



Macroprudential policy in an open economy

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*Macroprudential policy:
implementation and interaction with other policies*

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*Views expressed here are mine, not necessarily those of the BIS

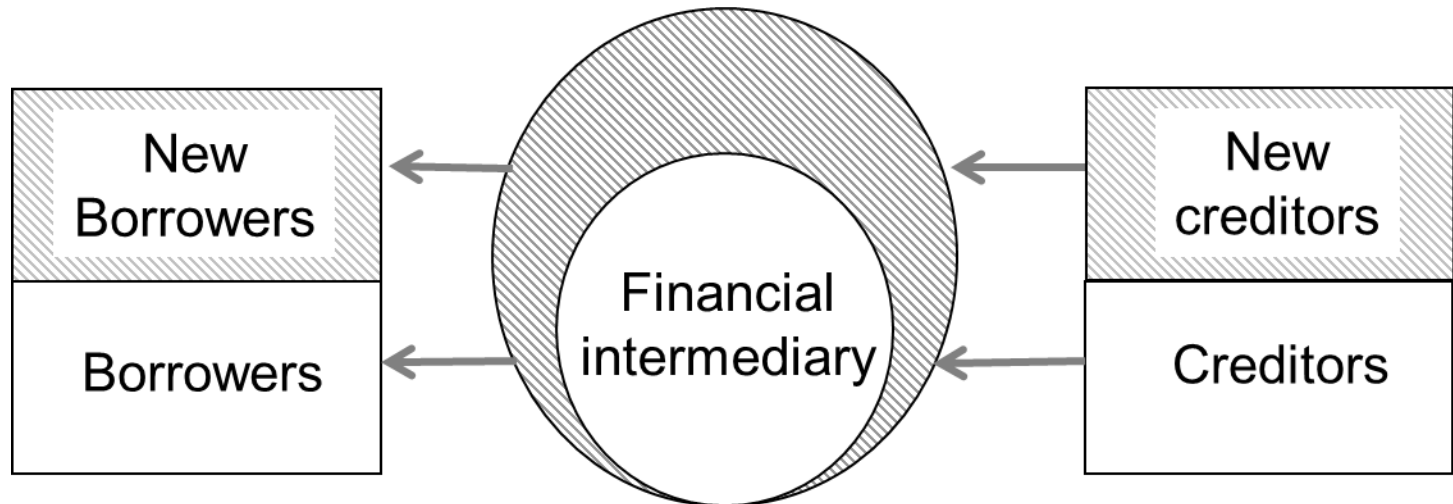
Three themes

- Elastic nature of credit capacity in a small open economy
- Currency appreciation and credit growth go hand in hand
- Macroprudential policy as a complement to monetary policy

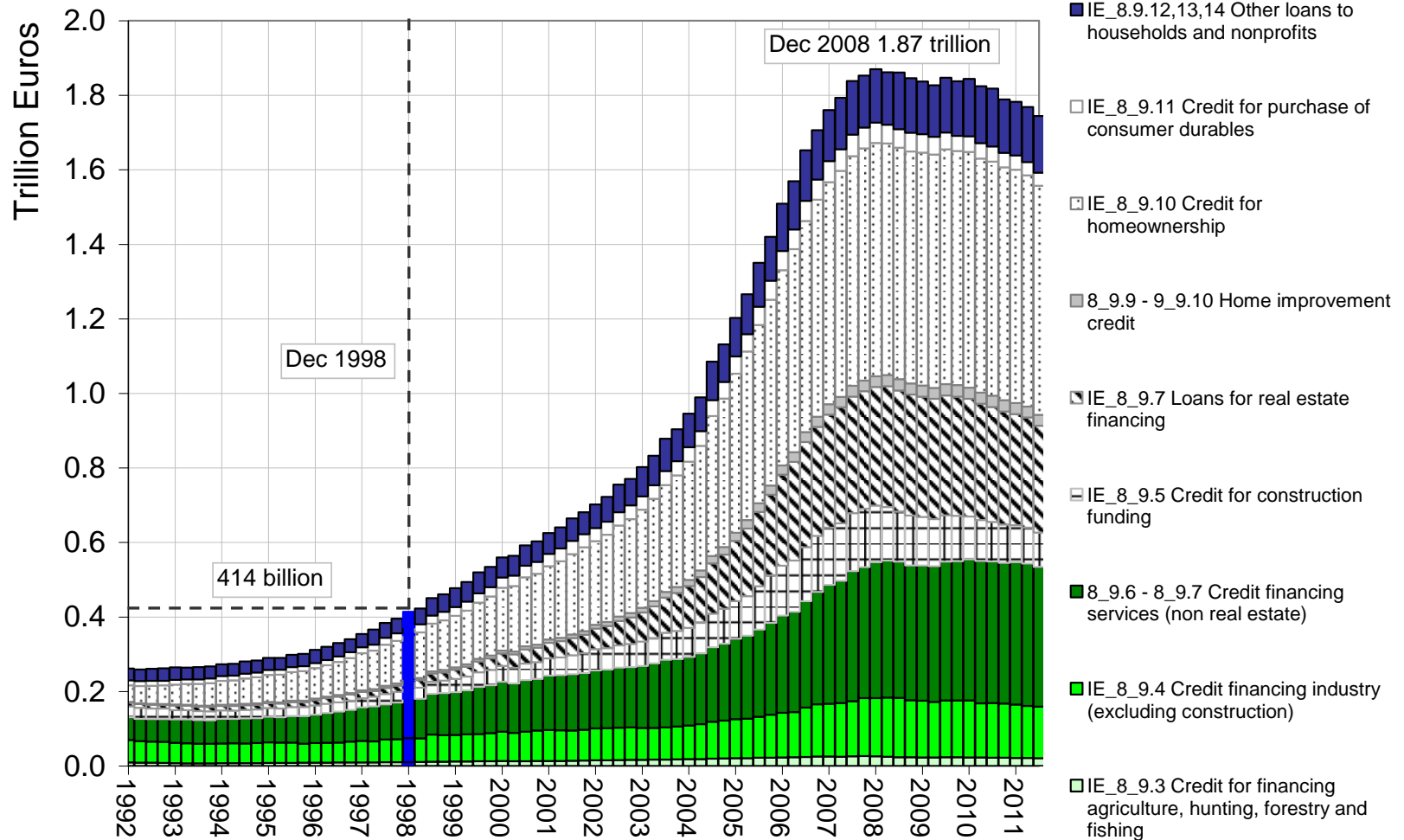
Financial intermediation before expansion



