



# East Asian Currency Cooperation 「アジア共通通貨の可能性」

---

Eiji Ogawa and Kentaro Kawasaki

Graduate School of Commerce and Management, Hitotsubashi University

Faculty of Business Administration, Toyo University

# Lessons from the Asian Currency Crisis



- East Asian countries had the following problems:
  - (1) Double mismatch of financial institutions' B/S in terms of currencies and maturities
  - (2) Officially or *de facto* dollar pegging exchange rate policy
  - (3) No regional financial cooperation in East Asia for currency crisis prevention and management

# Two initiatives for regional monetary and financial cooperation

- **Chiang Mai Initiative (CMI)** of ASEAN+3 Finance Minister Meeting (ASEAN+3)
  - (1) Establish a network of currency swap agreements for currency crisis managements
  - (2) Conduct a surveillance process for currency crisis prevention
- **Asian Bond Market Initiative (ABMI)** of ASEAN+3 and **Asian Bond Fund (ABF) Initiative** of EMEAP
  - (1) Foster and develop domestic bond markets
  - (2) Promote cross-boarder transactions of local currency denominated and regional monetary unit denominated bonds



# Current problem: Coordination failure in exchange rate systems

- A variety of exchange rate systems among East Asian countries (IMF classification)
  - (1) Flexible: Japan, Korea, Philippines
  - (2) Managed floating: Thailand, Singapore, Indonesia, New ASEAN Countries. China and Malaysia (since July 2005)
  - (3) Fixed: China and Malaysia (before July 2005)
  - (4) Currency Board (Strictly fixed): Hong Kong and Brunei
- Coordination failure in choosing exchange rate systems and conducting exchange rate policies (Ogawa and Ito (2002))
- Possibility of misalignments of intra-regional exchange rates among East Asian currencies caused by the US\$ depreciation under the coordination failure of exchange rate systems



# Linkages of East Asian currencies with three main currencies

---

- Frankel and Wei (1994)
- Regression equation:

$$\Delta \log e^{home/SFR} = a_0 + a_1 \Delta \log e^{USD/SFR} + a_2 \Delta \log e^{JPY/SFR} + a_3 \Delta \log e^{euro/SFR} + \varepsilon_t$$

- Daily data of exchange rates are used to conduct the regression for each year of the sample period from 1999 to 2006.



# Singapore dollar

	Singapore dollar	US dollar		euro		Japanese yen		Adj. R2
1999	0.8045	***		0.3951	***	0.1226	***	0.789
	0.0380			0.1194		0.0221		
2000	0.8230	***		0.0753		0.1392	***	0.910
	0.0285			0.0548		0.0209		
2001	0.7645	***		0.0348		0.2188	***	0.880
	0.0301			0.0572		0.0254		
2002	0.6783	***		-0.0155		0.2933	***	0.875
	0.0255			0.0739		0.0223		
2003	0.6455	***		0.2198	***	0.2388	***	0.882
	0.0288			0.0613		0.0271		
2004	0.5782	***		0.1606	***	0.2730	***	0.910
	0.0228			0.0620		0.0207		
2005	0.5586	***		0.1405	*	0.3312	***	0.870
	0.0254			0.0800		0.0270		
2006	0.5948	***		0.2459	***	0.3105	***	0.875
	0.0268			0.0758		0.0263		



# Thai baht

Thai baht	US dollar		euro		Japanese yen		Adj. R2
1999	0.7517 ***		0.6589 ***		0.1138 ***		0.478
	0.0746		0.2348		0.0435		
2000	0.8489 ***		0.1678		0.1782 ***		0.691
	0.0651		0.1249		0.0477		
2001	0.8615 ***		-0.0031		0.1868 ***		0.865
	0.0343		0.0652		0.0290		
2002	0.6685 ***		-0.0052		0.1499 ***		0.540
	0.0538		0.1559		0.0470		
2003	0.7217 ***		0.1223		0.2164 ***		0.814
	0.0393		0.0837		0.0370		
2004	0.7271 ***		0.1921 ***		0.1924 ***		0.896
	0.0271		0.0738		0.0247		
2005	0.6621 ***		0.1050		0.2731 ***		0.824
	0.0327		0.1028		0.0347		
2006	0.6857 ***		0.4301 ***		0.1387 **		0.607
	0.0577		0.1632		0.0567		

