



# Monetary policy in the grip of a pincer movement

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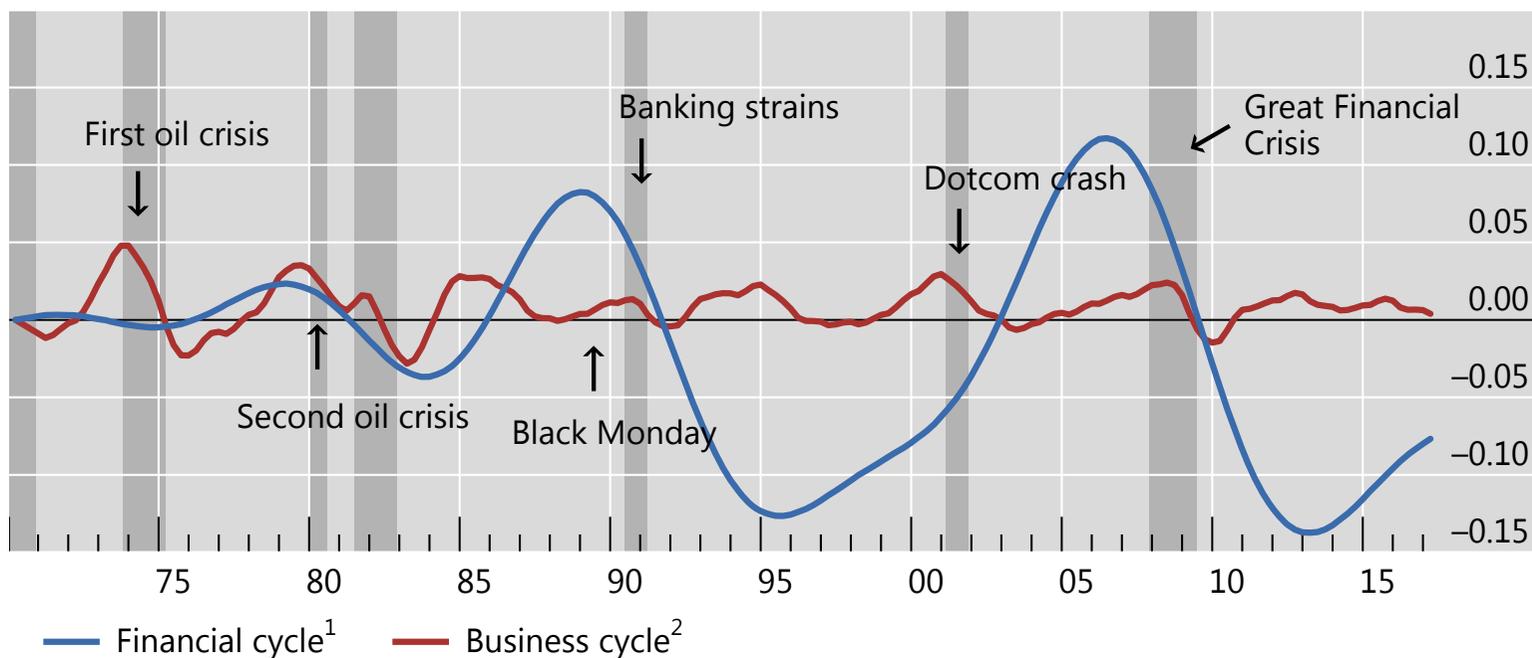
## Theme and takeaways

- Main thesis: monetary policy (MP) caught in a pincer movement
  - The emergence of disruptive financial cycles (FCs)
  - An inflation rate insensitive to domestic slack
    - Response to this challenge will define the future of MP
- Takeaways
  - Need to reconsider the natural interest rate ( $R^*$ ) (analytically and as policy guide)
    - Part of the solution or of the problem?
  - Need for MP to take the FC more systematically into account
    - Important to respond early
  - Need for greater room for manoeuvre in current frameworks
    - Various options
- Structure
  - What is the pincer movement?
  - How useful is the current notion of  $R^*$ ? (new empirical evidence)
  - Why should MP respond to the FC? (illustration)
  - How could MP frameworks be adjusted?

## I – The pincer movement

- Larger and more disruptive FCs
  - FC = self-reinforcing interaction credit/risk-taking/asset (property) prices (G 1)
  - Considerably longer than the traditional business cycle
  - Busts cause major and lost-lasting damage (especially if banking crisis)
    - Including to productivity growth through resource misallocations (G 2)
  - Amplified by changes in financial and monetary regimes
- Inflation is rather insensitive to domestic economic slack
  - Muted and seemingly declining response of wages and prices (G 3)
  - Result of greater central bank (CB) credibility?
  - Possible role of persistent positive supply-side factors, esp. globalisation
- Resulting MP challenge
  - Globalisation may have added fuel to the FC
  - Common coexistence of very low inflation/deflation, good growth and strong FCs
    - Historical evidence consistent with this (G 4)
  - Chasing short-term inflation control could even risk turning good into bad deflation

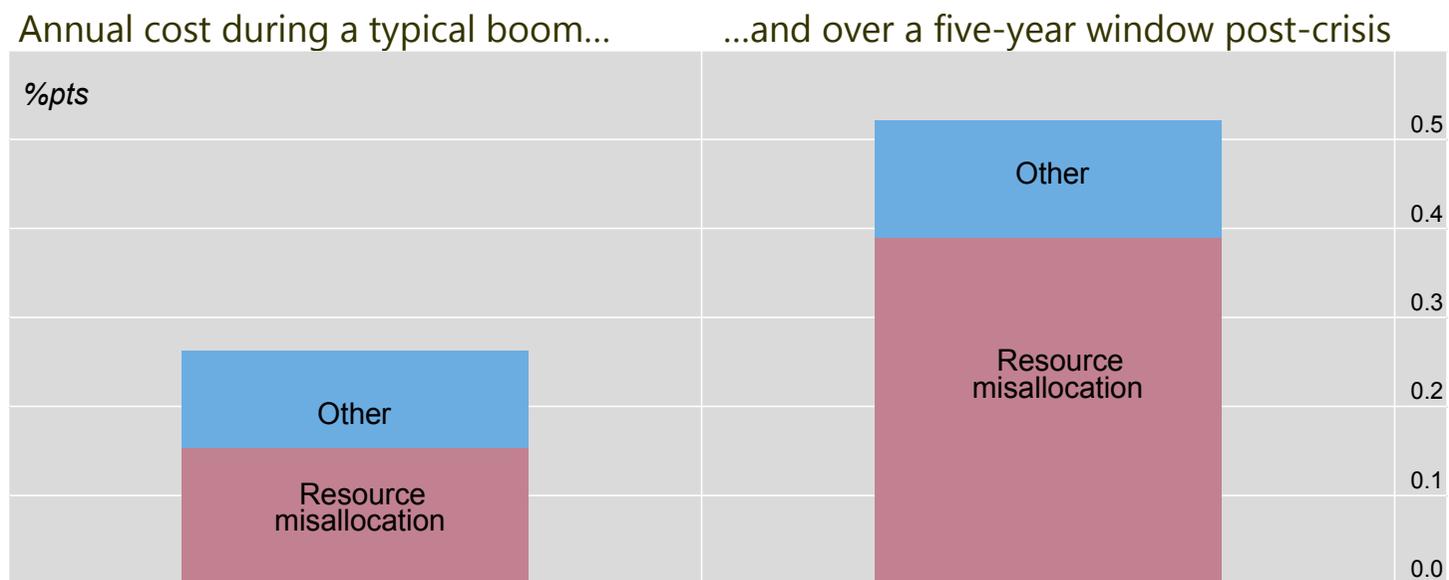
## G1: The financial cycle is longer than the business cycle (the US example)



