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

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 precautious international reserve accumulation after

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[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.

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,[2] 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.

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

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[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

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 focued on the trilemma

but failed to provide a comprehensive analysis of all of the three policy aspects.[5] A

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[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.[6] 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.

[Figure 3]

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).[7] 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

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[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 4]

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.

[Figure 5]

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

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[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
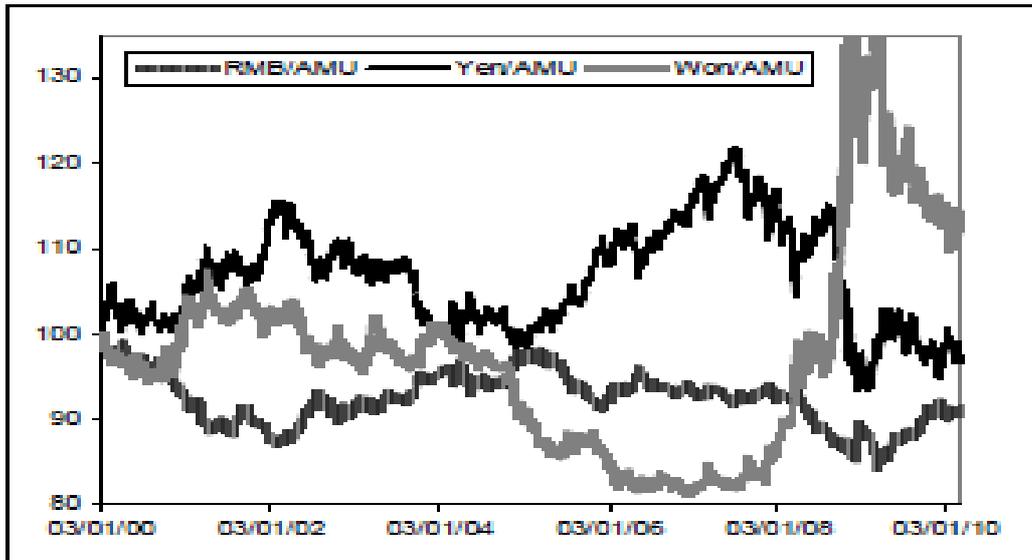scenarios for development of the RMB.

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.

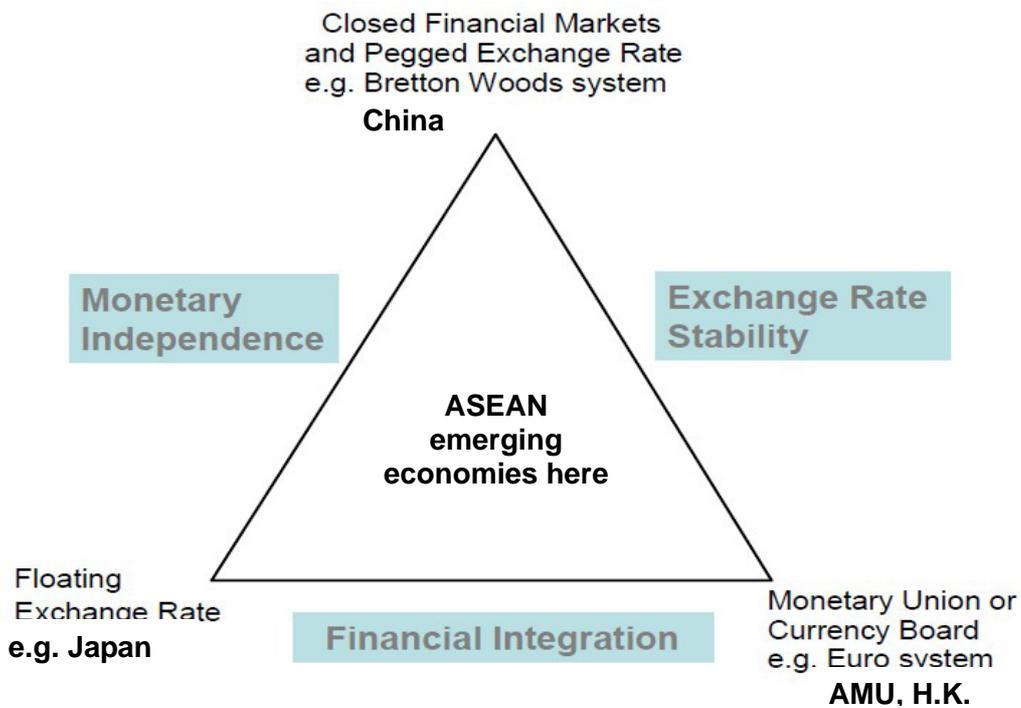Source: RIETI (2010) , <http://www.rieti.go.jp>

