



BANK FOR INTERNATIONAL SETTLEMENTS

# Maintaining financial stability: What role for monetary policy?

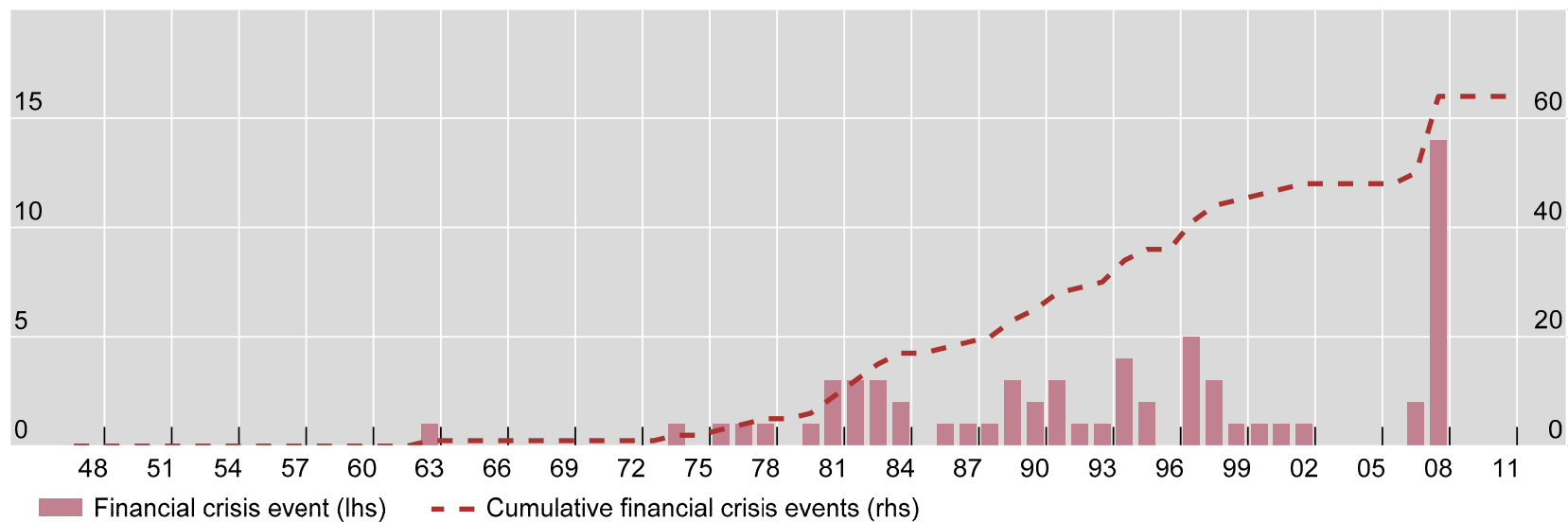
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South African Reserve Bank Research  
Conference on Financial Stability:  
Developments, Challenges and Policy  
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The views expressed are those of the presenter only and not necessarily those of the BIS



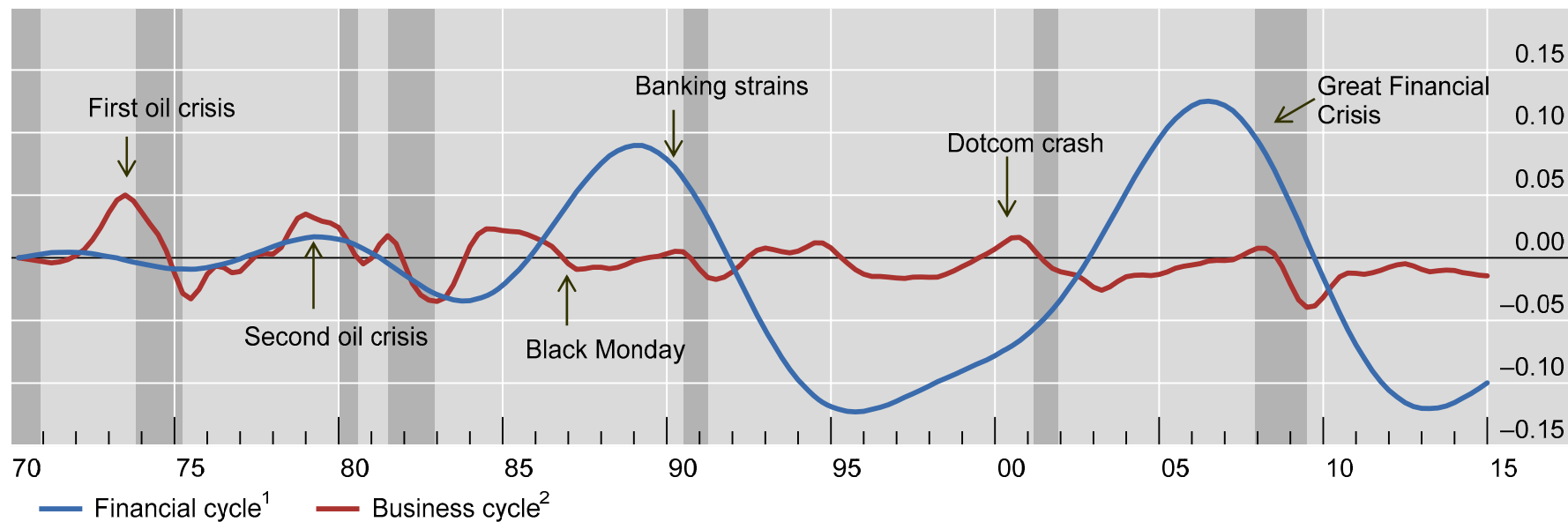
## Financial crises have become more frequent



For 43 advanced and emerging market economies

Sources: Gertler and Hofmann (2015) based on Laeven and Valencia (2012), Reinhart and Rogoff (2009), Schularick and Taylor (2012).

## Amplitude of the financial cycle has increased over time



<sup>1</sup> The financial cycle as measured by frequency-based (bandpass) filters capturing medium-term cycles in real credit, the credit-to-GDP ratio and real house prices; Q1 1970 = 0. <sup>2</sup> The business cycle as measured by a frequency-based (bandpass) filter capturing fluctuations in real GDP over a period from one to eight years; Q1 1970 = 0. Sources: Drehmann et al (2012), updated.

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## How to better maintain financial stability?

- Enhanced microprudential regulation
- Establishment of macroprudential frameworks
  - Bring systemic perspective to regulatory frameworks, complementing microprudential regulation
  - Tools that can be used in a targeted manner
- Are macroprudential tools enough?
  - Effectiveness potentially limited due to regulatory arbitrage
  - Inaction bias
  - More effective when complemented by monetary policy (Bruno/Shim/Shin 2014)
- A role for monetary policy?

