

*V. R. F. Series*

***No.460***

*Mar. 2010*

**A BBC Regime for Asian Financial Cooperation:  
Fundamentals and Feasibility**

**Jie Sun**

日本貿易振興機構 アジア経済研究所

INSTITUTE OF DEVELOPING ECONOMIES, JAPAN EXTERNAL TRADE ORGANIZATION

***No.460***

*Mar. 2010*

**A BBC Regime for Asian Financial Cooperation:  
Fundamentals and Feasibility**

**Jie Sun**

**No. 460 A BBC Regime for Asian Financial Cooperation: Fundamentals and Feasibility**

**IDE-JETRO**

## Acknowledgements

It seems like just yesterday that the six month program began, and the final result is beyond all my expectations. The enjoyable life consisting simply of research, as well as the amazing experiences and culture shocks during my stay in Japan will remain with me as long-lasting memories in the future. Even though I had made short visits to Japan many times before, and even though I cannot speak a single word of Japanese, the life and culture shocks I have experienced here have been impressive.

I would like to extend my sincere appreciation to all the staff and researchers of IDE for their wholehearted support and help throughout my stay.

Firstly, I would like to express my special gratitude to my counterpart, colleague and friend, Ms. Mariko Watanabe. As an eminent economist of the Chinese economy, she gladly accepted the ordeal of being my counterpart. From the beginning to the end of my stay in IDE-JETRO, she consistently provided me with all kinds of support when she believed I needed it, and especially concerning my academic research gave me key inspirations by raising questions and expanding my contacts. Her suggestions drove me back to basic but important issues. I am also indebted to Mr. Kozo Kunimune, Ms. Yurika Suzuki and Ms. Chie Kashiwabara, to name just few who did a great job in commenting on and enhancing my research.

I thank Ms. Yurika Suzuki, Ms. Miyuki Ishikawa, Ms. Yasuyo Sakaguchi and Mr. Koji Kubo of the International Exchange Division for their kind arrangements during my settlement and study tour, as well as for their readily available computer software service. I also thank all the visiting research fellows, Dr. Terefe Degefa Boshera from Ethiopia, Dr. Abdul Waheed from Pakistan, Dr. Attachak Sattayanurak from Thailand, Dr. Cleo Anne A. Calimbahin from Philippines and Mr. Hyeon Soo Kim and Mr. Jun Je-Goo from Korea, who were with me at IDE and provided me with a cosmopolitan environment for conducting my research on regional cooperation. I would also like to thank my Chinese colleagues here, Dr. Ding Ke, Dr. Ma Junwei and Dr. Bi Shihong for the pleasant exchanges, which helped me to understand more about Japan.

I have to acknowledge with gratitude here my Japanese friends, Professors Eiji Ogawa of Hitotsubashi University, Junko Shimizu of Senshu University and Kentaro Kawasaki of Toyo University, for their great help with my research through discussions, suggestions and comments. However, the responsibility for all errors in the report remains mine.

Finally, I would like to thank again IDE and JETRO for granting me the opportunity to carry out this research.

## Table of Abbreviations

ABF:	Asian Bond Fund
ABM:	Asian Bond Market
ABMI:	Asian Bond Market Initiative
ACD:	Asia Cooperation Dialogue
ACU:	Asian Currency Unit
ADB:	Asian Development Bank
AFDM:	ASEAN+3 Finance and Central Bank Deputies' Meeting
AFMM:	ASEAN Finance Ministers Meeting
AMF:	Asian Monetary Fund
AMU:	Asian Monetary Unit
APEC:	Asia-Pacific Economic Cooperation
ASA:	ASEAN Swap Arrangement
ASEAN:	Association of South-East Asian Nations
ASEM:	Asia Europe meeting
ASP:	ASEAN Surveillance Process
AUD:	Australia dollar
BBC:	Basket, band and crawling
BSA:	Bilateral swap arrangements
CAD:	Canadian dollar
CDO:	Collateralized Debt Obligation
CDS:	Credit Default Swap
CHF:	Swiss francs
CMD:	Chiang Mai Declaration
CMI:	Chiang Mai Initiative
COFER:	Currency Composition of Official Foreign Exchange Reserves
CPIS:	Coordinated Portfolio Investment Survey
DKK:	Danish krone
DOT:	Direction of Trade
ECU:	European currency Unit
EMEAP:	Executive's Meeting of East Asian and Pacific Central Banks
EMS:	European Monetary System
EMU:	European Monetary Union
ERP:	Economic Review and Policy Dialogue
EU:	European Union
EUR:	Euro
FDI:	Foreign direct investment
FMM:	Finance Ministers' Meeting

FSAP: Financial Sector Assessment Program  
GBP: British pound  
GDP: Gross Domestic Product  
GOE: Group of Expert  
G-PPP: Generalized Purchasing Power Parity  
GRD: Greek drachma  
IDE: Institute of Developing Economies  
IDR: Indonesia rupiah  
IIMA: Institute of International Monetary Affairs  
IMF: International Monetary Fund  
IPO: Initial public offering  
JBIC: Japan Bank for International Cooperation  
JETRO: Japan External Trade Organization  
JPY: Japanese yen  
KRW: Korean won  
MFG: Manila Framework Group  
MMSG: Monetary and Financial Stability Committee  
MOF: Ministry of Finance  
MYR: Malaysia ringgit  
NBER: National Bureau of Economic Research  
NMI: New Miyazawa Initiative  
NOK: Norwegian Krone  
OCA: Optimal Currency Area  
OSL: Ordinary Least Squared  
PAIF: Pan-Asia bond index fund  
PHP: Philippines peso  
PPP: Purchasing Power Parity  
RCU: Regional Currency Unit  
REER: Real Effective Exchange Rate  
RIETI: Research Institute of Economy, Trade and Industry  
SEACEN: South East Asian Central Banks Research and Training Centre  
SEANZA: South East Asia New Zealand and Australia  
SEK: Swedish Krona  
SGD: Singapore dollar  
SME: Small- and medium-sized enterprise  
THB: Thai baht  
TWG: Technical Working Group on Economic and Financial Monitoring  
UBC: University of British Columbia  
USD: US dollar

## **Abstract**

Asian financial cooperation began with the CMI, and has deepened with Asian bond market initiatives and AMU/ACU proposals, but the progress has been less than satisfactory. Lack of a regional exchange rate arrangement is a key reason for this. The economic integration of East Asia is based mainly on trade, but cannot compare with the level of the Euro area. It may be too early to talk about a regional currency based on current economic fundamentals. However, a currency basket benchmark is a necessary precondition for conducting regional surveillance and policy coordination. This report provides a dual basket BBC regime design including the choice of peg currency, the choice of parity and the choice of bandwidth. The main conclusions are: 1) It is possible to achieve 10% bands, especially for nominal exchange rate coordination; 2) Real exchange rate analysis indicates the importance of regional convergent requirements, such as the Maastricht Treaty, in Asia.



4.3	A Retrospective Glance at Currency Basket Schemes	56
4.3.1	Williamson's Trade Weighted Currency Basket	56
4.3.2	The Desirability of a Regional Basket Currency Arrangement	58
4.3.3	Searching for a Long-Term Sustainability Basket	59
4.3.4	AMU as a Basket for the ASEAN5+3 Currencies	60
4.3.5	Other Currency Basket Schemes	64
4.3.6	Currency Baskets from the European Perspective	65
4.4	The Evaluation and Function of Currency Baskets in Asia	65
4.4.1	The Evaluation of Currency Baskets	65
4.4.2	Functions of Currency Baskets in Asia	67
4.4.3	Approaches to Asian Monetary Integration	69
	Brief Summary	71
<b>5.</b>	<b>Design of a Currency Basket for Asian Financial Cooperation</b>	<b>72</b>
5.1	Initial Assumptions	72
5.1.1	Pegging on Interregional Currencies	72
5.1.2	Japanese yen	73
5.1.3	Differences in Exchange Rate Regime between ASEAN5+3 and the Euro	74
5.2	The Design of an Anchor Basket for East Asia	75
5.2.1	Assumptions	75
5.2.2	Weights of the Anchor Basket 1	77
5.2.3	Weights of the Anchor Basket 2	80
5.3	The Design of a Regional Basket for East Asia	84
5.3.1	Assumptions	84
5.3.2	Nominal Exchange Rate Volatility of the Regional Basket	85
5.3.3	Real Exchange Rate Volatility of the Regional Basket	87
5.4	Some Technical Issues and Implications	89
5.4.1	Feasible Band for the Asian BBC	89
5.4.2	The Benchmark Adjustment	92
5.5	Opening Issues	94
5.5.1	Crisis Management Solutions	94
5.5.2	The Asymmetry Issue and Selective Band	95
5.5.3	The Aggregated Volatility Effect	96
	Brief Summary	97
	<b>Conclusions</b>	<b>98</b>
	<b>References</b>	<b>101</b>
	<b>Annex</b>	<b>108</b>
	<b>About the Author</b>	<b>121</b>

## Introduction

The spillover effect of the financial crisis, rooted in the subprime mortgage crisis in the United States, can be seen all over the world. Its impact on Asian economies may be even more far-reaching, not only on the annual growth rate, but also on the future progress of regional financial cooperation.

The background of this research is that the less than satisfactory progress on Asian financial cooperation in the past ten years raises the question of what the main obstacle to the promotion of regional coordination is. The discussion of Asian financial cooperation can be traced back to long before the Asian financial crisis, while it was the touching pain during the crisis period that really initiated common concern. Proposals for regional financial cooperation in Asia have never been a bottleneck, and neither have forums and dialogues, AMF, CMI, ABMI, ABF and ACU, ASEAN+3 and EMEAP being the main platforms. Unfortunately, even though ten years have passed, even though a great deal of related and eminent research has been carried out, and even though some practical progresses has been achieved, de facto or de jure regional integration in Asia is still far from previous expectations.

The first basic hypothesis of this research is the role of a regional exchange rate arrangement. Exchange rate risk is the first obstacle to be overcome in conducting official and private regional/international transactions, and hence can be the first field to be dealt with as a regional surveillance benchmark in promoting regional coordination. In this process, the attitudes of large countries and their relations with regional economies are the keys in promoting regional cooperation. Considering the facts in East Asia, this is especially true. As a matter of fact, regional integration can be regarded as collective policy behavior among governments, and can only be achieved when all countries receive a net gain from it. The gain for the region as a whole is only a necessary condition, and is far from being a sufficient condition for regional cooperation. Even though every country in the region has realized that some kinds of cooperation are needed, no matter whether it be policy coordination or exchange rate arrangements, and even though a feasible program may be ready, it must result in a win-win process for all participants. From the experiences of the establishment and the enlargement of the Euro area, giant countries play a significant role in prompting regional integration processes. The analysis of costs and benefits gained from cooperation by Japan and China is a very important element in the feasibility research of Asian financial cooperation. However, keeping these in mind, we will focus more on the fundamentals.

Considering their dominant share in regional GDP and trade, as well as their role in regional growth, and considering the fact that regional integration in Asia is mainly present as trade integration, it is crucial to stabilize trade relations across intra- and inter-regional economies. Trade stabilization does not mean the stabilization of trade volume or trade

balance, which is mainly determined by endogenous processes of economics such as growth, competitiveness, labor division, as well as the global balance. It is hard to draw a general conclusion about the effect of exchange rate uncertainty on trade. One reason is that trade is not determined by exchange rate only. The other reason is that the impact of exchange rate volatility will present itself as a J curve effect within different currency-contract periods, which differ from time to time, and economy to economy. However for most developing economies in most periods, the impact of exchange rate volatility on trade volume is negative. It is especially true that when some countries in Asia peg their currencies to the US dollar while other currencies in the regional are allowed to float freely against the US dollar, a change in exchange rate against a third currency will disturb regional trade relations. Trade stabilization by this means is the second hypothesis.

The objective of this research is, based on the stylized facts, a review of practical progress and a literature survey on Asian financial cooperation, and BBC regime and basket proposals, to provide a mechanism for a solution to regional cooperation from the perspective of the asymmetric pattern found in Asia. Regional financial cooperation in Asia can be divided into three aspects; crisis bailout by currency swap and liquidity support, regional market integration, and exchange rate arrangements or a regional exchange rate regime. Past evolution indicates that the mechanism of liquidity support for crisis bailouts has gradually shifted from currency swap to trade facilitation. The development and integration of a regional financial market, especially a bond market, is crucial for policy coordination and cooperation in the region, but this cannot be implemented overnight, and from the experience of the Euro, it may only be possible after the launch of a regional currency. While an exchange rate arrangement or the choice of an exchange rate regime is a key factor in providing a favorable environment for trade and cross-border transactions in a regional market, so as well is regional cooperation on surveillance before and liquidity support during a crisis period. Basket benchmarks are the basic topic in the research on exchange rate arrangements and a precondition of regional policy coordination. They are also important for the regional currency in the far future.

The scope of the research will focus on regional financial integration from the perspective of exchange rate arrangements by the analysis of regional trade and investment integration as well as its consequences on macroeconomic policy coordination. Hence, we will mainly be concerned with trade dependencies, investment interaction, and also with business cycle synchrony analysis, key indicators and policy co-movement, as well as financial market integration and regional institutional arrangements.

In order to simplify the data process, we will in most cases focus on the analysis of ASEAN5+3 during the period 1980 to 2008. Another reason for this is data availability from a common source such as the IMF in order to maintain data consistency. In fact, the GDP of ASEAN5 accounted for about 90.17% of the total GDP of ASEAN10 in 2008, and all the more importantly, ASEAN5 plays an active role in Asia. The time series data begins

from 1980 because the 70s oil crisis was an exogenous factor beyond our analysis, and ASEAN+3 became more and more important in the world economy from the 1980s. It is a pity that the impacts of the global crisis have become intense and that the data updates can only rely on official sources of individual countries rather than an identical source with the same statistical approach and adjustment measures.

Another matter that should be mentioned here is that because mainland China accounts for more than 40% of Hong Kong's exports and imports, and the trade dependency of Hong Kong is over 100%, when we talk about China's imports or exports, we will include the imports or exports to and from Hong Kong also in the sum of China's imports or exports. In the case of imports, we will include imports into mainland China and Hong Kong together, rather than deduct China's imports from Hong Kong and Hong Kong's imports from China. Similarly, in the case of exports, we will also include exports from mainland China and Hong Kong together, rather than deduct China's exports to Hong Kong and Hong Kong's exports to China<sup>1</sup>. The problem is that although we take the transit trade via Hong Kong as China's trade and thus make a more precise estimate of China's role in the region, we did not take the Hong Kong dollar into consideration in the regional currency basket.

The methodology of the research is data dependent. Depending on original data from international institutions, and by processing data and processing trade, investment and other major indicators at the initial stage, we have attempted to discover some interesting phenomena and other matters for further analysis, and have then raised questions. At the same time, we also stress some new changes which had to be taken in consideration. The main part of the research follows related conventional frameworks, and then puts forward a solution as well as some policy recommendations, and finally, discusses the detailed design of those suggestions.

The research is divided into five parts. The first part is a retrospective evaluation of financial cooperation in Asia as background. The second part indicates some changes regionally and internationally in the past ten years and their impacts on Asia, addressing some new goals in Asian financial cooperation. The third part focuses on Asian economic integration against the Euro area as a benchmark, in order to discover differences in conducting financial cooperation. The fourth part consists of a survey on exchange rate regimes, especially the literature on BBC regimes and currency basket design. The fifth part is the main part of the whole report, and focuses on regional currency basket design as a benchmark for regional surveillance and policy coordination under the asymmetric pattern of trade and other major indicators among ASEAN5+3. The report ends with a final conclusion.

---

<sup>1</sup> The trade balance between Japan and China was in deficit on both sides when calculated using data from the Japan side and China side, respectively, according to DOT, but when calculating from the Japan side and China plus Hong Kong side, even though the trade balances are not equal, at least trade turned to a surplus on the Japan side and a deficit on the China side. In fact, the trade balance is not equal even when calculated on the Japan side and US side, and it is also hard to explain this difference by FOB and CIF.

## **1. A Retrospective Evaluation of Financial Cooperation in Asia**

Dialogues, forums and initiatives aimed at regional financial cooperation in Asia became a hot topic in international society after the Asian financial crisis of 1997. Looking back on the evolution and present progress, the achievements and lessons during the ensuing period, and then making a retrospective evaluation is undoubtedly a starting point for research on the future prospects for Asian financial cooperation.

### **1.1 Big Players in the Early Stage of Asian Financial Cooperation**

The AMF proposals during the crisis of 1997 and the New Miyazawa Initiative can generally be regarded as the beginning of Asian financial cooperation, but it is also undeniable that Asian financial regionalism can be traced back to the early 1990s.

Hamanaka (2009) explored and analyzed Asian financial regionalization projects and then challenged the common view that Asian financial regionalism became significant just after the crisis. He pointed out that Asian countries, especially Japan, had held a strong desire to establish an Asia-only regional cooperation framework at least from the early 1990s. Terada (1998) even believed that the Japan-sponsored regionalism of the late 1980s could be dated back to the 1960s! In fact, the establishment of EMEAP in 1991, and APEC FMM and Japan-ASEAN FMM in 1994 show the initial attempts towards Asian financial cooperation.<sup>2</sup> Why were those mechanisms neglected before the Asian financial crisis? Why did those mechanisms become important platforms for conducting regional cooperation after the crisis? That the awakened desire for cooperation became intensive among Asian countries after the crisis is only part of the reason. Hamanaka (2009) has indicated that other reasons are more important, including the fact that the basic policy stance of the United States changed resulting in the US participating in Asian forums with Japan. This competition is crucial to an understanding of the rise and fall of these projects. Regionalism, by definition, should involve the exercise of block power, while the participation of outside power, if not simply a killing factor, will be influencing. His final conclusion is that regionalism can be best understood as a project under which a relatively minor power seeks to establish a framework that excludes more influential states in order to increase its influence within the group.

The reluctant reaction of the IMF during the Asian financial crisis in July 1997 evoked

---

<sup>2</sup> There are other forums which have been founded for a long time, but less mentioned, such as SEANZA (1956) and SEACEN (1966). They generally have a large number of members, as SENZA, or are composed of states with less regional interests, as SEACEN, which find it hard to implement practical arrangements.

an essential demand for regional cooperation. As a natural response to the embarrassing situation, in contrast to the quick bailout program of the IMF during the Mexico crisis in 1994, Japanese officials put forward the proposal of AMF creation in the IMF annual meeting and ASEM Finance Ministers Meeting<sup>3</sup> in mid-September<sup>4</sup> 1997. As with the IMF, the AMF also aimed at providing crisis liquidity support arrangements, and hence was finally opposed by the United States for the reason of duplication of the IMF.<sup>5</sup> As a result, the Manila Framework Group (MFG), including the US, was established to supplement the role of the IMF. Following that, AFMM was founded in 1997, AFMM+3 and AFDM were founded in 2000, and ACD was founded in 2002. These are new forums and platforms for regional financial cooperation.

## 1.2 Symbolic CMI and Its Embarrassment

The Asian financial crisis gave impetus for East Asian countries to make joint efforts to create a regional scheme and prevent future crises against the fact of a delayed international bailout. At the meeting of finance ministers of ASEAN+3 on May 6, 2000, a regional mechanism was agreed in the name of the Chiang Mai Initiative (CMI). It consists of the two pillars of a regional financial arrangement and a surveillance or monitoring framework.

The key feature of the CMI is bilateral swap arrangements (BSAs). These were designed to provide short term liquidity support to member countries facing an incoming currency crisis with the purpose of preventing systemic failure of the exchange rate regime and subsequent regional contagion such as occurred in 1997. In fact, the eruption of the crisis in Thailand is directly rooted in a shortage of foreign reserves to stabilize the speculative effect on the foreign exchange market.

Undeniably, the CMI is a very important initiative for Asian financial cooperation. However, even though later proposals, such as ABM and AMU/ACU are all actually based on the CMI, it was still regarded as a symbolic stage.

In the case of Thailand in 1997, the total of 40 billion US dollars did not prevent the collapse of the Thai Baht fixed regime, while the initial total amount of swap under the CMI is 36.5 billion US dollars, in contrast to the total foreign exchange reserves of ASEAN+3, which are as high as 1.8 trillion US dollars. The more important problem is that the 36.5

---

<sup>3</sup> ASEM was just founded in 1997 as a financial ministry-led forum between Asia and Europe.

<sup>4</sup> According to Hamanaka (2009), the idea of a regional monetary fund can be dated to September 1995, long before the Asian financial crisis, and the Institute of International Monetary Affairs (IIMA) had finalized its study on AMF in early 1997 after half a year of research.

<sup>5</sup> According to Hamanaka (2009), at the decisive meeting of the AMF held in Hong Kong on 21st September, Japan, Korea and the ASEAN countries supported the AMF, Australia and Hong Kong remained neutral, China did not speak out at all, but the US and IMF opposed it.

billion was scattered over 17 bilateral swap agreements. With the booming of the economies of East Asia in the past ten years, the possible requested assistance from crisis-hit countries would be even more. By 2007, the total GDP and foreign reserves in ASEAN+3 had increased greatly, becoming twice as large, but the total amount of swap agreements had just a little bit more than doubled,<sup>6</sup> so nothing had improved.

Apart from the amount of swap, the more serious situation is, despite the many efforts made towards multilateralism, that the bilateral swap arrangements had been researched faster, especially faced with the global financial crisis in 2008. Initial discussions designated to CMI multilateralism began at the AFMM+3 meeting in May 2006, and detailed discussions began in 2007, but up to May 2009, commitments on the establishment of a regional foreign reserve pool was researched with a whole package of 96 billion US dollars, but the reserves in the pool are still managed by the denoted countries individually, far from the nature of a regional monetary fund in terms of institutional construction. The idea of a collective decision-making procedure is an urgent need for practical operation of liquidity support, or trade facility, or regional surveillance.

If the slow progress on multilateralism of the CMI in the past can be explained by the stable regional economic situation after 1997, it should have been promoted by the impact of the subprime mortgage crisis impact in 2008. However, the more embarrassing issue against the multilateralist effort is that even though some countries like Korea had been faced with the threat of a serious crisis, they did not apply for funds within the regional liquidity provision framework of the CMI, and instead actively signed a series of bilateral swap agreements between central banks of the region from the end of 2008!

Another notable feature is the link to the IMF. The CMI initially required its member countries to accept IMF conditionality<sup>7</sup> when they draw more than 10% of their contract amount. On the one hand, this limited the effectiveness of the regional liquidity provision to a minimum level in reducing exchange rate volatility and preventing the incoming crisis in time, and on the other hand, the painful experience of 1997 caused some countries oppose the linkage. At the meeting of AFMM+3 in May 2005, the linkage was revised from 90% to 80%, and there has still been no critical change up to now. The reason for the linkage is to maintain cooperative relations with the IMF, considering its attitude towards the AMF, deflecting criticism from powers in the rest of world, and showing that a well-functioning CMI will be supplementary to the IMF.

A more important reason is that ASEAN+3 still lacks a formal surveillance mechanism, while the IMF possesses better institutional surveillance via Article 4 on

---

<sup>6</sup> In fact, ASEAN5 central banks adopted a USD200 million swap arrangement (ASA) in August 1977 to promote regional monetary cooperation, but this was ineffective when faced with the crisis 20 years later. In May 2000, the amount was expanded to USD1 billion, and further jumped to USD2 billion in April 2005, but this is apparently still far from demand in the case of crisis.

<sup>7</sup> As a more practical criterion, remaining loans can only be extended if followed by IMF loans.

financial sector vulnerability under the Financial Sector Assessment Program (FSAP). Adherence to the IMF could be appropriate in fund provision and policy adjustment. Knowing the limit of linkage to IMF is one thing, while establishing a more effective surveillance regional institution is another. A commitment on a regional reserve pool can be researched, while a joint agreement on a necessary management organization for daily surveillance still needs to be negotiated somehow. Existing platforms such as the ASEAN+3 Economic Review and Policy Dialogue (ERPD), the Technical Working Group on Economic and Financial Monitoring (TWG) and the Group of Experts (GOE) in 2006, the Monetary and Financial Stability Committee (MFSG) in 2007, and the earlier ASEAN Surveillance Process (ASP) and the surveillance and coordination body of the ASEAN Secretariat at ADB are still far from the needs of regional surveillance.

In short, the limit on swap amounts, the difficulty in promoting a multilateral agreement, heavy linkage to IMF and the lack of surveillance, as well as the absence of a daily operating organization caused the CMI to be still just a symbol of regional financial cooperation. The CMI is a practical program of Asian financial cooperation, and so action is more meaningful than wording. The operation of the CMI indicates that there is much work to be done in deepening regional cooperation, and directly points to the importance of some key issues such as the need for an exchange rate arrangement in conducting currency swaps, extending official agreement to private sector contracts, financial market integration to perform surveillance and policy coordination, and the need for institutional operation. These could assist the symbol in becoming of practical importance.

### **1.3 Strengthening the Fundamentals of Cooperation by ABM**

Generally speaking, Asian financial cooperation can be traced back to two origins. On the one hand, the AMF/CMI proposal is a prompt response to crisis management by liquidity support during a crisis period. New topics raised in the operation and the later evolution of the CMI led regional cooperation to institutional surveillance, exchange rate arrangements and policy coordination. On the other hand, after the impact of the crisis, economists begin to explore behind the appearances for the deeper reasons for its occurrence. Financial fragility is a key factor in currency crises, and causes the whole economy to become more vulnerable. Eichengreen and Hausman (1999) initiated analysis on the relation between exchange rate regime and financial fragility, and this was later developed as Original Sin in Eichengreen, Hausmann and Panizza (2003). At the meantime, some World Bank economists devoted themselves to comparative research on bank-based vs. market-based financial systems. In Asia, economists focused on corporate governance first, but then related it to financial decisions and corporate capital structure, and finally also pointed to financial structure. The double mismatch (currency mismatch and maturity

mismatch) was created as another expression of the result of Original Sin. In 2003, the Chiang Mai Declaration (CMD), aimed at a joint effort for an Asian bond market development, which was consequently proposed at the second meeting of the ACD forum. From that time on, initiatives concerning an Asian bond market became popular, and these can be divided into supply side and demand side initiatives, widely known as ABMI and ABF.

The purpose of developing an Asian bond market is to strengthen the regional financial structure, decrease the heavy dependence on the banking sector, which resulted in the double mismatch. Within a background of Asian financial cooperation, the proposal for developing an Asian bond market also includes provision of a fundamental basis for regional surveillance and policy coordination.

The ABMI was launched in the end of 2002. After Korea proposed development of an Asian bond market within ASEAN+3 at an informal meeting of AFDM+3, Japan introduced a comprehensive plan named ABI and then ABMI, which was agreed upon at an AFDM+3 meeting. ABMI originally focused on promoting local currency denominated bond issuance, while considering the fact of the underdevelopment of the Asian bond market, but later focused more intensively on market infrastructure. As a practical plan, six working groups were set up on practical issues, including creating security debt instruments (Thailand), credit guarantee mechanisms (Korea), foreign exchange transaction and settlement (Malaysia), issuance of bonds denominated in local currency by multilateral development banks, government agencies and Asian multinational corporations (China),<sup>8</sup> local and regional rating agencies (Singapore and Japan), and technical assistance coordination (Indonesia, Philippines and Malaysia). Institutionally, ABMI was mainly promoted by Japan through ADB, JBIC,<sup>9</sup> MOF of Japan and Nomura Securities. These organizations are all very active in local currency denominated bond issuance and providing technical assistance.

The ABF was created by EMEAP with two intentions; finding a way of utilizing the regional foreign reserves, previously largely invested in the United States, in regional financial markets, and giving impetus to the development of a regional bond market from the demand side as a shield from external vulnerabilities. In the first phase, ABF1 was composed of USD 1 billion in reserves from member economies, invested in a basket of dollar denominated bonds issued by Asian sovereign and quasi-sovereign issuers of EMAEP economies in 2003. Considering that ABF1 was a potential challenge to the dominance of the US and EU on the global capital market, ABF2 was launched in 2005 with a total amount of USD 2 billion, invested in local currency denominated bonds issued by Asian sovereign and quasi-sovereign issuers of EMAEP economies. As a bond-type fund, ABF2 is composed of one pan-Asian bond index fund (PAIF) and eight country funds, invested in

---

<sup>8</sup> The work group chaired by China on the issuance of bonds denominated in local currency by multilateral development banks, government agencies and Asian multinational corporations ended successfully in 2006.

<sup>9</sup> On 1<sup>st</sup> October 2008, JBIC was reformed as the Japan Finance Corporation and the Japan International Cooperation Agency.

bonds issued by governments and quasi-government issuers of member economies. As a very important step, those funds made efforts to attract private funds by listing and public offering.

Compared to the operation of the CMI, both ABMI and ABF schemes share the striking feature of much practical detail for daily operation, which makes those schemes appear to be more feasible in promoting regional interaction and cooperation, while they have also involved problems. However, those practical efforts and operational mode have provided numerous hints about the logic, sequencing and the roadmap for successful regional cooperation.

The identification and integration of market infrastructure is a precondition of the establishment and development of a regional financial market. In fact, the practical operation of ABMI and ABF has encountered a large number of issues stemming from the lack of support of the necessary market infrastructure. How to deal with currency swaps for investors, how to set up a regionalized accounting standard, credit ratings, information exposure requirements and withholding tax system, are all obstacles which are hard to overcome within the scheme on the practical level.

The integration of a regional financial market will be helpful for policy coordination, but promoting the development of a regional financial market will, first of all, call for a regional exchange rate arrangement.

#### **1.4 AMU or ACU: A Final Solution?**

Two years after the outbreak of the Asian financial crisis, economists around the world began to search for solutions to stabilize the Asian economy by monetary cooperation. Obviously, another impact came from the launch of Euro. This real case of OCA theory inspired economists.

Williamson (1999) examines whether it is in fact sufficiently true to make Asian economies a natural monetary grouping such as the EMS countries are. He calculated what a common basket peg for East Asian economies would be. Soon after, Ogawa and Ito (2000) considered a theoretical model to examine an optimal exchange rate regime for Asia and determine the composition and weights in the basket. They also defined the optimal regime as one which would minimize fluctuations in trade balance. Kawai and Takagi (2000) suggested coordinated action by East Asian countries to stabilize their currencies against a common basket of major currencies that would help stabilize both intraregional exchange rates and effective exchange rates in a way consistent with the objective of promoting trade, investment and growth in the region.

It is not surprising to find that the research in this direction inevitably pointed towards a regional currency, while having the Euro in mind, namely, as the AMU or parallel

currency. Ogawa and Kawasaki (2003) pointed out that a common currency unit denominated in a currency basket could resolve the “coordinate failure” in choosing an exchange rate system. They find that the trade weights on the three major currencies (US dollar, Euro and Japanese yen) are optimized for the common currency basket area in ASEAN5+China. Ogawa (2004) conducted further research on coordination failure when the US dollar depreciated, showing that an asymmetric response would arise among East Asian countries. He believed that this indicated the necessity for a regional exchange rate agreement.

The most important research concerning the Asian currency basket appeared in Ogawa and Shimizu (2005, 2006a). They proposed a deviation measurement of regional exchange rate policy. They designed the AMU as a weighted average of East Asian currencies with four weights of trade, GDP, GDP at PPP and reserves, and then calculated the deviation indicators of that AMU to the US dollar and each East Asian currency by taking account of inflation. They suggest the real deviation indicator can serve for surveillance over the effective exchange rate policy. Ogawa and Shimizu (2006b) found that the stabilization effect on the effective exchange rate of an AMU basket of ASEAN5+3 currencies was better than a basket of G3 currencies. Ogawa and Shimizu (2006c) even proposed a possible way to shift from an individual G3 currency basket to the AMU currency basket system. Now, as a result of the research program, a daily value of the exchange rate of the AMU against the US dollar and Euro, and AMU deviation indicators calculated by Ogawa and Shimizu have been published on the RIETI website.

In contrast to the emergency crisis management of the CMI and the more practical scheme of ABMI and ABF, proposals on regional exchange rate regime cooperation started as academic research against the experience of EMU. But the effort did not stop at the practical analysis of the AMU when the initiatives of developing an Asian bond market appeared. To some surprise, the theoretical design of the AMU was not fully carried out at that time. Ogawa and Shimizu (2003) compared features of common basket and US dollar denominated bonds and found that common basket denominated bonds can decrease exchange risks while the US dollar denominated bonds enjoy higher liquidity, so there exists a trade-off between them. Shimizu and Ogawa (2004) indicate that AMU denominated bonds can lower the risk for both US and Japanese investors, the potential two largest investors in the Asian bond market. Ogawa and Shimizu (2006d) create a core-AMU composed of six convertible Asian currencies for practical use, and then calculated the return correlation coefficient matrix between core-AMU denominated Asian bonds, US treasury bonds and Euro bonds for Asian investors. They finally found that for China, Malaysia and Hong Kong this was not negative, but very small, while it was negative for the remainder of ASEAN5+3, and thus the core-AMU can serve as an effective substitute for AMU.

Compared to the persistent research of Ogawa and Shimizu, which directly pointed to regional cooperation, some economists show more interest in exchange rate arrangements in

Asia. Based on his research of 1999, Williamson (2005) also put forward a common currency basket scenario, an individual currency basket for East Asia, on the basis of trade weight for stabilizing intraregional trade and effective exchange rates to prevent competitive currency devaluation in the meantime. Eichengreen (2006a) strongly suggested a parallel currency approach, such as an ACU, in view of the ECU, in Asia. The logic of promotion of the ACU is similar to that of Ogawa and Shimizu, but he stresses that even if regional integration heightens the attractions of a regional currency such as the AMU, and even if bonds are ACU denominated, an ACU market clearing and settlement system is more attractive. He believes that a parallel currency, such as the ACU, will still not be quickly out-competed by the parallel regional currency. He emphasized that the regional currency should extend to private use as a parallel currency rather than be only for official use. Moon, Rhee and Yoon (2006) also calculated the value of an RCU (Regional Currency Unit) by a method used for the ECU under the EMS, but the use of the RCU is limited to information cost and value uncertainty.

Another important problem is the asymmetry of foreign exchange market intervention. Kawai (2007) appealed for a more rigid intraregional exchange rate stabilization scheme, named Asian Snake or the Asian Exchange Rate Mechanism, with a currency basket based on G3 or G3-Plus as its benchmark. The scheme will enable all East Asian currencies to move collectively against the US dollar while maintaining stability in intraregional rates. His idea and Eichengreen's suggestion concerning a parallel currency can be regarded as market-driven economic integration progress. Wang (2008) further proposed a BBC system in Asia.

Ogawa and Shimizu apparently are not alone in their direction of Asian monetary cooperation design. In the same direction as their research, no matter that the common currency basket was regarded as a reference unit or the anchor of the regional benchmark, Girardin and Steinberr (2008) explained three criteria of the ECU: GDP, trade and financial market indicators. They suggested that there are no iron-clad economic principles and therefore some room exists for political considerations. In fact, ECU weights were rescaled every five years as a correction mechanism for political acceptability. They believe that the vastly different growth performance among Asia countries indicates a preference for forward-looking rather than backward-looking measures.

The voluminous research literature by famous scholars in Asia, especially as some of them have had the chance to present their proposals to governments or regional institutions in this direction, will inevitably have an influence on policy. It needs to be mentioned that the ADB has conducted research on the ACU<sup>10</sup> since 2005, and that the ADB announced that it would be launched in 2006. The ACU could be regarded as the first step on the long

---

<sup>10</sup> The ACU would be a theoretical currency unit made up of a basket of Asian currencies, or a weighted average index for Asian currencies, would not be traded on the market, but could serve as an indicator to monitor the movements of regional currencies as a whole against currencies outside Asia and as a deviation measurement of regional currencies.

match towards the Asian Euro. While, as a voice from a politician, De Ocampo (2004) warned that the adoption of a common currency is the last step in the process of regional economic integration and from the experiences of the Euro will take a long time.

It is clear that the existing literature provides sufficient support for the preliminary implementation of the ACU or AMU. These are keys in practical promotion of Asian financial cooperation from the theoretical framework perspective of the economics of integration. Operations of the CMI, ABF and ABMI have also proved that a regional exchange rate regime or regional currency as a final solution is the absolute key point in the whole picture of regional financial cooperation and economic integration. However, the word on paper only, rather than the practice of the AMU might indicate the difficulties in implementation and its urgent importance. Detailed discussion may need to be carried out in a changing world, especially for Asian economies. The eminent research on the AMU and ACU has laid down a very important foundation and direction for future cooperation.

## **1.5 Japan: An Influential Factor in Asia**

Germany played a critical role in financial cooperation in Europe. In Asia, the critical role belongs to Japan. Like Germany and France in Europe, Japan and China are two major countries in the region, and Japan is more active on the issue of regional financial cooperation. Unlike Germany and France, Japan and China have huge economic differences as they are a developed and a developing economy, respectively, even if China might exceed Japan in terms of nominal GDP in the coming year.

As we have mentioned above, the AMF proposal, the New Miyazawa Initiative and later operations in ABMI and ABF<sup>11</sup> have dominated published literature on the AMU and ACU, and with promotions from the ADB mainly sponsored by Japan, all have shown the active attitude of Japan toward regional financial cooperation.

The first round of the CMI was completed by concluding sixteen BSAs, totaling USD36.5 billion. Besides the BSAs between Japan, Korea and China, Japan signed BSAs with all ASEAN5 countries for a total amount of USD13.5 billion. In contrast, Korea and China signed BSAs only with Thailand, Malaysia, Philippines and Indonesia, the BSAs of China amounting to USD6 billion, and those of Korea amounting to USD4 billion in total. Of the total USD36.5 swap amount, swaps between Japan, Korea and China amount to USD12 billion, accounting for about a third of the total.

---

<sup>11</sup> Under the New Miyazawa Initiative to assist Asian countries in overcoming the difficulties and stabilizing financial markets, Japan stands ready with a total of USD30 billion (50% for long and middle term and 50% for short term purposes). By 2000, Indonesia, Korea, Malaysia, Philippines and Thailand have received USD13.5 billion in medium- to long-term financial support and USD7.5 billion in short-term financial support.

**Table.1.1 Swap Arrangements under CMI to March 31, 2009**

(in billion USD)			
<b>BSA</b>	<b>Type</b>	<b>Size of Direction</b>	<b>Size</b>
Japan-Korea	Two-way	Yen to won (10), won to yen (5)	15
Japan-Korea	Two-way	Yen to won (3), won to yen (3)	6
Japan-China	Two-way	Yen to RMB (3), RMB to yen (3)	6
Korea-China	Two-way	RMB to won (4), won to RMB (4)	8
Japan-Thailand	Two-way	Yen to baht (6), baht to yen (3)	9
Japan-Philippines	Two-way	Yen to peso (6), peso to yen (0.5)	6.5
Japan-Malaysia	One-way	USD to ringgit (3.5)	1
Japan-Singapore	Two-way	Yen to SD (3), SD to yen (1)	4
Japan-Indonesia	One-way	USD to rupee (12)	12
Korea-Thailand	Two-way	USD to won, baht (1)	2
Korea-Philippines	Two-way	USD to won, peso (2)	4
Korea-Malaysia	Two-way	USD to won, ringgit (1.5)	3
Korea-Indonesia	Two-way	USD to won, rupee (2)	4
China-Thailand	One-way	USD to baht (2)	2
China-Philippines	One-way	RMB to peso (2)	2
China-Malaysia	One-way	USD to ringgit (1.5)	1.5
China-Indonesia	One-way	USD to rupee 00(4)	4
<b>Total</b>			<b>90</b>

Source: Reshaped from <http://www.boj.or.jp/type/release/adhoc09/data/un0903c.pdf>

Note: 1. Two-way swaps are calculated in both directions; 2. The one-way swap between Japan and Malaysia includes USD2.5 billion under NMI, which will be deducted; 3. According to the agreement between Japan and Korea, before October 30, 2009, the two-way swap of USD6 billion could be expanded to USD200 billion equivalent in yen or won; 4. There is also a USD2 billion swap under ASA.