# Malaysian ringgit

	Malaysian ringgit	US dollar		euro		Japanese yen	Adj. R2
1999	1.0078	***		0.0346	***	-0.0042 *	0.997
	0.0040			0.0127		0.0024	
2000	1.0005	***		-0.0003		-0.0004	1.000
	0.0004			0.0007		0.0003	
2001	1.0001	***		-0.0001		-0.0002	1.000
	0.0017			0.0033		0.0015	
2002	1.0003	***		0.0028		0.0002	0.999
	0.0023			0.0066		0.0020	
2003	1.0004	***		-0.0083		0.0024	0.997
	0.0047			0.0100		0.0044	
2004	1.0045	***		0.0001		-0.0035	0.999
	0.0026			0.0070		0.0023	
2005	0.9890	***		0.0149		-0.0107	0.940
	0.0212			0.0667		0.0225	
2006	0.8335	***		0.1383		0.1105 *	0.627
	0.0599			0.1695		0.0589	





# Chinese yuan

Chinese yuan	US dollar		euro	Japanese yen	Adj. R2
1999	1.0002 ***		0.0006	-0.0002	1.000
	0.0004		0.0012	0.0002	
2000	1.0001 ***		0.0000	-0.0002	1.000
	0.0006		0.0011	0.0004	
2001	1.0002 ***		-0.0007	0.0000	1.000
	0.0005		0.0009	0.0004	
2002	1.0004 ***		-0.0005	-0.0004 *	1.000
	0.0002		0.0007	0.0002	
2003	1.0000 ***		0.0002	0.0002	1.000
	0.0002		0.0005	0.0002	
2004	1.0003 ***		-0.0004	-0.0001	1.000
	0.0002		0.0006	0.0002	
2005	0.9399 ***		0.0235	0.0728 ***	0.960
	0.0169		0.0532	0.0180	
2006	0.9797 ***		0.0231	-0.0002	0.984
	0.0107		0.0303	0.0105	



# Analytical results

---

- Linkages with the US dollar

- (1) The Malaysian ringgit has weakened since 2005 when the monetary authorities of China and Malaysia announced to change their exchange rate system to a managed floating exchange rate system with reference to a currency basket.
  - (2) The Chinese yuan has not yet been changed so much in terms of its linkage with the US dollar. It shows that the monetary authority of China keeps stabilizing the Chinese yuan against the US dollar.
- Currency basket
    - (1) The monetary authorities of both Singapore and Thailand adopt a currency basket which includes the US dollar, the euro, and the Japanese yen.



# AMU and AMU Deviation Indicators

We show deviation measurements of each East Asian currency from an average of East Asian currencies to investigate widening deviation among East Asian currencies.

- Asian Monetary Unit (AMU) as a regional monetary unit for East Asia that means a weighted average of East Asian currencies (ASEAN10+3 (China, Japan, and South Korea) currencies)
- AMU Deviation Indicators that are measured for each of East Asian currency to deviate from the AMU. (Ogawa and Shimizu (2005))
- The weight of each currency in the basket is based on both the countries' respective shares of GDP measured at Purchasing Power Parity (PPP), and trade volumes (the sum of exports and imports) in the total of sampled countries for the relevant country.
- The AMU Deviation Indicators are set to be zero during their benchmark period of two years in 2000 and 2001 when trade imbalances of East Asian countries were the smallest during the recent decade.
- See <http://www.rieti.go.jp/users/amu/en/index.html>.

# AMU weights of East Asian currencies

**Table 2. AMU weights of East Asian Currencies (benchmark year=2000/2001)**

	Trade volume* %	GDP measured at PPP** ,%	Arithmetic average shares % (a)	Benchmark exchange rate*** (b)	AMU weights (a)/(b)
Brunei	0.41	0.41	0.41	0.5912	0.0069
Cambodia	0.19	0.21	0.20	0.0003	7.4235
China	21.65	47.93	34.79	0.1256	2.7711
Indonesia	4.67	5.56	5.12	0.0001	452.7871
Japan	27.31	28.30	27.80	0.0091	30.5681
South Korea	12.86	6.65	9.76	0.0009	113.1459
Laos	0.09	0.08	0.08	0.0001	5.9500
Malaysia	8.85	1.83	5.34	0.2735	0.1953
Myanmar	0.38	0.38	0.38	0.1598	0.0239
Philippines	3.12	2.74	2.93	0.0220	1.3347
Singapore	11.90	0.81	6.36	0.5912	0.1075
Thailand	6.60	3.56	5.08	0.0246	2.0630
Vietnam	1.96	1.53	1.74	0.0001	243.0432

\* : The trade volume is calculated as the average of total export and import volumes in 2001, 2002 and 2003 taken from DOTS (IMF).