## Clean or lean?

- Should monetary policy just respond to the fallout of a crisis, or should it lean against financial imbalances?
- Policy rate is a key determinant of the price of leverage
  - Key determinant of financial dynamics
  - “Gets in all of the cracks” (Stein 2013)
- But monetary policy also affects the real economy and inflation
- Leaning against the wind would involve a tighter policy stance when financial imbalances build up (all else equal)
  - Reducing risks of a potential costly future financial bust
  - But with potentially negative real effects in the short run
- Key question: is the net benefit positive?

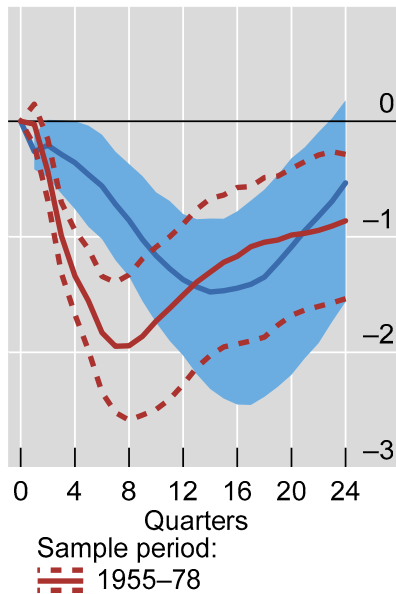
## Leaning against the wind: assessing the net benefits

- Widely used approach to assesses the net benefits: compare the short-term output/employment loss with the reduced risks of a future financial crisis associated with large output costs
- Leaning works through its impact on the probability of a financial crisis:  
Monetary policy → credit → financial crisis probability
- Calibrations based on existing evidence suggest that the net benefits are negative
- Is this the end of the story?

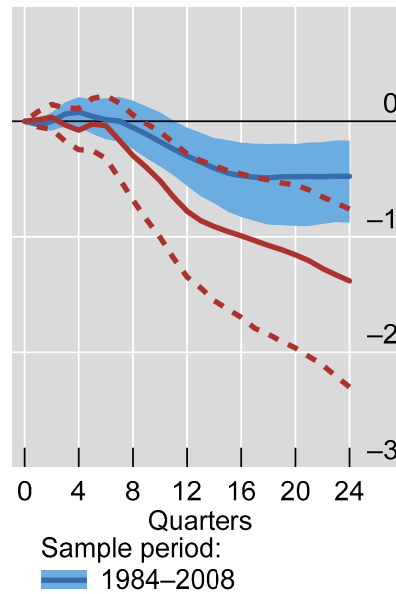
# The macro-financial impact of monetary policy has changed...

Impulse responses to a 100-basis-point increase in the policy interest rate<sup>1</sup>

