



ADB Working Paper Series

**Prevention and Resolution of
Foreign Exchange Crises in East
Asia**

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No. 363
June 2012

Asian Development Bank Institute

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An earlier version of this paper was presented at the ADBI Annual Conference on Reform of the International Monetary System held in Tokyo on 2 December 2011.

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Suggested citation:

Sussangkarn, C. 2012. ADBI Working Paper 363. Prevention and Resolution of Foreign Exchange Crises in East Asia. Tokyo: Asian Development Bank Institute. Available: <http://www.adbi.org/working-paper/2012/06/25/5099.resolution.foreign.exchange.crisis.east.asia/>

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Abstract

This paper discusses mechanisms to prevent and resolve foreign exchange crises in East Asia. Policies and mechanisms at the country level as well as regional and global levels are discussed. Policies at the level of a particular country to prevent foreign exchange crises include the management of short-term foreign currency liabilities, the adequacy of reserves, and managing episodes of rapid short-term capital inflows. The author discusses the development of regional mechanisms for crisis prevention and resolution in conjunction with the global mechanisms, including the Chiang Mai Initiative (CMI) and the Chiang Mai Initiative Multilateralization (CMIM). The author then suggests how the CMIM can evolve into an integrated crisis prevention and resolution mechanism for East Asia.

JEL Classification: E02, E44, E58, E63, F33, F36, F55

Note: In this paper, "\$" refers to US dollars, unless otherwise stated.

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1. INTRODUCTION

East Asia has been through two crises over the past decade and a half. The first one, in 1997–1998 was particularly severe, with three countries in the region, Thailand, Indonesia, and the Republic of Korea (henceforth Korea), becoming essentially insolvent in terms of not having enough foreign currency to meet their foreign currency obligations. All three countries had to enter into International Monetary Fund (IMF) supervised programs, and were forced to undertake harsh policies under IMF conditionality. In the global financial crisis of 2008–2009, the region fared much better on the foreign exchange front, with most countries being able to manage the volatility arising from the rapid capital outflows from the region following the closure of Lehman Brothers. However, some countries had severe dollar liquidity shortages and had to enter into bilateral swap agreements with other countries to help them cope with the liquidity shortages.

This paper discusses mechanisms to prevent and resolve foreign exchange crises in East Asia. Section 2 discusses policies at the level of a particular country to prevent foreign exchange crises, including the management of short-term foreign currency liabilities, the adequacy of reserves, and episodes of rapid short-term capital inflows. Section 3 discusses the development of regional mechanisms for crisis prevention and resolution in conjunction with the global mechanisms, including the Chiang Mai Initiative (CMI) and the Chiang Mai Initiative Multilateralization (CMIM). The paper suggests how these can evolve into an integrated crisis prevention and resolution mechanism for East Asia.

2. COUNTRY POLICIES TO PREVENT FOREIGN EXCHANGE CRISES

The most effective policies to prevent foreign exchange crises are at the country level. Past crises occurred mainly because of policy mistakes arising from a misunderstanding of the risks and from viewing situations with a wrong paradigm. This section will address issues related to the 1997–1998 crisis, the management of the adequacy of foreign reserves, and the management of short-term capital inflows.

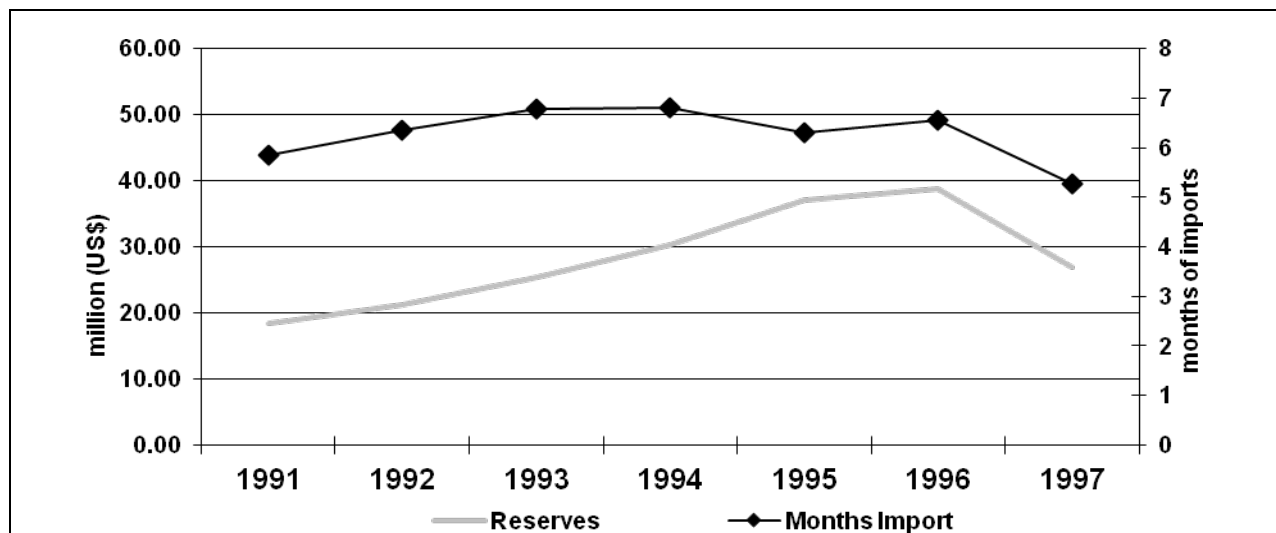
2.1 Short-term Foreign Debt and the 1997–1998 Crisis

The 1997–1998 East Asian financial crisis highlighted the importance of having appropriate policies at the country level to manage the adequacy of foreign reserves in order to prevent foreign exchange crises. Prior to the crisis, the main paradigm for viewing the adequacy of foreign reserves was that based on current account transactions, that is, foreign reserves should be adequate to back up current account transactions with the rest of the world. A widely used measure was the number of months of imports that reserves can cover, with at least three months of imports often used as a guideline, although there was no absolute scientific backing for the number.

This current account paradigm guided the Thai authorities' perception of the Thai macroeconomic position in the early to mid-1990s. Reserves were increasing rapidly up to 1996, and they were adequate to cover more than five months of imports (Figure 1). The increase in reserves and the high ratio of reserves to average monthly imports led the authorities to believe that Thailand's macro position was strong. This was in spite of the fact that

the annual current account deficit averaged about 7% of gross domestic product (GDP) between 1990 and 1996.

Figure 1: Reserves and Months of Imports



Source: Bank of Thailand data. <http://www.bot.or.th/English/Statistics/EconomicAndFinancial/Pages/index1.aspx> (accessed December 2010).

Given the large current account deficits, the main reason why reserves were increasing was because of large capital inflows. These were mainly foreign currency bank borrowing from abroad. In the early 1990s, the Thai authorities aimed to make Bangkok a regional financial center to rival Hong Kong, China and Singapore. Many financial liberalization measures were carried out and by 1993 most foreign exchange controls on current account and capital account transactions had been lifted. In March 1993, the Thai government established the Bangkok International Banking Facilities (BIBF) to serve as a means to develop Bangkok into an international financial center. Tax privileges were given to BIBF transactions to enable it to compete with other financial centers. It was hoped that the BIBF would result in a lot of in-out financial flows, so that Bangkok would become a financial center providing financing to other regional economies. Instead, most of the inflows remained in Thailand and were fueling an economic bubble, leading to a rapid increase of short-term foreign debt, which were the key elements that brought about the crisis.¹

