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How Far Apart Are Two ACUs from Each Other? : Asian Currency Unit and Asian Currency Union

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Shingo Watanabe and Masanobu Ogura

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Summary

This paper examines the future evolution of the Asian currency arrangements from broader perspectives, including the optimal currency area theory and the experience with the European Currency Unit (ECU). Most academic literature on this topic concurs that the optimal currency area conditions seem to be met by subsets of Asian countries although the ultimate success of an Asian currency union hinges crucially on such factors as the historical and political backgrounds, robustness of institutional set-ups, degree of regional convergence in developmental stages, and track record of sound macroeconomic policy in constituent countries. It is also a valid concern whether the transition toward a currency union could be susceptible to speculative currency assault. The experience with the ECU suggests that a successful Asian currency unit requires preconditions including the firm political commitment, market-wide expectations of the eventual currency unification, and existence of well-functioning financial markets as well as cross-border payment/settlement systems. We can learn further from the fact that the ECU was handicapped by a lack of cash currency, which led to its limited use in commercial transactions, and inadequacies of settlement arrangements. The ECU as a divergence indicator was also rarely focused on, despite the fact that the exchange intervention thresholds were defined in relation to the ECU.

Mr. Shigeto Nagai encouraged us to write this paper and also offered detailed comments on it. Description of the ADXY owes much to information from the Foreign Exchange Operations, Financial Markets Department of the Bank of Japan. We would also like to acknowledge the following individuals for their very helpful comments: Mr. Tetsuya Inoue, Mr. Yuji Osawa, Ms. Chikako Ohashi, Mr. Takeshi Shirakami, Mr. Hidehiko Sogano, Mr. Hiroshi Fujiki, Mr. Akinari Horii, Mr. Satoshi Kawazoe, Mr. Ken Matsushita, Mr. Satoru Yamadera and Mr. Kenichiro Watanabe. However, any possible mistakes are attributable to the authors alone. In addition, the contents of this article and the opinions therein are the personal views of the authors and do not represent the official opinion of the Bank of Japan or of its International Department.

1. Introduction

Discussions on the desirable Asian currency arrangements are gaining momentum. The Asian currency crises in 1997-98 made affected countries in this region realize that they need to re-examine their currency systems to prevent the recurrence of capital account drains. As is widely known, the Asian currency crises were exacerbated by the dollar-peg exchange regimes that were inherently vulnerable. Based on this reflection, experts have argued for the adoption by Asian countries of the managed floating underpinned by the currency basket consisting primarily of the yen, the US dollar and the euro.¹ The idea of a currency basket has even galvanized a renewed interest in the creation of a currency union as an ultimate goal.² This movement is inspired by the deepening of horizontal/vertical division of production processes among Asian economies, but the successful launch of the euro has also provided fresh impetus.

Recently a special attention is paid to creating Asian currency unit as a future common currency. At the beginning of 2006, officials of the Asian Development Bank (ADB) referred to their plan to publish an Asian currency unit (called ACU hereafter).^{3,4} The ASEAN+3 Finance Ministers endorsed in May 2006 an affiliated research group mandated with “Toward Greater Financial Stability in the Asian Region: Exploring Steps to Create Regional Monetary Units”.

On the academic front, we also have a wealth of research output exploring the feasibility of Asian currency union from various aspects. In this paper, for example, we will review 14 empirical studies based on the optimal currency area theory in addition to a lot of other studies based on other viewpoints.

The objective of this paper is to summarize proposed future evolution of Asian currency arrangements and examine it theoretically and empirically from a broad perspective. We believe that this kind of study will be indispensable for enhancing current discussions.

Methodologically this paper is structured as follows. We first survey past studies intensively, rather than add new evidences, on issues already discussed, intending to gain robust conclusions. Second, we revisit the experience with the European Currency Unit (ECU) as a “natural experiment” for analyzing the practicality of an ACU. This helps us to identify missing but important points in the current

¹ For example, the Council on Foreign Exchange and Other Transactions (1999).

² For example, the Study Group for the Promotion of the Internationalization of the Yen (2003).

³ Note that we will not call an Asian currency union “ACU” hereafter.

⁴ For example, “Ajia no Keizai Tougou-Shinka Suruka (Economic Unification in Asia - Will It Evolve?, in English),” an interview with Haruhiko Kuroda, President of the Asian Development Bank, *Nihon Keizai Shinbun*, morning edition, February 11, 2006.

ACU-related discussion.

What follows are the main conclusions of this paper:

- 1) Most of the proposed ideas on Asian currency arrangements are more or less the variant of the following three-stage process supported by an ACU as a facilitator:
 - i) the adoption by individual country of a managed floating based on the currency basket consisting of the yen, the US dollar and the euro;
 - ii) the harmonization of the weights attached to the basket currencies (i.e., a common currency basket); and,
 - iii) the establishment of a currency union based on an ACU (ACU as a common currency).
- 2) According to the optimal currency area theory, the benefits brought by a currency union (i.e., stable exchange rate and a reduction in trade costs) are larger if member economies are more externally open and intra-regional trade larger. In contrast, if factor movements and fiscal policy flexibility are constrained, or if the macroeconomic shocks tend to be asymmetric among member countries, a currency union would be welfare-reducing as the adjustments through exchange rate channels and country-specific monetary policies are no longer possible. Most empirical studies based on the optimal currency area theory are positive that the conditions for a currency union are met by subsets of Asian countries. They point out that some Asian countries exhibit almost the same level of external openness, intra-regional trade and symmetry in macroeconomic shocks as their European counterparts did in the pre-euro period.
- 3) However, there are other factors that affect the successful establishment of an Asian currency union, such as the historical and political backgrounds, institutional set-ups, regional convergence in developmental stages, and track record of sound macroeconomic policy.
- 4) Furthermore, it should be noted that the managed floating system is not immune to the risk of currency attacks, as was vividly shown during the introduction of the euro. This risk cannot be ignored in Asia where economic integration has begun relatively recently and both political commitment and institutional frameworks needed for regional integration have yet to be entrenched.
- 5) The experience with the European Currency Unit (ECU) suggests that a successful currency unit requires such preconditions as the firm political commitment, market-wide expectations of the eventual currency unification, and existence of

well-functioning financial markets as well as cross-border payment/settlement systems. We can learn further from the fact that the ECU was handicapped by a lack of cash currency, which led to its limited use in commercial transactions, and inadequacies of settlement arrangements. The ECU as a divergence indicator was also rarely focused on, despite the fact that the exchange intervention thresholds were defined in relation to the ECU.

This paper is structured as follows. The next section reviews proposals for future exchange rate arrangements in Asia, including the expected roles of an ACU. Section 3 provides an overview of the previous research that explores the feasibility of a currency union in Asia from the standpoint of optimal currency area theory. Section 4 outlines issues for discussion regarding the feasibility of a currency union in Asia, taking account of political and institutional dimensions. Section 5 discusses possible risks associated with the transition process toward a currency union. Section 6 revisits the experience of the ECU and Section 7 concludes.

2. Proposals for Currency Arrangements in Asia and Roles of an ACU

(1) Proposals for Currency Arrangements in Asia

With their primary focus put on achieving exchange rate stability in Asia, most of the proposed ideas on Asian currency arrangements are more or less the variant of the following three-stage process. Some proposals view a currency union as an ultimate goal while others do not (see Figure 1). But most proposals are in a similar vein as they envision exchange rate stability among Asian currencies in terms of currency basket composed of the yen, the US dollar and the euro.

First Stage: Adoption of a Managed Float Based on a Country-specific Basket⁵

While pegging its own currency to a basket composed of the currencies of key trading partners, the yen, the US dollar and the euro (G3 currency basket), each country tolerates a pre-determined range of deviations from a central rate (band) and reviews the central rate when needed (crawl). This is called the BBC system. The feature of this system is that Asian countries can reduce fluctuations in nominal effective exchange rates. It is sometimes argued that the weights attached to the G3 currencies be as similar as possible across countries in order to keep the variations in the intra-regional exchange rates small. Singapore is a typical example of the country running the BBC system. In 2005, China and Malaysia