Table 1.1 shows that by the end of March 2009, there existed USD90 billion in total swap arrangements among ASEAN5+3<sup>12</sup> under the CMI. Japan, Korea and China are still at the center of the swap network. The total swap amount between Japan, Korea and China is only USD35 billion, but still accounts for a third of the total.<sup>13</sup> The total Japanese swap amount with ASEAN5 is as high as USD32.5 billion. The corresponding data for Korea and China is USD13 billion and USD9.5 billion, respectively. Japan's role in the CMI became more dominant than it was at the beginning of the CMI.<sup>14</sup>

There are two keys to the promotion of bond issuance within ABMI. One is technical

<sup>12</sup> ASEAN5+3 have no BSA with Brunei Darussalam, Burma (Myanmar), Cambodia, Laos, or Vietnam.

<sup>13</sup> The total swaps between Japan, Korea and China did not include an extra swap amount. According to the agreement between Japan and Korea, the two way swap of USD6 billion could be expanded to USD200 billion in equivalent yen or won before 30 October 2009.

<sup>14</sup> The datum of USD32.5 billion excludes the financial support of USD2.5 billion under NMI.

assistance; the other is the transfer of financial know-how by the issuance of local currency denominated bonds. Japan is very active in both fields. In 2004, just after the launch of AMBI in December 2002, JBIC began to provide guarantees for baht-denominated bond issues of 3.5 billion baht (10 billion yen) by Japanese affiliates in Thailand and also provided guarantees for Korean collateralized bond obligations (issued by 46 Korean SMEs, 7.7 billion yen equivalent) to support the creation of a CDO market in Asia. JBIC then made its first Asian currency bond issuance of 3 billion baht (8.57 billion yen) by a Japanese issuer in line with the AMBI in 2005, provided guarantees for ringgit bonds (totaling 150 million ringgit, or 4.5 billion yen) issued by Japanese affiliates in Malaysia, provided guarantees for rupiah bonds (totaling to 1 trillion rupiah, or 12 billion yen) issued by Japanese affiliates in Indonesia in 2006, provided guarantees for rupiah bonds (totaling 1 trillion rupiah, or 13 billion yen) issued by Japanese affiliates in Indonesia, and provided guarantees for ringgit bonds (totaling 200 million ringgit, or 6.9 billion yen) issued by Japanese affiliates in Malaysia in 2007. It should be mentioned that in 2008, JBIC provided a guarantee for baht-denominated bonds (totaling 1 billion baht or 3.4 billion yen) for a Thai company, rather than a Japanese affiliate in Thailand. This could be regarded as a critical symbol in the operation of AMBI.

Through these undertakings, JBIC has become a representative of Japan and the most important player in Asia in promoting AMBI. In the meantime, Nomura Securities also provided technical assistance to ASEAN countries to develop their domestic markets, which is a part of an effort to enhance market infrastructure in Asia, and a fundamental step in the process of regional market establishment.

Japan is also active in the research on the AMU and ACU, and has even promoted the implementation via the ADB.

In short, in promoting the Asian financial cooperation process, Japan has thus far played a crucial role.

## **1.6 What is Regional Financial Cooperation?**

The Asian financial crisis is now twelve years past, and many proposals and initiatives for regional financial cooperation have been put forward and implemented. Compared to the evolution of the Euro in the past forty years, if we take the CMI as a starting point, although ten years of efforts have been made, have we accomplished a quarter of all the tasks towards the final goal? The answer might be negative. Considering the disparities among East Asian countries and regions, this might be reasonable. However, we also need to go back to the basic topic: What is the general goal of regional financial cooperation, and what is meant by regional financial cooperation? After clarifying these two issues, we may be able to understand where we are and where we are going.

Firstly, the liquidity support mechanism during a crisis period such as the CMI can only be regarded as a signal of collective action by an awakened desire for regional cooperation. Even the operation of the CMI deepened our understanding of the whole picture of cooperation in terms of regional surveillance and exchange rate arrangements as preconditions. The CMI by itself is far from the topic of regional integration. Secondly, the ABM is a practical scheme for regional fundamental integration.<sup>15</sup> The definition of the Asian bond market in the context of regional cooperation should be that it is Asian currency denominated and traded by regional/international investors.<sup>16</sup> The key feature of the Asian bond market should be cross-border transaction. Only by cross-border transaction, can a regional market, rather than a domestic market, be established. A regional bond market, however, is just an important basis for policy coordination, and the first policy to be coordinated is the exchange rate policy, which is really needed in the operation of the CMI and investors in the ABM. Then, naturally, a coordinated monetary policy is needed. When this occurs, we can talk about a common currency and move from regional cooperation to integration.

Exchange rate cooperation is a precondition for the CMI and ABM, but in the full context of regional integration, exchange rate arrangements should firstly serve sustainable regional trade growth, or at least prevent trade relations from being disturbed by exchange rate changes in a third country. Generally speaking, a suitable regional exchange rate arrangement should aim at decreasing the exchange rate risk on intraregional trade and investment.

### **Brief Summary**

As we have mentioned above, the CMI is a natural response to crisis and has sparked awareness for regional cooperation. However, it is a very important starting point for Asian financial cooperation.

The later initiative on regional bond market development was found to be another response to crisis after in-depth research was made. An ABM will promote regional financial integration to a level compatible with regional trade integration. The practical implementation of these initiatives provides enlightenment about keys for promoting regional cooperation on the exchange rate arrangement.

Although aimed at a common currency, the Asian Euro for example, for the far distant future, research on the AMU/ACU shares a common concern for its possible use for regional surveillance and policy coordination of exchange rates among East Asian

---

<sup>15</sup> The other important fundamental should be regional trade.

<sup>16</sup> Chaipravat (2004) made a valuable contribution on the topic. He first pointed out that Yankee bonds, Euro bonds and domestic bonds are not Asian bonds. He believed Asian bonds should be: 1) denominated in national Asian currencies; 2) bought and traded actively in secondary markets across Asia, and 3) It should be possible to mutualize or securitize the national currency denominated individual bonds from many countries and/or issuers into a synthetic debt instrument called the "Asian Bond Fund."

currencies in the near future.

The goal of regional cooperation is trade stabilization by immunity from exchange rate changes of a third currency outside the regional disturbing intraregional trade. Exchange rates are a key, if not the only one, to coordination within a region. Furthermore, because exchange rates serve as linkage between external balance and internal balance, regional cooperation by exchange rate coordination will call for economic integration and regional convergence.

In short, exchange rate coordination is the key for regional financial cooperation, as well as a basis for monetary cooperation in the far distant future.

## **2. Cooperation in a Changing World: New Challenges and Old Problems**

Asian financial cooperation has been pushed forward practically within the frameworks of the CMI and ABM. Further suggestions from the perspective of theoretical research into the AMU/ACU have also been put forward in the past ten years. However, the progress of Asian financial cooperation as a whole is still far from satisfactory. It is necessary to look back on the general roadmap design of Asian financial cooperation, finding what has been improved, what still needs to be dealt with, and to examine the new challenges, and more importantly, the new demands for regional cooperation in the changing world.

### **2.1 Trade Stabilization and Exchange Rate Fluctuation: Facing New Impacts?**

It is obvious that regional trade integration is a fundamental factor in regional cooperation. Evidence for the need and the possibility of successful cooperation can be found from the perspective of intraregional trade relations. Intensive intraregional trade relations call for regional exchange rate arrangements to reduce the risk in currency clearing and settlement as well as in invoices.<sup>17</sup> The Euro is economically based on European trade and investment integration, and so it should be in Asia.

Generally speaking, it is hard to find direct impacts of exchange rate fluctuation on trade because trade volume is determined by many other factors besides exchange rate fluctuation, such as GDP growth and consumption changes in the importing country, and the J curve effect will also confuse direct impacts since the currency-contract period differs from country to country, and time to time. However, there is still some evidence that can be found.

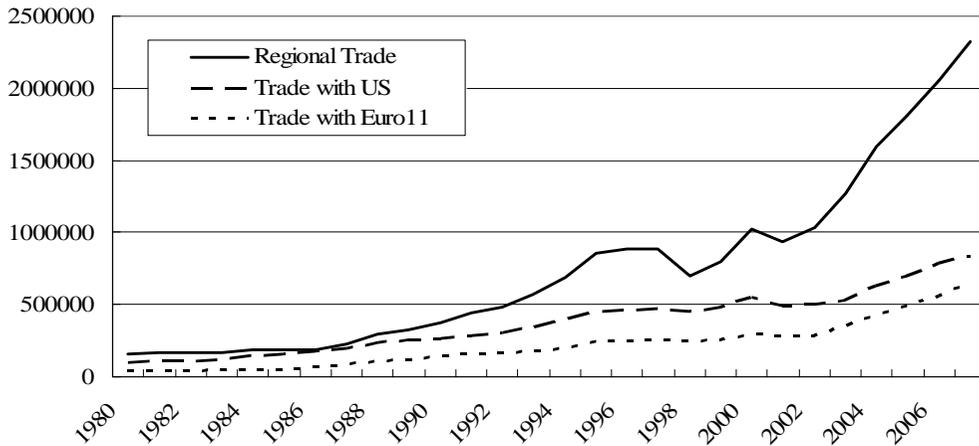
Figure 2.1 shows that the total amount of regional trade among ASEAN5+3 has increased dramatically from the mid-1980s. In fact, after a short period following 1995-2002, when trade was disturbed by the Asian financial crisis and the huge fluctuation in exchange rates, the total amount of intraregional trade increased sharply again.

Table 2.1 indicates the possible impacts of exchange rate change on trade volume. Considering the J curve effect of exchange rate change on trade, I have taken five years as one period. Since the Asian financial crisis broke out in 1997, the two periods can be set as 1996-2000 and 2001-2005. In order to make comparisons with other currencies, I have converted the standard deviation of exchange rate fluctuation into the coefficient of variation,

---

<sup>17</sup> Here, I would like to express thanks to my counterpart at IDE, Ms. Mariko Watanabe. She raised the basic question of why Asia can benefit from exchange rate stabilization. This caused me to spend more time working on the effect of exchange rate uncertainty on trade volume. The topic will be discussed again in Chapter Four.

**Figure 2.1 Regional Trade Pattern**



Source: DOT, 2009, IMF, in million USD.

**Table 2.1 Exchange Rate Volatility and Trade Volume**

	(%)			
	1996-2000	2001-2005	2006-2007	2008
<b>Japanese yen</b>	8.7653	6.6753	2.5076	5.1166
<b>Korean won</b>	20.7792	8.2707	1.9178	15.0489
<b>Chinese yuan</b>	0.1949	0.6665	2.7713	2.0056
<b>Indonesia rupiah</b>	52.606	8.0041	1.6216	8.6007
<b>Malaysia ringgit</b>	18.5794	0.2159	3.6464	4.4664
<b>Philippines peso</b>	20.6315	4.1254	6.5495	6.6148
<b>Singapore dollar</b>	8.3621	3.3794	3.3323	3.5773
<b>Thailand baht</b>	20.1027	4.6191	8.8601	4.7972
<b>Total trade growth</b>	4.2742	11.6209	15.5862	19.4064
<b>Regional trade growth</b>	4.8649	12.8881	13.2556	19.2987
<b>Trade growth with US</b>	3.9816	5.2091	9.7137	6.7051
<b>Trade growth with Euro11</b>	3.7995	11.4393	16.1678	12.2859

Source: Calculated using exchange rate data from the Exchange Rate Database of the University of British Columbia. Exchange rate is the currency against USD. Exchange rate volatility is presented as the coefficient of variation. Trade growth is the annual arithmetic average for the period.

and trade growth is the annual arithmetic average of the period. We can then find that the fluctuations in exchange rate for the periods 1996-2000, 2001-2005 and 2006-2007 were decreasing<sup>19</sup> and trade volume, whether total trade, regional trade, or trade with the US and

<sup>19</sup> China is exceptional because of its exchange rate regime adjustment in 2005. The Philippines peso and Thai baht experienced a little more fluctuation in the period 2006-2007.

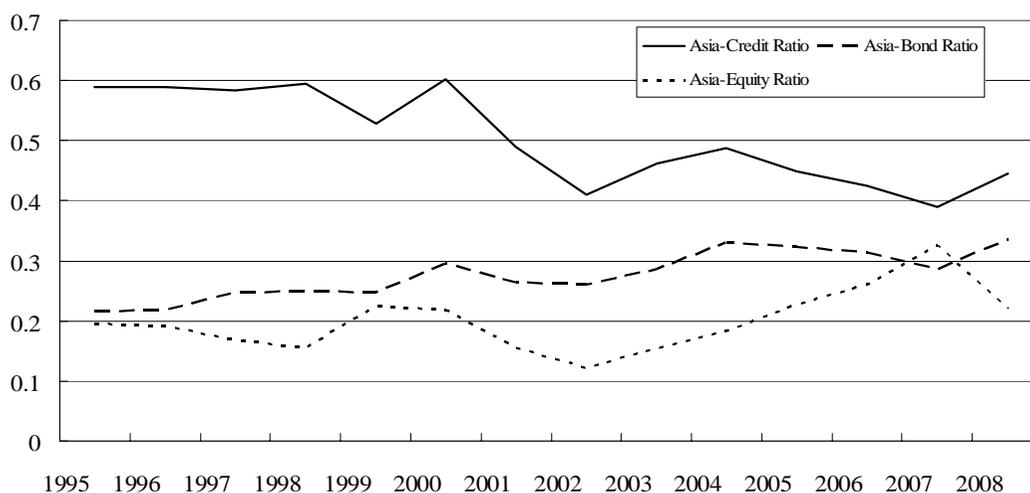
Euro11 all increased sharply except for trade with the US. This might be because most East Asian currencies are de facto pegged to the US dollar and the exchange rate here is the exchange rate of national currencies against the US dollar. In the first half of 2008, the exchange rate coefficient of variation is low and trade growth is high. In the second half of 2008, because of the rapidly worsening global situation, exchange rate volatility became high and trade growth apparently slowed down, but the annual growth of total and intraregional trade still continued to increase.

As a result, we can find the apparent effect of exchange rate (against the US dollar) fluctuation on the trade volume of ASEAN5+3 in the period of the past 12 years within intervals of 5 years. The typical case of exchange rate fluctuation with a third currency is that it will disturb trade among ASEAN5+3 and with Euro11. This situation suggests that it is necessary to have some kind of regional exchange rate arrangement.

## 2.2 Financial Structure and Instability

One of the most important lessons for Asia after the 1997 crisis concerns financial structure. Handling the double mismatch, as the ABM program was directly aimed to do, was the initial motivation for the development of the Asian bond market. Asia is the most vigorous region in the world, investment playing a significant role in promoting economic growth, and comprises a large share of global GDP. However, the dominating long-term investment programs have been heavily dependent on the banking sector for a long period of time. Bank supported investment finance rather than capital market finance results in a

**Figure 2.2 Financial Structure of ASEAN5+3**



Source: Regional database of Asian Bond on line.

maturity mismatch between assets and debts on the balance sheet of banks. On the one hand, the lack of capital markets, bond finance or equity finance causes large amounts of local funds to be driven to developed capital markets overseas in western countries. On the other hand, Asia has also borrowed large sums from overseas developed capital markets. These borrowed funds are put into domestic investments in terms of local currencies while they need to be repaid in foreign currencies. Thus currency mismatch comes with original sin. In 2004, developing a local currency bond market became a hot topic even though everybody knows that this cannot be achieved overnight. After five years, the data shows that there have been striking changes in Asian financial structure.

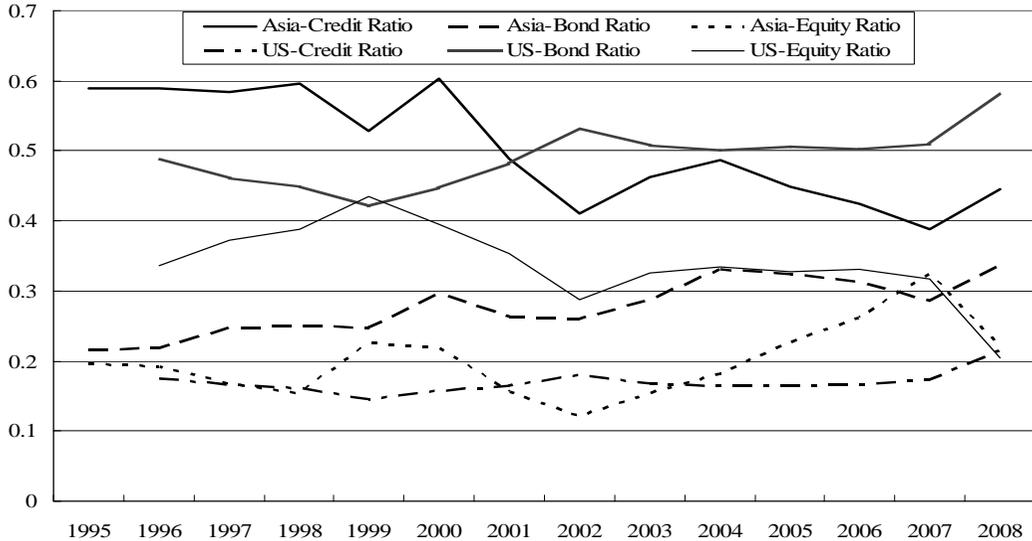
From Figure 2.2, we can find that the financial structure has been clearly improved. However, a more exact expression would be that the “improvement” is mainly achieved by a decrease in credit ratio and an increase in equity ratio while the bond ratio increased only slightly before 2007. A potential problem is that this kind of change is somewhat unstable as fluctuation of the equity ratio might happen at any time,<sup>20</sup> and this kind of change has nothing to do with substantial changes in financial fundamentals, such as the improvement of the double mismatch or bond market development. In fact, one thing we need to know is whether there is a high possibility that fluctuations on the stock market will make the equity ratio unstable. The other thing we need to bear in mind is that the deepening of globalization in the past twenty years has caused the link between equity markets in developed economies and ASEAN5+3 to become more significant. Thus, it is no wonder that when the global financial crisis occurred in late 2008, the equity ratio of ASEAN5+3 decreased sharply. An interesting thing we can pay attention to is the rebound of the credit ratio, which may indicate government efforts to ease monetary policy and its effect on bank credit. The rebound of the credit ratio can also be regarded as financial compensation for the banking sector when the stock market slumped with no real improvement in bond market financing.

Even though there was obvious change in financial structure in ASEAN5+3 before 2008, the difference between the financial structures of the United States and ASEAN5+3 remains significant, as shown in Figure 2.3. As a critical difference, the US bond ratio is the highest among bonds, equity and credit finance, and much higher than the credit ratio, while for ASEAN5+3, the picture is completely the opposite, credit ratio being the highest, followed by bond ratio and equity ratio. However, the change in the ratio of credit, bonds and equity represents co-movements between the United States and ASEAN5+3. This may suggest that the global financial crisis coming from the US might have finally affected the monetary policies of ASEAN5+3 through a contagion effect. Considering the fact that the

---

<sup>20</sup> Here we use stock market capitalization to total finance amount to calculate the equity ratio. Probably a better substitution would be the total IPO amount to illustrate the proportion of equity finance in total finance. However, it is hard to determine annual or IPO outstanding to use here since the credit data is the total assets of the banking sector, while the IPO amount generally changes with market capitalization. Thus the ratio trend also changes in the same way.

**Figure 2.3 Financial Structure of US and ASEAN5+3**



Source: Asia data from ADB, US data from FRB, SIFMA and WFE(ASE, NASDAQ and NYSE).

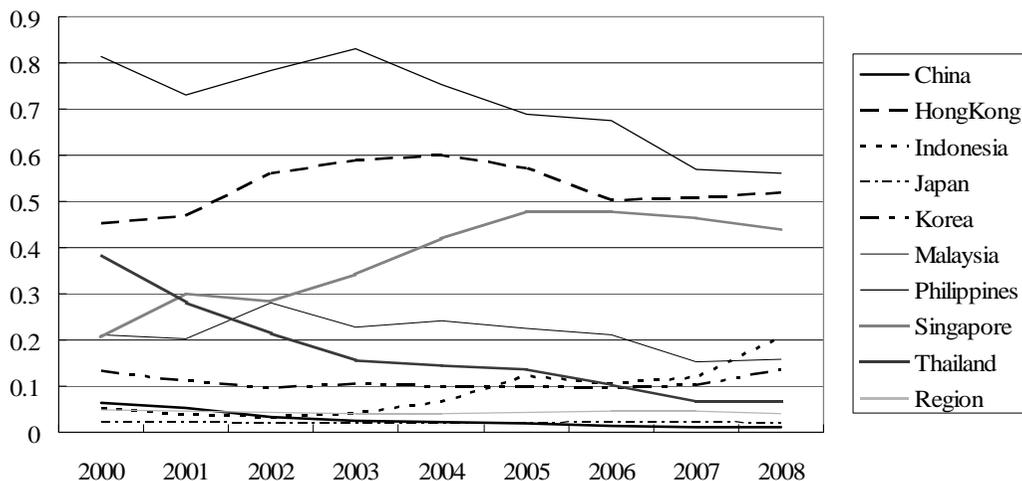
increase in the equity ratio played an important role in the “improvement” of the ASEAN5+3 financial structure, the slump in the stock market will have a greater negative effect on Asian financial structure. Another dismal fact is that even though the development of an Asian bond market has been a hot topic since 2003, the bond ratio in ASEAN5+3 has increased little, if not decreased, while the equity market boomed. This means, disappointingly, that bond market development has made less of a contribution to the change in financial structure of ASEAN5+3.

As a result, the financial structure between the ASEAN5+3 countries may have improved according to the data, but there may be no fundamental change financially, and the financial instability from the perspective of financial structure is even higher than before. This will make East Asian economies even more vulnerable when faced with external shocks. Regional surveillance and monitoring as an effort for preventing a possible crisis is urgently needed.

### 2.3 Currency Mismatch and Uncertainty

As we have mentioned above, currency mismatch is another reason for the Asian financial crisis, especially in Korea. As a natural result of the underdeveloped Asian bonds market, even though the financial structure has changed because of the booming equity market, currency mismatch, represented by the ratio of foreign currency denominated bonds to total bonds on the domestic market, has improved less.

**Figure 2.4 Currency Mismatch among ASEAN5+3**



Source: Calculated by database of Asian Bond on Line.

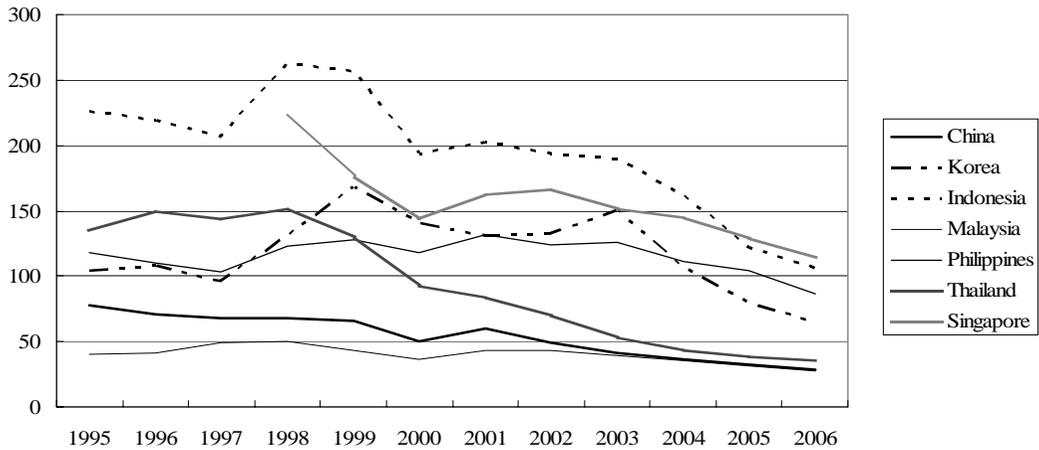
The pattern of currency mismatch among ASEAN5+3 is diverse (Figure 2.4). Japan and China, one the most developed economies and one of the capital account regulated countries, are keeping the ratio at a very low level. In the meantime, the ratios of the Philippines, Hong Kong and Singapore form the top three, Malaysia, Thailand and Indonesia are at the mean level, while Indonesia is showing an upward trend with Singapore and Korea. Thailand is on a downward trend with the Philippines.

A high currency mismatch does not necessary mean a high possibility of a balance of payments crisis. A more effective predictable indicator, external debt service ratio (external debt to goods and services exports) shows a downward trend for ASEAN5+3 in Figure 2.5. This suggests that even if currency mismatches on external debt show less improvement, the possibility of a currency crisis can still be maintained at a low level.

The combination of a stable level of currency mismatch and a decrease in the external debt service ratio may be explained also from the perspective of the underdeveloped Asian bond market. When the growth rate of external debt is lower than the export growth rate, the external debt service ratio will decrease. In the meantime, however, faster growth of external debt due to the underdeveloped local currency bond market can still induce the currency mismatch to become heavier.

As an export-oriented economy, in facing the global financial crisis, the export-led growth of ASEAN5+3 may be threatened by a slowdown in imports in the outside world. As a result, the external debt service ratio may increase to its threshold as a balance of payments crisis. In other words, when the domestic capital market is underdeveloped, heavy reliance on external debt may cause an export-orientated economy to be exposed to the uncertainties of the outside world.

**Figure 2.5: External Debt Service Ratio**



Source: Key Indicators for Asia and the Pacific 2008, ADB.

Thus the possibility of a currency crisis still exists, especially when faced with the impacts of the global financial crisis, and regional financial cooperation is also needed.

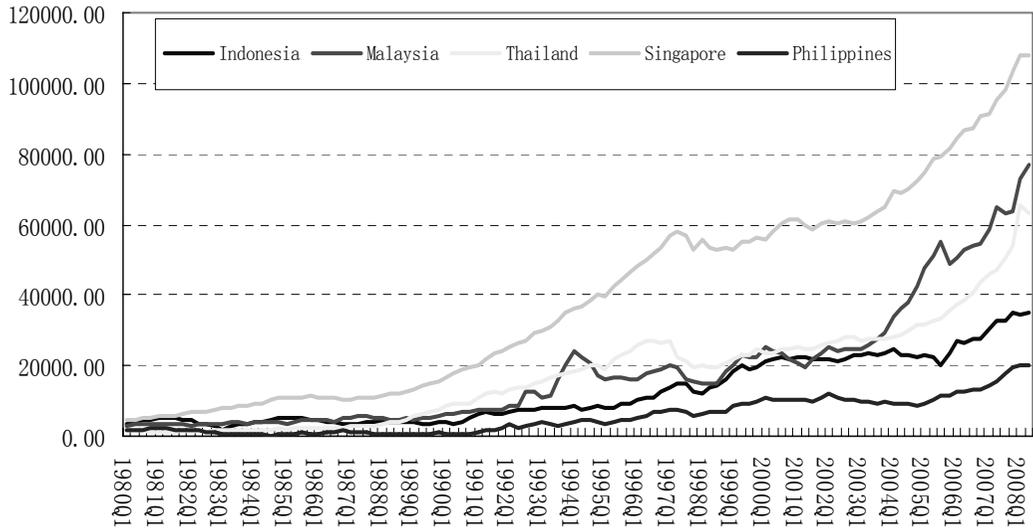
## 2.4 Excessive Foreign Reserves and Risk Management

As mentioned in the first chapter, the initial motivation of the CMI was the lack of foreign reserves to stabilize the foreign exchange market between East Asian economies faced with the incoming crisis. Figure 2.6 indicates the accumulation of foreign reserves among ASEAN5 economies. In the most crisis-affected countries, including Malaysia, Thailand, Indonesia and the Philippines, foreign reserves increased vigorously. Singapore, a unique case in ASEAN5, has been prudently maintaining a high and increasing level of foreign reserves for a long period. The increasing reserves enable ASEAN5 to enhance their ability to deal with incoming crises in the future.

When we expand our horizon to include all members of the CMI within ASEAN5+3, we find that compared to ASEAN5, China and Japan have accumulated huge foreign reserves in recent years, as showed in Figure 2.7. The disparity in foreign reserve accumulation between China/Japan and ASEAN5 may reflect their different positions in the regional production chains.

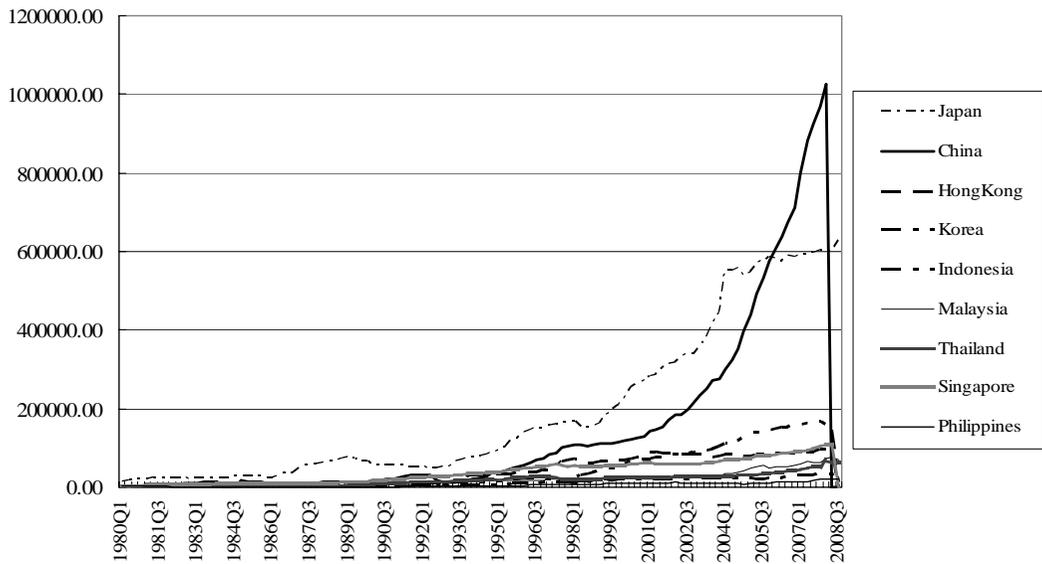
If the increasing foreign reserves of ASEAN5 can be regarded as a tool for foreign exchange market stabilization, the huge reserves of China and Japan, especially those of China, are far beyond a reasonable level by optimal determination, and become a reason for global imbalance. The domination of the regional foreign reserves of China and Japan in the region give a new motivation for regional cooperation, as do the ASEAN5 reserves also.

**Figure 2.6 Foreign Reserves of ASEAN5 (in million SDR)**



Source: International Financial Statistics, November 2008, IMF.

**Figure 2.7 Foreign Reserves of ASEAN5+3 (in millions of SDR)**



Source: IFS, 2008, IMF.

Table 2.2 shows that from the traditional perspective of the definition of the optimum quantity of international reserves, the optimal level is generally about three months of imports in total amount. China and Japan are both far beyond the criteria at more than six times the optimal level. For ASEAN5, foreign reserves are also quite adequate, more than 2-3 times the criteria of the optimal level.

**Table 2.2 Ratio of International Reserves to Imports (months)**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
<b>China</b>	8	10	13	13	12	9	11	13	13	14	16	17	20
<b>Japan</b>	7	8	9	10	12	12	15	18	23	24	21	20	20
<b>Korea</b>	3	3	2	7	8	7	9	10	11	11	10	9	9
<b>Indonesia</b>	4	5	5	9	11	9	10	11	11	9	6	7	8
<b>Malaysia</b>	4	4	3	6	6	4	5	5	7	8	8	8	8
<b>Philippines</b>	4	4	3	4	4	4	5	5	5	4	5	5	7
<b>Singapore</b>	7	7	6	9	8	7	8	8	9	8	7	7	8
<b>Thailand</b>	6	7	5	9	9	6	7	7	7	6	5	6	8

Source: Key Indicators for Asia and Pacific 2008, ADB.

**Table 2.3 Ratio of External Debt to International Reserves**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<b>China</b>	1.55	1.20	1.02	0.96	0.96	0.86	0.85	0.63	0.51	0.40	0.34	0.30
<b>Korea</b>	2.62	3.40	6.71	2.67	1.76	1.40	1.25	1.17	1.01	0.87	0.89	1.09
<b>Indonesia</b>	8.41	6.69	7.83	6.44	5.55	4.93	4.78	4.15	3.77	3.84	3.76	3.07
<b>Malaysia</b>	1.44	1.46	2.26	1.65	1.37	1.48	1.52	1.44	1.11	0.79	0.74	0.64
<b>Philippines</b>	5.05	3.74	5.78	4.95	3.87	3.87	3.71	3.66	3.67	3.76	3.34	2.63
<b>Singapore</b>	0.12	0.13	0.19	3.55	2.91	2.75	2.93	2.85	2.55	2.56	2.59	2.30
<b>Thailand</b>	2.71	2.92	4.08	3.55	2.78	2.44	2.03	1.53	1.23	1.03	0.99	0.82

Source: Calculated using data from the Key Indicators for Asia and Pacific 2008, ADB.

Table 2.3 indicates that from the perspective of preventing crisis by maintaining reserves, conventionally measured by the ratio of total external debt to reserves, which should be lower than two as a safeguard, China, Malaysia, Thailand and Korea met the criterion, and Singapore and the Philippines were close to the requirement by the end of 2006, Indonesia alone was a little far removed from the criterion.

In a word, foreign reserves in the region seem to be definitely excessive from various perspectives and the situation is totally different from the period of the Asian financial crisis in 1997. Faced with continuous fluctuation in exchange rates, the management of foreign reserves has become an inevitable challenge in the region, especially for China and Japan.

At present, compared to the world average level of currency composition of international reserves,<sup>21</sup> Asia is heavily reliant upon the US market. One reason for this is the underdeveloped regional financial market in Asia; the other reason is the exchange rate

<sup>21</sup> These data can be found in the IMF COFER database.

regime.<sup>22</sup> Among the ASEAN5+3 economies, most currencies are de facto or de jure pegged to the US dollar, and naturally, the US market is the best choice as an investment destination.

Even though the common sense of Asian bond market development has been reached, and AMF and ABMI have also been implemented, the regional financial market for the international reserves investment of Asia will hardly be developed overnight, and calls for endurance and joint efforts by the region. Considering the fact that since the initiative for the Asian bond market was put forward in 2003, and the development of a regional bond market has been far from our expectations in the past five years, we should spare some attention from the regional bond market to the regional exchange rate arrangements.

In fact, being pegged to the US dollar and investing foreign reserves on the US market could prevent nominal losses from exchange rate fluctuation, but this could not prevent real exchange risks. Because foreign reserves will eventually be spent in the world market, the real exchange risk depends on the purchasing power of the US dollar, rather than the book value in terms of local currencies.<sup>23</sup> When the United States experienced inflation domestically, or depreciation internationally, historical data shows that there must be inflation on the world commodity market, and this will result in a devaluation of the purchasing power of the US dollar.

In the current pattern of the global division of labor, East Asia still has the status as the manufacturing center of the world, and the foreign reserves of ASEAN5+3 mostly come from current account surplus. Within the framework of the global monetary system after Breton Woods, Triffin's Dilemma still exists. This means that Asia takes a trade surplus and the US takes a trade deficit, while Asia exports commodities and the US provides lending notes, Asia accumulating reserves and the US accumulating debt. The global imbalance is a natural result of Triffin's Dilemma, and is an unsustainable system. Some day in the future, foreign investors will suddenly be aware of the risk of dollar depreciation, suddenly stop buying US Treasury bonds, or ask for higher compensation, and then the global dollar standard will melt down! But before the collapse of dollar depreciation, Asian economies will have been trapped in dollar investment. This is an embarrassing status. You know that the dollar will start to depreciate some day in the future, but your first move away from dollar assets will ignite and quicken the process, and in the end you will bear the loss! Even though the global imbalance might be maintained for decades, it must break down at some point in the future. The current crisis is only a signal of Triffin's Dilemma, but still not the end of the current international monetary system. As a substitute system, a regional monetary system will also take time to be established. However, we can begin with exchange rate coordination and financial cooperation in East Asia. Eichengreen (2006b) has

---

<sup>22</sup> The evaluation of the dollar pegged regime in Asia will be discussed in Chapter Three.

<sup>23</sup> Seldom have foreign reserves of East Asia been invested in Treasury Inflation Indexed Securities (TIPS).

conducted research on this matter.

Mr. Sakakibara, the Vice-Minister of Finance for International Affairs in Japan from 1997 to 1999, who proposed the creation of the AMF in response to the Asian financial crisis, said on 15 May 2009 that faced with the global crisis the situation has evolved and Asia is now in a stronger position to speed up integration, and even to create an AMF. Yeyati, Schmukler and Horen (2008), Lee and Park (2008) have also carried out research on the crisis and cooperation.

### **Brief Summary**

Twelve years have passed since the Asian financial crisis, as well as in the efforts made towards Asian financial cooperation. There is an overall proposal for Asian financial cooperation including official regional currency swap arrangements for liquidity support, a policy-oriented regional financial market integration program and a theoretical regional common currency scheme. Even though most of this practical progress is far from expectations, it has been possible to make some changes.

1) The network of regional currency swap arrangements or reserve pool for liquidity support during the crisis period has been set up. However, the booming foreign reserve accumulation in East Asia has made this more psychological than practical. Currency misalignments against the background of increasing regional trade integration indicates the necessity of shifting from currency swap to trade facilitation, as well as the urgent task of Asian bond market development.

2) Existing currency swap arrangements being limited to official applications rather than private investors is a key reason for the underdeveloped state of regional financial bonds in the past five years and thus this has made less improvement to the double mismatch. Thanks to the rapid growth of regional exports, the external debt service ratio has decreased. When a buffer shock comes from the outside world against exports and the equity market, Asian economies are still vulnerable and have no effective stabilization mechanism.

3) As a result of export-oriented growth in Asia against a background of the global imbalance of balances of payments, the increasing reserve has become a process of credit accumulation on the Asian side and a process of debt accumulation on the US side. The global dollar standard cannot avoid Triffin's Dilemma in the future and Asia has been trapped in US Treasury bond investment. The current financial crisis is a signal of potential disaster, but not yet collapse.

The future of Asian financial cooperation, based on currency swap arrangements and the consensus for deepening regional cooperation, should point to a regional exchange rate arrangement, policy coordination, even regional surveillance, and then to regional financial market development, finally aspiring to a regional currency in the far distant future.



