Weak Investment in Uncertain Times:
Causes, Implications, and Policy Responses

M. Ayhan Kose

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Recent Studies on Investment Weakness

- *Weakness in Investment Growth: Causes, Implications and Policy Reponses*

  Policy Research Working Paper – March 2017

- *Regional Dimensions of Recent Weakness in Investment: Drivers, Investment Needs and Policy Reponses*

  Policy Research Working Paper – March 2017

- *Explaining the Cycles of Productivity: Global and Sectoral Factors*

  Policy Research Working Paper - Forthcoming

Four Questions

1 **What are the main features of the investment slowdown in EMDEs?**
Sharp; persistent; and highly synchronized slowdown in EMDEs (Emerging Market and Developing Economies)

2 **What are the correlates of slowing investment growth in EMDEs?**
No smoking gun; Weak output growth, decline in FDI inflows, adverse terms of trade shocks, private debt burden, elevated political risk and uncertainty.

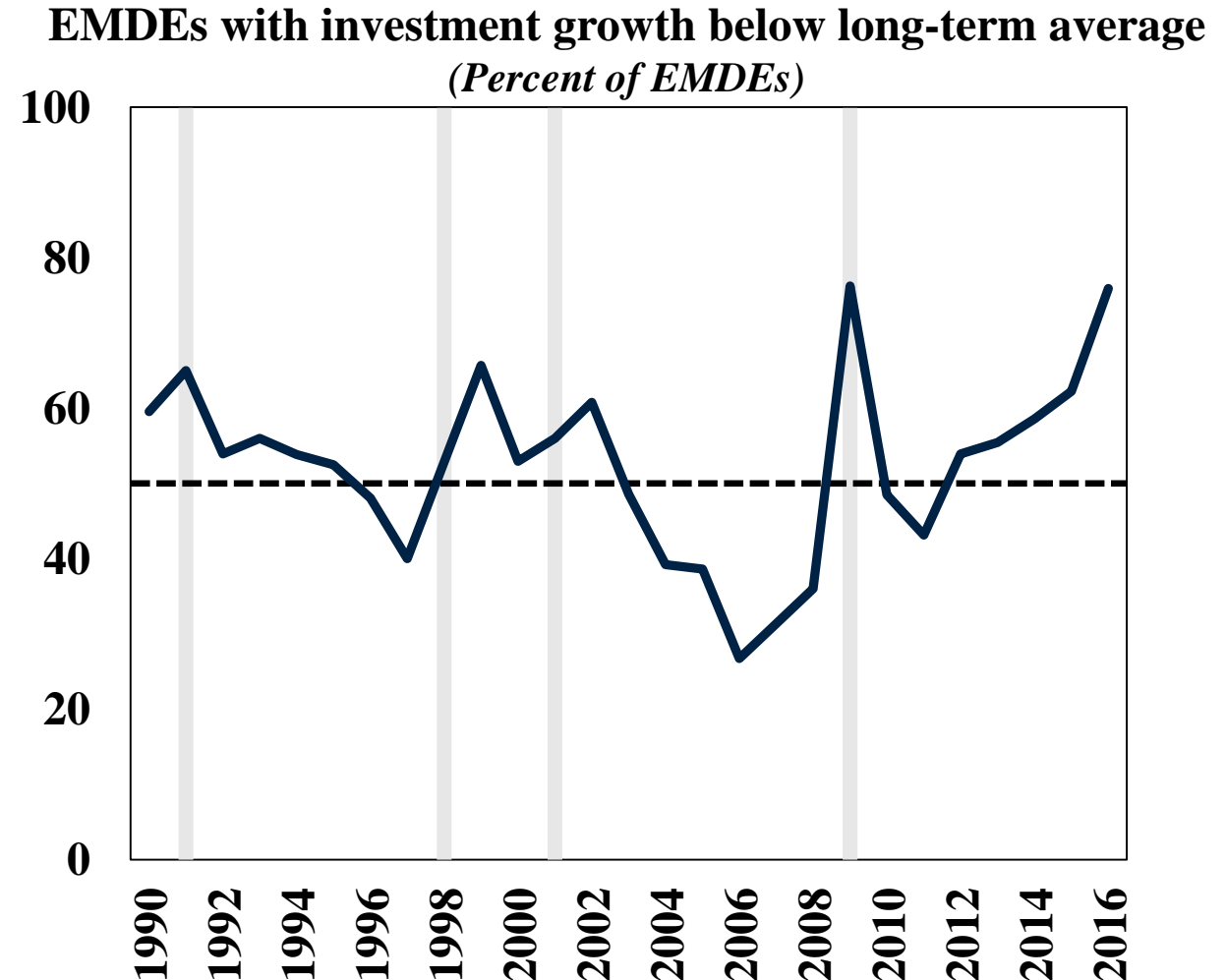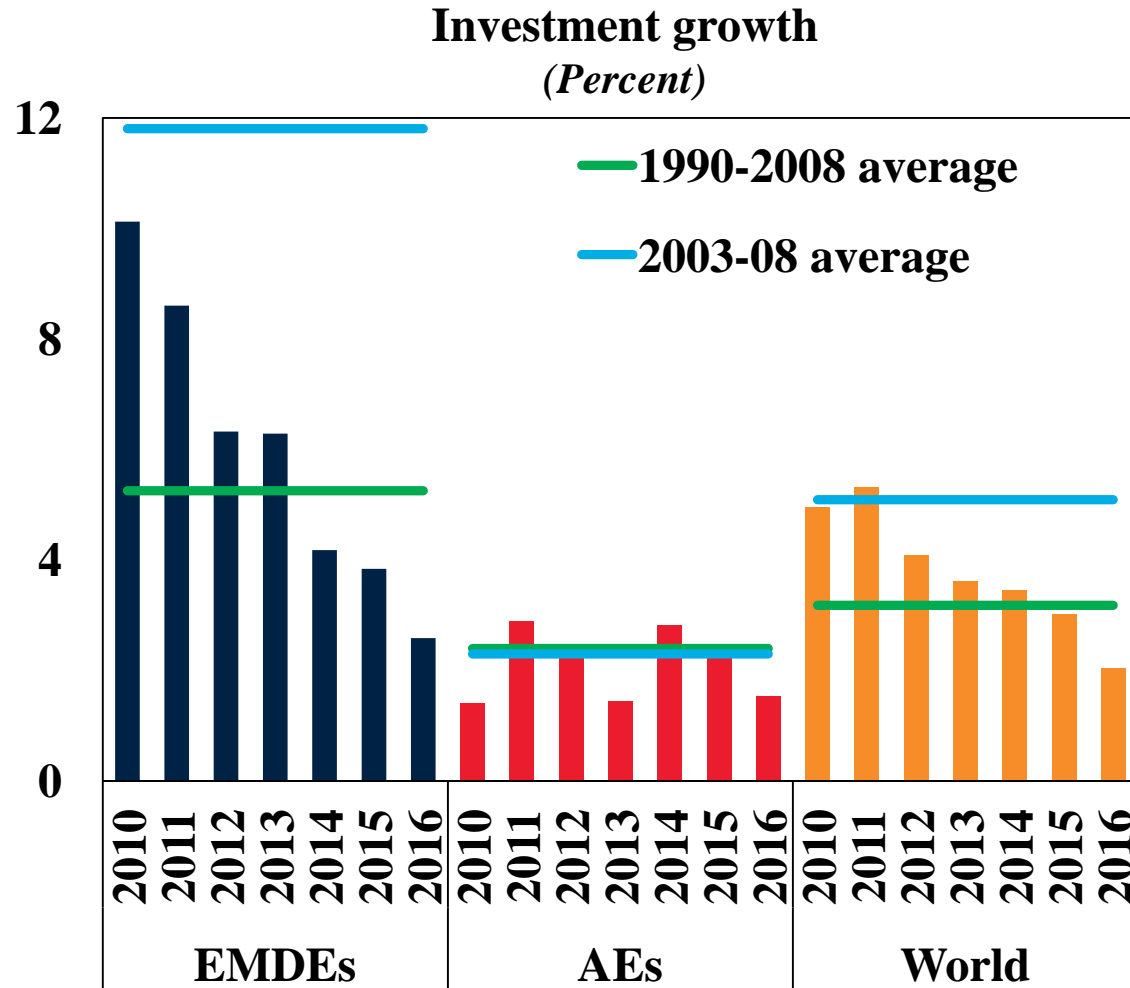**3** **What are the implications of weak investment growth for long-term growth prospects?**
Weaker productivity growth and slower income catch up.

4 **Which policies can support investment?**
No silver bullet; Direct measures: increase in public investment (infrastructure, health, education); Indirect measures: employment of countercyclical policies, institutional reforms.

Investment Growth:
Sharp, Persistent and Highly Synchronized Slowdown since 2010

Investment growth
(Percent)

— **1990-2008 average**
— **2003-08 average**

EMDEs · AEs · World

EMDEs with investment growth below long-term average
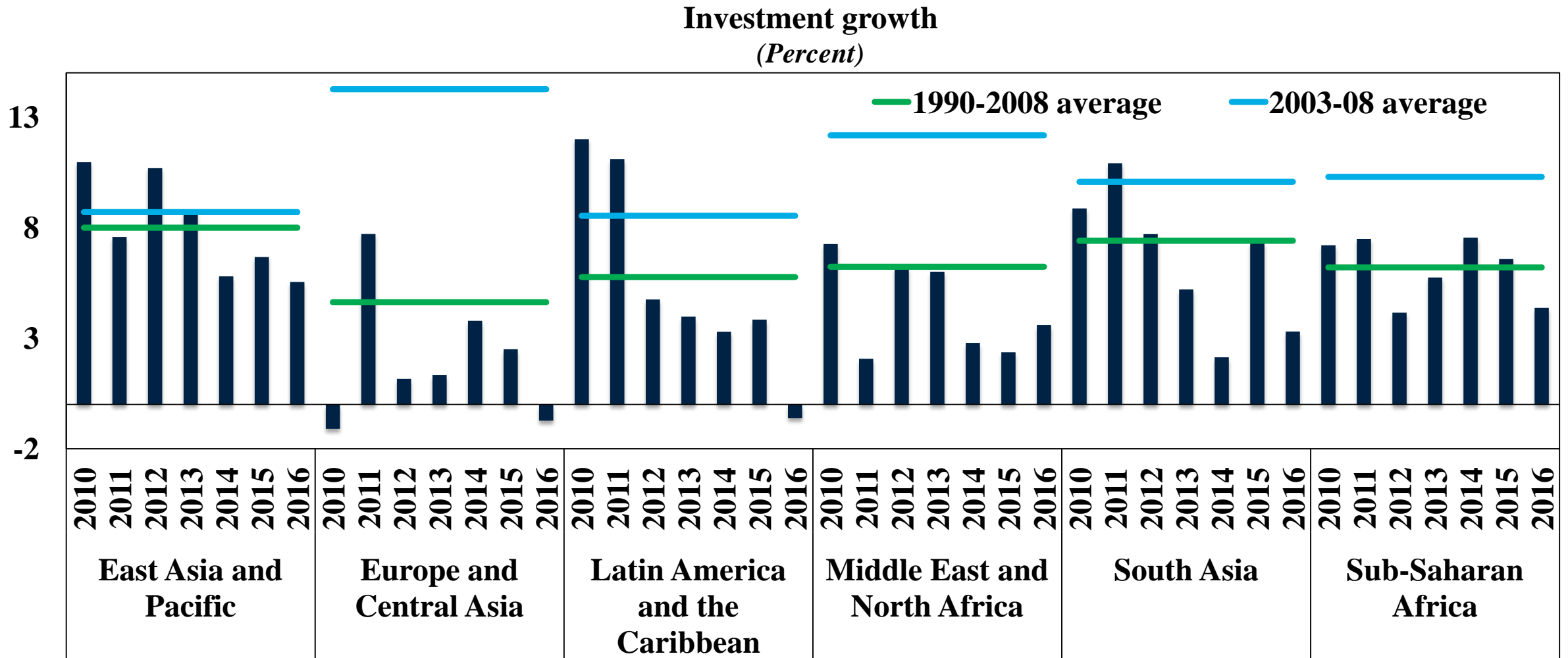*(Percent of EMDEs)*