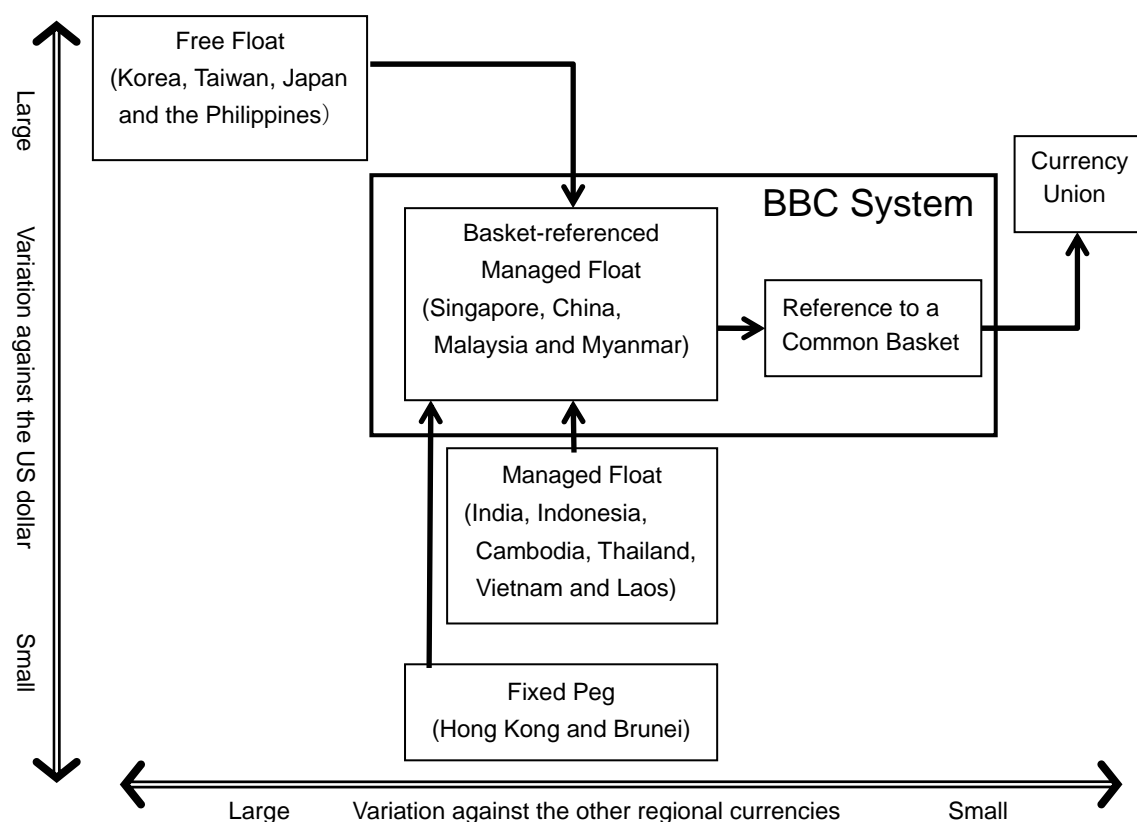
⁵ Dornbusch and Park (1999), Williamson (2000) and Mussa, Masson, Swoboda, Jadresic, Mauro and Berg (2000) advocate only this first stage.

also announced their decision to refer to the currency basket in their exchange rate policy.

Second Stage: Harmonization of the Weights of the Currencies in the Baskets⁶

Harmonizing the weights attached to the G3 currencies across countries further limits the fluctuations of intra-regional exchange rates, with the resulting effect similar to that seen when a currency union is established. Kawai (2005) argues that when the US dollar depreciates with the unwinding of global imbalances, this system allows all Asian currencies to appreciate to the same degree, equalizing (at least theoretically) the adverse effect on export competitiveness of member countries.

Figure 1 Proposed Arrangements towards a Currency Union



⁶ Mori, Kinukawa, Nukaya and Hashimoto (2002) and Ito (2005) propose a process up to this second stage. Kawai and Takagi (2000) and Williamson (2005) propose the second stage without referring to the first stage. On the other hand, Hefeker and Nabor (2005) and Ogawa and Shimizu (2006) advocate a peg to an ACU. The former authors explain that the G3 currency basket system is vulnerable because no intervention by the pegged G3 can be expected. They also expect that the Chinese yuan will have more weight in the basket in the future and therefore will become a key currency. The latter authors show that pegs to an ACU are more effective for some countries than pegs to a G3 currency basket in stabilizing effective rates.

Sources and Notes:

1. Countries adopting each system currently are shown in parentheses. The arrows show proposed processes.
2. Sources are the following: IMF Article IV staff reports; materials published by countries; IMF's "Classification of Exchange Rate Arrangements and Monetary Policy Frameworks as of December 31, 2004," published in March 2005.
- 3 IMF's categorizing is based on observation of countries' operations. Results may be different from official announcements.
4. The fixed peg means a currency's peg to the central rate defined by another currency or a basket. In the managed float, the central rate is regularly reviewed or the authority actively implements foreign exchange intervention without an explicitly defined central rate in order to restrain large fluctuations of the currency.

Third Stage: Establishment of a Currency Union⁷

Asian currencies are consolidated into a single common currency. If the consolidation process is to follow that of the euro, it consists of the pre-determined ranges for intra-regional exchange rate variations, enhanced coordination of macroeconomic policy including fiscal policy, and creation of a single central bank.⁸ At this stage, member countries are assumed to have attained economic as well as institutional convergence and have reached political agreement to participate in the union. This process is called a multi-track and multi-speed approach.

(2) Roles of an ACU

An ACU is a weighted average of Asian currencies, including those of the ASEAN countries, Japan, China and South Korea.⁹ It is expected to evolve into a common currency through the three-stage process outlined above. However, given that a currency union takes long to become a reality, it is proposed that an ACU be created even if there is no immediate prospect for the currency union. The thrust of this proposal is that an ACU, if used widely, could promote the establishment of the currency union.¹⁰ Eichengreen (2006) calls this a parallel currency approach.

⁷ Kawai (2005, 2006) and Kuroda (2005, 2006) advocate the whole of the three-stage process. Kwan (2001) states that a basket attaching a large weight to the yen is required for Asian countries to stabilize the nominal effective exchange rates and refers the ultimate case where the Bank of Japan sets monetary policy in Asia. On the other hand, McKinnon (2000) supports a dollar-peg system on the ground of the superiority of the U.S. dollar as the major invoice currency and stable inflation in the U.S. Also, Mundell (2002) suggests that the yen is not a suitable anchor because of the appreciating trend of the yen against a backdrop of low interest rates and proposes a process to achieve a common currency through a dollar-peg system.

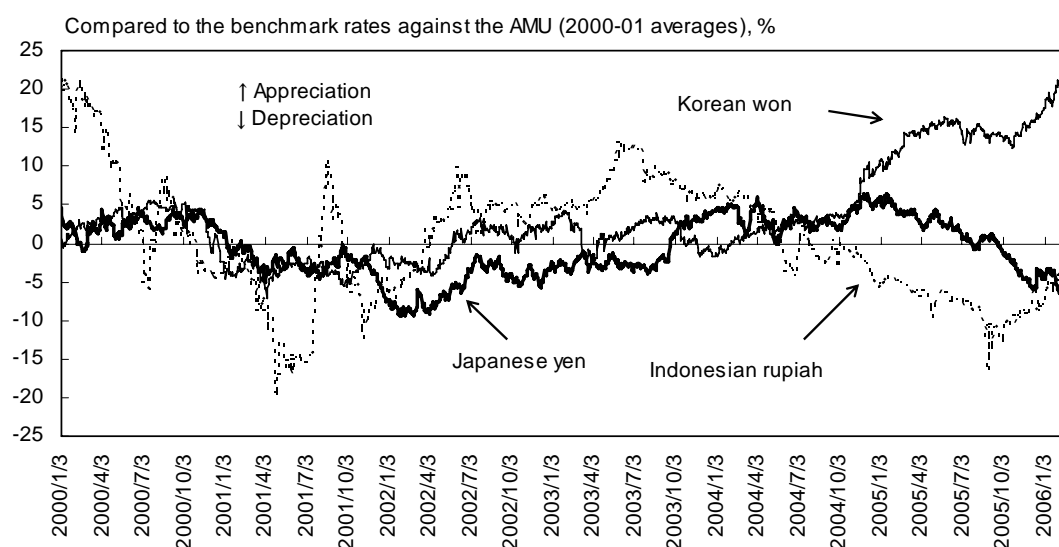
⁸ See the Appendix to review a history of the creation of the euro.

⁹ See the Appendix to examine the calculation of an ACU.

¹⁰ Agarwala (2003), Eichengreen (2006), Plummer and Click (2005) and Kawai (2005, 2006). The ACU proposal was also mentioned by Mr. Haruhiko Kuroda, President of the Asian

An ACU is expected to be used as a calculation unit for intra-regional trade and foreign exchange reserves. It could also serve as a measure of divergences of Asian currencies from a regional average. Some experts even envisage the issuance of ACU-denominated bonds. Whether an ACU will be used widely or not depends on the market perceptions of its usefulness. The public sector can play a meaningful role in catalyzing the use of an ACU.

Figure 2 AMU Deviation Indicator



Notes: The benchmark is the 2000-01 average. In 2001, the trade surplus of ASEAN+3 was the smallest between 1990 and 2003 and thus the economy is assumed to be close to equilibrium.

An ACU as an indicator of each currency's divergence from a regional average would be similar to the Asian Monetary Unit (AMU) deviation indicator published by Hitotsubashi University and the Research Institute of Economy, Trade and Industry.¹¹ The AMU is one of the Asian currency indices already available. As an example, figure 2 shows the AMU deviation indicators of the yen, the Korean won, and the Indonesian rupiah. This indicates that the yen is relatively stable against other Asian currencies while the Indonesian rupiah is fairly volatile. It also shows that the Korean won has appreciated remarkably in recent years, thereby eroding the export

Development Bank, in the interview referred in the fourth note. Mori, Kinukawa, Nukaya and Hashimoto (2002) advocate a basket currency composed of the yen, the US dollar and the euro mainly as a means for Asian companies to hedge foreign exchange risks in their trade transactions.