### **3. Regional Integration in Asia: Stylized Facts**

Export-oriented growth in Asia not only caused Asia's exports to the outside world to increase continuously, but at the same time also resulted in tremendous intraregional trade growth. Followed by growth in intraregional trade, we can expect FDI to occur in the region. Regional integration in Asia began with trade, then expanded to investment. This is the fundamental mode of regional integration in Asia.

The importance of trade integration for regional financial cooperation in Asia is undeniable. We will focus on this fundamental integration, make a general evaluation, and uncover the stylized facts before conducting further research on Asian financial cooperation in detail.

#### **3.1 Trade Integration and Asymmetry Structure**

It is obvious that trade integration is the basic fundamental for regional cooperation. The rationale of regional financial cooperation generally is the need to stabilize intraregional trade within the framework of the optimal currency zone theory, which has been proven by the practice of the Euro.

##### **3.1.1 A General Picture**

In terms of trade flow, East Asia has been experiencing unprecedented change in the pattern of regional trade. Integrated trade among ASEAN5+3 has rapidly increased in the past 30 years.

Table 3.1 shows that the average ratio of intraregional export/import of the ASEAN5+3 economies to their total exports/imports increased by over 30%. As a more essential fact behind the intensive regional integration process among ASEAN5+3, Ando (2006) finds that the significance of vertical intra-industry trade dramatically increased due to the expansion of back-and-forth transactions in vertically fragmented cross-border production processes, and in the same period, the relative importance of one-way trade dropped. This kind of change in the trade pattern can be regarded as the formation of a regional international production network, and these trends will hardly be changed overnight by a buffer shock.

One striking aspect that needs to be mentioned here is the rapid involvement of Japan and Korea in intraregional trade. In the past 30 years, the average ratio of the exports or imports of Japan and Korea with ASEAN5+3 to their total exports/imports, especially for Japan, increased much faster than the sluggish increase of the same index for ASEAN5 economies. Considering the overwhelming trade share of Japan and Korea among ASEAN5+3, the integration process was mainly promoted by them, and caused the regional

**Table 3.1 Intra-regional Trade among ASEAN5+3**

(%)

	Ratio of Exports to ASEAN5+3			Ratio of Imports from ASEAN5+3		
	1980-89	1990-99	2000-08	1980-89	1990-99	2000-08
<b>Japan</b>	20.96	30.50	37.41	22.55	29.14	37.73
<b>Korea</b>	27.85	38.14	42.14	35.71	36.22	42.39
<b>China</b>	26.38	27.67	25.60	39.61	42.39	40.80
<b>Sub-average</b>	<b>21.53</b>	<b>26.71</b>	<b>31.99</b>	<b>28.48</b>	<b>34.91</b>	<b>40.02</b>
<b>Indonesia</b>	63.21	54.49	54.58	43.45	39.30	41.58
<b>Malaysia</b>	53.77	49.21	49.89	49.5	53.29	56.59
<b>Philippines</b>	36.15	35.37	50.09	35.79	45.21	50.17
<b>Singapore</b>	25.4	28.53	40.07	44.7	50.77	51.53
<b>Thailand</b>	37.45	40.72	45.15	45.41	47.34	50.91
<b>Sub-average</b>	<b>43.25</b>	<b>40.08</b>	<b>46.13</b>	<b>44.57</b>	<b>48.76</b>	<b>51.40</b>
<b>Total Average</b>	<b>26.37</b>	<b>30.39</b>	<b>35.82</b>	<b>32.47</b>	<b>39.19</b>	<b>42.93</b>
<b>Trade Vol. bn.</b>	93.076	286.462	700.695	103.412	334.968	767.045

Source: Calculated using data from Direction of Trade, IMF, 2009

Note: 1) Data for China include mainland China and Hong Kong, deducting the trade between them. 2) Average values are calculated by both the sum of numerators and denominators.

average ratio to increase sharply.

The contribution of China to regional integration also cannot be neglected. Even though the ratio of its export/import with ASEAN5+3 to total exports/imports increased less in the past 30 years, the large balance (deficit) between regional imports and exports indicates that China is a major player in Asian trade.

The fast progress of intra-regional trade integration in East Asia is one thing, while the obsolete level of the regional share is another from the perspective of a regional comparison between ASEAN5+3 and Euro 15. During the same period, the average ratio of the intra-regional export/import of Euro15 to their total exports/imports increased by only about 10%, but the obsolete level of the regional share is about 30% higher than that of ASEAN5+3 (Table 3.2).

The smaller increase in regional trade integration in Euro15 and the high trade volume compared to ASEAN5+3 in the past 30 years may suggest that trade integration had already been well developed and mature at a stable level for a long time. Furthermore, the long-lasting and sustained higher level of trade integration also contributed to real integration between Euro15. Another difference is that the gap in the ratio between giants and general members in Euro15 is smaller than the gap in ASEAN5+3,<sup>1</sup> and the ratio

<sup>1</sup> We regard regional giants in Euro 15 and ASEAN5+3 as the top three in GDP. They are Germany, France and Italy in Euro15 and Japan, China and Korea in ASEAN5+3.

**Table 3.2 Intraregional Trade among Euro15**

(%)

	Exports to Euro15			Imports from Euro15		
	1980-89	1990-99	2000-08	1980-89	1990-99	2000-08
<b>Germany</b>	40.80	40.86	43.37	39.66	40.10	42.55
<b>France</b>	38.72	43.68	50.11	40.84	44.71	56.80
<b>Italy</b>	44.77	48.03	46.23	43.49	49.18	48.65
<b>Sub-average</b>	<b>41.06</b>	<b>43.24</b>	<b>45.72</b>	<b>40.96</b>	<b>43.51</b>	<b>48.22</b>
<b>Austria</b>	52.88	58.81	54.69	60.34	63.63	65.95
<b>Belgium- Luxembourg</b>	63.98	64.41	63.53	61.65	62.81	60.89
<b>Cyprus</b>	13.62	19.30	30.12	41.06	37.11	49.77
<b>Finland</b>	24.30	31.75	31.32	28.98	33.10	35.83
<b>Greece</b>	51.58	52.97	42.33	47.48	54.24	48.09
<b>Ireland</b>	33.04	37.62	40.52	21.95	19.16	23.40
<b>Malta</b>	51.15	53.60	33.90	53.75	56.05	55.24
<b>Netherlands</b>	50.27	53.64	62.72	38.69	38.79	39.74
<b>Portugal</b>	50.16	61.47	65.76	45.38	62.96	67.37
<b>Slovenia</b>	n.a.	60.54	53.34	n.a.	62.28	64.94
<b>Spain</b>	46.71	59.82	58.59	36.76	53.08	54.81
<b>Sub-average</b>	<b>51.27</b>	<b>55.76</b>	<b>57.64</b>	<b>45.94</b>	<b>50.87</b>	<b>50.68</b>
<b>Total Average</b>	<b>44.60</b>	<b>47.93</b>	<b>50.70</b>	<b>42.86</b>	<b>46.49</b>	<b>49.26</b>
<b>Trade Volume. bn.</b>	303.684	715.472	1392.941	298.836	670.621	1256.592

Source: Calculated using data from Direction of Trade, IMF, 2009

Note: 1) Data for Belgium and Luxembourg are combined as Belgium-Luxembourg during the period 1980-1996, after 1996, they are reported separately. Here we have put them together for the whole period; 2) Average values are calculated by both the sum of numerators and denominators.

increased at similar pace as between the two groups of giants and general members in Euro15.

In conclusion, trade integration in ASEAN5+3 has increased rapidly in the past 30 years, but there is still some room for deepening integration in comparison with the Euro15. The rapid growth of trade integration between ASEAN5+3, mainly promoted by large countries in the region, also suggests that real integration, especially for the fundamental element of regional policy coordination, still needs time to be established.

### 3.1.2 The Disparity between ASEAN5 and Japan, Korea and China

As small open economies, shown in Table 3.3, the trade dependency of ASEAN5, except for Indonesia, is very high, generally near or higher than 100%, in contrast to Japan, Korea and China. This means that their growth is not only heavily reliant on exports, but is also heavily reliant on imports. More importantly, their regional trade shares are also more

**Table 3.3 Trade Dependency and Intra-regional Trade Ratios between ASEAN5+3**

(%)

	Trade Dependency			Intra-regional Trade Ratio		
	1980-89	1990-99	2000-08	1980-89	1990-99	2000-08
<b>Japan</b>	19.40	15.85	22.71	21.66	29.92	37.56
<b>Korea</b>	57.52	50.89	63.78	31.76	37.19	42.26
<b>China</b>	35.67	57.69	104.17	33.42	35.11	33.24
<b>Sub-average</b>	<b>24.14</b>	<b>25.06</b>	<b>51.08</b>	<b>25.46</b>	<b>32.77</b>	<b>36.31</b>
<b>Indonesia</b>	33.74	41.11	46.62	55.32	47.95	49.68
<b>Malaysia</b>	96.48	156.91	179.52	51.80	51.20	52.91
<b>Philippines</b>	38.71	64.93	87.79	35.94	41.00	50.13
<b>Singapore</b>	308.01	277.05	326.24	35.83	39.92	45.47
<b>Thailand</b>	49.44	76.60	117.19	41.92	44.26	47.98
<b>Sub-average</b>	<b>68.59</b>	<b>101.74</b>	<b>130.43</b>	<b>43.91</b>	<b>44.46</b>	<b>48.57</b>
<b>Total Average</b>	<b>28.29</b>	<b>31.68</b>	<b>58.58</b>	<b>29.79</b>	<b>36.17</b>	<b>39.53</b>

Sources: Calculated using data from Direction of Trade, IMF, 2009 and GDP from WEO April 2009, IMF. Note: 1) Average values are calculated by both the sum of numerators and denominators; 2) Trade dependency is the ratio of the total trade volume to GDP; 3) Intra-regional trade ratio equals the amount of intraregional trade to total trade volume; 4) Data for China includes mainland China and Hong Kong, and deducts trade between them.

than 30% higher than Japan, Korea and China.

Even though the ASEAN5 countries have a lower share of GDP and total trade volume among ASEAN5+3, their growth is more dependent on trade, especially regional trade. Fluctuation in regional trade flows will have significant impact on their growth, and hence they will have a stronger demand for regional cooperation aimed at stabilizing intraregional trade. In contrast, Japan, Korea and China, with larger domestic markets, if they also followed the export-led growth model, would simply approach 51.08% at most,<sup>2</sup> and their intraregional trade ratio is also much lower than that for ASEAN5.

The most imbalanced data between ASEAN5 and Japan, Korea and China is the GDP difference. In 2008, the sum of the GDPs of Japan, Korea and China was about 7.5 times the sum of the GDPs of ASEAN5. Considering the huge GDP volume of Japan, Korea and China among ASEAN5+3, and the fact that their huge trade volume was made under a lower trade dependency and intraregional trade ratio, a small fluctuation in imports by Japan, Korea and China will have a big impact on ASEAN5 growth. As a result, the attitude towards regional cooperation by Japan, Korea and China will be the crucial factor.

<sup>2</sup> It was a very special case for a large economy like China when its foreign trade dependency reached approximately 70% in 2007, and when taking the trade data of Hong Kong SAR into China into account, the final trade dependency of China in the period 2000-2008 was as high as 104.17%.

When we look at the Euro area, there are similarities, but also differences. Among the Euro members, there also exist three large countries, Germany, France and Italy. The sum of the GDPs of the three countries is about 1.9 times of sum of the GDPs of the other twelve countries. The difference is large, but much smaller than the difference between ASEAN5 and Japan, Korea and China.

The most important distinguishing feature between the Euro area and ASEAN5+3 is in the trade pattern. Table 3.4 shows, in terms of total trade dependency, that the level of the Euro area was about 60% higher than ASEAN5+3 in the period 1980 to 1989. Even though this difference dropped to 25% in the period 2000 to 2008, it still cannot be neglected. In terms of intraregional trade ratio, the level of the Euro was about 50% higher than ASEAN5+3 in the period 1980 to 1989, and dropped to about 25% higher in the period 2000 to 2008.

**Table 3.4 Trade Dependency and Intraregional Trade Ratios among Euro15**

(%)

	Trade Dependency			Intraregional Trade Ratio		
	1980-89	1990-99	2000-09	1980-89	1990-99	2000-08
<b>Germany</b>	48.51	41.47	61.55	40.28	40.50	43.00
<b>France</b>	35.95	37.07	45.66	39.83	44.19	53.55
<b>Italy</b>	34.62	34.23	43.08	44.09	48.58	47.45
<b>Sub-average</b>	<b>40.62</b>	<b>38.34</b>	<b>51.69</b>	<b>41.01</b>	<b>43.37</b>	<b>46.92</b>
<b>Austria</b>	51.97	54.49	81.24	57.00	61.40	60.36
<b>Belgium- Luxembourg</b>	115.03	115.60	163.10	62.79	63.63	62.24
<b>Cyprus</b>	60.15	54.91	45.85	33.17	32.72	46.43
<b>Finland</b>	46.10	48.82	63.78	26.62	32.35	33.38
<b>Greece</b>	29.62	28.97	30.25	48.80	53.87	46.69
<b>Ireland</b>	92.44	109.60	94.40	27.55	29.80	33.91
<b>Malta</b>	80.55	138.67	120.42	52.84	55.12	46.79
<b>Netherlands</b>	88.13	83.92	118.09	44.57	46.53	51.83
<b>Portugal</b>	50.30	50.12	53.65	47.19	62.37	66.74
<b>Slovenia</b>	n.a.	86.92	107.87	n.a.	61.47	59.39
<b>Spain</b>	27.61	33.25	42.62	40.80	56.00	56.35
<b>Sub-average</b>	<b>60.93</b>	<b>62.35</b>	<b>80.54</b>	<b>48.45</b>	<b>53.26</b>	<b>54.42</b>
<b>Total Average</b>	<b>46.24</b>	<b>45.10</b>	<b>61.15</b>	<b>43.72</b>	<b>47.22</b>	<b>50.16</b>

Sources: Calculated using data from Direction of Trade, IMF, 2009 and GDP from WEO April 2009, IMF.

Note: 1) The data for Belgium and Luxembourg are combined as Belgium-Luxembourg during the period 1980-1996, and are reported separately after 1996. Here we put them together for the whole period; 2) Average values are calculated by both the sum of numerators and denominators; 3) Trade dependency is the ratio of the total trade volume to GDP; 4) The intraregional trade ratio equals the amount of intraregional trade to total trade volume; 5) The GDP data of Malta from 1980-1999 are converted by the index from IFS from the 2000 GDP volume.

However, this is not the most important feature. From 1980 to 2007, the intraregional trade ratio of Euro15 increased only by about 15%, while the ratio for ASEAN5+3 increased by about 35%. On the one hand, the rapid increase in regional trade integration in Asia provided a sound fundamental for regional cooperation, but on the other hand, the rapid increase in regional trade integration in Asia also indicates that real economic integration in Asia is still in progress, and still has room for deepening, and has not reached a matured stage with a stable level of intraregional trade integration. The growth process may invoke the awareness for cooperation in East Asia, but in Euro15, the relatively stable intraregional trade ratio has provided a stable environment for conducting policy coordination.

Another important difference between Euro15 and ASEAN5+3 is the difference between regional giants and general members. As mentioned above, not only do Japan, Korea and China take a large share in the regional GDP of ASEAN5+3, but ASEAN5 also has a much higher dependence on trade and intraregional trade. Thus the ASEAN5 countries have a stronger demand for regional cooperation, while Japan, Korea and China stand aloof despite their crucial status in the process. In Euro15, the GDP difference between the two groups is smaller than for ASEAN5+3, and trade dependency is also smaller. As for the intraregional trade ratio, the average level of Germany, France and Italy is quite close to the average level of the other 12 Euro15 countries. This means that the demand for regional cooperation aimed at intraregional trade stabilization for the two groups is roughly equivalent, making it easier to carry out joint decision-making and action.

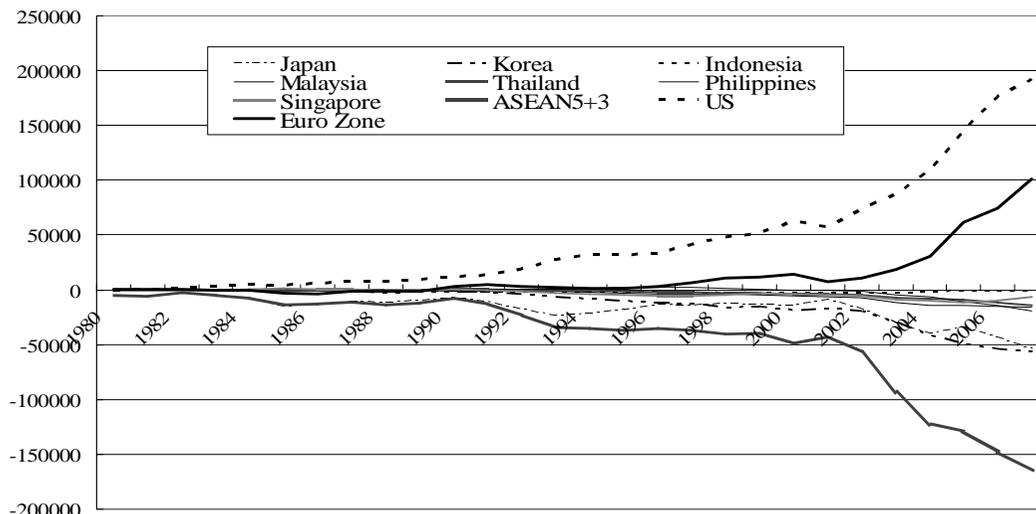
In short, the difference in total average level of regional trade dependency and intraregional trade ratio between ASEAN5+3 and Euro15 is clear. The more stable level in Euro15 compared to ASEAN5+3 indicates that European integration has come to a mature and stable stage while Asian integration still has room to go further. The other important feature of Asia is the huge disparity between ASEAN5 and Japan, Korea and China, not only in GDP and trade dependency, but also in intraregional trade ratio. This disparity calls for more policy coordination efforts in regional exchange rate cooperation, which is somewhat easier for Euro15 because of their smaller differences in GDP and trade dependency, especially in intraregional trade ratio.

### **3.1.3 The Asymmetric Effect between Japan, China and ASEAN5**

Because Japan and China are the two largest economies in East Asia, their attitudes in promoting regional cooperation are crucial to the process. From the perspective of economics, there exists some difference in demands concerning regional exchange rate coordination between Japan and China, even though both of them have become fully aware of the necessity for Asian financial cooperation.

The general picture of China's trade balance is that China continues to run a surplus with the US and Euro area, while at the meantime maintaining a deficit with ASEAN5+3 over a long period of time (Figure 3.1). This trade pattern reflects the status of China in

**Table 3.1 China's Trade Balance with ASEAN5+3, US and Euro Area**



Source: DOT, 2009, IMF, in USD million.

regional production chains as the largest developing country compared to Japan. China has maintained net imports from ASEAN5+3 to support its net exports to the US and Euro area for more than ten years.

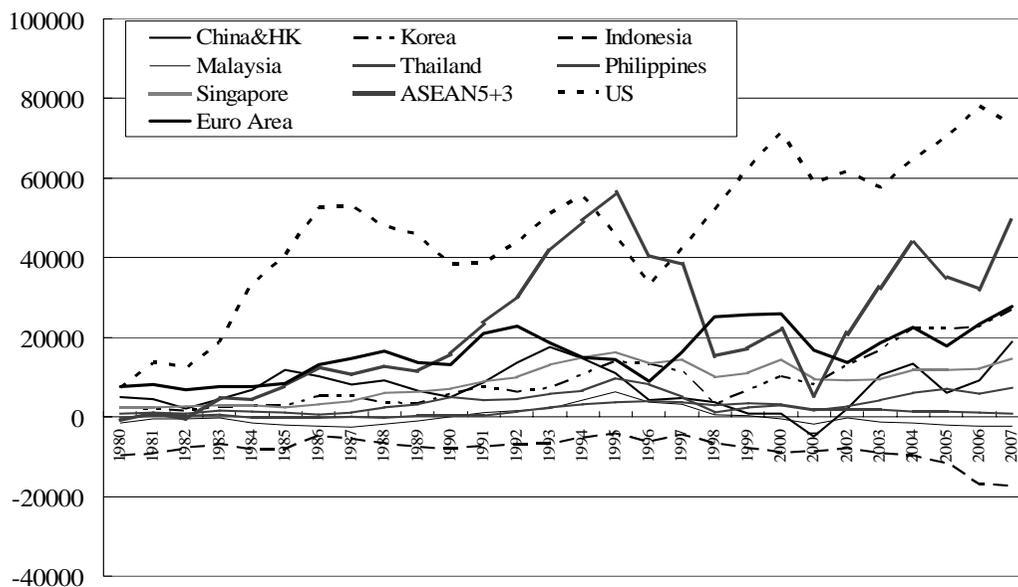
Given the trade balance pattern and the export-led growth path of China, it is reasonable for RMB to be pegged to the US dollar, in order to minimize the risk of its trade surplus with the US<sup>3</sup> against the background of the global dollar standard, which is the most important compensation for China for its deficit with ASEAN5+3. If China ceased pegging the RMB to the US dollar and joined the exchange rate arrangement within ASEAN5+3, this would enable stability of the nominal deficit with ASEAN5+3, while the source of surplus from the US and Euro area would fluctuate, and finally cause uncertainty in China's balance of payments.

The pattern of Japan's trade balance of is totally different from that of China, as shown in Figure 3.4. As the most developed country in Asia, Japan's comparative advantage presents itself both in exports to ASEAN5+3 and exports to the US and Euro area. Because of the free-floating exchange rate regime of the Japanese yen, the trade balance between Japan and ASEAN5+3, the US and Euro area have fluctuated very often,<sup>4</sup> but all the balances have maintained positive values from the mid 80's.

<sup>3</sup> From July 2005, China announced that the RMB would be pegged to a currency basket mainly including USD, Euro, Japanese yen and Korean won. For a long period, however, according to Ogawa and Sakane (2006), the weight of USD in the basket was very high.

<sup>4</sup> Another interesting phenomenon occurs because the exchange rate of the US dollar and Euro generally move in the opposite direction, Japanese trade surplus with the US and Europe also increased/decreased in opposite directions after the launch of the Euro in 1999.

**Figure 3.2 Japan's Trade Balance with ASEAN5+3, US and Euro Area**



Source: Direction of Trade, 2009, IMF. In USD million.

In this case, if Japan joins the regional exchange rate arrangement, the nominal surplus from ASEAN5+3 will be stable and at the meantime, the surplus from the US and Euro area will be better than before since the regional exchange rate benchmark will be more stable than the exchange rate of yen against USD. The final effect of Asian financial cooperation for Japan will be positive from the perspective of trade balance and trade stabilization.

In a word, Japan will benefit from the deepening of regional cooperation while China will pay a higher cost. This difference in the situation between Japan and China will result in different attitudes of Japan and China toward a pure regional basket peg regime such as a typical OCA.

**Table 3.5 The Asymmetric Effect on Regional Exchange Rate Stabilization**

	Japan and Korea	China	ASEAN
<b>Intraregional</b>	Surplus can be stable	Deficit can be stable	Trade becomes stable
<b>Interregional</b>	Surplus fluctuates less	Surplus shifts from stable to fluctuating	Trade fluctuates more
<b>Overall</b>	Benefits on both sides	Loss due to interregional dependence on trade balance	Benefits due to regional dependence both in volume and balance

As for ASEAN5, even though they will depart from dollar pegging before joining the regional exchange rate mechanism, which will make their interregional trade unstable, in consideration for the importance of intraregional trade to economic growth, they will finally benefit from regional exchange rate cooperation.

The asymmetric effect of regional exchange rate stabilization may be summarized as in table 3.5.

## **3.2 Financial Integration in Asia**

The existence of a number of hypotheses on the casualty relationship between economic growth and financial development indicates that the fast growth of trade integration in ASEAN5+3 should have shown some effect on regional financial integration in the past thirty years, since financial integration can be regarded as regional integration in depth as a result of trade integration.

There are several indices which can be used to measure the degree of regional financial integration. Generally speaking, these can be divided into three categories, quantity measures, price measures and institutional or regulatory measures. In fact, institutional or regulatory measures are based on a common market in a region, so this is an index for a matured regionalization. Price measures are based on the law of one price in a financial market that can be used in fully integrated markets where arbitrage equalizes the return of similar assets, and are more often applied in the study of the co-movements of interest rates, bond yields and stock price as the macroeconomic consequences of integration. The quantity measure is the only index based on trade and financial integration indicating actual progress towards regional integration.

Aldaba and Yap (2009) carried out an overall review of financial integration among ASEAN economies. Qin, Cagas, Ducanes, Magtibay-Ramos and Quisin (2007) used a dynamic factor error correction model and found that feedback adjustment to price disparities is significantly observable in every case when the disparities are represented in terms of regional facts, and regional integration proceeds more strongly and longer in goods market price parities than in capital market parities for most of the Asian economies. Baier and Dwyer (2008) find more evidence of convergence to equality for returns to capital than for returns to labor.

### **3.2.1 Regional Portfolio Investment**

Among the indices of the quantity measures of financial integration, portfolio investment is a key indicator reflecting the linkage between financial markets by private investment. Unfortunately, from this perspective, compared to Euro15, the regional share of portfolio investment in ASEAN5+3 is very low!

**Table 3.6 Geographic Breakdown of Total Portfolio Investment**

				(%)			
		2001	2007				
		2001	2007	2001	2007		
<b>Japan</b>	<b>Region</b>	3.69	2.45	<b>Germany</b>	<b>Region</b>	43.55	47.95
	<b>US</b>	36.48	40.94		<b>US</b>	11.50	13.24
	<b>Euro</b>	18.01	24.86		<b>UK</b>	11.19	5.00
	<b>UK</b>	17.35	11.17		<b>5+3</b>	10.46	6.45
<b>Korea</b>	<b>Region</b>	18.45	15.81	<b>France</b>	<b>Region</b>	39.36	49.36
	<b>US</b>	44.90	39.42		<b>US</b>	18.47	18.56
	<b>Euro</b>	14.53	25.86		<b>UK</b>	16.80	5.14
	<b>UK</b>	14.05	8.46		<b>5+3</b>	9.06	7.28
<b>China</b>	<b>Region</b>	13.72	18.44	<b>Italy</b>	<b>Region</b>	60.03	75.51
	<b>US</b>	32.30	37.42		<b>US</b>	8.32	7.94
	<b>Euro</b>	22.26	22.78		<b>UK</b>	15.71	3.27
	<b>UK</b>	21.36	12.09		<b>5+3</b>	6.22	4.93
<b>ASEAN5</b>	<b>Region</b>	27.12	23.00	<b>Euro12</b>	<b>Region</b>	55.33	62.85
	<b>US</b>	34.40	33.55		<b>US</b>	14.04	10.00
	<b>Euro</b>	10.55	22.31		<b>UK</b>	8.60	5.96
	<b>UK</b>	18.04	11.37		<b>5+3</b>	7.75	5.16
<b>Regional Av.</b>	<b>Region</b>	10.58	10.60	<b>Regional Av.</b>	<b>Region</b>	50.42	58.86
	<b>US</b>	36.45	38.90		<b>US</b>	13.45	11.82
	<b>Euro</b>	17.31	24.17		<b>UK</b>	11.42	5.36
	<b>UK</b>	17.65	11.05		<b>5+3</b>	8.44	5.74

Source: Calculated using data from the Coordinated Portfolio Investment Survey (CPIS), IMF.

Note: The data for China is the sum of mainland China and Hong Kong SAR, deducting mainland China's portfolio investment in HK.

Table 3.6 shows a number of differences between ASEAN5+3 and Euro15.

(1) The degree of regional average portfolio investment ratio for ASEAN5+3 is lower than that for Euro15 by more than 40 percentage points, being only about 5% of the Euro 15 level.

(2) Another important difference is that in ASEAN5+3 from 2001 to 2007, the regional average portfolio investment ratios in most economies decreased against an increase in the ratio for Euro15, except for a small increase in the regional portfolio investment ratio for China. While in Euro15, with the launch of the Euro and enlargement of the Euro capital market, the regional average portfolio ratio of every economy in Euro15 increased.

(3) Among ASEAN5+3, Japan, with the largest domestic capital market in the region, has a very small ratio of regional portfolio investment. In contrast, ASEAN5 have a relatively high average ratio of regional portfolio investment. The difference between large or more developed economies, like Germany, France, Italy, and small or less developed

economies in Euro15 is much smaller than the difference between the ASEAN5+3 economies.

(4) In ASEAN5+3, cross-border portfolio investments were generally concentrated in Hong Kong, Japan, Singapore and Korea in 2007, investments in Indonesia, Malaysia, Philippines and Thailand being low till 2007. This indicates an imbalance in financial market development in the region. In Euro15, based on the Clearstream system, Luxembourg takes a leading position in attracting portfolio investment, and portfolio investments of other economies in Euro 15 are **much more even** than in ASEAN5+3. Of the 15 countries, only four countries show relatively low (Greece and Portugal) or low (Cyprus and Malta) inward investments.

In a word, ASEAN5+3 have a much lower degree of regional portfolio investment when compared to Euro15. Japan, the most developed economy in Asia shows less motivation to outward regional financial integration.<sup>5</sup>

### **3.2.2 The Linkage between Regional Trade and FDI**

In fact, trade and production integration (regional production networks) proceeded quite rapidly, but in the meantime, financial integration has been relatively sluggish among ASEAN5+3 compared with Euro15.

The linkage between intraregional trade and financial integration is also a hot topic in the literature.

On the one hand, Rose and Spiegel (2002) provide a theoretical model based on the assumption that international trade acts as an enforcement mechanism for sovereign debt repayment. Empirical evidence from data concerning 20 creditor countries and 149 debtor countries supported the proposition during the period 1989-1999. Forbes and Chinn (2003) find that bilateral bank lending and trade competition are significant determinants of cross-country linkage, but that bilateral FDI is not. Eichengreen and Park (2004) explained why there has been less financial integration in East Asia than in Europe. They indicate that the different level of economic development in the two regions is important, while other differences are largely predetermined by policy. East Asia has done less to promote the growth of intraregional trade than has Europe, such as the establishment of a common market, and the long-lasting capital control and the underdevelopment of financial markets in East Asia caused institutions in potential leading countries to become impediments to regional financial integration. Eichengreen and Park (2004) also warned that rapid liberalization could increase financial vulnerability.

On the other hand, Fukao Ishido and Ito (2003) suggest that FDI has spurred intra-industry trade, particularly vertical intra-industry trade. It is the differences in comparative advantage and factor endowments which have resulted in the differences in

---

<sup>5</sup> Japan may have strong inward regional financial integration by attracting regional equities and bonds to be listed and traded on its deep domestic capital markets.

cross-border investment before the establishment of supply chains and production networks.

Reasons for the underdeveloped intraregional portfolio investment in ASEAN5+3 can be narrowed down to three fields. The first is for reasons of regulation, as noted by Kawai (2007). The low degree of financial integration in ASEAN5+3 is a result of regulation. With the exception of Japan, Hong Kong SAR and Singapore, many economies in the region still impose significant capital control and exchange restrictions or other cross-border investment barriers, which impede free flows of financial capital within the region. The second is the lack of a regional financial market which has sufficient depth and liquidity for intra- and extra-regional investors to participate in, as noted by Cowen, Salgado, Shad, Teo and Zanello (2006). The development of regional financial markets calls for major infrastructure construction on unified regulations, tax hurdles, credit ratings, accounting standards, and especially a regional clearing and settlement system. It became possible to establish the Euro bond market with the help of the unified clearing and settlement systems Clearstream and EuroClear. The third is somewhat of a paradox. Financial integration can provide a sound basis for regional financial cooperation, while financial integration also requires the precondition of a regional exchange rate arrangement. A common currency such as the Euro is more preferable, considering the booming of the Euro bond market after the launch of the Euro.

### **3.2.3 Regional FDI in East Asia**

If regional financial integration in terms of portfolio investments calls for a large number of preconditions even when trade integration has already reached a high level, regional financial integration in terms of foreign direct investment might be more easily achieved since it would be a natural result of regional trade integration.

Table 3.7 shows that the top ten sources of foreign direct investment inflow to ASEAN10 are dominated by ASEAN10+3 as a whole. The actual figure could be even higher because the sources from Bermuda and Cayman might also include some FDI originating from the ASEAN10+3. The difference between ASEAN10+3 and the second large source, EU-25, is large enough. Even if the total share of Bermuda and Cayman are all added to the data for EU-25, the order will not change.

However, the share of ASEAN10+3 in total FDI inflow to ASEAN10 is still lower than the share of trade among the ASEAN5+3 economies.<sup>6</sup> The result is somewhat reasonable and shows the function of financial integration in East Asia as a supplement to regional trade. Regional portfolio investment integration might be based on regional financial cooperation while regional FDI integration should be a direct result of trade

---

<sup>6</sup> The result is based on DOT data, as in Table 3.1 in the report. According to the ASEAN statistics of the ASEAN Secretariat (Table 19), the share of trade of ASEAN10+3 with ASEAN10 is about 54.1%, much higher than the second largest trade partner, the US at 12.4%. The reason is that Japan and China dominate regional exports to the US and Euro area.

**Table 3.7 Top Ten Sources of FDI Inflow to ASEAN10**

(%)

	Share to total FDI inflow			
	2006	2007	2008	2006-2008
<b>EU-25</b>	19.4	26.5	20.3	22.3
<b>ASEAN10</b>	13.8	13.5	18.4	15.2
<b>Japan</b>	18.6	12.1	12.8	14.2
<b>USA</b>	6.2	9.1	5.9	7.2
<b>Other America</b>	6.7	3.0	1.6	3.7
<b>Bermuda</b>	2.4	4.0	2.9	3.2
<b>ROK</b>	2.3	4.5	2.1	3.1
<b>Cayman</b>	6.4	1.1	2.0	3.0
<b>Hong Kong</b>	2.3	2.3	0.9	1.9
<b>China</b>	1.8	1.8	1.9	1.8
<b>Sub-total</b>	80.0	78.0	68.7	75.6
<b>Others</b>	20.0	22.0	31.3	24.4
<b>Total inflow</b>	100.0	100.0	100.0	100.0
<b>ASEAN10+3</b>	<b>38.88</b>	<b>34.20</b>	<b>36.09</b>	<b>36.21</b>
<b>Total Amount, bn.</b>	54.980	69.481	59.440	183.902

Source: ASEAN Secretariat.

Note: The data for ASEAN10+3 is calculated by the FDI value on the original table and the data for China is the sum of China and Hong Kong.

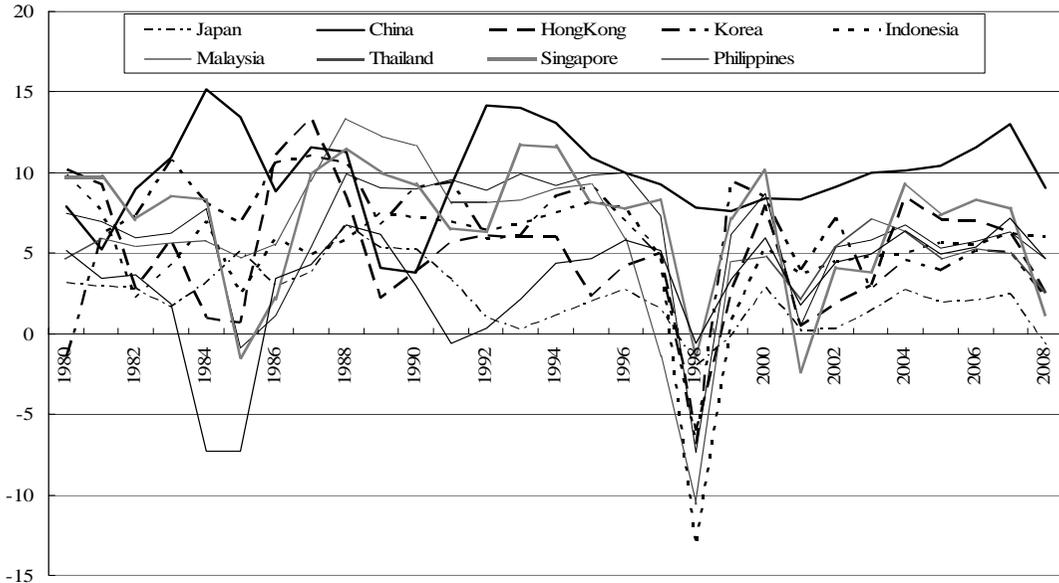
integration. In comparison to liquid portfolio investment, FDI provides a sound basis for conducting financial cooperation in East Asia. To some extent, the FDI integration points much more directly to real integration.

### 3.3 Macroeconomic Consequences of Integration in ASEAN5+3

As the data above has shown, the level of trade integration is much higher than that of financial integration between ASEAN5+3. This fact may provide the conclusion that financial integration follows trade integration. Fukao Ishido and Ito (2003) believe that trade integration in ASEAN5+3 may be dominated by inter-industry trade rather than intra-industry trade, even though the later is growing significantly, according to the findings of Ando (2006). Rana (2007) pointed out intra-industry trade, rather than inter-industry trade, is the major factor explaining business cycle co-movements in East Asia.

No matter that financial integration is underdeveloped or that trade integration is dominated by inter-industry trade, as a matter of fact, trade integration is the fundamental of

**Figure 3.3 GDP Growth among ASEAN5+3**



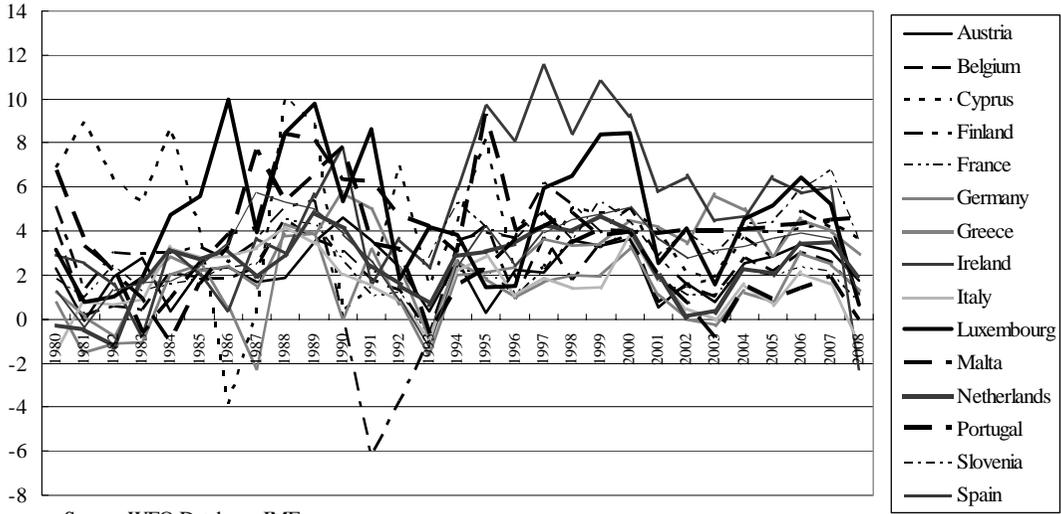
Source: WEO database, IMF

financial integration. This will result in the macroeconomic consequence of real integration sooner or later.

