

Regional Arrangements to Borrow:

A Scheme for Preventing Future Asian Liquidity Crises

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Regional Arrangements to Borrow: A Scheme for Preventing Future Asian Liquidity Crisis*

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Preface

Before the Asian financial crisis broke out in 1997, few would have argued for the creation of any type of regional financial arrangement in East Asia. However, the financial crisis of 1997 was a major breakdown: many East Asians became aware of the need for regional financial arrangements that could forestall future crises. In September 1997, Japan proposed an “Asian Monetary Fund (AMF)” to prevent the recurrence of an Asian currency crisis and to institutionalize financial cooperation among the countries within the region. The advocates of the AMF declared the need for a regional lender of last resort, referring to the fact that the IMF allocation of funds for Asia is inadequate considering the size of the Asian economies vis-à-vis speculative international capital. The United States and the IMF, on the other hand, strongly objected to the idea of the AMF, asserting that it would threaten the stability of the global financial system by weakening the IMF voice in promoting structural adjustments in recipient countries and by aggravating the moral hazard problem.

Despite heated debates on how to prevent the recurrence of crises in the region, we have no tangible solutions yet. Some proposals have been dismissed as unrealistic in spite of their publicity, while others are still in need of a concrete framework and suitable instruments. While the recovery of the East Asian economies has been much faster than expected, the search for regional arrangements is now again gaining momentum. In May 2000, Asia’s three powerhouses – China, Japan and South Korea – along with the 10 members of ASEAN, at the Asian Development Bank’s annual meeting in Chiang Mai, Thailand, agreed to expand the existing network of arrangements designed to ward off a crisis similar to the one that rocked the region in 1997. The plan, dubbed the Chiang Mai Initiative, calls for a network of bilateral currency swap-and-repurchase arrangements. The initiative is widely perceived as a major step toward strengthening financial cooperation among the East Asian countries.

Despite many misgivings in recent years about the role of regional financial arrangements, the Chiang Mai Initiative would not require a new institution like the IMF. Although the details of the Chiang Mai Initiative are under careful study, and still unclear, it could complement the facilities of the IMF. In other words, this contractual arrangement would placate outsiders’ worry about any instability in the global financial system that might result in potential conflict of interest with the IMF and the moral hazard problem.

This study aims to move one step further beyond the Chiang Mai Initiative and present a blueprint for a regional arrangement to borrow (RAB) in East Asia. A regional arrangement to borrow may be characterized as contingent credit lines based on the participants’ commitment to lend up to a

predetermined ceiling. A typical example of a RAB would be the IMF's General Arrangements to Borrow (GAB). On the other hand, the credit facilities of the European Monetary System (EMS), established in the early 1970s, provide an example of a successfully operating RAB. This study emphasizes that the Asian Arrangements to Borrow (AAB) – a region - based multilateral borrowing arrangement – serves as a firm and meaningful milestone in terms of financial cooperation.

As East Asian countries become more regionally integrated, the next agenda for the regional financial cooperation would be to search for a means to stabilize exchange rates among regional currencies. An even higher level of concerted cooperation would be required to establish appropriate monetary arrangements at the national as well as regional dimensions. An Asian currency unit of a single currency could be further explored over a longer term, if regional political consensus emerges along with deeper regional economic integration. The Institute hopes that this study will contribute to building a foundation for regional financial cooperation.

The authors, Tae -Joon Kim and Jai -Won Ryou were former research fellows at the Korea Institute for International Economic Policy (KIEP). They are currently professors of Economics at Dongduk Women's University and Konkuk University, respectively. Yunjong Wang has been a research fellow at the KIEP since 1993. He is currently the head of research team in the Department of International Macroeconomics and Finance at the KIEP.

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Executive Summary

For over three years, the East Asian crisis countries, other than Malaysia, have dutifully followed the IMF structural programs to make their corporate and financial sectors more transparent, efficient and resilient to financial market instability. The reform processes in these countries are far from over, yet there is already a growing concern that they will remain vulnerable to future financial crises even with faithful execution of reforms. The domestic economic reforms alone may not safeguard them against future crises, so long as the reform of the international financial system is deferred or pushed forward without due consideration of the institutional and structural characteristics of the emerging market economies.

The reform led by the G - 7 countries has been losing steam and from the viewpoint of emerging market economies does not adequately address the supply side problems. In particular, the small and medium -sized open economies in East Asia, on their own, may not be able to fend off rapidly globalized and virtualized speculative attacks. For these reasons, there has been increasing support in East Asia for developing a regional mechanism of defense in the form of financial cooperative arrangements. This support has culminated in the Chiang Mai Initiative of ASEAN+3 to create currency swap arrangements among thirteen countries in East Asia. The initiative is widely perceived as a major step toward strengthening financial cooperation among East Asian countries. Details of the swap arrangements among the ASEAN+3 countries will need further elaboration; however, at this stage it is too early to tell whether they will be able to successfully negotiate the creation of such arrangements, given the different interests of different countries in the region.

As was the case of the Asian Monetary Fund proposed by Japan when the crisis touched off in July 1997, the idea of a regional monetary fund or regional lender of last resort still faces strong opposition by the United States, European countries and, of course, the International Monetary Fund (IMF) for a number of reasons. Many western scholars dismiss the contention that an East Asian regional fund may have a comparative advantage in diagnosing regional economic problems and prescribing appropriate solutions on the basis that it will increase competition in the market for ideas. A more serious argument is that East Asians are not ready or capable of creating and managing an effective regional monetary fund. Compared to European countries, East Asia lacks the tradition of integrationist thinking and the web of interlocking agreements that encourages monetary and financial cooperation.

Nevertheless, regional financial arrangement could be structured and executed so as to be complementary to the role of the IMF. For example, a regional financial arrangement could provide additional resources to the IMF

while joining forces to work on matters related to the prevention and management of financial crises. Furthermore, the East Asian countries' joint efforts to monitor economic and financial market developments in the region will support the IMF's global surveillance activities. In this regard, an East Asian regional financial arrangement, along with a regional surveillance process, can be explored while avoiding institutional duplication and reducing operational costs as well.

Beyond the Chiang Mai Initiative, the Asian Arrangements to Borrow (AAB) would build a strong foundation for committed financial cooperation in East Asia. The AAB shall be activated as the first line of defense for a country faced with a temporary shortage of foreign exchanges before officially requesting emergency loans from the IMF. The AAB would not require the establishment of a formal institution. The AAB would be based on the credit arrangements among participants, as in the case of the credit mechanism under the European Monetary System (EMS). However, the AAB should be distinguished from the facilities to maintain the par value system among participating countries under the regional monetary system.

To avoid or mitigate the moral hazard problem embodied in the automatic lending system of the AAB, it would be desirable to link the limit of borrowing assigned to each participant with its credit commitments. In addition, a penalty rate should be applied to borrowing countries. The AAB could become the next initiative by developing the network of bilateral swap arrangements, currently discussed under the Chiang Mai Initiative, into a truly multilateral scheme. If carefully designed and implemented, the AAB may serve as a milestone for closer and deeper financial cooperation in East Asia.

As the East Asian countries become more regionally integrated, the next agenda for the regional financial cooperation would be to search for a means to stabilize exchange rates among regional currencies. An even higher level of concerted cooperation would be required to establish appropriate monetary arrangements at the national as well as regional dimensions. As seen in the ERM crisis of 1992 - 93, however, even this EMS institutional framework would not be sufficient to ward off speculative attacks. An Asian currency unit or a single currency could be further explored over a longer term, if regional political consensus emerges along with deeper regional economic integration.

East Asia has a long way to go before formalizing and putting into effect the Chiang Mai Initiative, and launching further cooperative initiatives. In this respect, China and Japan should be able to provide leadership in leveling out the differences among the East Asian countries that are likely to surface during the negotiation process.

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I. Introduction

Before the financial crisis broke out in 1997, few would have argued for the creation of any type of regional arrangement in East Asia. East Asians did not have any formal incentives or strong motivation to encourage regional integration (Lawrence, 1996).¹ Because of the successful economic performance, a market-led process of integration was already taking place in East Asia. Given their history of enmity, rivalry and uneven distribution of power, many neighboring countries were not even thinking of creating a regional bloc. East Asian countries were not afraid of being excluded from any regional arrangements; hardly were they prepared to make the structural adjustments and policy changes required for successful implementation of a regional arrangement.

However, the financial crisis of 1997 was a major breakdown: many East Asians became aware of the need for regional financial arrangements that could forestall future crises.² In September 1997, Japan proposed an “Asian Monetary Fund (AMF)” to prevent the recurrence of currency crises in Asia and to institutionalize financial cooperation among the countries within the region. The advocates of the AMF declared the need for a regional lender of last resort, referring to the fact that the IMF allocation of funds for Asia is inadequate and insufficient, considering the size of the Asian economies vis-à-vis speculative international capital. The United States and the IMF, on the other hand, strongly objected to the idea of the AMF, asserting that it would threaten the stability of the global financial order by weakening

¹ The East Asian countries did not actively participate in the wave of global regionalism. Although Southeast Asian countries formed the ASEAN, it remained essentially a political association with a few cooperative programs designed to promote intra-ASEAN trade, joint ventures, and industrial specialization (Lawrence, 1996).

² In *The Economist*, Fred Bergsten (2000) asserts that in the medium term, at least, the most important changes to the world financial architecture are likely to come from the new regional arrangements being fashioned in East Asia. As a result, he imagines that for the first time in history, the world is becoming a three-bloc configuration.

the IMF's voice in promoting structural adjustments in recipient countries and by aggravating the moral hazard problem.

Eichengreen (2000) and others dismiss the contention that an East Asian regional fund may have a comparative advantage in diagnosing regional economic problems and crafting appropriate solutions on the basis that it will increase competition in the market for ideas. A more serious argument is that East Asians are not ready for, or capable of, creating and managing an effective regional monetary fund. According to Eichengreen (2000), East Asia, in contrast to Europe, lacked the tradition of integrationist thinking and the web of interlocking agreements that have encouraged monetary and financial cooperation in Europe.

For over half a century, European countries have worked hard to develop a wider web of political and diplomatic agreements which encouraged them to cooperate on monetary and financial matters. Certainly such a web does not exist in East Asia. Furthermore, East Asians may not be prepared to negotiate an international treaty which includes provisions for sanctions and fines for countries that do not adjust their domestic policies accordingly. This unwillingness would make it difficult for a regional fund to impose politically unpopular policies on the member countries and hence may pose a serious moral hazard problem.

However, moral hazard is not a problem that will beset only regional arrangements: the IMF is not immune. For instance, the task force report of the Council on Foreign Relations (1999) advised the IMF to adhere consistently to normal lending practices to redress the moral hazard problem. The reasons why an East Asian regional fund would suffer more than the IMF from the moral hazard problem have not been made clear. As in words of Sakakibara (2000): "if those countries unaffected by the East Asian crisis do not have any political incentive to contribute their own money, they should say so instead of using the moral hazard argument as an excuse for opposing regional arrangements in East Asia."

As for East Asia's limited capacity, Eichengreen (2000) has a point. If the European experience proves to be any guide, East Asia may take many years to develop an effective cooperative financial arrangement. However, it must also be pointed out that having suffered such a painful and costly financial crisis, East Asian countries are prepared to set aside their differences and work together to develop a region-wide self-defense mechanism to protect themselves from future crises.

Despite heated debates on how to prevent the recurrence of crises in the region, we have no tangible solutions yet. Some proposals have been dismissed as unrealistic in spite of their publicity, while others are still in need of concrete frameworks and suitable instruments. While the recovery of the East Asian economies has been much faster than expected, the search for regional arrangements is now again gaining momentum. In May 2000, Asia's three powerhouses – China, Japan, and South Korea – along with the 10 members of ASEAN, at the Asian Development Bank's annual meeting in Chiang Mai, Thailand, agreed to expand the existing network of arrangements designed to ward off a crisis similar to the one that rocked the region in 1997. The plan, dubbed the Chiang Mai Initiative, calls for a network of bilateral currency swap-and-repurchase arrangements and implies the establishment of a system of pooled reserves that central banks could draw upon to buy time when their currencies come under speculative attack. The initiative is widely perceived as a major step toward strengthening financial cooperation among East Asian countries.

Despite many misgivings in recent years about the role of regional financial arrangements, the Chiang Mai Initiative would not require a new institution like the IMF. Although the details of the Chiang Mai Initiative are under careful study, and still unclear, it could complement the facilities of the IMF. In other words, this contractual arrangement would assuage outsiders' worries about any instability in the global financial system that might

result from potential conflict of interests with the IMF and the moral hazard problem.

This paper aims to present a blueprint for a regional arrangement to borrow (RAB) in East Asia. A regional arrangement to borrow may be characterized as contingent credit lines based on the participants' commitment to lend up to a predetermined ceiling. A typical example of a RAB would be the IMF's General Arrangements to Borrow (GAB). The IMF established the GAB in 1961 to supplement its ordinary quota-based resources in coping with the growing strain on the par value system caused by the balance of payments problems of the United States and the United Kingdom. Eight of the major industrial countries and the central banks of two others committed themselves to provide up to US\$6 billion. On the other hand, the credit facilities of the European Monetary System (EMS), established in the early 1970s, provide an example of a successfully operating RAB. The credit mechanism of the European Community focused on providing international liquidity to member countries experiencing balance of payments deficits by drawing on other member countries' loans. Depending on the purpose of the loans, conditions and ceilings varied.

The idea for the Asian Arrangements to Borrow (AAB) was inspired by both the IMF's GAB and the short-term financing facilities of the EMS.³ In principle, the AAB assumes a scheme in which the central banks of participating countries will provide contingent credit lines to its member countries in need. The operation of the contingent credit facilities does not require the establishment of a regional fund; therefore the administrative costs can be minimized. If carefully designed and implemented, it can supplement and complement the role of the IMF without challenging its authority as the international lender of the last resort.⁴

³ Bergsten (2000) also notes that the ASEAN+3's Chiang Mai Initiative is similar to the network installed by the G-10 in the early 1960s, when they faced the first global monetary hiccups of the post-war period. The G-10 network was incorporated into the IMF's GAB.

⁴ The role of the IMF as an international lender of last resort is still incomplete, since it does not have the power to create international reserve money. According to Fischer (1999), however, the classic Bagehot rules for the lender of last resort have been incorporated into the operation of the IMF. Two elements of the Bagehot rules

The AAB, as proposed in this paper, would serve as a milestone in the way to closer and deeper financial cooperation in the region.

The book is organized as follows. Chapter II overviews regional actions to cope with the Asian crisis. Chapter III briefly reviews the multilateral credit arrangements at work. In Chapter IV, we consider major issues related to the promotion of an Asian financial arrangement. In Chapter V, a blueprint for the Asian Arrangements to Borrow is presented. In Chapter VI, the challenges and tasks for the AAB are critically assessed and discussed in detail. A feasible and desirable scheme for the Asian monetary arrangement is explored beyond the regional arrangements to borrow in Chapter VII. Lastly, the major findings of our study are summarized in Chapter VIII.

II. Background: Regional Actions to Cope with the Asian Financial Crisis

1. Asian Monetary Fund: Is It Stillborn?

At the ASEM Finance Ministers' meeting in Bangkok on September 19, 1997, Japan proposed an "Asian Monetary Fund" (AMF) to prevent the recurrence of an Asian currency crisis and to institutionalize financial cooperation among the countries within the region. To discuss the details of the proposed AMF, an undisclosed meeting of Deputy Finance Ministers from twelve Asian nations was held on September 21 at the request of Japan during the IMF/World Bank annual meeting. The twelve nations participating in this meeting were

(penalty rate and the notion of lending freely) have been incorporated into the Supplemental Reserve Facility (SRF), which can make short-term loans in large amounts at penalty rates to countries in crisis. With regard to the last element of the Bagehot rules (good collateral), the loss of market access that would result from default, and the fact that the Fund would be regarded as preferred creditors, would likely be sufficient collateral.

Korea, Japan, China, Hong Kong, Malaysia, Indonesia, the Philippines, Thailand, Australia, Singapore and New Zealand. The United States and a representative of the IMF attended the meeting with observer status.

At the meeting, Japan's Finance Minister Hiroshi Mitsuzuka outlined the plan for the establishment of an AMF. He also expressed Japan's willingness to contribute one half of the initial funds needed. The United States and the IMF representative strongly opposed the plan, asserting that an AMF may weaken the existing international financial architecture under the Bretton Woods institutions. Due to significant differences in opinion regarding the establishment of an AMF, the meeting adjourned without agreement on the details.

However, the advocates of the AMF continued to stress the need for a regional lender of last resort, referring to the fact that the IMF allocation of funds for Asia is inadequate, considering the size of the Asian economies. It has also been pointed out that an individual country's foreign reserves are too small to defend against a currency attack by speculative hedge funds. Japan has been particularly enthusiastic about creating the AMF. Deputy Finance Minister Eisuke Sakakibara toured ASEAN nations to explain Japan's plan. To ease the opposition from the IMF and the United States, he proposed that the AMF be put under the control of the IMF by having the same conditionalities for financial rescue operations, and by making the AMF play a supplementary role to the IMF.

Following up on these events, fourteen Deputy Finance Ministers and central bank representatives as well as IMF, World Bank and Asian Development Bank (ADB) representatives gathered in Manila in November 1997 to discuss ways to stabilize the regional financial market (which was called the Manila Framework). During preparation for the meeting, the United States and other developed nations managed to convince Japan not to pursue its AMF proposal as such a plan would weaken the IMF's authority. A compromise

was reached to strengthen the ability of the IMF to provide funds through early approval of the New Arrangements to Borrow (NAB) and cooperative lending agreements. The plan also provided for a regional surveillance mechanism to strengthen the IMF's global surveillance capacity.

Although the idea of the AMF virtually ended with the adoption of the compromise plan, most members of the Asia Pacific Economic Cooperation (APEC) created the Manila Framework Group as a regional forum in order to develop a concerted approach to restore financial stability in the region. This has been achieved through such initiatives as regional surveillance, economic and technical cooperation to strengthen domestic financial systems and regulatory capacities, and cooperative financing arrangements that supplement those provided by international financial institutions (IFIs). However, the Manila Framework has no formal status, secretariat or other institutional foundation, nor can it provide financial resources to supplement the IMF facilities in the region. Although ad hoc financing package provisions were arranged in the Manila Framework as the second line of defense, such supplementary funding has not been implemented on a permanent and assured basis.

2. APEC's Response to the Financial Crisis

As serenity and confidence returned to Asian financial markets in late 1998, APEC leaders gathered in Malaysia and reaffirmed their confidence in the strong economic fundamentals and prospects for Asia Pacific economies. However, they also recognized important challenges that still remained. To meet these challenges, APEC leaders committed themselves to pursue a cooperative growth strategy with the following dimensions:

- prudent growth-oriented macroeconomic policies, appropriate to the specific requirements of each individual economy;
- expanded financial assistance from the international community to generate employment and build and strengthen social safety nets to protect the poor and vulnerable;
- a comprehensive program of support for efforts to strengthen financial systems, restore trade finance, and accelerate corporate sector restructuring;
- new approaches to catalyze the return of stable and sustainable private capital flows into the region;
- a renewed commitment to the Bogor goals of achieving free and open trade and investment within APEC; and
- looking toward the longer-term, urgent work within APEC and with other economies and institutions to develop and implement measures to strengthen the international financial system.

At the meeting in Lankawi, Malaysia on May 15-16, 1999, the APEC Finance Ministers welcomed the progress the cooperative growth strategy has yielded in stabilizing financial markets and the improved economic outlook, but stressed that continued financial and corporate restructuring was needed in the crisis-affected economies. Finance Ministers also:

- stressed that sound financial systems, corporate governance and improved accounting, transparency and disclosure standards are central to restoring investor confidence and a return of capital flows;
- expressed concerns about the social impact of the crisis and welcomed assistance

- from the development banks to promote the sound design of social safety nets;
- reaffirmed their commitment to cooperate in APEC and other international forums to strengthen the international financial architecture and called for the establishment of an ongoing mechanism for dialogue among industrial and emerging market economies to build consensus on future economic and financial policy issues; and
 - tasked their Deputies to work with private sector groups such as the APEC Financiers Group, ABAC and PECC to study business recommendations for strengthening financial markets and institutions.

The Finance Ministers gathered in Bandar Seri Begawan, Brunei Darussalam on September 9-10, 2000 to discuss the regional economy and measures to ensure the sustainable growth necessary for increased economic prosperity in the APEC region. They also reviewed progress on their various collaborative initiatives to strengthen regional financial and capital markets and to support freer and more stable capital flows in the Asia-Pacific region. Work has proceeded on a range of initiatives:

- *Strengthening financial market supervision:* The APEC Finance Ministers launched the Financial Regulators Training Initiative at their 1998 meeting in Kananaskis. Since then, APEC economies have made significant progress towards strengthening financial supervisory systems through the development of training programs for banking supervisors and securities regulators. The Asian Development Bank has funded a secretariat to support the implementation of the initiative. Given the great strides made under this initiative, the training program

will be extended for a further two years, focusing on more intensive work to assist national regulatory organizations to implement model curricula, and continued provision of regional courses. In addition, Australia will lead a three-year project on managing regulatory change in life insurance and pensions to improve the skills and knowledge of life insurance regulators in the region.

- *Bank failure management:* Recent international financial crises have highlighted the importance of sound domestic financial system, and strong, sound and reliable supervisory and regulatory frameworks. Much of the work being undertaken regarding banking regulation and supervision has focused on ways to prevent bank failure and financial system distress. This initiative plans to address the issue of how to manage bank failures when they occur. A report on bank failure management will be presented to the APEC Economic Leaders in 2001.
- *Pension reform:* Given the important role of pension systems in capital market development and social protection, regional forums on pension reform have been held in Mexico (February 1998) and Chile (April 1999). The latter focused on policy issues and the roles of the public and private sectors in pension fund administration. Thailand hosted the third regional forum in March 2000, which focused on the integration of social security, pension and provident funds together with supervisory and regulatory considerations.
- *Improved credit rating agencies and disclosure:* Workshops on credit rating agencies (CRAs) have been held in Manila in March 1998 and February 1999 which sought to develop best practices for domestic rating agencies. In response to APEC Economic Leaders' request in 1998 for a review of the practices of international rating agencies to promote their effectiveness and to contribute to

sustainable capital flows, a survey of the codes of conduct and practices currently used by various CRAs has been undertaken.

