



BANK FOR INTERNATIONAL SETTLEMENTS

Revisiting three intellectual pillars of monetary policy received wisdom

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Objective, themes and takeaways

- Objective
 - Question 3 deeply-held beliefs in monetary policy (MP) received wisdom
- The 3 beliefs
 - The natural (equilibrium) interest rate is best defined i.t.o. output and inflation only
 - Money (monetary policy) is neutral
 - Deflations are always very costly
- The 2 conclusions
 - A different interpretation of the trend decline in real interest rates
 - Seen as at least in part a disequilibrium phenomenon
 - Inconsistent with lasting financial, macroeconomic and monetary stability
 - Need to make adjustments to current monetary policy frameworks
 - MP to play a more active role in preventing financial instability
 - Key: more symmetrical policies over the financial cycle (FC)
- Structure
 - Discuss each of the 5 points sequentially



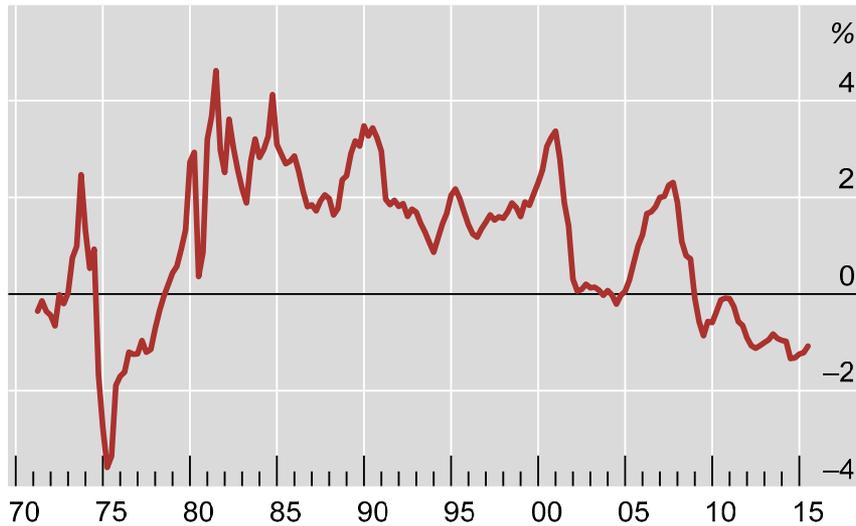
I – Equilibrium (natural) rates revisited

- Fact: interest rates have been exceptionally low for exceptionally long (G 1)
- Consensus: market rates are determined by central banks and market participants
 - Given nominal rates, inflation determines real rates (ex ante, ex post)
- Prevailing view
 - Natural rate: output at potential & price (inflation) stability in a given period
 - Behaviour of inflation signals disequilibrium
- Alternative view
 - Natural rate: consistent with sustainable good macroeconomic performance
 - Also financial imbalances (FIs) can signal disequilibrium
- If low rates ...
 - ... contribute to financial instability ...
 - ... and financial instability causes huge macroeconomic costs ...
 - ... it is not reasonable to regard those rates as equilibrium ones
- To think otherwise reflects deficiencies in current models
- Timeframe is key: the FC is much longer than the traditional business cycle (G 2)
- Big implication for MP
 - All agree that its task is to set the policy rate so as to track the natural rate