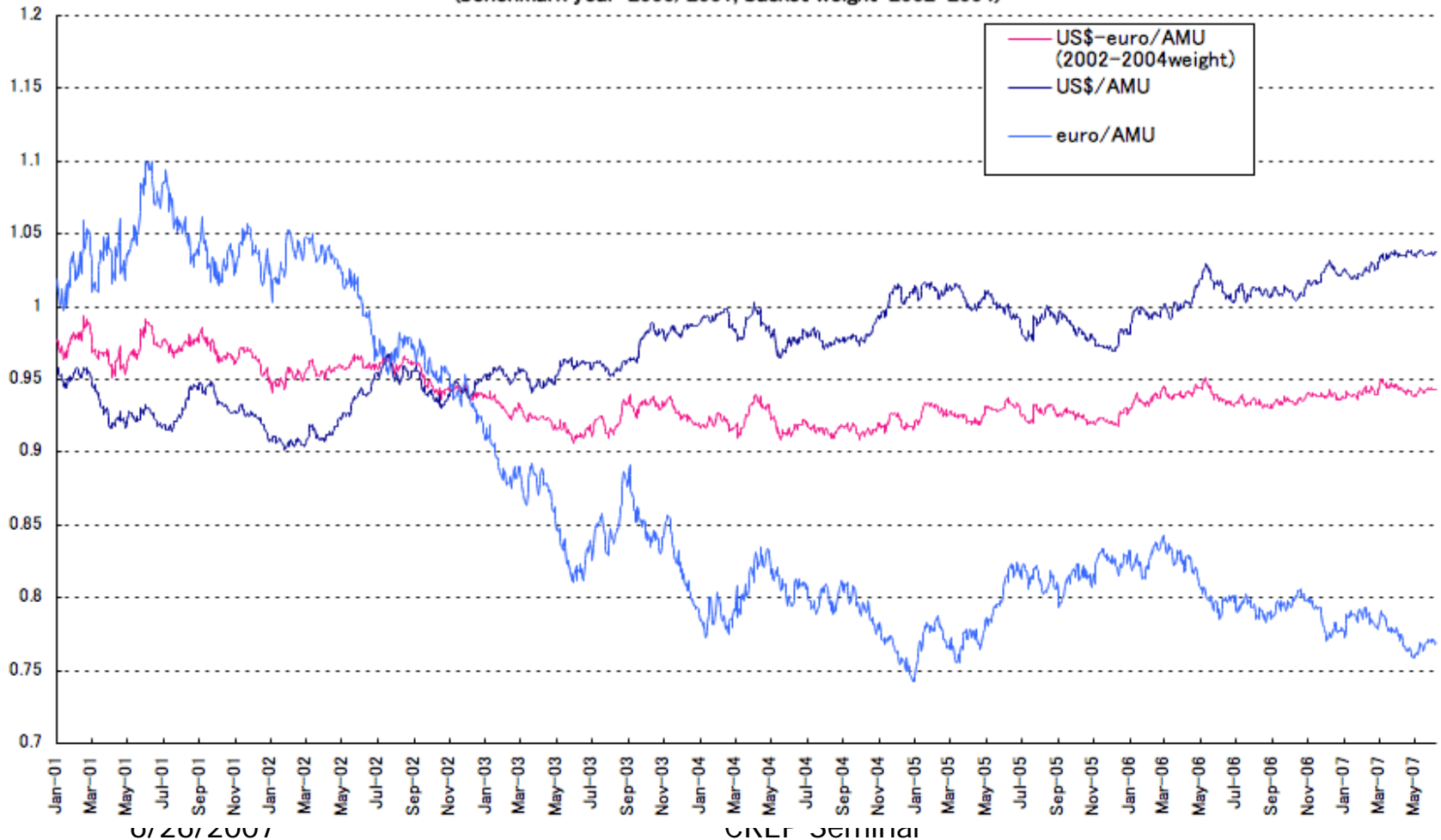
\*\* : GDP measured at PPP is the average of GDP measured at PPP in 2001, 2002 and 2003 taken from the World Development Report, World Bank. For Brunei and Myanmar, we again use the same share of trade volume since no GDP data are available for these countries

\*\*\* : The Benchmark exchange rate (\$-euro/Currency) is the average of the daily exchange rate in terms of US\$-euro in 2000 and 2001.

