 3, 2006, however, 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 RMU) that had often been referred to as the Asian Currency Unit (ACU).

- Even though no specific measures were undertaken for implementation after this announcement, it marks an important first step toward realizing a monetary union in Asia. Any action to implement the agreement on the introduction of the RMU will serve as an instrument for breaking the current standstill.
 - For instance, the RMU 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 Mechanism.
- This chapter tries to explore ways to promote RMU in official transactions and, in doing so, proceeds to further monetary and financial integration in East Asia.
 - Given that the economies of East Asia are very heterogeneous and that almost all these countries have moved to the floating exchange rate system after the currency crisis, it would not be easy at all to shift directly to a monetary union. There are not yet any regional trade arrangements between Korea, Japan, or China, and there is a total absence of political solidarity among East Asian countries. Under these circumstances, it may be more appropriate for East Asian countries to have some kind of psychological buffer period during which the experiences of coordination and cooperation in economic policies could develop naturally into a full-fledged union.
 - Establishing an exchange rate arrangement that could be named the Asian Monetary System modeled after the EMS will be an important intermediate process. This paper examines how the creation of an RMU could facilitate the establishment of an AMS and inversely how an AMS could help promote the use of a RMU more actively. So far, the literature on RMUs and an AMS is

very limited (Moon et al, Ogawa 2006).

2. Possible Roles of RMU

- The creation of the RMU can play a pivotal role in monetary stability in Asia and speed up the creation of a monetary union in Asia. In order for the RMU to play such a role, however, it is essential to create a regional exchange rate arrangement.¹ That was exactly the case for the EMS. 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.

- As indicated by Steinherr (1989, 60), indeed, “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.” Thus, the development of the RMU should certainly be accompanied by the development of an exchange rate arrangement in Asia.

- At the official level of the EMS framework, the ECU was used in the following ways:
 - as a unit of account for denominating the value of EMS countries

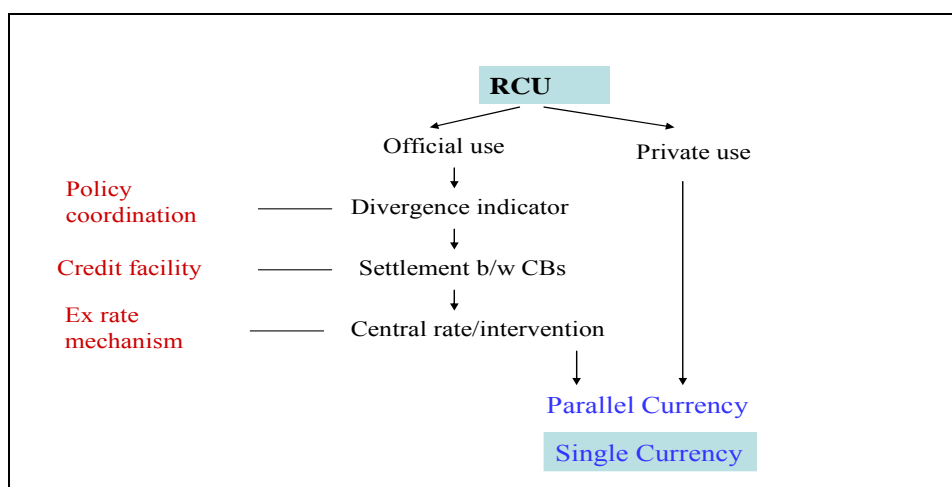
 - as a reference unit for the operation of the divergence indicator

 - as a denominator for operations in the intervention and credit mechanisms

¹ See Moon et al. (2000), Choi (2007) for the need of Asian Exchange Rate Arrangement.

- as a reserve asset (settlement instruments between the central banks of the member states)
- In East Asia, the RMU, even if agreed to at its creation, could not be used for all these official transactions. Initially, the roles of the RMU will be limited to those such as a unit of account for denominating the value of Asian currencies and for measuring the divergence of Asian countries, which, as the least-binding transactions, will not require intensive political cooperation among Asian countries.
- Further development of the RMU would not be possible, however, without more intensive discussion on the degree and type of regional monetary and financial integration in East Asia. For instance, the use of RMU as a settlement currency between central banks will necessitate the introduction of a credit provision facility among them. Also, if the RMU is to be used for foreign exchange market intervention, East Asian countries should agree on establishing a regional exchange rate system.
- Figure 1 summarizes the possible uses of the RMU at the official level.

<Figure 3-1> RMU's role for monetary integration



- The use of the RMU at the official level also leads to private use of the RMU. In

particular, it can help to promote an RMU-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 the surpluses of East Asian countries.

- At the same time, the RMU can be used in private capital markets as a denomination of market transactions such as bond issuance. Issuing bonds on the basis of the RMU is a good idea to make use of increasing foreign reserves in East Asian countries.
 - The RMU can become a supplementing framework for the development of regional financial markets in East Asia.² The EU's experience, however, suggests that the use of a private ECU could be activated only if the use of an official ECU was guaranteed in the official sector.³ Thus an idea to develop financial markets linked to the RMU at the official level such as ABMI is important in stimulating private sector interest in the use of the RMU.
 - The RMU can also serve as a useful instrument for the introduction of a regional settlement system to link Asian financial markets as well as a swap arrangement and surveillance mechanisms to improve the efficiency of the CMI.
- Finally, the RMU could be developed into a single currency in Asia. If the RMU is given legal tender status for domestic transactions in East Asian countries, it could circulate in parallel with their national currencies and eventually pave the way to a monetary union in Asia.
 - This idea of the so-called parallel currency approach was intensely discussed, even prior to the creation of the EMS, by European scholars (Vaubel, 1978) and was applied to Asia recently by Eichengreen (2007).

² Moon (2007) suggests strategies for creating regional bond markets in East Asia.

³ For more detailed discussion, see Moon et al. (2006).

