THE CONFERENCE BOARD

Window On

Infrastructure Investment

May 26, 2021

Some of the critical questions and issues we will be answering today

- Learn from experts both the benefits and pitfalls of public investment in infrastructure.
- Discover how infrastructure might both contribute to faster economic growth and jobs creation, but also potentially crowd out investment elsewhere and stoke inflation.
- Understand how fiscal multipliers can provide more bang for the buck, but also how delays and poor governance dull the positive effects.
- Hear why the US, in particular, gets a grade of C- on its public infrastructure, and what the current Administration plans to do about it.

Today's Speakers

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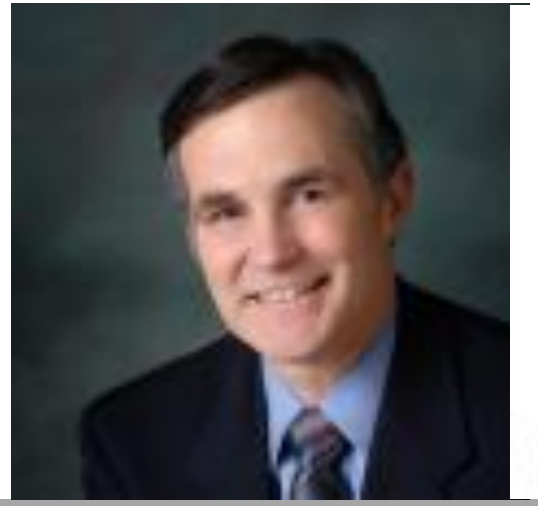

Greg DiLoreto
Chair Emeritus
ASCE's Committee on America's Infrastructure

Raphael Espinoza
Deputy Division Chief
IMF

Joseph J. Minarik
Senior Vice President and Director of Research
Committee for Economic Development of The Conference Board (CED)

Dana M. Peterson (Moderator)
Executive Vice President & Chief Economist
The Conference Board

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WINDOW ON: INFRASTRUCTURE INVESTMENT