¹¹ The AMU was created by Mr. Eiji Ogawa, a faculty fellow of the Research Institute of Economy, Trade and Industry and a professor at Hitotsubashi University, for the project titled "The Optimal Exchange Rate Regime for East Asia." The project is headed by Mr. Takashi Ito, a faculty fellow of the Research Institute and a professor at the University of Tokyo. ADXY is another Asian currency index already available published by J.P. Morgan and Bloomberg. See the Appendix.

competitiveness of Korea.

3. An Asian Currency Union from the Optimal Currency Area Theory View

As discussed in the previous section, many proposals for Asian currency arrangements suppose, to one degree or another, that a currency union could ultimately be established. In this section, we evaluate the desirability of a common currency in the Asian context.

A stylized method is to assess the quantitative benefits and costs within the framework of the optimal currency area theory.¹² According to this theory, the benefits brought by a currency union (i.e., stable exchange rate and a reduction in trade costs) are larger if member economies are more externally open and intra-regional trade larger. In contrast, if factor movements and fiscal policy flexibility are constrained, or if the macroeconomic shocks tend to be asymmetric among member countries, a currency union would be welfare-reducing as the adjustments through exchange rate channels and country-specific monetary policies are no longer possible.¹³

Table 1 Optimal Currency Area Criteria and Empirical Facts in Asia

<i>Criteria and Rationale</i>	<i>Empirical Facts</i>
<p>1) <i>The degree of openness and the scale of intra-regional trade</i></p> <p>Larger degrees of openness and larger scales of intra-regional trade imply larger benefits of stable foreign exchange rates and reduced trading costs as well as a more unified goods market that generates less need for exchange rate adjustments.</p>	<p>In Asia, the degrees of openness in 2002 ranged from 21.1% (Japan) to 273.7% (Singapore) with a median of 87.7%; the intra-regional trade ratio in 2003 was 54.0%.</p> <p style="text-align: center;">↓</p> <p>The degrees of openness in the EU in 1998, the year before currency unification, ranged from 32.9% (Greece) to 135.5% (Belgium) with a median of 58.2%. In 1995, the intra-regional trade ratio in the EU was 56.8%.</p>
<p>2) <i>Correlations in macroeconomic shocks</i></p> <p>Higher correlations in macroeconomic shocks among countries imply that more similar monetary policy reactions may be taken by countries and hence that the costs of abandoning country-specific monetary policies are smaller.</p>	<p>Supply shock series show significantly positive correlations in 22% of all bilateral relationships among 10 Asian countries.</p> <p style="text-align: center;">↓</p> <p>The figure for 14 European countries is 27%.</p>

¹² Mongelli (2002) surveys papers based on the optimal currency area theory.

¹³ It is common that macroeconomic shocks are identified by VARs with long-run restrictions.

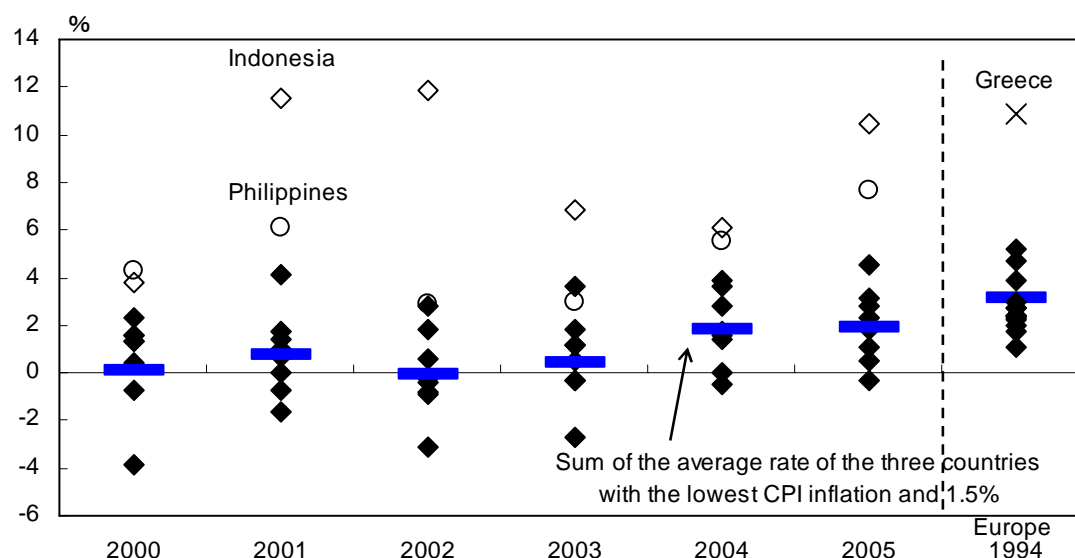
<p>3) <i>Similarity in the speed of macroeconomic adjustment in response to shocks</i></p> <p>More similar speeds of macroeconomic adjustment in response to shocks imply that more similar monetary policy reactions may be taken by countries and thus costs of abandoning country-specific monetary policies are smaller.</p>	<p>The ratios of one-year-responses of GDP to supply shocks in five-years-responses are more than 96% in nine Asian countries excluding Japan where the figure is 87%.</p> <p style="text-align: center;">↕</p> <p>The figures are at least 90% in 13 European countries excluding Spain where the figure is 44.5%.</p>
<p>4) <i>Similarity in the size of macroeconomic response to shocks</i></p> <p>More similar sizes of macroeconomic responses to shocks imply that more similar monetary policy reactions may be taken by countries and thus costs of abandoning country-specific monetary policies are smaller.</p>	<p>The sizes of GDP increases in response to 1% supply shocks over five years are 0.009-0.030% in ten Asian countries.</p> <p style="text-align: center;">↕</p> <p>The figures are 0.008-0.019% in 14 European countries</p>
<p>5) <i>Flexibility in fiscal policy</i></p> <p>Smaller budget deficits and outstanding debts imply higher possibilities of fiscal policy actions and thus smaller costs of abandoning country-specific monetary policies.</p>	<p>The sizes of fiscal deficits are moderate in most Asian countries. Those in Japan, Laos, and Vietnam have been exceptionally more than 3%, as seen in Table 2.</p>
<p>6) <i>Similarity in inflation rate</i></p> <p>More similar inflation rates imply less need for exchange rate adjustments.</p>	<p>Inflation rates are low in most Asian countries, although high inflation rates are observed exceptionally in Indonesia and the Philippines. The degree of convergence in inflation rates is almost the same as in pre-euro Europe except for those two countries, as seen in Figure 3.</p>
<p>7) <i>Flexibility in factor movement</i></p> <p>The more flexible factor movements imply smaller divergences in factor prices among countries upon occurrence of a shock and less need for exchange rate adjustments.</p>	<p>Foreign workers' shares in the workforces in 2000 are 1.3% in Japan, 1.3% in South Korea, 2.4% in Taiwan, 8.0% in Hong Kong, 26.0% in Singapore, 13.5% in Malaysia, and 1.5% in Thailand .</p> <p style="text-align: center;">↕</p> <p>The figures in 1986 are 4.31% in Austria, 7.12% in France, 6.77% in Germany, 2.91% in the Netherlands, 4.88% in Sweden and 17.48% in Switzerland.</p>

Table 2 Fiscal Balance

Ratio to Nominal GDP, %							
	2000	2001	2002	2003	2004	2005	2006
Japan	-7.5	-6.1	-7.9	-7.7	-6.5	-6.5	-6.0
China		-3.1	-3.4	-2.8	-1.7	-2.1	0.0
South Korea	5.4	4.6	5.4	0.4	0.0	-0.2	
Singapore		3.5	4.2	6.3	3.1	3.0	
Hong Kong	-0.6	-5.0	-4.9	-3.2	-1.7	-0.2	
Thailand	-1.8	-1.1	-1.2	1.8	0.7	0.1	
Malaysia	0.7	-0.3	-0.9	-1.2	-0.5	1.0	
Indonesia		-3.2	-1.5	-1.9	-1.4	-1.0	
Philippines			-5.6	-5.0	-4.2	-3.1	-2.5
Brunei		4.3	-6.9	10.8	16.1	19.5	
Vietnam	-5.0	-5.0	-4.5	-7.2	-4.5	-3.8	
Laos		-4.4	-3.3	-5.7	-3.4	-3.5	-4.0
Cambodia	-2.1	-2.8	-3.8	-4.5			

Note: Boxes indicating deficits higher than 3% are highlighted.

Figure 3 CPI Inflation



Sources and Notes:

- 1) Kawai and Motonishi (2004). Openness is defined as $(\text{import} + \text{export}) / \text{GDP}$. Intra-regional trade ratio is defined as $\text{intra-regional trade} \times 2 / (\text{import} + \text{export})$. The Asian intra-regional trade ratio is calculated based on data of the ASEAN and NIES countries, China and Japan. The degrees of openness are calculated for those countries excluding Brunei and Myanmar.
- 2), 3) and 4) The result of Zhang, Sato, and McAleer (2004) is shown as an example. The sample periods are 1980-2000 for Asia and 1980-2000 for Europe. They use quarterly data. The sample 10 Asian countries consist of Japan, China, the NIES and ASEAN4 countries. The sample European countries consist of Denmark, Norway, Sweden, Switzerland, the UK, and the euroarea countries excluding Greece, Ireland, and Luxemburg.
- 5) The data on Japan and South Korea are from OECD "Economic Outlook" (December 2005),

and the data on the other countries are from the IMF Article IV staff reports. Some data are estimates and forecasts. The data on Singapore and Indonesia cover the central governments and those on the other countries cover the general governments.

