Global Financial Crisis and Regional Monetary Cooperation in East Asia

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- Empirical analysis on appreciation of East Asian currencies for reducing the current account imbalances
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Global Imbalances

- Global Imbalances (current account imbalances across the world)

(1) Current account (CA) deficit in the United States (US) (<= increase in investments caused by the IT boom, fiscal deficit, and housing investment (which cause the subprime mortgage problem)

(2) CA surpluses in Japan, China, and East Asia (<= "saving glut" (Bernanke (2005))

(3) CA surpluses in oil-exporting countries (<=increase in oil price) (Oil money flows via the EU, especially London, to the US)
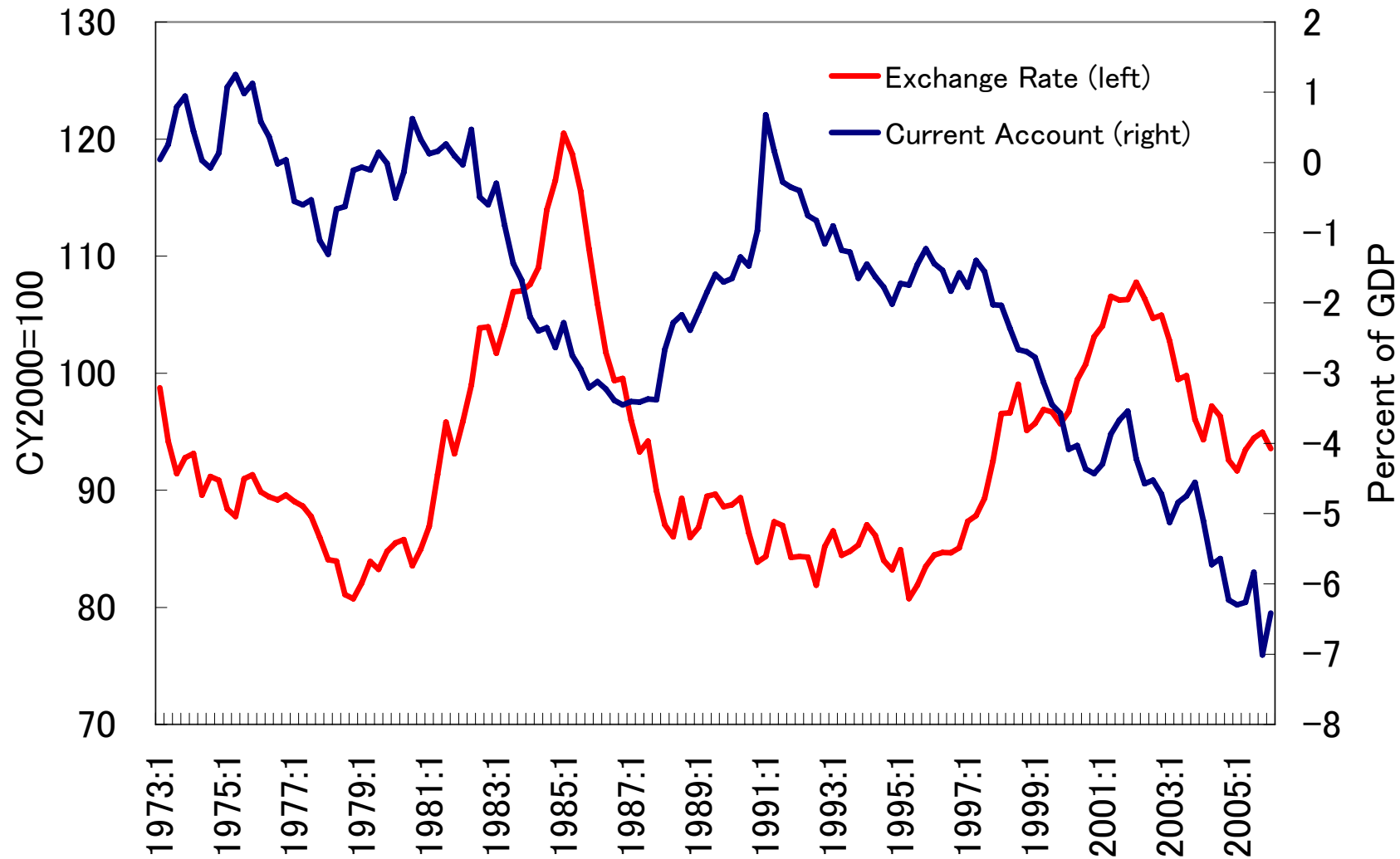
Current account imbalances of the US vs. Japan and East Asia (ASEAN5+3)
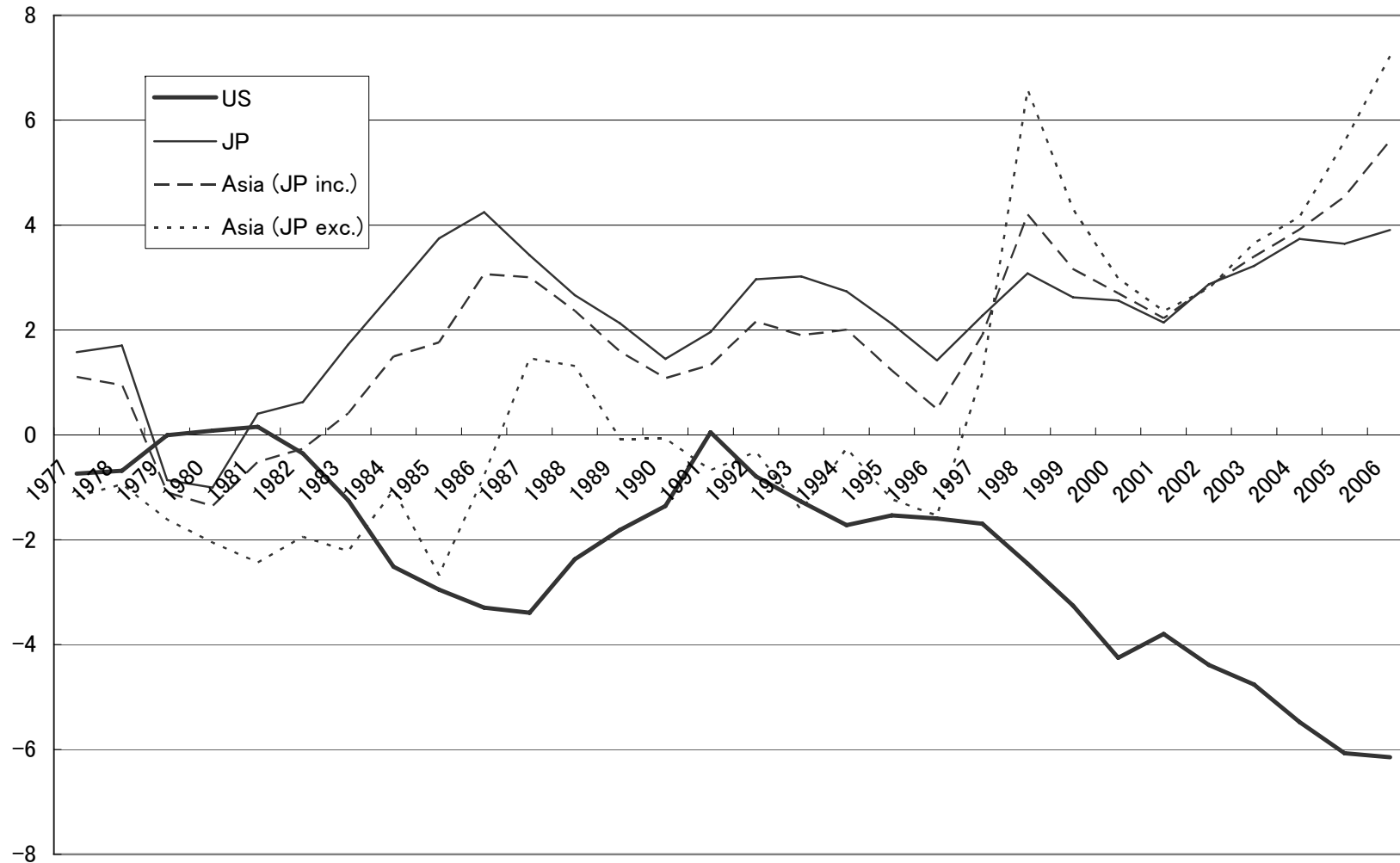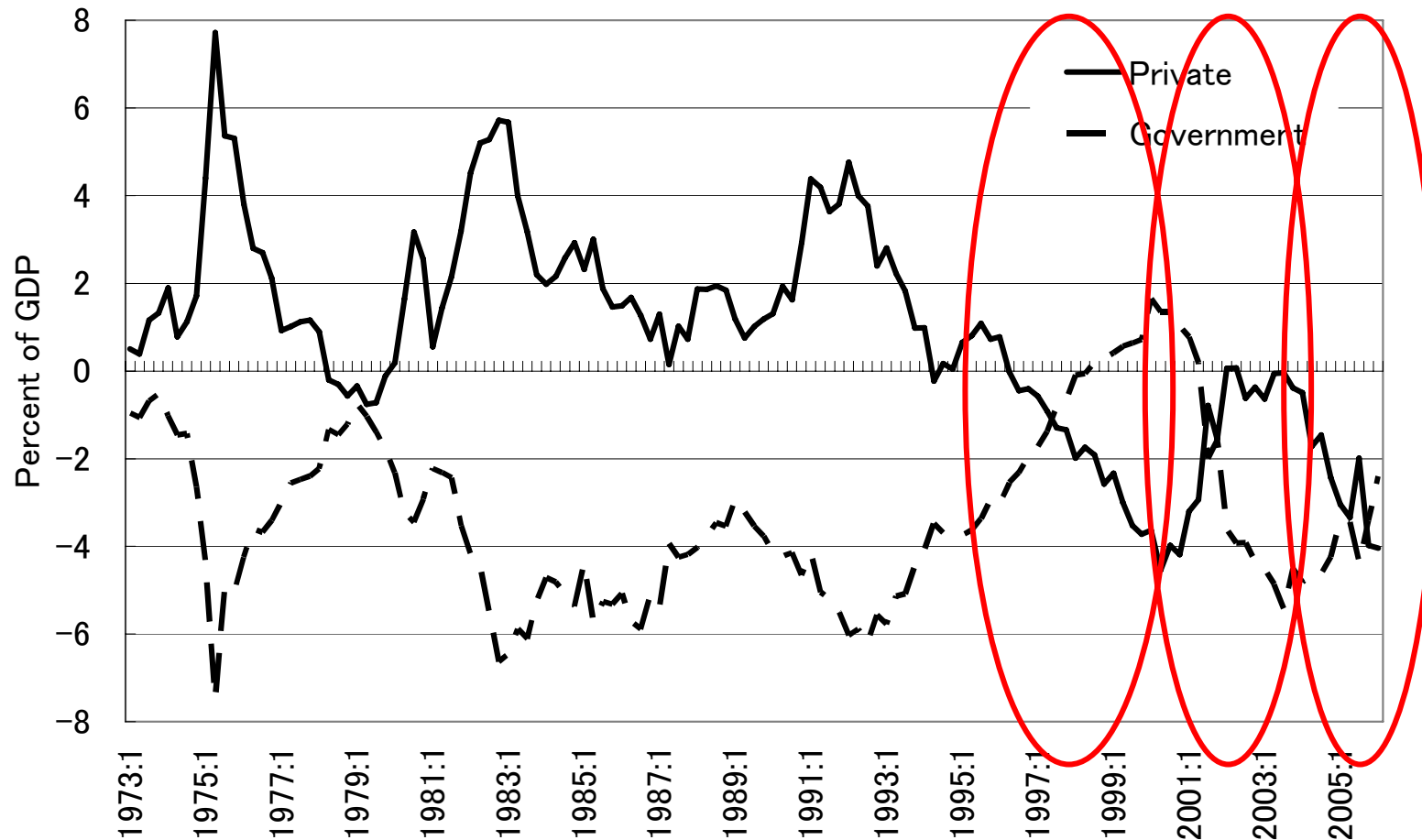
Current Account of the US and the US$