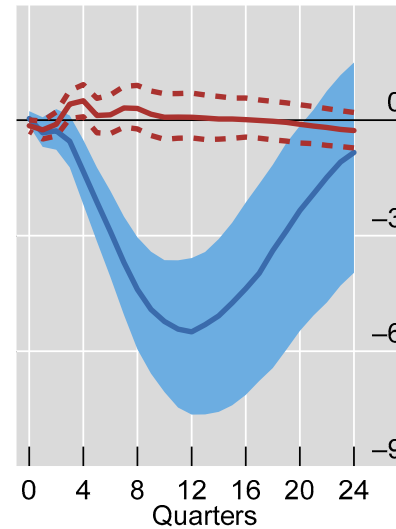
Real GDP



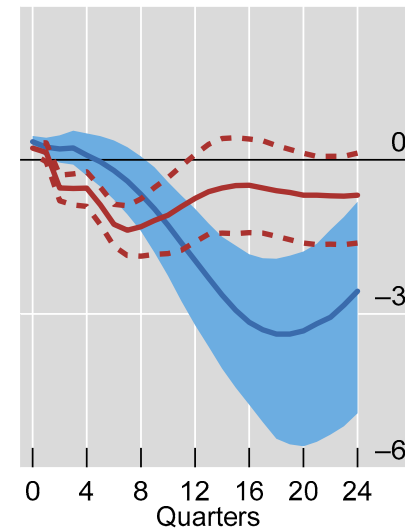
Price level



Real house prices



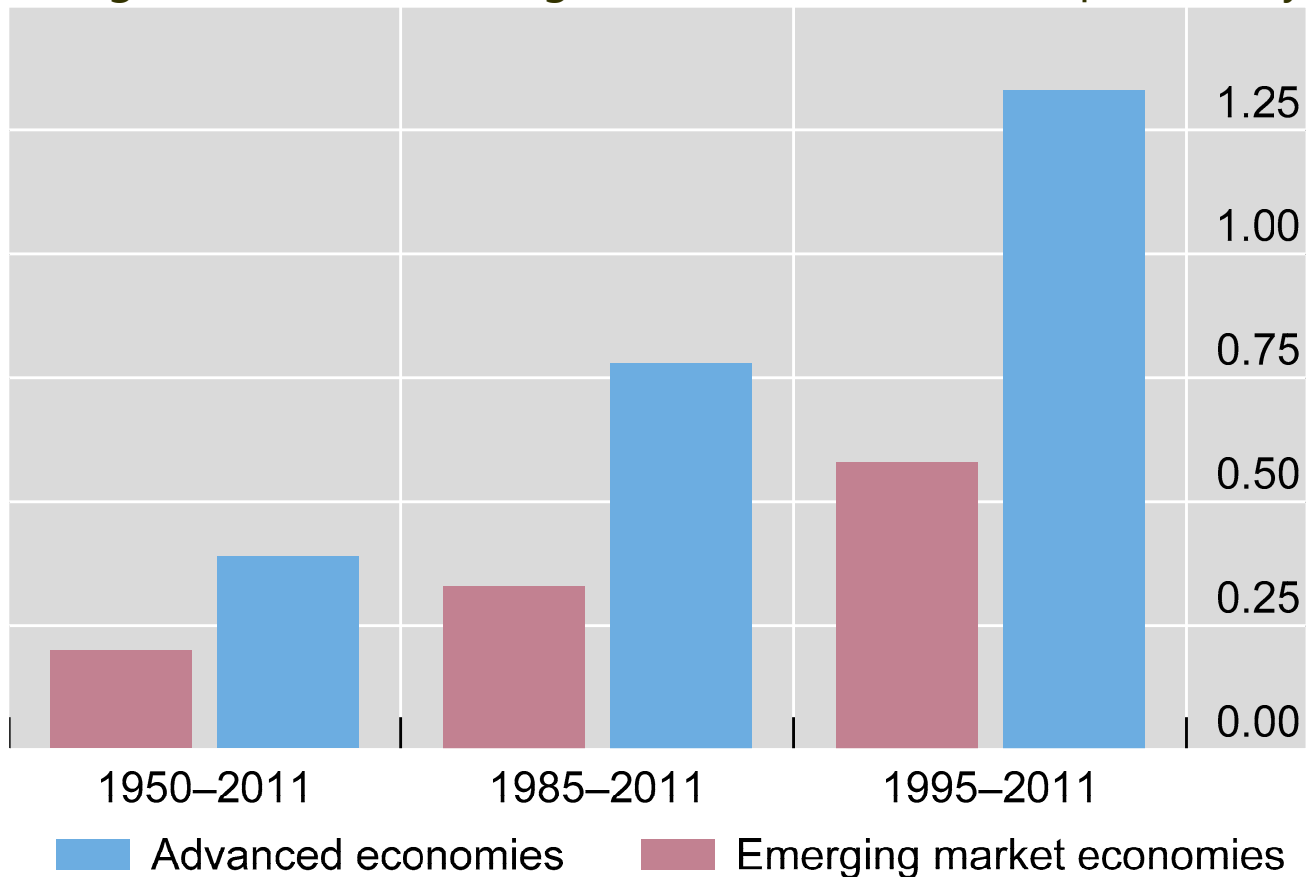
Real credit



<sup>1</sup> For the United States; median and the 68% probability range of the impulse responses. Source: Hofmann and Peersman (2015).

## ....and so has the impact of credit on financial crisis probability

Marginal effect of credit growth on financial crisis probability<sup>1</sup>



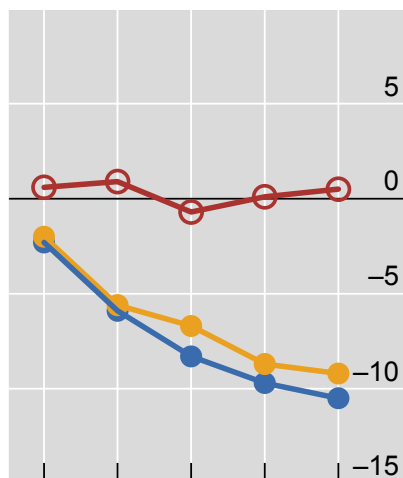
<sup>1</sup> From panel estimations for 21 advanced and 22 emerging market economies.  
Source: Gertler and Hofmann (2015).



# Asset price deflations have negative real effects <sup>1</sup>

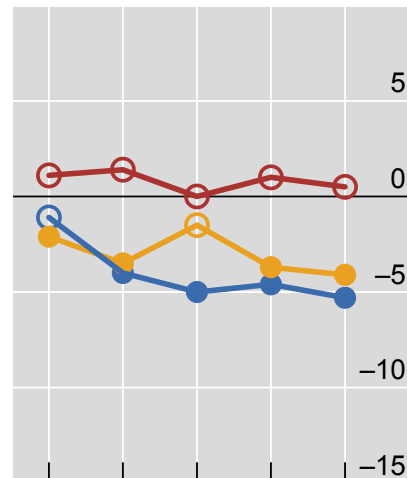
In percentage points<sup>2</sup>

Full sample



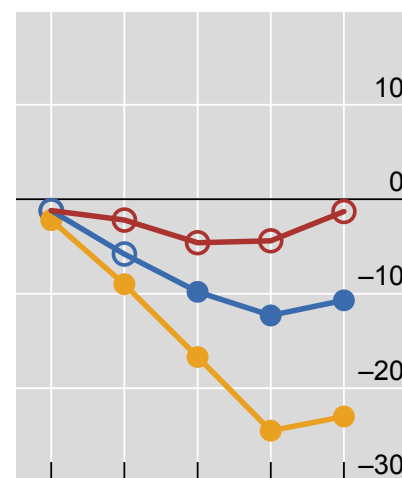
— Consumer prices

Classical gold standard



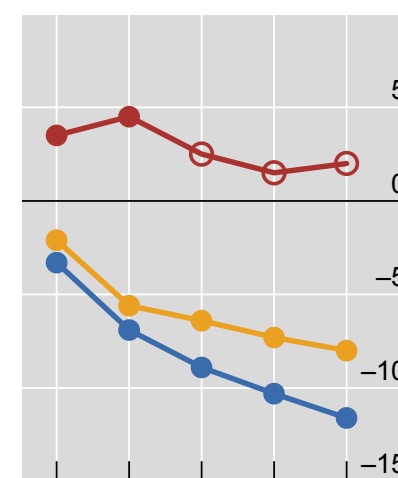
— Property prices

Interwar period



— Equity prices

Postwar era



The estimated regressions are:  $(y_{i,t+h} - y_{i,t}) - (y_{i,t} - y_{i,t-h}) = \alpha_i + \beta_1 P_{i,t}^{CPI} + \beta_2 P_{i,t}^{PP} + \beta_3 P_{i,t}^{EP} + \varepsilon_{i,t}, h = 1, 2, 3, 4, 5$   
 where  $y$  is the log level of per capita real GDP and  $\alpha_i$  are,  $P^{CPI}$ ,  $P^{PP}$ ,  $P^{EP}$  respectively, the CPI, property and equity price peaks.