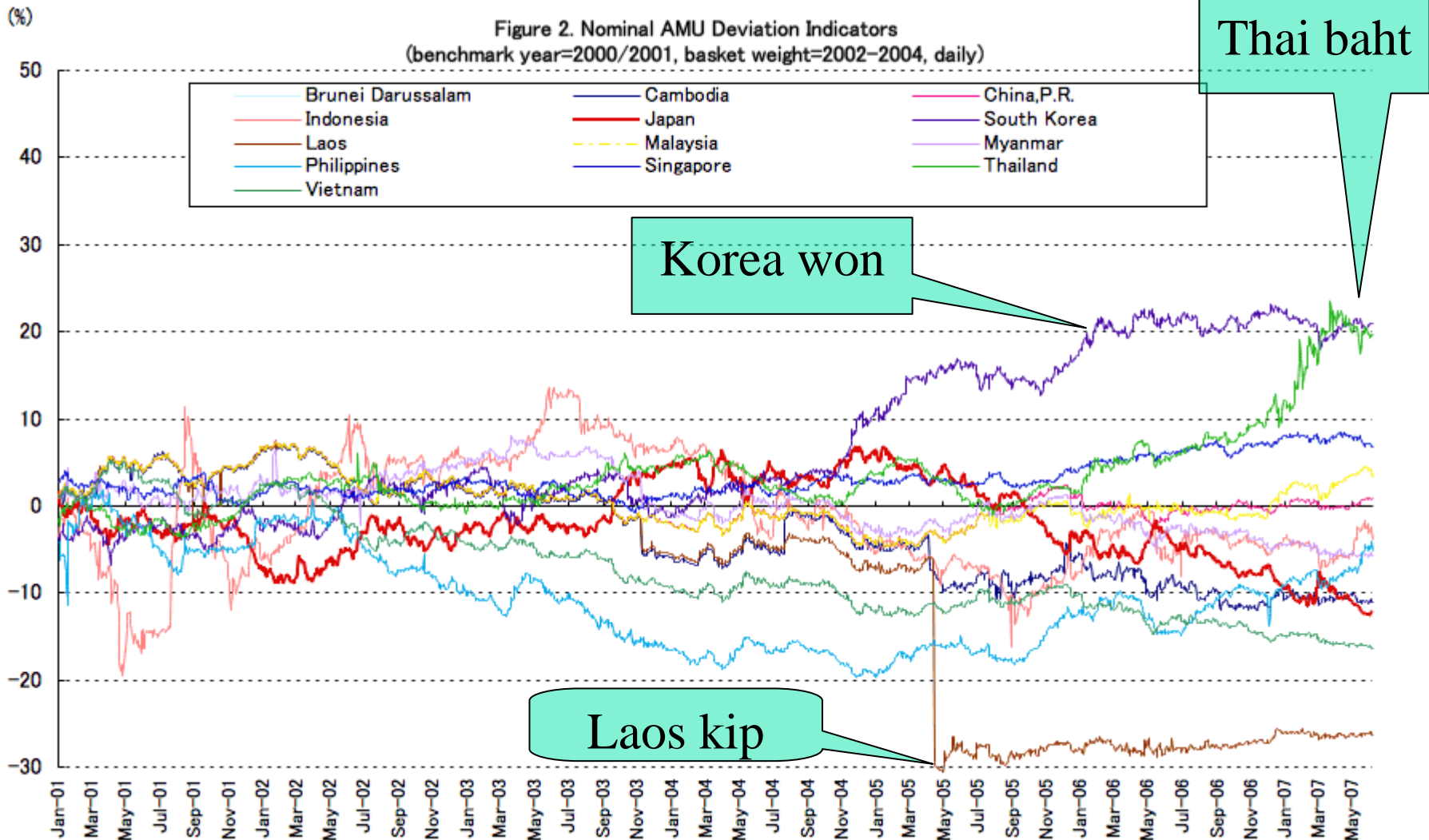
# Movements in Values of AMU

■ US\$-euro/AMU

Figure 1. AMU in terms of the US\$-euro  
(benchmark year=2000/2001, basket weight=2002-2004)



# AMU Deviation Indicators



# Widening deviation among East Asian Currencies

- Figure 2 => Deviations among the East Asian currencies has been widening since the end of 2004.
  - (1) The Korean won has been appreciating against the AMU or a weighted average of East Asian currencies since the end of 2004. It is overvalued by more than 20% compared with the benchmark years.
  - (2) The Thai baht has been appreciating very quickly since the end of 2005. It is overvalued by more than 20% compared with the benchmark years.