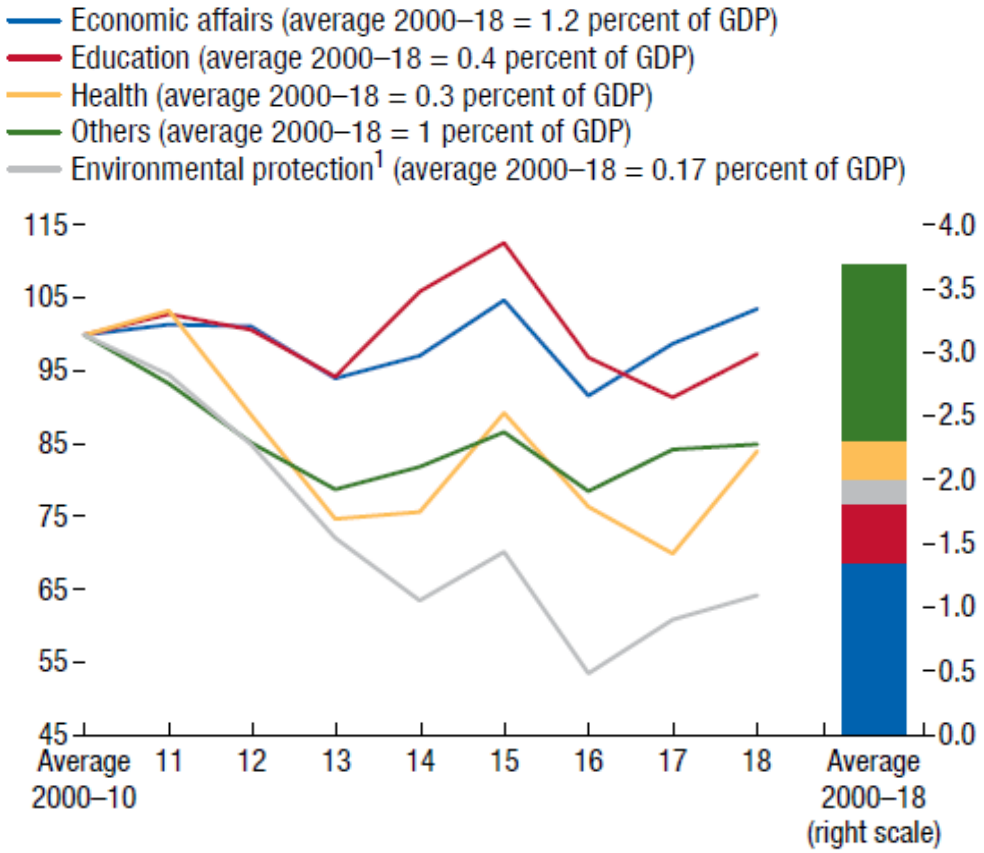
Raphael Espinoza, IMF

CONFERENCE BOARD – MAY 26

Based on work done with Matthieu Bellon, William Gbohoui, Fabien Gonguet, Xuehui Han, Sandra Lizarazo, Mariano Moszoro, Andrea Presbitero, Mouhamadou Sy, and Claude Wendling

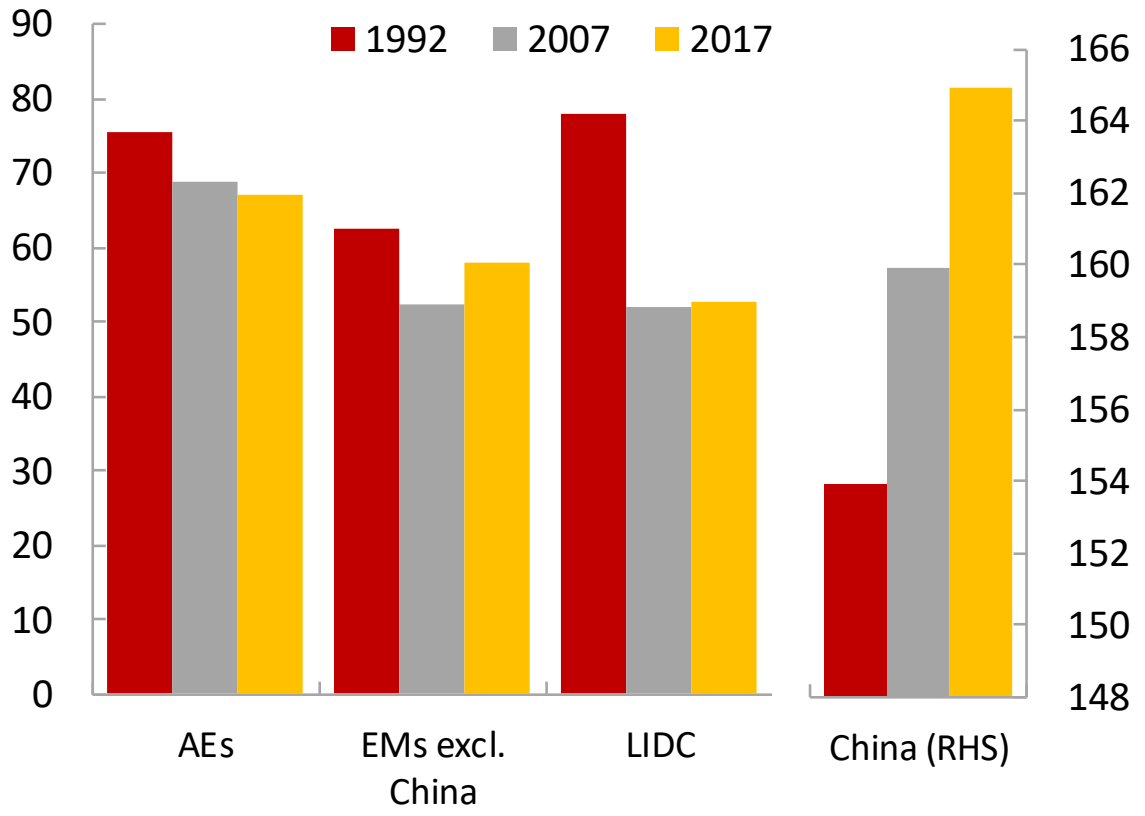
Public Investment and Public Infrastructure

Public Investment/GDP in Advanced and Emerging Market Economies (2000-18)



Sources: OECD and IMF staff estimates.
Note: "Others" includes general public services, defense, etc.
[1]Covers waste management, protection of biodiversity, etc.