- *Developing domestic bond markets:* This initiative was launched in 1998 to promote the development of deep, liquid and mature domestic bond markets. An initial survey of the current state of individual bond markets identified various impediments to their development. A December 1998 workshop in Hong Kong recommended the preparation of a compendium of sound practices and a website to serve as a resource center and facilitate information exchange. Another workshop held in Hong Kong in August 1999 finalized the “Compendium of Sound Practices Guidelines to Facilitate the Development of Domestic Bond Markets in APEC Member Economies,” which was published in September 1999.
- *Strengthening corporate governance:* The Finance Ministers in Langkawi endorsed recommendations in the report entitled “Strengthening Corporate Governance in the APEC Region” and urged APEC economies to promptly implement them. The report reviews the state of corporate governance in selected APEC economies and suggests measures that governments, judiciaries, regulators, and the private sector could take to enhance corporate standards and encourage greater accountability and transparency in corporate structures. Following up on this report, a policy dialogue will be held in March 2001 to promote understanding of corporate governance issues in the region.
- *Insolvency law:* APEC Finance Ministers aim to raise an awareness of the importance of establishing and implementing strong insolvency regimes in the region. Australia, in conjunction with the OECD and World Bank, hosted a

symposium, “Insolvency Systems in Asia – an Efficiency Perspective,” in November 1999. Indonesia will host a follow-up symposium in early 2001.

- *Free and stable capital flows:* At the 1997 APEC Finance Ministers’ Meeting in Cebu, Ministers agreed that Deputies would prepare a Voluntary Action Plan (VAP) for promoting freer and more stable capital flows in the APEC region. The VAP consists of two parts. Part I comprises a report analyzing the benefits and risks associated with cross-border capital flows and policies that can assist economies in deriving maximum benefit from accessing international capital markets while minimizing the risks. Part II of the VAP is intended to actively encourage the implementation of policies to promote robust and open economies within the APEC region through a process of policy dialogue. It is envisaged that this process will assist economies in implementing international standards and exploring alternative approaches to the promotion of sound and efficient financial markets. The policy dialogue will be based on particular policy issues or international standards, depending on the priorities identified by economies. It is proposed that the first stage of policy dialogue occur in the second half of 2001.
- *Privatization forum:* APEC Finance Ministers endorsed holding the inaugural meeting of the APEC Privatization Forum in November 1999 in Bangkok. Indonesia hosted the second meeting in May 2000. The initiative aims to share experiences and expertise on privatization, including governance and regulation of state enterprises.

3. The New Miyazawa Initiative

As the focus has moved to the issue of post-crisis recovery rather than crisis management itself, financial support was also based on the growth and recovery initiative. In October 1998, Japanese Minister Miyazawa announced “A New Initiative to Overcome the Asian Currency Crisis” (New Miyazawa Initiative), to assist five crisis-affected Asian countries. Under the New Miyazawa Initiative, Japan promised to contribute US\$30 billion. Of the US\$30 billion of the funds available, US\$15 billion was arranged to facilitate trade finance and to provide other short-term capital support; the remaining US\$15 billion was prepared for mid- to long-term support for economic recovery in Asian countries. As of February 2, 2000, a total of US\$21 billion has been committed to support the five crisis-affected Asian countries. In the case of Korea, US\$5 billion of short-term capital is to be provided in the form of a “back-up facility,” as well as US\$3.35 billion of mid- to long-term capital (See Appendix 4).

Japan also initiated the second stage of the New Miyazawa Initiative that has, in principle, placed greater emphasis on the market since Asian economies are entering a new stage of development. It includes assistance to mobilize private sector capital, aimed at the stable economic development of Asia. Two trillion yen of domestic and foreign private-sector funds for Asia will be provided through such measures as assistance for fundraising in international financial and capital markets by Asian countries, and assistance for investment in Asian private-sector enterprises via equity funds, etc. In addition, upgrading and fostering of Asian bond markets with sufficient volume are urgent issues as part of the efforts toward establishing a stable and sound financial system in the region. To promote this, the government of Japan is vitalizing the Tokyo market through promoting the issuance of Samurai bonds and upgrading the government bond market and settlement systems.

The Board of the Asian Development Bank (ADB) approved on March 23, 1999 the establishment of an “Asian Currency Crisis Support Facility (ACCSF)” to assist the five crisis-affected countries. This facility was established by the contributions from the Japanese government, but is administered by the ADB. The facility has the following modalities: (a) interest payment assistance and technical assistance grants; and (b) guarantees. The Japanese government promised to contribute 7.5 billion yen in cash for interest payment and technical assistance grants, and 360 billion yen in government notes for guarantees in FY 1998.

4. The Chiang Mai Initiative

Following the “Joint Statement on East Asia Cooperation,” issued by the ASEAN + 3 Leaders at their informal meeting in Manila, November 1999, the Finance Ministers of ASEAN, China, Japan, and South Korea (ASEAN + 3), convened a meeting in Chiang Mai, during the Asian Development Bank Annual Meeting in May 2000, in order to exchange views on economic and financial situations and discuss further cooperation in the East Asian region. As a move toward regional self-help and support mechanisms in East Asia, through the ASEAN + 3 framework, 13 countries jointly recognized the need to establish a regional financing arrangement to supplement the existing international facilities. As a start, they agreed to strengthen the existing cooperative frameworks among the monetary authorities in East Asia through the Chiang Mai Initiative. The Initiative involves an expanded ASEAN Swap Arrangement that would include all ASEAN countries, and a network of bilateral swap and repurchase agreement facilities among ASEAN countries, China, Japan, and South Korea.

Because the existing arrangements still have various limitations, they were not utilized

during the recent crisis. Thus, the Chiang Mai Initiative, the details of which are being worked out, should be further developed to effectively fend off currency attacks and to promote greater international financial stability. To that end, a comprehensive study of all feasible regional support facilities needs to be made under the ASEAN + 3 framework. In addition, based on the road map leading the way towards the strengthened regional financial cooperation, detailed modalities and mechanism should be designed for enhancing the financial stability of the region.

III. Review of the Multilateral Arrangements to Borrow

1. The General Arrangements to Borrow (GAB)⁵

The quota subscriptions of member countries are the principal source of financing for the IMF. However, in 1962, the largest industrial countries became concerned that if any one of them were to draw on the resources of the IMF, the amount they would potentially borrow would significantly reduce the amount of usable resources readily available to other countries. Accordingly, they agreed to stand ready to lend supplemental funds to the IMF, if such funds were needed to forestall, or cope with, an impairment of the international monetary system. This agreement was named the “General Arrangements to Borrow” (GAB). The General Arrangements were subject to several revisions, as will be shown in this chapter. The potential amount of credit currently available to the IMF, under the GAB, totals SDR 17

⁵ Here we refer to and summarize the IMF's pamphlet, “The General Arrangements to Borrow,” by M. Ainley (1984).

billion (about US\$23 billion), with an additional SDR 1.5 billion available under an associated arrangement with Saudi Arabia. The GAB have been activated ten times, most recently in July 1998, for an amount of SDR 6.3 billion, in connection with the financing of an extended arrangement for Russia. Prior to the July 1998 activation for Russia, activation occurred in 1977, when the IMF borrowed for lending to the United Kingdom and Italy under stand-by credits, and in 1978 to finance a reserve tranche purchase by the United States.

1.1 The General Arrangements in 1962-1982

The General Arrangements to Borrow were established in 1962 by the Fund, in cooperation with eight of the major industrial countries and the central banks of two others.⁶ The General Arrangements were the first credit lines arranged by the Fund to supplement its ordinary, quota-based resources. Since then, the General Arrangements have remained the IMF's longest-lasting borrowing arrangements.

The General Arrangements were a product of the times. They were designed to help the Fund deal with widespread and growing concern about the adequacy of the official reserves of international liquidity owing to the large drawings by two major reserves centers, the United States and the United Kingdom, and the disruptive effects of short-term speculative capital movements. The General Arrangements were a conditional credit line of defense, incorporated within the Fund's ordinary lending procedures and could be drawn on only with the consent of the participants. The credit arrangements assigned to the participants were based on their present and prospective balance of payments and reserve positions. The credit lines established for individual participants are shown in Table 1:

⁶ They were the United States, Deutsche Bundesbank (Germany), the United Kingdom, France, Italy, Japan, Canada, the Netherlands, Belgium and Sveriges Riksbank (Sweden).

<Table 1> GAB Participants and Credit Amounts, 1962

Participant	Units of Participant's Currency	U.S. Dollar Equivalent (in millions)	Percentage Share
United States	US\$2,000,000,000	2,000	33.33
United Kingdom	£357,142,857	1,000	16.66
Deutsche Bundesbank ¹⁾	DM 4,000,000,000	1,000	16.66
France	NF 2,715,381,428	550	9.16
Italy	Lit 343,750,000,000	550	9.16
Japan	¥ 90,000,000,000	250	4.16
Canada ²⁾	Can\$216,216,000	200	3.36
the Netherlands	f. 724,000,000	200	3.36
Belgium	BF 7,500,000,000	150	2.50
Sveriges Riksbank ¹⁾	SKr 517,320,000	100	1.66
Total		6,000	100.00

Source: Ainley (1984)

- 1) Both the Sveriges Riksbank and the Deutsche Bundesbank are empowered, by domestic legislation, to lend to the Fund. They are, therefore, participants in the GAB in their own right and not simply agents of their respective governments. The commitment of Sweden was transferred to the Sveriges Riksbank between December 1961, when the Group of Ten agreed to establish the General Arrangements, and October 1962, when they took effect.
- 2) The amount for Canada, initially fixed at Can\$208,938,000, was increased before the General Arrangements came into force to maintain a credit line equivalent to US\$200 million following the devaluation of the Canadian dollar in May 1962.

The GAB participants could be called on by the Fund to finance either a stand-by arrangement or an “exchange transaction” which did not require a stand-by arrangement. Each participant in the GAB reserved the right to decide whether or not to lend to the Fund. There were five main steps to be followed before the GAB was to be activated:

- 1) The Managing Director first had to come to an agreement, after consultation, that the GAB resources were needed to forestall, or cope with, an impairment of the system;
- 2) The Managing Director then had to consult with the Executive Directors and the GAB participants on a possible proposal for a GAB activation plan;
- 3) The GAB participants then had to accept the proposal as a group;
- 4) Each participant then notified the Fund individually that it had accepted the proposed

call under its credit line; and

5) The proposal then had to be approved by the Executive Board.

The maturity of lending by GAB participants is essentially five years. However, the Fund could repay earlier if the GAB beneficiary is committed to repaying the Fund within five years, so the creditors of the GAB could get their money back earlier in a crisis. The interest rate paid by the IMF in the loans under the GAB was not high, partly because the GAB were seen as a cooperative effort to protect the international monetary system, and partly because the GAB claims would have been secure investment. A new interest formula was adopted in 1975, which meant that the Fund should pay interest quarterly to GAB creditors at the same rate it levied charges on drawings financed by the GAB, but not less than four percent per annum.

The provisions under the January 1962 Decision did not allow a participant to transfer all or part of its GAB claims except with the prior consent of the Fund. In practice, however, these provisions did not stand in the way of transfers among GAB participants, which enhanced the liquidity of GAB claims. The provisions were updated and broadened in March 1979, when the IMF decided to give participants the freedom to transfer at any time all or part of their GAB claims to another participant at a mutually agreed price.

Between 1964 and 1970, the General Arrangements were activated six times to help the Fund finance four large drawings by the United Kingdom and two by France. The total borrowings from the GAB during this period amounted to the equivalent of US\$2.155 million, all of which had been repaid by August 1971. The details are shown in Table 2.

<Table 2> Fund Financing Involving the GAB, 1964-1970

(unit: millions of US\$)

Date	Member	Amount of Drawings	Financed by		
			GAB	Fund Gold Sales	Fund Currency Holdings
Dec. 1964	U.K.	1,000	405 (41%)	250 (25%)	345 (34%)
May 1965	U.K.	1,400	525 (38%)	400 (28%)	475 (34%)
Nov. 1967	U.K.	1,400	476 (34%)	365 (26%)	559 (40%)
June 1968	France	745	265 (36%)	182 (24%)	298 (40%)
June 1969	U.K.	500	200 (40%)	50 (10%)	250 (50%)
Sept 1969/ Feb. 1970	France	985	284 (29%)	200 (20%)	501 (51%)
	Total	6,030	2,155 (36%)	1,447 (24%)	2,428 (40%)

Source: Ainley (1984)

The IMF had called on the GAB participants to finance large conditional drawings on the Fund (in the so-called “upper credit tranches”) by the United Kingdom. The United Kingdom’s current account was weak for much of the 1960s but policy options – especially devaluation – were limited by the reserve-currency role of the pound sterling and the sizable overhand of sterling balances held in London. The General Arrangements were also activated for France under similar circumstances: first to resist devaluation of the franc in 1968, and then to support it in 1969. Surprisingly, however, the General Arrangements were not activated for the United States in the 1960s. Successive U.S. administrations were unwilling, for domestic political reasons, to accept the conditions attached by the Fund to drawings on the credit tranche. The U.S. drawings in this period were all within the unconditional gold tranche and hence financed without recourse to the GAB.

The General Arrangements were activated three times in the 1970s. They were used to help finance large drawings by the U.K. (January 1977), Italy (May 1977) and the U.S. (November 1978). 76% of the proposed drawings by the U.K. (SDR 2.6 billion), 75% of the proposed drawings by Italy (SDR 337 million) and 34% of the drawings by the U.S. (SDR 777million) were financed by the GAB. The U.S. authorities mobilized SDR 2.3 billion,

mainly in deutsche marks and yen, to defend the dollar. The details of how the Fund financed these drawings are shown in Table 3.

<Table 3> Fund Financing Involving the GAB, 1977-1978

(unit: millions of SDR)

Date	Member	Amount of Drawings	Financed by		
			GAB	Fund Sales	Gold Fund Currency Holdings
Jan. 1977	U.K	3,360	2,560 (76%)	300 (9%)	500 (15%)
May 1977	Italy	450	337 (75%)	37.5 (8%)	75 (17%)
Nov. 1978	U.S.	2,275	777 (34%)	-	1,498 (66%)
	Total	6,085	3,674 (69%)	337.5 (6%)	2,073 (30%)

Source: Ainley (1984)

The General Arrangements, which had been activated during the period 1962-1978, were useful to the Fund in that they provided an additional source for financing its lending to member countries and allowed the Fund to preserve its ordinary resources for drawings by other members who did not participate in the GAB. However, the General Arrangements had always been controversial and some members, including industrial as well as developing countries, were overtly critical of the non-global aspect of the GAB. The main criticisms were as follows:

- 1) The General Arrangements were exclusive. The number of participants was limited, and they had agreed to lend to the Fund only to finance their own transactions with it.⁷ Several countries, and not solely developing countries, resented this exclusiveness of the GAB;
- 2) The General Arrangements were seen as reducing the Fund's authority. They gave a small club of rich members an effective veto over important decisions by the Fund to

⁷ The GAB aroused the suspicion that a new: deology of cooperation between industrial countries had replaced

enter into transactions; and

- 3) The General Arrangements were the *raison d'être* of the Group of Ten, which played a much greater role in discussing Fund issues, such as the creation of the SDR. This later prompted the developing countries to form their own group, the Group of 24, in November 1971, to protect their interests in the international monetary field.⁸

The participants examined the problems raised against the GAB on several occasions before 1982, but very little came out of it. The General Arrangements, therefore, stayed virtually the same from 1962 to 1982. There were three main reasons for this inertia, particularly in the 1970s. First, the participants did not view the Fund as a necessary line of support in this period. As the international monetary system moved from the fixed regime to the floating regime, there was less need for the participants to defend a particular exchange rate, less need to approach the Fund to support such action, and less need for the Fund to use the GAB. Second, the rapid growth of the Euro-market as a source of credit offered a more expensive, but unconditional, alternative to borrowing from the Fund. The expansion of the U.S. Federal Reserve's swap network and the European Community also provided other sources of official credit for the major industrial countries. Third, more generally, the most powerful industrial countries were reluctant to take on new international commitments at a time when their own economies were making the difficult, often painful adjustment to rising inflationary pressures, higher oil prices and deep-rooted structural imbalances.

the universalist aspirations of Bretton Woods (James, 1996).

⁸ The Group of 24 was established in 1971 with a view to increase the analytical capacity and the negotiating strength of the developing countries in discussions and negotiations in the international financial institutions. The G-24 is the only formal developing country grouping within the IMF and the World Bank. Its meetings are open to all developing countries.

1.2 Reform of the GAB (1982-1983)

It took a crisis to establish the GAB; another was needed to persuade the participants to reform them. Reform of the GAB came as a direct response by the major industrial countries to the debt crises. The debt crises can be traced back to the growing inflationary pressures of the late 1960s and 1970s, the oil price increases of 1973-1974 and 1979-1980, and the unexpected depth and severity of the world recession after 1980. In the early 1980s, the major industrial countries, notably the U.S., moved decisively to monetary restraint, which was designed to break the upward trend in inflation and the inflationary expectations of their economies. The result was slow growth, weak import demand and very high interest rates for foreign, as well as domestic, borrowers. For the borrowing countries, these changes in the world economy meant growing strains on both their current and capital accounts. Major borrowers, like Mexico and Brazil, were forced to rely increasingly on more expensive short-term loans. The total outstanding external debt of the non-oil developing countries amounted to US\$626 billion in 1982, compared with just US\$90 billion in 1971. Much of it was concentrated among a small group of major borrowers in Latin America and Eastern Europe.

In the summer of 1982, Mexico and then Brazil were unable to obtain new loans, or to roll over the existing ones. The result was higher spreads for virtually all borrowers, irrespective of their particular circumstances, and an abrupt reduction in the availability of credit for specific countries. This situation finally developed into the default of the major borrowing countries.

The immediate crisis was averted by a series of ad hoc rescue packages involving the BIS, central banks, governments, commercial banks and crucially the Fund. However, the debt crisis, and the consequent requests for Fund support on a large scale, highlighted the

inadequacy of Fund resources. Despite two general quota increases in 1977 (32.5 percent) and 1980 (50 percent), which raised the total quota to SDR 61 billion, the Fund's ordinary resources from quota subscriptions had not kept pace with either the growth in world trade and capital flows or with the growing needs of deficit members for balance of payment assistance. In September 1982, U.S. Treasury Secretary Donald T. Regan proposed to increase the Fund quota sufficiently enough to cover the members' need for temporary financing in the normal circumstances at the Annual Joint Meetings of the IMF and the World Bank. He also suggested adopting an additional permanent borrowing arrangement that would be available to the IMF on a contingency basis for use in extraordinary circumstances. The reform and enlargement of the GAB immediately followed this proposal. Secretary Regan's proposal did not refer specifically to the GAB, leaving options open for lenders to the crisis fund to include countries that were not Group of Ten participants. However, the General Arrangements offered a ready-made framework for the proposal. It was quicker and easier for the Group of Ten to adapt the GAB than to start afresh with a new arrangement.

The revision of the GAB, agreed by the Group of Ten and the Executive Board in January and February 1983, respectively, became effective in December 1983. The main changes were as follows:

- 1) The total of individual credit lines under the GAB was increased to SDR 17 billion;
- 2) The shares of individual participants in the increased total were rearranged to reflect the changes in their economic and financial positions since 1962 and their ability to provide resources to the Fund. The shares of the original and revised GAB are shown in Table 4. As in 1962, the size of individual credit lines was decided rather informally.

There was no single or precise formula;

- 3) Through the Swiss National, Bank Switzerland became a new participant in the GAB.

As in the past, the fact that Switzerland is not a member of the Fund means that the Fund cannot call on the revised GAB to finance transactions with Switzerland;

- 4) The revised GAB allowed the Fund to enter into borrowing arrangements with members that are not GAB participants. As one of the forms of association with the GAB, a borrowing arrangement could authorize the Fund to call on the GAB to finance transactions with non-participant members. In this case, a non-participant would have virtually the same rights and responsibilities as a GAB participant;

- 5) The Fund concluded an associated borrowing arrangement with Saudi Arabia. Under the arrangement, Saudi Arabia agreed to stand ready to lend the Fund up to SDR 1.5 billion on a revolving basis over five years. The procedure for making calls, the interest rates and most other terms and conditions were essentially the same as those in the revised GAB;

- 6) The Fund could call on the participants to finance drawings by non-participants according to the revised GAB only in certain well-defined circumstances. Such drawings were only to be made in support of adjustment programs. Furthermore, special criteria had to be met in order for the Managing Director to propose calls on the GAB to finance transactions with non-participants. The criteria were stricter than those for participants. In particular, the criterion referring to problems which could “threaten” the stability of the international monetary system was much more severe than that which allows the GAB to be activated for the benefit of participants to forestall or cope with an “impairment” of the system; and

- 7) GAB creditors were expected to earn interest at a rate equal to the combined market

interest rate. The market interest rate was determined on the basis of a weighted average of yields on short-term market instruments denominated in the five currencies that make up the SDR basket. It was also agreed to denominate the individual credit lines in SDR. This would avoid unintended changes in the value, caused by exchange rate fluctuations.

