



International Monetary Fund

Why Have the BRICS Slowed Down?

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Research Department

NIPFP-DEA Neemrana Conference
September 8, 2013

Three Questions

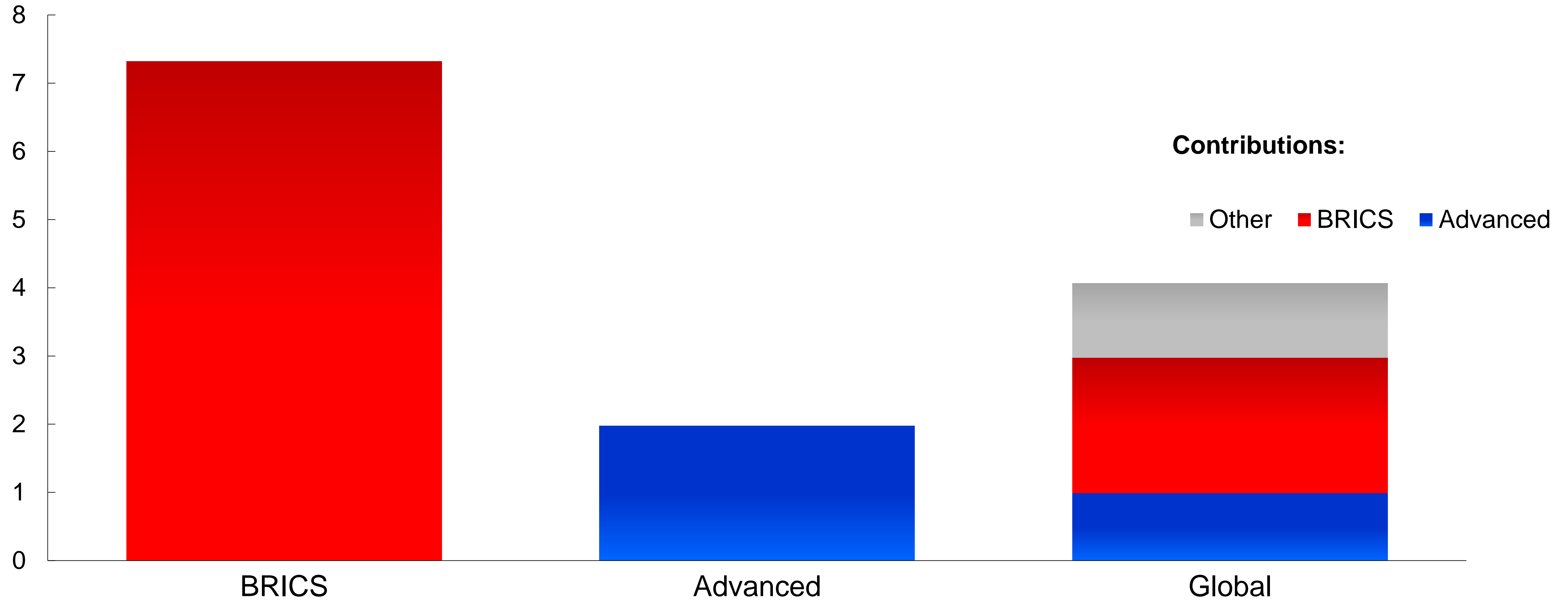
Why are we concerned?

How can we identify structural slowdowns?

Are the slowdowns structural?

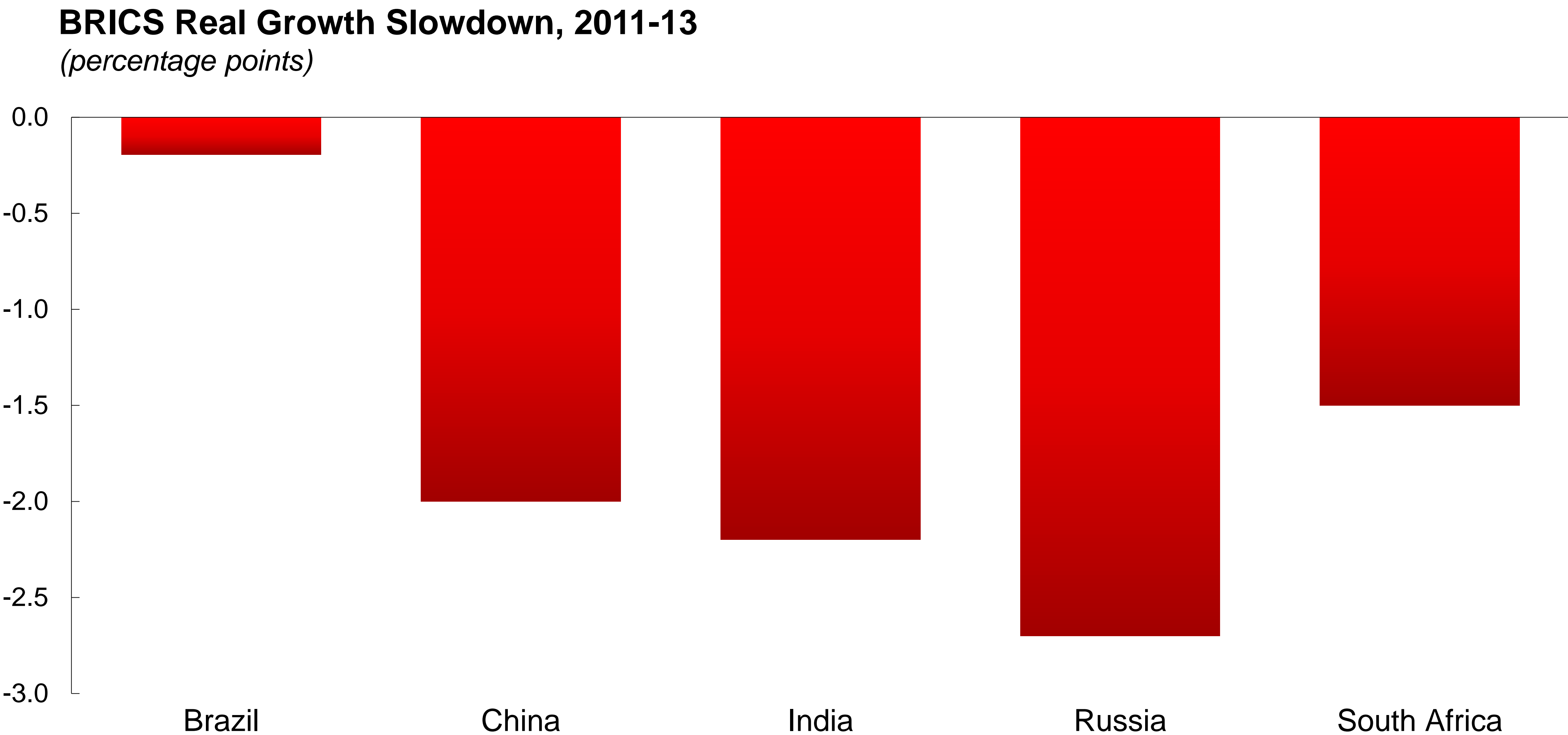
BRICS: Global Growth Engine

BRICS, Advanced Economies and Global Real Growth, 2010-12
(Percent)



Source: IMF staff calculations.

Slowdown: Sharp and...

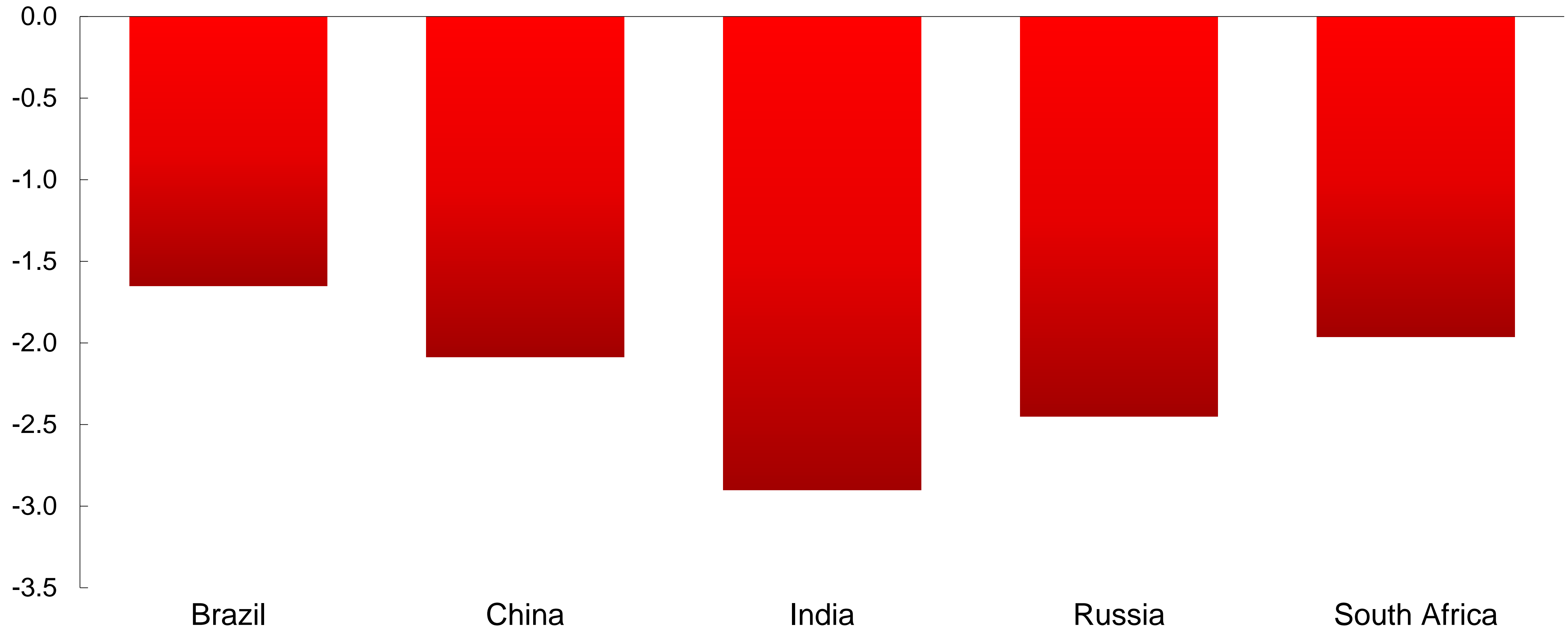


Sources: Haver Analytics; and IMF staff calculations.

Unanticipated

BRICS: 2013 Growth Forecast Changes

(percentage points; Fall 2011 WEO versus IMF GPM forecast for 2013)