# Coordination of exchange rate policy in East Asia

- East Asian countries have strong economic relationships with each other within the intra-region as well as the United States and European countries.
- It is the most desirable for East Asian countries to stabilize both exchange rates among the intra-regional currencies and their exchange rates against outside currencies such as the US\$ and the euro.
- > stabilize exchange rates of East Asian currencies against a **common G3 currency** (US\$, euro, and JPY) basket
- It is the second best that they should stabilize intra-regional exchange rate in a situation where regional production networks have been establishing.
- > stabilize exchange rates of East Asian currency against a **common regional monetary unit**.





# Multi-step Approach to Regional Monetary Coordination

---

- Phase 1: Institutional Development
  - CMI and ABMI (and ABF)
- Phase 2: Common Exchange Rate Policy Objectives
- Phase 3: Common Exchange Policy Regimes
- Phase 4: Implementation of Regional Monetary Arrangement

# Phase 1:

## Institutional Development

- **Chang Mai Initiative (CMI):** Network of Currency Swap agreements and Surveillance of Macro/financial conditions
  - Swap agreements for currency crisis management
  - Surveillance process for currency crisis prediction
- **Asian Bond Market Initiative (ABMI) and Asian Bond Fund (ABF) Initiative:** Developing Institutions for Asian Bond Market
  - Resolution of double mismatch of balance-sheet in terms of currency and maturity
  - Infrastructure for Asian bond markets
  - Asian Bond Fund for investors



# Phase 1 (con'd)

---

- CMI: surveillance of the exchange rate movement  
→ **Official RMU (Regional Monetary Unit)**
  - **RMU and RMU Deviation Indicators** of ASEAN+3 Research Group (eg. **Asian Monetary Unit** of Ogawa and Shimizu, **ACU** of ADB)
- ABMI and ABF: developing regional monetary unit denominated Asian bond → **Private RMU**
  - **ABF2** of EMEAP = Pan Asia Bond Index Fund (PAIF) investing in local currency-denominated sovereign bonds of eight EMEAP bond markets
  - WG of ASEAN+3 is studying a fund consist of local currency–denominated Asian bonds

# Phase 2: Common Exchange Rate Policy Objectives

- Agreement on adoption of a common exchange rate policy objectives
  - Monetary policy => Price stability and real activity stability
  - Exchange Rate Policy => Exchange rate stability against an individual criteria (individual currency basket); for trade stability and financial stability
  - Multi-speed sequencing (cascading)
  - Continue to accelerate Phase 1 items

# Phase 3: Common Exchange Rate Policy Regimes



- Agreement on adoption of a common exchange rate policy regimes
  - Adoption of Exchange rate regime, Basket, Band, Crawling (BBC)
  - Centered on a real effective exchange rate
  - Weights may change as the intra-regional trade shares goes up or down
  - Recognition of mutual dependency of policy regimes is important at this stage



# Phase 4: Implementation of Regional Monetary Arrangement

---

- Implementation of a **Regional Monetary Arrangement**
  - Asian Monetary System (AMS) of coordinated intervention
- A **Region-wide BBC** (Basket, Band, Crawl) with a **common currency basket**
  - Takes care of mutual dependency (possible coordination failure) automatically
  - Enhance policy coordination automatically
  - Band can vary across countries



# Is East Asia an OCA?

---

- The ASEAN+3 countries should be an Optimum Currency Area (OCA) in order to succeed in adopting a common exchange rate policy or a common currency policy.
- Ogawa and Kawasaki (2007) investigate whether the ASEAN+3 countries is an OCA while we take into account a fact that a currency basket system should be desirable for these economies who have strong economic relationships with not only the United States but also the rest of world.
- The Generalized-PPP (G-PPP) model is used to investigate an OCA or a common currency policy area while specifying a currency basket as an anchor currency.



# Earlier works on the OCA theory and empirics

---

- Factor mobility: Mundell (1961)
- Openness (international trade) of economy: McKinnon (1963)
- Symmetry of aggregate supply shocks by using the Structural VAR approach: Bayoumi, Eichengreen, and Mauro (2000)
- Cointegrated relation of real exchange rates by using G-PPP Approach: Enders and Hurn (1994), Kawasaki (2000), Ogawa and Kawasaki (2001)





# Generalized-PPP Approach

---

- Enders and Hurn (1994)  
*“...the fundamental macroeconomic variables, such as real output levels, which determine real exchange rates...will exhibit common stochastic trends if the fundamental variables are sufficiently interrelated. As originally elaborated by Mundell (1961), within an optimum currency area, real output levels...will share common trends...there exists a linear combination of the various bilateral real rates which is stationary...”*