In terms of annual GDP growth in the past 30 years, there has been a convergent trend within ASEAN5+3 since the 90s. We can see in Figure 3.3 that Japan and China provide the floor and ceiling of regional GDP growth in most years. Another important feature of Japan and China is, as the two largest economies in the region, their growth has been much more stable than ASEAN5 and Korea because of their huge domestic markets, especially during the period of the Asian financial crisis, allowing them to behave as stabilizers for the region.

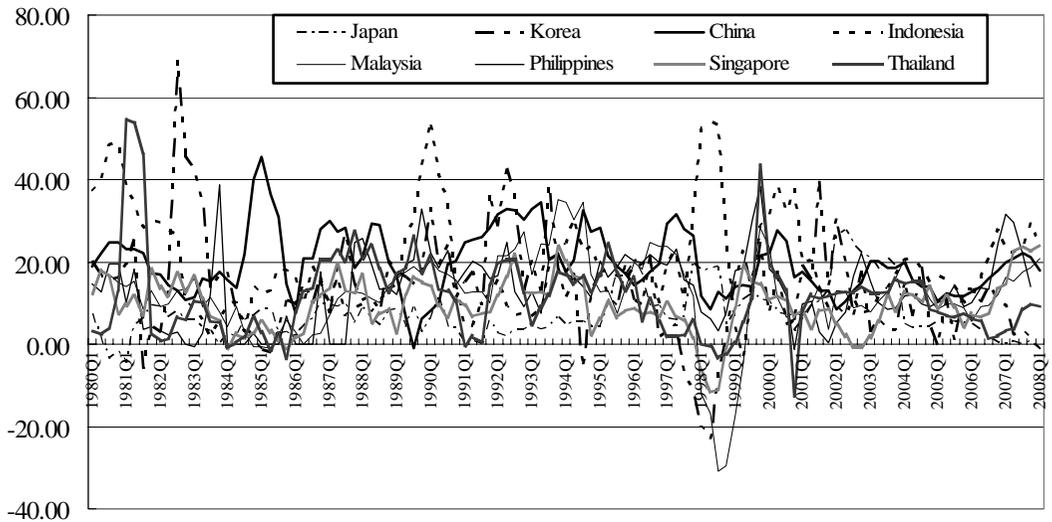
Compared to annual GDP growth in Euro15 in Figure 3.4, we can easily see the differences with ASEAN5+3. The most striking difference is in ASEAN5+3; even though the difference in GDP growth rate between Japan and China has been stable since the 90s, they provide the floor and ceiling, respectively, reflecting their difference in economic development levels as a developing and a developed country. The top three economies in Euro15, Germany, France and Italy, are all members of the G8 developed countries, share more similar features of economic growth in terms of absolute value, have formed the floor for growth rate among the Euro15 economies since the 90s, and their GDP growth rates are very close to each other. Even though the growth rate disparity appears to be larger in Euro15 than in ASEAN5+3, the convergence between major economies in the region makes policy coordination much more easily researched.

**Figure3.4 GDP Growth in Euro15**



As a general trend in GDP growth, ASEAN5+3 exhibited convergence from the early 90s except for the short period of the buffer shock of the financial crisis in 1997-99. Contrastingly, the Euro15 economies have also become convergent since the early 90s if we eliminate the influence of fluctuation from Ireland, Cyprus and Luxembourg.<sup>7</sup>

**Figure3.5 Money Growth in ASEAN5+3**



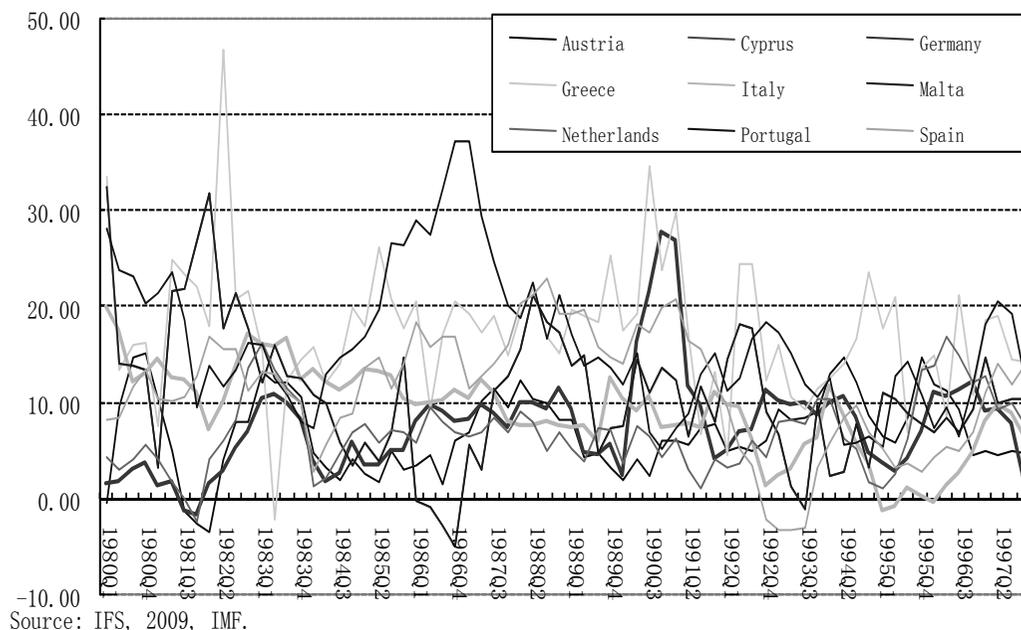
<sup>7</sup> The GDP growth fluctuation of Luxembourg may be rooted in the fluctuation of the capital market.

In fact, the GDP growth rate is an overall index of regional integration because, to some extent, it reflects the effort of macroeconomic policy. The key to policy coordination in regional financial cooperation is the money supply, which mainly indicates changes in monetary policy.

Figure 3.5 indicates the role of monetary policy in maintaining stable growth and we can see that the GDP growth among ASEAN5+3 is actually a result of different monetary policy in different countries. The three giants in the region, especially Japan and China, have often conducted monetary policy in different directions since the mid-90s. The money supply of Korea continuously fluctuates compared to its relatively stable GDP growth.

In contrast to the diversified monetary policy among ASEAN5+3, a different picture appears in selected Euro countries<sup>8</sup> again in Figure 3.6. The money growth difference between Germany and Italy, the two large countries in the Euro area, is much smaller than that of Japan and China in most years, when they share an almost identical GDP growth rate. The highly convergent GDP growth and the similarity in monetary policy between Germany and Italy suggest that the real integration of the two countries is higher than the differences between Japan and China. While for other countries in the Euro area, their differences in money supply are similar to ASEAN5 and also have less influence on the level of regional integration.

Figure 3.6 Money Growth in Selected Euro



<sup>8</sup> It is regretted that the data source does not include France, one of the most important countries in the Euro area. In order to make a clear demonstration, I have eliminated the abnormal data of Finland and Ireland, which experienced much higher money growth in some years.

### 3.4 The Exchange Rate Regime in ASEAN5+3

Numerous plans for monetary cooperation as a prelude to monetary integration and ultimately monetary unification have been proposed. However, Genberg (2006) argues that this is a dangerous path in the context of highly integrated financial markets. An alternative approach is proposed where independent central banks coordinate their monetary policies through the adoption of common objectives and by building an appropriate institutional framework.

As early as 1994, Frankel and Wei (1994) conducted research on whether the yen bloc or dollar bloc should be the choice in East Asia. On the bias toward intraregional trade increasing, the yen should play a greater role in East Asia. However, they find little evidence that East Asia is assigning increased weight to the yen in their exchange rate policy because they have strong links to North America, and the increase in intraregional trade can be attributed to rapid growth in East Asia. They finally warned that the effect of exchange rate stability with the US dollar on bilateral trade flow, though apparently significant statistically, may be due to reverse causality.

The later occurrence of the Asian financial crisis is a verification of his projection, but the paper was famous not for this but for the method applied to estimate the composition of a supposed currency basket by the role for bilateral exchange rate variability in equations. They used weekly exchange rate data in terms of the Swiss franc in a regression of the changes in the value of the domestic currency against the changes in the values of foreign currencies to estimate the composition of a supposed currency basket to which the currency is pegged without a constant term for the coefficient of USD, DEM and JPY:

$$\Delta E_j = \beta_1 \Delta E_{USD} + \beta_2 \Delta E_{DEM} + \beta_3 \Delta E_{JPY} + u$$

Later, the method was mathematically simplified by Kawai and Akiyama (2000) as the log differences of exchange rate of each East Asian currency in terms of the Swiss franc regressed on the log differences of the exchange rate of those pegged currencies in the proposed basket in terms of the Swiss franc:

$$\Delta E_j = \alpha + \beta_1 \Delta E_{USD} + \beta_2 \Delta E_{DEM} + \beta_3 \Delta E_{JPY} + \beta_4 \Delta E_{FRF} + \beta_5 \Delta E_{GBP} + u$$

Their analysis was based on monthly data for the coefficient of USD, DEM, JPY, FRF and GBP.

Frankel and Wei (1994) found that from 1979 to 1992, all nine East Asian countries assigned a heavy weight to the dollar and many of them were pegged to the dollar alone, but during the mid-1980s, some currencies increased their weight on the yen. Ogawa and Shimizu (2006) found in 2004 and 2005 that twelve East Asian currencies (ASEAN + Korea and China) could be divided into two groups: a group of currencies which still maintained a strong linkage with the US dollar, such as the Chinese yuan, Malaysian ringgit, Philippine peso, Cambodian riel, Myanmar kyat and Vietnamese dong, and that the other group of currencies increased their weight on the Japanese yen, such as the Singapore dollar, Thai

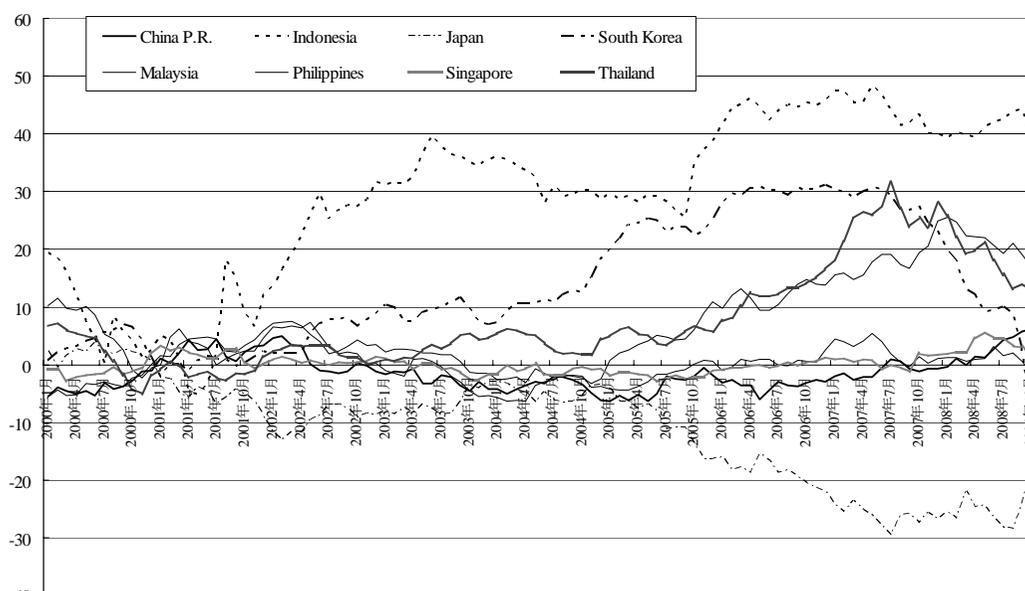
baht, Indonesian rupiah, Korean won, Brunei dollar and Laos kip. The number in the two groups is just equal at six each.

However, the more important thing that we need to mention here is that Frankel and Wei (1994) believed only in the case of a perfect basket peg, the OSL regression will uncover the correct weights regardless of the choice of numeraire used to measure to the value of currencies; when the currency is not perfectly pegged to any basket, the choice of numeraire affects the interpretation of the error term. In the estimate of Frankel and Wei (1994), most of the adjusted  $R^2$  values are quite high. In the estimate of Ogawa and Shimizu (2006), some of the adjusted  $R^2$  values are apparently lower than 0.8, as for the Indonesian rupiah, Korean won, Cambodian riel and Myanmar kyat. The result may indicate that they have moved away from the supposed basket pegging regime.

Following these methods, we estimate the possible basket that ASEAN5+3 currencies were pegged to for the periods 1999-2002, 2003-2006 and 2007-2008, as in Tables 3.8, 3.9, 3.10 and 3.11 (in Annex).

These tables show that during the period 1999 to 2009, of ASEAN5 plus Korea and China, China and Malaysia remained steadily pegged to USD and present statistically significant pegging on the dollar with a very small standard error. Singapore and Thailand showed that their currencies were mainly pegged on USD. Korea made a shift from 2007, and as the estimates show, broadening the possible basket made just a little bit of an improvement on the result. After the impacts of the crisis in the period 1999-2002, Indonesia remained pegged to USD, but with a lower  $R^2$  value. The Philippines was pegged

**Figure3.7 Monthly Real AMU Deviation Indicators among ASEAN5+3**



Source: [www.rieti.go.jp/users/amu/en/index.html](http://www.rieti.go.jp/users/amu/en/index.html).

to USD during the period 2003-2006, but the estimate result worsened, which might be due to the abnormal appreciation in 2007-2008. In short, the exchange rate regime of ASEAN5+2 showed no apparent change from the dollar peg.

The research of Ogawa and Shimizu shows that the deviation indicators of the ASEAN5+3 currencies apparently widened, as shown in Figure 3.7. This trend shows the increasing foreign exchange risk of regional trade in Asia. The risk should have escalated when the intraregional trade volume boomed, and should have resulted in a more intensive desire for Asian financial cooperation

Ogawa and Yoshimi (2008, 2009) conducted continuous research on the de-convergence trend. They found that the weighted average of East Asian currencies has been appreciating against the US dollar while depreciating against the currency basket of the US dollar and Euro up until the global financial crisis in 2008. The widening deviation reflects a coordination failure in adopting an exchange rate system among economies in the region.

The intensive trade integration and the widened deviation among currencies in ASEAN5+3 suggested the need for financial cooperation to promote regional growth by intraregional trade, as well as some obstacles in conducting policy coordination. From 2006, Eichengreen (2006b) stressed the implication of the increasing global imbalance for regional cooperation in East Asia. Faced with the impact of global financial turmoil, Lee and Park (2008) revealed the challenges for the Asian financial system and the urgent need for strengthening regional financial cooperation on monitoring and surveillance.

The currency misalignments suggest that there exist some fundamental asymmetries among the ASEAN5+3 economies (Ogawa, 2004). Those asymmetries might reflect differences in demand for regional financial cooperation, and this might be the key obstacle that needs to be solved in mechanical design.

### **Brief Summary**

ASEAN5+3, as one of the most active economic areas in the world, exhibits an increasing trend of regional integration in terms of trade, but still shows a moderate difference compared to Euro15 at the present stage. According to empirical studies and theoretical hypotheses on the relationship between trade integration and financial integration, the very low level of regional financial integration may suggest that trade integration is mainly driven by inter-industry trade rather than intra-industry trade, which is also a negative feature in the formation of an OCA. However, we need to notice the fact that intra-industry trade is increasing in recent years.

It is undeniable that trade integration is a fundamental factor in promoting regional integration. Regional integration in Asia based on trade is somewhat amazing considering the lack of support from financial integration. Real integration in terms of GDP growth and money supply still shows some diversification. Analysis of trade/financial integration will

point to their consequence on real integration. Even though regional integration among ASEAN5+3 is crippled, integration focusing on trade only, the present situation suggests the need for promoting the fundamentals of financial cooperation in the region, especially the need for establishing regional exchange rate arrangements. The fact that most countries in the region still maintain a dollar peg system has caused the task of establishing regional exchange rate coordination to become more urgent in the face of the global financial crisis in 2007-2009.

## **4. Currency Baskets for Financial Cooperation: Literature Survey**

One of the reasons for the past slow progress on Asian financial cooperation might be the lack of exchange rate risk management, as we mentioned in previous chapters. When we are talking about regional economic cooperation, the exchange rate issue is always important, no matter whether for the official sector or private sector. Generally speaking, issues relating to exchange rate risk management are somehow easily solved on an official level, as in CMI-like agreements, but for the private sector, the main player in conducting real integration in microeconomic activities, exchange rate risk is always an important factor that must be taken into consideration.

On matured foreign exchange markets, there are a large number of derivative products for hedging risks, but there are some reasons why these are prohibited from functioning well. Firstly, for most emerging economies, as in East Asia, the market for straight financial products is not well developed, and is far from the maturity of derivatives markets. Secondly, well-functioning derivatives markets must have depth and liquidity, which will generally result in speculation, as on the CDS market before the subprime mortgage loan crisis, and over-speculation will finally lead to distorted pricing. Finally, hedging with derivatives will add extra costs and is not suitable for general market participants.

### **4.1 The Rationale of the Exchange Rate Regime in East Asia**

As noted from the evolution of the Euro, the current demand for regional cooperation in East Asia, whether pointing to a regional exchange rate arrangement or aiming at the far-reaching goal of the establishment of a common currency, an Asian Euro for example, as the final solution, will be hard to achieve in the near future. However, there are several choices for exchange rate regimes.

#### **4.1.1 Fixed vs. Flexible**

The choice between fixed and flexible exchange rates has long been one of the most fundamental issues in international finance, as noted by Mundell (1961) and McKinnon (1963), but has become a hot topic since the 1990s, when currency crises became more frequent. There are three prescriptions in regard to exchange rate regimes; floating, fixed and middle. Frankel (1999) believes that no single currency regime is right for all countries or at all times and concluded that the optimal exchange rate system depends on a country's circumstances at the time.

The first question is how to define an exchange rate regime. By deeds vs. words, de facto vs. de jure, as Levy-Yeyati and Sturzenegger (2003) have suggested? By empirical

evidence or by official intervention behavior, as Poirson (2001), and Hernandez and Montiel (2001) have indicated? The announced regime is sometimes different from actual exchange rate behavior. This might be a reflection of the fear of floating, as Calvo and Reinhart (2002) have suggested. Countries that say they allow their exchange rate to float mostly do so as a soft peg. Further discussions in this direction result in a corner solution in the actual choice of exchange rate regime.

The second question is the relation between exchange rate regime and economic fundamentals, including the relative performance of alternative exchange rate regimes; the long-run behavior of the real exchange rate, especially whether there is long-run convergence to PPP in emerging economies, or real exchange rate misalignments as shown by Edwards and Savastano (1999), and Obstfeld and Rogoff (1995).

The third question is the determinants of the exchange rate regime. Mussa, Masson, Swoboda, Jadresic, Mauro and Berg (2000) conducted an overall review of the exchange rate regime in an increasingly integrated world economy and concluded by listing the following conditions of appropriate allocation for some forms of pegged exchange rate regime:

- 1) The degree of involvement with international capital markets is low;
- 2) The share of trade with the country to which it is pegged is high;
- 3) The shocks it faces are similar to the country's with which it pegs;
- 4) It is willing to give up monetary independence for its partner's monetary credibility;
- 5) Its economy and financial system already extensively rely on its partner's currency;
- 6) Because of high inherited inflation, exchange-rate-based stabilization is attractive;
- 7) Its fiscal policy is flexible and sustainable;
- 8) Its labor market is flexible;
- 9) It has high international reserves. This is a very important result because it can be extended to a number of policy implications.

In fact, Mussa, Masson, Swoboda, Jadresic, Mauro and Berg (2000) made suggestions for four groups of countries:

- 1) The small open economy with a dominant trade partner; the pegging system is clear in details;
- 2) The more advanced transition economies of central and eastern Europe, even if they aspire to membership of the EU, need time to strengthen fiscal policy and address weaknesses in financial sectors for capital account liberalization, and may encounter conflict between exchange rate stabilization and price stability in the process of catching up; a pegged regime would appear to be relevant for the future but not necessary for the near term;
- 3) Exchange rate policy based stabilization is quite successful for countries with difficult problems of stabilization and high inflation;
- 4) Some form of pegged exchange rate, a tight band, crawling band or heavily

managed floating is the relevant exchange rate regime for a significant number of large, medium sized and smaller developing transition countries, including China.

Husain, Mody and Rogoff (2004) also find that economically and financially developed countries will benefit by having an increasingly flexible exchange rate system, and that this would be distinctly more durable and appears to be associated with slightly higher growth, but for developing countries with little exposure to international capital markets, pegs are neutral, though are the least durable and show a high risk of crisis.

#### **4.1.2 Exchange Volatility and Trade**

Following the breakdown of the Bretton Woods system of fixed exchange rates and the later substantial volatility of real and nominal exchange rates, the growth of international trade declined significantly.<sup>1</sup> Topics such as the impact of exchange rate uncertainty on the volume of international trade attracted the attention of many economists, which also deepened our understanding of the transmission mechanism of exchange rate fluctuations on the economy. Conventional presumption is that an increase in exchange rate uncertainty will have an adverse effect on trade flows, and consequently will have an adverse effect on the overall economy of countries in the trade network. However, the results of empirical studies are two-fold.

On the one hand, Makin (1976), Hooper and Kohlagen (1978), Gotur (1985), Bailey et al. (1987) and Caporale and Doroodian (1994) indicated that exchange rate uncertainty has no significant effect on trade flow and support the proponents of the floating regime. On the other hand, Cushman (1983), Akhtar and Hilton (1984) and Kenen and Rodrik (1986) found that exchange rate uncertainty is detrimental to international trade and suggest a fixed regime. Technically, all these research efforts use time series analysis on the bilateral trade of industrial economies. Bahmani-Oskooe (1991), Bahmani-Oskooe and Payesteh (1993) and Arize (1996) focus on emerging markets.

Irاندoust, Ekblad and Parmler (2006) estimated price and income elasticity for bilateral trade equations between Sweden and eight major trade partners from 1960 to 2001 by likelihood-based panel cointegration. They found that depreciation of the SEK could improve Swedish exports to six of the eight partners, but for imports, only four of eight would decrease. Bahmani-Oskooe and Hegerty (2008) apply cointegration analysis to disaggregated export and import data for 117 Japanese industries from 1973 to 2006. They found that in the long run, the trade shares of most industries are relatively unaffected by increased uncertainty, while in the short run, some industries are influenced by exchange rate volatility, the effect often being ambiguous. Baak (2008) examined the impact of the real exchange rate between CNY and USD on bilateral trade and found that the coefficient value of the real GDP was greater than the coefficient value of the exchange rate, implying

---

<sup>1</sup> Similar opinions on the effect of exchange rate uncertainty on trade volume can be found in papers such as Doroodian (1999) and Bahmani-Oskooe and Hegerty (2008).

that income elasticity is higher than price elasticity in the export function they examined. In fact, this result is not unique in the literature on related research.

In regard to these two-fold results, later research has broken the issue down to details and has given more possible answers. Bahmani-Oskooe and Ltaifa (1992) investigated the effect of exchange rate uncertainty on the aggregate exports of 19 developed and 67 developing countries using cross-sectional data. They found exchange rate uncertainty to be detrimental to the export of both developing and developed countries. However, developed countries' exports are found to be less sensitive to exchange risk than that of developing countries. Furthermore, within the developing countries, those who fixed their exchange rate to one major currency were found to be subject to less risk than the other developing countries. Doroodian (1999) used a GARCH model to obtain a measure of the conditional variance of exchange rates for India, South Korea and Malaysia and found that exchange rate uncertainty has a negative and significant effect on trade flow. Baum and Caglayan (2009) provided empirical evidence on the hypotheses that exchange rate uncertainty may have an impact on both the volume and variability of trade flows by employing data on the bilateral real trade flows of 13 developed countries with 143 models during the period 1980 to 1998. They found that the impact of exchange rate uncertainty on trade flow is indeterminate, but has a consistent positive and significant effect on the volatility of bilateral trade flows and macroeconomic volatility.

A common feature in trade equations is that the effect of exchange rate uncertainty on trade is less important than national income (Baak, 2008), and the effect of exchange rate uncertainty on trade in the short run is more apparent than in the long run (Bahmani-Oskooe and Hegerty, 2008). A possible explanation for the two-fold result may reflect the different import/export elasticity, which is the key in the Marshall-Lerner condition, and which finally determines the exchange rate effect on trade (Irاندوست, Ekblad and Parmler, 2006). Generally speaking, the effect of exchange rate uncertainty on trade is larger for emerging economies than for industrial countries. Furthermore, the different import/export elasticity between emerging economies will also result in asymmetric effects of exchange rate uncertainty on trade, which is very important in conducting an East Asia exchange rate arrangement (Fang, Lai and Miller, 2009). Qin and Tan (2008) established models that form the base for counterfactual simulations of the impact of currency union and applied it to ASEAN+3. They found that intraregional variability consists of mainly short-run shocks which have significantly affected inflation and trade growth of major members. A union would reduce inflation and promote intraregional trade on the whole, but the benefit accruing to each member would vary.

However, the fact that the effect of exchange rate uncertainty on trade is significant for most emerging economies would in most cases support the necessity to reach a regional exchange rate arrangement on stabilization of exchange rates in addition to its advantage as a method for growth incentive.

### 4.1.3 Is East Asia an OCA?

Krugman (1991) provides a basic theory of target zone and crawling band with fundamental determinants of the exchange rate in a simple monetary model. A crawling band combines a central exchange rate target that can be changed in frequent small increments with a wide band within which the actual exchange rate is allowed to fluctuate, but at the edge of band, authorities are committed to intervene to prevent further movement. Williamson (1996) further developed the idea into BBC (basket, band and crawl) rules. Statistical evidence from Chile, Colombia and Israel suggests that a crawling band is capable of achieving a reasonable trade off between the conflicting objectives of reducing inflation and maintaining export growth, as well as limiting both exchange rate and reserve volatility, and outperforming both free floating and managed floating, although this is not statistically significant. Apart from the responsibility for exchange rate policy, the keys of the BBC regime include the choice of peg and intervention currency, the choice of parity, the choice of band width and the choice of rate of crawl.

After Williamson himself used the BBC framework in the analysis of regional exchange rate arrangements in East Asia, the idea became a standard framework for Asian financial cooperation.

Mussa, Masson, Swoboda, Jadresic, Mauro and Berg (2000) indicate that East Asia is in the situation of having both diversified linkages to the industrial countries and significant intraregional trade, and thus faces the problems of substantial exchange rate fluctuation within the group, as well as with the industrial countries. Joint pegging of exchange rates to a single major currency (de facto or de jure) has the advantage of coordinating the exchange rate among ASEAN+3. However, because different Asian economies were affected differently by the crisis and are recovering in different ways and at different speeds, they remain subject to different domestic and external shocks, and market pressure on their exchange rates is unlikely to be uniform. Even though it may be hard to generate formal rules for regional cooperation on exchange rate policy, it should be feasible to take some common factors that likely to influence those economies identically. A joint peg to a basket of major currencies reflecting the trade pattern of the region would be a better choice than a single currency peg.

However, is East Asia an optimum currency area? Eichengreen and Bayoumi (1999) find that the region satisfies the standard optimum currency area criteria for the adoption of a common monetary policy as in Western Europe. The small open economies in East Asia would benefit from the reduction in uncertainty provided by a common basket peg because their intraregional trade and investment level is relatively high, adjustment to shock is rapid, and supply and demand disturbances are small and symmetrical by European standards. Especially, the small open economies of East Asia would benefit from the reduction in uncertainty that would result from the creation of a durable common peg. The argument is that the domestic financial systems in East Asia are less developed, and the legacy of

financial repression and capital control limit financial depth. Currency pegs are risky where governments are required to intervene in support of their banking system. The conflict between the exchange rate peg and monetary policy would require the bands to be at least 10%!

Kim (2005) indicates that there exists a non-stationary property and no cointegration relationship in most of the bilateral convergence in East Asia, and low financial integration and volatile fundamentals in a country, as well as divergent macroeconomic variables in the region, could result in an unsustainable pegged regime. Kawai and Motonishi (2005) believe that Japan, Korea, China Taiwan, Singapore, Hong Kong, Malaysia and Thailand are well integrated in terms of trade, finance and macroeconomic activity, but ASEAN+3 is not an optimum currency area because of restrictions and the underdeveloped financial markets in some countries. Frankel and Wei (2004) find that Asia is a de facto dollar bloc rather than a yen bloc by regressive analysis on weekly exchange rate data for the early 1980s.

Alesina, Barro and Tenreyro (2002) argued that there exist well-defined dollar and Euro areas, but no clear yen area, based on historical data on inflation, trade and the co-movement of price and output. The other point they made is that the adoption of another country's currency will increase bilateral trade and raise the co-movement of prices. This is important because the decision of a country to join a union would depend on how the union affects trade and co-movement, and involvement in the endogeneity of the optimum currency area criteria. Frankel and Rose (1998) find that international trade pattern and international business cycle correlation are endogenous, closer trade links tend to have more tightly correlated business cycles. Some countries may appear to be poor candidates for OCA, but OCA entry, for whatever reason, may provide a substantial impetus for trade expansion. This will in turn result in a more highly correlated business cycle, and the country will then be more likely to satisfy the criteria to be a member of the OCA.

Thorbecke (2006) indicates that exchange rate change can cause significant declines in exports of intermediate and capital goods from developed Asia to developing Asia, and trade between Asia and the US. Fang, Lai and Miller (2009) and Fang, Lai and Thompson (2007) find that asymmetric effects of exchange rate risk affects exports differently during appreciations and depreciations. The real exchange rate risk significantly affects exports for all countries, negative or positive, in periods of appreciation and depreciation. Thus policy makers can consider the stability of the exchange rate in addition to depreciation as a method of controlling export growth. Sun and An (2008) apply a six-variable structural vector autoregressive model to estimate the degree of symmetry in shocks between a small economy in East Asia and its potential peg anchor for the period 1960-2004 and find a subset of countries that might be able to form an OCA with Japan. Shirono (2009) suggests that currency union with China tends to generate higher average welfare gains for East Asian countries whose currencies form a union with Japan or the United States. Overall, Japan does not appear to be a dominant player in forming a currency union in East Asia.

## 4.2 Some Issues concerning Currency Baskets

As for the general theory on currency basket design, Asheim (1983) studied a consistent and stable currency basket system under a wide set of circumstances. When a number of countries tie their currencies to unilaterally designed baskets of other currencies, as a non-cooperative exchange rate system, consistency and stability are preserved whenever countries within such a non-cooperative exchange rate system devalue, while sufficiently large revaluations undermine these properties. This asymmetry is caused by the use of an arithmetic basket which does not preserve effective weights when exchange rates differ from their base setting. This means that there would not be a large amount of change in a basket peg system even when the anchor currency devalued non-cooperatively. This is important when the AMU is composed of the US dollar and the Euro. Turnovsky (1981) analyzes the choice of the optimal currency basket using a general equilibrium macro model of a small open economy with perfect capital mobility. He found that price elasticity of demand is important and trade weight plays a relatively minor role. However, as soon as the domestic economy is able to influence the price of a commodity, this result no longer holds. It suggested that the trade weight is important in determining a larger country's weight in the currency basket, but not for a small open economy where price elasticity of demand is more important.

The aim of a currency basket peg system is to maintain the weighted average exchange rate stabilization against currencies in the basket. Currencies in the basket are given a certain weight and the exchange rate of the home currency will float according to the weighted average exchange rate of the basket currencies. The currency basket is not intended to maintain a stable exchange rate level, but float to a currency basket rather than float against one currency.

As a typical case of the currency basket peg system, the ECU is a currency basket composed of its member currencies. Exchange rates among those currencies in ECU were principally fixed, but actually fixed within bands. The bands were originally 2.25%, or 6% for some currencies, and then adjusted to 15% in period of crisis. The ECU as a currency basket is a float against the other main currencies,<sup>2</sup> especially GBP and USD, also in bands, but with the bands being much wider than the bands for member currencies. The criteria for a member currency include economic integration and policy coordination. The fixed exchange rate between those currencies will stabilize their economic relations and transactions, especially in trade.

---

<sup>2</sup> These currencies include 13 external trade partners of the Euro11 group and their percentage shares are: GBP 28.35%, USD 22.76%, CHF 10.75, JPY 9.43%, SEK 6.6%, DKK 4.17%, NOK 3.64%, KRW 2.72%, TWD 2.54%, HKD 2.5%, SGD 2.29%, GRD 2.16% and CAD 2.08%. The data was estimated by Werner Antweiler (2001) for calculating pseudo-exchange rates of the Euro for the period before introduction in 1999.

The final objective of a currency basket peg system is to decrease the impact of exchange rate volatility, as well as inflation, on the real economy. This was regarded as income and output stabilization in early literature. The minimization of income, output and inflation volatility is theoretically the objective function in Turnovsky (1982) and Connolly (1980). In empirical research, trade stabilization was widely accepted as the objective. The reasons for this are two-fold. One is that the transmission from exchange rate stabilization to the minimization of income/output and inflation volatility is too complicated to be written in an equation. The process would contain the whole context of macroeconomics. The second is that in most cases of the research focus is on an emerging market without a matured financial system, and the transmission from exchange rate stabilization to trade is more direct.

However, there exist different views on the selection of trade data and objective functions.

Considering the fact that the final goal of a currency basket peg system is income and output stabilization by trade stabilization via exchange rate stabilization, trade balance should be more directly determined according to the conventional macroeconomic model. The experience of economic development in China indicates the trade volume might be more important than trade balance for overall economic development and growth because trade volume will have a more comprehensive interaction with overall economic activity than trade balance alone.<sup>3</sup> A more important fact is that economic development, industrial upgrading and opening are very crucial for emerging economies. Trade volume is widely used to estimate the weights of currency baskets in Asian theoretical research and European practice.

The evaluation of the effect of a currency basket peg on trade can be presented directly by the standard deviation of trade volume. This evaluation result actually includes all impacts on trade, such as real impact, monetary impact and exchange rate impact. The exchange rate impact is just one of these. Theoretically, to evaluate every impact on trade we need to establish a specific model for each respective impact. Applying an exchange rate model to evaluate the factual result of the possible three impacts and drawing policy suggestions from this is apparently insufficient. If we had to do it in this way, a necessary precondition would be that there are no other independent real impacts and monetary impacts. The deviation of the actual level of the designated variable, generally the actual exchange rate of a member currency, to the desired level, generally the benchmark for exchange rate coordination, is in practice applied in conducting a currency basket peg system, but may be supplemented by the evaluation of the effect of the currency basket peg on trade data by standard deviation analysis, even though it might have other some problems.

---

<sup>3</sup> China's trade balance was very low before 2005, while no one can deny the significant role of foreign trade in Chinese economic growth.

The last thing we need to clarify is that it is the real effective exchange rate, rather than the nominal exchange rate, that will effectively affect overall trade. As a result, the direct goal of the currency basket peg system is the stabilization of the real effective exchange rate. In fact, real effective exchange rate can only be obtained with some time lag and there is no stable relationship between real effective exchange rate and nominal exchange rate. However, all the actual and proposed currency basket peg systems focus on real-time nominal exchange rate determination and coordination.

### **4.3 A Retrospective Glance at Currency Basket Schemes**

Discussion on currency baskets for Asia began just after the financial crisis. One of the symbolic publications of the time was *Exchange Rate Policies in Emerging Asian Countries* in 1999, in which eleven economists made excellent contributions through papers or discussions on the evidence of Asian policies concerning the long-run view on exchange rates, development and regional monetary cooperation. In 2000, another important contribution was made by Ogawa and Ito in NBER working papers, which directly focused on the regional basket currency arrangement in East Asia. Since then, more and more economists have shown an interest in the exchange rate arrangements in Asia, European economists also taking part in the discussion with contributions concerning experiences with the Euro.

#### **4.3.1 Williamson's Trade Weighted Currency Basket**

Just after the Asian financial crisis in 1997, Williamson (1999) began to carry out research on a common basket peg for East Asian currencies based on his previous work on BBC. Williamson (2005) concluded his related papers on the currency basket for East Asia. He believed there was no difficulty in shifting to, adopting and operating a basket peg from a dollar peg regime. The difference is that a single currency peg makes it simple to carry out interventions just when the dollar changes, and a basket peg will change more frequent not only when the exchange rate of the dollar itself has changed, but also when the changes in the dollar exchange rate occurs in terms of other currencies in the basket. He thinks that it is not difficult to obtain instantaneous market quotations from the exchange markets of major currencies and feed these into a computer to give a figure for the implied dollar intervention point for the central bank's market operators, thus maintaining the float within in the bands.

Williamson conducted his research on the Asian currency basket from a typical traditional perspective of the direction of trade. He thus believed that the benefit of adopting a common basket in East Asia would guarantee that no change in a third country exchange rate would disturb the trade relationships among the East Asian countries themselves. Williamson's notion of East Asia is ASEAN5+3 plus Hong Kong and Taiwan (Greater

China). Besides these nine economies, he sometimes includes India.

From the perspective of direction of trade, he found that the eight economies<sup>4</sup> on average have strong intraregional trade relations. In the meantime, all have fairly diversified extra-regional trade. Ha also finds that most of the economies export more to and import less from the United States, the trade surplus with the European Union being smaller, and that they import more from and export less to Japan. China runs a deficit with the rest of non-Japan East Asia. As a result, he suggested adopting a common basket for East Asia. The Japanese yen can be included if and when Japan shows that it is capable of limiting the fluctuation of the yen. This is due to the fact that if the yen continued to fluctuate as violently as it has in the past, the other countries of East Asia would experience significant variations in their effective exchange rates even though they stabilized their rates in terms of the dollar-Euro basket.

As for the composition of the basket, he favored using total trade weight rather than giving different treatment to exports or imports, using direction rather than currency demonization, and then relying on the choice of peg to stabilize the nominal exchange rate. If country B does not contribute more than 5% of country A's trade, country B's currency should not appear in country A's basket. According to the rule of 5%, the common basket should include all eight currencies. As for extra-regional currencies, his answer is that they should be included in the basket, especially USD and the Euro.

The next question is whether East Asia should have an individual country basket or a common basket, and which one is better. Williamson believes there are several advantages in adopting a common basket rather than a tailor-made basket based on individual trade patterns. Firstly, this would insulate the trading relationships of the region from outside disturbances. Secondly, it would create a propitious environment for further advances towards regional monetary integration since it would build in a presumption of stability among participating currencies and make it easy to construct an arrangement whereby all economies adjusted their currency values simultaneously. Third, he found empirical evidence from the behavior of exchange rates in East Asia that change in a third country's currency exchange rate will have a systematic effect on the alteration of the position of the currency to its central rate. The dollar peg or near peg had the effect of reducing intraregional exchange rate instability. However, in seven out of nine cases a common basket peg could actually have reduced instability compared both with actual historical experience and with the individual country basket. So the common basket outperforms the individual country basket in stabilizing the effective exchange rate, which is regarded as an important factor for macroeconomic stability.