<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. <sup>2</sup> The business cycle as measured by a frequency-based (bandpass) filter capturing fluctuations in real GDP over a period from 1 to 8 years.

The graph compares the financial cycle with traditional measures of the business cycle. The picture would be similar based on other common methodologies (eg turning point (peak/trough) analysis).  
Source: Drehmann et al (2012), updated.

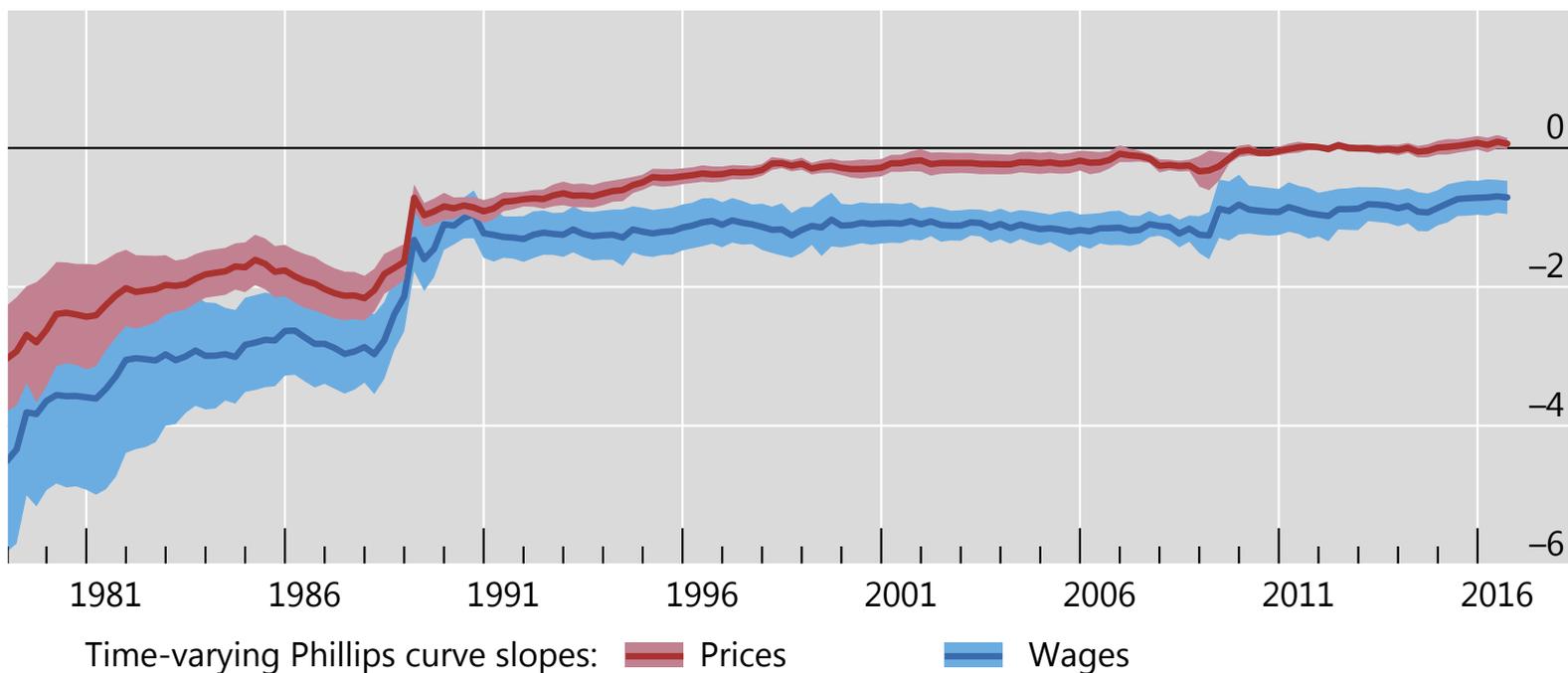
## G2: Financial booms sap productivity by misallocating resources



Estimates calculated over the period 1969–2013 for 21 advanced economies. Resource misallocation = annual impact on productivity growth of labour shifts into less productive sectors during a five-year credit boom and over the period shown. Other = annual impact in the absence of reallocations during the boom.

Source: Borio et al (2016).

## G3: A flatter Phillips curve for prices and (less so) for wages



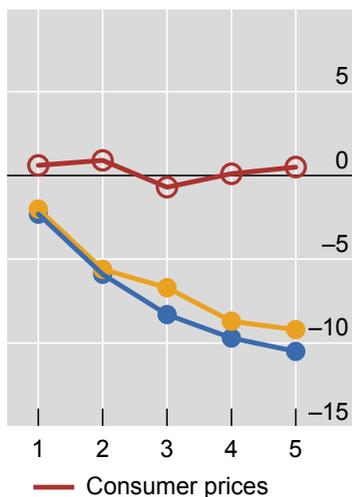
<sup>1</sup> Coefficient; rolling 15-year window estimates from panel of G7 economies. See source for details.

Source: Borio (2017), from 87<sup>th</sup> BIS Annual Report.