Saving-Investment balances of private and government sectors in the US

Figure 3: The US Saving-Investment Balance

Empirical Analysis on Exchange Rate Adjustment for Current Account Imbalances (Ogawa and Iwatsubo (2008))

- We used data before the global financial crisis to investigate the adjustments of Japanese and East Asian CA surplus, assuming that the US and global economies have not yet experienced the global financial crisis. The assumption means that fiscal deficits, consumption, and investments of the US are unchanged.

- VAR models are used to analyze the causality relationship between their CAs and their related economic variables (exchange rate (FXR) and others) and to examine how their CA surplus has been adjusted and how much FXR adjustment is needed.

Comparison of exchange rate adjustments between Japan and East Asia

- We compare the results of the impulse responses of CA to FXR among Japan only, East Asia excluding Japan, and East Asia including Japan.

- As for Japan, we investigate how much appreciation of the JPY is necessary to reduce the Japanese CA surplus from a current level (4% of GDP) to its half level (2% of GDP).

- As for East Asia, we investigate how much appreciation of AMU is necessary to reduce the CA surplus of East Asia from a current level (3% of GDP) to its 1% of GDP by 2% points that is the same change (% points) as Japanese case.

VAR models for Japan

- We use two kinds of VAR models to investigate the effects of FXR on CA.

(1) Four-variable VAR model (Model J1): the logarithm of real effective exchange rate (REER) of the JPY, the ratio of Japanese CA in terms of GDP, the Japanese real interest rate, and the Japanese GDP growth rate.

(2) Four-variable VAR model (Model J2): the ratio of outward FDI in terms of domestic investments and the ratio of IA to CA as well as the logarithm of the REER of the JPY and the ratio of Japanese CA to GDP.

- Sample periods: (1) 1980Q1 to 1990Q4 and (2) 1991Q1 to 2006Q4

VAR models for East Asia

- East Asia includes eight countries (Japan, China, Korea, Singapore, Malaysia, Indonesia, the Philippines, and Thailand) .
- We use two kinds of VAR models to investigate the effects of FXR on CA for East Asia as a whole.
- East Asia excluding Japan
(1) Four-variable VAR model (Model EA1): the logarithm of REER of East Asian currencies, a ratio of East Asian CA to GDP, East Asian real interest rate, and East Asian GDP growth rate.
(2) Four-variable VAR model (Model EA2): a ratio of inward FDI to domestic investments and a ratio of IA to CA in East Asia as well as logarithm of REER of East Asian currencies and a ratio of East Asian CA to GDP.
- East Asia including Japan
(1) Four-variable VAR model (Model EA3): the same four-variables with Model EA1.
- Sample period: 1991Q1 to 2006Q4

Exchange rate adjustment to CA imbalance

Country/region	Japan		East Asia excluding Japan		East Asia including Japan
Models	Model J1	Model J2	Model EA1	Model EA2	Model EA3
Responses to 1% appreciation during 50Q					
Appreciation	2.56%	10.48%	18.52%	31.40%	6.79%
Reduced CA surplus	0.23% point	0.73% point	1.53% point	3.61% point	0.87% point
Necessary appreciation during 50Q for 2%point reduced CA surplus	22.3%	28.7%	24.2%	17.4%	15.6%

Analytical results

- The comparison of the FXR adjustments to CA imbalances shows that

(1) 22% to 29% of appreciation of the JPY during 12 and half years is needed in order to reduce the Japanese CA surplus from the current level (4%) to its half level (2%) by 2% point.

(2) 17% to 24% of appreciation of the AMU excluding the JPY during the period is needed in order to reduce the CA surplus of East Asia without Japan as a whole from the current level (3%) to 1% by the 2% point.

(3) 16% of appreciation of the AMU including the JPY during the period is needed in order to reduce the CA surplus of East Asia as a whole from by the 2% point.

- It is smaller appreciation of East Asian currencies as a whole that is needed for the same % points of reduction in the CA than that of the JPY only or other East Asian currencies .

Scenarios of US dollar depreciation

- **Benchmark Scenario**: About 20% of appreciation of the JPY and 16% of appreciation of East Asian currencies, given the situation before the global financial crisis and the current fiscal deficit of the US.

- **Soft-landing Scenario**: The subprime mortgage problems might reduce housing investment, consumption, and investment. The reduction reduces the current account deficits and, in turn, contribute to smaller depreciation of the US$.