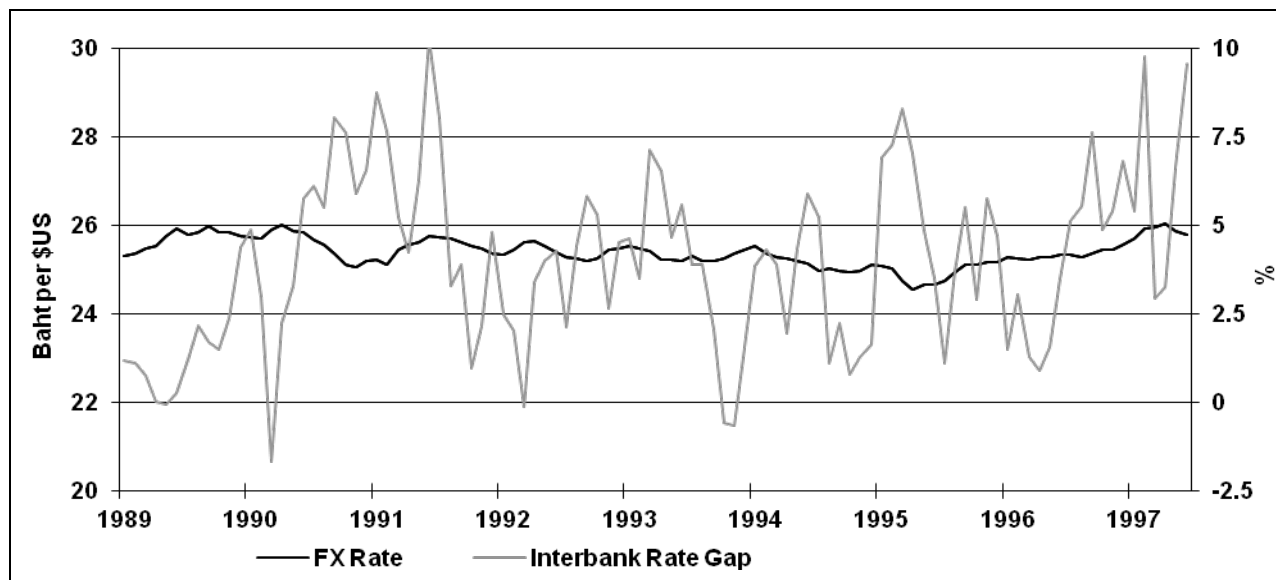
Adopting a flawed macroeconomic policy regime further fueled the rapid capital inflows. The authorities liberalized cross-border capital flows while sticking to a fixed exchange rate system and also pursuing an independent monetary policy. This was, of course, the classic Mundell “impossible trinity” (Mundell 1963). Thailand had successfully used a fixed exchange rate system since the end of the Second World War. However, these successes were mostly in a global environment of modest financial capital flows. The mistake was to stick to this old paradigm in the 1990s when capital flows became very large and very volatile.

Prior to the crisis, the baht was fixed to a basket of currencies, with the dollar having a dominant weight, resulting in a fairly stable baht/ dollar rate for many years prior to the crisis. However, Thailand also tried to pursue an independent interest rate policy. This can be seen from the gap between the Thai overnight interbank rate and the overnight Federal Reserve fund rate. This gap averaged about 3.97% between January 1989 and June 1997 (the last month before the

¹ For more details on the evolution of the crisis, its resolution, and lessons see Sussangkarn and Vichyanond (2007).

float of the baht), and sometimes reached up to 10% (Figure 2). With liberalized capital flows, this inevitably led to a large amount of capital flow into Thailand.

Figure 2: Exchange Rate and Interbank Rate Gap



Note: FX = foreign exchange.

Sources: Bank of Thailand data. <http://www.bot.or.th/English/Statistics/FinancialMarkets/Pages/index.aspx> (accessed December 2002); US Federal Reserve data. <http://www.federalreserve.gov/releases/h15/data.htm> (accessed December 2002).

Most of the inflows were in the form of foreign currency bank borrowing, and most of the bank borrowing was short-term (maturity less than one year). The predominance of short-term borrowing in foreign currency bank borrowing of most of the emerging market economies, including Thailand, had to do with the Basel Capital Accord. The provisioning requirements of the Basel Capital Accord, a 20% risk weighting was applied to short-term loans to non-OECD banks, while 100% risk weighting had to be applied for long-term loans (with a maturity of one year or more) (Basel Committee on Banking Supervision 1988; Basel Committee on Banking Supervision 1998). Therefore, it was much less costly for the lender to lend short. This may have made sense in the context of a particular loan, because in the short-term there is less chance of the borrower turning non-performing. However, more and more short-term borrowing coming into a country led to more challenges for the authorities to make sure that these short-term borrowings were sufficiently backed up by foreign reserves.

The paradigm on the adequacy of foreign reserves prior to the 1997–1998 crisis was mainly derived from a current account paradigm. As short-term borrowing increased, the authorities were observing that reserves were increasing rapidly. Not much attention was paid at that time to the fact that short-term borrowing was also increasing rapidly, and was actually the main reason why reserves were increasing. Data on short-term foreign borrowing were also not readily available. In the case of Thailand, when the issue of short-term borrowing was eliciting the attention of the authorities in 1996, it took some time to gather the required data and what could be gathered was incomplete. In hindsight, it can be seen that the size of outstanding short-term foreign debt was about the same as foreign reserves between 1991 and 1994 and became much larger than the reserves in 1995 and 1996 (Figure 3).

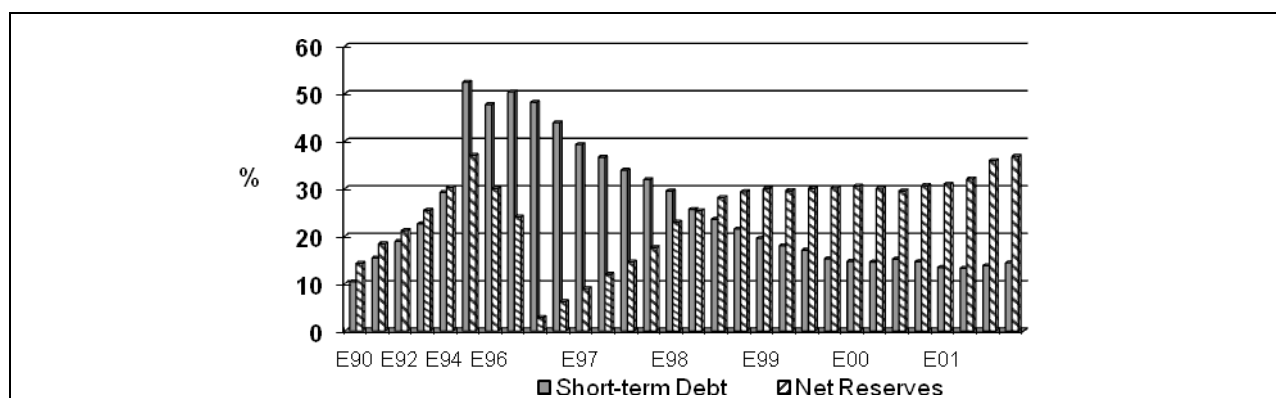
Figure 3: Short-term Debt and Reserves



Source: Bank of Thailand data. <http://www.bot.or.th/English/Statistics/EconomicAndFinancial/Pages/index1.aspx> (accessed December 2010).

The situation became rather risky as the financial market may fear that reserves were insufficient to back up all the short-term foreign currency obligations of the country, particularly as Thailand was also running a monthly current account deficit of about \$1 billion around that period. In actual fact, by the end of 1996, financial markets became convinced that the value of the baht could not be maintained and expected a sizeable devaluation or depreciation of the baht. Speculators attacked the baht a number of times and the Bank of Thailand made the fatal mistake of using more and more of the reserves to fight off speculators and defend the value of the baht. Forward sales of dollars were made at a similar rate to the spot rate to show the authorities' commitment to defend the value of the baht. The outcome, however, was that net reserves (reserves net of forward obligations to sell the dollar) fell rapidly, and by the end of June 1997, net reserves were only about \$2.8 billion (Figure 4). This was tiny compared to outstanding short-term foreign debt at that time of about \$48 billion and the continued current account deficit of about \$1 billion per month. Thailand was basically insolvent in terms of no longer having sufficient foreign currencies to meet its foreign currency obligations. The baht had to be floated on 2 July 1997 and Thailand had to enter an IMF supervised program.

Figure 4: Short-term Foreign Debt and Net Reserves



Note: E = end of year.

