BANK FOR INTERNATIONAL SETTLEMENTS

Macroprudential policy in an open economy

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Bank for International Settlements

Macroprudential policy:
implementation and interaction with other policies

Joint IMF/Riksbank conference

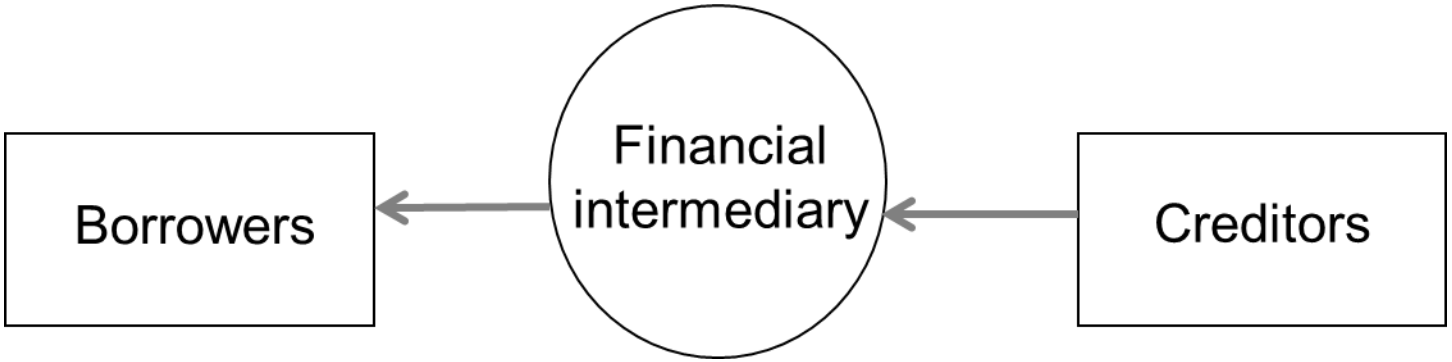
13-14 November, Stockholm

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

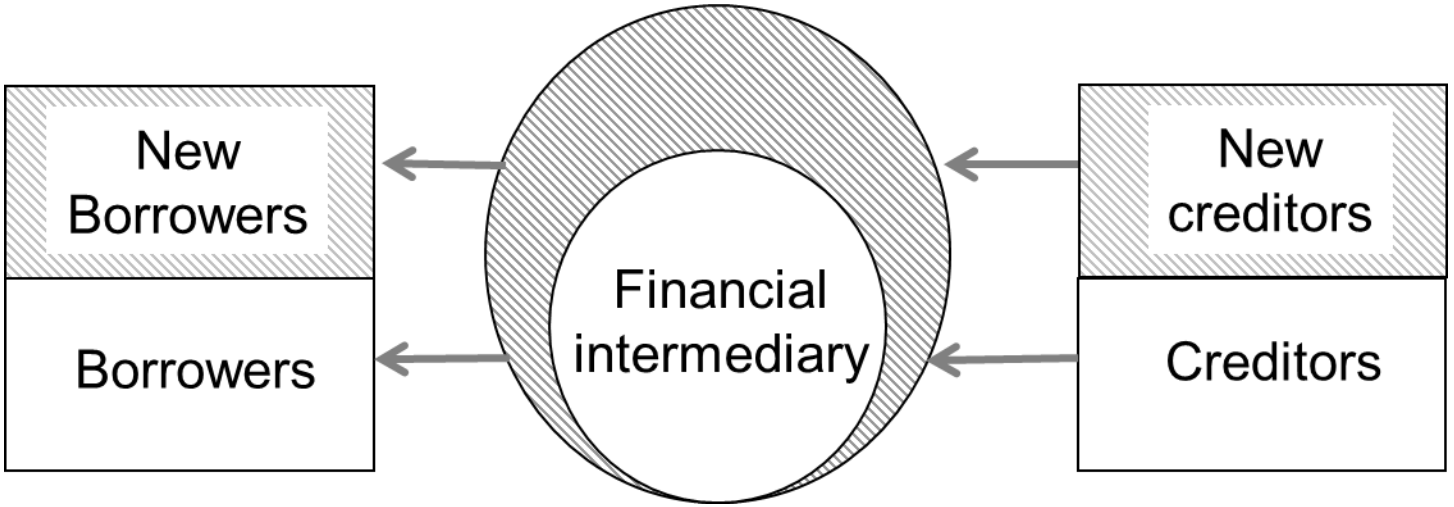
Three themes

- 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

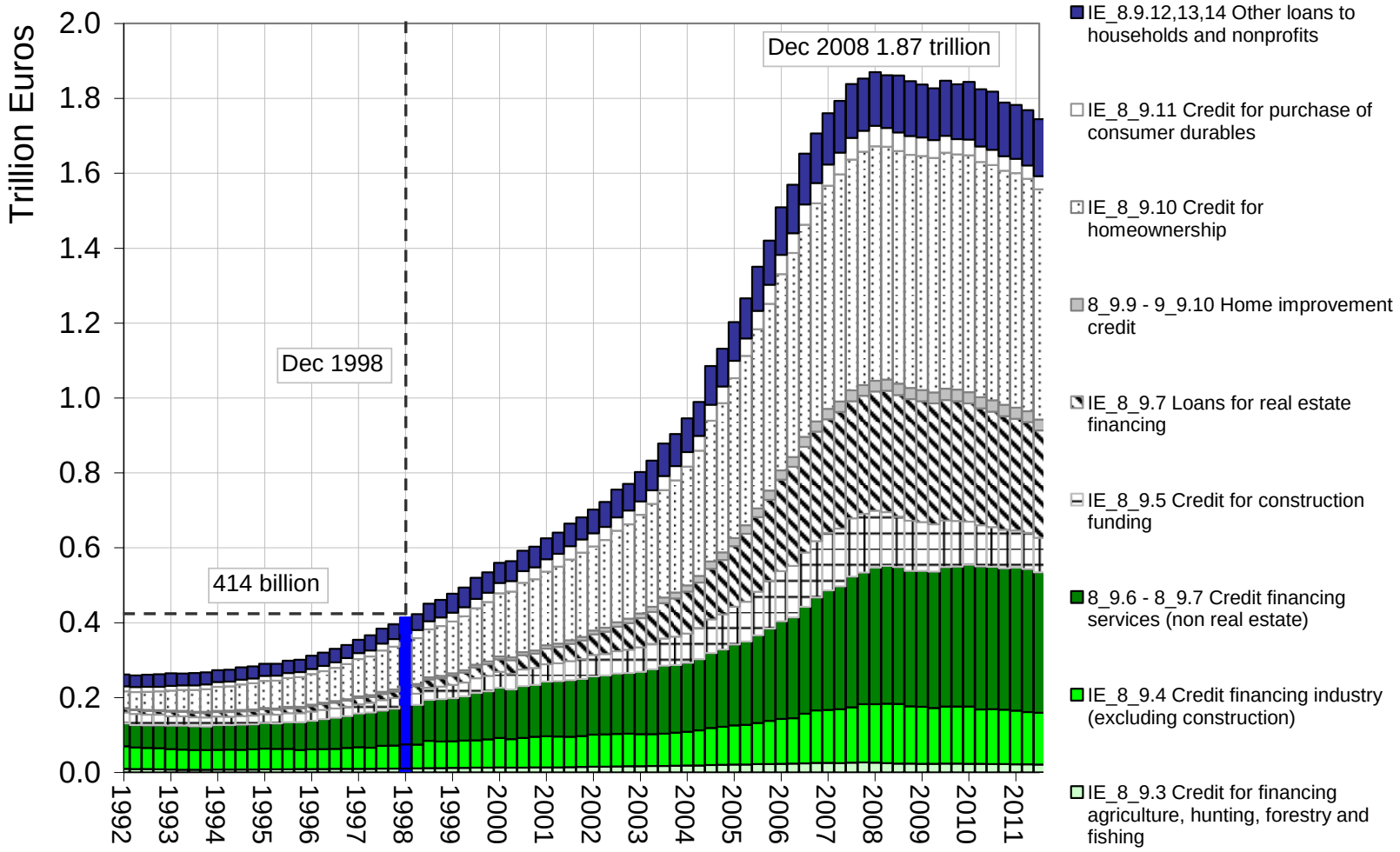
Financial intermediation before expansion