Sources: Haver Analytics, World Bank, Oxford Economics, International Monetary Fund.
Left Panel. Weighted averages. Includes 120 EMDEs. Long-term average starts in 1991 for EMDEs due to the data availability. EMDEs and AEs refer to emerging market and developing economies and advanced economies, respectively.
Right Panel. Long-term averages are country-specific over 1991-2008. Includes 122 EMDEs. Dashed line shows 50 percent. Shaded areas refer to global recessions and slowdowns (1991, 1998, 2001 and 2009). Data for 2016 are estimates.
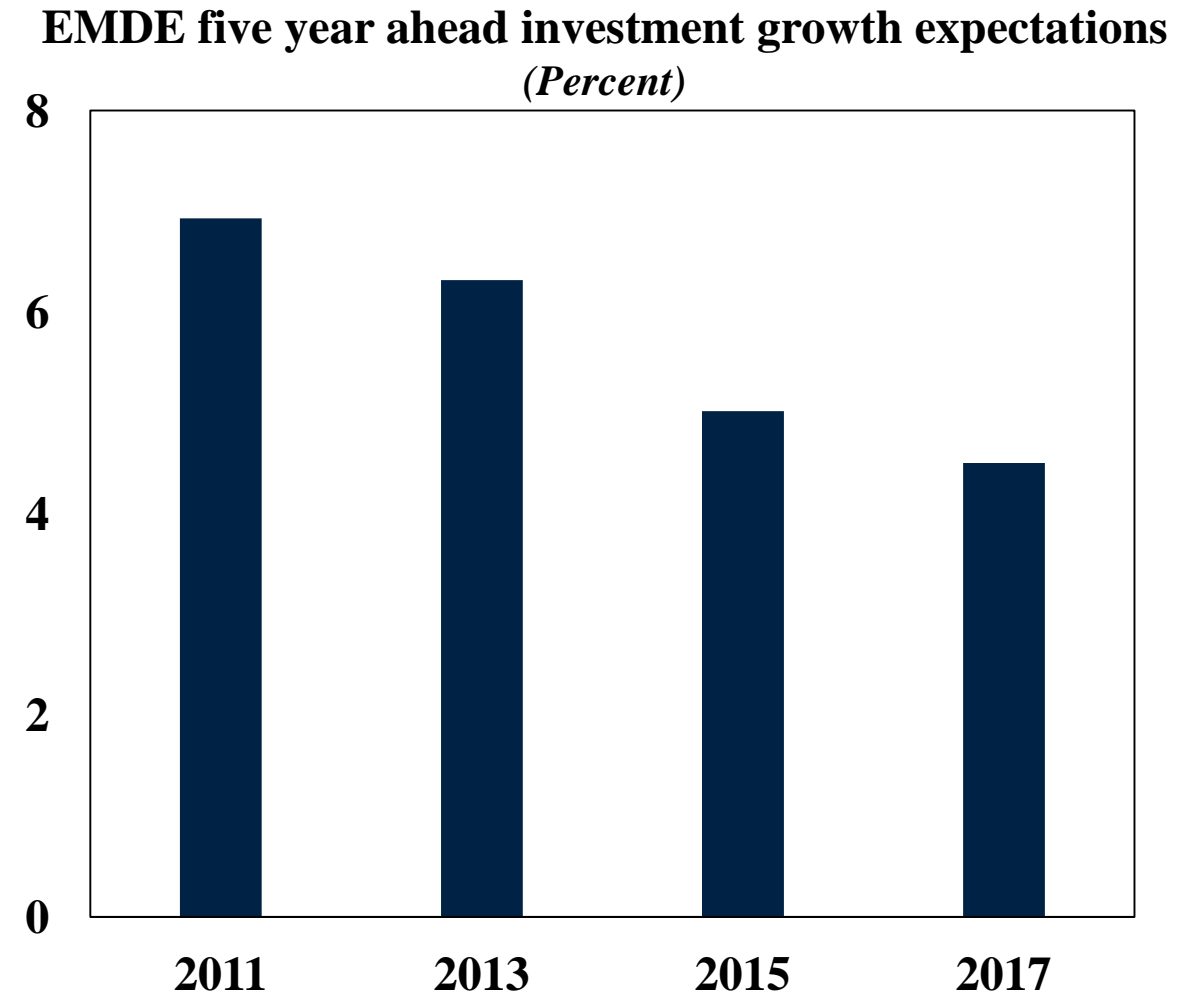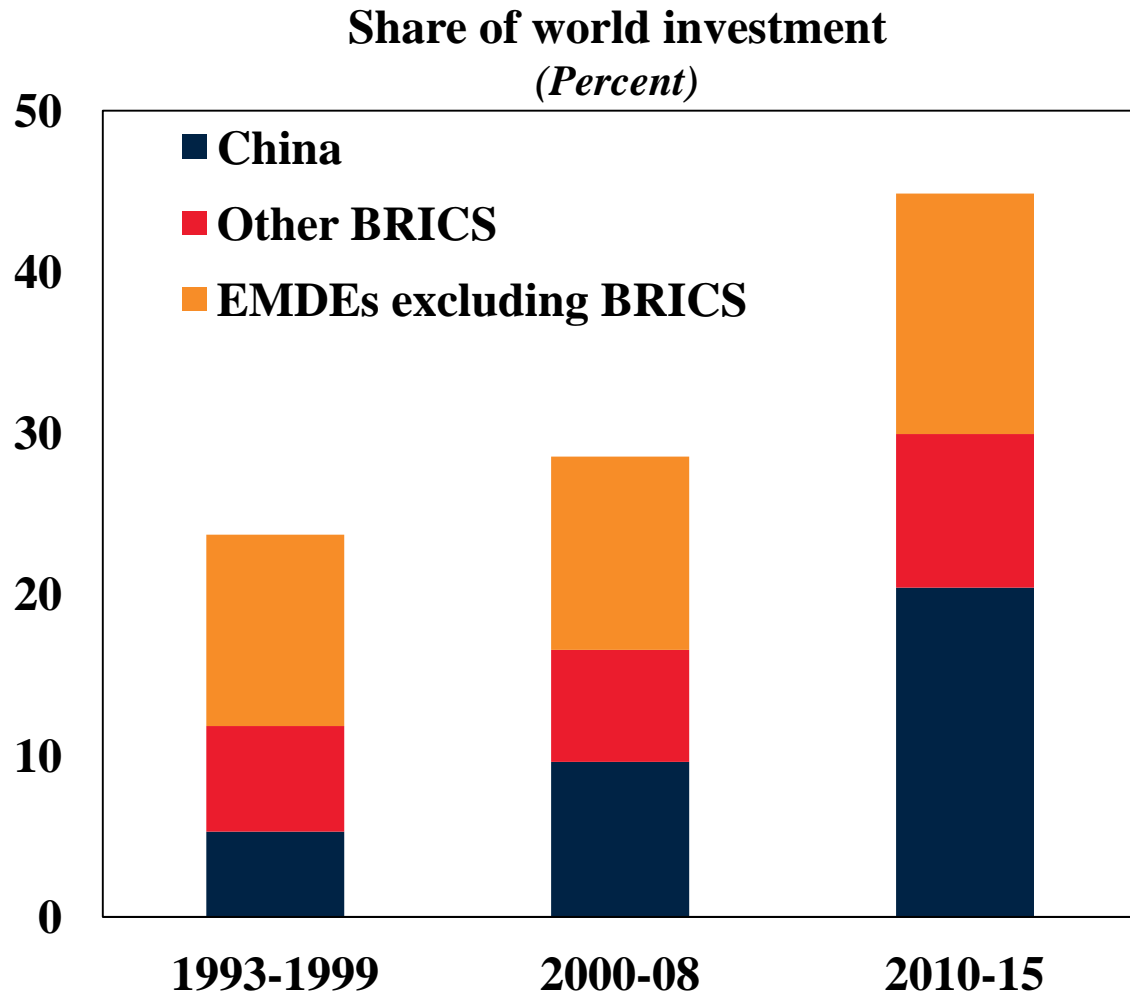
Investment Slowdown – Regional Dimensions:
Weakness in Multiple Regions

Investment growth
(Percent)

Sources: Haver Analytics, World Bank, Oxford Economics, International Monetary Fund.
Note: Medians across EMDEs of each region to ensure broad-based representation. Long-term averages are period averages of annual medians. East Asia and Pacific, Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa, South Asia, and Sub-Saharan Africa include 8, 12, 18, 10, 5, and 26 economies, respectively.

EMDE Investment Share and Growth Expectations:
Significant for the World; Subdued Investment Growth Prospects

Share of world investment
(Percent)

- ■ China
- ■ Other BRICS
- ■ EMDEs excluding BRICS

EMDE five year ahead investment growth expectations
(Percent)

Four Questions

2   **What are the correlates of slowing investment growth in EMDEs?**
No smoking gun; Weak output growth, decline in FDI inflows, adverse terms of trade shocks, private debt burden, elevated political risk and uncertainty.

Methodology

- *Panel regressions.* To study correlates of investment growth (output growth, terms of trade growth, change in FDI inflows, debt, and political risk)
  - 73 EMDEs, annual data for 1998-2015
  - Fixed country effects; GMM; Bayesian Model Averaging; Private Investment

- *Bayesian vector autoregressions.* To study spillovers from activity and uncertainty in major economies (US, EU, and China)
  - 18 EMDEs, quarterly data for 1998:1-2016:2
  - Global financial market uncertainty (VIX), economic policy uncertainty, adverse spillovers from US and Euro Area output slowdown, adverse spillovers from China's investment growth slowdown

Sources of Investment Weakness:
Many Culprits; No Smoking Gun

Sluggish activity

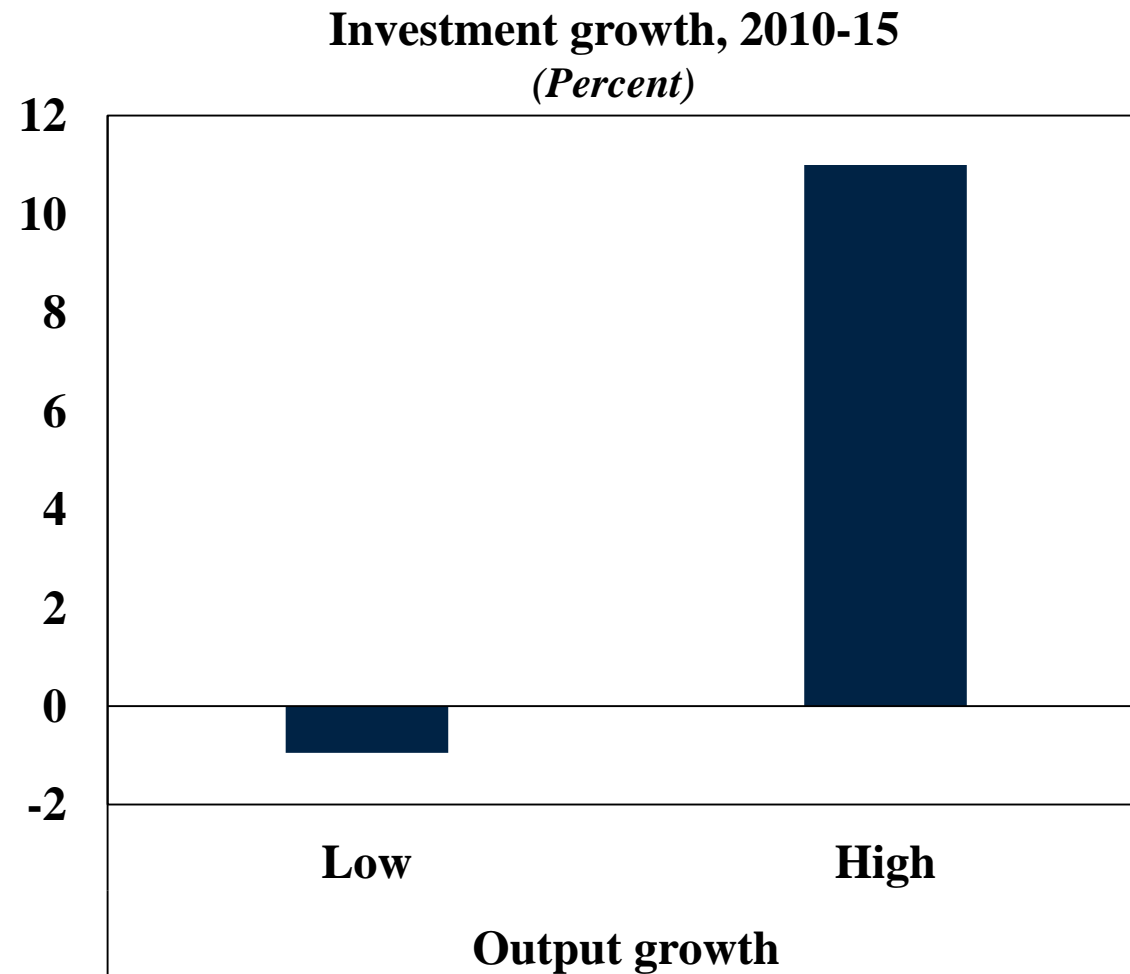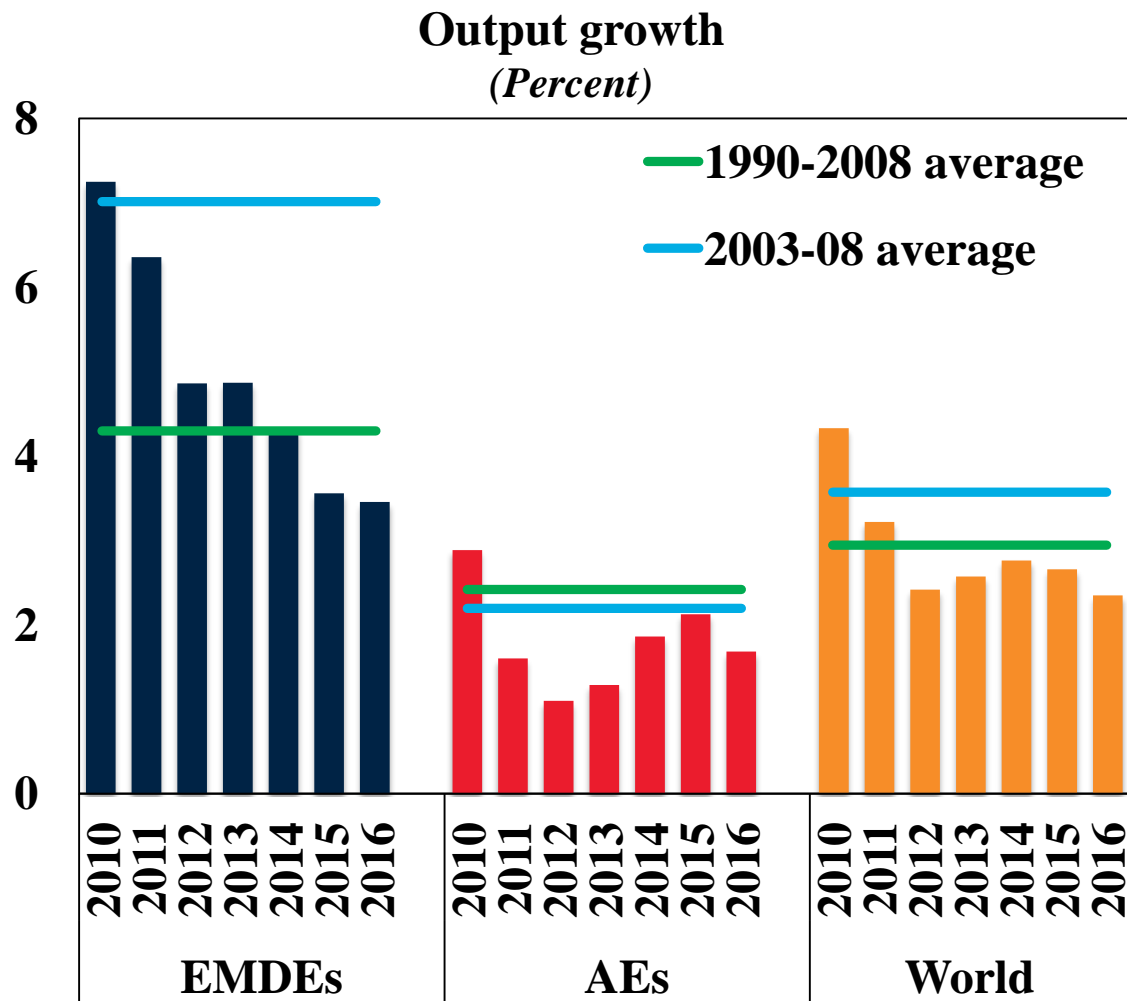Decline in FDI flows (for commodity importers)