Figure 2 The trilemma for East Asia
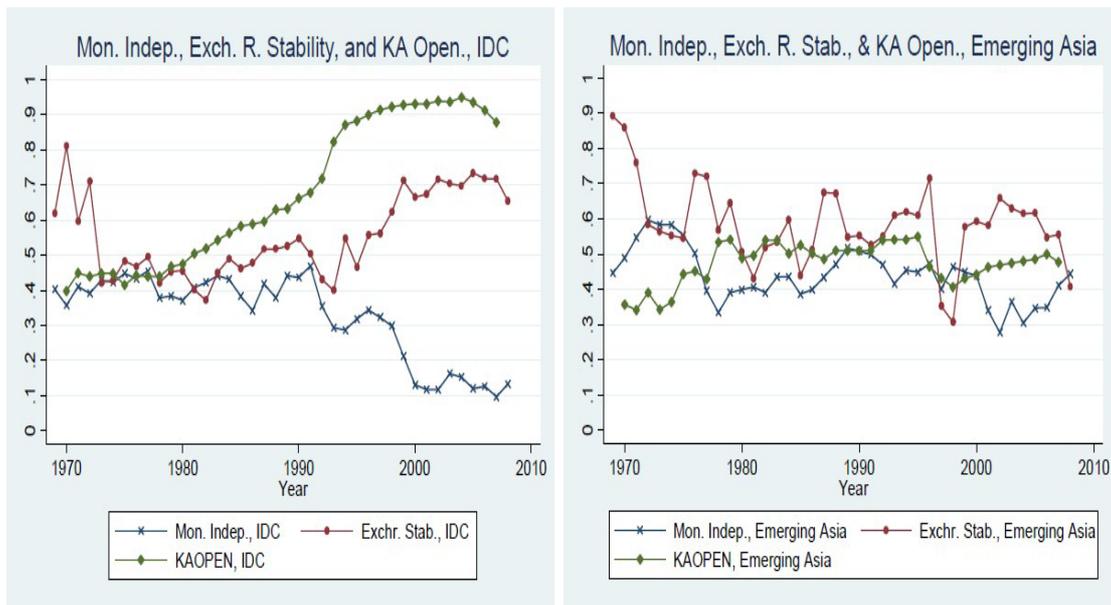
Source: Authors' compilation.

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.
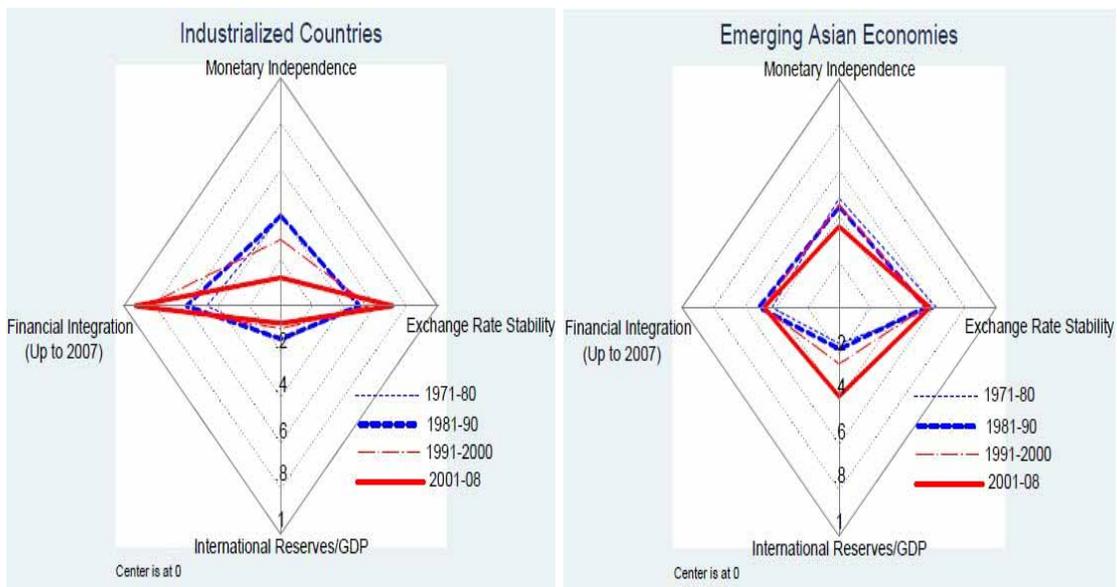Source: Aizenman et al. (2010).