Source: Bank of Thailand data. <http://www.bot.or.th/English/Statistics/EconomicAndFinancial/Pages/index1.aspx> (accessed December 2005).

Having inadequate reserves to back up short-term foreign debt was also the case for two other countries in East Asia: Indonesia and Korea. Together with Thailand, these were the countries with a much higher level of short-term foreign debt compared to reserves (Table 1). When the

crisis hit Thailand, information about the extent of short-term foreign debt and reserves became more publicly available. Capital flows quickly reversed and there was a rush to get hold of foreign currencies resulting in rapid depreciations of the baht. Attention also turned to other countries in the region that could suffer the same predicament. In the end, a rush to exit also led to Indonesia and Korea needing to enter IMF supervised programs. The IMF conditionality imposed on the three countries were very harsh and controversial and this has left a stigma on the IMF within the region to this day, even though the IMF itself has evolved quite a lot from that time.²

Table 1: Ratio of Short-term Foreign Debt to Official Reserves (%)

	1991	1992	1993	1994	1995	1996
People's Republic of China	24.3	64.8	66.5	32.6	29.4	23.6
<i>Indonesia</i>	<i>139.7</i>	<i>158.5</i>	<i>145.6</i>	<i>147.4</i>	<i>175.6</i>	<i>167.2</i>
Malaysia	18.8	21	25.4	24.2	30.4	40.8
Philippines	109.2	98.5	85	80.3	67.9	67.9
Singapore	2.7	2.3	2	1.7	1.8	2.6
<i>Korea</i>	<i>81.6</i>	<i>69.5</i>	<i>60.2</i>	<i>123.1</i>	<i>142.5</i>	<i>195.4</i>
<i>Thailand</i>	<i>83.6</i>	<i>89.3</i>	<i>89</i>	<i>96.4</i>	<i>141.5</i>	<i>123.3</i>

Source: ADB (2001); Bank of Thailand data.

<http://www.bot.or.th/English/Statistics/EconomicAndFinancial/Pages/index1.aspx>

2.2 Managing Foreign Reserves Adequacy

After the 1997–1998 crisis, the danger of allowing short-term foreign debt to become too large, in particular to become larger than foreign reserves, was widely recognized. Most countries developed appropriate and timely data on important economic indicators, including foreign debt, both short and long term. For example, in Thailand, the availability of data that were essential for risk assessments and economic management was woefully inadequate before the crisis. GDP data were only available on an annual basis and with a time lag of a year or so. Regularly available quarterly or monthly data were extremely limited, and data on short-term foreign debt was hardly available at all. Significant improvements were made after the crisis. Many monthly and quarterly data series were produced. A quarterly GDP series was developed and has been available with a one-quarter lag for many years now. Vast amount of monthly official data are now accessible for downloading through the Internet from public agencies such as the Bank of Thailand and the National Economic and Social Development Board. The availability of these data allows public and non-public sector organizations, as well as academics and financial analysts, to better track economic developments and make more accurate risk assessments. In addition, important variables related to potential foreign exchange crisis, such as short-term foreign debt and foreign reserves (including net forward commitments), have been regularly monitored and analyzed.

Although the issue regarding the need to have sufficient reserves to back up short-term foreign debt (as well as for current account transactions) was a prominent one associated with the 1997–1998 crisis, it would be a mistake to ignore other potential sources of short-term foreign exchange liabilities. Foreign holdings of domestic stocks and bonds, for example, can quickly be

² For discussions of the IMF program for Thailand, see Sussangkarn (2002).

liquidated and the local currency proceeds converted to foreign currencies to take out of the country. When these other potential short-term foreign exchange liabilities are taken into account in addition to short-term foreign debt, reserves may be insufficient to cover all of them together. This was the case for some countries around the time of the global financial crisis.

Table 2: Reserves and Potential Short-term Foreign Currency Liabilities (2008)

	(1)	(2)	(3)	(4)	(5)
	FX Reserves (billion US\$)	Short-term Debt (by remaining maturity)	Foreign Holdings of Stocks	Foreign Holdings of Bonds	Ratio of (1) to (2)+(3)+(4) (%)
Korea	201.7	191.1	111.0	27.0	61.3
Indonesia	50.9	33.2	18.0	7.1	87.3
Malaysia	91.3	42.4	22.3	11.8	119.3
Philippines	39.6	14.3	11.6	0.6	149.4
Thailand	112.3	35.1	30.7	1.7	166.4

Source: Chua (2009).

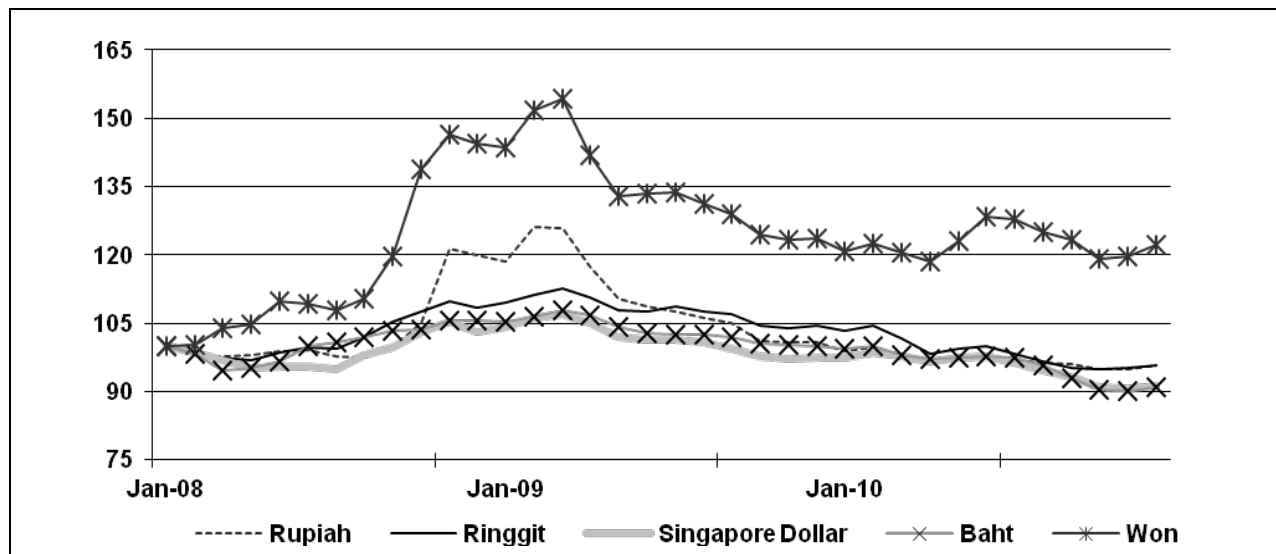
Table 2 shows data on foreign reserves, short-term debt (by remaining maturity), and foreign holdings of stocks and bonds for some countries in East Asia at the end of 2008. It can be seen that Korean reserves, while large at about \$200 billion, were only about 61.3% of the sum of short-term debt, foreign holdings of stocks and bonds. Indonesia also had less foreign reserves than these potential short-term foreign currency liabilities combined. Korea and Indonesia were therefore particularly vulnerable to sudden capital outflow shocks, whether arising from domestic sources or from the outside. Indeed, when acute dollar liquidity shortages developed after the closure of Lehman Brothers on 15 September 2008, Korea had severe foreign currency liquidity problems. The Korean won depreciated rapidly, falling by about 25% over the next three months (Figure 5). Korea had to enter into a swap agreement with the US Federal Reserve for \$30 billion in order to stabilize the situation. Eventually, when the depreciation of the won led to a sustained current account surplus, the won began to appreciate and eventually stabilized at a level about 8.5% weaker than its level prior to Lehman's closure. Indonesia, the other country shown in Table 2 with fewer foreign reserves than the sum of short-term debt and foreign holdings of stocks and bonds, also suffered foreign currency liquidity problems, although to a lesser extent than Korea. The rupiah depreciated by about 20% in the three months after the closure of Lehman Brothers, and Indonesia also requested a swap with the US Federal Reserve, similar to the one the Federal Reserve gave to Korea. This was, however, refused, and Indonesia eventually got a swap with the People's Republic of China (PRC) amounting to 100 billion yuan (about \$15 billion) and increased its maximum amount of pre-existing swap agreement under the Chiang Mai Initiative with Japan to \$12 billion.³

The experiences of the 1997–1998 East Asian financial crisis and the global financial crisis showed that unexpected capital outflows can occur rapidly, possibly through domestic policy mistakes or from global shocks. Countries need to make sure that such a situation remains temporary and does not turn into a full blown financial crisis like the situation in 1997–1998. Having sufficient reserves to ride through the storm is obviously very important. If it is known or

³ Although only 20% of this could be utilized without linking to an IMF supervised program (see discussion of the Chiang Mai Initiative below. Japan and Indonesia also supplemented this in July 2009 with a rupiah–yen swap agreement amounting to 1.5 trillion yen (about \$19 billion).

suspected that a country does not have enough reserves, whether the country's own or through its bilateral, regional, or global arrangements, then there will be a rush to exit to make sure that foreign currencies will still be available and also to race against the inevitable rapid and large depreciation of the local currency.

