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International Monetary Fund

2014 IMF Spillover Report

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Main Messages

1. Changing Growth Patterns are Leading Source of Spillovers at this Point.

2. Recovery and Normalization in Key AEs will Have Global Spillovers.

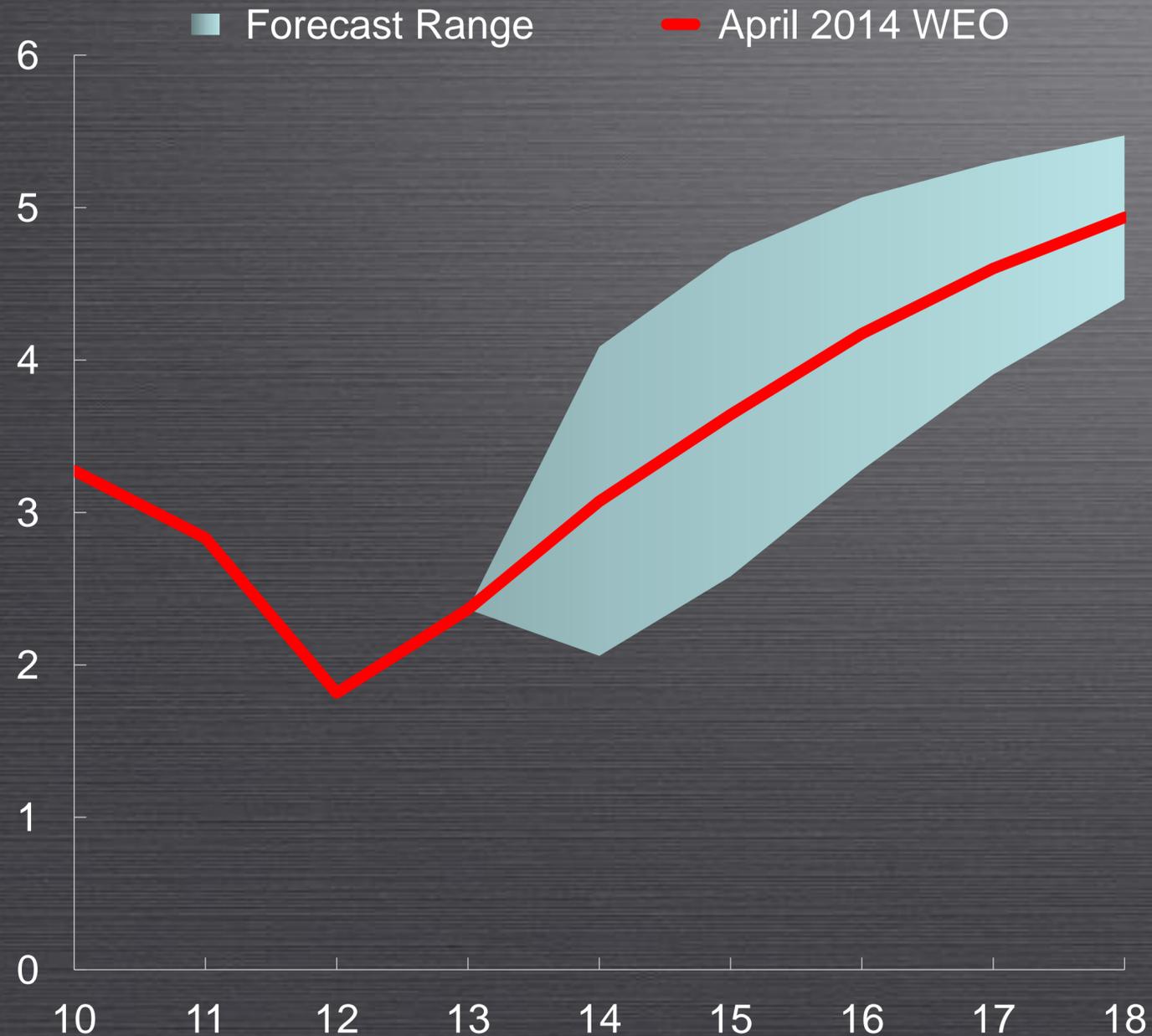
- Nature of spillovers depends on underlying drivers of higher interest rates at *source*.
- For *recipients*, spillover effects differentiate depending on their fundamentals.

3. EM Slowdown has Global Spillovers, Substantial Local Spillovers.

**4. Spillover Risks Remain Relevant Going Forward and Can Interact.
Stronger Action at National Level Aligns with Better Global Outcomes.**

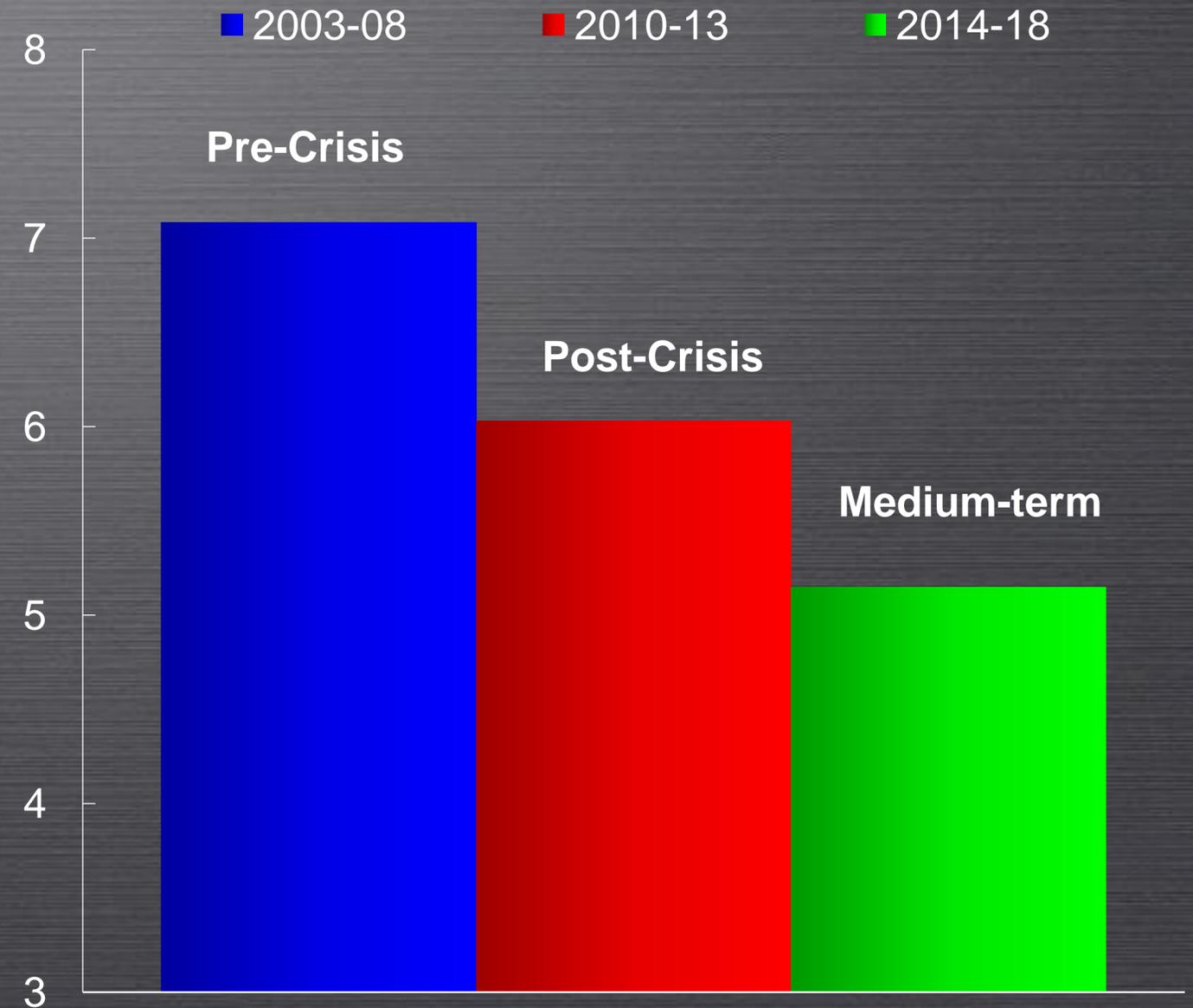
Changing Tides and Global Spillovers

AE Yield Projections 1/
(10-year; percent)



EM Growth

(percent change year-over-year; period averages)



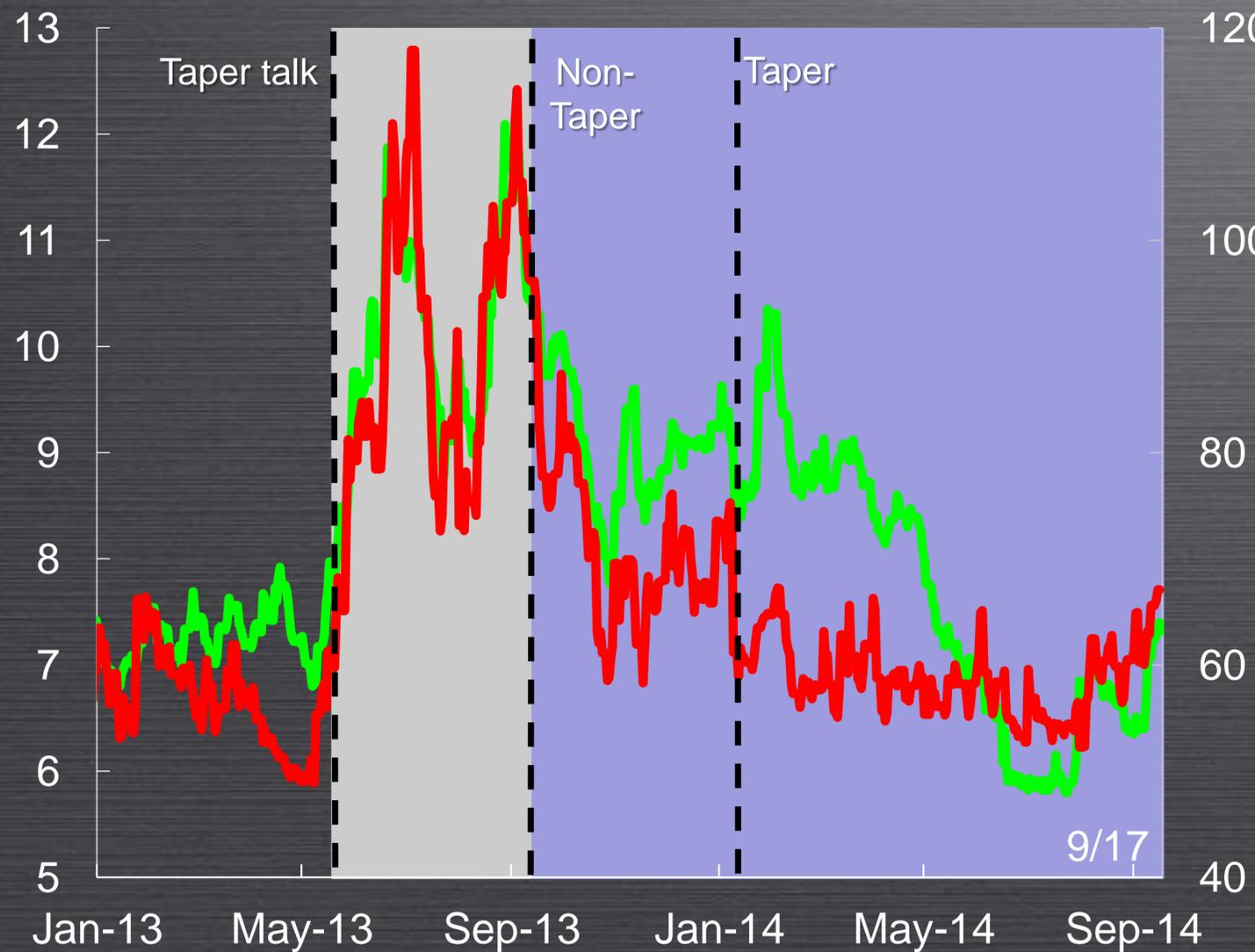
Sources: IMF, *World Economic Outlook*; and Consensus Economics.