[“Theory and Test of Generalized Purchasing Power Parity,” pp179-180]



# Structural VAR vs. G-PPP

	S-VAR	G-PPP
Point	Symmetry of AS shock between a home and a host country	Stable relationships in the long-run measured by REER among counties.
Features	<ul style="list-style-type: none"><li>■ The symmetry of shocks is no more than a sufficient condition for an OCA.</li></ul>	<ul style="list-style-type: none"><li>■ The long-run equilibrium can be regarded as the outcome of adjustment by the openness of the economy or factor mobility.</li><li>■ Can choose the host currency in the sense of Mundell (1961).</li></ul>



# G-PPP Model based on REER

---

- Define the REER which country  $j$  has  $n$  number of trade partners
- Expect country  $j$  form a common currency policy area with  $m-1$  ( $m < n$ ) number of countries which has strong connection of trade with country  $j$ .
- While assuming the shocks from outside area is temporal or only affect symmetrically on the inside countries, focus on the REERs defined by  $m$  number of bilateral real exchange rates which are evaluated by the outside currency: the currency of the country  $m+1$
- $m+1$  number of the REERs contain common stochastic trends.



# G-PPP Approach

---

- Linear combination of real exchange rates in the common currency policy area exhibit stationary property in the long run.

$$\zeta_1 \cdot re_{m+1,1} + \zeta_2 \cdot re_{m+1,2} + \dots + \zeta_m \cdot re_{m+1,m} = 0$$

where  $re_{j,i}$  is the logarithm of the real exchange rate between Country i and Country j



# Our Earlier Works and extension

---

- Ogawa and Kawasaki (2003)
  - Basket Currency vs. US dollar
  - Weights on G3 currency: equivalent
- Kawasaki and Ogawa (2006)
  - Weights on G3 currency: Trade share
  - Estimate basket weights on G3 currency
  - ASEAN5, with/without Korea and/or China
- Ogawa and Kawasaki (2007)
  - What type of common currency basket should be adopted in East Asian countries?
  - Whether a possible common currency policy area can include Japan or not?



# Dual Currency Basket

---

- For stabilizing intra-regional exchange rates: “inside currency basket”  
=> Create a regional currency basket composed of the East Asian currencies (JPY, THB, SGD, ...etc. ) [Ogawa and Shimizu (2005)]
- For stabilizing outside trader partner currencies: “outside currency basket”  
=> Target the inside currency basket to the outside currency basket composed by the US dollar and the euro



# Methodology: DOLS

- In our earlier works, we could find several linear combinations which had cointegration relationships (a stable long-run relationships) while we set the basket weight on three major currencies in advance.
- Using the Dynamic OLS (DOLS)

$$re_{US,EU} = \beta_0 + \beta_1 \cdot re_{US,1,t} + \beta_2 \cdot re_{US,2,t} + \cdots + \beta_{JP} \cdot re_{US,JP} + \cdots + \beta_m \cdot re_{US,m} \\ + \sum_{i=1}^m \sum_{j=-k}^k \gamma_{i,j} \Delta re_{US,i,t+j} + \beta \cdot t + u_t$$

$$\hat{u}_t = \phi_1 \cdot \hat{u}_{t-1} + \phi_2 \cdot \hat{u}_{t-2} + \phi_3 \cdot \hat{u}_{t-3} + \cdots + \phi_p \cdot \hat{u}_{t-p} + e_t$$

$$\hat{\sigma}'_u = \hat{\sigma}_u / (1 - \phi_1 - \phi_2 - \phi_3 - \cdots - \phi_p)$$



# Empirical analysis

---

- Possible countries in the region
  - Rank 1: ASEAN5 and Japan, + Korea, + China, and + Korea and China
  - Rank 2: ASEAN5 + Korea, + China, and + Korea and China
- Data
  - Pre crisis period; 1987:1-1997:7
  - Post crisis period; 1999:1-2005:11
  - Calculating the "Prior euro (not ECU) " and the euro real exchange rates by GDP weighted euro-CPIs.