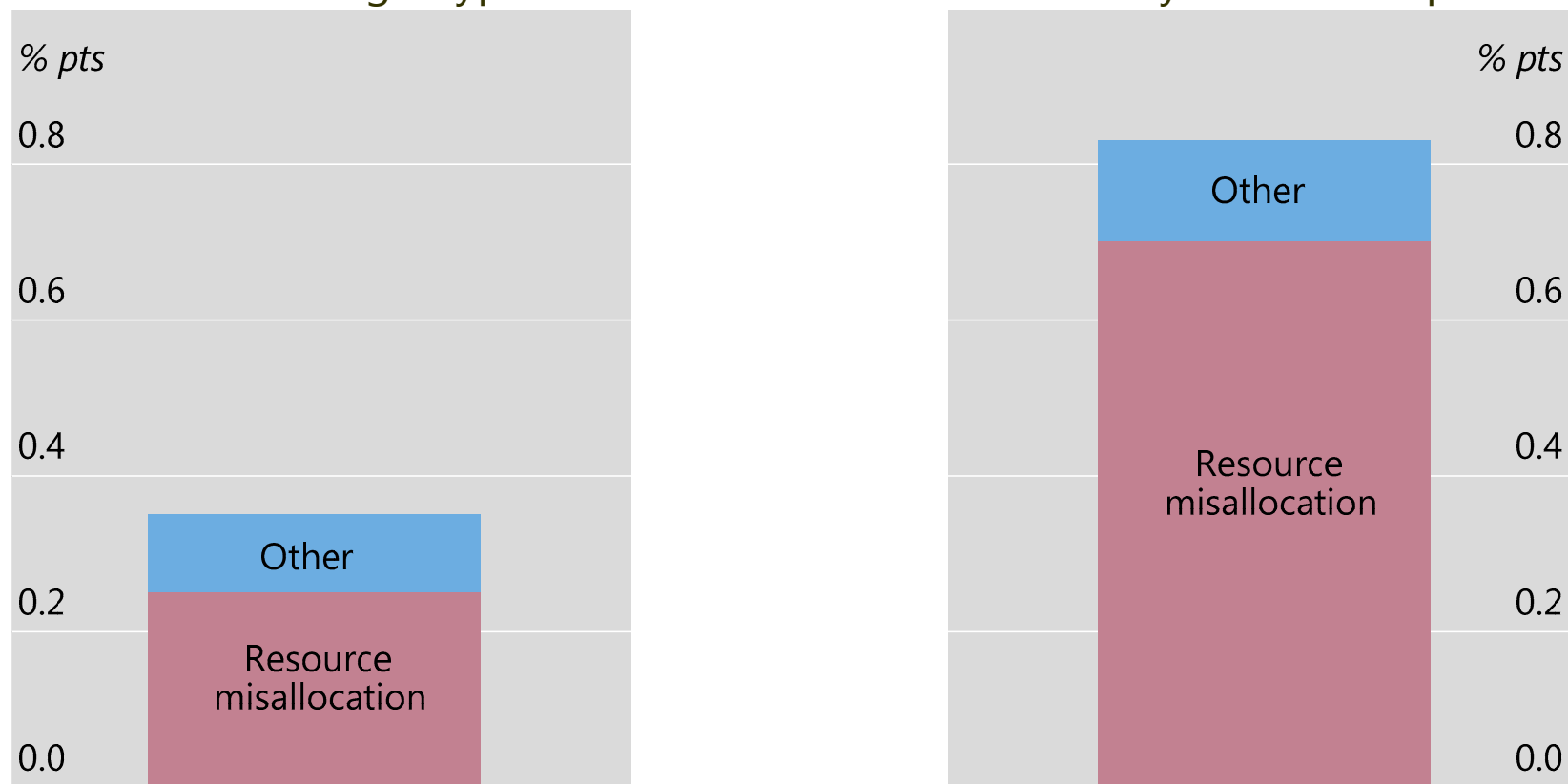
A circle indicates an insignificant coefficient, and a filled circle indicates that a coefficient is significant at least at the 10% level. Estimated effects are conditional on sample means (country fixed effects) and on the effects of the respective other price peaks (eg the estimated change in h-period growth after CPI peaks is conditional on the estimated change after property and equity price peaks).

<sup>1</sup> The graph shows the estimated difference between h-period per capita output growth after and before price peak. <sup>2</sup> The estimated regression coefficients are multiplied by 100 in order to obtain the effect in percentage points.

Source: Borio, Erdem, Filardo and Hofmann (2015).

# Financial booms sap productivity by misallocating resources

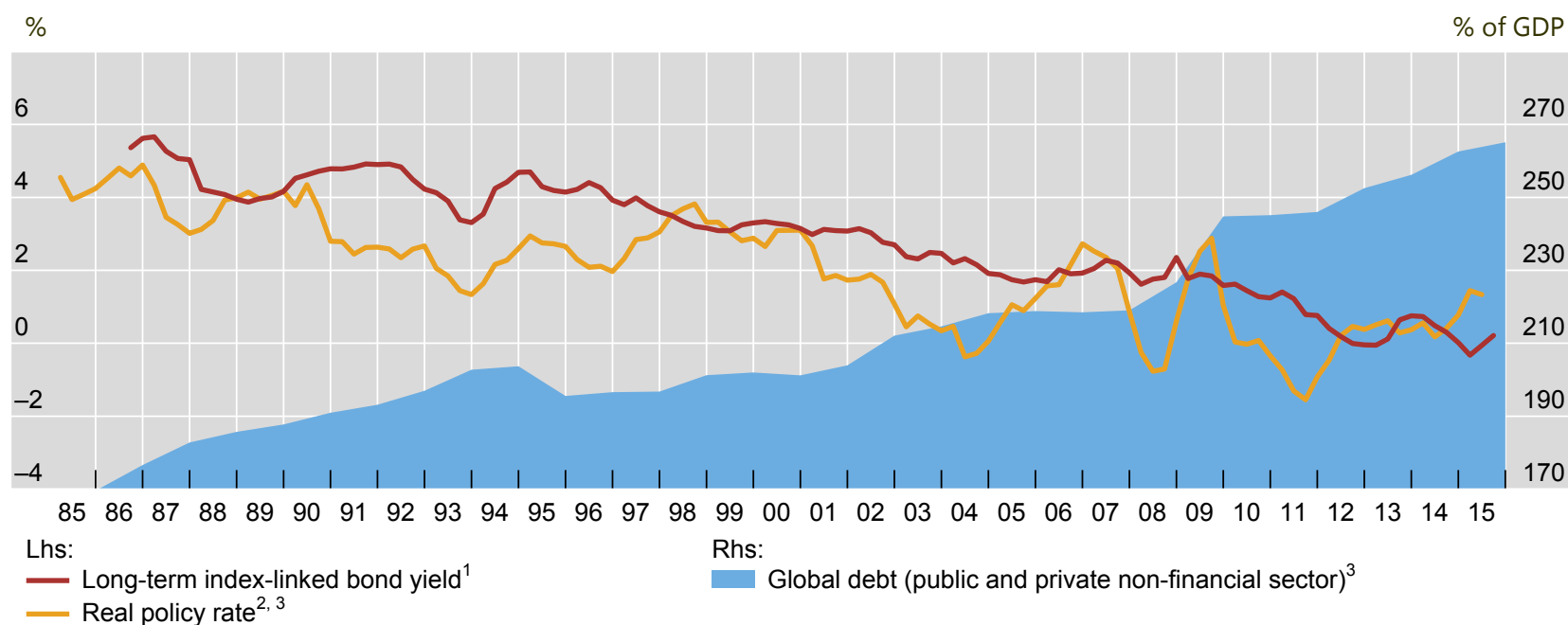
Annual cost during a typical boom ... .. and over a five-year window post-crisis



Estimates calculated over the period 1980–2010 for 22 advanced economies. Resource misallocation = annual impact of labour shifts into less productive sectors during the credit boom on productivity growth as measured over the period shown. Other = annual impact in the absence of reallocations during the boom.