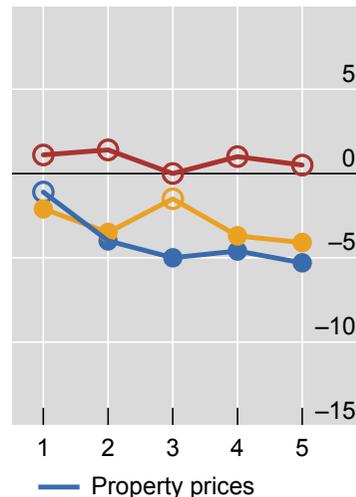
## G4: Output costs - Deflations vs asset price declines<sup>1</sup>

In percentage points<sup>2</sup>

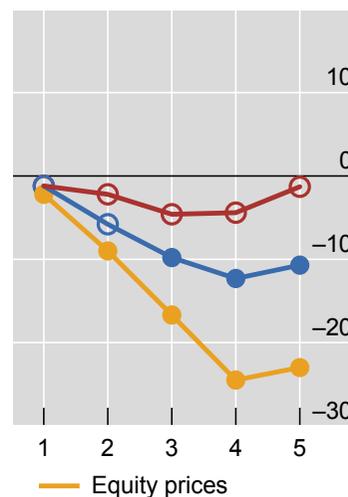
Full sample



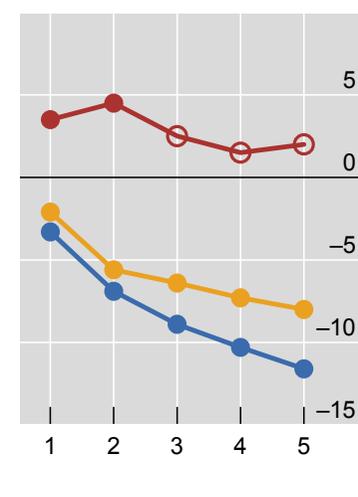
Classical gold standard



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  $\alpha_i$  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).

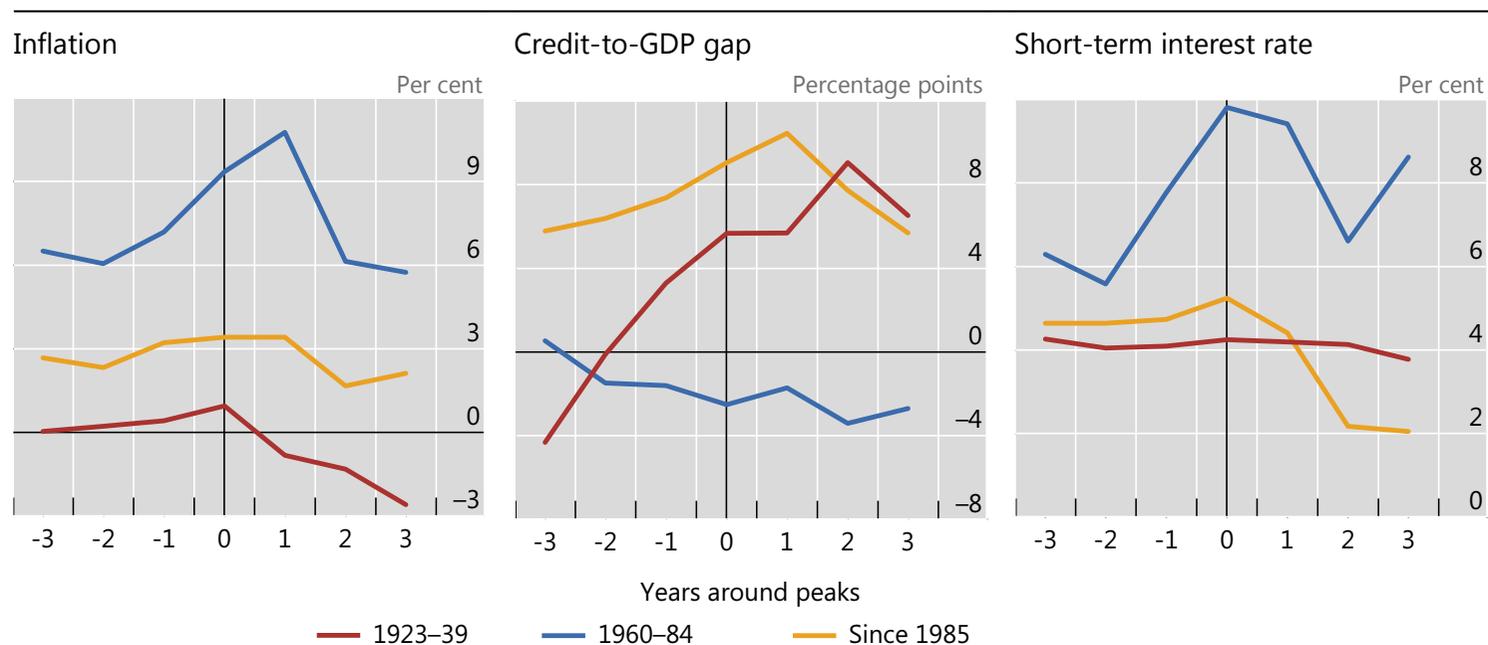
<sup>1</sup> The graph shows the estimated difference between h-period per capita output growth after and before price peak. <sup>2</sup> The estimated regression coefficients are multiplied by 100 in order to obtain the effect in percentage points.

Source: Borio, et al (2015).

## I – The pincer movement (ctd)

- Important change in the business cycle since early 1980s
  - From inflation-induced to financial cycle-induced recessions (G 5)
- Pre-mid 1980s
  - Inflation rose substantially
  - Monetary policy tightened
  - And little happened to credit
- Post-mid 1980s
  - Inflation changed little
  - Monetary policy hardly tightened
  - But a strong credit boom turned to bust
- A similar picture would appear if full financial cycle measures were used
  - Confirmation: financial cycle proxies outperform the term spread as recession indicators since then

## Gr 5: The evolution of the business cycle<sup>1</sup>



<sup>1</sup> The horizontal axis denotes years around peaks in the business cycles, with the peak date set at zero (vertical lines). Lines show the median evolution across countries (AU, CA, DE, DK, FI, FR, GB, NO, SE and US) and events in the respective time period.

Source: BIS calculations.