- Given that it is an implausible long-term agenda, however, we address the role of the RMU in three possible areas of monetary cooperation and suggest strategies to further monetary integration in East Asia.

3. RMU as an official instrument for policy coordination

- Countries in East Asia are so heterogeneous that gradual monetary integration looks more desirable (from an OCA theory). In this regard, the first important step is that East Asian countries should strengthen their policy coordination⁴.
 - Political as well as economic considerations might be important. In face of bipolarizing global monetary order dominated by the dollar and euro, for example, East Asian countries need more concerted action to maximize their voices on international monetary affairs. This suggests the need for an Asia-only policy forum.
 - In addition, in order to have uniform voices and pursue closer cooperation on monetary and financial affairs, prior consultation on economic and monetary policies of their national economy is essential.
 - Basically, East Asian countries should strengthen their policy dialogue on external and internal monetary policy, making efforts to concert their monetary and fiscal policies, as well as to stabilize intraregional exchange rates, which is increasingly important given the current economic linkages among East Asian countries.

⁴ In the case of Europe, for example, Treaty of Rome devotes two chapters to economic policy coordination and BOP problems. In particular, Paragraphs 103–107 say explicitly that each member country should consider its conjuncture policy and its exchange rate policy as matters of “common concern”.

- There are some debates on the appropriateness of instruments for policy coordination.
 - For example, Genberg (2006) and Eichengreen (2007) argue for harmonized inflation targeting. According to Gernberg, exchange rate targeting could be disastrous due to the risk of currency speculation, so he proposes creating a region of monetary stability in Asia based on the common objective of an inflation target.
 - Eichengreen (2007) provides a more comprehensive account of why harmonized inflation targeting is the best approach to encourage monetary integration in Asia. He compares the three different systems (exchange rate coordination, harmonized inflation targeting, and parallel approaches) relative to three criteria: robustness with respect to capital mobility, compatibility with prevailing political circumstances, and congruence with modern ideas about conducting monetary policy. He argues that exchange rate targeting in East Asia does not satisfy these criteria, essentially, due to high capital mobility and the absence of political solidarity. For these reasons, he prefers inflation targeting and maintains that such an arrangement, if chosen appropriately, might limit even exchange rate instability. According to him, harmonized inflation targeting is less prone to speculative attacks in a world of capital mobility and it is compatible with the prevailing political situation in Asia.
 - Given that economic conditions, policy preferences, and perceptions of them are so different in East Asia, it seems neither possible to calculate appropriate common inflation targets nor to agree on common inflation. Indeed, it will be difficult to say that harmonized inflation targeting is better than exchange rate targeting.
- For the goal of exchange rate targeting, it will be helpful to develop an RMU-based divergence indicator and to monitor and coordinate monetary and economic policies in East Asia on this basis.

- In particular, the RMU could be used to monitor exchange market development. Indeed, the RMU could be an appropriate tool for identifying misalignment and excess volatility of an Asian currency vis-à-vis other regional currencies.
 - Also, the RMU can be used 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.
 - For instance, Moon, Rhee, and Yoon (2006) calculated the value of Asian national currencies in terms of RMU during the period of 2000–2005. According to them, the Korean won appreciated the most, by roughly 10 percent, while the Philippine peso and Indonesian rupiah depreciated by 25 percent and 15 percent, respectively.
 - Thus, if Asian countries are targeting their exchange rates with a fluctuation margin of +/-15 percent, then it implies that a country like the Philippines should intervene in the foreign exchange market to stabilize its currency vis-à-vis the RMU. Thus, the creation of the RMU can be a good way to coordinate policies and assure exchange stability between countries.
- In this regard, however, it is important to note the asymmetry arising from the difference in weights attributed to the currencies in the basket. As examined by Moon et al. (2006), the larger the weight of the currency is in the basket, the lower its depreciation (appreciation) against the RMU will be.
- Insofar as the exchange rate fluctuation is concerned, a country with higher weight in the basket will have smaller exchange rate fluctuations of its currency in terms of the RMU, while countries with lower weight will have to face larger fluctuations of their exchange rates in terms of the RMU.
 - If there is an intervention band such as a target zone, this asymmetry is all the more important because the country with the smaller weight will have to

intervene, while the country with a higher weight will not need to do so.

- Thus, it is quite important to determine the appropriate weights of national currencies in the RMU basket, and once the weights are fixed, to consider the asymmetry that exists between big and small countries.
 - Concerning the weights, there are many ways to calculate the weights of the composite currencies of the RMU. Table 3-1 shows the possible weights for East Asian currencies.
 - Major central banks such as the Federal Reserve System, European Central Bank, and Bank of England are regularly publishing their real exchange rates and in this regard, allocate what they think are the most appropriate weights on the basis of their trade relations with East Asian currencies.
 - Very recently, RIETI has started to publish the value of an Asian currency basket named the Asian Monetary Unit, and, to this end, it had to determine the weights of Asian currencies. The weights of Asian currencies used in these calculations are not yet what Asian countries will agree to.
 - If Asian countries agree to introduce the basket currency RMU, then they have to first agree on the weights of the component currencies in the basket. The principles in this case are that the weights should be constructed so that the RMU can well reflect the values of Asian currencies in international transactions and ensure that one currency is not too dominant in the basket.
 - A popular idea is to define the weights according to the shares of GDP. There are two kinds of GDP, however: PPP exchange rate-based and market exchange rate-based. The weights vary a lot depending on which GDP is used. When the PPP-based GDP is used, China is well ahead as the number-one country, while Japan is well ahead of China when the market-based GDP is used. This variance suggests that attribution of weights using GDP cannot appropriately reflect the

values of Asian currencies. Another problem with using GDP is that a country, China or Japan for example, can be too dominant in the composition of the basket and there arises the important problem of asymmetry.

