

**High-level Regional Policy Dialogue on  
"Asia-Pacific economies after the global financial crisis: Lessons learnt,  
challenges for building resilience, and issues for global reform"**

**6-8 September 2011, Manila, Philippines**

**Jointly organized by  
UNESCAP and BANGKO SENTRAL NG PILIPINAS**

**Current Regional Challenges 2: Managing Capital Flows**

*Presentation*

**Managing Capital Flows in Asia and the Pacific: the case of Korea**

by

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**September 2011**

# Managing Capital Flows in Asia and the Pacific: the case of Korea

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### •What have we learned from GFC?

- Capital inflows problem
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- Dealing with capital inflows problem
  - Foreign reserves
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- Final remarks

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# Capital inflows problem: Aperiodicity

- Capital inflows problem may emerge regardless of FX regime
- Not all capital inflows are harmful.
  - Only massive capital inflows are
    - How 'massive' is massive?
  - Regime shift
    - Financial market behavior during BB period is different from normal period

Pro-cyclicality of Capital Flows: Korea

		1995-97	2000-08	2000-05	2006-08
Pro-cyclicality <sup>1)</sup>	Net Capital Inflows	0.64	0.47	0.12	0.94
	FDI	-0.53	0.04	0.13	-0.31
	Equities	0.40	0.18	0.18	0.03
	Bonds	0.18	0.24	-0.13	0.70
	Others	0.71	0.33	0.06	0.87
	(Bank)	(0.64)	(0.41)	(0.00)	(0.92)

1) Coefficient of correlation with quarterly year-to-year real GDP growth rate (%)  
Source: Kim (2009)

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# Capital inflows problem: Procyclicality

- Not all capital flows are procyclical.
  - Bank borrowing > Bonds > Equities > FDI
- A small open economy with deep international financial linkage suffers most from procyclicality
  - Korea ranked 44<sup>th</sup> of 91 countries

(Schindler's *de jure* financial integration index from 1995 to 2005)

- What matters is the size of the *gross* capital inflows
- Often capital inflows are *intermediated* into local currency denominated liabilities

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FX Flow of Funds (2007, USD billion)

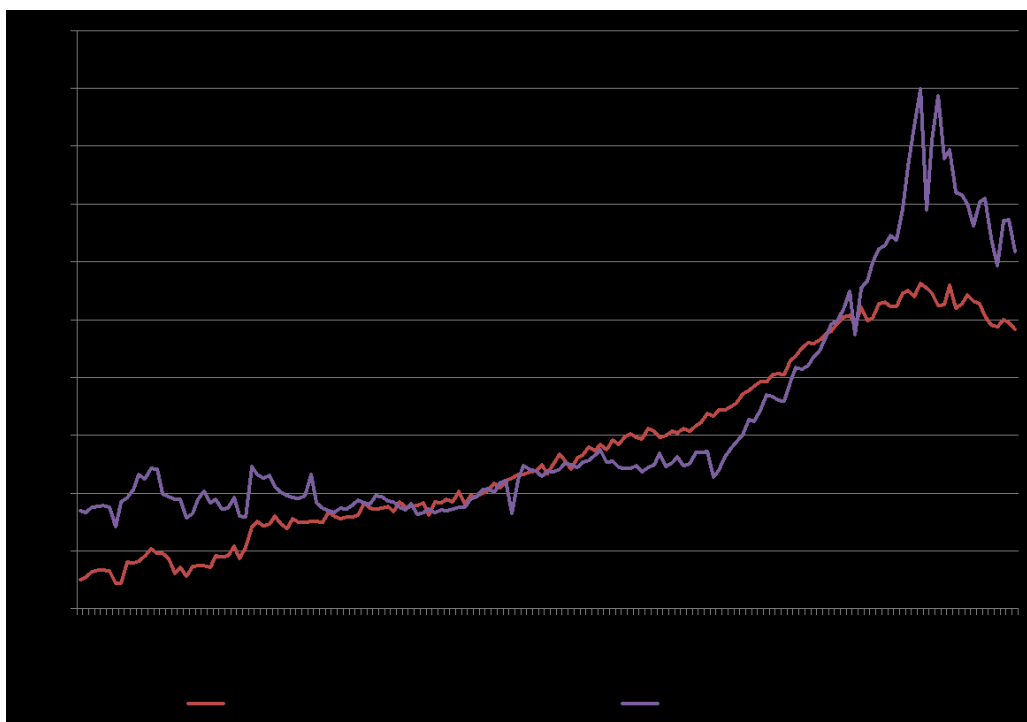
Uses of FOREX Liquidity			Sources of FOREX Liquidity		
External Assets?		27.8	External Liabilities?		108.2
?	General Government	3.0	?	General Government	21.5
?	MA	15.1	?	MA	12.3
?	Banks	13.2	?	Banks	56.3
?	(DB)	(10.3)	?	(DB)	(26.8)
?	(FBB)	(2.9)	?	(FBB)	(29.5)
?	Others	-3.5	?	Others	18.2
Overseas Direct Investment		19.7	Foreign Equity Investment		-28.9
Overseas Equity Investment		52.6	Foreign Direct Investment		1.8
Financial Derivatives		-5.4	Other		0.2
Other Capital Account		2.4	CA		21.8
Other Investment		8.2	?		?
Errors and Omissions		-2.1	?		?
Total		103.1	Total?		103.1