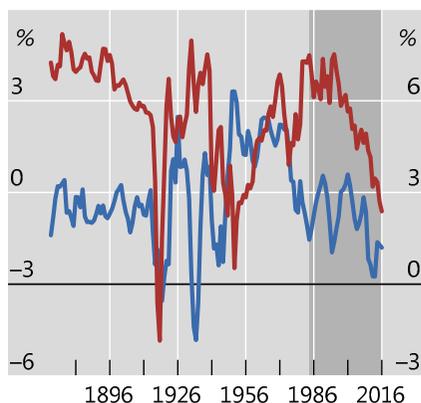
## II – The natural rate of interest revisited

- $R^*$  = real interest rate ( $R$ ) that prevails when output is at potential (full employment)
  - Standard notion: determined purely by real factors
  - Underpinned by notion of money (long-run) neutrality
- Claim: decline in real  $R$  to very low (even negative) levels is due to decline in  $R^*$
- Challenges in empirical testing...
  - 1. “Long run” is analytical notion to be translated into calendar time
  - 2.  $R^*$  is an unobservable, model-dependent concept
  - 3. How can one tell whether market  $R$  and  $R^*$  coincide?
    - what compass guides economic actors, who set  $R$ , to ensure that outcome?
- ...Raise problems with current evidence (risk of circularity)
  - 1. OK: zero frequency but in practice (for policy relevance) a decade or shorter
  - 2. Problematic: heavy reliance on maintained hypotheses
  - 3. Problematic: either assume or use inflation (Phillips curve) as key signal

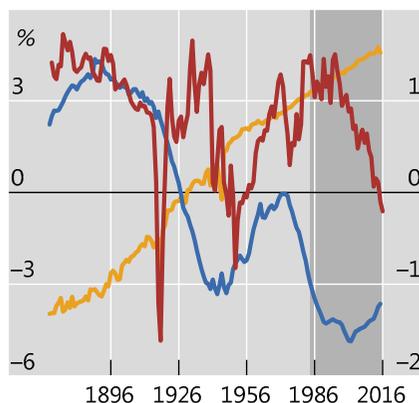
## II – The natural rate of interest revisited (ctd)

- To break out of this circularity: let data speak a bit more (observables key)
  - 1870s-present day; 19 countries, link long and short real (including filtered)  $R_s$  to “usual suspects”
  - Compare with the role of MP
- Two key findings
  - Usual suspects do not work well beyond typical sample (G 6)
  - Evidence that MP regimes matter (G 7)
- Two examples of relevance of MP regimes
  - Classical gold standard
    - Nominal  $R_s$  stable; inflation slow-moving and range-bound; usual suspects just as variable
  - Recent sample: 3 possible footprints
    - 1980s:  $R_s$  unusually high because of Volcker shock
    - Asymmetric response to successive financial and business cycles
    - Difficulties in pushing inflation up

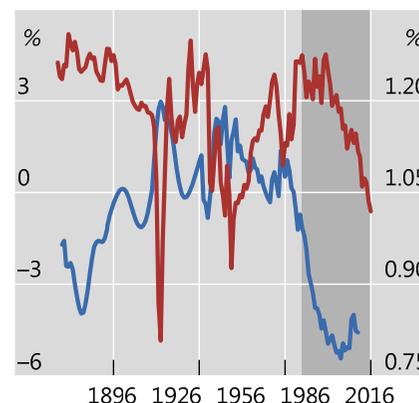
## G6: Real interest rate and saving/investment: spot the correlation...



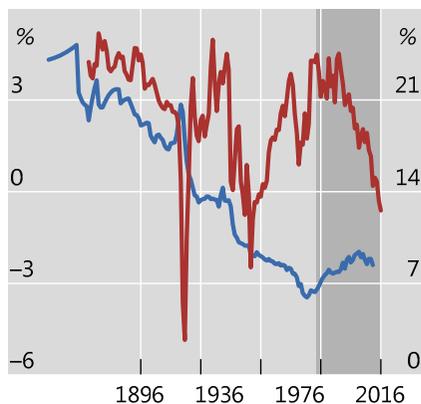
— Long-term real rates (lhs)  
— GDP growth<sup>1</sup> (rhs)



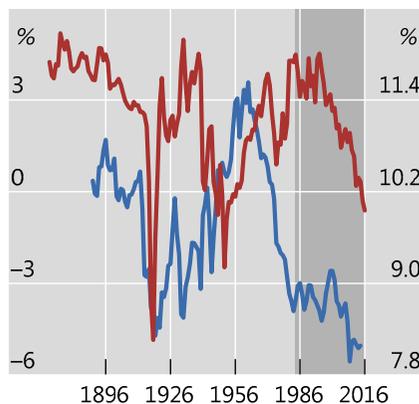
— Dependency (rhs)  
— Life expectancy (rhs)



— Relative price of capital (rhs)



— Long-term real rates (lhs)  
— Inequality (rhs)



— Long-term real rates (lhs)  
— Marginal product of capital (rhs)

Shaded area indicates last 30 years.

All variables are medians of 19 advanced countries. Ten-year bond yields are used to calculate the long-term real interest rate. Dependency ratio and life expectancy are normalised.

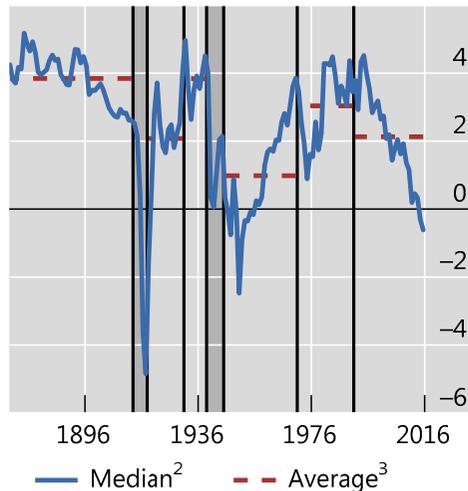
<sup>1</sup> Five-year moving average.

Source: Borio et al (2017).

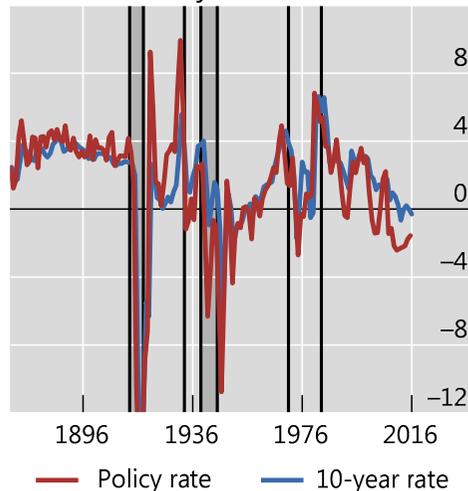
# G7: The influence of monetary regimes on real interest rates<sup>1</sup>

In per cent

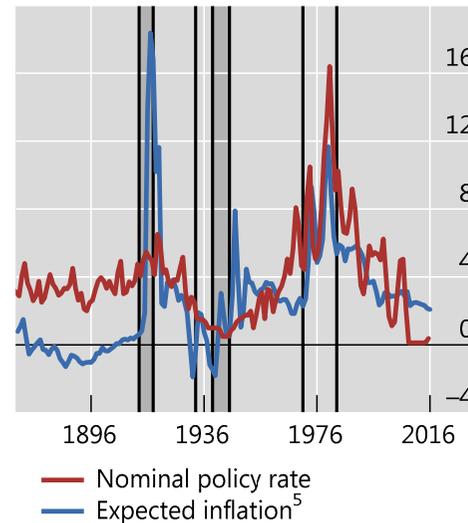
Median long-term rate across countries



Interest rates for the monetary anchor countries<sup>4</sup>



Nominal policy rate<sup>4</sup> and expected inflation<sup>4</sup>



<sup>1</sup> Monetary policy regimes, in order: (mainly) classical gold standard; post-WWI gold standard; other interwar years; Bretton Woods; post-Bretton Woods, pre Volcker; post-Bretton Woods, post-Volcker. Shaded areas indicate WWI and WWII (excluded from the empirical analysis). <sup>2</sup> Median interest rate for 19 countries. <sup>3</sup> Average of median interest rate over the periods corresponding to regimes. <sup>4</sup> Data for the United Kingdom up to WWI, and for the United States thereafter. <sup>5</sup> One-year ahead expected inflation (year-on-year headline CPI).