1/ Rates for United States and United Kingdom. Range based on WEO forecasts from October 2009 used to measure +/-1 standard deviation.

Are Market Risks Rebuilding?

Implied Volatility (percent)

- EM foreign exchange volatility
- U.S. interest rate volatility, Move index (basis points; RHS)



Emerging Market Assets (index; January 1, 2013=100)

- Equities - MSCI
- EMBI (RHS)



Sources: Bloomberg, L.P.; and IMF staff calculations.

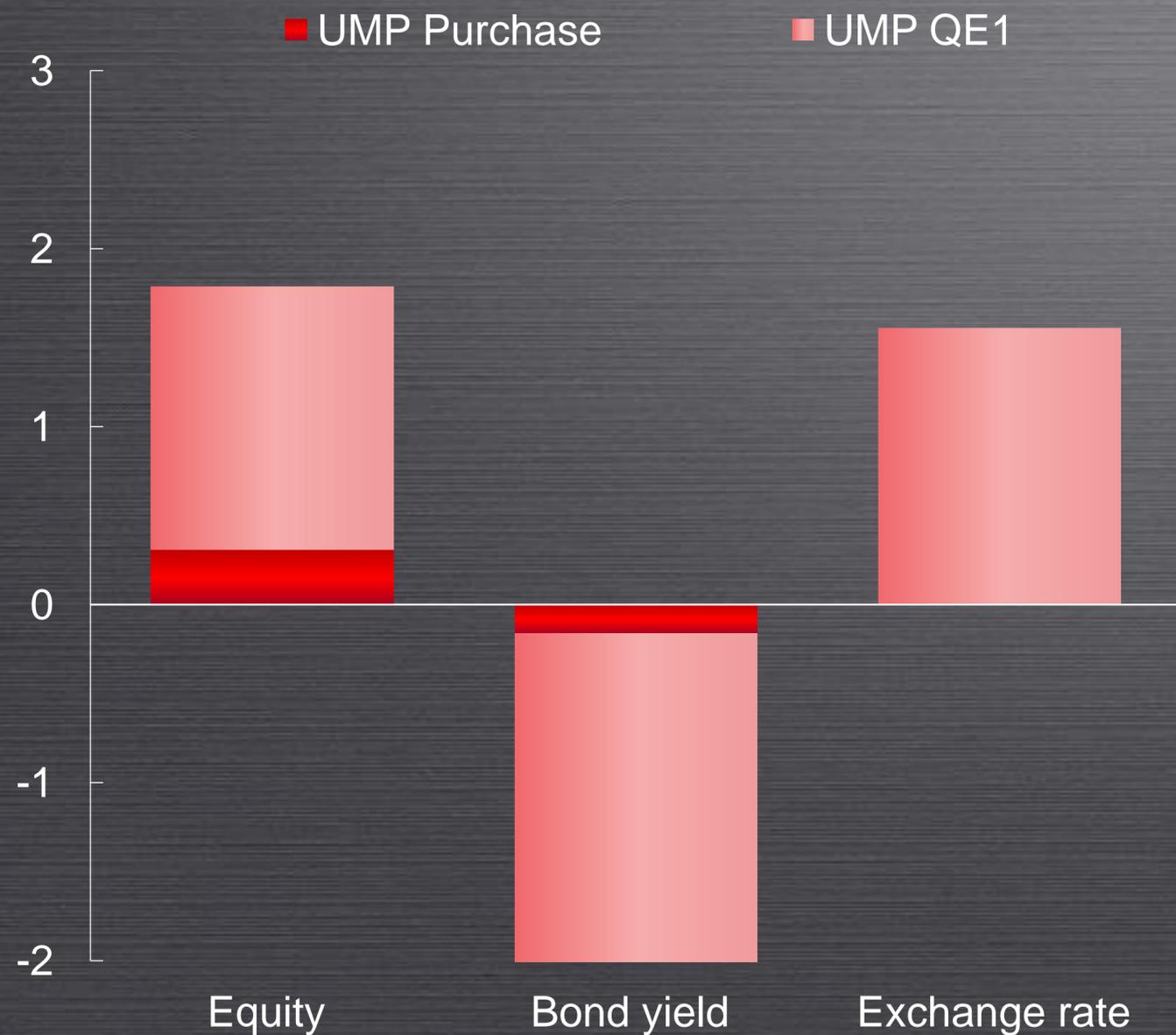


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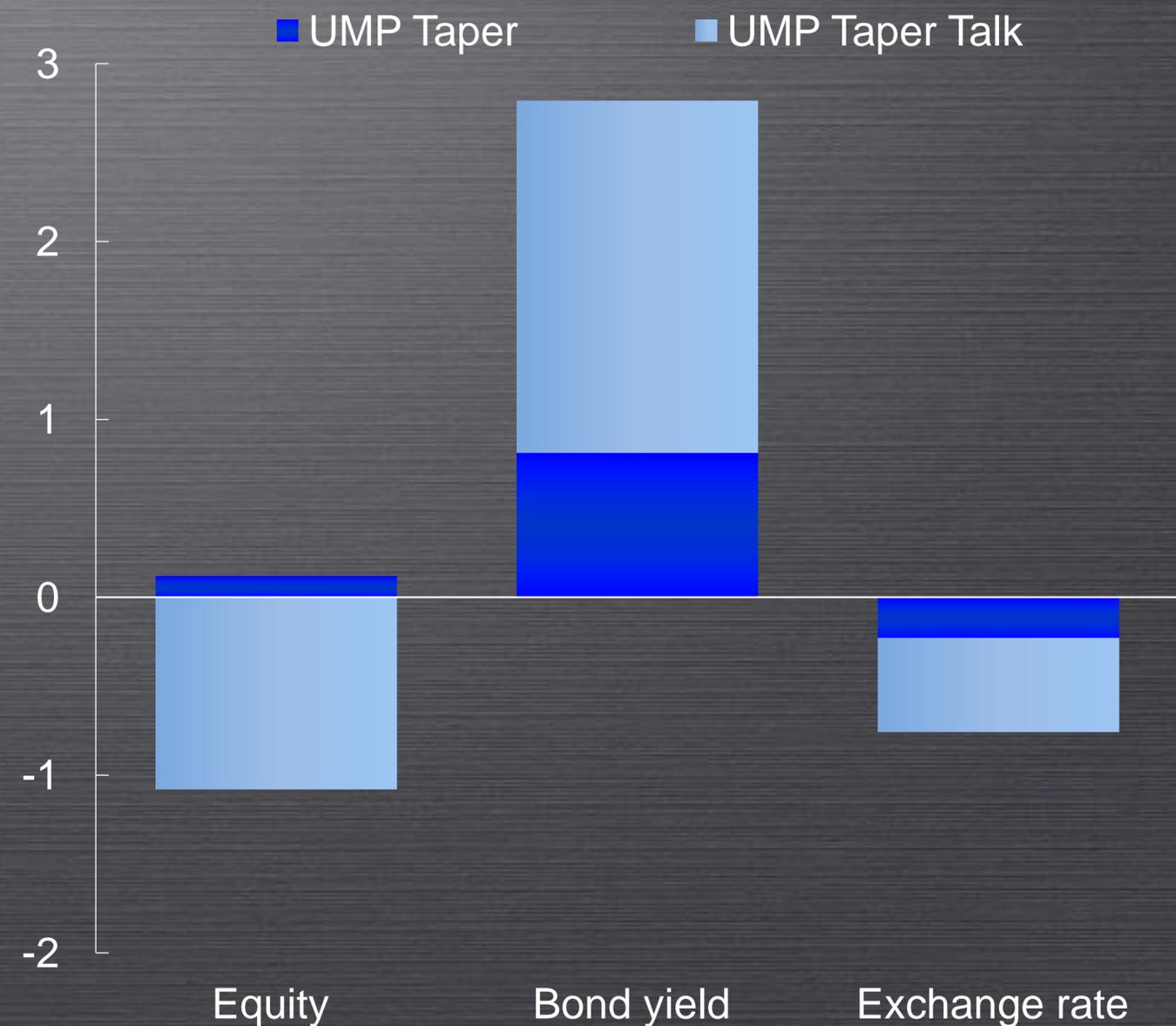
**Spillovers from
Monetary Normalization**

Taper Shock Generated Large EM Spillovers

EM Response in Purchasing Episode 1/
(percent change)



EM Response in Taper Episode 1/
(percent change)



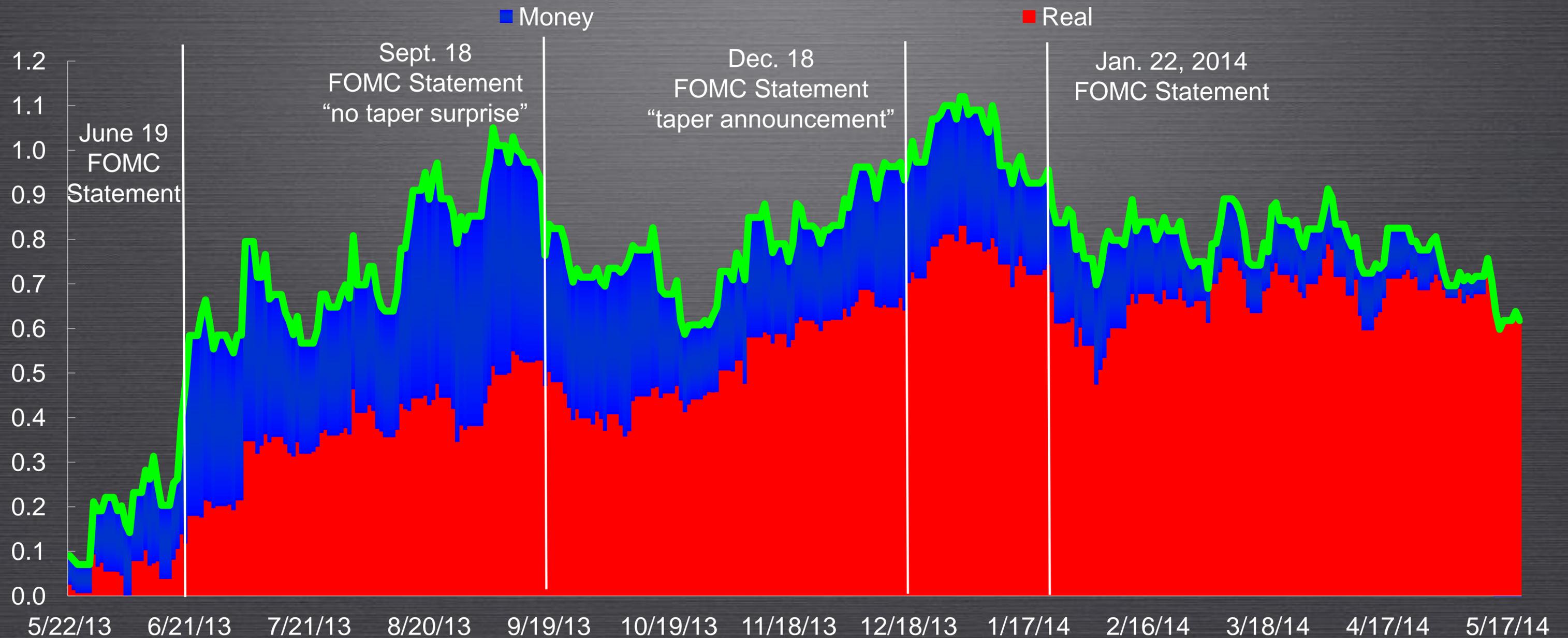
Source: IMF staff calculations.