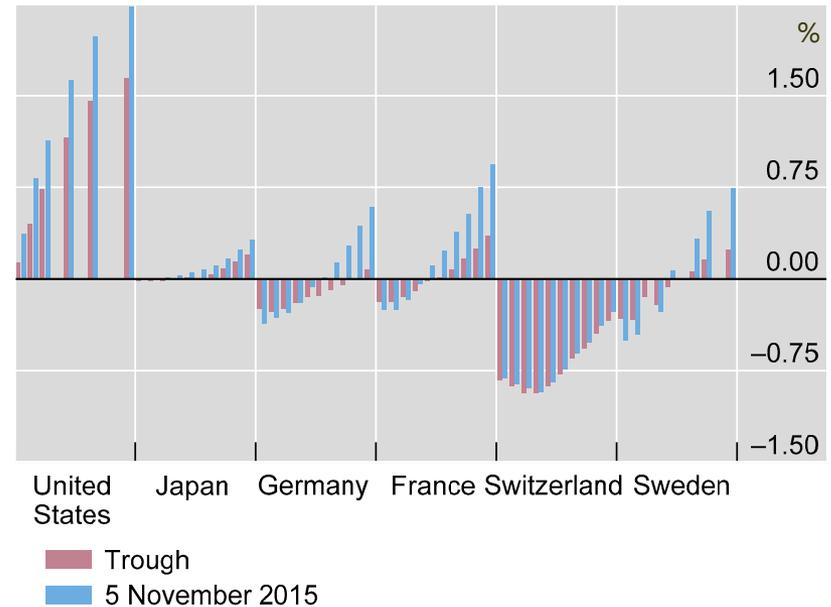


Graph 1: Interest rates have been exceptionally and persistently low

G3 real policy rates¹



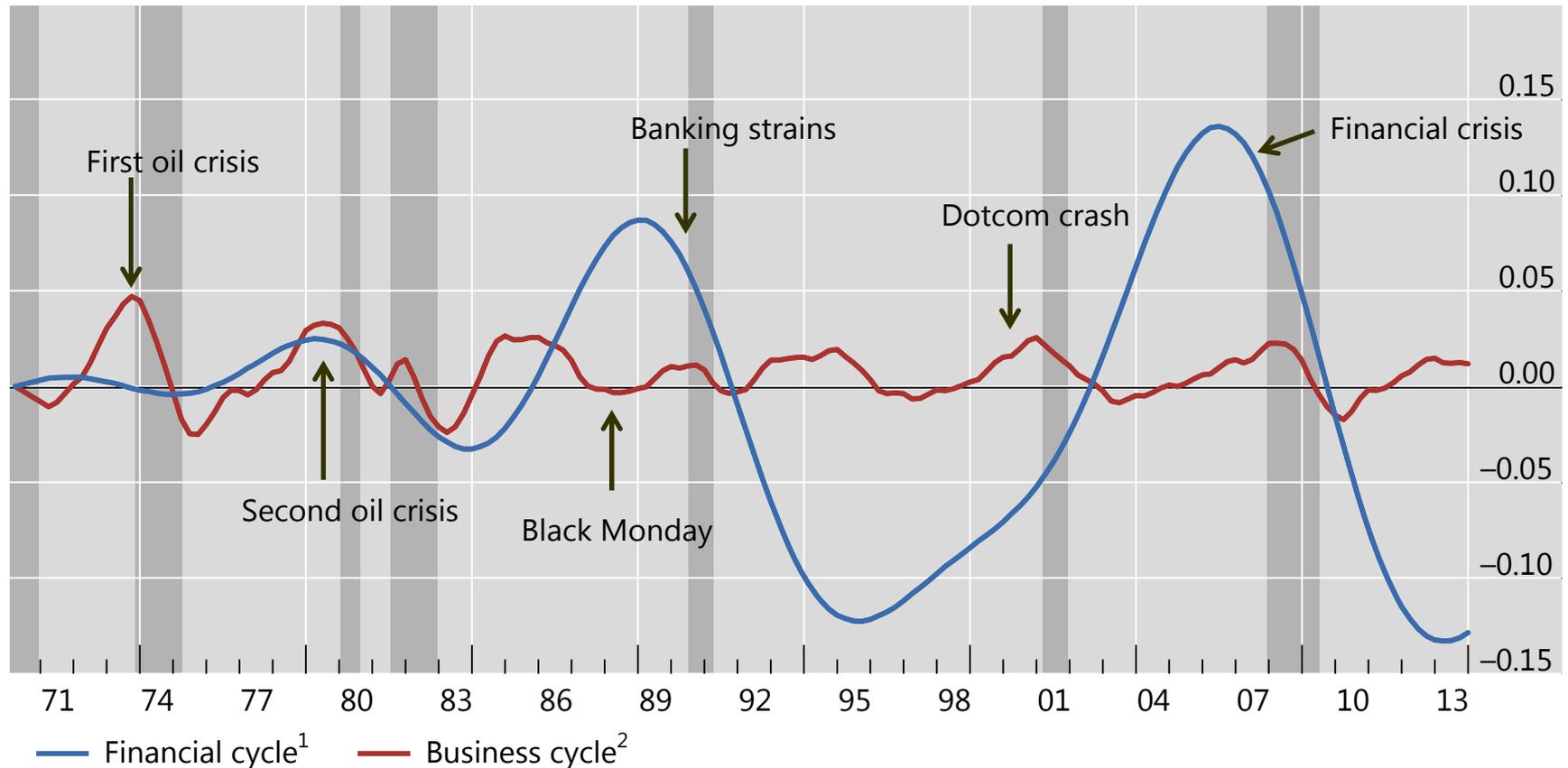
Bond yields²



¹ Nominal policy rate less consumer price inflation excluding food and energy. Weighted averages for the euro area (Germany), Japan and the United States based on rolling GDP and PPP exchange rates. ² Yield per maturity; for each country, the bars represent the maturities from one to 10 years.

Sources: Bloomberg; national data.

Graph 2: The financial cycle is longer than the business cycle (the US example)



¹ 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. ² The business cycle as measured by a frequency-based (bandpass) filter capturing fluctuations in real GDP over a period from one to eight years.

Source: from Drehmann, M, C Borio and K Tsatsaronis (2012), updated.

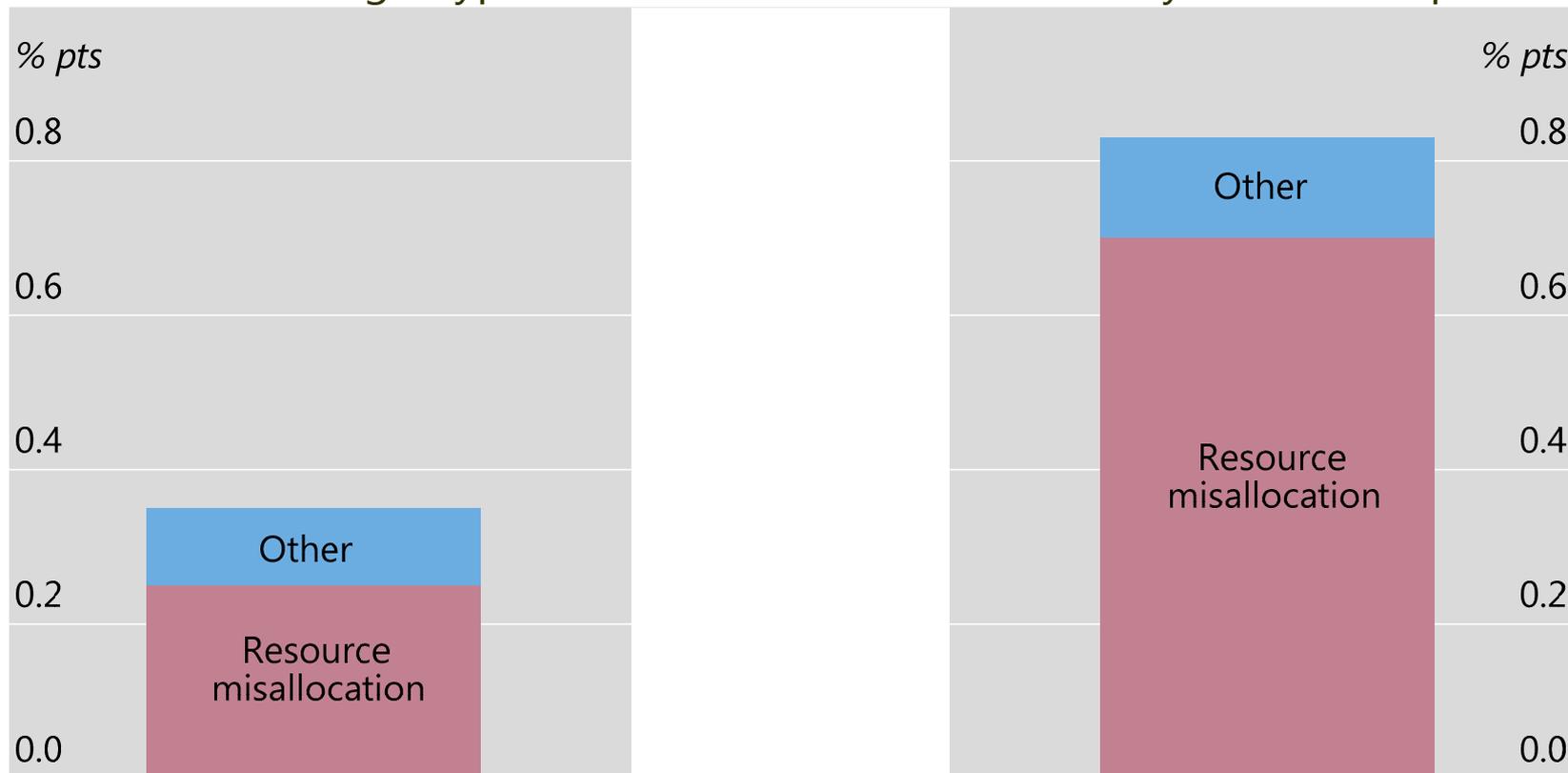
II – Money (monetary policy) neutrality revisited