Collapse in terms-of-trade (for commodity exporters)

Large stock of private debt

Elevated political / policy uncertainty

Adverse spillovers from weakness in some major economies

Activity and Investment:
## Weaker Output Growth; Weaker Investment Growth

Sources: World Bank, International Monetary Fund.
Left Panel. Weighted averages. Right Panel. "Low" and "High" indicates annual output growth in the bottom and top one-thirds of the distribution, respectively. Difference in medians between "high" and "low" subsamples is significant at the five percent level. Group medians for 135 EMDEs during 2010-15.

Multiple Sources of Investment Weakness:
Collapse in Terms-of-Trade; Declining FDI; Large Private Debt

**Investment growth, 2010-15**
(Percent)
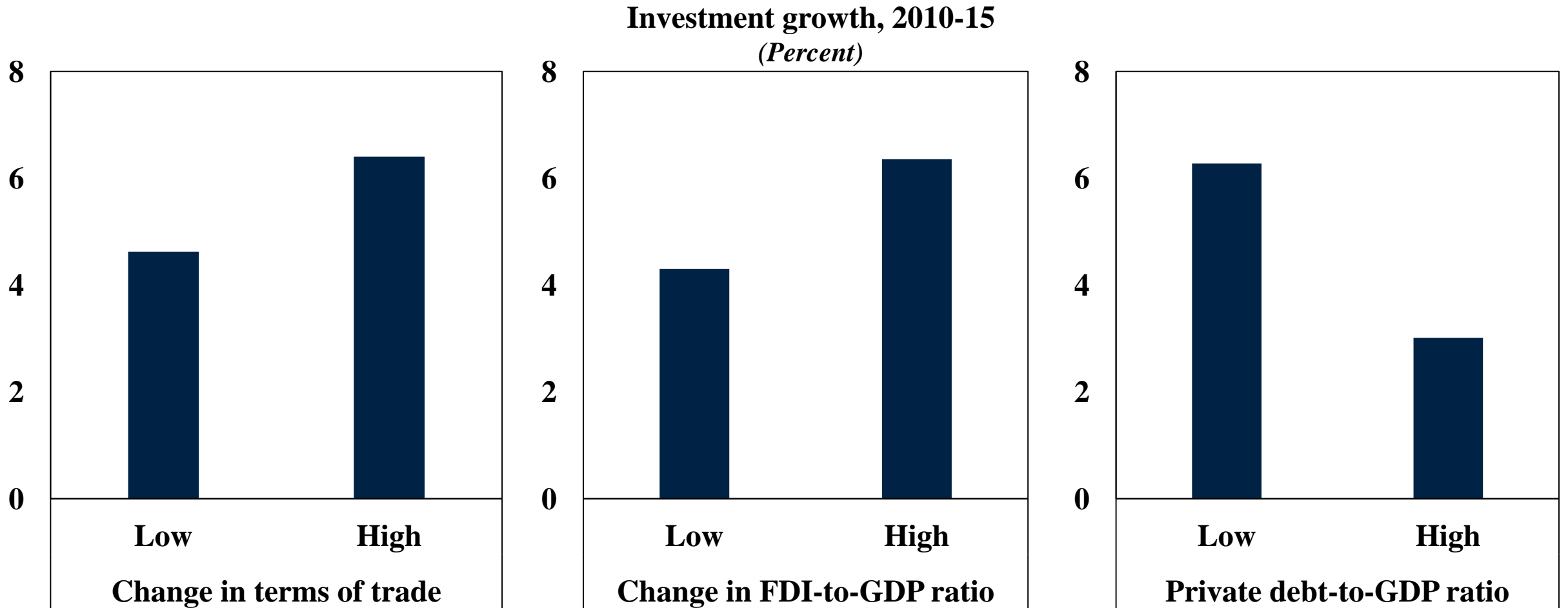
Sources: World Bank, International Monetary Fund.
Left Panel. "Low" and "High" indicate annual terms of trade growth in the bottom and top one-thirds of the distribution, respectively, based on 105 EMDEs. Difference in medians between "high" and "low" subsamples is significant at the five percent level. Center Panel. "Low" and "High" indicate annual change in the FDI to GDP ratio in the bottom and top one-thirds of the distribution, respectively, based on 119 EMDEs. Difference in medians between "high" and "low" subsamples is significant at the five percent level. Right Panel. Private debt refers to domestic credit to private sector by banks. "Low" and "High" indicate median credit-to-GDP ratios over 2010-15 in the bottom and top one-thirds of the distribution, respectively, based on 107 EMDEs. Difference in medians between "high" and "low" subsamples is significant at the five percent level.

United States and Euro Area:
Weaker Growth Expectations

United States: Five-year ahead growth forecasts
(Percent)
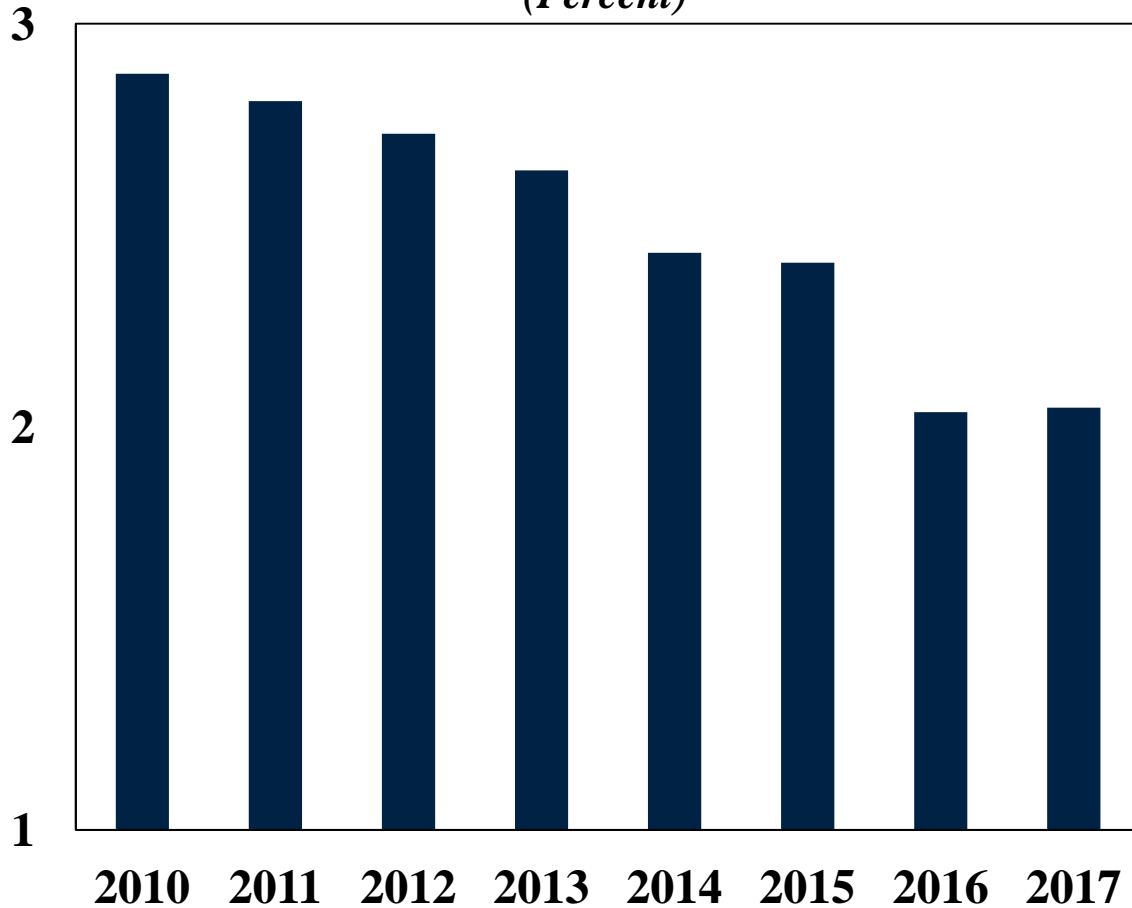
Euro Area: Five-year ahead growth forecasts
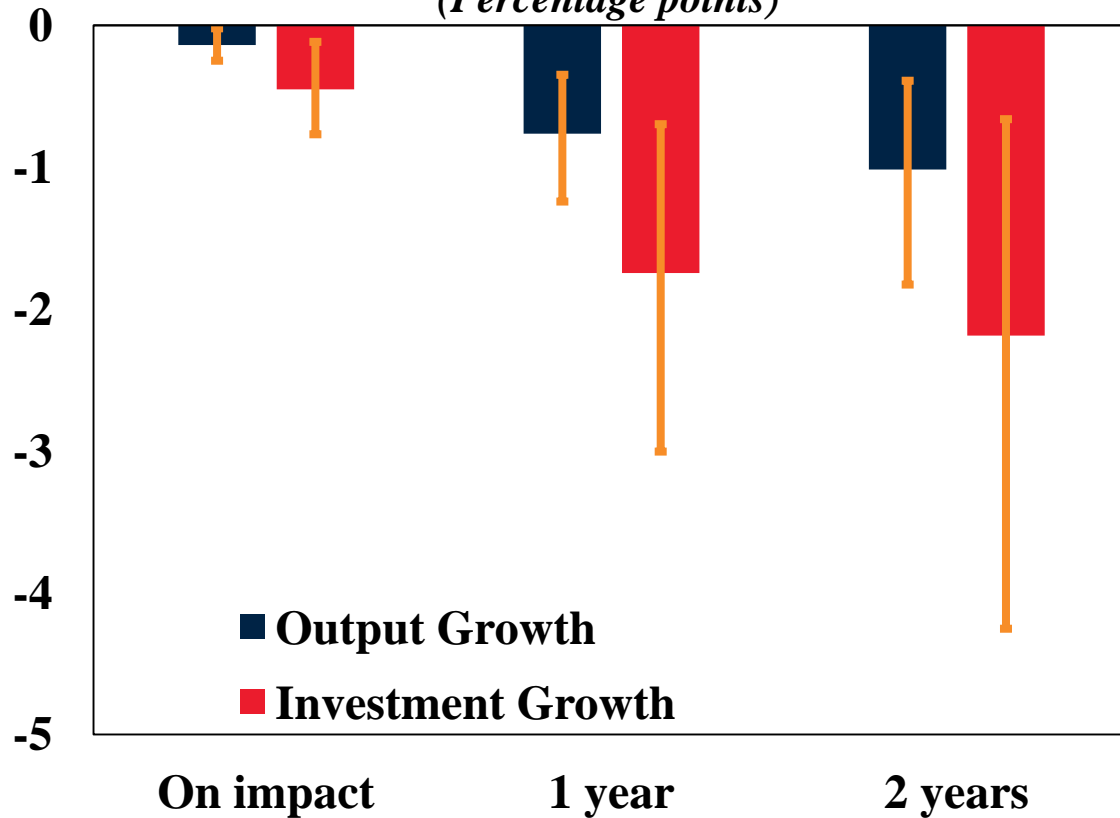*(Percent)*
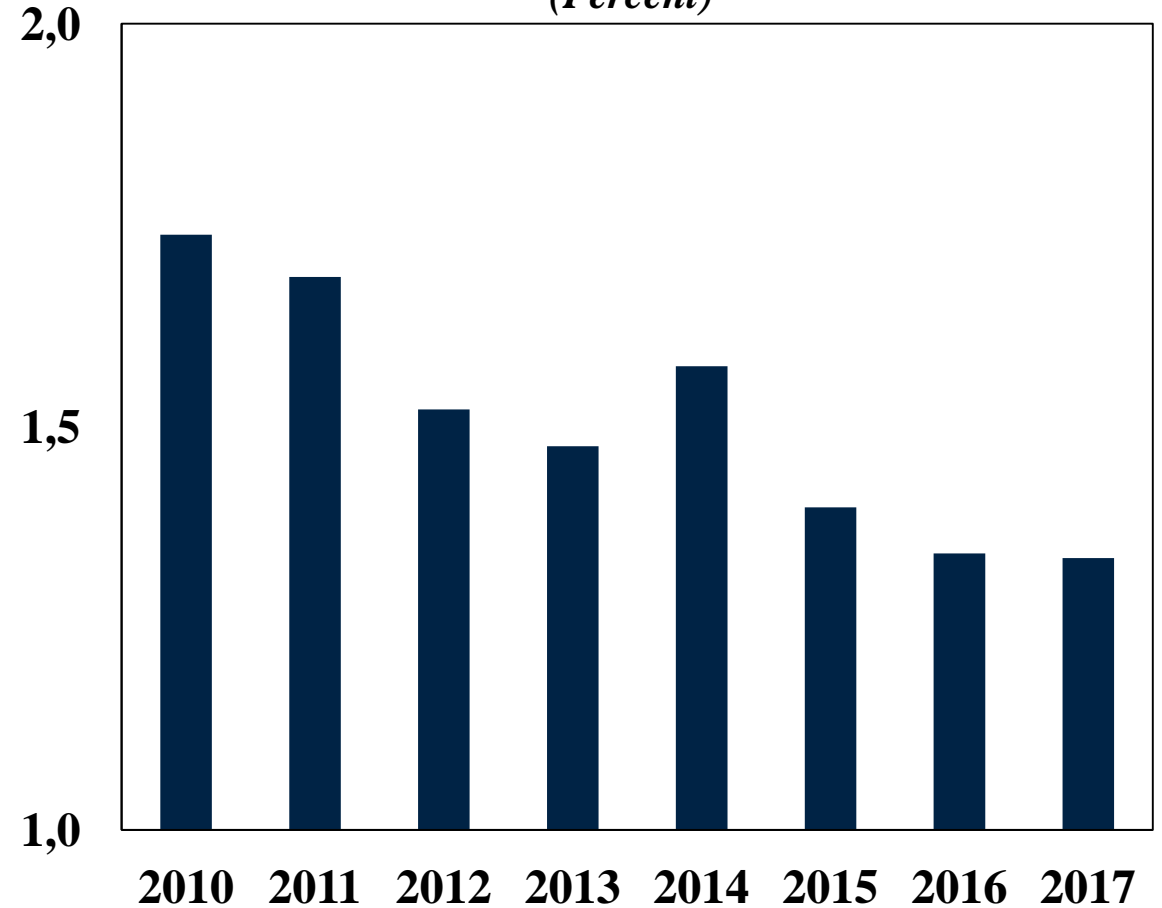
Sources: Consensus Economics, World Bank.
Note: Five-year ahead consensus forecasts as of October of each year until 2016. Forecasts in 2017 are as of April.