<Table 4> Original and Revised GAB: Individual Credit Arrangements

1962		1983	
Participants	Amount (millions of US\$) (%)	Participants	Amount (millions of SDR) (%)
U.S.	2,000 (33.33)	U.S.	4,250 (25.00)
Deutsche Bundesbank	1,000 (16.66)	Deutsche Bundesbank	2,380 (14.00)
Japan	250 (4.16)	Japan	2,125 (12.50)
France	550 (9.16)	France	1,700 (10.00)
U. K.	1,000 (16.66)	U. K.	1,700 (10.00)
Italy	550 (9.16)	Italy	1,105 (6.50)
Canada	200 (3.36)	Canada	892.5 (5.25)
The Netherlands	200 (3.36)	the Netherlands	850 (5.00)
Belgium	150 (2.50)	Belgium	595 (3.50)
Sveriges Riksbank	100 (1.66)	Sveriges Riksbank	382.5 (2.25)
Swiss National Bank	-	Swiss National Bank	1,020(6.00)
Total	6,000	Total	17,000

Source: Ainley (1984)

These reforms of the General Arrangements strengthened the Fund in several important ways:

- 1) The tripling of the GAB resources represented a major addition to the Fund's resource base. The Fund found itself in a much more secure financial position;
- 2) The Fund found itself in a position to continue assisting its members on an appropriate scale, therefore remaining an effective agent for adjustment and important catalyst for

other financial flows;

- 3) The enlargement of the GAB meant that the Fund was in a better position to meet the potential borrowing needs of the main industrial countries;
- 4) The GAB had become more open and less exclusive. The fact that the Fund could tap the GAB for lending to non-participants was potentially very significant; and
- 5) The Fund's liquidity would be considerably strengthened as the Group of Ten admitted outsiders into their club. The participation of Switzerland set an important precedent, as did the association of Saudi Arabia.

On the other hand, the revised GAB still left a number of questions unanswered:

- 1) It could be argued that its overall size might still be insufficient to cover the potential demands on the Fund by both participants and non-participants;
- 2) It could be argued that the conditions for activating the GAB for non-participants were overly restrictive. The developing countries were very concerned that the definition of a "threat" to the international monetary system would be made by the GAB participants and not by the Fund alone;
- 3) The possible use of the GAB for the benefit of non-participants might be only temporary. If the crisis atmosphere of 1982 had given way to a more settled international outlook, the participants might have decided to restore the GAB to its original role as a source of finance available exclusively for drawings by the Group of Ten of the Fund;
- 4) The enlargement of the GAB, in preference to a much larger quota increase, could be interpreted as a shift to a more conservative role for the Fund in the mid-1980s.

2. The New Arrangements to Borrow (NAB)

Following the Mexican financial crisis in December 1994, participants in the June 1995 G-7 Halifax Summit called on the G-10 and other financially strong countries to develop new financing arrangements. Following the meeting, the IMF's Executive Board adopted a decision establishing the New Arrangements to Borrow (NAB) on January 27, 1997. However, the New Arrangements were not immediately implemented mainly due to the delay in U.S. Congressional approval. Only after the Thai crisis spread to neighboring countries and many East Asian countries came to support Japan's proposal for the Asian Monetary Fund in late 1997, did the United States and the other developed countries become aware of the severity of the Asia-wide crisis. The compromise plan, envisioned during the gathering in Manila, in November 1997, was to strengthen the ability of the IMF to provide funds through an early approval of the New Arrangements and cooperative lending agreement.

The New Arrangements finally became effective on November 17, 1998. The NAB are a set of credit arrangements between the IMF and 25 members and institutions to provide supplementary resources to the IMF, enabling it to forestall or cope with an impairment of the international monetary system. The NAB also aims to deal with an exceptional situation threatening the stability of that system, as under the GAB. Basically, the NAB do not replace the existing GAB, which remain in force. However, the NAB are to be the first and principal recourse in the event that supplementary resources are needed by the IMF. The total amount of resources available to the IMF under the NAB and GAB combined is SDR 34 billion (about US\$46 billion), double the amount available under the GAB alone. The NAB participants and their credit amounts are shown in Table 5. Commitment from individual participants is based on relative economic strength, as measured by the actual IMF quota, as a

predominant criterion. The decision will be in effect for five years from its effective date and may be renewed.

<Table 5> NAB Participants and Amount of Credit Arrangements

Participants	Amount (millions of SDR)
Australia	810(2.38%)
Austria	412(1.21%)
Belgium	967(2.84%)
Canada	1,396(4.11%)
Denmark	371(1.09%)
Deutsche Bundesbank	3,557(10.46%)
Finland	340(1.00%)
France	2,577(7.58%)
Hong Kong	340(1.00)
Italy	1,772(5.21%)
Japan	3,557(10.46%)
Korea	340(1.00%)
Kuwait	345(1.01%)
Luxembourg	340(1.00%)
Malaysia	340(1.00%)
Netherlands	1,316(3.87%)
Norway	383(1.13%)
Saudi Arabia	1,780(5.24%)
Singapore	340(1.00%)
Spain	672(1.98%)
Sveriges Riksbank	859(2.53%)
Swiss National Bank	1,557(4.58%)
Thailand	340(1.00)
U. K.	2,577(7.58%)
U. S.	6,712(19.74%)
Total	34,000(100%)

A proposal for calls on the NAB by the Fund's Managing Director becomes effective only if it is accepted by the NAB participants, and then approved by the Executive Board. The NAB may also be activated to finance drawing on the Fund by non-participants, as in the GAB. The NAB have been activated once to finance an extended arrangement for Brazil in December 1998, when the IMF called on funding of SDR 9.1 billion, of which SDR 2.9 billion was used. The Fund repaid the outstanding amount in March 1999, when the Fund's

liquidity position improved substantially due to the bulk of the quota increases following the effectiveness of the Eleventh General Review of Quotas.⁹

Participants in the NAB are scheduled to meet once a year at the time of the Annual Meetings of the Fund to discuss macroeconomic and financial market developments, especially those which could have an impact on the stability of the financial system and lead to a possible need for the Fund to seek supplementary resources. The chairmanship of the NAB grouping rotates annually, and the IMF headquarters staffs provide secretariat support for the group.

3. Credit Arrangements of the European Community¹⁰

The origin of the credit mechanisms of the European Union goes back to the late 1960s, when divergences in inflation rates and external balances began to appear among member states of the European Community. A speculative attack against the French franc in favor of the deutsche mark in May 1968, which put a great deal of pressure on the bilateral parities of Community currencies, resulted in heated discussions on the necessity to coordinate economic and monetary policies among the member states and establish monetary facilities for mutual balance of payments assistance.

The credit mechanisms of the European Community are composed of three distinctive but mutually complementary instruments: the Very Short-Term Financing Facility, the Short-Term Monetary Support Facility and the Medium-Term Financial Support Facility. These facilities have the common goal of providing international liquidity to member states

⁹ During the Eleventh General Review of Quotas, the quota was increased from SDR 145.6 billion to SDR 212 billion.

¹⁰ Information on the credit arrangements of the EU draws on Apel (1998), chapters 1 and 2.

experiencing balance-of-payment deficit. However, they differ not only in their maturity, but also in the conditions attached to borrowing. Below, we will review the major characteristics of these facilities one by one.

3.1 The Short-Term Monetary Support Facility

The Short-Term Monetary Support (STMS) facility aims to provide a certain amount of credit to its members in return for their commitment to lend on request from other members. The STMS facility became operational in February 1970 on the basis of an agreement between the central banks of the six member states. Under the agreement, the central bank of each member state committed itself to providing, on request, funds not exceeding a given ceiling, equal to its debtor quota, to the other central banks of the member states experiencing short-term balance of payments difficulties.

Initially, this facility had a total quota of 1 billion units (1 unit of account = US\$1) available to the central banks of the member states. The total quota was broken down in the following way: 300 million units for France and Germany respectively, 200 million units for Italy, and 100 million units for the Netherlands and Belgium (together with Luxembourg). According to the above agreement, the central bank of a participating country can borrow from the other four central banks up to its quota. At the same time, it was obliged to lend up to the same quota to the other banks. In addition, the total extension (or *rallonge*) of the quotas could attain a maximum of 1 billion units of account.

The STMS facility is governed by an agreement between the central banks of the member states and is administered by the European Monetary Cooperation Fund (EMCF), with the

Bank of International Settlements (BIS) as its agent.¹¹ The granting of short-term monetary support is linked to the need for short-term financing caused by a temporary balance of payments deficit. Credits are granted without economic policy conditions, but they trigger subsequent consultations. They are extended for a period of three months, originally with the possibility of renewal for another period of three months. With the amendments introduced in the context of the European Monetary System, a new agreement allows credits under the STMS facility to be renewed for additional three months, raising the maximum duration from six to nine months.

The STMS facility was fully revised and strengthened in February 1974. The central banks of nine member states agreed to increase the total amount of the quotas; more importantly, a debtor quota (borrowing ceiling) and a creditor quota (commitment ceiling) were separately arranged, the latter being twice as high as the former. In addition, extensions beyond the debtor and the creditor quotas (so called *rallonges*) could be applied to any member state. The central bank of a member state may borrow, from its partners under the STMS facility, a total amount equal to its debtor quota plus one-half of the total available (creditor) *rallonge*. The central bank of a member state is committed to lend to its partners under this facility a maximum amount equal to its creditor quota plus the total (creditor) *rallonge*.

The STMS facility was used by Italy in 1974, but has not been used since the launch of the EMS. Participants and the amount of debtor and creditor quotas are shown in Table 6. As of January 1995, all of the 15 EU member states took part in the STMS facility and the total

¹¹ The European Monetary Cooperation Fund was established in April 1973 with a view to promoting economic and monetary union. However, it was given more limited tasks than originally planned: 1) the cooperation necessary to facilitate the gradual narrowing of the margins of fluctuation of Community currencies against each other; 2) the administration of the short-term monetary support facility; 3) the multilateralization of positions in the very short-term financial support financing facility resulting from intervention carried out by the central banks in Community currencies. See Apel (1998) p. 40.

amount of credit available from the facility is ECU 15,450 million.¹²

<Table 6> Short-Term Monetary Support Facility

1. Participants and Amounts of Quotas as of March 1979

(unit: million of ECU)

Participant	Debtor Quota	Creditor Quota	Percentage(%)
Belgium	580	1,160	7.34
Denmark	260	520	3.29
Germany	1,740	3,480	22.03
France	1,740	3,480	22.03
Ireland	100	200	1.27
Italy	1,160	2,320	14.67
Netherlands	580	1,160	7.34
U.K.	1,740	3,480	22.03
Total	7,900	15,800	100.0
Rallonge	4,400	8,800	

2. Participants and Amount of Quotas as of January 1995

(unit: million of ECU)

Participant	Debtor Quarter	Creditor Quarter	Percentage(%)
Belgium	580	1,160	5.81
Denmark	260	520	2.60
Germany	1,740	3,480	17.43
Greece	150	300	1.50
Spain	725	1,450	7.26
France	1,740	3,480	17.43
Ireland	100	200	1.00
Italy	1,160	2,320	11.62
The Netherlands	580	1,160	5.81
Austria	350	700	3.50
Portugal	145	290	1.45
Finland	220	440	2.20
Sweden	495	990	4.96
U.K.	1,740	3,480	17.43
Total	9,985	19,970	100.0
Rallonge	4,400	8,800	

Source: Apel (1998), p. 71

¹² If the central banks of the member states holding 66.6 percent of the debtor quotas borrowed up to their ceiling from the other central banks holding 33.3 percent of the creditor quotas, the total amount of credit outstanding becomes ECU 6,657 million. If the amount of creditor rallonge of ECU 8,800 million is added, the total amount of credit available becomes ECU 15,450 million.

3.2 The Very Short-Term Financing Facility

In the middle of increased uncertainty about the prospects for the Bretton Woods system, the central banks of the six member states of the European Community and the three prospective member states signed an agreement to narrow the margins of fluctuation between Community currencies. Under the Smithsonian agreement, any Community currency could fluctuate within a margin of plus or minus 2.25% of its parity against the U.S. dollar. Meanwhile, under the Basle Agreement, which is sometimes referred to as the “snake in the tunnel,” any two Community currencies could fluctuate within the much narrower margin of 2.25%.

The very short-term financing facility was established in April 1972 to finance the marginal intervention required to stabilize bilateral exchange rates between Community currencies. Under the VSTF facility, the central banks of strong currencies have an obligation to provide a sufficient amount of their currencies required for official intervention to defend the existing exchange rate margin. For example, if the exchange rate of the French franc per unit of the deutsche mark increases sharply, the central bank of France needs to intervene in the foreign exchange market by selling deutsche marks. Through the VSTF facility, France can borrow deutsche mark from Germany. This obligation came about because the official reserve holdings that one country can use in order to intervene in the foreign exchange market are not sufficient to cope with the unprecedented magnitude of private capital movements. In addition, the ERM crisis in 1992-93 shows that this EMS institutional framework alone was not sufficient to fend off speculative attacks.

In the case of European monetary cooperation, the German Bundesbank assumed the role of the regional lender of last resort. For example, during the EMS crisis in September

1992, the credit supplied by the Bundesbank reached about DM93 billion. Because the liabilities that weak currency countries incur can be repaid in the ECU, the value of German credits decreased after the devaluation of some European currencies. The expected loss of the Bundesbank was estimated to be in excess of DM1 billion in its VSTF facility (Collignon, 1996).

With the introduction of the EMS in 1979, the terms and conditions of the VSTF facility were revised several times. According to the 1987 agreement between the central banks, which is known as the Basle/Nyborg Agreement, the major features of the VSTF are as follows:

- 1) The debtor central bank is given seventy-five days from the end of the month in which the debt is incurred to reimburse the principal and interest. At the request of the debtor central bank, this initial settlement date may be extended for a period of three months. This request is automatically granted, provided that the total amount of indebtedness of the central bank in the VSTF facility does not exceed a ceiling equal to 200% of the debtor quota of the central bank concerned under the STMF facility. Moreover, any debt already renewed automatically for three months may be renewed for further three months, subject to the agreement of the creditor central banks;
- 2) Any debt exceeding the 200% ceiling may be renewed once for three months, subject to the agreement of the creditor central bank, or central banks if the debtor central bank has loans outstanding with more than one creditor central bank;
- 3) When the reimbursement of a financing operation falls due, settlement by the debtor central bank is to be effected preferably in the creditor's currency. Any debt not settled in the creditor's currency may be settled by transfers of ECU assets, or that of other

reserve components in accordance with the composition of the debtor central bank's reserves; and

- 4) Since the unit of account of the VSTF facility managed by the EMCF is the ECU, debtor and creditor balances are also denominated in ECU. However, since the loans and reimbursements are usually effected in assets denominated in national currencies, the conversion from the national units of account to the ECU is done on the settlement day on the basis of the daily rate for the ECU established by the commission;
- 5) Interest payments apply to loans granted under the VSTF operations. Following the 1985 amendment, the interest rate is calculated as a weighted average of the most representative rates on the domestic money market of the countries whose currencies make up the ECU basket.

To summarize, the operation of the VSTF facility is closely linked to the STMS facility in its purpose of stabilizing bilateral exchange rates between Community currencies. At the same time, determination of the creditor and debtor ceilings is linked to those under the STMS facility. In addition, appropriate market interest rates are applied to loans under the VSTF facility.

3.3 The Medium-Term Financial Support Facility

The Medium-Term Financial Assistance (MTFA) facility was established in 1972 with an aim to extend loans to any member state in difficulty, or seriously threatened with difficulties in its balance of payments. Whether difficulties with the balance of payments resulted from the current account or the capital account did not matter. Under the MTFA facility, credits are

extended for a period of two to five years. The debtor country is subject to economic policy conditions decided by the Council of Ministers. In formulating conditions and monitoring the performance of the debtor country, the Commission and the Monetary Committee assume the key advisory roles. The MTFA facility has creditor ceilings, but no specified debtor ceilings, for individual countries except that the borrowing of a member state normally cannot exceed half of the total creditor ceilings. The creditor ceilings for participants are as follows: 600 million units of account for Germany and France respectively, 400 units for Italy, 200 units for Belgium, Luxembourg and the Netherlands respectively.

Meanwhile, the Community Loan Mechanism (CLM) was established in 1975 to assist member states experiencing current account problems arising from the oil price shock. The CLM could be differentiated from the MTFA facility in the sense that the former used funds from the outside. The community was allowed to borrow up to US\$3 billion. In 1988, the MTFA was merged with the Community Loan Mechanism (CLM) to form a new credit facility called the Medium-Term Financial Support (MTFS) facility. This decision was made to provide a flexible financial safety net in order to encourage full liberalization of the member states' capital flows. Borrowing under the MFTS facility is subject to conditions aimed at re-establishing a sustainable balance of payments status. The current ceiling for total borrowing under the MFTS facility is set at ECU 16,000 million.¹³

4. ASEAN Swap Arrangement

The five original ASEAN countries, in pursuit of their common objective to promote monetary cooperation, established in August 1977 an ASEAN Swap Arrangement for a

¹³ Italy was granted a loan of ECU 8 billion in four tranches on January 18, 1993.

period of one year. Since then, the ASEAN Swap Arrangement has been renewed several times, in accordance with Article X laid down in the Memorandum of Understanding of the ASEAN Swap Arrangement. The latest renewal, for additional five years, was made in Kuala Lumpur on January 27, 1999.

Under the Swap Arrangement, the maximum total outstanding amount of U.S. dollars provided by each participant was US\$40 million. This amount was too tiny to fend off the volatile capital reversal that occurred during the last Asian financial turmoil. In principle, the amount of swap granted to a participant was to be provided in equal shares by the other participants. However, a participant may refrain from swapping by informing the other member countries, and at its discretion, provide reasons for its decision. As a consequence, other participants are allowed to increase their shares on a voluntary basis. In the case where the total amount of swap committed collectively by the participants does not sufficiently meet the requested amount, the amount of swap granted shall be reduced accordingly. The maximum outstanding amount of U.S. dollars received by any participant under the Arrangement shall not at any point in time exceed US\$80 million (on the basis of a gearing ratio of one to two).

As shown briefly above, the ASEAN Swap Arrangement is a very primitive financing arrangement, compared to various well-organized European mechanisms. This is mainly due to the loose monetary cooperation in ASEAN. Furthermore, no regional lender of last resort exists, although Singapore could be a candidate. In addition, the Swap Arrangement is denominated in U.S. dollars, which implies that this financing mechanism has nothing to do with region-wide exchange rate coordination. The ASEAN countries might use this arrangement to defend their dollar-pegged exchange rate systems when their currencies are under sharp pressure of depreciation.

The level of utilization was also low; from 1979 to 1992 only four ASEAN countries have activated this facility, i.e., Indonesia (1979), Malaysia (1980), Thailand (1980), and the Philippines (1981 and 1992). During the Asian financial crisis of 1997-98, the ASEAN Swap Arrangement was not utilized. In fact, this regional arrangement would not have helped much to put down the financial debacle since a massive scale of liquidity provision was required to finance the external imbalance caused by the liquidity run. Although new members are expected to join the expanded ASEAN Swap Arrangement under the Chiang Mai Initiative, Cambodia, Lao PDR, Myanmar, and Vietnam would not contribute much because they are poor developing countries.¹⁴ Unless Singapore takes leadership in ASEAN by contributing a meaningful amount of credit, this swap arrangement will not be a useful instrument to cope with the contemporary currency crisis except for being a symbolic cooperative scheme.

IV. Major Issues for Asian Financial Arrangements

1. Rationale for Asian Financial Arrangements

A genuine assessment of whether any type of regional financing arrangement is necessary in Asia will depend on the nature of the 1997 Asian financial crisis and the possibility of its recurrence in the future. If the financial crisis was due to a temporary lack of international liquidity in the region, any financial arrangement that can directly and adequately cope with

¹⁴ Cambodia, Lao PDR, Myanmar and Vietnam are non-IMF Article VIII countries. What these countries more seriously need will be long-term development assistance rather than short-term measures to manage the liquidity crisis. When they become more deeply integrated into international capital markets, the source of financing will be more diversified, and thus the role of private capital will be more important in their development financing. Subsequently, they must also seek such preventive measures as the ASEAN Swap Arrangements to ward off volatile capital movements.

this liquidity problem should be promoted. On the other hand, if the crisis reflected the deep-seated structural problems associated with deteriorating fundamentals, such as the over-borrowing syndrome of the private sector and the subsequent high rate of non-performing loans in the financial sector, then the benefits of a regional financing arrangement without any binding structural reforms would not suffice to prevent the recurrence of a similar crisis.

According to Chang and Velasco (1998), the Asian crisis was no more than a liquidity crisis. Thus, they openly stated that the crisis was primarily caused by the liquidity run in the financial sector where the potential short-term obligations in foreign currency exceeded the amount of foreign currency it could access on short notice.¹⁵ They claimed that the illiquidity of the financial system was almost entirely rooted in the previous bout of financial liberalization, which accentuated the maturity mismatch between international assets and liabilities. In addition, capital flows from abroad, caused by an opening of the capital account and a fall in world interest rates, magnified the problem by making available huge amounts of resources that could be intermediated by domestic banks. When this mismatch met head-on with the panicking international creditors and their refusal to roll over short-term loans, the stage was set for an immediate liquidity crisis and the resultant bank-runs.

Although this classical view also emphasizes the danger of undertaking immature financial and capital account liberalization that is not matched by the necessary regulatory supervision (Furman and Stiglitz, 1998), a number of economists have placed stress on moral hazard and structural weakness.¹⁶ We believe that both domestic structural weakness and the

¹⁵ Insolvency is defined as the inability of an economic agent to fulfill its obligations. However, in the case of illiquidity, the economic agent is fundamentally solvent, but is not able to meet its obligations when they fall due. In practice, the distinction between the two cases is not easy to draw. Insolvency may depend on the general state of confidence of the market, which may be measured by its degree of illiquidity. See De Bonis (1999) for more details.

¹⁶ Following an insightful paper by Krugman (1998a), the term “moral hazard” has been used quite extensively to explain the excessive risk-taking behavior by borrowers and lenders prior to the outbreak of the Asian crisis. However, several months later, Krugman (1998b) completely reversed his assessment of the crisis in an article titled “The Confidence Game: How Washington Worsened Asia’s Crash.” In Krugman’s new awareness:

inherent instability of the international financial market led to the Asian crisis. While identifying which factor was the leading cause of the crisis might be helpful in some regards, an approach that treats each cause with equal weight will likely bear proper policy guidance.