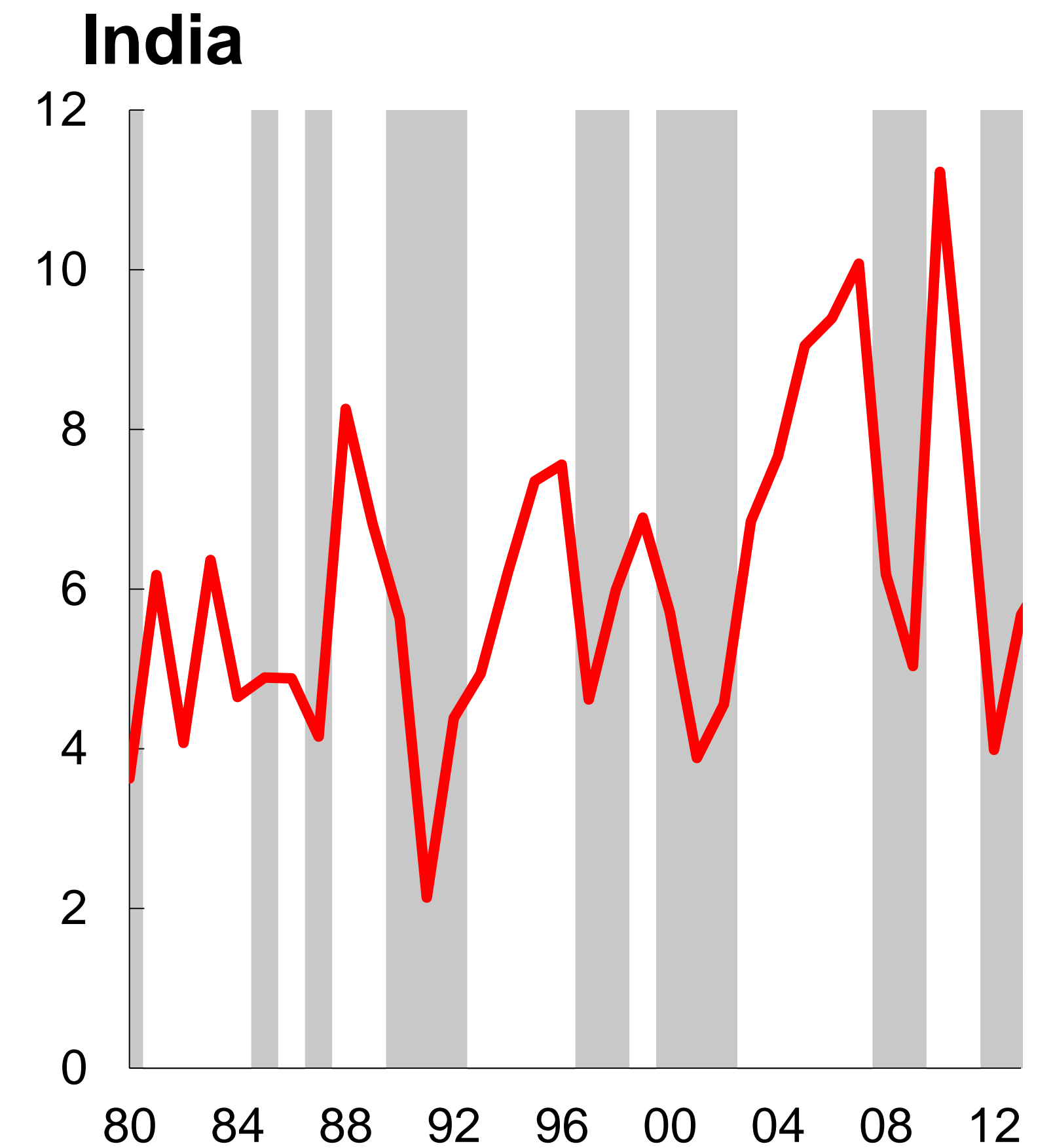
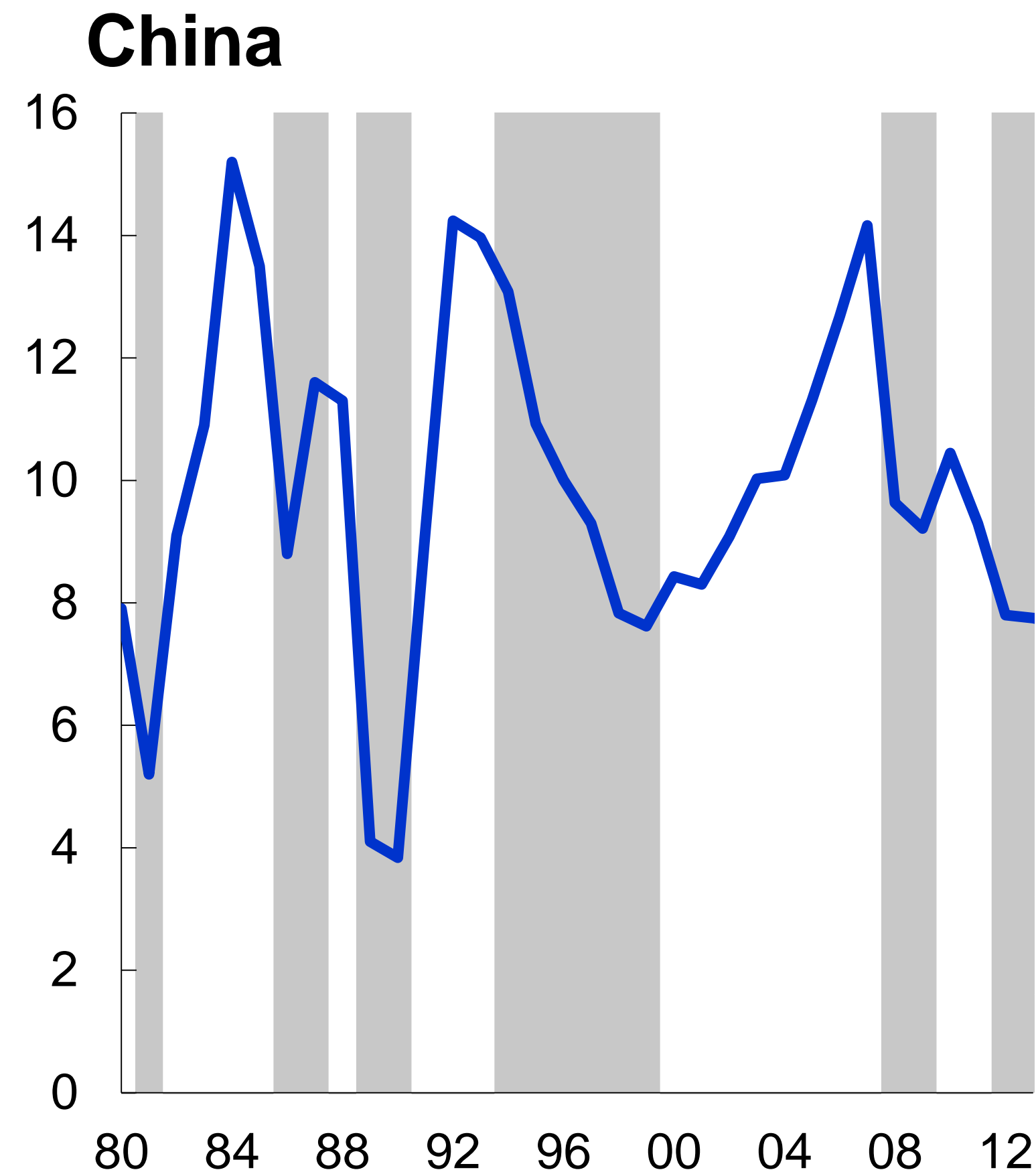
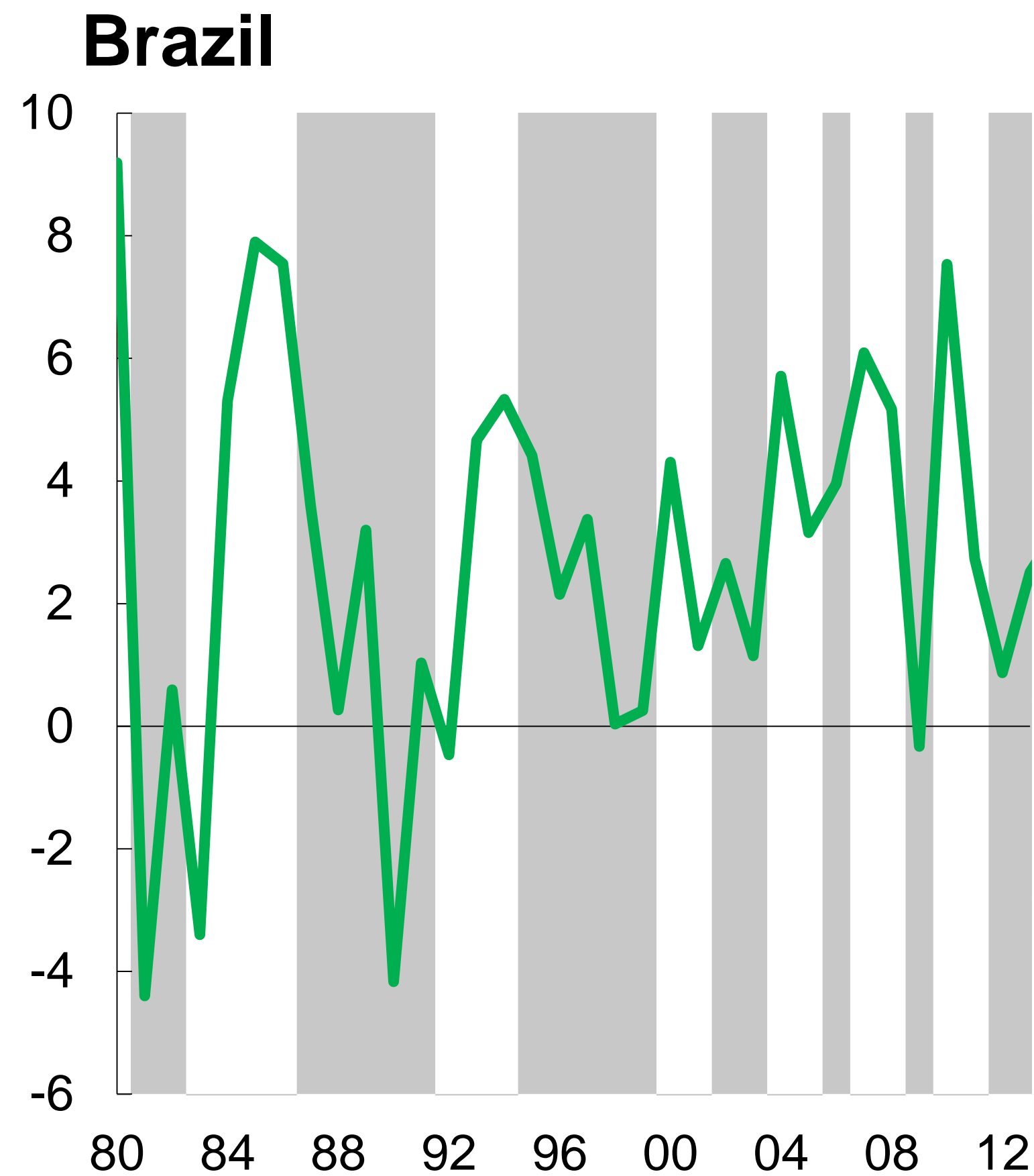


Sources: IMF, *World Economic Outlook, Fall 2011*; and staff calculations.

But Hardly Unprecedented

Real GDP Growth

(percent, shaded areas indicate years of growth slowdown)



Sources: IMF, *World Economic Outlook*; and staff calculations.

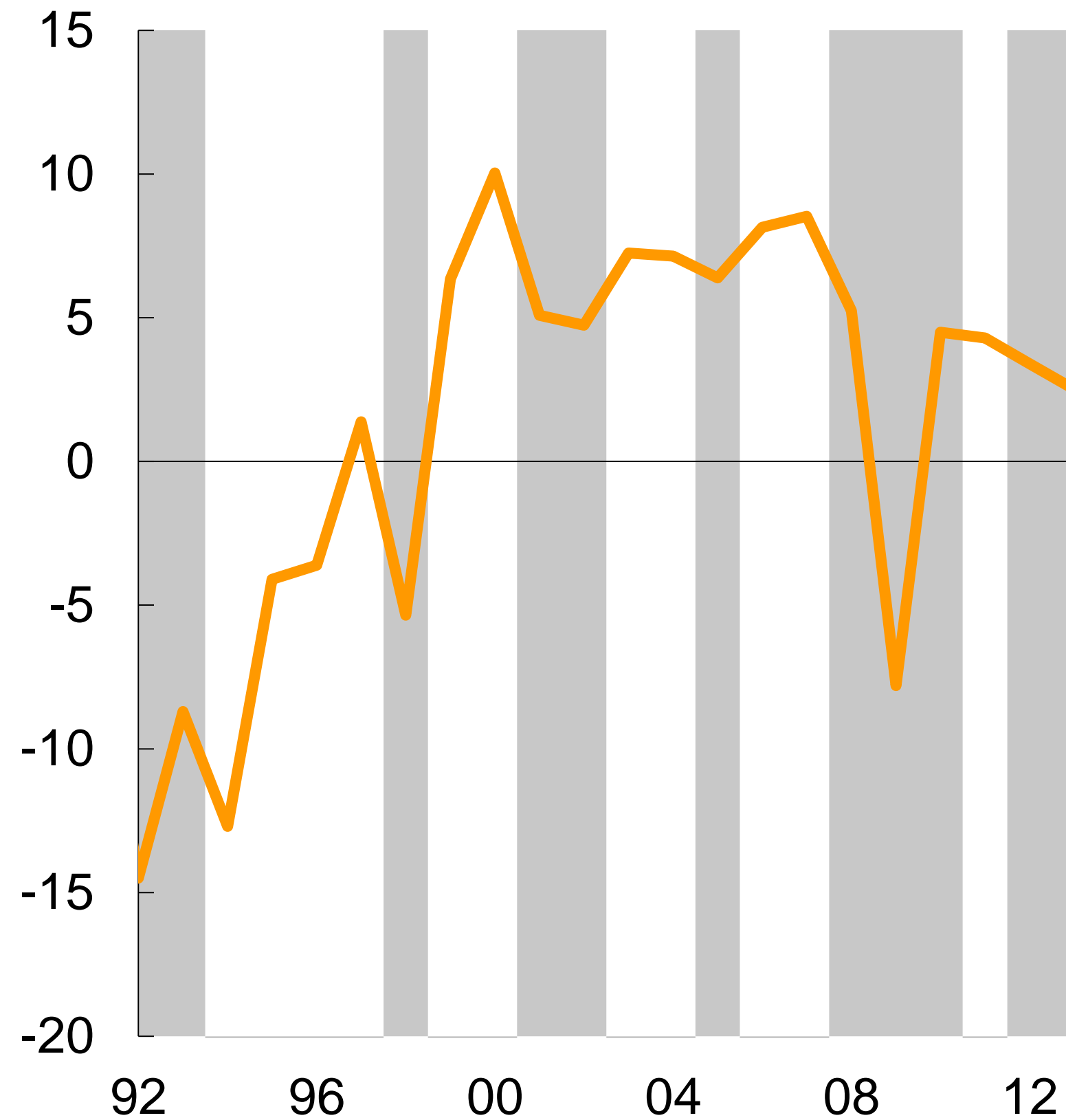
Note: A year of growth slowdown occurs when the difference in growth rates between year t and year $t-2$ is negative. Growth is shown on calendar year basis.

RS Countries: Milder than Usual?

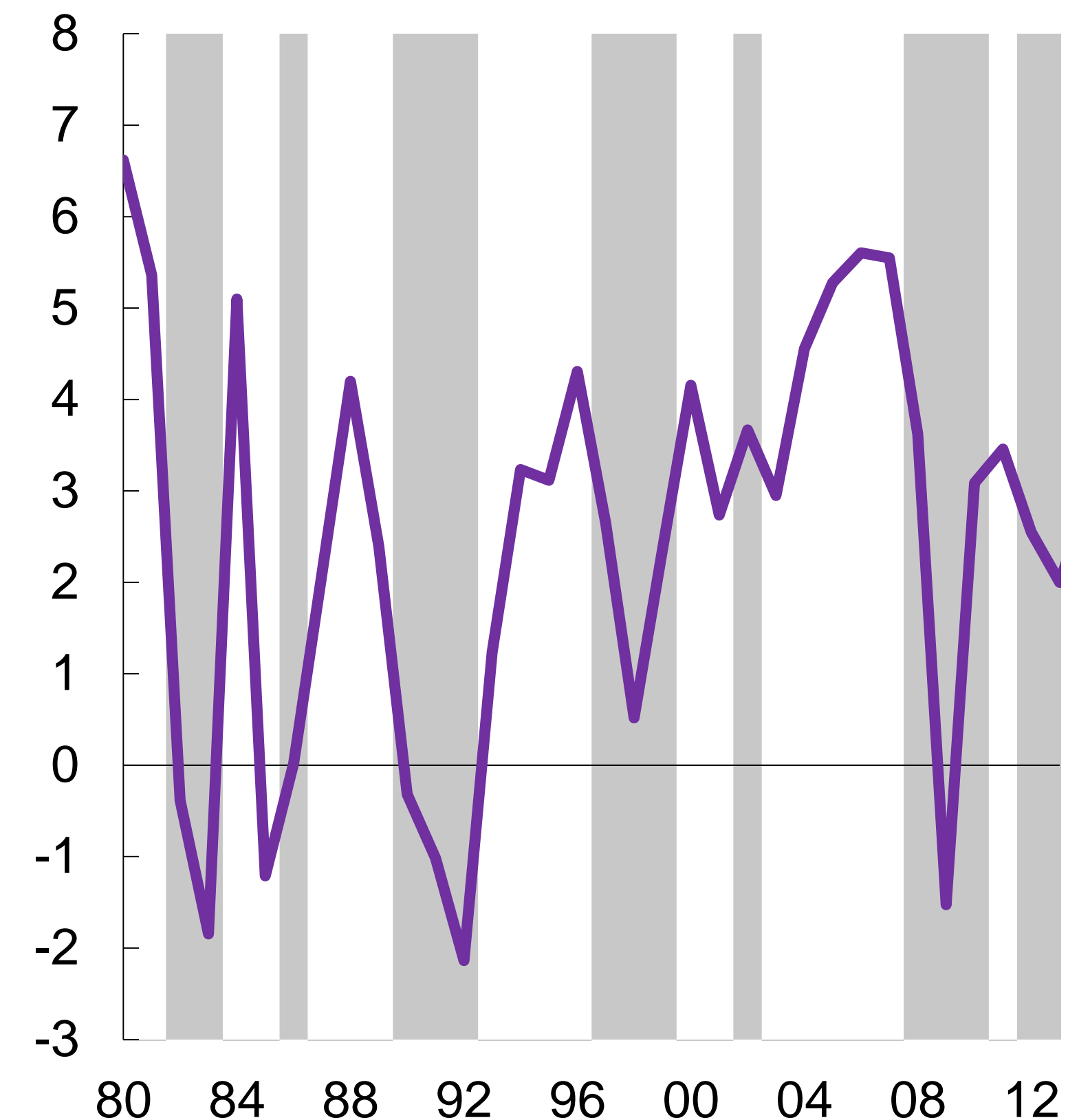
Real GDP Growth

(percent, shaded areas indicate years of growth slowdown)