- **Crisis Scenario**: The financial crisis in the US might lose credibility of the US$. It causes a larger depreciation of the US$.

- **Most Realistic Scenario**: The US$ keeps at the current level in the short run. Increase in fiscal deficits of the US might cause harder-landing in the long run.

Moderate appreciation of US$ and sudden depreciation of euro

- Moderate appreciation of US$ and sudden depreciation of euro since the Lehman Brothers Shock in September 2008.

- The Lehman Brothers Shock clearly exists counter-party risk in inter-bank markets especially in Europe.

- European financial institutions who damaged their balance sheet due to loss of securities backed by the subprime mortgage cannot finance the US$ money.

- Some of European countries occurred housing bubbles like the United States.

=> Lesson: even the euro has depreciated so much even though the euro is used for transactions within the euro area. The US$ is still used for transactions with outsiders of the euro area.
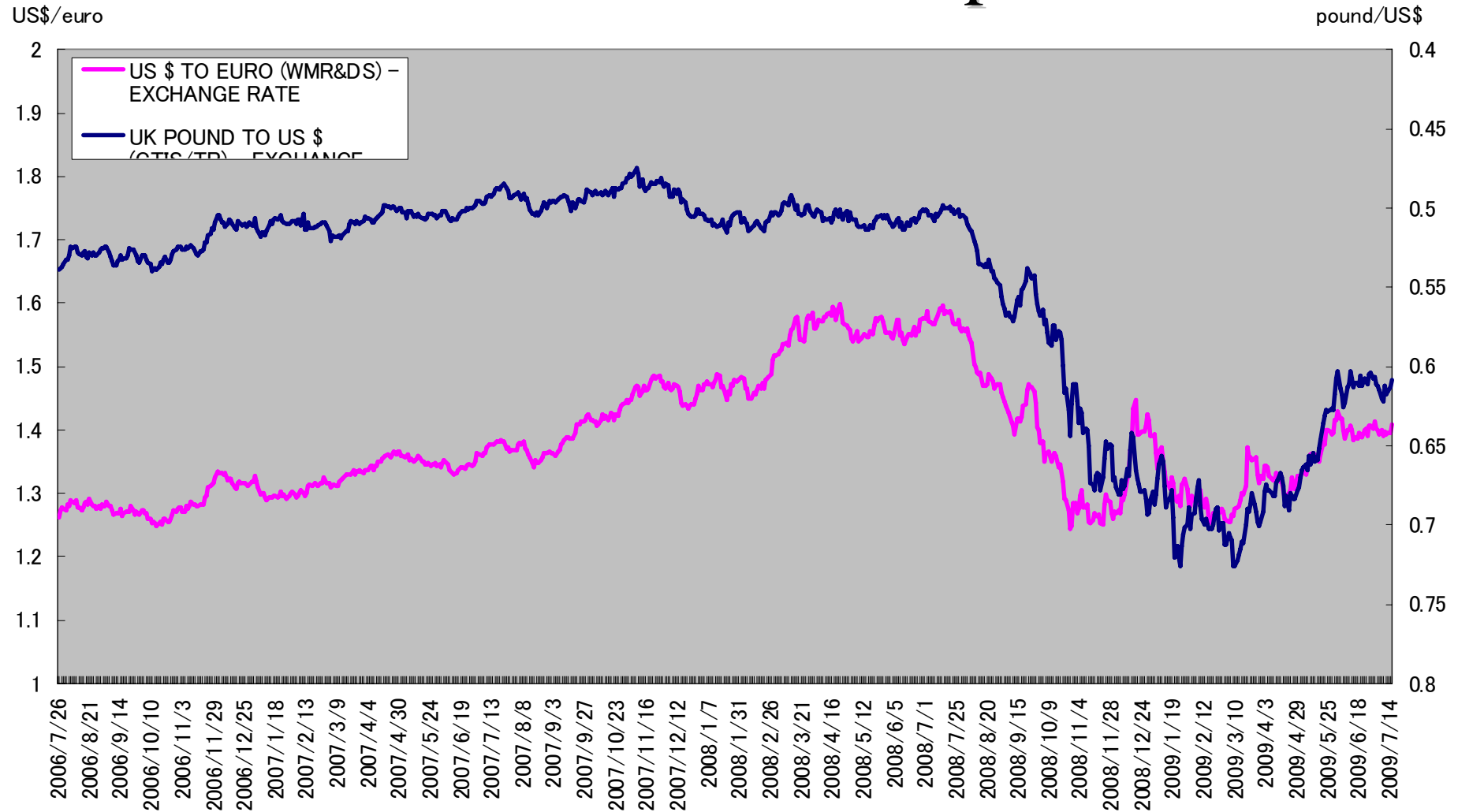
Unlimited supply of US$ to Europe rescued the euro

- In 2007, the ECB, Bank of England, and other central banks concluded currency swap agreements with the FRB to give supply of US$ liquidity to the central banks.
- The agreements extend to unlimited supply of US$ liquidity in October 2008.
- The counter-party risk in inter-bank markets has reduced since November 2008. However, credit risks are left (around 1% point).
- Strong demand for the US$ against the euro and other European currencies in interbank markets in Europe.
- It clarifies that economic agents in Europe needs the US$ for external economic transactions even though they can use the euro for intra-regional economic transactions.
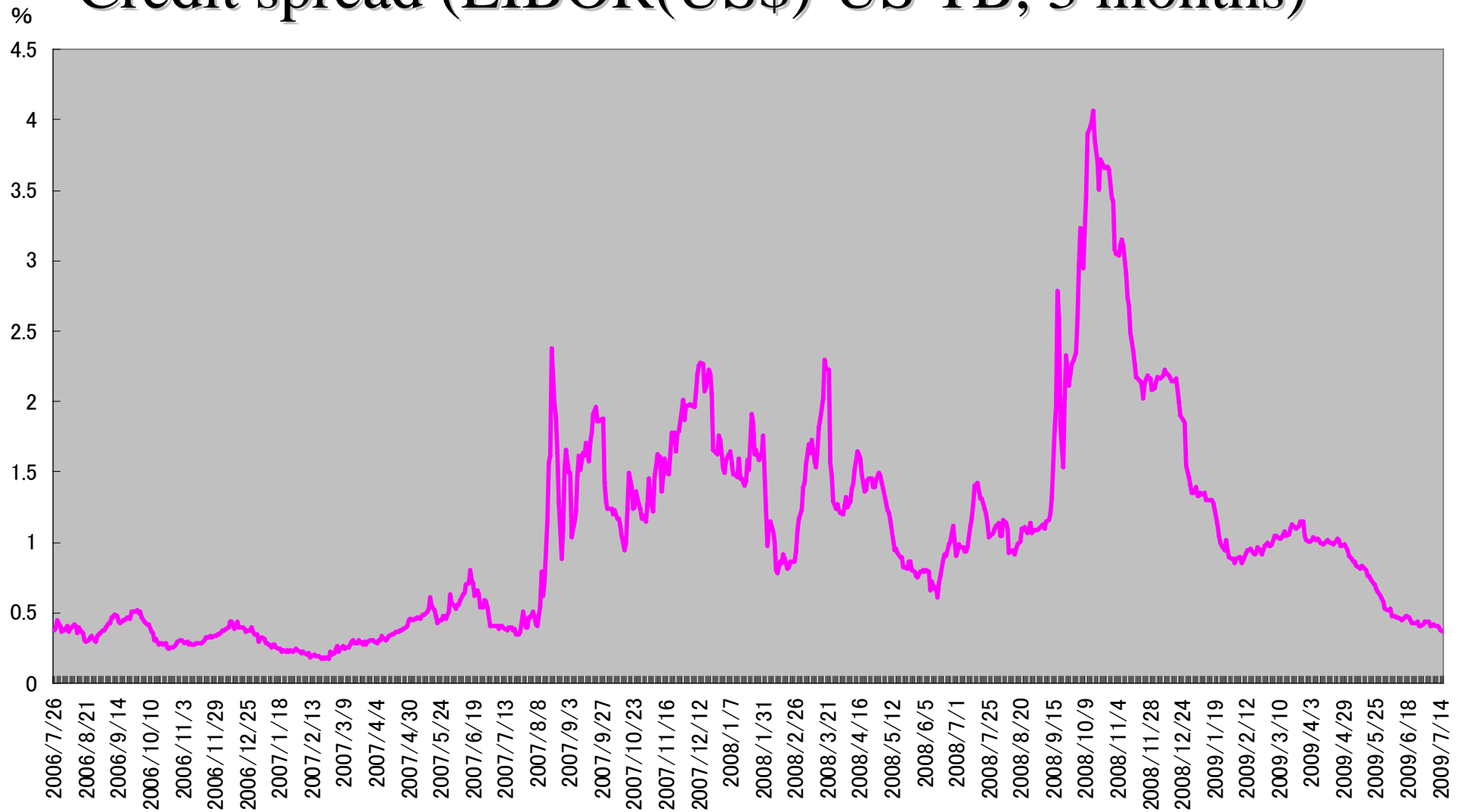
Movements of the euro and the pound