Financial intermediation during credit boom

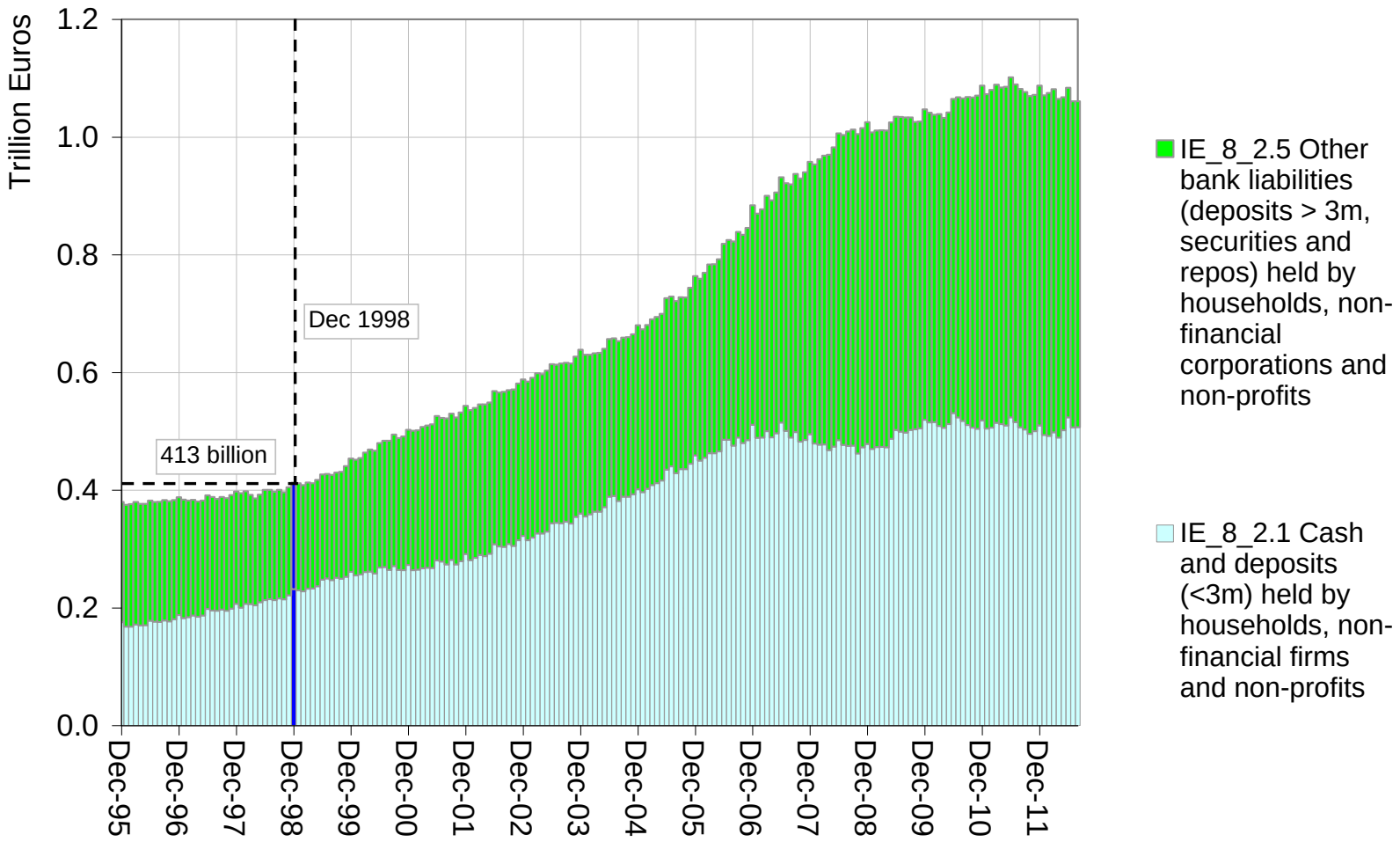


Spain: total banking sector domestic credit



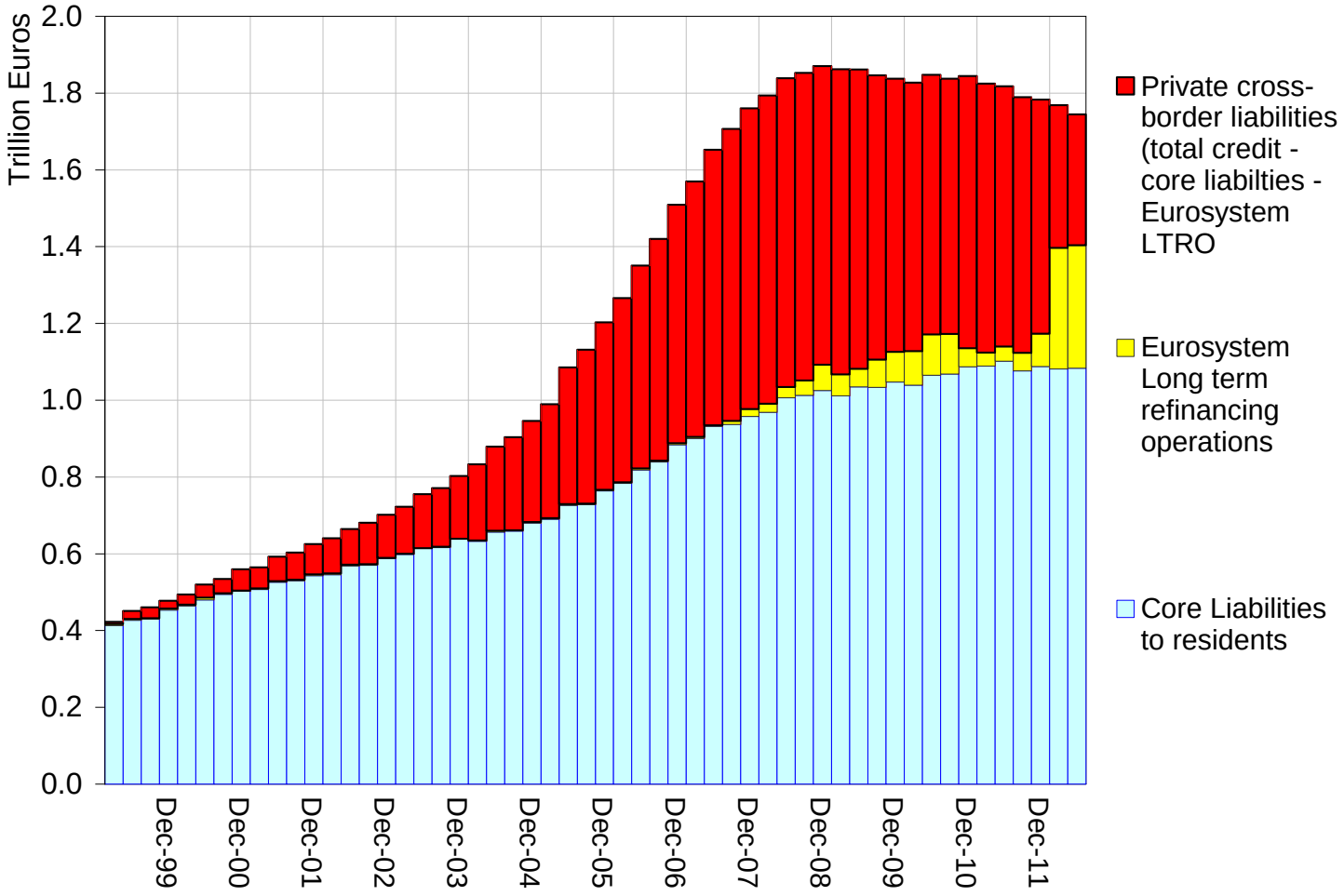
Source: Bank of Spain

Spain: core domestic liabilities of banking sector



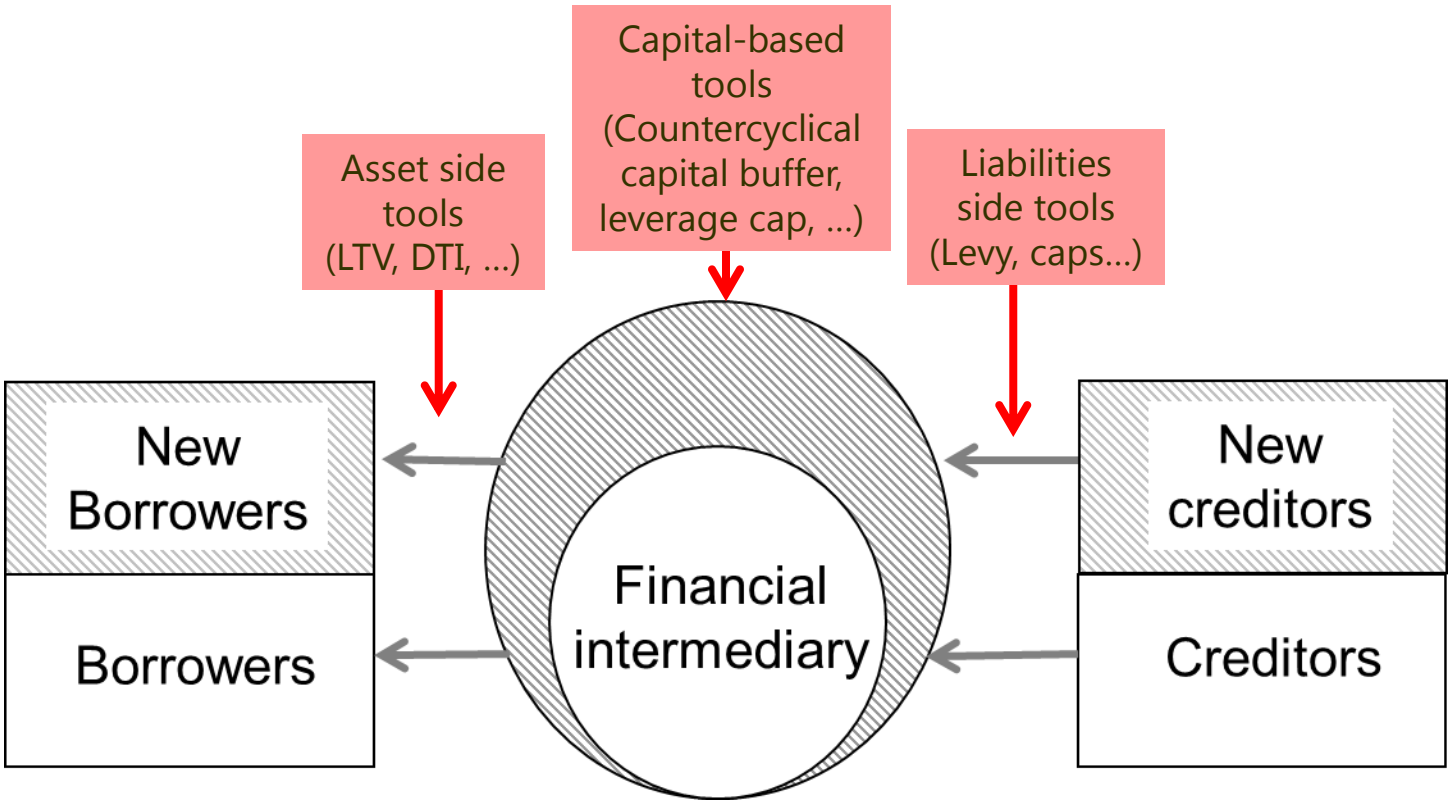
Source: Bank of Spain

Spain: core and non-core liabilities of banking sector

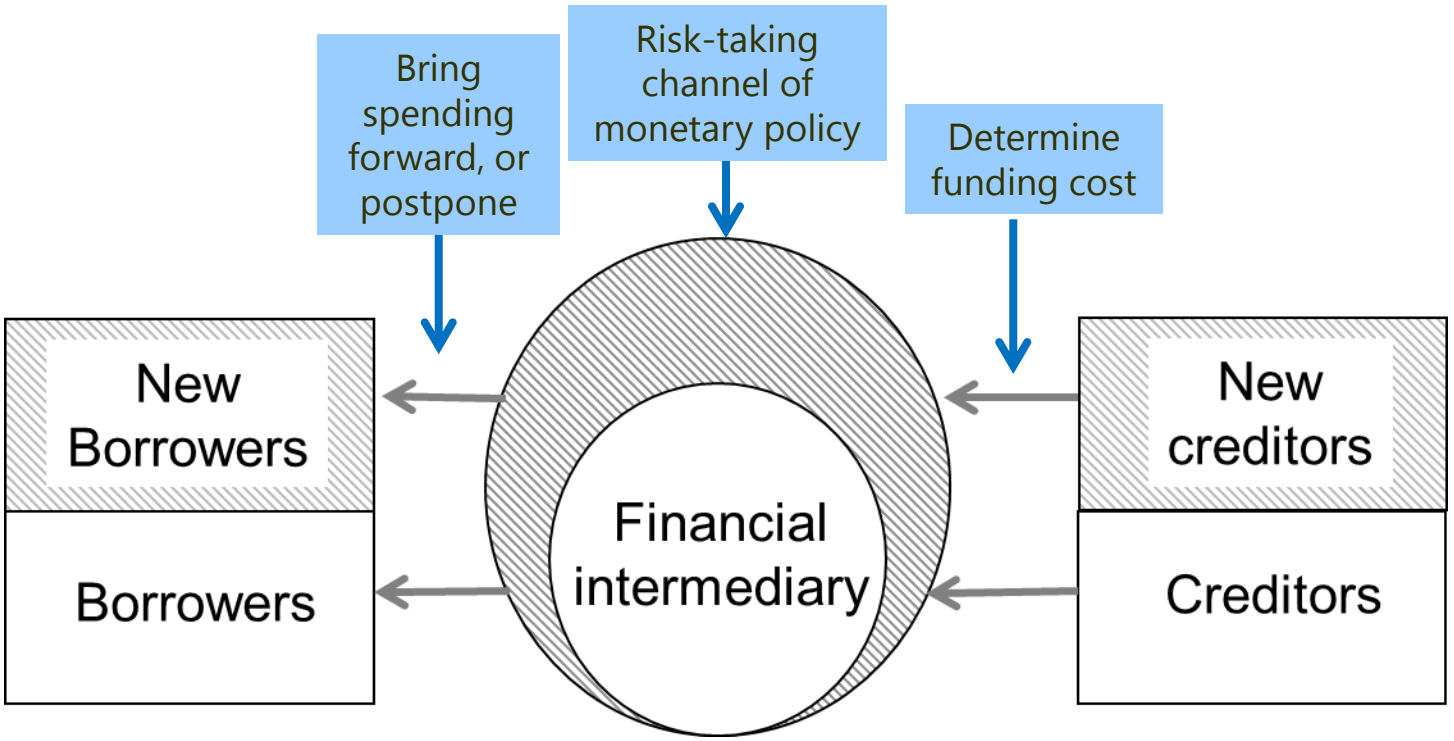


Source: Bank of Spain

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

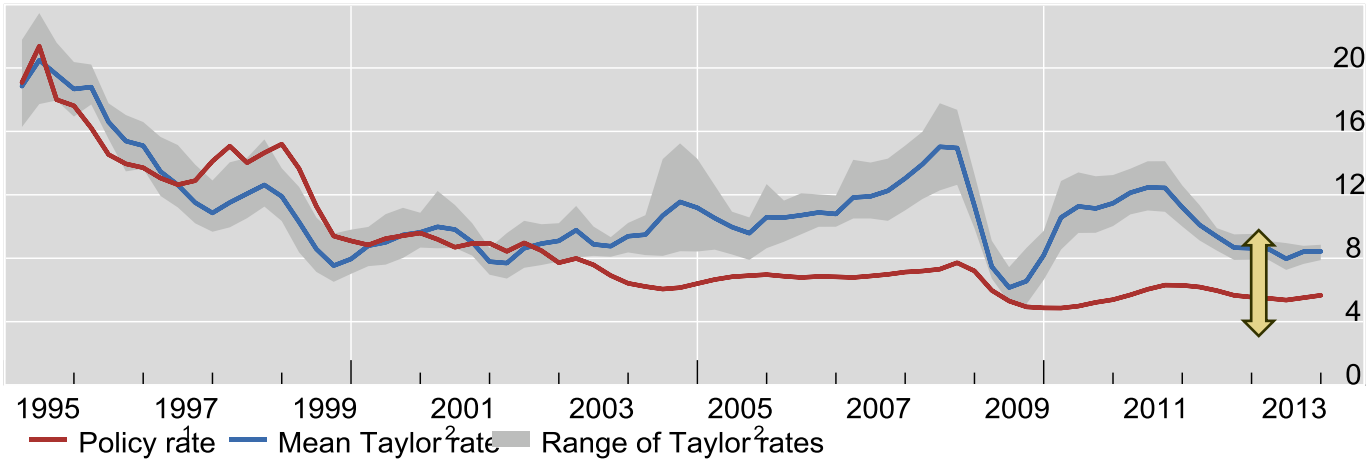
Two differences

- 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

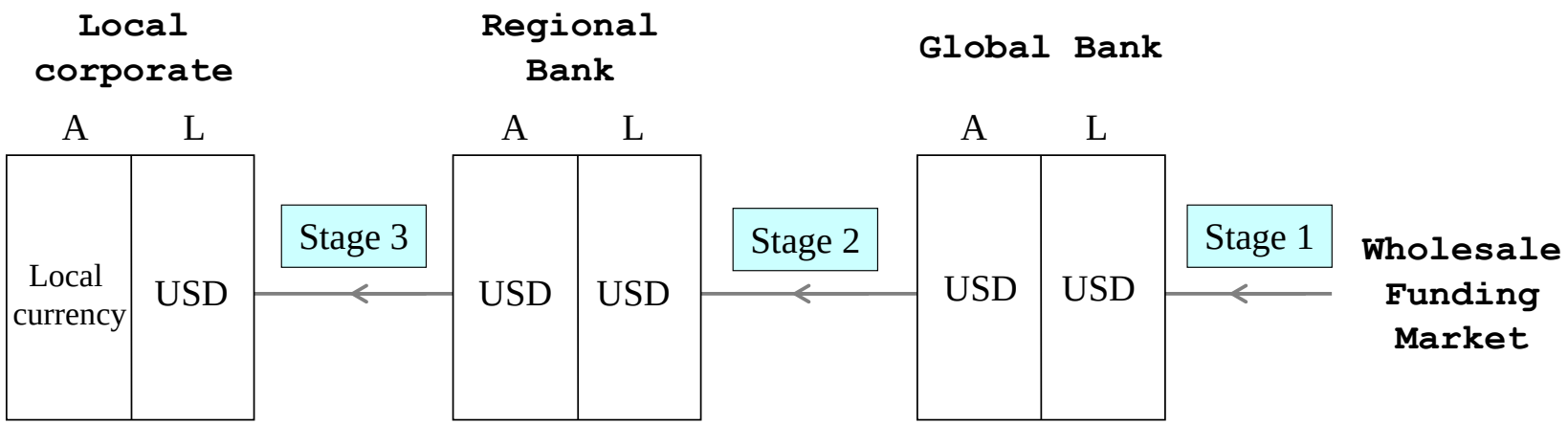
Policy interest rates and Taylor rule rates in EMEs

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.

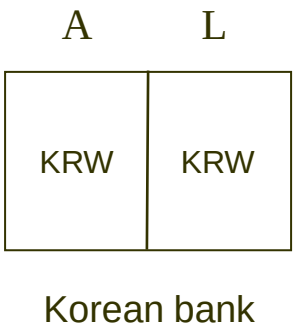
Currency appreciation leads to lending boom



- 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

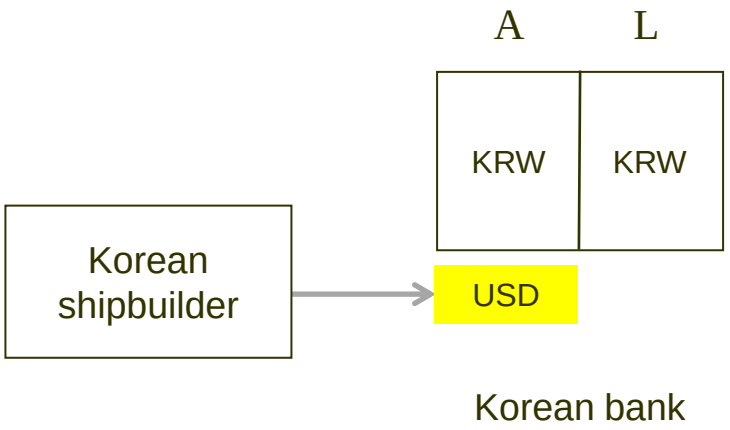
Source: Bruno and Shin (2014) http://www.bis.org/publ/work458.pdf

Exchange rates and credit boom: example from Korea



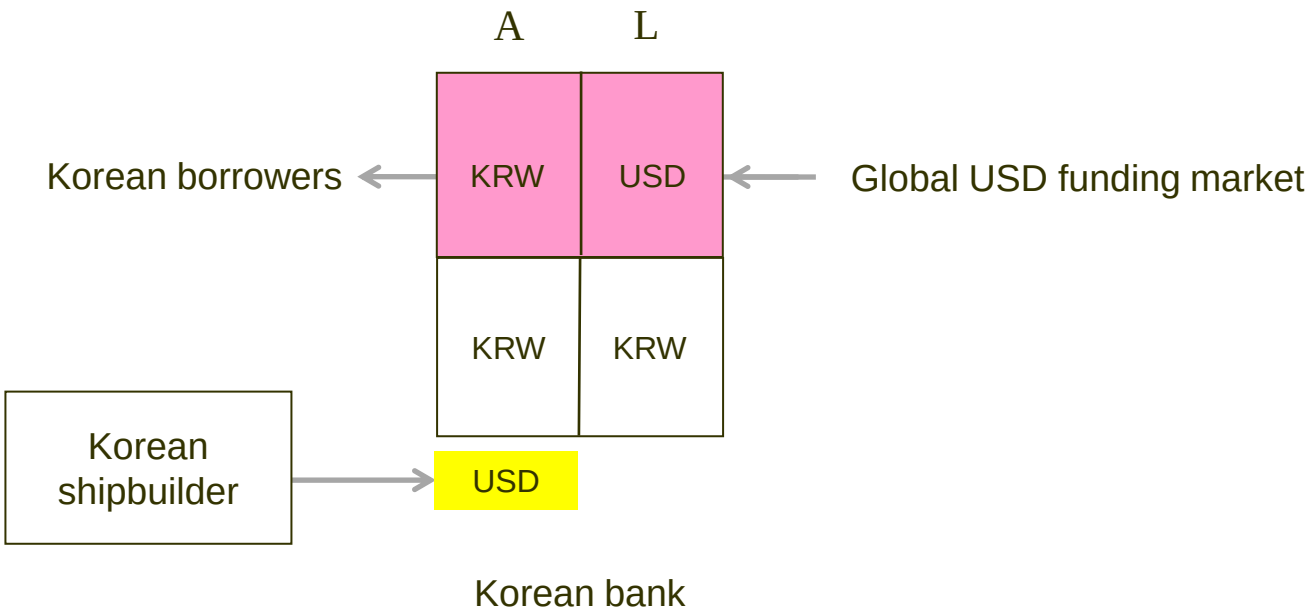
- Initial balance sheet of a Korean bank

Exchange rates and credit boom: example from Korea



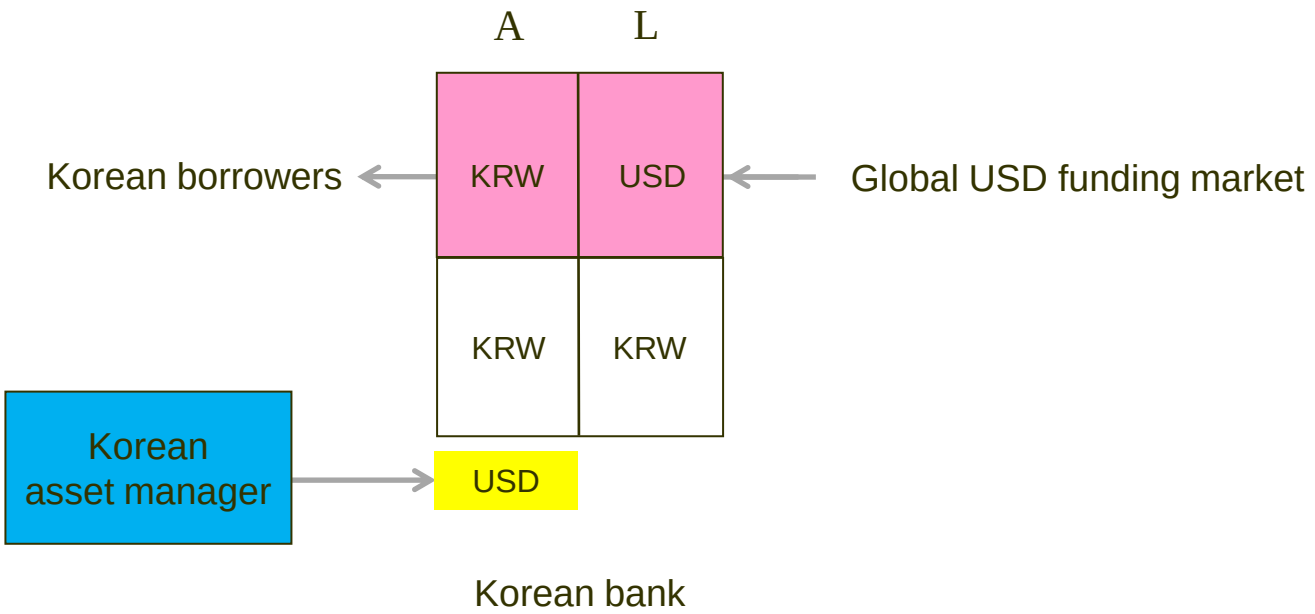
- Korean shipbuilder receives order invoiced in USD for vessel to be delivered in 3 years
- Shipbuilder hedges currency risk by selling 3 year USD forward to local bank

Exchange rates and credit boom: example from Korea



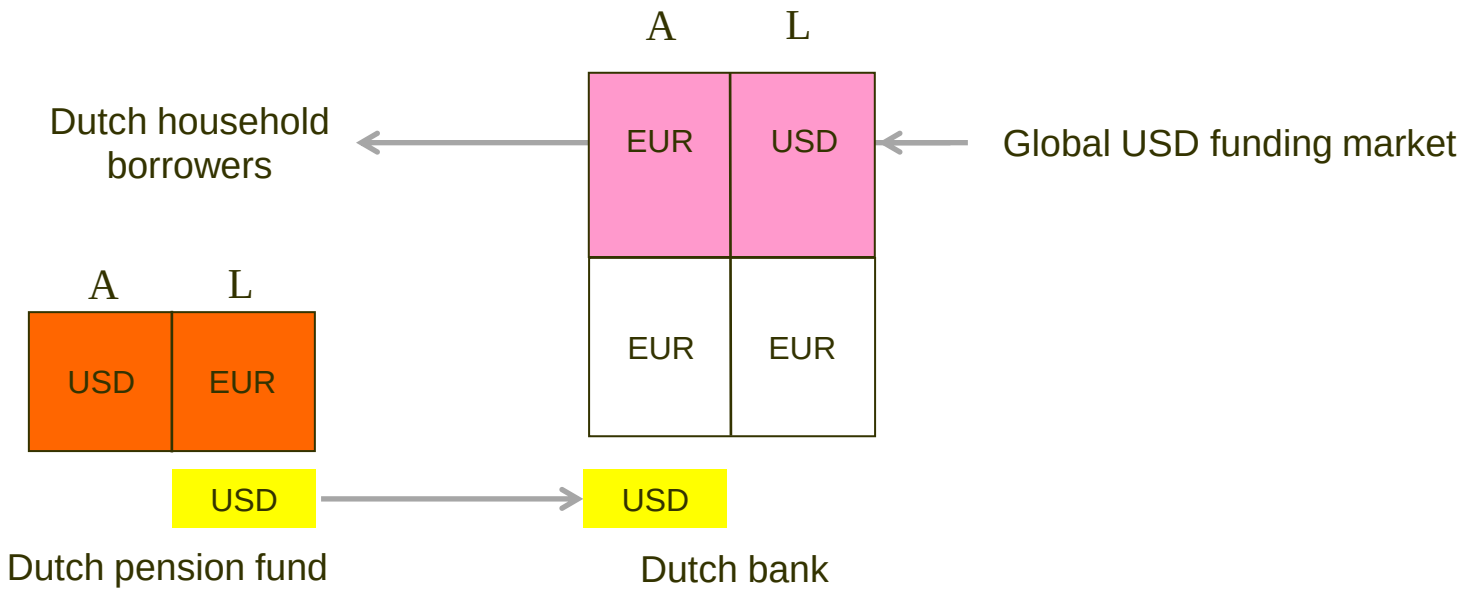
- Bank hedges currency risk by borrowing USD and holding KRW assets
- Domestic credit to Korean borrowers increases by amount of export order
- Expectations of dollar depreciation tempt Korean shipbuilder into "overhedging" – i.e. outright speculation; in practice, dividing line between hedging and speculation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

A variation on the same theme



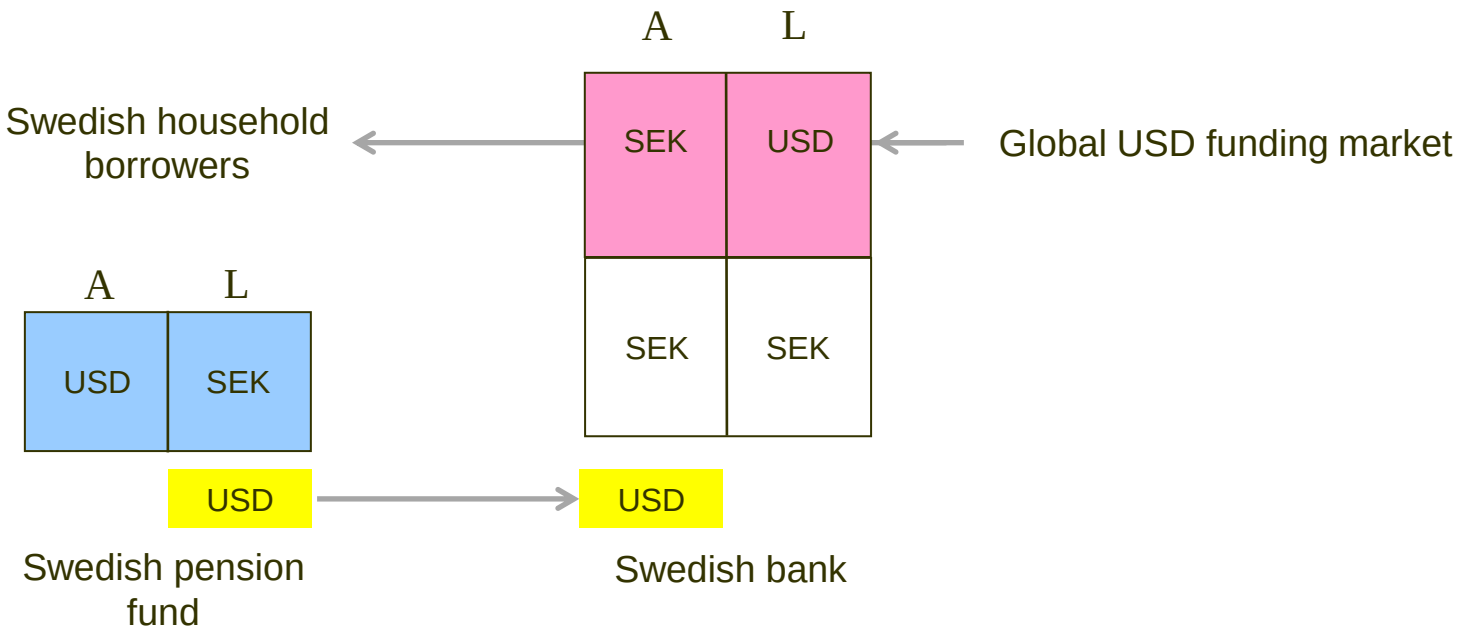
- Korean asset manager offers currency-hedged product to retail investors; sells dollars forward to lock in exchange rate
- Bank hedges currency risk by borrowing USD and holding KRW assets
- Increase in domestic credit to Korean borrowers (in pink) is given by amount of inflow into retail fund