- 6) Asian countries consist of Japan, China, the NIES and ASEAN4 countries. European countries consist of the euroarea countries, Denmark, Sweden and the UK. The period of the data on European countries is 1994, when the European Monetary Institute (EMI) was established. The data on Japan are provided by the International Department, Bank of Japan, and those on Europe are from “Annual Report 1995” published by the EMI.
- 7) Data on Asian countries are from Athukorana (2004) and those on European countries are from Goto and Hamada (1994).

As summarized in Table 1, we find that the degree of external openness and the size of intra-regional trade are high in Asia. It should also be noted that some Asian countries exhibit the level of external openness, intra-regional trade and symmetry in macroeconomic shocks comparable to those of their European counterparts in the pre-euro period. Looking at other criteria, Japan is the only country that has seen a marked deterioration in fiscal balance (Table 2), and high inflation is observed in just two countries, i.e., Indonesia and the Philippines (Figure 3). Given these facts, it seems fair to say that subsets of Asian countries meet the optimal currency area criteria to the same degree as European countries did in their pre-euro phase.

To ascertain the robustness of our conclusion, we have surveyed 14 previous studies on this topic. As these studies differ in their analytical methods and model specifications, they can serve as a robustness check on our conclusion.

Table 3 shows the groupings of optimal currency areas identified by the past studies. All but two studies take a positive view of the existence of optimal currency areas in subsets of Asian countries.¹⁴ From their results, we can note the following points:¹⁵

- 1) 79% (11 of 14 studies) identify Malaysia and Singapore as an optimal currency area.¹⁶ This is the highest ranked country combination in terms of the ratio of studies concluding affirmatively on the optimality (called the OCA ratio hereafter).
- 2) Among all the combinations including Japan, that of Japan and South Korea is the highest ranked in terms of the OCA ratio (67% [8 of 12 studies]). By the same token, China is combined with Japan, South Korea, Singapore and Malaysia (50% [5

¹⁴ Uniquely, Sánchez (2005) expresses model parameters that should take similar values across the member countries for a monetary union to attain a stable macro economy. He makes a country-by-country comparison of economic characteristics that may affect the parameters, such as segmental shares in a country.

¹⁵ We examine the country combinations explored by more than ten studies. Countries tend to be excluded from optimal currency areas when those exhibit low correlations with other countries in estimated macroeconomic shocks.

¹⁶ It seems related to this finding that it was possible to exchange the Singaporean dollar at par with the Malaysian ringgit and the Brunei dollar from June 1967 to March 1973. It can still be exchanged at par with the Brunei dollar. See Ngian and Yuen (2002) for details.

of 10 studies]) and South Korea with Singapore (69% [9 of 13 studies]).

3) Among ASEAN countries, the combination of Malaysia, Thailand and Indonesia is the highest ranked after that of Malaysia and Singapore (69% [9 of 13 studies]).

4) Combinations including the Philippines are given the lowest OCA ratio. Among them, the combination of the Philippines and Thailand receives the highest OCA ratio, but merely 42% (5 of 12 studies).

Table 3 Identified Optimal Currency Areas¹⁷

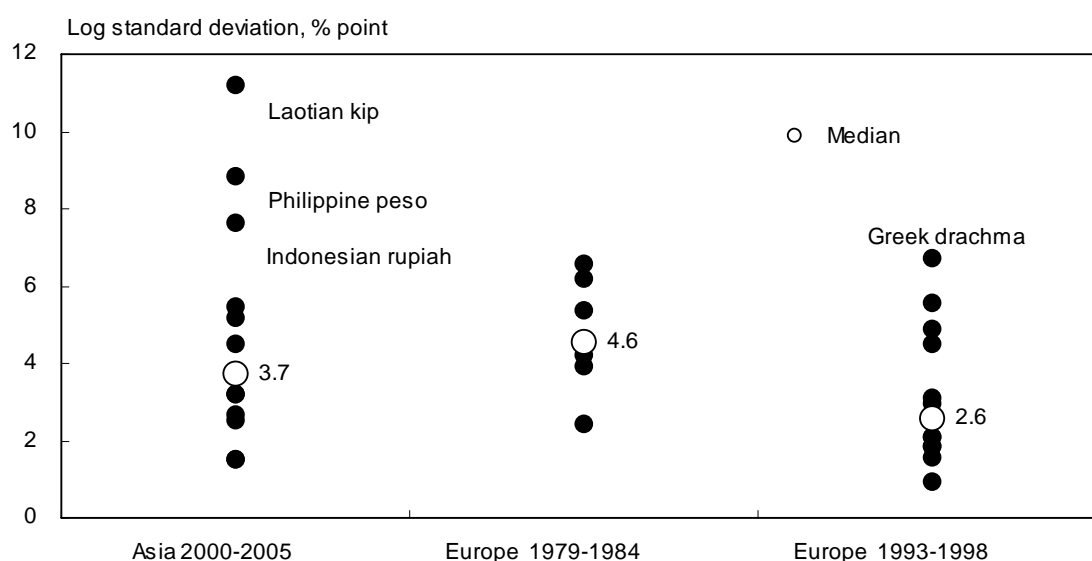
	China	Hong Kong	Taiwan	Japan	South Korea	Singapore	Malaysia	Indonesia	Thailand	Philippines	Other ASEAN countries	Australia and NZ	India
Bayoumi et al. (2000)													
Loayza et al. (2001)													
Yuen (2001)													
Baek et al. (2002)													
Chow et al. (2003)													
Lee et al. (2003)													
Kawai et al. (2004)													
Kwak (2004)													
Zhang et al. (2004)													
Girardin (2005)													
Sánchez (2006)													
Tang (2006)													
Ogawa and Kawasaki (2006)													
Huang et al. (2006)													

Notes: Shaded boxes indicate that countries are included in optimal currency areas identified in each paper. If several optimal currency areas are identified in a paper, the boxes corresponding to each area are surrounded by thick lines. The boxes marked with diagonal lines indicate that those countries are not covered by the respective studies.

¹⁷ Alesina, Barro and Tenreyro (2003) explore yen, US dollar and euro zones and take a negative view of the establishment of a yen zone.

The viability of this finding can be tested by comparing the degree of intra-regional variance of Asian currencies with that of pre-euro European currencies. The AMU-based variations of intra-regional nominal effective exchange rates in Asia are mostly within $\pm 3.7\%$ range of the averages. This range is greater than that of European currencies in the pre-euro period (1993-98), i.e., $\pm 2.6\%$, but smaller than that seen following the establishment of the EMS (1979-84), i.e., $\pm 4.6\%$ (Figure 4). This suggests that the need for macroeconomic adjustments through exchange rate realignment in Asia is as small as that of pre-euro Europe, where a currency union was finally achieved.¹⁸ In addition, the fact that the Philippine peso shows greater fluctuations than other Asian currencies is consistent with the finding that optimal currency areas including the Philippines are given the lowest mark by the past studies, as mentioned above.¹⁹

Figure 4 Fluctuations in Intra-regional Nominal Effective Exchange Rates of Asian and European Currencies



Notes: A log standard deviation shows the range around the average, which includes 68.3% of samples under the normal distribution. Asian currencies, for which the exchange rates against the AMU are shown, are those of the ASEAN+3. European currencies included in the March 1979-February 1984 sample are the currencies of the seven countries that initially participated in

¹⁸ One might argue that this finding reflects not Asian economic convergence but explicit or implicit adoptions of the dollar-peg by many Asian countries. This argument makes no sense because the countries would have abandoned the dollar peg if their economy had required adjustments through exchange rates.

¹⁹ While the Indonesian rupiah fluctuates as much as the Philippine peso, 69% of studies conclude that Indonesia is included in the optimal currency area with Malaysia and Thailand. This implies that there is a huge range of potential factors other than economic fundamentals that can influence fluctuations in the exchange rate or that there are other conditions for the establishment of a currency union that have yet to be adequately explored.

the ERM: the French franc, the Belgian franc, the German mark, the Italian lira, the Dutch guilder, the Danish krone and the Irish pound. The Irish pound is included in the post-January 1982 sample. Six currencies in the current euro member currencies were added to the 1993-1998 sample: the Greek drachma, the Spanish peseta, the Luxemburg franc, the Austrian schilling, the Portuguese escudo and the Finnish marka. Although Denmark does not participate in the euro system at the moment, it is a member of the ERM II.