Source: Based on Borio et al (2015 ); BIS calculations.

## Interest rates sink as debt soars



<sup>1</sup> From 1998, simple average of France, the United Kingdom and the United States; otherwise only the United Kingdom. <sup>2</sup> Nominal policy rate less consumer price inflation. <sup>3</sup> Aggregate based on weighted averages for G7 economies plus China based on rolling GDP and PPP exchange rates. 2015 figure is based on Q1 or Q2 data.  
Sources: IMF, World Economic Outlook; OECD, Economic Outlook; national data; BIS calculations.

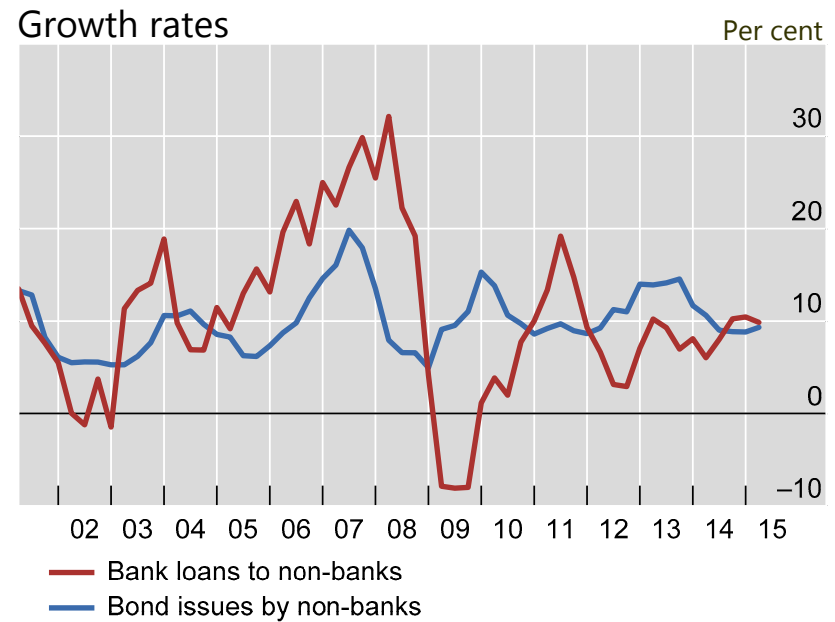
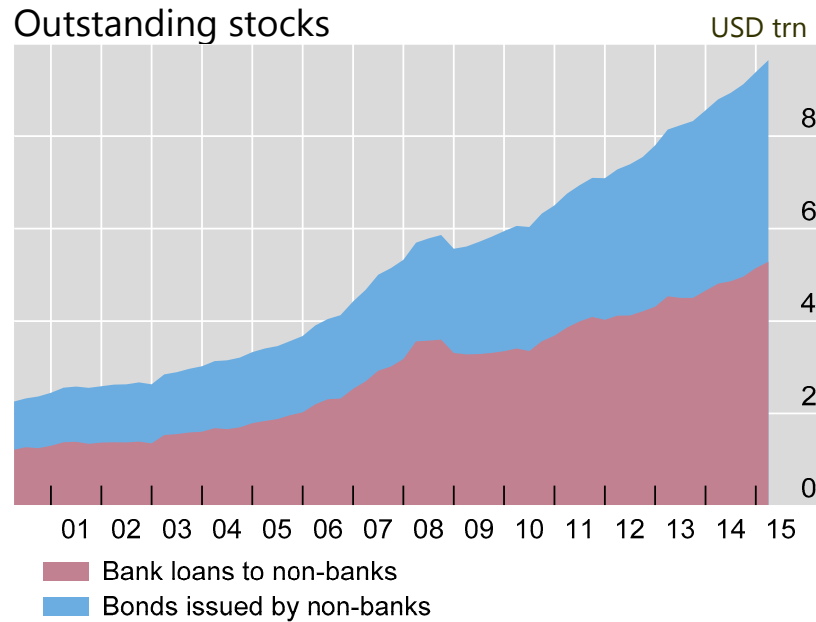
## Why have interest rates declined over time?

- Savings glut, secular stagnation?
- Complementary explanation: in part a disequilibrium process
- Reflection of asymmetrical MP over booms and busts
  - Downward bias in interest rates and upward bias in debt
  - Debt trap?
    - Progressive loss of ammunition
    - Harder to raise rates without causing damage
  - Too low rates in the past are one reason for lower rates today

## Adverse consequences of persistent low interest rates

- Counterproductive in recovery from balance sheet recession
  - Reduced perceived need to implement balance sheet repair and structural reform after balance sheet recessions (BIS 2014)
  - Impaired intermediation capacity of banks through negative effects on bank profitability (Borio/Gambacorta/Hofmann 2015)
  - Strains on insurance companies and pension funds (BIS 2015)
  - Search for yield fostering build up of new financial imbalances
- ➔ scenario of continued anaemic growth amongst high debt and financial fragility
- International spillovers fostering financial imbalances elsewhere

# US dollar credit to non-banks outside the United States

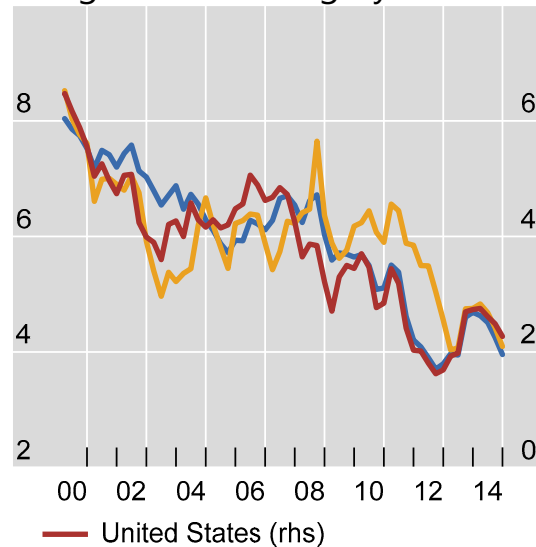


Bank loans include cross-border and locally extended loans to non-banks outside the United States. For China, locally extended loans are derived from national data on total local lending in foreign currencies on the assumption that 80% are denominated in US dollars. For other non-BIS reporting countries, local US dollar loans to non-banks are proxied by all BIS reporting banks' gross cross-border US dollar loans to banks in the country. Bonds issued by US national non-bank financial sector entities resident in the Cayman Islands have been excluded. For more details, see McCauley/McGuire/Sushko (2015).