FX Flow of Funds (2008, USD billion)

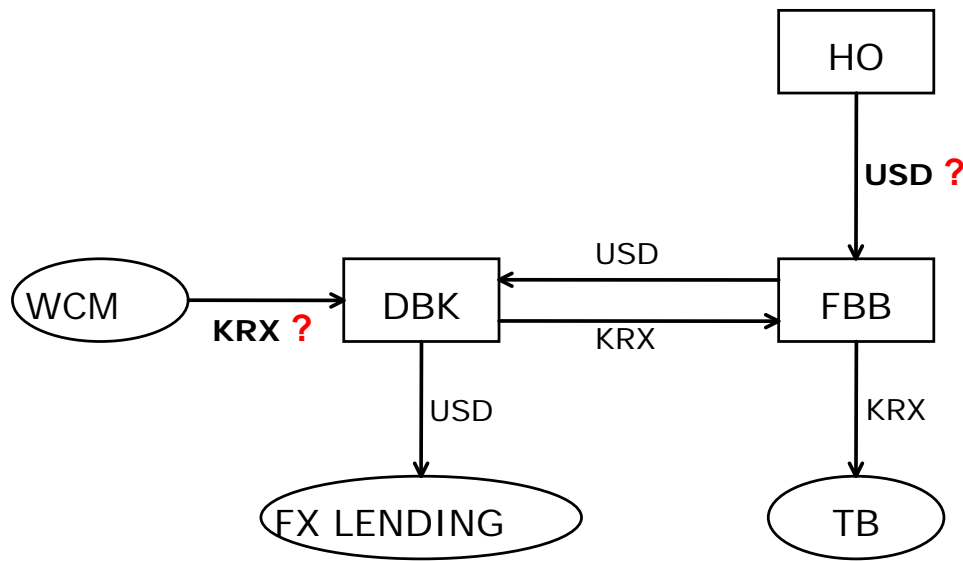
Uses of FOREX Liquidity			Sources of FOREX Liquidity		
External Assets?		-69.7	External Liabilities?		-16.1
?	General Government	-10.6	?	General Government	-10.6
?	MA	-56.4	?	MA	9.5
?	Banks	6.3	?	Banks	-23.5
?	(DB)	(7.4)	?	(DB)	(-12.0)
?	(FBB)	(-1.1)	?	(FBB)	(-11.5)
?	Others	-9.0	?	Others	8.5
Overseas Direct Investment		20.3	Foreign Equity Investment		-33.5
Overseas Equity Investment		-7.1	Foreign Direct Investment		3.3
Financial Derivatives		14.8	Other		-0.2
Other Capital Account		-0.1	CA		3.2
Other Investment		-3.3	?		?
Errors and Omissions		2.0	?		?
Total		-43.2	Total?		-43.2

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## Non-core liabilities of Korean Banking Sector



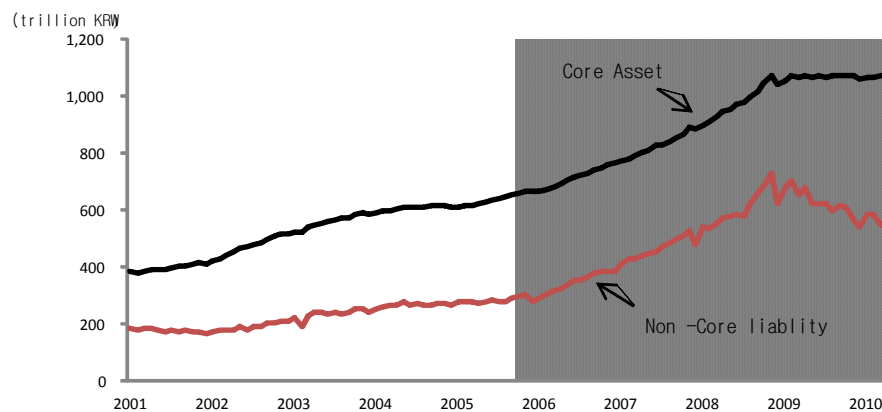
# Foreign Exchange Swap and Maturity Transformation



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## Aperiodicity

- The growths of core assets and NCL show a strong linear relationship from October 2005 to March 2010.
- During a boom the term spread is unlikely to reflect the real activities.



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# NCL ? Liquidity

- Procyclicality of interest oriented monetary policy framework
  - Financial intermediary's interbank transaction involves maturity transformation
  - Active maturity transformation such as borrowing short and lending long, ceteris paribus, will lead the short-term market interest rate to rise
  - To maintain its current monetary policy stance the central bank through open market operations will reduce the gap between the short-term rate and the policy rate **assuming that the credit cycle is not matched by real cycle.**
  - Credit causes liquidity

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## Regression of Monetary Base Growth on Non-Core Liability Growth