1/ Average responses during 2-day window around U.S. monetary events. Increase in exchange rate denotes EM currency appreciation.

Drivers of U.S. Yields Evolved during Taper Episode

Real versus Money Shocks 1/

(percentage points; change in 10-year Treasury bond yield since May 21, 2013)



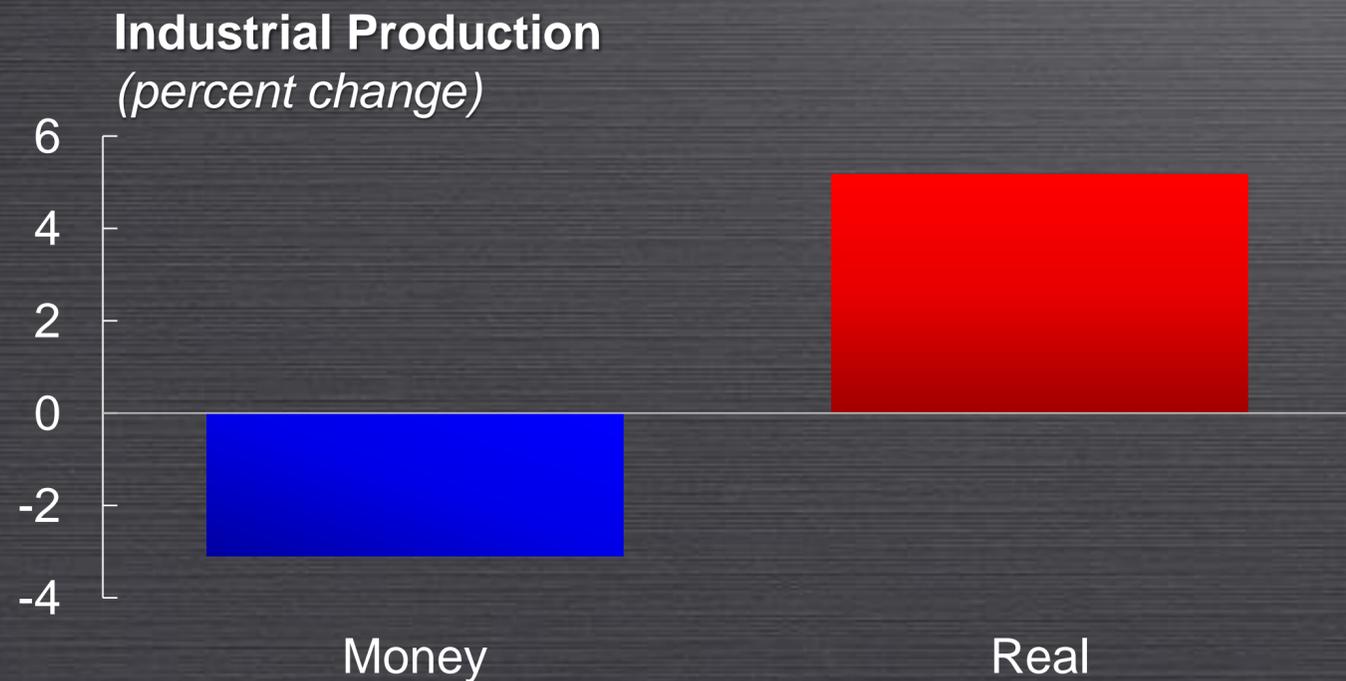
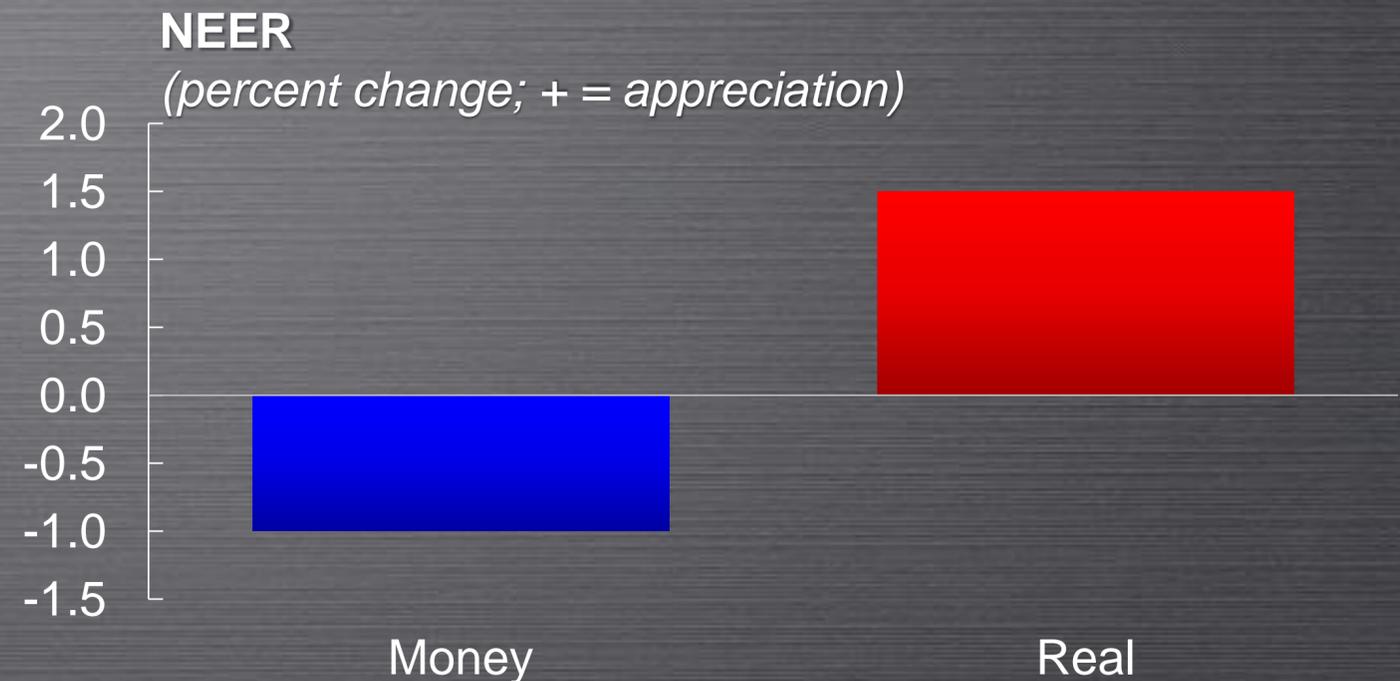
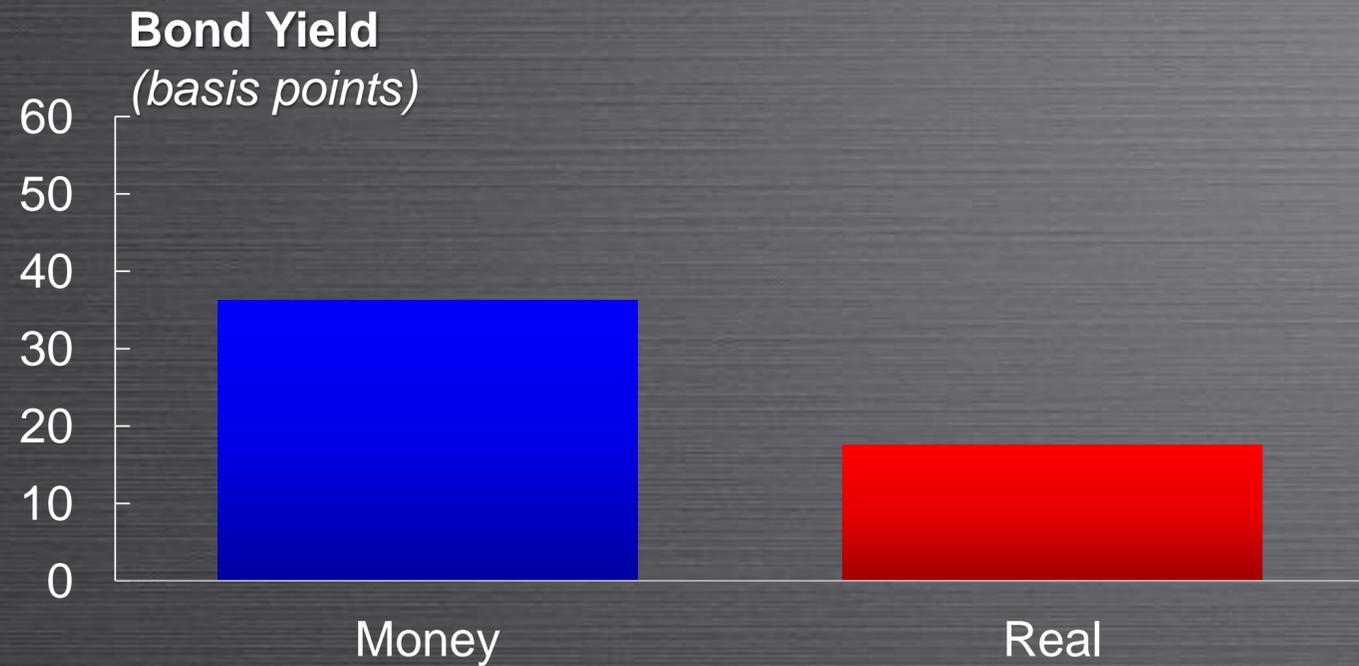
Sources: Haver Analytics; and IMF staff calculations.

1/ Historical shock decomposition since May 21, 2013 based on a two-variable VAR estimated on daily data (2003-13). The variables are (log) S&P 500 and the 10-year Treasury bond yield. The VAR is identified with sign restrictions.