Spillovers from the US and EA:
Sizable Negative Impact on EMDE Activity

Impact of 1-percentage-point decline in U.S. output growth on growth in EMDEs
(Percentage points)

■ Output Growth
■ Investment Growth

On impact   1 year   2 years

Impact of 1-percentage-point decline in Euro Area output growth on growth in EMDEs
(Percentage points)

■ Output Growth
■ Investment Growth
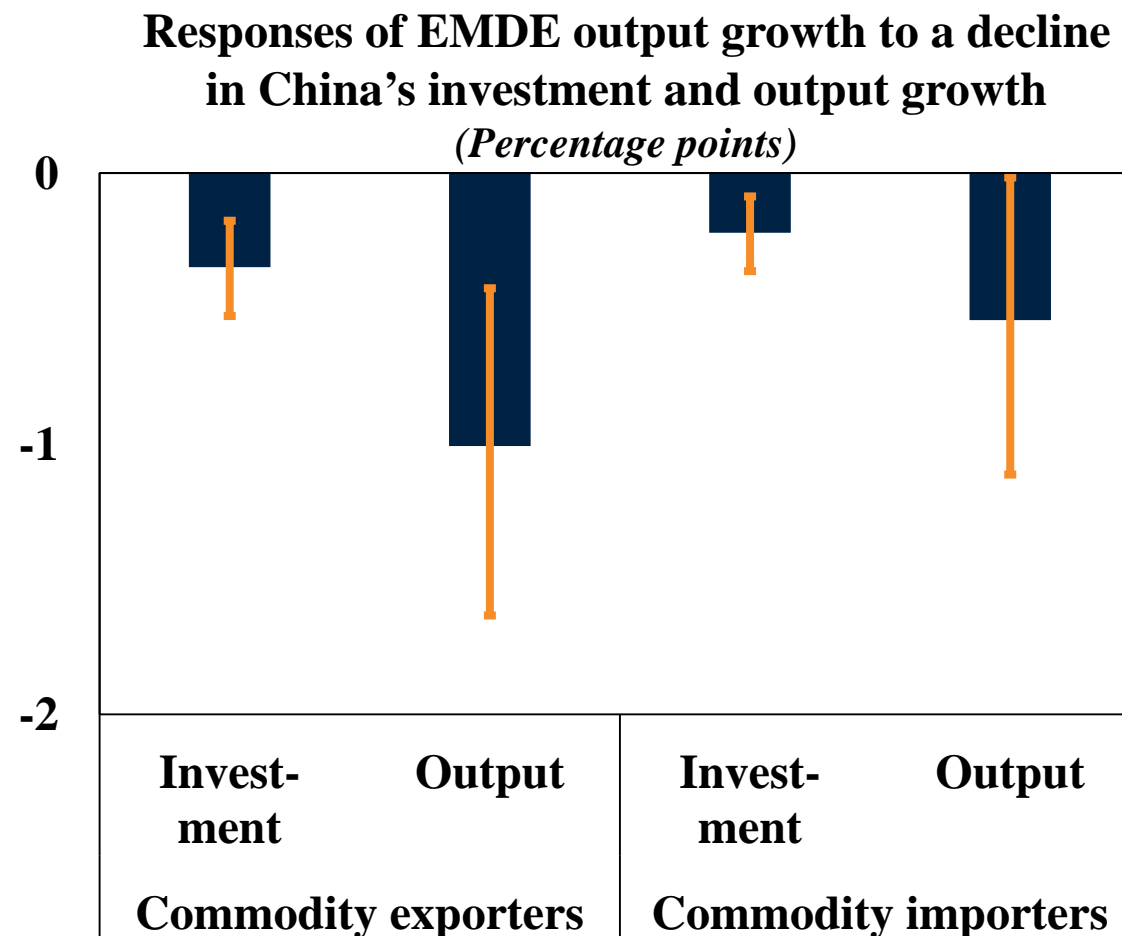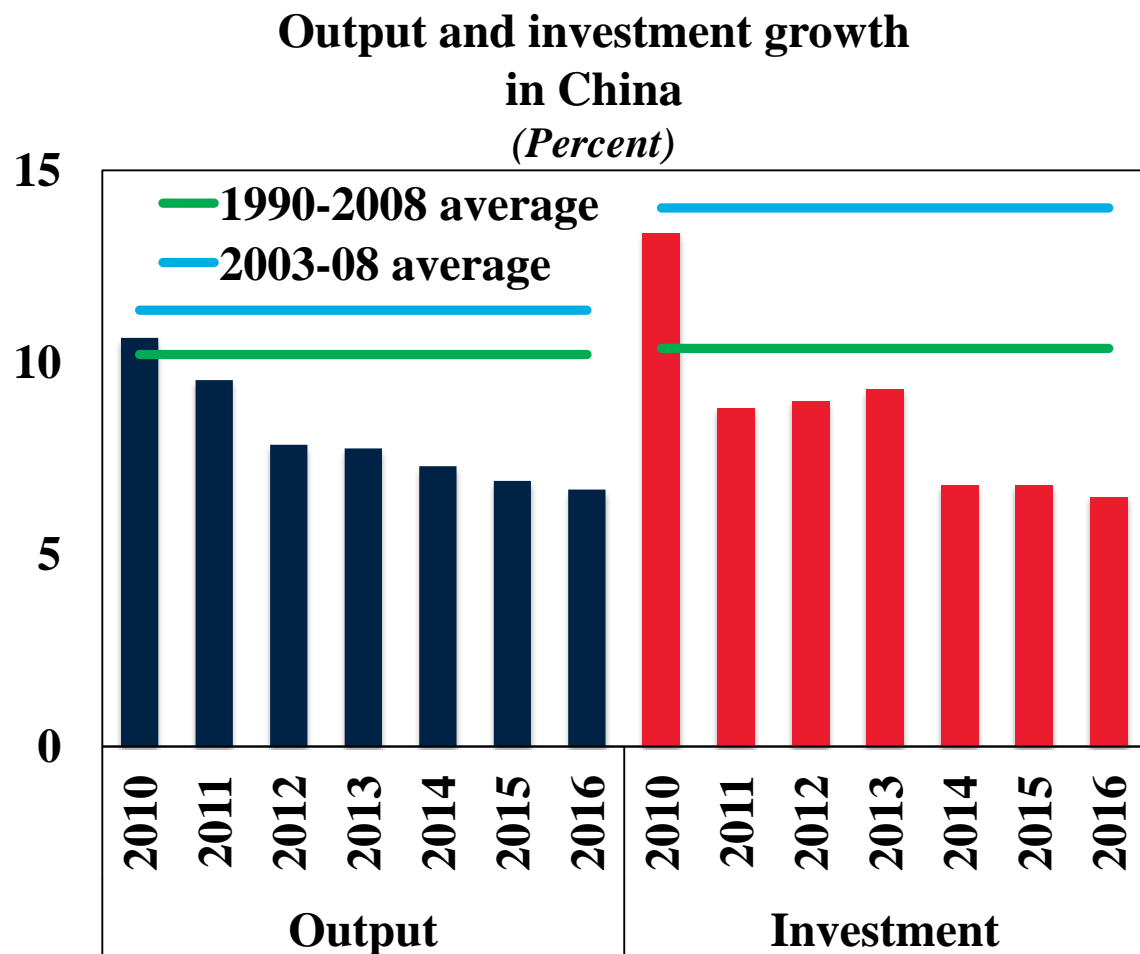
On impact   1 year   2 years
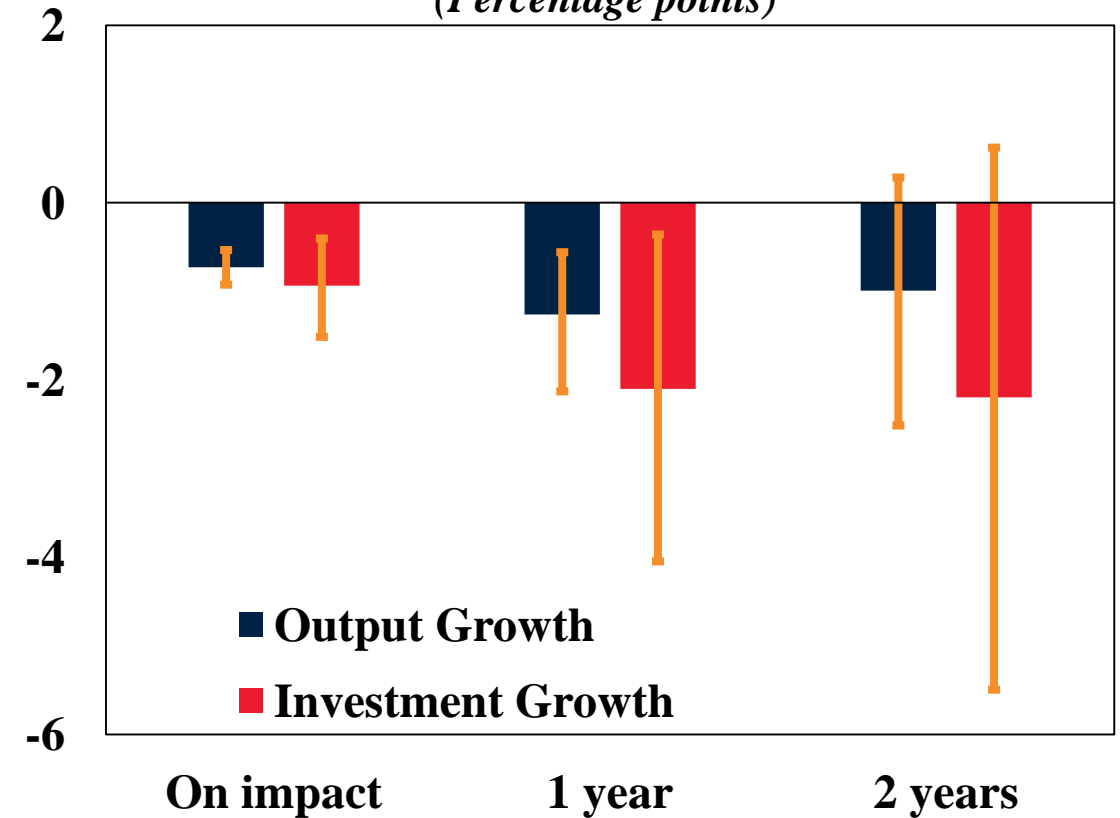
Sources: World Bank, Haver Analytics, Bloomberg, Baker, Bloom, and Davis (2016), ICRG.
Note: Cumulative impulse response of weighted average EMDE output growth or investment growth to a 1-percentage-point decline in growth in real GDP in the United States (Left) and Euro Area (Right). Growth spillovers based on a Bayesian vector autoregression of world GDP growth (excluding the source country of spillovers), output growth in the source country of the shock, the U.S. 10-year sovereign bond yield, JP Morgan's EMBI index, investment or output in EMDEs excluding China. The oil price is exogenous. Orange lines denote 16-84 percent confidence intervals, blue and red bars denote median of posterior distributions. Sample includes 18 EMDEs (Brazil, Bulgaria, Chile, Costa Rica, Hungary, India, Indonesia, Malaysia, Mexico, Paraguay, Peru, the Philippines, Poland, Romania, Russia, South Africa, Thailand, and Turkey) from 1998Q1-2016Q2.