Financial intermediation during credit boom

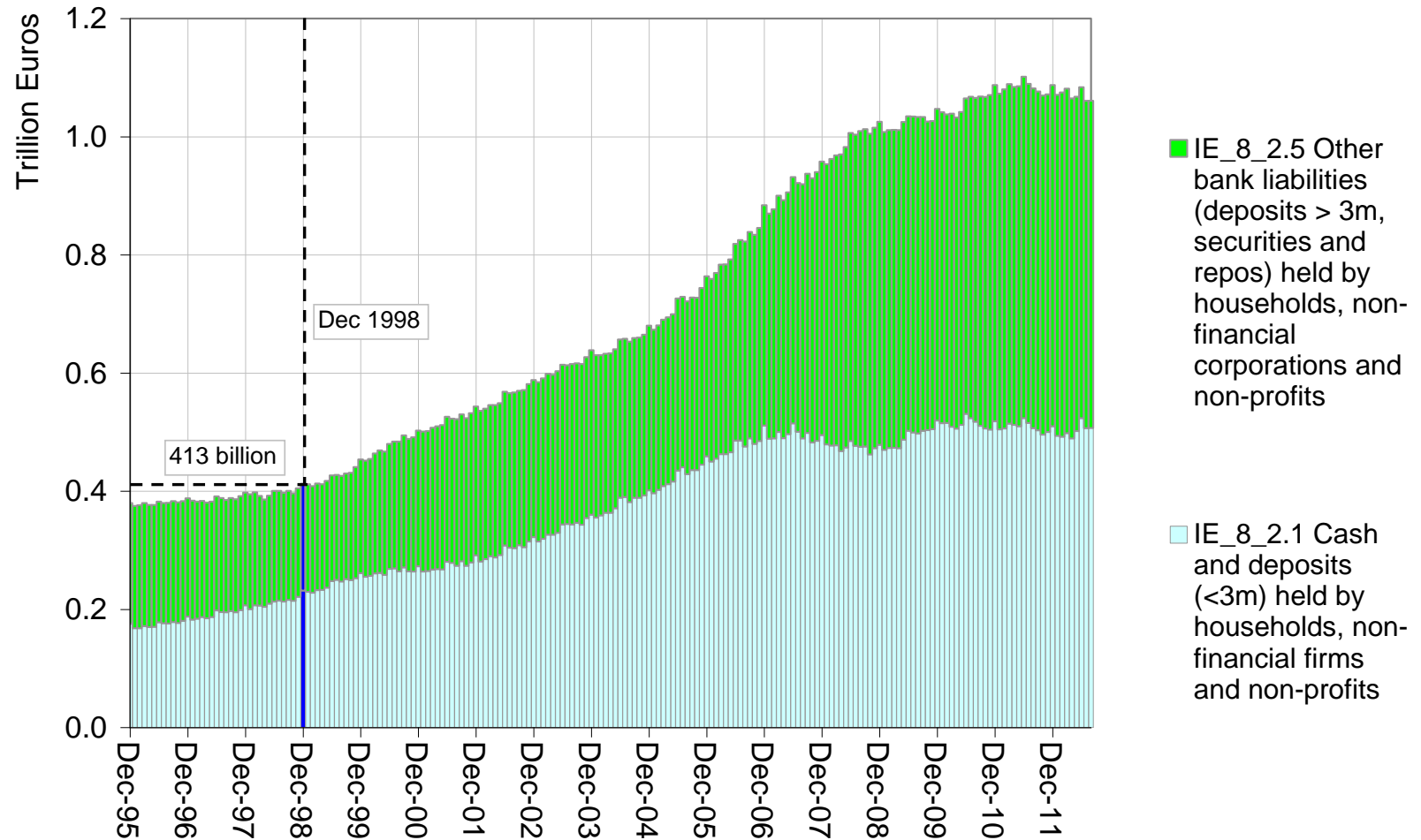


Spain: total banking sector domestic credit



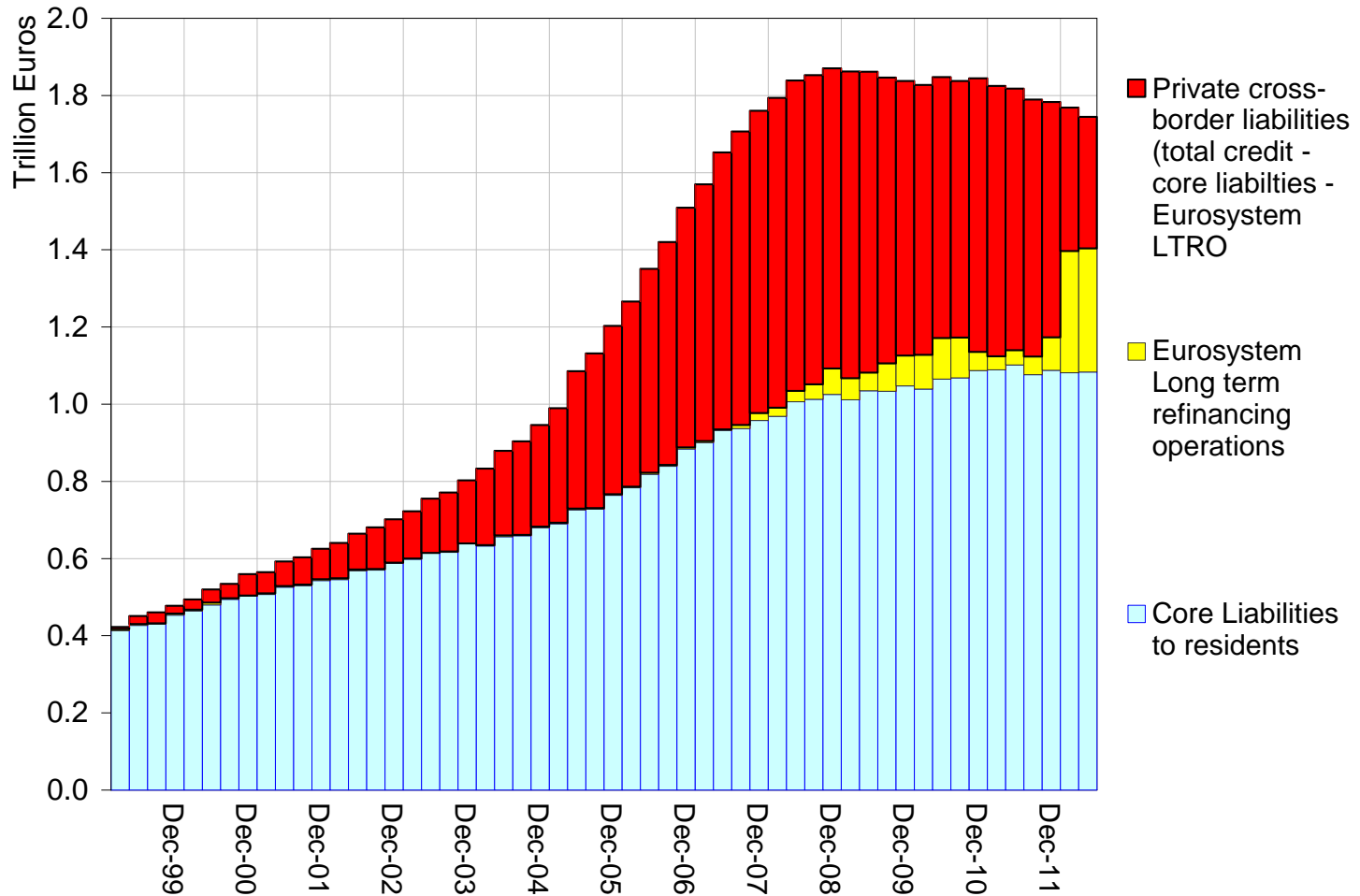
Source: Bank of Spain

Spain: core domestic liabilities of banking sector



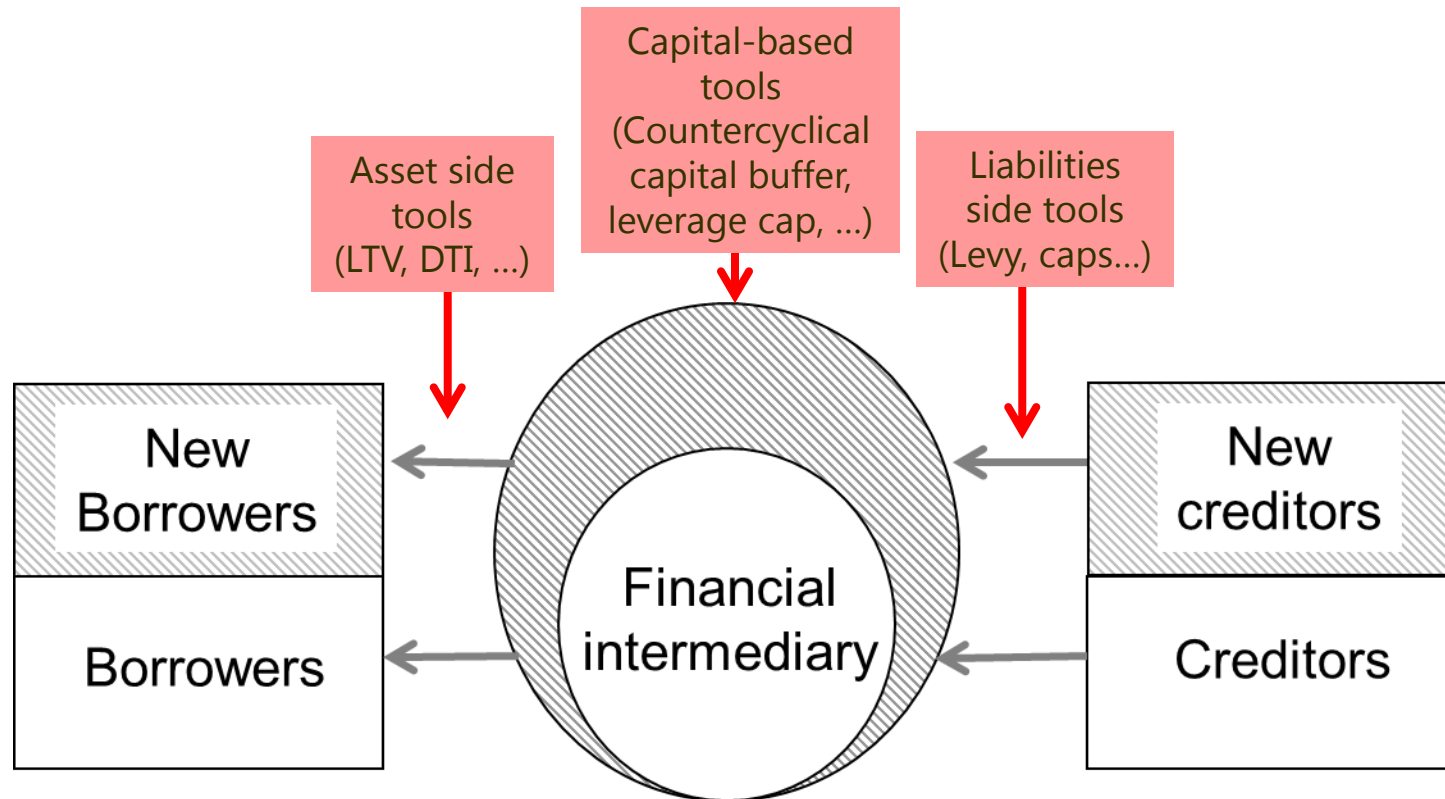
Source: Bank of Spain

Spain: core and non-core liabilities of banking sector

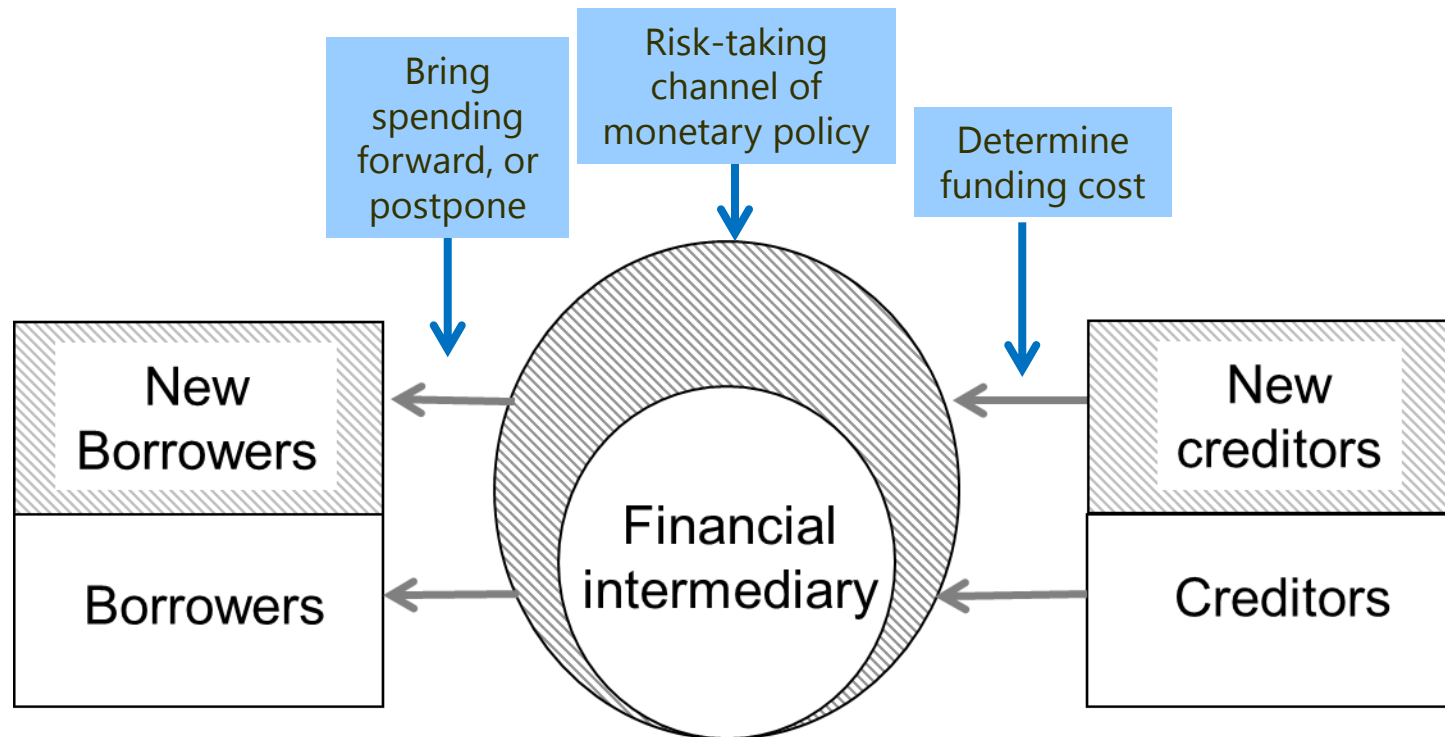


Source: Bank of Spain

A taxonomy of macroprudential tools



Monetary policy has similar impact to macroprudential policy



Monetary policy and macroprudential policy: similarities

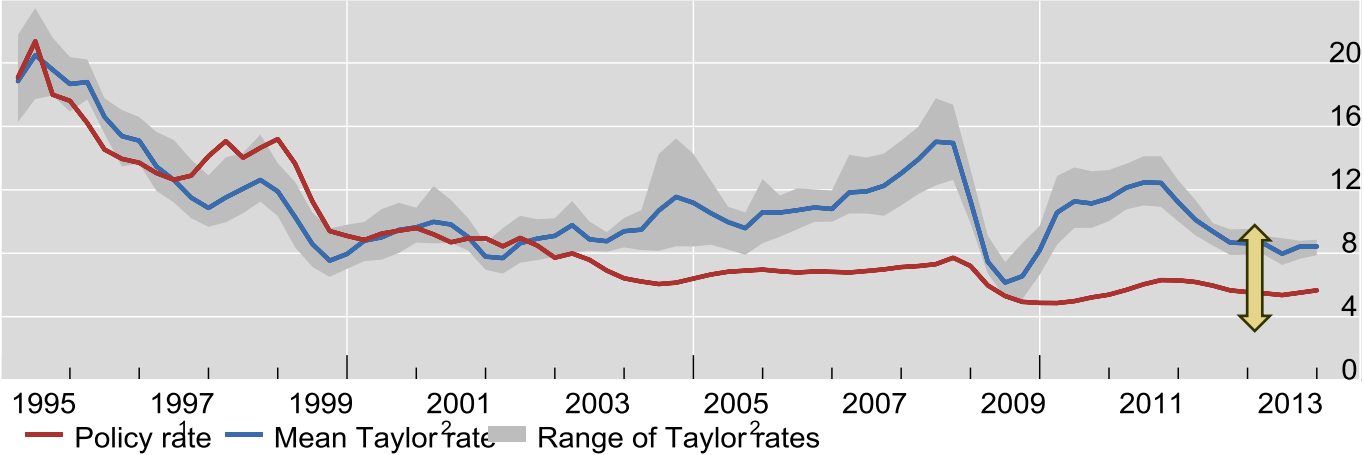
- Impact on demand for credit
 - Monetary policy brings spending forward (by borrowing more) or postpones spending (by borrowing less)
 - Macroprudential policy postpones spending by curbing credit
- Impact on bank risk-taking
 - Risk-taking channel of monetary policy
 - Macropru does the same through binding equity constraint
- Impact on funding costs
 - Monetary policy influences net interest margin