US$/euro

pound/US$

Legend:
- US $ TO EURO (WMR&DS) – EXCHANGE RATE
- UK POUND TO US $ (CTIS/TR) – EXCHANGE

Data: Datastream

Credit spread (LIBOR(US$)-US TB, 3 months)

Reaction of East Asian currencies

- AMU and AMU Deviation Indicators (AMU DIs) （http://www.rieti.go.jp/users/amu/index.html)

(1) AMU（Asian Monetary Unit）: a weighted average of East Asian (ASEAN+3 (China, Japan, and Korea))

(2) AMU DI: position of each East Asian currency against the AMU based on benchmark period (2000-2001)

- The AMU has been appreciating against a currency basket of the US dollar and the euro since August 2008.

- The AMU has been depreciating against the US dollar since April 2008.

- The AMU has been appreciating against the euro since July 2008.

Value of AMU in terms of US dollar and euro

Figure 1. AMU in terms of the US$-euro
(benchmark year=2000/2001, basket weight=2004-2006)

US$-euro/AMU

Legend:
- U.S.$-euro/AMU
- U.S.$/AMU
- euro/AMU
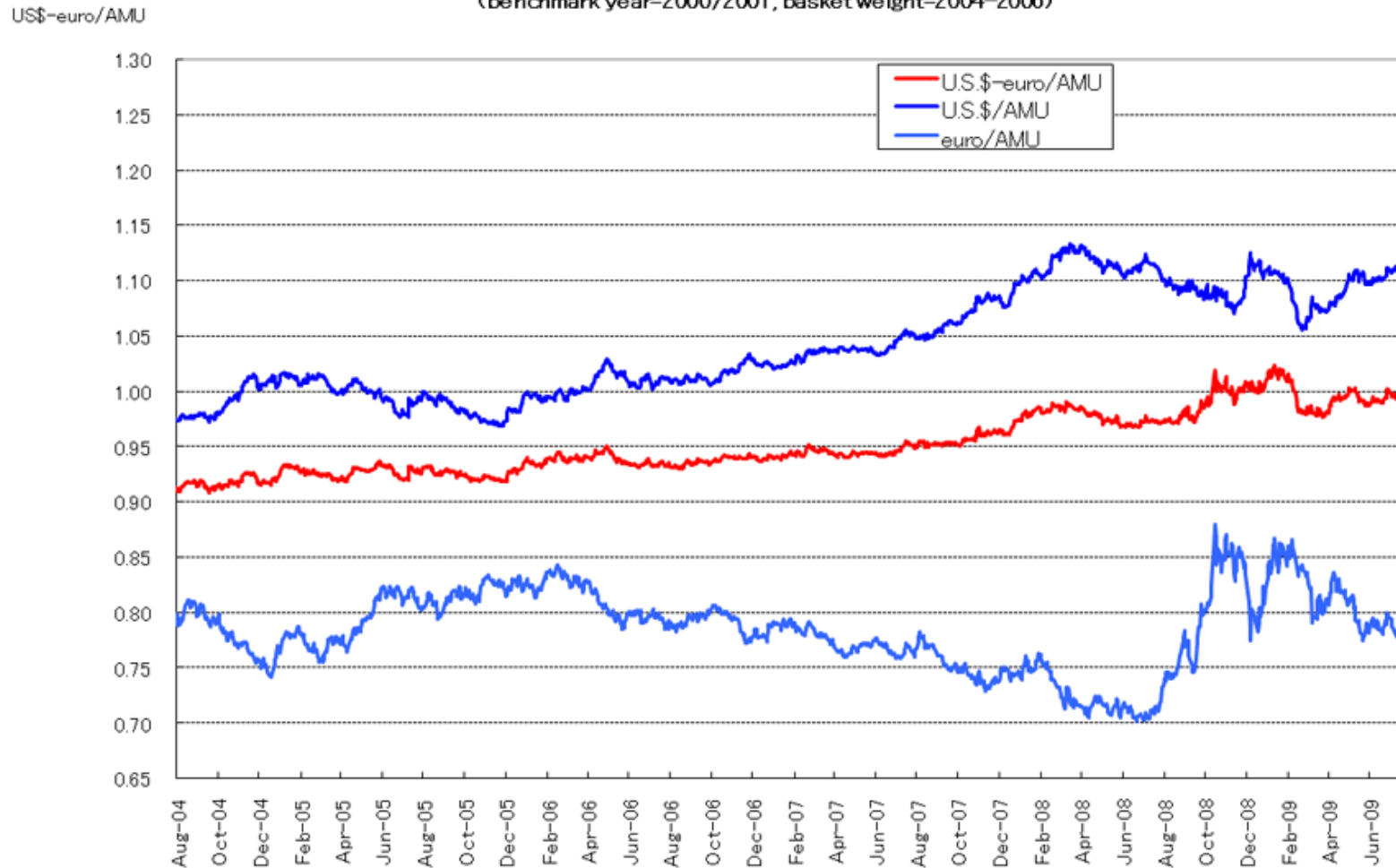
Asymmetric reactions of East Asian currencies

- AMU DIs of East Asian currencies shows their asymmetric reactions against the global financial crisis.

- The Korean won changed from 20% of overvaluation in October 2007 to 27% of undervaluation in October 2008. It depreciated by 47% points against the AMU.

- The ASEAN5 currencies have depreciated against the AMU.

- The Japanese yen has a appreciating tendency with volatility against the AMU since August 2007.