- Notion of MP neutrality is problematic
 - FCs cause major and long-lasting damage to the real economy
 - Previous work: permanent output losses
 - New BIS research: also long-lasting damage to productivity growth (G 3)
- Shift of focus from demand side to supply side of the economy
 - Resource misallocations are key
- 3 Main findings (22 advanced economies, 1980-2010)
 - Drag during a typical credit boom: over 0.3 pp per year
 - Largely through sectoral misallocations: almost $\frac{3}{4}$ of total loss
 - & with larger effects if a crisis follows: some 0.7 pp per year
 - 5-year boom & 5-year post-crisis window: 6 pp cumulatively
- 3 additional implications
 - Need to broaden the notion of hysteresis beyond aggregate demand effects
 - Allocation, rather than just total amount, of credit is key
 - Highlights limitations of persistently and exceptionally easy MP following the bust
 - Balance sheet repair and structural reforms are key
 - Macroeconomic models need to go beyond “one good” standard benchmark
 - Risk of throwing out the baby with the bathwater



Graph 3: 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, C, E Kharroubi, C Upper and F Zampolli (2015).



III – The costs of deflation revisited

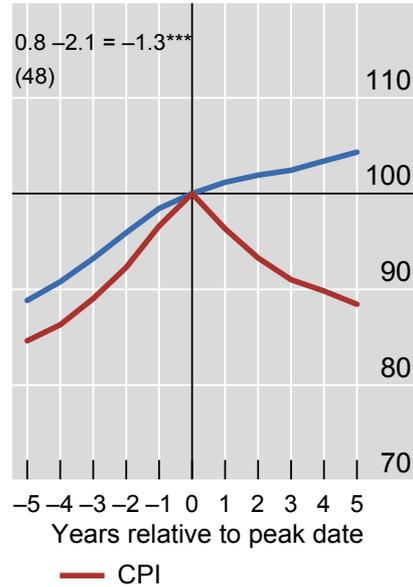
- Is deflation always and everywhere very costly for output?
 - Historical record suggests otherwise
- Recent BIS research sheds further light (38 countries; 1870-2013): 3 findings
 - 1. Only a weak (bivariate) link with growth (G 4)
 - The Great Depression (GD) is the main exception
 - 2. Stronger link between asset price falls (esp. property) and growth
 - If these are controlled for, growth-deflation link disappears even in the GD (G 5)
 - 3. No evidence of Fisherian debt deflation
 - Damaging interplay is between property price falls and debt (esp. post-war)
- Japan in 1990-2000s is no exception: need to adjust for demographics
 - “Lost decade” in 1990s (balance sheet problems), not in 2000s (when deflation set in)
- Results are consistent with
 - Supply-driven (“good”) versus demand-driven (“bad”) deflations
 - Smaller and largely re-distributional impact of declines in the price level
- Disinflationary secular tailwinds since early 1990s are probably of the “good” variety
 - Globalisation of the real economy and, possibly, technology innovation
 - Supporting BIS research: evidence of greater role of global factors
- Worth rebalancing MP focus: from deflation threats to FC threats



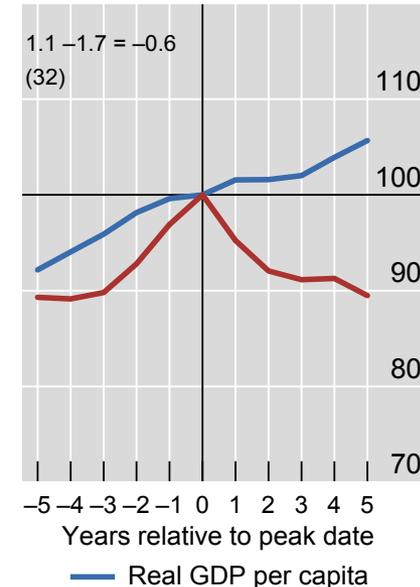
Graph 4: Output costs of persistent deflations?¹

Thirty-eight economies, 1870–2013, variable peak² year = 100

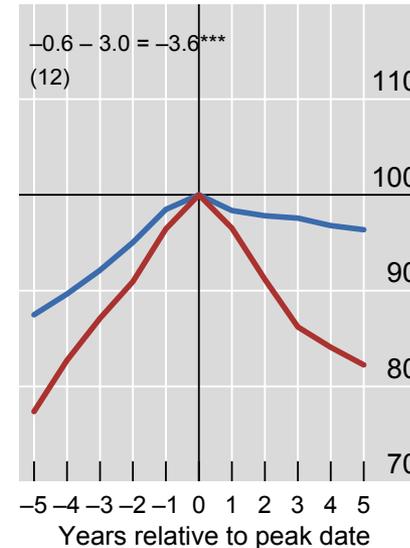
Full sample



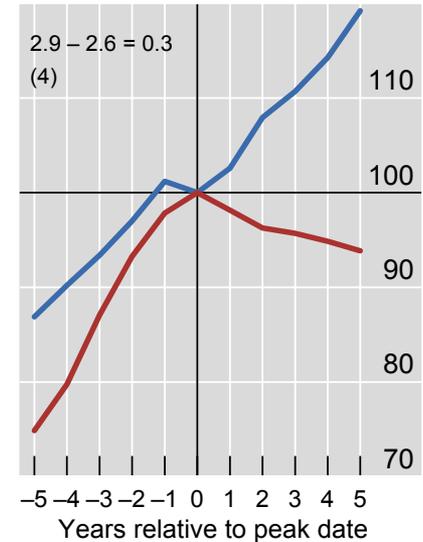
Classical gold standard



Interwar period



Postwar era



The numbers in the graph indicate five-year averages of post- and pre-price peak growth in real GDP per capita (in per cent) and the difference between the two periods (in percentage points); */**/** denotes mean equality rejection with significance at the 10/5/1% level. In parenthesis is the number of peaks that are included in the calculations. The data included cover the peaks, with complete five-year trajectories not affected by observations from 1914–18 and 1939–45. For Spain, the Civil War observations are also excluded (1936–39).

