International Monetary Coordination and Response
from East Asia: Analysis of the Quantitative Trilemma

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Abstract

In this paper we use the trilemma proposed by Mundell (1963), and its quantitative measurement by Aizenman et al. (2008, 2010) to predict future policy configurations of some East Asian countries. We argue that a Bretton Woods style mechanism will still be feasible after the global economic crisis. Once a new international currency (the RMB or an Asian currency unit, ACU) can be launched, the ASEAN+3 may be willing to decrease their precautious international reserve accumulation. However, China’s attitude toward the ACU, proposed by Japan, will be the critical factor.

Keywords: power, trilemma, international policy coordination, East Asia

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1. Introduction

The 2007 global economic crisis is made East Asian countries hit by the regional crisis in 1997-98 rethink their views on international macroeconomic cooperation. In addition to the long-run goal of a new international reserve currency to compete with the U.S. dollar and the Euro, three proposals have been implemented proposed to improve East Asian economic policy coordination and to prevent future speculative attacks:

First, the Asian Development Bank (ADB) established an Asian Currency Unit (ACU) in 2000. By collectively pegging to a currency basket based on ASEAN+3’s currencies, East Asian countries can achieve Pareto optimality of joint floating against the U.S. dollar, and also avoid the risks of beggar-thy-neighbour and volatility of short-term capital by attaining East Asian regional exchange rate stability (Kawai 2010a, b). The Asian financial market can be deepened by issuing ACU bonds, which helps to resolve the Asian saving glut and maintain the balances of capital flows between the U.S. and Asian emerging markets.¹

Second, the East Asian precautionous international reserve accumulation after

¹ Williamson (2005) also suggested that the common basket unit and indicators are useful in stabilizing exchange rates, predicting crises, and managing capital flows within the region.
East Asian monetary policy choices

1997-98 is another reason for the global imbalances. By currency undervaluation, East Asian economies have acquired 50% of the world foreign reserves to deal with possible speculative attacks, and also created a huge current account surplus against the U.S. To create a regional risk sharing system, the Chiang Mai Initiative Multilateralisation (CMIM) has been strengthened, reaching 120 billion U.S. dollars in 2010.

Finally, capital controls were not seen as part of the policy toolkit until 2010, though now they have been endorsed by the IMF (2011). Furthermore, the IMF (Ostry et al. 2010; Ostry et al. 2011) has developed a framework to help countries manage large capital inflows as part of its ongoing work to assess the risks facing economies as they recover from the global crisis. With the help of capital flow management measures, East Asian countries can be coordinated by weighing the benefits of different policy responses on their economies, choosing from a menu of policy options to respond to capital inflows, and then determining the appropriate circumstances to consider taxes, certain prudential measures, and capital controls.

To prevent the next crises and their contagious effect, international policy coordination is necessary for some countries to achieve their common goals, such as

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2 Contagion means that a country with sound fundamentals may suffer from a financial crisis that occurred in other countries, since investors become pessimistic and then withdraw their money from the market.
East Asian monetary policy choices

stable exchange rates, sustainable capital flows, or independent monetary policies. However, this coordination does not mean that a consensus on policy configurations has been achieved, and the two leading countries in East Asia have clearly different preferences on policy arrangements. With ACU, CMIM and its own capital control framework (Kawai and Lamberte 2011; Kawai 2011), ADB (mainly sponsored by Japan and the U.S.) expects that ASEAN+3 can make a collective revaluation against the U.S. dollar and an international foreign reserve pool, in order to manage capital inflows and to decrease reserve accumulation of each country. The ADB’s ideas are clearly influenced by the European precedent. But policy coordination in Europe was based on explicit commitments, such as bilateral parity pegs, automatic and unlimited mutual support, and consensus on realignments (Wyplosz 2004, 2010). These cannot be accepted and implemented immediately without complicated international political negotiations.3

But China follows a different approach. Its policy of RMB stability, monetary independence, strict controls on capital flows, and huge foreign reserve accumulation may not be changed quickly. Moreover, many emerging economies also doubt that the so-called “framework” is to impose more restrictions on their capital controls, but

3 If ACU cannot be formally imposed on East Asian countries, it will only be another useless currency unit, comparable to the European Currency Unit (ECU). Woo (2010) advises East Asia should focus its energy on a free trade area and forgo the creation of an unrealistic common currency.
rather to ignore the responsibility of the origin (e.g., the U.S.) of capital outflows (Bloomberg 2011; Wagstyl 2011). The great disparity between the economic policy of China and Japan will make coordination in ASEAN+3 more difficult, which could in turn worsen the global imbalances.