**Sub-sample period 1 (2001.1 ~ 2005.9)**

Dependent variable :	Model 1	Model 2	Model 3
<b>Monetary base growth</b>			
Monetary base growth (-1)	0.678*** [0.124]	0.663*** [0.095]	0.663*** [0.098]
Non-core Liability growth	-0.011 [0.055]	-0.014 [0.057]	-0.013 [0.057]
Call rate		-0.051 [0.094]	-0.052 [0.092]
Industrial production growth			-0.361 [0.418]
Constant	0.030** [0.013]	0.030** [0.014]	0.031** [0.014]
Adjusted R-squared	0.115	0.107	0.099

**Sub-sample period 2 (2005.10 ~ 2010.3)**

Dependent variable :	Model 1	Model 2	Model 3
<b>Monetary base growth</b>			
Monetary base growth (-1)	0.563*** [0.105]	0.547*** [0.095]	0.492*** [0.084]
Non-core Liability growth	0.108** [0.043]	0.092** [0.044]	0.109** [0.054]
Call rate		-0.070 [0.048]	-0.098* [0.056]
Industrial production growth			0.572 [0.511]
Constant	0.030** [0.013]	0.034*** [0.013]	0.033** [0.013]
Adjusted R-squared	0.352	0.363	0.378

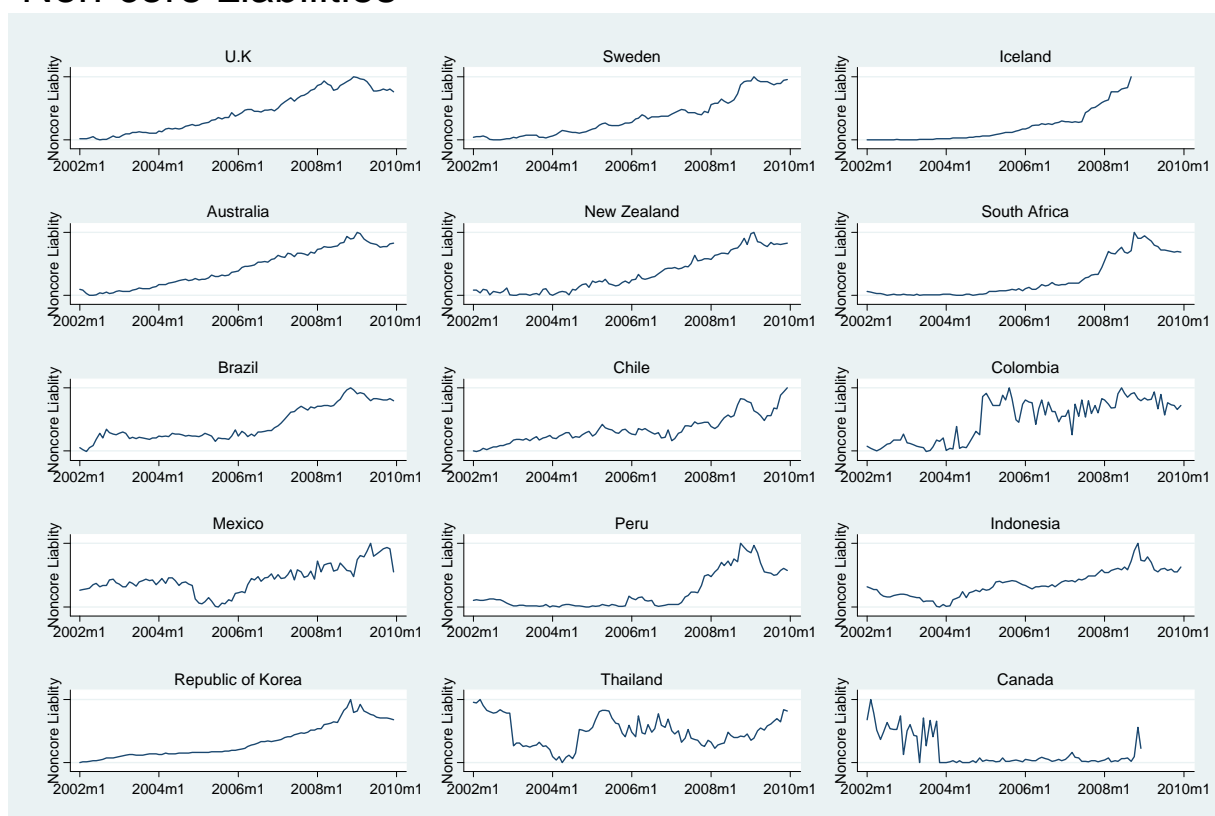
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# International evidence also supports procyclicality of interest oriented monetary policy

- Panel data for the years 2002-2009: 14 countries adopting inflation targeting and floating exchange rate arrangements.
  - U.K, Sweden, Iceland, Australia, New Zealand, South Africa, Brazil, Chile, Colombia, Mexico, Peru, Indonesia, Republic of Korea, and Thailand