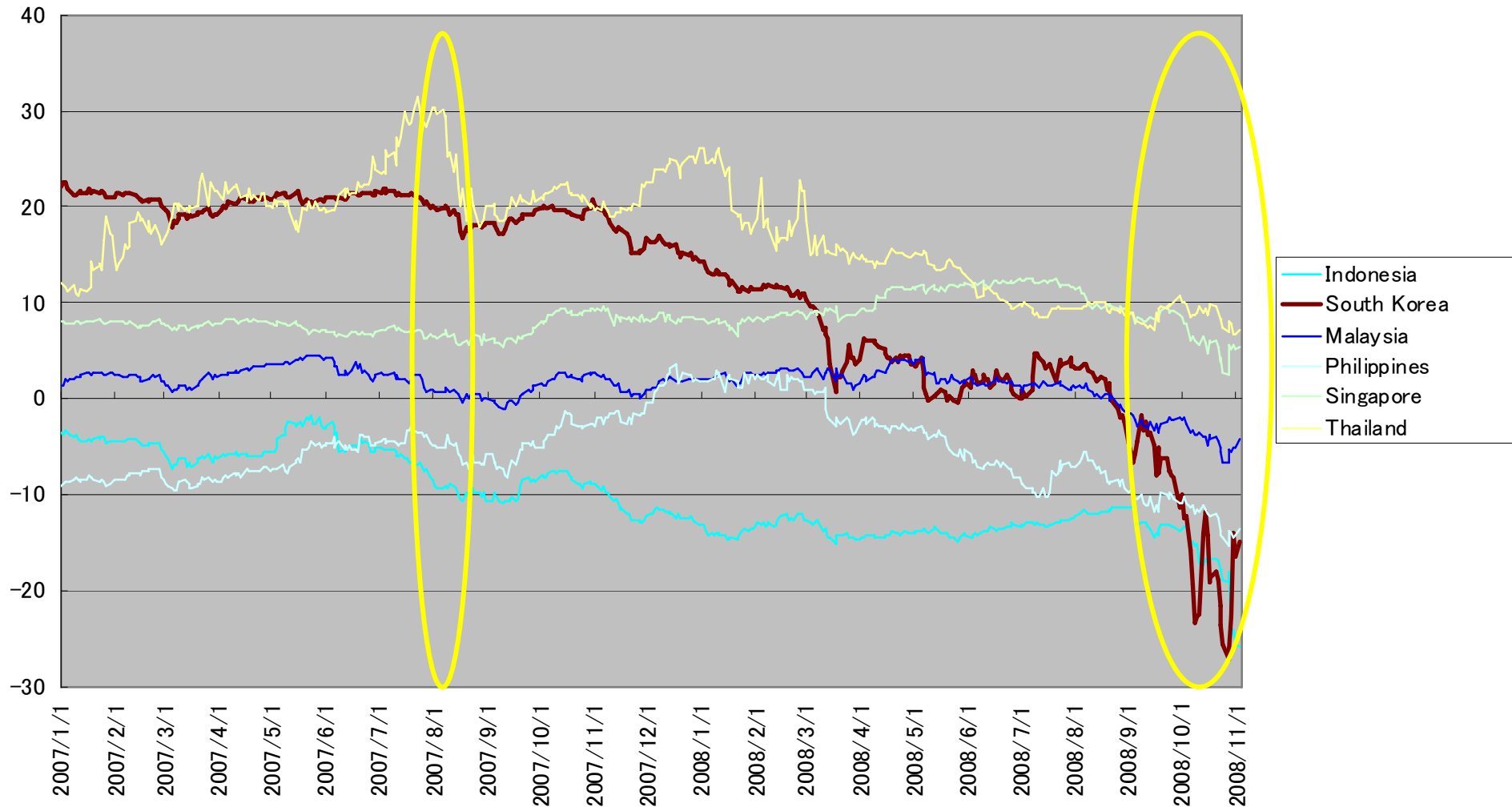- The Chinese yuan has appreciating against the AMU since March 2008.
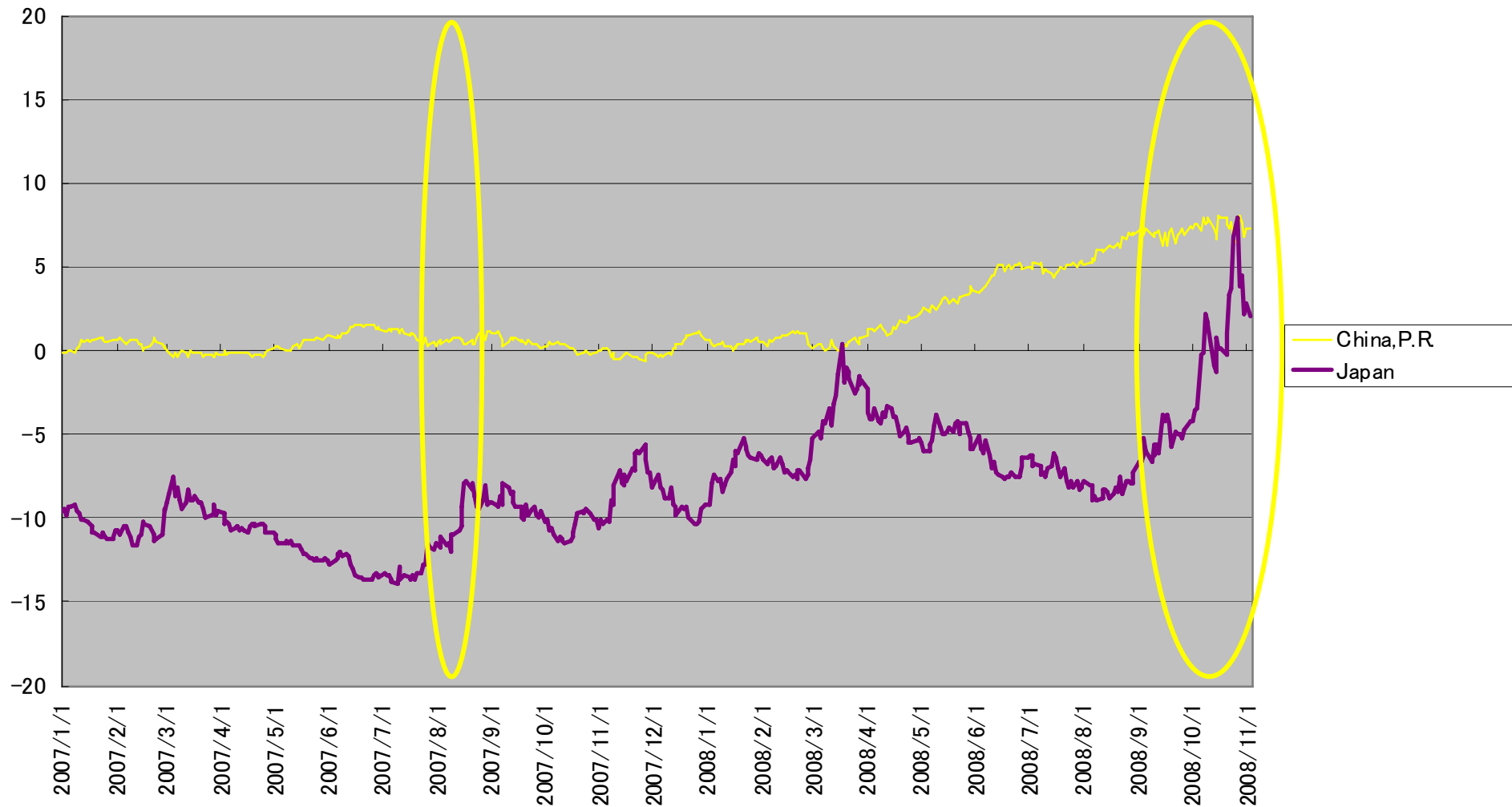
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Nominal AMU Deviation Indicators

Figure 2. Nominal AMU Deviation Indicators
(benchmark year=2000/2001, basket weight=2004-2006,daily)
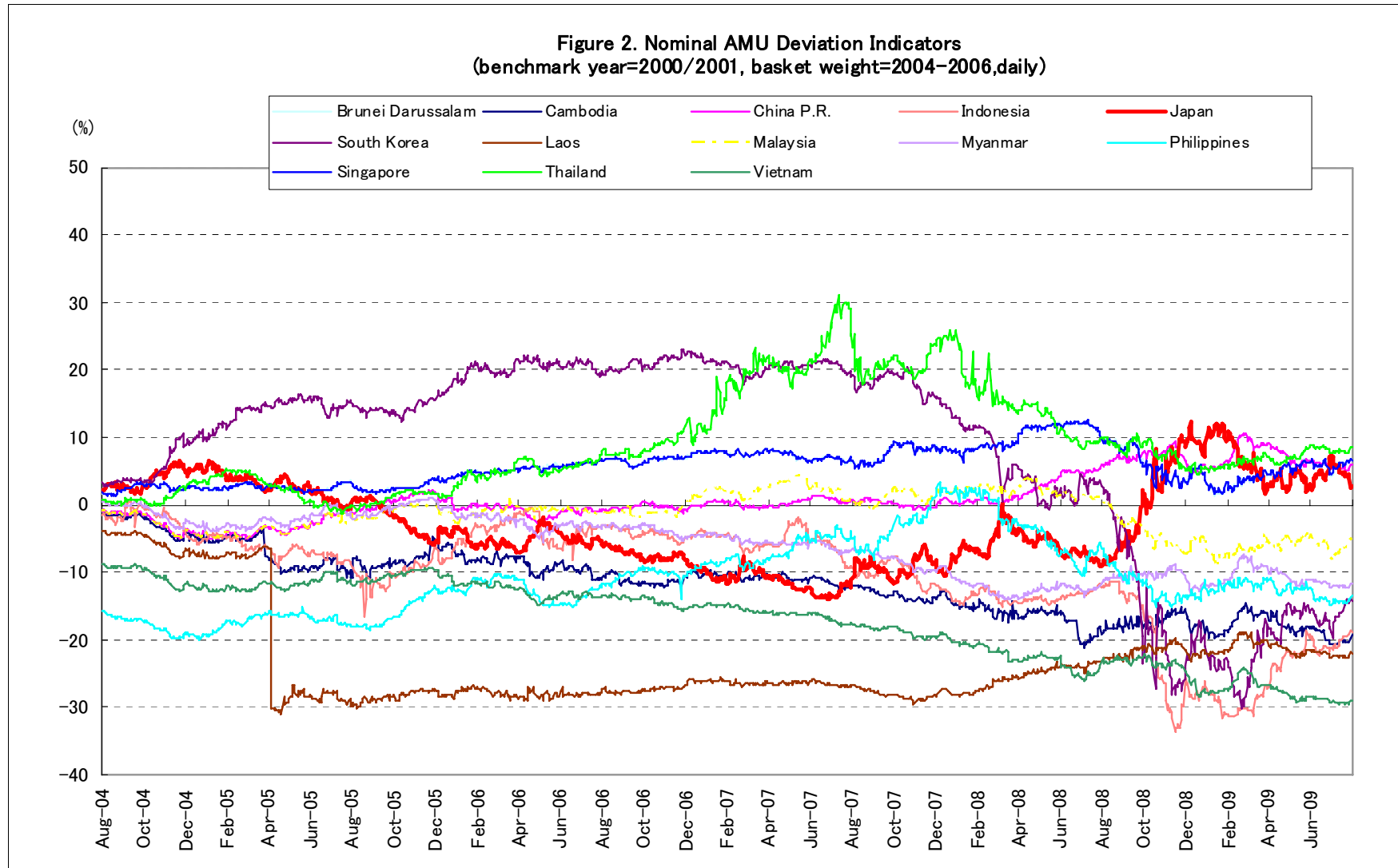
AMU Deviation Indicators of depreciating currencies