The need for a regional financing arrangement is basically related to the question of how effectively the existing international monetary system can cope with a financial crisis. The existing international financial system has been questioned and numerous proposals have been put forward to reform the international financial system by G-7 and G-22 governments, multilateral organizations, private institutions, and scholars since the Asian financial crisis touched off in 1997. However, the urgency of reform in the G-7 countries has receded considerably with the rapid recovery of East Asia. The slow progress has been further complicated by the perception that a new financial architecture, as it is designed, may not be effective in sustaining the global financial stability. As long as the structural problems on the supply side of capital are not adequately addressed, the East Asian countries will remain as vulnerable to future crises as they were before. Instead of waiting until the G-7 creates a new architecture, whose effectiveness is at best questionable, it would be in the best interest of East Asians to work together to create their own self-defense arrangements (Park and Wang, 2000).

Furthermore, financial panic for a country, or a region, is not necessarily a crisis for other countries. Of course, there is always the possibility of contagion. The contagion fear became real for the United States after the Russian crisis of August 1998. Until then, the East Asian crisis had been an “Asian” crisis that had not affected the United States. As long as a crisis remains country-specific, or regional, there is no urgent political need for unaffected

“because crises can be self-fulfilling, sound economic policy is not sufficient to gain market confidence; one must cater to the perceptions, the prejudices, and the whims of the market. Or rather, one must cater to what one hopes will be the perceptions of the market.” See also Wing (2000) for further remarks on Krugman’s startling apostasy.

countries to pay significant costs associated with playing the role of international lenders of last resort. Realism, not altruism, dictates policy decisions in G-7 and other countries. The United States, as well as Japan, act in their own national interest and no one can criticize them for doing so as long as we respect the nation-state as the decision making unit (Sakakibara, 2000).

Although many Western economists and policy makers have dismissed the contention that a regional financing arrangement could be structured and managed to be complementary to the IMF, an Asian regional financing arrangement could provide additional resources to the IMF while joining forces to work on matters related to the prevention and management of financial crises. Furthermore, joint efforts of the East Asian countries to monitor economic and financial market developments in the region will support the IMF's global surveillance activities. In this regard, an East Asian regional financing arrangement, along with a regional surveillance process, can be explored while avoiding institutional duplication and reducing operational costs. Furthermore, in contrast to the European Union, East Asia has not yet started a regional monetary arrangement for exchange rate stabilization. Thus, at present, it will be difficult to expect policy coordination among the East Asian countries regarding foreign exchange market intervention similar to the one adopted by European countries in the 1970s and 1980s. At the initial stage, it may be desirable for the East Asian countries to concentrate on extending and developing short-term credit arrangements by utilizing the foreign reserve holdings in the region.

2. Institutional Considerations for the Asian Financial Arrangements

The institutional characteristics of a regional financing arrangement will be critically affected by its relationship with the IMF and the possible formation of a regional monetary fund. For the sake of discussion, we may consider four possible forms of regional financing arrangements:

- 1) a special credit arrangement to borrow under the supervision of the IMF;
- 2) a new credit arrangement under the supervision of the ADB;
- 3) a credit arrangement under a regional monetary fund; and
- 4) a credit line arrangement among central banks in the region, without any extra institutionalization.

2.1 Asian Arrangements to Borrow under the Supervision of the IMF

Similar to the General Arrangements to Borrow (GAB) or the New Arrangements to Borrow (NAB), the IMF may act as the financial intermediary for its participants by introducing the Asian Arrangements to Borrow (AAB) under IMF supervision. In this case, the IMF is in itself the main body of the agreement, which will become a borrower to the participating creditor countries and the lender to the borrowing countries. By securing region-specific credit lines in the case of a financial crisis, the IMF's role as the lender of last resort will be strengthened. However, the growing influence of Asian participants may weaken the IMF's supra-nationality. In addition, there may be potential conflict of interests between the AAB and the existing GAB or NAB.

2.2 The Asian Development Bank as the Secretariat for the AAB

Although the Asian Development Bank (ADB) does not have similar contingent credit arrangements such as the GAB or NAB, its primary function is financial intermediation as a regional development bank. To save costs with respect to the establishment of a new institution to operate the AAB, the Asian Development Bank could competently manage its role of funding emergency liquidity. Considering that the ADB did not play a greater role as crisis manager or lender during the recent Asian crisis, if the ADB is given the role of being the management agency of the AAB, its prestige as a regional development bank will be greatly enhanced. Furthermore, the ADB could justify its role by insisting that region-specific financing arrangements would effectively forestall and contain the region-specific crisis contagion. However, if the ADB takes on only a minimal administrative role, there remains the question of who will supervise the operation of the AAB. Furthermore, many others contend that the regional development bank should concentrate on its primary long-term development projects, such as poverty alleviation.

2.3 Asian Arrangements to Borrow and the Asian Monetary Fund

If the Asian Monetary Fund (AMF) is to be established, the AAB will be its important instrument for mobilizing the necessary funds to provide under the AMF, together with quota contributions from the participants. If the AAB is to operate under the AMF in a similar way to the IMF's GAB or NAB, strict conditionalities should be imposed on the borrowing country. The AAB is then an agreement between the AMF (borrower) and its corresponding

creditors, because the AMF would utilize the AAB just for mobilizing the funds needed to assist countries in an emergency situation. If the AMF does not attach IMF-like conditionalities, the international financial community might raise the issue of moral hazard. In this regard, relevant but binding policy recommendations should be imposed on the borrowing countries. Without due lending disciplines in place, the AMF will likely go bankrupt due to lax supervision of financial assistance.

2.4 Contingent Credit Lines for Central Banks

Regional financial arrangements may be managed without any institutional support, quite similarly to the General Agreement to Trade and Tariffs (GATT). In this scheme, the central banks in the region should open credit lines in case a participant needs emergency loans. The idea of contingent credit lines means that a member country becomes obliged to lend a certain amount to other members, but at the same time, it attains the right to borrow corresponding to its commitment. To make the arrangement workable, the responsibility and rights of the participating central banks should be specified. Accordingly, the provision of contingent loans should be drawn immediately without conditions, and they should be paid back without delay in preparation for the next emergency loans.

This operation of the contingent credit lines for the central banks will be different from the current financing facilities of the IMF, thus being supplementary to the latter in principle. However, this has several shortcomings. First, as there is no institutional infrastructure, the supervision and enforcement of the agreement may be not strong enough. Second, the risk of default on borrowing needs to be dealt with adequately, particularly with respect to how a defaulting country should be penalized.

East Asian countries already have bilateral swap and repurchase arrangements between their central banks. The idea of the AAB could be regarded as a way of extending bilateral swap arrangements into multilateral ones. However, in most cases, these swap arrangements purport to procure funds for foreign exchange market intervention. The United States Federal Reserve Board (FRB) adopted swap arrangements with central banks in 14 countries and the Bank for International Settlements (BIS). In the early 1960s, the main purpose of the swap arrangements was to facilitate the United States' role in supporting stability in the European foreign exchange market. However, after the adoption of flexible exchange rates in 1973, the United States FRB also utilized the arrangements as a financing facility.

Japan also has a brief history of swap arrangements. The central bank of Japan agreed to a swap arrangement with the New York FRB for the first time in 1963. The arrangement secured funds for foreign exchange market intervention and supplemented foreign reserves when they were insufficient. Japan also set up swap arrangements with the central banks of Germany and Switzerland in order to sustain stability in the international financial markets. Accomplishments credited to swap arrangements have been limited, yet the agreements symbolize the intimate cooperation of the central banks in stabilizing exchange markets. This alone may be conducive to maintaining stability and allows for the exchange of mutual information pertaining to exchange markets. Similarly, under the New Miyazawa Initiative for trade and financial assistance, Korea and Japan agreed to a swap arrangement between their central banks that amounted to US\$5 billion as of October 1999. However, in the case of the Korea-Japan bilateral swap arrangement, the funds cannot be used to intervene in foreign exchange markets or to protect against sudden capital outflows.

Similarly, the central banks in East Asia have repo (repurchase) arrangements. The repo arrangement is a financial contract that enables a country to take on a very short-term loan,

usually for less than three months, on illiquid assets as collateral. Korea had repo arrangements with seven central banks around the time of its currency crisis. However, Korea's repo arrangements put immoderate limitations on exchangeable securities. Furthermore, it is still unclear whether or not the terms of duration and amount will be sufficient in times of future crises.

The Asian Arrangements to Borrow are mutual agreements among the participants. In theory, the participants are borrowers and lenders all at once. However, in practice, there will be some asymmetry, which means that a group of participants could be consistently of a borrower status, while the other group could be in a lender status. On the borrowers' side, however, these public contingent credit lines (CCL) are potentially unilateral. Compared to market-based liquidity procurement schemes such as private CCL, the AAB, as a public CCL arrangement, will have pros and cons. On the positive side, member countries will not pay commitment fees for the arrangement, because each member is nominally having dual status of lender and borrower. Second, due to the relatively high cost of commitment fees, the countries applying for private CCL will be mostly limited to riskier countries. Thus, less risky countries will not apply for private CCL, fearing that they are regarded in the marketplace as lemons (riskier borrowers). Thus, public CCL, with appropriate surveillance processes, will reduce the adverse selection problem that exists in the marketplace. Third, many emerging market economies are concerned that private CCL will crowd out normal credit supply as private financial institutions will want to maintain a certain level of risk exposure in each country. This dynamic hedging strategy will reveal the incentive to decrease other types of loans provided by private financial institutions.¹⁷ On the other hand, the AAB,

¹⁷ Another issue is the seniority attached to different financial instruments. If credit disbursed under private CCL enjoyed preferential treatment, it could subordinate other forms of senior debt in a crisis, and discourage the provision of bonds and other similar lending in normal times.

like the CCL facility of the IMF, will be an additional liquidity injection into the country in need, not necessarily reducing other capital inflows.

The fact that there have been few examples of private CCL arrangements in the past shows that improvements are necessary in the incentive structure in order to involve more countries and private financial institutions. The case of Mexico also vividly illustrates the incentive problems associated with private CCL. In 1997, Mexico arranged private CCL worth US\$2.7 billion with 31 private commercial banks. The country succeeded in withdrawing funds when the contract was nearing expiration and the financial institutions were unwilling to extend their CCL arrangements with Mexico. Private financial institutions are likely to be reluctant to provide funds in times of crisis, or to extend the contract with potentially vulnerable countries. Thus, public CCL could be alternative contingent credit lines to address the incentive problems associated with private CCL.

3. Moral Hazard

The moral hazard problem means that distortions exist in international capital markets, in particular when there is a quasi-lender of last resort. Liberal economists reject the notion that markets are intrinsically unstable and need to be stabilized by an international lender of last resort. They argue that markets are stable, efficient and smoothly operating and that contagion effects are negligible. They argue that an international lender of last resort would create a greater problem, rather than offer a solution.¹⁸ However, the herding behavior of

¹⁸ Kindleberger (1973, 1989) argues that the world financial market is intrinsically unstable without an international lender of last resort. Schwartz (1986), Meltzer (1986), and recently Bordo et al. (1996) rejected Kindleberger's idea on two grounds. First, an international lender of last resort would exacerbate the risk of moral hazard by sovereign borrowers as well as by international banks. Second, the authority to create base money, that is the very *raison d'être* of a lender of last resort, remains within the purview of national central banks.

investors, volatility and contagion continue to be the reality. The IMF, as a quasi-lender of last resort, has recently strengthened principles governing its lending activities to address the moral hazard problem by adhering to the classical Bagehot rules of (a) lending freely to solvent borrowers; (b) against good collateral; and (c) at a penalty rate (Fischer, 1999).

If any Asian financing arrangement involves a moral hazard problem, we should look at how the Asian arrangement would undermine the Bagehot rules. The contention that only tough conditionalities would relieve the moral hazard problem is a simple-minded approach. The tough conditionalities would not necessarily discipline emerging market economies to adhere to sound macroeconomic and financial policies. The Asian Arrangements to Borrow, in our mind, have nothing to do with a presumed regional lender of last resort. As the devil is in the details, our regional scheme is aimed at institutionalizing private CCL by establishing multilateral contingent credit arrangements among the central banks in East Asia. Therefore, the moral hazard problem could be avoided by applying the Bagehot rules. For example, the borrowing country ought to offer a certain amount of its currency as collateral; furthermore, it should also be required to pay at market interest rates on loans.

4. Credibility and Sustainability

In order for members to maintain their commitment to lend, it is a prerequisite for them to have confidence in their ability to borrow in return. First, the credit ceiling and the borrowing ceiling should be well balanced to ensure the continual operation of the credit facility. The borrowing ceiling should be set so as not to jeopardize the overall framework in case of default.

Second, the decision procedure should be transparent and fair. Because the Asian

Arrangements to Borrow do not necessarily require any operational institution, we do not require institutional discretion to provide the necessary emergency funding to a country. In this sense, the automatic approval of borrowing may be desirable. However, automatic lending, based on pre-commitment, may not completely avoid the moral hazard problem on the part of the borrower. Accordingly, we should secure a mechanism to safeguard against risks of over-borrowing and default.

V. Architecture for the Asian Arrangements to Borrow

1. Basic Characteristics of the Asian Arrangements to Borrow

The Asian Arrangements to Borrow aim to promptly provide emergency loans for Asian countries faced with liquidity problems. The Asian Arrangements shall be activated as a first line of defense for a country faced with a temporary shortage of international liquidity before officially requesting emergency loans from the IMF. Bilateral swap and repo arrangements would be useful for stabilizing the exchange rates between the Asian currencies. However, the main purpose of the AAB is to cope with liquidity problems. The Asian Arrangements should be distinguished from the funding facilities to maintain the central parities among participating countries under the regional monetary system.

The Asian Arrangements would not require the establishment of a formal institution or the raising of quota subscriptions. They are based on the credit arrangements among participants, as in the case of the credit mechanism of the European Community. Any participant who calls on the AAB would be able to borrow funds to a certain amount without

a string of conditionality. A request by a participant for additional funds, over the amount automatically provided, would be granted with the approval of the member countries. The Asian Arrangements do not play the role of a lender of last resort in that the total credit arrangements of the AAB are limited.

2. Ceilings on Borrowing and Credit Arrangements

It is important to avoid or reduce the moral hazard problem embodied in the automatic lending system of the AAB. To do so, it would be desirable that the limit of borrowing assigned to each participant should be linked with their credit commitments. For example, the ceiling of the automatic lending would be assigned up to 100% of each participant's own credit commitment. Only when two thirds of the member countries reach an agreement, would an additional 100% of credit commitment be provided.

The credit allocations among the participants would be determined based on the foreign reserve positions and different criteria would be applied in determining a credit quota between developed and developing countries.¹⁹ If the amount of credit commitment were set too large, some countries would not be willing to participate in the AAB. Because the total borrowing of an individual participant should be proportional to its own credit commitment, too excessive a credit assignment to each participant could lead to the failure of repayment, which would threaten the stability of the system. On the other hand, the AAB would be of no value, if its total credit quota were not sufficient to ease the liquidity problem of the crisis-hit countries.

¹⁹ Some elaborate formula would be needed to calibrate individual credit commitment of participating countries. By using various country data profile such as external financing requirement (external debt profile), GDP and foreign exchange reserves, an elaborate scheme could be developed. Since those data profiles are also changing, however, such a scheme could mostly serve as a benchmark.

The appropriate amount of the total credit commitments to secure the effectiveness and stability of the AAB would be US\$30-50 billion, when considering the current scales of foreign reserves of Asian countries. In Table 7, two alternative credit arrangement schemes for East Asian countries are proposed; the total credit commitments in scheme A amount to US\$30 billion, while those in scheme B add up to US\$50 billion. In the former, the ratio of credit commitments relative to the foreign reserves is about 2% for Japan, and 3~4% for developing countries. On the other hand, in the latter case, the ratio for Japan increases to 3.6%, and those for developing countries are around 5~7%. Based on these schemes, let us suppose that the AAB are called on concurrently by South Korea, Malaysia, Indonesia and Thailand (all of which suffered from the currency crisis in 1997-98) up to the maximum level of 200% of each country's credit ceiling. Despite huge amount of concurrent drawings, the proportion to the total credit arrangements in the case of AAB of US\$30 billion would be only 46.6%. This implies that such scale of the AAB would work effectively even in the event currency crises simultaneously break out due to a contagion effect.

<Table 7> Credit Arrangement Schemes for the AAB
(unit: US\$ hundred millions)

Participants	Credit Arrangements		Foreign Reserves (Base Point)(C)	Ratios(%)	
	A	B		A/C	B/C
Japan	70 (23.3%)	120 (24.0%)	3,345(2000. 5)	2.09%	3.59%
Korea	30 (10.0%)	50 (10.0%)	868(2000. 5)	3.46%	5.76%
Hong Kong	40 (13.3%)	65 (13.0%)	939(2000. 4)	4.26%	6.92%
Taiwan	45 (13.3%)	75 (15.0%)	1,035(1999. 11)	4.35%	7.25%
Singapore	30 (10.0%)	50 (10.0%)	753(2000. 4)	3.98%	6.64%
Malaysia	12 (5.0%)	20 (4.0%)	334(2000. 5)	3.59%	5.99%
Indonesia	10 (3.3%)	15 (4.0%)	281(2000. 4)	3.56%	5.34%
Philippines	5 (1.7%)	10 (2.0%)	140(2000. 4)	3.57%	7.14%
Thailand	12 (5.0%)	20 (4.0%)	313(2000. 5)	3.83%	6.39%
China	46 (15.0%)	75 (15.0%)	1,595(2000. 4)	2.88%	4.70%
Total	300 (100.0%)	500 (100.0%)	9,603	3.12%	5.21%

Source: Data of foreign reserve holdings are drawn from the IMF's *International Financial Statistics* (July 2000) except for Taiwan.

The total outstanding credit arrangements of US\$30 billion are the same as those to be committed under the Miyazawa Plan. In addition, they seem to be reasonable when considering the overall size of the IMF's GAB plus NAB, which amount to SDR 34 billion (about US\$46 billion). The credit provided to Korea along with the IMF's Supplemental Reserve Facility (SRF) just after the currency crisis hit the Korean economy was US\$12 billion. If the AAB amounting to US\$30 billion are in effect, the maximum credit Korea could draw is US\$6 billion. It would be US\$10 billion in the case of a US\$50 billion AAB. Such figures seem to be substantial.

When some participant calls on the AAB, requested credits would be allocated to the other participants in proportion to their credit arrangements. To borrow funds over the amount of automatic lending, two thirds of the participants of the AAB must approve the proposal. Voting power should be distributed in proportion to credit commitments.

3. Terms and Conditions for Lending and Borrowing

To address the moral hazard problem, a penalty rate should be charged to the lending under the facility. If the interest rate is too low and there is no string of conditionality, borrowers may not have a sufficient incentive to be more careful next time. In addition, borrowers that are not currently in trouble may take excessive risk exposures because they know that there is a cheap source of credit available if things turn out badly (Goldstein, 2000). The Meltzer Commission Report (2000) seriously raises the problem of moral hazard and concludes that IMF lending rates are not high enough; specifically, the report proposes that Fund lending rates be set at a risk premium over the sovereign yield paid by the borrowing country one week prior to applying for an IMF loan. However, market rates would be varying

even during normal times and extremely volatile when a country faces liquidity problems. One simple benchmark rate would be the SRF rate applied to large drawings from the IMF. If borrowing countries are eligible for the CCL and prepare for requesting the CCL, the CCL rate would be charged on the lending from this facility. Compared to the SRF and CCL rates, market rates would be higher for most member countries.²⁰

To prevent the abuse of the automatic lending scheme under the AAB, some conditions should be satisfied to make a call on the AAB. For example, the nominal exchange rates should rise more than 20% or the stock of foreign reserves should drop more than 20% from the average level of the recent three months. These would be reasonable measurements for currency crises. Although our proposed lending rates are basically in line with IMF lending rates rather than market rates proposed by the Meltzer Commission Report (2000), above mentioned conditions for drawing should be differentiated from conditionalities imposed by the IMF. As Goldstein (2000) correctly points out, whatever the economic merits, the decision to go to the IMF is politically costly from the viewpoint of the incumbent government since domestic political opponents may take advantage of the relatively powerless authorities. In this regard, a “conditionality-equivalent” interest rate is high enough to deter at least moral hazard of the incumbent government. In this regard, although credits are granted without economic policy conditions, subsequent consultations among the participating countries should be promptly prepared for enhancing the surveillance process.²¹

Three months would be appropriate for the maturity of the lending and it would be automatically extended for another three months. With the approval of two-thirds of the

²⁰ For instance, the range of market rates around LIBOR plus 150-200 basis points applicable to some member countries would be most likely higher than the IMF lending rates. Thus, market rates would be definitely of punitive nature. For example, emerging-market bond spread (relative to U.S. Treasury Bond) have fluctuated from 375 to 1700 basis points since the outbreak of the Thai crisis in mid-1997 (Goldstein, 2000).

²¹ Under the STMS, credits are granted without economic policy conditions, but they lead to subsequent consultations.

member countries, it could be revolved for further six months only once. The debtor countries should deposit as collateral an amount in their own currencies equivalent to the credit drawings to the creditor countries. Countries, which do not redeem the principal and interest by the due date, would be deprived of the right to automatically draw funds for a certain period. The exception could be possible if two-thirds of member countries approve the extension.

4. Other Operational Modalities

In order for the AAB to be implemented, there are many minor issues to be reviewed. For example, the following issues need to be elaborated:

- 1) The AAB should be reviewed every two years. Accordingly, the credit lines should be rearranged on the basis of foreign reserve positions;
- 2) The chairmanship of the AAB should rotate every two years. The chairman should be authorized to appoint the secretary-general;
- 3) The ADB may serve as the secretariat support for the AAB. Alternatively, the central banks of member countries may take turns to provide the required service; and
- 4) The exiting AAB claims should be transferable to other member countries to enhance their liquidity.