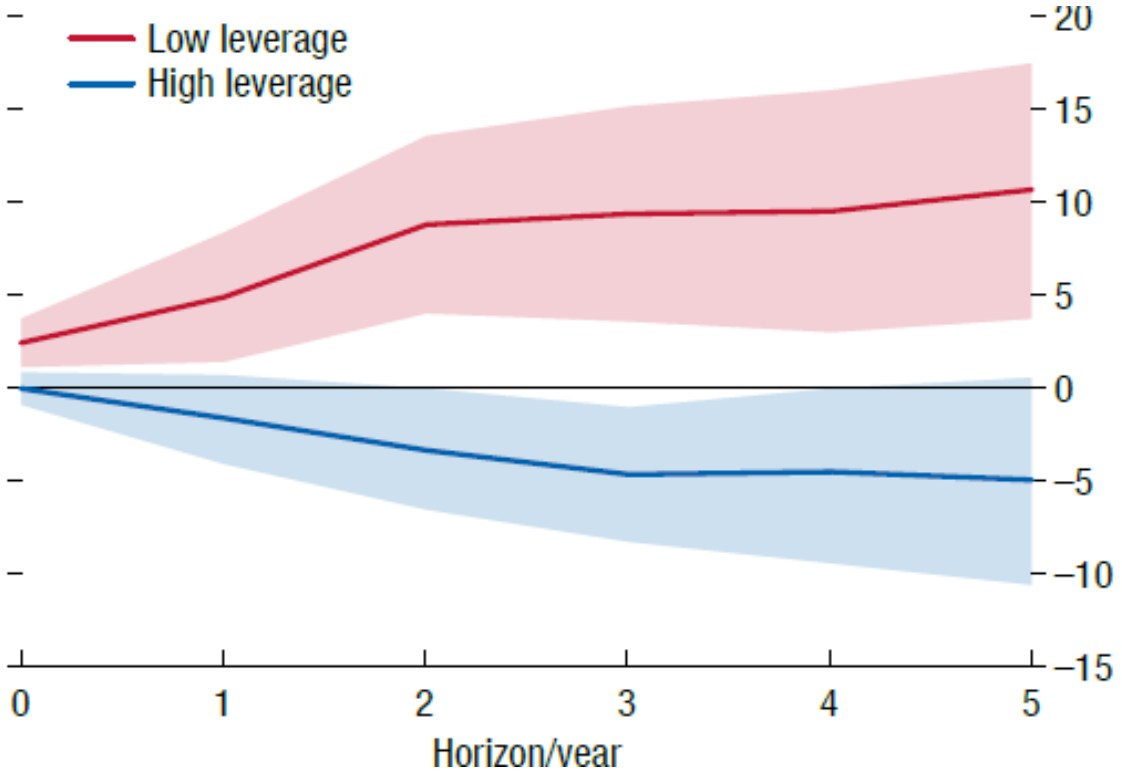
Public Capital Stocks, 1992, 2007, and 2017 (Ratio to GDP)



Source: IMF Investment and Capital Stock Dataset.
Note: AEs = advanced economies; EMs = emerging markets; LIDCs = low-income developing countries.

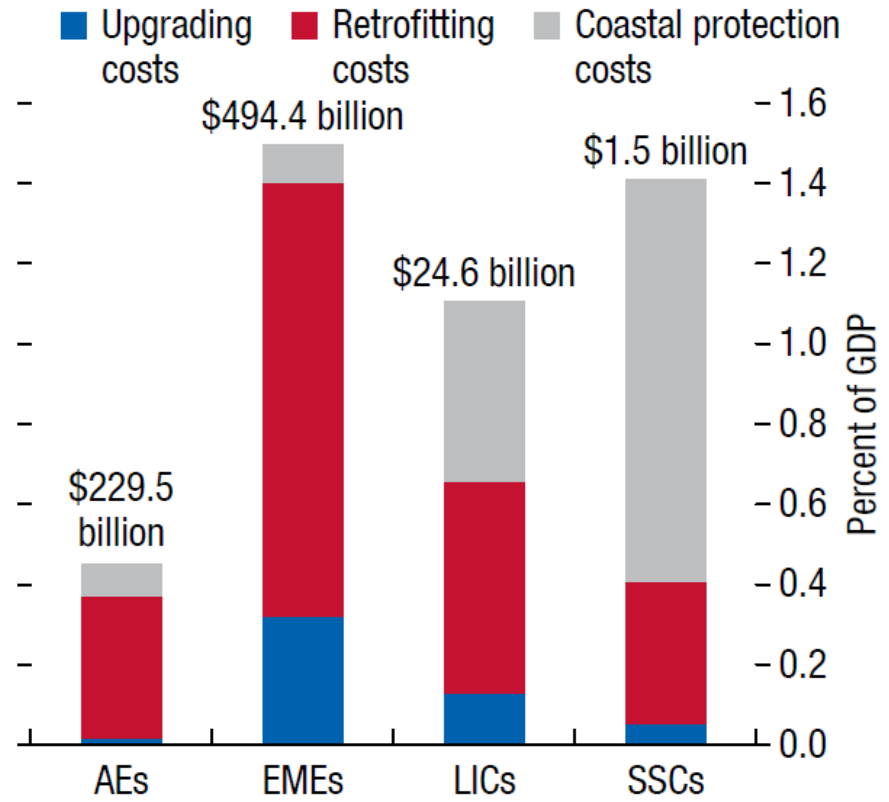
The Role of Public Investment in The COVID-19 Recovery