- Our proposal is that the weight should represent the country's importance in international transactions and its contributions to economic cooperation in the region.
 - Using the volume of international transaction in trade and finance can well reflect the value of a currency, not only in international transactions, but also its economic power. Using a country's contribution can also encourage participation in regional economic cooperation.
 - Attribution of weights considering intraregional transactions and regional economic contributions could avoid the asymmetry problem, because a currency's weight does not become too dominant. To make sure, we further suggest that the largest weight attributed to a currency should not be greater than one third of the whole.

<Table 3-1> Summary of Various Currency Basket Weights

Economies	Central Bank NEER			RIETI AMU	Currency Weight (percent) as of 2005			
	FRB	ECB	BOE		PPP- GDP	Nom- GDP	Intra- trade	CMI- Swap
China	38.5	26.9	27.6	34.8	53.33	21.80	26.11	16.67
Japan	28.9	38.7	38.8	27.8	25.51	59.05	26.87	30.86
Korea,	11.7	12.4	10.3	9.8	6.29	9.76	13.87	17.28
Indonesia	2.5	3.2	-	5.1	5.88	3.29	4.45	11.11
Malaysia	6.1	5.0	6.0	5.3	1.62	1.48	8.28	4.94
Philippines	2.4	2.4	-	2.9	2.94	1.10	2.86	6.79
Singapore	5.9	7.0	11.2	6.4	0.86	1.36	11.13	4.94
Thailand	4.1	4.5	6.0	5.1	3.55	2.16	6.43	7.41
Other	-	-	-	2.9	-	-	-	-
ASEAN1								
ASEAN + 3	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note 1: This includes Viet-Nam, Brunei, Cambodia, Lao PDR, and Myanmar

Source: Kawai (2006) and Moon et al. (2006)

- Also, to make the monetary integration process move smoothly forward, the asymmetry problems should be resolved.
 - Indeed, the European experience shows that the development of the EMS since the fall of the Bretton Woods system was a way of coping with the asymmetry. In the case of the EMS, for example, there was an upper limit to the weight of the strong currencies.
 - Moreover, for countries with small weights, a larger exchange rate fluctuation band was allowed while a smaller exchange rate fluctuation band was reserved for countries with larger weights.
 - The fluctuation band in the EMS was actually set to be $\pm 2.25\% \times (1 - \text{basket weight})$ around the central rate, where 2.25% was a pre-determined exchange rate fluctuation band.

- Coordination of exchange rates leads, in turn, to the establishment of an appropriate organization or institution.
 - The simple way is, of course, to set up a secretariat accompanied by a research institute. Once it is agreed to, the next step is to move to set up a monetary and financial committee that will help to facilitate policy coordination and cooperation.
 - In the case of Europe, long before monetary integration was pursued, there was an institution named the Monetary Committee, which comprised one representative from the central bank and one from the finance ministry of each member country, plus two representatives of the European Commission. This group provided a useful forum for the exchange of information and for preparing the meetings of the Council of Ministers of Economics and Finance (ECOFIN).
 - As the importance of intra-European exchange rate stability increased, the role of the Monetary Committee was continuously strengthened in such a way that concerning member states' decisions on international monetary and financial issues, prior consultation should have been obligatory.
 - In 1964, another institution, the Committee of Governors of the central banks of the Member States of the European Economic Community, was established.

4. RMU and Settlement Currency

- The establishment of an Asian Exchange Stabilization Fund (AESF) should be given serious consideration.
 - A similar idea was already proposed under the name of the 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 with the formation of the CMI (Moon, Rhee, and Yoon 2005).
 - 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, in May 2006.
 - The AMF proposal and the CMI are, however, by nature incomplete because they do not address the question of institutionalization of the exchange rate system in Asia. This could be carried out with the establishment of the AESF.
- There are two ways to create an RMU.
- First, as in the case of Europe, central banks in Asia could transfer a certain amount of their dollar reserves, say, 20% of their dollars, to the AESF in exchange for the RMU. In Europe, the currency they created was to be used as the settlement currency for 50% of the net claims between the two central banks.
 - The second way is to issue RMU against national currencies. For example, each national government in East Asia could transfer a given amount of its currency to the AESF and receive RMU deposits in return. In fact, each national central bank will have its RMU account in the AESF. The AESF will have the RMU deposit of each national central bank on its liability side and the constituent national currencies on its asset side.

5. RMU as an intervention currency and exchange rate mechanism

- If monetary union is the final objective, clearly the high degree of intra-community exchange rate variability that has been observed in recent years must be reduced, even if this could be done gradually over time.

- Presently, JY and KW are floating independently while CY is pegged. Table 2 summarizes the current official IMF classification exchange rate arrangements in East Asia before and after the Asian currency crisis. The current diverse exchange rate system in East Asia creates considerable exchange rate variability; however, this may be measured, vis-à-vis each other, vis-à-vis the dollar, or vis-à-vis a weighted average of major intraregional or interregional currencies, and makes the exchange rate coordination difficult.

<Table 3-2> East Asian Exchange Rate Regime

	1996			2004		
	Peg	M-float	I-float	Peg	M-float	I-float
Mal		X		X		
Phil			X			X
Sing					X	
Thai	X					X
Indo		X			X	
China	X				X	
HK	X			X		
Taiw		X			X	
Korea		X				X
Japan			X			X

Note: Indonesia shifting to independent floating since July 1997, Korea since November 1997, Thailand since July 1997, and Malaysia since September 1998

Source: IMF annual report.

- These exchange rate fluctuations vis-à-vis the US dollar on one hand and between

national currencies on the other seem inappropriate for the stable economic growth of the region and evoke the need to introduce a greater element of stability first into intraregional exchange rates, and second, into exchange rates between East Asian countries and the external world, particularly the US.