Russia



South Africa



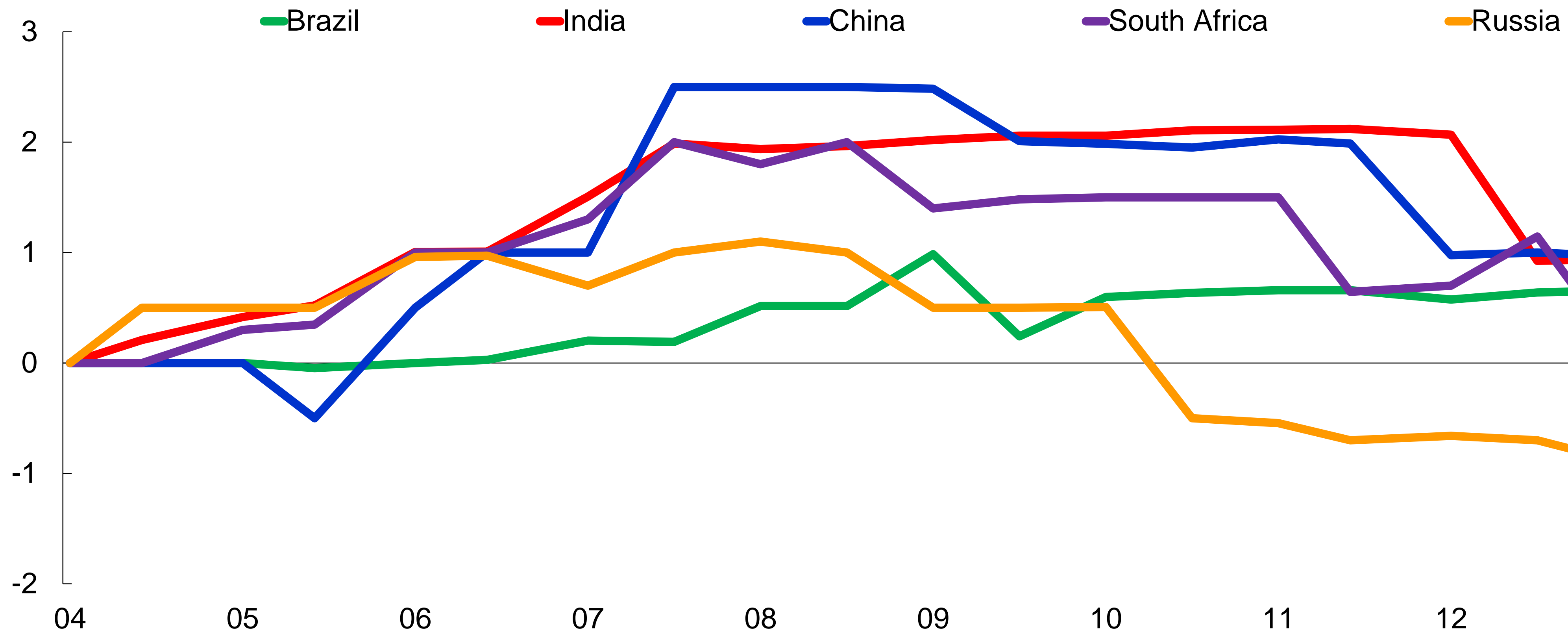
Sources: IMF, *World Economic Outlook*; and staff calculations.

Note: A year of growth slowdown occurs when the difference in growth rates between year t and year $t-2$ is negative. Growth is shown on calendar year basis.

End of an Illusion?

Medium-term Growth Forecast

(percentage points change from April 2004 WEO)



Source: IMF, *World Economic Outlook*.

Note: 5-year ahead growth forecasts used as a proxy for longer term growth expectations. India's figures for the July 2013 update are on fiscal year terms.

Three Questions

Why are we concerned?

How can we identify structural slowdowns?

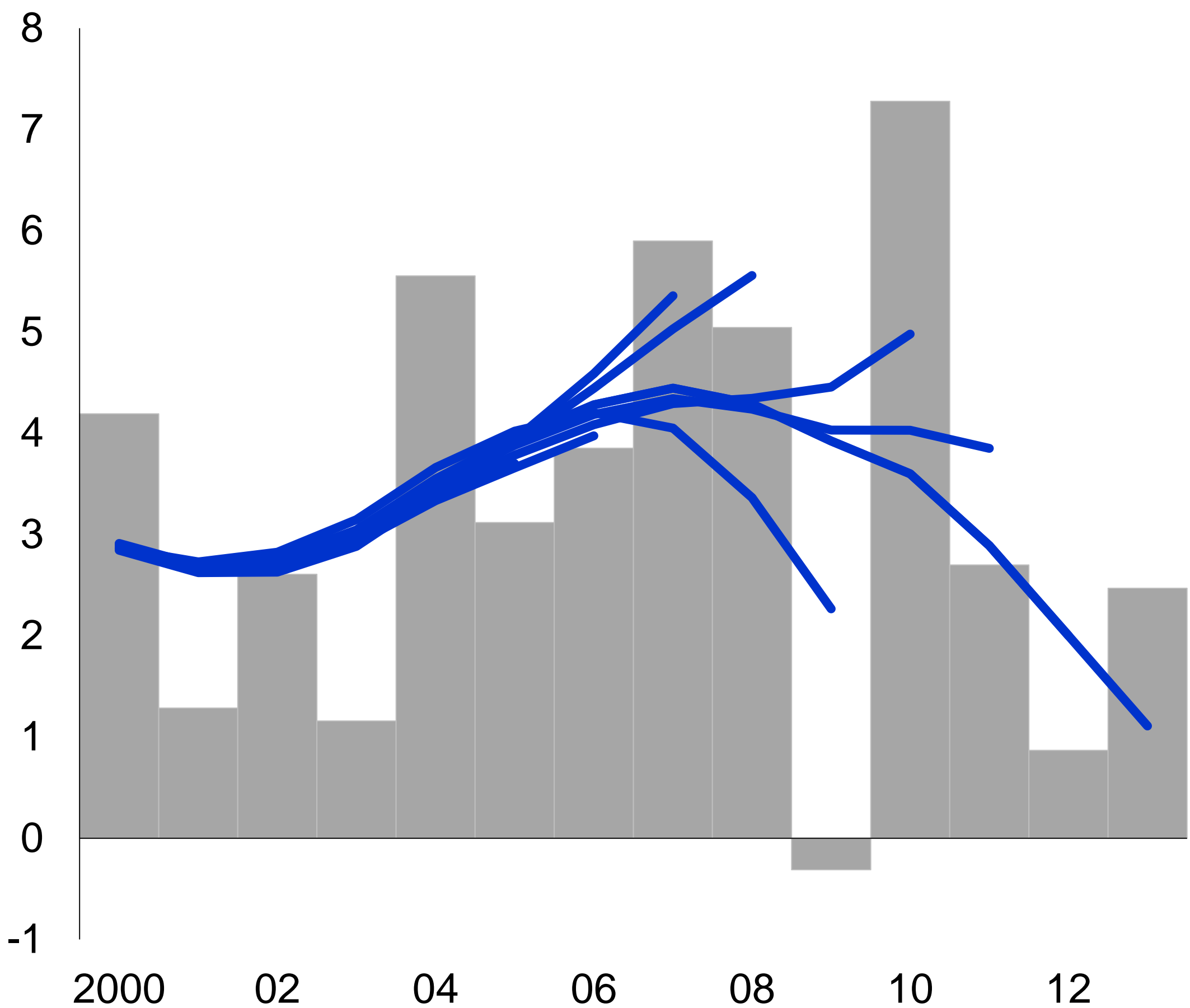
Are the slowdowns structural?

What is Potential Growth?

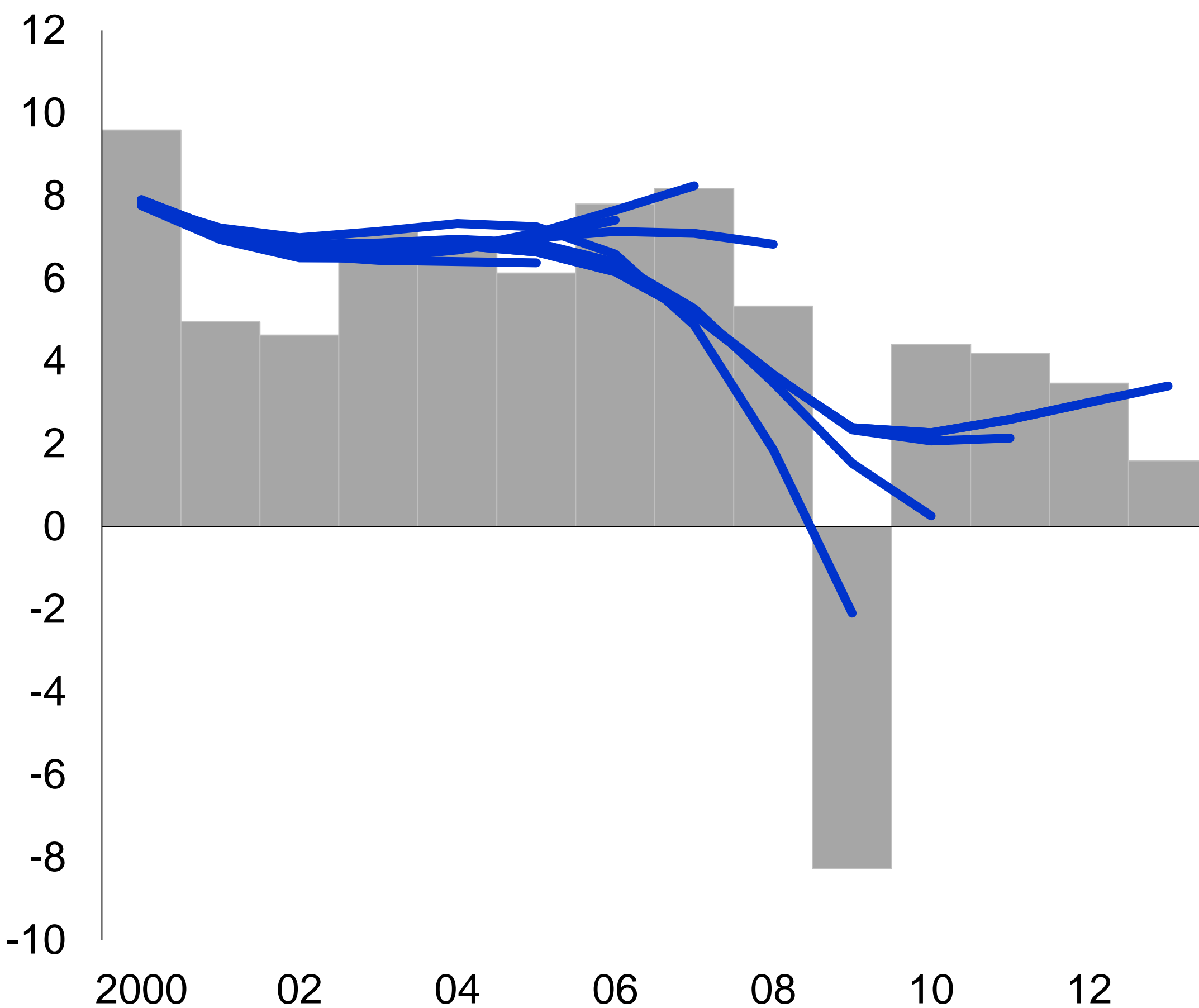
- **Trend Component of output?**
 - Purely statistical, no economic content.
 - Conventional approach to estimate might use HP filter.
- **Maximum feasible output?**
 - Need to decide what maximum feasible output means
 - Could use production function to estimate – but then need to assume an investment path.

HP Filter: End-point Problem

Brazil: HP Filter
(Percent)



Russia: HP Filter
(Percent)



Source: IMF, staff calculations.

A New Approach

- Okun's definition of potential
 - Output level consistent with stable inflation
- Estimated using a small macro model
 - Output dynamics
 - Inflation dynamics
- Advantages
 - Definition has economic content.
 - Uses much more information (more than one variable).
 - But not too much, so it can be estimated for many countries.