VI. Agenda for the Asian Arrangements to Borrow

1. Feasibility

The aftermath of the Asian financial crisis is characterized by the lingering possibility of a new crisis, despite the rapid recovery of the East Asian countries; hence there is, to a certain extent, a tacit yet common understanding that regional financial cooperation is necessary. Of course, the specific plans for financial cooperation will take into account possible conflicts of interest between the IMF and the countries in the region and between the countries themselves. A possible proposal beyond the Chiang Mai Initiative is the initiation of the Asian Arrangements to Borrow. This arrangement would overcome shortcomings of such proposals as the AMF, credit line arrangements with private financial institutions, and Repo/Swap arrangements between central banks.

Geo-politically, the AAB will minimize opposition pronounced by the United States and the IMF to the formation of a regional monetary fund such as the AMF. However, it will still be important to persuade the IMF to acknowledge that the AAB are a useful alternative to the launch of a regional fund, reiterating the example of a similar financing facility under the EMS system in Europe. In addition, the AAB will mollify any resentment expressed by China to the increasing influence of Japan, and encourage developing countries in East Asia, such as those in ASEAN, to participate.

Having some experiences of actual operation under the Chiang Mai Initiative, a network framework could develop into a truly multilateral

2. Supporting Institutional Infrastructure

The Asian Arrangements to Borrow will provide liquidity to countries that begin to experience exchange rate instability due to temporary liquidity shortage caused by sudden reversal of capital flows. This will effectively contain full-blown development of currency crises, not to mention contagion in the region. To take an example, if Korea has committed resources of US\$3 billion in the Arrangements, it can borrow up to US\$6 billion. This is comparable to the US\$5 billion proposed as part of the bilateral currency swap arrangement under the Miyazawa Plan. Moreover, compared to the IMF support package of SDR 2.9 billion (US\$4 billion) in response to the 1998 financial crisis in Brazil, the credit support in the Arrangements is by no means a small figure. Therefore, the mere existence of this financial arrangement should act as a buffer that will avert speculative attacks in advance, and will go so far as to provide stability to the entire international financial system.

However, in order to respond instantaneously to calls for assistance, simultaneous activation from the committed credits will be a key ingredient for effective containment of the crisis. If a group of potential credit-providing countries is hesitant to and postponing the activation immediately under this multilateral borrowing arrangement, the AAB would not be a credible instrument to be utilized. Thus, there must be an enforcement mechanism to commit participating countries to this contractual arrangement.

Since the crisis can be contagious to neighboring countries, some of the member countries may decide to opt out from this arrangement. The decision to opt out would be permissible under the jurisdiction of the decision-making body. It should be noted that the arrangements need to have a balance between flexibility and commitment. If the decision to opt out is completely discretionary, a serious coordination problem may arise, weakening the credibility

and effectiveness of the AAB. If the opt-out clause is to be included, conditions for non-participation should be specified. A regular monitoring and surveillance process should be installed to provide promptly relevant information for assessing the economic conditions of the country exercising the opt-out clause.

The economic conditions of the country exercising the opt-out clause could be also based on quantitative measures such as the degree of nominal exchange rate depreciation, the depletion of foreign reserves as in the prescribed condition for automatic drawings under this arrangement. However, qualitative assessment by the decision-making body would reflect the true state of each member country's vulnerability to the crisis.

A decision-making body is required to ensure and coordinate joint activation as mentioned above. Functions of the decision-making body are:

- 1) assessing and supervising regular monitoring and surveillance activities conducted by the Asian Surveillance Unit;
- 2) conducting performance evaluation of the borrowing countries;
- 3) providing policy recommendations to the borrowing countries;
- 4) determining conditions under which member countries can exercise their opt-out clause; and
- 5) providing liaison services to member countries.

Monitoring and surveillance is the bedrock on which coherent policy formulation rests. The Asian Monitoring and Surveillance Unit (AMSU) should be established for serving a critical role under the AAB. This unit will be specialized in monitoring liquidity positions as well as economic fundamentals of its members. Regular and rigorous check-ups are essential

for both prevention and resolution of the crisis. The collected information will help detect and distinguish liquidity or solvency problems at their early stage so that proper remedial actions are timely taken.

This regional monitoring and surveillance process could be supplementary to the IMF's global surveillance and Article IV consultation. The monitoring and surveillance unit will provide prompt and relevant information to the decision-making body. Economic monitoring will keep in close touch with 1) macroeconomic trends and policy changes, 2) financial market developments including activities of institutional investors, short-term capital movements and hedge funds (or highly-leveraged institutions) and 3) institutional and social changes. This rather broad coverage of economic monitoring would serve its functions to support effective management of the AAB, to promote orderly economic integration in the region and to facilitate policy coordination and financial cooperation among its members.

The AMSU is also required to develop a surveillance mechanism to enforce 1) implementation of common standards agreed among the members, 2) policy changes recommended for borrowing countries from the AAB and 3) economic policy coordination agreed among the members.

3. Membership

The Action Plan for the AAB should start with a consensus building among China, Japan, and Korea. For regional financial cooperation to have any kind of success, the active participation of these three powerhouses is essential. In addition, in order for the AAB to be a true regional mechanism for financial stability, ASEAN member countries, such as Thailand and Indonesia, who have experienced currency crises must also join. In principle, however,

the AAB should open their doors to everyone. This will minimize negative effects of regionalism, if any, and mollify any apprehension expressed by the IMF or non-Asian countries. However, for the sake of efficiency, it would be desirable to expand their membership step by step. The first tier participants should include Japan, China, South Korea, and countries in ANIES (Taiwan, Hong Kong) and ASEAN. A possible obstacle may lie in persuading China, Hong Kong, and Taiwan to join simultaneously. When the AAB gains sufficient credibility, more countries will be able to join. For example, there is no reason why countries like Australia and New Zealand should not participate. Their participation should rest on thorough deliberation amongst the countries involved.

VII. Towards Monetary Arrangements in East Asia

1. Desirability of Asian Monetary Arrangements

As discussed above, if carefully designed and implemented, the AAB could serve as a milestone for closer and deeper financial cooperation in East Asia. Taking into account the aims of the AAB, the next agenda for the regional financial cooperation would be to search for a means to stabilize exchange rates of regional currencies. The Asian currency crisis reminded us that an exchange rate regime lacking in transparency and credibility could induce abrupt interruption of short-term capital flows. Therefore, concerted efforts are needed to establish appropriate monetary arrangements encompassing both national and regional dimensions. In this context, it is no wonder that the creation of a regional monetary system in East Asia similar to the type adopted by the European Union (EU) has been recently

proposed and discussed in academic circles and even policy-making groups. As is well known, the European Monetary System (EMS) was established in 1979 with the purpose of strengthening monetary cooperation among member countries. And the various credit arrangements discussed in Chapter III have served as critical components of the EMS.

The background of the current interest in the Asian Monetary System (AMS) seems to have multi-faceted aspects. Firstly, many East Asian developing countries are searching for an optimal exchange rate regime. After the Asian currency crisis, most East Asian developing countries abandoned the fixed exchange rate regime and adopted nominally a free floating regime. However, it is no exaggeration to say that there still exists “fear of floating” among many monetary authorities (Calvo and Reinhart, 2000). Of course, there is no point returning to the fixed exchange rate regime unless the credibility of the flexible exchange rate regime cannot be ensured. Nevertheless, the regional monetary system could be an alternative to both fixed and flexible rate regimes.

Secondly, a currency bloc in Asia may be necessary to avoid competitive devaluation of regional currencies. Under the dollar peg, exchange rates of the Asian currencies against the yen inevitably become unstable due to fluctuations in the yen-dollar exchange rate. For many East Asian developing countries with common export markets, the fluctuation of their exchange rates against the yen would critically affect the competitiveness of their exports. As a matter of fact, the depreciation of the yen against the dollar resulted in the current account deficit for these countries in the mid-1990s, which might have been closely related to the subsequent currency crisis.²²

²² Kwan (2000) and Ueda (1998) also point out that one of the key determinants of the boom and bust cycle in East Asia was the sharp appreciation of the yen against the dollar between the mid-1980s and the mid-1990s, and its subsequent depreciation. They support their argument with the evidence that real investment and speculative financial capital within and into East Asia responded too much to the yen-dollar exchange rate fluctuations. In a similar vein, Ogawa, Ito and Sasaki (1999) propose a regional basket currency arrangement to mitigate the adverse impact of yen-dollar exchange rate movements on the trade balance.

Thirdly, the stabilization of exchange rates will be helpful for Asian countries to achieve their full potential for growth. Unlike Europe or North America, East Asia lacks an institutional framework to support market-driven integration. After the currency crisis, there seems to be a subtle change in policy stance toward regionalism, particularly from Japan. However, it is too early to expect any tangible results. As intra-regional trade and investment recuperate, however, the need for policy coordination and monetary arrangements to stabilize exchange rates of Asian currencies will increase.

The establishment of the Asian Monetary System (AMS) would be supported by the AAB, as a mechanism to provide financial facilities to the participating countries suffering from balance of payments difficulties. In fact, the AAB, which would guarantee the central banks of participating countries contingent credit lines in case of a liquidity crisis, could develop into credit arrangements aimed at the stability of the exchange rates among participating countries. If necessary, the AAB should be redesigned in terms and conditions for lending and borrowing similarly to those of the EMS reviewed in Chapter .

Even if establishment of a regional monetary system is desirable and feasible, it is another task to choose the most suitable option: a single currency peg system, a common basket peg system, or creation of a common currency. The Japanese yen or the U.S. dollar could be an anchor currency in the Asian currency bloc. The creation of a common currency basket such as the ACU (Asian Currency Unit) would be another option. Let us compare and evaluate these alternatives first, and then consider several operational problems concerning the regional monetary system.

2. Three Approaches to Asian Monetary Arrangements

The Asian currency crisis in 1997 and the launch of the Euro in 1999 made the possibility and desirability of introducing a regional monetary system in East Asia a point of debate. In particular, there has been a voluminous literature on the topic of forming a currency bloc in East Asia. While empirical findings and policy implications of previous studies are mixed, they may be grouped into three approaches.

The first group considers a currency bloc as the adoption of a common currency and asks if the Japanese yen would take on that role. The second group examines the exchange rate policies of East Asian countries for evidences of a dollar peg and/or any significant changes in their policies. The third approach is based on the optimum currency area (OCA) theory and tests whether its key conditions are satisfied in East Asia or not. Let us review each approach in detail.

Focusing on the internationalization of the yen, the first approach has received special attention as intra-regional trade and investment in East Asia began to increase rapidly in the 1980s. Talvas and Ozeki (1992) reported that the weight of yen-denominated trade had recently increased, particularly in capital transactions. Taking into account Japan's economic power, however, the relative importance of the yen still lags far behind when compared with the U.S. dollar or the deutsche mark. According to Garber (1996), the importance of the yen as an international currency substantially increased during the 1990s. He insists that such a change reflects increased instability of value of the U.S. dollar, and the vitalization of trade, investment and capital transactions among East Asian economies as well.

Japanese monetary authorities began to take a proactive policy stance toward the internationalization of the yen in the 1980s; in response to the Asian currency crisis, they are

looking forward to accelerating the process. It requires, however, that several preconditions be satisfied: sustained economic growth in Japan, stability of the yen-dollar exchange rate, development and liberalization of capital market and implementation of specific measures to promote the use of the Japanese yen (Committee on Foreign Exchange and Other Transactions, 1999).

The internationalization of yen is expected to help revitalize the Japanese financial market, improve the competitiveness of the Japanese financial industry and decrease exchange risk of the Japanese firms. In addition, it would be effective in preventing the recurrence of a financial crisis in East Asia. Nevertheless, the response of East Asian developing countries to Japan's efforts has not necessarily been favorable. East Asian countries seem to be uneasy about increasing Japanese influence in the region. On the other hand, the liberalization and deregulation of the Japanese financial market as a by-product of the internationalization of the yen is expected to provide new opportunities for financial transactions with Japan.

The second approach focuses on the correlation of East Asian currencies with respect to the U.S. dollar or the Japanese yen (Frankel, 1992; and Frankel and Wei, 1993, 1994). Frankel (1992) estimates weights attributed to major currencies such as the dollar and the yen, assuming East Asian countries adopted the basket currency peg regime. Even if countries in the region do not explicitly adopt the basket currency peg, the estimated weights of major currencies included in the basket would provide useful information about the anchor currency in the region. Frankel and Wei (1993, 1994) applied this approach to East Asian countries, and found that estimated weights of the yen were very small, while those for the dollar dominant. As a result, they concluded that East Asia was a de facto dollar bloc, at least in the 1980s.

The third approach focuses on the comparison of East Asia and the EU in terms of OCA

variables: mobility of factors of production, symmetry of shocks, interdependence through trade, economic size and convergence of macroeconomic variables. Most empirical studies examining symmetry of shocks or degree of interregional interdependence conclude that East Asia satisfies the criteria for a currency bloc.²³ Meanwhile, Kwan (1994, 1998) shows that high income countries like South Korea, Taiwan and Singapore, having more similar trade structures with Japan, should be first-tier candidates for a yen bloc.²⁴

Eichengreen and Bayoumi (1996a, 1996b) proceed to test if the bilateral exchange rates of regional currencies can be well explained by the OCA theory. They define the standard deviation of the bilateral exchange rates as the dependent variable and then regress it on the OCA variables. The forecasts of the dependent variable of East Asian countries turn out to be comparable with those of the EU; consequently, they argue that East Asia satisfies the preconditions for a currency bloc.

While the aforementioned literature is not exhaustive, it is enough to provide empirical evidences in support of a regional currency bloc. If this is so, why has there been no active movement for monetary cooperation in the region? The most frequently heard answer to this question would be that the absence of political consensus in the region and the region's historical legacy hamper the possibility of a regional bloc in reality.

There also exist structural reasons such as the varying stages of economic development among East Asian countries and chronic trade balance deficit with Japan. In order to propose a politically and economically attractive blueprint for a regional currency bloc, the aforementioned factors need to be taken into account. At the same time, the costs and benefits of forming a regional currency bloc should be more thoroughly analyzed to persuade East

²³ See Ito (1993), Goto and Hamada (1994), Bayoumi and Eichengreen (1994), and Taguchi (1994).

²⁴ Kwan (1994, 1998) compares the inflation rates in East Asian countries and finds that the higher income countries have relatively lower inflation rates. The average inflation rates of East Asia appear to be lower than those of the EU. Therefore, he concludes that Asia would be more suitable for a currency union than the EU.

Asian countries to participate in the bloc.

3. Comparison of Currency Blocs in East Asia²⁵

In order to search for a desirable and realistic monetary arrangement in East Asia, we will compare alternative modes of currency blocs. In particular, we will focus on the issue of stabilization of real effective exchange rates. In retrospect, East Asian developing countries adopted an outward-oriented development strategy, and utilized the exchange rate policy as its major policy instrument (World Bank, 1987; Balassa and Williamson, 1987). Such a policy stance can be confirmed even in the process of capital account liberalization in the 1990s: East Asian governments often intervened in the foreign exchange market to suppress the appreciation of their currencies (Kim and Ryou, 1998). After the currency crisis, the balance on current account, not the overall balance of payments, has reemerged as a key policy target. Against this background, it is realistic to assume that the monetary authorities of East Asian countries are trying to stabilize the real effective exchange rate (REEX) as an intermediate goal for balancing the current account.

3.1 Stabilization of the Real Effective Exchange Rates (REEX)

Real effective exchange rates can be defined in various ways, but we will define them as simply as possible to clarify the relationship between the stability of REEX and the weights of major currencies included in the basket. Hence, we assume that the REEX of an East Asian currency is the weighted sum of its bilateral exchange rates against the dollar, yen, mark and

²⁵ See the Appendices for derivation and discussion of variances of real effective exchange rates.

the other representative Asian currencies, taking into account the trade weights with the largest trading partners for East Asian countries: the U.S. (NAFTA), Japan, Germany (EU) and East Asia as a whole (China, Hong Kong, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan and Thailand, except for Japan).²⁶

The REEX of an East Asian developing country – for instance, Korea – can be defined as follows. Here, the representative Asian trading partner is assumed to be Hong Kong.

$$\text{REEX(won)} = W_{\text{US}} \cdot \text{Ex(won/\$)} + W_{\text{JPN}} \cdot \text{Ex(won/¥)} + W_{\text{GER}} \cdot \text{Ex(won/DM)} + W_{\text{HK}} \cdot \text{Ex(won/HK\$)} \quad (1)$$

In equation (1), nominal exchange rates and price indices take the logarithmic transformation. W_j means country j 's trade weight or competitor weight ($W_{\text{US}} + W_{\text{JPN}} + W_{\text{GER}} + W_{\text{HK}} = 1$). Because the price indices are assumed to be exogenous and normalized to take the value of one, the REEX becomes the same as the nominal effective exchange rate.

Meanwhile, East Asian countries are assumed to peg their currencies to an independent currency basket, in which SDR is the numeraire. For example, the exchange rate of Korean won against the SDR is assumed to be determined according to the following formula:

$$\text{Ex(SDR/won)} = \mathbf{a} \text{Ex(SDR/\$)} + \mathbf{b} \text{Ex(SDR/¥)} + \mathbf{g} \text{Ex(SDR/DM)}$$

where $\mathbf{a} + \mathbf{b} + \mathbf{g} = 1$ (2)

\mathbf{a} , \mathbf{b} , \mathbf{g} denotes the weight of the U.S. dollar, the Japanese yen and the German deutsche mark (as now the euro), respectively. If the country concerned adopts a dollar peg (or a yen peg),

²⁶ In the case of Korea, trade with these areas accounts for 80% of its total trade.

then it follows that $\mathbf{a} = 1$, $\mathbf{b} = \mathbf{g} = 0$ (or $\mathbf{a} = \mathbf{g} = 0$, $\mathbf{b} = 1$).

Using equations (1) and (2), the variance of REEX of the Korean won may be expressed as follows:

$$\begin{aligned} \text{Var}(\text{REEX}(\text{won})) &= (\mathbf{b} \cdot \mathbf{W}_{\text{JPN}})^2 \cdot \text{Var}(\text{Ex}(\text{¥}/\$)) \\ &\quad + 2(\mathbf{b} \cdot \mathbf{W}_{\text{JPN}})(\mathbf{g} \cdot \mathbf{W}_{\text{GER}}) \cdot \text{Cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$)) \\ &\quad + (\mathbf{g} \cdot \mathbf{W}_{\text{GER}})^2 \cdot \text{Var}(\text{Ex}(\text{DM}/\$)) \end{aligned} \quad (3)$$

In equation (3), the representative Asian trading partner's exchange rate against the U.S. dollar is assumed pegged to the U.S. dollar $\text{Var}(\text{Ex}(\text{HK\$}/\$)) = 0$.

In the case of an independent basket peg, it can be easily shown that the optimal weights of the dollar, yen and mark should be equal to the trade weights denominated by those currencies: $\mathbf{b}^* = \mathbf{W}_{\text{JPN}}$, $\mathbf{g}^* = \mathbf{W}_{\text{GER}}$, and $\mathbf{a}^* = \mathbf{W}_{\text{US}}$.

3.2 Comparison of Various Currency Blocs

Here, we will examine how the formation of a currency bloc in East Asia affects the real effective exchange rates of the participating countries. While there may be various types of currency blocs, we focus on four specific examples: the dollar bloc, the yen bloc, the Asian currency basket and a global currency basket. The dollar bloc and the yen bloc may be interpreted as a special case of $\mathbf{a} = 1$ and $\mathbf{b} = 1$ of the independent currency baskets respectively. The Asian currency basket (ACB) denotes that only East Asian currencies are included in the basket. On the other hand, the global currency basket may be comparable to the case of the SDR, which is composed of major currencies such as the U.S. dollar, the

Japanese yen and the deutsche mark. The basic features of these currency blocs are summarized in Table 8.

The Dollar Bloc and the Yen Bloc

The comparison of the dollar bloc and the yen bloc is straightforward. If the dollar bloc is formed, nominal exchange rates of East Asian currencies against the U.S. dollar becomes fixed. If we normalize the exchange rates by taking the value of one, and take the logarithmic transformation of them, the bilateral exchange rates of the East Asian currencies against the U.S. dollar become zero. The variance of REEX (won) is determined as follows:

$$\begin{aligned}\text{Var}(\text{REEX}(\text{won})) = & W_{\text{JPN}}^2 \cdot \text{Var}(\text{Ex}(\text{¥}/\$)) \\ & + 2 W_{\text{JPN}} \cdot W_{\text{GER}} \cdot \text{Cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$)) \\ & + W_{\text{GER}}^2 \cdot \text{Var}(\text{Ex}(\text{DM}/\$))\end{aligned}\quad (4)$$

In the case of the yen bloc, the exchange rates of Asian currencies against the yen become fixed. Therefore, the exchange rate of an Asian currency against the U.S. dollar becomes the same as the yen/dollar rate ($\mathbf{b}=1$, $\mathbf{a}=\mathbf{g}=0$). The variance of the Asian currency is as follows:

$$\begin{aligned}\text{Var}(\text{REEX}(\text{won})) = & (1-W_{\text{JPN}}-W_{\text{HK}})^2 \cdot \text{Var}(\text{Ex}(\text{¥}/\$)) \\ & - 2(1-W_{\text{JPN}}-W_{\text{HK}}) \cdot W_{\text{GER}} \cdot \text{Cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$)) \\ & + W_{\text{GER}}^2 \cdot \text{Var}(\text{Ex}(\text{DM}/\$))\end{aligned}\quad (5)$$

<Table 8> Key Features of Currency Blocs

Type	Weights $a+b+g=1$			Won/Dollar Rate: Ex(won/\$)	Real Effective Exchange Rate: REEX(won) $= (1-W_{HK}) \cdot \text{Ex}(\text{won}/\$)$ $-W_{JPN} \cdot \text{Ex}(\text{¥}/\$)$ $-W_{GER} \cdot \text{Ex}(\text{DM}/\$)$
	a	b	g		
Dollar Bloc	\$			Constant	$-W_{JPN} \cdot \text{Ex}(\text{¥}/\$)$ $-W_{GER} \cdot \text{Ex}(\text{DM}/\$)$
Yen Bloc		¥		Ex(¥/\$)	$(1-W_{HK}-W_{JPN}) \cdot \text{Ex}(\text{¥}/\$)$ $-W_{GER} \cdot \text{Ex}(\text{DM}/\$)$
Asian Currency Basket	Won	¥	HK\$	Ex(\$/¥)	$(1-W_{HK}-W_{JPN}) \cdot \text{Ex}(\text{¥}/\$)$ $-W_{GER} \cdot \text{Ex}(\text{DM}/\$)$
Global Currency Basket	\$	¥	DM	$b \cdot \text{Ex}(\text{¥}/\$)$ $+g \cdot \text{Ex}(\text{DM}/\$)$	$(1-W_{HK}-W_{JPN}) b \cdot \text{Ex}(\text{¥}/\$)$ $+ \{(1-W_{HK}-W_{JPN}) g - W_{GER}\} \cdot \text{Ex}(\text{DM}/\$)$

Which common basket is more desirable for the stability of effective rates in Asian countries? Comparing equation (4) with equation (5), we can find that the answer depends on the weights of trading partners, as well as the movement of the yen and the mark. As the trade weight of Japan becomes heavier, instability coming from fluctuation of the yen-dollar rate decreases. As the covariance between the yen-dollar rate and the mark-dollar rate becomes larger, the Asian currency becomes more stable under the yen peg.