 - Macropru is another way to influence funding costs

Two differences

- Addressing sectoral disparities
 - Monetary policy “gets into all the cracks” (Jeremy Stein)
 - Macropru can be aimed at particular sectors/practices
- Dealing with global liquidity
 - Floating exchange rate does not insulate an economy in pursuing autonomous monetary policy (Helene Rey)
 - Macropru is less constrained by global liquidity conditions

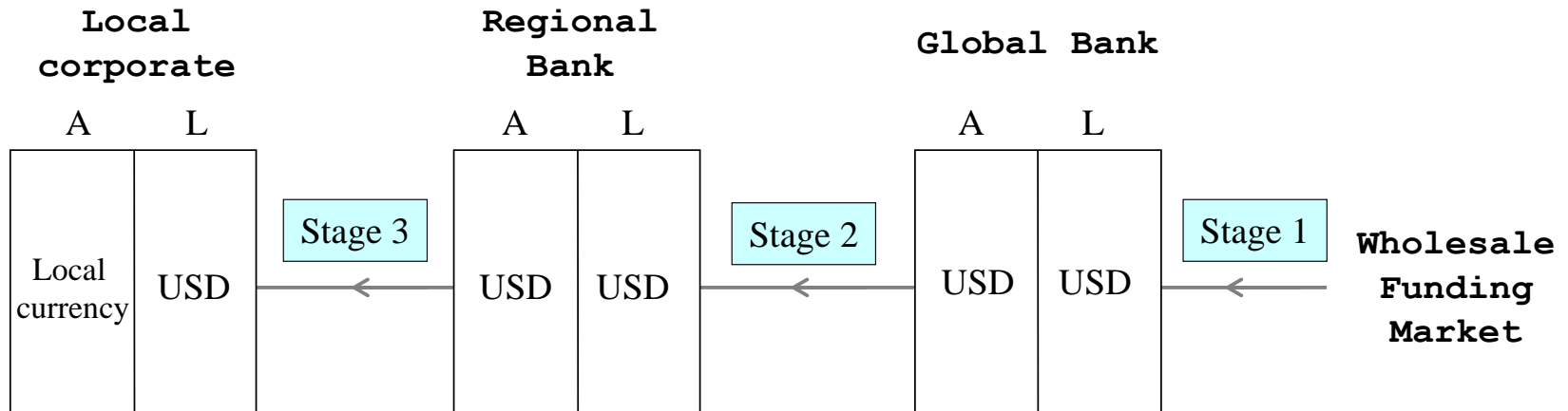
Policy interest rates and Taylor rule rates in EMEs

Per cent



¹ Weighted average based on 2005 GDP and PPP exchange rates for Argentina, Brazil, China, Chinese Taipei, the Czech Republic, Hong Kong SAR, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Poland, Singapore, South Africa and Thailand. ² The range and the mean of the Taylor rates for all inflation-output gap combinations. See B Hofmann and B Bogdanova, "Taylor rules and monetary policy: a global 'Great Deviation'?", *BIS Quarterly Review*, September 2012, pp 37-49.