Simple Economic Model

- Dynamics for potential output, its growth, and output gap
- Phillips curve equation

$$\bar{Y}_t = \bar{Y}_{t-1} + G_t + \varepsilon_t^{\bar{Y}}$$

$$G_t = \theta G^{ss} + (1 - \theta)G_{t-1} + \varepsilon_t^G$$

$$y_t = \phi y_{t-1} + \varepsilon_t^y,$$

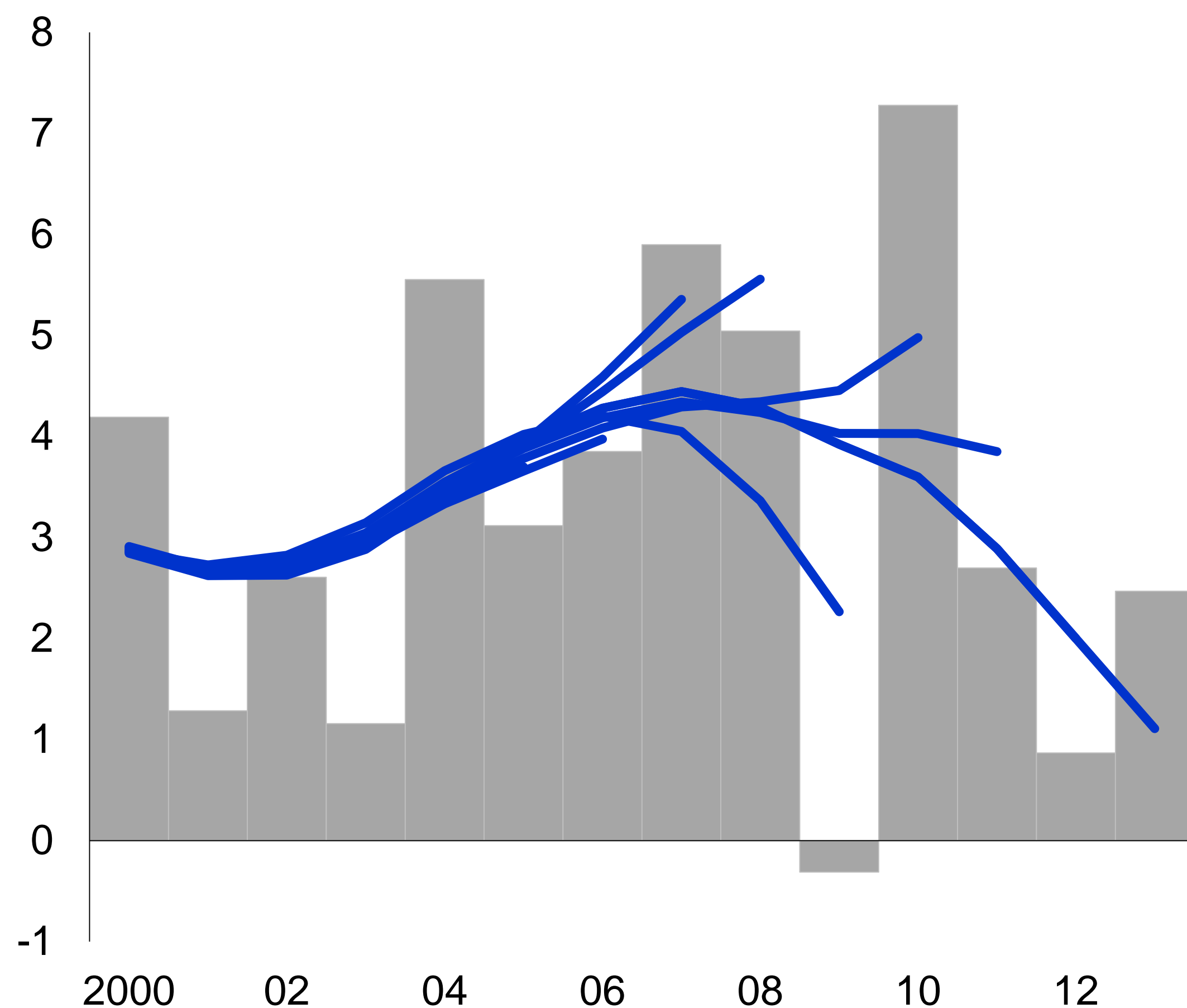
$$\pi_t = \lambda \pi_{t+1} + (1 - \lambda)\pi_{t-1} + \beta y_t + \varepsilon_t^\pi$$

- Put together with data on actual growth and can infer/estimate unobserved potential output, its growth, and the output gap

Brazil: Real-time Performance Comparison

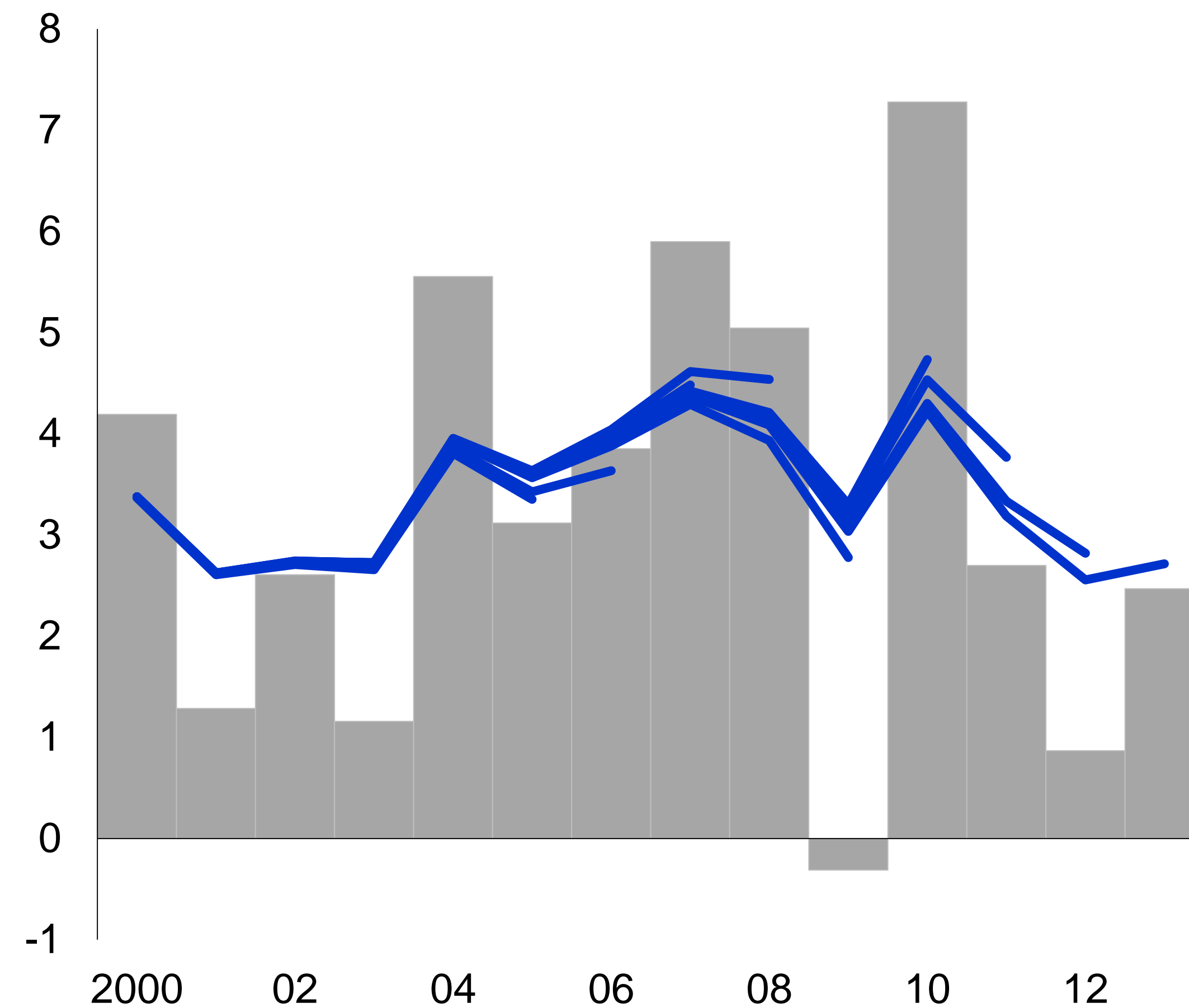
HP Filter

(Percent; gray columns indicate actual growth)



MV Filter

(Percent; gray columns indicate actual growth)

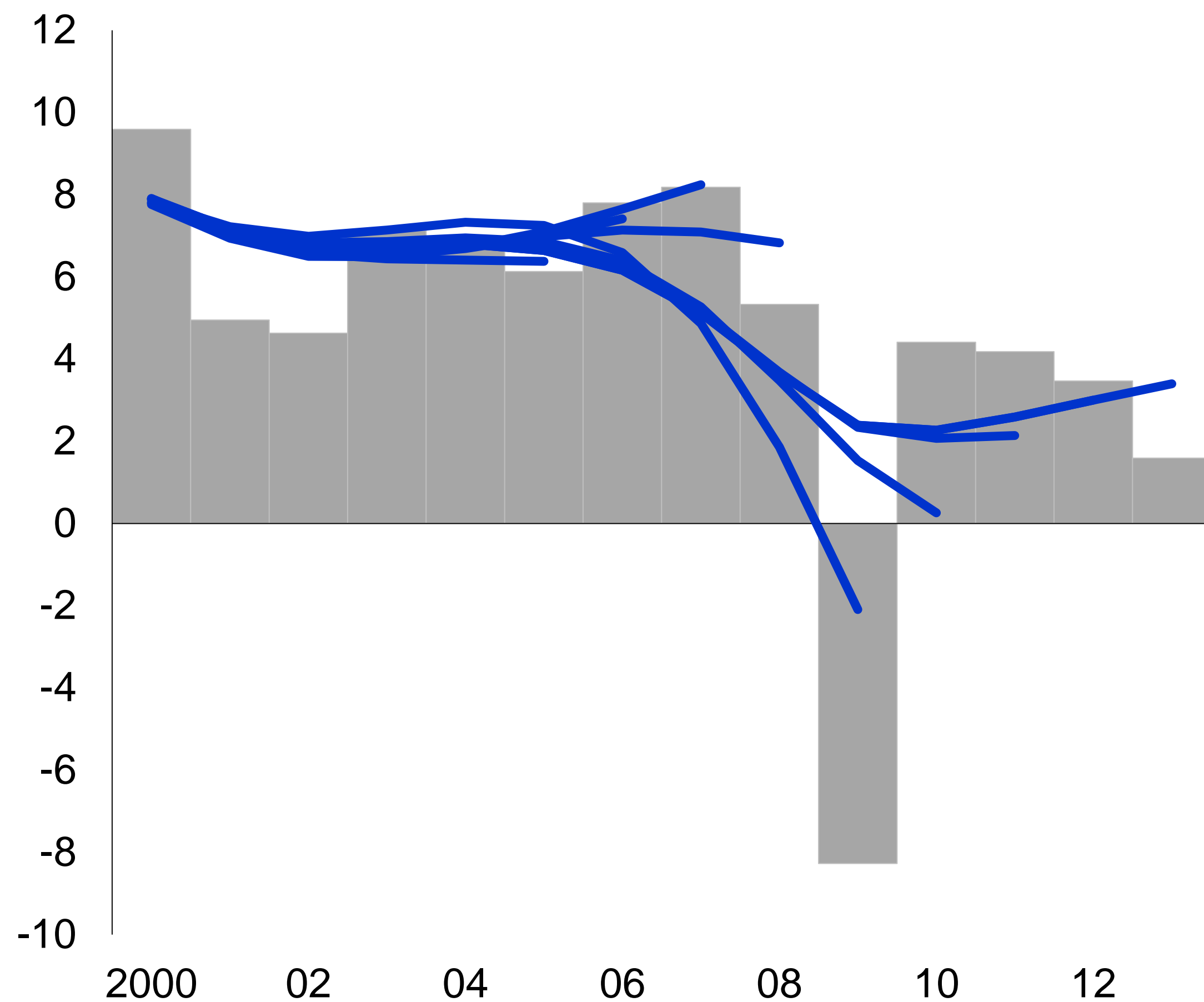


Source: IMF, staff calculations.

Russia: Real-time Performance Comparison

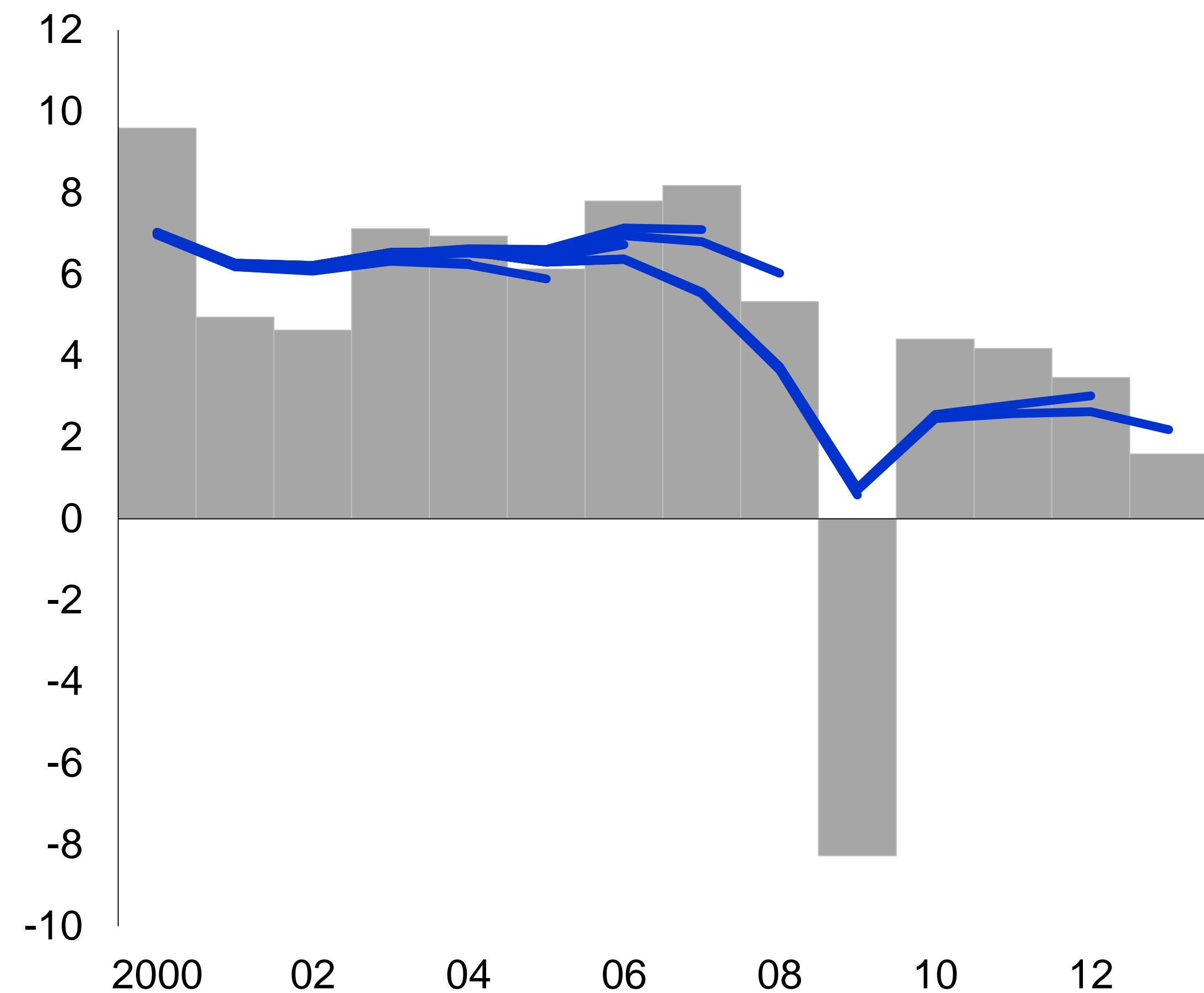
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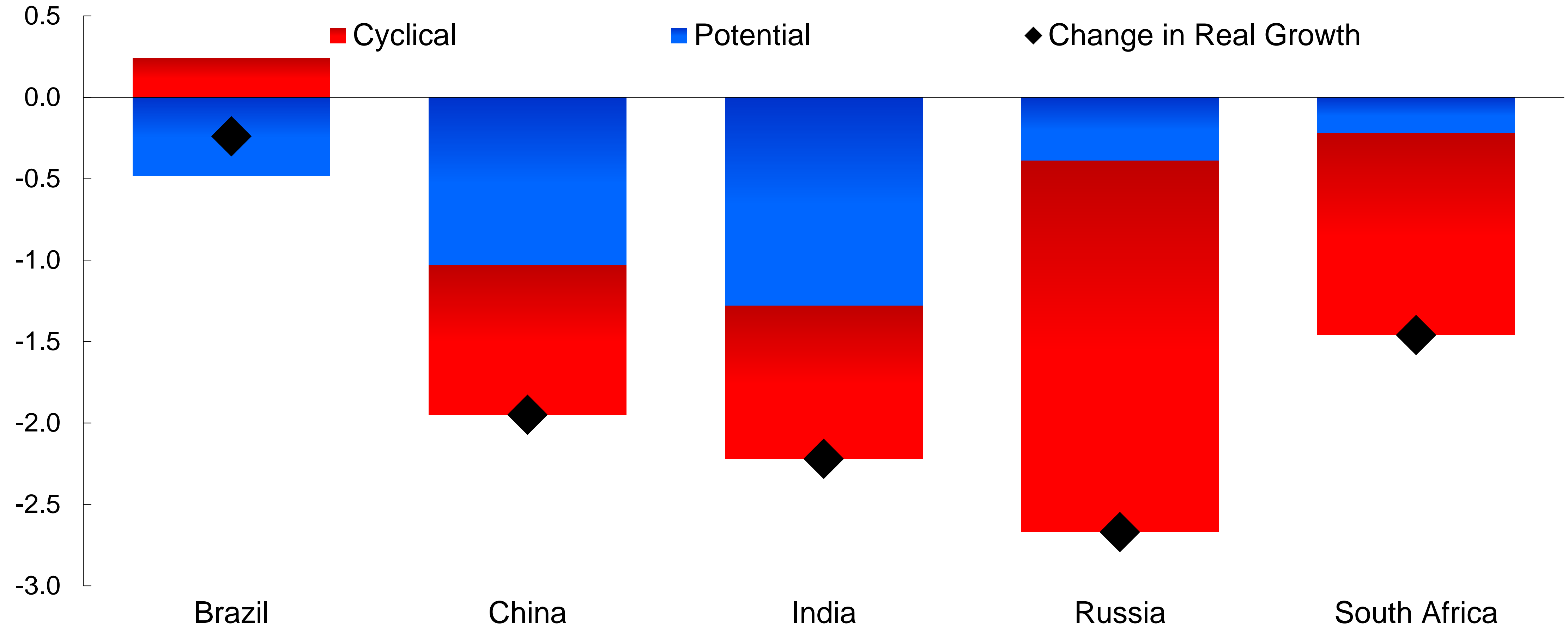