Spillovers from China:
Sizable Negative Impact on EMDE Activity

Output and investment growth in China
(Percent)

- 1990-2008 average
- 2003-08 average

Output | Investment

Responses of EMDE output growth to a decline in China's investment and output growth
(Percentage points)

Invest-ment | Output | Invest-ment | Output

Commodity exporters | Commodity importers

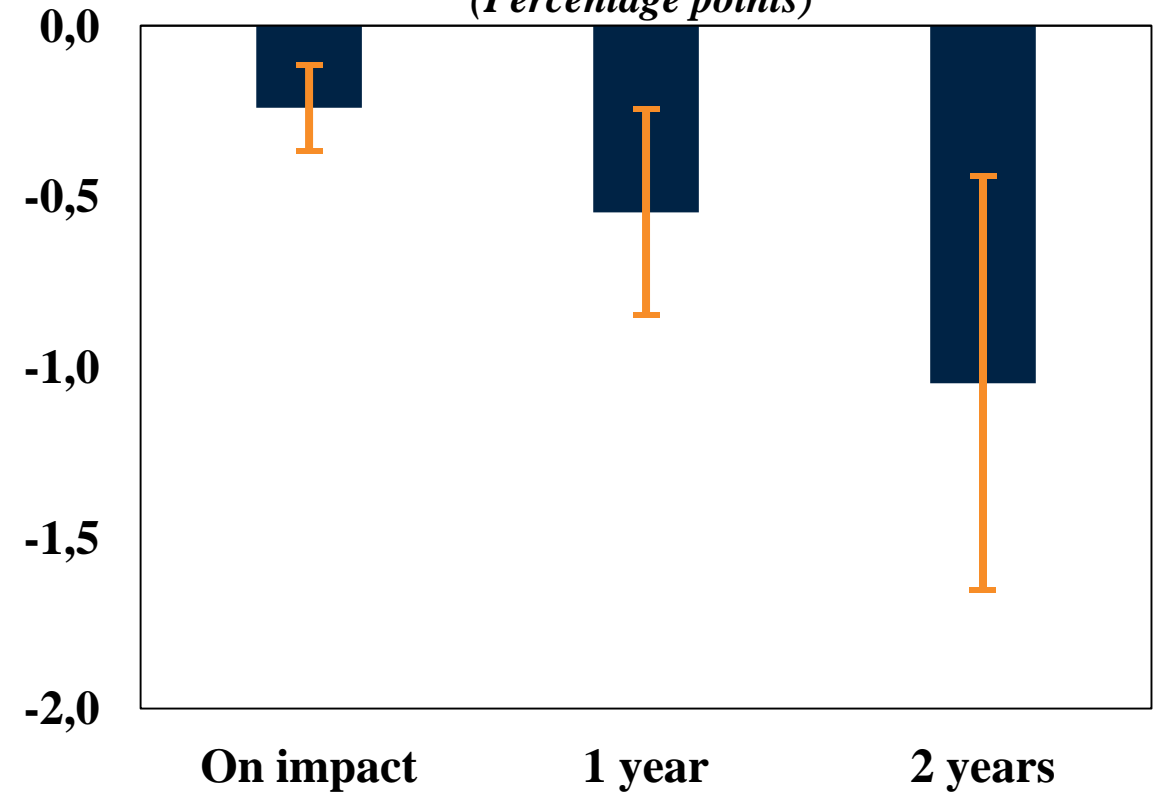Sources: World Bank, Haver Analytics, Bloomberg, International Monetary Fund.
Right Panel: Cumulative impulse response of weighted average EMDE output growth after 1 year to a 1-percentage-point decline in growth in real investment and real GDP in China. Investment spillovers based on a Bayesian vector autoregression of world GDP growth (excluding China), the U.S. 10-year sovereign bond yield, JP Morgan's EMBI index, growth in the non-investment component of China's real GDP, China's real investment growth, and real GDP growth in the spillover destination group. Oil price is exogenous. Real GDP replaces real investment in models that estimate spillovers from output. Sample includes 18 EMDEs from 1998Q1-2016Q2. Orange lines denote 16-84 percent confidence interval, blue bars denote median of posterior distribution.

Uncertainty and Investment Growth:
Higher Uncertainty; Weaker Investment Growth

Impact of 10-percent increase in VIX on investment growth in EMDEs
(Percentage points)
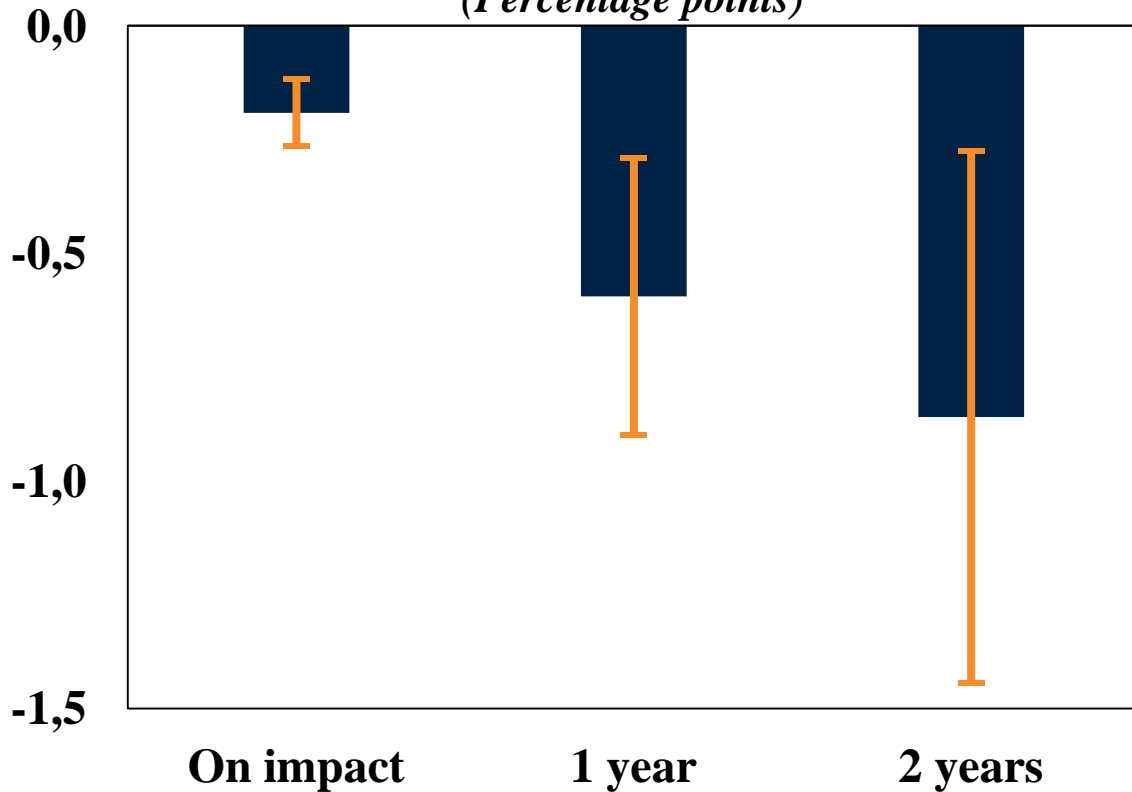
Impact of 10-percent increase in EU policy uncertainty on investment growth in ECA
(Percentage points)