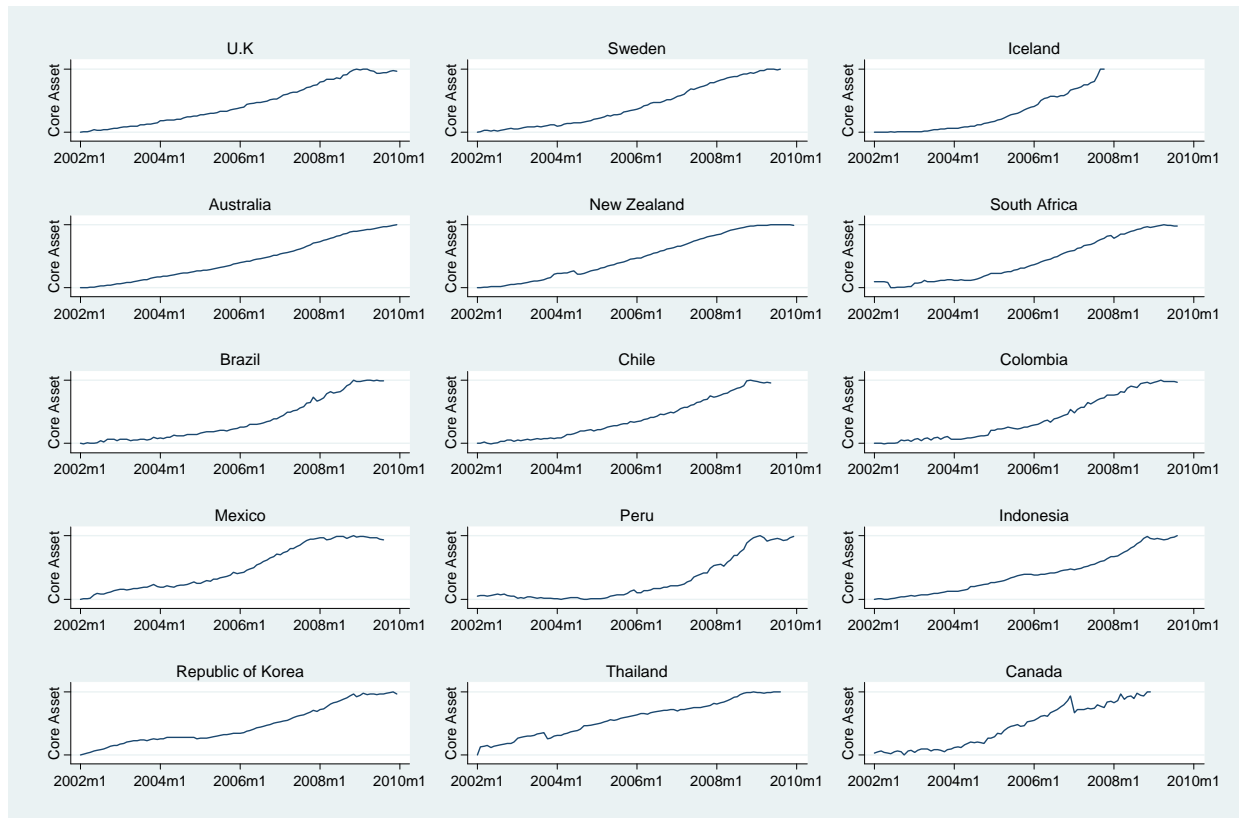
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## Non-core Liabilities



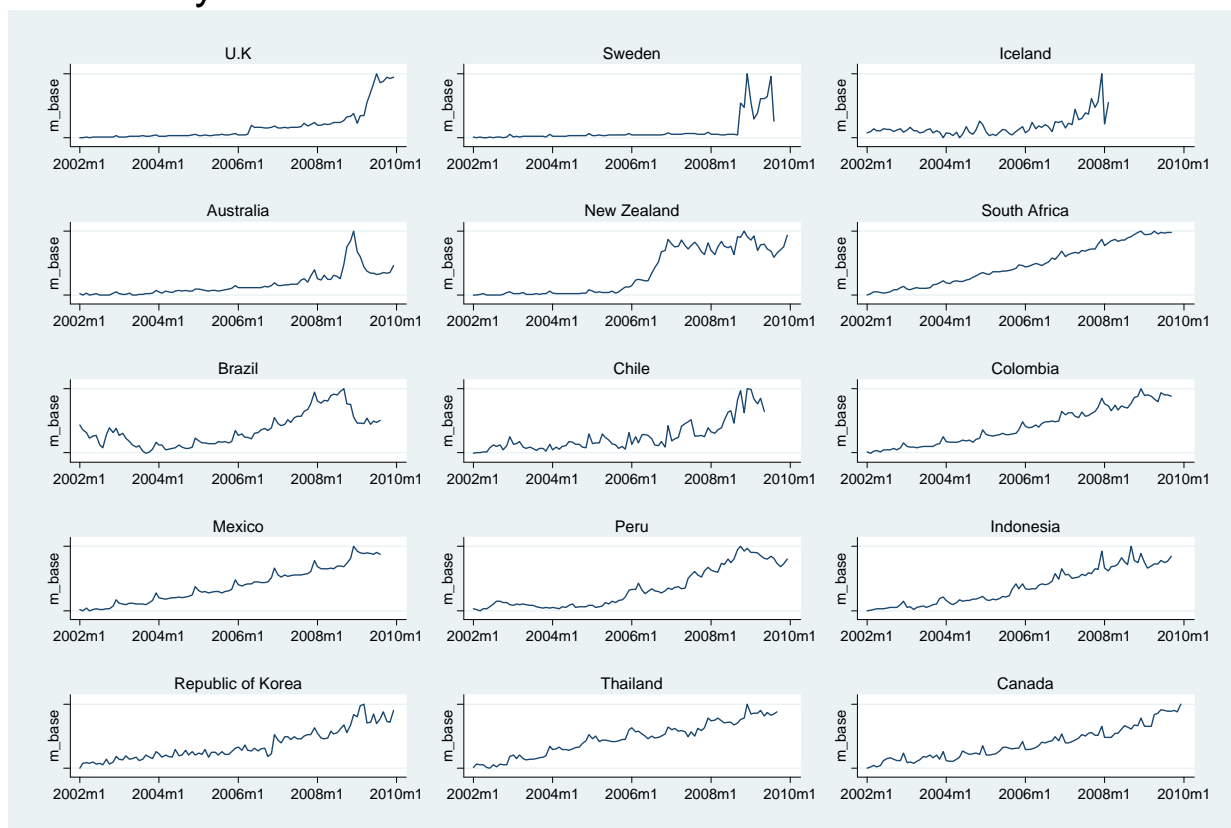
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# Core Assets