- The recognition of this problem leads to the proposal for a regime with a target zone, such as the ERM system in Europe. This target zone is a voluntary guideline for exchange rates, defined in terms of a band of permissible exchange rate movement.
 - Its objective is to stabilize intraregional exchange rates among Asian currencies by collectively floating against the dollar and the euro. This system would address three important issues related to the choice of exchange rate regime: how large the band, which parity, and how to maintain.
 - Wide band: In the beginning, the band should be wide enough to accommodate all the currencies. If the currencies stay stable in the zone, the band can be narrowed step by step. The band can be set differently according to the trend of volatility.
- Given that the economies of East Asia are very heterogeneous and that many countries in Asia have already moved to the floating exchange rate system, a target zone as suggested by Williamson (2000), that is, a wide-band basket system, which seems to be the most appropriate initial form.
 - Initially, governments in East Asia should be satisfied with a loose coordination of exchange rate policy. The regime, however, could be progressively tightened. At a later stage, the obligation to defend the margins through intervention could be introduced and the margins themselves, which might be quite wide at the outset, could be narrowed with the strengthening of policy coordination and the setup of a monetary financing system such as the CMI.
- The essential precondition for the previously mentioned basket system is that it must

be accompanied by an emergency liquidity provision system: a country can dispose of its currency if it is under speculative attack.

- The establishment of AERSF is not enough for maintaining the exchange rate stability of Asian currencies. The liquidity provision facility should continue to be strengthened.
 - In the case of EMS, the facility for the provision of liquidity known as the VSTFF was one of the most important corner stones of European monetary cooperation long before the establishment of EMS. Indeed, in the whole history of monetary cooperation in Europe, the facility for the provision of liquidity has been constantly strengthened and constitutes one of the most important instruments for monetary cooperation.
- In the EMS, this facility is known as the VSTFF, and the EMCF was scheduled to manage it. The important point here is that, under the VSTFF, the central banks of strong currencies have an obligation to provide unlimited amounts of their own currencies to those with weak currencies to defend the existing exchange rate margin.
 - Need to complete AMS linking these three pillars to each other. 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 RMU 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
 - In addition, to make the monetary integration process move smoothly forward, the asymmetry problems should be resolved.
- Indeed, the European experience shows that the development of the EMS since the fall of the Bretton Woods system has a history of coping with the asymmetry. There are various ways to strengthen symmetry.

- As emphasized earlier, for example, setting an upper limit to the weight of strong currencies and a narrower band for countries with large shares adjusted to be 2.25% (1-basket weight) is one such instrument to guarantee the symmetry of the system.
- There were other numerous methods used in the case of EMS, such as the intervention obligation of countries with strong currency as well as those with weak currency, unlimited borrowing of the strong currencies, borrowing in strong currency and paying in RMU, and periodical revision of the weights.

6. Conclusion

- The creation of the RMU is a good way to coordinate policies and assure exchange stability between Asian countries. Once the creation of the RMU is agreed to, the RMU can be used as an official instrument to monitor the exchange rates of Asian currencies between themselves and against the US dollar or the euro. Then, the RMU could be used as settlement currency in line with the creation of the AESF.
- This study aims to conduct research on the RMU's official role for surveillance and transactions from theoretical and empirical perspectives.
- Drawing a parallel with the ECU, this paper suggests the establishment of an Asian exchange rate system like the European exchange rate system, and the creation of the Asian Exchange Stabilization Fund to facilitate a monetary union in Asia.
- The RMU can be developed into a parallel currency as well. In this regard, we suggest that the long-term vision of a monetary union in East Asia is essential and this should be presented in the form of a common declaration.

- If there is a long-term vision, it will stimulate economic cooperation among Asian countries. Since it is a declaration, it will not necessarily cause a political burden and would not incur any costs from the participating countries. But the declaration could become a landmark and provide guidelines when the East Asian integration process advances. Moreover, many ideas for regional cooperation based on the RMU will gain a stable basis through the declaration and the chances of success in the market will be enhanced.

IV. RMU for Private Transaction: Innovative Financial Instruments and Financial Market Development?

1. Issues to be discussed

- In East Asia, there have been diverse financial cooperation initiatives since the aftermath of the Asian Financial Crisis.
- One of the most important achievements was the introduction of the CMI in May 2000.
 - The CMI is a network of bilateral swap arrangements among ASEAN+3 countries. The main objective of the CMI is the prevention of speculative attacks and the stability of financial markets.
 - More recently, ASEAN+3 finance ministers organized a task force to study the multilateralization of the CMI. In a meeting of ASEAN+3 finance ministers held in Tokyo on May 5, 2007, a rough outline of the reform of the CMI was made public.
- Another initiative for financial cooperation is the Asian bond market initiative (ABMI).

- The ABMI was first proposed by the Korean delegation at an informal meeting of deputy finance ministers in November 2002, which was largely supported by the 13 members. Since then, a number of variants of the ABMI have been proposed and discussed in the context of official or academic meetings.
 - The main issues raised in the context of the ABMI are related to the measures facilitating market access by reducing credit and exchange risks attached to cross-border investment.
 - Six working groups among ASEAN+3 members have been studying how to create an environment conducive to active participation by both issuers and investors. It seems however that the progress is slower than previously expected.
- At this juncture, it can be asked what the connections between financial cooperation and monetary cooperation initiatives in East Asia will be.
- More precisely, what will be the impact of the introduction of an RMU on financial cooperation initiatives?
 - Will the development and integration of regional financial markets in general and bond markets in particular in East Asia be facilitated by using the RMU as a denomination currency?
 - These are the main issues this chapter aims to discuss.