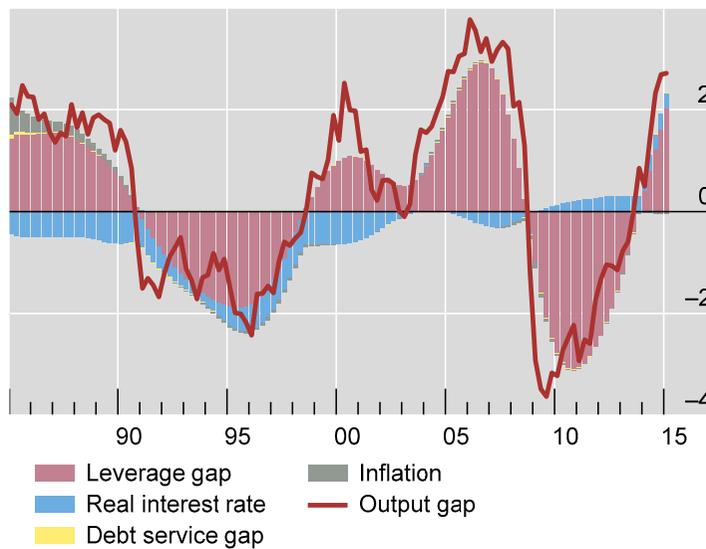
Source: Borio et al (2017).

## III – Adjusting MP frameworks

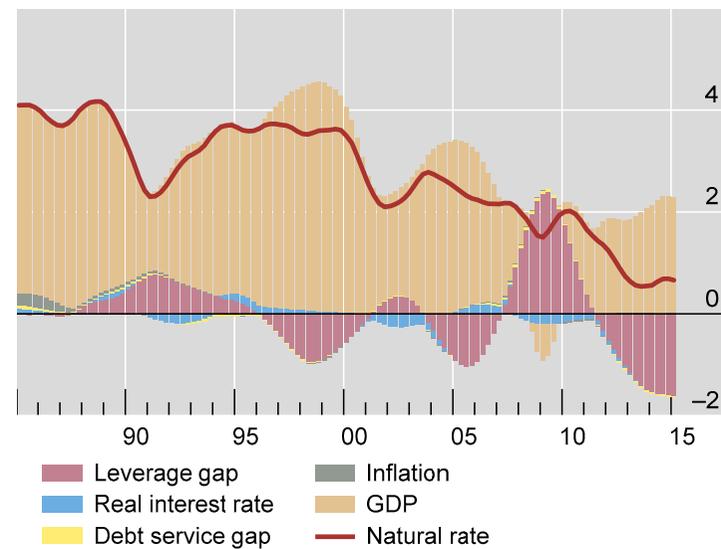
- Why respond?
  - Weaker link of MP with inflation increases any collateral damage of low rates
    - Risk of a debt trap
  - (Macro)prudential (MaP) measures unlikely to be able to address FC on their own or debt trap
  - No need to change MP's objectives but just time-frame
  - Could be done successfully
- How? An illustration
  - Incorporate the FC into an otherwise standard empirical macro system
    - Two key variables: leverage and debt service ratio gaps perform quite well
      - Gaps measure deviations from «financial equilibrium» (FE)
    - Augment standard filter and CB's rule with FC proxies: gaps measure deviations from FE
  - Findings
    - Financial gaps are key in estimates of output gaps and natural interest rate (G 8)
    - Augmented rule leads to output gains with little change in inflation (G 9) as smooths FC (G 10)
    - Important to lean early and respond systematically to the FC (G 11)
    - $R^*$  is higher than commonly estimated and falls by less when the CB responds to the FC (G 12)
    - Sizeable deviations of policy  $R$  from  $R^*$  may be needed

## G8: The FC contains more information than inflation

Output gap



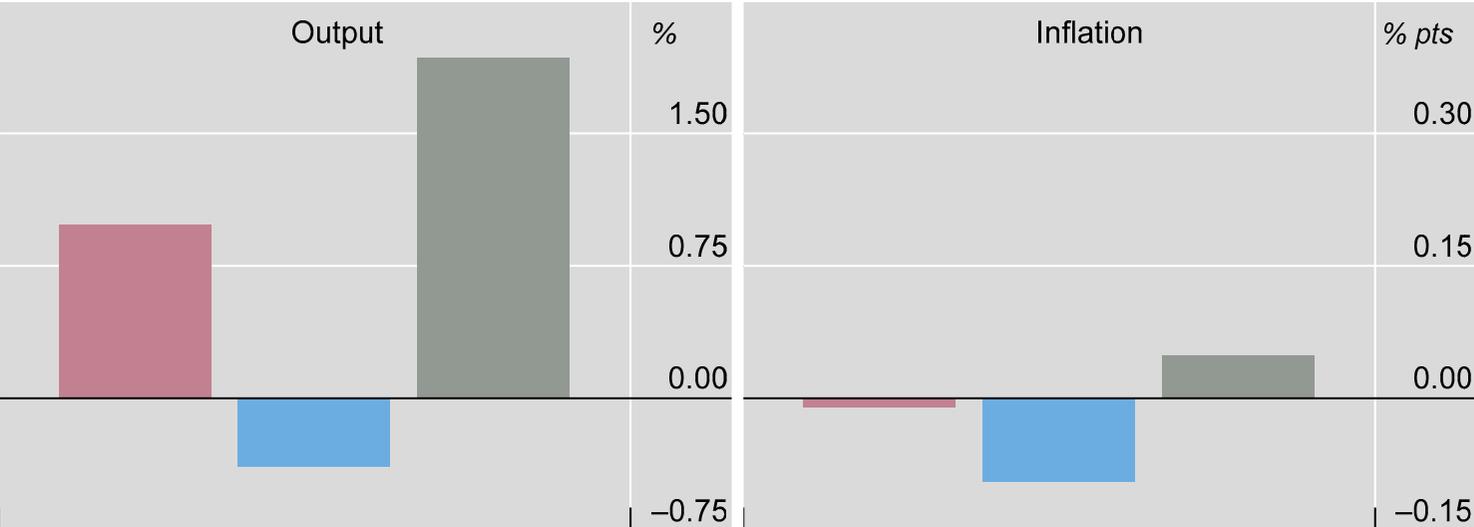
Natural rate



The leverage gap and debt service gap are proxies for the financial cycle. The graph indicates that the information content of inflation (grey shade) for the output gap (potential output) and for the natural rate is quite limited once the data are allowed to choose between inflation and financial cycle proxies.