Source: IMF, staff calculations.

Slowdowns: Large Cyclical Element

Composition of 2011-13 Growth Changes

(EMD multivariate filter, percentage points)

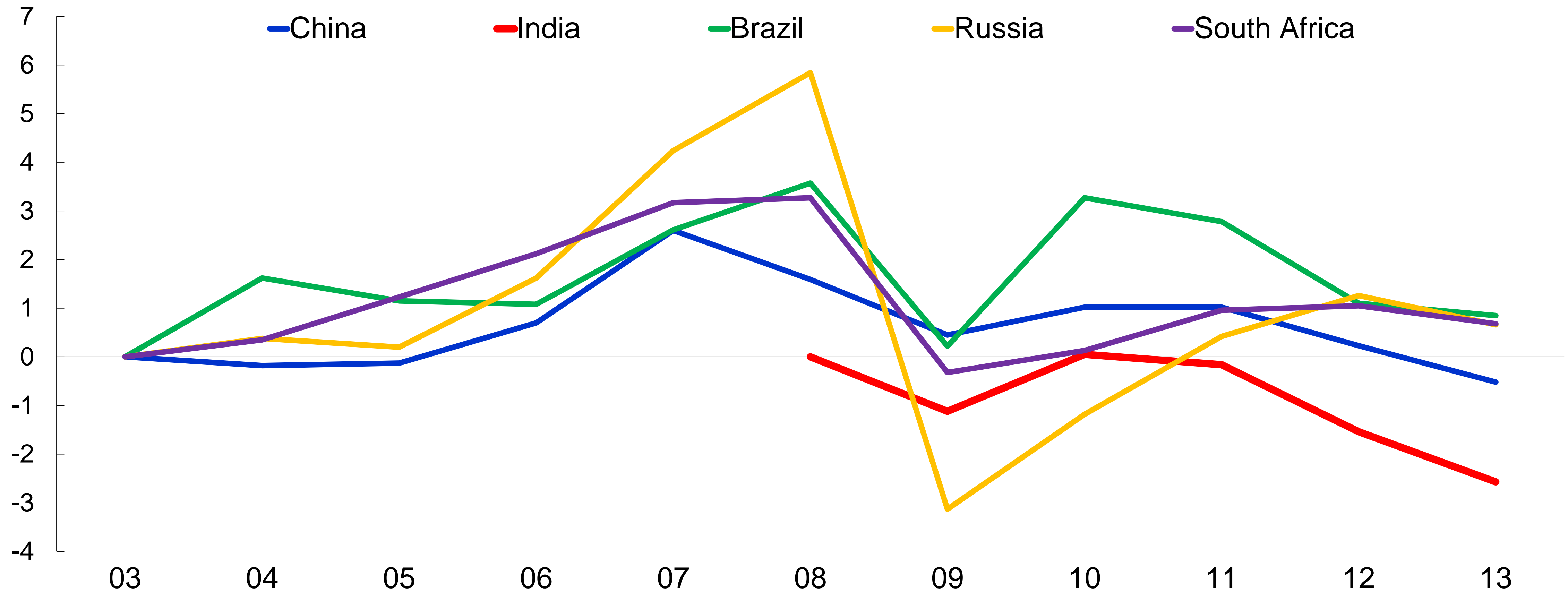


Sources: IMF staff calculations.

Mind the Gaps!

Output Gap in the BRICS

(Percentage points deviation from 2003, 2008 for India. EMD multivariate filter)

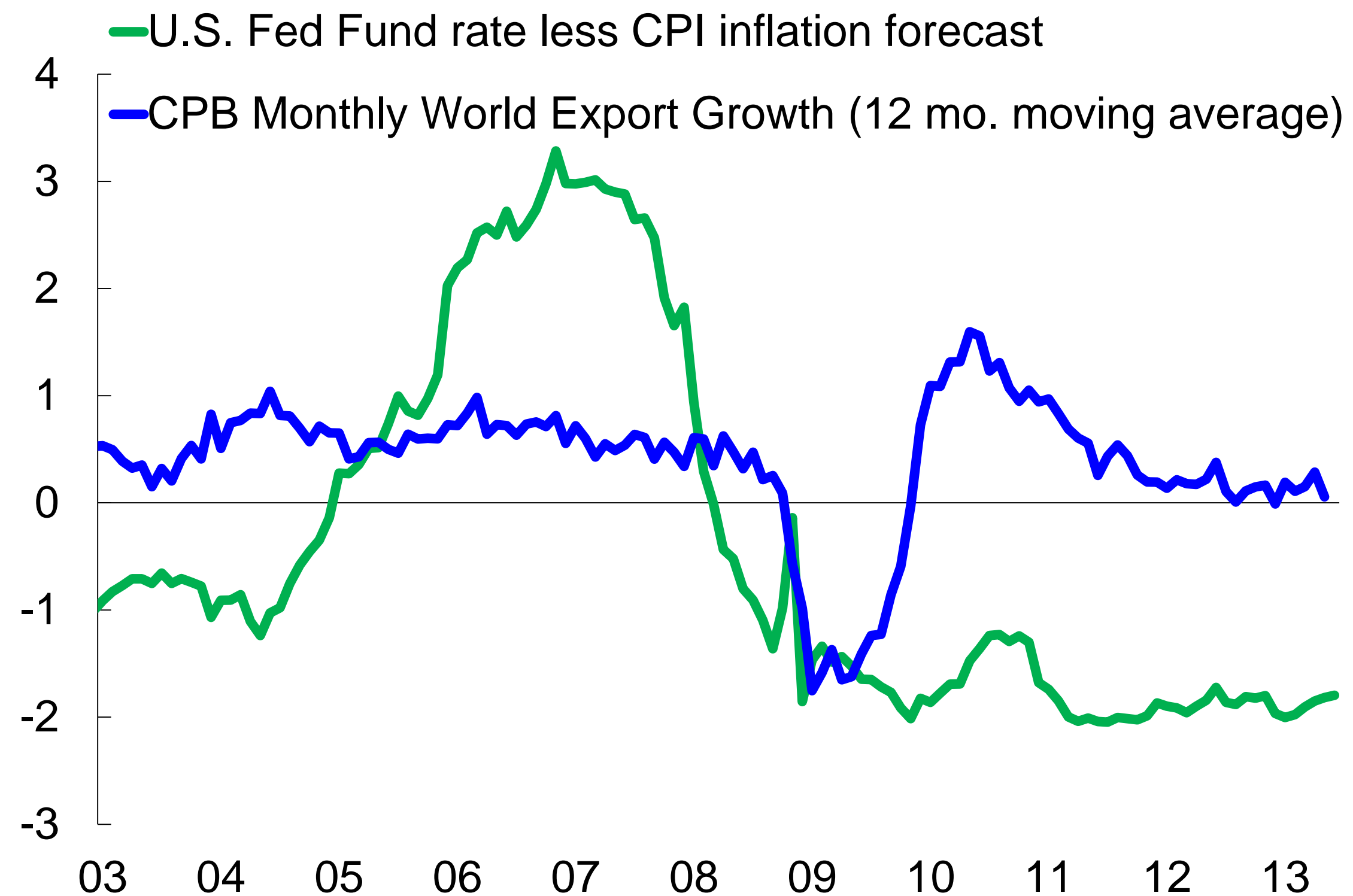


Sources: IMF staff calculations.

Common Factors at Work

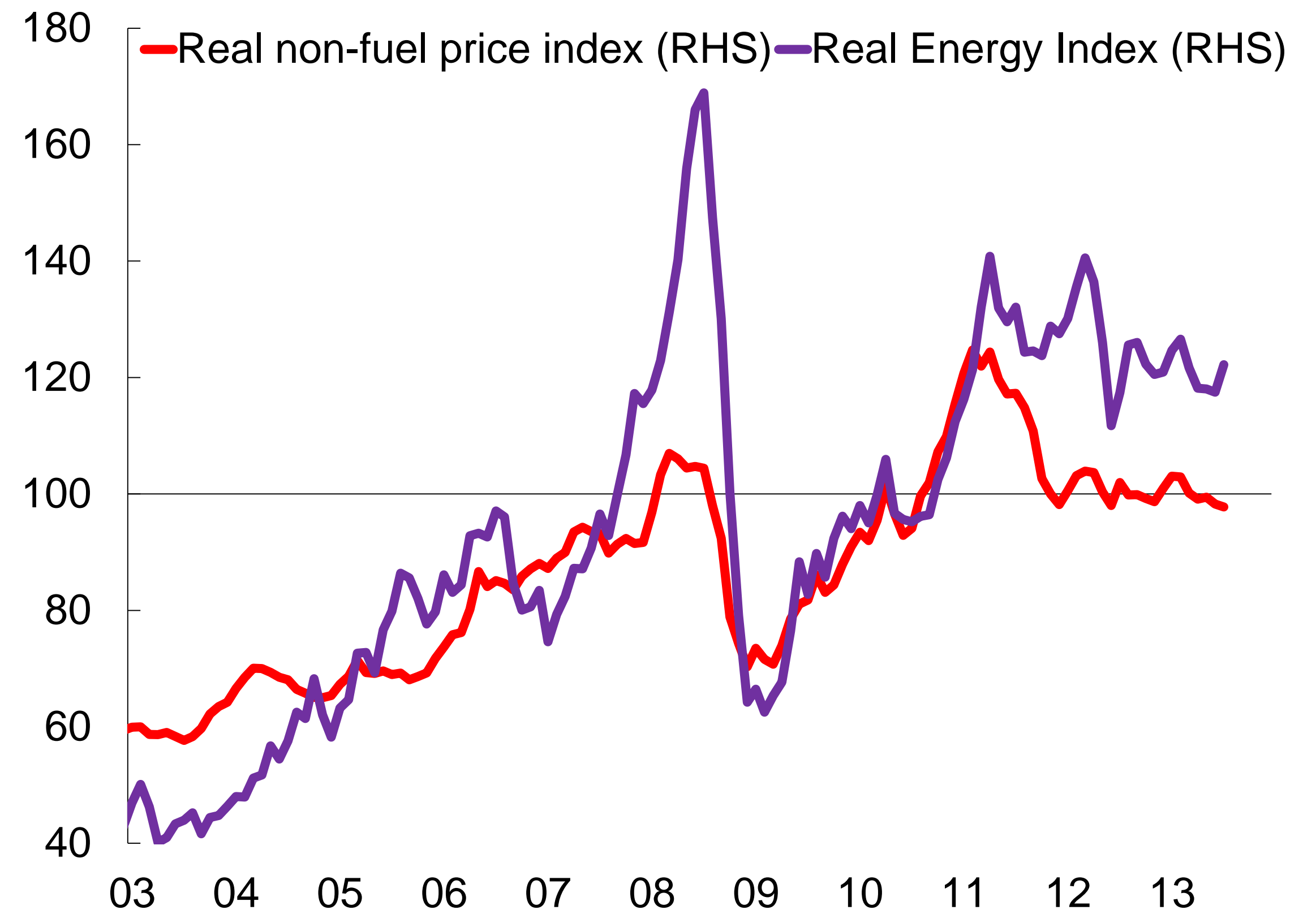
World Export Growth and Ex-Ante U.S. Real Interest Rate

(percent)



Commodity Prices

(index, 2005=100)



Source: Haver Analytics; CPB Netherlands; Consensus Economics; IMF, *World Economic Outlook*; and staff calculations.

Three Questions

Why are we concerned?