2. Financial integration in East Asia and the policy initiatives

A. The potential benefits of financial integration

- Financial integration and development will bring about many positive changes on the region.
 - First, financial integration will improve the depth and width of the financial markets so that borrowers and lenders would be able to raise and lend funds with improved return-risk profile.
 - Second, the development of financial markets will make the East Asian economy an autonomous growth pole. In real terms, the East Asian economy has comparable trade and output size with other regions such as the EU and the US. Also, trade integration has progressed significantly in recent decades. Yet the financial markets are not well-developed and remain fragmented. The integration of financial market in East Asia would, without a doubt, enhance the economic autonomy of this region and render it less vulnerable to international financial turbulence.
 - Third, financial integration will contribute to weaken the so-called “original sin” problem. According to Eichengreen and Hausmann (1999), a country or region with less-developed capital markets is unable to raise funds in its own currency so that it is condemned to suffer from maturity and currency mismatch problems. The integration and development of East Asian markets will relieve this region, if not completely, from the original sin.
 - Fourth, financial integration will provide favorable conditions for a currency union by facilitating short-term capital inflow to make up for current account deficits and by mitigating the negative effects of idiosyncratic shocks through portfolio diversification.

2. Current state of financial integration in Asia

- Despite the potential benefits of financial integration in East Asia, empirical studies show that financial integration is lagging behind trade integration.

- Current status of bond market integration in Asia:
 - Most of the empirical studies on bond market integration are based on the price-based measure. The price-based measures estimate discrepancies in prices or returns on assets caused by the geographic origin of the assets, which constitutes a check of the law of one price. If financial integration is complete, homogeneous assets should have the same price without respect to the location of trading.

 - Empirical studies based on price measures do not show the same results about bond market integration due to the different measures. Most empirical studies, however, point to very limited progress over the years in bond market integration (Yu et al. 2007b).

 - This result is consistent with the observations on cross-border bond holdings of Asian countries. Chu et al. (2006) report that Asian economies hold only 3.6% on average, a much smaller portion than the Europe's 68.8%.

- Current Status of equity market integration in Asia:
 - Compared to the bond market, there is a larger degree of integration in equity markets when measured by similar indicators (Yu et al. 2007a).

 - Chai and Rhee (2006), based on a GARCH framework, conclude that the US influence is an important determinant in the process of equity market integration in East Asia. In other words, East Asia's equity markets appear to be integrated because each of them is integrated with the US market.

B. Obstacles to the financial integration and next steps

- Above all, the under-development of local bond markets is the main reason for the integration of bond markets in Asia.
- Takeuchi (2007) identified the impediments to cross-border bond investment and issuance in Asian countries as follows:
 - Impediments to foreign investor participation in local bond markets: Capital controls, availability of hedging instruments, taxation, clearing, and settlement
 - Impediments to foreign issuer participation in local bond markets: Regulation of the issuance of local bonds by non-residents, requirement of local rating/local listing, local law as governing law, documentation in the local language, time-lag to obtain approval, and others
- Therefore, much remains to be done to achieve a more integrated regional financial market in East Asia.⁵
 - Further capital account liberalization
 - Liberalization of financial services and prudential regulation
 - Harmonization of rules and regulation
 - Strengthening implementation of global standards and best practices
 - Regional efforts at harmonization
- Regional financial cooperation initiatives such as the Asian Bond Initiative or Asian Bond Fund are good platforms to develop and integrate bond markets in Asia.

⁵ See Cowen et al. (2006) for a pertinent discussion of this theme.

3. RMU as a Catalyst for Financial Market Development in East Asia

A. Private use of the RMU in financial markets

- The official calculation of the RMU can generate incentives for the private use of the RMU or the use of the private RMU⁶.
 - The private use of the RMU refers to the use of the officially calculated RMU by private agents in their financial or commercial transactions.
 - The private RMU is a privately formulated and/or privately created RMU.
- The private use of the RMU is mainly related to the denomination of financial products. The advantage of using the RMU in financial transactions lies in the nature of the RMU as a composite currency.
 - A borrower will prefer to borrow in a foreign currency rather than in his national currency as long as he considers that the savings in interest payments are superior to the risk of appreciation of the foreign currency vis-à-vis his national currency. An investor will choose to invest in a foreign currency as long as the advantage of the interest rate of an investment denominated in foreign currency is superior to the risk of its depreciation.
 - The exchange rate risk, however, can be hard to foresee due to national regulation and/or the absence of hedging instruments. The use of a composite currency can then reduce the exchange rate risk considerably since it is more stable against component currencies than they are against each other.

⁶ Refer to Lelart (1994) for more details on the distinction between the private use of the RMU and the use of the private RMU.

- Another trait of a composite currency is that its interest rate is the weighted average of its constituent currencies. Therefore, a borrower in a country in which the interest rate is relatively high may gain by borrowing in RMU, and an investor in a country in which the interest rate is relatively low may be better off by investing in RMU.
 - These advantages explain the rapid growth of the issuance of ECU-denominated bonds and international bank credits in Europe in the 1980s⁷.
- The RMU can be privately created and used as a means of payment.
- An investor acquiring RMU-denominated bonds can pay in RMUs by asking his bank to change his deposits from a standard currency to RMUs. To satisfy this request, the bank has to create RMUs through the purchase of constituent currencies in the exchange market and transfer them to the issuer's bank. In doing so, the bank is creating private RMUs. The firm issuing the bonds and receiving the RMU payment can either keep the deposits in RMUs or ask its bank to transfer the RMUs as deposits of a currency. In the latter case, RMUs are destroyed immediately and exist only ephemerally. Because the coupons must be paid in RMUs or by a similar means, however, there is ongoing repetitive use of the private RMU. When the issuer keeps the deposits in RMU, the bank will keep the constituent's currencies as assets and deposits in RMU as liabilities on the balance sheet.
 - If the operation proceeds as described above, there is no exchange rate risk for either bank. Creating the RMU by purchasing constituent currencies or eliminating the RMU by selling them, however, implies significant transaction costs. Therefore, the possibility of the ideal scenario happening as hoped is clearly unlikely. As the issuance of financial claims denominated in RMU

⁷ Some authors argue, however, that it is mainly the German regulation to restrict the use of the Deutsche Mark to denominate international bonds that made ECU-denominated bonds popular in Europe. See Dammers and MaCauley (2006).

increases, there may appear a bank (bank A) which is willing to play the role of “market maker” for the RMU. When another bank (bank B) needs RMUs, it can purchase RMUs directly from bank A in exchange for a currency (typically, the national currency of bank B). When bank B needs to sell the RMUs that have been bought, it can sell them to bank A in exchange for a currency (typically, the national currency of bank B). For such operations, the purchase of RMUs against national currencies looks like habitual foreign currency exchanges. Banks will be subject to the exchange rate risk, but the need for hedging on the RMU position is limited not to all the operations, but to the net position of credits and debits. On the other hand, bank A can earn fee revenues in exchange for its exposure to the exchange rate risk.