Response of Corporate Investment to Public Investment (deviation from baseline, for a 1 pc shock)



Note: Cumulative effect on private investment of a 1 percent shock in public investment. Estimated based on a database of about 400,000 private firms covering 26 advanced economies and 23 emerging and developing economies. See Espinoza, Gamboa and Sy (2020)

Annual Climate Change Adaptation Costs (in percent of GDP)



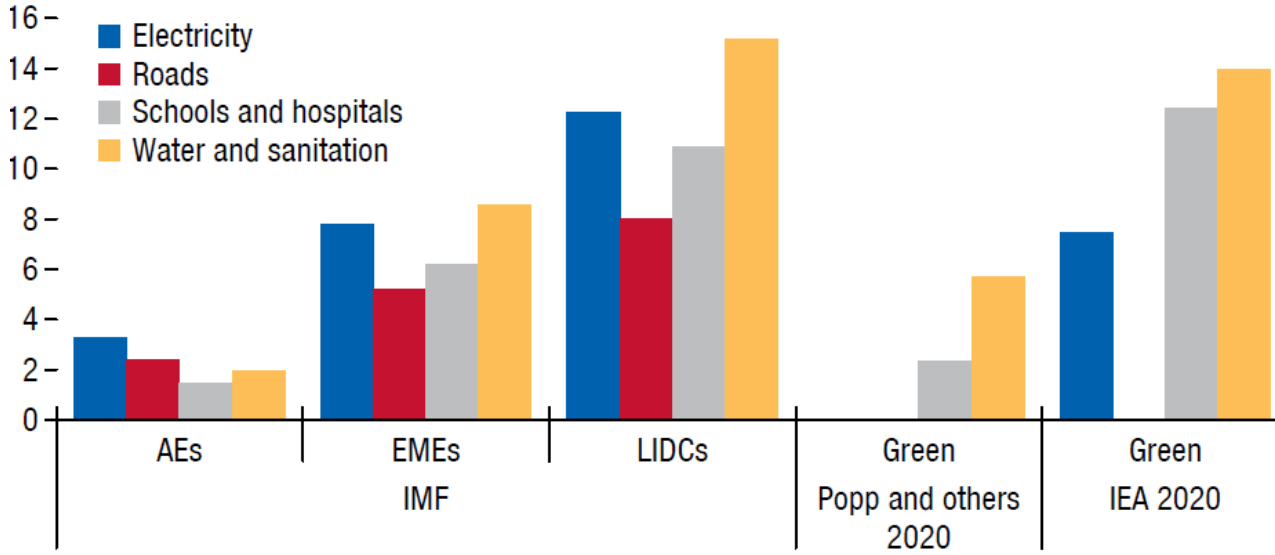
Sources: Rozenberg and Fay 2019; IMF staff estimates.

Note: Upgrading costs estimated WEO projections. Retrofitting costs calculated using share of exposed public assets. Coastal protection costs based on global representations of coastal zones and climate model in Nicholls and others (2019). See Annex 2.7 and Bellon (forthcoming)

Public infrastructure can create jobs and boost the recovery

- Direct job content of infrastructure assessed using firm-level data
- 1 percent of GDP of investment in AE/EMs creates 7 million jobs directly
- Excludes indirect effects

Job Content Per US$1 Million of Additional Investment (Selected infrastructure sectors)