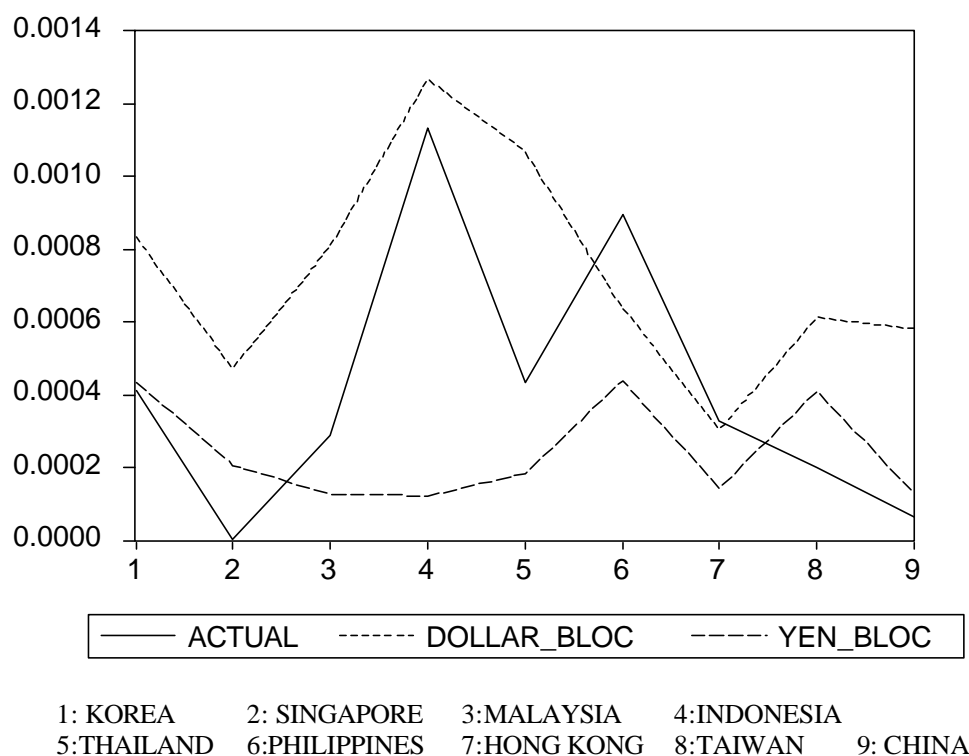
<Graph 1> shows how variances of the real effective exchange rate of East Asian currencies become affected by the formation of a currency bloc. The vertical axis denotes the size of variance, which is derived from equation (3) using actual values for currency weights (b, g) as such reported in Table A.1 of the appendix, actual trade weights for W_{JPN} and W_{GER} , and variances of the yen-dollar rate and the mark-dollar rate, as well as their covariance during 1990-96. The variances for the dollar bloc and the yen bloc are respectively derived from equation (4) and equation (5). The horizontal axis denotes each case for eight East Asian currencies.

As shown in the graph, the variances of real effective exchange rates become smaller in the yen bloc than the dollar bloc. This result may be interpreted as an evidence of the

comparative advantage of the yen bloc in stabilizing the real effective exchange rate for East Asian currencies. Taking into account the fact that the size of variance under the dollar bloc is generally larger than the actual value, except for the cases of Philippines and Hong Kong, the desirability of the dollar bloc is questionable.

Meanwhile, the yen bloc appears to be effective in stabilizing the real effective exchange rates of East Asian currencies, except for the Korean won, the Singaporean dollar, the New Taiwanese dollar, and the Chinese yuan. In other words, the yen bloc may be a viable option for the ASEAN Big Four: Indonesia, Malaysia, the Philippines, and Thailand. This finding stands in a stark contrast to Kwan's assertion (1994, 1998) that Asian NIEs (Korea, Singapore and Taiwan) would be first-tier candidates for participation in the yen bloc.

<Graph 1> Variance of Real Effective Exchange Rates



The Asian Currency Unit

The Asian Currency Unit (ACU) is composed of only the East Asian currencies including the Japanese yen. The Asian Currency Unit as an instrument for a currency bloc implies that East Asian participants adopt a common currency unit, similar to the ECU for the EU.

Now, let us assume that the ACU is composed of three Asian currencies: the Korean won, the Japanese yen and the Hong Kong dollar.²⁷ **a**, **b** and **g** denote the weights for these currencies. The exchange rate of the Korean won to the SDR is determined as follows:

$$\text{Ex}(\text{SDR/won}) = \mathbf{a}\text{Ex}(\text{SDR/won}) + \mathbf{b}\text{Ex}(\text{SDR/ ¥}) + \mathbf{g}\text{Ex}(\text{SDR/HK\$}) \quad (6)$$

The exchange rate of the Korean won against the U.S. dollar is as follows:

$$\text{Ex}(\text{won/\$}) = 1/(1-\mathbf{a}) \{ \mathbf{b}\text{Ex}(\text{¥/\$}) + \mathbf{g}\text{Ex}(\text{HK\$/\$}) \} \quad (7)$$

Similarly, the exchange rate of the Hong Kong dollar is determined as follows:

$$\text{Ex}(\text{HK\$/\$}) = 1/(1-\mathbf{g}) \{ \mathbf{a}\text{Ex}(\text{won/\$}) + \mathbf{b}\text{Ex}(\text{¥/\$}) \} \quad (8)$$

From equations (7) and (8), the exchange rate of the Korean won against the U.S. dollar is shown to be equal to the yen-dollar rate:

$$\text{Ex}(\text{won/\$}) = \text{Ex}(\text{¥/\$}) \quad (9)$$

Equation (9) implies that the ACU bloc is exactly the same as the yen bloc. That is, the adoption of the common Asian currency basket results in the same effect as the formation of the yen bloc. By adopting the common basket peg, the bilateral exchange rates between any pair of Asian currencies become fixed. Thus, the exchange rate of the Korean won or the Hong Kong dollar against the U.S. dollar equals the yen-dollar exchange rate. Accordingly, the real effective exchange rate and its variance are the same as in the case of the yen bloc.

The yen bloc and the Asian currency basket share a common feature: Japan would be required to play a leadership role in monetary policy. The East Asian developing economies have to give up their independent monetary policies, and accept the position of followers in order to fix the exchange rates of their currencies against the Japanese yen. For example, if the Japanese yen becomes relatively strong against the U.S. dollar, the East Asian currency would appreciate, too. Similarly, if the Japanese monetary authorities pursue a deflationary monetary policy to cope with inflation, the East Asian economies would have to follow the same monetary policy along with Japan in order to maintain the par value system. In this regard, the monetary policy coordination should be in place.²⁸

Meanwhile, if the Asian currency unit is adopted, the East Asian economies can use the ACU as the medium of exchange and official settlement. Thus, the Asian currency basket is considerably different from the yen bloc in that Japan could not monopolize the seignorage gains. Furthermore, if the exchange rates of the East Asian currencies are allowed to fluctuate within a certain range around the par value, the exchange rates between the ACU and major

²⁷ In this example, the Hong Kong dollar is not pegged to the U.S. dollar. The Hong Kong dollar represents a composite currency of the rest of East Asian countries.

²⁸ This regime works effectively only if the domestic authority is willing to subordinate its monetary policy to the fixing of the exchange rate. However, the anchor country's monetary policy may change as a function of which countries adopt the anchor's currency. This adjustment of policy may feature compensation schemes between "clients" and "anchors," possibly involving the amount of seignorage revenue accruing to the various

international currencies such as the U.S. dollar could be more stable compared to the case of the Japanese yen. Thus, the role of the ACU as the unit of account will be strengthened.²⁹

The Global Currency Basket

Finally, let us consider the case of the global currency basket (GCB), which includes the G-3 currencies: dollar, yen and mark.³⁰ The composition of the GCB is the same as in the case of the individual currency basket of equation (2). The only difference between individual and common baskets is that the weights of the latter basket are set to be the same through policy coordination.

Because the bilateral exchange rates of the Asian currencies including the Japanese yen become fixed, variance of the real exchange rate of the Korean won is as follows:

$$\begin{aligned} \text{Var}(\text{REEX}(\text{won})) = & \mathbf{b}^2(\mathbf{W}_{\text{US}} + \mathbf{W}_{\text{GER}})^2 \cdot \text{Var}(\text{Ex}(\text{¥}/\$)) \\ & + 2\mathbf{b}(\mathbf{W}_{\text{US}} + \mathbf{W}_{\text{GER}})\{(\mathbf{W}_{\text{US}} + \mathbf{W}_{\text{GER}}) \mathbf{g} - \mathbf{W}_{\text{GER}}\} \cdot \text{Cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$)) \\ & + \{(\mathbf{W}_{\text{US}} + \mathbf{W}_{\text{GER}}) \mathbf{g} - \mathbf{W}_{\text{GER}}\}^2 \cdot \text{Var}(\text{Ex}(\text{DM}/\$)) \end{aligned} \quad (10)$$

The optimal currency basket should determine the weights of \mathbf{a} , \mathbf{b} and \mathbf{g} to minimize

governments. See Alesina and Barro (2000).

²⁹ European policymakers worried that the EMS was actually a DM bloc. The ECU was established to deal with the asymmetric leadership of Germany in the process of the monetary integration. See Gros and Thygesen (1992), Chapter 3.

³⁰ The global currency basket (GCB) seemingly includes the Japanese yen. However, a clear distinction should be made between the cases where the Japanese yen is included in the Asian common currency or excluded and free-floating with other major international currencies. As in the case of the euro where the deutsche mark is also included, we consider the case where the Japanese yen is also included in the Asian common currency bloc. On the other hand, Ogawa, Ito and Sasaki (1999) propose a regional basket currency arrangement where only Asian developing countries jointly participate, but Japan does not. In the latter case, \mathbf{b} does not vanish.

variance of equation (10). Thus the weights for the U.S. dollar, the Japanese yen and the deutsche mark under the GCB are determined as follows:

$$\mathbf{a}^* = W_{US}/(W_{US} + W_{GER}) \quad (11.1)$$

$$\mathbf{b}^* = 0 \quad (11.2)$$

$$\mathbf{g}^* = W_{GER}/(W_{US} + W_{GER}) \quad (11.3)$$

It is interesting to see that the variance of the real exchange rate as shown in equation (10) becomes zero under equations (11.1) through (11.3). It implies that the formation of the Asian currency bloc is the most efficient only if all the major currencies are included in the basket. Furthermore, the weight of the Japanese yen is set to zero because Japan is also participating in the Asian currency bloc based on the global currency basket.

The GCB is superior to both a single currency bloc centered on the dollar or the yen, and the ACU. However, it is another matter whether the optimal GCB is attainable in reality. The experience of policy coordination among G-7 countries confirms the difficulty of achieving exchange rate stabilization. In order to realize optimal GCB, the East Asian economies should first form its own currency bloc before pursuing an exchange rate adjustment mechanism with the U.S. and European Central Bank (ECB). A trilateral monetary coordination should be in place to effectively manage the above monetary system. However, the U.S. and ECB will not easily give up their autonomy over monetary policy in order to stabilize the dollar-yen (thus dollar-ACU) rate and the euro-yen (thus euro-ACU) rate. In adopting this policy stance, the large current account deficit will remain as a major stumbling block.

The optimal GCB is only plausible if the international monetary system, at least for the

Asia-Pacific region, is reshaped according to the spirit of the Bretton Woods system. The resurrection of the globally fixed exchange rate regime requires appropriate parity levels among participating currencies, as well as the establishment of a world central banking system (Eichengreen, 1994). In this sense, the formation of political consensus is prerequisite. Is it possible to reach an agreement among Asian developing countries, Japan, ECB and the U.S. on this ambitious plan? At present, it seems fair to conclude that the optimal GCB remains as a remote possibility.

4. Design of the Asian Monetary System

From the previous discussion, we find that neither a dollar bloc nor a yen bloc is the best option for the Asian Monetary System (AMS). On the other hand, a global currency basket similar to the SDR is plausible only if policy coordination among Asian countries, Japan and the U.S. is attained. This condition cannot be easily satisfied in reality. Accordingly, the adoption of the Asian currency basket centered on the ACU may be a realistic alternative. It is beyond the scope of this study to put forth a detailed blueprint for the AMS. Nevertheless, we may gain some insight from the experiences of the EMS. The EMS is composed of three major ingredients: the creation of the European Currency Unit (ECU), adoption of the Exchange Rate Mechanism (ERM) and establishment of financial facilities. Similarly, the AMS should deal with the three key dimensions of monetary cooperation: the Asian Currency Unit, the Asian Exchange Rate Mechanism and the Asian Financial Facilities.

First, the ACU may be designed to be a currency basket composed of the currencies of the member countries. As such, its value against a non-member country's currency is nothing but the weighted average of exchange rates of member country currencies against the

concerned currency. The ACU, if adopted as the common basket, may serve as the basis for the AMS. However, the acceptance of the ACU as a regional means of payment settlement or store of value is another matter.

Let us consider the case of the ECU briefly. The ECU was created with the purpose of providing an accounting unit for the official sector. After the creation of the EMS, the ECU was supposed to be at the center of the system. It was the numeraire for the exchange rate mechanism, the unit of account for the EMCF and the means of payment settlement. The EMS member states were asked to deposit at least 20% of their foreign reserves in ECU in the EMCF, and the ECU deposits were used in connection with settlement operations related to the intervention activities of central banks. However, the official ECU was not widely used. Holdings of deutsche mark or US dollar reserves can be more easily used in foreign exchange market intervention. Thus, it is debatable whether or not the ECU has played an important role in the EMS (Gros and Thygesen, 1992).³¹

In order to facilitate use of the ACU as the regional money, there should be institutional support from the central banks of the member countries. For example, the operation of the AAB needs to be denominated and settled in the ACU. At the same time, incentives for using the ACU in private transactions should be provided.

Second, the adoption of a common basket peg based on the ACU implies that the par value of each participant's currency against it is institutionally determined. Hence, bilateral exchange rates between regional currencies are fixed. In reality, unexpected external shocks to the balance of payments may make it difficult to abide by the par value. Given that shocks are temporary in nature, it would be reasonable to allow the bilateral exchange rates of

³¹ The ECU was widely used in the private sector as a means of diversification of the intra-EU exchange rate risk. In this case, the weights of the ECU were negotiable.

concerned currencies to fluctuate within a predetermined band. If external shocks to the balance of payments are not temporary, the par value is to be adjusted.

Accordingly, the marginal intervention rule should be agreed upon. The margins for fluctuation need not be universal. Taking into account the situation of the external balances of concerned countries, the band should be flexibly determined. For example, a $\pm 2.25\%$ margin may be applied to ANIEs (Hong Kong, Korea, Singapore and Taiwan), while $\pm 6\%$ is appropriate for another group of ASEAN countries (Indonesia, Malaysia, the Philippines, and Thailand).

If any two currencies hit their margins of fluctuation, there should be intervention to stabilize the exchange rates. In the case of the EMS, unlimited intervention by the central banks concerned was required.³² The Asian countries may follow this example for foreign exchange market intervention. In the case of East Asian developing countries, the bilateral exchange rates between regional currencies, including those against the yen, are indirectly determined by the triangular arbitrage rule. For example, the won-yen rate is determined by the cross rates. These are calculated based upon the rates quoted in both the Tokyo and the New York foreign exchange markets. These were used as reference rates for the commercial banks and there are no restrictions on the spread. Suppose that the won-yen rate hits the lower margin and the Bank of Korea tries to sell the Japanese yen and buy the Korean won. If the market for Japanese yen is not deep, the intervention cannot effectively overrule the won-yen rate determined by the cross rates. In order for the intervention to be effective, there should be a deep and liquid foreign exchange market for member currencies, particularly for the

³² Assume the DM/FF hit the upper margin. The Banque de France is required to buy its own currency against the DM in the Paris foreign exchange market. Since the Banque de France is not allowed to hold the currencies of the other Community central banks in any significant amount beyond working balances, the Bundesbank has an obligation to lend DM to the Banque de France. In support of the intervention of the Banque de France in the Paris foreign exchange market, the Bundesbank is required to sell its currency against the French franc in the Frankfurt foreign exchange market.

regional anchor currency, e.g. the Japanese yen. In the same context, the AERM requires the revitalization of the use of regional currencies and the ACU in the same context.

Finally, it is important to provide credit to the member countries experiencing external imbalances in order to establish stable and credible monetary arrangements in Asia. In this sense, the functions of the AAB need to be specified and subdivided to serve various purposes effectively. At the same time, operational modalities should be appropriately developed. It would be possible to draw valuable lessons from the financial facilities of the EU, particularly from the VSTF facility, which was established to support foreign exchange market intervention.

Meanwhile, it should be noted that the financial facility aimed at exchange market intervention should be utilized for that specific purpose only. The obligatory intervention by the concerned central banks would result in decreases in monetary base and foreign exchange reserves for the weak-currency countries, and the opposite for the strong-currency countries if the intervention was not sterilized (Apel, 1998). This asymmetric effect of intervention means a substantial burden to the former if it is a small open economy. Any difficulties in sustaining the central parities in the medium- to long-run will jeopardize the credibility of regional monetary arrangements.

VIII. Conclusion

The Asian currency crisis has greatly increased an awareness of the importance and necessity of East Asian regional financial cooperation. This awareness has formed a ground to develop a new financial architecture for preventing future currency crises. After the crisis,

Japan, fearing diminishing influence in the Asian region, has been most active in proposing various measures for regional financial cooperation. However, the AMF, proposed by Japan, should face strong opposition from outsiders and insiders. The United States and the IMF contend that the AMF could potentially undermine the existing international financial system over which the United States exercises hegemony. On the other hand, China is cautious about strengthening Japan's hegemony in the Asian region. In response to opposition, Japan has instead launched and executed the Miyazawa Plan, a newly devised support initiative for the region. The Miyazawa Plan, specifically designed for crisis-afflicted Asian countries to reinvigorate the economy in the medium term, would play a positive role in indirectly preventing recurrence of currency crises. However, it is not an effective and systematic approach to preventing currency crises or to forestalling their contagion. Accordingly, Malaysia's Prime Minister, Mahathir Mohamad, has proposed the initiation of the East Asia Monetary Fund (EAMF). However, the United States and the IMF are not supportive of the idea.

A more realistic and feasible financial cooperation plan is the multilateral regional arrangements to borrow (RAB). No single country can exert excessive influence in the Arrangements, and more importantly, the Arrangements will not overlap with the functions of other established international financial institutions. The Asian Arrangements to Borrow (AAB) stipulate in advance the credit and borrowing limits for each member country. When a particular country asks to borrow, the Arrangements would provide a loan up to the agreed ceiling. Unlike in the IMF or the AMF, where the member countries establish a fund based on quota subscriptions and provide credit when necessary, the AAB would work out a financing facility almost automatically after the need arises. Though member countries would have to agree upon the specific terms and conditions for this multilateral Arrangements, six general

principles for its implementation would be worth considering.

First, the credit limit for each country should be proportional to its foreign reserves. This will serve as a criterion for the amount of capital the country can borrow.

Second, as a means to supplement the IMF's role, the AAB will be applied and activated before a request for IMF assistance. In addition, the borrowing activated from the AAB will be unconditional, unlike in the case of the IMF.

Third, when a country requests support, the country first willing to provide credit will have precedence in giving assistance. Otherwise, the assistance will be activated according to the previously determined allotment of financial commitment.

Fourth, to minimize moral hazard associated with the borrowing country, a proper level of penalty interest rate should be charged to its borrowing.

Fifth, the conditions on requested loans will be limited. The AAB will only be applicable in such situations as a sudden depreciation of the currency, or a sudden decrease in foreign reserves during the three months prior to the request.

And finally, for effective management, a monitoring and surveillance unit should be in place to supervise the operation of the AAB.

The AAB will automatically provide liquidity to countries that have started to experience turbulence in the foreign exchange market. Accordingly, the AAB will be able to prevent currency crises, and serve as a firm and meaningful milestone in terms of financial cooperation. As a rule, the AAB should initiate itself through multilateral means. In the meantime, until it becomes fully established, China, Japan and Korea should begin with a tripartite arrangement and gradually take steps to include the ASEAN member countries.

As the East Asian countries become more regionally integrated, the next agenda for the regional financial cooperation would be to search for a means to stabilize exchange rates

among regional currencies. An even higher level of concerted economic and political cooperation would be required to establish appropriate monetary arrangements at the national as well as regional dimensions. Meanwhile, the establishment of a regional monetary system does not mean forming a dollar bloc or a yen bloc in East Asia. The adoption of the common currency basket centered on the Asian currency unit may be a realistic alternative for East Asian countries.