Sources: World Bank, Haver Analytics, Bloomberg, Baker, Bloom, and Davis (2016), ICRG.
Left Panel. Vector autoregressions are estimated with sample for 1998Q1-2016Q2. The model includes, in this order, VIX, MSCI Emerging Markets Index, J.P. Morgan's EMBI Index, aggregate real output and investment growth in 20 EMDEs, with G7 real GDP growth, U.S. 10-year government bond yields and MSCI World Index as exogenous regressors and estimated with two lags. Bars show median cumulative responses of EMDE investment to a 10-percent increase in VIX, and error bars 16-84 percent confidence bands. Right Panel. Vector autoregressions are used for estimation on a sample of aggregate variables for ECA over the period of 1998Q1-2016Q2. The model includes EPU for the Euro Area, emerging market stock price (Euro Area) index, emerging market bond index, aggregate real output and investment growth in 7 ECA countries, with G7 real GDP growth, U.S. 10-year bond yields and MSCI World Index as exogenous regressors and estimated with two lags. Bars show cumulative median responses of investment to a 10-percent policy uncertainty shock in Europe, and error bars 16-84 percent confidence bands.
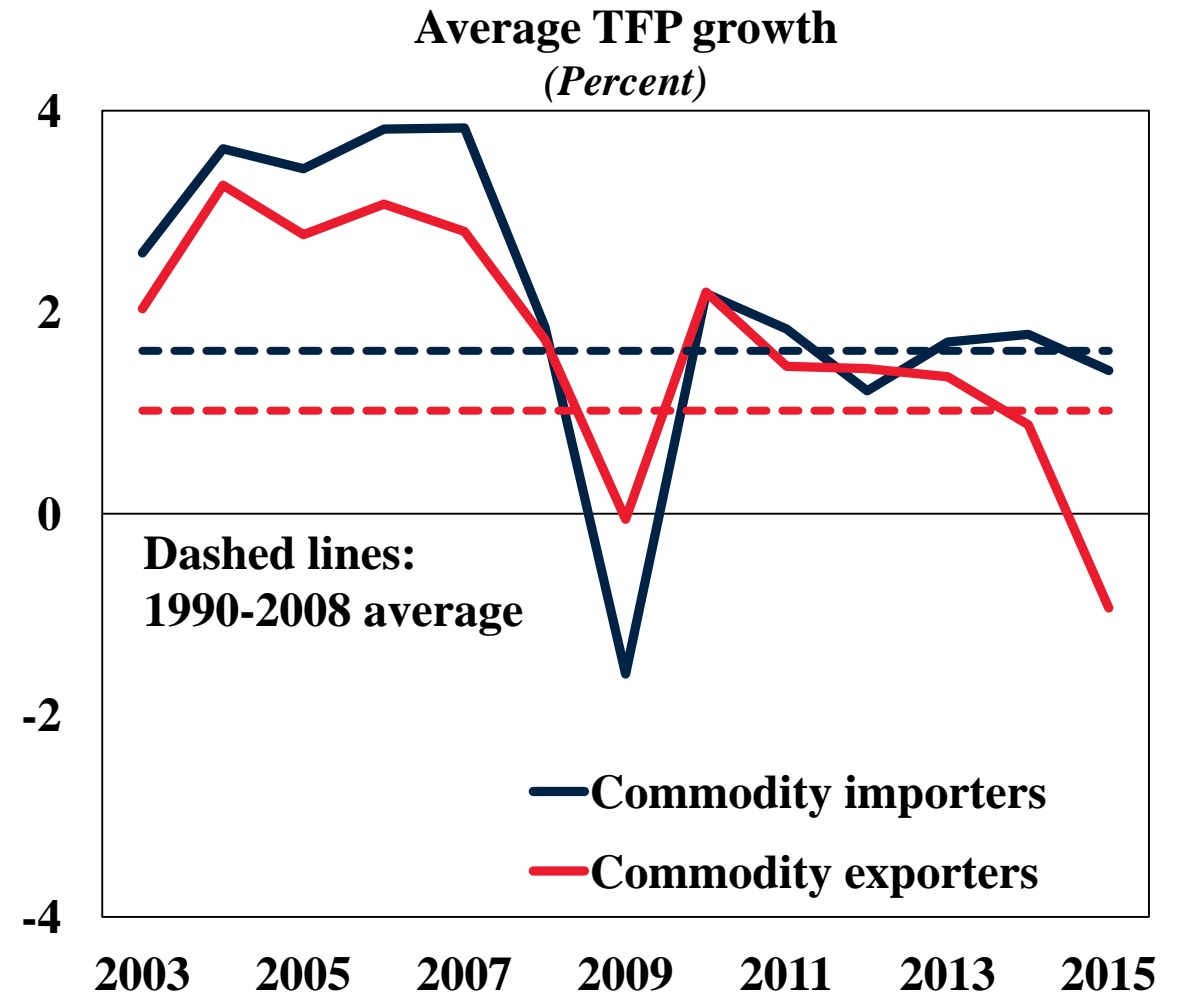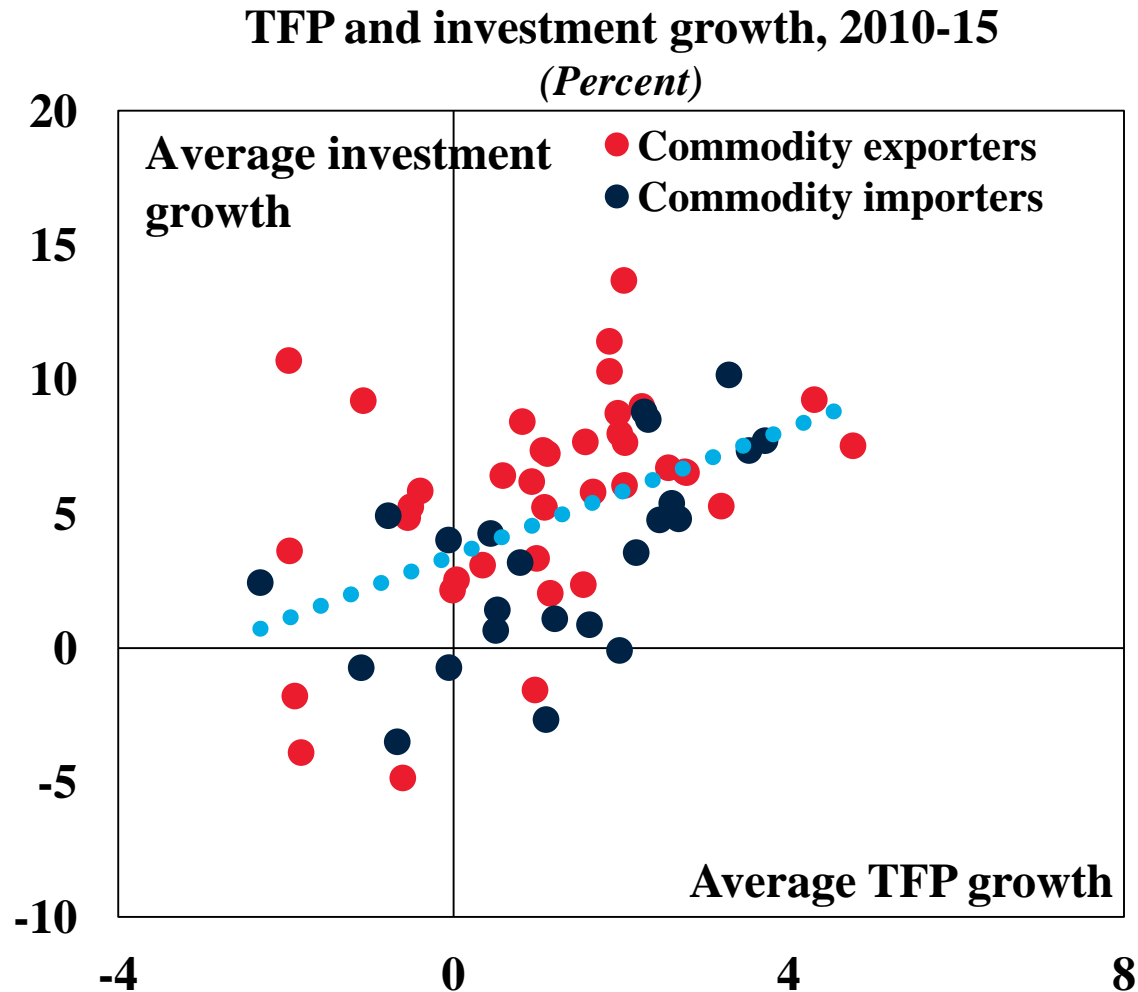
Four Questions

3 **What are the implications of weak investment growth for long-term growth prospects?**
Weaker productivity growth and slower income catch up.

Weak Investment and Slower Productivity:
Linkages and Evidence

- Weak investment can account for as much as two-thirds of the below average labor productivity growth in OECD countries (Furman 2015, Ollivaud et al. 2016)

- Weak investment is often associated with less R&D investment, especially when firms face credit constraints or lower cash flows (Aghion et al. 2012).

- Investment is import-intensive and investment weakness is associated with trade slowdown (Bussiere et al. 2013). Trade openness positively correlated with TFP growth (Kose et al. 2009; Alcala and Ciccone 2004)
  – Capital goods imports embody efficiency-enhancing technology transfers (Alfaro and Hammel 2007)
  – Trade facilitates more efficient allocation of capital goods improving aggregate productivity (Mutreja et al. 2014)
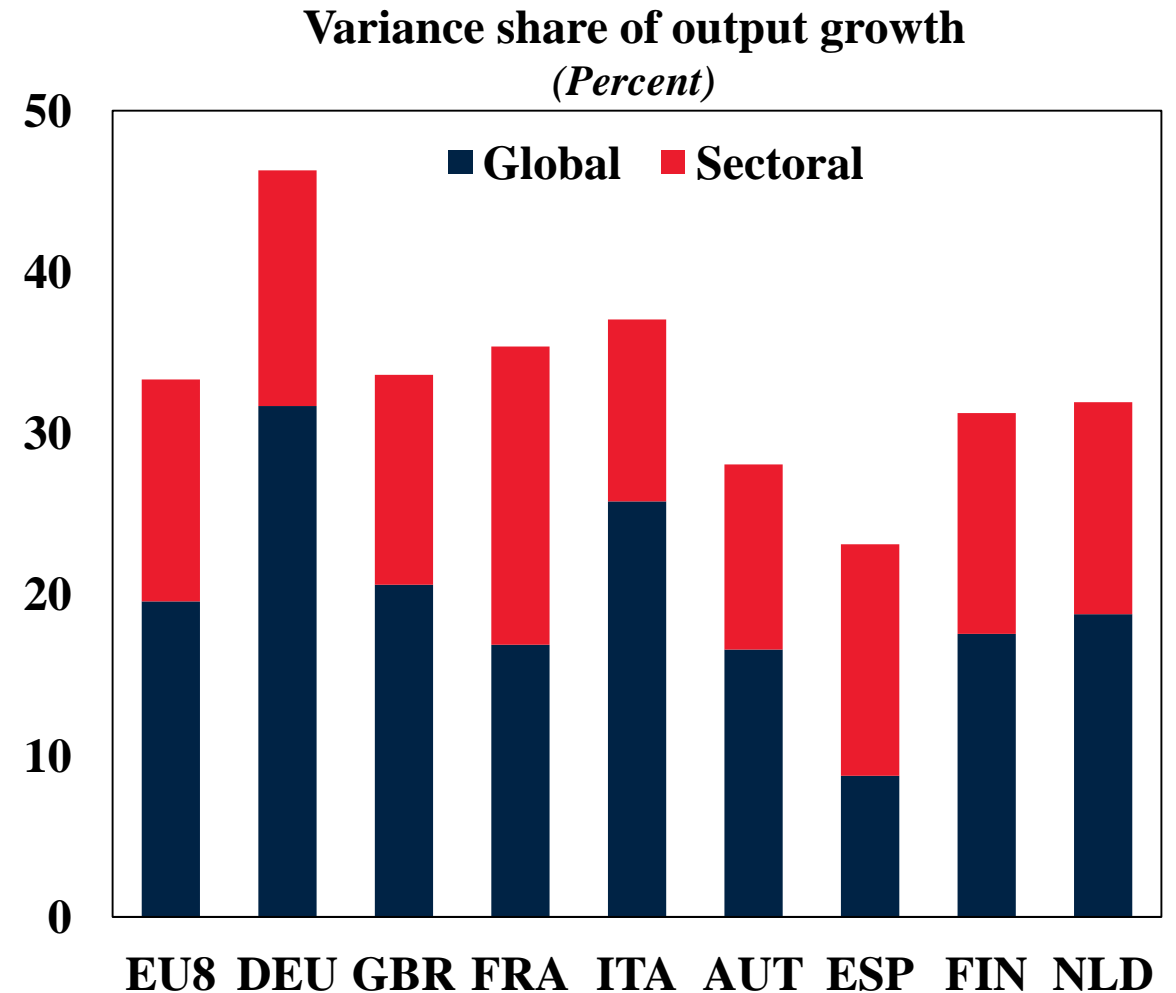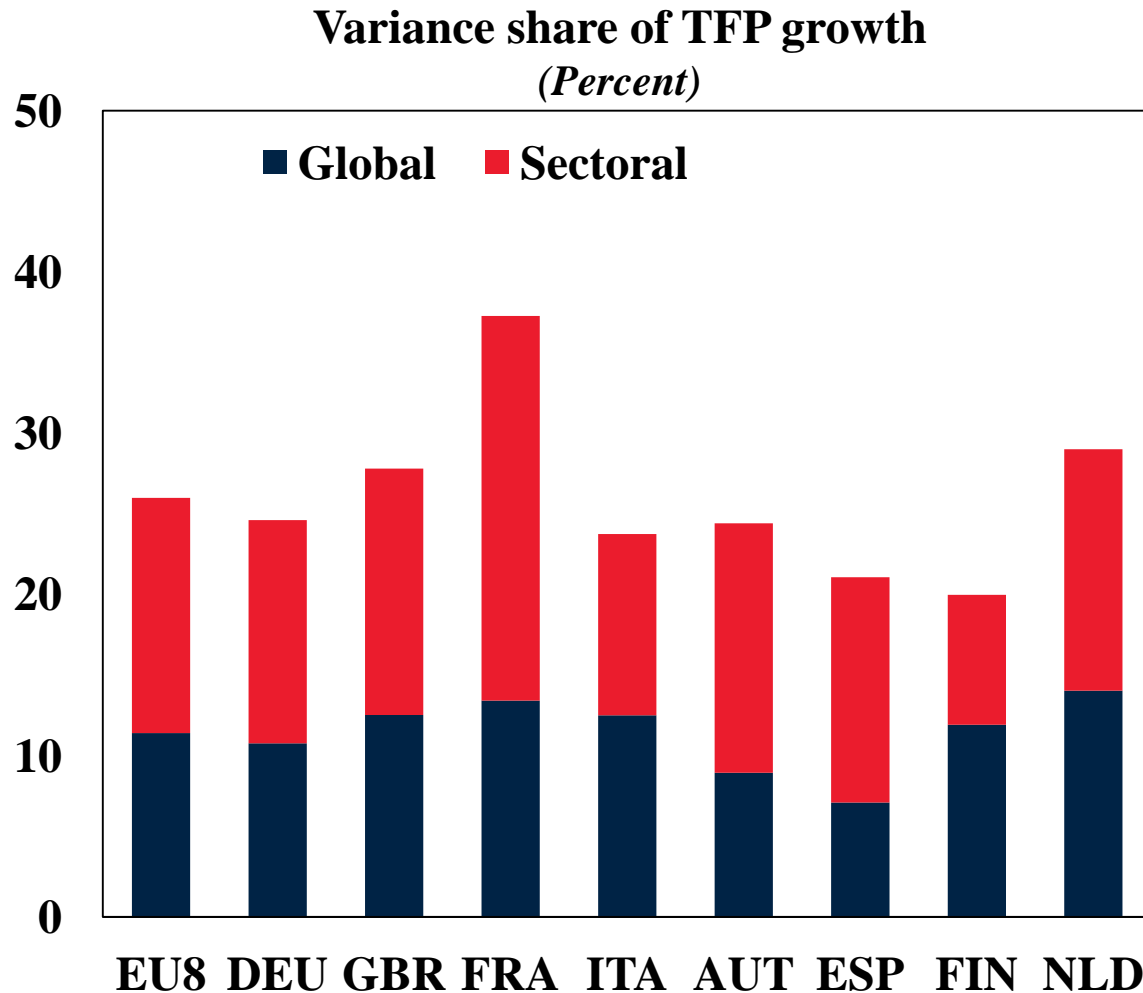
TFP and investment growth, 2010-15
(Percent)

Average investment growth

● Commodity exporters
● Commodity importers

Average TFP growth

Average TFP growth
(Percent)

Dashed lines: 1990-2008 average

— Commodity importers
— Commodity exporters

Sources: World Bank, Haver Analytics.