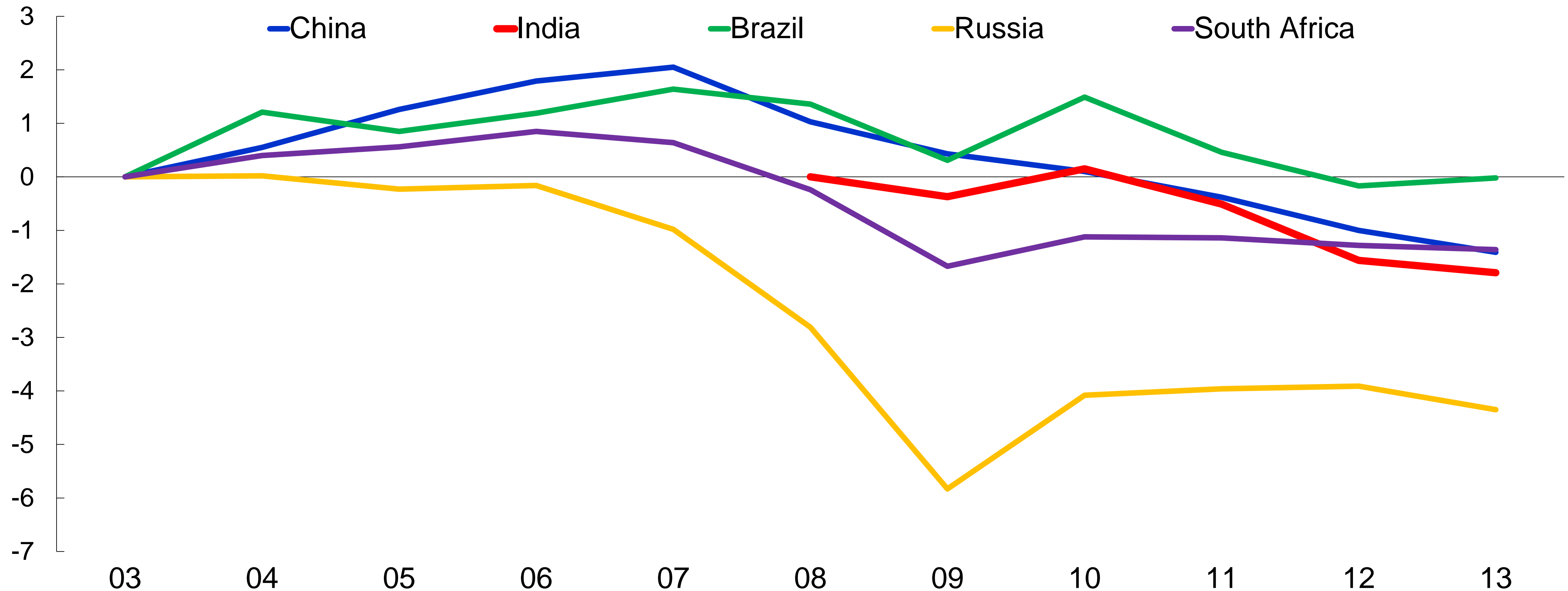
How can we identify structural slowdowns?

Are the slowdowns structural?

Potential Growth: Normal Variation?

Potential Growth in the BRICS

(Percentage points deviation from 2003, 2008 for India. EMD multivariate filter)



Sources: IMF staff calculations.

Structural Break in Growth?

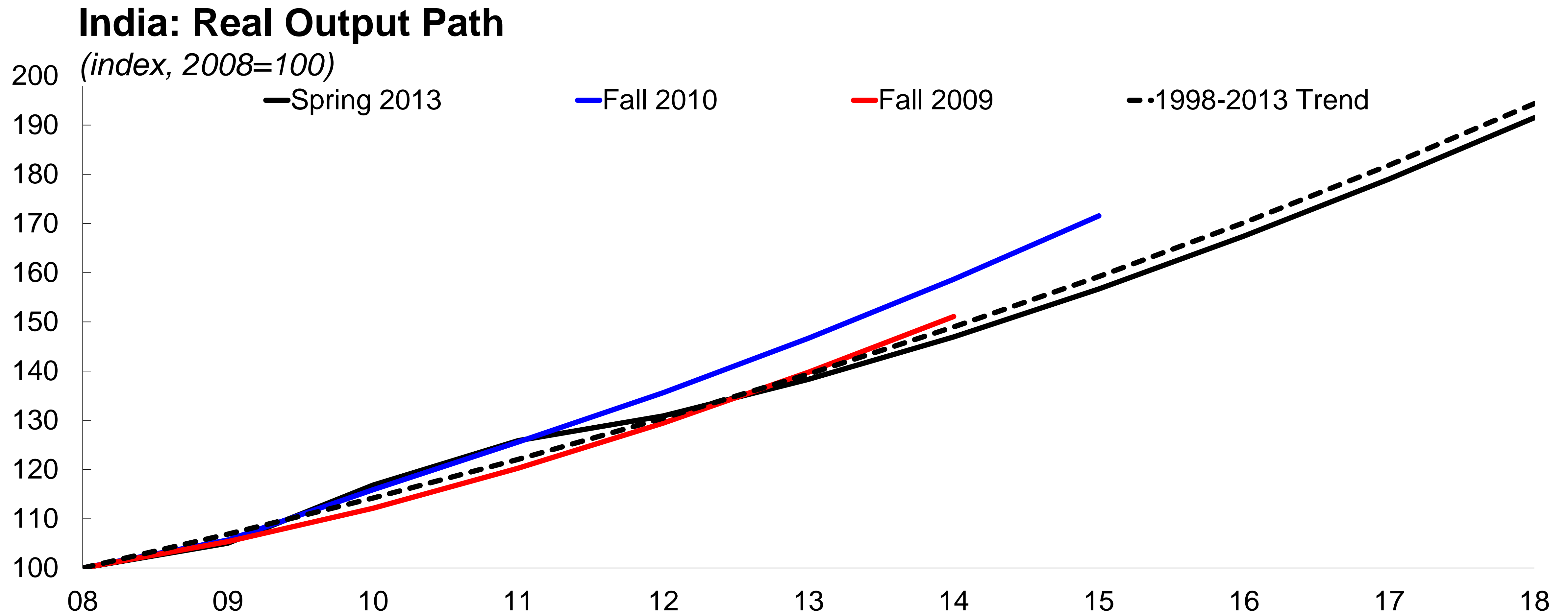
(percentage points)

| Economy | Average Growth (1998-2013) | Five-Year Ahead Forecast Growth |
|----------------|---------------------------------------|--|
| Brazil | 2.9 | 3.5 |
| China | 9.6 | 7.5 |
| India | 6.9 | 6.9 |
| Russia | 4.4 | 3.5 |
| South Africa | 3.2 | 3.5 |

Source: IMF staff calculations.

Note: Five-year ahead forecast growth is from the July 2013 WEO update (estimate for 2018 growth).

Structural Break in Output Level?



Source: IMF, *World Economic Outlook*.

Structural Break in Level?

Real Output Path in BRCS

(index, 2008=100)