Source: Juselius et al (2017), WP version, based on US data.

# G9: An illustrative experiment: higher output and similar inflation

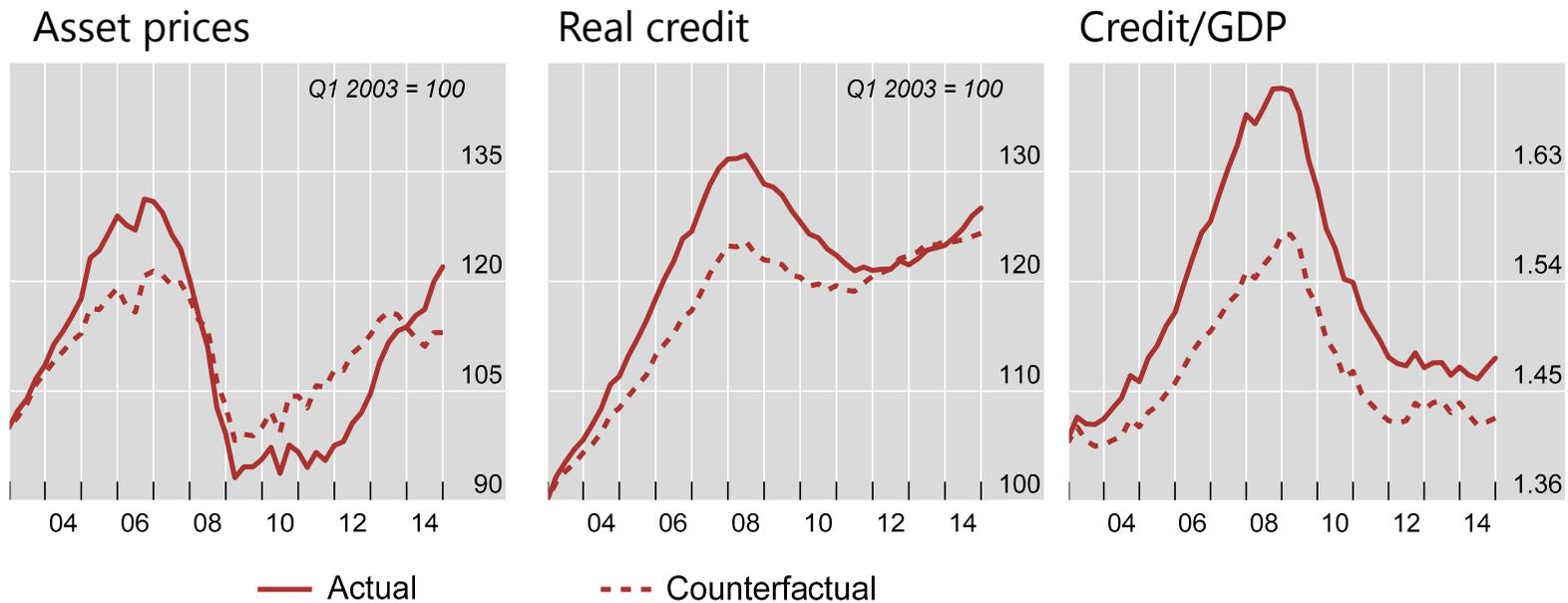


Difference between counterfactual and actual outcomes; yearly average

■ Overall period (2003–2015)   
 ■ Before 2008   
 ■ After 2008   
 ■ Overall period (2003–2015)   
 ■ Before 2008   
 ■ After 2008

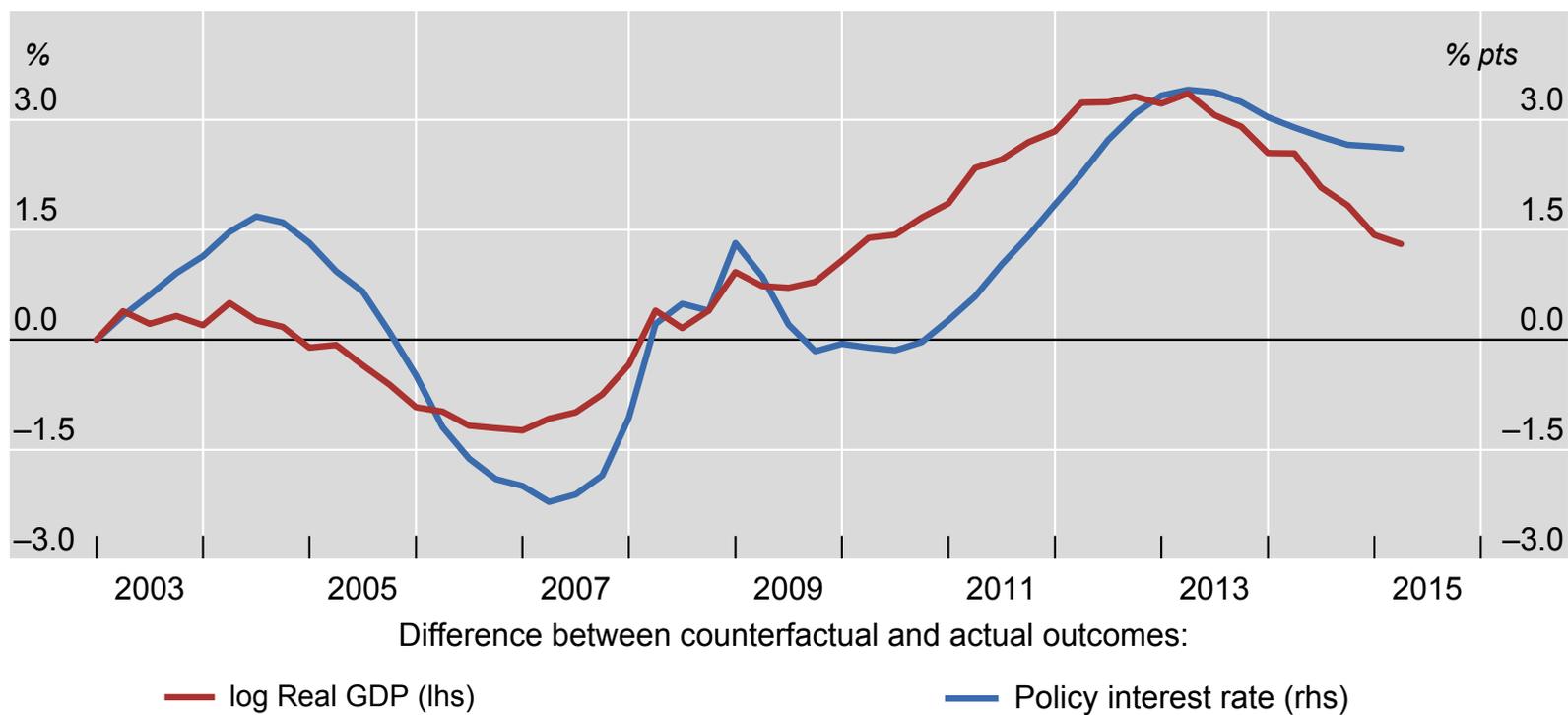
Source: Juselius et al (2017), WP version, based on US data.