4. An Asian Currency Union from a Broader Viewpoint

Although the possibility of a currency union has been examined mainly in the context of the optimal currency area theory, it should also be assessed from a broader perspective. For example, given the fact that the issue of currency is an essential element of sovereignty, the prospect for a currency union should be defined by other factors beyond economic rationality. In fact, many studies have identified various obstacles to achieving a currency union in Asia in terms of the weaknesses of historical, political and institutional foundations, divergences in developmental stages and macroeconomic policy track record, and a lack of a key regional currency. On the other hand, we should note the argument that the *ex ante* fulfillment of the optimal currency area conditions is not necessarily imperative as these conditions could be met *endogenously* once a currency union is established.

We summarize these views as follows:

1) Weaknesses of historical, political and institutional foundations for economic integration

Compared with other regions, Asia has a relatively short history of economic integration. Against this backdrop, the political and institutional foundations for further integration are still less than solid.²⁰ Although efforts are underway towards regional monetary cooperation such as the Asian Bond Fund (ABF) and the Chiang Mai Initiative (CMI), both of them are still in early stages of existence.²¹ The former was launched in 2003 and the latter driven by the agreement made at the ASEAN+3 financial ministers' meeting held in 2000. In addition, the meetings of political leaders covering the whole of Asia do not have a long history: the ASEAN+3 Summit started in 1997 and the first East Asia Summit in 2005.²² Furthermore, political commitment to deep Asian economic

²⁰ See Bayoumi, Eichengreen and Mauro (2000), Wyplosz (2001), Kawai and Motonishi (2004), Eichengreen (2005), Glick (2005), Kwack (2005), Kuroda (2005) and Kenen and Meade (2006).

²¹ The ABF is the fund that invests in Asian bonds. It was created by the EMEAP (Executives' Meeting of East-Asia and Pacific Central Banks) to foster Asian local bond markets. The CMI is an initiative to build a currency swap network among countries to enhance a currency cooperation framework in Asia.

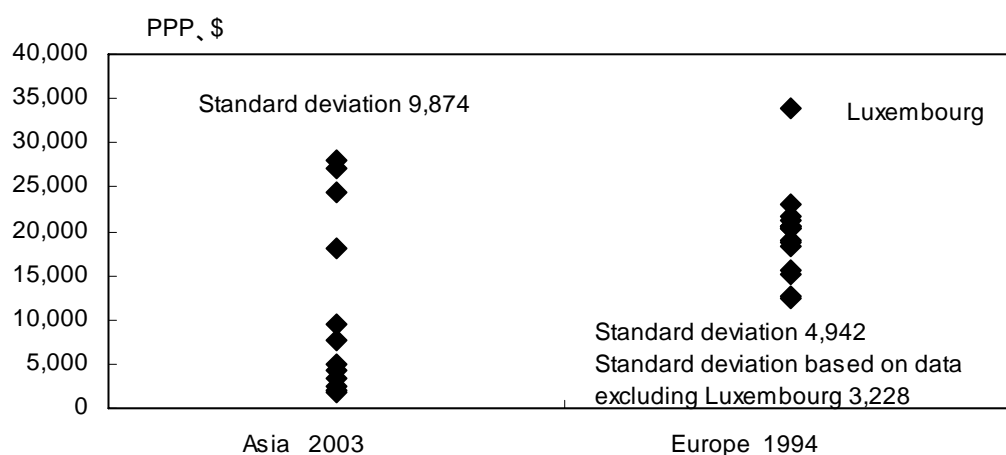
²² Participants in the East Asia Summit include India, Australia, and New Zealand in addition to the

integration does not appear to be as strong as that in Europe after World War II.²³ Institutionally, the fact that the ADB is the only organization operating all across the region stands in contrast to the multi-layered structure of the European institutions established in the wake of World War II.

2) Divergences in developmental stages

There are significant differences in developmental stages among Asian countries. For example, the variation in per capita GDP is almost three times greater than that of pre-euro Europe, as shown in Figure 5. Such differences, arising partly from structural uniqueness of individual Asian countries, might affect the prioritization of their policy objectives (for example, poor countries might prefer economic growth to currency unification).²⁴ Furthermore, because of the relative lack of capital accumulation, interest rate levels in developing countries are normally higher than those in developed countries. Thus, the imposition of a common currency plus a single region-wide interest rate could potentially cause economic instability for several countries in the region.

Figure 5 GDP Per Capita



Notes: Asia includes Japan, China, South Korea, Hong Kong and the ASEAN countries except Myanmar and Brunei. Europe includes the euroarea countries, Denmark, Sweden and the UK. We compared data on Europe in 1994, when the EMI was established, with data on Asia in 2003. Source: “World Development Indicators,” World Bank.

3) Variations in the macroeconomic policy track record

ASEAN+3 countries.

²³ The ASEAN countries made progress in the economic ministers’ meeting on May 2006 by agreeing to establish an economic community for free cross-border movement of people, goods, and capital in 2015.

²⁴ Similar arguments are made by Bayoumi, Eichengreen, and Mauro (2000) and Wyplosz (2001).

Since the Asian crisis, macroeconomic policy management in Asia has improved quite visibly. For instance, inflation is much lower now, with the exception of Indonesia and the Philippines. As Asian countries have rebuilt their economies by adopting a combination of flexible exchange rates and disinflation-oriented monetary policy, they may have little incentive to give up their monetary sovereignty for the sake of a currency union.²⁵

4) A lack of a key regional currency

One of the key factors that led to the successful introduction of the euro was the existence of the German mark, a symbol of the anti-inflation currency backed by the largest economy in Europe. On this analogy, some studies have argued that the non-existence of such a dominant currency in Asia poses another obstacle to the establishment of an Asian currency union.²⁶

5) The endogeneity of the optimal currency area

We can also note the “endogeneity of the optimal currency area”, which means that joining a currency union *per se* will catalyze the *endogenous* and *ex post* fulfillment of the optimal currency area conditions. This argument is based on the premise that joining a currency union itself is a strong commitment, resulting in the elimination of exchange rate fluctuations. This in turn promotes trade and investment among countries, leading to a higher co-movement of business cycles.²⁷ Therefore, as this argument goes, there is little point in debating whether or not the optimal currency area conditions are satisfied *ex ante*.

5. Risks in the Transition Process

As described above, recent proposals for future currency arrangements in Asia are more or less the same in viewing the establishment of a currency union as a long-term goal. In the short- to medium term, they call for the introduction of a common currency basket for intra-regional exchange rate stability. Although this progressive approach sounds workable, it cannot be decoupled from the potential risks of currency attacks.²⁸

²⁵ Bayoumi, Eichengreen and Mauro (2000) and Alesina, Barro and Teneyro (2003) point out that the incentive to join a currency union may vary depending on the macroeconomic policy track record.

²⁶ See Glick (2005). Wyplosz (2001) states that although the existence of a key country is important, it is more important to follow steps to foster confidence among countries.

²⁷ See Frankel and Rose (1998).

²⁸ The issues related to the optimal currency theory also should be discussed as constraining intraregional exchange rate fluctuations is more or less similar to the establishment of currency

Table 4 Prehistory of Economic Integration in Europe

1693	William Penn, the Quaker founder of Pennsylvania, proposes the establishment of the European Dyet, Parliament, or Estates. ²⁹
1849	Victor Hugo, the great figure in French literature, calls for the creation of the United States of Europe at the International Peace Congress.
1923	Pan Europa Movement is initiated.
1946	Churchill proposes the creation of the United States of Europe.
1948	The Hague Congress is held to advance the cause of regional integration. The Organization for European Economic Cooperation (OEEC) is inaugurated.
1949	The Council of Europe is established to discuss cooperation in economic, social and cultural areas.
1950	The European Payments Union (EPU) is created to promote liberalization of currency trading within the European region.
1951	The European Coal and Steel Community (ECSC) is inaugurated to control coal and steel production in Europe.
1957	The Treaty of Rome is signed. Inauguration of the European Economic Committee (EEC) in 1958 is agreed to. The treaty states that the exchange rate is an issue in common for member countries.
1962	The EC Committee mentions a monetary union plan.
1965	A common agricultural policy is adopted.
1968	A customs union enters into force and the Common Customs Tariff is introduced.
1970	The Werner Plan recommends transition to a monetary union with the target year set at 1980.
1972	The “Snake” system is introduced.

As opposed to Europe where central exchange rates were established with strict capital controls in place, capital flows in and out of Asia today are much more liberalized, and consequently, regional financial markets are much more susceptible to large swings in private capital flows. In addition, as described in Table 4, Asia cannot compare squarely with Europe in terms of the history of economic integration and the strength of political as well as institutional foundations. Therefore, it may prove to be difficult for Asia to win market confidence in the creation of a common currency basket, which makes it more likely to invite speculative currency attacks.³⁰

union in nature. In addition, de Brouwer (2004) finds that the fluctuations of the yen, the US dollar, and the euro affect Asian countries’ effective exchange rates asymmetrically under the common basket peg and therefore affect countries’ competitiveness asymmetrically. He suggests that this is one unattractive feature of the common basket peg for the countries.

²⁹ William Penn (1644-1718) was a British Peer and the founder of Pennsylvania. In exchange for the cancellation of his father’s credit to Charles II, he was given the sovereignty of Pennsylvania. Although he was a Quaker, Penn is acclaimed for opening Pennsylvania to all religions in response to suppression of minor religious sects in European countries.