Figure 1 shows the consequences of the inconsistency. The different exchange rate regimes have made an imprecise ACU, which indicates that the RMB should depreciate and the Korean Won should appreciate. However, it is expected that the Yen, Won and RMB actually appreciate to adjust current account surpluses against the U.S. Without a flexible RMB, the ACU cannot be a reliable indicator for policy coordination, and will rather become an origin of international conflicts. Their policy configurations will still depend on the two leading countries.

[Figure 1]

This paper explores the possible response of ASEAN+3 toward policy coordination according to theories of international finance and power. To examine policy configurations in the context of international macroeconomics, we first focus on a central hypothesis in international finance, namely the “impossible trinity” or the “trilemma” pioneered by Mundell (1963). This hypothesis states that a country can only choose any two of the following three goals: monetary independence, exchange
rate stability, and free capital flows. This concept, if valid, is supposed to constrain policy makers by forcing them to choose only two out of the three policy choices. Within the constraint of the trilemma and its quantitative measurement, we can better understand the determinants and effectiveness of East Asian policy coordination.

This paper is structured as follows. Section 2 explains the trilemma. Section 3 presents the possible configurations of ASEAN+3 according to the trilemma indexes established by Aizenman et al. (2008, 2011). Section 4 concludes and notes the policy implications for national power.

2. Trilemma: Implications for ASEAN’s choice

In contrast to the microeconomic approach of the optimum currency area (Mundell 1961), the trilemma established by an international macroeconomic framework is also useful in analyzing consistency of a country’s policy. Figure 2 illustrates the trilemma by historical and current examples. The three sides of the triangle represents monetary independence, exchange rate stability, and financial integration, respectively. But it is not possible to be simultaneously on all three sides. For instance, the Bretton Woods system tried to keep exchange rate stability and monetary independence of each country by imposing capital controls, which is similar to China’s current policy arrangement. Hong Kong, the euro system and the future Asian Monetary Union (AMU) give up
individual monetary sovereignty to obtain exchange rate stability and free capital flows. Japan is a minority in East Asia by keeping its exchange rate flexible to achieve its monetary policy independence and financial integration with the rest of the world.

[Figure 2]

In theory, greater monetary independence allows policy makers to stabilize the economy through monetary policy. But monetary authorities could also abuse this tool in order to monetize fiscal debt and thus cause high inflation. Exchange rate stability can stabilize price levels, mitigate uncertainty, and thereby increase investment and international trade. But it could also distort price level, leading to cause misallocation of resources and output volatility. Financial liberalization, on the one hand, can improve efficiency of resource allocation, mitigate economic asymmetry, and introduce technology and know-how from abroad to stimulate economic growth. On the other hand, over the past decades it has been claimed to be the main cause of sudden stop or reversals of capital flows, triggering financial crises. In short, each policy in the trilemma can be a double-edged sword.

What happens if one or more countries violate the trilemma? Note that the collapse of the Bretton Woods system was caused by the removal of capital controls under monetary sovereignty. The European ERM crisis in 1992-93 was due to free
East Asian monetary policy choices

capital mobility after 1987 and members’ monetary independence. The Korean crisis in 1997-98 was due to financial liberalization requested by OECD. The huge U.S. debts caused by the long-run current account deficits may be explained by the rigid exchange rates against currencies of China and many other East Asian economies\(^4\) under monetary independence and financial integration. That is, we cannot ignore the role of inconsistent policy configurations in the recent financial crises.

As we mentioned above, a country in crisis can have a contagious effect to other economies in the same area. Therefore international policy coordination consistent with the trilemma is necessary for some countries to maintain their common goals, such as stable exchange rates, sustainable capital flows, or independent monetary policies. The problem is to develop a consensus for a consistent policy configuration.

3. Quantitative measurement of the trilemma

Due to the lack of quantitative measurement, many studies have focused on the trilemma but failed to provide a comprehensive analysis of all of the three policy aspects.\(^5\) A

\(^4\) This is the so-called “Bretton Woods II” by Dooely, Garber, & Folkerts-Landau (2007). They argue that not all countries chose to open their capital accounts after the 1970s. Most notably, Asian economies appear to have followed the same development strategy of the periphery of old system by undervaluing their exchange rates, managing sizable foreign exchange interventions, imposing capital controls, accumulating reserves, and encouraging export-led growth by sending goods to the competitive center.