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

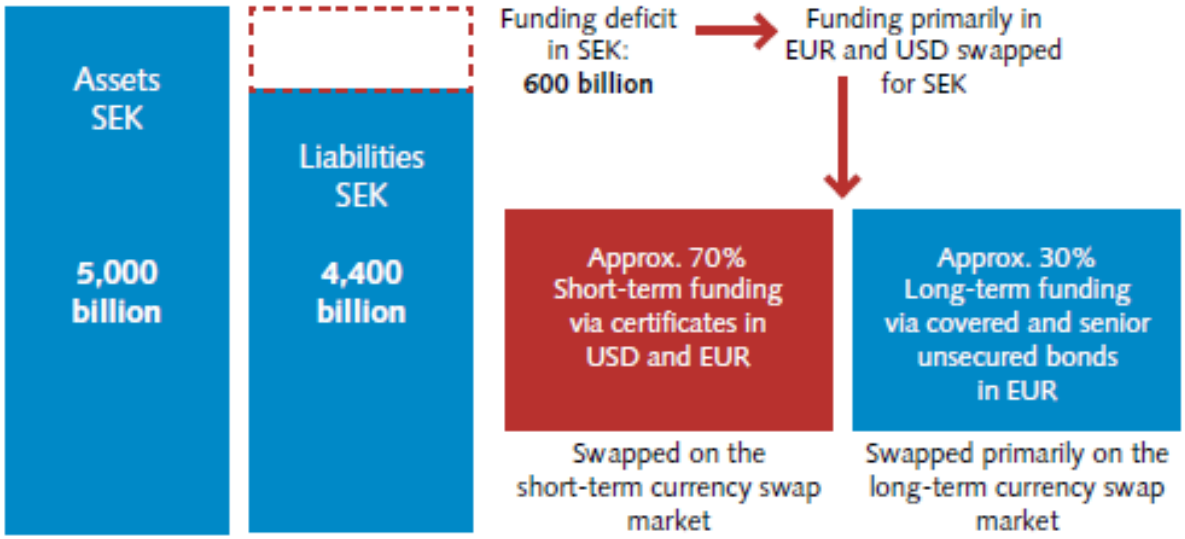
Example from Sweden



- 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

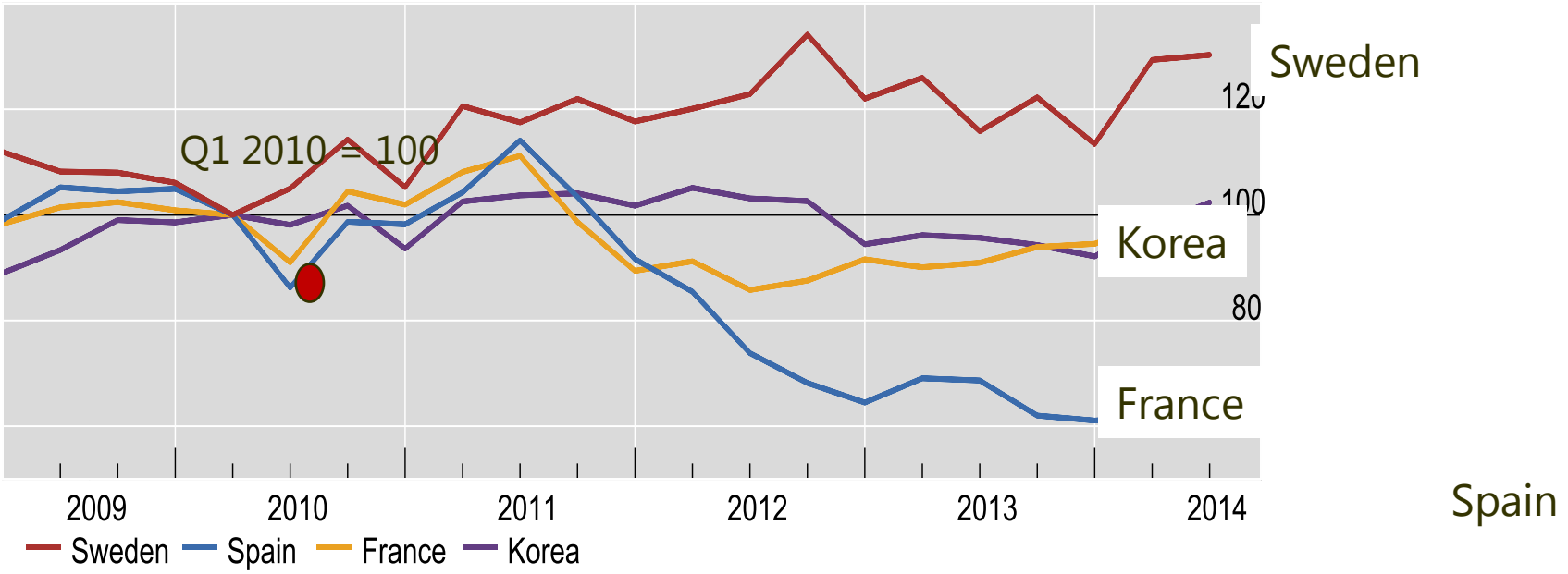


Note. The funding deficit in SEK matches the funding surplus in foreign currency.

Sources: Bank reports and the Riksbank

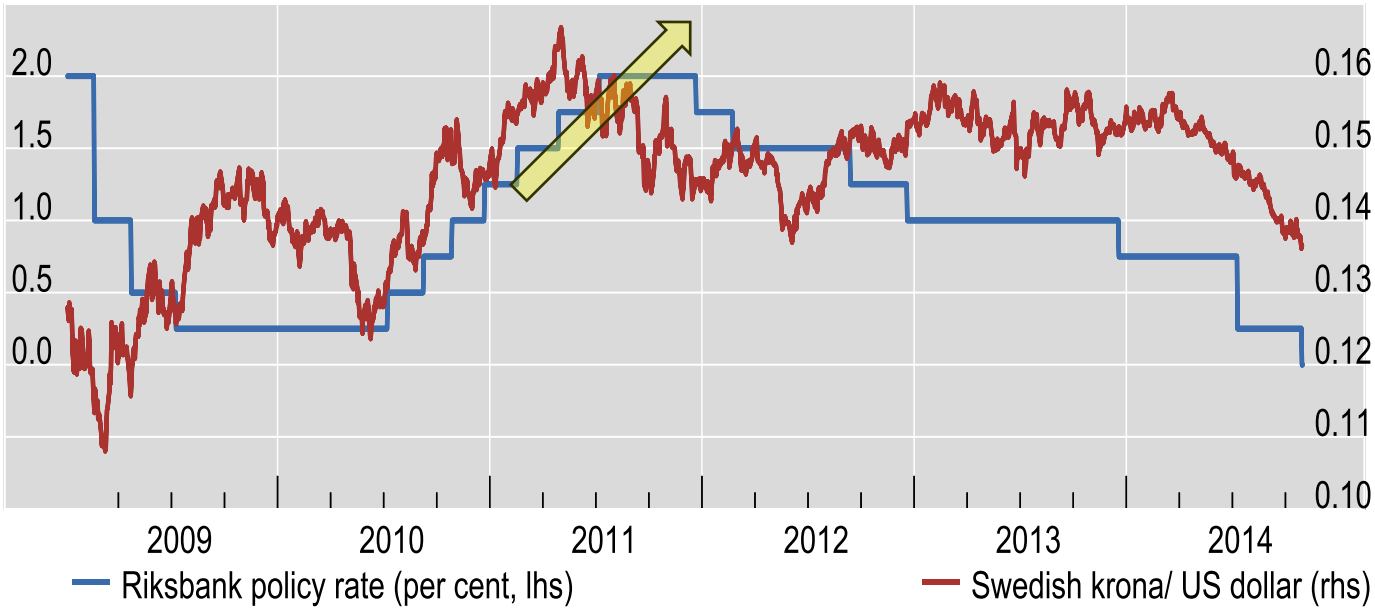
Source: Hilander (2014) Sveriges Riksbank Economic Review 2014:1
http://www.riksbank.se/Documents/Rapporter/POV/2014/2014_1/rap_pov_140306_eng.pdf

Cross-border bank liabilities



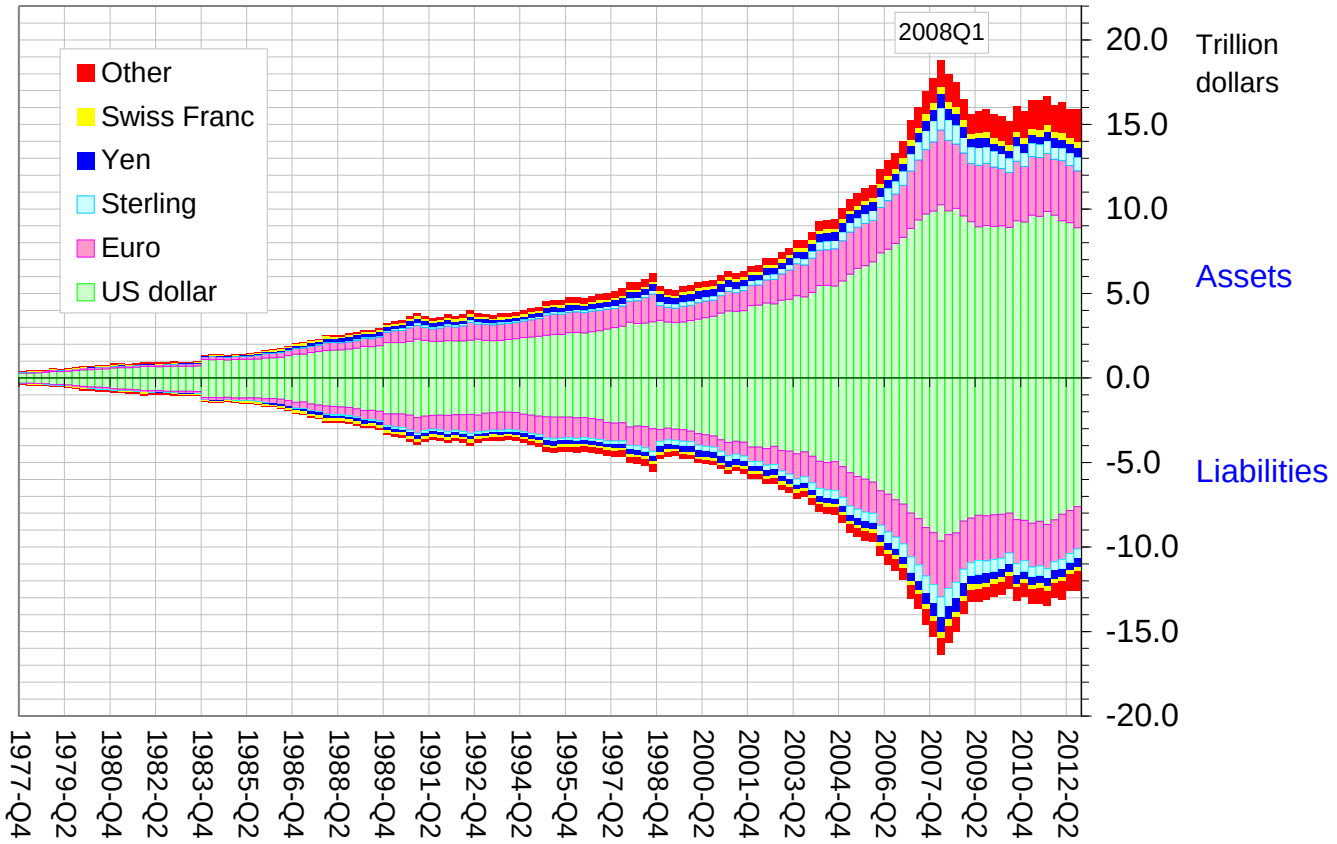
Source: BIS locational banking statistics by residence.

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

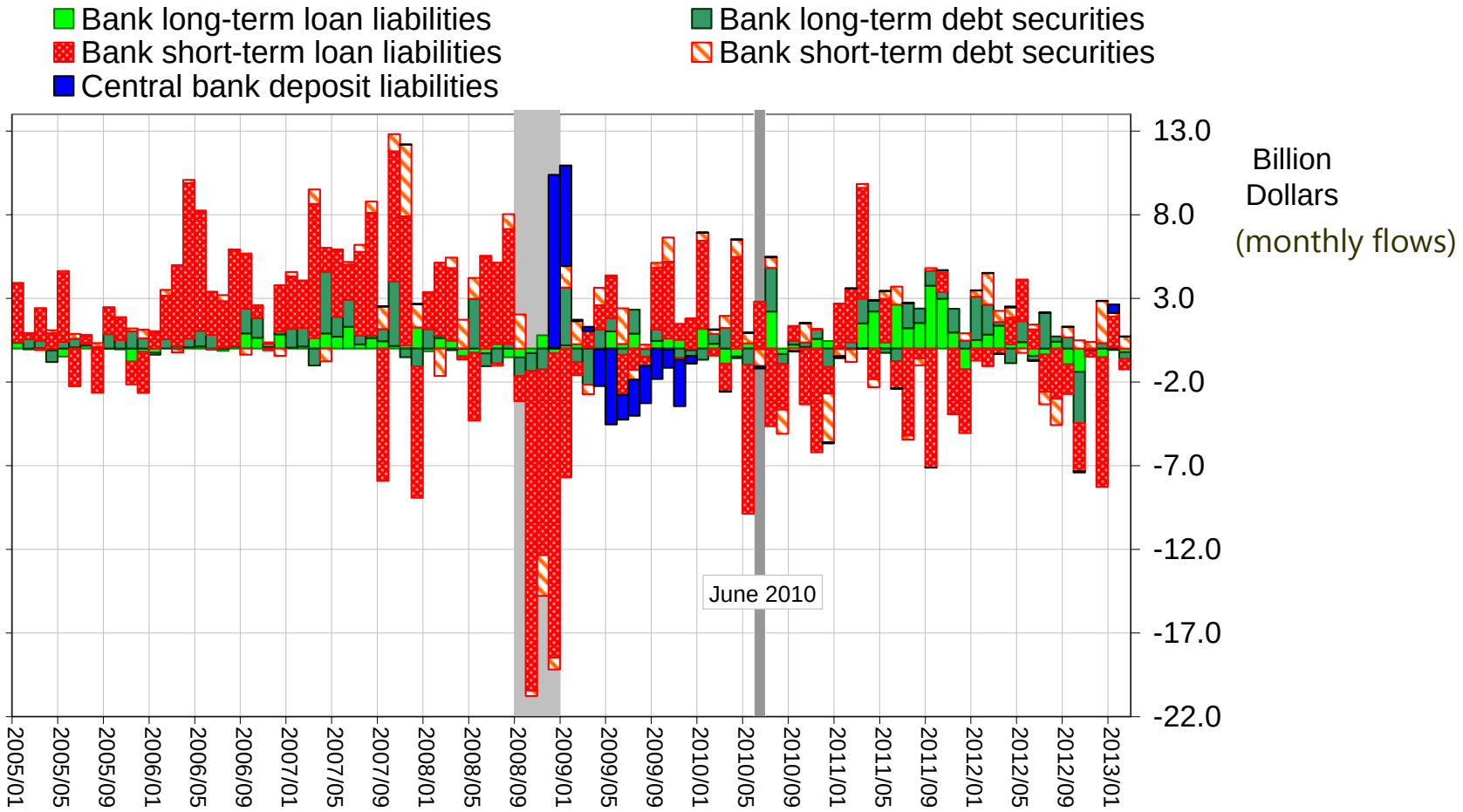
- Private cost of hedging ≠ social cost of hedging
  - Privately optimal hedging neglects costs of credit boom

- 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

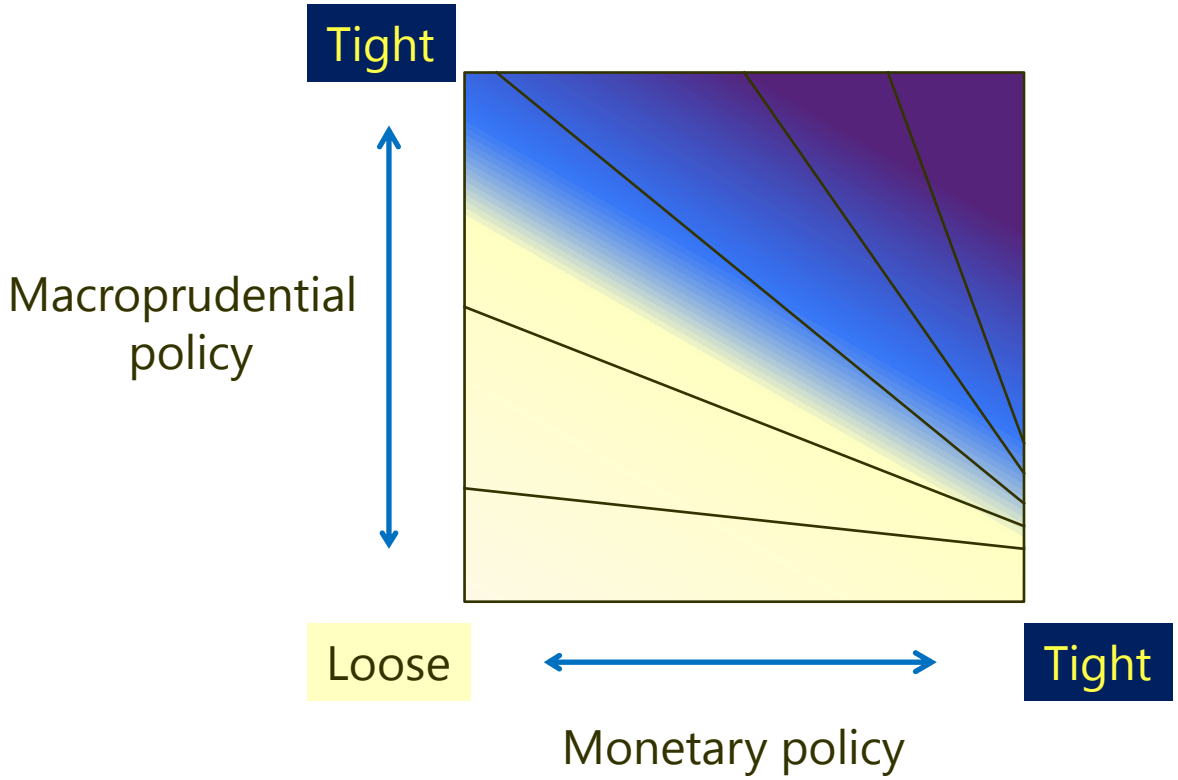
- Leverage cap on FX derivatives positions
  - Cap on notional value of FX derivatives
  - Leverage cap set at 250% of capital for foreign bank branches
  - 50% for (deposit-funded) domestic banks
  - Announced in June 2010; introduced in July 2010 with 3-month grace period; further tightened in June 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"