Even though the individual basket compositions of East Asian economies remain different, Williamson (2005) calculated a common basket composed of G3 currencies under

---

<sup>4</sup> Taiwan was excluded for the reason of incomplete data.

the trade weights 40.2:31.6:28.2 for the dollar, Euro and yen. His more important result is that the differences for East Asian currencies of the standard deviations of East Asian nominal effective exchange rates under a common basket peg is the smallest compared to actual historical experience and individual-country pegs, except that the differences are a little higher for the Philippines and Indonesia.

#### **4.3.2 The Desirability of a Regional Basket Currency Arrangement**

Ogawa and Ito (2000) is a comprehensive declaration of Asian financial cooperation regarding the impact of the Asian financial crisis on the de facto dollar peg regime. Even though the Asian financial crisis was largely caused by capital movements rather than directly by current account deficits, trade balance is one of the most important reasons and triggers causing the sudden reversal of capital, and the prior currency overvaluation, and affected confidence in the exchange regime.

Ogawa and Ito reasonably assumed that emerging Asian economies export goods to the US, Japan and the rest of world (neighboring countries and the EU), and peg their currencies to the US dollar. When the exchange rates between the US, Japan and the Euro fluctuate, they will experience economic booms and busts. An obvious solution is a flexible exchange rate regime, but maintaining the real effective exchange rate in a relatively stable state. They defined an optimal exchange rate regime as one that minimizes the fluctuation of the trade balance. The remaining problem then is how to determine a reference rate as an appropriate real effective exchange rate and how much fluctuation is excessive.

They put forward a two-country regional export model and showed how an emerging market economy's choice of the exchange rate regime (or weight in the basket) is dependent on its neighboring country's exchange rate regime, which was determined as a Nash equilibrium.<sup>5</sup> In general, multiple equilibrium and coordination failure may result. This process of choosing the optimal Nash equilibrium can be regarded as a regional currency arrangement and the coordinate managed float by the two countries would increase the stability of the trade balance.

Ogawa and Ito (2000)'s policy implications include: Firstly, if the Asian region wishes to avoid a trade balance cycle by overvalued/undervalued exchange rate fluctuation under dollar peg, the real exchange rate must be managed. Secondly, emerging economies would be better off moving to a basket currency regime if the decision is made simultaneously instead of through a Nash equilibrium and coordination failure in terms of competitive depreciation. Thirdly, in order to assist the calculation of such a basket tailored to each country, calculating and publishing a typical currency basket (named the Asian Currency Unit, ACU) would be helpful. Each Asian economy manages its own currency within a

---

<sup>5</sup> This is a new perspective regarding Mussa, Masson, Swoboda, Jadresic, Mauro and Berg (2000).

reasonable band around ACU in order to avoid coordination failure.<sup>6</sup>

In fact, Ito, Ogawa and Sasaki (1998) had estimated the optimal weight of the US dollar and the Japanese yen in a currency basket and showed that the optimal weight of the US dollar was smaller than the estimate by Frankel and Wei (1994), as well as by Kawai and Akiyama (1998).

### **4.3.3 Searching for a Long-Term Sustainability Basket**

Ogawa and Ito (2002) point out that monetary authorities in East Asian have been unwilling to continue the de facto dollar peg following their painful experiences during the financial crisis in 1997, but that they may have had to peg to USD due to the coordination failure, and thus some form of coordination in choosing an exchange rate regime is needed. The greatest possibility is that East Asian monetary authorities might agree on identifying an anchor currency as a benchmark for their exchange rate policy. Theoretically, a common currency basket is more preferable.

Ogawa and Kawasaki (2003a) discussed the composition of the common currency basket. They investigated what type of common currency basket could be adopted that would ensure long-term sustainability. From this point of view, in an early paper of Ogawa and Kawasaki (2003b), they first defined the common currency basket as consisting of the same weight of three major currencies (the US dollar, Euro and Japanese yen), and found the common currency basket was more applicable for the creation of a common currency area than use of the US dollar as a currency anchor. This is also a key idea in two papers by Williamson (1999, 2005). Ogawa and Kawasaki (2003a) investigated what the type of common currency basket should be for trade balance stabilization. They used a G-PPP model, which detects the existence of a cointegration relationship among real effective exchange rates, to analyze the long-run equilibrium of trade when using the common currency basket as an anchor currency and the long run sustainability when the basket is placed with trade weights on the three currencies. They found that ASEAN5+China could form a common currency basket area with the three major currencies, which means that trade weights on the three currencies are optimized as the common currency basket for ASEAN5+China.<sup>7</sup> They also estimated the endogenous weight on the three major currencies in the basket and found that the weight on the US dollar in the basket is larger than the weight based on the trade of seven East Asian countries with the US. The larger weight on the US dollar in the basket tends to make the bilateral exchange rates between East Asian countries stationary in the long run. The result suggests that if monetary

---

<sup>6</sup> Later, Ogawa (2004) found that East Asian currencies can be divided into two groups, one appreciated against US dollar while the other was pegged to the dollar. It was coordination failure in conducting exchange policies among East Asian economies that caused biased change in exchange rates among intraregional currencies.

<sup>7</sup> The reason for this might be that ASEAN5+China formed production chains to export to the US and Euro area, while Japan and Korea gain surpluses with both ASEAN5, and the US and Euro area.

authorities employed the dollar peg system for their exchange rate policy, they would not have to coordinate exchange rate regime policy. This could be the reason for the de facto dollar peg prevailing in the region.

Ogawa and Kawasaki (2006) focus on the status of the Japanese yen in the region. They employ a Dynamic OLS to estimate the long term relationships between East Asian currencies in the basket and found that the Japanese yen worked as an exogenous variable in the cointegration system before the crisis, but worked as an endogenous variable and was regarded as an insider currency with other East Asian currencies after the crisis.<sup>8</sup>

#### **4.3.4 AMU as A Basket for the ASEAN5+3 Currencies**

Considering the fact that East Asian currencies make asymmetric responses to US dollar depreciation under a variety of exchange rate systems, if the common currency basket regime is adopted by East Asian economies with different trade patterns, effective exchange rates might also be unstable (Ogawa, 2004). Ogawa and Shimizu (2006a) continue to investigate the kinds of compositions of the common currency basket that could stabilize the real effective exchange rates of East Asian currencies, but in this paper, they put forward a concept for an AMU (Asian Monetary Unit) which is a weighted average of an ASEAN10+3 currencies basket rather than a G3 currencies basket.

The growing closer economic relationships among East Asian economies have caused the stabilization of real exchange rates among intraregional currencies to become more important. Exchange rate changes among major international currencies will trigger fluctuations of exchange rates among East Asian currencies, alter the competitiveness of export goods and disrupt growth patterns. Thus, the shift from a G3 basket to AMU, a currency basket composed of regional currencies rather than outside currencies, is more preferable.

Ogawa and Shimizu (2006a) calculated the standard deviations of daily nominal exchange rates of East Asian currencies with the US dollar for the period 2000 to 2005. These varied from 0.21 (Malaysia) to 12 (Indonesia), while with Japanese yen they varied from 4 (Thailand and Singapore) to 12 (Philippines). This means two things: A dollar peg system has no stabilizing effect with either the US dollar or Japanese yen. The actual exchange rate system adopted by East Asian countries has basically shifted from the dollar peg to a more flexible system, even though the dollar still has overwhelming weights. In the meantime, the average of intraregional import weights has steadily increased while trade weight with the US has decreased.<sup>9</sup> The situation calls for a basket peg, especially an intraregional currencies basket.

---

<sup>8</sup> To some extent, this result provides a possibility for Japan to participate in monetary cooperation in Asia.

<sup>9</sup> Ogawa and Shimizu also indicated the fact that ASEAN10+3 can be divided into two groups, one still having a strong linkage with the US, such as China and Malaysia, the other group having recently increased their weight with Japan.

The most important paper on the mythology of calculating a currency basket in East Asia is Ogawa and Shimizu (2005). In fact, the calculation method they put forward originally stems from the need to measure coordination failure by deviation, while the first task they need to perform is to identify the benchmark for deviation measurement. This caused them to point to the research on the currency composition of AMU.

Ogawa and Shimizu (2005) estimate AMU according to the method of calculating the ECU under EMS, defined as a basket of the currencies of ASEAN10+3. The share of a currency in the ECU was based on a combination of GDP and trade volume represented in US dollars at the market exchange rate, while for ACU, they attempted to apply four indicators of GDP measurement as basket weights: trade volume, nominal GDP, GDP at PPP and international reserves (minus gold). The sample period covers the years 1999 to 2004.

Their procedure includes two steps. Firstly, they defined the nominal exchange rate of AMU in terms of the dollar and the Euro by trade weight, that is used a currency basket composed of the US dollar and the Euro by applying trade share with these currencies for the total ASEAN10+3 economies in 1999, and obtained weights for the dollar and the Euro of 51.7% and 48.3%.<sup>10</sup> Secondly, based on the weights of the dollar and the Euro, they calculated the weights of each ASEAN10+3 currency in AMU by the four indicators. They then found that the four types of AMU moved similarly and fluctuated within  $\pm 10\%$  bands, except for the nominal GDP weight, and it was hard to tell which one was the most stable. By deviation analysis, they found that the AMU based on GDP at PPP and trade volumes were the most and next stable, suitable as candidates for the AMU calculation.

In order to calculate the deviation of East Asian currencies, they required a benchmark. They defined the benchmark as the total of trade close to balance. Assuming a one-year time lag before the change of exchange rate can affect trade volumes, they set the benchmark period as 2000-2001 and selected 2001 as the benchmark year. The deviation indicator of each East Asian currency from AMU is estimated by the following formula:

Deviation indicators (%)

$$= \frac{\text{benchmarkrateofacurrency} / \text{AMU} - \text{actualexchangerateofacurrency} / \text{AMU}}{\text{benchmarkrateofacurrency} / \text{AMU}} \times 100\%$$

In the case of GDP at PPP, the Chinese yuan accounted for 48.66% in AMU, while the Japanese yen was 28.38%, and the Korean won was 7.14%. The Indonesian rupiah reached an 18% deviation while the Philippines peso reached -20%. Other currencies were in between. In the case of trade weight, the Japanese yen took 29.23% in AMU, the Chinese Yuan took 17.32%, followed by the Korean won, the Malaysian ringgit and the Singapore dollar by 12.84, 11.14 and 10.71%, respectively. Indonesia and the Philippines again

<sup>10</sup> Ogawa and Shimizu (2006b) changes the share of the dollar and the euro to 65% and 35% by trade volume from 2001-2003.

reached the highest deviation in both directions.

Ogawa and Shimizu (2005) further calculated the nominal exchange rate ( $nex_i$ ) and real exchange ( $rex_i$ ) by the formula for economy i:

$$nex_i = \text{currency}_i / \text{AMU};$$

$$rex_i = nex_i \cdot P_{AMU} / P_i$$

or:

$$\dot{nex}_i = \dot{rex}_i - (\dot{p}_i - \dot{p}_{AMU})$$

where  $P_{AMU}$  is the price in the AMU area,  $P_i$  is the price in economy i.  $\dot{nex}_i$  is the rate of change of the nominal exchange rate,  $\dot{rex}_i$  is the rate of change of the real exchange rate,  $\dot{p}_{AMU}$  is the inflation rate in the AMU area, and  $\dot{p}_i$  is the inflation rate in economy i.

Finally, they obtain:

$$\text{Real deviation indicator } i = \text{nominal deviation indicator } i - (\dot{p}_{AMU} - \dot{p}_i)$$

They also compared this with the calculation result between the real deviation indicator and the nominal deviation indicator, and sometimes found that the difference was not equal to inflation. Thus in conducting regional surveillance, both real and nominal deviation indicators should be investigated. Generally, misalignments among ASEAN10+3 are larger in real terms than in nominal terms, but the real term can only be made available on a monthly basis

Ogawa and Shimizu (2006a) then investigated the stabilization effects on the effective exchange rate under the AMU by comparing the stability of the nominal effective exchange rates under the peg system<sup>11</sup> scenarios of the basket composed of all major trading partners (intra-regional and inter-regional) and composed of only outside trading partners, and G3 currencies. They found that the AMU peg system would be more effective in reducing the instability of effective exchange rates as more countries applied the AMU peg system, and the important result is that the AMU peg system will lead to more stability than the G3 basket peg system in four (Indonesia, the Philippines, Korea and Thailand) of seven economies. They also found that this may suggest that an AMU peg system is more effective in stabilizing home currencies for countries with a higher trade dependency with

---

11 They regard the stability of nominal effective exchange rates as leading to the stability of real effective exchange rates in most East Asian economies except Indonesia under high inflation. In fact, Williamson (2005) also used nominal effective exchange rates in his paper because he believed the difference between a nominal and a real exchange rate was simply the weighted average inflation rate. If there are no major countries with high inflation rate in the basket, nominal can be substituted for real for the sake of simplicity.

Japan.

Ogawa and Shimizu (2006b) also attempt to provide a possible way to monitor exchange rate movements by AMU deviation indicators. In Ogawa and Shimizu (2005), they actually considered that the value of AMU is quoted in terms of the weighted average of the US dollar and the Euro, and that its deviation indicator should be a proxy of its effective exchange rate in terms of the currencies of the rest of world (represented by the dollar and the Euro) for each of the ASEAN10+3 currencies, even though they supposed that all ASEAN10+3 currencies had the same trade share with the rest of world. They carried out a further explanation of the exchange rate of AMU as its exchange rate to the currency basket composed of the dollar and the Euro, and this could also be broken down into a sum of the weighted exchange rate of each ASEAN10+3 currency to the currency basket composed of the dollar and the Euro. That is:

$$USdEuro/AMU = a_1 \cdot USdEuro/BN + a_2 \cdot USdEuro/CBR + a_3 \cdot USdEuro/CYN + a_4 \cdot USdEuro/IDR + a_5 \cdot USdEuro/JPY + a_6 \cdot USdEuro/KRW + a_7 \cdot USdEuro/LOK + a_8 \cdot USdEuro/MLR + a_9 \cdot USdEuro/MYK + a_{10} \cdot USdEuro/PLP + a_{11} \cdot USdEuro/SP\$ + a_{12} \cdot USdEuro/TLB + a_{13} \cdot USdEuro/VTD$$

The exchange rate of each ASEAN10+3 currency to AMU, e.g., Japanese yen, may be given by:

$$\frac{yen}{AMU} = \frac{\frac{USdEuro}{AMU}}{\frac{USdEuro}{yen}} = \frac{\frac{USdEuro}{AMU}}{w \frac{USd}{yen} + (1-w) \frac{Euro}{yen}}$$

Where  $w$  is the weight of the US dollar in the AMU currency basket.

The calculation of real and nominal AMU deviation indicators is as of Ogawa and Shimizu (2005). Now their key job is to check the relationship between AMU and each currency's nominal AMU deviation indicator and its effective exchange rate.

They calculated two types of effective exchange rate in terms of the currencies of the rest of world, and in terms of the currencies of the rest of East Asia. They simply estimated these using the following equation:

$$(\log EER_{ROW}) = \beta_0 + \beta_1 \cdot (\log AMU) + \beta_2 \cdot (AMUDI)$$

$$(\log EER_{ROEA}) = \beta_0 + \beta_1 \cdot (\log AMU) + \beta_2 \cdot (AMUDI)$$

Where  $EER_{ROW}$  stands for the effective exchange rate in terms of currencies of the rest of world,  $EER_{ROEA}$  stands for effective exchange rate in terms of currencies of the rest of East Asia, and AMUDI stands for AMU deviation indicator.

They then found that for the Japanese yen and the Chinese yuan, most of the coefficients are significant and positive, which results in higher weights for both currencies in AMU. Coefficients of the AMU deviation indicator are also significant and positive for seven out of thirteen East Asian currencies, indicating that AMU deviation indicators have a positive relationship with their effective exchange rates.

#### 4.3.5 Other Currency Basket Schemes

Moon, Rhee and Yoon (2006) carried out research on the economic and currency weight of member countries in the ECU based on percent of EC GNP, percent of intra-EC trade and percent of EC financial support. Taking the ECU experience as a reference, they put forward proposals for an RCU (Regional Currency Unit) basket design. They suggest that the official price of the Asian basket in terms of currency  $i$  can be defined as a weighted sum of the official exchange rate of the currency:

$$RCU^i = \sum_j a_j S_j^i$$

Where  $RCU^i$  is the official price of the basket currency in terms of currency  $i$ ;  $a_j$  is the amount of currency  $j$  in the basket,  $S_j^i$  is the value of currency  $j$  in terms of currency  $i$ .

In comparison with Ogawa and Shimizu (2006b), Moon, Rhee and Yoon (2006) suggest four factors that should be taken into consideration for the RCU basket weight. They are: 1) relative weight of each country's nominal GDP; 2) relative weight of each country's GDP measured at purchasing power parity; 3) relative weight of each country's intraregional trade; and 4) relative weight of each country's bilateral swap arrangement in the CMI. They calculated the value of RCU in both US dollars and in national currencies and found that the RCU is almost equivalent to the US dollar exchange rate with in Japan, Korea and China. Their result for ASEAN5+3 showed a similar pattern!

Shioji (2006) believed, as is conventional, that the optimality of an exchange rate regime is defined mainly in terms of trade balance stabilization, but he also studied how East Asia's GDP and welfare respond to foreign shocks under different exchange regimes and discussed a better choice of exchange rate regime from these viewpoints. He developed a three-country "new open economy macroeconomics" model consisting of East Asia, Japan and the US, and assuming that East Asia pegs its currencies to a basket of the other two currencies, the optimal basket weight of Japanese yen becomes much larger.

Schnabl (2006) applied rolling econometric estimations of the basket structure in East Asia and found growing weights for the Japanese yen in most East Asian currency baskets, the role of the Euro as a reserve currency in East Asia remaining uncertain.

#### 4.3.6 Currency Baskets from the European Perspective

Christl (2006) indicated that a logical roadmap for monetary union is contingent upon high economic integration and strong political commitment, but this was not an ex-ante requirement, as of Frankel and Rose (1998) on the endogeneity of the optimum currency area criteria.

Girardin and Alfred (2008) provide lessons from Europe in using the ECU for

monitoring and serving as the denomination for the issuance of bonds for regional monetary unity for Asia. In the ECU, three economic criteria were used to determine the weight of currencies: 1) the share of the individual member state in the EC's gross domestic product; 2) the contribution of each member country to intra-EC trade; and 3) the quota of the individual member countries in the short-term support facility of the EMS. However, explicit rules about either how weights have changed or to what extent the criteria have been retained and how they were weighted have not been disclosed. It should be mentioned that the British pound and Italian lira had a wider intervention margin (6%), and received a much lower weight than that suggested by the three basic criteria. The deutschmark, on the other hand, had a larger weight.

Kim, Moon and Yoon (2004) believe that when there are relatively wider income disparities between regions and nations in East Asia than within Europe, this can lead to the isolation of economically depressed regions or countries from a given union, which may jeopardize the East Asian economic integration process itself. From the experiences of European Union, Plummer (2006) also suggested that the substantive differences between Asian countries and their differing historical contexts should not be underestimated. Pasadilla (2008) stresses that, 1) the European Union implemented the integration of the financial system with the strong guidance and supervision of a supranational authority, which East Asia does not have. 2) The European Union bureaucracy is not immune to the influence of interest groups, and they do not completely determine public policies. In Asian countries, the linkages between politicians, influential families and economic interests are more stringent, and so the practicalities of financial services integration in East Asia will be much more problematical.

#### **4.4 The Evaluation and Function of Currency Baskets in Asia**

The key for the OCA is the benchmark by a currency basket, not only for regional exchange rate coordination, but also for regional monitoring and surveillance, and thus East Asian financial cooperation is required. The operation of a basket peg system is also a typical case of regional cooperation.

##### **4.4.1 The Evaluation of Currency Baskets**

As Frankel (1999), and Yoshino, Kaji and Suzuki (2004) have indicated, there does not exist in general an optimal choice for the adoption of a currency basket peg with trade weights, because each loss function for each policy objective in choosing the optimal exchange rate system can only minimize for one circumstance.

The comparison made by Williamson (2005) concerning the stabilizing effect of a

common basket or an individual basket on real effective exchange rates shows that the best currency basket for East Asia is the former. Rajan (2002) believes the common currency basket system might be favorable because the possibility of competitive devaluation would continue to exist if monetary authorities in East Asia choose their own individual currency baskets.

Wang (2002) attempts to suggest a more symmetrical approach for the promotion of regional financial cooperation in East Asia, and thus further policy development is needed here. Wang (2008) believed that the BBC (basket, band crawl) would be a more desirable exchange rate system that East Asia could adopt jointly. Participating economies link their currencies to the common basket (ACU) with a band, as in the EMS, and the ACU is linked to the basket of the dollar and Euro by a regional agency. A more valuable idea that he put forward, however, is that in the regional BBC system, the US and Japan should fix the yen/dollar exchange rate within a band in the short and medium run and fix the rate in the long term. This is important because the lower interest rates of Japan compared with the US and emerging East Asia economies will induce carry trade and excessive capital inflow when the expected exchange rate of the yen is weak or uncertain.<sup>12</sup> When participating economies crawl their central rates within the band, the real effective exchange rate using unit cost indices needs to be used in order to keep their export competitiveness constant. This is also a unique suggestion. As with the criteria of the Euro, prudential fiscal policy, flexible prices of goods and productive factors, proper interest rate policy and effective use of foreign reserves are also needed.

Ogawa and Shimizu (2006a) believe that the real choice is not the possibility of coordination failure when East Asian economies peg their home currencies to a common currency basket or exchange rate fluctuations under a dollar peg regime. In these two situations, all uncertainties exist if monetary authorities are risk averse. So why not try a change from the dollar peg? One way to implement regional coordination is by having all the monetary authorities in the region make a commitment to peg to a common currency basket as a benchmark in conducting their exchange rate policy. In fact, such a regional currency arrangement would also help to prevent competitive depreciation among the related currencies and solve the problem of coordination failure.<sup>13</sup>

Park and Wyplosz (2007) examine the difference among various exchange rate arrangements aimed at stabilizing real and nominal effective exchange rates. They formed an exchange rate behavior reaction function to detect the exchange rate system in East Asia, allowing for the possibility of exchange rates staying within a band to detect intervention,

---

<sup>12</sup> This suggestion is totally different from the roadmap of Ogawa and Shimizu (2006c), where the Japanese yen did not join in the regional basket peg system for the reason of the yen's depth in the exchange market.

<sup>13</sup> Theoretically, by pegging to a common currency basket, competitive depreciation can still exist because the asymmetric effect of the basket value depends not only on one currency, but all currencies in the region that take a share.

and then stipulating the objectives of intervention, finally coming to the regional currency arrangements. They believe that as long as the reluctance to abandon any element of monetary sovereignty remains strong, the only way towards monetary integration must be imperfect and highly incomplete. Formal basket pegging is unlikely to be sustainable, but can easily be mimicked with country-specific pegs. Dirty float or soft pegging is the only possibility.

#### **4.4.2 Functions of Currency Baskets in Asia**

The endogeneity of the optimum currency area criteria raise a question about the costs and benefits of the OCA, or broadly speaking, the costs and benefits of a currency basket peg regime.

Hoxha, Kalemli-Ozcan and Vollrath (2009) compare welfare in a calibrated neoclassical model of consumption under autarky to welfare under financial integration, including the productivity gains from the inflow of FDI, using data from 92 countries for the period 1960 to 2000. They found substantial gains from international financial integration arising from a persistent difference in fundamentals across nations. Apart from the trade benefits, there are also benefits from commitment on exchange rates and inflation. In the stabilization policies, however, they had to pay the costs of co-movement before a perfect integration was achieved, and independent monetary policy would also disappear.

One conclusion we have reached in Chapter One is that the core in promoting Asian financial cooperation is the regional exchange rate arrangements, or at least the exchange rate policy coordination among economies in Asia. The coordination can be firstly defined as the choices between an exchange rate regime or the choice of currency anchor, or the currency basket benchmark. Secondly, exchange rate policy coordination can be regarded as a policy target, in domestic monetary policy for example, which can have impact on the exchange rate level of a national currency directly, or trade stabilization from the perspective of an external balance. The choice between the two considerations is actually related together in theory.

The decision of policy choice depends on the policy target and economic situation. Generally speaking, macroeconomic policy is countercyclical and hence the target of monetary policy is generally represented as stabilization in terms of price level, trade, economic growth, and more broadly speaking, the policy preferable is a neutral economic circumstance. Even though the countercyclical policy might cool down an overheated economy, or give incentives to growth when the economy is in a slump, the effect of policy should be neutral in the long run, simply allowing the economy to run in its own way. Neither inflation nor deflation are preferable, and neither should the trade balance be affected, whether positively or negatively. The final goal of policy will aim at providing a long term preferential situation for growth. The more important thing is that domestic policy will focus on maintaining a favorable environment for trade, rather than stabilizing trade

volume or trade balance. Policy should not concern itself with deficit or surplus in the short run. In this sense, trade stabilization is not to stabilize trade volume or trade balance, but to prevent exogenous impacts on trade, especially the impact of an exchange rate change in a third currency. The basic assumption here can be presented as trade stabilization by “exogenous shock prevention” in the choice of exchange rate regime and currency anchor in Asian financial cooperation.

Considering the fact that the final solution for regional monetary cooperation such as a common currency will be hard to achieve in the near future, the currency basket is still important in conducting policy coordination and regional surveillance by indicating the direction and range for authorities in the region, functioning as the EMU did in Europe before the introduction of the Euro.

A regional currency basket serving as a benchmark will be an inevitable topic in deepening regional financial cooperation. The benchmark can help: 1) to promote regional financial market development and cross-border transaction, 2) to decrease exchange rate uncertainty,<sup>14</sup> 3) to increase competition across East Asia by direct comparability of prices and wages, which will finally lower prices for consumers and bring improved investment opportunities for businesses, 4) to promote the integration of regional capital markets, 5) to prevent competitive devaluation and speculative attack on foreign exchange markets, 6) to attract international investors and expand the investor base, increasing market depth by cross-border transactions on regional financial markets, 7) to prevent inflation by pegging to currency baskets, 8) to enhance domestic fiscal discipline, and 9) to serve as a benchmark for regional surveillance and policy coordination.

The functions of a currency basket in East Asia include:

First, the basket value is a general index for measuring the exchange rate change in East Asian currencies as a whole to the currencies of their main trade partners such as the US and Euro area countries, for making evaluations of the trade balance trend and enabling collective action upon the judgment;

Second, the basket value is also an index for measuring the exchange rate change, as well as the deviation, between ASEAN5+3 currencies, and for implementing exchange rate stabilization among regional currencies, providing statistical evidence for regional dialogue on financial cooperation, especially exchange rate cooperation;

Third, the basket value can also serve as a key index for regional surveillance of the economic situation, to check whether there are abnormal changes in individual currencies which might reflect unreasonable trends in capital flow or sensitive market reaction to some unnoted fundamental change.

Other functions, such as the denominating currency of bond issuance on regional bond markets, a pricing reference for regional currencies on derivatives markets, and providing a

---

<sup>14</sup> Exchange rate uncertainty cannot be totally eliminated under a BBC regime, but can be greatly decreased.

basis for a regional exchange rate mechanism or an Asia Euro are future potential applications of the basket.

In short, a currency basket is a reasonable solution and an inevitable topic in dealing with regional cooperation in a theoretical manner.

#### **4.4.3 Approaches to Asian Monetary Integration**

Ogawa and Shimizu (2006c) have described an overall image of a pathway to Asian monetary integration. They suggest using the value of a basket of major international currencies outside the region as a reference for carrying out regional coordination in exchange rate policies by not deviating from the common reference, and achieving stability of intraregional exchange rates, basically by joint floating against the outside currencies.<sup>15</sup>

As for the details of the basket design, their analysis is based on a series of former research efforts, including:

1) Dollar peg vs. basket peg. In the de facto dollar peg, the dollar weight in the currency basket is more than 90%. Considering that the intraregional trade share in East Asia was larger than 50% in 2004, the stability of intraregional exchange rates is more important for regional economic growth and stability. A peg on the dollar is a solution, but there is a high possibility of deviation of the effective exchange rate from a desirable level, while pegging to a basket with a trade weight could stabilize the effective exchange rate.

2) G3 basket vs. AMU. Since the AMU is a currency basket composed of regional currencies similar to the ECU, a common AMU peg system would be more effective in reducing fluctuations in the effective exchange rate than the common G3 basket peg system.<sup>16</sup> Yamaguchi (2005) provided further evidence on this result.

3) Common basket vs. individual basket. Williamson (2005), Ogawa and Shimizu (2006) and Rajan (2002) have all found superior performance of a common basket peg over a series of tailor-made currency baskets.

4) Converting between the AMU, a G3 basket and an individual basket. It was found that the results of both the AMU and the individual basket conversion to a G3 basket will be affected by the choice of currency regime, and since all East Asian economies have strong trade relations with China, as Shioji (2006) has indicated, China's exchange rate regime choice will theoretically interact with the rest of East Asia's choice.

5) ECU and AMU. The ECU was used as the unit of account, a limited-flexible exchange rate system with band of  $\pm 2.25\%$  (widened to 6% for the Italian lira) with the Deutschmark playing an important role, while the AMU serves only as a numeraire and as a surveillance index.

---

<sup>15</sup> Here, they have a problem, since the Japanese yen had been regarded as an outside currency rather than a regional one; a common basket composed of G3 currencies will partly decrease the exchange rate fluctuation between them.

<sup>16</sup> This is especially conspicuous for Indonesia, the Philippines, Korea and Thailand.

6) Steps towards a common basket system in East Asia. Mori, Kinukawa, Nukaya and Hashimoto (2002) put forward a two-step approach, first by an individual basket and then a common basket. Ogawa and Shimizu (2006c) divided this into five detailed steps. The first is regional surveillance by an AMU deviation indicator, the second is that ASEAN+2 adopt an individual G3 basket, the third is a common G3 basket with AMU deviation surveillance, the fourth is a peg on the AMU, a common regional currency basket, the fifth is introduction of a bilateral grid method based on the AMU to conduct exchange rate interventions, as in the EMS.<sup>17</sup>

Based on his early estimate of Asian financial cooperation in Eichengreen and Bayoumi (1999) that East Asia satisfies the standard optimum currency area criteria for the adoption of a common monetary policy, Eichengreen (2007) believes there are two alternatives that go some way towards meeting the desire for stable exchange rates while a consensus on the desirability of an Asian monetary union is still being forged; a parallel currency and harmonized inflation targeting. Even though the parallel currency approach is unproven and inflation targeting is a proven strategy, Eichengreen appeals for a parallel currency because it will make the parallel currency more attractive if it is given legal tender status alongside the national currency. He believes the decision to move to a single currency could be driven by economics rather than politics. Only when a critical mass of producers, exporters and investors has adopted the parallel currency would it be clear that Asian economies were ready for monetary unification. In terms of stabilizing exchange rates, promoting intraregional trade, simplifying investment planning and encouraging cross-border participation in local bond markets, the parallel currency is more stable and simple compared to the ACU. Besides taking the parallel currency as a unit of account, a store of value and medium of exchange, officials can help to prepare the way for the parallel currency in a similar manner as for the ACU, including the construction of a free trade area and issuing debt denominated in the parallel currency.

Choi and Yoon (2005) try to make the ACU shift from a basket numeraire to a parallel currency by real transactions and asset management. After growing acceptance by private market participants, such as private claims denominated in ACU becoming possible, the ACU can be used as a legal tender in the region, promoting intraregional trade and enlargement of financial markets as a single integrated market. Compared to Eichengreen, they suggest the establishment of a multilateral exchange rate arrangement with the ACU as the Asian Exchange Rate Mechanism (AERM) in the Asian monetary system.

Moon, Rhee and Yoon (2006) also put forward strategies to make the RCU a parallel currency in Asia, while they also mention the very important problem of asymmetry for foreign exchange market intervention, because the change in the exchange rate vs. RCU will

---

<sup>17</sup> They have discussed the stabilization intervention for the Japanese yen. Because the foreign exchange market for yen is too deep and difficult to be intervened in effectively, they suggest that the yen can be included later.

be smaller in a country with a larger weight than in a country with a smaller weight. Moon and Rhee (2007) give a further explanation on the usage of RCU, believing that in order to deal with asymmetry problems, the largest share attribute to RCU of a regional currency should not exceed one-third and contribution to cooperation, such as a share in the CMI, should be further emphasized.

Lee and Yoon (2007) conducted research on the feasibility of monetary integration in East Asia by OCA criteria. They found that criteria such as openness and inflation show favorable conditions for monetary integration, while volatility of real exchange rate, financial integration and economic synchronization show a less favorable situation than Europe. They drew implications from the European experience and developed a roadmap for Asian monetary integration in three stages. The first is creating an environment for coordinated policy by multilateralization of the CMI, institutionalization of policy dialogue and creation of a system for information sharing. The second stage is establishing a common exchange rate mechanism by exchange rate cooperation, introducing a regional currency unit and creating financial facilities for intervention. The third stage is creation of a single currency by creating an Asian central bank and substituting national currencies with a regional currency unit.

Gerling (2008) warned about the impact of financial integration on wealth inequality in the presence of capital market imperfections. Fratzscher and Stracca (2008) identified the fact that the EMU has helped reduce the impact of political shocks on the domestic economy of member states, but has magnified the transmission of political shocks within the Euro area. Herrnabb and Winkler (2008) stress that better developed and more integrated financial markets increase the ability of emerging markets to borrow abroad.

### **Brief Summary**

As the most active region of economic growth, most of the economies in East Asia can be regarded as emerging markets. Hence the effect of exchange rate stabilization on trade and growth will be positive. This is the rationale of Asian exchange rate arrangements.

Even though there exist some gaps between the theory and practice of currency basket operation, discussions on various currency basket schemes have been a hot topic in the past ten years. The results from Ogawa's research group are the most comprehensive, containing practical details for operation and empirical data.

As Chapter Three has suggested, integration in East Asia may at present be somewhat far from the creation of a regional currency, but the demand for regional cooperation is urgent. A currency basket as a regional exchange rate benchmark is a starting point towards a common currency, as occurring in Europe more than ten years ago. However, the most important function of the basket benchmark is that it could serve as an effective indicator for regional surveillance and coordination. This is a crucial precondition for the activation of real regional cooperation.

## 5. Design of a Currency Basket for Asian Financial Cooperation

It is clear that Asia needs to have a regional currency basket benchmark for conducting financial cooperation and much research has been carried out on this topic. However, I would like to make a contribution from the perspective of a BBC regime alternative for East Asia on the basis of the former results, and provide a framework as well as details for a basket design (anchor and regional), weight choice (not only trade), feasible band determination and evaluation by empirical data simulations.

### 5.1 Initial Assumptions

The optimal composition of a currency basket is determined by the proposed goals to be optimized. Even though the basket is aimed at exchange rate stabilization, we still need to clarify the aim of exchange rate stabilization; trade or investment?

The ultimate goal of regional financial cooperation is economic growth, and thus trade stabilization is the first priority to be taken into consideration, as we suggested in the previous chapter. At the present stage, FDI is the main regional investment, followed by trade integration. Regional portfolio investment can be expected only when regional bond markets have been developed. Exchange rate risk management of international reserves is the other concern of the regional exchange rate arrangement in East Asia.

#### 5.1.1 Pegging on Interregional Currencies

There are some issues that we need to discuss before talking about weights in the basket. The first one is currency selection.

The first question is; what kinds of trade are we aiming to stabilize?

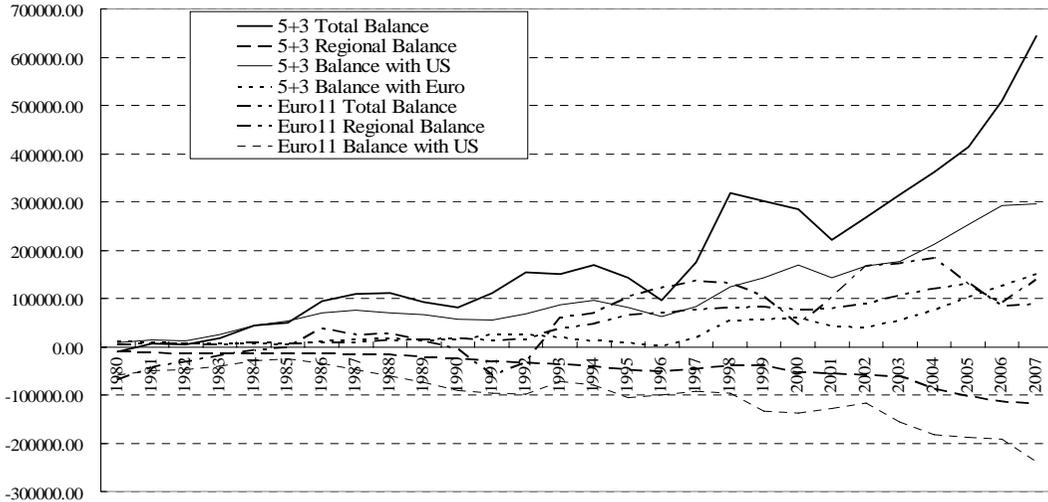
In contrast to the Euro area, the most striking feature of the trade among East Asian economies is the export-oriented rather than the near balanced intraregional trade among Euro area members. This has been decided by the economic structure and global division of labor of East Asia. Even though this has resulted in a global imbalance, export-oriented growth is hard to change without long-term effort. In fact, export-oriented growth in East Asia presents two facets, as Figure 5.1 shows.

One is that the total trade surplus of ASEAN5+3 is higher than that of Euro11. Considering the fact that the regional GDP of Euro11 is much higher than that of ASEAN5+3, the ratio of the trade surplus to the regional GDP of ASEAN5+3 should be much higher than that of Euro11. Trade stabilization, not only in trade balance but also trade volume is extremely important for the economic growth of ASEAN5+3.<sup>1</sup>

---

<sup>1</sup> In China, the contribution of net exports to GDP is small, but no one can deny the importance of trade to Chinese economic growth in terms of spillover effect.

**Figure 5.1 Trade Balance of ASEAN5+3 and Euro Area (in million USD)**



Source: DOT, 2009.

The other facet is that the regional trade balance among Euro11 is in surplus, which is compensated by their trade deficit with the US and the rest of the world. However, the regional trade balance among ASEAN5+3 is in deficit, and is compensated by the trade surplus from outside the region, mainly from the US and Euro11.

A more striking fact is that the interregional trade surplus is much higher than the intraregional trade deficit, which is a key factor supporting economic growth in ASEAN5+3. Holding to this proposition, the stabilization of interregional trade is much more important for ASEAN5+3 than the importance of intraregional stabilization in Euro11.

Intra-industry trade in the region and the surplus produced by interregional trade may suggest that in order to stabilize intraregional trade, the interregional trade should be stabilized first. This might be the reason why previous research on the AMU/ACU suggested pegs on the US dollar and Euro.

### 5.1.2 Japanese yen

The next problem is the Japanese yen. Should it be included in the basket or regarded as an international currency and an anchor as one of the G3 currencies?