³⁰ Indicated by Wyplosz (2001), de Brouwer (2004), Eichengreen (2006) and Glick (2005). On

The fact that even Europe, better-suited for establishing a currency union than today's Asia, was hit by a currency crisis is quite suggestive. Europe's currency crisis (ERM crisis in 1992) is said to have been caused not only by the weaknesses in economic policy management in member countries (for example, a high unemployment rate prevented Italy from implementing a necessary tightening policy), but also by the speculative assaults in the foreign exchange market.

As is well known, the mechanism of a speculative attack is as follows. Suppose that market participants begin to doubt the country's commitment to participate in a currency arrangement because the country tends to implement overly lax macroeconomic policy. Under such circumstances, market participants would sell the country's currency on a massive scale. If the country opting out of the arrangement finds it difficult to rejoin the arrangement even if it reaffirms its commitment to a tightening policy, it would be more rational for it to stay outside the arrangement and continue its loose policy instead. Therefore, the country would actually adopt a lax policy and the negative expectations by market participants would turn out to be self-fulfilling.³¹

If a strong commitment to the establishment of a currency union has yet to be made, a risk of currency attacks seems much higher. Also, it should be noted that the current move by Asian countries towards more flexible exchange rate systems is a response to their ordeals in the Asian currency crisis where crisis-hit countries were made aware of the vulnerability of fixed exchange rate regimes.³²

6. Implications of the Experience of the ECU for an ACU

This section outlines issues for discussion of the so-called parallel currency proposal, in which an ACU is supposed to facilitate the establishment of a currency union.

What has been missed so far in the ACU-related discussion is an examination of how an ACU will become widely used. For example, although a widely-used ACU is expected to create a favorable environment for the establishment of a currency union, it is not certain whether an ACU will be widely accepted if the prospect for the creation of a currency union is only slim.

In the following discussion, we critically review the experience of the ECU, the historical precedent of a basket currency, as an empirical guidepost for analyzing the

the other hand, if Asian countries were able to peg their currencies to a common basket without the sufficient prerequisite conditions, markets might believe in the determined will of the monetary authorities.

³¹ See Eichengreen and Wyplosz (1993).

³² de Brouwer (2004) argues that there is little need for transfer to a peg when economic entities have started to learn how to deal with flexible exchange rates.

practicality of an ACU. Our discussion is framed along the three core functions of a currency: a unit of account, a store of value and a medium of exchange.

(1) Overview of the ECU

The ECU is a basket of currencies, which is a weighted average of the currencies of EC (European Community) member countries. It was created under the European Monetary System (EMS) established in 1979, and functioned like a currency until the launch of the euro in 1999. The weights were determined mainly by each country's shares in Community-wide GDP, intra-Community trade and total quota of EMS financial support system.

The composition of the ECU was supposed to be reviewed every five years, with the actual revisions made in 1984 and 1989. But the Maastricht Treaty in November 1993 stipulated that such revisions would no longer be made.³³ This was expected to eliminate the fluctuations in ECU interest rates arising from changes in the composition of the ECU, thereby increasing ECU-related transactions.³⁴

The revisions of the weights of the currencies in 1984 and 1989 were also intended to decrease the weights of currencies that had appreciated. This was because appreciated currencies had an unduly large impact on the ECU formula.³⁵

There were two kinds of ECU: the official ECU and the private ECU. Under the EMS, the official ECU was provided by the European Monetary Cooperation Fund (EMCF) to the member central banks in exchange for the deposits at the EMCF of 20% of their holdings of gold and US dollar reserves. The official ECU was meant to be used as a means of settlement between member countries for foreign exchange interventions.³⁶

³³ As the new EC member currency, the Greek drachma was added to the ECU composition in 1984 and so were the Spanish peseta and the Portuguese escudo in 1989, respectively. However, after the Maastricht Treaty came into force, the new member currencies, such as the Austria schillings, were not added to the ECU composition. The weight of each component currency as of the time of change in 1989 was as follows: German mark: 30.1%, French franc: 19.0%, British pound: 13.0% Italian lira: 10.15%, Dutch guilder: 9.4%, Belgian franc: 7.6%, Spanish peseta: 5.3%, Danish krone: 2.45%, Irish pound: 1.1%, Greek drachma: 0.8%, Portuguese escudo: 0.8% and Luxemburg franc: 0.3%.

³⁴ For example, see Plath (1994).

³⁵ It was possible that adding a new EC member currency, which tended to accompany high interest rates, and decreasing the weight of an appreciating currency, which tended to accompany low interest rates, raised ECU interest rates. This could have inflicted losses on holders of ECU-denominated assets. Allen (1987) notes that, as the EC had a number of advance discussions with market participants, the review in 1984 was not so surprising for them and did not seem to have an adverse impact on the ECU markets.

³⁶ Weak-currency central banks were able to borrow, without limits, members' hard currencies for interventions under the Very Short Term Facility (VSTF) of the EMCF. In interventions, the EMCF received funds simultaneously from the hard-currency central banks. The VSTF credit

In contrast, the private ECU was the ECU-denominated liability of private banks for commercial transactions. Until November 1988, private banks accepted the private ECU on a par with the official ECU, and consequently both ECUs had the equal value. After 1988, some disparities began to emerge between the private and the official ECUs. But except for rare occasions when confidence in the eventual currency unification was shaken, the discrepancies between two ECUs were small as market participants expected them to be exchanged at par again in the future.³⁷

(2) The ECU as a Unit of Account

In addition to its role as a means of measuring the value of member country's currency and a unit of account in public entities, the official ECU was expected to be used as an indicator of a member currency's divergence from the average value of European currencies.³⁸

However, some studies note that the ECU divergence indicator was not closely watched as monetary authorities of member countries conducted interventions with a view to preserving the stability of their exchange rates against other currencies, especially the German mark.³⁹

Furthermore, the ECU as the divergence indicator sometimes sent misleading signals. While the statutory exchange rate bands for the EMS member currencies were 2.25% on both sides of the central rates, fluctuations of up to $\pm 6\%$ were allowed for the Italian lira as well as the British pound and the Spanish peseta, both of which entered the EMS at a later date. Fluctuations of these three currencies sometimes caused considerable volatilities among the ECU exchange rates even when other currencies maintained stable relationships among themselves.⁴⁰

(3) The ECU as a Store of Value

The private ECU was widely used for financial transactions. In particular, the issuance of ECU-denominated bonds had steadily increased from 1981 to the beginning of the 1990s.⁴¹ This was partly driven by a growing political commitment to currency unification, as evidenced by the Delors Report in 1989. The issuance of

was denominated and partly payable in ECU. See Fratianni and von Hagen (1992), for example.

³⁷ See Folkerts-Landau and Garber (1992) for details on determinants of the private ECU exchange rate.

³⁸ The EMCF, the central banks under the EMS, and the EC used it as an accounting unit.

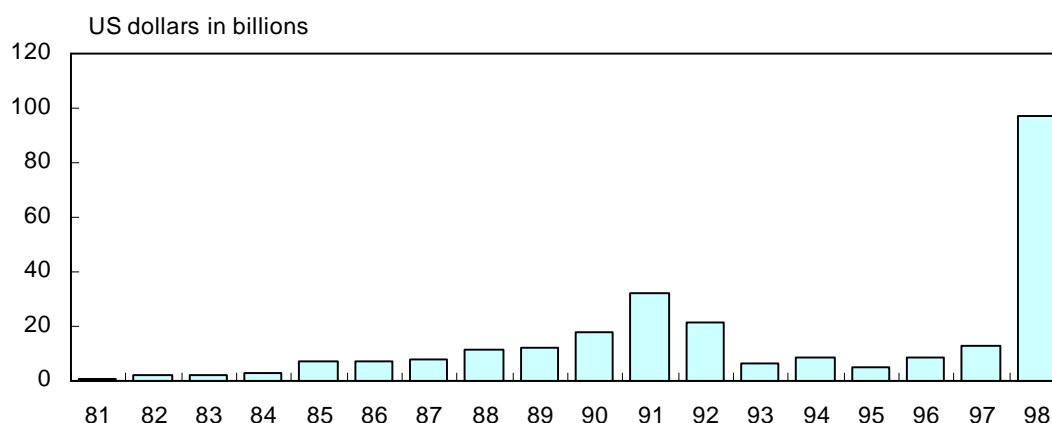
³⁹ See Steinherr (1989), Gros (1991), and Jaillet and Vissol (1991).

⁴⁰ In January 1990, the ranges of the variations for the Italian lira were changed to above and below 2.25% of the central rates.

⁴¹ The first issue was launched by Italian public telecommunications corporation, SOFTE, in 1981.

ECU bonds reached its peak of US\$ 32.5 billion in 1991 (Figure 6), accounting for slightly more than 10% of international bonds issued.⁴² However, the issuance of the ECU bond decreased after the ERM crisis in 1992 and remained stagnant until 1998 when a sharp rebound was seen amid growing expectations of the launch of the euro slated for 1999.

Figure 6 Amount of ECU Bonds Issued



Source: Dammers and McCauley (2005).