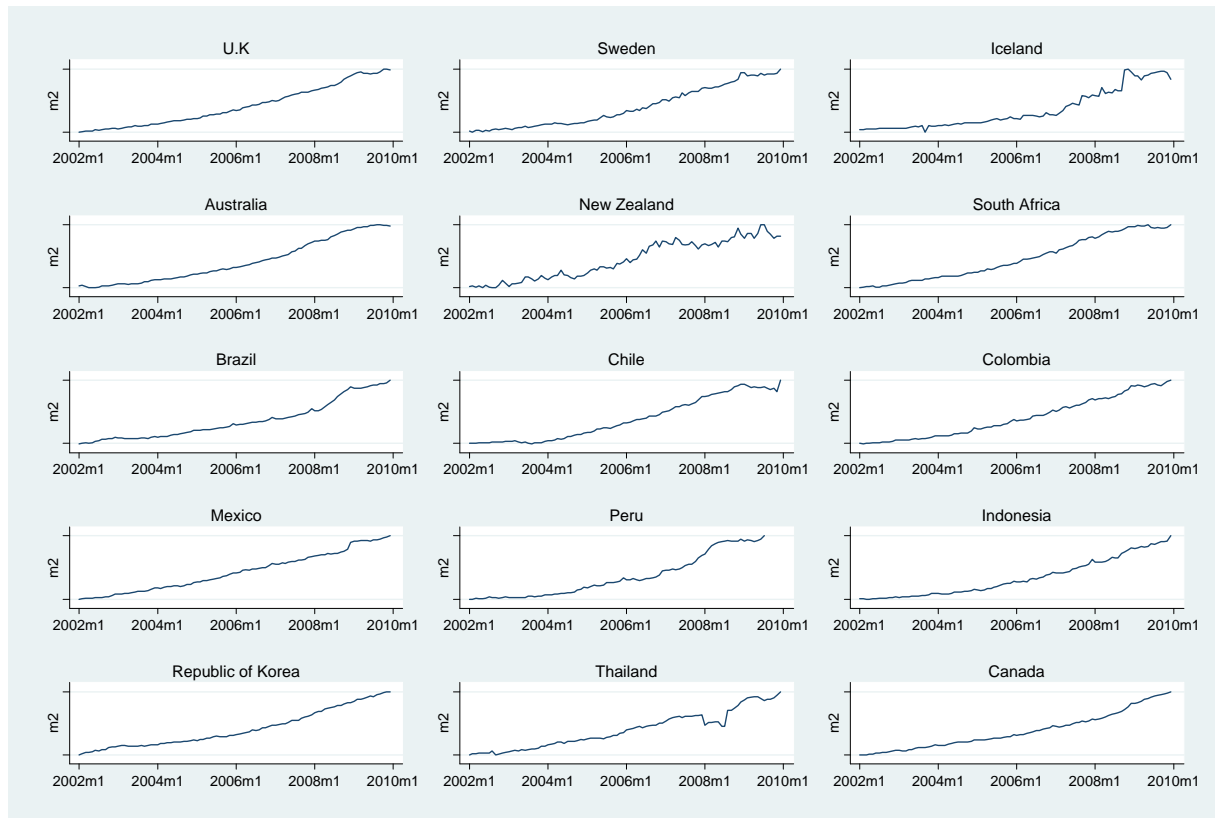
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# Monetary Base