From the perspective of trade, as the most developed country in the region, Japan has a surplus not only with the US and Euro area, but also with ASEAN5+3. In other words, under the current pattern of regional production chains and division of labor, it may be that ASEAN5+3 can only produce a trade surplus with the US and Euro area when they are running a trade deficit with Japan.<sup>2</sup>

On the one hand, this pattern suggests that any exchange rate arrangement would be

<sup>2</sup> ASEAN5 as a group has a trade surplus with China.

welcomed by Japan because of great trade balance fluctuations. It is clear that it might be of advantage for the currencies of ASEAN5+3 and the Japanese yen were pegged to a regional basket, especially in the depreciating period of ASEAN5+3 being hit by a crisis, which would cause the yen to appreciate against the currencies of ASEAN5+3. Considering the fact that Japan's trade surplus with the US is dominant within Japan's total trade surplus, the best choice for Japan would be if the regional exchange rate arrangement among ASEAN5+3 were locked on to the US dollar (or the Euro).

On the other hand, ASEAN5+3 also need to stabilize their trade with Japan. This is their basic motivation for taking part in the regional exchange rate arrangement. As we have shown in Table 3.5, a stable exchange rate in their currencies against the Japanese yen is important for them. In the meantime, their currencies also need to be stable with the US dollar and Euro in order to stabilize their trade with these partners.

The key point here is, in order to prevent changes in a third currency's exchange rate fluctuation disturbing regional trade relations among ASEAN5+3, especially since the Japanese yen fluctuates against the US dollar and when most currencies of ASEAN5+3 are still pegged heavily on the dollar, the exchange rate fluctuation of the Japanese yen against USD often turns into exchange rate fluctuation of ASEAN5+3 currencies against the Japanese yen. This means that we should and could regard the Japanese yen as a regional currency and put it into the regional basket.

The most important reason why the Japanese yen should be included in the regional basket rather than the anchor basket is that Japan's intraregional trade takes the No.1 position among ASEAN5+3 and the intraregional trade of Japan has exceeded its trade volume with the US in the past ten years, which indicates the importance of trade relations for Japan and the ASEAN economies. This is a very important factor to be considered when discussing regional cooperation in Asia.<sup>3</sup>

### **5.1.3 Differences in Exchange Rate Regime between ASEAN5+3 and the Euro**

As we have mentioned above, there is a big difference in trade patterns between ASEAN5+3 and the Euro area. Economic growth in ASEAN5+3 is export-oriented. A more exact expression is that the economic growth of East Asia has been achieved by interregional trade surplus. In the meantime, according to research carried out by Ando and Iriyama (2009), intraregional trade serves interregional trade. In order to prevent the changes of a third currency's exchange rate fluctuation disturbing ASEAN5+3 regional trade relations, ASEAN5+3 currencies need to be pegged to each other in a regional currency basket composed of regional currencies. However, as Table 5.1 (in Annex) shows,

---

<sup>3</sup> As we have mentioned previously, Ogawa and Kawasaki (2006) proved that even though the Japanese yen worked as an exogenous variable in the cointegration system before the crisis, it works as an endogenous variable and can be regarded as an insider currency with the other East Asian currencies after the crisis.

ASEAN5+3 also need to float together against the US dollar and Euro to stabilize their trade relations with these partners. The US dollar and the Euro should be included in the anchor basket.

In short, to conduct financial cooperation by establishing a regional exchange rate arrangement in Asia, we need two currency baskets. One is the common anchor currency basket (anchor basket) that is composed of currencies outside the region, such as the US dollar and Euro. The other is the common regional currency basket (regional basket), which ties them together and pegs them to each other to prevent changes in a third currency's exchange rate fluctuation disturbing regional trade relations among ASEAN5+3.

The reason for establishing two currency baskets for East Asia is that the trade pattern of the Euro is totally different from the trade pattern of ASEAN5+3. The intraregional trade of the Euro area is close to balance, if not, just a little bit in surplus against their huge regional GDP, and the surplus is compensated for by the interregional trade deficit. From this point of view, compared to ASEAN5+3, the Euro area is more likely to be a self-dependent economy, supporting growth through their own regional market. As a result, the stabilization of intraregional trade is their first priority. In order to prevent exchange rate fluctuation among regional currencies, they composed the Euro simply as a currency basket of member currencies with less concern about finding an anchor outside the region, allowing the currencies to float together in accordance with the basket.<sup>4</sup> Since they focused on the stabilization of regional trade, their main concern was to have one currency basket.

## **5.2 The Design of an Anchor Basket for East Asia**

The unique requirement of Asian exchange rate arrangements is that they involve two currency baskets, and therefore involve two kinds of weights determinations; the weights determination of the anchor basket, and those of the regional basket.

### **5.2.1 Assumptions**

Regional trade patterns in ASEAN5+3 show that in terms of trade balance, the US and the Euro area are the dominant sources for East Asia, as in Figure 5.1. On the other hand, in terms of trade volume, the ratio of intraregional trade and the ratio of trade with the US and Euro area are almost equivalent to each other in ASEAN5+3, as shown in Table 5.1. This will give us two options in the design of an exchange rate arrangement: One is the two basket scheme, as mentioned above, which aims at trade stabilization. The other gives the same attention to intraregional as well as interregional currencies, or gives equal weight to both in the basket, and results in a one basket scheme. Figure 5.1 shows that in order to

---

<sup>4</sup> In fact, the anchor basket exists only in theory. Werner Antweiler (2001) has made an estimate of it.

stabilize both intraregional and interregional trade, it is necessary to have the regional basket pegged to the anchor basket, which is composed of the US dollar and the Euro.

The first question is what kind of trade should be the determining factor for the basket weight. In the ECU currency basket, it was the total trade volume. In the newly revised BIS effective exchange rate indices, the basket was weighted by an average of import and double export weights because export weights suggest the relative importance of direct export competition on the international market. This rule is also accepted by the ECU and Euro. As for the trade flow, most of the alternative calculations of effective exchange rates are focused on manufactured goods, but the US Federal Reserve includes everything except oil, gold and military items (Klau and Fung, 2006). The reason for favoring trade volume as the main determining factor of the weights in the ASEAN5+3 currency basket is the overwhelming intraregional trade share among all the ASEAN5+3 economies. In the case of China, even net exports are relatively small in GDP formation, but the high trade dependency suggests the importance of foreign trade to economic growth in China. In the case of ASEAN5+3, the picture is similar. With the high trade dependency of ASEAN5+3 (except Japan) and the overwhelming intraregional trade share, as a main part of their economic activity and transactions, intraregional trade among ASEAN5+3 cannot be neglected in the regional basket design. This perspective is also the reason why we need to design two baskets for the East Asian exchange rate regime in order to reflect the importance of both interregional and intraregional trade.

The second question we need to ask concerns the benchmark year in the basket design, as in Ogawa and Shimizu (2005). They defined the goal of the optimal basket as trade stabilization, so they chose the year 2001 as the benchmark year in calculating deviation indicators for currencies in the region. However, we need to set a benchmark year not only as a year in which the region was close to trade balance, but also as the beginning of the basket resetting interval. Considering the fact that the Asian financial crisis suddenly appeared as a huge shock in 1997 and the launch of the Euro was in 1999, we would like to position the resetting point at 1999. Because the Asian economy is changing faster than the Euro area, the length of time for the resetting period should be shorter than that for the ECU, and I would like to decide upon a 4-year interval compared with the five-year resetting interval for the ECU. Hence, one of the interval periods should be from 1999 to 2002, and the following period should be from 2003 to 2006, just before the impact of the financial turmoil from the subprime mortgage crisis in the US, a recent shock that began in 2007 and became severe in 2008. This interval is also coincident with the benchmark of 2002 of Ogawa and Shimizu (2005). As an historical retrospective, since the data for the pseudo-exchange rate of the Euro can be estimated from 1995, the first period can be set as 1995 to 1998.

In 2001, as Ogawa and Shimizu (2005) have illustrated, regional trade was closest to balance in terms of total trade, regional trade, trade with US, trade with the Euro area and

ratio of total trade balance to GDP. However, considering the J curve effect and the complementarity of FDI to trade, we can consider the exchange rate level in 1999 to be better with regards to a base period of the exchange rate index. It is true that ten years is too long for economic growth and structural change in ASEAN5+3, and thus we will try to set up different scenarios for both baskets by using an average value from the previous interval.

The last question is the kind of exchange rate we will focus on. Regarding the meaning of trade stabilization by exchange rate stabilization, we should clarify that the exchange rate should be the real effective exchange rate, or at least should be the nominal effective exchange rate rather than the exchange rate against US dollar alone, even though ASEAN5+3 gains much from the trade with the US. However, considering the fact that there are some differences when calculating the REER, data availability and data compatibility, I still use the exchange rate against the US dollar as a basic analysis.

### 5.2.2 Weights of the Anchor Basket 1

As we have shown above, the anchor basket of the East Asian exchange rate regime will be composed of the US dollar and the Euro.

We start from the trade weight and calculate the trade weight of ASEAN5+3 with the US and Euro area first.

Considering the fact that nearly a third of the trade share of ASEAN5+3 was with the rest of world besides trade with the US, the Euro area and intraregional partners, and considering the fact of the global dollar standard, the anchor basket peg on the US dollar will also have a positive stabilization effect on ASEAN5+3 trade with the rest of world. This means the US dollar should have a higher weight than its weight simply measured by trade between ASEAN5+3 and the US. Assuming that the third of the trade volumes of ASEAN5+3 that were conducted with the rest of world were settled in US dollars, we find the final trade weights for the US dollar and the Euro to be 0.7061 and 0.2939, 0.7272 and 0.2728, 0.7316 and 0.2684, respectively, in the periods 2003-2006, 1999-2002 and 1995-1998, calculated by data from *Direction of Trade*, IMF.<sup>5</sup> We can note that the share of trade with the US is slightly decreasing.

Apart from trade weight, with the growth in regional international reserve accumulation, reserve management, such as the rise of sovereign wealth funds in the region,<sup>6</sup> has become a hot topic and main concern among ASEAN5+3.

The other problem is whether portfolio investment on international financial markets should be taken into consideration in anchor basket weight design in order to reduce those exchange rate risks.

---

<sup>5</sup> We calculated the total trade of ASEAN5+3 with the US and Euro area in the three intervals, and then calculated the relative shares of the US and Euro area.

<sup>6</sup> In fact, the rise of sovereign wealth funds has become an international concern and has resulted in the agreements of the Santiago Principles on international surveillance.

The data for East Asian portfolio investment<sup>7</sup> on European and US capital markets is from the IMF CPIS database, but this lacks Chinese data. However, although the data on East Asian international reserve investment is confidential, we can simply estimate this from the global average of the Currency Composition of Official Foreign Exchange Reserve from the IMF COFER database for the Currency Composition of Official Foreign Exchange Reserve of ASEAN5+3 concerning the share of US dollar and Euro assets in the total allocated world reserve. There exists a large difference between the share of the US dollar and the Euro in total portfolio investment and foreign reserve allocation, which reflects the different behaviors of portfolio investment and foreign reserve allocation as, respectively, aggressive and conservative.

Since portfolio investment is more aggressive and hence is more ready to take risks, we will take the foreign reserve allocation into consideration only, even though it is only an approximate estimation. The shares of the US dollar and the Euro in the total allocated world reserve of ASEAN5+3 were 0.7273 and 0.2727, 0.7778 and 0.2222, 0.9198 and 0.0802, respectively, in the periods 2003-2006, 1999-2002 and 1995-1998 according to COFER data.<sup>8</sup> We can note that the share of official foreign exchange reserve allocated to US dollar assets is decreasing, especially after the launch of the Euro.

The last job is the determination of the anchor basket value by the weights of trade and investment. Here, we just simply give them the same weights.

Hence, we have an anchor basket value determination formula as follows:

$$\text{Anchor Basket Value} = 0.5 \sum_{i=2}^i W_{Ti} C_i + 0.5 \sum_{i=2}^i W_{Pi} C_i$$

Here  $C_i$  stands for currency of country  $i$ ,  $W_{Ti}$  stands for the trade weight of country  $i$  and  $W_{Pi}$  stands for the portfolio investment of country  $i$ .

The final composition of the anchor basket value for the three intervals is as follows:

$$\begin{aligned} \text{Anchor Basket Value} &= 0.8257 \text{ USD} + 0.1743 \text{ Euro (1995-1998)} \\ &= 0.7525 \text{ USD} + 0.2475 \text{ Euro (1999-2002)} \\ &= 0.7167 \text{ USD} + 0.2833 \text{ Euro (2003-2006)} \end{aligned}$$

In fact, if the value of the anchor basket presented in terms of USD, and taking the base value of the anchor basket as one USD, a unit value of the anchor basket should be composed of, for example in the interval of 2003-2006, 71.67% of a US dollar and 28.33% of a Euro, which would also be equivalent to one dollar. A unit value of the anchor basket, if presented in terms of USD should be simply converting the Euro into the dollar at the market exchange rate at the time. For example, when the exchange rate of the Euro against the dollar was 1 Euro equaled 1.4039 dollars on July 30, 2009, then the unit value of the

---

<sup>7</sup> The definition of portfolio investment is as of the definition in the Balance of Payments Manual, fifth edition.

<sup>8</sup> The investment weight calculation is similar to the trade weight calculation

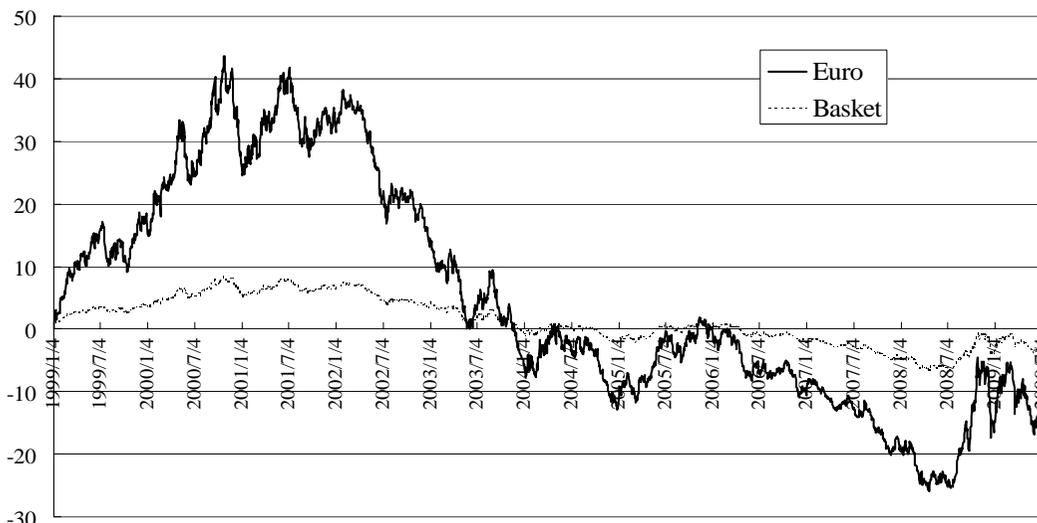
anchor basket was 1.1144 dollar at the time.

In the determination formula for the anchor basket, if the value is presented in terms of the US dollar, both the determinants of the dollar and the Euro value should be equal and equal to one dollar, the change in the value of the anchor basket in terms of USD is 28.33% of the exchange rate change of the Euro against USD in the period 2003-2006. Mathematically, we can simply take the differential value of all three terms in the determination formula and turn the basket value determination formula into the basket volatility determination formula. Thus, we can apply the determination formula to calculate exchange rate changes in the anchor basket.

Hence, we can calculate the exchange rate changes in the anchor basket against the US dollar and obtain Figure 5.2. We need to note that the exchange rate volatility of the anchor basket against the US dollar in any particular period is determined by the weight based on the data from the previous period. The exchange rate volatility of the anchor basket against USD from 1995 through 2006 will be calculated by the daily exchange rate change of the Euro.

In Figure 5.2, we can see that the anchor basket has an obvious compromising effect on the exchange rate volatility of the Euro against the dollar.<sup>9</sup> In fact, the exchange rate volatility of the anchor basket is more dependent on the dollar, as defined by the higher weight in the determination formula. Another thing we find here is that the weight changes have no apparent effect on the exchange rate of the anchor basket in the long run.

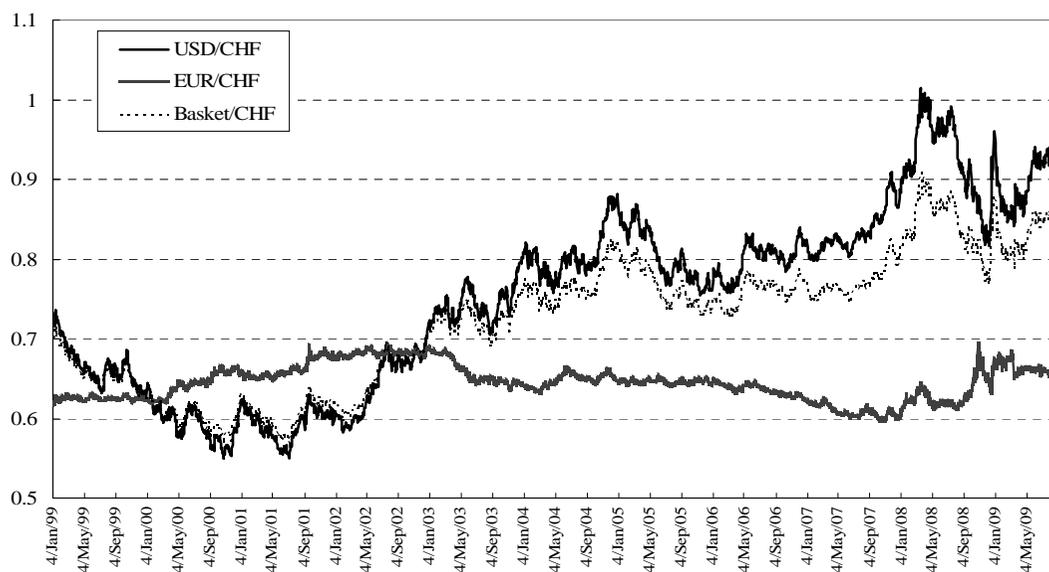
**Figure 5.2 Euro and Anchor Basket Exchange Rate Change in 1999-2009**



Source: UBC database and author's calculation.

<sup>9</sup> In Figure 5.2, since we use the exchange rate against USD, the dollar is the value standard and thus it is presented as the horizontal axis.

**Figure 5.3 Exchange Rate Volatility of Anchor Basket 1**



Source: Calculation by data of UBC.

Another simulation (exchange rate against the Swiss franc, CHF) of anchor basket volatility is shown in Figure 5.3. We can note that the anchor sticks closely to the movement of the US dollar. There are two reasons for this. The first is that the basket is simply composed of two currencies and the second is the dollar, which takes a higher weight in terms of trade in the basket.

We can note that the movement between the US dollar and the Euro is generally in the opposite direction,<sup>10</sup> but unfortunately the basket cannot hedge these opposite movements in a perfectly neutral manner, and mainly moves with the US dollar. Since the US dollar and the Euro generally are moving in opposite directions, the anchor basket often has a significant smoothing effect on exchange rate volatility, if not totally neutralizing it. It also reflects the fact that ASEAN5+3 has a heavier dependence on the United States in terms of trade and reserve investment. This is not a problem of basket design, but a problem of East Asia economic features.

### 5.2.3 Weights of the Anchor Basket 2

Considering the imperfect effect of the anchor basket 1 (a peg on USD and the Euro only) on stabilizing exchange rate volatility, we will make a further estimation of the anchor basket in a more comprehensive way by including more trade partners. Table 5.2 shows the main trade partners during the periods 1995 to 1998, 1999 to 2002 and 2003 to 2006, the three resetting intervals we proposed for the calculation of basket.

<sup>10</sup> This is also apparent in terms of the movement of the real effective exchange rate of the US dollar and the Euro.

**Table 5.2 Top 12 Trade Partners of ASEAN 5 + 3**

(%)

1995-1998		1999-2002		2003-2006	
Country	Ratio	Country	Ratio	Country	Ratio
United States	20.86	United States	20.28	United States	15.73
Euro Area	11.27	Euro Area	11.22	Euro Area	10.96
United Kingdom	2.79	United Kingdom	2.56	Australia	2.42
Australia	2.40	Australia	2.35	United Kingdom	2.02
Canada	1.46	Saudi Arabia	1.50	Saudi Arabia	1.84
Saudi Arabia	1.38	Canada	1.37	United Arab Emirates	1.58
United Arab Emirates	1.15	United Arab Emirates	1.29	India	1.32
Switzerland	0.87	India	0.93	Canada	1.19
India	0.85	Russia	0.73	Russia	1.10
Russia	0.76	Switzerland	0.72	Vietnam	0.79
Brazil	0.70	Mexico	0.62	Brazil	0.73
Panama	0.57	Vietnam	0.61	Iran, I.R. of	0.70
<b>ASEAN5+3</b>	<b>45.87</b>	<b>ASEAN5+3</b>	<b>46.64</b>	<b>ASEAN5+3</b>	<b>49.16</b>
<b>5-Currency Total</b>	<b>38.78</b>	<b>5-Currency Total</b>	<b>37.78</b>	<b>5-Currency Total</b>	<b>32.32</b>
<b>Total</b>	<b>90.93</b>	<b>Total</b>	<b>90.82</b>	<b>Total</b>	<b>88.81</b>

Source: Calculated using data from DOT.

When taking the level of trade ratio into consideration, we would like to compose the anchor basket of seven partners including the United States, the Euro Area, the United Kingdom, Australia, Canada, Saudi Arabia and the United Arab Emirates. The total trade ratio of these plus the intraregional trade is nearly 90%, sufficient to reflect the trade pattern of ASEAN5+3. Considering the fact that the currencies of Saudi Arabia and the United Arab Emirates are actually pegged to the US dollar and are hardly ever traded on international

**Table 5.3 Currency Weights in Anchor Basket 2**

(%)

1995-1998		1999-2002		2003-2006	
Currency	Weight	Currency	Weight	Currency	Weight
USD	56.60	USD	56.85	USD	53.58
EURO	27.28	EURO	27.66	EURO	30.66
GBP	6.76	GBP	6.31	GBP	6.78
AVD	5.81	AUD	5.80	AUD	5.66
ACD	3.55	ACD	3.38	ACD	3.33
Total	100.00	Total	100.00	Total	100.00

Source: Calculated from Table 5.2.

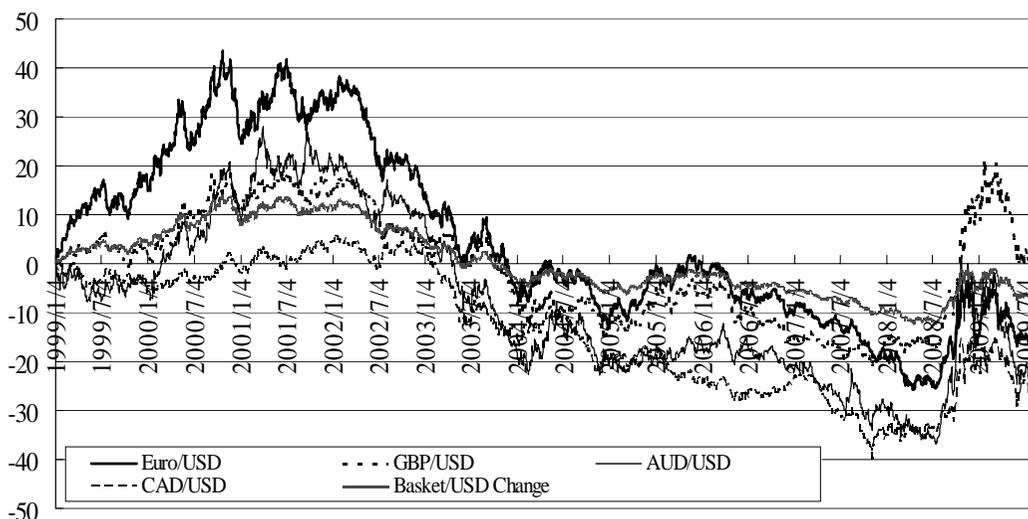
foreign exchange market, we can compose the anchor basket of five currencies, USD, Euro, GBP, AUD and CAD. The trade weights of Saudi Arabia and the United Arab Emirates will be added to the USD. The weights of the five currencies in the anchor basket are presented in Table 5.3 below.

In the calculation for anchor basket 2, if we simply take trade weights as the only factor, we will obtain an anchor basket determination formula for the three intervals, respectively, as:

$$\begin{aligned} \text{Anchor Basket Value} &= 0.566 \text{ USD} + 0.2728 \text{ Euro} + 0.0676\text{GBP} + 0.0581\text{AUD} + \\ &0.0355\text{ACD} \text{ (1995-1998)} \\ &= 0.5685 \text{ USD} + 0.2766 \text{ Euro} + 0.0631\text{GBP} + 0.0580 \text{ AUD} + \\ &0.0338 \text{ ACD} \text{ (1999-2002)} \\ &= 0.5358 \text{ USD} + 0.3066 \text{ Euro} + 0.0678\text{GBP} + 0.0566 \text{ AUD} + \\ &0.0333\text{ACD} \text{ (2003-2006)} \end{aligned}$$

Figures 5.4 and 5.5 present the stabilization effect of anchor basket 2 against the exchange rate volatility of the five currencies, respectively, in terms of exchange rate against USD and CHF. Since the anchor basket serves as an anchor for the common currency basket, the exchange rate in terms of Swiss francs is more preferable than in terms of USD.<sup>11</sup>

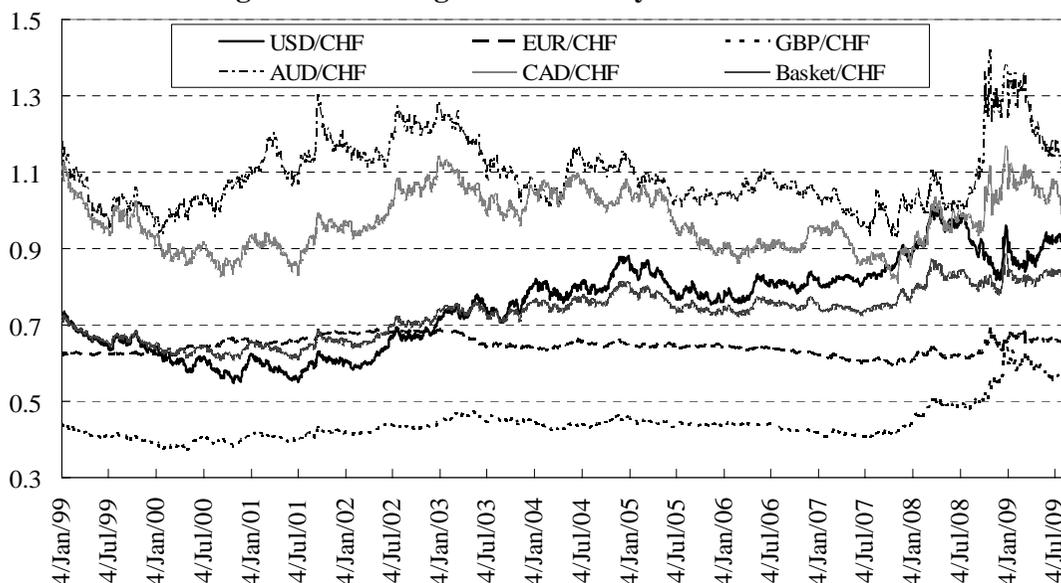
**Figure 5.4 Exchange Rate Change of Anchor Basket and 5 currencies**



Source: Calculated by UBC data.

<sup>11</sup> Actually, this should be regarded as a kind of real effective exchange rate for the common currency basket against interregional currencies. Because of the difficulty in calculating the REER of the common currency basket, we use the exchange rate against Swiss francs as a substitute measurement.

**Figure 5.5 Exchange Rate Volatility of Anchor Basket 2**



Source: Calculated by data from UBC.

**Table 5.4 Descriptive Statistical Result of Anchor Basket Volatility**

	Anchor Basket 1	Anchor Basket 2
Mean	0.721386	0.726581
Median	0.739963	0.738167
Maximum	0.909251	0.882871
Minimum	0.568754	0.607806
Std. Dev.	0.082439	0.064127

Source: Calculated from data in Figures 5.3 and 5.5.

Note: Unlike the calculation of the exchange rate volatility of the regional basket, here we have simply calculated the exchange rate change of the anchor basket. In the calculation for regional basket volatility, we set the first trading day as the benchmark.

The final goal of the regional exchange rate regime in Asia is real effective exchange rate stabilization, and hence the choice between anchor basket 1 and anchor basket 2 will be mainly determined by their volatility features measured by standard deviation. Table 5.4 illustrates the overall descriptive statistical results of anchor basket 1 and anchor basket 2.

The result shows that anchor basket 2 is more stable than anchor basket 1, and should be regarded as the actual anchor basket for the regional basket for Asian financial cooperation.

### 5.3 The Design of a Regional Basket for East Asia

The function of the regional basket is to tie all the currencies of ASEAN5+3 together in order to float them jointly against the anchor basket, and to achieve the aim of exchange rate and intraregional trade stabilization. Thus the key factor in the determination of weights in the regional basket is intraregional trade.<sup>12</sup>

#### 5.3.1 Assumptions

Considering the fact of the low level of financial integration in terms of portfolio investment, we may neglect the financial integration weight. It needs to be mentioned here that in terms of FDI, Japanese FDIs in ASEAN10 are apparently higher than Korea and China by about 5 to 6 times. Even these FDIs can be regarded as a complementarity of trade, the huge difference seems to be reflected in weight.<sup>13</sup> However, the intraregional trade volume of Japan was as high as 517.66 billion US dollars in 2007. In the meantime, Japan's FDIs in ASEAN were only 8.382 billion, small enough to be neglected. Since Japan is the most advanced economy in the region and is the most active player in outward FDI, other economies' FDIs can also be neglected. Here we will consider trade weight and neglect investment weight.

As for the weight of GDP in the regional basket, nominal GDP is calculated in ECU even though there are some differences between nominal GDP and GDP as measured at PPP. In fact, nominal GDP in 2008 was about 1.98 times the GDP measured at PPP for Germany, 1.40 times for France and 1.32 times for Italy. The ratio is about 1.10 times for Japan, 0.75 times for Korea and 0.54 times for China. The difference between nominal GDP and GDP measured at PPP is higher in the three European countries. According to research by Ogawa and Shimizu (2005), GDP measured at PPP is preferred for the reason of stability of the deviation indicator.<sup>14</sup> It is reasonable to use GDP measured at PPP rather than use nominal GDP directly since nominal GDP may be auto-correlative with trade, however, we need to have doubts about the estimation of GDP measured at PPP.<sup>15</sup>

Determining weights by data for a designated year might be reasonable for Europe, but might be doubtful for emerging markets, especially for the fast-growing GDP volume of

---

<sup>12</sup> The trade weights used in Europe and the ACU are based on total trade. Comparing weights based on exports or imports, there is no great difference between them. However, total trade can reflect both dependence/contribution of a member to regional integration.

<sup>13</sup> In 2008, FDI inflow to ASEAN from Japan was 7.67 billion US dollars, Korea and China (mainland and Hong Kong) was 1.26 and 1.68 billion US dollars, respectively, according to ASEAN Secretariat statistics. The share is presented in Table 3.2.

<sup>14</sup> Ogawa and Shimizu (2005) use a designated year as the reference period of the indicator for country weights. Williamson (2005) also used a designated year. When Girardin and Alfred (2008) produced their scenario for ACU with reference to experiences from Europe, they also determined weights by data for a designated year.

<sup>15</sup> In 2007, the World Bank adjusted its estimation of GDP measurement at PPP, causing a 40% drop in China's GDP.

most Asian emerging markets, China in particular. We prefer average GDP measured at PPP in the weights, in order to reflect the change of GDP volume in the resetting interval, even if this means that the resetting interval is one year shorter.

The CMI can serve as an indicator of the attitude and contribution of the economies of ASEAN5+3 to economic cooperation in the region. However, we have only two data series for CMI contribution, those for 2004 and 2009. We will apply these in the basket calculation for the periods 1999-2002 and 2003-2006. As for the period 1995-1998, there is no consideration for this factor.

Generally, intraregional trade and GDP at PPP were given the same weights, and considering the regional contributions can be regarded as a bonus, we simply give the three factor weights as 6:3:1. We believe that trade stabilization is the most important, and thus we give trade weight as 0.6, GDP at PPP is the second most important and was given a factor of 0.3, and the factor for the weight of contribution to regional integration was given as 0.1.

### 5.3.2 Nominal Exchange Rate Volatility of the Regional Basket

According to the assumptions on basket weight, and the factors for the three weights, we may obtain the determination formula for the regional basket as follows:

$$\text{Common Basket Value} = 0.6\sum W_{Tj}C_j + 0.3\sum W_{GDPj}C_j + 0.1\sum W_{CMIj}C_j$$

Where  $W_{Tj}$ ,  $W_{GDPj}$  and  $W_{CMIj}$  stand for the trade weight, GDP weight and the CMI weight of economy  $j$ ,  $C_j$  stands for the currency of economy  $j$ .

Applying yearly trade volume data from DOT, GDP measured at PPP from WEO and period data of CMI contribution into the calculation, we now obtain:

$$\begin{aligned} \text{Regional basket} &= 0.3433\text{JPY} + 0.1096\text{KRW} + 0.2642\text{CNY} + 0.0572\text{IDR} + \\ &0.0662\text{MYR} + 0.0255\text{PHP} + 0.0775\text{SGD} + 0.0566\text{THB} \text{ (1995-1998)} \\ &= 0.3354\text{JPY} + 0.1214\text{KRW} + 0.3044\text{CNY} + 0.0463\text{IDR} + \\ &0.0588\text{MYR} + 0.0280\text{PHP} + 0.0586\text{SGD} + 0.0471\text{THB} \text{ (1999-2002)} \\ &= 0.3102 \text{ JPY} + 0.1306\text{KRW} + 0.3285\text{CNY} + 0.0423\text{IDR} + \\ &0.0496\text{MYR} + 0.0249\text{PHP} + 0.0637\text{SGD} + 0.0502\text{THB} \text{ (2003-2006)} \end{aligned}$$

The result is shown in Figure 5.6 in the Annex.

In the same way as in the case of the anchor basket, we can calculate the exchange rate volatility of the regional basket against the US dollar. We also need to note that the value or the exchange rate volatility against the US dollar of the regional basket in a certain period is determined by the weight based on the data of the previous period. In order to present the effect of weight change on the change of basket, we will also take 1999 as the base period of the index for all periods. The exchange rate change of the regional basket against USD from 1999 till 2006 will be calculated by the daily exchange rate change of the currencies of ASEAN5+3.

Mathematically, we can simply take the differential value of all the three terms in the

determination formula and turn the basket value determination formula into the basket volatility determination formula. Thus, we can apply the determination formula to calculate exchange rate changes in the regional basket.

Applying the weighted estimate equation above, I carried out a simulation by using daily exchange rate data from the UBC database, Pacific Exchange Rate Service, Sauder School of Business, The University of British Columbia, for the currencies in the baskets. I used the exchange rate of a currency against the US dollar.

In Figure 5.6 (in Annex), we can find that:

1) Most of time during the period, most ASEAN5+3 currencies fluctuated quite close to the fluctuation of the regional basket, except the Philippine peso, the Indonesian rupiah and sometimes the Korean won, which had severe misalignments with the regional basket compared to other currencies;

2) The regional basket showed that regional currencies maintained a tendency to be undervalued during the period 2001-2004, remained above parity till 2007, and then began a trend of overvaluation;

3) Since Japan and China take a larger weight in the regional basket, it is undeniable that they will have more influence on the regional basket fluctuation. The period of undervaluation was mainly driven by the depreciation of yen, while the early stage of overvaluation from 2007-2008 was mainly driven by the appreciation of the yuan and was then enhanced by the appreciation of yen when the value of the US dollar presented a downward trend;

4) Theoretically the dominating weights of the yen and yuan in the regional basket will put more pressure on other currencies in the region, such as in the concern of Moon, Rhee and Yoon (2006) and Moon and Rhee (2007) for the asymmetry problem in conducting exchange rate coordination between large and small countries. However, thanks to intraregional trade integration, as with the effect of endogeneity on OCA, there naturally exists a co-movement involving exchange rate and natural coordination for most countries in the region;

5) There are two things that need to be mentioned when there exists a co-movement involving exchange rate and natural coordination between ASEAN5+3, which indicates the existence of a sound basis for regional financial cooperation. One is the continuously large deviation to the regional basket of the Philippine peso and the Indonesian rupiah, and to some extent the Thai baht. The other is in facing impacts from the outside world such as the financial turmoil in 2008, some currencies, for example the Philippine peso, the Indonesian rupiah and the Korean won began to deviate greatly from the regional basket and show severe fluctuation;

6) The most important thing is that, as we expect, even though some ASEAN countries, like the Philippines, have accumulated high depreciation in the past ten years, the regional basket presents a significant stabilization effect on exchange rates when compared

**Table 5.5 Exchange Rate Volatility Stabilization Effect of Regional Basket**

	JPY	KRW	CNY	IDR	MYR	PHP	SGD	THB	Basket
Mean	0.736250	-4.545223	-3.686379	17.05098	-2.737280	27.68299	-0.446178	7.315416	0.319133
Median	1.560410	-2.449616	-0.016914	16.53204	0.000000	30.81472	1.862792	8.386045	0.274785
Maximum	20.18725	32.39228	0.057991	55.54848	0.055269	46.41143	11.74343	26.50609	12.90205
Minimum	-21.70486	-23.78700	-17.72843	-16.50656	-17.56764	-2.682022	-18.76658	-19.00119	-12.35575
Std. Dev.	7.725814	11.41672	5.981147	12.23423	4.520136	14.13166	7.483031	10.99821	5.544914

Source: Calculated using data from 1999 to 2009.

with almost all the ASEAN5+3 currencies, and we can find a more effective stabilization effect from the regional baskets on exchange rate volatility in contrast to the anchor basket. This means that the two baskets, or the dual-pegging regime, will have more apparent effect on intraregional stabilization .

At least we can say that regional economic integration has shown a positive effect on regional exchange rate movement in most times and most cases. This is a very important basis for future cooperation.

As for the analysis of the anchor basket, we will use the descriptive statistical result in Table 5.5 to show the stabilization effect of the regional basket on nominal exchange rate volatility.

The data in Table 5.5 show the exchange rate volatility of ASEAN5+3 currencies and the regional basket against USD, the standard deviation of the regional basket being apparently smaller than for other ASEAN5+3 currencies except the Malaysian ringgit, which was pegged to USD for a long time during the sample period.

### 5.3.3 Real Exchange Rate Volatility of the Regional Basket

One of the main economic features of some of the ASEAN5+3 economies in the past ten years has been inflation. This has made it necessary to take inflation into consideration when discussing exchange rates. However, data on inflation is only available at monthly intervals.

The real exchange rate volatility of the regional basket is calculated based on the calculation of nominal exchange rate volatility of the regional basket that we have just conducted above, but with consideration for inflation. The basic calculation is the same as for the nominal regional basket, but utilizes monthly data. Real exchange volatility is the nominal exchange rate volatility (direct quotation) minus inflation:

$$RER_i = NER_i - (\text{infi} - \text{infus}) = NER_i - \text{infi} + \text{infus}$$

Where  $RER_i$  and  $NER_i$  stand for the real exchange rate volatility and the nominal exchange rate volatility of the currency of economy  $i$  in the region, respectively,  $\text{infi}$  and  $\text{infus}$  stand for the monthly inflation in economy  $i$  in the region and in the US. Real exchange rate volatility is measured by an index defined as January 1st, 1999=0.