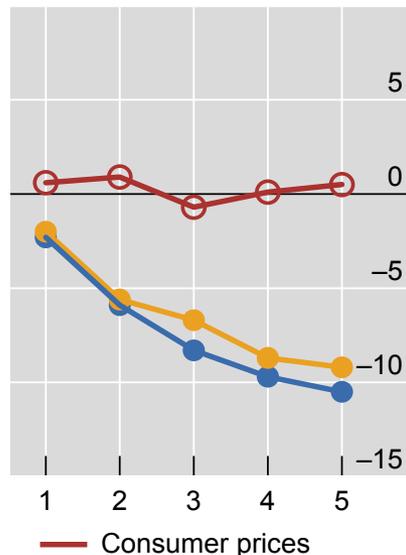
¹ Simple average of the series of CPI and real GDP per capita readings five years before and after each peak for each economy, rebased with the peaks equal to 100 (denoted as year 0). ² Associated with a turning point in the five-year moving average and peak levels exceeding price index levels in the preceding and subsequent five years.

Source: Borio, C, M Erdem, B Hoffman and A Filardo (2015).

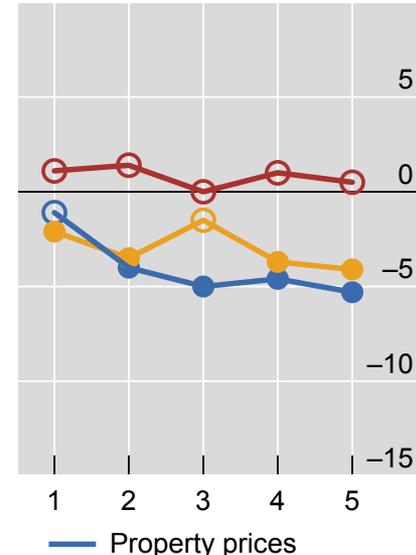
Graph 5: Output costs - Deflations vs asset price declines¹

In percentage points²

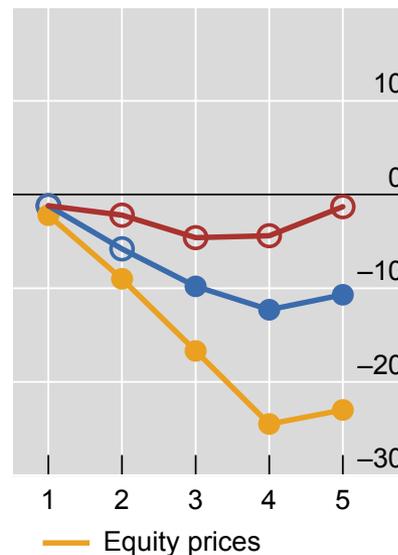
Full sample



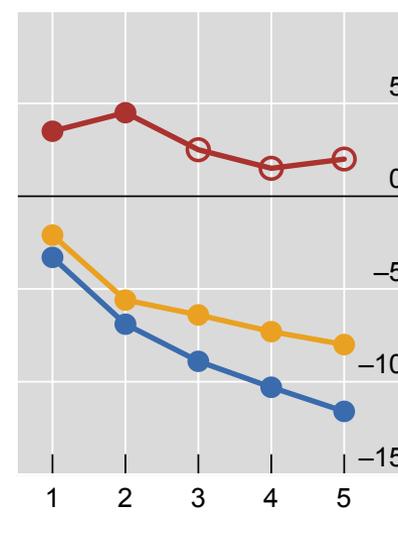
Classical gold standard



Interwar period



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 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).

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

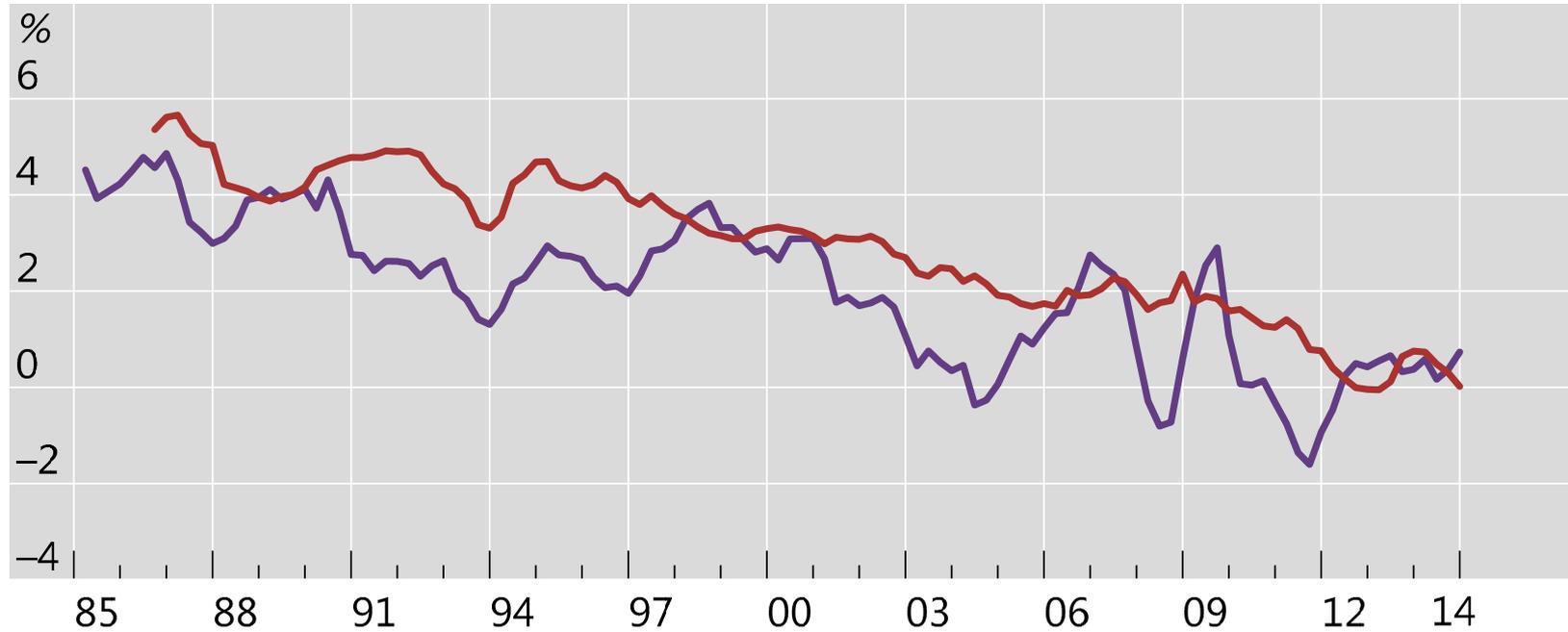
Source: Borio, C, M Erdem, B Hoffman and A Filardo (2015).