- The bank that assumed the function of “market maker” of the ECU also provided clearing and settlement services.
 - Banks with accounts at the same clearing bank benefited from the internal clearing process. The clearing and settlement between banks that did not have accounts at the same clearing bank occurred via bilateral or multilateral agreements between clearing banks.
 - On September 17, 1985, eighteen banks that maintained an interest in the development of ECU transactions and their clearing and settlement established the ECU Banking Association (EBA). Commercial banks kept their accounts in ECU at the clearing banks of the EBA.
- One can legitimately expect similar development in Asia if RMU is introduced in the private financial market with required institutions.

B. Factors promoting the development of RMU denominated financial products

- What are the factors promoting the private use of the RMU or the use of private RMU in financial markets?

- First of all, an official definition and outline for use of the RMU is necessary for extensive implementation.
 - There is no reason why a purely private composite currency without details such as an official definition, value calculation, or official use could not be proposed to take advantage of its merits. Several private composite currencies could be formulated and used to denominate different financial claims. The existence of several types of private composite currencies, however, will seriously hamper the use of each as a means of payment. As noted above, the appearance of the “market maker” is crucial to develop the use of the private RMU. Yet, the coexistence of several private RMUs would diminish the liquidity of each and render less attractive to the “market maker”.

 - Therefore, it is crucial that one private RMU, of which the composition and value is related to the officially formulated RMU, prevail in order to implement the use of the private RMU as a means of payment.

 - Furthermore, the official use of the RMU in bond issuance will help to develop RMU financial markets. In Europe, the European Investment Bank and national governments assumed an important function in this respect by raising funds through ECU bonds or ECU bank credit. In Asia, the Asian Development Bank and national governments would be able to play a similar role.

- Second, coordinated actions aimed at stabilizing exchange rates among constituent currencies would be helpful for the private use of the RMU.
 - The rapid increase of the ECU-denominated bonds in Europe had to do with the exchange regime. In order to contain the fluctuation of exchange rates within the bands under EMS, inflation-prone countries were obliged to increase interest

rates. Consequently, the enlarged differential of interest rates under EMS combined with the stability of exchange rates provided favorable conditions for the use of the ECU despite a certain degree of uncertainty about the future realignment of the exchange rates.

- This observation also explains why the development of ECU-denominated financial markets had been subdued after the crisis of ERM in 1992, which increased significantly the uncertainty regarding the exchange rates of the ECU.
 - The European experience implies that cross-border financial transactions, in terms of the RMU in East Asia, will be promoted by coordinated action on the region's exchange rates.
 - Without any effort to stabilize exchange rates in East Asia, the public's appreciation for the merit of RMU financial products as a shock absorber would not be sufficient to guarantee the products' popularity.
- Third, an efficient and reliable arrangement for the clearing and settling the private RMU claims is a crucial factor in developing RMU financial markets.
- With the establishment of the EBA, the clearing and settling of ECU-denominated bank claims in Europe was based on three institutions: the EBA, the Bank for International Settlement (BIS), and SWIFT. The BIS signed an agreement with the EBA under which it assumed the role of agent for clearing and settling on behalf of the clearing banks of the EBA. The transactions between clearing banks of the EBA took place through transfers across accounts (ECUCOVER accounts) held at the BIS.
 - Other banks used the clearing bank's account for the settlement in ECU. Daily messages on payments were transmitted through the SWIFT network. The clearing system gradually opened up to new clearing banks. The number of clearing banks participating in the system amounted to more than eighty in the

1990s. The BIS assured the reliability of the system by assuming the function of supervisor, despite the fact that it did not provide liquidity assistance⁸.

- The settlement of RMU funds in Asia can be designed to follow the European model. For example, banks that desire to assume an important role in the RMU interbank market can set up an association and clearing arrangement. To assure the credibility of the clearing system, it would be desirable for a public organization, such as the Hong Kong branch of the BIS or ADB, to support the private sector's initiative.
- Otherwise, the association can establish a private institution that manages clearing accounts on behalf of the association. There may be rivalry as to where the new institution should be located, but beyond that there is no other serious technical or institutional hurdle that might obstruct the introduction of the settlement system for RMU interbank claims.
- The introduction of the settlement system for RMU-denominated securities is more complicated than the settlement of interbank claims, since settlement of a securities transaction involves not only the payment of funds between buyer and seller, but also the delivery of securities. Therefore, it is essential to establish settlement procedures that only allow securities to be delivered to the buyer on condition of payment being received by a seller (delivery versus payment [DVP]). Furthermore, cross-border settlement involves the harmonization of different technical requirements, market practices, tax regimes, and legal systems since it involves counterparties residing in different countries. Indeed, even European countries are still struggling to establish a Europe-wide securities settlement system⁹.

⁸ Refer to Giovanoli (1989) for more details about the role of the BIS relating to the ECU.

⁹ See Giovannini (2001, 2003). They maintain that European countries' securities settlement system is fragmented so that international investment involves important cost and risk.