Currency appreciation leads to lending boom



- Local currency appreciation strengthens borrower balance sheet
- Creates slack in lending capacity of local banks; creates slack in global bank lending capacity; local and global banks drive credit boom
- Higher interest rate differential vis-à-vis the dollar amplifies boom

Source: Bruno and Shin (2014) <http://www.bis.org/publ/work458.pdf>

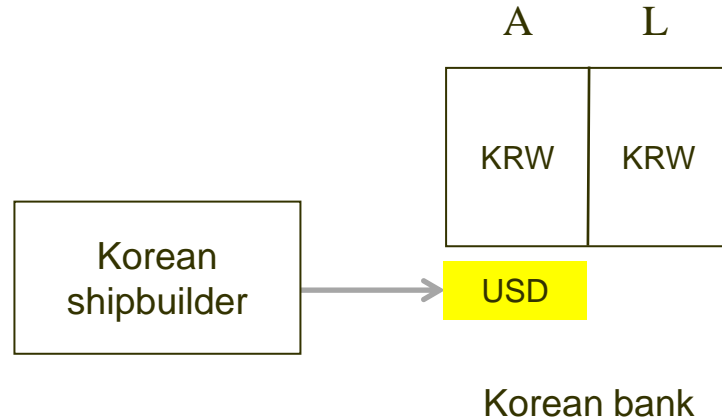
Exchange rates and credit boom: example from Korea

A	L
KRW	KRW

Korean bank

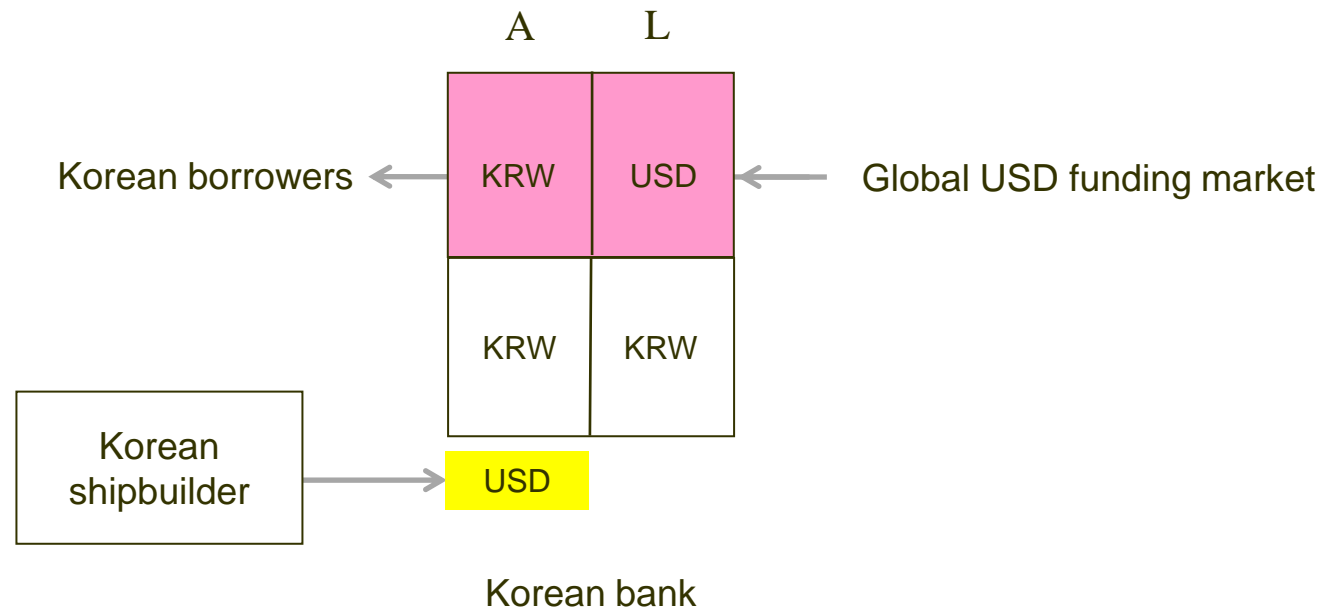
- Initial balance sheet of a Korean bank

Exchange rates and credit boom: example from Korea



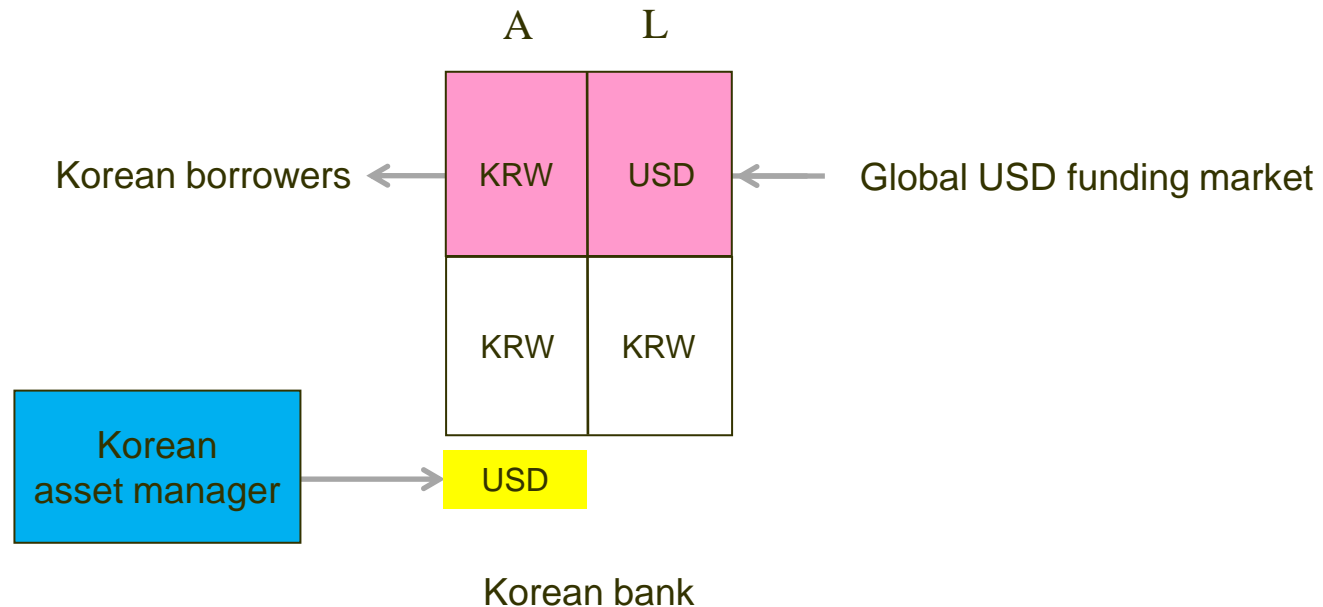
- Korean shipbuilder receives order invoiced in USD for vessel to be delivered in 3 years
- Shipbuilder hedges currency risk by selling 3 year USD forward to local bank

Exchange rates and credit boom: example from Korea



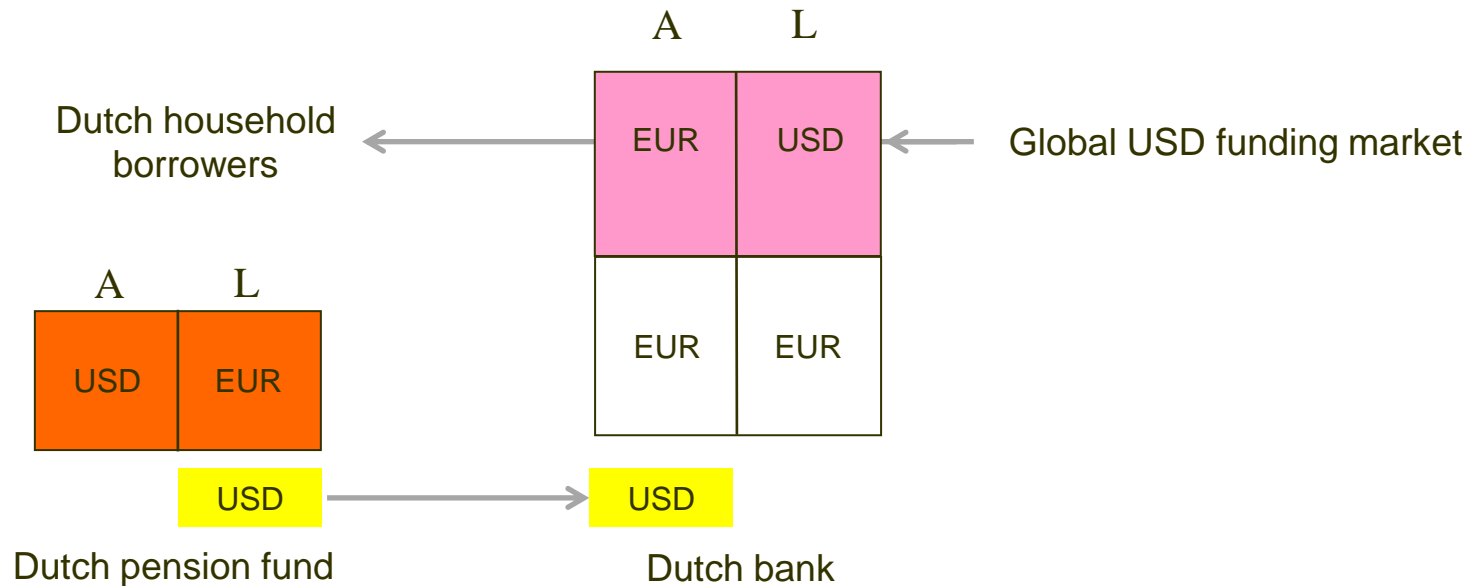
- Bank hedges currency risk by borrowing USD and holding KRW assets
- Domestic credit to Korean borrowers increases by amount of export order
- Expectations of dollar depreciation tempt Korean shipbuilder into “overhedging” – i.e. outright speculation; in practice, dividing line between hedging and speculation is difficult to draw, even ex post