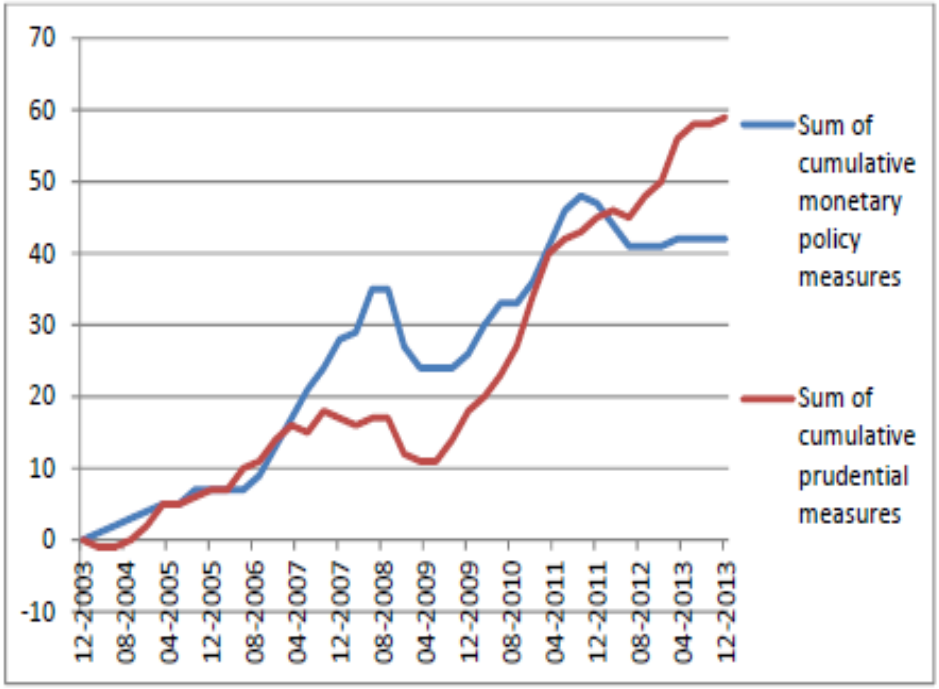
Domestic macroprudential measures

	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.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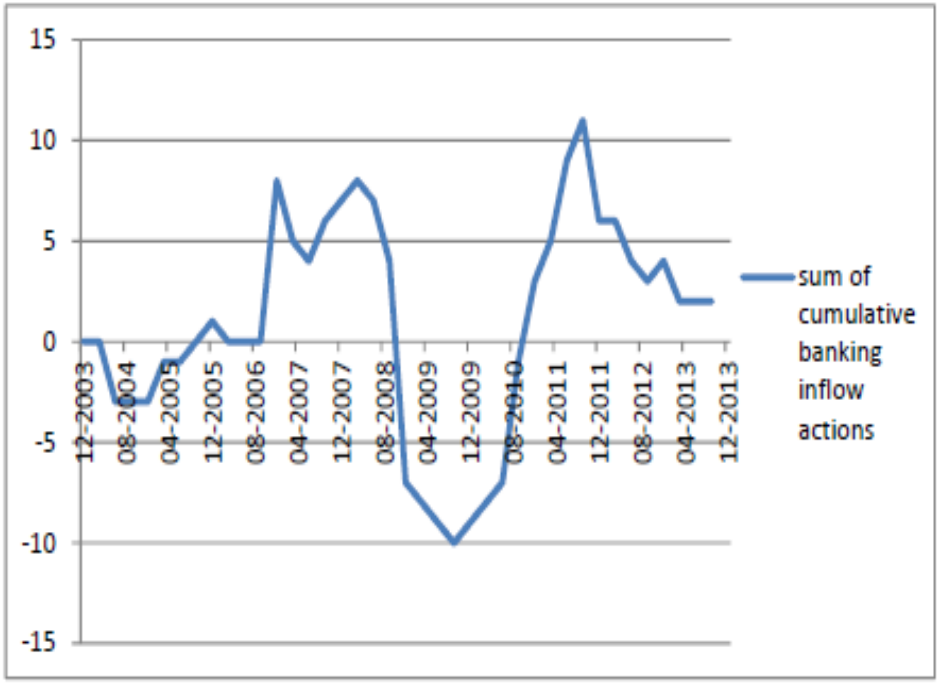
Sum of cumulative monetary policy measures
Sum of cumulative prudential measures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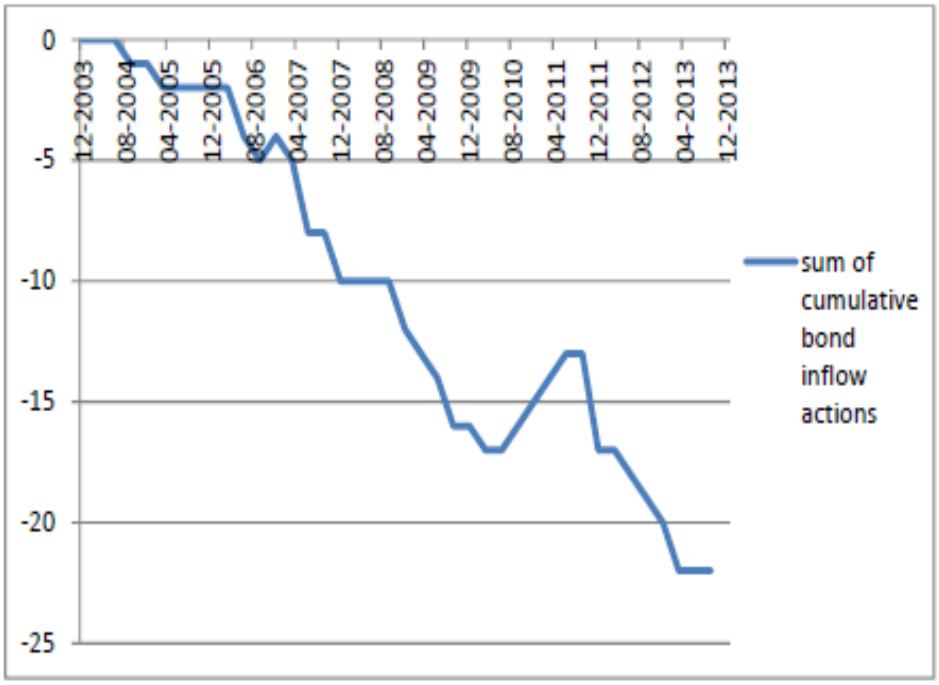
sum of cumulative banking inflow actions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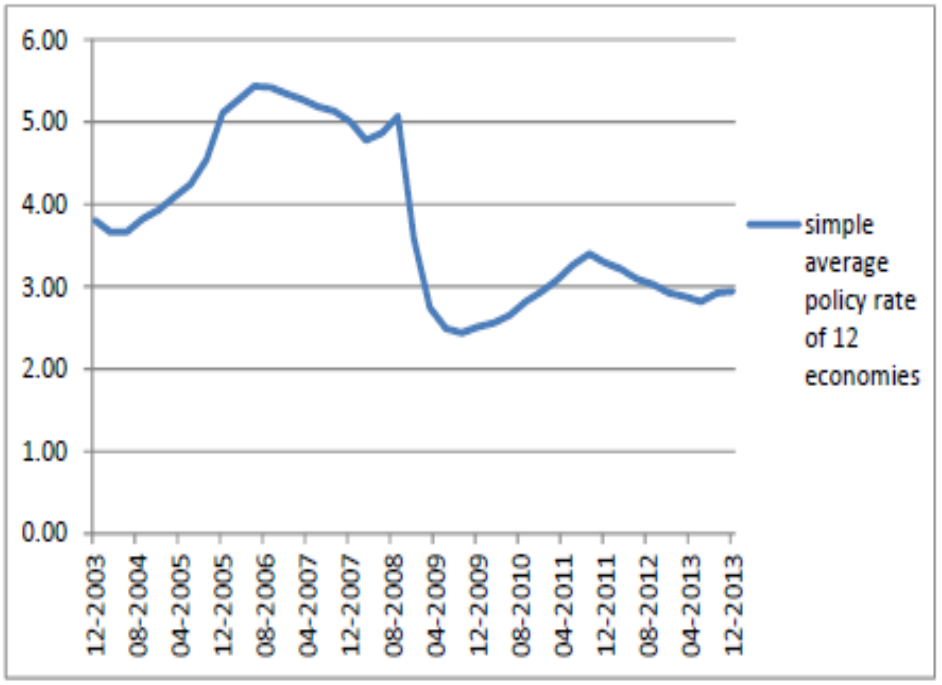
sum of cumulative bond inflow actions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simple average policy rate of 12 economies

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

ESRB
European Systemic Risk Board
European System of Financial Supervision

Seeing the forest through the trees: the ESRB approach

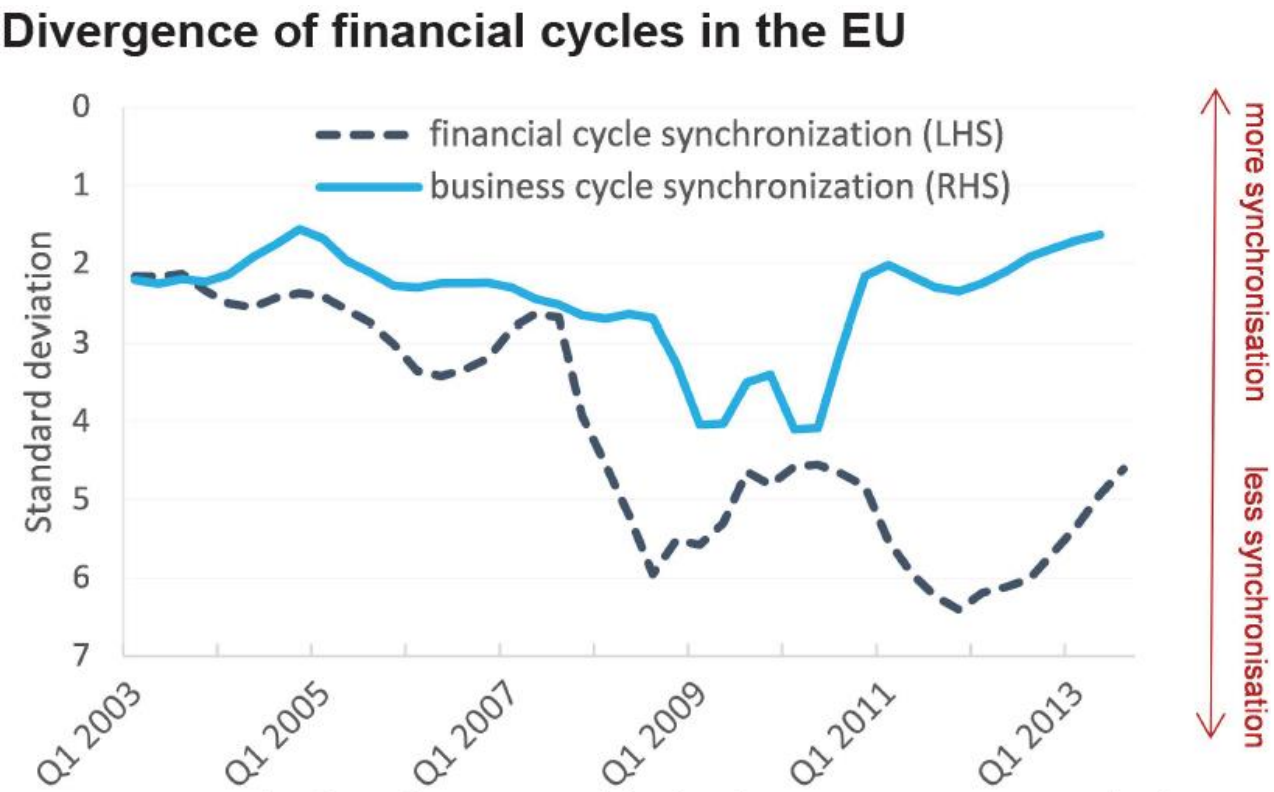
for "Macroprudential Policy—Implementation and Interaction with other Policies"

13 November 2014, Stockholm

Aerdt Houben

Chair, ESRB Instruments Working Group (IWG)

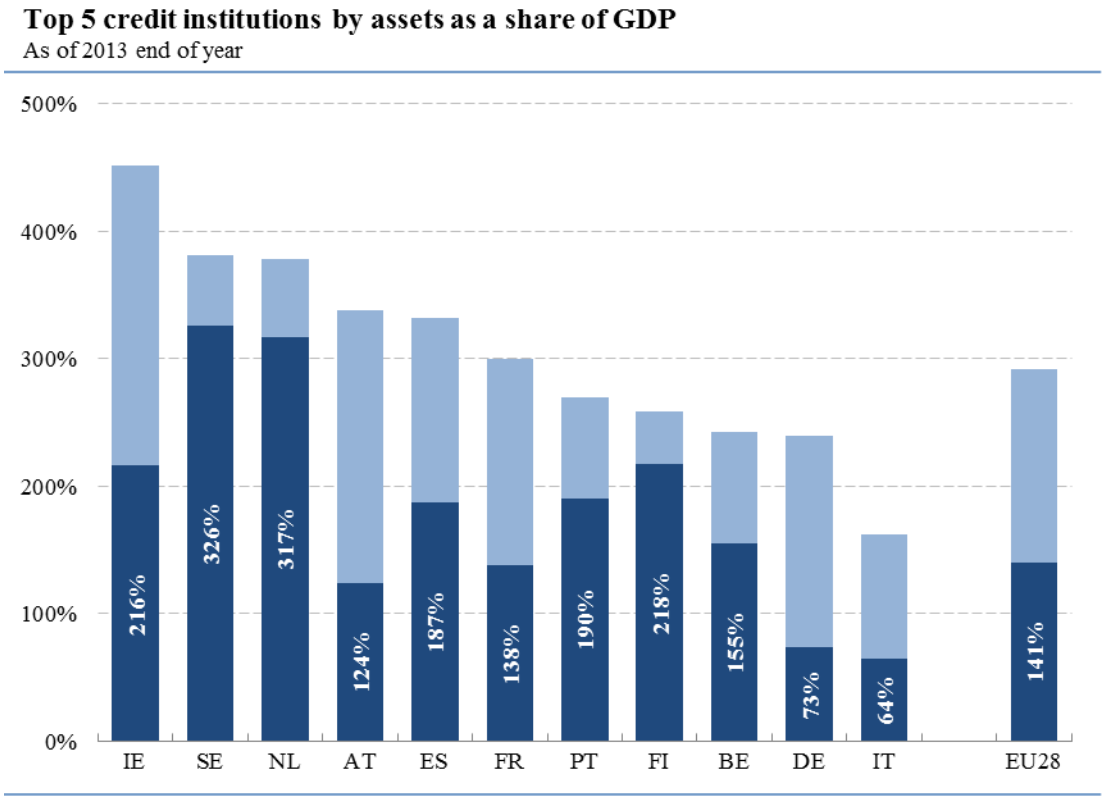
Context: diverging cycles across the EU



Notes: Financial cycle synchronization is defined as the 1-year cross-country standard deviation in the credit-to-GDP gap (source: Alessi and Detken (2011, *EJPE*)). Business cycle synchronization is defined as the 1-year cross-country 2-year standard deviation in the YoY GDP growth rate (source: national accounts).

Source: DNB

…and diverging structures of the financial sector



Source: Eurostat, ECB. (EU28 is a weighted average by country).

Source: DNB

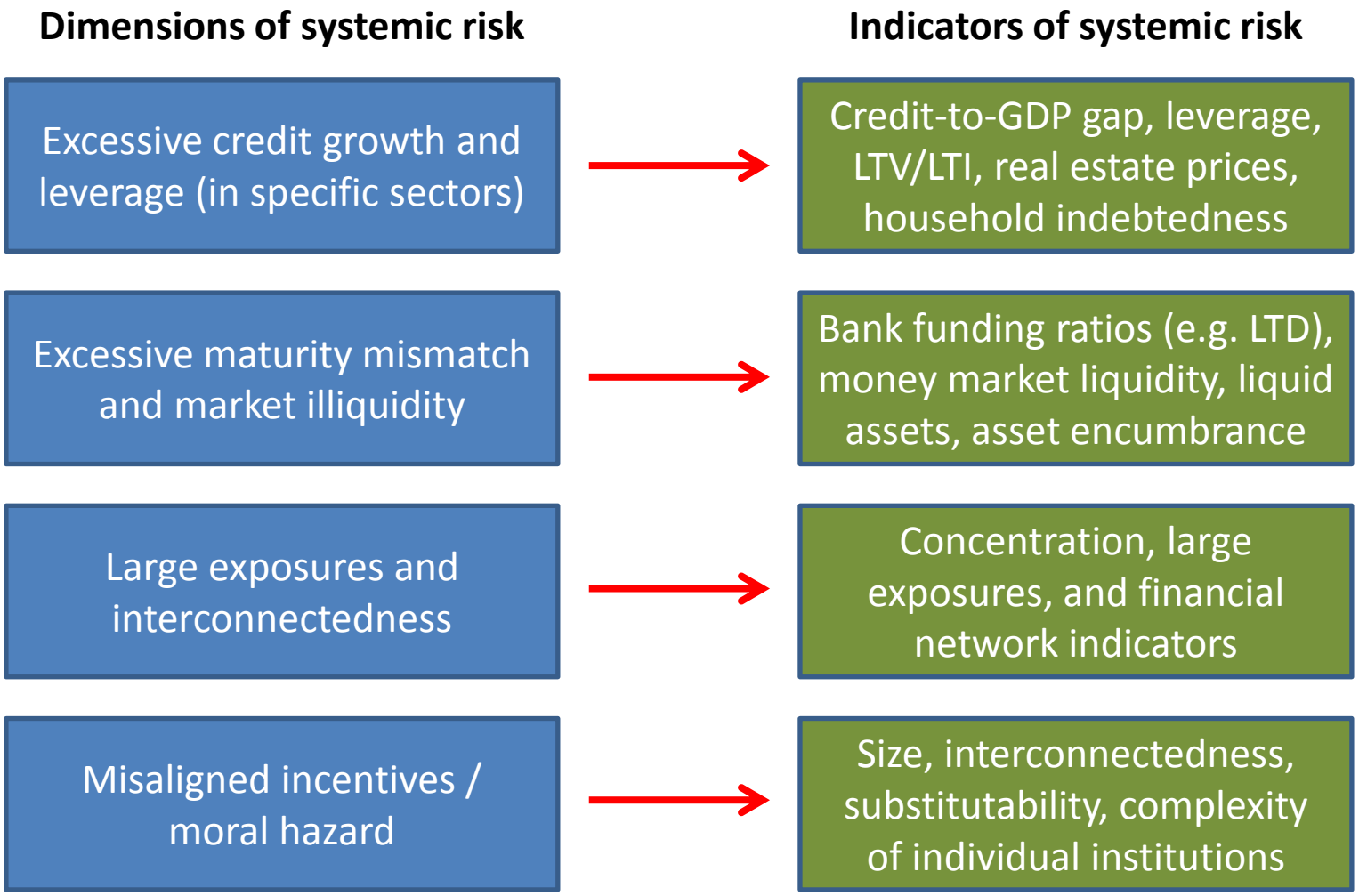
Causes of inaction bias

- Short-term, certain and visible costs versus long-term, uncertain and invisible benefits
- Uncertainty on the nature and severity of systemic risks
- Lack of structure of information on risks
- Lack of experience with instruments
- Too narrow focus (e.g. on only banking)

→Operationalizing policy means structuring information

→Presumptive indicators and thresholds to move from analysis to action

Dimensions and indicators of systemic risk



Source: ESRB Handbook on Operationalising Macro-prudential Policy in the Banking Sector

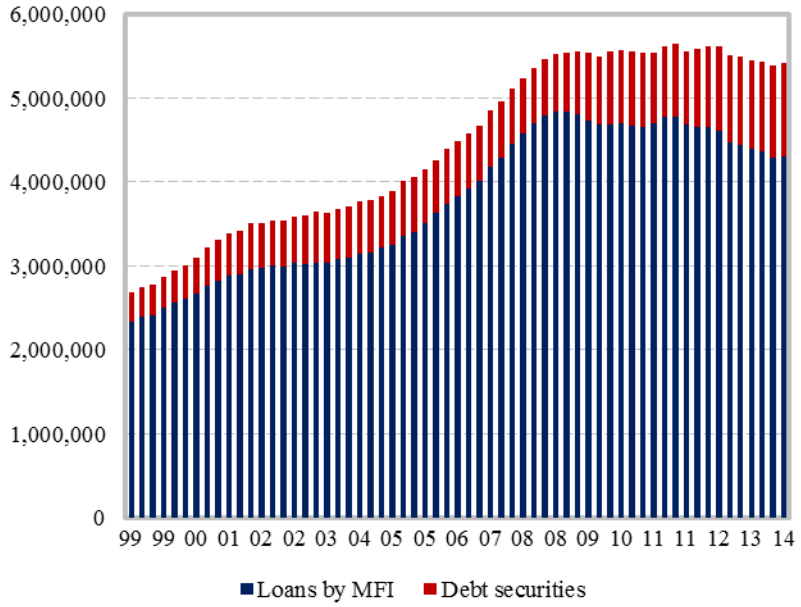
Examples of national measures so far

- **BE:** mortgage risk weight floors, restrictions on trading activities
- **CZ:** SRB/O-SII buffer, CCB activated at 2.5%
- **DE:** measures for resilience of life insurers
- **DK:** SRB, higher risk weights for CRE, LGD floor for mortgages
- **EE:** systemic risk buffer (SRB) for largest banks
- **IE:** LTV/LTI limits for new lending
- **NL:** SRB/O-SII buffer for four largest banks, LTV limits
- **SE:** SRB and P2 add-on, mortgage risk weight floors, CCB of 1%
- **SI:** Gross Loan to Deposit Floor (GLTDF)
- **SK:** non-binding recommendations on retail lending
- **UK:** LTI limits, leverage ratio

...and many more measures in train

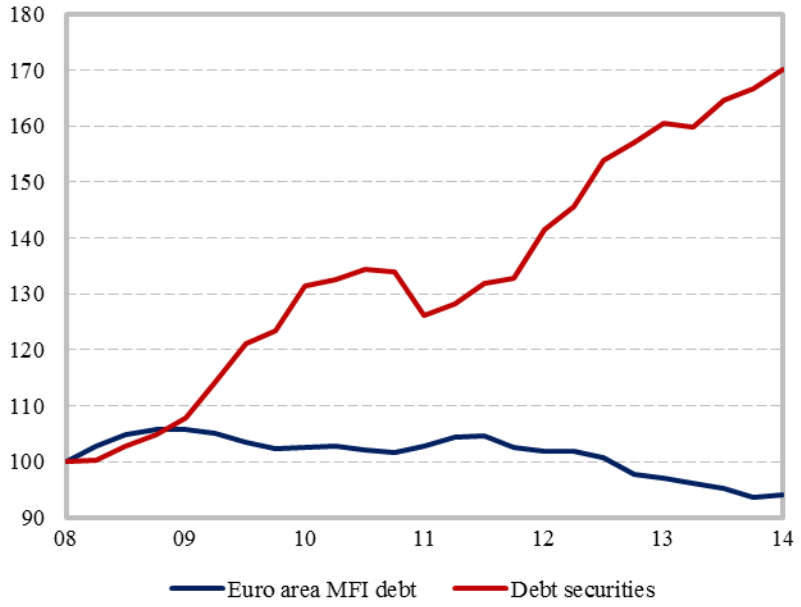
Credit growth shifting from banks to markets

Selected non-financial corporate debt in the Euro Area
Millions of euros.