Figure 5: Trend in Exchange Rate Indices (January 2008 = 100)



Source: Bank of Thailand data.
http://www.bot.or.th/English/Statistics/FinancialMarkets/ExchangeRate/Pages/StatExchangeRate_old.aspx

There are various types of potential short-term foreign currency liabilities that foreign reserves should back up. A recent study, (IMF 2011) developed new guidelines for assessing the adequacy of foreign reserves. A metric is developed based on variables that might be behind drains on foreign reserves. Five variables were highlighted: short-term debt (STD); other portfolio liabilities (OPL), such as foreign holdings of stocks and bonds; broad money (M2), for countries with limited controls on capital outflows from residents; and exports (X), in case there is an export shock leading to reduced foreign exchange inflows from exports. Based on data from previous capital outflow episodes from various countries, a metric is suggested for emerging market economies with fixed exchange rate and floating exchange rate regimes as follows:

Fixed: $0.3 \cdot STD + 0.15 \cdot OPL + 0.1 \cdot M2 + 0.1 \cdot X$

Float: $0.3 \cdot STD + 0.1 \cdot OPL + 0.05 \cdot M2 + 0.05 \cdot X$

It is then suggested that foreign reserves should be in the range of 100% to 150% of the respective metric to be able to deal adequately with potential outflow episodes. The report certainly makes advances to the analysis of what might be an adequate level of foreign reserves. However, it should be made clear that the authors emphasized that this is really a work in progress and should not be taken as policy recommendations. The paper stated:

The proposal above reflects work in progress and should at best be regarded as a potential advance on existing metrics, and still providing guidance only at the most general level. Additional experience and analysis can yet be brought to bear both on what weights should be put on different sources of risk and also on how much of the resulting metric is reasonable to hold. And considerable judgment would be required in application to individual countries (IMF 2011: 27).

For a country like Thailand that has been through a foreign exchange crisis and the pain of having to implement harsh IMF conditionality, it would not be surprising that a much more conservative approach to an adequate level of reserves would be adopted. And indeed, based on the above metric, it turned out that Thailand's foreign reserve was around 300% of the proposed metric in 2009, and Thailand ranked among the very top countries in terms of the ratio of reserves to the suggested metric (IMF 2011).

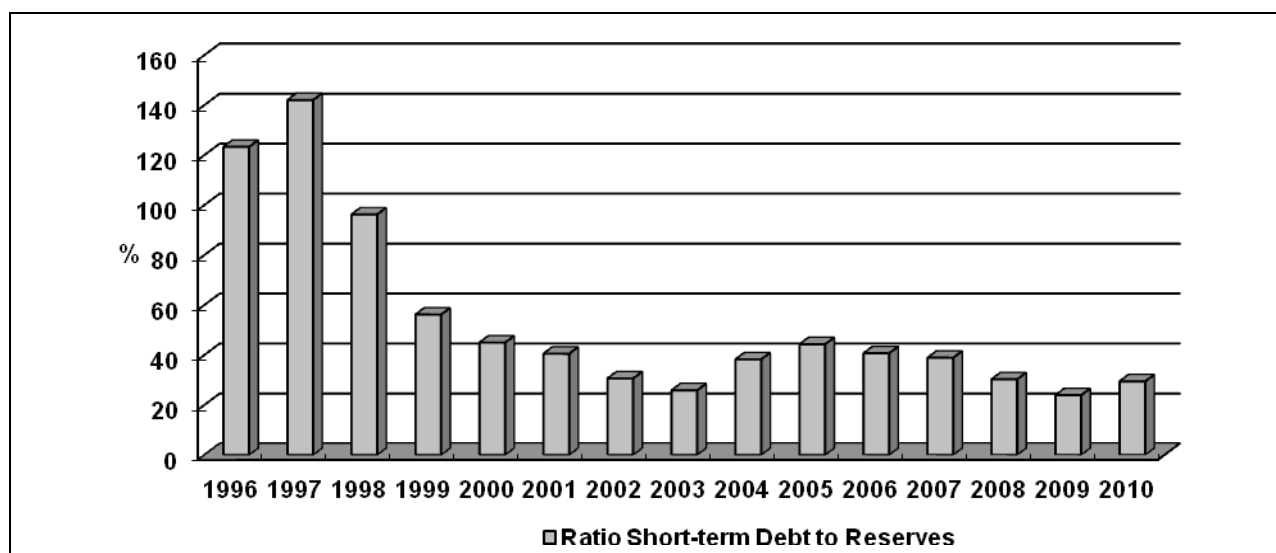
In the Thai context, M2 is probably not so important, as there are still strict controls on capital outflows by residents that are not backed up by underlying current account transactions. Exports, particularly manufactured exports, also tend to be related to imports as a lot of parts and components are imported for the assembly of exports. So when exports declined, such as during the global financial crisis following the closure of Lehman Brothers, imports also tended to decline. Indeed, in the first quarter of 2009, when exports declined by about 20% year on year, imports declined by about 38% and the current account surplus in that quarter was the largest quarterly current account surplus ever, amounting to almost \$10 billion compared to an average quarterly current account surplus of about \$3 billion in the two years prior to the global financial crisis. So the most important potential foreign exchange short-term liabilities for a country like Thailand are the short-term foreign debt and other portfolio liabilities. And based on past crises and rapid capital outflow episodes, it would be safest for reserves to be able to easily cover all of these potential liabilities; that is reserves should be well above the total of short-term foreign debt and other foreign portfolio liabilities.

It should also be noted that having a certain amount of reserves does not mean that all of the reserves can be quickly drawn upon quickly. Most of the reserves are normally held in US treasuries or other hard currency government bonds. If a sizeable amount of the reserve holdings need to be liquidated quickly, this may result in bond market disruptions and also possible capital loss. So liquidity of the foreign currency assets is an issue that also needs to be borne in mind.

2.3 Managing Short-term Capital Inflows

Making sure that foreign reserves are adequate to cover potential short-term foreign currency liabilities is related to managing short-term capital inflows. After the 1997–1998 crisis, most countries have carefully monitored short-term foreign debt and have generally made sure that short-term foreign debt remains a low proportion of reserves. In Thailand, for example, the ratio of short-term foreign debt to official reserves has remained in the range of 20%–40% over the past ten years (Figure 6). More of a problem for Thailand and many other countries in the region have been periods of rapid portfolio capital inflows.⁴ The rapid inflows created challenges for reserves management and, the closely related issue, exchange rate management.

⁴ And, of course, the rapid capital outflows during the global financial crisis.

Figure 6: Ratio of Short-term Debt to Reserves: Thailand

Source: Bank of Thailand data.

<http://www.bot.or.th/English/Statistics/EconomicAndFinancial/ExternalSector/Pages/StatExternalDebt.aspx> (accessed December 2011).