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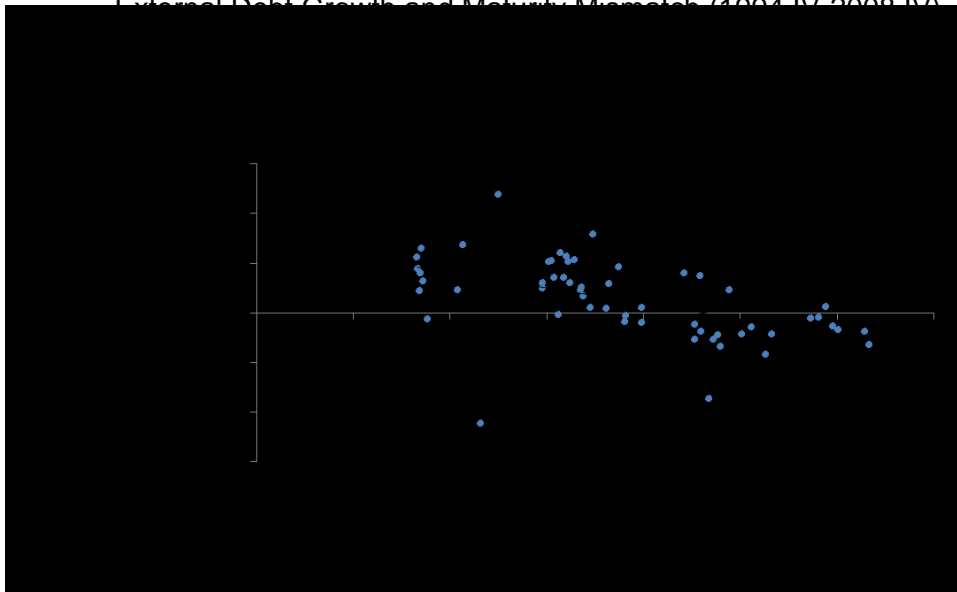




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## Capital inflows problem: risk of currency and maturity mismatches

External Debt Growth and Maturity Mismatch (1994: IV - 2009: IV)



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## Logical explanations for heavy reliance on short term indebtedness

- Lender's concern
  - Monitor debtors' actions (Jeanne, 2009)
  - Charge a higher risk premium on long-term bonds making it cheaper for EMCs to borrow short term (Broner, Lorenzoni and Schmukler, 2010)
- Borrower's point of view
  - Waiting for better borrowing condition in the future (Mama, 2007)
- Moral hazard incurred by lenders and borrowers (Rodrik, 2006; Kim, 2010)

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## Ironically, currency mismatches are much more serious in developed countries

Aggregate Effective Currency Mismatch Index

	90-99	2000	2001	2002	2003	2004	2005	2006	2007
Australia	-31.0	-48.7	-56.4	-64.4	-102.0	-117.9	-101.8	-120.6	-115.5
Britain	-23.6	-32.7	-44.3	-65.4	-88.0	-101.3	-90.2	-95.9	-124.3
Canada	-17.9	-12.3	-11.9	-14.3	-15.3	-13.6	-11.9	-9.1	-12.1
Germany	-2.0	-18.0	-7.8	-11.8	-14.3	-14.6	-6.5	-3.6	5.4
Japan	0.7	3.4	6.0	6.9	5.6	6.2	8.4	8.7	10.0
USA	-2.2	-12.6	-23.7	-31.1	-35.4	-33.8	-29.8	-30.9	-33.2
Brazil	-8.6	-18.0	-17.2	-30.0	-21.5	-11.5	-4.4	-0.7	3.3
China	0.9	0.8	0.8	0.6	0.5	0.5	0.6	0.5	0.6
Indonesia	0.9	1.0	0.9	0.8	1.0	1.0	1.3	1.7	2.1
Korea	0.3	0.9	1.0	0.9	1.0	0.9	4.0	3.9	3.8
Malaysia	-21.4	-14.7	-11.8	-10.0	-3.9	-0.6	-0.7	0.8	1.5
Mexico	-1.5	0.2	1.1	1.5	1.1	0.7	1.2	0.1	0.2
Taiwan	-0.2	2.0	2.2	2.2	2.1	2.5	5.4	8.4	13.0

Source: Suh and Kim (2010)

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# FX volatility of EMCs tends greater than ACs

FX Volatility (against USD, % average daily rate of FX movements)

	AUD	BRL	CAD	EUR	GBP	IDR	KRW	MXN	MYR	PHP	THB	ZAR
2009.4-2010.12	0.74	0.72	0.63	0.55	0.54	0.37	0.58	0.61	0.37	0.33	0.15	0.77
2010	0.68	0.64	0.57	0.59	0.5	0.26	0.60	0.55	0.39	0.34	0.16	0.62

Source: BOK, Bloomberg

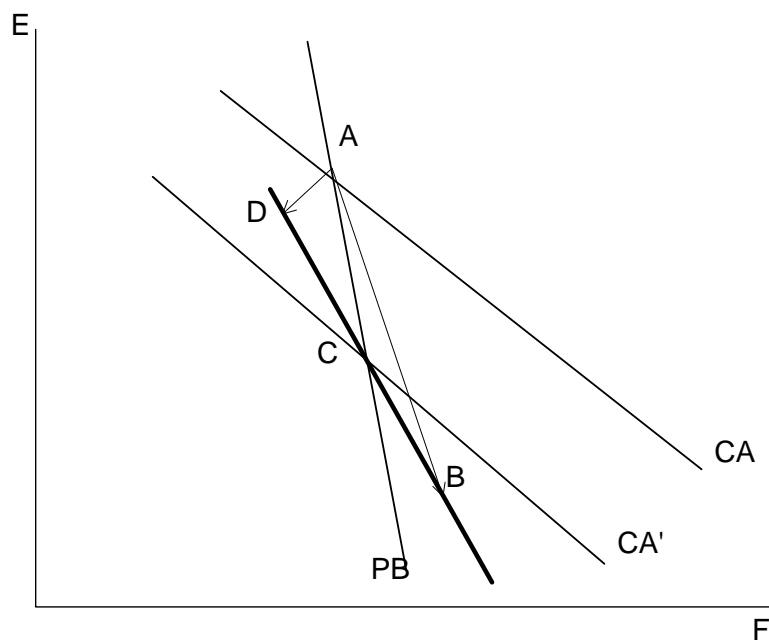
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## Volatile FX: Currency denomination of liability contract