Different Drivers of Yields Have Different Spillovers

EM Response to G-4 Shocks 1/

(scaled to a max. response of 100bps in U.S. 10 year yield)

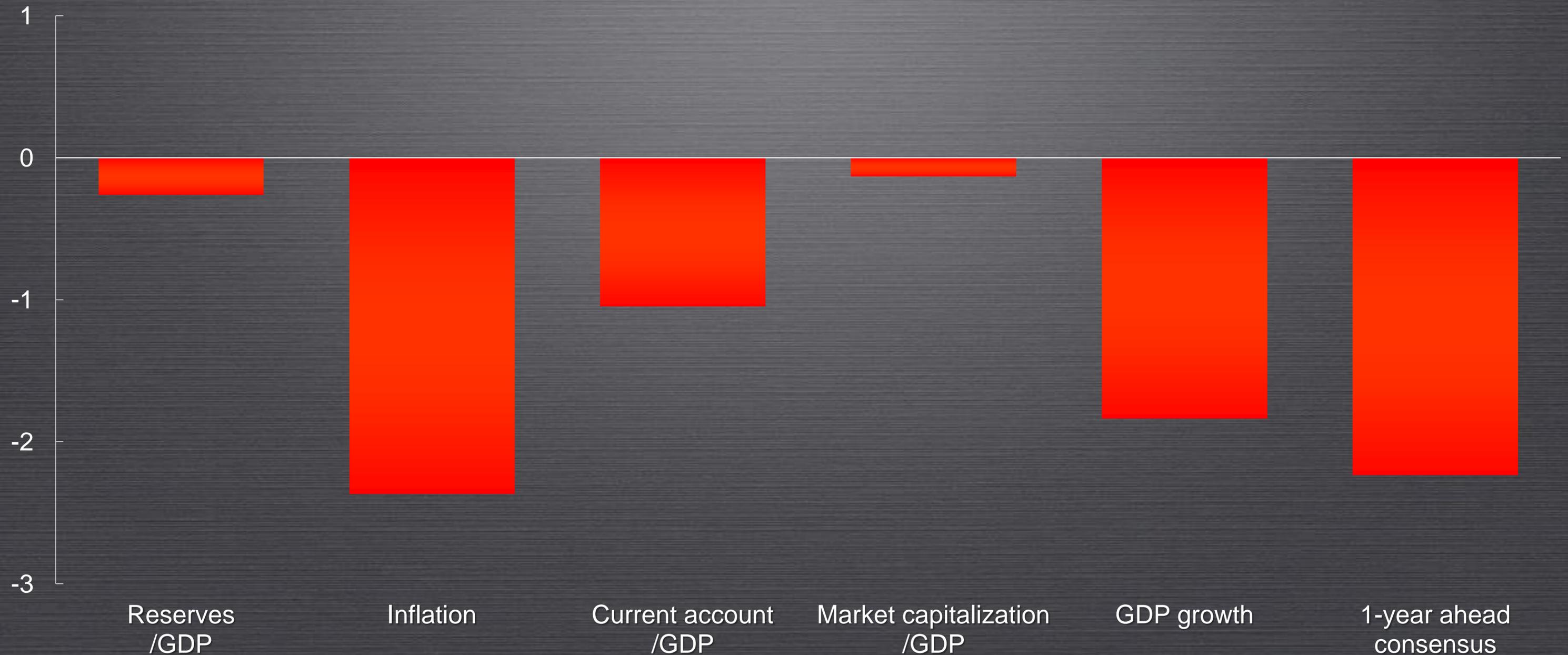


Source: IMF staff calculations.

1/ G-4 comprises of United States, United Kingdom, Euro area and Japan.

Spillover Effects Differentiate Depending on Fundamentals

EM Bond Yields and Fundamentals 1/
(2-day change; percentage points)



Sources: IMF staff calculations; and Mishra et al (forthcoming).

1/ Change in yields shown as differences from the mean for one standard deviation change in fundamentals from cross-section averages.



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**Reversal of Fortunes:
Spillovers from Emerging Market**

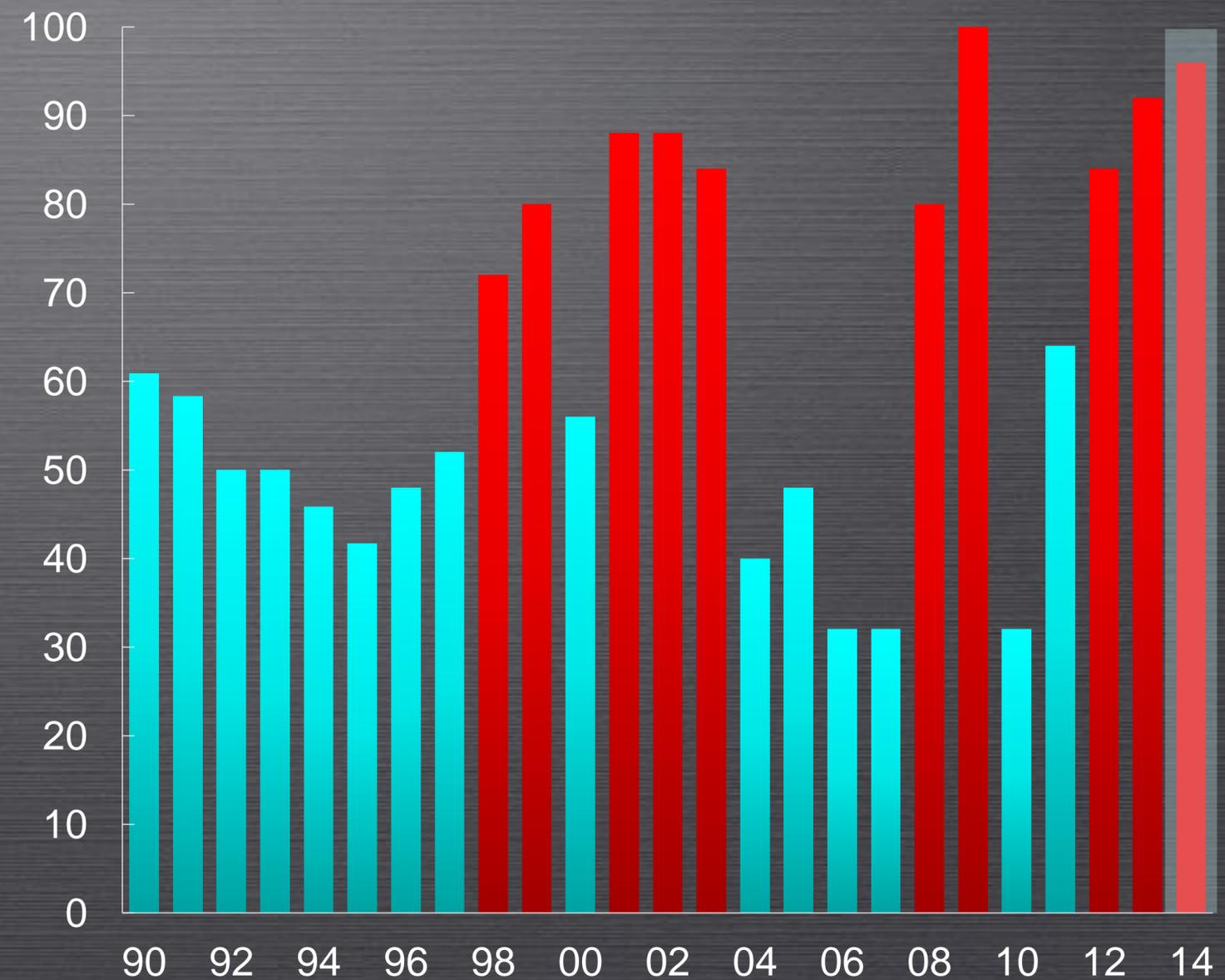
Gradual and Synchronized Slowdown in EM Growth

Emerging Markets: Evolution of Growth
(percent change year-over-year)



Synchronized EM Slowdown

(percent of EM countries with growth slowdowns) 2/



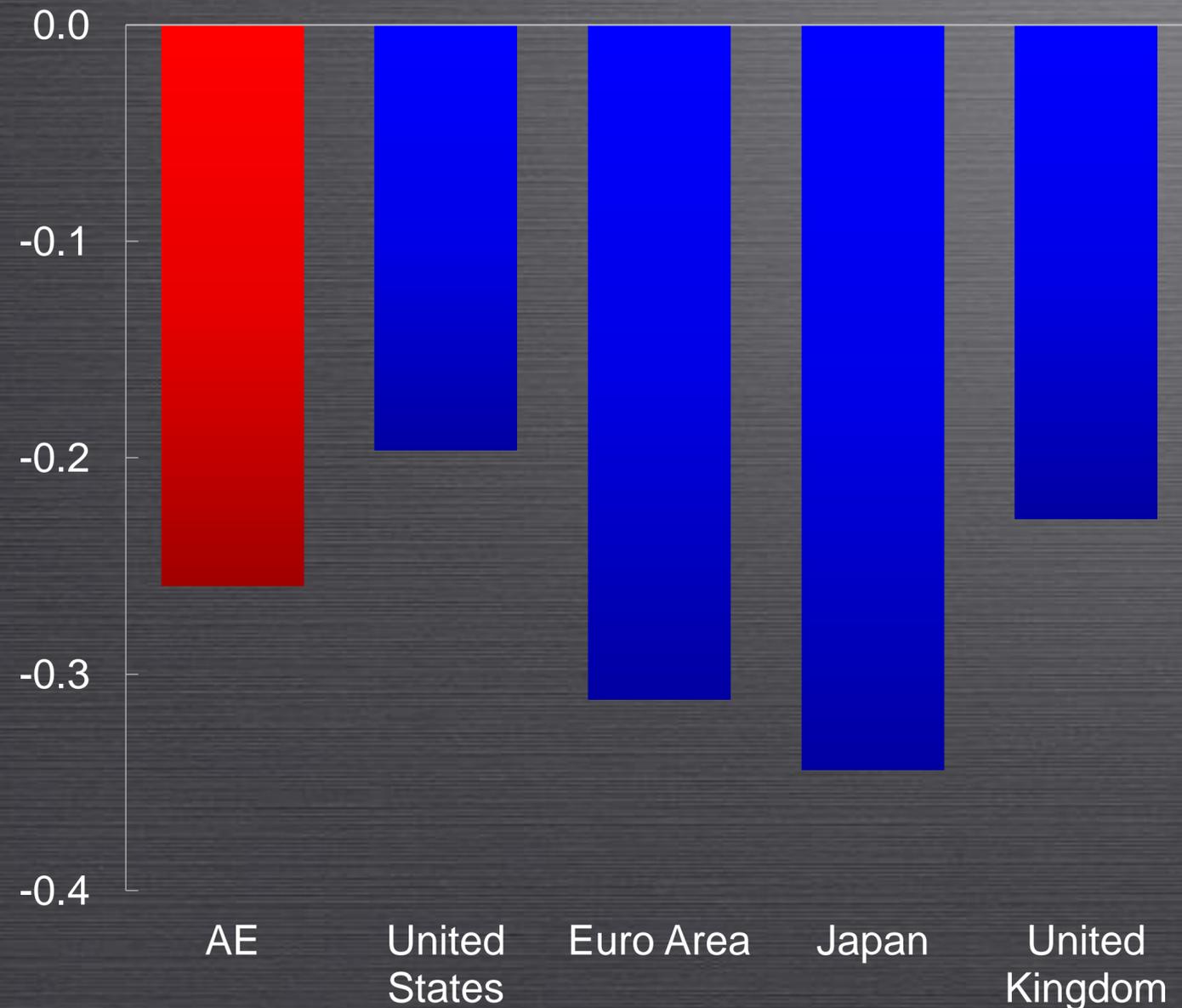
Sources: April 2014 *World Economic Outlook*; Consensus Economics; and staff calculations.

1/ Central and Eastern Europe; consisting of Czech Republic, Hungary, Poland, Russia, and Turkey.