Hence, we obtain Figure 5.7 (in Annex) concerning the real exchange rate volatility of the regional basket.

We can see some noticeable differences between the real exchange rate volatility of the regional basket and the nominal exchange rate volatility from Figures 5.6 and 5.7.

1) For most economies in the region, the real exchange rate volatility has become more divergent in the past ten years;

2) The real exchange rates of the rupiah and peso became conspicuously more divergent from the regional level. Their volatility differences with the regional basket are so high that even if they were assigned small weights, they would still have influenced the movement of the regional basket;

3) With the higher influence from the rupiah and peso, the Japanese yen and Chinese yuan remained below the regional basket during most of the period;

4) The most important change involved the Korean won. Its real exchange rate volatility became more stable than its nominal exchange rate volatility;

5) The real exchange rate of the regional basket became more stable, even though its member currencies showed more divergence, as shown in Table 5.6;

6) The three major currencies, the Japanese yen, the Korean won and the Chinese yuan, fortunately move closer to each other, and this is a very important factor in keeping the regional basket stable.

We also use the descriptive statistical result in Table 5.7 to show the regional basket stabilization effect on real exchange rate volatility.

**Table 5.6 Descriptive Statistical Result of Regional Basket Volatility**

	Nominal Basket	Real Basket
Mean	0.319133	3.000315
Median	0.274785	2.900856
Maximum	12.90205	13.27798
Minimum	-12.35575	-7.179639
Std. Dev.	<b>5.544914</b>	<b>4.555985</b>

Source: Calculated from data in Figures 5.6 and 5.7.

**Table 5.7 Real Exchange Rate Volatility Stabilization Effect of Regional Basket**

	JPY	KRW	CNY	IDR	MYR	PHP	SGD	THB	Basket
Mean	17.40933	-4.870266	9.717984	-25.58840	2.952542	19.86148	8.697701	10.78658	8.775819
Median	18.15717	-2.506098	10.02956	-22.69448	3.918424	23.78168	10.02615	12.90216	9.599247
Maximum	37.91057	16.43912	18.53937	30.87877	8.571035	43.20678	16.20908	29.51471	17.08108
Minimum	-6.408649	-23.42860	0.000000	-73.49210	-8.027143	-13.45747	-2.722452	-12.73064	-1.760120
Std. Dev.	10.34126	11.39542	4.660505	26.67897	3.755827	17.44944	5.020109	11.62362	4.277248

Source: Calculated using data from 1999 to 2009.

## 5.4 Some Technical Issues and Implications

We will discuss here two important issues in our BBC regime design for East Asia. The first is the determination of a feasible band, and the second is to produce a different scenario regarding benchmark year setting.

### 5.4.1 Feasible Band for the Asian BBC

We have decided on two key elements in the BBC regime design, the choice of peg, and the choice of parity. Now we would like to determine the choice of band width. In the framework of the BBC regime, when we have a basket benchmark for regional exchange rate coordination, the next topic is the floating band.

Figure 5.8 (in Annex) indicates that in terms of the nominal exchange rate volatility of the ASEAN5+3 currencies to the regional basket benchmark, 10% bands can be achieved with a moderate joint regional effort. However the Philippines and Indonesia need to make more effort to keep their currency exchange rate fluctuations within the bands.

Figure 5.9 (in Annex) shows that in terms of the real exchange rate volatility of the ASEAN5+3 currencies to the regional basket benchmark, 10% bands can also be achieved with a moderate joint regional effort. The Philippines and Indonesia still need to make more effort to keep their currency exchange rate fluctuations within the bands.

We try to evaluate the possible feasible bands using three indicators to show how often and how much the exchange rate of ASEAN5+3 currencies will fluctuate beyond the upper/lower bands.

The first indicator is the daily average degree of a currency fluctuating out of the band (the average out degree). This indicator can reflect the average degree of a currency fluctuating beyond the bands. It is calculated as:

$$\text{Average out Degree}^{16} = \frac{\text{Sum of Daily Fluctuate out of Bands by Percentage}}{\text{Sum of Days of Fluctuate out of Bands}}$$

Since the real exchange rate volatility is only available on a monthly basis, it is also calculated as:

$$\text{Average out Degree} = \frac{\text{Sum of Monthly Fluctuate out of Bands by Percentage}}{\text{Sum of Months of Fluctuate out of Bands}}$$

The second indicator is the ratio of total days that a currency fluctuates beyond the bands to total days of observation (out of frequency). This can reflect the frequency with which a currency fluctuates beyond the bands. It is calculated as:

---

<sup>16</sup> The sum of fluctuation out of the bands by percentage is an addition of absolute values.

$$\text{Out of Frequency} = \frac{\text{Sum Days Fluctuate out of Bands}}{\text{Total Observation Days}}$$

The result is shown in Table 5.8 below.

The third indicator is a compound evaluation of some statistical descriptions including mean value, median value, maximum value, minimum value and standard deviation of the difference of the exchange rate of a ASEAN5+3 currency to the regional basket benchmark. This is the key evaluation indicator. Because the bands are  $\pm 10\%$ , and considering that the expanded bands of the ECU reached as high as  $\pm 15\%$ , thus the evaluation standards for mean, median, and standard deviation are  $<5$ =good,  $5-8$ =acceptable,  $8-12$ =fair,  $>12$ =difficult. The evaluation standards for maximum and minimum values are  $<10$ =good,  $10-15$ =acceptable,  $15-20$ =fair,  $>20$ =difficult. However, among mean value, median value, maximum value, minimum value and standard deviation, we give more attention to mean value, median value and standard deviation.

Table 5.9 shows the result and the evaluation of nominal exchange rate volatility of ASEAN5+3 currencies to the basket benchmark by  $\pm 10\%$  bands.

Table 5.10 shows the result and the evaluation of real exchange rate volatility of ASEAN5+3 currencies to the basket benchmark by  $\pm 10\%$  bands.

In the tables above, we evaluate the feasibility of the implementation of a regional basket regime with 10% bands around the regional benchmark.

1) In terms of the nominal exchange rate volatility of ASEAN5+3 currencies to the regional benchmark, we can note that two currencies, the rupiah and the peso, have found it difficult to maintain their movements within the  $\pm 10\%$  bands with the regional benchmark in the past ten years; three currencies, the yuan, the ringgit and the Singapore dollar were able to remain perfectly within the  $\pm 10\%$  bands with the regional benchmark; three currencies, the yen, the won and the baht may be able to make sufficient efforts to move within the  $\pm 10\%$  bands with the regional benchmark of the total of eight ASEAN5+3 currencies.

**Table 5.8 Comparison of Nominal and Real Deviation beyond Bands (1999-2009)**

<b>Nominal</b>	<b>JPY</b>	<b>KRW</b>	<b>CNY</b>	<b>IDR</b>	<b>MYR</b>	<b>PHP</b>	<b>SGD</b>	<b>THB</b>
Degree	1.2548	7.3019	1.4477	13.3942	1.2842	21.1329	0	3.119
Frequency	5.35%	37.66%	8.29	67.68%	4.75%	86.82%	0	38.42%
<b>Real</b>	<b>JPY</b>	<b>KRW</b>	<b>CNY</b>	<b>IDR</b>	<b>MYR</b>	<b>PHP</b>	<b>SGD</b>	<b>THB</b>
Degree	2.4619	9.3849	3.2062	29.5618	0	15.6292	0.0236	3.9777
Frequency	7.09%	38.58%	43.3%1	74.02%	0	66.14%	2.36%	56.69%

Source: Calculated by the author.

**Table 5.9 Statistical Descriptions of Nominal Exchange  
Rate Volatility to Regional Basket**

<b>1999-2009</b>	<b>JPY/USD</b>	<b>KRW/USD</b>	<b>CNY/USD</b>	<b>IDR/USD</b>	<b>MYR/USD</b>	<b>PHP/USD</b>	<b>SGD/USD</b>	<b>THB/USD</b>
<b>Mean</b>	0.417117	-4.86436	-4.00551	16.73185	-3.05641	27.36385	-0.76531	6.996283
	good	good	good	difficult	good	difficult	good	Acceptable
<b>Median</b>	0.592678	-4.22568	-3.54175	16.82225	-2.78538	29.13775	-0.1607	8.564637
	good	good	good	difficult	good	difficult	good	Fair
<b>Maximum</b>	13.1468	35.53419	4.031125	60.33671	4.229456	48.21312	6.351978	19.93151
	acceptable	difficult	good	difficult	good	difficult	good	Fair
<b>Minimum</b>	-12.6565	-20.1244	-14.4375	-18.6146	-12.8968	-6.38929	-8.34074	-14.7606
	acceptable	difficult	acceptable	fair	acceptable	good	good	Acceptable
<b>Std. Dev.</b>	5.05489	10.21328	3.780222	13.33845	3.558869	12.9756	3.028258	6.602282
	acceptable	fair	good	difficult	good	difficult	good	Acceptable
<b>Overall</b>	<b>acceptable</b>	<b>fair</b>	<b>good</b>	<b>difficult</b>	<b>good</b>	<b>difficult</b>	<b>good</b>	<b>Acceptable</b>

Source: Calculated by the author using data from the UBD database.

**Table 5.10 Statistical Descriptions of Real Exchange Rate  
Volatility to Regional Basket**

<b>1999-2009</b>	<b>JPY/USD</b>	<b>KRW/USD</b>	<b>CNY/USD</b>	<b>IDR/USD</b>	<b>MYR/USD</b>	<b>PHP/USD</b>	<b>SGD/USD</b>	<b>THB/USD</b>
<b>Mean</b>	8.633508	-13.6461	0.942165	-34.3642	-5.82328	11.08566	-0.07812	2.010762
	fair	difficult	good	difficult	acceptable	fair	good	Good
<b>Median</b>	6.732773	-10.8857	1.921632	-32.4628	-6.52674	15.31076	0.279553	5.605345
	acceptable	fair	good	difficult	acceptable	difficult	good	Acceptable
<b>Maximum</b>	26.63294	7.835606	10.19526	16.49214	2.676854	34.6222	4.551481	17.91684
	difficult	good	acceptable	fair	good	difficult	good	Fair
<b>Minimum</b>	-4.64853	-32.9725	-9.87774	-81.5794	-14.3097	-17.995	-7.43273	-21.997
	good	difficult	good	difficult	acceptable	fair	good	Difficult
<b>Std. Dev.</b>	8.078263	11.969	4.137002	26.73207	4.208025	15.45297	2.732697	10.08054
	fair	fair	good	difficult	good	difficult	good	Fair
<b>Overall</b>	<b>fair</b>	<b>fair</b>	<b>good</b>	<b>difficult</b>	<b>acceptable</b>	<b>difficult</b>	<b>good</b>	<b>Fair</b>

Source: Calculated by the author using data from the UBC database.

2) In terms of the real exchange rate volatility of ASEAN5+3 currencies to the regional benchmark, we find that the rupiah and the peso have still had difficulties maintaining their movements within the  $\pm 10\%$  bands with the regional benchmark in the past ten years; only the yuan and the Singapore dollar were able to remain perfectly within the  $\pm 10\%$  bands with regional benchmark; the other currencies, the yen, won, ringgit and

baht all have more disadvantageous evaluations.

3) The indicators and evaluation results for the real exchange rate volatility of ASEAN5+3 currencies to the regional benchmark showing that for most ASEAN5+3 economies it would be quite difficult to keep within the bands, suggests fundamental differences in regional economics and the importance of a regional convergent standard such as the European Union's Maastricht Treaty.

The general result of both evaluations indicates that there exists a sound basis for implementing a BBC regime among ASEAN5+3 with a joint effort for 10% bands. Even though the evaluation result for real exchange rate volatility of ASEAN5+3 currencies to the regional benchmark suggests the importance of regional convergence in economic fundamentals, considering the daily operation of regional exchange rate coordination will mainly focus on nominal exchange rate volatility, a BBC regime with  $\pm 10\%$  bands is possibly feasible.

#### 5.4.2 The Benchmark Adjustment

We set the benchmark year for exchange rates at 1999 by taking into consideration trade balance, J curve effect and economic environment stability. However, ten years is too long for the rapidly changing economic structure of East Asia, and the benchmark may not continue to reflect the balance.

Here, we try to establish an alternative scenario by resetting the benchmark exchange rate level to the average exchange rate level in the past interval. Figure 5.10 and Figure 5.11 (in Annex) represent the nominal and real exchange rate volatility to the regional basket and bands.

Table 5.11 shows the comparison of the result of the benchmark adjustment.

**Table 5.11 Nominal and Real Deviation to Bands Comparison (1999-2009)**

<b>Nominal</b>	<b>JPY</b>	<b>KRW</b>	<b>CNY</b>	<b>IDR</b>	<b>MYR</b>	<b>PHP</b>	<b>SGD</b>	<b>THB</b>
Degree	1.2548	7.3019	1.4477	13.3942	1.2842	21.1329	0	3.119
Degree*	3.606	10.955	10.4705	31.9243	13.7553	13.0025	0	16.6729
Frequency	5.35%	37.66%	8.29	67.68%	4.75%	86.82%	0	38.42%
Frequency*	30.24%	64.07%	39.36%	61.66%	37.78%	77.21%	0	47.95%
<b>Real</b>	<b>JPY</b>	<b>KRW</b>	<b>CNY</b>	<b>IDR</b>	<b>MYR</b>	<b>PHP</b>	<b>SGD</b>	<b>THB</b>
Degree	2.4619	9.3849	3.2062	29.5618	0	15.6292	0.0236	3.9777
Degree*	6.8498	10.3109	6.2362	55.3500	5.0605	23.9612	0	9.4144
Frequency	7.09%	38.58%	43.3%1	74.02%	0	66.14%	2.36%	56.69%
Frequency*	52.76%	57.48%	34.65%	100%	29.13%	74.02%	0%	64.56%

Source: Calculated by the author.

Note: The values of Degree\* and Frequency\* are the benchmark adjusted values.

We can see that during the whole period from 1999 to 2009, after making the adjustment, that the nominal and real exchange rates of most ASEAN5+3 currencies became more deviated from the basket benchmark. This result is somewhat surprising, but when we break this down to shorter periods of analysis for the basket weight resetting interval, as showed in Tables 5.12 and 5.13, we find that:

- 1) The crisis impact is more obvious, in particular for nominal deviation;
- 2) It is easier to maintain exchange rates within the  $\pm 10\%$  bands in normal years, such as in the period 2003 to 2006, for most countries and especially for nominal deviation;
- 3) Some economies, Indonesia and the Philippines, constantly experienced long-lasting deviations against other economies in the region during all periods;
- 4) There are no obvious differences between real and nominal deviation volatility

**Table 5.12 Nominal Exchange Rate Deviation to Bands**

<b>1999-2002</b>	<b>JPY</b>	<b>KRW</b>	<b>CNY</b>	<b>IDR</b>	<b>MYR</b>	<b>PHP</b>	<b>SGD</b>	<b>THB</b>
<b>Degree</b>	3.8568	11.5965	10.8567	47.2764	13.7553	19.8575	0	19.9875
<b>Frequency</b>	69.69	100	100	100	100	82.65	0	100
<b>2003-2006</b>	<b>JPY</b>	<b>KRW</b>	<b>CNY</b>	<b>IDR</b>	<b>MYR</b>	<b>PHP</b>	<b>SGD</b>	<b>THB</b>
<b>Degree</b>	0	4.6353	0	3.0744	0	9.6633	0	0
<b>Frequency</b>	0	46.96	0	21.64	0	100	0	0
<b>2007-2009</b>	<b>JPY</b>	<b>KRW</b>	<b>CNY</b>	<b>IDR</b>	<b>MYR</b>	<b>PHP</b>	<b>SGD</b>	<b>THB</b>
<b>Degree</b>	1.3263	15.5515	1.2497	10.0115	0	2.2982	0	4.3599
<b>Frequency</b>	23.27	47.76	6.47	64.25	0	33.59	0	41.60

Source: Calculated by the author.

**Table 5.13 Real Exchange Rate Deviation to Bands**

<b>1999-2002</b>	<b>JPY</b>	<b>KRW</b>	<b>CNY</b>	<b>IDR</b>	<b>MYR</b>	<b>PHP</b>	<b>SGD</b>	<b>THB</b>
<b>Degree</b>	3.384	0.9351	6.4966	68.0030	6.2149	23.3243	0	10.0394
<b>Frequency</b>	56.25	6.25	87.50	100	58.33	97.92	0	85.42
<b>2003-2006</b>	<b>JPY</b>	<b>KRW</b>	<b>CNY</b>	<b>IDR</b>	<b>MYR</b>	<b>PHP</b>	<b>SGD</b>	<b>THB</b>
<b>Degree</b>	5.8204	11.7271	0.4003	34.4974	0	3.6074	0	3.5222
<b>Frequency</b>	31.25	91.67	2.08	100	0	33.33	0	20.83
<b>2007-2009</b>	<b>JPY</b>	<b>KRW</b>	<b>CNY</b>	<b>IDR</b>	<b>MYR</b>	<b>PHP</b>	<b>SGD</b>	<b>THB</b>
<b>Degree</b>	11.2106	8.9962	1.1370	68.0461	1.4691	35.4320	0	10.4884
<b>Frequency</b>	80.65	83.87	3.22	100	29.03	100	0	100

Source: Calculated by the author.

At least by now, for the past ten years, benchmark year adjustment is not necessary. However, the benchmark year adjustment scenario suggests that exchange rate volatility of the ASEAN5+3 currencies and its deviation with respect to the basket benchmark bands mainly occurred during the crisis impact period.

## **5.5 Opening Issues**

There are two issues that have been uncovered by the above analysis. One is the crisis management of the BBC regime, the other is the asymmetry effect in BBC operation.

### **5.5.1 Crisis Management Solutions**

It is obvious that the aim of the BBC regime is to stabilize the exchange rate volatility during a financial crisis period. However, we unfortunately found that it is difficult to maintain exchange rates within the bands of the basket benchmark during a crisis period. This indicates that a BBC may only serve as a tool for surveillance or coordination, rather than for its stabilization effect on trade.

A striking feature present in the table above is in the two periods 1999-2002 and 2003-2006. When there was no international impact on regional economies during the period of 2003 to 2006, the ASEAN5+3 exchange rates were stable and showed convergent movement with the supposed regional basket within the 10% bands. However, during the period 1999 to 2002, especially during the period 2007 to 2009, when faced with global financial turmoil, the exchange rate behavior of almost all regional currencies fluctuated and deviated away from the basket benchmark and its 10% bands, this being especially notable in nominal exchange rate volatility.

This is normal because East Asia is an export-oriented economy and most countries in the region have a high foreign trade dependency. When faced with international impacts, it is inevitable that turbulence is experienced. Due to economic disparities among ASEAN5+3, exchange rate behavior is also different from one country to another. During the period from 2007 to 2009, the exchange rates of the won, the rupiah and the peso can be regarded as having difficulties remaining within the bands. The rupiah and the peso present monotonic depreciation, resulting in mean values for exchange rates deviating far from the basket. To some extent, this kind of deviation is easy to adjust because continuous growth may reflect some changes in economic fundamentals, and can be adjusted for by depreciation. The won shows fluctuations in both the depreciation and appreciation directions, and hence results in the mean value of the exchange rate still keeping close to the basket. This kind of volatility is hard to adjust. In the case of Korea, nominal exchange rate volatility is more than real exchange rate volatility, which indicates that the actual impact is not very serious in term of fundamentals, but only as an impact. In the case of Indonesia and the Philippines, the real

exchange rate continues to deviate against the basket, indicating that their fundamentals have been changed.

Policy focus should be placed on real exchange rate coordination, which is more difficult to maintain within the bands, for long-term analysis in particular. For a short-term effect as in the Korean case, considering the fact that the vulnerability of the East Asia economy to international impacts cannot be eliminated overnight, in order to prevent the impacts of the abrupt exchange rate fluctuations on the real economy and financial market stability, it is necessary to enhance regional financial stability schemes such as the CMI. Adequate CMI support is a necessary cost in BBC regime operation.

In the case of Indonesia and the Philippines, depreciation might be necessary. However, before depreciation is carried out, these currencies should depart from the basket or decrease their weights and increase their bands for the period of time it takes to ensure that the depreciation level is appropriate. Those currencies can then rejoin the basket as normal.

In fact, domestic policy and the CMI are two pillars which support the regional exchange rate arrangement in facing disturbance, and we need to conduct further research on the specific liquidity support plan for different currencies.

### **5.5.2 The Asymmetry Issue and Selective Band**

Differences in status among the currencies of ASEAN5+3 in the regional basket are partially predetermined by the weight of each currency.

On the one hand, it is certain that if a currency takes a larger weight in the basket, generally a country with a larger GDP and trade share in the region, its exchange rate volatility will become more influential on the exchange rate volatility of the regional basket.

On the other hand, it is reasonable when a country, like Japan or China, with a larger share in regional GDP and trade takes a larger weight in the basket, and hence has less pressure to adjust to keep its exchange rate within the basket bands, easily satisfies requirements, and has less trouble regarding the conflict between internal and external balance.

In contrast, small economies, like ASEAN5 and other potential members among the ASEAN countries, will have to do their best with the exchange rate volatility of their currencies to keep within the basket bands that are mainly determined by larger countries in the region, and have to make more efforts and pay extra costs regarding the conflict between internal and external balance.

Even though this is a reasonable economic solution in regional cooperation between large economies and small open economies, considering the fact of the extra cost that will be paid by small open economies, some alternative options are needed. Moon and Rhee (2007) provided the simple solution that the largest share attribute to RCU should not be over one third.

The possible solution may include:

1) As an institutional solution, for the fast growing economies in East Asia, the interval period of basket weight resetting should be made shorter in order to reflect the fast-changing GDP and trade patterns among ASEAN5+3 economies.

2) Small open economies such as those of ASEAN5 can enjoy a selective tradeoff between band width and weight. Because a smaller share will have less influence on the basket, in order to ease the pressure of adjustment and alleviate the conflict between internal and external balance, they can enjoy the status of a smaller weight and larger band width. As an opposite case, larger economies should strictly keep within the exchange rate bands in order to keep the basket stable.

In fact, Japan, the largest economy in the region may also encounter an asymmetry issue. Because the exchange rate market for yen is too deep for intervention, it may require some time to solve the problem.

The final solution to the asymmetry issue is to enhance the convergent requirements for East Asia as in the Maastricht Treaty and call for further economic integration fundamentally rather than trade integration only.

### **5.5.3 The Aggregated Volatility Effect**

The final goal of exchange rate arrangements in East Asia is to stabilize both intraregional and interregional trade, prevent the exchange rate volatility of a third country outside the region disturbing intraregional trade relations, and stabilize interregional trade when the exchange rate of a third country outside the region changes, considering the fact that interregional trade relations are as important as intraregional trade relations.

From this perspective, we designed a dual basket pegging regime for East Asia. The final result of this regional exchange rate regime will certainly be determined by the combined effect of the two baskets.

In Chapter 2, we have found that the stabilizing effect of the anchor basket is shown by the smoothing effect on the exchange rate fluctuations, often in opposite directions, between the US dollar and the Euro, the two major currencies in the anchor basket. The stabilizing effect of the regional basket is shown by the smoothing effect of the exchange rate fluctuation of ASEAN5+3 currencies against the US dollar. This is also indicated by the standard deviation analysis. The best result we would anticipate is that the final stabilizing effect of the dual basket regime could be enhanced when compared to the stabilizing effects of each of the two baskets separately.

We simply aggregate the volatilities of the two baskets together to detect the combined stabilizing effect of the whole dual basket regime pair by pair. For the reason that only anchor basket 1, anchor basket 2 and the nominal regional basket have daily data available, only two pair comparisons can be made, as Figures 5.12 and 5.13 (in Annex) show. The statistical result is presented in Table 5.14.

**Table 5.14 Statistical Descriptions of Aggregated Volatility Effect**

	<b>Anchor 1 (1)</b>	<b>Anchor 2 (2)</b>	<b>Nominal (3)</b>	<b>(1) + (3)</b>	<b>(2) + (3)</b>
<b>Mean</b>	1.202128	0.703282	0.319133	1.521261	1.022415
<b>Median</b>	3.855394	2.388117	0.274785	4.157828	2.791109
<b>Maximum</b>	27.74538	22.51264	12.90205	15.41745	12.49053
<b>Minimum</b>	-20.0929	-15.6571	-12.3558	-19.6652	-16.7083
<b>Std. Dev.</b>	11.50523	8.827394	5.544914	8.175549	6.400118

Source: Calculated by the author.

Note: Unlike the calculation of the exchange rate volatility of the regional basket, we generally simply calculated the change in the exchange rate of the anchor basket. In the calculation of regional basket volatility, we set the first trade day as the benchmark. Here, in order to make the comparison, we calculated the exchange rate volatility of the anchor basket also by setting the first trade day as the benchmark.

We can note that the final stabilizing effect of the dual basket regime will be somewhere in between the exchange rate volatility of the two baskets. In fact, we can see that the volatility of the two baskets is generally in the opposite direction in Figures 5.12 and 5.13, and the volatility trace of the combined effect is somewhere in between.

It is somewhat of a surprise that since most of ASEAN5+3 currencies are de facto pegged to USD, the volatility of the regional basket, especially the nominal one, should mainly follow the volatility of USD. The opposite volatility of the anchor basket and regional basket still remains a mystery.

### **Brief Summary**

Because both interregional trade and intraregional trade are important to the ASEAN5+3 economies, from the perspective of trade stabilization by exchange rate stabilization, it is necessary to emphasize both in the design of the regional exchange rate regime. This results in a dual basket BBC regime for East Asia.

A simple anchor basket is composed of USD and the Euro, but a more comprehensive and effective one would be composed of USD, the Euro, GBP, AUD and CAD. The nominal exchange rate regional basket is convenient in the operation of a BBC, but the real exchange rate regional basket could serve as an indicator of the integration of economic fundamentals in the region, which is the key for regional cooperation.

A BBC regime with 10% bands should be feasible in operation. The nominal BBC regime is easier to achieve within the bands than a real BBC regime. This suggests that East Asia still has a long way to go to an economic convergence that points to a common currency. However, the basket benchmark of exchange rates by the BBC regime is now a very practical indicator for conducting regional surveillance and coordination.

## Conclusions

Today, looking back on the evolution of Asian financial cooperation since the 1997 crisis, we can find that the CMI was a natural response to the crisis, but it also sparked regional awareness and is still a very important platform for regional cooperation.

The later initiative on regional bond market development was another response to the crisis after in-depth research was made. The ABM aimed at promoting regional financial integration to a level compatible with regional trade integration. However, the practical implementation of various initiatives provides enlightenment concerning a key element in promoting regional cooperation, the exchange rate arrangement.

Based on proposals of Asian financial cooperation, including official regional currency swap arrangements for liquidity support, policy-oriented regional financial market integration programs and theoretical regional common currency schemes, the network of regional reserve pools for liquidity support and ABM investment has been set up. However, Asian economies are still vulnerable even though the regional financial structure has improved, and the existing currency swap arrangements should expand from official application to private investors in order to make the policy-oriented integration a market-oriented one. Against a background of a global imbalance in balance of payments, the increasing reserves has become a process of credit accumulation on the Asian side and a process of debt accumulation on the US side. The current financial crisis is a signal of potential disaster and Asian monetary cooperation should be speeded up.

Although aimed at a regional currency, an Asian Euro for example, for the far future, research on AMU/ACU share a common concern for its possible use for regional surveillance and policy coordination of exchange rates among East Asian currencies in the near future.

The basic goal of regional cooperation is trade stabilization by immunity from the possibility that exchange rate volatility with a third currency outside the region will disturb intraregional trade. As the most active region for economic growth, most economies in East Asia can be regarded as emerging markets. Hence the effect of exchange rate stabilization on trade and growth will be positive. This is the rationale of Asian exchange rate arrangements.

It is undeniable that trade integration is a fundamental factor in promoting regional integration. Regional integration in Asia based on trade only would be somewhat amazing without the support of financial integration. Real integration in terms of GDP growth and money supply still presents some diversification. The fact that most countries in the region still maintain a dollar peg system has made the task of establishing regional exchange rate coordination more urgent in the face of the global financial crisis of 2007-2009.

Exchange rate is a key, if not the only one, that requires coordination at the present

stage of regional cooperation. Furthermore, because exchange rate serves as a linkage between external balance and internal balance, exchange rate coordination will call for deepening economic integration and regional convergence criteria, or an Asian edition of the Maastricht Treaty.

Even though there exist some gaps between the theory and the practice of currency basket operation, discussions on various currency basket schemes have been a hot topic in the past ten years. The currency basket as a regional exchange rate benchmark is a starting point towards a common currency, as happened in Europe more than ten years ago. However, the most important function of the basket benchmark is that it could serve as an effective indicator for regional surveillance and coordination. This is a crucial precondition for the activation of real regional cooperation.

Because both interregional trade and intraregional trade are important to the ASEAN5+3 economies, from the perspective of trade stabilization by exchange rate stabilization, it is necessary to emphasize both in the design of a regional exchange rate regime. This consideration results in the two basket BBC regime for East Asia.

A simple anchor basket is composed of USD and the Euro, but a more comprehensive basket should be composed of USD, the Euro, GBP, AUD and CAD. The nominal exchange rate regional basket is convenient for the operation of a BBC, but the real exchange rate regional basket could indicate the integration of economic fundamentals in the region, which is the key for regional cooperation.

A BBC regime with 10% bands should be feasible in operation. The nominal BBC regime is easier to operate than a real BBC regime. This suggests that East Asia still has a long way to go before economic convergence that points to a common currency. However, the basket benchmark of exchange rates by the BBC regime is a very practical indicator for regional surveillance and coordination.

The main conclusions of the report can be stated as follows:

- 1) A regional exchange rate arrangement is the key in promoting regional cooperation in East Asia;
- 2) Compared with the Euro area, regional integration in East Asia does not yet qualify for the creation of a common currency;
- 3) The establishment of a regional exchange rate benchmark as a BBC regime for regional surveillance and trade stabilization is crucially required, and may provide a benchmark for private investment and official swap in the region;
- 4) A suggested currency basket design, including the choice of peg currency, the choice of parity and the choice of band width are provided;
- 5) A BBC regime with 10% bands is possible to achieve, especially for nominal exchange rate coordination;
- 6) Real exchange rate analysis shows the importance of regional convergent requirements, such as the Maastricht Treaty, and calls for an overall and fundamental

economic integration in Asia.

Benchmark year setting in the analysis of exchange rate deviation; the stabilization effect of the BBC on trade in East Asia; the asymmetric effect among East Asian economies and the choice of intervention currency; and the choice of the rate of crawl are all topics that must be attempted in a future report.

## References

- Akhtar, M. A., and R. S. Hilton (1984): "Effects of Exchange Rate Uncertainty on German and U.S. Trade", *Federal Reserve Bank of New York Quarterly Review*, pp.7-16.
- Aldaba, Rafaclita M. and Josef T. Yap (2009): "Investment and Capital Flows: Implications of the ASEAN Economic Community", *Philippine Institute for Development Studies Working Paper Series*, No. 2009-01.
- Alesina, Alberto., Robert J. Barro and Silvana Tenreyro (2002): "Optimal Currency Areas", *NBER Working Paper*, No.9072.
- Ando, Mitsuyo (2006): "Fragmentation and Vertical Intra-industry Trade in East Asia", *North American Journal of Economic and Finance*, vol.17, pp.257-281.
- Ando, Mitsuyo and Akie Iriyama (2009): "International Production Networks and Export/Import Responsiveness to Exchange Rate: The Case of Japanese Manufacturing Firms", RIETI Discussion Paper Series 09-E-049.
- Antweiler, Werner (2001): "The EURO: Europe's New Currency: An Information Page of the Pacific Exchange Rate Service", <http://fx.sauder.ubc.ca/euro/>.
- Arize, A. C. (1996): "The Impact of Exchange Rate Uncertainty on Export Growth: Evidence from Korean Data", *International Economic Journal*, vol.10, pp.49-60.
- Asheim, Beir B (1983): "Properties of a System of Currency Baskets", *Journal of International Economics*, vol.16, pp.311-317.
- BAAK, SaangJoon (2008): "The Bilateral Real Exchange Rate and Trade Between China and the U.S.", *China Economic Review*, vol.19, pp.117-127.
- Bahmani-Oskooee, Mohsen (1991): "Is There a Long-run Relation between the Trade Balance and the Real Effective Exchange Rate of LDCs?" *Economics Letters*, vol.36, pp.403-407.
- Bahmani-Oskooee, Mohsen and Nabil Ltaifa (1992): "Effects of Exchange Rate Risk on Exports: Crosscountry Analysis", *World Development*, vol.20, pp.1173-1181.
- Bahmani-Oskooee, Mohsen and Paesteh, S (1993): "Does Exchange-Rate Volatility Deter Trade Volume of LDCs?" *Journal of Economic Development*, vol.18, pp.189-205.
- Bahmani-Oskooee, Mohsen and Scott W. Hegerty (2008): "Exchange-Rate Risk and U.S.-Japan Trade: Evidence from Industry Level Data", *Journal of the Japanese and International Economies*, vol.22, pp.518-534.
- Baier, Scott L. and Gerald P. Dwyer (2008): "Financial and Real Integration", *Federal Reserve Bank of Atlanta Working Paper Series*, 2008-14.
- Bailey, Martin J., George S Tavalas and Michael Ulan (1987): "The Impact of Exchange-Rate Volatility on Export Growth: Some Theoretical Considerations and Empirical Results", *Journal of Policy Modeling*, vol.9, pp.225-243.
- Baum, Christopher F. and Mustafa Caglayan (2009): "On the Sensitivity of the Volume and

- Volatility of Bilateral Trade Flows to Exchange Rate Uncertainty”, *Journal of International Money and Finance*, forthcoming.
- Calvo, G. and C. Reinhart (2002): “Fear of Floating”, *Quarterly Journal of Economics*, vol.117, pp.379-408.
- Caporle, T and Doroodian, K (1994): “Exchange Rate Variability and the Flow of International Trade”, *Economic Letters*, vol.46, pp.49-54.
- Choi, Gongpil and Deok Ryong Yoon (2005): “A Roadmap for the Asian Exchange Rate Mechanism”, *KIEP Working Paper* 05-04.
- Christl, Josef. (2006): “Regional Currency Arrangements: Insights from Europe”, *Oesterreichische Nationalbank Working Papers* No.125.
- Cowen, David., Ranil Salgado, Hemant Shah, Leslie Teo and Alessandro Zanello (2006): “Financial Integration in Asia: Recent Developments and Next Steps”, *IMF Working Paper* 06/196.
- Cushman, David O., (1983): “The Effects of Real Exchange Rate Risk on International Trade”, *Journal of International Economics*, vol.15, pp.45-63.
- De Ocampo, Roberto F. (2004): “A Single Currency for Asia: is it Time?”, paper presented at ADB Seminar: “A Single Currency for East Asia: Lessons from Europe”.
- Doroodian, K., (1999): “Does Exchange Rate Volatility Deter International Trade in Developing Countries?” *Journal of Asian Economics*, vol.10, pp.465-474.
- Edward, Sebastian and Miguel A Savastano (1999): “Exchange Rate in Emerging Economies: What Do We Know? What Do We Need to Know?” *NBER Working Paper* 7228.
- Eichengreen, B., Hausmann, R. and Panizza, U (2003) “Currency Mismatches, Debt Intolerance and Original Sin: Why They are Not the Same and Why it Matters”, *NBER Working Paper* 10036.
- Eichengreen, Barry (2006a): “The Parallel Currency Approach to Asian Monetary Integration”, *American Economic Review Papers and Proceedings* vol.96, pp.432-436.
- Eichengreen, Barry (2006b): “Global Imbalances and the Asian Economics: Implications for Regional Cooperation”, *ADB Working Paper Series on Regional Economic Integration*, No.4.
- Eichengreen, Barry (2007): “Fostering Monetary and Exchange Rate Cooperation in East Asia”, [http://www.econ.berkeley.edu/~eichengr/fostering\\_monetary.pdf](http://www.econ.berkeley.edu/~eichengr/fostering_monetary.pdf).
- Eichengreen, Barry and Yung Chul Park (2004): “Why Has There Been Less Financial Integration in Asia than in Europe?” *Monetary Authority of Singapore Staff Paper*, No.28.
- Eichengreen, Barry, and Hausman, Ricardo (1999): “Exchange Rates and Financial Fragility”, *NBER Working Paper* No. 7418.
- Eichengreen, Barry., and Tamim Bayoumi (1999): “Is Asia an Optimum Currency Area? Can it become One?”, in *Exchange Rate Policies in Emerging Asian Countries*, edited

- by Stefan Collignon, Jean Pisani-Ferry and Yung Chul Park, *Routledge Studies in the Growth Economies of Asia*, pp.347-366.
- Fang, Lai and Miller (2009): “Does Exchange Rate Risk Affect Exports Asymmetrically? Asian Evidence”, *Journal of International Money and Finance*, vol.28, pp.215-239.
- Fang, Lai and Thompson (2007): “Exchange Rate, Exchange Risk and Asian Export Revenue”, *International Review of Economics and Finance*, vol.16, pp.237-254.
- Forbes, Kristin and Menzie Chinn (2003): “A Decomposition of Global Linkage in Financial Markets Over Time”, *NBER Working Paper* 9555.
- Frankel J and A. Rose (1998): “The Endogeneity of the Optimum Currency Area Criteria”, *The Economic Journal*, vol.108, pp.1009-1025.
- Frankel, Jeffrey (1999): “No Single Currency Regime is Right for All Countries or at All Times”, *NBER Working Paper* 7338.
- Frankel, Jeffrey A., and Shang-Jin Wei (1994): “Yen Bloc or Dollar bloc? Exchange Rate Policies of the East Asian Economies”, in Takatoshi Ito and Anne O. Krueger eds., *Macroeconomic Linkage: Savings, Exchange Rate and Capital Flows*, Chicago, University of Chicago Press, pp.295-355.
- Fratzscher, Marcel and Livio Stracca (2008): “Has the Euro Made a Difference?” *European Central Bank Working Paper Series*, No.956.
- Fukao, Kyoji, Hikari Ishido and Keiko Ito (2003): “Vertical Intra-industry Trade and Foreign Direct Investment in East Asia”, *Journal of Japanese and International Economics*, vol.17, pp.468-506.
- Genberg, Hans (2006): “Exchange-Rate Arrangements and Financial Integration in East Asia: On a Collision Course?”, *Oesterreichische National Bank Working Paper*, 122.
- Berling, Kerstin (2008): “The Real Consequences of Financial Market Integration When Countries are Heterogeneous”, *Oesterreichische National Bank Working Paper*, 141.
- Girardin, Eric., and Alfred Steinberr (2008): “Regional Monetary Unit for East Asia: Lessons from Europe”, *ADB Institute Discussion Paper* No.116.
- Goutor, Padma (1985): “Effects of Exchange Rate Volatility on Trade: Some Further Evidence”, *IMF Staff Paper*, vol.32, pp.475-512.
- Hamanaka, Shintaro (2009): “Re-considering Asian Financial Regionalism in the 1990’s”, *ADB Working Paper Series on Regional Economic Integration*, No.26, Asian Development Bank.
- Herrmann, Sabine and Adalbert Winkler (2008): “Emerging Europe versus Emerging Asia”, *European Central Bank Occasional Paper Series*, No.88.
- Hooper, Peter and Steven W. Kohlhagen (1978): “The Effects of Exchange Rate Uncertainty on the Prices and Volume of International Trade”, *Journal of International Economics*, vol.8, pp.483-511.
- Hoxha, Indrit., Sebnem Kalemli-Ozcan and Dittrich Vollrath (2009): “How Big Are the Gains from International Financial Integration?”, *NBER Working Paper Series* 14636.