Source: ECB Euro Area Accounts.

The development of non-financials' debt liabilities since 1999
Indexed, 2008Q1 position = 100. By type of debt.



Source: ECB Euro Area Accounts.

Source: ECB Euro Area accounts

Priority: extension across sectors

Systemic risks of excessive credit and leverage

Sector	Monitoring	Instruments
Banking	Credit to private sector, capital	CCB, risk weights, leverage ratio
Households	LTV, debt	LTV, LTI caps
Shadow banking	Securities financing transactions (SFT), fund leverage	Haircuts floors, leverage restrictions in AIFM?
Corporates	Debt / leverage	*Captured through instruments above (but preferential treatment of government debt)*
Government	Debt public sector	

Priority: extension to shadow banking

Systemic risks in shadow banking sector

Intermediate objective	Monitoring	Instruments
Credit growth/ leverage	Securities financing transactions (SFT), fund leverage	Haircuts floors, leverage restrictions in AIFM?
Maturity mismatch and market illiquidity	Liquidity terms of investment funds and exchange trade funds (ETFs)	Redemption fees and gates, required cash buffers?
Large exposures / interconnectedness	Concentrated links with banks, network importance	Large exposures regime for illiquid products?
Misaligned incentives / moral hazard	Size and market share of asset managers, herding behaviour	Resolution plans, additional cash buffers for NBNI SIFIs?

Priorities for macroprudential policy

- SSM countries moving toward joint monetary policy and microprudential policy

→Need for macroprudential policy to counter diverging cycles

- Structural risks vary widely across EU countries

→National structural measures (SRB, O-SII buffers, LTV/LTI, etc.)

- Systemic risks from non-banks, “capital markets union” in the EU

→New instruments needed not only for banks, but also for economy-wide leverage and shadow banking

Macroprudential policies in Switzerland

Jean-Pierre Danthine
Vice Chairman of the Governing Board
Swiss National Bank

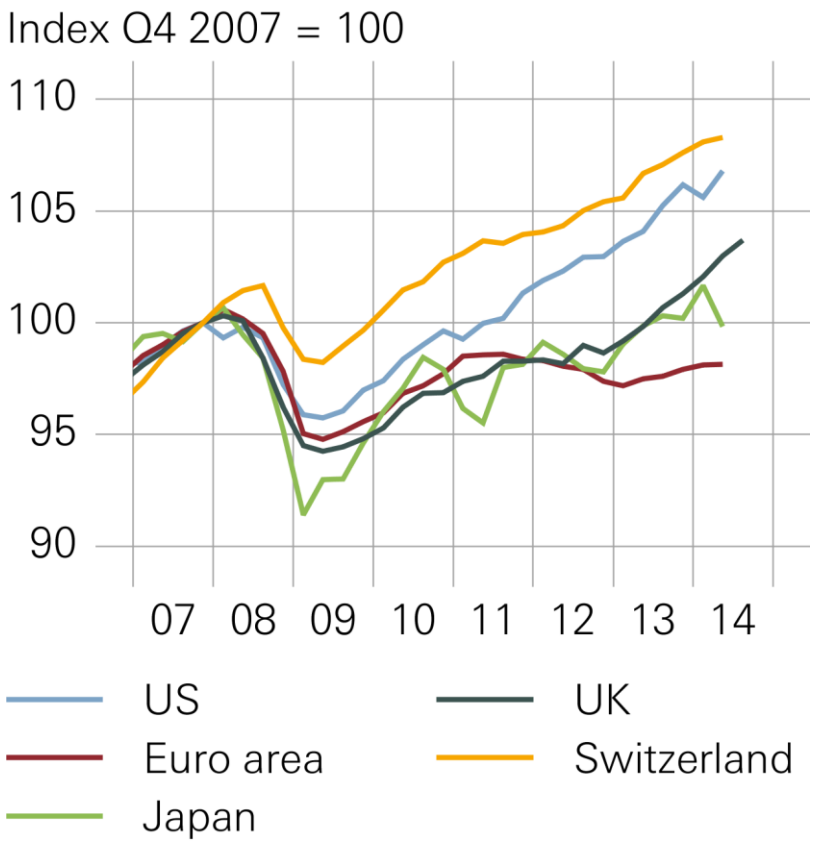
Riksbank-IMF conference: Macroprudential Policy - Implementation and Interaction with other Policies
Stockholm, 13 November 2014

SCHWEIZERISCHE NATIONALBANK
BANQUE NATIONALE SUISSE
BANCA NAZIONALE SVIZZERA
BANCA NAZIUNALA SVIZRA
SWISS NATIONAL BANK

Context: Macroeconomic situation in Switzerland

Less severe recession, more robust recovery

REAL GDP, LEVEL



GROWTH RATES Q3 2009 – Q2 2014

	average change (qoq, annualized)	**cumulative change**
US	2.2%	+11.2%
Switzerland	2%	+9.4%
UK	1.8%	+9.0%
Japan	1.5%	+7.3%
Euro area	0.7%	+3.2%

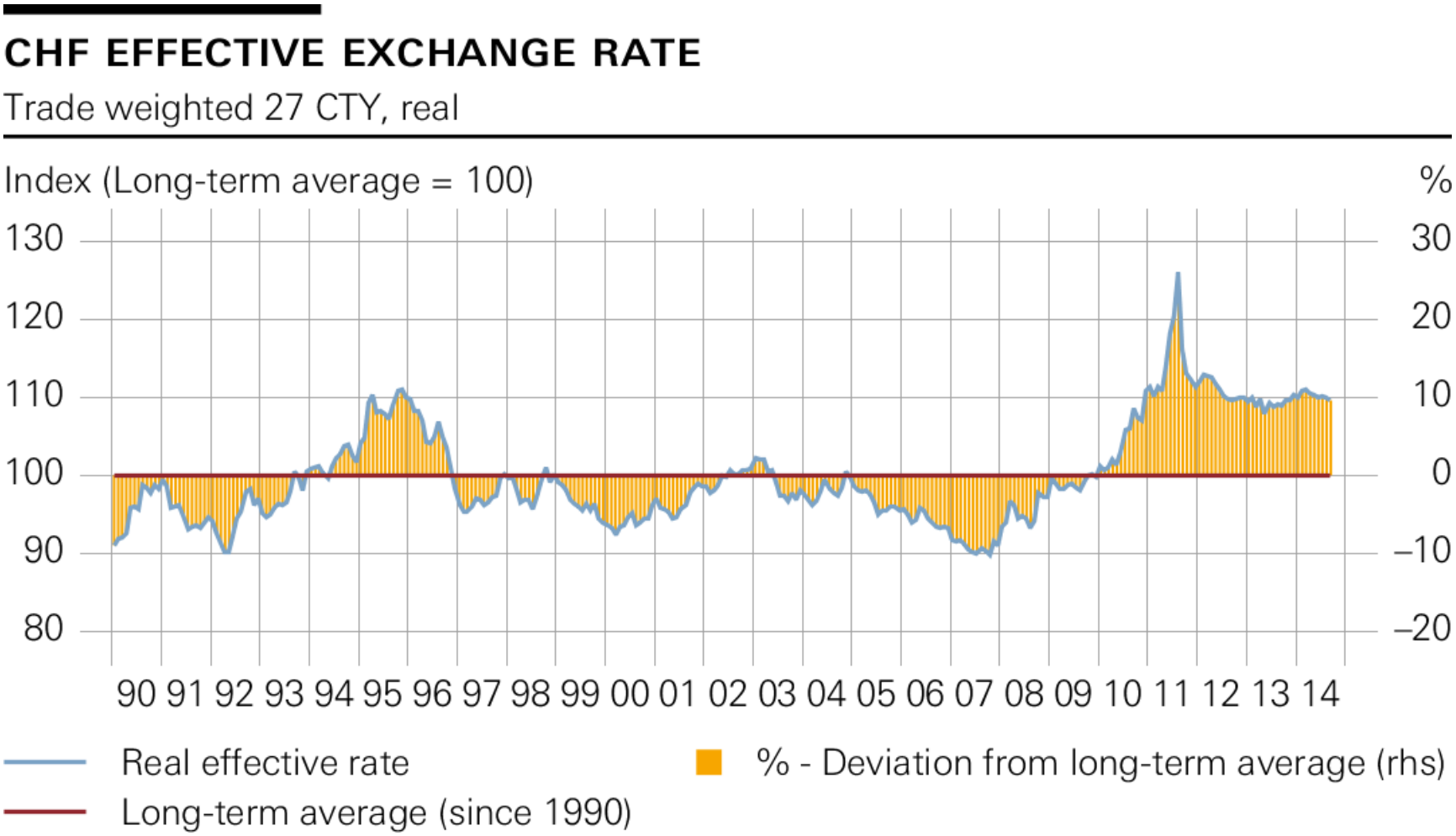
Source: SNB

Interest rates at very low levels

INTEREST RATES IN SWITZERLAND

Source: SNB

Persistent overvaluation of the Swiss franc…

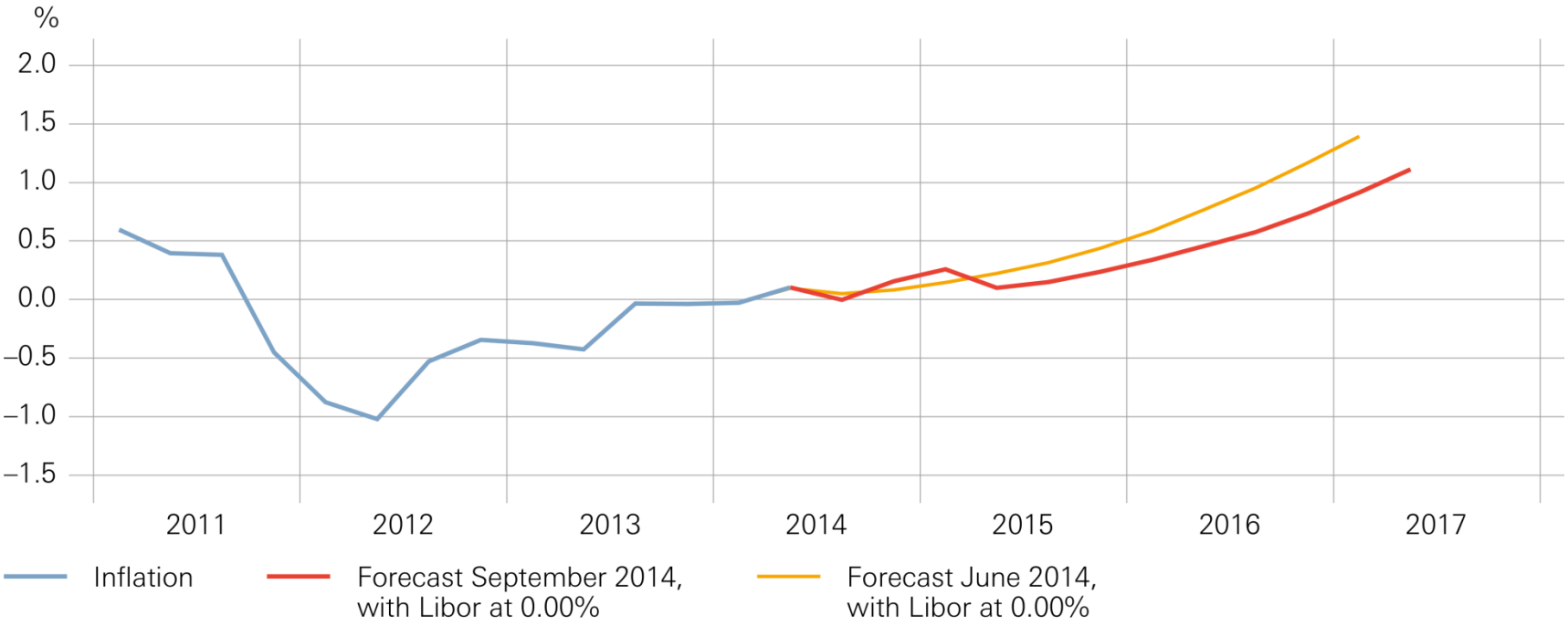


Sources: SNB, BIS

…and subdued inflation outlook invalidate interest rate tool

CONDITIONAL INFLATION FORECAST OF SEPTEMBER 2014

Year-on-year change in Swiss consumer price index in percent

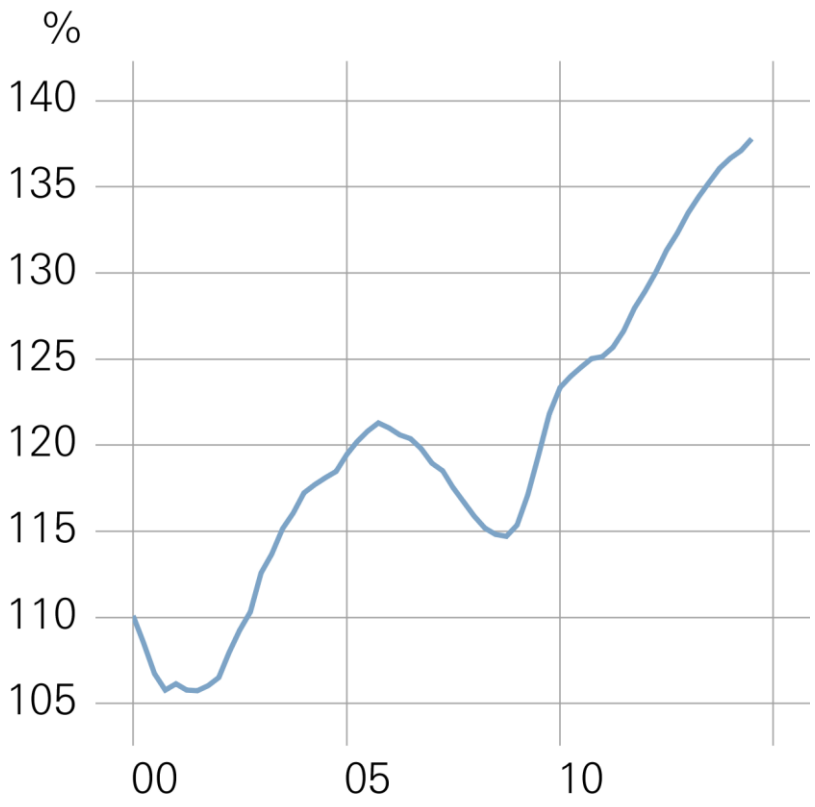


Source: SNB

Developments on the mortgage and real estate markets

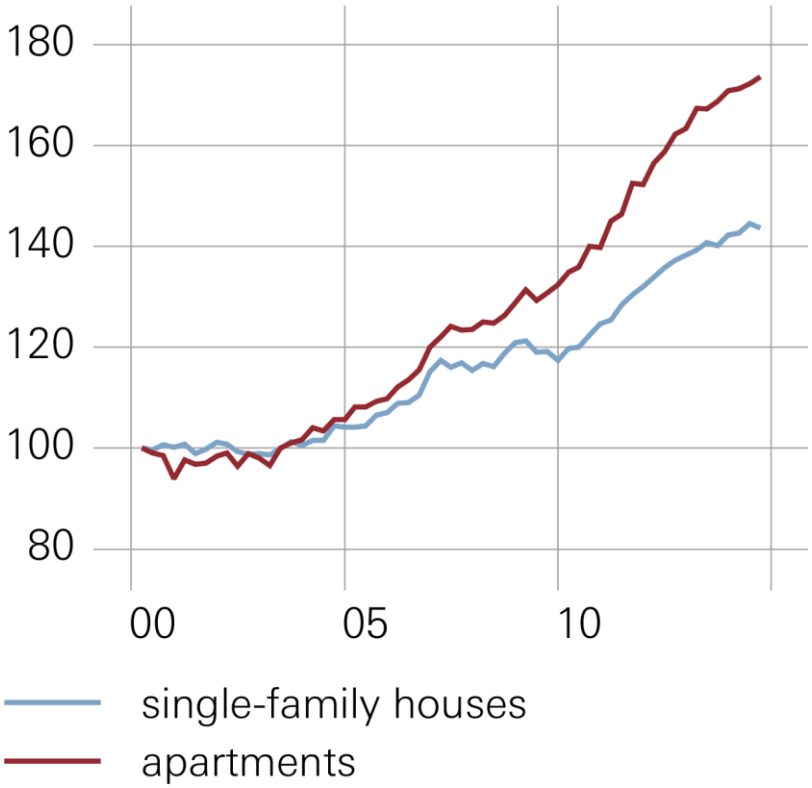
A sustained momentum on mortgage and real estate markets since early 2000s