IV – A different view of the long-term decline in real rates (G 6)

- Prevailing view (shared by saving glut and secular stagnation hypotheses)
 - Equilibrium phenomenon reflecting deep-seated forces that generate slack
- Complementary explanation
 - In part a disequilibrium phenomenon
- Reflection of asymmetrical MP over booms and busts...
 - Global disinflationary forces (esp real economy globalisation) keep a lid on inflation
 - Little response during financial booms
 - Large and, above all, persistent response during busts
 - Lost-lasting economic damage
- ...that results in a downward bias in interest rates and upward bias in debt (G 7)
 - Debt trap? (time inconsistency)
 - Policy runs out of ammunition over time
 - It becomes harder to raise rates without causing economic damage
 - Owing to large debts/distortions in the real economy
- Over long horizons, rates become to some extent self-validating
 - Too low rates in the past are one reason for lower rates today
 - Policy rates are not simply passively reflecting some deep “exogenous” forces...
 - ... they are also helping to shape the economic environment



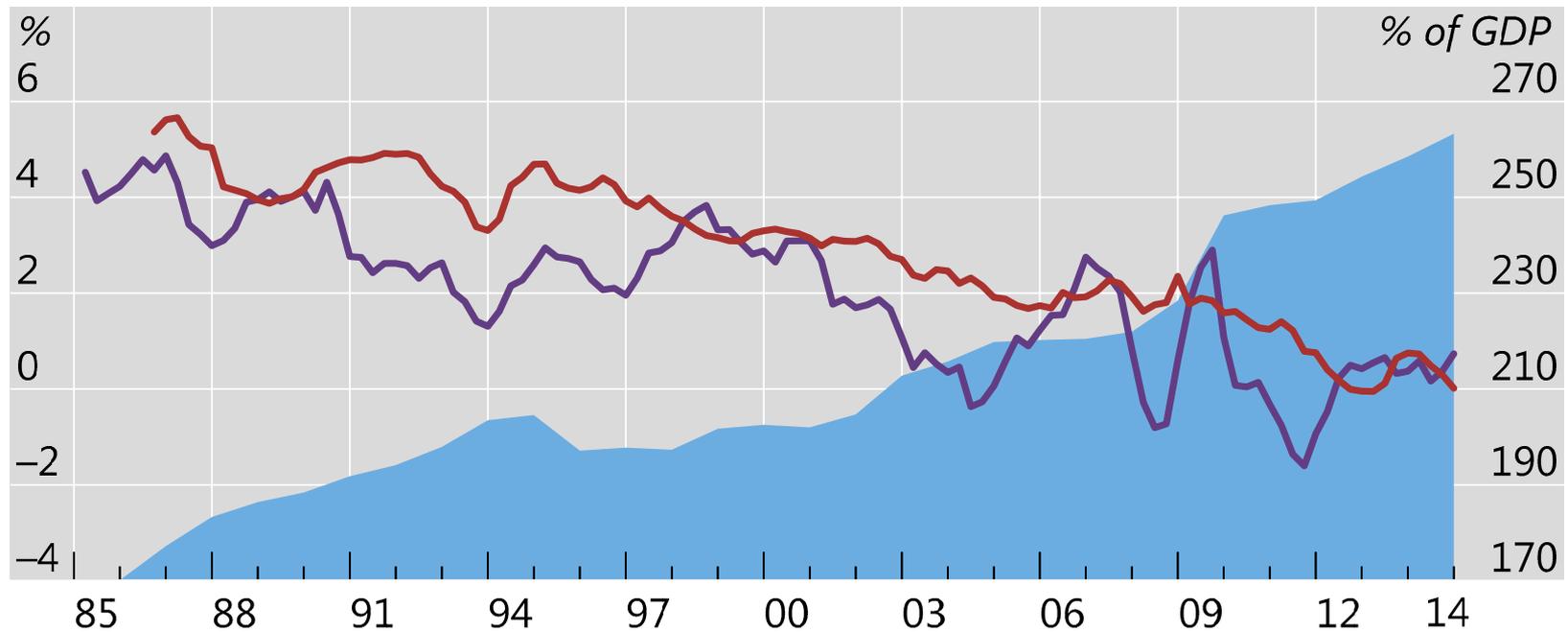
Graph 6: Interest rates sink ...



- Long-term index-linked bond yield
- Real policy rate



Graph 7: Interest rates sink ... as debt soars



Lhs:

— Long-term index-linked bond yield¹
 — Real policy rate^{2, 3}

Rhs:

■ Global debt (public and private non-financial sector)³

¹ From 1998, simple average of France, the United Kingdom and the United States; otherwise only the United Kingdom. ² Nominal policy rate less consumer price inflation. ³ Aggregate based on weighted averages for G7 economies plus China based on rolling GDP and PPP exchange rates.