- How to denominate your foreign debt contract matters
  - Your currency or international currency but hedged
  - International currency or hedged by foreign investors
- The valuation effect of exchange rate change on the external debt is potentially very large and important.
  - According to Gourinchas and Rey (2005) in 2004 a 10% depreciation of the dollar represents, ceteris paribus, a transfer of around 5.9% of U.S. GDP from the rest of the world to the US.
- When debt is denominated in international currency the debtor country takes whole burden of a negative shock and the exchange rate should adjust greater.
  - Foreign debt + Excess return on domestic asset

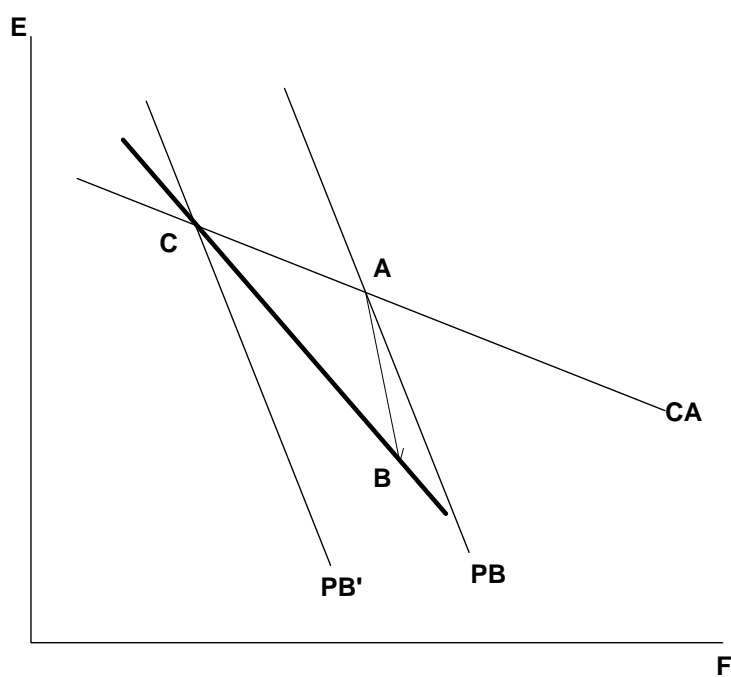
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## Negative terms of trade shock



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## Portfolio shock: Flight to quality



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## Implications

- The valuation effect is important to explain vulnerability of exchange rates in EMCs exposed to external shocks
  - The larger the net debt position, the larger gross external assets position, the larger counterparty credit risk, and larger the valuation effect.
- The valuation effect is procyclical
- Internationalization of currency

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## Dealing with capital inflows problem: Foreign reserves and Korea's foreign exchange system

External Assets and Liabilities (billion USD, end of 2010)

	Total	(ST)	(LT)	GOV	MA	Banks	(ST)	(LT)	Other
Debts	360.0	(135.0)	(225.0)	44.2	35.6	173.8	(101.3)	(72.4)	106.5
Assets	448.3	(369.1)	(79.2)	10.0	296.2	83.7	(50.2)	(33.5)	58.4

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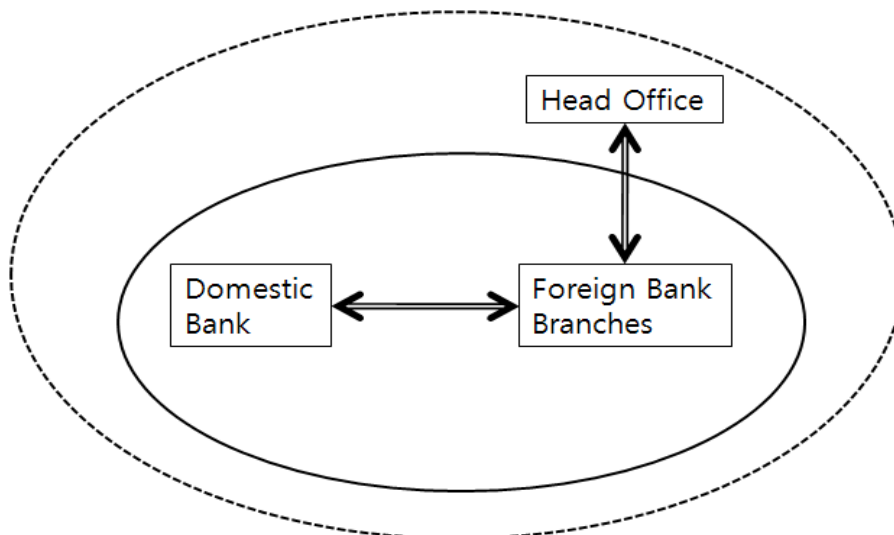
## Dealing with capital inflows problem: Foreign reserves

- FR and ST debt cause each other
  - Based on 46 EMCs (22 countries for ST debt of the banking sector) and 2000-2007 annual data after controlling other macro variables growth of FR causes ST debt growth. (Kim, 2010)
- FR accumulation does not necessarily mitigate the risk of maturity mismatch while it may provoke pro-cyclicality of capital inflows.
- In order FR to be a useful buffer against practical hazard *not moral hazard* prudential regulation should be imposed.