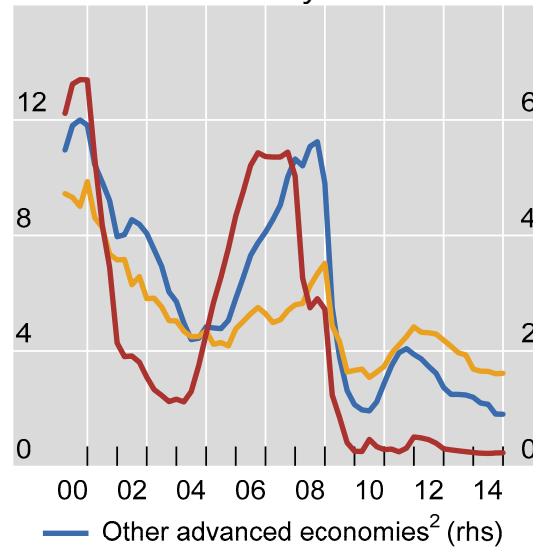
Sources: IMF, *International Financial Statistics*; Datastream; BIS international debt statistics and locational banking statistics by residence; BIS calculations.

# Interest rates are closely correlated internationally

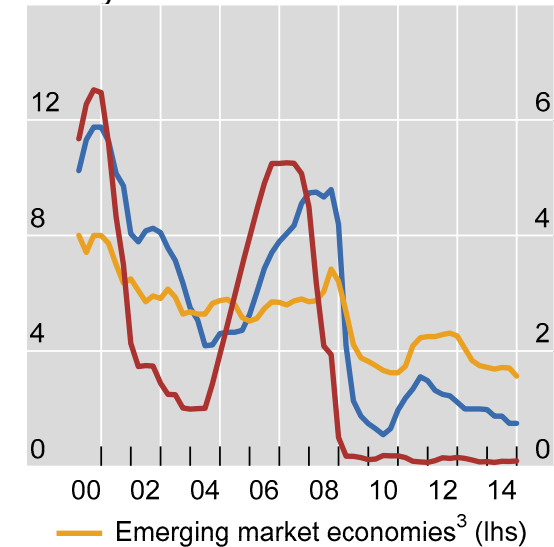
Long-term sovereign yield



Short-term money market rate



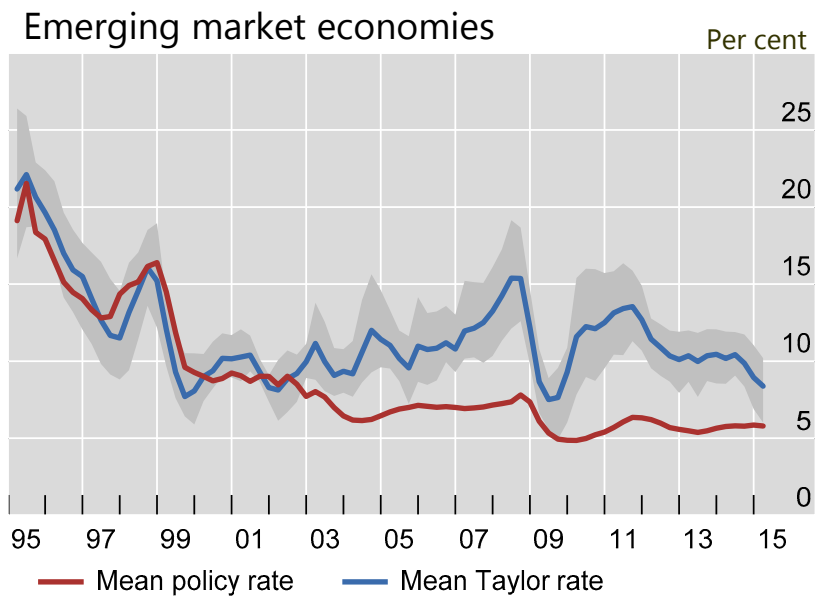
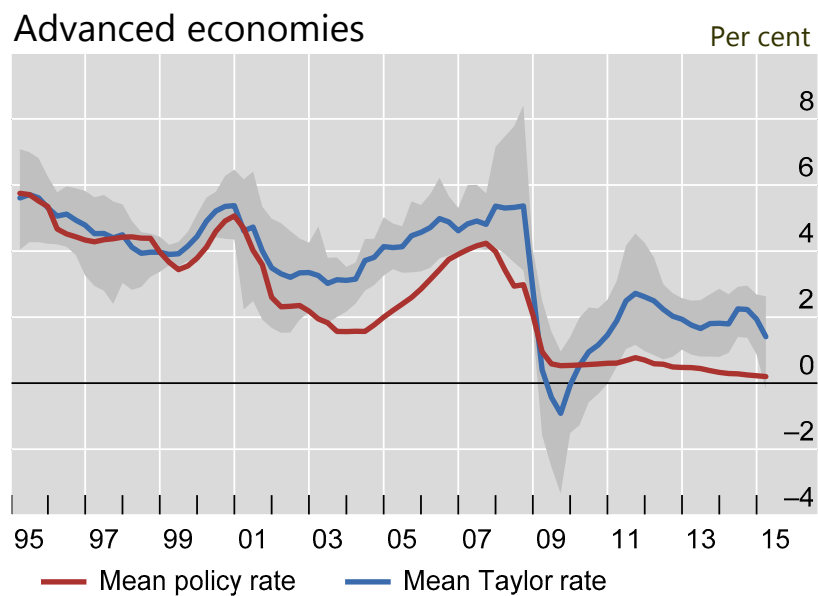
Policy rate<sup>1</sup>



<sup>1</sup> For the United States, effective federal funds rate. <sup>2</sup> Median across Australia, Canada, Denmark, New Zealand, Norway, Sweden, Switzerland and the United Kingdom. <sup>3</sup> Median across Brazil, Chile, China, Chinese Taipei, Colombia, the Czech Republic, Hong Kong SAR, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, Singapore, South Africa, Thailand and Turkey, where data are available.

Sources: Federal Reserve Bank of St Louis, FRED; IMF, International Financial Statistics; Bloomberg; CEIC; Datastream; GFDatabase; national data; BIS calculations.

# A global "Great Deviation"



Note: weighted averages. For details, see Hofmann and Bogdanova (2012).