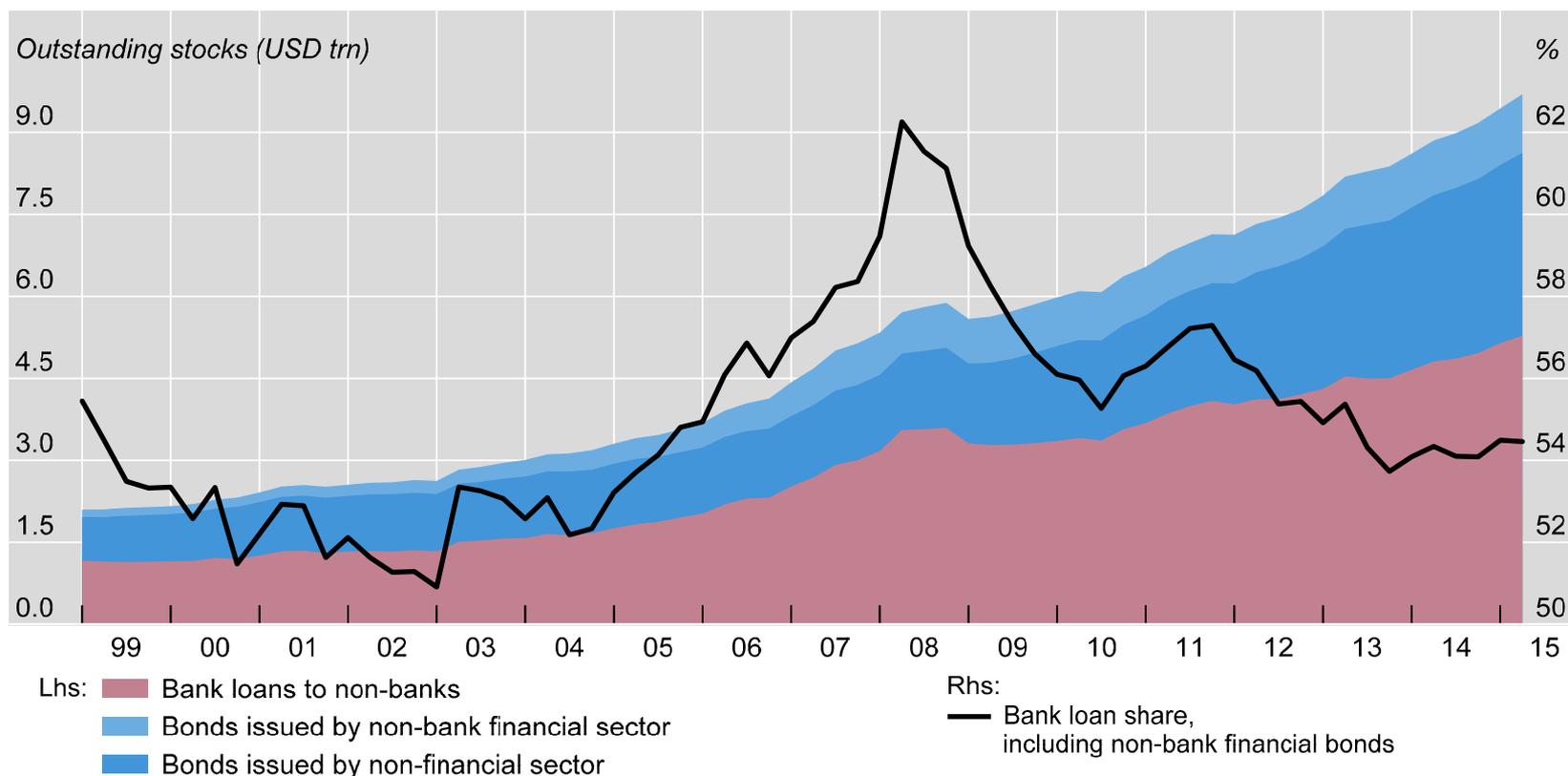
Sources: IMF, *World Economic Outlook*; OECD, *Economic Outlook*; national data; BIS calculations.

IV – A different view of the long-term decline in real rates (ctd)

- Here the international monetary and financial system (IMFS) plays a key role
 - Successive crises need not occur in the same country and IMFS can spread them
- Low rates in countries that are fighting a financial bust may induce problems elsewhere
 - Policymakers try very hard but get little traction
 - FX borrowing surges (G 8)
 - Exchange rates take adjustment burden and appreciations elsewhere are resisted
 - Easing begets easing (G 9)
- This helps explain why
 - Policy rates appear unusually low for world as a whole (G 10)
 - There are signs of dangerous FIs in countries less affected by the crisis (T 1)
 - EMEs (including very large ones), but also some advanced economies (AEs)
- If serious financial strains did materialise...
 - spillbacks to the rest of the world could spread weakness globally



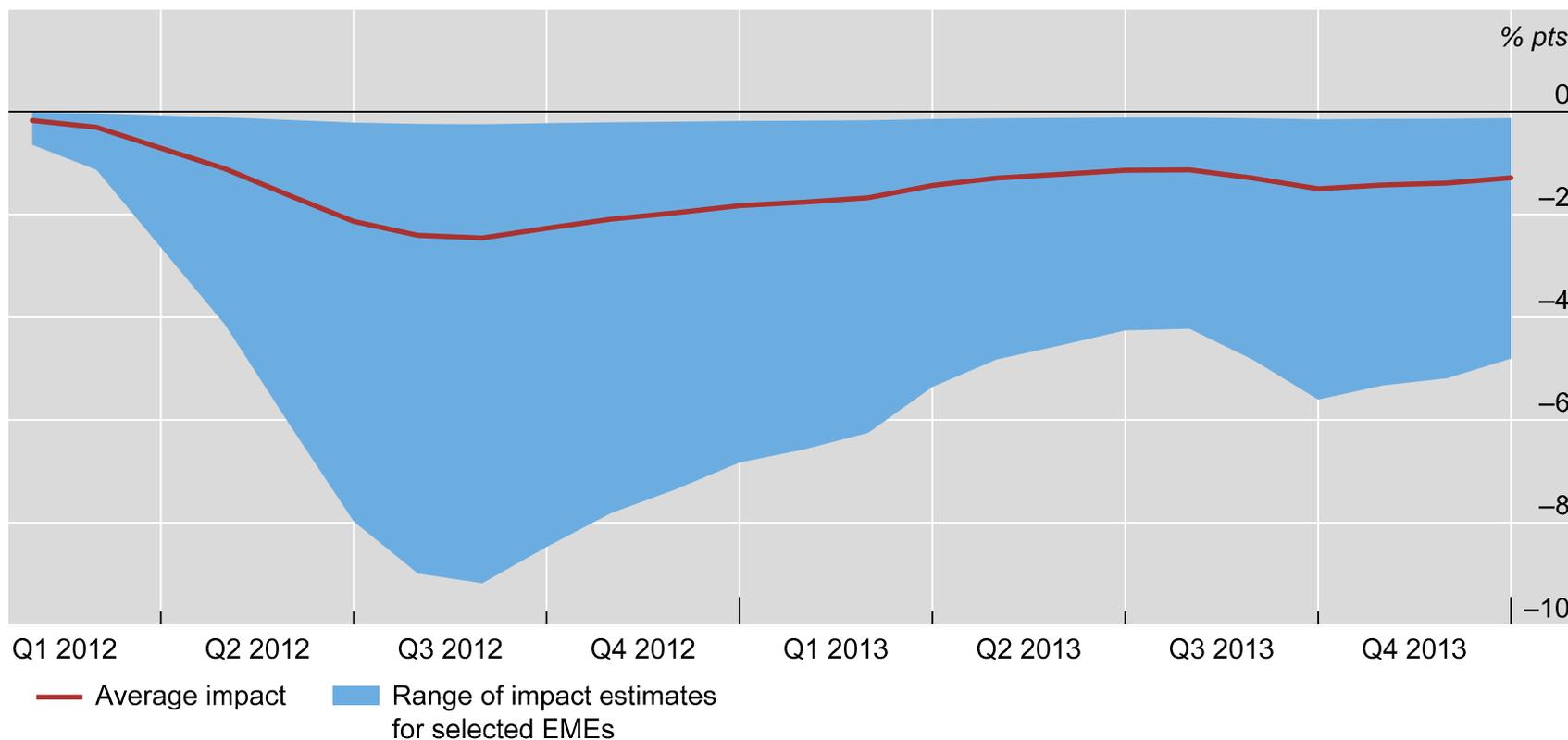
Graph 8: Surge in US dollar credit to non-banks outside the US



Bank loans include cross-border and locally extended loans to non-banks outside the United States. For China and Hong Kong SAR, 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.