The theoretical yield (derived as a weighted average of the government bond yields of the component currencies) was the most commonly used benchmark for ECU bonds. ECU bonds made it unnecessary for investors to replicate the synthetic bonds composed of the member currencies. This, along with the tax advantage given to ECU bonds as Eurobonds, kept the yields on ECU bonds lower than its theoretical yields, although demand-supply conditions peculiar to ECU bonds i.e., issuance calendar or low expectations of future currency stabilization, sometimes affected this relationship, pushing actual yields above the theoretical ones occasionally.⁴³

The following points are key factors for the expansion of the ECU bond markets:

1) Convergence trade

While expectations of stable exchange rates among regional currencies grew against the backdrop of political commitment towards currency unification, investors engaged in arbitrage trading to earn profits arising from the differences between the German mark interest rates, which were relatively low in the region, and yields on ECU bonds.⁴⁴ In fact, the number of ECU bond issuances, which

⁴² Dammers and McCauley (2006).

⁴³ Schofield (1991).

⁴⁴ Dammers and McCauley (2006).

had increased steadily from the end of 1980s, decreased significantly after the ERM crisis in 1992, because that incident undermined investors' expectations of currency unification.

2) Funding at low interest rates

With expectations of the stable exchange growing, under-funded entities in high-interest rate countries, including their governments, tried to raise funds through issuances of ECU bonds.⁴⁵

3) Political momentum towards currency unification

In addition to the EC institutions, the UK and France actively issued ECU-denominated government bonds in order to support future currency unification.⁴⁶ Also, as described earlier, a strong political commitment towards this goal strengthened expectations of stable intra-regional exchange rates, thereby promoting convergence trade.

4) Response to foreign exchange regulations

There was also a need for ECU bonds as foreign currency-denominated bonds. That is, these were used by both governments and investors as a means of thwarting various foreign exchange regulations. For example, it is suggested that ECU bonds were sometimes issued as an alternative to German mark-denominated bonds, the issuance of which was strictly limited (the German mark was given the 30% weight in the ECU).⁴⁷ Also, countries with weak currencies, such as Italy and France, actively issued ECU bonds to offer domestic investors an opportunity to invest in foreign currency assets while maintaining strict foreign exchange control.⁴⁸

5) Investment diversification

Some studies are of the view that investors and issuers used ECU bonds as a means of diffusing (diversifying) foreign exchange risks across multiple currencies. In fact, rich private investors purchased ECU bonds as part of their quasi-efficient diversified portfolio. Achieving such diversification through investing separately in each national bond market would have been much more costly because of the still-underdeveloped and fragmented financial markets

⁴⁵ Schofield (1991).

⁴⁶ Schofield (1991).

⁴⁷ Dammers and McCauley (2006).

⁴⁸ Hasse (1990).

then.⁴⁹

6) Development of settlement systems and financial instruments

Custodial and settlement operations for ECU bonds were handled by the two ISCDs (International Central Securities Depositories), Euroclear and Cedel (currently, Clearstream). Furthermore, the expansion of derivative transactions through FINEX, LIFFE and MATIF contributed to the active trading of ECU bonds.

(4) The ECU as a Medium of Exchange

The official ECU was not tradable in the foreign exchange markets and had to be exchanged through EMCF with other currencies for market intervention purposes. This mechanism reduced the efficiency of ECU as a reserve currency. Thus, countries had little incentive to hold the official ECU over the initial amount apportioned.⁵⁰

Commercial transactions based on the private ECU did not become widespread. The reasons for this are: 1) there was no cash currency; 2) using checks or money transfers in ECU entailed additional cost and time burdens; 3) availability of information and technical support for ECU-denominated transactions was limited; and 4) taxes and salaries had to be paid in domestic currencies.⁵¹ As of the first half of 1986, for instance, the weight of ECU-invoiced transactions in Italian foreign trade was tiny, accounting for 0.85% and 0.41% of exports and imports respectively (see Table 5).

Table 5 Currencies Used for Italian Trading Invoices (First Half of 1986)

	Italian lira	US dollar	German mark	ECU
Exports	34.65	27.98	14.86	0.85
Imports	23.45	35.50	16.35	0.41

Note: These data cover approximately 70% of the trade value of Italy.

Source: Jozzo (1989).

In addition, international settlement systems for the private ECU, created at the initiative of private financial institutions, contributed to increasing the private use of the ECU. But they were inadequate in their security and functionality.

⁴⁹ Schofield (1991) and Dammers and McCauley (2006).

⁵⁰ Steinherr (1989).

⁵¹ Jozzo (1989), Cahen (1991), and Lomax (1991).

To elaborate a bit more on this point, although settlement in ECU funds had been conducted since 1986 by ECU clearing banks that held ECU accounts with the BIS through fund transfers between these accounts, the banks' final ECU balances had to be reduced to zero on a daily basis through arrangements in which banks with net credit positions extended loans for banks with net debit positions for settlement purposes.^{52,53} Although the BIS was able to arrange such inter-bank ECU loans within a certain pre-determined range, it did not have the unlimited capacity to perform the lender of last resort (LLR) function of ECU. Thus, if the banks did not agree to extending loans when a settlement beyond a certain amount was required, there was a risk that the settlement could not be finalized.⁵⁴

With regard to the functionality, non-ECU clearing banks were required to go through time-consuming process where they had to execute ECU-denominated settlement through ECU clearing banks only.⁵⁵

(5) Implications for an ACU

In connection with our discussion on an ACU, we can draw several implications from the experience with the ECU.

First, an ACU as a divergence indicator is unlikely to be monitored by monetary authorities, because even the ECU did not attract attention as a divergence indicator, despite the fact that its range of variations against the member currencies was established with a view to realizing a currency union.

⁵² See Rambure (1987) and Levitt (1991). It was possible for ECU clearing banks to provide the ECU in the accounts held with the BIS through transferring all of the nine component currencies to the BIS. However, the transfers had to be made from each of the accounts held by the nine central banks within the BIS, and the process was thus time-consuming and costly. This was therefore regarded as an exceptional measure.

⁵³ Cross-border ECU settlements began among the banks in 1983. Seven European banks, called MESA (Mutual ECU Settlement Account) banks, opened accounts with each other and calculated their net position on a monthly basis in rotation to make inter-bank settlements in ECU. Non-MESA banks also opened accounts with MESA banks to participate in inter-bank settlements in ECU. This system was cumbersome in that settlements among MESA banks were ultimately conducted in component currencies instead of the ECU. Furthermore an automated system was necessary for more banks to participate. As a result, a settlement system for which the BIS served as an agent began in 1986. See Rambure (1987) and Levitt (1991).

⁵⁴ To reduce these risks, improvements in the ECU settlement system took place as follows. First, the Intermediation Facility under which each ECU clearing bank would on-lend up to 5 million ECU to a bank with net debit position was developed in 1991. In 1993, mandatory multilateral limits were implemented. Settlement was guaranteed in the event of all but one clearing banks being within their debit and credit limits but one short bank being unable to borrow sufficient liquidity. Furthermore, in 1996, a system of setting intraday limits which controlled delivery of payments between two clearing banks was introduced. In addition, central banks in England, Italy and France introduced collateralized liquidity facilities. See European Monetary Institute (1996).

⁵⁵ Cahen (1991).

Second, ACU-denominated bonds could work as a fundraising vehicle for borrowers in high interest countries or as a quasi-efficient portfolio for investors. But, for ACU bonds to evolve into a major asset, the political commitment and market-wide expectations of the eventual currency unification are both needed.

Third, as in the case of the ECU, a lack of cash currency may pose an obstacle to the wider use of an ACU in commercial transactions.

The prevalence of the ECU was fostered to some extent by the development of the ECU international settlement systems and financial markets. To achieve an Asian currency union backed by the wider use of an ACU, we need to discuss how to develop safe and efficient settlement systems and financial markets.

7. Conclusion

Most academic literature concurs that the optimal currency area conditions seem to be met by subsets of Asian countries. But the establishment of a currency union requires examination of a wider range of factors such as the historical and political backgrounds, robustness of institutional set-ups, degree of regional convergence in developmental stages, track record of sound macroeconomic policy in constituent countries, and the risks of currency attacks. A successful ACU also requires various preconditions, as the experience with the ECU suggests.

In addition, the Europe's experience with the euro will be useful in evaluating a currency union in Asia, although we did not address it in this paper. The issues include measuring the impact of the fixed exchange rate and the reduced trade costs on trade and investment and evaluating widening disparities among countries' economic growths due to divergences in stages of fiscal soundness and/or structural adjustments.⁵⁶

⁵⁶ Attempts to conduct an evaluation from a broad perspective at the moment include, for example, articles submitted and discussions at the conference held at the European Central Bank (ECB) in May 2005 (see the ECB's website).

Appendix 1 A Brief History of the Establishment of the Euro

1. Establishment of the European Monetary System (EMS)

The EMS was established in March 1979 and consisted of 1) introduction of the ECU (European Currency Unit), which was a basket of currencies of the EMS member countries; and 2) adoption of the ERM (Exchange Rate Mechanism), which was a mechanism created to keep variations among currencies of the member countries within a certain definite range. Under the ERM, central rates were determined for the currencies of the member countries against the ECU as well as for all pairs of the currencies. The ranges of variations were basically set at 2.25% above or below the central rates.⁵⁷ If the rate between any two currencies reached the limits of the range of variations, both countries were obliged to intervene.