## Trilemma vs dilemma

- Rey (2013): Trilemma has turned into dilemma: Financially open economies cannot control domestic financial conditions even under flexible exchange rates
- Obstfeld (2015): No dilemma, but limited policy effectiveness
  - Short rates independent, long rates not over sample starting in 1990
- But: greater financial deregulation and financial globalisation may have changed the empirical relationships
- Evidence from data starting in 2000 (Hofmann and Takats 2015)
  - International spillovers in both short- and long rates (controlling for common macro/financial factors)
  - But stronger in long rates, short rates also influenced by domestic macro conditions

## Interest rate changes and the US impact

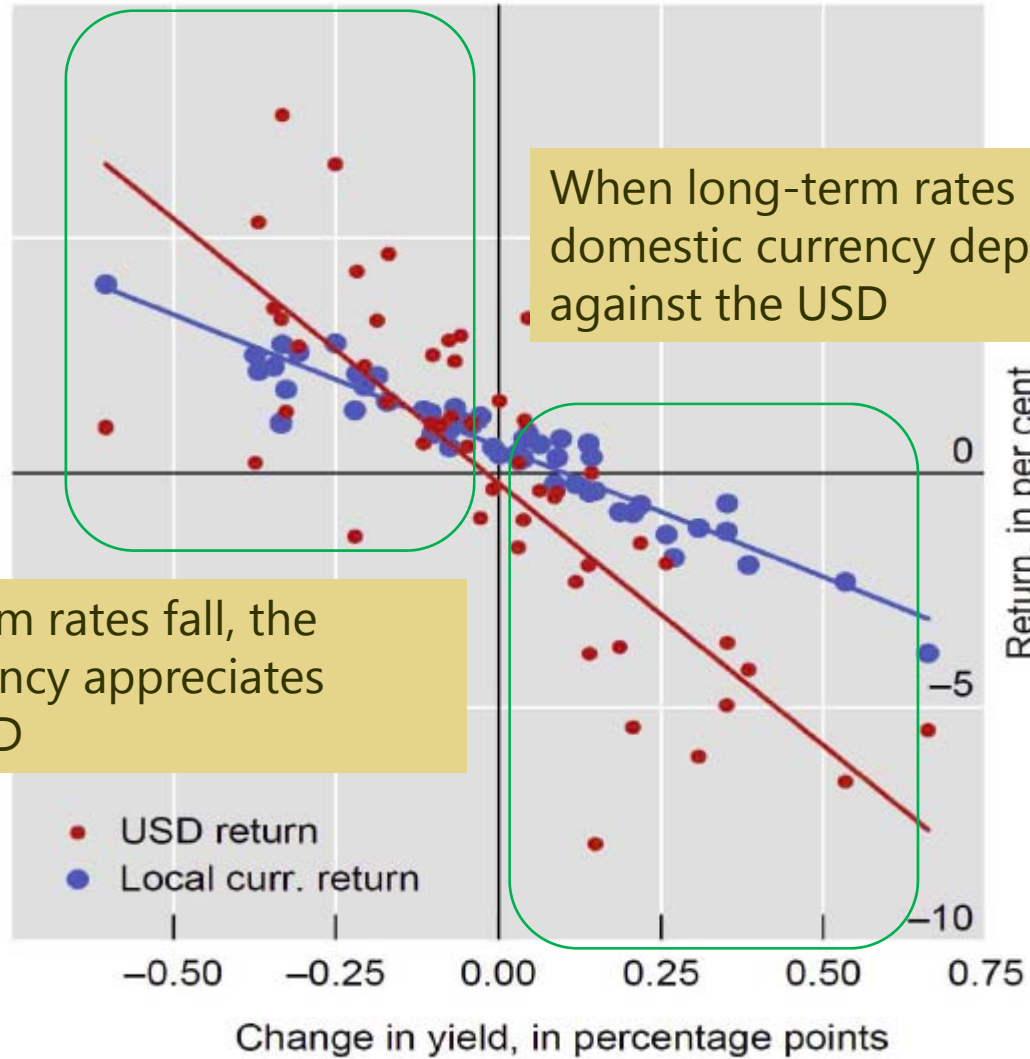
Changes between Q4 2007 and Q4 2014, in percentage points



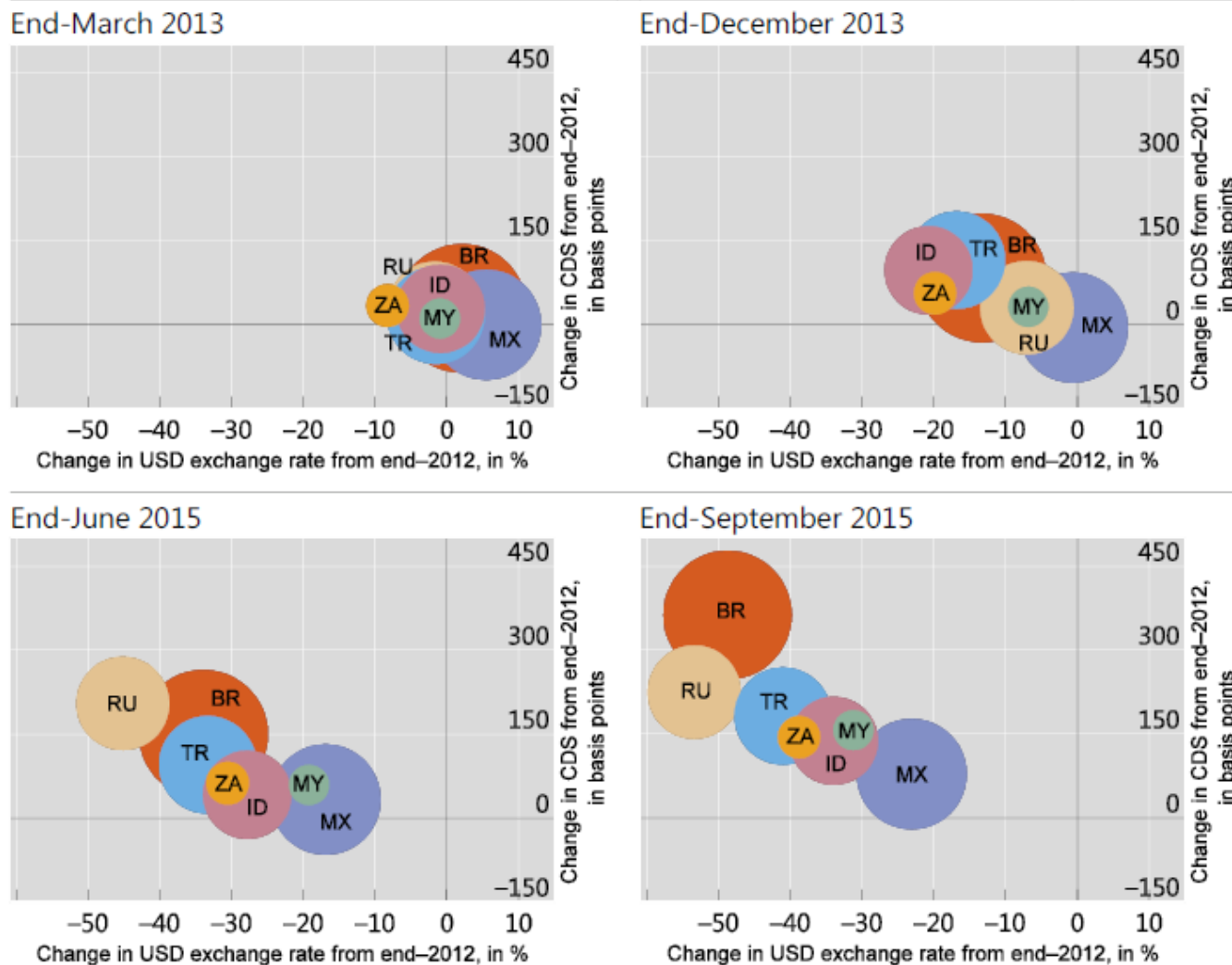
<sup>1</sup> Simple average of Australia, Brazil, Canada, Chile, China, Chinese Taipei, Colombia, the Czech Republic, Denmark, Hong Kong SAR, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, New Zealand, Norway, Peru, the Philippines, Poland, Russia, Singapore, South Africa, Sweden, Switzerland, Thailand, Turkey and the United Kingdom; where data are available. <sup>2</sup> Back-of-the-envelope calculations based estimated impacts of the US rates from panel regressions multiplied by change in the respective US rate.