## G10: An illustrative experiment: smoothing the financial cycle



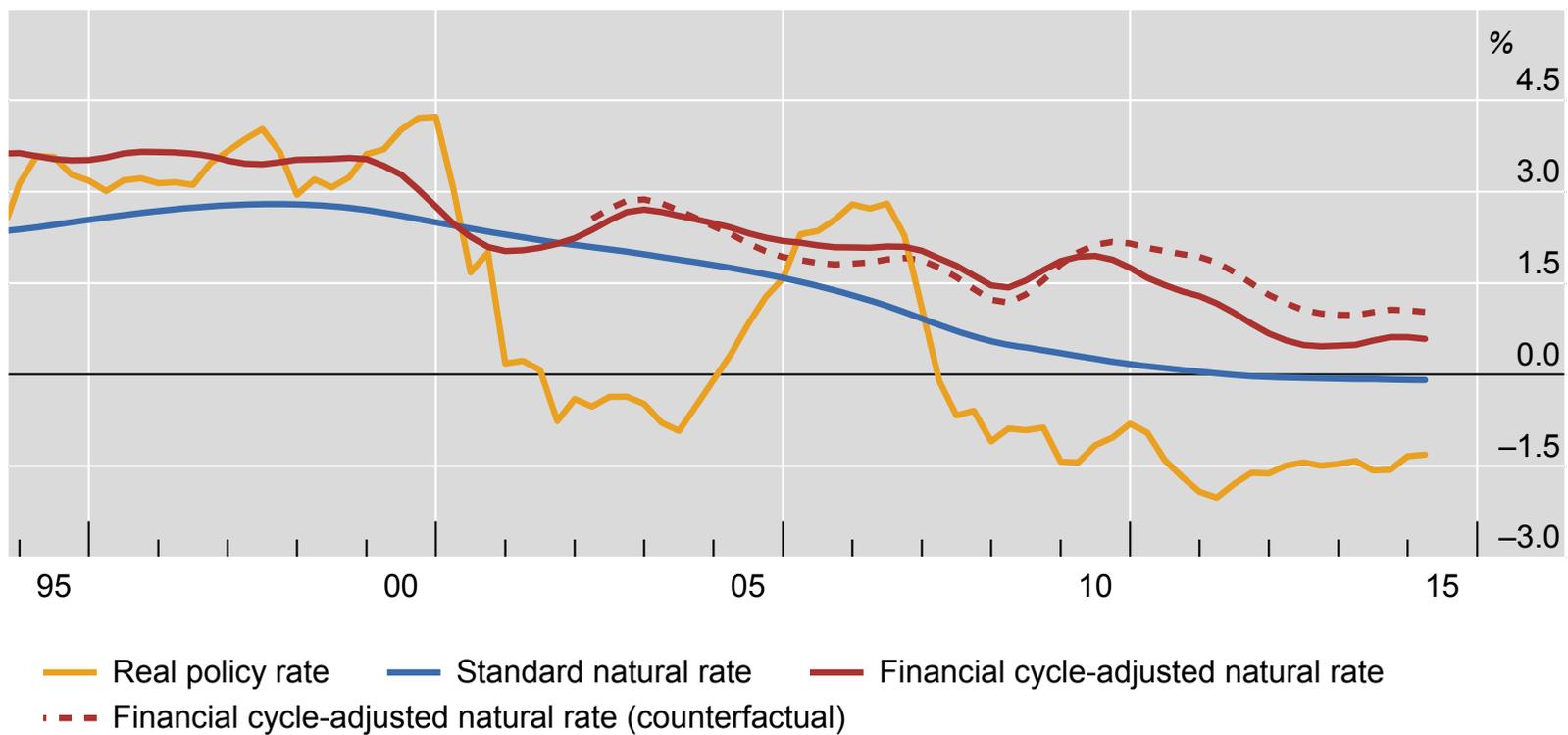
Source: M Juselius et al (2017), WP version, based on US data.

## G11: An illustrative experiment: output and interest rate paths



Source: Juselius et al (2017), WP version, based on US data.

## G12: Comparing interest rates: standard and FC-adjusted



Source: Juselius et al (2017), WP version, based on US data.