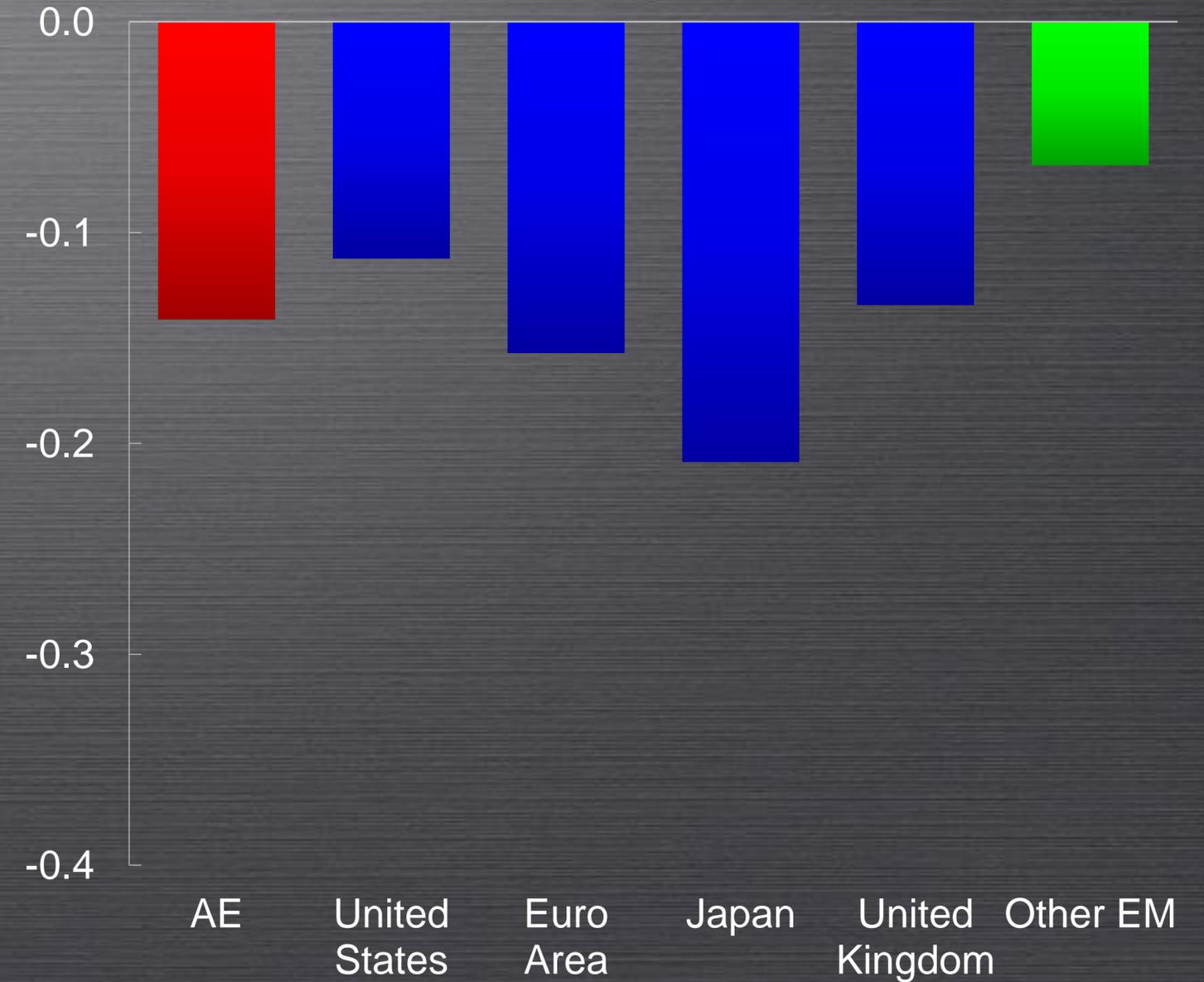
2/ Red bars denote more than 70 percent of sample countries. For years 1990-2002, below the average of 1994-1996 real GDP growth, thereafter below the 2003-2007 average.

Significant Spillovers Through Trade

Cumulative Effect of a One-Percentage-Point Decline in EM Growth
(percentage points)



Cumulative Effect of a One-Percentage-Point Decline in China Growth
(percentage points)

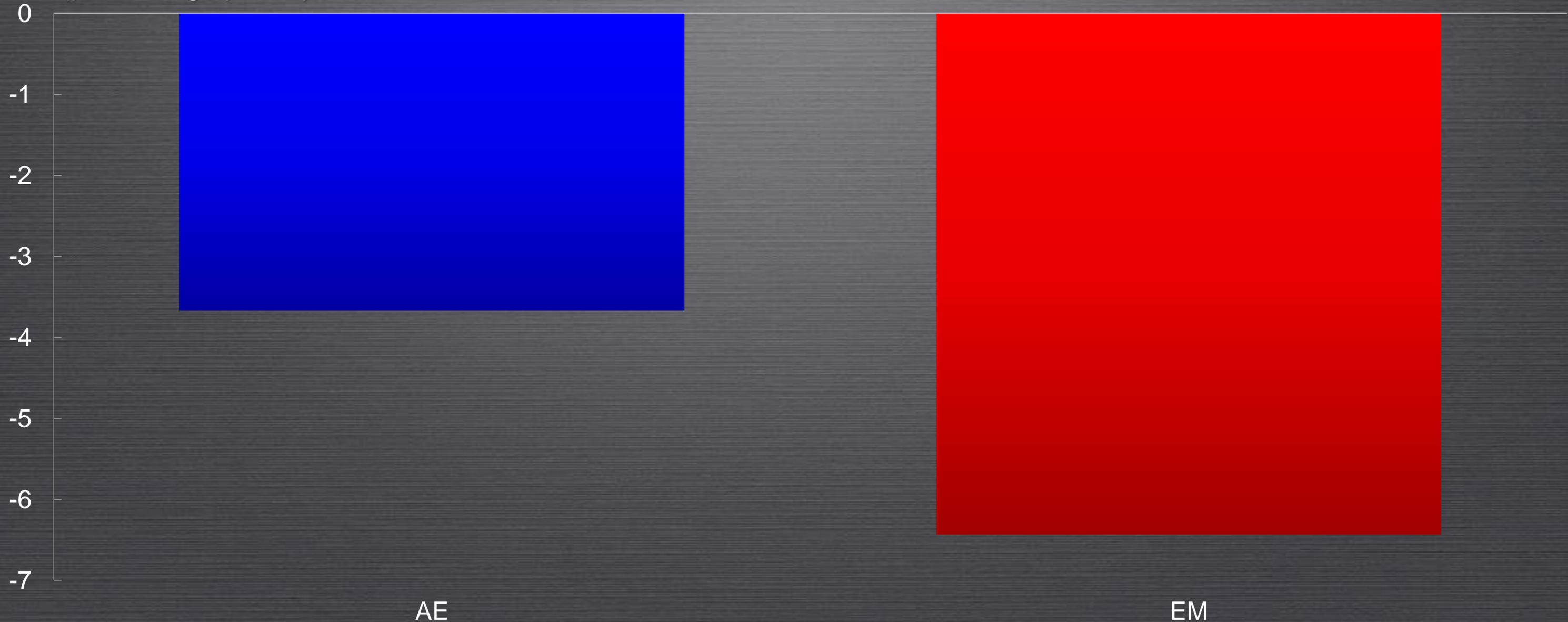


Source: IMF staff estimates.

Note: Results are significant at 10 percent. The method of estimation is Global VAR using exports plus import value added weights. Generalized Impulse response are used for structural decomposition.

Commodity Prices are Heavily Influenced by EM Growth

Cumulative Effect of a One-Percentage-Point GDP Growth Decline on Commodity Prices
(percentage points)

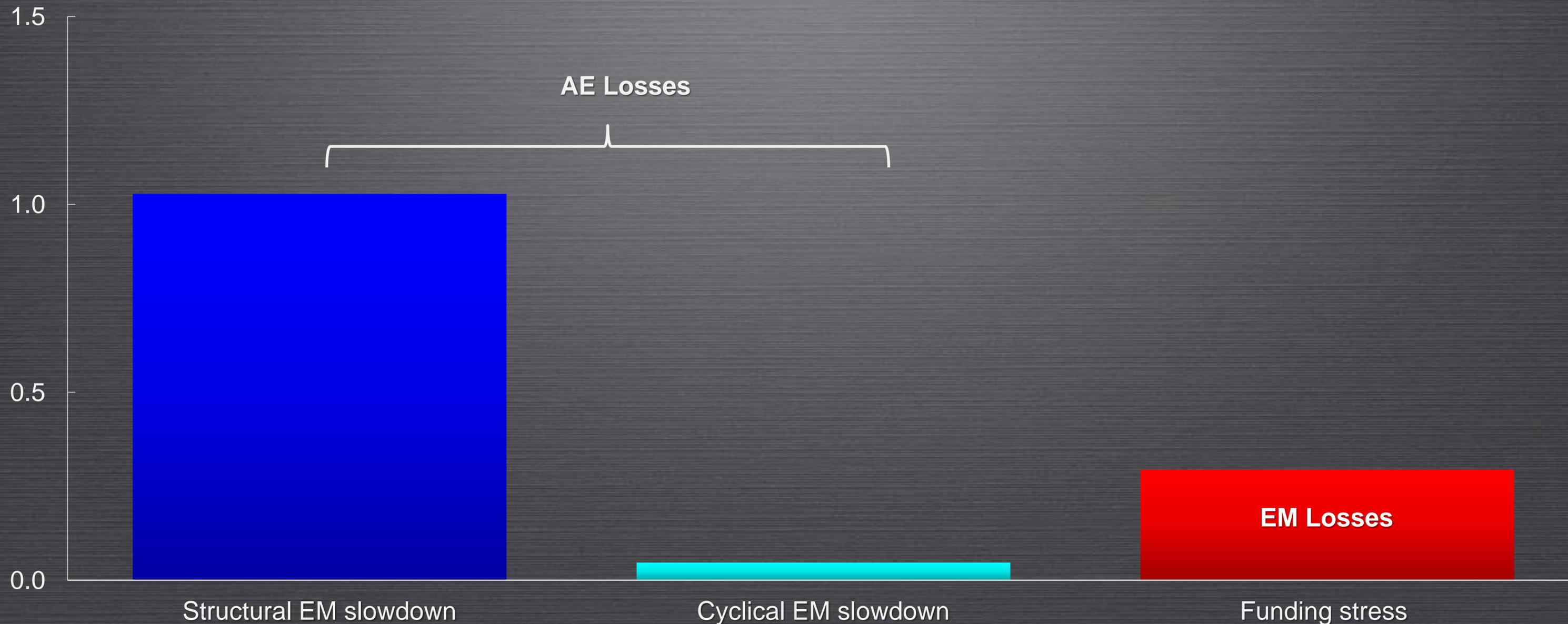


Sources: IMF, *Primary Commodity Price System*; and IMF staff estimates.

Note: Results are significant at 10 percent. The method of estimation is VAR using Cholesky with AE entering first in the ordering. The IMF commodity price index includes energy, metal and food price inflation deflated by US CPI and weighted by their respective shares in global trade.

Risk of Bank Losses through EM Exposures

Total AE Bank Capital Losses
(percent of GDP)



Sources: IMF staff calculations based on BIS; Central Banks; Bankscope; and IMF, *International Financial Statistics*.