When there are surges in short-term portfolio capital inflows, the short-term contingent liability on foreign currencies increases in line with these inflows. In recent years, international financial markets have become very volatile, so capital flow reversals can occur frequently. Short-term funding from money markets in the developed countries finance a lot of these short-term portfolio investment inflows. So when there are market disruptions, as when Lehman Brothers was closed down, liquidity can tighten rapidly, and this can lead to massive capital outflows from emerging markets. To make sure that these surges in inflows and outflows do not lead to major negative spillovers into the real economy, it is important to have sufficient reserves to back up these short-term foreign currency liabilities (as was discussed above). To do this, the authorities should buy up these short-term foreign currency inflows, so reserves will increase by a similar amount to the inflows, and be available to use when capital flow reversals occur. With this strategy, as short-term foreign exchange contingent liability increases from the inflows, reserves will also increase in line and be sufficient to back up the liability.

Absorbing the short-term capital inflows into reserves will also mean that the exchange rate will not be affected too much by the inflows. This seems to be the right approach, as the exchange rate should be based more on fundamental factors, such as current account transactions and long-term foreign direct investment, rather than short-term speculative flows.⁵ And when the situation changes to one of rapid outflows, the reserves that were previously absorbed from the inflows can then be used to bring relative stability to the exchange rate. This issue of managing reserves and the exchange rate under volatile short-term capital flows has been very important for many East Asia economies that rely a lot on exports to drive their growth. When rapid capital inflows lead to significant currency appreciation, exporters complain, and there are political pressures to manage the exchange rate more intensively. This can even lead to the adoption of drastic capital control measures, such as that in Thailand in December 2006.⁶

⁵ However, in recent years, many East Asian countries have also been preventing their currencies from appreciating even though they have large current account surpluses and net foreign direct investment inflows.

⁶ See more discussions on the Thai case below.

There are, however, constraints to absorbing all the short-term capital inflows into reserves. The increase in reserves will lead to increased liquidity of the domestic currency. This will need to be sterilized to prevent over-heating and a build up of inflationary pressures. However, what can be earned from foreign reserves has been somewhat lower than the cost of issuing treasury bills to sterilize the inflows in recent years. So the central bank will make a loss from the operation. In addition, if the inflows also lead to appreciation of the local currency, the central bank also suffers another loss from the fall in value of the reserves in local currency terms.

Depending on the specific institutional context of various economies, this loss of the central bank may be more or less important. In the context of Thailand, this has very important fiscal implications. After the 1997–1998 crisis, the government incurred huge clean up costs of the financial system. A large number of bonds were issued to pay for this clean up cost. It was agreed that the Bank of Thailand would be responsible for the capital amount of the bonds and the Ministry of Finance will be responsible for the interest costs via the regular fiscal budget. Because of the losses that the Bank of Thailand have been incurring from reserve and exchange rate management, the capital amount of the clean up bonds have hardly declined for many years, and is now still more than 1.1 trillion baht (about \$37.7 billion). Each year the government has to set aside about \$1.5 billion to \$2 billion to pay for the interest on these bonds in the fiscal budget. This issue has led to a lot of tension between the Bank of Thailand and the Ministry of Finance on exchange rate management and monetary policy (as the policy rate also affects the cost of sterilizing the capital inflows).

The difficulty in dealing with large capital inflows and their impacts on the exchange rate, the Bank of Thailand's balance sheet, and political pressures to protect the export sector that has been Thailand's main engine of growth since the 1997–1998 crisis, led to the imposition of capital controls in December 2006. The capital inflows in 2006 were large and sustained. Although the Bank of Thailand had been buying foreign currencies to ease the strengthening trend of the baht, the baht strengthened from about 41 baht to the dollar at the end of 2005 to about 37.6 baht to the dollar at the end of the third quarter of 2006. The capital inflow became even more rapid in the last quarter of 2006. Between the beginning of October 2006 and the middle of December 2006, the central bank intervened extensively in the foreign exchange market to buy up foreign currencies that were flowing into the country. It was buying an average of about \$800 million per week for ten consecutive weeks. Yet, the baht strengthened at the most rapid pace ever, reaching about 35.2 baht to the dollar by the middle of December 2006.

Because of the baht appreciation, the authorities were under tremendous political pressures from businesses to intervene more and more. On 18 December 2006, Thailand imposed capital controls on capital inflows by copying measures that Chile had used in the early 1990s. Inflows were subject to a 30% unremunerated reserve requirement (so only 70% of the inflows can be invested) and the capital inflow needed to be kept in the country for at least one year, otherwise there would be a fine equal to 10% of the capital amount. The next day the stock market crashed by 15% and the authorities had to reverse the controls on those inflows coming to invest in the stock market.

In hindsight, it seemed clear that the authorities did not really understand that the requirement to keep the capital inflow in the country for at least one year was extremely strong, because very few investors can afford to park their money in one place for that long, particularly as a lot of the funds behind the inflows were raised in the short-term money market. And when different inflows were treated differently, there were possibilities of leakages of one type of inflow into another, and this created a lot of administrative challenges for the authorities. Also when inflows into the stock market were excluded from the controls, the controls were not very effective in discouraging capital inflows and their impacts on the exchange rate. Inflows into the stock market led to increases in stock prices in local currency and they also led to appreciation of the

local currency, given that the authorities did not buy up all the inflows into reserves, so inflows created double profits for the speculators, from stock price increases and from the appreciation of the baht. The baht continued to appreciate throughout the duration of the capital control measures, which were eventually abandoned in March 2008.

In spite of the failure of the Thai capital control measures, capital control measures should not be ruled out per se, as they can provide a valuable added instrument for the authorities to manage the volatility arising from capital flows, if they are well designed. However, it would be dangerous to copy measures that may have worked for some country at some point in the past. The financial system changes so rapidly and financial globalization is now very extensive, so measures that might have worked in the past may be counter-productive in the present day. If capital controls are to be introduced then they must be well designed and the authorities must be sure of how the financial markets will respond to them. More research is needed on the appropriate capital control measures in various circumstances.⁷ Equally important, it would be risky for a single country to adopt capital control measures without some regional or global agreement on the need and appropriate norms for such measures. Unilateral measures by a particular country can lead to credit rating downgrades and even retaliatory measures. So this is an area for regional or global discussions and agreements. Similarly, regional and global mechanisms to help countries prevent and resolve foreign exchange crises are also needed to supplement measures at the country level, given that there are many limitations on what a country can do by itself in the current period of large and volatile capital flows.

3. REGIONAL AND GLOBAL MECHANISMS

While the most important measures to prevent the occurrence of a foreign exchange crisis are those taken by the countries concerned, the ability of countries to adequately protect themselves from unexpected capital outflows may be limited and costly. Certainly, the severe dollar liquidity shortages and rapid capital outflows from emerging markets that occurred after the closure of Lehman Brothers were totally unexpected. The key is to keep the disruptions from these outflows temporary and prevent these events from leading to a full-blown financial crisis for countries facing these outflows.

Most countries in East Asia weathered the storm arising from the capital outflows well, mainly because they had accumulated large reserves that were very handy in cushioning the impacts of the outflows. However, some countries, such as Korea and Indonesia, had liquidity problems, and in the end they relied on ad hoc bilateral swap agreements to cushion them through the outflow episode. While these bilateral swap agreements were helpful during the global financial crisis, they have limitations in that it depends on the swap providing countries whether these swaps will be provided to particular countries, as illustrated by the refusal of the US Federal Reserve to provide a swap to Indonesia.

It would be more effective if foreign exchange support mechanisms were developed at the regional and global level in a systematic way. Indeed, East Asia countries have been developing regional liquidity support mechanisms since the early 2000s, through the Chiang Mai Initiative (CMI) and the Chiang Mai Initiative Multilateralization (CMIM). These mechanisms have to be developed further to become an integrated crisis prevention and resolution mechanism for the region. This section describes the CMI and CMIM and discusses how the current CMIM can evolve to become such an integrated mechanism.

⁷ Kawai and Lamberte (2010) is an excellent example of the kind of studies that are needed.