Left Panel. Correlation between average investment growth over 2010-15 and average TFP growth over the same period. Blue dotted line denotes linear regression line with all samples. Right Panel. TFP is calculated as residual from the growth-accounting framework in Didier et al. (2015). Unweighted averages. Dashed lines indicate long-term average for 1990-2008 for each group.
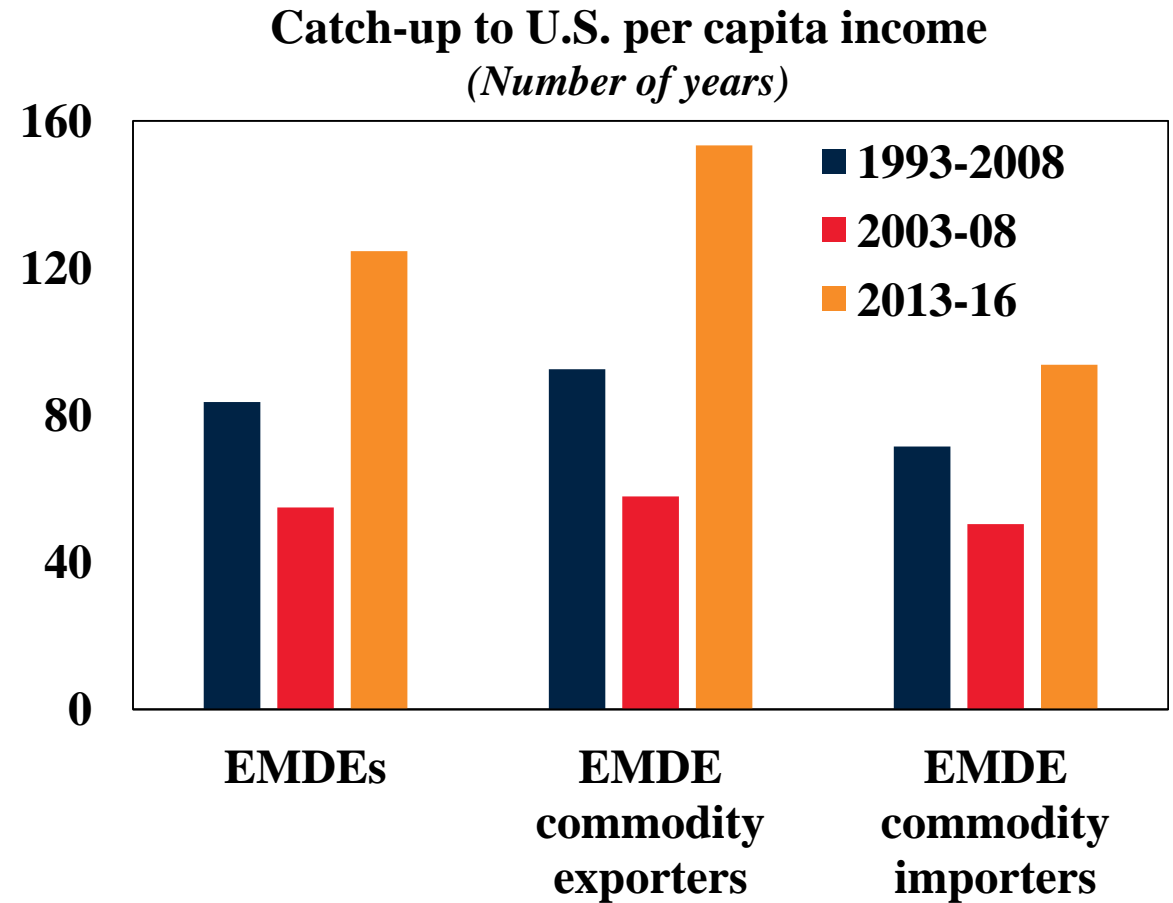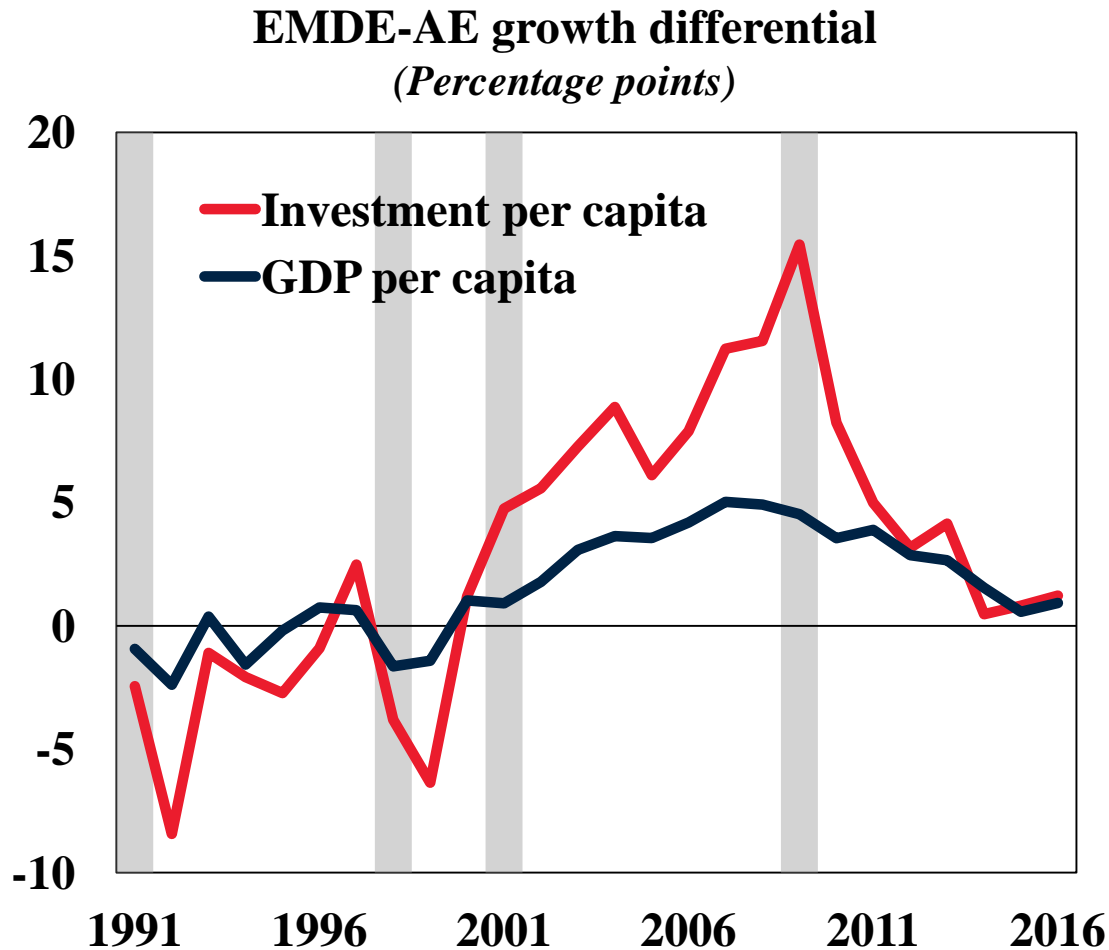
A Global Productivity Cycle?:
Sizeable Variation of TFP Fluctuations Explained by Common Factors

Variance share of TFP growth
(Percent)

■ Global ■ Sectoral

EU8 DEU GBR FRA ITA AUT ESP FIN NLD

Variance share of output growth
(Percent)

■ Global ■ Sectoral

EU8 DEU GBR FRA ITA AUT ESP FIN NLD

Sources: EU KLEMS, Rev 4, 1981-2014; World Bank.
Note: Bars show the unweighted averages across sectors of percent of TFP/output growth fluctuations explained by each factor estimated using a dynamic factor model for EU 8 countries and 15 sectors. EU8 consists of Austria (AUT), Finland (FIN), France (FRA), Germany (DEU), Italy (ITA), the Netherlands (NLD), Spain (ESP), and the United Kingdom (GBR).

Growth Differential and Income Catch Up:
Declining Growth Differential; Slowing Pace of Catch Up

EMDE-AE growth differential
(Percentage points)

- Investment per capita
- GDP per capita

Catch-up to U.S. per capita income
(Number of years)

Legend:
- 1993-2008
- 2003-08
- 2013-16

Categories: EMDEs, EMDE commodity exporters, EMDE commodity importers
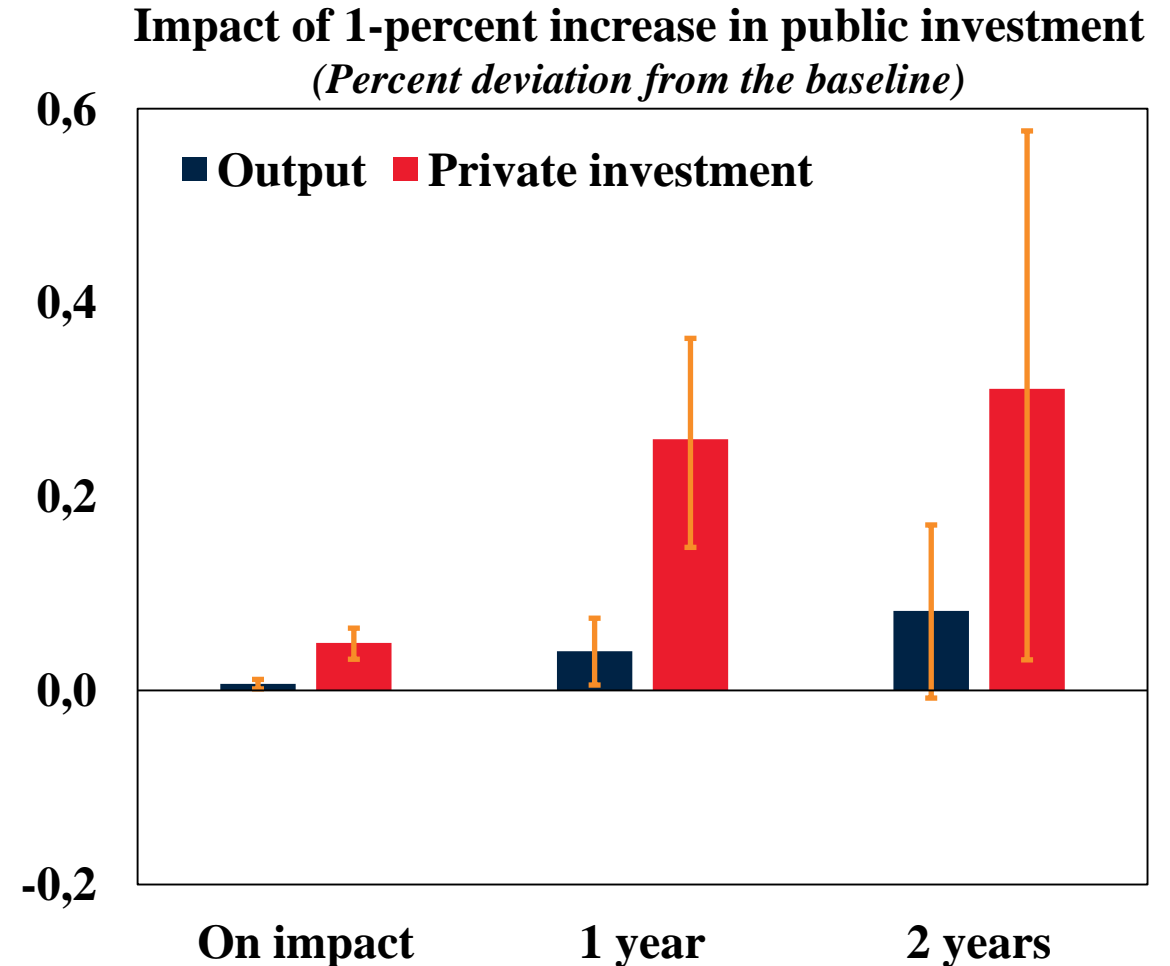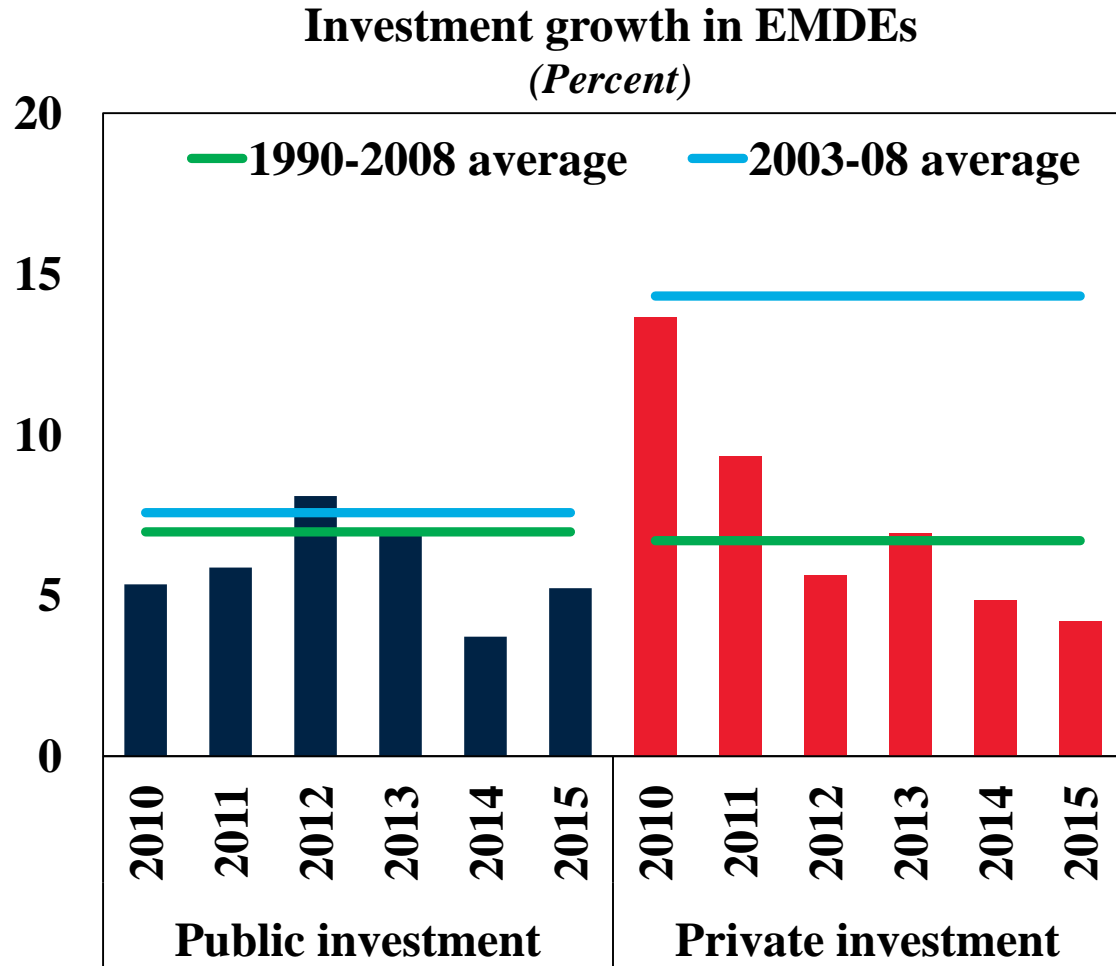
Source: World Bank.
Left Panel. Weighted averages. Difference between EMDEs (emerging market and developing economies) and AEs (advanced economies). The shaded areas are global recessions and slowdowns. Right Panel. Number of years needed to catch-up with 2016 real per capita GDP level in the United States, assuming average growth rates over each period denoted for each group.