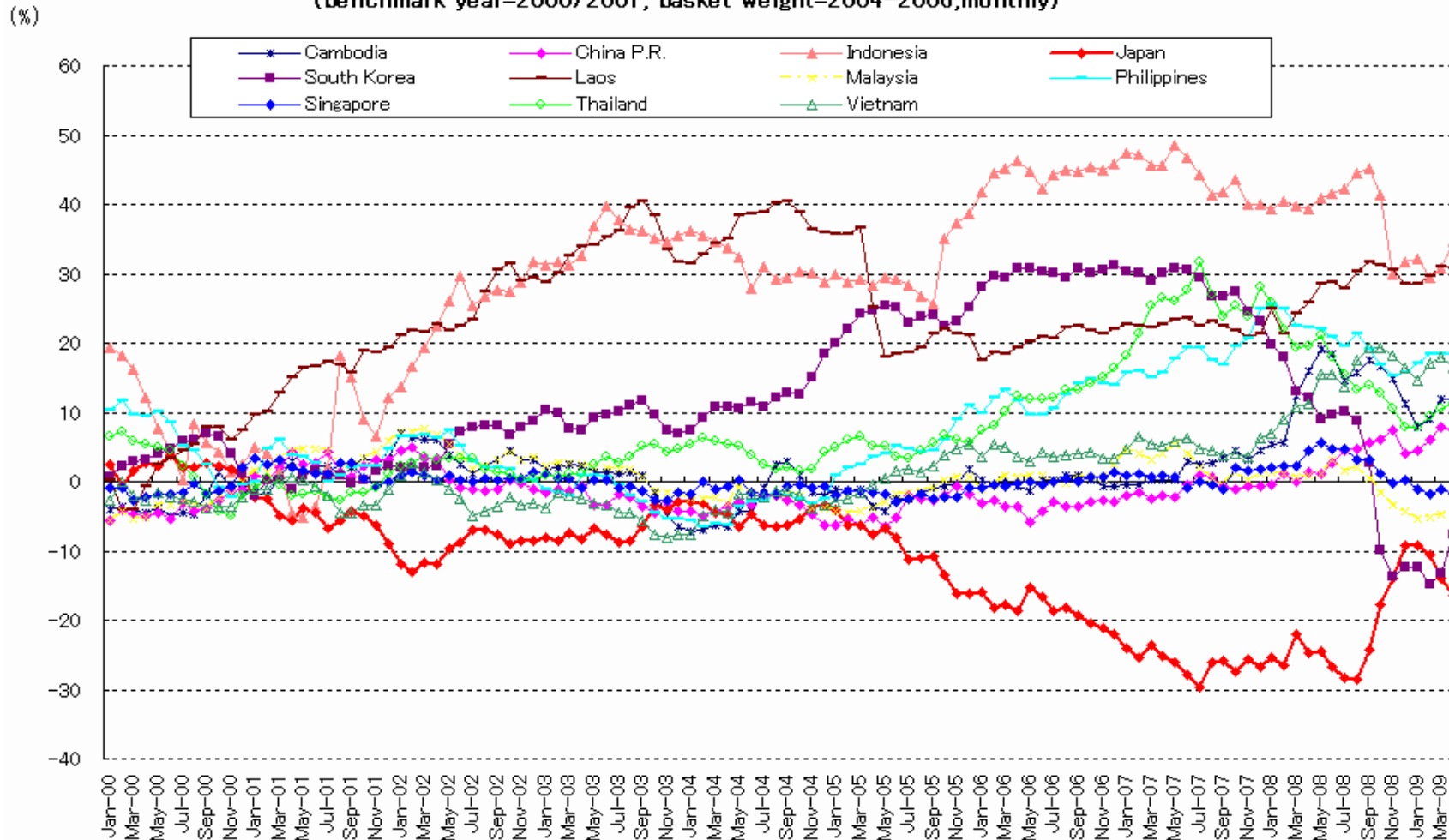（データ）http://www.rieti.go.jp/users/amu/index.html

AMU Deviation Indicators of appreciating currencies

Real AMU Deviation Indicators

Figure 4. Real AMU Deviation Indicators
(benchmark year=2000/2001, basket weight=2004-2006, monthly)

AMU DI convergences (Ogawa and Yoshimi (2008, 2009))

- Weighted averages of AMU DI have an increasing tendency.

- We use two tests of convergence to show AMU DI convergences among the East Asian currencies.

(1) β-convergence: AMU DIs in countries with relatively higher AMU DIs have tendencies to decrease more rapidly than those in countries with relatively lower AMU DIs.

(2) σ-convergence: cross-country dispersion (variance) of AMU DIs has a tendency to decrease over time.

- We found that AMU DIs have an increasing tendency in terms of β and σ-convergences. East Asian currencies is diverging especially since 2005.