**Table 1: DOLS estimation (pre crisis: 1987:1-1997:6)**

Dependent variables	Explanatories							
	Japan (Yen)	Indonesia (Rupiah)	Malaysia (Ringgit)	The Philippines (Peso)	Singapore (\$SG)	Thailand (Baht)	Korea (Won)	China (Yuan)
EU/US (rank=1)	0.0162 (0.32122)	-0.9948 ( 2.02308)	0.7092 ( 0.62715)	-0.3870 ( 0.42195)	0.0467 ( 1.45216)	1.1397 ( 3.63366)		
EU/US (rank=2)	-	-0.9583 ( 1.15805)	0.6652 ( 0.50424)	-0.3676 ( 0.35774)	0.0227 ( 0.80176)	1.2014 ( 2.23868)		
JP/US (rank=2)	-	5.0534 **** ( 0.98000)	0.1892 ( 0.42671)	-0.3717 ( 0.30274)	3.3679 **** ( 0.67849)	-7.8083 **** ( 1.89449)		
EU/US (rank=1)	-0.3104 ( 0.20239)	-1.2086 ( 1.14389)	2.2608 *** ( 0.78621)	-0.8616 ( 0.35177)	0.0862 ( 0.78188)	1.2311 ( 1.98842)	1.0006 ** ( 0.44839)	
EU/US (rank=2)		-2.2605 ** ( 1.13705)	1.7601 ** ( 0.86317)	-0.6484 * ( 0.39031)	-0.7436 ( 0.70763)	3.0897 ( 2.00540)	0.7342 ( 0.44838)	
JP/US (rank=2)		3.2282 **** ( 1.19814)	1.6373 ** ( 0.90955)	-0.7135 ** ( 0.41129)	2.4474 ** ( 0.74565)	-5.4477 ** ( 2.11316)	0.9098 * ( 0.47248)	
EU/US (rank=1)	-0.0825 ( 0.30153)	-0.6479 ( 1.84107)	0.4326 ( 0.62267)	-0.3605 ( 0.37673)	1.0343 ( 1.59292)	0.6338 ( 3.35042)		0.1931 ( 0.22566)
EU/US (rank=2)		-1.0497 ( 1.17591)	0.3748 ( 0.55881)	-0.3139 ( 0.34406)	0.5836 ( 0.92062)	1.4740 ( 2.33383)		0.1710 ( 0.19899)
JP/US (rank=2)		4.4661 **** ( 0.97102)	-0.1835 ( 0.46144)	-0.3040 ( 0.28411)	4.0813 **** ( 0.76021)	-6.4481 **** ( 1.92718)		0.3130 * ( 0.16432)
EU/US (rank=1)	-0.3919 ** ( 0.19390)	-1.2604 ( 1.08749)	1.7446 * ( 0.91614)	-0.7352 ( 0.37657)	0.8780 ( 0.91154)	1.4663 ( 1.92056)	0.8249 * ( 0.48731)	0.1989 ( 0.13505)
EU/US (rank=2)		-2.2878 * ( 1.22817)	1.4196 ( 1.06306)	-0.5665 ( 0.43579)	-0.3763 ( 0.90096)	3.2852 ( 2.23441)	0.6266 ( 0.50100)	0.1074 ( 0.16949)
JP/US (rank=2)		2.6400 ** ( 1.14911)	1.2918 ( 0.99463)	-0.6293 ( 0.40774)	2.7869 **** ( 0.84296)	-4.0726 * ( 2.09059)	0.8312 * ( 0.46876)	0.2112 ( 0.15858)