Source: Hofmann and Takats (2015).

# Local currency returns versus USD returns of EME local currency bond fund



# USD exchange rate and sovereign CDS spreads



BR = Brazil; ID = Indonesia; MX = Mexico; MY = Malaysia; RU = Russia; TR = Turkey; ZA = South Africa. The size of the bubbles indicates the size of dollar debt in Q2 2015.

## Risk-taking channel of currency appreciation

- Additional spillover effects on domestic financial conditions working through the USD exchange rate (Hofmann/Shim/Shin 2015)
  - Appreciation against the USD strengthens balance sheets of USD borrowers in EMEs lowering tail risk of default
  - Greater supply of bank credit fosters increased investment
  - Improved government fiscal position reduces tail risk of default leading to greater supply of bond credit by global investors
  - Lower government bond yields/risk spreads lead to easier financial conditions more widely
- Empirical evidence (controlling for common macro/financial factors) is supportive:
  - USD appreciation significantly lowers sovereign bond/credit risk spreads in a panel of EMEs
  - USD exchange rate matters, not the effective exchange rate

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## Summing up

- More symmetric monetary policy over the financial cycle
  - Leaning against the boom
  - Easing less aggressively and less persistently in the bust
  - Ongoing research at the BIS on practical implementation
- In EMEs capital flows and exchange rates important additional concerns
  - Three pillar monetary policy frameworks in EMEs (Filardo/Genberg/Hofmann 2014)
  - Greater awareness in core economies of spillovers and spillbacks of their monetary policies

## References

- Bank for International Settlements (2014): 84th BIS Annual Report, June
- \_\_\_\_\_ (2015): 85th BIS Annual Report, June
- Borio, C, M Erdem, B Hofmann and A Filardo (2015): The costs of deflations: a historical perspective, *BIS Quarterly Review*, March.
- Borio, C, L Gambacorta and B Hofmann (2015): The influence of monetary policy on bank profitability, *BIS Working Papers*, no 514, October.
- Borio, C, E Kharroubi, C Upper and F Zampolli (2015): Labour reallocation and productivity dynamics: financial causes, real consequences, *BIS mimeo*, BIS
- Bruno, V, I Shim and H Shin (2015): Comparative assessment of macroprudential policies, *BIS Working Papers*, no 502, June.
- Drehmann, M, C Borio and K Tsatsaronis (2012): Characterising the financial cycle: don't lose sight of the medium term!, *BIS Working Papers*, no 355, November.
- Hofmann, B and B Bogdanova (2012): Taylor rules and monetary policy: a global "Great Deviation"? *BIS Quarterly Review*, September, pp 37–49
- Filardo, A, H Genberg and B Hofmann (2014): Monetary analysis and the global financial cycle: an Asian central bank perspective, *BIS Working Paper No 463*.
- Hofmann, B and P Gertler (2015): Monetary facts revisited, *mimeo*, BIS.
- Hofmann, B and G Peersman (2015): Revisiting the US monetary transmission mechanism, *mimeo*, BIS.
- Hofmann, B and E Tákats: (2015): International monetary spillovers, *BIS Quarterly Review*, September.
- Hofmann, B, I Shim and H Shin (2015): Sovereign yields and the risk-taking channel of currency appreciation, *mimeo*, BIS.
- Laeven, L. and F. Valencia (2012): Systemic banking crises database: An update, *IMF Working Paper 12/163*, Washington: International Monetary Fund.
- McCauley, R, P McGuire and V Sushko (2015): Global dollar credit: links to US monetary policy and leverage , *BIS Working Papers*, no 483, January.
- Obstfeld, M (2015): Trilemmas and trade-offs: living with financial globalisation, *BIS Working Papers*, no 480, January.
- Reinhart C. and K. Rogoff, (2009): This time is different: Eight centuries of financial folly" *Economics Books*, Princeton University Press
- Rey, H (2013): Dilemma not trilemma: the global financial cycle and monetary policy independence, paper presented at the 25th Federal Reserve Bank of Kansas City Annual Economic Policy Symposium, Jackson Hole, Wyoming, August.
- Schularick, M. and A. Taylor (2012): Credit booms gone bust: monetary policy, leverage cycles, and financial crises, 1870–2008, *American Economic Review*, 102 (2), pp 1029–61.
- Stein, J (2013), Overheating in credit markets: Origins, measurement, and policy responses, Speech at the "Restoring Household Financial Stability after the Great Recession: Why Household Balance Sheets Matter" research symposium sponsored by the Federal Reserve Bank of St. Louis, St. Louis, Missouri, February 7, 2013