MORTGAGES-TO-GDP



TRANSACTION PRICE INDICES

in real terms, indexed to Q1/2000 = 100

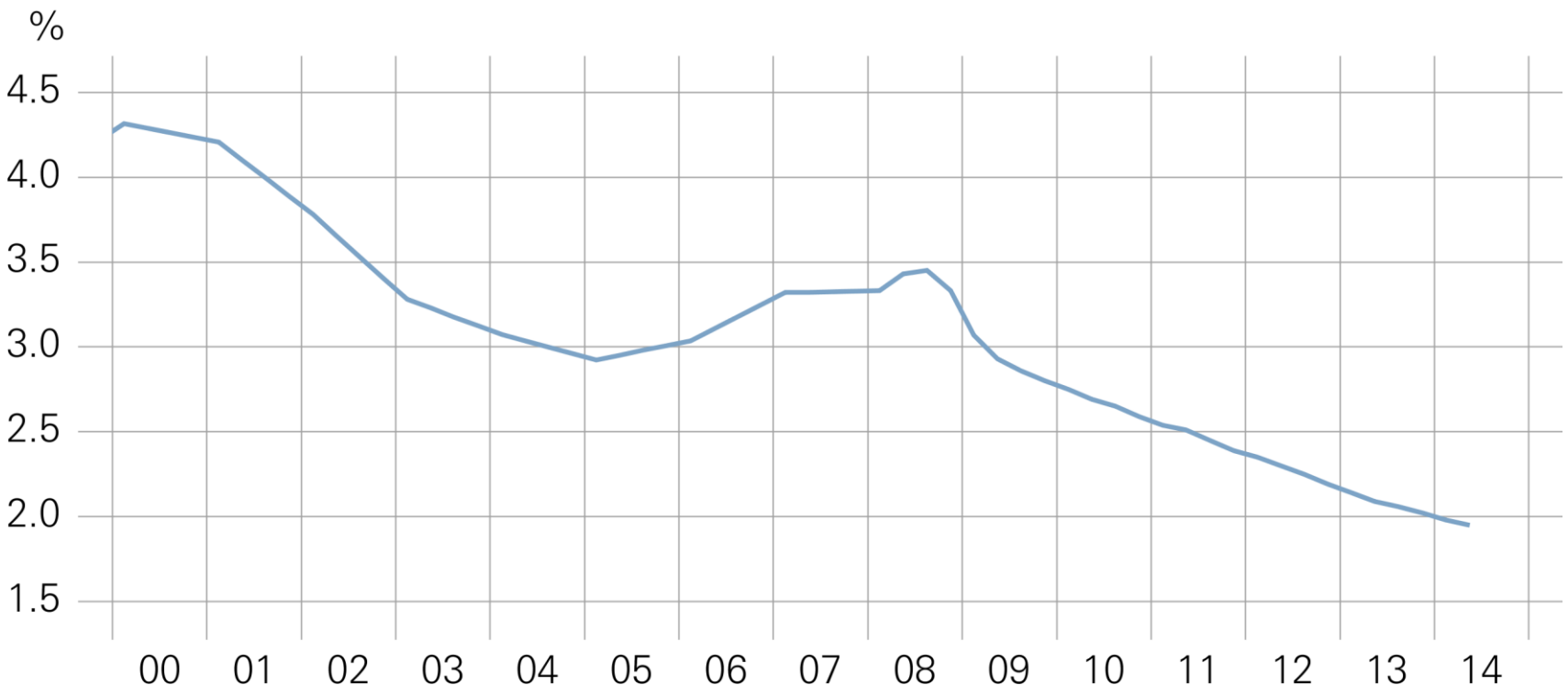


Sources: SNB, FSO, SECO, Wüest & Partner

Dynamics supported by very low mortgage interest rates…

MORTGAGE INTEREST RATE

weighted average

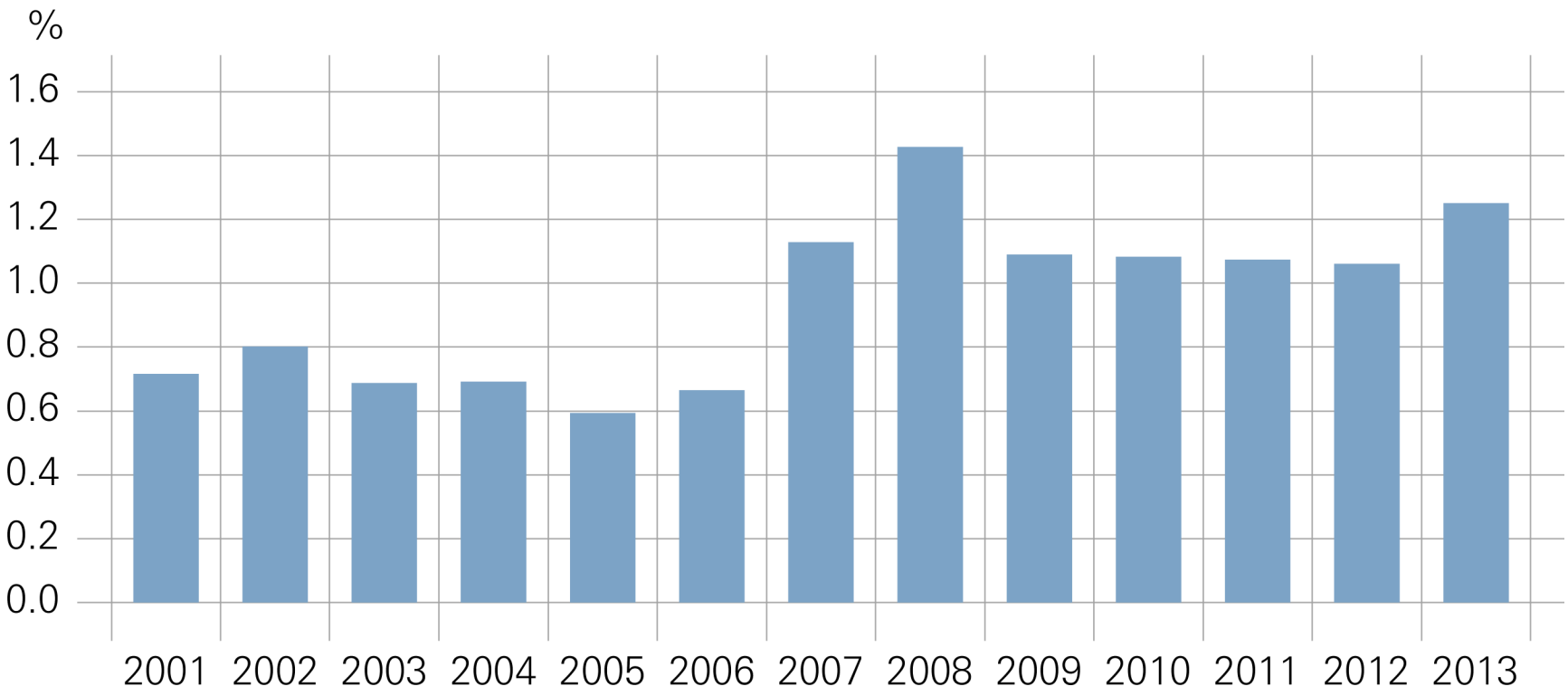


Source: SNB

…strong housing demand…

POPULATION GROWTH

annual change

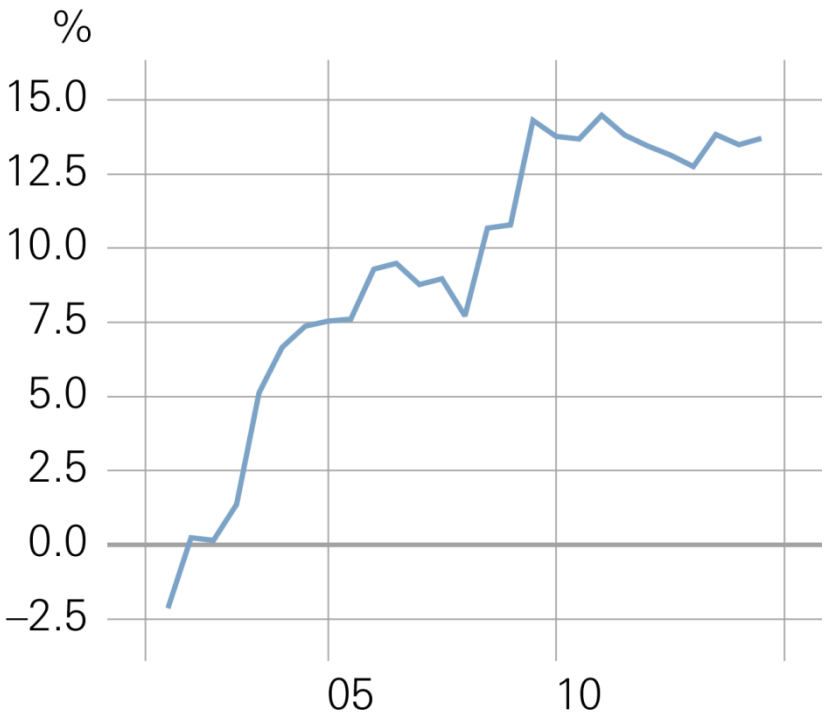


Source: FSO

…and high risk appetite by lenders

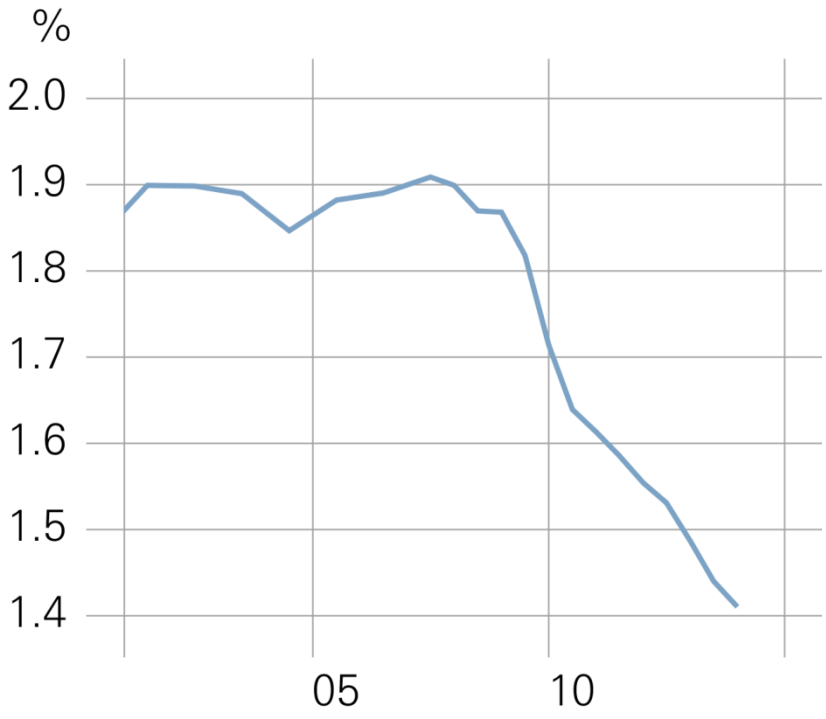
INTEREST RATE RISK

NPV losses relative to capital for +200bp, domestically oriented banks



INTEREST RATE MARGIN

Weighted average, semi-annual data, domestically oriented banks



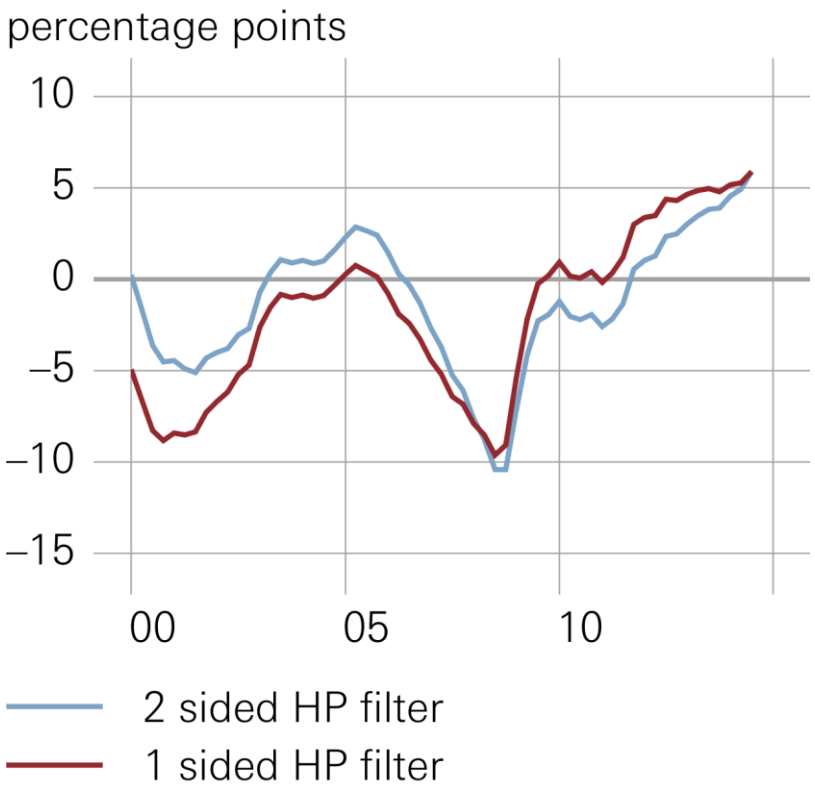
Sources: SNB, Finma

Macroprudential policies in Switzerland

Assessment: Significant imbalances according to standard indicators

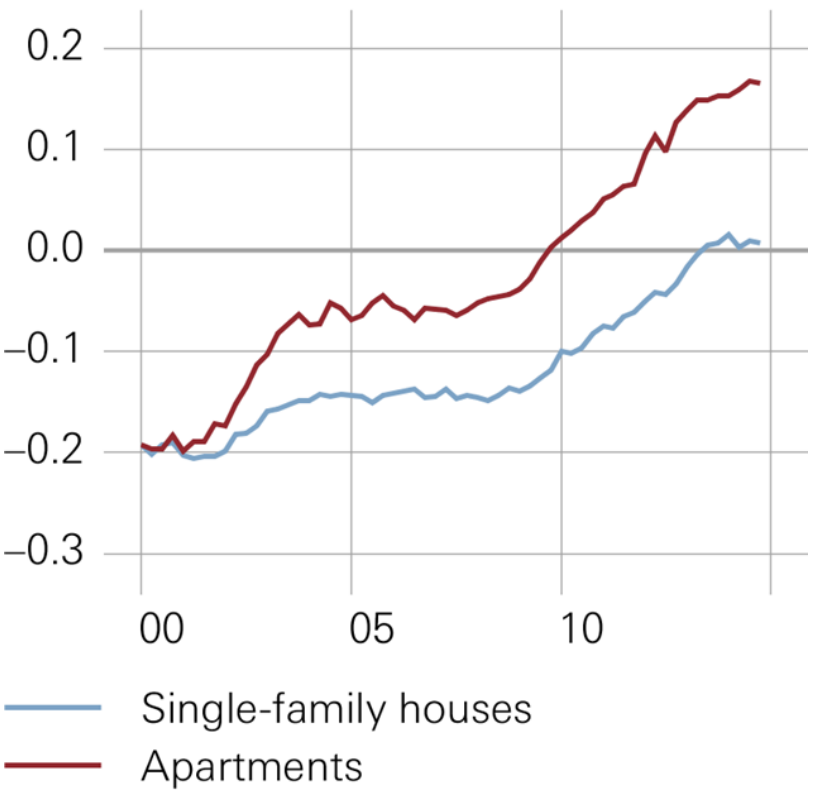
MORTGAGES-TO-GDP: GAP

BIS reference indicator



PRICE-TO-RENT: ASKING PRICES

Deviation from long term average

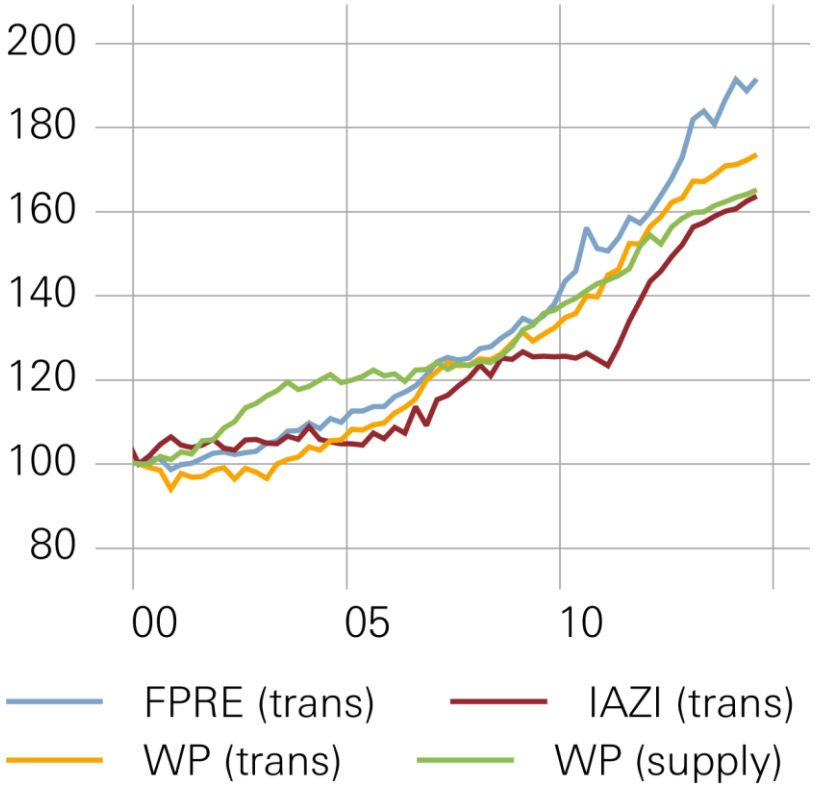


Sources: SNB, Wüest & Partner

Well-known difficulties in real-time identification of unsustainable developments