2. Stage One of the EMU: Enhancement of Policy Collaboration

In accordance with the Delors Report published in April 1989, a three-stage approach towards Economic and Monetary Union (EMU) was outlined. It included: 1) enhancement of policy collaboration, 2) introduction of the European System of Central Banks (ESCB), and 3) transition to a unified monetary policy and a single currency. The first stage of this process began in July 1990. With a view to establishing a future one-dimensional monetary policy under the ESCB, the Committee of Central Bank Governors prepared annual reports for the European Parliament, the Council of Ministers, and the European Council. Also, member states were asked to submit multi-annual convergence programs that were reviewed by the Council of Ministers.

3. Stage Two of the EMU and Establishment of the EMI

The Treaty on European Union (the Maastricht Treaty), which was agreed to in December 1991 and came into effect in November 1993, introduced the schedule for the EMU. According to the schedule, the second stage of the EMU began in January 1994, and the EMI (European Monetary Institute) was established through the absorption of the Committee of Governors and the European Monetary Cooperation Fund (EMCF). It provided for introduction of a unified monetary policy and a single currency and was the predecessor of the ECB (European Central Bank).

4. Determination of the Timing for Transition to Stage Three and the Name of the Single Currency

The European Council meeting held in Madrid in December 1995 determined that Stage Three would begin on January 1, 1999, and that the single currency would be called the euro.

⁵⁷ Above and below 15% from August 1993.

Appendix 2 Calculation of an ACU

An ACU is a weighted average of Asian countries' currencies. For example, the formula used to calculate an ACU with the rate of US\$1=ACU1 in January 2000 is as follows, if the ECU's formula is adopted:

$$ACU_t = 1 \cdot \sum_{i=1}^n (w_i \cdot FX_{i,Jan-2000}) / FX_{i,t}$$

where w_i and FX_i represent a weight and an exchange rate of the currency i against the US dollar respectively. As is clear here, it is necessary to select component currencies and weights in order to calculate an ACU.

First, selection of component currencies depends on who calculates an ACU, for what purpose, and in what kind of environments.⁵⁸ As already described in this paper, during the first ten years in the ECU's history, the currencies of new participant countries were added to the ECU component twice, but then the rule was changed and further addition of currencies was prevented in order to avoid confusion in the markets.⁵⁹

As for calculation of the weights of an ACU, because foreign exchange trading in certain countries is not sufficiently liberalized, there are discussions as to whether it is necessary to consider liquidity in the markets or not.⁶⁰

In fact, between the AMU already mentioned and the ADXY that is another Asian currency index published by J.P. Morgan and Bloomberg, there are differences in component currencies and calculation of the weights: the former uses the countries' shares in GDP and export and import trade whereas the latter uses the countries' shares in export and import trade and liquidity (see Table 1).⁶¹

⁵⁸ For example, if an ACU were calculated by a private economic entity with the aim of determining the average foreign exchange rate in Asia, the currencies of the entire Asian region would be chosen. In contrast, as was the case during European economic and currency unification, if an ACU were established by a public body that has a mission to promote economic unification in Asia and looks towards introduction of a single currency, only the currencies of countries participating in such unification would be selected.

⁵⁹ Allen (1987) suggests that, given the fact that a precondition of a currency being included in the ECU component was that the issuing country participated in the EC, selection of component currencies is of a political rather than economic nature.

⁶⁰ For example, in the morning edition of *Nihon Keizai Shimbun* dated May 5, 2006, an article on the ASEAN+3 Financial Ministers' Meeting's agreement on a study group, which is mentioned in the introduction, introduces an opinion of a market player that "the weight of the Chinese yuan under strict government control might become too large." In addition, in the morning edition of *Nihon Keizai Shimbun* dated July 4 2006, Masahiro Kawai, Economic Advisor to the ADB President, comments that "the country's gross domestic product (GDP), the amount of trade, and the openness of capital transactions will be the basis of calculation of an ACU." Also, as described in this paper, the weights in the ECU were calculated based on countries' shares in EC GDP, EC intraregional trade, and EMS financial support.

⁶¹ What is also distinctive about ADXY is that it is actually used for transactions with clients.

Table 1 Characteristics of the AMU and the ADXY

	AMU	ADXY
Publishing entity	Hitotsubashi University and Research Institute of Economy, Trade and Industry.	J.P. Morgan and Bloomberg.
Vehicle for publication	Website.	Website and Bloomberg.
Date when publication began	September 2005.	October 2004.
Component currencies	Currencies of ASEAN+3 (13 currencies).	Chinese yuan, Korean won, Hong Kong dollar, NT dollar, Singaporean dollar, Thai baht, Indonesian rupiah, Indian rupee, Philippine peso, Malaysian ringgit (10 currencies).
Weight	Arithmetical average of the share in GDP and the share in export and import trade from 2001 to 2003.	Weighted average of the share in extra-regional trade (average exports and imports over the last five years) and the share in liquidity. The weights are 0.75 and 0.25 respectively. ⁶² The trade share is reviewed on an annual basis and the liquidity share is reviewed on a quarterly basis.
Unit of calculation	Against the US dollar and the euro ⁶³ and against the US dollar.	Against the US dollar.

If we recalculate the weights for the common component currencies in the AMU and the ADXY as of June 2006, we find that the ADXY weight for the Chinese yuan is 16 percentage points smaller and those for the Korean won and the Singaporean dollar are respectively 12 and 5 percentage points larger than the AMU weights, as shown in Table 2. These large differences arise from the fact that liquidity is taken into consideration in the ADXY weight. In addition, the ADXY weight for the Malaysian ringgit as of February 2005 was zero due to a lack of liquidity. In Figure 1, we plot ACUs based on the weights in Table 2 and the formula for the ECU in order to see the impact of such differences in the weights on fluctuations of an ACU.

⁶² The liquidity share is calculated based on the amount available for overseas investors to trade in the local market. In concrete terms, this is the three-month average of the average daily volume based on a sample survey and estimates. The weight of a currency whose average daily volume is US\$50 million or less is zero, regardless of the share in export and import trade.

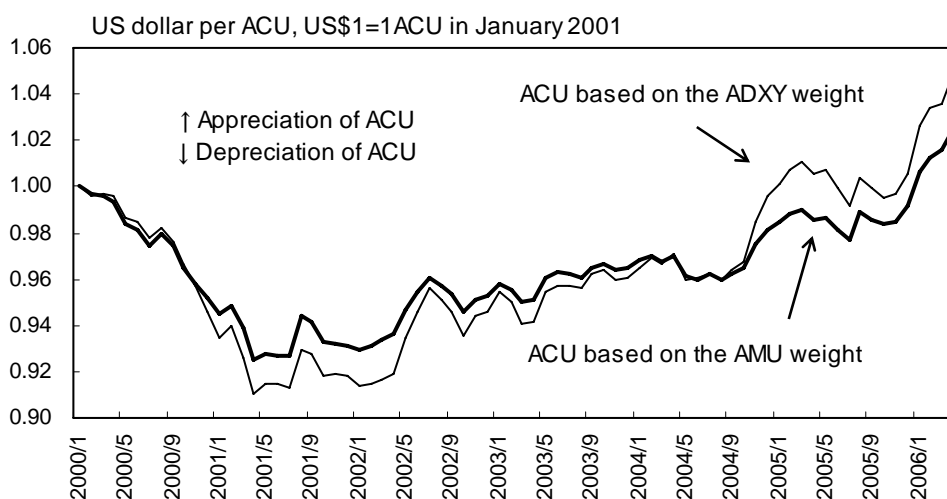
⁶³ In calculating the AMU rate against the US dollar and the euro, each currency is incorporated in the AMU as a weighted average of the rates against the US dollar and the euro. The weights are 0.65 and 0.35 respectively.

Table 2 Weights for the Common Component Currencies in the AMU and the ADXY

%, % points

	AMU (a)	ADXY (b)	(b)-(a)
China	50	34	-16
Indonesia	7	5	-2
South Korea	14	26	12
Malaysia	8	8	0
Philippines	4	4	0
Singapore	9	14	5
Thailand	7	9	1

Figure 1 ACUs based on AMU and ADXY Weights



As shown, at least during the period from 2000 to April 2006, there is no significant difference between the two indices in terms of fluctuations, and the range of divergences was limited to a maximum of two cents. However, the ACU calculated by using the ADXY weight begins to increase notably around October 2004, when the Korean won started to appreciate against other Asian currencies. The fact that the Korean won had a greater weight in the ADXY than in the AMU by 12 percentage points implies, when a currency with a significant weight difference moves independently, the weight difference affects ACU fluctuations.⁶⁴ This point is one of the factors that should be taken into consideration when designing an ACU.

⁶⁴ Edison (1987) calculates various virtual ECUs with different weights and shows that the differences in the weights affect fluctuations in the ECU rate when currencies deviate greatly from the central rates.

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