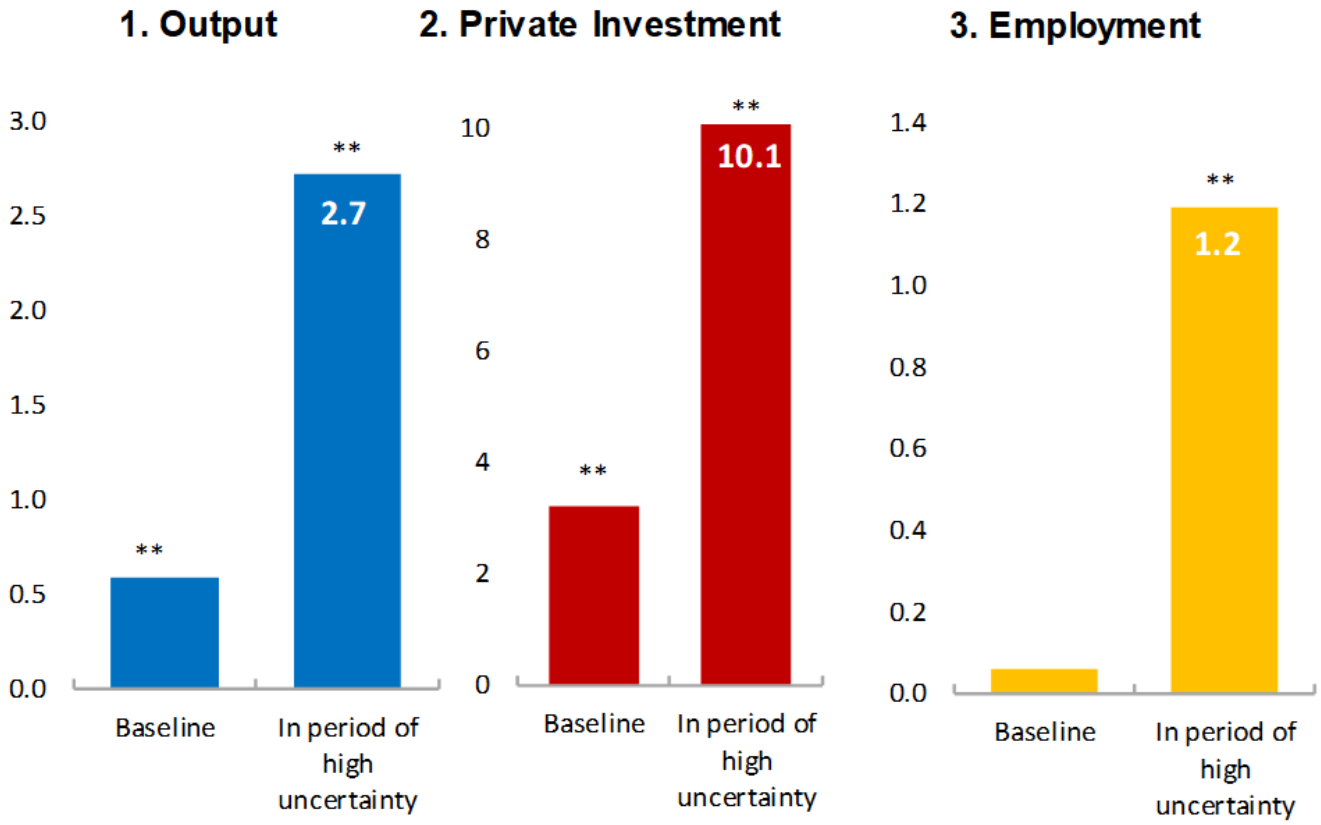


Source: IMF staff estimates; IEA (2020) and Popp et al. (2020)
Notes: Based on regressions of employment on revenues in millions of 2015 US dollars over 1999-2017, covering 47,580 observations for 5,679 privately-owned and SOEs (Compustat and Orbis). IEA (2020) and Popp et al (2020) are specifically for green investment. R&D results based on cross-country regressions using OECD data on R&D and employment. See Annex 2.4 and Moszoro (forthcoming).

Public infrastructure can create jobs and boost the recovery

- Direct job content of infrastructure assessed using firm-level data
- 1 percent of GDP of investment in AE/EMs creates 7 million jobs directly
- Excludes indirect effects
- When including indirect macro effects, a one percent of GDP in investment can boost GDP by 2 percent in periods of high uncertainty
  - ➢ 20-33 million jobs created globally for percent of GDP of public investment ir AE and EMs

Uncertainty and the Fiscal Multiplier of Public Investment in AEs and EMs (deviation from baseline, for 1 pc GDP shock to public investment)