A variation on the same theme



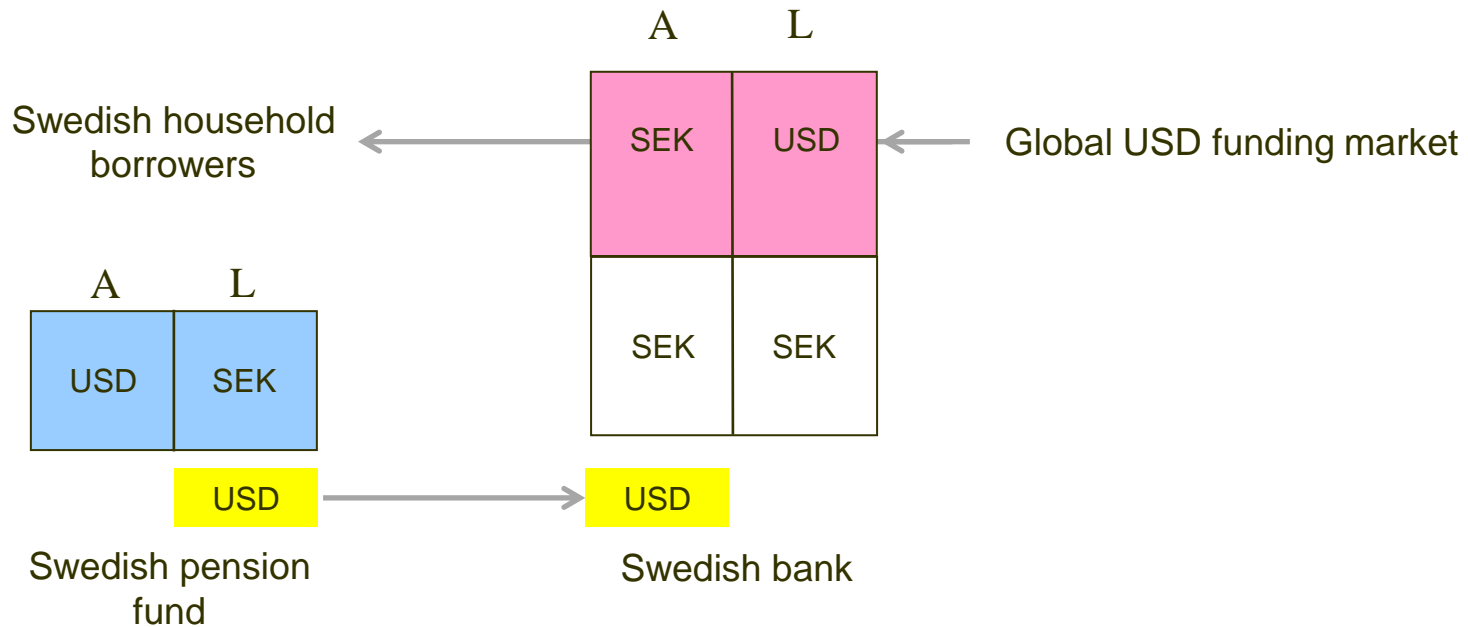
- Korean asset manager offers currency-hedged product to retail investors; sells dollars forward to lock in exchange rate
- Bank hedges currency risk by borrowing USD and holding KRW assets
- Increase in domestic credit to Korean borrowers (in pink) is given by amount of inflow into retail fund

Example from Netherlands



- Dutch pension fund holds overseas assets denominated in USD; wishes to mitigate currency risk on its euro-denominated liabilities; sells dollars to Dutch bank to lock in exchange rate
- Dutch bank hedges currency risk by borrowing USD and lending in euros to Dutch households for house purchase

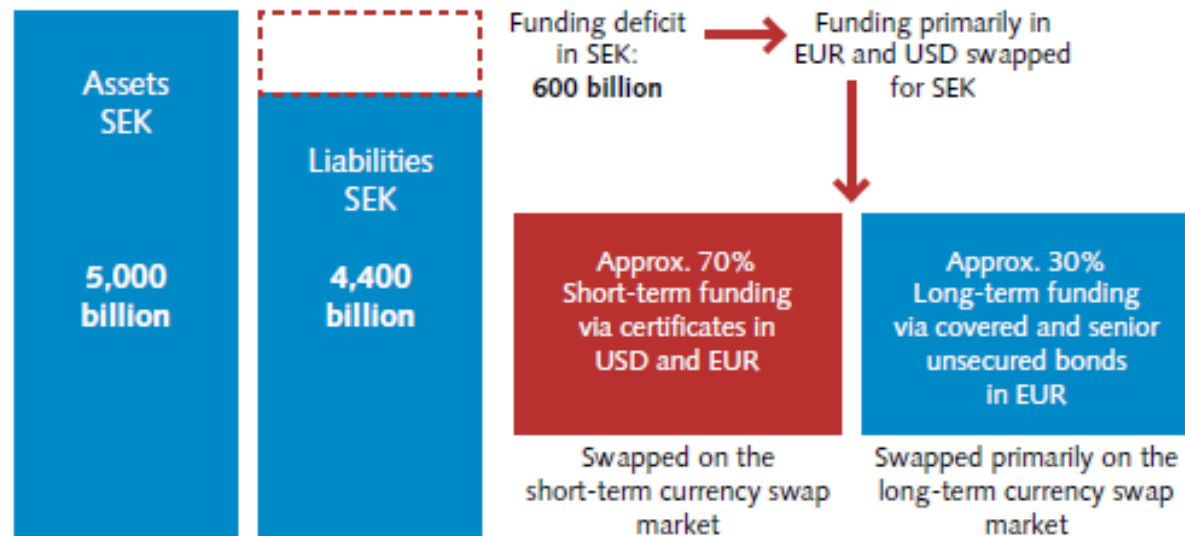
Example from Sweden



- Swedish pension fund holds overseas assets denominated in USD; wishes to mitigate currency risk on its liabilities denominated in Swedish krona; sells dollars to Swedish bank to lock in exchange rate
- Swedish bank hedges currency risk by borrowing USD and lending to Swedish households for house purchase

Dollar and euro funding of Swedish banks

Figure 4. Aggregate use by major Swedish banks of currency swaps to fund assets in SEK

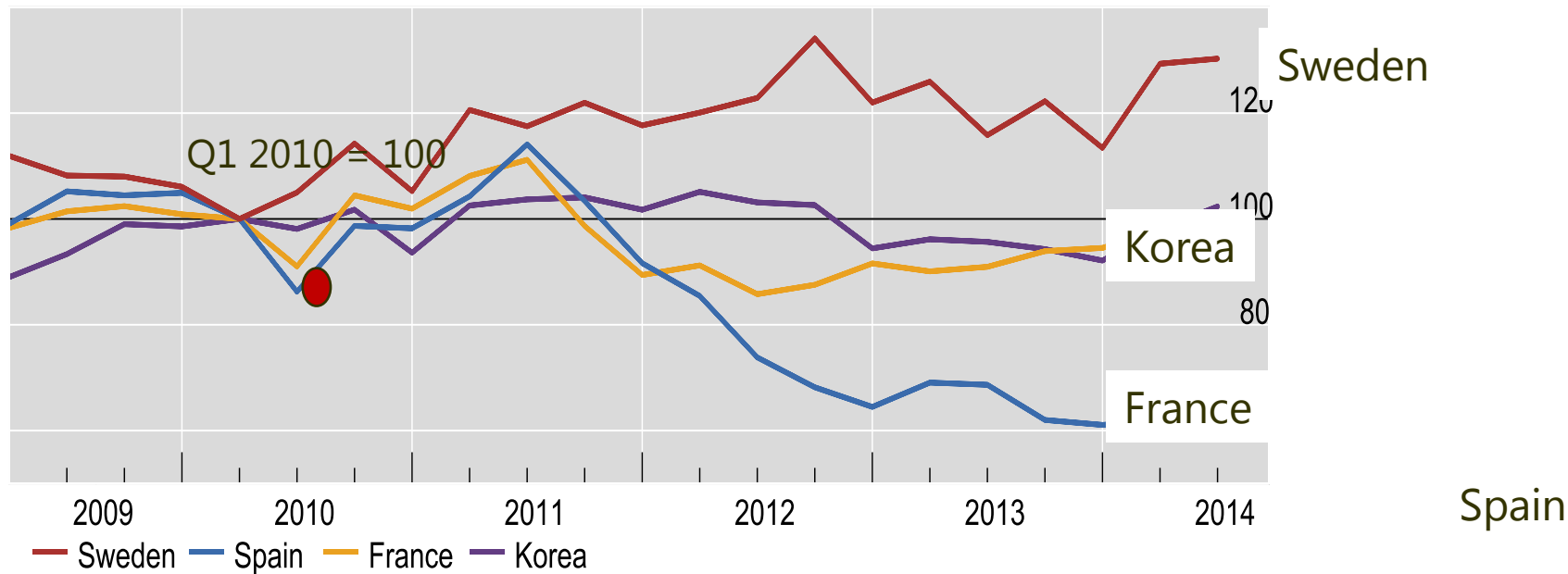


Note. The funding deficit in SEK matches the funding surplus in foreign currency.