†Significance level: \*90%, \*\*95%, \*\*\*97.5%, \*\*\*\*99%,

**Table 2: DOLS estimation (post crisis: 1998:1-2005:11)**

Dependent variables	Explanatories							
	Japan (Yen)	Indonesia (Rupiah)	Malaysia (Ringgit)	The Philippines (Peso)	Singapore (\$SG)	Thailand (Baht)	Korea (Won)	China (Yuan)
EU/US (rank=1)	-0.7691 **** ( 0.14485)	0.6302 **** ( 0.08529)	-4.7695 **** ( 0.75476)	-0.4464 ** ( 0.18897)	2.7001 **** ( 0.43576)	0.6401 ** ( 0.29745)		
EU/US (rank=2)		0.5395 **** ( 0.18520)	-5.5718 **** ( 1.59216)	-0.3996 ( 0.41760)	2.0716 ** ( 0.93066)	0.4252 ( 0.63908)		
JP/US (rank=2)		0.1467 ( 0.21186)	1.4802 ( 1.82136)	-0.1484 ( 0.47772)	0.9202 ( 1.06464)	0.3034 ( 0.73107)		
EU/US (rank=1)	-0.8305 **** ( 0.09914)	0.5539 **** ( 0.06438)	-3.1482 **** ( 0.80190)	-0.6802 **** ( 0.15433)	3.0316 **** ( 0.30341)	0.4374 ** ( 0.20593)	0.3436 **** ( 0.11760)	
EU/US (rank=2)		0.5784 **** ( 0.21913)	-6.0095 *** ( 2.41719)	-0.3315 ( 0.50826)	2.1075 ** ( 0.97978)	0.4323 ( 0.67306)	-0.0637 ( 0.33892)	
JP/US (rank=2)		0.0080 ( 0.24933)	3.7160 ( 2.75032)	-0.4835 ( 0.57831)	1.1360 ( 1.11482)	0.1182 ( 0.76582)	0.4190 ( 0.38563)	
EU/US (rank=1)	-0.7994 **** ( 0.11328)	0.3811 **** ( 0.12513)	-3.6697 **** ( 0.77322)	-0.3838 *** ( 0.15093)	3.5278 **** ( 0.48399)	0.9368 **** ( 0.27155)		-2.35701 *** -0.99384
EU/US (rank=2)		0.39405 -0.34461	-4.9078 *** ( 1.91169)	-0.3771 ( 0.42660)	2.4352 ** ( 1.23349)	0.6283 ( 0.73022)		-1.2763 ( 2.58917)
JP/US (rank=2)		-0.0762 ( 0.42815)	2.1985 ( 2.37510)	-0.0406 ( 0.53001)	1.5688 ( 1.53249)	0.5425 ( 0.90723)		-2.0129 ( 3.21681)
EU/US (rank=1)	-0.8299 **** ( 0.11102)	0.4574 **** ( 0.12950)	-3.0462 **** ( 0.95485)	-0.5830 **** ( 0.20947)	3.3451 **** ( 0.49622)	0.6392 * ( 0.34440)	0.2442 ( 0.19039)	-1.1472 ( 1.34229)
EU/US (rank=2)		0.3025 ( 0.35394)	-5.8279 ( 2.35729)	-0.0949 ( 0.56030)	2.9225 ( 1.30130)	1.0064 ( 0.84758)	-0.2994 ( 0.42163)	-3.1035 ( 3.31939)
JP/US (rank=2)		0.0558 ( 0.44345)	3.8811 ** ( 2.95346)	-0.5069 ( 0.70200)	0.9068 ** ( 1.63040)	-0.0168 ( 1.06194)	0.4830 ( 0.52827)	0.6394 ( 4.15888)

†Significance level: \*90%, \*\*95%, \*\*\*97.5%, \*\*\*\*99%,



# Empirical results

---

- In terms of cointegration relationships among the currencies, some East Asian currencies have a long-run stability, which can form a common currency policy area.
- Countries cannot form a common currency policy area with Japan in the “pre-crisis period”
- Selected Asian countries can form a common policy currency area with Japan after the crisis.



# References

---

- Bayoumi, T., Eichengreen, B., Mauro, P., 2000. On regional monetary arrangements for ASEAN. *CEPR Discussion Paper*, 2411.
- Enders, W., Hurn, S., 1994. Theory and tests of generalized purchasing-power parity: Common trends and real exchange rates in the Pacific Rim. *Review of International Economics*, 2, 2, 179-190.
- Frankel, J.A., Wei, S., 1994. Yen bloc or dollar bloc? Exchange rate policies of the east Asian economies. In : Ito, T., Krueger, A.O., (Eds.), *Macroeconomic Linkage: Savings, Exchange Rates and Capital Flows*, University of Chicago Press, Chicago, 295-355.
- Kawasaki, K and E. Ogawa, 2006. What should the weights of the three major currencies be in a common currency basket in East Asia? *Asian Economic Journal*, 20, 1, 75-94.
- McKinnon, R. I., 1963. Optimum currency areas, *American Economic Review*, 53, 4, 717-725.
- Mundell, R., 1964. A theory of optimum currency areas. *American Economic Review*, 51, 657-664.
- Ogawa, E. and Ito, T., 2002. On the desirability of a regional basket currency arrangement. *Journal of the Japanese and International Economies*, 16, 317-334.
- Ogawa, E. and Kawasaki, K., 2003. Possibility of creating a common currency basket for East Asia. *JBICI Discussion Paper*, 5, Japan Bank for International Cooperation.
- Ogawa, E. and Kawasaki, K., 2007. Adopting a common currency basket arrangement into the "ASEAN plus three", forthcoming.
- Ogawa, E. and J. Shimizu, 2005. A Deviation Measurement for Coordinated Exchange Rate Policies in East Asia, *RIETI Discussion Paper Series*, 05-E-017.