3.1 Building Up East Asian Regional Mechanisms: CMI and CMIM⁸

The harsh nature of the IMF conditionality imposed on Thailand, Indonesia, and Korea led to dissatisfaction within the region. The region as whole also had a lot of financial resources, whether in terms of foreign reserves or net saving. Many parties in the region felt that if there had been more financial cooperation within the region prior to the crisis, the crisis could possibly have been avoided, or at least could have been resolved with more sensitivity to the socio-political circumstances of each country and with less pain. The Association of Southeast Asian Nations (ASEAN)+3 (plus the PRC, Japan, and Korea) group was formed and they embarked on a number of financial cooperation initiatives, such as developing liquidity support mechanisms, the CMI and CMIM, and developing the region's bond markets. These financial cooperation initiatives have since expanded to other areas, with annual ministerial level meetings in many sectors apart from finance.

Soon after Thailand entered the IMF program, Japan proposed the setting up of an Asian Monetary Fund (AMF). The proposal was much too radical for that time and there had not been enough prior consultation within the region so it did not get full support. The proposal was also attacked—particularly by the IMF and the US—on the grounds that a regional fund would create a lot of moral hazard in relation to the IMF. The idea was quickly dropped (Manupipatpong 2002).

In spite of the AMF setback, key players in the region continued to explore ideas for financial cooperation. At a meeting of Asian finance and central bank deputies in Manila, in November 1997, the so-called “Manila Framework” was developed. This was to be “A New Framework for Enhanced Asian Regional Cooperation to Promote Financial Stability.” Given the involvement of the US and the IMF at the meeting, the ideas incorporated into the framework were not very radical and stressed the central role of the IMF. The Manila Framework explicitly acknowledged the need for any East Asian regional framework that may emerge to be consistent with and supportive of the global framework.

The Manila Framework was endorsed at a meeting of finance ministers from ASEAN; Australia; the PRC; Hong Kong, China; Japan; Korea; and the US, in Kuala Lumpur, Malaysia, on 2 December 1997. Work on the regional cooperative financing arrangement to supplement IMF resources continued. Eventually, in May 2000 at the ASEAN+3 Finance Ministers Meeting in Chiang Mai, Thailand (back-to-back with the ADB Annual Meeting), the ministers recognized “a need to establish a regional financing arrangement to supplement the existing international facilities,” and agreed to “strengthen the existing cooperative frameworks among our monetary authorities through the Chiang Mai Initiative. The Initiative involves an expanded ASEAN Swap Arrangement⁹ that would include all ASEAN countries, and a network of bilateral swap and repurchase agreement facilities among ASEAN countries, the PRC, Japan, and Korea (ASEAN+3 Finance Ministers 2000).

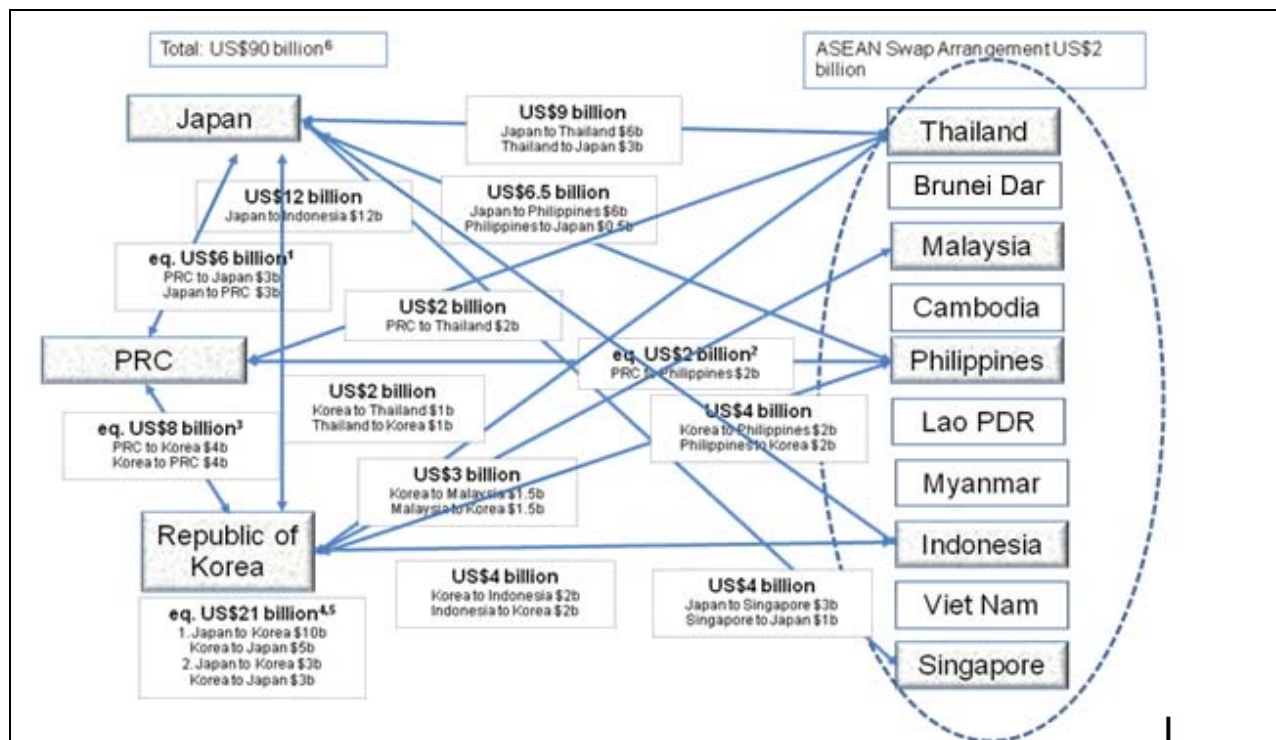
The CMI was designed as a regional financing arrangement that provides short-term liquidity support to any of its member countries that may experience balance of payment difficulties. It was intended to supplement the existing international financial arrangements and was designed to be closely linked to the IMF. Only 10% of the swap amount can be accessed without being

⁸ For more details on the development of the CMI and CMIM, see Sussangkarn (2011a).

⁹ The ASEAN Swap Arrangement (ASA) was established in 1977 by the central banks of the original ASEAN member countries (Indonesia, Malaysia, Philippines, Singapore, and Thailand) to provide short-term (1-6 months) liquidity assistance to members that might experience a temporary international liquidity problem. The initial size was \$100 million. The expanded ASEAN Swap Arrangement increased the size to \$1 billion, which was later increased further to US\$2 billion and the membership was expanded to include all ten ASEAN member countries.

under an IMF program (later increased to 20%). Because of this, the US and the IMF cautiously welcomed the initiative. The most recent total amount of swaps under the CMI, before the CMI was replaced by the CMIM in March 2010, was \$90 billion, with various bilateral amounts (Figure 7).

Figure 7: Network of Bilateral Swap Arrangements under the Chiang Mai Initiative (April 2009)



Notes: b= billion; eq = equivalent; Brunei Dar. = Brunei Darussalam; Lao PDR = Lao People’s Democratic Republic; PRC = People’s Republic of China; US = United States. 1. Local currency swap between yen and yuan. 2. Local currency swap between yuan and peso; 3. Local currency swap between yuan and won; 4. Local currency swap between yen and won; 5. The maximum amount was increased to US\$20 billion equivalent until end October 2009; 6. The sum of US\$90 billion does not include the ASEAN Swap Arrangement.

Source: Ministry of Finance, Japan.
http://www.mof.go.jp/english/international_policy/financial_cooperation_in_asia/regional_financial_cooperation/CMI_0904.pdf.

While \$90 billion may appear to be a reasonable size, the amount available to each country was in fact not very large, especially if the drawing was not linked to an IMF program. For example, if the latest structure of the CMI had been available before the crisis in 1997, Thailand would have been able to draw about \$2 billion from the CMI swap arrangements prior to asking for IMF assistance. This amount is insignificant compared to the scale of problem that Thailand faced in mid-1997, or compared with the size of the IMF package for Thailand (\$17.2 billion). Therefore, the amount of money available under the CMI was too small to make a lot of difference.