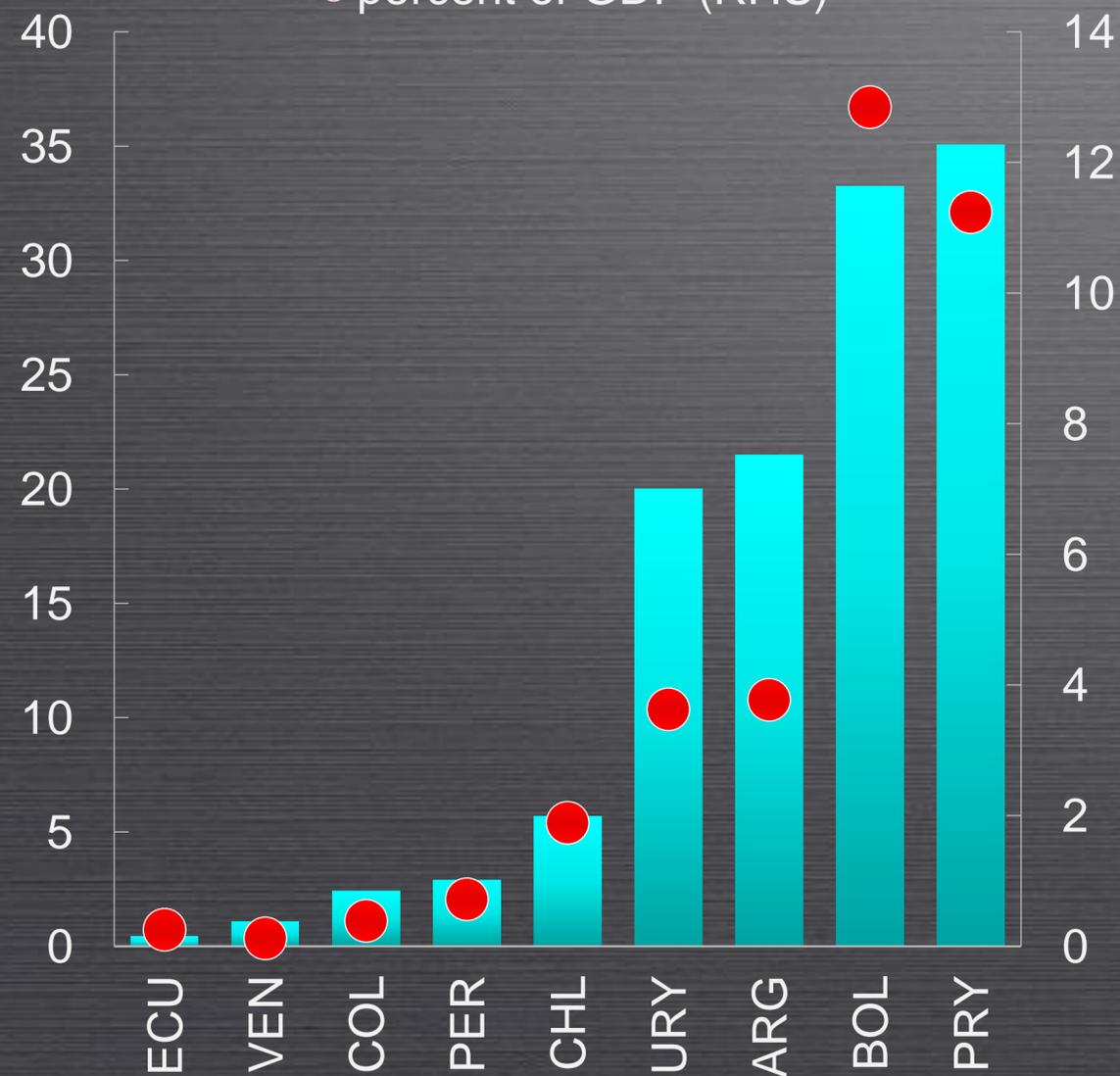
Local EM Spillovers Can Be Large

Exposure to Brazil, 2010 – 2012

(exports to Brazil)

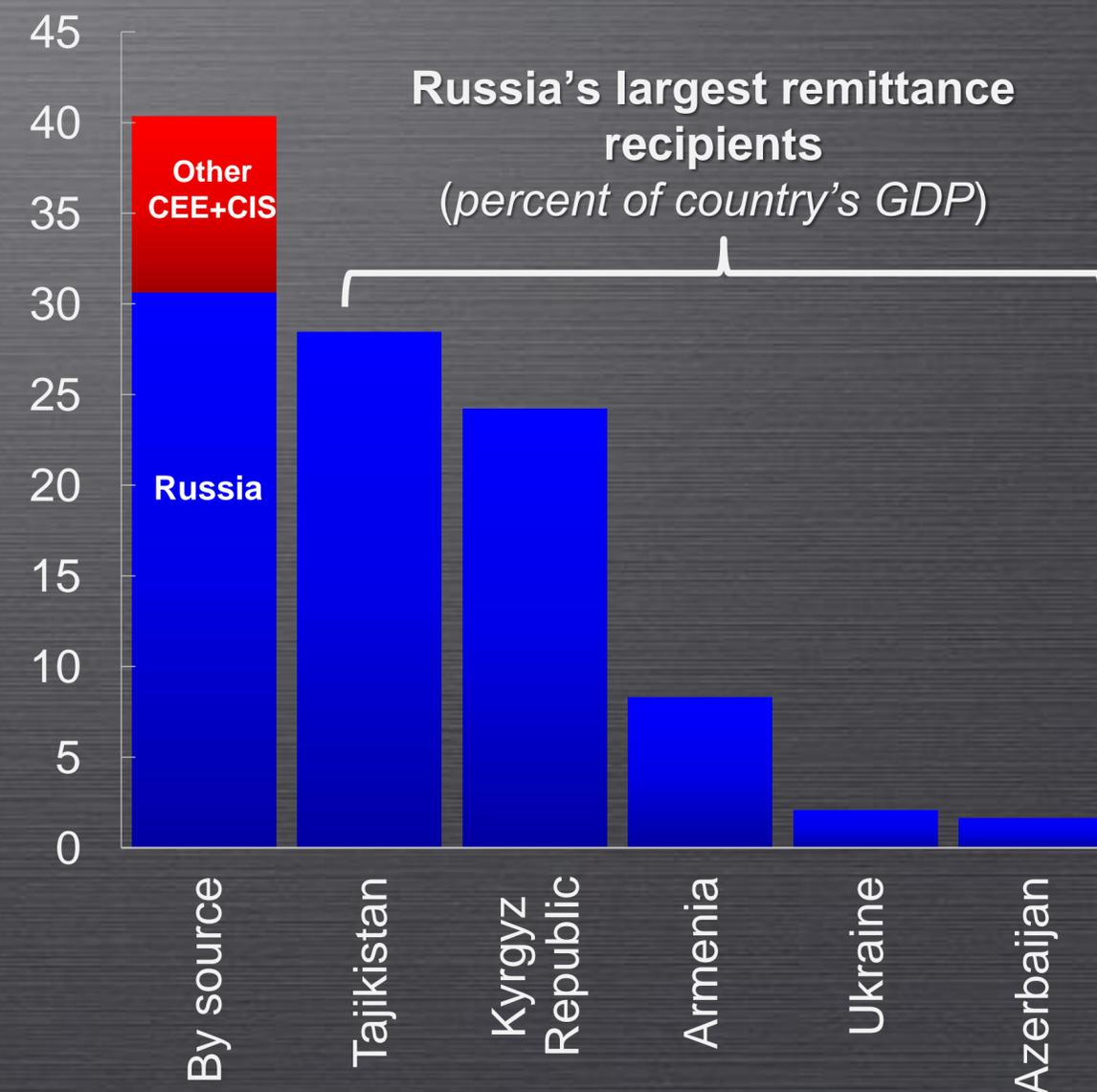
■ percent of total exports

● percent of GDP (RHS)



CEE + CIS: Regional Remittances

(percent of total remittances to the region; 2012)



Sources: Country authorities; IMF, *Direction of Trade Statistics*; PDVSA; World Bank, Migration and Remittances database; and IMF staff calculations.



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Spillover Risks and Global Policies

Elements of Global Downside Scenario

1. Sharper tightening in global financial conditions

- Sooner-than-expected tightening in key advanced economies (money shock)
- Long-term interest rates rise by 100 basis points in first year before easing gradually, short-term interest rates rise briefly then ease within the year (up 25 bps)

2. Further slowdown in emerging economies

- Unanticipated slowdown that is perceived to be cyclical, eventually seen as structural
- (Autonomous) slowdown of $\frac{1}{2}$ percentage point for growth per annum for 3 years

3. Additional financial market stress

- Higher risk premia in vulnerable emerging markets (50 basis points)—G20MOD
- Calibrated asset price declines and exchange rate movements based on event studies of past EM-led sell-offs—G40 Model

Global Downside Scenario

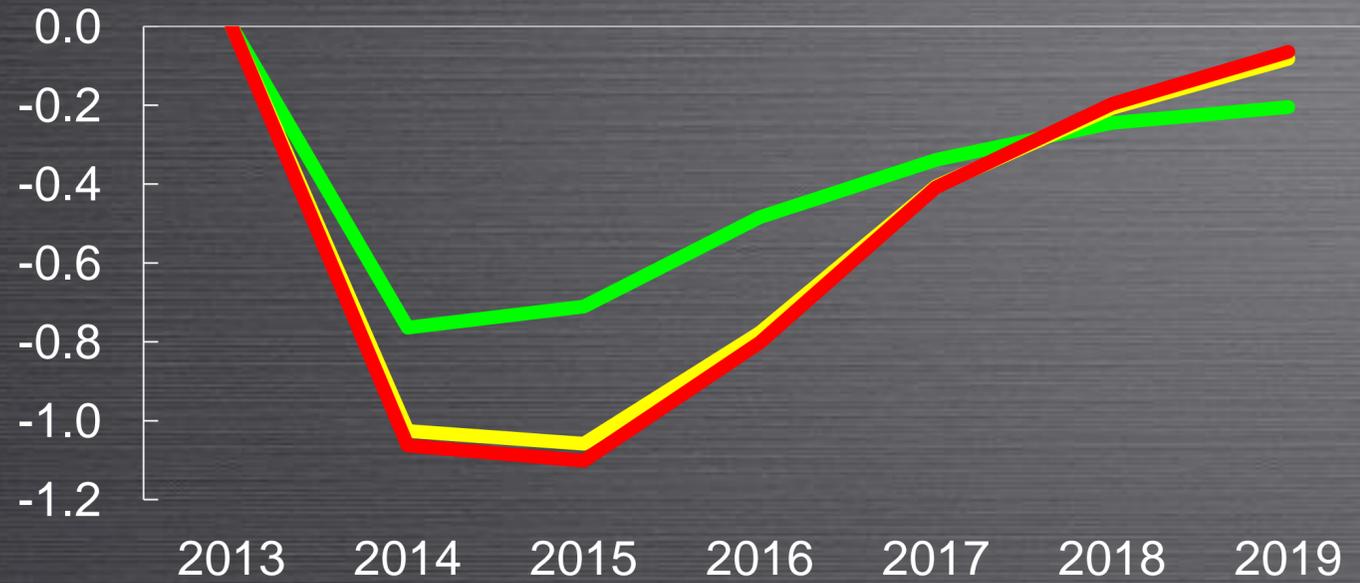
(percent; deviation from baseline)

— Money Shock in U.S. and U.K.