- One option is to use an existing international central securities depository (ICSD), such as Euroclear or Clearstream International; however, it is not clear whether those ICSDs would offer settlement in RMU even before RMU securities took off (Eichengreen 2007). Moreover, the fact that these ICSDs are located in Europe is a serious drawback to this solution because investors in Asia lose their liquidity for an additional day: to get the settlement in T+2 day, the buyer has to send the settlement fund in T+1 (Oh et al. 2003). Therefore, it seems reasonable to look for more regionally oriented alternatives.

- A more feasible alternative for East Asia's cross-border securities settlement system would then be the establishment of a decentralized or centralized Asian system of settlement. The centralized system refers to the system in which each national central securities depository (NCSD) is connected to a newly created Asian central securities depository (ACSD). The decentralized system is a network of bilateral connections between NCSDs in the region. The competition between NCSDs in a decentralized system is likely to enhance dynamic efficiency. As compared to the centralized system, the decentralized system maintains a low systemic risk. Nevertheless, the decentralized system is less efficient than the centralized one given the economies of scale and network externalities in settlement. It would also be costly, as well as technically difficult, to connect various NCSDs, as there is no standard settlement platform for different NCSDs. Furthermore, it is even uncertain whether Asia would be able to finally establish a harmonized platform through a decentralized process. Thus, it seems that a “big-bang” approach toward a centralized system is the most desirable alternative for Asia (Chai and Rhee 2005).

- Fourth, the capital account liberalization is an important condition for the wider use of the RMU.

- It is clear that the deregulation and opening of domestic financial systems is necessary for domestic investors to be allowed to invest in foreign bonds or to save in foreign currency. Many European countries, even in the 1980s, retained

substantial regulation on capital movements. It is only after the Single European Act and the two related council directives in the late 1980s that the liberalization of capital movements was generalized in Europe. In these circumstances, the bulk of financial transactions in ECU were related to the Eurocurrency or Eurobond markets.

- This was clearly an important limit to the development of financial markets in ECU. In Asia, RMU-denominated financial markets could be developed in Eurocurrency or Eurobond markets even under substantial capital controls. It is necessary to liberalize capital movements, however, in order to more widely implement the RMU.

4. Conclusion

- Despite the acceleration of regional cooperation, introducing the RMU is simply not enough to develop the regional financial market. Active use of the official RMU and an exchange rate coordination system will be the prerequisites for the development and integration of private financial markets, along with other conditions like capital liberalization, regional settlement system, and so on.

V. Summary and Conclusion

- RMU can contribute to economic growth through stabilizing exchange rates of regional currencies in East Asia. The expected role of RMU will be the anchor currency to measure the exchange rate divergence. This divergence indicator can be used for surveillance and monitoring on the macroeconomic policies.
 - The RMU can become a good instrument to coordinate policies and assure exchange rate stability among countries in East Asia because
 - it can measure deviations of regional currencies to the average trend, and
 - it can induce collective response to external changes through monitoring how Asian currencies are moving collectively vis-à-vis key external currencies.
- However, the use of the RMU as a divergence indicator and an instrument for policy coordination necessitates stronger cooperation among regional countries.
 - The first condition for the RMU to be widely used is that the RMU should be used to monitor exchange market development at the official level in East Asia. While intra-East Asian trade has grown to take up 50% of the region's total exports in 2005, the level of regional economic integration in Asia still falls behind those of Europe and North America. Therefore, in the first phase, East Asian countries should accept the RMU administratively as an official instrument for monitoring to attract a critical mass of users in the region.
 - To accept RMU officially, regional countries should have consensus on many technical issues on RMU including assignment of currency weights, selection of base year, grouping of currencies included in RMU, period of weight revision, etc.

- RMU can start among ASEAN+3 countries with weighting system on GDP on the base year of 2000. The countries can revise these options if the selected options would show some problems.
- To resolve the asymmetry problem and strengthen symmetry, RMU may include the following suggestions in the system;
 - Weighting of participating currencies using the combination of GDP based on PPP-value, intraregional trade, and contribution to regional monetary and financial cooperation (e.g., CMI contribution). The weights can be revised periodically (for instance, every three years). The system should introduce upper limit of 33.3% to the weight of the largest share of a currency.
 - In case of exchange rate cooperation, there should be a narrower band for countries with large share adjusted to be *band width (1-basket weight)*. The both countries with strong and weak currencies must intervene together if the exchange rate of the two currencies exceeds the band allowed. The country with strong currency should provide short term loan to stabilize the exchange rate to the country with the weak currency. The debtor country must be allowed to pay in RMU instead of strong regional currency.
- The problem with RMU for surveillance is that the East Asian countries are focusing mainly on the exchange rate convergence without any correction mechanism. There are not any discussions how the divergence should be dealt with.
 - Further discussions and studies are needed to analyze possible causes of divergence.
 - The surveillance mechanism should have a system to judge what degree of the divergence would cause macroeconomic problems in the country as well as in the region.

- Surveillance mechanism should develop a system to deal with the divergence and the country with the oversized divergence.
 - The surveillance mechanism should incorporate other macroeconomic indicators like the growth rate and balance of payment, fiscal balance etc.
 - Different exchange rate system among the Asian countries can limit the effectiveness of surveillance mechanism using RMU.
- As to the official use of RMU, the major function would be to coordinate policies and assure exchange stability between Asian countries.
- Once the creation of RMU is agreed, the RMU can be used as a divergence indicator to monitor the exchange rates of Asian currencies between themselves and against the US dollar or the euro.
 - The RMU can serve as an accounting unit without an accompanying Asian Monetary System would be a useful indicator for monetary authorities in formulating and coordinating their exchange rate policies.
 - Then, the RMU could be used as settlement currency in line with the creation of AESF.
 - Drawing a parallel with the ECU, we 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.
- The RMU can be developed into a parallel currency as well. In this regard, we suggest that the long term vision of a monetary union in East Asia is essential and this should be presented in the form of a common declaration.