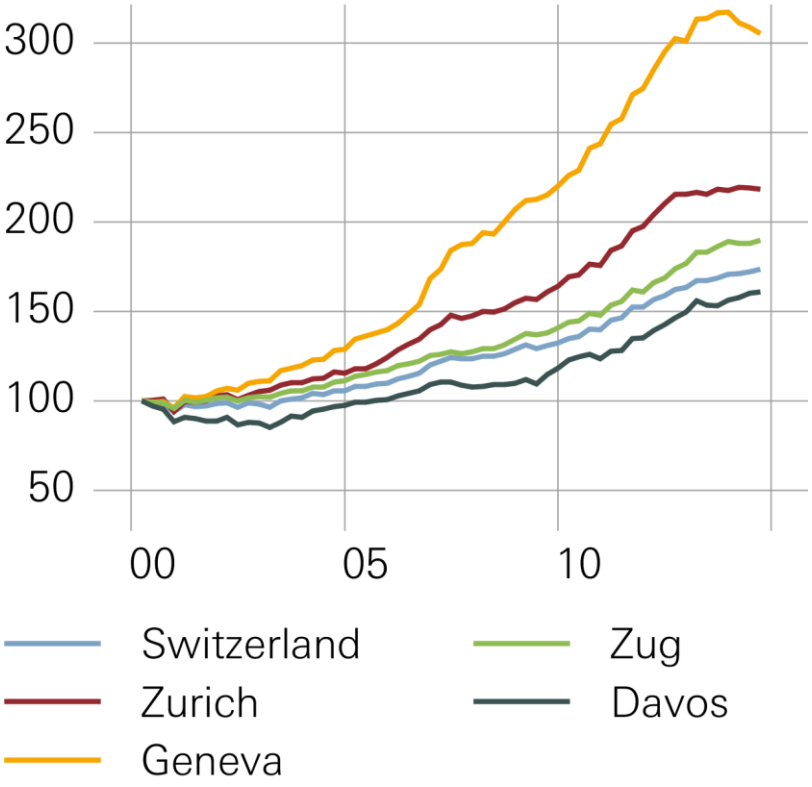
APARTMENT PRICE INDICES

In real terms, Q1/2000 = 100



REGIONAL HOTSPOTS

Apartments: real transaction prices



Sources: FSO, Fahrländer Partner, IAZI, Wüest & Partner

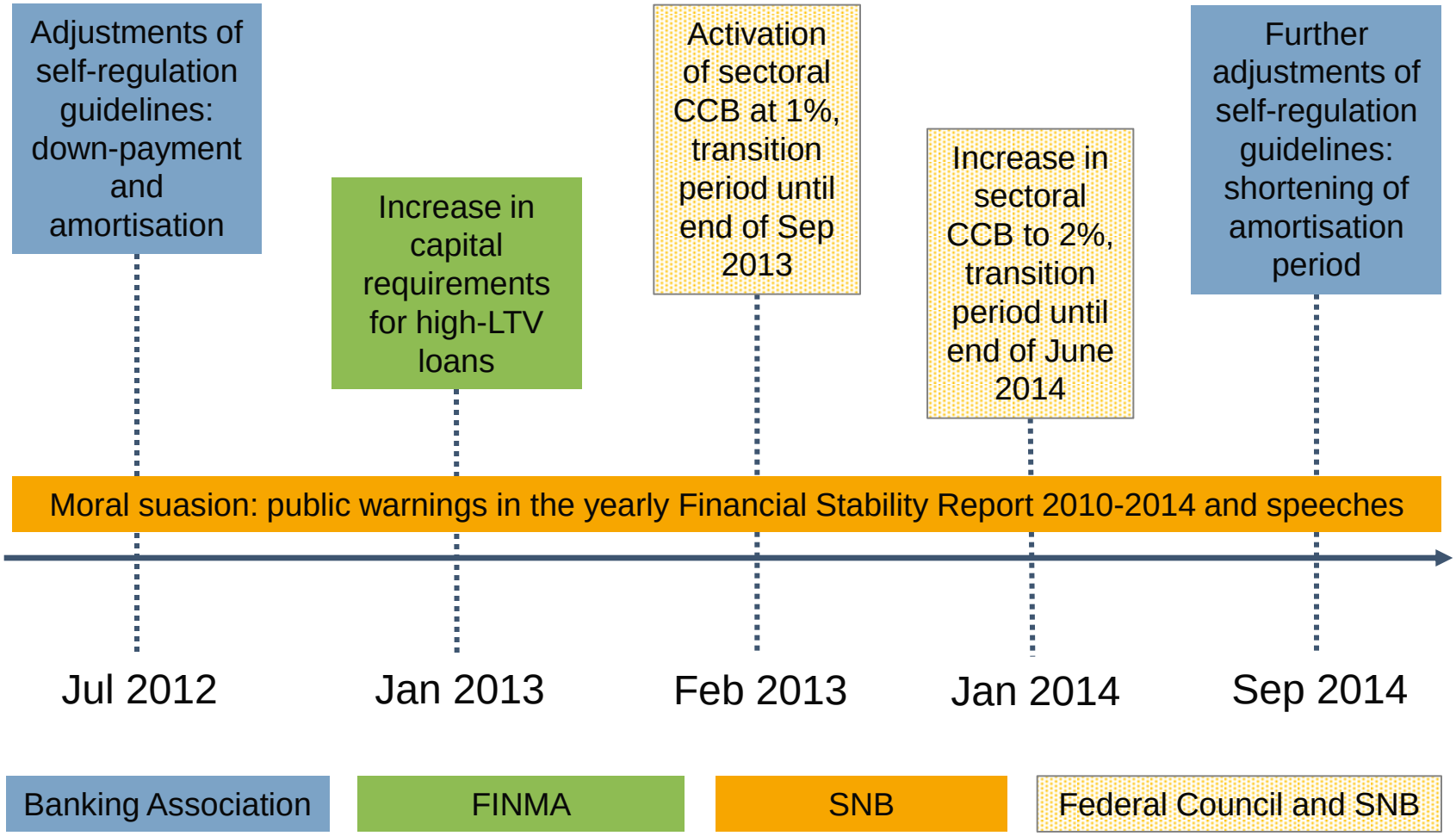
Institutional set-up

- No single macroprudential authority or Financial Stability Board
  - Division of responsibilities
  - Central bank (SNB) the only institution with an explicit financial stability mandate (“contribute”)
- SNB’s instruments
  - Communication/moral suasion
  - Crisis management – liquidity support
  - Regulatory framework: input/expertise, but no formal mandate
  - CCB: formal responsibility, but no decision taking power

Division of responsibilities – the CCB example

- SNB *proposes* activation, modification and deactivation of the CCB
- Federal Council *decides* upon SNB proposition after *consultation* of the financial market supervisory authority
- Procedure
  - The SNB conducts a quarterly assessment of the developments in the mortgage and real estate markets
  - If the SNB determines that it is necessary to activate or adjust the level of the buffer, the SNB submits an official proposal to the Federal Council
  - FINMA supervises the implementation of the CCB at individual bank level

Macroprudential in practice: broad set of measures taken by different agents acting on different levers



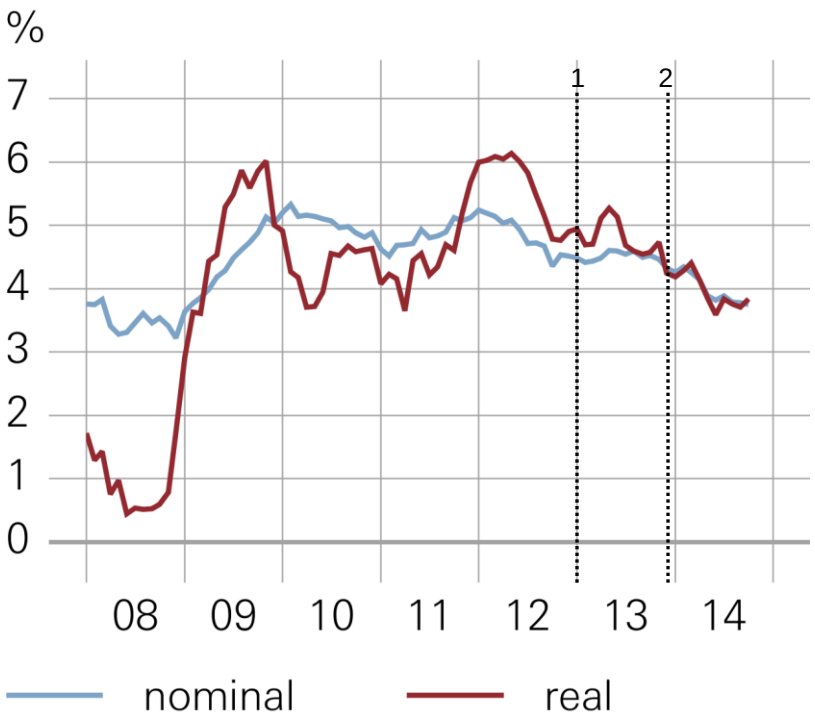
Effectiveness – evidence so far (I)

- Activation and increase of CCB: Banks responded by increasing capital, making them more resilient
- Difficult to assess whether mortgage lending is affected
  - No counterfactual
  - Impact of individual measures cannot be assessed
    - CCB: may impact lending – depends on size/design
    - Self-regulation: down-payment rule likely to impact demand for housing

Effectiveness – evidence so far (II)

MORTGAGE GROWTH

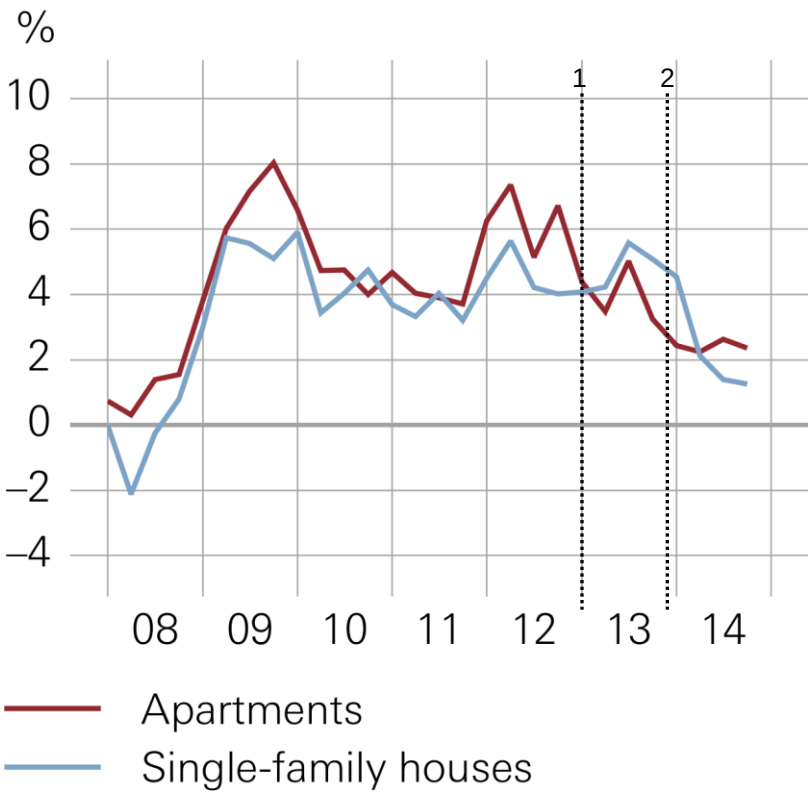
Annual growth rate, monthly data



[1] Activation of CCB [2] Increase to 2%

REAL ESTATE PRICE GROWTH

asking price indices, real annual rates



Sources: SNB, Wüest & Partner

CCB methodology

Basic characteristics of Swiss CCB

- The CCB can be applied on a broad basis or to exposures to specific sectors
- The maximum level of the CCB is set at 2.5% of total domestic RWA
  - On aggregate, mortgage credit amount to about 50% of domestic RWA
- Banks are given between 3 and 12 months to fulfill the requirements, depending on assessment of the situation
  - Transition period at first activation: 8 months
  - Transition period for the increase: 5 months
- First experience regarding the frequency of CCB decisions: one decision per year is realistic

CCB decision-making process: A ‘guided discretion’ approach

- The approach combines a rule component…
  - Mechanic guidance built on 4 key indicators
- …with a discretionary component
  - The mechanic guidance can be ‘overruled’ based on an analysis of additional (“secondary”) indicators
  - Discretion important given the substantial uncertainty and complexity of measuring imbalances in the credit market

Key indicators

- The key indicators play a major role in the decision regarding turning the CCB on/off and regarding its size
- SNB relies on a combination of mortgage credit variables and residential real estate price indicators
- Pragmatism needed: only limited experience with indicators to assess position on the financial cycle
  - Calibration is, necessarily, based on one crisis only

Additional indicators

- Monitored on a regular basis to provide information used as part of the discretionary decision making process
- The greater the heterogeneity among the key indicators, the more weight is put on the discretionary component
- Additional indicators include
  - Indicators of bank risk
  - Alternative measures of credit conditions and real estate prices
  - Measures of general economic conditions
  - Soft indicators: qualitative survey data from SNB's regional network

Thank you for your attention!

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BANCA NAZIUNALA SVIZRA
SWISS NATIONAL BANK

DEVELOPING A FRAMEWORK - EXPERIENCE FROM NORWAY

AMUND HOLMSEN

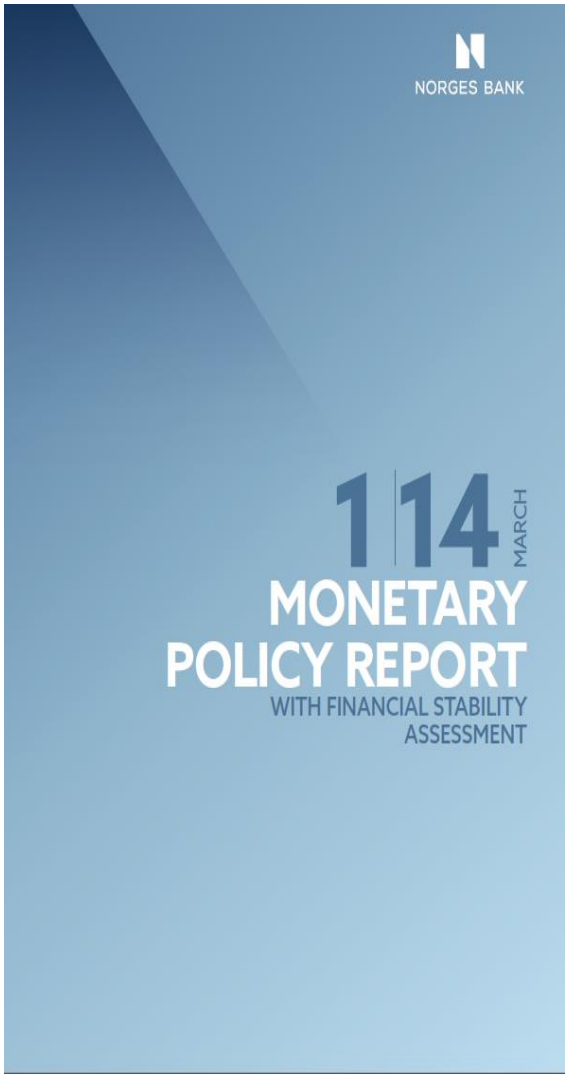
STOCKHOLM 13 NOVEMBER 2014

NORGES BANK

Institutional set-up for the CCB in Norway

Basis for decision →

Advice



Regulation on the countercyclical buffer

"The purpose of the countercyclical capital buffer is to strengthen the financial soundness of banks and their resilience to loan losses in a future downturn and mitigate the risk that banks will amplify a downturn by reducing their lending."

Norwegian regulation on the CCB (Section 1)

Formulating a macroprudential policy

- Explicit criteria for appropriate policy
- Four key indicators communicated
- Transparency about policy intentions – management of expectations?

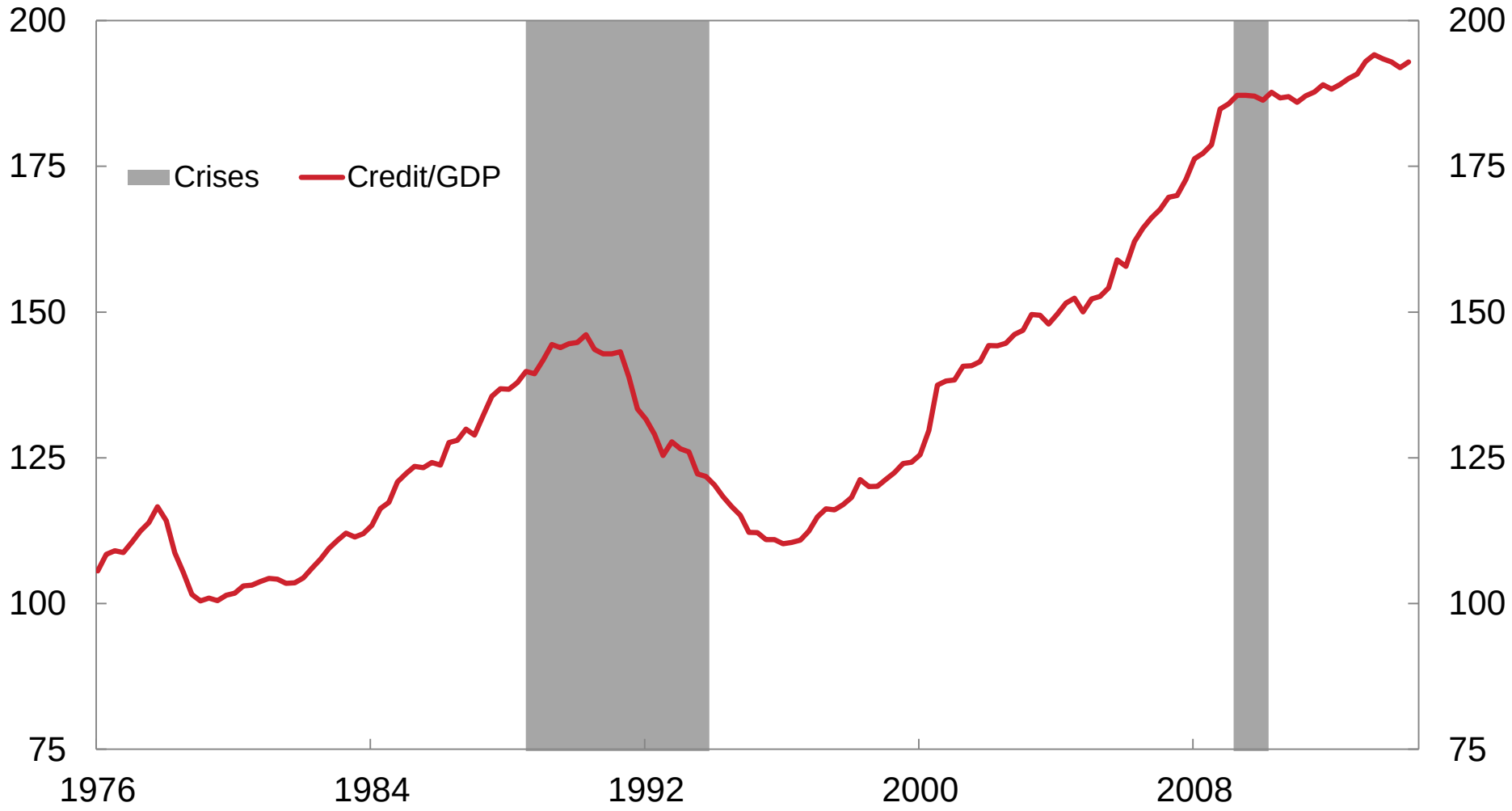
➔ Credibility and accountability

Policy criteria

Interest rate path	Countercyclical buffer
1. The inflation target is achieved 2. Flexible IT – reasonable tradeoff between inflation and the real economy 3. Monetary policy is robust – reduce the risk of financial imbalances…	1. Banks should become more resilient during an upturn 2. The size of the buffer should be viewed in the light of other requirements applying to banks 3. Stress in the financial system should be alleviated