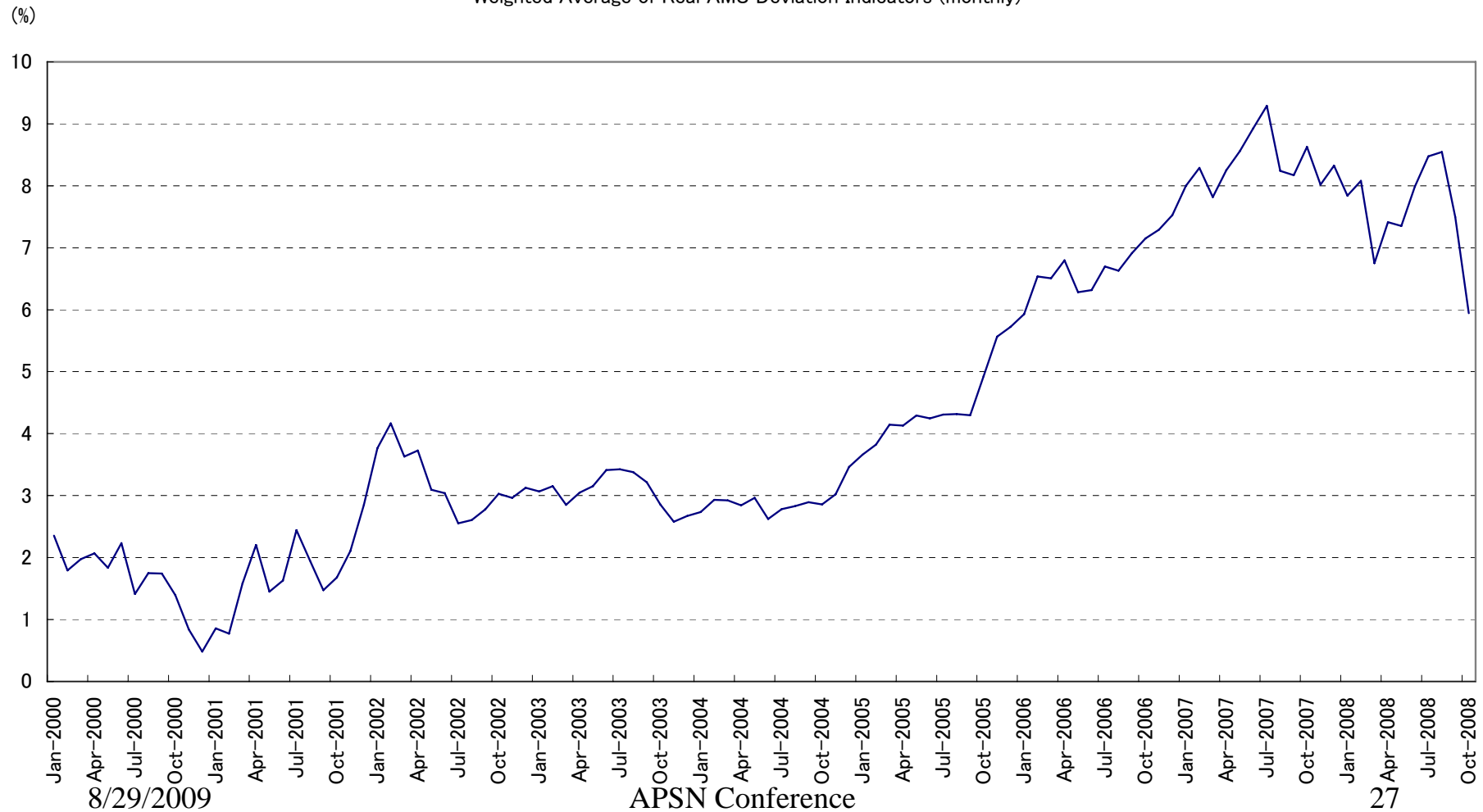# Weighted Average of Nominal AMU DI

Weighted Average of Nominal AMU Deviation Indicators（daily）
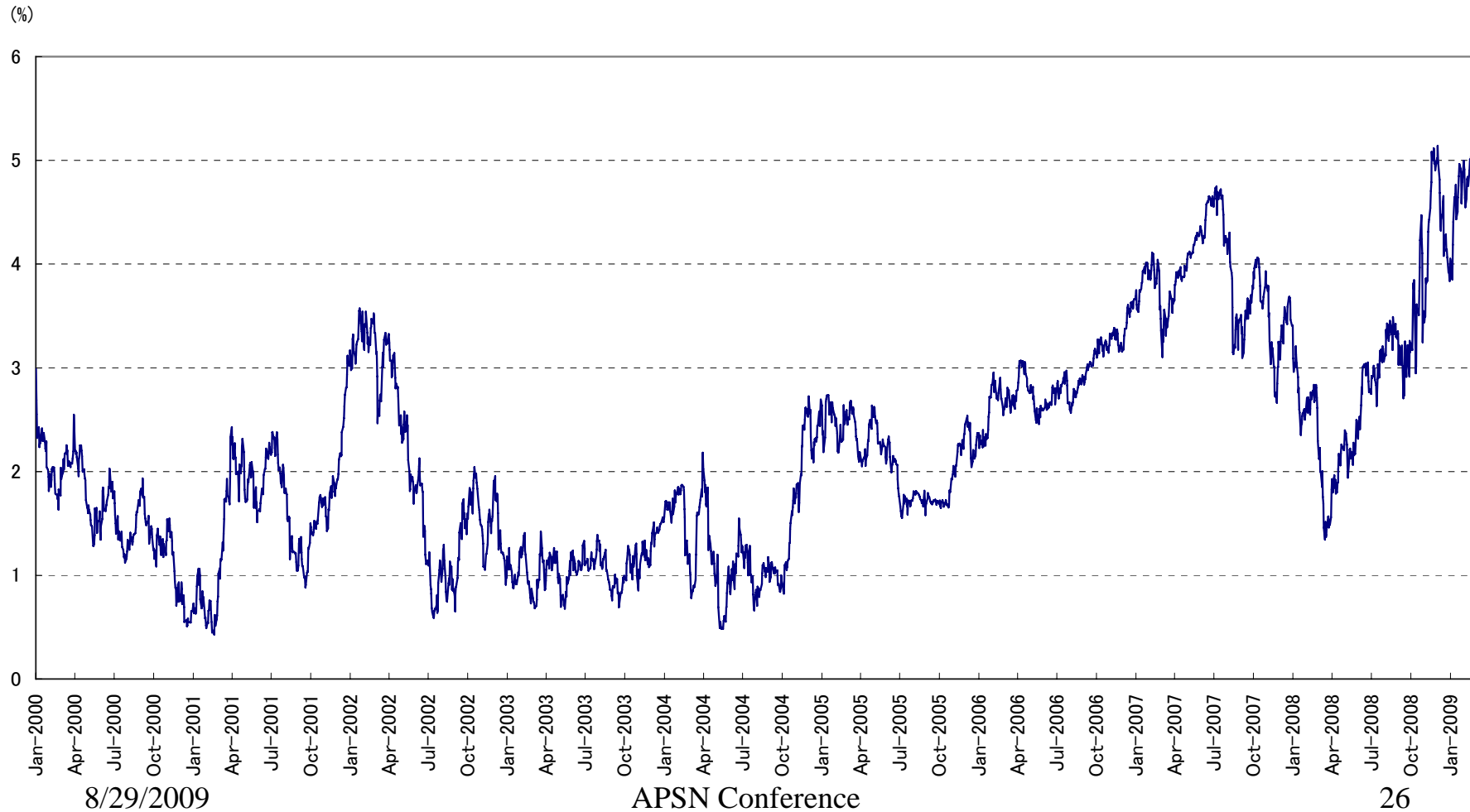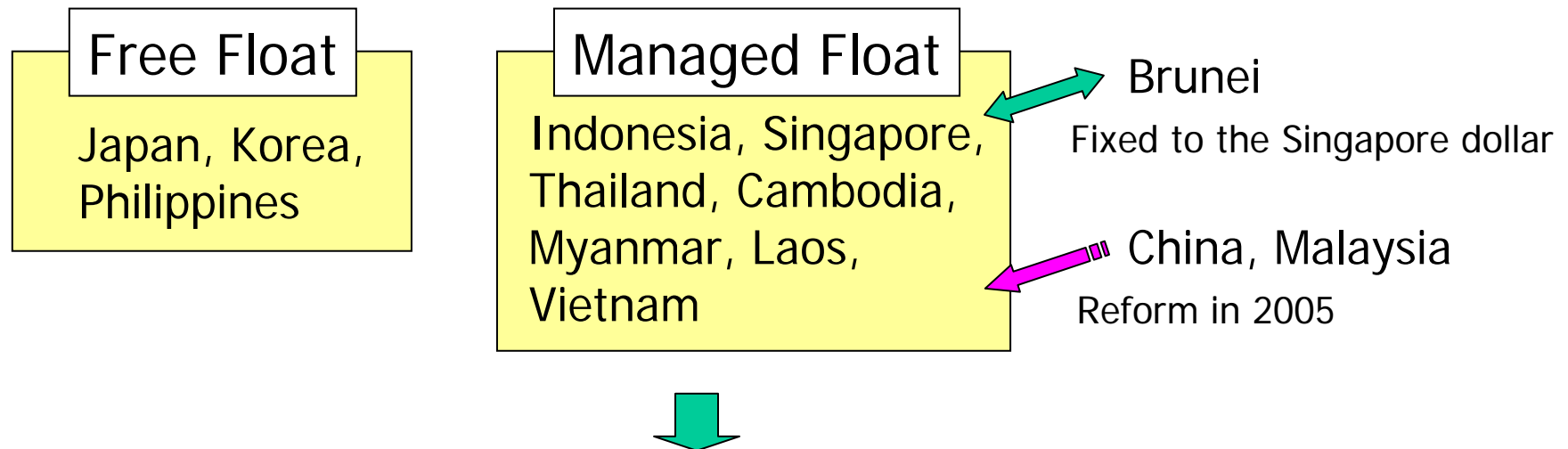
Weighted Average of Real AMU DI

Weighted Average of Real AMU Deviation Indicators (monthly)

Exchange rate regimes in East Asia

- Officially announced EX rate regimes

Free Float	Managed Float	
Japan, Korea, Philippines	Indonesia, Singapore, Thailand, Cambodia, Myanmar, Laos, Vietnam	Brunei — Fixed to the Singapore dollar China, Malaysia — Reform in 2005

Officially announced EX rate regimes may differ from actual ones. We employ Frankel and Wei (1994)'s method to investigate actual (*de facto*) regimes employing.