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

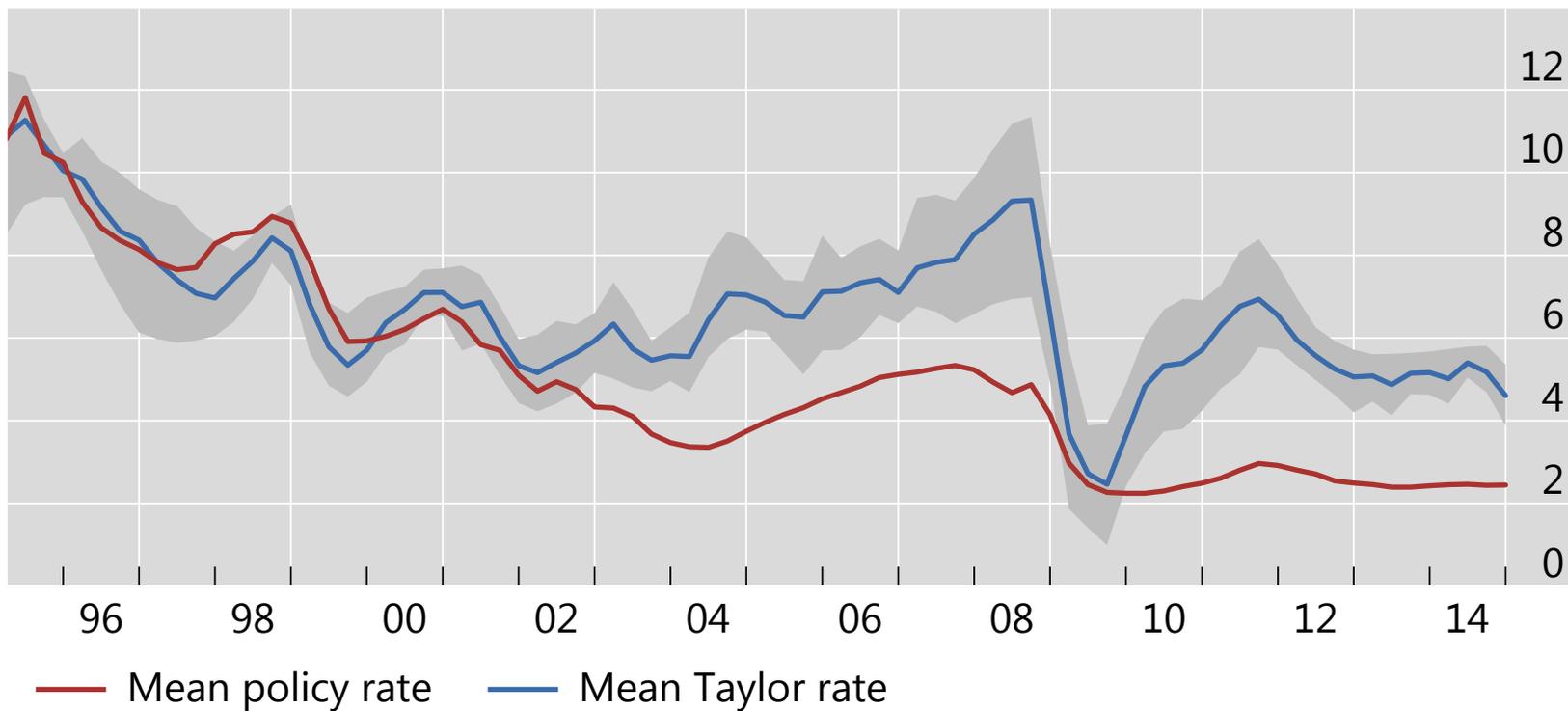
Graph 9: Unusually easy monetary policy spreads globally: the impact of US monetary policy



The shadow US policy rate driven component of the augmented Taylor equation when it is significant at the 5% level: Brazil, China, Colombia, the Czech Republic, Hungary, India, Indonesia, Israel, Korea, Mexico, Peru, the Philippines, Poland, Singapore (overnight rate), South Africa and Turkey. For details see E Takáts and A Vela, "International monetary policy transmission", BIS Papers, forthcoming.

Sources: IMF, *International Financial Statistics* and *World Economic Outlook*; Bloomberg; CEIC; Consensus Economics; Datastream; national data; BIS calculations.

Graph 10: Unusually accommodative global monetary conditions



Weighted averages. For details, see BIS, *85th Annual Report*, Graph V.3.

Table 1: Early warning indicators for banking distress – risks ahead

	Credit-to-GDP gap ²	Property price gap	Debt service ratio (DSR)	Debt service ratio if interest rates rise by 250 bp ⁴
Asia	18.3	10.4	2.0	4.3
Australia	1.6	1.5	0.7	4.5
Brazil	15.7	-5.2	4.6	6.3
Canada	6.5	6.3	1.7	5.5
China	25.4	-6.3	5.8	9.1
Central and Eastern Europe	-11.2	7.1	1.2	2.7
France	5.7	-11.7	1.4	4.5
Germany	-5.9	9.7	-1.8	0.1
Greece	-7.4	4.6		
India	-3.4		2.1	3.2
Italy	-9.8	-17.2	0.8	3.0
Japan	5.2	13.3	-2.2	0.6
Korea	3.4	4.2	0.1	3.8
Mexico	6.0	-4.0	0.3	0.9
Netherlands	-14.7	-19.2	1.6	6.5
Nordic countries	1.5	2.6	1.7	5.9
Portugal	-29.7	7.6	-0.5	2.9
South Africa	-2.1	-6.2	-0.9	0.4
Spain	-39.1	-26.6	-2.2	0.8
Switzerland	9.3	11.6	0.4	3.6
Turkey	16.6		4.1	5.7
United Kingdom	-29.0	-3.1	-1.7	1.2
United States	-12.5	0.9	-1.8	0.7
<i>Legend</i>	<i>Credit/GDP gap > 10</i>	<i>Property gap > 10</i>	<i>DSR > 6</i>	<i>DSR > 6</i>
	<i>2 ≤ Credit/GDP gap ≤ 10</i>		<i>4 ≤ DSR ≤ 6</i>	<i>4 ≤ DSR ≤ 6</i>