Sources: Bank reports and the Riksbank

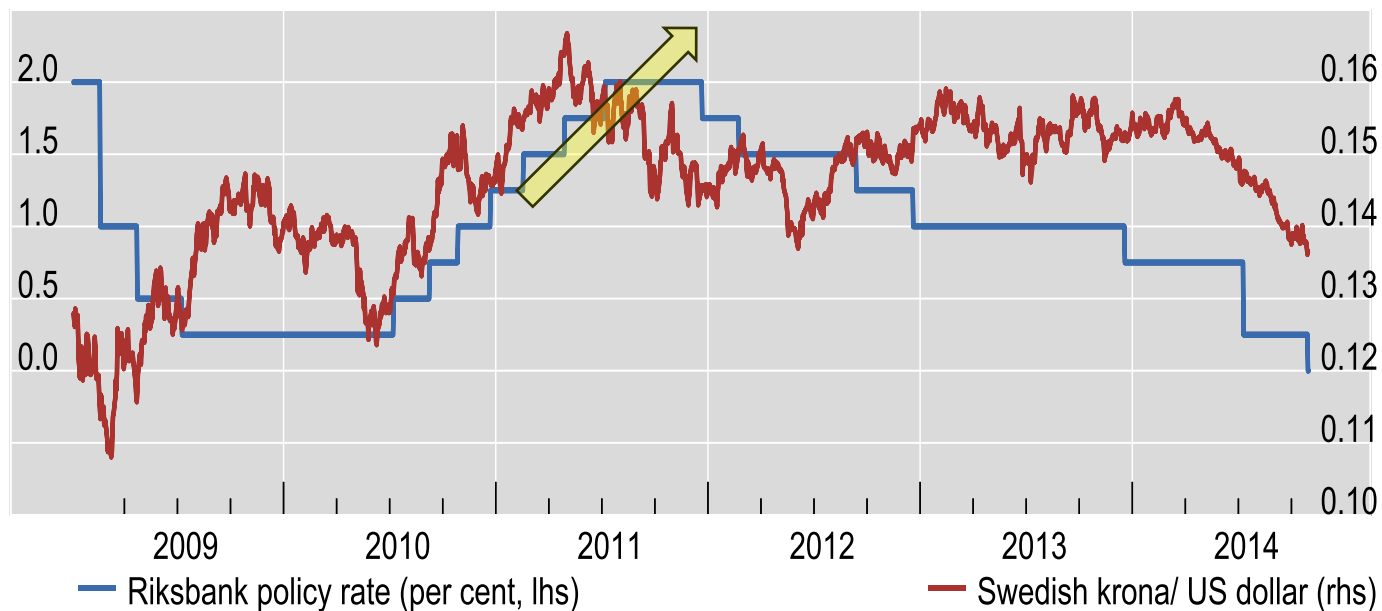
Source: Hilander (2014) Sveriges Riksbank Economic Review 2014:1
http://www.riksbank.se/Documents/Rapporter/POV/2014/2014_1/rap_pov_140306_eng.pdf

Cross-border bank liabilities



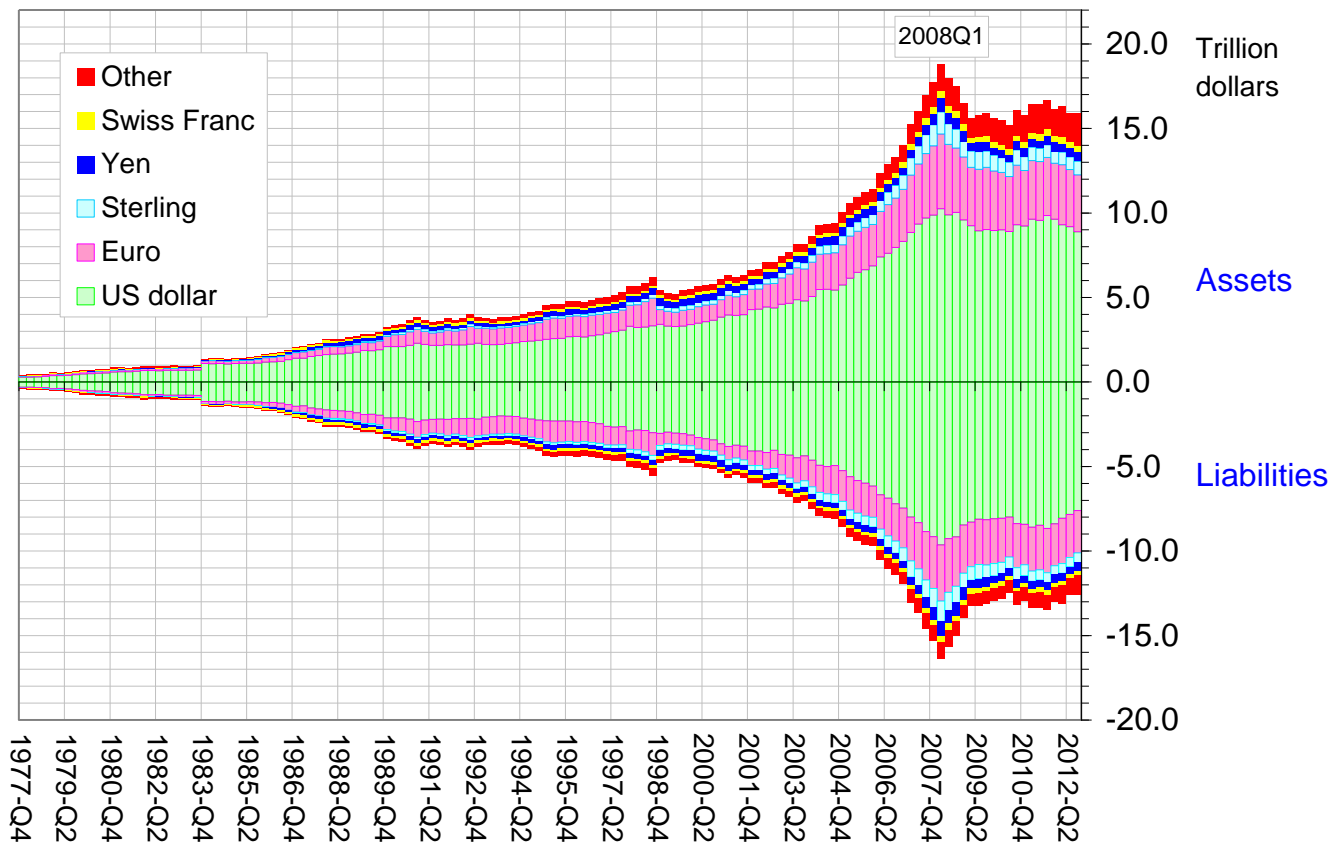
Source: BIS locational banking statistics by residence.

Swedish krona exchange rate against US dollar



Source: national data.

Elasticity of wholesale funding: foreign currency assets and liabilities of international banks



Source: BIS international banking statistics Table 5A

Elasticity of domestic credit growth in open economies

- Lending capacity of open banking system has few hard limits;
➡ “excess elasticity” [Borio and Disyatat (2011)]
- Balance sheet of long-term investors such as pension funds can be converted into lending capacity to domestic borrowers
- Elasticity of banking sector increases with looser global liquidity conditions