- If there is a long term vision it will stimulate economic cooperation among Asian countries. Since it is a declaration, it is not necessarily cause a political burden and would not incur any costs from the participating countries. But the declaration can become a landmark and provide guidelines when East Asian integration process advances.
 - Moreover many ideas for regional cooperation based on the RMU will gain a stable basis through the declaration and the chance for success in the market will be enhanced.
- RMU can be used in the private sector for a variety of objectives.
 - Exporters, importers can use private RMU to denominate economic transactions, such as in invoicing and payment to reduce exchange rate risk especially for the intra-regional trade.
 - Financial market participants can use private RMU for deposit-taking, lending, hedging and issuing bonds.
 - Despite the acceleration of regional cooperation, introducing the RMU is simply not enough to develop the regional financial market. Active use of the official RMU and an exchange rate coordination system to stabilize the RMU will be the prerequisites for the development and integration of private financial markets.
 - The experience of the ECU shows that the official area should initiate the use of common currency.
 - Official sectors should contribute to the development of private RMU market with providing necessary conditions like capital liberalization, regional settlement system and so on

- Private sector has strong enough incentive to create private RMU and use it for transactions and for financial markets. However, private market using RMU can develop only if the necessary conditions are fulfilled.

- This research shows that RMU can be used for surveillance, transactions and settlement in official sector, and financial market development in private arena even though there are many issues to be resolved. However all these possible functions of RMU presuppose active cooperation among the member countries. For an active cooperation, there should be an institution like EC-Commission in Asia to initiate and lead the cooperation process. Maybe institutionalized cooperation must come before all the details regarding RMU-creation for the success of RMU.

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Appendix 1: Exchange Rate Regimes in East Asia

A. Exchange rate system Classification

- Criteria for classification: De Jure vs. De Facto

- De Jure Classification according to the IMF classification

- De Facto Classification according to N-W Index.

- N-W index by Nitithanprapas and Willett(2002)

- $N-W \text{ index} = \frac{\Delta R}{(\Delta R + \Delta E)}$

- where ΔR is change of international reserve and ΔE is change of exchange rate against US\$

- N-W index = 0 : Floating, 1 : Fixed

B. De Jure classification

1. Exchange Rate arrangements with no separate legal tender
2. Currency Board Arrangement
3. Other Conventional Fixed peg arrangements (within a band of most +/- 1%)
4. Pegged exchange rate arrangement within horizontal bands (at least +/-1%)
5. Crawling pegs (with small pre-announced adjustment)
6. Exchange Rate with Crawling bands
7. Managed Floating with no pre announced path for the exchange rate

8. Independent Floating (market determined exchange rate and independent monetary policy)

* In this study, regimes are classified by Fixed regime (1,2), Intermediate Regime(3,4,5,6) and Flexible Regime (7,8)

C. Data

□ Sample Periods : 1990-2005(Annual Data) : Whole Period

- 1990-1997(Pre-Crisis Period) : Sub-Period

- 1998-2005(Post-Crisis Period) : Sub-Period

□ Countries : ASEAN(10) + 3, ASEAN(5) +3

D. Asian Exchange Rate Regime: De Jure Classification

□ Before the Crisis : From intermediate Regime to Flexible Regime

□ After the Crisis : From Flexible to Intermediate

	1990	1994	1998	2006
Fixed System	0	0	0	1
Intermediate Reg.	3	2	2	4
Flexible Regime	8	10	11	8
Total	11	12	13	13

E. Asian Exchange Rate Regime: De Facto Classification

- Increased Exchange Rate Flexibility since the Crisis Except China, Malaysia, Vietnam, Myanmar and Cambodia.
- Fixed regime decreased since the crisis except China, Malaysia, Vietnam and Cambodia.

F. Asian Exchange Rate Regime: De Facto Classification: N-W Index

	Korea	Japan	China	Thailand	Indonesia	Philippine	Singapore	Malaysia
1990-2006	0.6510	0.4193	0.9422	0.6703	0.5628	0.7232	0.6350	0.8361
1990-1997	0.7633	0.4204	0.8915	0.7928	0.7221	0.8125	0.6703	0.7598
1998-2006	0.5387	0.4181	0.9929	0.5478	0.4035	0.6340	0.6358	0.9125

	Vietnam	Myanmar	Cambodia	Lao PDR	Brunei
1990-2006	0.5315	0.6788	0.5565	0.4188 (1997)	n.a
1990-1997	0.3261	0.6861	0.4523	0.4416	n.a
1998-2006	0.6599	0.6714	0.6216	0.4160	n.a

Appendix 2: Historical Development of Monitoring and Surveillance Mechanisms in Europe

System	Period	Objects	Monitoring and surveillance institutions	Characteristics	Evaluation
EPU	1950-1958	· Trade expansion by securing payment system	· Managing Board	· Bilateral payment system → Multilateral payment system · The Board monitors and gives directives	· Highly effective and successful
Bretton Woods System & Treaty of Rome	1958-1972	· Supporting economic integration by securing fixed exchange-rate system	· Monetary Committee · Committee of Governors	· IMF was more active than regional institutions	· Successful in the 1960s
Snake System	1972-1978	· Maintaining common market and common agricultural policy by reducing bilateral fluctuation and joint-floating against dollar	· European Monetary Cooperation Fund (new) · Monetary Committee · Committee of Governors	· National interests were greater than regional interests	· Not successful (and did not function well?)
EMS	1978-1992	· Securing internal stability of exchange rates	· Same institutions, but more active	· Countries with strong currencies shared the burden of intervention	· Successful
EMU	1993-present	· Introducing single common currency	· EMI in the transition period · ECB after introduction of euro	· National competences are transferred to the community · Binding rules introduced	· Successful until now

Source: Wang and Yoon (2003)