V – Adjustments to MP frameworks

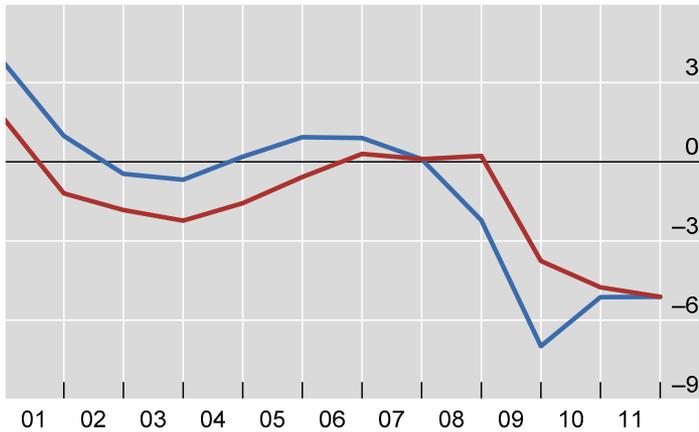
- Need for MP to be more symmetrical across booms and busts than current ones
 - Tighten MP if FIs build up even if near-term inflation is under control (“lean option”)
 - Ease less aggressively and persistently during busts
- 3 Objections & 3 answers
 - 1. Too hard to identify the build-up of FIs; but
 - Macroprudential (MaP) frameworks are based on that very premise
 - Traditional MP benchmarks are also very hard to measure in real time
 - And FC proxies may actually help, as in the case of output gaps (G 11)
 - 2. Better to rely on MaP measures to constrain FIs (separation principle); but
 - Reach of MaP is too limited
 - Extensive deployment in EMEs has not prevented signs of FIs
 - 3. Proposals are not consistent with inflation objectives
 - Require too much tolerance of persistent deviations from targets; but
 - Not clear that central banks have fully exploited available flexibility
 - Perceived trade-offs key, including concerns about deflation
 - But historical record suggests concerns may be overdone
 - Revisiting mandates should not be taboo, but only as a last resort
 - Analytical lens matters more than the mandates



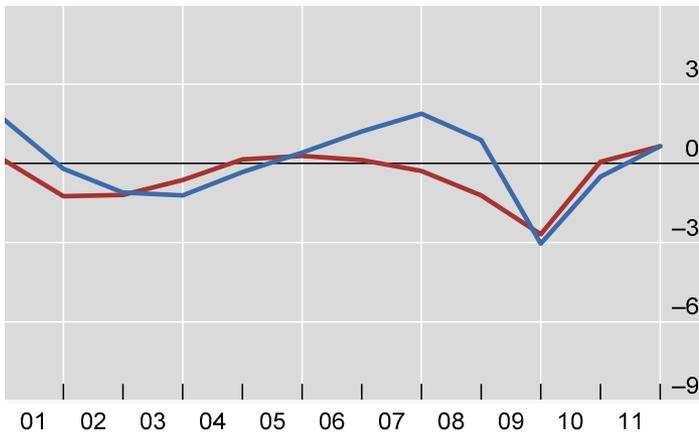
Graph 11: US output gaps: ex post and real-time estimates

In per cent

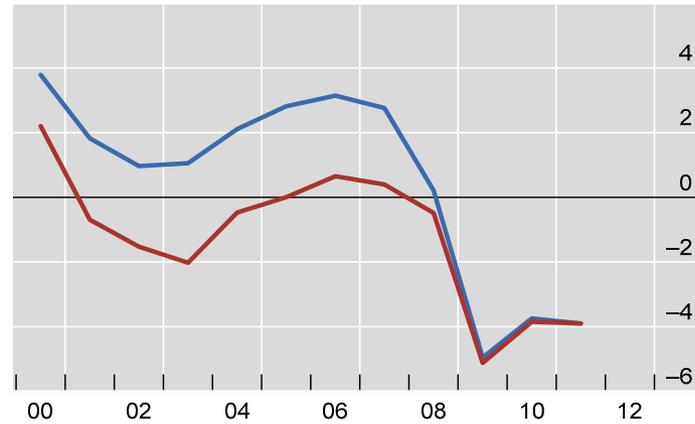
IMF



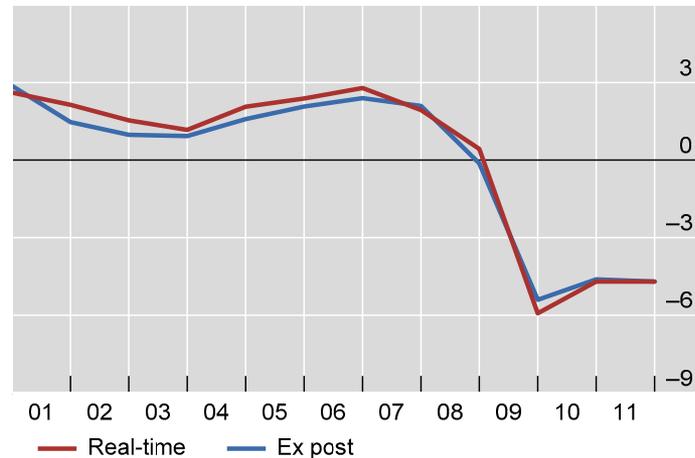
Hodrick-Prescott



OECD



Finance-neutral



For each time t , the “real-time” estimates are based only on the sample up to that point in time. The “ex post” estimates are based on the full sample.

Source: Borio, C, P Disyatat and M Juselius (2013).

Conclusion

- Good reasons to question 3 deeply-held beliefs underpinning MP received wisdom
 - 1. Equilibrium (or natural) rates definitions that ignore financial stability
 - Role of financial booms & busts (FCs) is key
 - 2. Money (monetary policy) neutrality over long horizons relevant for policy
 - Role in fostering financial booms & busts....
 - and their long-lasting impact on productivity growth are key
 - 3. Deflations are always costly in terms of output
 - Historical record suggests otherwise
 - Asset price (esp. property price) “deflations” matter more
- 2 conclusions
 - The long-term decline in real interest rates is, in part, a disequilibrium phenomenon
 - not consistent with lasting financial, macroeconomic and monetary stability
 - Need to adjust MP frameworks to take FCs systematically into account
 - would help avoid an easing bias over time and the risk of a debt trap
 - Imprudent to rely exclusively on MaP to constrain FIs
- Questioning deep-seated beliefs is a risky business, but is important
 - Essential to explore them critically and have a debate: stakes are high



*"It ain't what you don't know that gets you into trouble.
It's what you know for sure that just ain't so."*

Mark Twain



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