The experiences under the EMS may shed some light on the prospects for the AMS. In order to be an effective regional monetary system, the AMS should be equipped with three essential ingredients: the currency unit, the exchange rate mechanism, and the financial facilities. As seen in the ERM crisis of 1992-93, however, even this EMS institutional framework would not be sufficient to ward off speculative attacks. A common currency needs to be explored over a longer term.

East Asia has a long way to go before formalizing and putting into effect the Chiang Mai Initiative, and launching further cooperative initiatives. Once established, the AAB will become a milestone in the way for closer financial cooperation in East Asia. China, Japan and Korea should provide leadership to achieve this goal by leveling out the differences among the East Asian countries.

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Appendix 1

Asian Monetary Fund Initiative in Autumn 1997

Supportive arguments for the Asian Monetary Fund prepared ahead
of the autumn 1997 World Bank/IMF joint annual meeting

[outline]

- . The Asian Monetary Fund (AMF) is envisaged as an independent permanent organization designed to complement the role of the IMF, and as having its own secretariat.
- . The AMF will provide a forum for the regular exchange of views on economic policy (regional surveillance) by regional economies aimed at forestalling future currency crises.
- . In the event of a currency crisis, the AMF will put together an assistance package from contributions made by countries in the region to quantitatively complement the IMF package, if the IMF, which will always play the central role in providing assistance, is unable to come up with sufficient funding.
- * At the time (Autumn 1997), details of the AMF, such as size of the fund, member countries, and modality of the institution and funding, were still undecided.

[Concept]

- . The lessons from the Asian currency crisis provide the motive for the establishment of the AMF.

- (1) An appropriate exchange rate regime and sound macroeconomic policy are extremely important for countries of the region. Overcoming the vulnerability of the financial sector is also an urgent task.
- (2) Among emerging market economies in Asia, a currency crisis in one country can easily spread to other countries, with significant consequences.

- . The Asian Monetary Fund initiative emerged spontaneously during the process of coping with the currency crisis.

(The momentum grew during the consultative group meeting for Thailand held in Tokyo in August 1997.)

- (1) To prevent currency crises, a regular exchange of views on economic policy by economies in the region is essential.
- (2) In the event of a currency crisis, the IMF will play the central role in providing assistance. However, in cases where the IMF package falls short, it is necessary that countries of the region will provide the additional financing needed to complement it in quantitative terms.

- . The Asian Monetary Fund will not undermine the functions of the IMF nor lead to moral hazard.

The Asian Monetary Fund is meant to provide a forum for the regular exchange of views on economic policy by regional economies and provide financial assistance under the conditionality consistent with that for IMF's financial assistance. It therefore will only complement and strengthen the functions of the IMF, and will not give rise to moral hazard.

Appendix 2

Manila Framework

- . On November 18 and 19, 1997, a conference of deputy finance ministers and central bank governors from 14 countries, mainly from Asia, was held in Manila, and “A New Framework for Enhanced Asian Regional Cooperation to Promote Financial Stability” (the so-called Manila Framework) was agreed upon.
- . The Manila Framework centers around the four initiatives described below.

(1) Regional surveillance

- Regional surveillance will be undertaken to complement the IMF’s global surveillance.
- Regional surveillance will involve a twice yearly detailed exchange of views on a range of issues, including macroeconomic policy, structural policy, currency exchange policy, and the financial system.

(2) Technical assistance (TA) geared towards strengthening the financial sector

- Requests were made to international financial institutions to support participating countries’ efforts to strengthen the supervision of their financial sector/markets through technical assistance, etc., in light of the importance of a healthy financial sector in each country.

(3) Bolstering of the IMF's ability to deal with financial crises

- While welcoming the 11th capital increase, requests were made for early activation of NAB (an expanded version of GAB).
- Requests were made for a review of the access limit to make the level of assistance needed to restore the confidence of the markets available.
- Requests were made for an investigation into a new mechanism for short-term lending.

(4) Contingent Financing Arrangement (CFA) for Asian currency stabilization

- CFA involves the provision of assistance for troubled participating countries which have agreed to an IMF economic adjustment program by other participating countries on the condition that the IMF has already extended maximum help.
- With each recipient country taking any necessary legal procedures in advance, the concrete form and scale of assistance will be determined on a case-by-case basis.

. So far, regional surveillance conferences have been held five times: March 26 and 27, 1998 (Tokyo), November 7 and 8, 1998 (Kuala Lumpur), March 26 and 27, 1999 (Melbourne), August 29 and 30, 1999 (Singapore) and March 20 and 21, 2000 (Hong Kong). The next conference is scheduled to take place in November in Thailand.

➤ Countries and institutions participating in the Manila Framework conferences:

Australia, Brunei Darussalem, Canada, China, Hong Kong, Indonesia, Japan, South Korea, Malaysia, New Zealand, the Philippines, Singapore, Thailand, United States, IMF, World Bank, and Asian Development Bank (14 countries/areas and three institutions)

Appendix 3

A New Initiative to Overcome the Asian Currency Crisis

- New Miyazawa Initiative -

To assist Asian countries in overcoming their economic difficulties and to contribute to the stability of international financial markets, Japan stands ready to provide a package of support measures totaling US\$30 billion, of which US\$15 billion will be made available for the medium- to long-term financial needs for economic recovery in Asian countries, and another US\$15 billion will be set aside for their possible short-term capital needs during the process of implementing economic reform.

. Medium- to Long-Term Financial Support to Asian Countries

1. Need for funds in Asian countries

Asian countries affected by the currency crisis need medium- to long-term capital to implement the various policy measures described below for economic recovery.

- (1) Supporting corporate debt restructuring in the private sector and efforts to make financial systems sound and stable
- (2) Strengthening the social safety net
- (3) Stimulating the economy (implementation of public undertakings to increase employment)
- (4) Addressing the credit crunch (facilitation of trade finance and assistance to small- and medium-sized enterprises)

2. Measures for financial assistance

To meet these medium- to long-term capital needs of Asian countries, Japan will extend financial assistance to those countries making use of the various measures listed below. In doing so, due consideration will be paid to the better use of the Tokyo market to mobilize Japanese funds.

(1) Providing direct official financial assistance

- i) Extending Export-Import Bank of Japan (JEXIM) loans to Asian countries
- ii) Acquisition of sovereign bonds issued by Asian countries by the JEXIM
- iii) Extending ODA yen loan to Asian countries

(2) Supporting Asian countries in raising funds from international financial markets

- i) Use of guarantee mechanisms
 - a) Utilizing the guarantee functions of the JEXIM
 - The JEXIM will guarantee bank loans to Asian countries.
 - The JEXIM will guarantee sovereign bonds issued by Asian countries (legal amendment is necessary).
 - b) Providing export insurance to bank loans to Asian countries
 - c) Requesting the World Bank and the Asian Development Bank to step up their efforts to provide guarantees to bank loans and bond issuance by Asian countries
 - d) It is hoped that in the long run the establishment of an international guarantee institution with a prime focus on Asian countries will be seriously

considered.

ii) Interest subsidies

Japan will establish an Asian currency crisis support facility backed by our funding. This facility will be used to provide interest subsidies to Asian countries that borrow funds from JEXIM or private banks in conjunction with loans from the Asian Development Bank.

This will be an open facility in which all countries are welcome to take part.

(3) Financial support in the form of co-financing with multilateral development banks

Japan will continue to provide co-financing with the World Bank and the Asian Development Bank to Asian countries. In particular, we will call for maximum financial assistance from the World Bank and the Asian Development Bank to support those Asian countries that are faced with huge capital needs in an effort to address the issue of corporate debt restructuring and the restoration of stability in the financial system. We are ready to provide co-finance with these two banks.

(4) Technical assistance

The World Bank and the Asian Development Bank will be requested to provide necessary technical assistance through Japan special funds to Asian countries that are to implement a comprehensive approach to address the issue of corporate debt restructuring and the restoration of the financial system. Japan is prepared to contribute by means of providing technical assistance to these Asian countries, taking into account the respective situations in those countries.

. Short-Term Financial Support to Asian Countries

Asian countries may face some needs for short-term capital in the course of making progress in their economic reform. To be prepared to meet these needs such as facilitation of trade finance, Japan will set aside US\$15 billion in short-term funds which will take the form of swap arrangements.

Japan intends to cooperate closely with the multilateral development banks and the related countries, especially Asia-Pacific countries and G-7 countries, in implementing the new initiative.

Appendix 4

New Miyazawa Initiative (financial support already indicated)

(in millions of US dollars)

As of February 2, 2000

	Medium- to Long-Term Financial Support		Short-term Financial Support	Total	Notes
	JBIC (OOF account)	JBIC (ODA account)			
Indonesia	<ul style="list-style-type: none"> - Parallel Loan with IMF/ Extended Fund Facility approx.1,000 - Power Sector Restructuring Program Loan (ADB) approx.400 - Policy Reform Support Loan II (IBRD) approx.100 	<ul style="list-style-type: none"> - Social Safety Net Loan approx.380 - Health & Nutrition Sector Development Program Loan (ADB) approx.300 - Social Safety Net Adjustment Loan (IBRD) approx. 600 - Community&Local Government Support Sector Development Program Loan(ADB) approx.150 		2,930	
Korea	<ul style="list-style-type: none"> - Untied Loan approx.2,350 - Two-Step-Loan to the Korean Development Bank 1,000 		<ul style="list-style-type: none"> - Short-term Financing Facility up to 5,000 	8,350	
Malaysia	<ul style="list-style-type: none"> - Two-Step-Loan for Export Industry support approx.500 - Two-Step-Loan to the Development Infrastructure Bank of Malaysia approx.400 	<ul style="list-style-type: none"> - ODA Yen Loan (7 Projects) approx.950 	<ul style="list-style-type: none"> - Short-term Financing Facility up to 2,500 	4,350	<ul style="list-style-type: none"> - JBIC Guarantees for the Infrastructure Projects of Physical Distribution approx. 700 - Trade Insurance Facility 560
Philippines	<ul style="list-style-type: none"> - Power Sector Restructuring Program Loan(ADB) approx.300 - Banking System Reform Project Loan (IBRD) approx.300 - Two-Step-Loan for the Private Sector Development through the Development Bank of Philippines approx.500 	<ul style="list-style-type: none"> - Metro Manila Air Quality Improvement Sector Development Program Loan (ADB) approx.300 - ODA Yen Loan(13 Projects) approx.1,100 		2,500	<ul style="list-style-type: none"> - JBIC Guarantees for the Public Sector Entities in the Power Sector approx. 500
Thailand	<ul style="list-style-type: none"> - Economic and Financial Adjustment Loan (IBRD) up to 600 - Two-Step-Loan for Manufacturing Sector Support approx.750 	<ul style="list-style-type: none"> - Economic Recovery and Social Sector Program Loan approx.250 - Agricultural Sector Program Loan(ADB) approx.300 - ODA Yen Loan (5 Projects) approx.970 		2,870	<ul style="list-style-type: none"> -Trade Insurance Facility approx. 500
Total	8,200	5,300	7,500	21,000	2,260
		13,500			

Notes: (ADB) ~ Co-financing with ADB, (IBRD) ~ Co-financing with IBRD

Appendix 5

Resource Mobilization Plan for Asia

- The Second Stage of the New Miyazawa Initiative -

1. Current Conditions and Issues for Asian Economies

- Having passed through the initial stage of the currency crisis and the next stage of preventing further stagnation of the economy, the Asian economies are now entering a new stage of cooperation in the construction of a more stable and robust economic system so they can recover and maintain vigorous economic development.
- The urgent capital needs of each Asian country have been met through funding via the New Miyazawa Initiative and other public assistance, and the economies of Asia are bottoming out. It is now essential to mobilize domestic and foreign private-sector funds to achieve a full-scale, vigorous recovery in these economies.
- As the excessive reliance on short-term dollar funds was one of the causes of the currency crisis, in working toward the mobilization of private-sector funds it will be essential to establish a stable and robust financial system within the Asian region that would avoid Asian economies from falling into currency crises in the future.
- In working to establish such a system, measures for the full utilization of Japan's abundant savings will be indispensable. Such efforts may also contribute to the

internationalization of the yen and the more active use of the Tokyo market.

2. New Developments under the New Miyazawa Initiative

. Basic Ideology

As the Asian economies are entering a new stage, in addition to steadily continuing to provide assistance via loans, future assistance under the New Miyazawa Initiative should place greater emphasis on the market, including assistance to mobilize private-sector capital, aiming at the stable economic development of Asia.

. Assistance Measures to Mobilize Private-sector Capital

As a new development in assistance under the New Miyazawa Initiative, Japan stands ready to provide assistance to mobilize, a total of up to ¥2 trillion of domestic and foreign private-sector funds for Asia through the following measures.

(1) Assistance for Fund-raising in International Financial and Capital Markets by Asian Countries

Assistance via the Export-Import Bank of Japan

- Credit guarantees for borrowing from private-sector financial institutions by Asian countries
- Credit guarantees for public bonds issued by Asian countries (from October 1,

1999)

- Acquisition of public bonds issued by Asian countries

Expanding the range of bonds that can be acquired and increasing the percentage of each issuance that can be acquired

Assistance via the “Asian Currency Crisis Support Facility” of the Asian Development Bank

- Credit guarantees and/or interest subsidies for fund-raising on international markets by Asian countries

(2) Assistance for Investment in Asian Private-Sector Enterprises via Equity Funds, etc.

- The Export-Import Bank of Japan will provide assistance in the form of funding, capital investment and guarantees to financing schemes such as equity and debt funds that invest in Asian private-sector enterprises.

- This will include assistance in working capital to facilitate the restructuring of private-sector enterprises.

. Construction of a Stable Financial System Resistant to Currency Crises

To ensure that Asian economies are not easily influenced by excessive short-term international capital flows, while maximizing the mobilization of private-sector capital within the Asian region, it will be necessary to promote the influx of good-quality funding (long-

term funding denominated in Asian currencies) from outside the region and to build up a stable financial system.

(1) Upgrading and Fostering of Asian Bond Markets

Upgrading and fostering of Asian bond markets with sufficient volume are urgent issues as part of the efforts toward establishing a stable financial system in the region.

To promote this, the government of Japan is vitalizing the Tokyo market through promoting the issuance of the Samurai bonds and upgrading the government bond markets and settlement systems:

In addition, Japan will cooperate with the governments in the region to conduct joint examinations of the following issues:

Issues for individual country

- Division of functions between indirect and direct financing
- Formation of benchmarks and diversification of financial products in the government bond and corporate bond markets
- Promotion of disclosure practices
- Strengthening and upgrading of rating agencies
- Improvement of funds' and securities' settlement systems

Issues for the overall Asian region

- Vitalization of the regional primary markets of international bonds
- Upgrading of the regional secondary markets

(2) While utilizing the know-how in the Japanese financial sector, the government of Japan will also provide technical and personnel assistance for the establishment of a stable financial system.

Appendix 6

The Joint Ministerial Statement of the ASEAN+3 Finance Ministers Meeting

6 May 2000, Chiang Mai, Thailand

Introduction

1. Following the “Joint Statement on East Asia Cooperation” issued by the ASEAN+3 Leaders at their Informal Meeting in Manila last November, we, the Finance Ministers of ASEAN, China, Japan and the Republic of Korea (ASEAN+3), convened our meeting in Chiang Mai to exchange views on economic and financial situations and discuss further cooperation in the East Asian region.
2. H.E. Pehin Orang Kaya Laila Wijaya Dato Haji Abdul Aziz Umar, Minister representing the Ministry of Finance, Brunei Darussalam, presided over our meeting.

Strengthening East Asia Financial Cooperation

3. We appreciated the presentation by the Asian Development Bank on the East Asian economic and financial situations and welcomed the stronger-than-expected recovery of our member economies. To further sustain this economic growth, we agreed to strengthen our policy dialogues and regional cooperation activities in, among others, the areas of capital flows monitoring, self-help and support mechanism and international

financial reforms.

4. On the monitoring of capital flows, our experts met in Manila in late April this year to exchanging views on capital flows monitoring mechanisms and discussed possible approaches to establish a regional monitoring framework in East Asia. We agreed to use the ASEAN+3 framework to facilitate the exchange of consistent and timely data and information on capital flows.
5. As a first step towards establishing a well-coordinated economic and financial monitoring system in East Asia, we agreed to establish a network of contact persons to facilitate regional surveillance in East Asia. This would enhance the effectiveness of our economic reviews and policy dialogues.
6. In order to strengthen our self-help and support mechanisms in East Asia through the ASEAN+3 framework, we recognized a need to establish a regional financing arrangement to supplement the existing international facilities. As a start, we agreed to strengthen the existing cooperative frameworks among our monetary authorities through the “Chiang Mai Initiative”. The Initiative involves an expanded ASEAN Swap Arrangement that would include all ASEAN countries, and a network of bilateral swap and repurchase agreement facilities among ASEAN countries, China, Japan and the Republic of Korea.
7. We requested the ASEAN Secretariat to lead and coordinate a study on other appropriate mechanisms that could enhance our ability to provide sufficient and timely financial

support to ensure financial stability in the East Asian region.

8. Recognizing the importance of human resources and the need for cooperative research to prepare for policy dialog and consultation, we agreed to establish a network of research and training institutions to conduct research and training on issues of mutual interest. In this context, we appreciated Japan's offer to provide technical assistance in the financial sector through training and seminars for finance officials and the dispatch of experts to meet urgent needs of improving fiscal consolidation, public debt management and monetary policy. We also welcomed China and Korea's offer of technical assistance to finance, banking and fiscal officials in the region through training programs.

Appendix 7

Real Effective Exchange Rates and the Currency Blocs

1. Real Effective Exchange Rates and the Independent Basket Currency Peg

Let us assume that Asian countries peg their currencies to an independent currency basket, in which SDR is the numeraire. For example, the exchange rate of the Korean won against the SDR is assumed to be determined according to the following formula:

$$E(\text{SDR/won}) = E(\text{SDR/\$})^a E(\text{SDR/¥})^b E(\text{SDR/DM})^g, \mathbf{a+b+g=1} \quad (\text{A.1})$$

where \mathbf{a} , \mathbf{b} , \mathbf{g} denotes the weight of the dollar, yen and mark, respectively. If the country concerned adopts a dollar peg (a yen peg), then it follows that $\mathbf{a} = 1$, $\mathbf{b} = \mathbf{g} = 0$ ($\mathbf{a} = \mathbf{g} = 0$, $\mathbf{b} = 1$).

The fixed rates are often adjustable in the presence of fundamental disequilibria in the balance of payments, inflationary pressures, the GDP gap, etc. In this context, the exchange rate determination under the adjustable basket currency peg can be expressed as follows:

$$E(\text{SDR/won}) = \dots \cdot E(\text{SDR/\$})^a E(\text{SDR/¥})^b E(\text{SDR/DM})^g \quad (\text{A.2})$$

By taking the logarithmic transformation and the first difference of equation (A.2), we may get the following equation, which can be readily applied to empirical analysis.

$$e(\text{SDR/won}) = +\mathbf{a} \ e(\text{SDR/\$}) + \mathbf{b} \ e(\text{SDR/¥}) + \mathbf{g} \ e(\text{SDR/DM}) \quad (\text{A.3})$$

If a country adopts a dirty floating regime, a flexible exchange rate regime allowing for some degree of intervention, equation (A.3) is still effective for empirical quest. Under the clean floating, however, the estimated weight of the each currency is no longer meaningful to describe the stance of the monetary authorities. The estimated weights of the U.S dollar, the Japanese yen and the deutsche mark are reported in <Table A.1>.³³

Real effective exchange rates can be defined in various forms. We try to define it as simply as possible to clarify the relationship between the stability of REEX and the weights of major currencies included in the basket. Hence, we assume that the REEX of an Asian currency is the weighted sum of its bilateral exchange rates against the dollar, yen, mark and the other representative Asian currency, taking into account that largest trading partners are the U.S. (NAFTA), Japan, Germany (EU) and Asia as a whole (except for Japan).³⁴

In general, trade weights are used to define the REEX. Here, trade weights of the concerned Asian country with the NAFTA, Japan, the EU and eight out of nine Asian developing countries (China, Hong Kong, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan and Thailand except for itself) are used in calculating the REEX.

³³ In estimating equation (3), we use the rolling regression method to begin with the period of 1990-1992, onto the period of 1994-1996. Also, the Chochrane-Orcutt method is adopted to cope with the first-order auto-correlation of residuals. Moreover, a constraint of $\mathbf{a}+\mathbf{b}+\mathbf{g}=1$ is imposed on estimation.

³⁴ In the case of Korea, trade with these areas weighs over 80% of its total trade.

<Table A.1> Estimated Implicit Weights of the Dollar, Yen and Mark

	90-92	91-93	92-94	93-95	94-96	90-96
Korea	.97	1.02	.99	.88	.83	.91
a	.02	-.02	.02	.07	.16	.08
b	.01	.00	-.01	.05	.01	-.00
g						
Taiwan	.89	.89	.89	.74	.77	.84
a	.06	.03	.04	.12	.22	.09
b	.05	.08	.07	.14	.01	.07
g						
Singapore	.61	.66	.71	.72	.78	.68
a	.19	.12	.10	.10	.16	.13
b	.20	.21	.19	.17	.05	.18
g						
Hong Kong	1.01	1.01	.99	.99	.99	1.01
a	.00	-.01	-.00	-.01	-.01	-.01
b	-.01	.00	.01	.02	.02	.00
g						
Malaysia	.87	.86	.94	.84	.95	.87
a	.09	.10	-.06	.08	.12	.08
b	.04	.04	.12	.08	-.06	.05
g						
Indonesia	.95	.97	.99	.99	.99	.97
a	.03	.02	.01	.02	-.03	.01
b	.02	.01	.00	-.01	.04	.02
g						
Philippines	1.10	1.10	1.03	1.08	1.05	1.07
a	-.13	-.18	-.09	.04	.07	-.04
b	.03	.08	.06	-.12	-.12	-.03
g						
Thailand	.80	.81	.81	.84	.84	.82
a	.13	.11	.12	.10	.11	.11
b	.07	.08	.07	.06	.05	.07
g						
China	.90	.94	.28	.51	.99	.78
a	.10	.01	.45	.07	.01	.09
b	.00	.05	.27	.42	.00	.13
g						

Source: IMF, *International Financial Statistics Yearbook* 1999. For Taiwan, *Taiwan Statistical Data Book*, Council for Economic Planning and Development.