\(^5\) But some empirical attempts (e.g., Obstfeld, Shambaugh, & Taylor (2005, 2008); Shambaugh (2004)) can be noted.
quantitative method is also necessary to understand the current policy arrangements and the future direction of policy coordination in East Asia. Here we use the trilemma indexes developed by Aizenman et al. (2008, 2010) to measure the degree to which each of the three policy choices is implemented by economies. They create the “trilemma indexes” for more than 170 economies for 1970 through 2007. The monetary independence index (MI) is based on the correlation of a country’s interest rates with the base country’s interest rate. The index for exchange rate stability (ERS) is the inverse of exchange rate volatility (e.g., standard deviations of the monthly rate of depreciation) using the exchange rate between the home and base economies. The degree of financial integration is measured with the Chinn & Ito (2006, 2008) capital controls index (KAOPEN). The three indexes are normalized between zero and one. Higher values for each of three indexes indicate higher degrees of monetary independence, exchange rate stability, or freedom capital flows, respectively. The details can be found in the Data Appendix.

According to the trilemma, the values of the three angles in Figure 2 should be (1,1,0), (1,0,1) or (0,1,1), which can be three extreme cases consistent with the trilemma. The extreme values may not be possible in practice, but we should observe divergent indexes if one or a group of countries definitely chooses two of the three policy goals and relinquishes the remaining one. On the other hand, the converging
indexes do not mean that the countries must violate the trilemma, but it may indicate that they are in a “gray zone.” Therefore policy coordination, higher foreign reserves for market intervention, or an international safety mechanism (e.g., CMIM) for risk sharing may be necessary to defend against possible shocks.

Figure 3 shows the indexes of industrialized countries and some Southeast Asian emerging economies. Most of the industrialized economies are members of the European Monetary Union (EMU). We can clearly observe that the divergent periods before the 1970s and after the launch of the Euro, and the more convergent period from the collapse of the Bretton Woods system to the onset of the 1992-93 ERM crisis. This again confirms the importance of consistent policy configurations to prevent financial crises. Since the post-ERM crisis, most EMU members have given up monetary independence to achieve exchange rate stability and free capital mobility, which is consistent with the southeast angle in Figure 1.

The only two periods at which the indexes are significantly divergent for East Asia are the period before the collapse of the Bretton Woods system (same as the case of the advanced economies) and the period after the Asian financial crises. However,

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6 The EMS from 1970s to 1990s was referred to an “incomplete monetary union” (De Grauwe 2008).
the indexes become more convergent at the present time, which implies now the East Asian emerging economies are not standing at any angle in Figure 1. That is, they are staying inside of the triangle. In addition, maintaining East Asia exchange rate stability seems to be more important than the other two goals. The situation may not be dramatically changed until the launch of a new international currency or a collective floating mechanism.

The main reason to support East Asian exchange rate stability is that 60% of East Asian international reserves are still in the U.S. dollars after the global crisis (Lee 2010). By accumulating huge foreign reserves after 2000, it is easier for East Asian emerging economies initially to maintain a stable exchange rate, and then to think of the other two goals according to other considerations.

The diamond charts in Figure 4 confirm the above arguments. Given exchange rate stability, emerging Asian economies choose to gradually open their financial markets to the world and sacrifice some monetary independence. This can be achieved with the support of their huge foreign reserves (the right chart). However, if the long term goal of East Asian nations is to establish a monetary union (proposed by Japan and the ADB), exchange rate stability and high financial integration could be achieved

7 The fourth variable in Figure 4 is the ratio of international reserves over gross domestic products (GDP).
without monetary independence and huge foreign reserves. A strong CMIM or even a new Asian currency can decrease the need of foreign reserves in the U.S. dollar and then eliminate the problem of global imbalances. Comparing the right chart with the left one, it shows that it will take some time for East Asia to adjust their precautious reserve accumulations and overlook about the potential threats from capital flows and monetary dependence. A new monetary union may not be available right away, even if many economists believe that East Asia has already satisfied all the conditions of an optimum currency area (De Grauwe 2008).

Figure 5 shows that the diamond of East Asian emerging economies is of course different from that of China. But the two diamonds have the same ratios of foreign reserves, and East Asian financial openness in fact has been declining since the 1990s, which are helpful for emerging Asia to maintain a certain degree of exchange rate stability and monetary autonomy.

The policy configurations reveal not only preferences of a country, but also the possibility and effectiveness of policy coordination in a region. Some important empirical work indicates that the hypothesis of “fear of floating” is entirely rational
from the perspective of each East Asian country (Calvo and Reinhart 2002; McKinnon & Schnabl 2004). Furthermore, their joint pegging to the dollar benefits the East Asian dollar bloc as a whole, although Japan remains an important outlier. During the global financial crisis we still observe the joint intervention by the East Asian central banks to stabilize exchange rates against the U.S. dollar (Financial Times 2009). Due to the patterns of original equipment manufacturing (OEM) and original design manufacturing (ODM) and their lower gross profit rates, East Asian governments will still be concerned about exchange rate stability and return to a dollar bloc after the recovery of the U.S. economy.