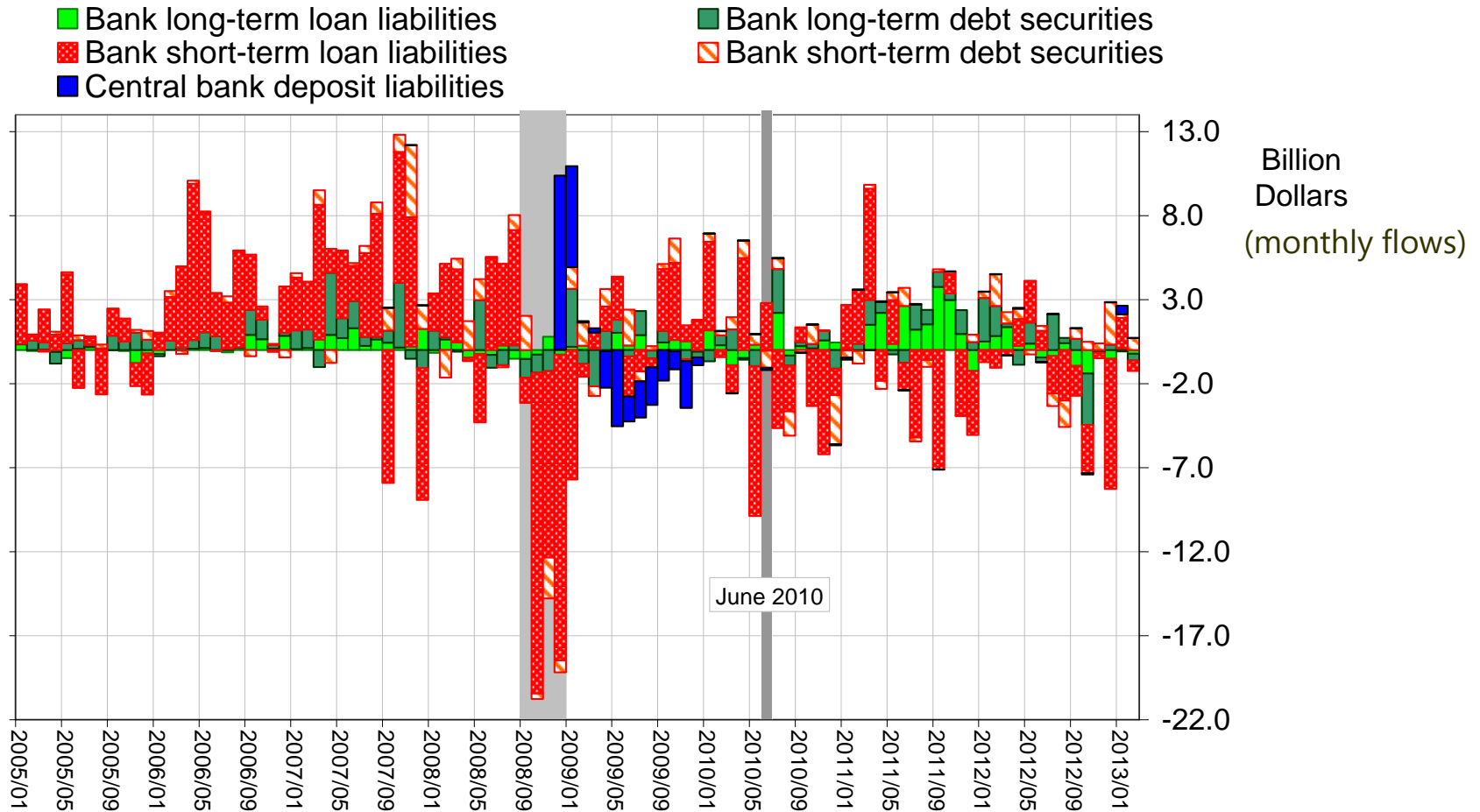
Guide to choice of macroprudential tools

- Private cost of hedging \neq social cost of hedging
 - Privately optimal hedging neglects costs of credit boom
- Macropru should address distortion, but no more
 - Pigovian principles; bring private cost closer in line with social cost
 - Minimise impact on core intermediation
 - Enhance effectiveness of monetary policy

Korea's 2010 macroprudential measures

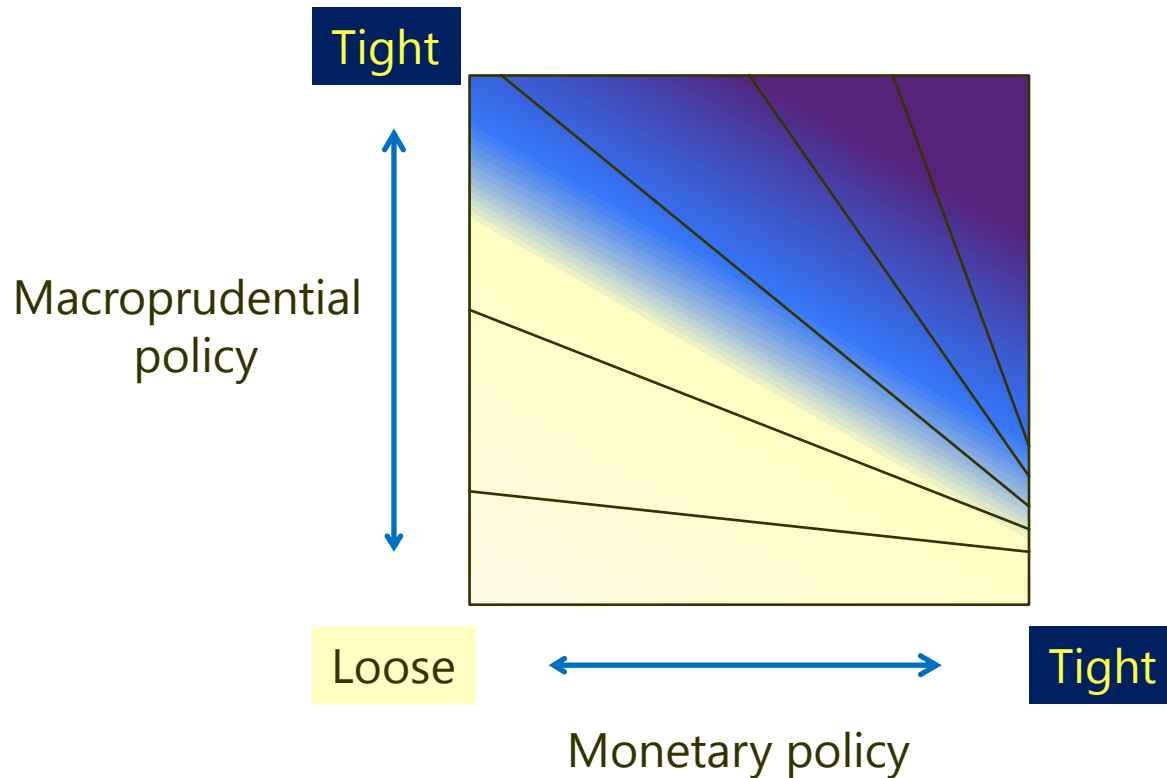
- Leverage cap on FX derivatives positions
 - Cap on notional value of FX derivatives
 - Leverage cap set at 250% of capital for foreign bank branches
 - 50% for (deposit-funded) domestic banks
 - Announced in June 2010; introduced in July 2010 with 3-month grace period; further tightened in June 2011 and January 2013
- Macroprudential levy
 - 20 bp (annualised) for short-term FX bank liability; sliding scale of lower rate for longer-term FX liabilities
 - Proceeds go to separate fund, not general budget
 - First announced in 2010; legislation passed in April 2011; final rates announced in July 2011; implemented in August 2011

Capital flows to Korean banking sector by category



Source: Bruno and Shin (2014) www.princeton.edu/~hsshin/www/korea_macropru.pdf

Enhancing monetary policy effectiveness



Macroprudential policy and monetary policy

- Do they pull in the same direction (complements), or do they pull in opposite directions (substitutes)?
- Evidence from Bruno, Shim and Shin (2014)*
 - 12 Asia-Pacific economies: AU, CN, HK, IN, ID, JP, KR, MY, NZ, PH, SG, TH over period Q1 2004–Q3 2013
 - Database of tightening/loosening of domestic macroprudential measures (177 instances) and capital controls (152 instances)
 - Examine interaction between monetary policy (interest rate policy) and various types of macroprudential policy (such as non-interest rate monetary policy (e.g. reserve requirements), prudential policy, bank/bond inflow policies)

*Bruno, Shim and Shin (2014) "Comparative assessment of macroprudential policies"