With the small amount of money available in the IMF unlinked portion of the CMI, the CMI cannot really be regarded as a crisis prevention facility. And with the required link to an IMF supervised program if more than 20% of the swap amounts are drawn upon, there is little difference to a normal IMF facility in times of crisis. IMF conditionality will still be applied, so the CMI does not really get away from the problem of East Asia not having much say in the IMF conditionality. The CMI is therefore more of a crisis resolution facility with the IMF having the supervisory role as in 1997–1998. While the CMI swaps can be regarded as contributing to funding that can be made available to resolve a crisis, this is no different to the actual IMF

packages in 1997–1998, when only a small portion of the money making up the various packages came directly from the IMF. For Thailand, for example, only \$3.9 billion out of the \$17.2 billion package was the IMF's own money, and most of the package was from contributions from countries within the region. So the CMI does not seem to add anything much to the situation that existed before the 1997–1998 crisis.

This also explains why the CMI did not play any significant role for countries in the region requiring foreign currency liquidity support during the global financial crisis. During the period of US dollar liquidity shortages following the closure of Lehman Brothers, countries like Korea and Indonesia were not in crises like they were in 1997–1998. The economies and financial systems were sound, and they also had reasonably large reserves. The problem was one of temporary foreign exchange liquidity shortages and no where near one of insolvency. In such a situation, asking these countries to go under an IMF supervised program in order to be able to access sufficient funds from the CMI is unrealistic.¹⁰ In any case, there is still a stigma attached to the IMF that may create a lot of political problems for any East Asian government that takes its country into another IMF supervised program.

Although the CMI did not really bring much value-added to what had existed before the East Asian financial crisis, it can, however, be viewed as a significant symbolic initiative, showing that the countries in East Asia were willing to work together to develop self-help mechanisms. The CMI was clearly a work in progress that needed to be developed into something more tangible and substantive. The next step in this process was the Chiang Mai Initiative Multilateralization (CMIM).

In 2006, a task force was set up to explore various possible approaches towards a more advanced framework of regional liquidity support arrangement. Upon the task force recommendations, the ASEAN+3 Finance Ministers agreed in principle at their meeting in May 2007 in Kyoto that the CMI should evolve into a CMIM, which would take the form of a self-managed reserve pooling arrangement governed by a single contractual agreement. The officials were tasked with working out the details of such an arrangement. These were not finalized until after the onset of the global financial crisis.

In spite of the CMI not playing any role to help countries with foreign exchange liquidity problems during the global financial crisis, ASEAN+3 still pushed ahead with CMIM. This is likely to be from the realization that a regional liquidity support mechanism can be made to work and the institution building involved will yield benefits in the longer term far beyond simply providing liquidity support. Negotiations to finalize the CMIM were not straight forward, particularly on country contributions and voting weights. However, these were mostly concluded by May 2009 with some final revisions in 2010. The CMIM came into effect and replaced the CMI on 24 March 2010. The country contributions, purchasing multiples, and voting weights are given in Table 3.

¹⁰ Korea, for example, could have accessed \$16.5 billion through its won-dollar swaps under the CMI if it was willing to go into an IMF supervised program.

Table 3: CMIM Contributions, Purchasing Multiples, and Voting Weights

Country	Contribution (US\$ Billion)		Purchasing Multiple	Voting Weight %
Brunei Darussalam	0.03		5.0	1.158
Cambodia	0.12		5.0	1.222
People's Republic of China (PRC)	PRC, excluding Hong Kong, China 34.2	38.4	0.5	25.430
	Hong Kong, China 4.2		2.5	
Indonesia	4.552		2.5	4.369
Japan	38.4		0.5	28.410
Republic of Korea	19.2		1.0	14.770
Lao People's Democratic Republic	0.03		5.0	1.158
Malaysia	4.552		2.5	4.369
Myanmar	0.06		5.0	1.179
Philippines	4.552		2.5	4.369
Singapore	4.552		2.5	4.369
Thailand	4.552		2.5	4.369
Viet Nam	1.00		5.0	1.847

Notes: US = United States.

Source: Joint Ministerial Statement of the 13th ASEAN+3 Finance Ministers' Meeting, Tashkent, Uzbekistan, 2 May 2010.

The total size of the CMIM is \$120 billion, with ASEAN countries contributing 20%, and the plus three countries the other 80%. Japan and the PRC each contribute 40% of the plus three's contributions (with Hong Kong, China included as part of the PRC's contribution) and Korea contributing the other 20%. Each country's maximum swap quota equals its contributions multiplied by its purchasing multiple, so for example, Thailand's quota is \$4.552 billion times 2.5 or \$11.38 billion. However, at present there is still a link with the IMF if more than 20% of the swap quota is used, so only \$2.276 billion, is available for Thailand without attachment to an IMF program.

The CMIM is a 90-day swap facility (local currency for US dollar), which could be rolled over a maximum of seven times.¹¹ On voting weights, each country is given 1.6 basic votes plus the number of contribution votes equal to the number of billion dollars that it contributes to the CMIM pool. On decision rules, fundamental issues, such as size of pool, contributions, borrowing multiples, membership and terms of lending, will be decided by consensus at the minister of finance level. Executive decision on lending, renewal, and default will be done using two thirds majority by the Executive Level Decision Making Body, which comprises the deputy-level representatives of the ASEAN+3 finance ministries and central banks and the Monetary Authority of Hong Kong, China.

The CMIM process will be supported by the ASEAN+3 Macroeconomic Research Office (AMRO), located in Singapore. The AMRO's role is to (i) monitor, assess, and prepare quarterly reports on the macroeconomic situation and financial soundness of the ASEAN+3 countries, (ii) assess macroeconomic and financial vulnerabilities in any of the ASEAN+3 countries and provide assistance in timely formulation of policy recommendations to mitigate such risks, and

¹¹ As of the beginning of 2012.

(iii) ensure compliance of swap requesting parties with the lending covenants under the CMIM agreement.

As with the CMI, the current IMF link with the CMIM makes the CMIM effectively a crisis resolution facility. Yet, the operational structure of the CMIM does not fit in well with the CMIM being a crisis resolution facility. This is because the CMIM is a 90-day swap facility, and certainly if a country is in a foreign exchange crisis, similar to what happened in 1997–1998, the problem cannot be solved in 90 days, or even within one year. Although the CMIM swap can be rolled over up to seven times, if a country is already in crisis, then the need to roll over many times is already a foregone conclusion, so the way the CMIM operates should be adjusted to be consistent with this.

In fact, a 90-day swap facility is much more like a crisis prevention facility. With rapid and unexpected capital outflows, a country may face foreign exchange liquidity problems, like that faced by Korea during the global financial crisis. In such a situation, having access to additional foreign exchange, similar to that made available to Korea by the US Federal Reserve, can help to calm markets and ride the country through a temporary liquidity shortage situation. The reason why the CMIM in its present form is not a crisis prevention facility is like in the case of CMI—because of the IMF link. IMF conditionality is more suitable for countries that have structural problems causing foreign exchange shortages and require fundamental policy reforms. It is true that the IMF now has the Flexible Credit Line (FCL) facility, where given that countries have been pursuing sound policies and have sound fundamentals (as approved by the IMF), the pre-qualified countries can have access to a renewable credit line for one or two years without conditionality. If a country in the CMIM has pre-qualified for the FCL, then having the CMIM linked to the IMF may mean that no conditionality will be attached to the IMF link. However, if a CMIM country can already access the IMF's FCL, then the need for the CMIM swap will be relatively limited as the FCL facility may be sufficient. So the IMF link with the CMIM is meaningful in cases of countries with structural problems and requires policy reforms with conditionality.

The nature of the CMIM in its present form being like a crisis resolution facility and not a crisis prevention facility was well recognized by the ASEAN+3 finance ministers. The Joint Ministerial Statement of the 14th ASEAN+3 Finance Ministers' Meeting in Ha Noi on 4 May 2011 stated:

We shared the view that, under the current global financial environment, crisis takes place on a global scale and it spreads in a short period of time. It has demonstrated the importance of crisis prevention measures to deter contagion. Considering that the regional financial arrangement needs to be adapted to this new environment, we instructed the Deputies to initiate a study on the design of a possible crisis prevention function for CMIM, including the size, further collaboration with the IMF, and the role of AMRO.