- Husain, Aasim., Aska Mody and Kenneth S. Rogoff (2004): “Exchange Rate Regime Durability and Performance in Developing Versus Advanced Economies”, *NBER Working Paper* 10673.
- Irandoust, Manuchehr., Kristim Ekblan and Johan Parmler (2006): “Bilateral Trade Flows and Exchange Rate Sensitivity: Evidence from Likelihood-based Panel Cointegration”, *Economic Systems*, vol.30, pp.170-183.
- Ito, Takatoshi., Eiji Ogawa and N. Yuri Sasaki (1998): “How Did the Dollar Peg Fail in Asia?”, *Journal of the Japanese and International Economics*, vol.12, pp.256-304.
- Kawai, Masahiro (2007): “Towards a Regional Exchange Rate Regime in East Asia”, *ADB Institute Discussion Paper* No.68.
- Kawai, Masahiro and Shigeru Akiyama (1998): “The Role of Nominal Anchor Currencies in Exchange Arrangements”, *Journal of the Japanese and International Economics*, vol.12, pp.334-387.
- Kawai, Masahiro and Shigeru Akiyama (2000): “Implications of the Currency Crisis for Exchange Rate Arrangements in Emerging East Asia”, *The World Bank Policy Research Working Paper*, No.2502.
- Kawai, Masahiro and Shinji Takagi (2000): “Proposed Strategy for a Regional Exchange Rate Arrangement in Post-Crisis East Asia”, *The World Bank Policy Research Working Paper*, No.2503.
- Kawai, Masahiro., and Taizo Motonishi (2005): “Is East Asia an Optimum Currency Area?”, Conference Paper, Financial Interdependence and Exchange Rate Regimes in East Asia, Policy Research Institute, MOF, [http:// www.mof.go.jp/english/soeken/kiiep2005/kiiep2005.htm](http://www.mof.go.jp/english/soeken/kiiep2005/kiiep2005.htm).
- Kenen, Peter B., and Dani Rodrik (1986): “Measuring and Analyzing the Effect of Short-Term Volatility in Real Exchange Rates”, *The Review of Economics and Statistics*, vol.68, pp.311-315.
- Kim, Heungchong, Woosik Moon and Deok Ryong Yoon (2004): “Monetary Union and Real Convergence Compared: Europe and East Asia”, *KIEP Discussion Paper* 04-01.
- Kim, Jung Sik (2005): “Is the Pegged Regime a Feasible Alternative in East Asia?”, Conference Paper, Financial Interdependence and Exchange Rate Regimes in East Asia, Policy Research Institute, MOF, <http://www.moof.go.jp/english/soeken/kiiep2005/kiiep2005.htm>.
- Klau, Marc and San Sau Fung (2006): “The New BIS Effective Exchange Rate Indices”, *BIS Quarterly Review*, March.
- Krugman, P. (1991): “Target Zones and Exchange Rate Dynamics”, *Quarterly Journal of Economics*, vol.106, pp.669-682.
- Lee, Jong-wha and Cyn-young Park (2008): “Global Financial Turmoil: Impact and Challenges for Asia’s Financial System”, *ADB Working Paper Series on Regional Economic Integration*, No.18.

- Lee, Kyung Tae., and Deok Ryong Yoon (2007): “A Roadmap for East Asian Monetary Integration: The Necessary First Step”, *KIEP Working Paper* 07-04.
- Levy-Yeyati, E. and F. Sturzenegger (2005) “Classifying Exchange Rate Regimes: Deeds vs. Words,” *European Economic Review*, vol.49, pp.1603-1635.
- Makin, John H (1976): “Eurocurrencies and the Evolution of the International Monetary System”, in Carl H. Stern, John H. Makin and Dennis E. Logus eds. *Eurocurrencies and the International Monetary System*, Washington, DC: American Enterprise Institute, pp.17-51.
- McKinnon, Ronald (1963): “Optimum Currency Areas”, *American Economic Review*, vol.53, pp.717-724.
- Moon, Woosik and Yeongseop Rhee (2007): “Regional Currency Unit and Exchange Rate Coordination in East Asia”, *The Kyoto Economic Review*, vol.76, pp.53-66.
- Moon, Woosik., Yeongseop Rhee and Deokryong Yoon (2006): “Regional Currency Unit in Asia: Property and Perspective”, *KIEP Working Paper* 06-03.
- Mori, Junichi., Naoyuki Kinukawa, Hedeki Nukaya and Masashi Hashimoto (2002): “Integration of the East Asian Economies and a Step by Step Approach towards a Currency Basket Regime”, *IIMA Research Report* No.2.
- Mundell, Robert (1961): “A Theory of Optimum Currency Areas”, *American Economic Review*, vol.51, pp.509-517.
- Mussa, Michael., Paul Masson, Alexander Swoboda, Esteban Jadresic, Paolo Mauro and Andy Berg (2000): “Exchange Rate Regimes in an Increasingly Integrated World Economy”, *IMF Occasional Paper* 193.
- Obstfeld, Maurice and Kenneth Rogoff (1995): “The Mirage of Fixed Exchange Rates”, *NBER Working Paper* 5191.
- Ogawa, Eiji (2002): “Should East Asian Countries Return to a Dollar Peg Again?” in Peter Drysdale and Kenichi Ishigake eds. *East Asian Trade and Financial Integration: New Issues*, Asia Pacific Press, pp.159-184.
- Ogawa, Eiji (2004): “Regional Monetary Cooperation in East Asia against Asymmetric Response to the US Dollar Depreciation”, paper prepared for the Conference on Korean and World Economy III.
- Ogawa, Eiji and Junko Shimizu (2003): “Trade-off for Common Currency Basket Denominated Bonds in East Asia”, *Hitotsubashi University Research Unit for Statistical Analysis in Social Sciences*, No.5.
- Ogawa, Eiji and Junko Shimizu (2004): “Risk Properties of AMU Denominated Asian Bonds”, *Hi-Stat Discussion Paper Series*, No.45.
- Ogawa, Eiji and Junko Shimizu (2005): “A Deviation Measurement for Coordinated Exchange Rate Policies in East Asia”, *RIETI Discussion Paper Series* 05-E-017.
- Ogawa, Eiji and Junko Shimizu (2006a): “Stabilization of Effective Exchange Rates under Common Currency Basket Systems” *NBER Working Paper Series*, 12198.

- Ogawa, Eiji and Junko Shimizu (2006b): “Progress towards a Common Currency Basket System in East Asia”, *RIETI Discussion Paper Series 07-E-002*.
- Ogawa, Eiji and Junko Shimizu (2006c): “The Core-AMU Denominated Asian Bonds for Local Investors in East Asia”, unpublished.
- Ogawa, Eiji and Kentaro Kawasaki (2003a): “What Should be Weights on the Three Major Currencies for the Common Currency Basket in East Asia”, *Hitotsubashi University Research Unit for Statistical Analysis in Social Sciences*, No.6.
- Ogawa, Eiji and Kentaro Kawasaki (2003b): “Possibility of Creating a Common Currency Basket for East Asia”, *JBIC Discussion Paper No.5*.
- Ogawa, Eiji and Kentaro Kawasaki (2006): “Adopting a Common Currency Basket Arrangement into the ‘ASEAN Plus Three’”, *RIETI Discussion Paper Series 06-E-028*.
- Ogawa, Eiji and Takatoshi Ito (2000): “On the Desirability of a Regional Basket Currency Arrangement”, *NBER Working Paper Series*, No.8002.
- Ogawa and Yoshimi (2008): “Widening Deviation among East Asia Currencies”, *RIETI Discussion Paper Series 08-E-010*.
- Ogawa and Yoshimi (2009): “Analysis on  $\beta$  and  $\alpha$  Convergences of East Asian Currencies”, *Global COE Hi-Stat Discussion Paper Series 049*.
- Park, Yung Chul., and Charles Wyplosz (2007): “Exchange Rate Arrangements in Asia: Do They Matter?”, Graduate Institute of International Studies, Geneva, *HEI Working Paper No.04/2007*.
- Pasadilla, Gloria O. (2008): “Financial Service Integration in East Asia: Lessons from the European Union”, *Asia-pacific Research and Training Network on Trade Working Paper Series*, No.53.
- Plummer, Michael G. (2006): “The ASEAN Economic Community and the European Experience”, *ADB Working Paper Series on Regional Economic Integration No.1*.
- Poirson, Helene (2001): “How Do Countries Choose Their Exchange Rate Regime?” *IMF Working Paper*, 01/46.
- Qin, Duo, Marie Anne Cagas, Ceoffrey Ducanes, Nedelyn Magtibay-Ramos and Oilipinas F. Quisin (2007): “Measuring Regional market Integration in Developing Asia: A Dynamic Factor Error Correction Model (DF-ECM) Approach”, *ADB Working Paper Series on Regional Economic Integration*, No.8.
- Qin, Duo and Tao Tan (2008): “How Much Intraregional Exchange Rate Variability Could a Currency Union Remove? The Case of ASEAN+3”, *Queen Mary University of London Working Paper*, No.631.
- Rajan, Ramkishan (2002): “Exchange Rate Policy Options for Post-crisis Southeast Asia: Is There a Case for Currency Baskets?” *The World Economy*, vol.25, pp.137-163.
- Rana, Pradumna B. (2007): “Trade Intensity and Business Cycle Synchronization: The Case of East Asia”, *ADB Working Paper Series on Regional Economic Integration*, No.10.
- Rose, Andrew K and Mark Spiegel (2002): “A Gravity Model of International Lending:

- Trade, Default and Credit”, *CEPR Discussion Paper* No.3539.
- Schnabl, Gunther (2006): “The Evolution of the East Asian Currency Basket---Still Undisclosed and Changing”, *CESIFO Working Paper*, No.1873.
- Shioji, Etsuro (2006): “Invoicing Currency and the Optimal Basket Peg for East Asia: Analysis Using a New Open Economy Macroeconomic Model”, *Journal of the Japanese and International Economies*, vol.20, pp.569-589.
- Shirono, Kazuko (2009): “Yen Bloc or Yuan Bloc: An Analysis of Currency Arrangements in East Asia”, *IMF Working Paper*, WP/09/3.
- Sun, Wei and Lian An (2008): “Asymmetric Shocks and Exchange Rate Regimes in East Asia”, *International Research Journal of Finance and Economics*, vol.22, pp.38-48.
- Terada, Takashi (1998): “The Origins of Japan’s APEC Policy: Foreign Minister Takeo Miki’s Asia-Pacific Policy and Current Implications”, *The Pacific Review*, vol.11, pp.337-363.
- Thorbecke, Willem (2006): “The Effect of Exchange Rate Changes on Trade in East Asia”, REITI Discussion Paper Series 05-E-009.
- Turnovsky, Stephen J., (1982): “A Determination of the Optimal Currency Basket: a Macroeconomic Analysis”, *Journal of International Economics*, vol.12, pp.333-354.
- Wang, Yen Kyun (2008): “Flexible BBC Exchange Rate System and Exchange Rate Cooperation in East Asia”, *KIEP Working Paper* 08-03.
- Williamson John (1999) : “The Case for a Common Basket Peg for East Asian Currencies”, in *Exchange Rate Policies in Emerging Asian Countries*, edited by Stefan Collignon, Jean Pisani-Ferry and Yung Chul Park, Routledge Studies in the Growth Economies of Asia, pp.327-343.
- Williamson John (2005): “A Currency Basket for East Asia, Not Just China”, *Policy Briefs in International Economics*, 05-1.
- Williamson, John (1996): *The Crawling Band as an Exchange Rate Regime: Lessons from Chile, Colombia, and Israel*, Washington: Institute for International Economics.
- Yamaguchi, Masaky (2005): “Competing Proposals for the Asian Basket Currency”, <http://www.lib.yamagata-u.ac.jp/kiyou/kiyous/kiyous-36-1/image/kiyous-36-1-059to075.pdf>
- Yeyati, Eduardo Levy, Sergio L. Schmukler and Neeltje van Horen (2008): “Crises, Capital Controls and Financial Integration”, ADB Institute Working Paper No.121.
- Yoshino, Naoyuki., Sahoko Kaji and Ayako Suzuki (2004): “The Basket Peg, Dollar-Peg and Floating: A Comparative Analysis”, *The Journal of the Japanese and International Economies*, vol.18, pp.183-217.

**Annex 1:**

**Table 3.8 China and Malaysia: Steady Peg on USD**

<b>CNY</b>	<b>USD</b>	<b>EUR</b>	<b>JPY</b>	<b>Adjust R<sup>2</sup></b>
<b>1999-2002</b>	0.997527*** (0.001977)	-0.000114 (0.004534)	-0.001092 (0.001555)	0.997578
<b>2003-2006</b>	0.980440*** (0.005071)	-0.012308 (0.013786)	0.028877*** (0.005380)	0.985809
<b>2007-2008</b>	0.965773*** (0.011211)	0.043444* (0.016848)	0.004424 (0.009458)	0.972350
<b>2009</b>	0.981482 (0.005182)	0.002850 (0.009289)	0.006037 (0.004501)	0.997032
<b>MYR</b>	<b>USD</b>	<b>EUR</b>	<b>JPY</b>	<b>Adjust R<sup>2</sup></b>
<b>1999-2002</b>	1.002168*** (0.003510)	0.006767 (0.008046)	-0.002185 (0.002753)	0.992402
<b>2003-2006</b>	0.972522*** (0.008141)	0.005185 (0.022131)	0.022549*** (0.008637)	0.963638
<b>2007-2008</b>	0.889501*** (0.032285)	0.214569*** (0.048519)	-0.033596 (0.027239)	0.793126
<b>2009</b>	0.842034*** (0.044948)	0.306070*** (0.080563)	-0.108060*** (0.039038)	0.762657

Source: Calculated by the author according to the method of Frankel and Wei (1994) and Kawai and Akiyama (2000), taking the Swiss franc as the numeraire currency. Exchange rate data from UBC Pacific Exchange Rate Service database.

Note: Standard errors are in parenthesis, \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% levels, respectively.

**Annex2:**

**Table 3.9 Singapore and Thailand: Mainly Peg on USD**

<b>SGD</b>	<b>USD</b>	<b>EUR</b>	<b>JPY</b>	<b>Adjust R<sup>2</sup></b>
<b>1999-2002</b>	0.778092*** (0.014529)	0.104700*** (0.033306)	0.165980*** (0.011397)	0.866190
<b>2003-2006</b>	0.605170*** (0.012944)	0.173402*** (0.035188)	0.272791*** (0.013732)	0.872617
<b>2007-2008</b>	0.680305*** (0.024582)	0.413629*** (0.036943)	-0.031289 (0.020741)	0.829430
<b>2009</b>	0.683384*** (0.029788)	0.421354*** (0.053391)	-0.044829* (0.025871)	0.850771
<b>THB</b>	<b>USD</b>	<b>EUR</b>	<b>JPY</b>	<b>Adjust R<sup>2</sup></b>
<b>1999-2002</b>	0.780059*** (0.024136)	0.095567* (0.055328)	0.175320*** (0.018933)	0.705110
<b>2003-2006</b>	0.695215*** (0.017640)	0.144383** (0.047954)	0.276524*** (0.018714)	0.818689
<b>2007-2008</b>	0.915698*** (0.070559)	0.189128* (0.106038)	-0.028660 (0.059532)	0.455093
<b>2009</b>	0.831323*** (0.023323)	0.148497*** (0.041804)	0.029625 (0.020257)	0.928212

Source: Calculated by the author according to the method of Frankel and Wei (1994) and Kawai and Akiyama (2000), taking the Swiss franc as the numeraire currency. Exchange rate data from UBC Pacific Exchange Rate Service database.

Note: Standard errors are in parenthesis, \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% levels, respectively.

**Annex 3:**

**Table 3.10 Korea: Might Peg on a Broader Basket**

<b>KRW</b>	<b>USD</b>	<b>EUR</b>	<b>JPY</b>	<b>CNY</b>	<b>AUD</b>	<b>Adjust R<sup>2</sup></b>
<b>1999-2002</b>	0.856757*** (0.027868)	-0.044252 (0.063884)	0.182411*** (0.021861)			0.674690
<b>2003-2006</b>	0.734230*** (0.027539)	0.117766 (0.074865)	0.260501*** (0.029217)			0.661013
<b>2007-2008</b>	0.870877*** (0.110007)	0.731015*** (0.165322)	-0.321179*** (0.092815)			0.296580
	0.725717*** (0.113011)	0.283521 (0.189521)	-0.136489 (0.101909)	0.129580 (0.070164)	0.295904*** (0.066008)	0.324202
<b>2009</b>	0.807726*** (0.110076)	0.574697** (0.197294)	-0.307145*** (0.095602)			0.334371
	0.671032*** (0.107812)	-0.063507 (0.244592)	-0.144351 (0.096682)	0.110505 (0.093266)	0.423965*** (0.092381)	0.406547

Source: Calculated by the author according to the method of Frankel and Wei (1994) and Kawai and Akiyama (2000), taking the Swiss franc as the numeraire currency. Exchange rate data from UBC Pacific Exchange Rate Service database.

Note: Standard errors are in parenthesis, \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% levels, respectively.

**Annex 4:**

**Table 3.11 Indonesia and Philippines: Pegged but Disturbed**

<b>IDR</b>	<b>USD</b>	<b>EUR</b>	<b>JPY</b>	<b>Adjust R<sup>2</sup></b>
<b>1999-2002</b>	0.116435 (0.101628)	0.019449 (0.232968)	0.044118 (0.079721)	0.001753
<b>2003-2006</b>	0.770516*** (0.037689)	0.108311 (0.102460)	0.192471*** (0.039986)	0.505197
<b>2007-2008</b>	0.797320*** (0.064565)	0.674210*** (0.097031)	0.022095 (0.054475)	0.538798
<b>2009</b>	0.877546*** (0.076615)	0.105431 (0.137321)	-0.060578 (0.066541)	0.535486
<b>PHP</b>	<b>USD</b>	<b>EUR</b>	<b>JPY</b>	<b>Adjust R<sup>2</sup></b>
<b>1999-2002</b>	0.886457*** (0.040265)	0.036871 (0.092302)	0.115733*** (0.031586)	0.486482
<b>2003-2006</b>	0.800315*** (0.027727)	0.003392 (0.075416)	0.067030** (0.029416)	0.622089
<b>2007-2008</b>	0.002855 (0.079886)	0.056270 (0.119936)	-0.105475 (0.067309)	0.007468
<b>2009</b>	-0.213369** (0.098520)	0.013611 (0.176061)	0.074806 (0.086355)	0.018395

Source: Calculated by the author according to the method of Frankel and Wei (1994) and Kawai and Akiyama (2000), taking the Swiss franc as the numeraire currency. Exchange rate data from UBC Pacific Exchange Rate Service database.

Note: Standard errors are in parenthesis, \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% levels, respectively.

## Annex 5:

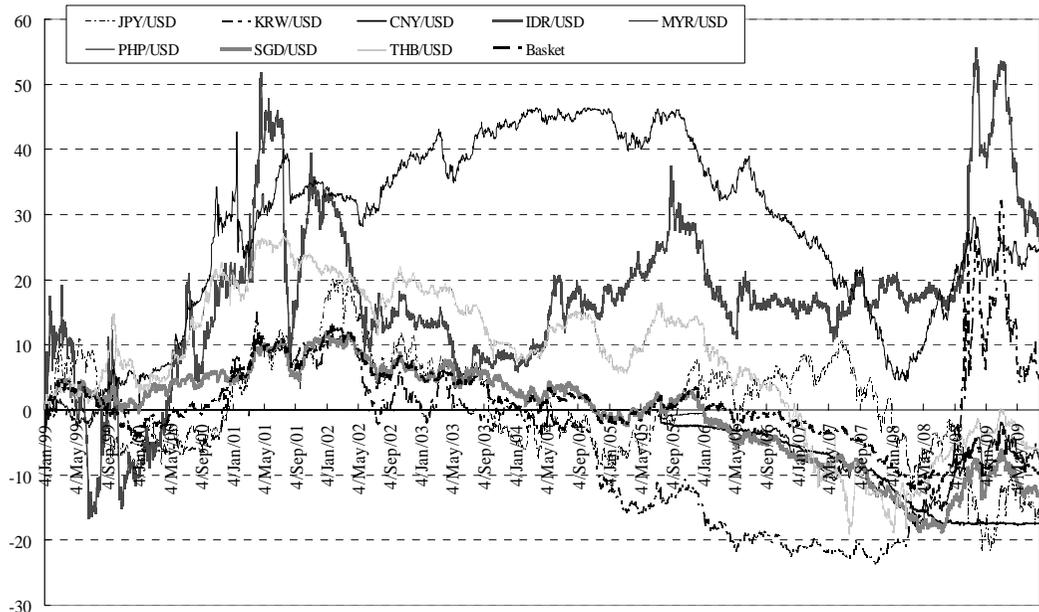
**Table 5.1 Trade Composition of ASEAN5+3**

	Intra-regional Trade Ratio			Trade Ratio with the US			Trade Ratio with Euro11			ROW		
	1980-89	1990-99	2000-09	1980-89	1990-99	2000-09	1980-89	1990-99	2000-09	1980-89	1990-99	2000-09
<b>Japan</b>	21.66	29.92	37.56	27.58	26.48	20.05	9.08	11.68	10.50	41.69	31.92	31.89
<b>Korea</b>	31.76	37.19	42.26	28.89	20.71	14.55	8.42	9.66	9.60	30.93	32.44	33.59
<b>China</b>	27.37	30.52	29.23	11.06	14.63	14.80	10.54	11.01	12.26	51.03	43.84	43.72
<b>Sub-average</b>	<b>23.93</b>	<b>31.45</b>	<b>34.48</b>	<b>25.47</b>	<b>22.80</b>	<b>16.77</b>	<b>9.19</b>	<b>11.15</b>	<b>11.10</b>	<b>41.41</b>	<b>34.60</b>	<b>37.35</b>
<b>Indonesia</b>	55.32	47.95	49.68	16.90	13.08	10.31	8.72	12.95	9.69	19.06	26.02	30.32
<b>Malaysia</b>	51.80	51.20	52.91	15.99	18.33	16.67	9.88	9.82	9.54	22.33	20.65	20.88
<b>Philippines</b>	35.94	41.00	50.13	27.82	26.12	19.62	10.00	10.17	11.09	26.23	22.71	19.16
<b>Singapore</b>	35.83	39.92	45.47	17.24	17.80	12.49	8.19	10.34	9.18	38.74	31.94	32.86
<b>Thailand</b>	41.92	44.26	47.98	15.04	15.69	12.47	13.14	11.21	9.11	29.89	28.84	30.44
<b>Sub-average</b>	<b>43.91</b>	<b>44.46</b>	<b>48.57</b>	<b>17.51</b>	<b>17.53</b>	<b>13.77</b>	<b>9.48</b>	<b>10.74</b>	<b>9.47</b>	<b>29.09</b>	<b>27.27</b>	<b>28.19</b>
<b>Total Average</b>	<b>28.92</b>	<b>35.59</b>	<b>38.60</b>	<b>23.48</b>	<b>21.12</b>	<b>15.94</b>	<b>9.26</b>	<b>11.02</b>	<b>10.65</b>	<b>38.33</b>	<b>32.27</b>	<b>34.81</b>

Source: Calculated using data from Direction of Trade.

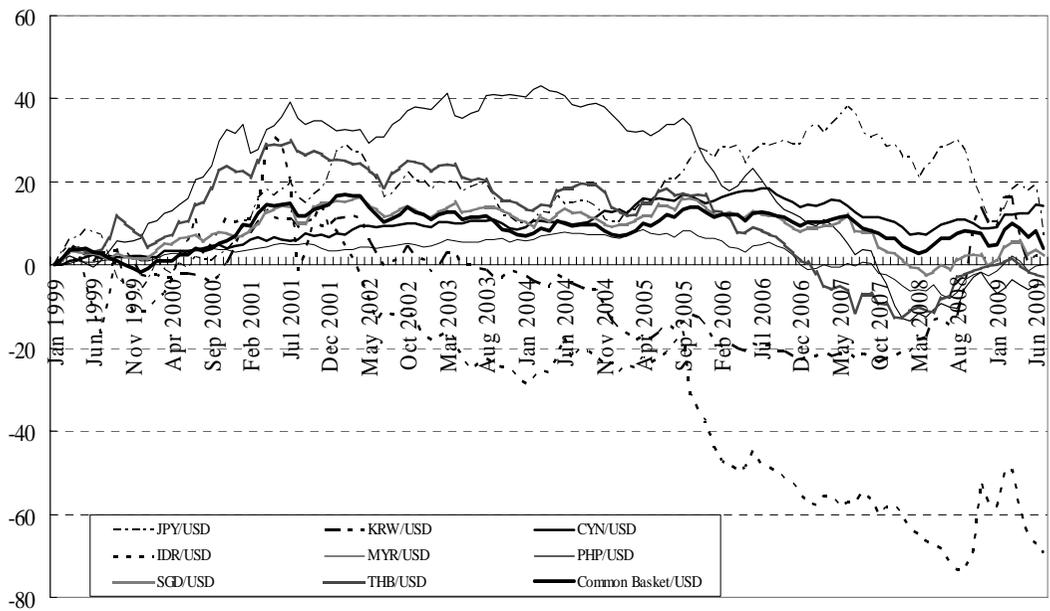
Note: 1) Average values are calculated by both the sum of numerators and denominators; 2) Intra-regional trade ratio equals the amount of intraregional trade to total trade volume; 3) Data for China include mainland China and Hong Kong SAR.

**Figure 5.6 Nominal Exchange Rate Volatility and Regional Basket**



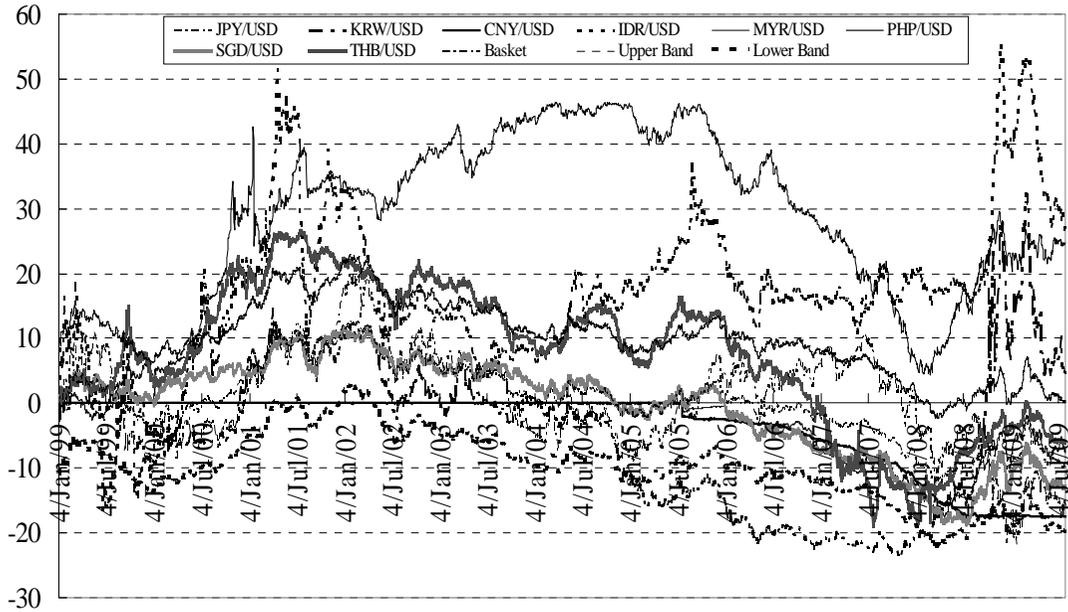
Source: UBC database and author's calculation.

**Table 5.7 Real Exchange Rate Volatility and Regional Basket**



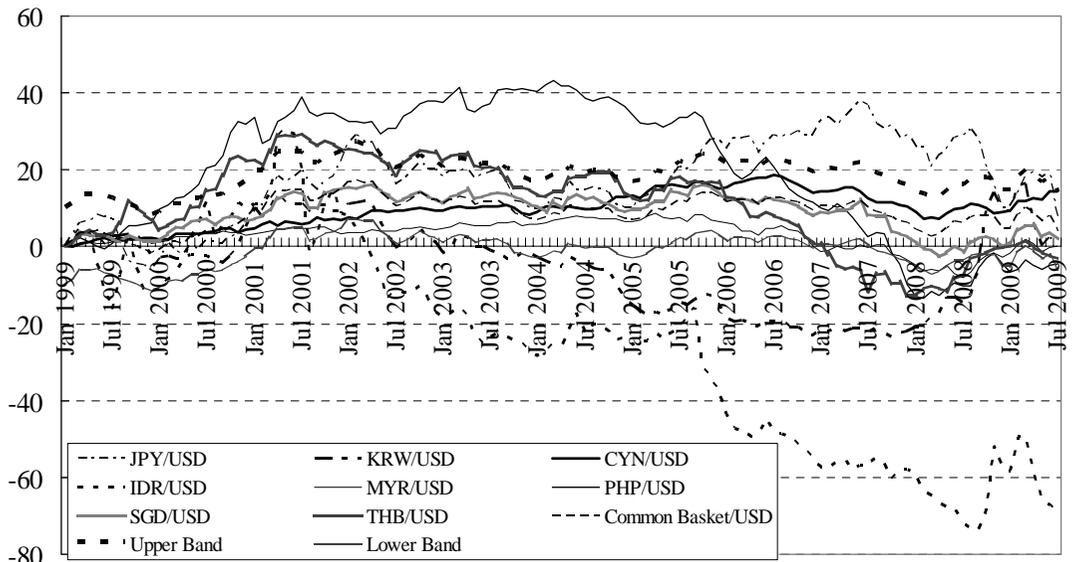
Source: Calculate by data from UBC.

**Figure5.8 Nominal Exchange Rate Volatility and Regional Basket Bands**



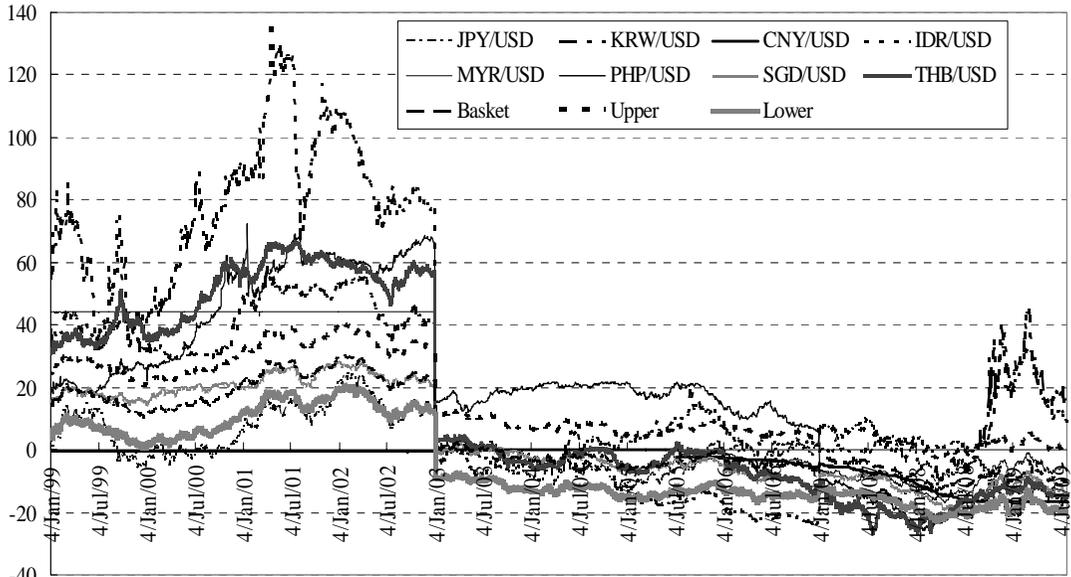
Source: UBC and author's calculation.

**Figure5.9 Real Exchange Rate Volatility and Regional Basket Bands**



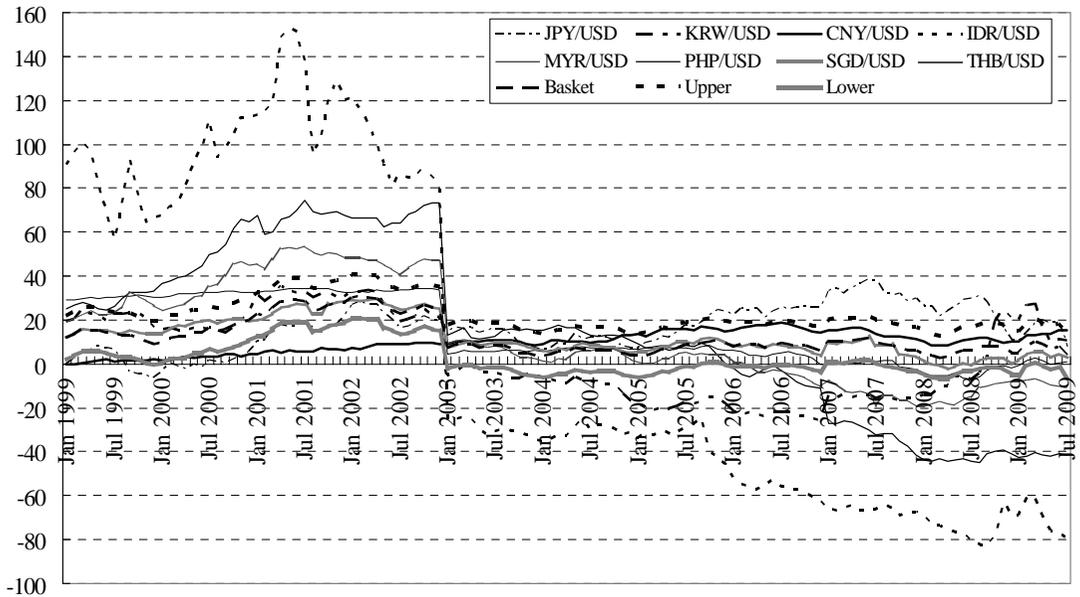
Source: Calculated by data from UBC.

**Figure5.10 Benchmark Adjustment: Nominal Regional Basket and Bands**



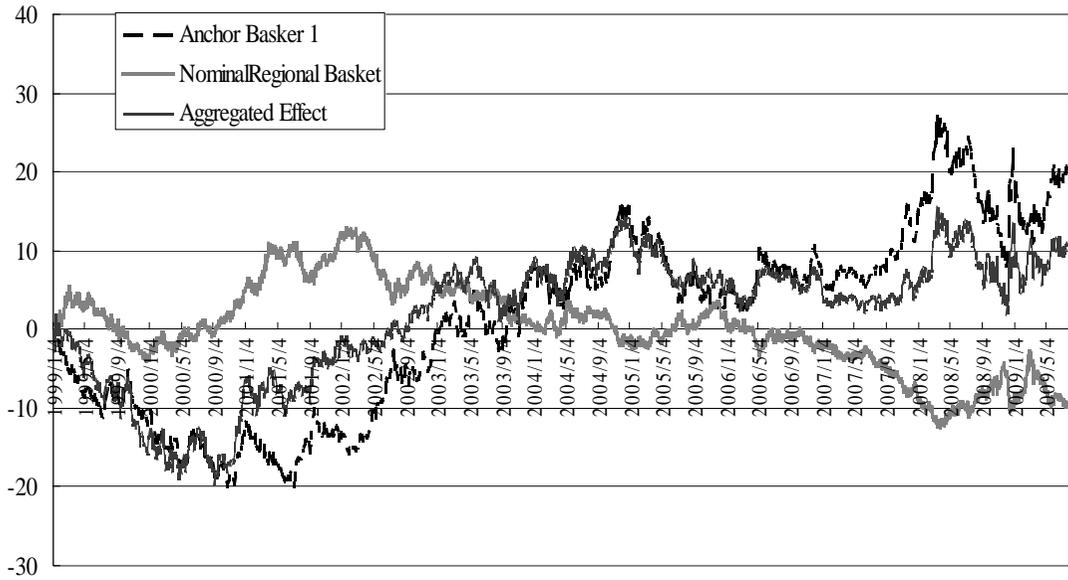
Source: Calculated by author.

**Figure5.11 Benchmark Adjustment: Real Regional Basket and Bands**



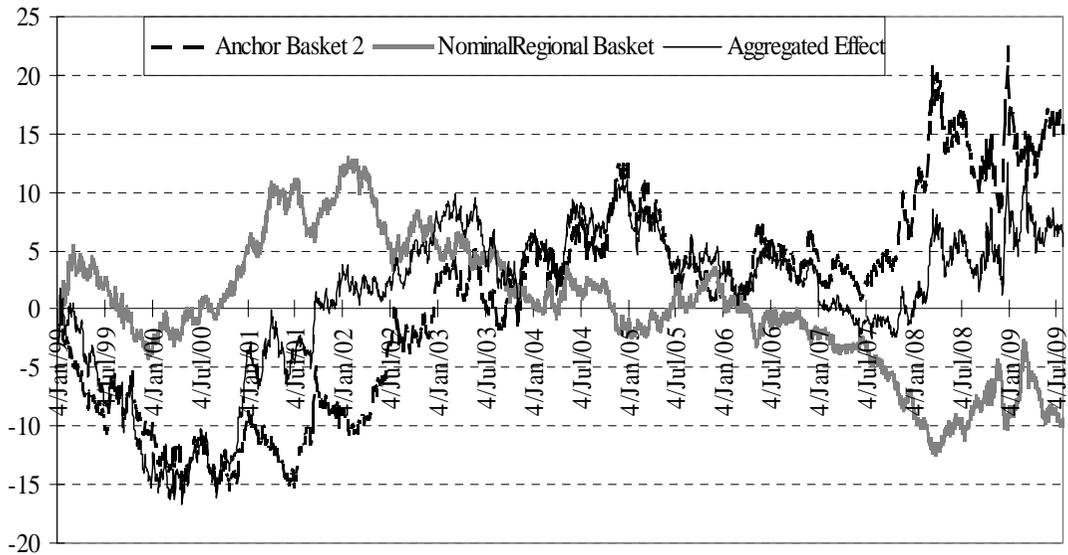
Source: Calculated by author

**Figure 5.12 Aggregated Effect of the Two Baskets**



Source: Calculated by author.

**Figure 5.13 Aggregated Effect of the Two Baskets**



Source: Calculated by author.