Coordination Failure in choosing Exchange Rate Regimes

- The widening deviations among the East Asian currencies reflect the fact that the monetary authorities of East Asian countries are adopting a variety of exchange rate systems. In other words, a coordination failure in adopting exchange rate regimes among the monetary authorities of East Asian countries increases volatilities and misalignments of the intra-regional exchange rates in East Asia (Ogawa and Ito (2002)).

- Misalignments and volatility of intra-regional FXR among East Asian currencies have adverse effects on East Asian economy where production networks have been establishing.

Chiang Mai Initiative (CMI)

- The CMI includes bilateral currency swap arrangements (CSA) for managing currency crisis and a surveillance process for preventing currency crisis.

- However, the CMI has limitations: (1) A total amount of CSA is US$ 90 billion. It is not enough! (2) 80 % of the amount is implemented only after the IMF decides to give a financial support to the country (IMF Link) for managing balance of payment crisis.

- The Korean government rushed to not the CMI but the FRB to conclude a new CSA and implement it promptly. It shows that the CMI is not effective in implementing for providing US$ liquidity to Korea.

- Japanese, Chinese, and Korea governments decided to increase CSA between Japan-Korea and China-Korea last December. BOJ and BOK concluded the CSA in terms of the JPY and the won (US$ 30 billion) without any IMF Link.

Network of Bilateral Swap Arrangements (BSAs) under the Chiang Mai Initiative (CMI)
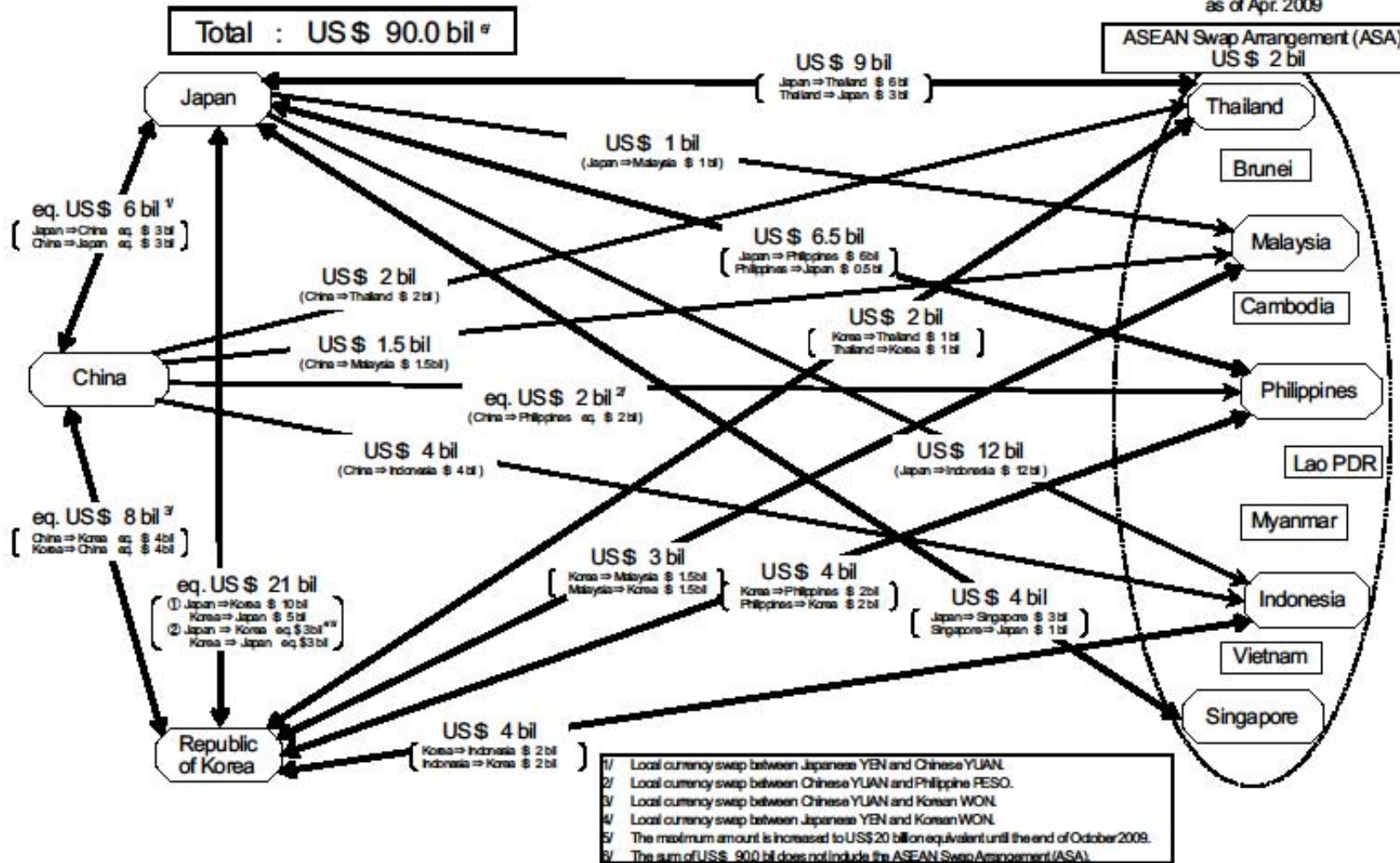
CMI Multilateralisation (CMIM)

- ASEAN+3 Financial Ministers have agreed an extended CMI and multilateralisation of the CMI in May 2009.

- CMIM has two core objectives:

(1) To address short-term liquidity difficulties in the region,

(2) To supplement the existing international financial arrangement.

- Multilateralisation: the multilateralised arrangement will be governed by a single contractual agreement.

- Agreed that an independent regional surveillance unit will be established as soon as possible to monitor and analyze regional economies and support CMIM decision-making.

- Hong Kong participates in the CMIM.

Total size and contribution portions of CMIM

- Total size of CMIM: US$ 120 billion
- Contribution portions:

Japan: US$ 38.4 billion (32%)

China (including Hong Kong): US$ 38.4 billion (32%) (China (excluding Hong Kong): US$ 34.2 billion (28.5%)+ Hong Kong: US$ 4.2 billion (3.5%))

Korea: US$ 19.2 billion (16%)

ASEAN: US$ 24 billion (20%)

- Borrowing Multiplier:

0.5 (Japan and China), 1 (Korea), 2.5 (ASEAN5 and Hong Kong) to 5 (New ASEAN countries)

Decision-making mechanism of CMIM

- Fundamental issues will be decided through consensus of members of ASEAN+3.

  Fundamental issues include Review, contribution, and borrowing multiples), Re-admission, Membership, Terms of Lending.

- Lending issues will be decided through majority.

  Lending issues include Lending, Renewal, and Default.

Conclusion (1)

- In the short run, shortage of the US$ liquidity (especially in interbank markets in Europe) is more sever than loss of the US$'s credibility. It has depreciated the euro against the US$.

- In the long run, the injection of money to US financial institutions by the US government will be more problematic. It will increase fiscal deficits. The increase fiscal deficits should increase the CA deficit of the US and, in turn, make further depreciation of the US$.

- The global financial crisis have asymmetric effects on East Asian currencies.

Conclusion (2)

- We should reconsider effective implementation of the CSA under the CMI in order to provide US$ liquidity to currency-crisis countries.

- The CMI should be improved by leasing the limitations. The CMI should be developed in the following points:

(1) Multilateralize the bilateral CSA,

(2) Increase total amount of CSA,

(3) Reduce a share of IMF Link,

(4) Strengthen monitor and surveillance over exchange rates and macroeconomy of East Asian currencies, and

(5) Establish standing organization to monitor and surveillance and to provide liquidity to currency crisis countries.

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