Section 3.2 suggests how the CMIM, with a slight modification, can be transformed into both a crisis prevention and crisis resolution facility.

3.2 An Integrated Crisis Prevention and Resolution Mechanism for East Asia

It is possible to combine a crisis prevention liquidity support facility with a more medium-term crisis resolution facility for structural imbalance problems under the CMIM framework. Sussangkarn (2011a) proposed that the IMF link be invoked not based on a percentage of a

country's swap quota, but rather if a country needs to roll over the 90 day swap more than a certain predetermined number of times.

The CMIM is a short-term swap facility, like a central bank swap. Each drawing is only of 90 days maturity, so the CMIM is best regarded as a crisis prevention facility meant to assist an economy in dealing with short-term temporary shortages of foreign currencies, like that faced by Korea during the global financial crisis. If an economy faces temporary foreign currency liquidity shortages, such as from an unexpectedly episode of rapid capital outflows, and comes to the CMIM for a 90-day swap arrangement, it does not make sense to impose conditionality of an IMF loan on the economy. An IMF loan is more appropriate for dealing with fundamental imbalances of a longer duration in the economy. So the current IMF link based on drawing the CMIM swap above a certain percentage (currently 20%) of an economy's quota should be removed. This will also remove the reluctance of countries to use the CMIM because of the IMF stigma.

The IMF link with the CMIM however, can be retained, but in a different form. Instead of imposing an IMF link if the swap drawing is above a certain percentage of an economy's quota, an IMF link can be invoked if the number of swap rollovers exceed a certain number of times, possibly at the second rollover, that is, after about six months. This will make the CMIM into both a crisis prevention facility, the swaps over the first six months, and a crisis resolution facility, for those economies unable to deal with the liquidity shortages within six months.

The point is that what is a temporary foreign exchange liquidity shortage and a more enduring one is usually not easy to judge a priori. Given the East Asian experiences with two major crises over the past 15 years, East Asian economies should have learnt valuable lessons and have become much more resilient to a foreign exchange crisis than in the past. If an economy requests a 90-day swap facility from the CMIM, the probability is that it is more of a temporary liquidity problem, especially in the current world of very volatile capital flows (unless there are clear indicators otherwise). However, if the economy continues to have to ask for a renewal of the swap, say two or three times, then it becomes more and more likely that the problem is not a short-term temporary problem, but a more fundamental one, with the need for significant adjustments in macroeconomic policies. This is where the link to an IMF program can be invoked. The IMF link can be imposed, for example, if an economy needs to roll over for the second time. This gives a leeway of six months to solve the temporary foreign exchange liquidity problem, but if the problem has not gone away then it can be assumed that the problem is not temporary and some adjustment policies will be needed. This is when the IMF link together with conditionality can be invoked.

Changing the link to the IMF in the above fashion brings many benefits. First, the CMIM will be complementary to the global facility, being the first line of defense suitable for problems of temporary foreign exchange liquidity shortages, with the IMF having a role if the problem appears not to be a temporary problem but a more fundamental one. This is more desirable than an East Asian regional mechanism that is completely independent from the IMF. Given that East Asia is a very important part of the global economic and financial system, an East Asian mechanism should supplement rather than replace the global mechanism. Second, economies having temporarily foreign exchange liquidity problems will be able to access the CMIM to their full quota without any IMF link (at least for six months, depending on the number of swap rollovers before the IMF link is invoked), and thereby avoid any potential political problems domestically. This will make the CMIM more attractive to member economies. With the IMF link remaining as it is, countries will be reluctant to use the CMIM, which will make the whole exercise rather futile. Third, invoking the IMF link after a certain number of swap rollovers may actually be a way to indirectly push problem countries to undertake necessary corrective policies, as all countries are likely to want to avoid going under an IMF program, with all the

potential domestic political fallouts. Fourth, when it becomes apparent that serious conditionality will be necessary to turn around a country, bringing the IMF into the picture may be a way to avoid intra regional political problems that may arise if East Asian countries impose stringent conditionality on another East Asian country. The IMF may become a good excuse for stringent conditionality in such a circumstance. With the suggested change in the way the CMIM is linked to the IMF, the CMIM can then be regarded as an integrated crisis prevention and resolution mechanism for East Asia with complimentary functions to the global mechanism.

3.3 Strengthening Regional Mechanisms

Apart from changing the way the CMIM is linked to the IMF to develop an integrated foreign exchange crisis prevention and resolution mechanism, there are many measures that can be carried out to the strengthen the region mechanism. These are briefly described below.¹²

The current size of the CMIM (\$120 billion) should be increased to make sure that an adequate amount of resources will be available to countries that need them. This can be done by increasing (at least doubling) the contributions to the CMIM. This is not a burden on contributing countries, as the CMIM is a self-managed pooling mechanism so that countries do not actually put money into a common pool. The CMIM contributions remain with the respective countries, including all the income earned from these nominal contributions. Where real resources will be needed is when a swap agreement is actually implemented. Another way to increase effective resources is to allow bilateral country swaps linked to CMIM swap. For example, if Thailand implements a swap with CMIM for, say \$10 billion, there is no reason why Japan and the PRC, as important economic partners of Thailand, cannot add bilateral swaps with Thailand attached to the CMIM swap of, say, \$10 billion each. This will make the effective resources available through CMIM to be more like \$600 billion to \$700 billion rather than the \$120 billion at present.

The role of the AMRO is critical for the success of the whole mechanism. Good surveillance on possible foreign exchange liquidity shortages and the policies to reduce the risks of such shortages are needed to support the operation of CMIM. Full support from all the CMIM member countries, in terms of financial resources, data, and technical support will be critical for the success of the AMRO. The AMRO and organizations such as the IMF, ADB, the Bank for International Settlements, and the ASEAN Secretariat will also need to develop effective modes of working among themselves.

The regional architecture for surveillance and financial cooperation should be substantially deepened. A significant change in 2012 is that the central bank governors of the ASEAN+3 economies joined the ASEAN+3 Ministers of Finance Meeting for the first time. This will become an important forum for discussions of the region's economic situation and the broad range of regional financial cooperation activities. In the longer term, AMRO may also evolve to become like a monetary organization for East Asia, providing secretariat support to this process.

4. CONCLUSION

This paper discusses various mechanisms for the prevention and resolution of foreign exchange crises in East Asia. Appropriate policies of individual countries are most important for the prevention of foreign currency crises. Viewing economic situations with the wrong paradigm can lead to policy mistakes that lead to crises. The risks from short-term foreign debts, and the need to have sufficient reserves to cover these debts, were not well understood before the 1997–

¹² For more detailed discussion see Sussangkarn (2011b).

1998 crisis. Apart from short-term foreign debts, other potential short-term foreign reserves liabilities also need to be backed up by sufficient reserves. This has implications for how the authorities should manage periods of rapid short-term capital inflows. If possible, the inflows should be absorbed into reserves, so that when capital flow reversals occur, there will be sufficient foreign exchange liquidity to manage the outflows. There are however limitations in the ability of the authorities to do this arising from the cost to the central bank's balance sheet and the fiscal implications. Given this, regional and global mechanisms are also needed to provide foreign exchange support when necessary.

The paper concludes that the regional liquidity support mechanisms that have been developed in East Asia—the CMI and the CMIM—are thus far, in effect, crisis resolution mechanisms rather than crisis prevention mechanisms. This is because the way these mechanisms are linked to an IMF program, being based on using more than a certain percentage of a country's swap quota. It is suggested that if the link to an IMF program is changed—so that it is based on a country needing to roll over the swap with the CMIM more than a certain number of times, possibly if two or more rollovers are needed—then the CMIM can become an integrated crisis prevention and resolution mechanism for East Asia, and be complementary with the IMF.

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