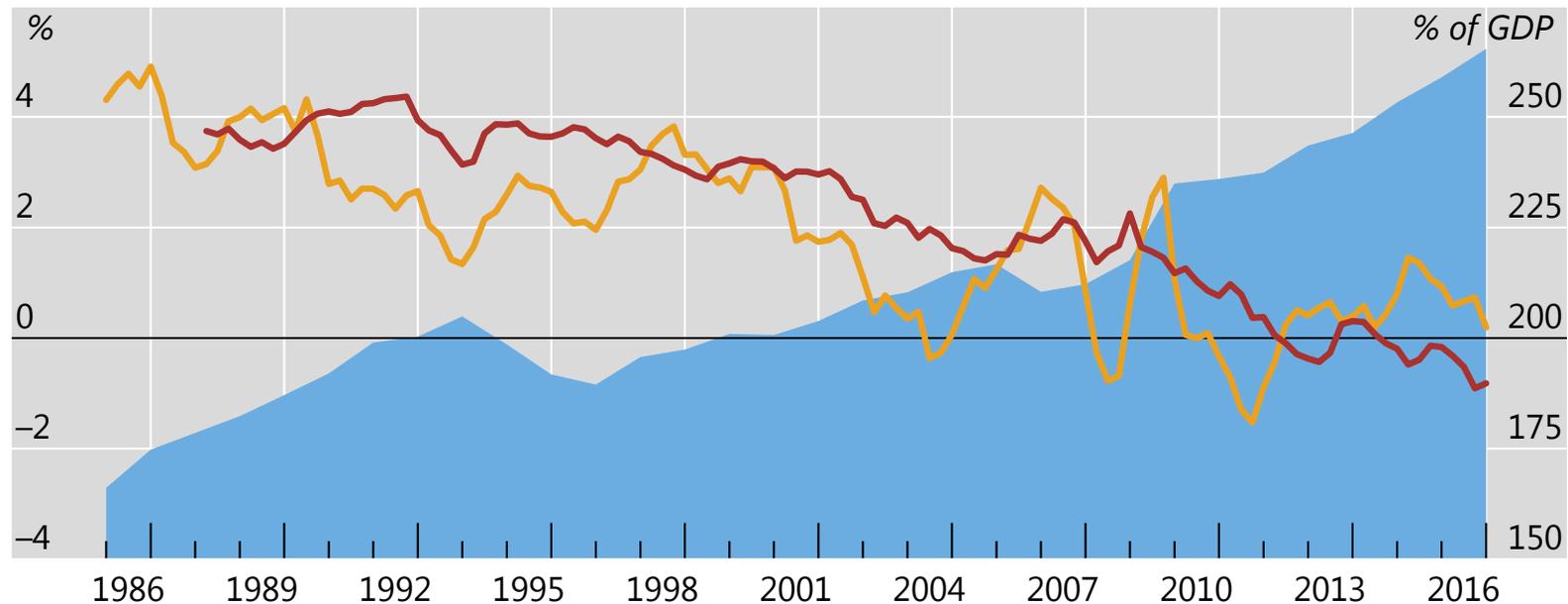
## II – Adjusting MP frameworks (Ctd)

- Key adjustment to frameworks
  - Gain the necessary room for manoeuvre to address the FC and debt trap risk systematically
- General considerations
  - No one-size-fits-all: country-specific
  - All options have pros/cons
  - All already implemented or proposed in some countries
- Options
  - Lengthen the horizon over which to pursue a given inflation target
  - Shift from point-targets to soft bands/widen bands
  - Lower the point targets/bands
  - Change the mandate (eg, add financial stability)
    - Most unpredictable? Caution needed

## Conclusion

- Central banks have been caught in a pincer movement
  - Growing disruptive FCs
  - Inflation's limited responsiveness to domestic slack
- This raises risks
  - For the economy
    - Entrenching instability and a debt trap (G 13)
  - For MP frameworks
    - May be found not to be fully fit for purpose
- A number of analytical and practical adjustments may be desirable
  - Need to reconsider the natural interest rate ( $R^*$ ) (analytically and as policy guide)
    - Part of the solution or of the problem?
  - Need for MP to take the FC more systematically into account
    - Importance of responding early
  - Need for greater room for manoeuvre in current frameworks
    - Various options are possible; to be evaluated carefully

## G13: Interest rates sink as debt soars: a debt trap?



Lhs: — Long-term index-linked bond yield<sup>1</sup> — Real policy rate<sup>2,3</sup> Rhs: ■ Global debt (public and private non-financial sector)<sup>3</sup>

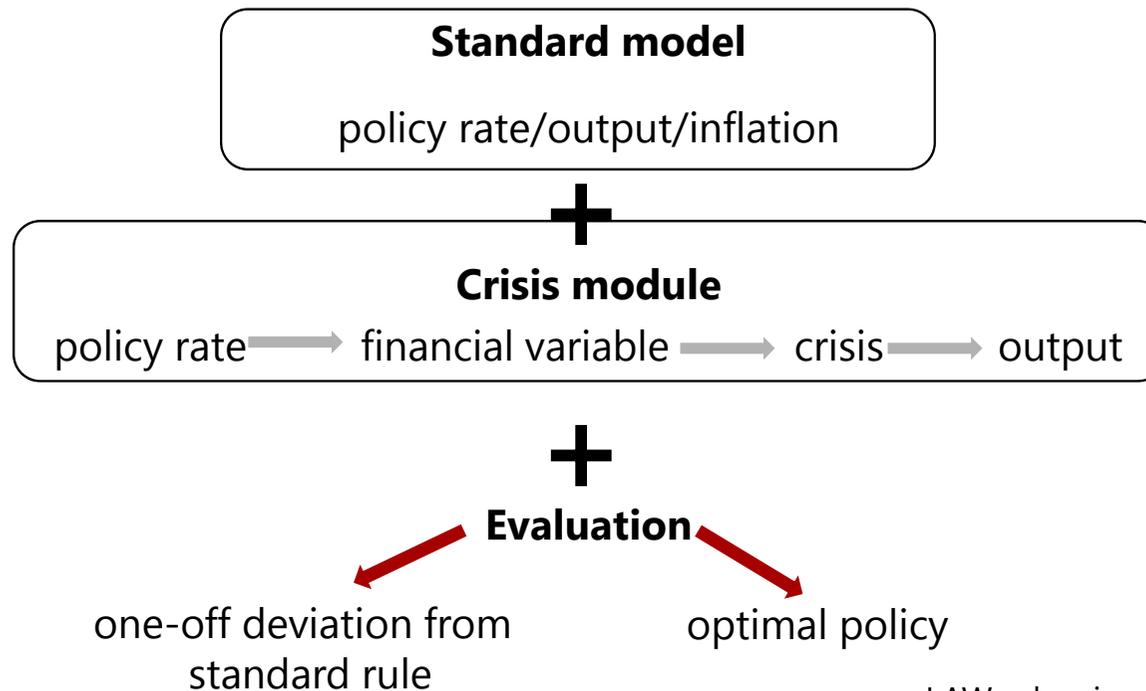
<sup>1</sup> From 1998, simple average of France, the United Kingdom and the United States; otherwise only the United Kingdom. <sup>2</sup> Nominal policy rate less consumer price inflation. <sup>3</sup> Aggregate based on weighted averages for G7 economies plus China based on rolling GDP and PPP exchange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

Sources: Borio and Disyatat (2014), updated.

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# ANNEX

## Costs and benefits of LAW: standard approach



LAW = leaning against the wind

## Costs and benefits of LAW: assumptions

	<b>Standard</b>	<b>BIS</b>
Permanent output losses	NO	NO/YES
Cleaning is costly	NO/YES	YES
LAW reduces crisis costs	NO	YES
Benefits possible without crises	NO	YES
Risks build up	NO	YES

LAW = leaning against the wind

## Costs and benefits: an alternative approach