Now, let us define the REEX of an Asian developing country, e.g. Korea. Furthermore, the representative Asian trading partner is assumed to be Hong Kong.

$$\begin{aligned}
\text{REEX(won)} = & W_{\text{US}} \cdot (\text{EX(won/\$)} + P_{\text{US}} - P_{\text{KOR}}) \\
& + W_{\text{JPN}} \cdot (\text{EX(won/¥)} + P_{\text{J}} - P_{\text{KOR}}) \\
& + W_{\text{GER}} \cdot (\text{EX(won/DM)} + P_{\text{G}} - P_{\text{KOR}}) \\
& + W_{\text{HK}} \cdot (\text{EX(won/HK\$)} + P_{\text{HK}} - P_{\text{KOR}})
\end{aligned} \tag{A.4}$$

Here, nominal exchange rates and price indices take the logarithmic transformation. W_j means country j's trade weight or competitor weight ($W_{\text{US}} + W_{\text{JPN}} + W_{\text{GER}} + W_{\text{HK}} = 1$).

In equation (A.4), the price indices are assumed to be exogenous and normalized to take the value of one. Therefore, the REEX become the same as the nominal effective exchange rate.

$$\begin{aligned}
\text{REEX(won)} = & W_{\text{US}} \cdot \text{EX(won/\$)} + W_{\text{JPN}} \cdot \text{EX(won/¥)} \\
& + W_{\text{GER}} \cdot \text{EX(won/DM)} + W_{\text{HK}} \cdot \text{EX(won/HK\$)}
\end{aligned} \tag{A.5}$$

We may convert equation (A.5) to equation (A.6), which includes only the bilateral exchange rates of the Korean won against the dollar.³⁵

$$\begin{aligned}
\text{REEX(won)} = & \text{EX(won/\$)} - W_{\text{JPN}} \cdot \text{EX(¥/\$)} - W_{\text{GER}} \cdot \text{EX(DM/\$)} - W_{\text{HK}} \cdot \text{EX(HK\$/\$)}
\end{aligned} \tag{A.6}$$

³⁵ $\begin{aligned} \text{REEX(won)} &= W_{\text{US}} \cdot \text{EX(won/\$)} + W_{\text{JPN}} \cdot \text{EX(won/¥)} + W_{\text{GER}} \cdot \text{EX(won/DM)} + W_{\text{HK}} \cdot \text{EX(won/HK\$)} \\ &= W_{\text{US}} \cdot \text{EX(won/\$)} + W_{\text{JPN}} \cdot [\text{EX(won/\$)} - \text{EX(¥/\$)}] + W_{\text{GER}} \cdot [\text{EX(won/\$)} - \text{EX(DM/\$)}] + W_{\text{HK}} \cdot [\text{EX(won/\$)} - \text{EX(HK\$/\$)}] \\ &= \text{EX(won/\$)} - W_{\text{JPN}} \cdot \text{EX(¥/\$)} - W_{\text{GER}} \cdot \text{EX(DM/\$)} - W_{\text{HK}} \cdot \text{EX(HK\$/\$)} \end{aligned}$

Equation (A.1) can be expressed as equation (A.7).³⁶

$$\text{Ex}(\text{won}/\$) = \mathbf{b}\text{Ex}(\text{¥}/\$) + \mathbf{g}\text{Ex}(\text{DM}/\$) \quad (\text{A.7})$$

By inserting equation (A.7) into equation (A.6), we can explicitly show the determinants of the REEX.

$$\text{REEX}(\text{won}) = (\mathbf{b} - \mathbf{W}_{\text{JPN}}) \cdot \text{Ex}(\text{¥}/\$) + (\mathbf{g} - \mathbf{W}_{\text{DM}}) \cdot \text{Ex}(\text{DM}/\$) - \mathbf{W}_{\text{HK}} \cdot \text{Ex}(\text{HK}\$/\$) \quad (\text{A.8})$$

For the sake of simplicity, the representative Asian trading partner's exchange rate against the U.S. dollar in equation (A.8) is assumed pegged to the U.S. dollar $\text{Var}(\text{Ex}(\text{HK}\$/\$)) = 0$. Hence, the variance of REEX of the Korean won becomes as follows:

$$\begin{aligned} \text{Var}(\text{REEX}(\text{won})) &= (\mathbf{b} - \mathbf{W}_{\text{JPN}})^2 \cdot \text{Var}(\text{Ex}(\text{¥}/\$)) \\ &\quad + 2(\mathbf{b} - \mathbf{W}_{\text{JPN}})(\mathbf{g} - \mathbf{W}_{\text{GER}}) \cdot \text{Cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$)) \\ &\quad + (\mathbf{g} - \mathbf{W}_{\text{GER}})^2 \cdot \text{Var}(\text{Ex}(\text{DM}/\$)) \end{aligned} \quad (\text{A.9})$$

The variance of the REEX depends on the variances of yen/dollar and mark/dollar exchange rates, the covariance between the two. The variance of the REEX is also affected by the difference between the weights assigned to the yen and the mark in the currency basket

³⁶ The weights of the dollar, yen and mark in the currency basket are denoted as \mathbf{a} , \mathbf{b} , \mathbf{g} respectively: $\text{Ex}(\text{SDR}/\text{won}) = \mathbf{a}\text{Ex}(\text{SDR}/\$) + \mathbf{b}\text{Ex}(\text{SDR}/\text{¥}) + \mathbf{g}\text{Ex}(\text{SDR}/\text{DM})$. If the term of $\text{Ex}(\$/\text{SDR})$ is added to both sides of equation (1), we may derive equation (7).

$\text{Ex}(\$/\text{SDR}) + \text{Ex}(\text{SDR}/\text{won}) = \text{Ex}(\$/\text{won}) = \mathbf{a}[\text{Ex}(\$/\text{SDR}) + \text{Ex}(\text{SDR}/\$)] + \mathbf{b}[\text{Ex}(\$/\text{SDR}) + \text{Ex}(\text{SDR}/\text{¥})] + \mathbf{g}[\text{Ex}(\$/\text{SDR}) + \text{Ex}(\text{SDR}/\text{DM})] = \mathbf{b}[\text{Ex}(\$/\text{¥})] + \mathbf{g}[\text{Ex}(\$/\text{DM})] \quad (\text{Ex}(1) = 0)$

and the trade weights with Japan and Germany: $(\mathbf{b}-W_{\text{JPN}})$ and $(\mathbf{g}-W_{\text{GER}})$.

2. Comparison of Currency Blocs

Now, let us examine how formation of a currency bloc in Asia affects real effective exchange rates of its participant countries. For that purpose, we focus on four specific examples: the dollar bloc, the yen bloc, the Asian currency basket, and a global currency basket. The dollar bloc and the yen bloc may be interpreted as a special case of $\mathbf{a} = 1$ and $\mathbf{b} = 1$ of the independent currency baskets. The Asian currency basket (ACB) denotes the case that only the Asian currencies are included in the basket. On the other hand, the global currency basket may be compared to the case of the SDR, which is composed of major currencies such as the U.S. dollar, the Japanese yen, and the deutsche mark.

(1) Dollar Bloc and Yen Bloc

If the dollar bloc is formed, nominal exchange rates of Asian currencies against the U.S. dollar become fixed. If we normalize the exchange rates by taking the value of one, and take the logarithmic transformation of the rates, the bilateral exchange rates of the Asian currencies against the U.S. dollar become zero:

$$\text{Var}(\text{Ex}(\text{HK}\$/\$)) = 0 \quad (\text{A.13})$$

The real effective exchange rate of the Korean won becomes as follows:

$$\begin{aligned}\text{REEX(won)} &= (\mathbf{b} - W_{\text{JPN}}) \cdot \text{EX}(\text{¥}/\$) + (\mathbf{g} - W_{\text{GER}}) \cdot \text{EX}(\text{DM}/\$) - W_{\text{HK}} \cdot \text{EX}(\text{HK}\$/\$) \\ &= -W_{\text{JPN}} \cdot \text{EX}(\text{¥}/\$) - W_{\text{GER}} \cdot \text{EX}(\text{DM}/\$)\end{aligned}$$

(A.14)

The variance of REEX (won) is determined as follows:

$$\begin{aligned}\text{Var}(\text{REEX(won)}) &= W_{\text{JPN}}^2 \cdot \text{Var}(\text{EX}(\text{¥}/\$)) \\ &\quad + 2 W_{\text{JPN}} \cdot W_{\text{GER}} \cdot \text{Cov}(\text{EX}(\text{¥}/\$), \text{EX}(\text{DM}/\$)) \\ &\quad + W_{\text{GER}}^2 \cdot \text{Var}(\text{EX}(\text{DM}/\$))\end{aligned}$$

(A.15)

In the case of the yen bloc, the exchange rates of Asian currencies against the yen become fixed. Therefore, the exchange rate of an Asian currency, e.g. the Korean won, against the U.S. dollar can be expressed as follows ($\mathbf{b}=1$, $\mathbf{a}=\mathbf{g}=0$).

$$\text{Ex(won}/\$) = \text{EX(won}/\text{¥}) + \text{EX}(\text{¥}/\$) = \text{EX}(\text{¥}/\$) \quad (\text{A.16})$$

The variance of the Asian currency is derived from equation (A.8) as follows: ³⁷

$$\text{REEX(won)} = (1 - W_{\text{JPN}} - W_{\text{HK}}) \cdot \text{EX}(\text{¥}/\$) - W_{\text{GER}} \cdot \text{EX}(\text{DM}/\$) \quad (\text{A.17})$$

³⁷ $\text{REEX(won)} = (\mathbf{b} - W_{\text{J}}) \cdot \text{Ex}(\text{¥}/\$) + (\mathbf{g} - W_{\text{G}}) \cdot \text{Ex}(\text{DM}/\$) - W_{\text{HK}} \cdot \text{Ex}(\text{HK}\$/\$)$
 $\text{Ex}(\text{HK}\$/\$) = \text{Ex}(\text{HK}\$/\text{¥}) + \text{Ex}(\text{¥}/\$) = \text{Ex}(\text{¥}/\$)$ ($\text{Ex}(\text{HK}\$/\text{¥}) = 0$), $\text{REEX(won)} = (\mathbf{b} - W_{\text{JPN}} - W_{\text{HK}}) \cdot \text{¥}/\$$
 $+ (\mathbf{g} - W_{\text{GER}}) \cdot \text{Ex}(\text{DM}/\$)$. Equation (17) is derived, if the condition of ($\mathbf{b}=1$, $\mathbf{g}=0$) is satisfied.

$$\begin{aligned}
\text{Var}(\text{REEX}(\text{won})) &= (1-W_{\text{JPN}}-W_{\text{HK}})^2 \cdot \text{Var}(\text{Ex}(\text{¥}/\$)) \\
&\quad - 2(1-W_{\text{JPN}}-W_{\text{HK}}) \cdot W_{\text{GER}} \cdot \text{Cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$)) \\
&\quad + W_{\text{GER}}^2 \cdot \text{Var}(\text{Ex}(\text{DM}/\$))
\end{aligned}
\tag{A.18}$$

(2) Asian Currency Unit

The Asian Currency Unit (ACU) is composed of only the Asian currencies: the Korean won, the Japanese yen, and the Hong Kong dollar. The exchange rate of the Korean won to the SDR is determined as follows:

$$\text{Ex}(\text{SDR}/\text{won}) = \mathbf{a}\text{Ex}(\text{SDR}/\text{won}) + \mathbf{b}\text{Ex}(\text{SDR}/\text{¥}) + \mathbf{g}\text{Ex}(\text{SDR}/\text{HK\$}) \tag{A.19}$$

Adding $\text{Ex}(\$/\text{SDR})$ to both sides of equation (A.19), we get the exchange rate of the Korean won against the U.S. dollar:³⁸⁾

$$\text{Ex}(\text{won}/\$) = 1/(1-\mathbf{a}) \{ \mathbf{b}\text{Ex}(\text{¥}/\$) + \mathbf{g}\text{Ex}(\text{HK\$}/\$) \} \tag{A.20}$$

Similarly, the exchange rate of the Hong Kong dollar is determined as follows:

$$\text{Ex}(\text{HK\$}/\$) = 1/(1-\mathbf{g}) \{ \mathbf{a}\text{Ex}(\text{won}/\$) + \mathbf{b}\text{Ex}(\text{¥}/\$) \} \tag{A.21}$$

³⁸⁾ $\begin{aligned} \text{Ex}(\$/\text{SDR}) + \text{Ex}(\text{SDR}/\text{won}) &= \text{Ex}(\$/\text{won}) \\ &= \mathbf{a}[\text{Ex}(\$/\text{SDR}) + \text{Ex}(\text{SDR}/\text{won})] + \mathbf{b}[\text{Ex}(\$/\text{SDR}) + \text{Ex}(\text{SDR}/\text{¥})] + \mathbf{g}[\text{Ex}(\$/\text{SDR}) + \text{Ex}(\text{SDR}/\text{HK\$})] \\ &= \mathbf{a}\text{Ex}(\$/\text{won}) + \mathbf{b}\text{Ex}(\$/\text{¥}) + \mathbf{g}\text{Ex}(\$/\text{HK\$}) \end{aligned}$

Substituting $Ex(HK\$/\$)$ in equation (A.20) by equation (A.21), the exchange rate of the Korean won against the U.S. dollar is shown to be equal to the yen/dollar rate:³⁹

$$Ex(won/\$) = Ex(\yen/\$) \quad (A.22)$$

Equation (A.22) is exactly the same as equation (A.16).

(3) Global Currency Basket

The composition of the GCB is the same as in the case of individual currency basket of equation (A.1). The only difference between individual and common baskets is that the weights of the latter basket are set to be the same through policy coordination.

The exchange rate of the Korean won against the U.S. dollar becomes the same as observed before:

$$Ex(won/\$) = \mathbf{b} \cdot Ex(\yen/\$) + \mathbf{g} \cdot Ex(DM/\$) \quad (A. 23)$$

The bilateral exchange rates of the Asian currencies become fixed ($Var(Ex(won/HK\$))=0$).⁴⁰

³⁹ $Ex(won/\$)=1/(1-\mathbf{a})[\mathbf{b} Ex(\yen/\$)+\mathbf{g}[1/(1-\mathbf{g}) \cdot \{\mathbf{b} Ex(\yen/\$) + \mathbf{a} Ex(won/\$)\}]]$
 $\rightarrow \{1-\mathbf{a}\mathbf{g}(1-\mathbf{a})(1-\mathbf{g})\} Ex(won/\$) = \mathbf{b}/(1-\mathbf{a}) \cdot \{1+\mathbf{g}(1-\mathbf{g})\} Ex(\yen/\$)$
 $\rightarrow \{(1-\mathbf{a}\mathbf{g})/(1-\mathbf{a})(1-\mathbf{g})\} Ex(won/\$) = \mathbf{b}/[(1-\mathbf{a})(1-\mathbf{g})] Ex(\yen/\$)$
 $\rightarrow Ex(won/\$) = \mathbf{b}/(1-\mathbf{a}\mathbf{g}) \cdot Ex(\yen/\$) = \mathbf{b}/\mathbf{b} \cdot Ex(\yen/\$) = Ex(\yen/\$)$

⁴⁰ $REEX(won) = W_{us} \cdot Ex(won/\$) + W_{jpn} \cdot Ex(won/\yen) + W_{ger} \cdot Ex(won/DM)$
 $= W_{us} \cdot Ex(won/\$) + W_{jpn} \cdot Ex(won/\yen) + W_{ger} \cdot [Ex(won/\$)-Ex(DM/\$)]$
 $= (W_{us} + W_{ger}) \cdot Ex(won/\$) + W_{jpn} \cdot Ex(won/\yen) - W_{ger} \cdot Ex(DM/\$)$
 $= (W_{us} + W_{ger}) \cdot [\mathbf{b} Ex(\yen/\$) + \mathbf{g} Ex(DM/\$)] + W_{jpn} \cdot Ex(won/\yen) - W_{ger} \cdot Ex(DM/\$)$
 $= (W_{us} + W_{ger}) \cdot \mathbf{b} Ex(\yen/\$) + W_{jpn} \cdot Ex(won/\yen) + [(W_{us}+W_{ger}) \mathbf{g} W_{ger}] \cdot Ex(DM/\$)$

Therefore the real exchange rate of the Korean won is as follows:

$$\begin{aligned} \text{REEX(won)} = & \mathbf{b}(W_{\text{US}} + W_{\text{GER}}) \cdot \text{Ex}(\text{¥}/\$) \\ & + \{(W_{\text{US}} + W_{\text{GER}}) \mathbf{g} - W_{\text{GER}}\} \cdot \text{Ex}(\text{DM}/\$) \end{aligned} \quad (\text{A. 24})$$

Accordingly, its variance is determined as follows:

$$\begin{aligned} \text{Var}(\text{REEX(won)}) = & \mathbf{b}^2(W_{\text{US}} + W_{\text{GER}})^2 \cdot \text{Var}(\text{Ex}(\text{¥}/\$)) \\ & + 2\mathbf{b}(W_{\text{US}} + W_{\text{GER}})\{(W_{\text{US}} + W_{\text{GER}})\mathbf{g} - W_{\text{GER}}\} \cdot \text{Cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$)) \\ & + \{(W_{\text{US}} + W_{\text{GER}})\mathbf{g} - W_{\text{GER}}\}^2 \cdot \text{Var}(\text{Ex}(\text{DM}/\$)) \end{aligned} \quad (\text{A. 25})$$

The optimal currency basket should determine the weights of (\mathbf{a} , \mathbf{b} and \mathbf{g}) to minimize variance of equation (A.25). Thus the weight for the Japanese yen under the GCB is derived as follows:

$$\mathbf{b}^* = -\{(W_{\text{US}} + W_{\text{GER}})\mathbf{g} - W_{\text{GER}}\} \cdot \text{Cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$)) / \{(W_{\text{US}} + W_{\text{GER}}) \cdot \text{Var}(\text{Ex}(\text{¥}/\$))\} \quad (\text{A. 26})$$

Likewise, the optimal weight for the German mark becomes as follows:

$$\begin{aligned} \mathbf{g}^* = & -\mathbf{b} \cdot \text{Cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$)) / \text{Var}(\text{Ex}(\text{DM}/\$)) \\ & + W_{\text{GER}} / (W_{\text{US}} + W_{\text{GER}}) \end{aligned} \quad (\text{A. 27})$$

$$= (W_{\text{US}} + W_{\text{GER}}) \cdot \mathbf{b} \text{Ex}(\text{¥}/\$) + [(W_{\text{US}} + W_{\text{GER}})\mathbf{g} - W_{\text{GER}}] \cdot \text{Ex}(\text{DM}/\$).$$

Using equation (A.27), equation (A.26) can be shown to satisfy the following condition:⁴¹

$$\mathbf{b}^* = \mathbf{b}^* \cdot [\text{Cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$))]^2 / [\text{Var}(\text{Ex}(\text{¥}/\$)) \cdot \text{Var}(\text{Ex}(\text{DM}/\$))] \quad (\text{A.28})$$

Equation (A.28) implies that the weight of the Japanese yen should be set to zero, unless the yen-dollar rate and the mark-dollar rate moves in one to one correspondence ($\text{Cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$))^2 / \{\text{Var}(\text{Ex}(\text{¥}/\$)) \cdot \text{Var}(\text{Ex}(\text{DM}/\$))\} = 1$).

$$\mathbf{b}^* = 0 \quad (\text{A.29})$$

From equation (A.29) and ($\mathbf{a} + \mathbf{b} + \mathbf{g} = 1$), the optimal weights for the dollar and the mark are easily derived:

$$\mathbf{g}^* = W_{\text{GER}} / (W_{\text{US}} + W_{\text{GER}}) \quad (\text{A.30})$$

$$\mathbf{a}^* = W_{\text{US}} / (W_{\text{US}} + W_{\text{GER}}) \quad (\text{A.31})$$

⁴¹ $\mathbf{b} = -[(W_{\text{US}} + W_{\text{GER}}) \mathbf{g} - W_{\text{GER}}] \cdot \text{cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$)) / [(W_{\text{US}} + W_{\text{GER}}) \text{Var}(\text{Ex}(\text{¥}/\$))]$
 $= -[(W_{\text{US}} + W_{\text{GER}}) \cdot \{-\mathbf{b} \cdot \text{cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$)) / \text{Var}(\text{Ex}(\text{DM}/\$)) + W_{\text{GER}} / (W_{\text{US}} + W_{\text{GER}})\}$
 $- W_{\text{GER}}] \cdot \text{cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$)) / [(W_{\text{US}} + W_{\text{GER}}) \text{Var}(\text{Ex}(\text{¥}/\$))]$
 $= -[(W_{\text{US}} + W_{\text{GER}}) \cdot \{-\mathbf{b} \cdot \text{cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$)) / \text{Var}(\text{Ex}(\text{DM}/\$))\} \cdot \text{cov}(\text{Ex}(\text{¥}/\$),$
 $\text{Ex}(\text{DM}/\$)) / [(W_{\text{US}} + W_{\text{GER}}) \text{Var}(\text{Ex}(\text{¥}/\$))]$
 $= \mathbf{b} \cdot \text{cov}(\text{Ex}(\text{¥}/\$), \text{Ex}(\text{DM}/\$))^2 / [\text{Var}(\text{Ex}(\text{¥}/\$)) \cdot \text{Var}(\text{Ex}(\text{DM}/\$))]$

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(Currency Swap Arrangement)

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