Credit as a share of GDP

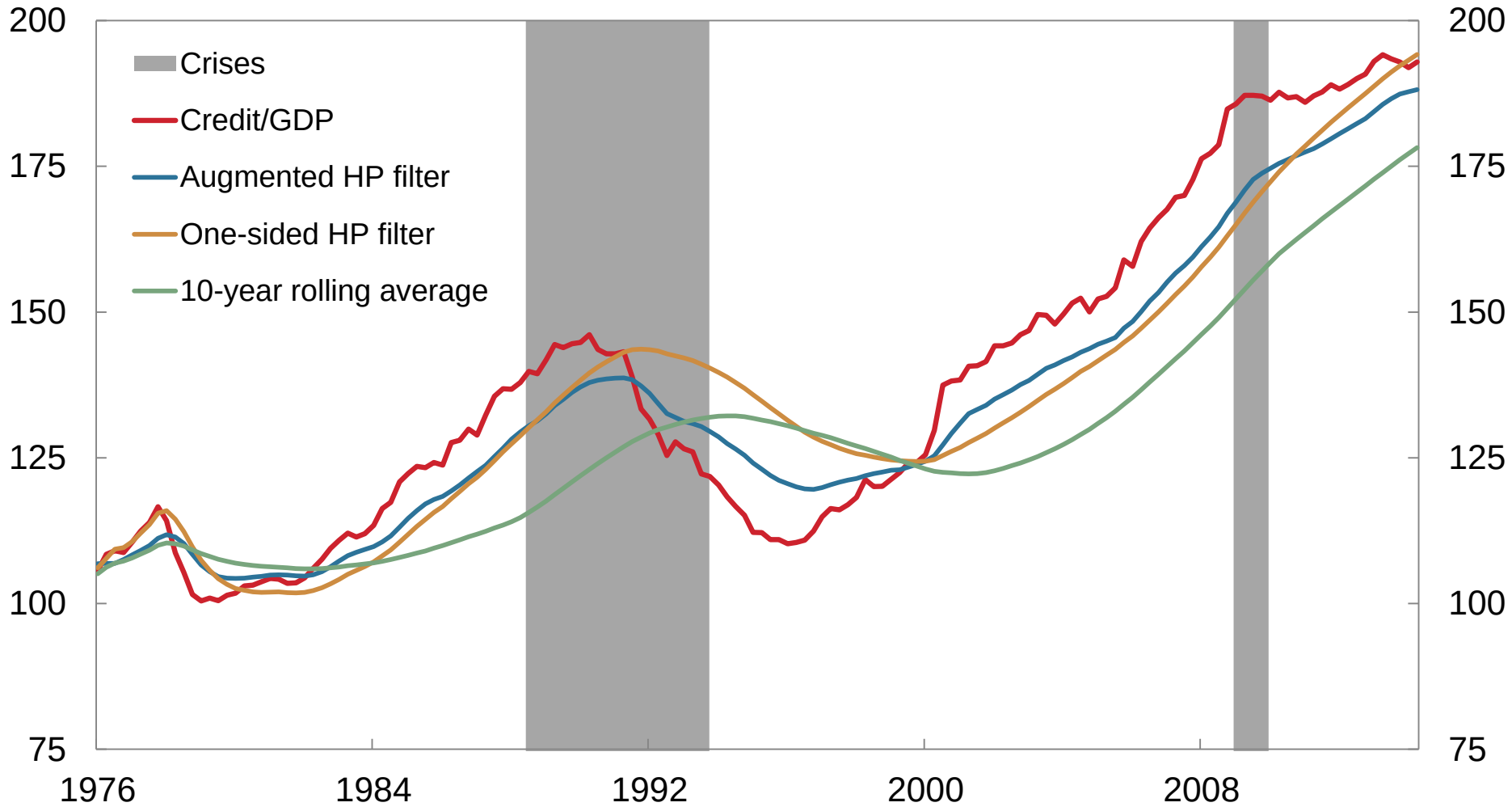
Percent. 1976 Q1 – 2014 Q2



Sources: Statistics Norway, IMF and Norges Bank

Credit as a share of GDP

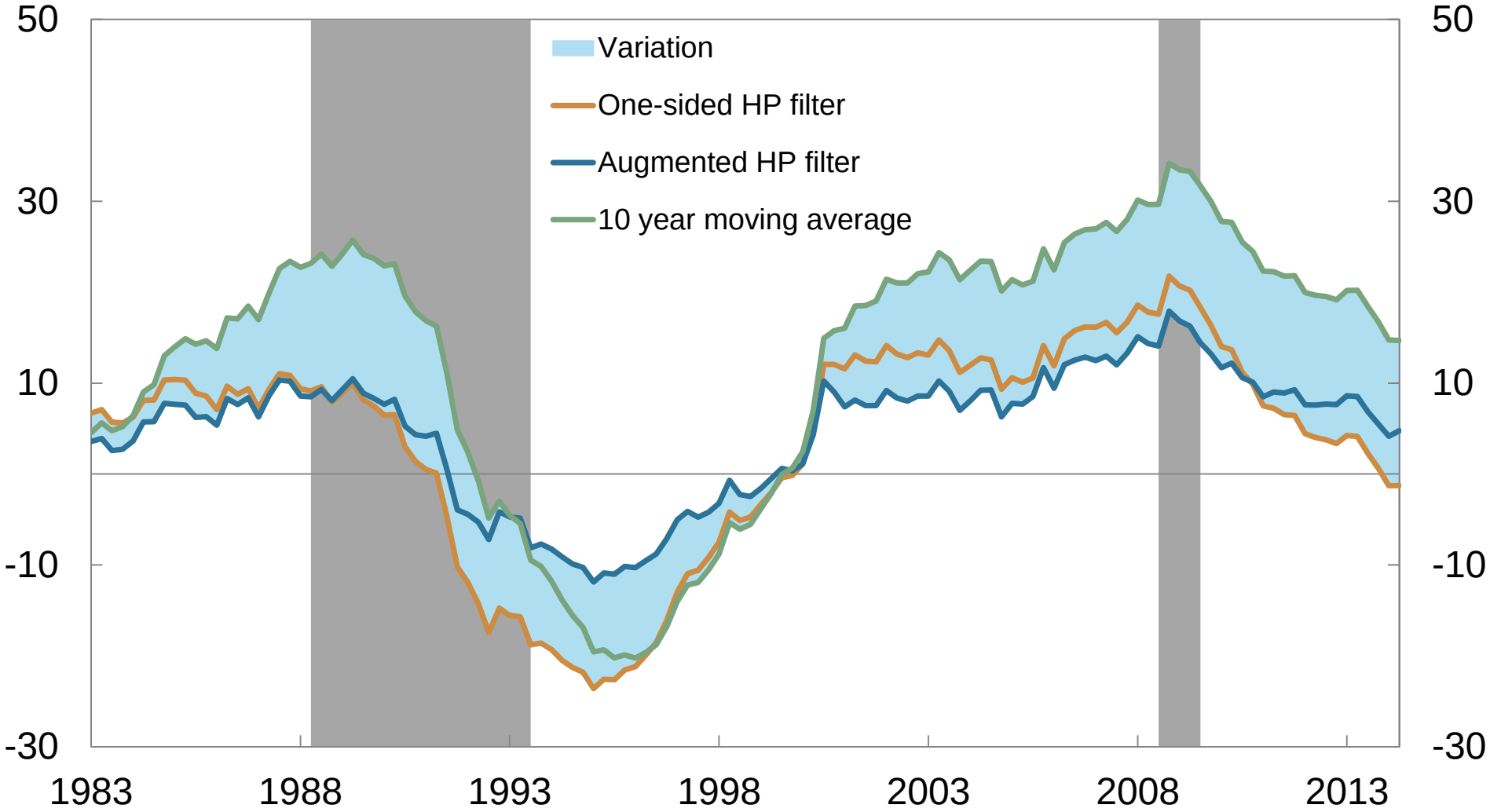
Percent. 1976 Q1 – 2014 Q2



Sources: Statistics Norway, IMF and Norges Bank

Credit/GDP – deviation from trend

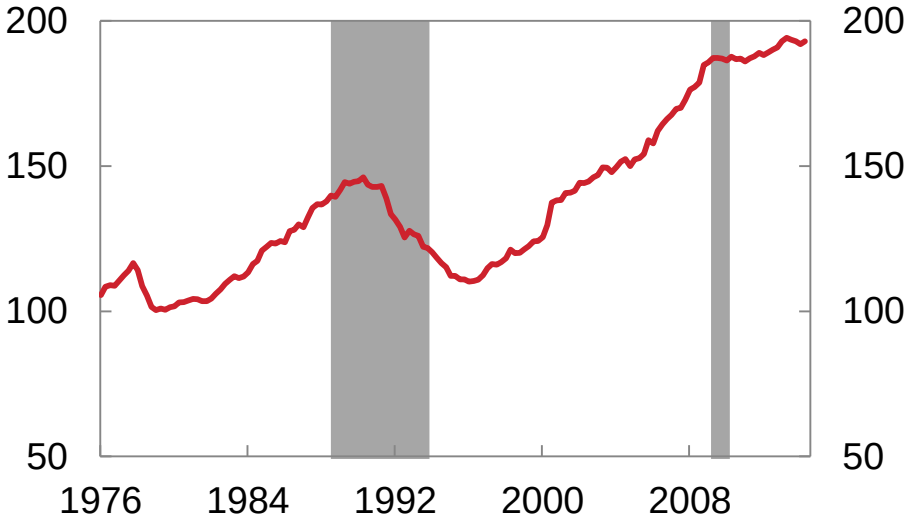
Percentage points. 1983 Q1 – 2014 Q2



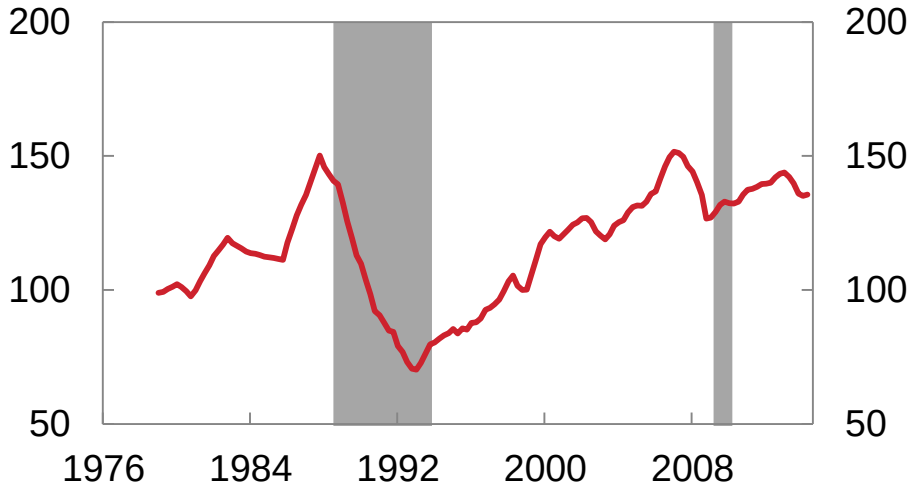
Sources: Statistics Norway, IMF and Norges Bank

Key indicators

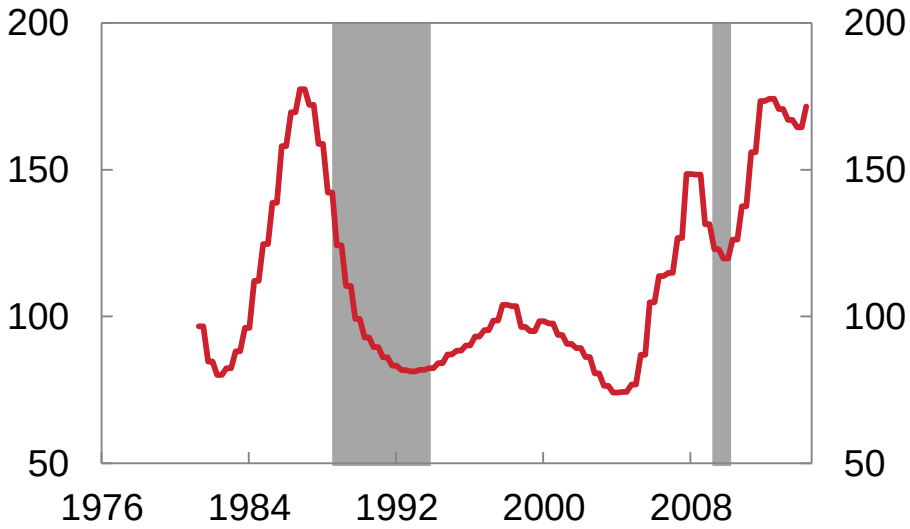
Credit / GDP



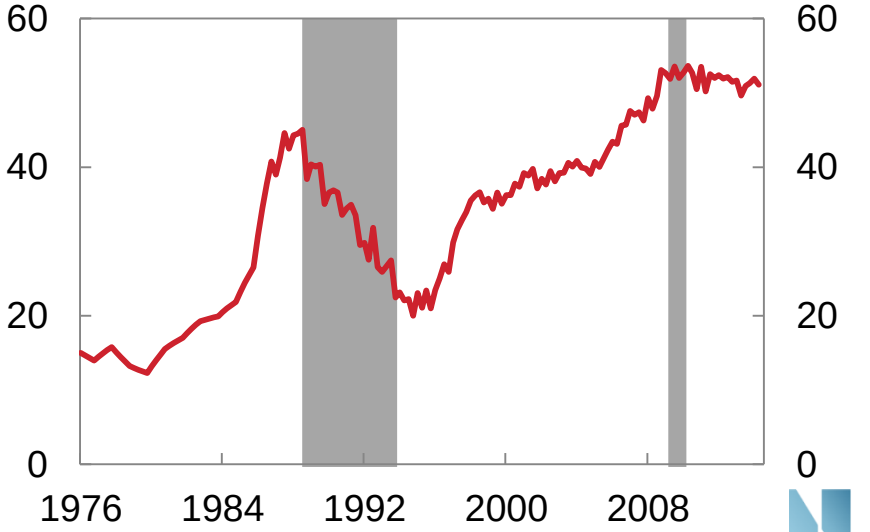
House prices / disposable income



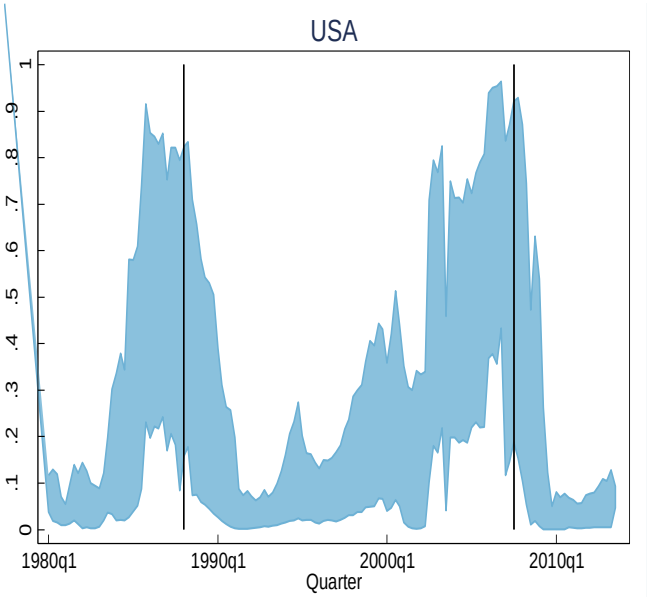
Real commercial property prices

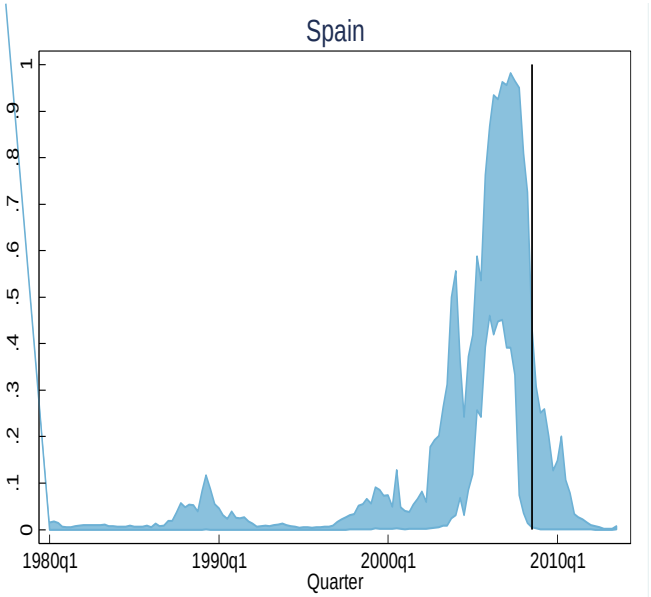


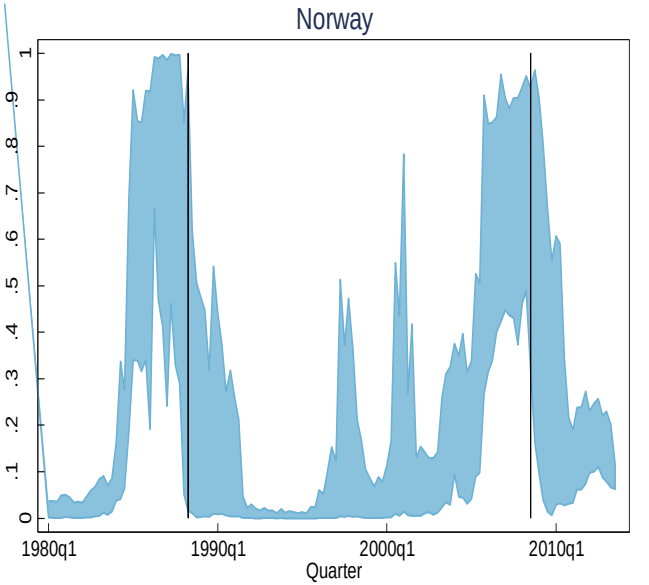
Banks' wholesale funding ratio

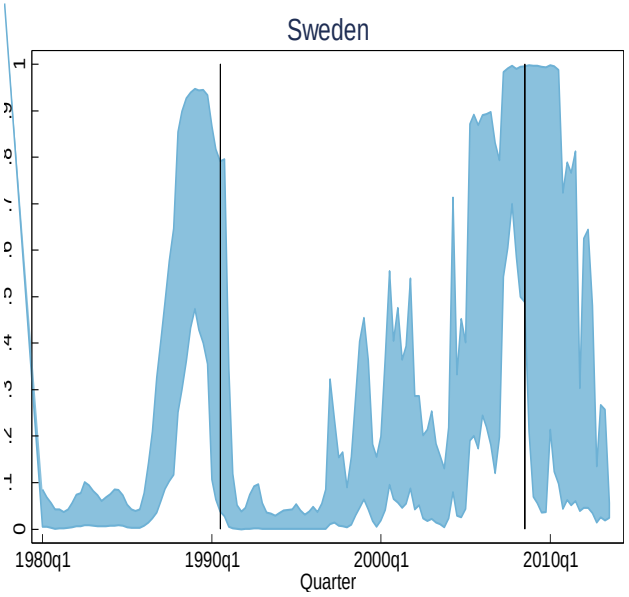


Crisis probabilities







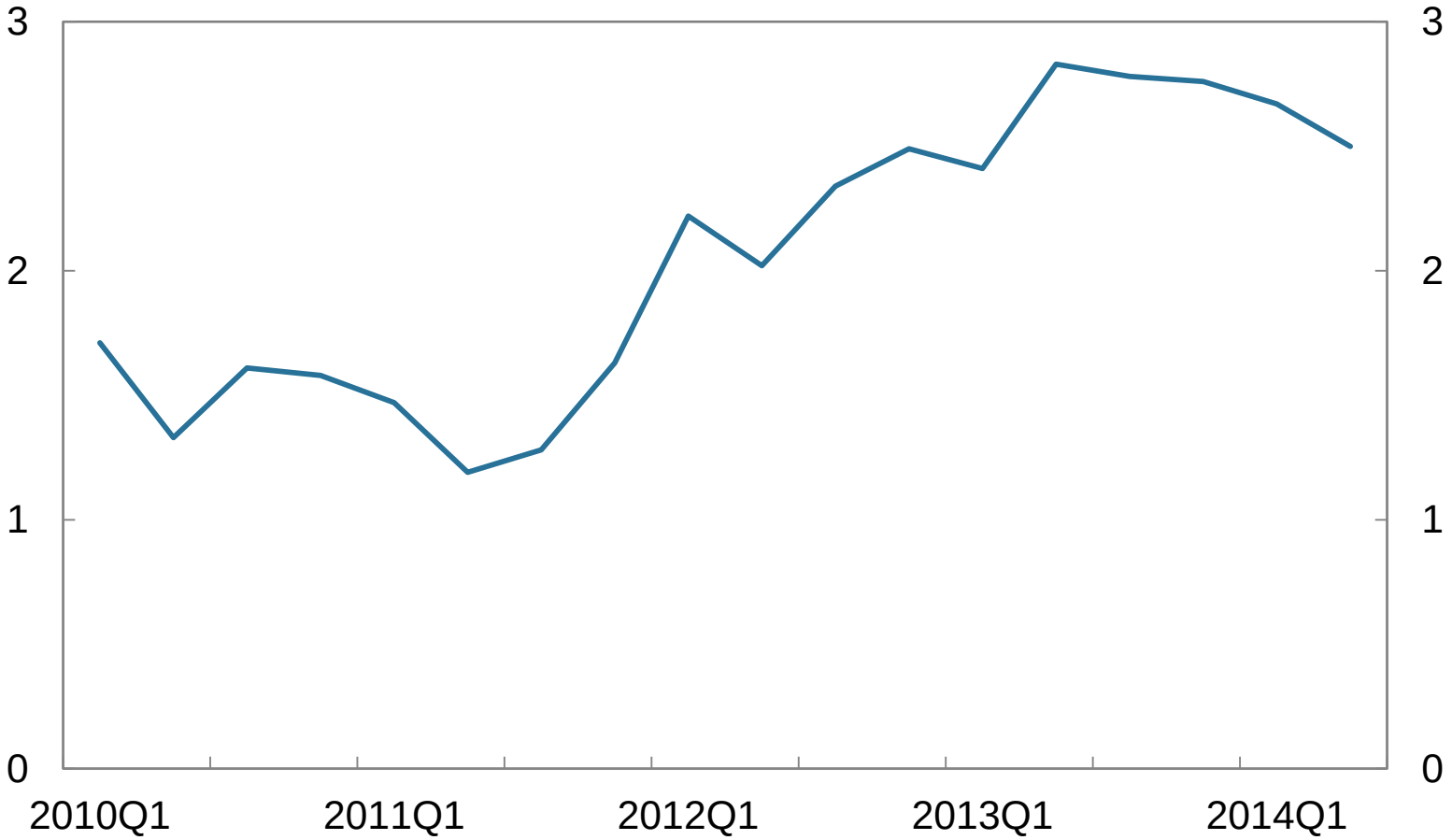


Source: Anundsen et al., ”Bubbles and crises: The role of house prices and credit”, forthcoming *Norges Bank Working Paper*

Is it working?

Lending margin on loans to households

Percentage points. 2010 Q1 – 2014 Q2



Source: Statistics Norway

DEVELOPING A FRAMEWORK - EXPERIENCE FROM NORWAY

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