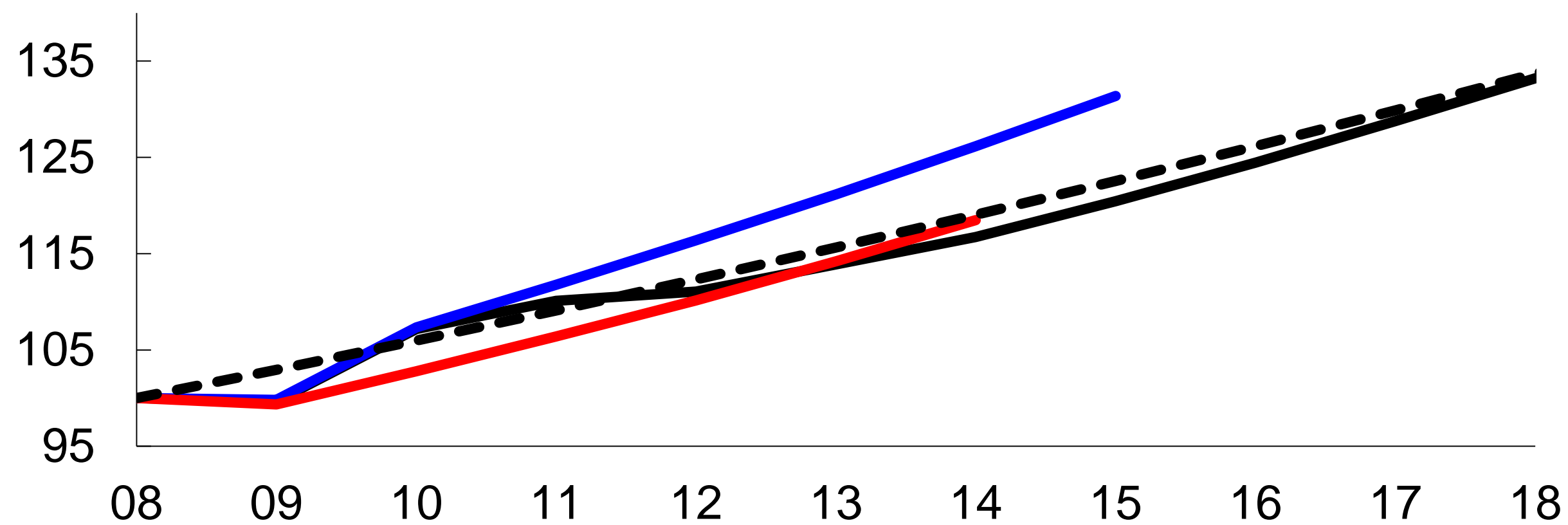
— Mid-year 2013

— Fall 2010

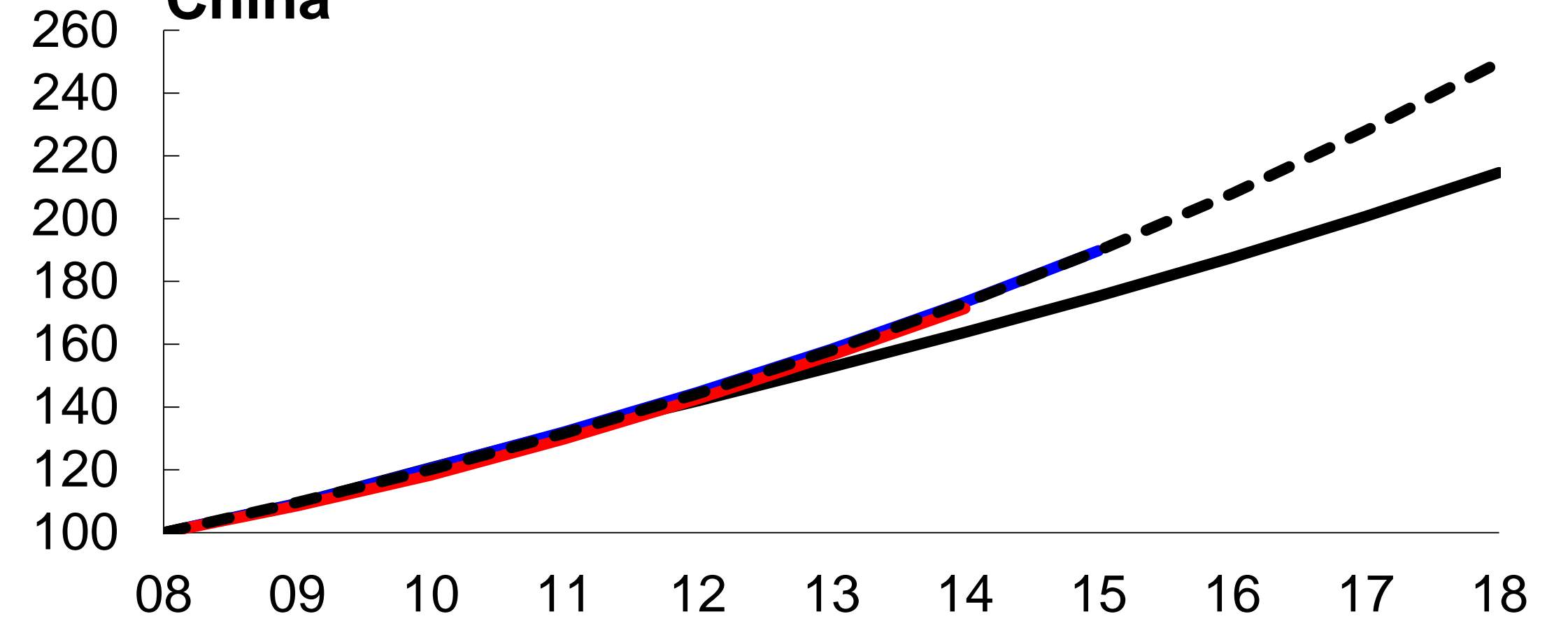
— Fall 2009

--- 1998-2013 Trend

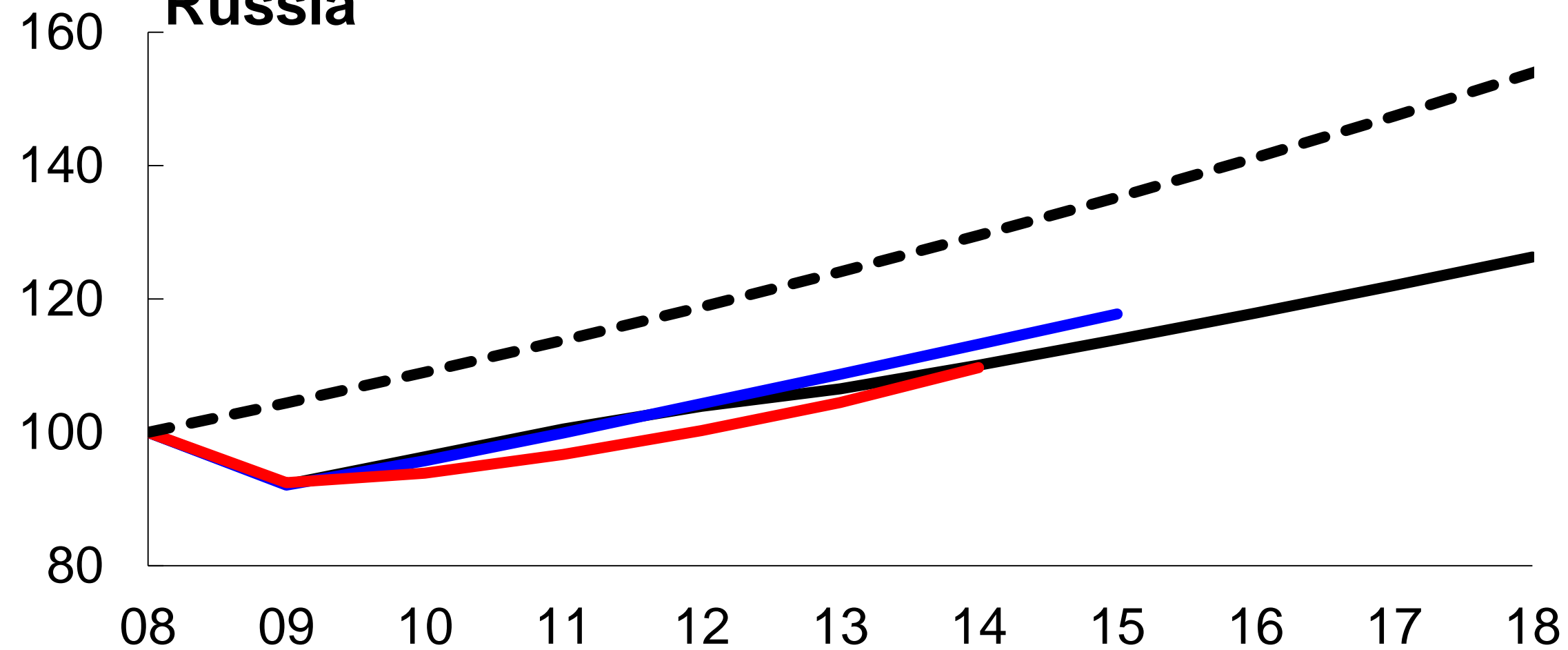
Brazil



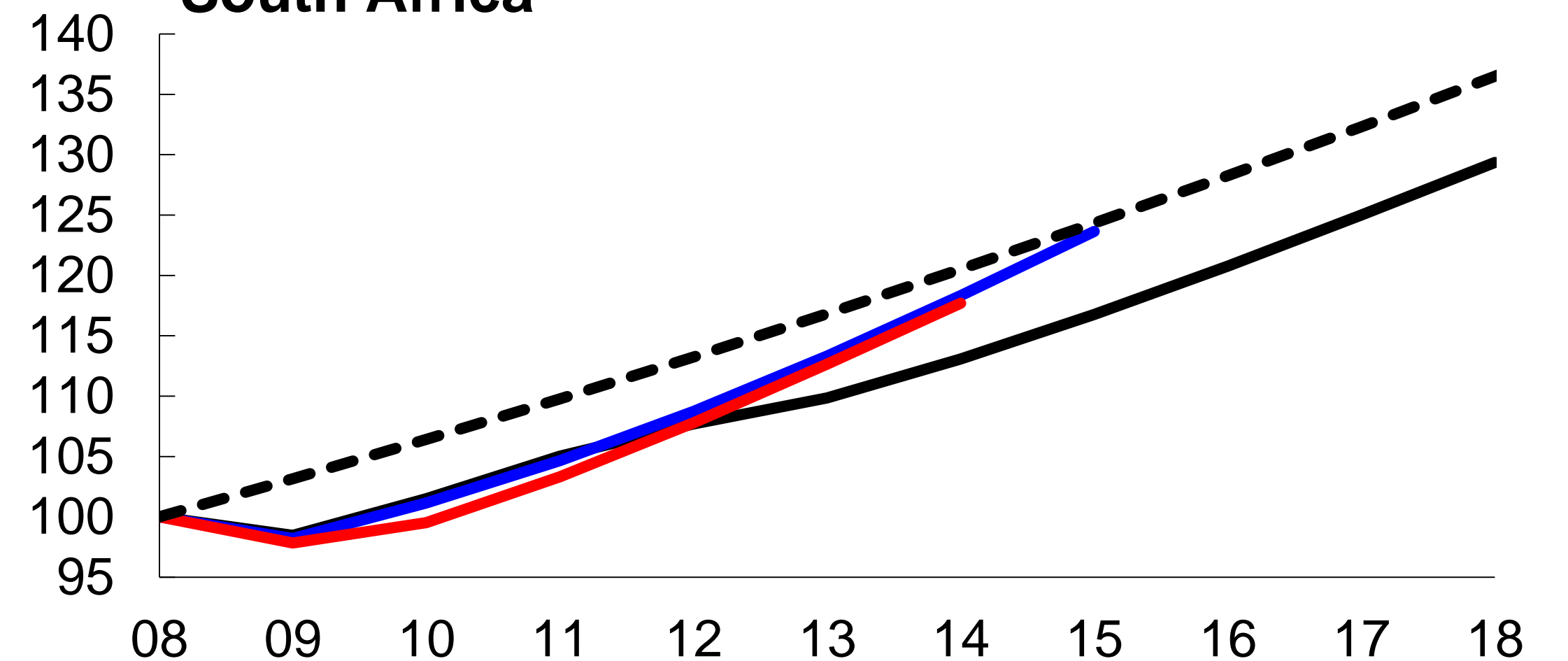
China



Russia



South Africa



China's Model: Running out of Time?

- **Relies on extensive growth**
 - Capital accumulation
 - Shifting labor to urban factories

- **But now:**
 - Investment encountering diminishing returns
 - Labor force growth has ended, surplus labor exhausted by 2020
 - Productivity set to decline as income converges

Conclusion

- **Good news**
 - Much of slowdown is cyclical

- **Bad news**
 - Potential output has deteriorated

- **But it could be worse**
 - Only China and Russia are likely to have persistently lower growth

The Slowdown of Real and Potential Growth in the BRICS

| Economy | Year | Real Growth | Potential Growth | Cyclical Growth | Output Gap |
|--------------|-------------------|-------------|------------------|-----------------|------------|
| Brazil | 2011 | 2.7 | 3.2 | -0.5 | 0.8 |
| | 2013 (Projection) | 2.5 | 2.7 | -0.2 | -1.1 |
| | Change | -0.2 | -0.5 | 0.2 | -1.9 |
| China | 2011 | 9.4 | 8.9 | 0.4 | 0.9 |
| | 2013 (Projection) | 7.4 | 7.9 | -0.5 | -0.6 |
| | Change | -2.0 | -1.0 | -0.9 | -1.5 |
| India | 2011 | 7.4 | 7.4 | 0.1 | 0.6 |
| | 2013 (Projection) | 5.2 | 6.1 | -0.9 | -1.8 |
| | Change | -2.2 | -1.3 | -0.9 | -2.4 |
| Russia | 2011 | 4.3 | 2.6 | 1.7 | -0.9 |
| | 2013 (Projection) | 1.6 | 2.2 | -0.6 | -0.6 |
| | Change | -2.7 | -0.4 | -2.3 | 0.2 |
| South Africa | 2011 | 3.5 | 2.6 | 0.9 | -0.3 |
| | 2013 (Projection) | 2.0 | 2.4 | -0.4 | -0.5 |
| | Change | -1.5 | -0.2 | -1.2 | -0.3 |

Source: IMF staff calculations.

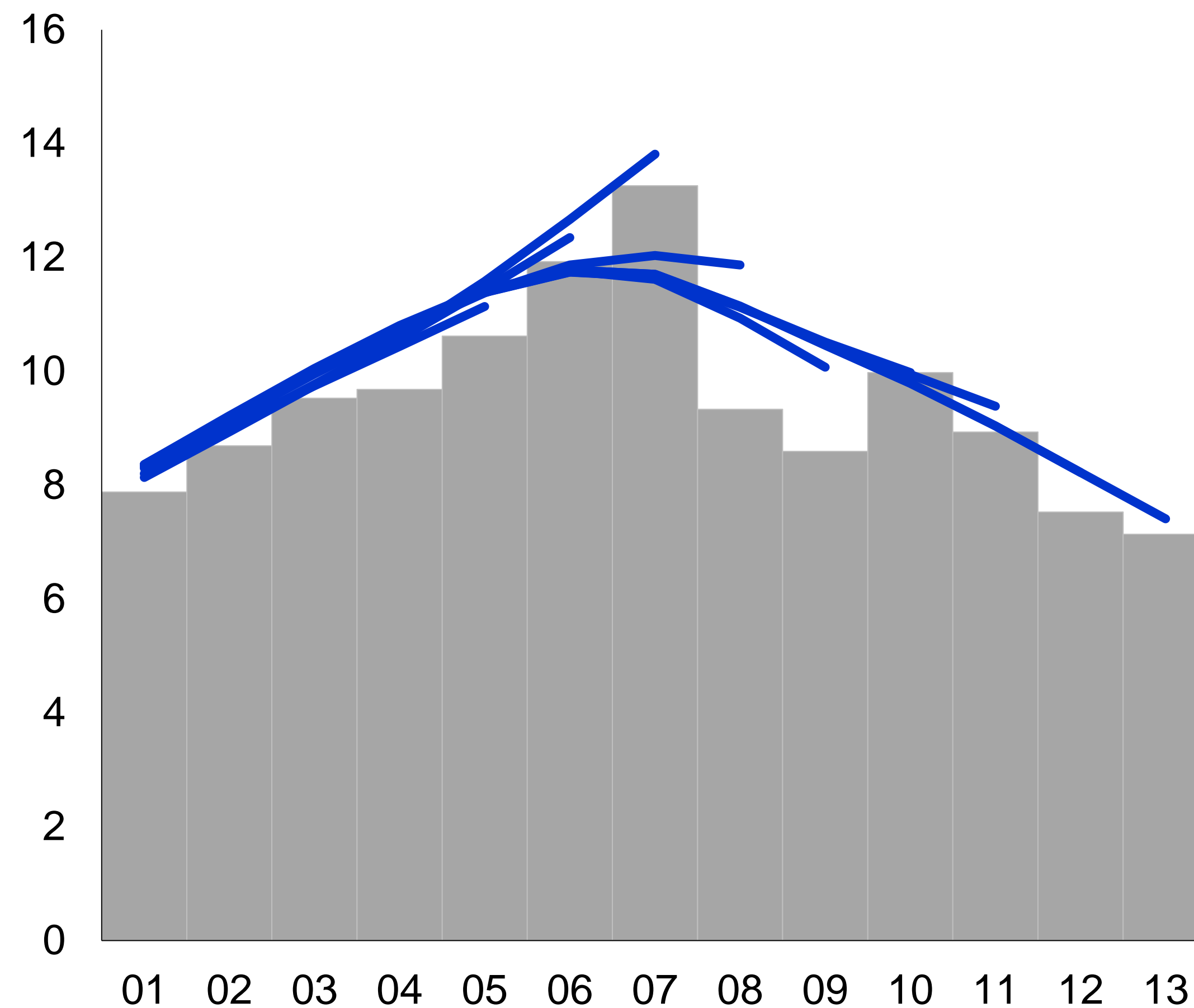
Real growth in 2013 is the forecast from the IMF Global Projection Model (GPM), which may differ from the official WEO forecast. See Carabenciov and others (2013) for details on the GPM.

Note: Growth rates are shown on a calendar year basis. Estimates of potential and cyclical growth and the output gap come from the multivariate filter described in the text. Real and potential growth are defined as the year-to-year change of the underlying log-level series (times 100). Cyclical growth is defined to be the difference between real and potential growth. Numbers need not sum exactly due to rounding errors. The output gap is given by the difference between log potential output and log real output (times 100); a negative number indicates deflationary pressure. Change indicates the difference between the 2013 and 2011 estimates.

China: Performance of MV Filter vs. HP Filter

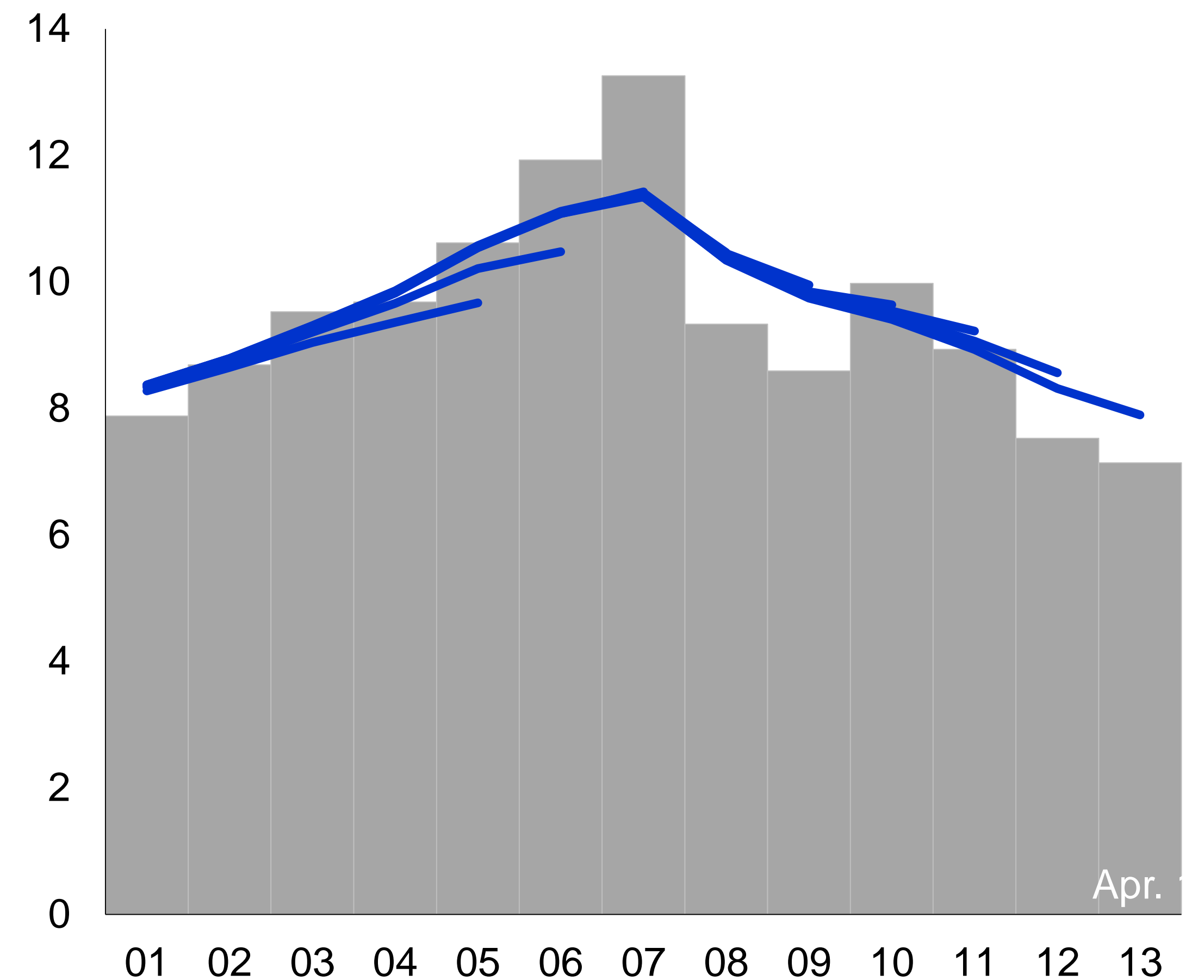
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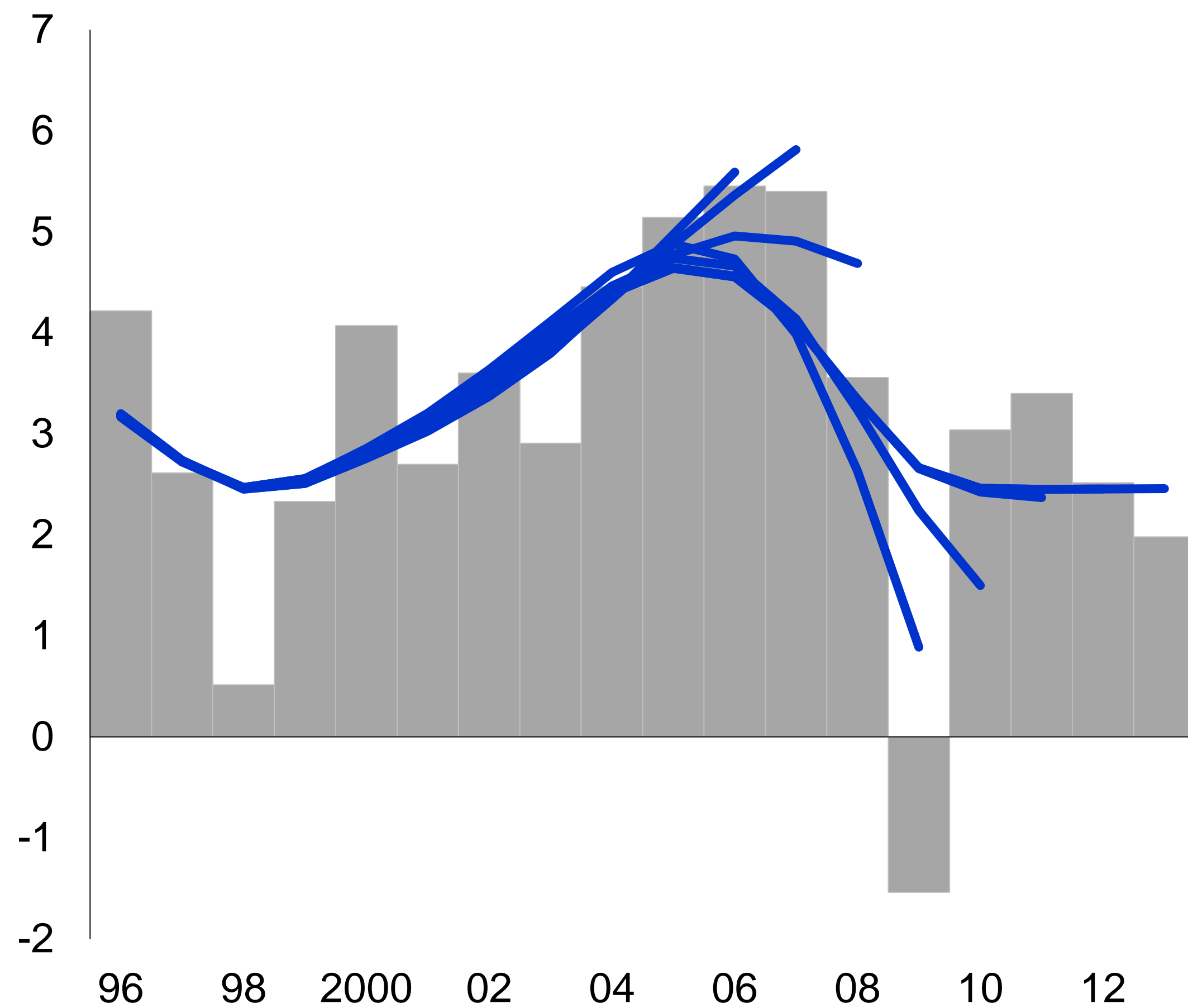