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## Macroprudential policy and regulatory arbitrage

Systemically Important Financial Institutions



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## Capital controls

- FX-related prudential measures discriminate according to the currency while capital controls the residency of the parties to the transaction.
- However, the classification is not always clear cut. (Ostry, et al., 2011)

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## FX prudential measures

2009.11.19	Mandatory Minimum Holdings of Safe FX Assets
2010.6.14	<p>'New macro prudential measures to mitigate volatility of capital flows'</p> <p>Introducing New Ceilings on FX Derivatives Positions</p> <ul style="list-style-type: none"><li>- The ceilings on domestic banks' FX derivatives contracts will be no more than 50% of their capital in the previous month. In case of foreign bank branches, the ceilings will be set at 250%.</li><li>- Stricter liquidity ratios require domestic banks to raise the LT financing for FX loans to 100%.</li></ul>
2010.12.19	<p>Imposing Macro-prudential Stability Levy</p> <ul style="list-style-type: none"><li>- It would charge on non-deposit foreign currency liabilities or total foreign currency-denominated debt exclusive of foreign currency-denominated deposits.</li></ul>

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# Prudential measures and post GFC adjustment

FX Flow of Funds (2009, USD billion)

Uses of FOREX Liquidity			Sources of FOREX Liquidity		
External Assets?			External Liabilities?		
?	General Government	0.0	?	General Government	6.7
?	MA	68.7	?	MA	8.7
?	Banks	-5.1	?	Banks	10.8
?	(DB)	(-5.2)	?	(DB)	(6.0)
?	(FBB)	(0.2)	?	(FBB)	(4.8)
?	Others	4.3	?	Others	1.9
Overseas Direct Investment		17.2	Foreign Equity Investment		25.1
Overseas Equity Investment		2.1	Foreign Direct Investment		2.2
Financial Derivatives		3.1	Other		-0.2
Other Capital Account		-0.3	CA		32.8
Other Investment		-0.2	?		?
Errors and Omissions		-1.9	?		?
Total		87.9	Total?		87.9

FX Flow of Funds (2010, USD billion)

Uses of FOREX Liquidity			Sources of FOREX Liquidity		
External Assets?			External Liabilities?		
?	General Government	0.8	?	General Government	16.4
?	MA	27.1	?	MA	-4.4
?	Banks	6.0	?	Banks	-6.5
?	(DB)	(4.2)	?	(DB)	(3.6)
?	(FBB)	(1.8)	?	(FBB)	(-10.1)
?	Others	9.7	?	Others	9.2
Overseas Direct Investment		19.2	Foreign Equity Investment		23.0
Overseas Equity Investment		4.9	Foreign Direct Investment		-0.2
Financial Derivatives		0.0	Other		0.1
Other Capital Account		0.2	CA		28.2
Other Investment		-5.1	?		?
Errors and Omissions		2.9	?		?
Total		65.7	Total?		65.7

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## Collective FSN

- The binding constraint of international debt repayment is *willingness* rather than ability to pay, which makes international debt contract incomplete (Eaton and Gersovitz, 1981).
- A more complete international debt contract is possible to arrange if *bad luck* is distinguishable from *bad policy*.

Continent (countries)	Average years in default or rescheduling	Average years in banking crisis
Africa (13)	24.0	12.2
Asia (12)	6.4	11.2
Europe (19)	14.4	6.4
Latin America (18)	34.8	4.3
North America (2)	0.0	10.8
Oceania (2)	0.0	4.9

Sources: Kaminsky and Reinhart (2010)



## Collective FSN

- Considering that IMF lending to EMCs has been repaid in full, and that *ex ante* conditionality can mitigate systemic contagion, *ex ante* conditionality should be a useful policy tool. (Jeanne et al., 2008)
  - FCL, PCL, HAPA
- RFA: CMIM
  - retains IMF link, but it is not clear whether other sorts of IMF credit arrangements than SBA could also meet that description.
  - not equipped with credit line instrument which can be used for precautionary function.

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## In spite of the usefulness of Collective FSN FR is the most important insurance

- The size of the collective FSN has remained constant as a share of GDP but has declined drastically compared to the size of the external shocks. (IMF, 2011b)
- Type I and Type II error
- Both EMCs and MMCs' common interest for GFSN as a reform on international financial architecture do not mesh.

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## Concluding remarks

- FR, prudential measures, collective FSN are key words in managing large capital inflows and they are inter-related.
- Properly designed and implemented prudential policies should alleviate the risk of short term external borrowing.
- However, such prudential measures should be well designed, correctly implemented and minimal in distortion.
- Otherwise, it could bring about only short term relief at the *cost of the longer term benefits* of the efficient financial system.
- *Inconvertibility* of EMC currency lies at the root of the capital inflows problem.