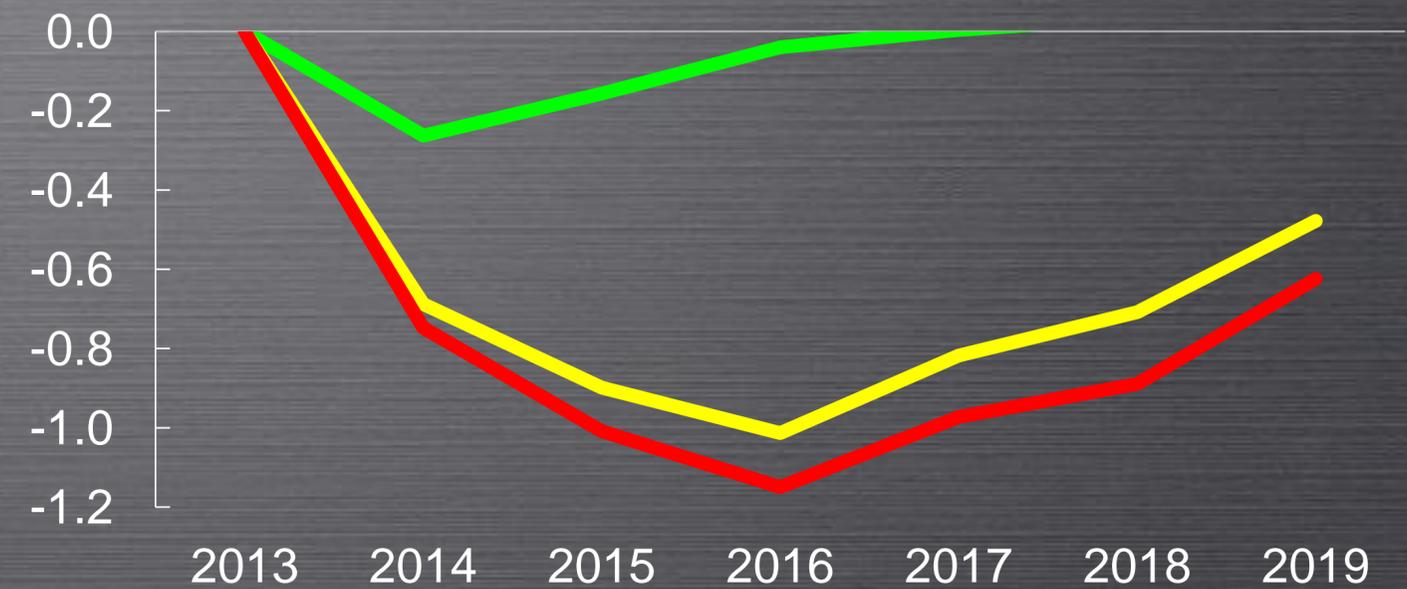
— EM structural slowdown

— Additional tightening in EM

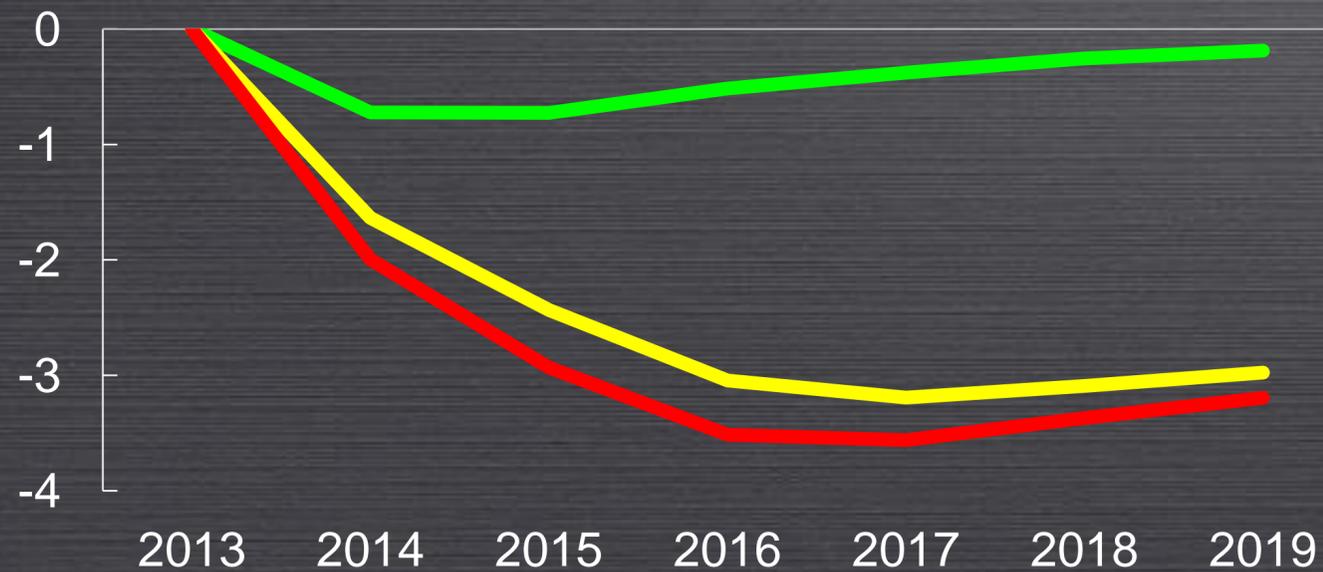
Source of AEs: U.S. and U.K.



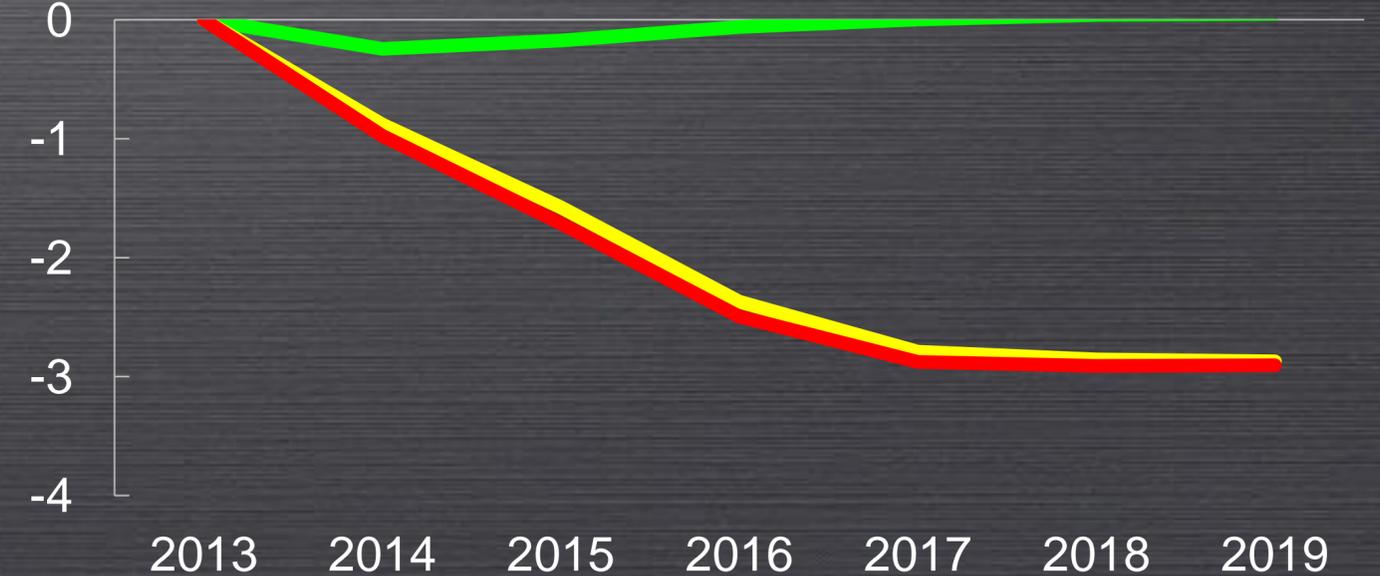
Recipient AEs: Euro Area and Japan



Vulnerable EMs



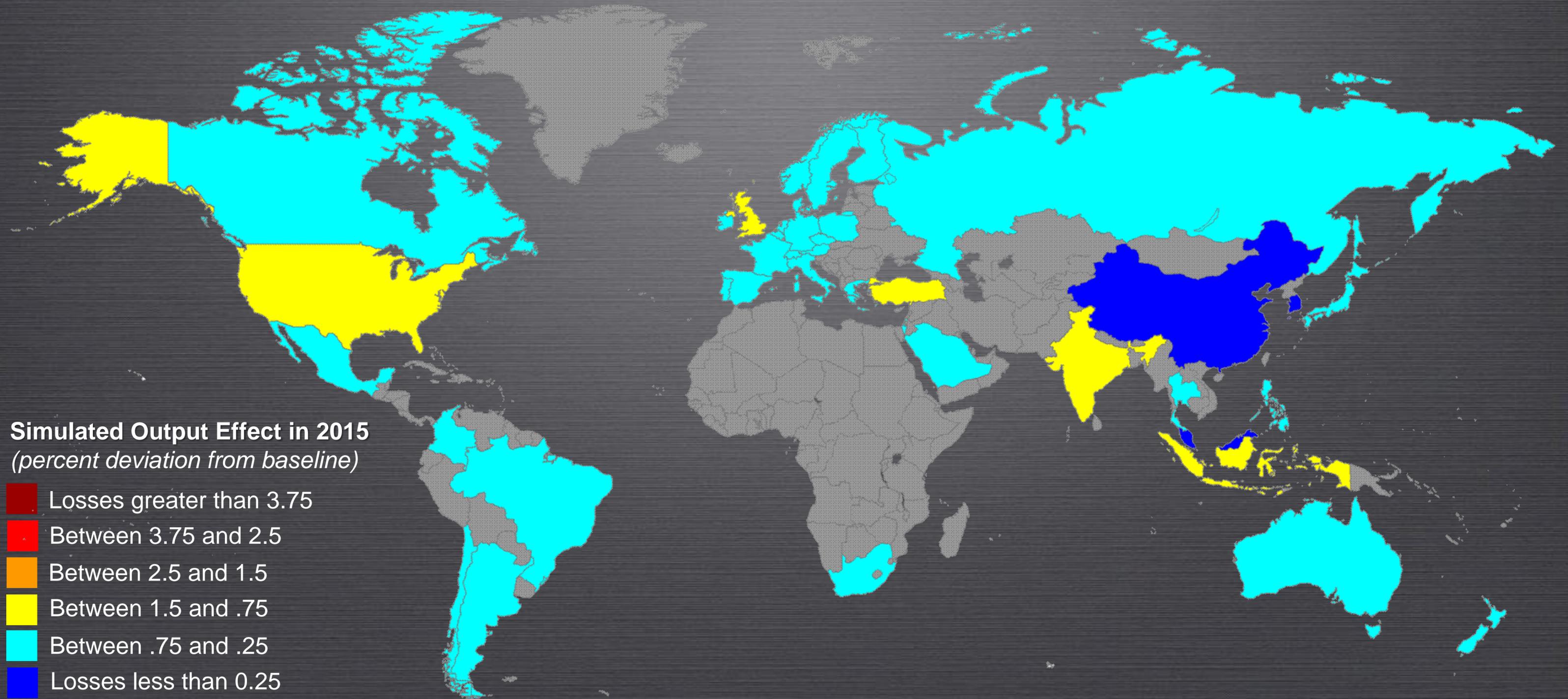
Other EMs



Sources: IMF staff estimates; and G20MOD.