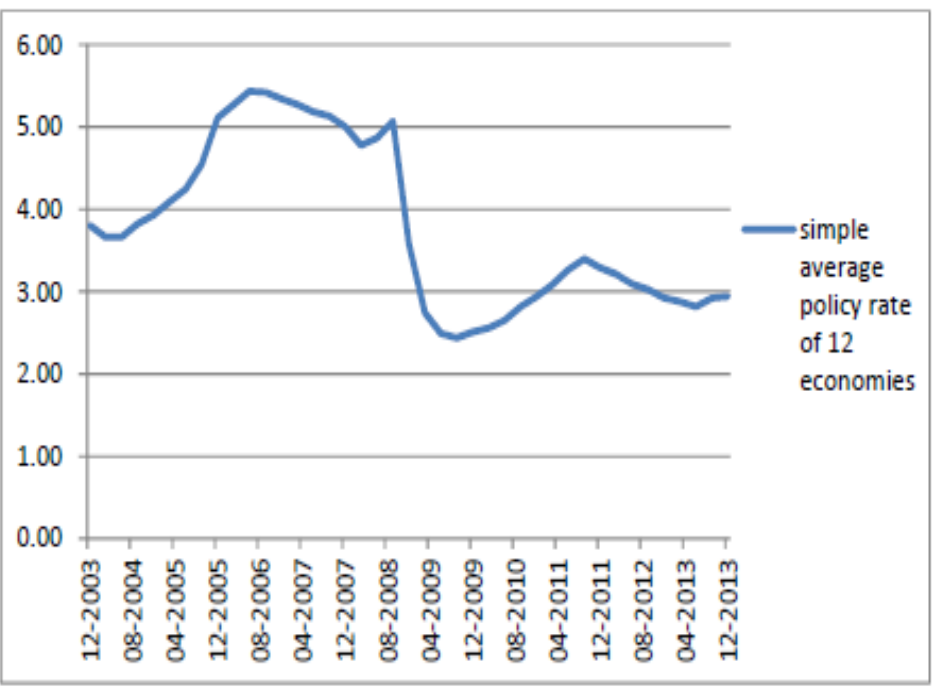
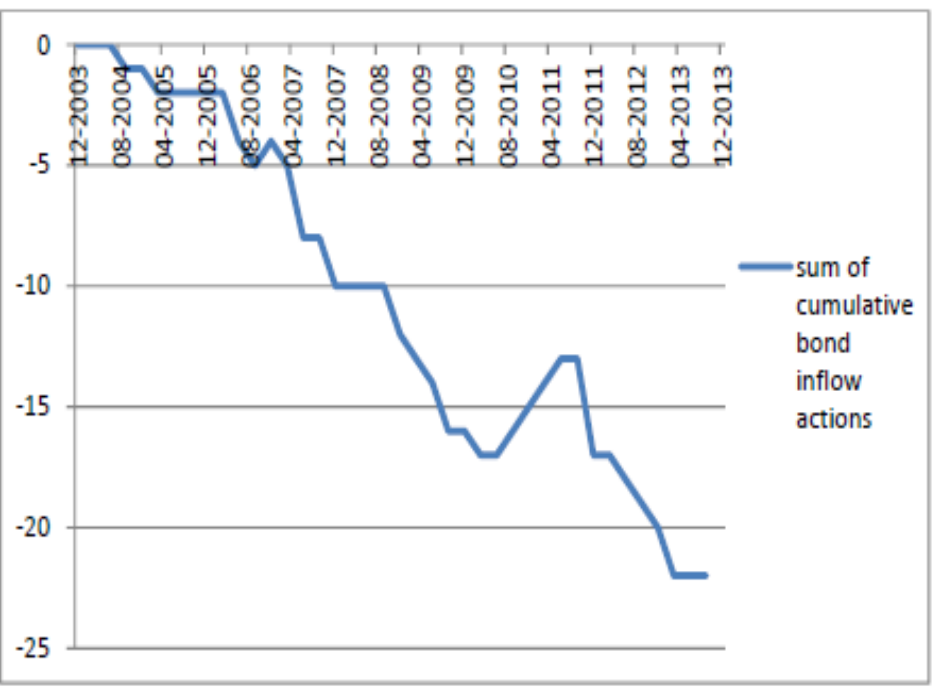
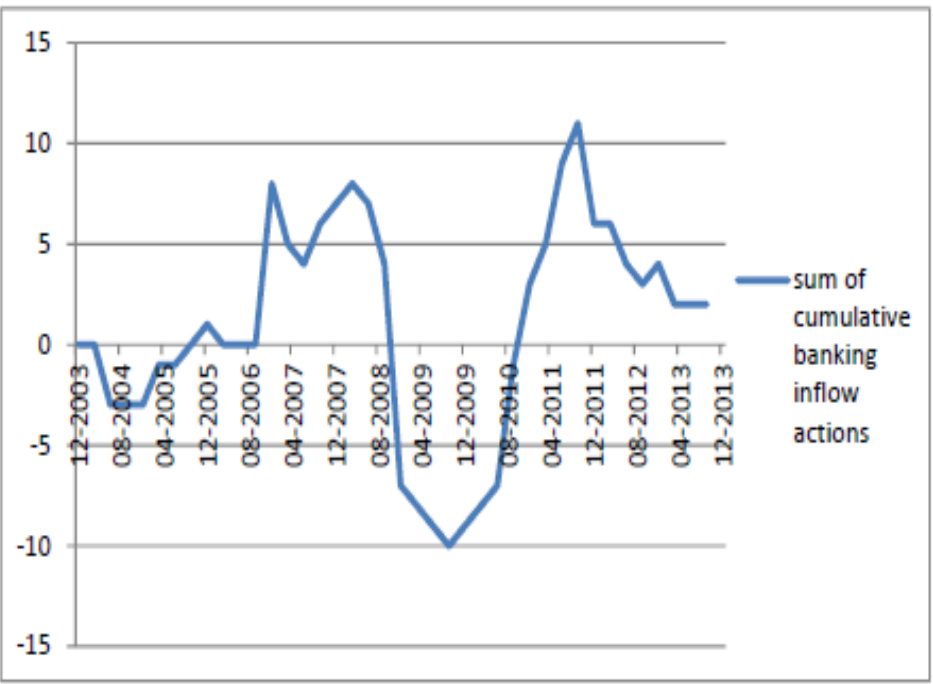
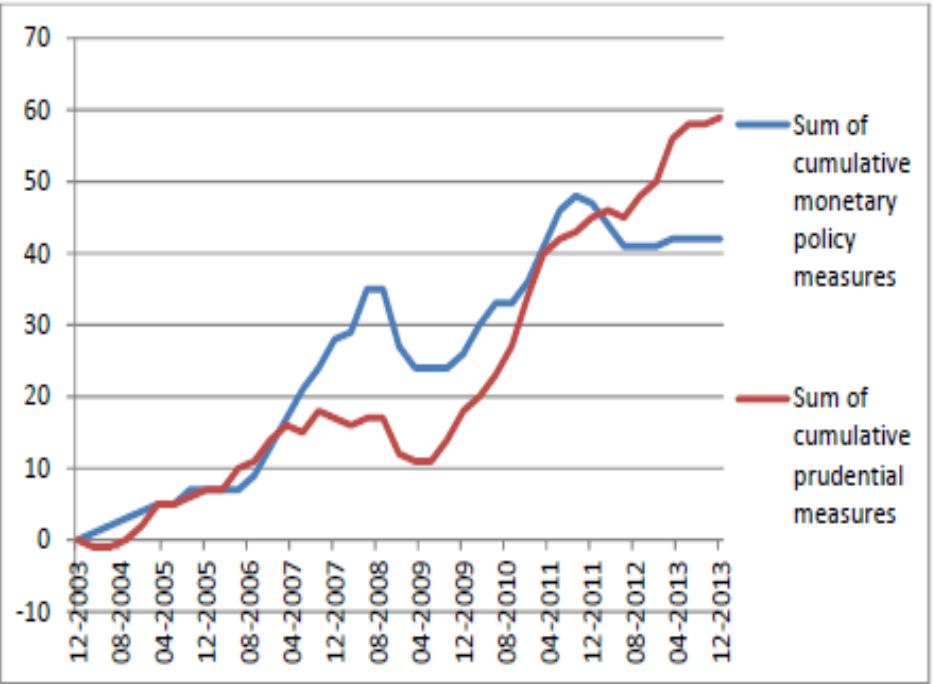
Domestic macroprudential measures

	Monetary measures			Prudential measures			All macroprudential measures		
	Tighten	Loosen	Total	Tighten	Loosen	Total	Tighten	Loosen	Total
Australia	0	0	0	1	0	1	1	0	1
China	34	7	41	21	2	23	55	9	64
Hong Kong SAR	0	0	0	11	2	13	11	2	13
India	17	7	24	11	2	13	28	9	37
Indonesia	2	1	3	1	0	1	3	1	4
Korea	1	0	1	12	6	18	13	6	19
Malaysia	2	3	5	4	0	4	6	3	9
New Zealand	2	0	2	1	0	1	3	0	3
Philippines	6	3	9	0	1	1	6	4	10
Singapore	0	0	0	9	1	10	9	1	10
Thailand	1	2	3	3	1	4	4	3	7
Total	65	23	88	74	15	89	139	38	177

Capital flow measures in Asia and the Pacific

Type	AU	CN	HK	IN	ID	JP	KR	MY	NZ	PH	SG	TH	Total	Tighten	Loosen
Bond inflow measures	-	9	-	12	3	-	4	3	-	1	-	4	36	7	29
Equity inflow measures	-	8	-	5	-	-	3	-	-	-	-	1	17	-	17
Banking inflow (prudential) measures	-	18	1	33	7	-	28	8	-	9	-	12	116	59	57
Real estate inflow measures	-	4	3	3	-	-	1	4	-	-	4	-	19	13	6
Direct inflow measures	-	6	-	4	-	-	1	1	-	-	-	1	13	3	10
Other inflow measures	-	7	-	12	3	-	2	10	-	3	-	4	41	18	23
Outflow measures	-	16	-	34	1	-	17	22	-	19	-	16	125	4	121
Total	-	68	4	103	14	-	56	48	-	32	4	38	367	104	263

AU = Australia; CN = China; HK = Hong Kong SAR; IN = India; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; NZ = New Zealand; PH = the Philippines; SG = Singapore; TH = Thailand.



Correlation between changes in monetary stance and macroprudential stance

	Policy rate change	Bank Controls (T&L)	Bond Controls (T&L)	Macro-pru (T&L)	Monetary (T&L)	Prudential (T&L)
policy rate change	1					
Bank Controls (T&L)	0.2018	1				
Bond Controls (T&L)	0.0644	0.3945	1			
Macro-pru (T&L)	0.2489	0.2605	-0.0027	1		
Monetary (T&L)	0.2214	0.2997	-0.0109	0.7958	1	
Prudential (T&L)	0.1599	0.0925	0.0076	0.7454	0.1896	1

Findings

- Do monetary policy and macroprudential policy pull in the *same* direction?
 - Only weak evidence for interest rate changes
 - Stronger evidence for non-interest rate measures (e.g. reserve requirements)
- Capital controls are associated with slowing of flows
 - Especially for banking sector
- Limited evidence of effectiveness of macropru in curtailing domestic credit growth
 - But difficult to tie down counterfactual scenario

Summing up

- Elastic nature of credit capacity in a small open economy poses policy challenge
- Currency appreciation and credit growth go hand in hand
 - They reinforce each other (Bruno and Shin (2014))
- Floating exchange rate may not be sufficient to ensure monetary autonomy; “own house in order” doctrine not sufficient
- Macroprudential policy
 - Enhances effectiveness of monetary policy?
 - Needs to overcome many practical design/implementation challenges