Source: IMF, staff calculations.

South Africa: Performance of MV Filter vs. HP Filter

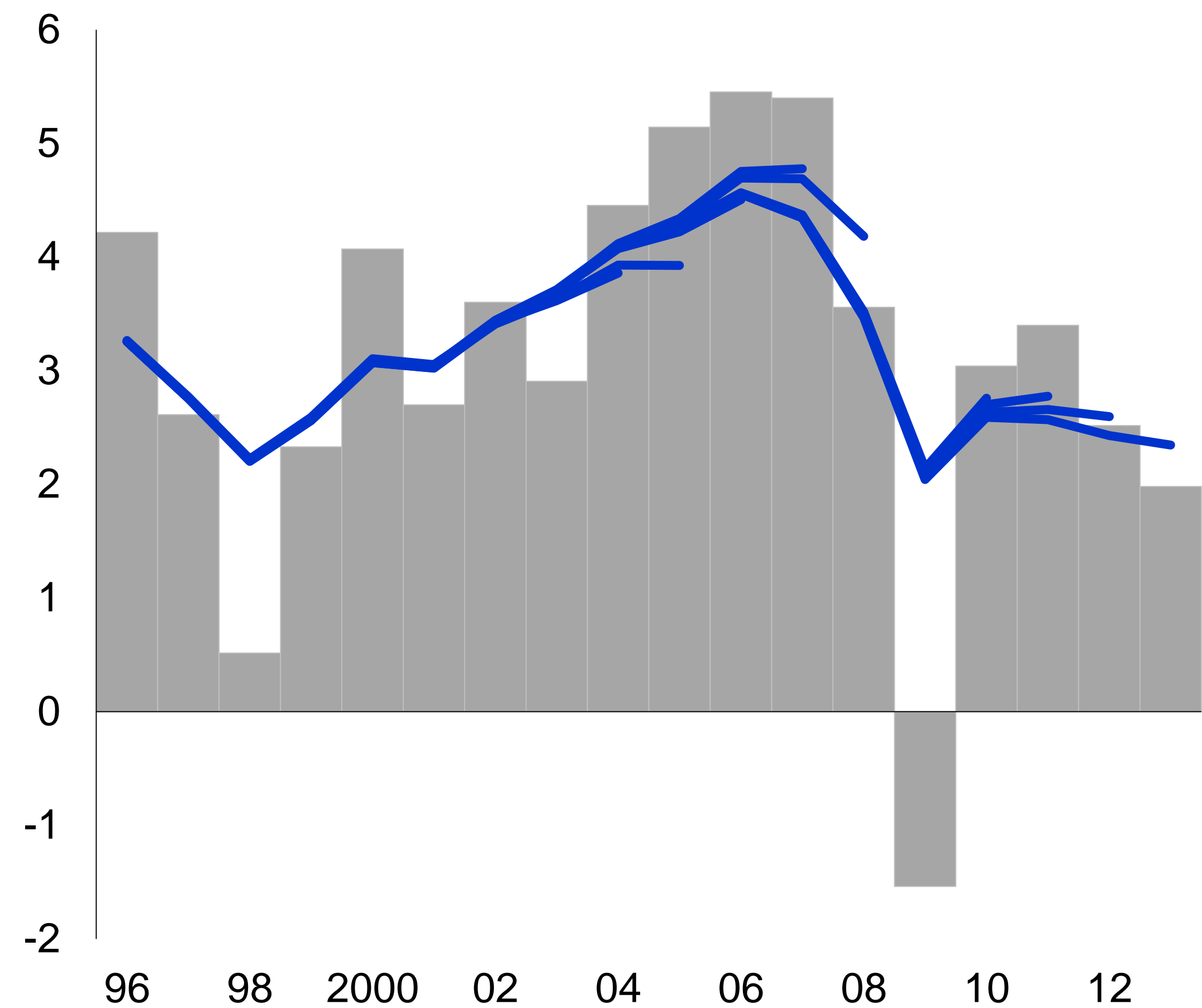
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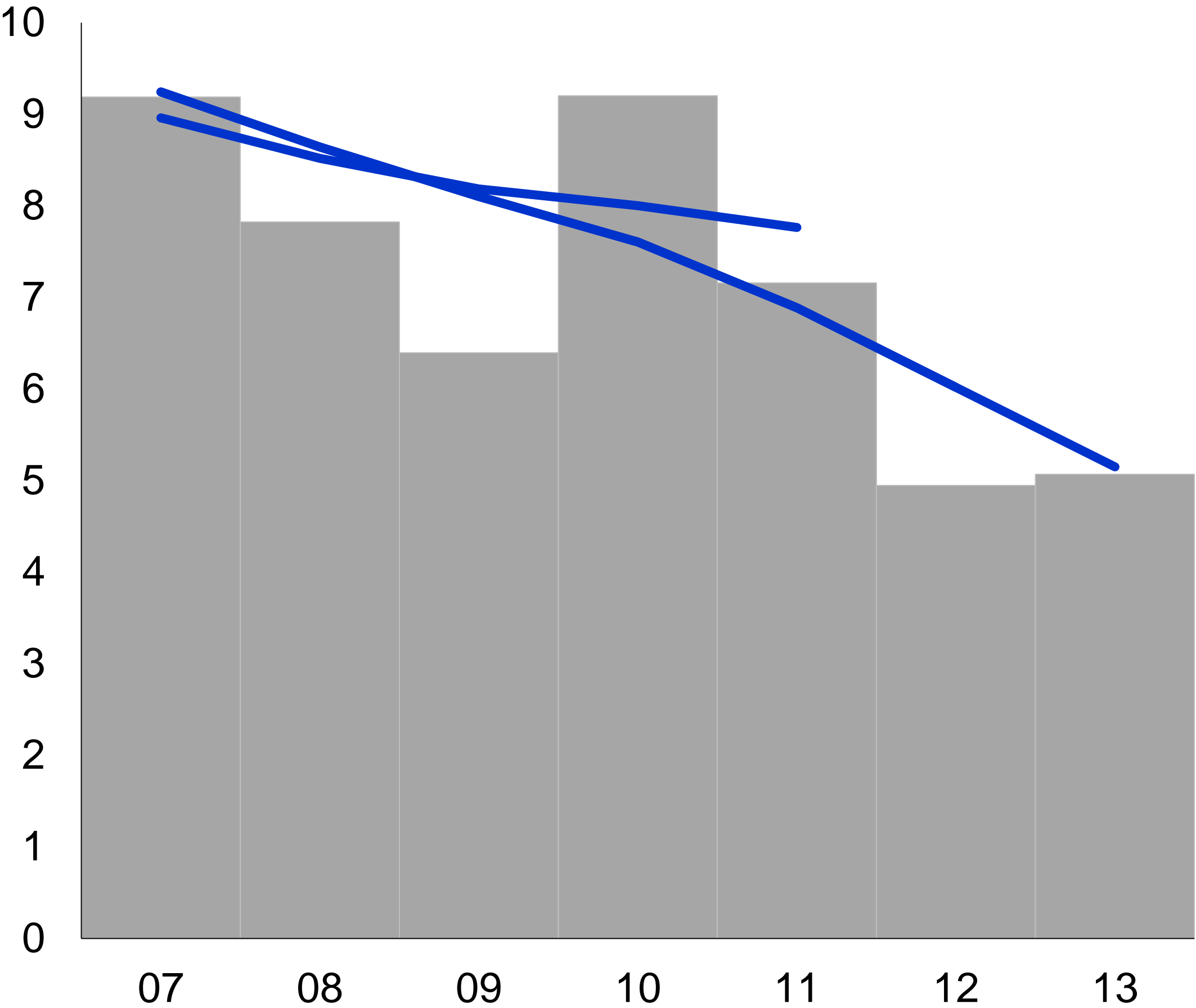
(Percent; gray columns indicate actual growth)



India: Performance of MV Filter vs. HP Filter

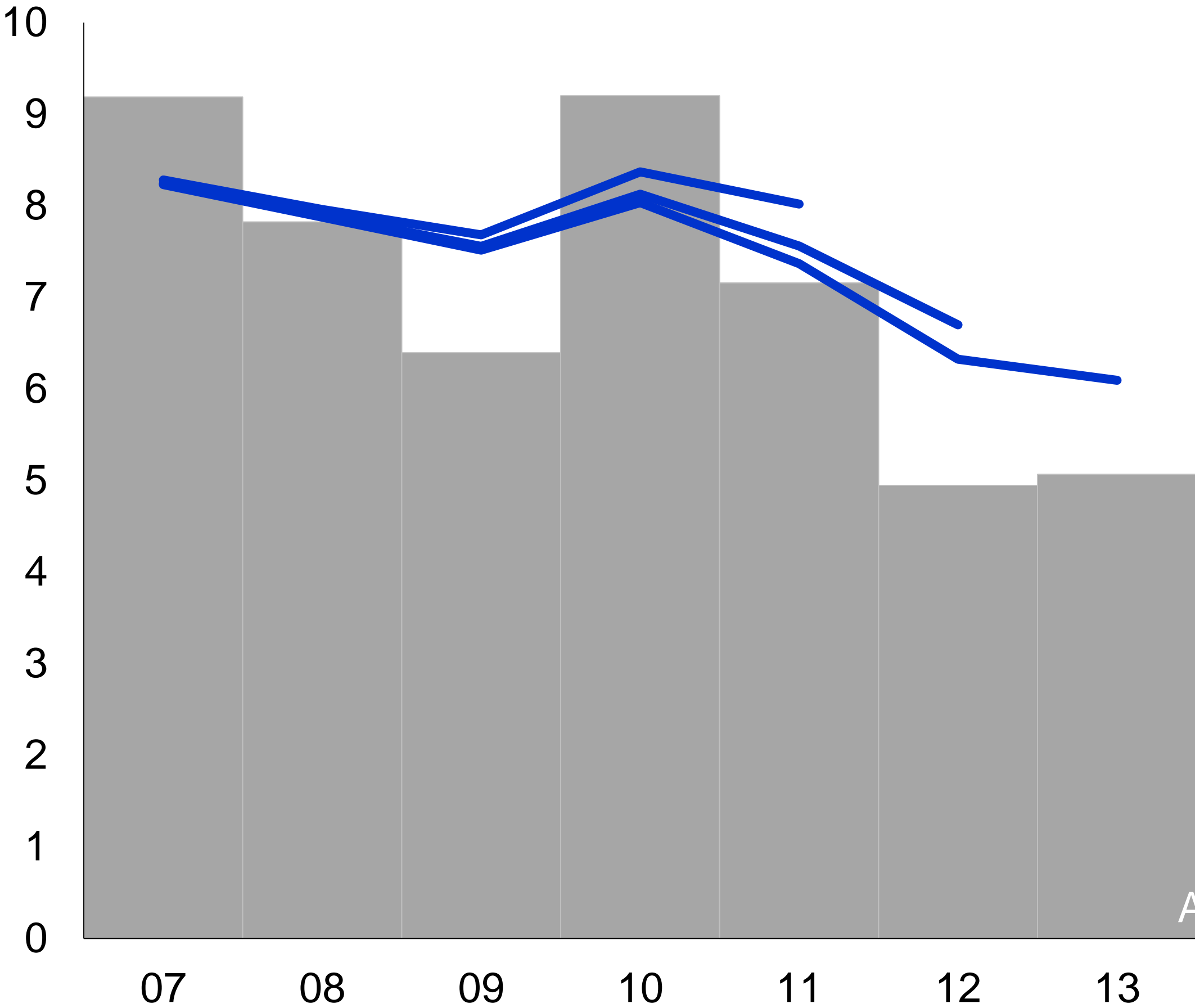
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Source: IMF, staff calculations.