4. Conclusion

If a collective exchange rate stability mechanism is the priority of East Asian economies, the ASEAN should go either the southeast corner (proposed by Japan) or the north corner (held by China), as Figure 6 indicates. Due to the fear of capital flows and exchange rate volatility, the East Asian emerging economies may still choose to go to the “north,” which is constituted of exchange rate stability, monetary independence, and limitations on capital flows with the support of precautious reserves accumulations and multilateral currency swaps.8 That is, a Bretton Woods style policy coordination

8 Note that China has signed RMB swaps agreements with eight economies, including Hong Kong, Indonesia, Malaysia, Singapore, and Korea.
mechanism (e.g., Bretton Woods system II by Dooely, Garber, & Folkerts-Landau 2007, 2009) should be more feasible.⁹

[Figure 6]

If a new international currency (the RMB or ACU) can be launched as soon as possible, the ASEAN+3 may go to the “southeast” and decrease their large foreign reserves (Yeh 2010). But China’s attitude toward the ACU (proposed by Japan) and RMB liberalization will be the critical factors.¹⁰ We believe that the ACU still has a chance to prevail as long as it can forge a single currency with the Renminbi on board before China dramatically expands its domestic market and speeds up its financial liberalization.

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⁹ As Dooely, Garber, & Folkerts-Landau (2009) state, “following a painful period of adjustment the incentives that drive Bretton Woods II will be even more powerful than has been the case to date.”

¹⁰ See Tso & Yeh (2011). The World Bank (2011) and Lardy & Douglass (2011) provide different scenarios for development of the RMB.
东亚货币政策选择

图1 政策协调失败：亚洲货币篮子（AMU）与人民币、日元和韩元

注：高于（低于）100的值意味着需要货币升值（贬值）。

来源：RIETI（2010年），<http://www.rieti.go.jp>

图2 亚洲的三难问题

来源：作者的编纂。

Figure 1 Policy coordination failure: Asian Currency Unit against RMB, Yen and Won.

Note: Values higher (lower) than 100 mean currency appreciation (depreciation) are needed.

Source: RIETI (2010), <http://www.rieti.go.jp>
East Asian monetary policy choices

Figure 3 Trilemma indexes: Industrialized advanced countries (IDC) vs. emerging Asia
Note: Emerging Asia includes five important members of ASEAN+3: Indonesia, S. Korea, Malaysia, Thailand and the Philippines.
Source: Aizenman et al. (2010).

Figure 4 The trilemma indexes plus foreign reserves over GDP: Industrialized advanced countries vs. emerging Asian economies
Source: Aizenman et al. (2010).
East Asian monetary policy choices

Figure 5 Different policy configurations between China and Emerging Asia
Source: Aizenman et al. (2008).

Figure 6 ASEAN’s choice: Possible policy configurations for the future
Source: Authors’ compilation.
Data Appendix: The trilemma indexes

Details are shown on http://web.pdx.edu/~ito/trilemma_indexes.htm. In this appendix we briefly explain the construction of the trilemma measures.

1. Monetary Independence (MI)

The extent of monetary independence is measured as the reciprocal of the annual correlation between the monthly interest rates of the home country and the base country. Money market rates $r$ (IMF’s International Financial Statistics, line 60B) are used for the following calculation:

$$MI = 1 - \frac{\text{Corr}(r_i, r_j) - (-1)}{1 - (-1)},$$

where $i$ refers to home countries and $j$ to the base country. By construction, the maximum value is 1, and the minimum value is 0. Higher values of the index indicate more monetary policy independence.

The base country is defined as the country that a home country’s monetary policy is most closely linked with, as in Shambaugh (2004). The base countries are Australia, Belgium, France, Germany, India, Malaysia, South Africa, the United Kingdom, and the United States.

2. Exchange Rate Stability (ERS)
East Asian monetary policy choices

To measure exchange rate stability, annual standard deviations of the monthly exchange rate between the home country and the base country are calculated and included in the following formula to normalize the index between 0 and 1:

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ERS = \frac{0.01}{0.01 + \text{stdev}(\Delta \log(\text{exch rate}))},
\]

where higher values of this index indicate more stable movement of the exchange rate against the currency of the base country.

3. Financial Openness/Integration (KAOPEN)

KAOPEN by Chinn and Ito (2006, 2008) is normalized between zero and one. Higher values of this index indicate that a country is more open to cross-border capital transactions. The index is available for 181 countries for 1970 through 2006.

KAOPEN is based on information regarding restrictions in the International Monetary Fund’s Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). Since KAOPEN is based on reported restrictions, it is necessarily a de jure index of capital account openness.
References


East Asian monetary policy choices