20

Four Questions

4   **Which policies can support investment?**
No silver bullet; Direct measures: increase in public investment (infrastructure, health, education);
Indirect measures: employment of countercyclical policies, institutional reforms.

Interactions between Public and Private Investment:
Weakness in Both; Public Investment Crowding-In Private Investment

Investment growth in EMDEs
(Percent)

Impact of 1-percent increase in public investment
*(Percent deviation from the baseline)*

Sources: World Bank, International Monetary Fund, CEIS.
Left Panel. Public and private investment growth rates are weighted average growth rates of gross fixed capital formation in the public and private sectors, respectively, in constant U.S. dollars. Sample includes 20 advanced economies and 99 EMDEs from 1990-2015. Right Panel. Cumulative impulse responses of output and private investment due to a positive shock to public investment, based on a sample of 8 EMDEs for 1998Q1-2016Q2. The model includes, in this order, real public investment, real GDP, real private investment, current account balance and real effective exchange rate. The shock size is such that public investment increases by 1 percent from the baseline on impact. Bars represent median values, and error bars 16-84 percent confidence bands.

Growth Differential during Reforms and Setbacks
(Growth differential, in percent)
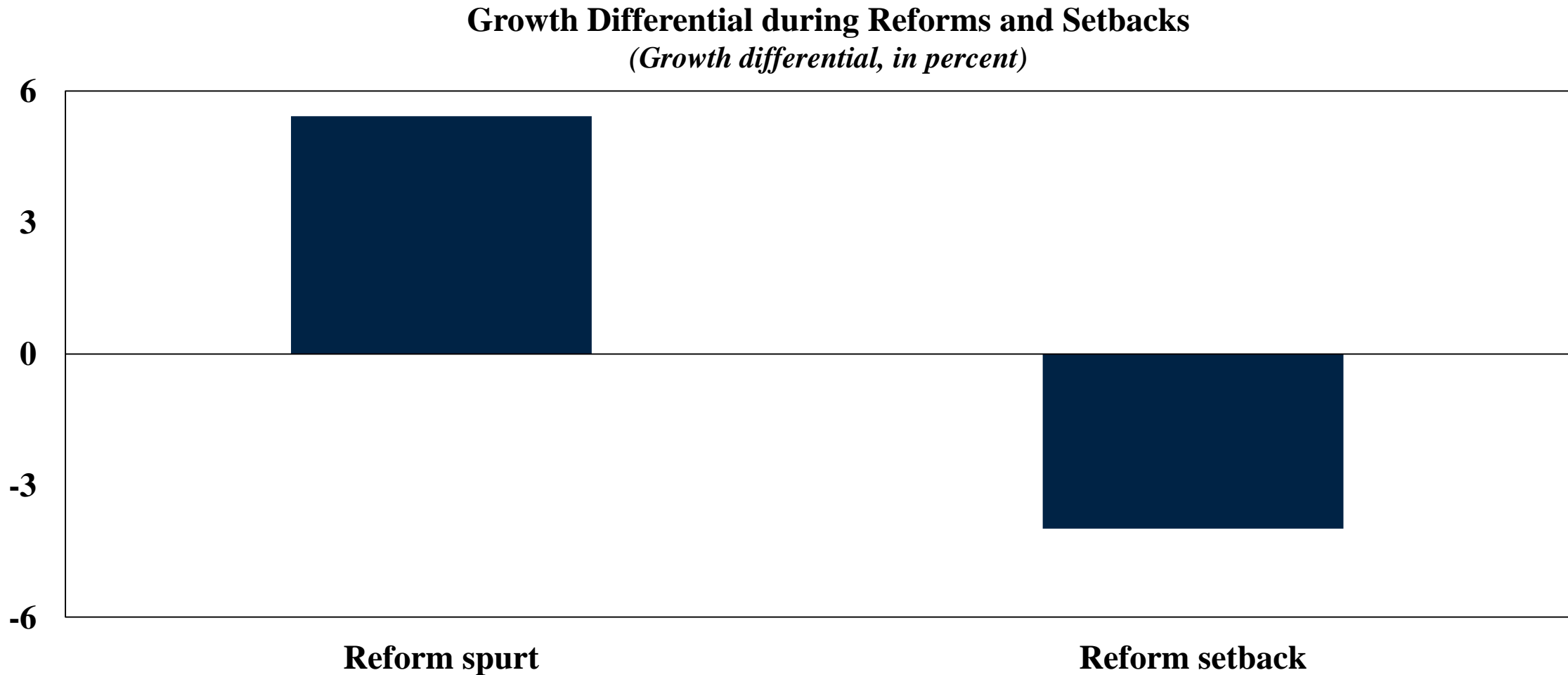
Source: World Bank, Haver Analytics, Oxford Economcis, International Monetary Fund, World Bank's Worldwide Governance Indicators (WGI).
The columns show the cumulative investment growth differential of economies during an reform spurt or setback episode, relative to those that experienced neither spurts nor setbacks. Spurt (setback) is defined by a two year increase (decrease) by two standard deviations in one or more of indices of regulatory quality, government effectiveness, rule of law, and control of corruption. Differentials are based on estimates from a panel data regression with time and country fixed effects. The sample includes 75 reform spurt episodes and 71 reform setback episodes among 97 EMDEs over 1996-2015. The growth differential during reform spurt episodes is significant at the ten percent level. See Annex 3.2.E for more details.

Policy Responses:
Country-Specific; Fiscal Expansion If Possible; Structural Policy Push

Fiscal policies

- *Expansionary fiscal policy to address investment needs in infrastructure, health, education, and clean energy*
- *Expenditure reallocation or revenue reforms*

Structural policies

- **Business climate reforms**: *Lower startup costs; corporate governance and financial sector reforms; reduction of trade barriers; labor and product market reforms; stronger property rights; improve access to power supplies*
- **Structural reform priorities (G20)**: *Promote trade and financial openness; increase educational attainment; encourage innovation; promote competition; strengthen the financial system; enhance environmental sustainability*

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Global Growth:
Gaining Momentum as Expected
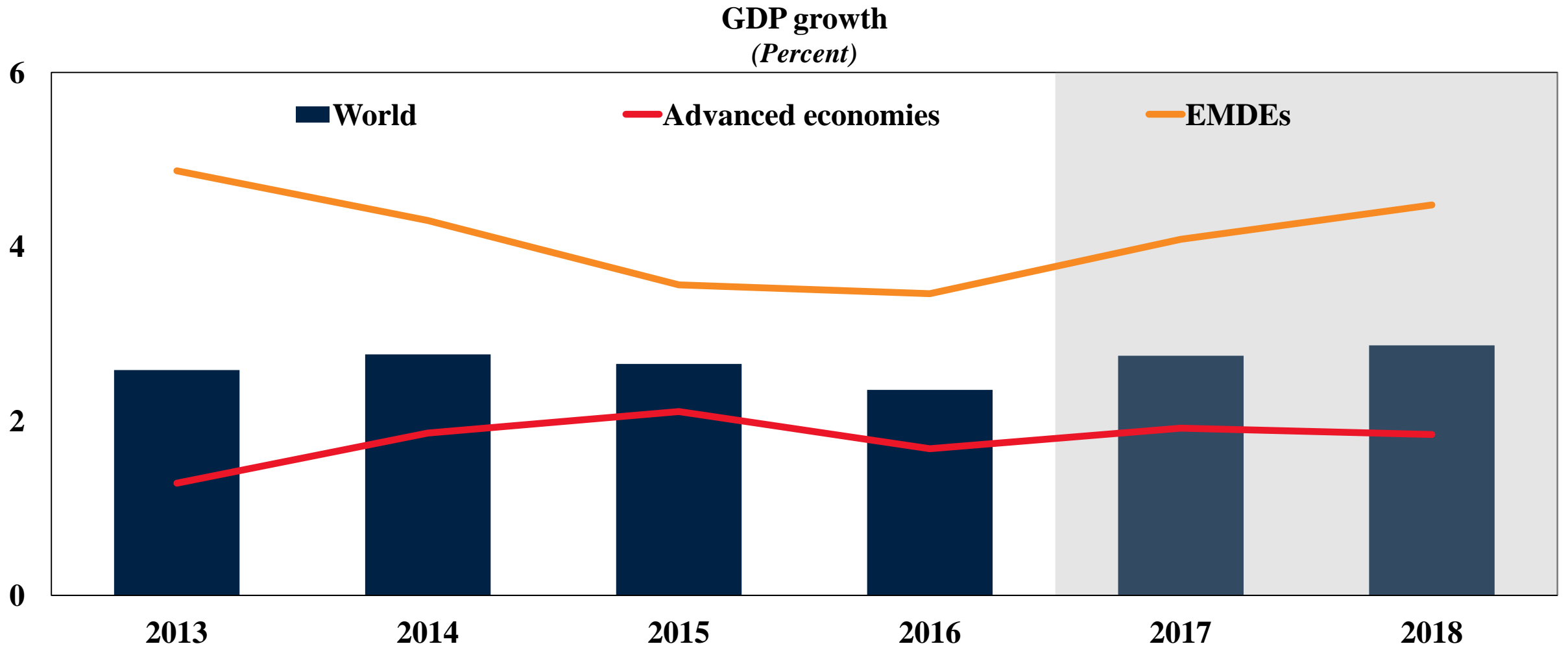
GDP growth
(Percent)

Legend: World, Advanced economies, EMDEs

Select Publications on Global Economy

- *Global Economic Prospects* – *June 2017*

- *Commodity Markets Outlook* – *April 2017*

- *Global Monthly and Global Weekly*

- *A Cross-Country Database of Fiscal Space*
    Policy Research Working Paper – *Forthcoming*

- *Weakness in Investment Growth: Causes, Implications and Policy Responses*,
    Policy Research Working Paper – *March 2017*

- *Regional Dimensions of Recent Weakness in Investment: Drivers, Investment Needs and Policy Responses*,
    Policy Research Working Paper – *March 2017*

- *The Global Role of the U.S. Economy: Linkages, Policies and Spillovers*,
    Policy Research Working Paper – *February 2017*

Questions & Comments
Thanks!

M. Ayhan Kose
akose@worldbank.org