Global Downside Scenario

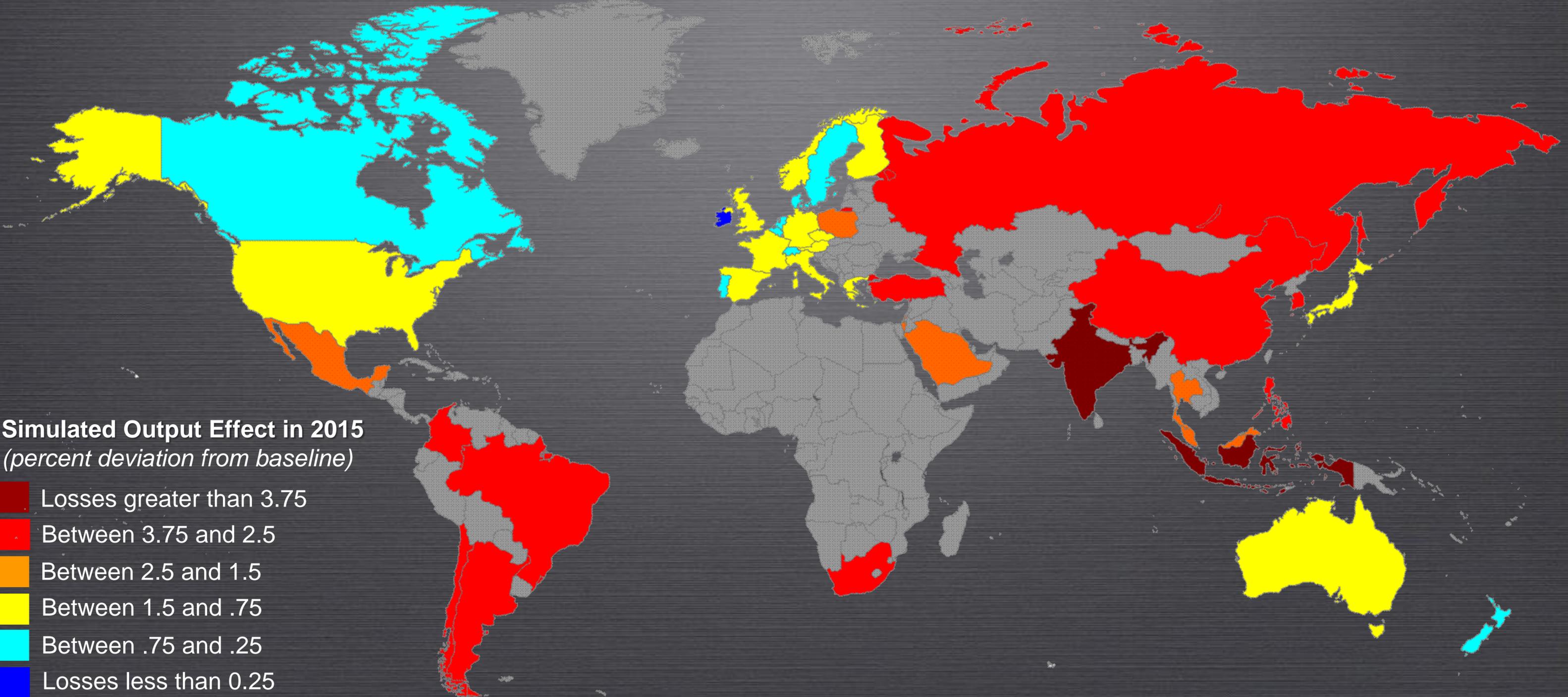
Asynchronous Normalization



Sources: IMF staff calculations; and G40 model.

Global Downside Scenario

Asynchronous Normalization + EM Slowdown



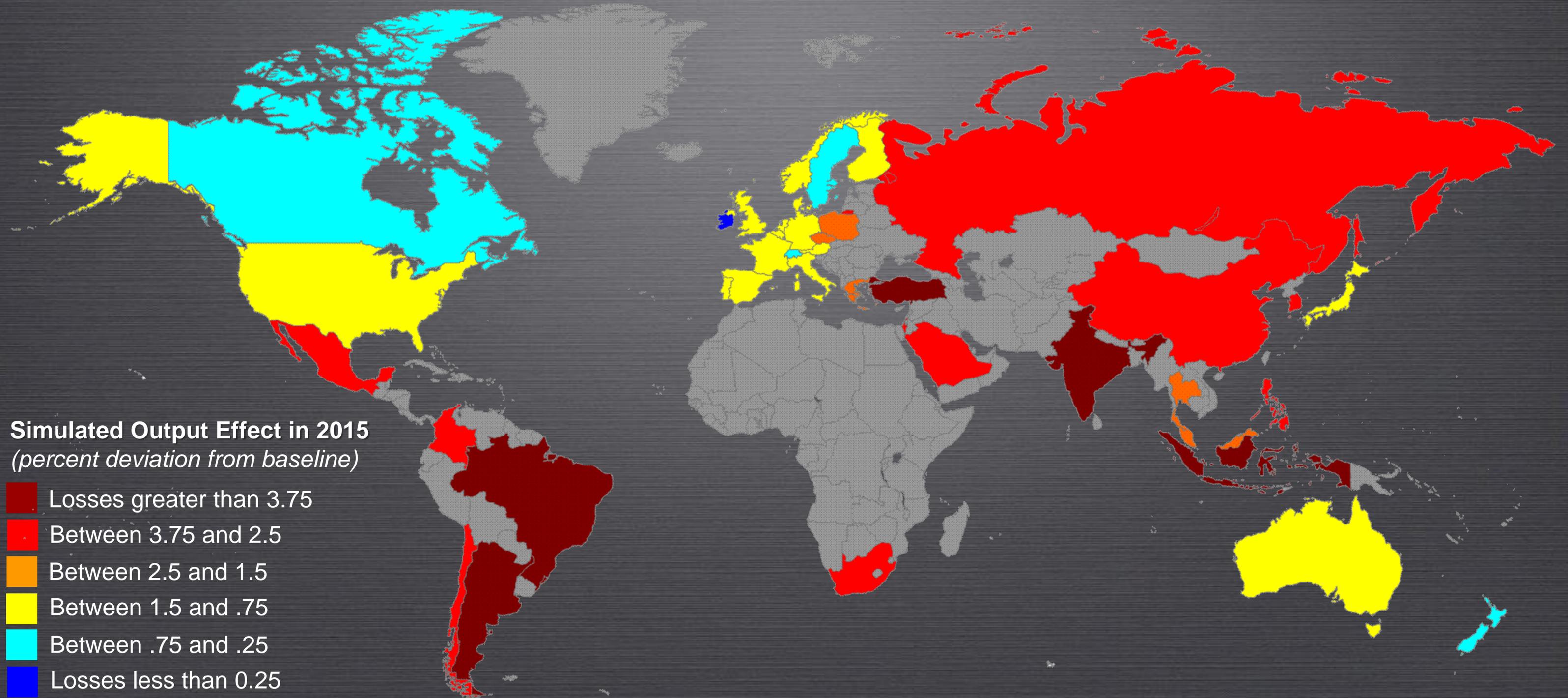
Simulated Output Effect in 2015
(percent deviation from baseline)

- Losses greater than 3.75
- Between 3.75 and 2.5
- Between 2.5 and 1.5
- Between 1.5 and .75
- Between .75 and .25
- Losses less than 0.25

Sources: IMF staff calculations; and G40 model.

Global Downside Scenario

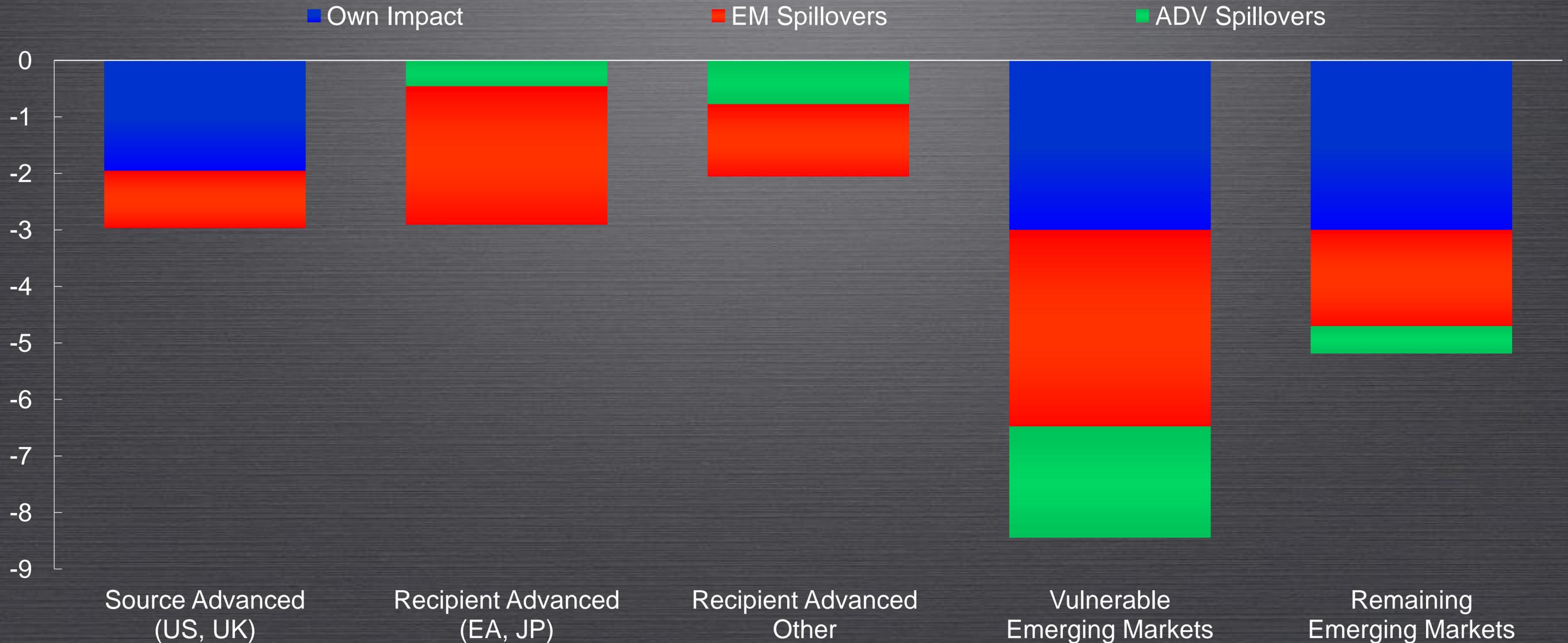
Asynchronous Normalization + EM Slowdown + Financial Turmoil



Different Spillover Effects Across Countries

Spillover Effects on Output

(cumulative contribution to real GDP by 2016; percent deviation from baseline)



Source: IMF staff estimates.

Policy Implications

1. Central banks need well-calibrated communications and policy actions.

2. Advanced economies vulnerable to adverse spillovers may need further monetary accommodation.

3. In EMs, priorities depend on country circumstances and vulnerabilities.

- **Strengthening fundamentals and policy frameworks where needed to reduce vulnerabilities; Certain responses can help weather turbulence.**
- **Renewed attention on structural reform priorities for medium-term growth.**

4. Scope for cooperation reflects tradeoffs and possibly modest “spillbacks.”