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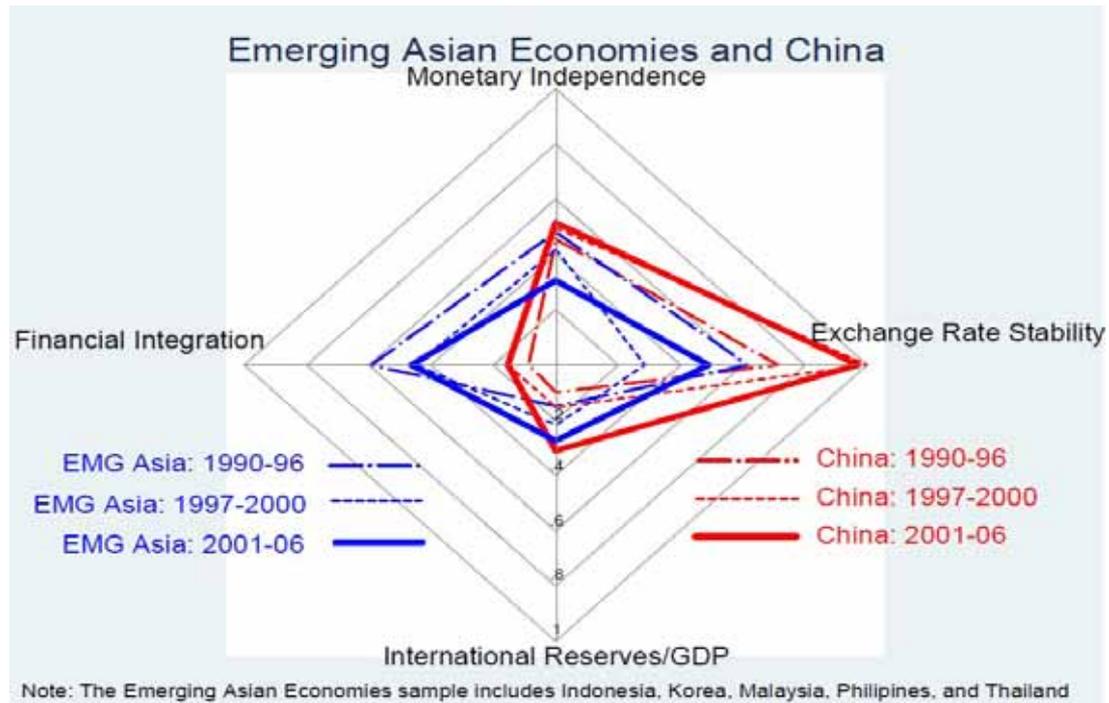Source: Aizenman et al. (2010).

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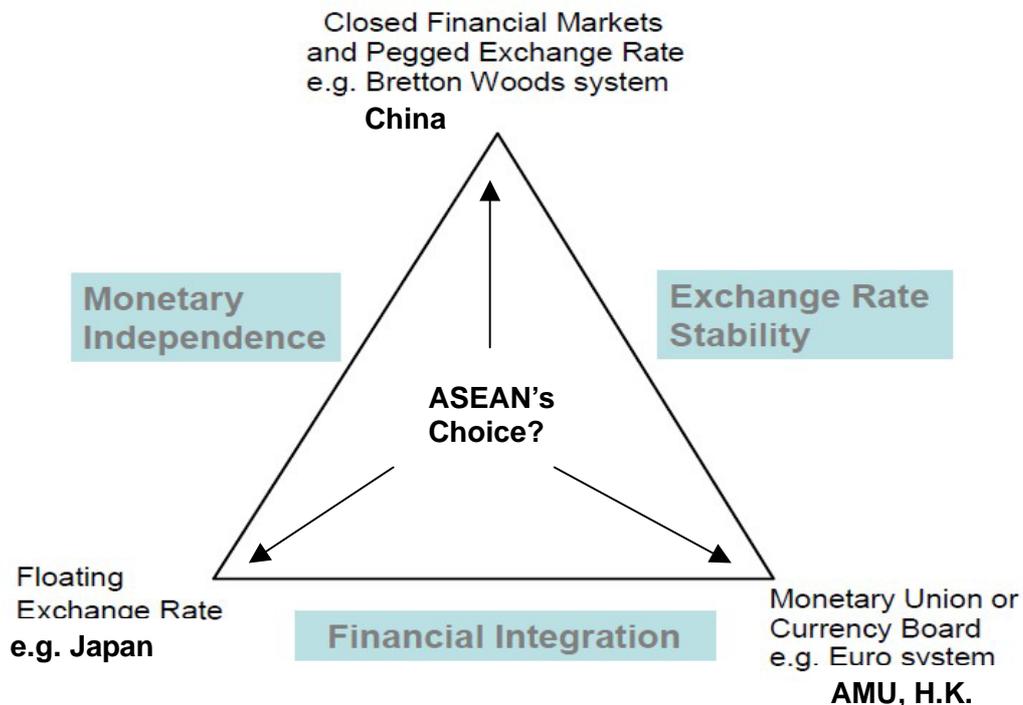Source: Aizenman et al. (2008).

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:

$$MI = 1 - \frac{Corr\,(r_i, r_j) - (-1)}{1 - (-1)},$$
(A1)

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)

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:

$$ERS = \frac{0.01}{0.01 + stdev(\Delta \log(exch\_rate))}, \qquad (A2)$$

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.

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