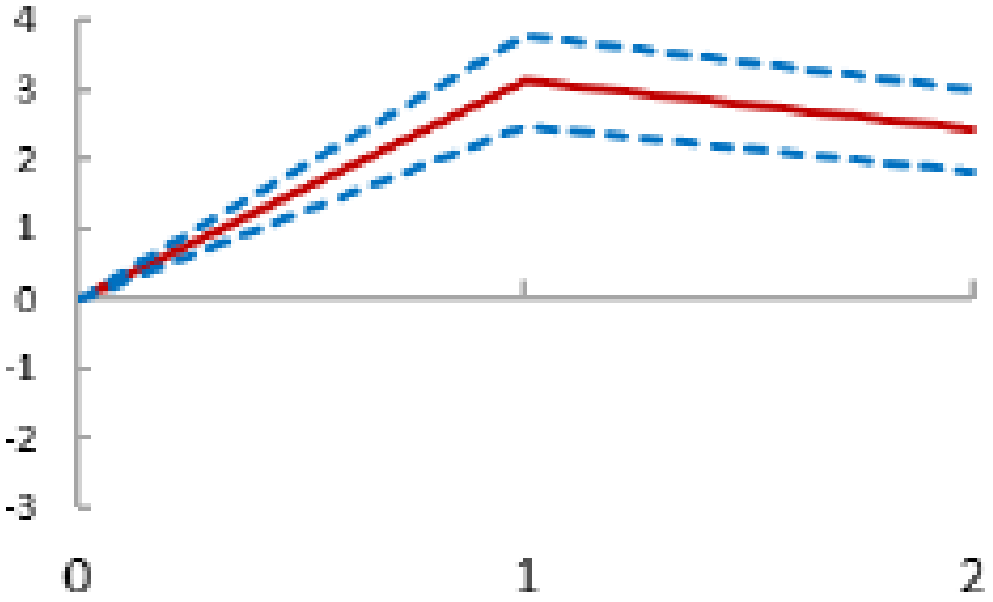


Source: IMF staff estimates for 2-year horizon multiplier.
Note: ** for significant at two standard deviation confidence interval. Data cover 72 AEs and EMs. See Gbohoui (Annex 2.5)

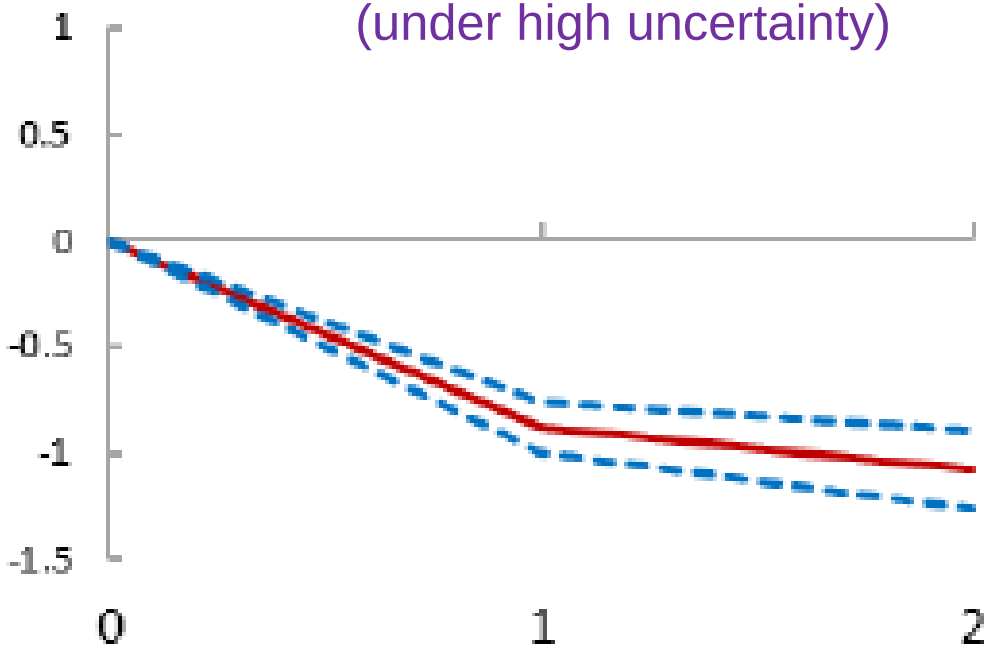
Important macroeconomic effect via confidence

Effect of Public Investment on professional forecasters' growth forecasts
(deviation from baseline, for 1 pc GDP shock to public investment)

Mean forecast
(under high uncertainty)



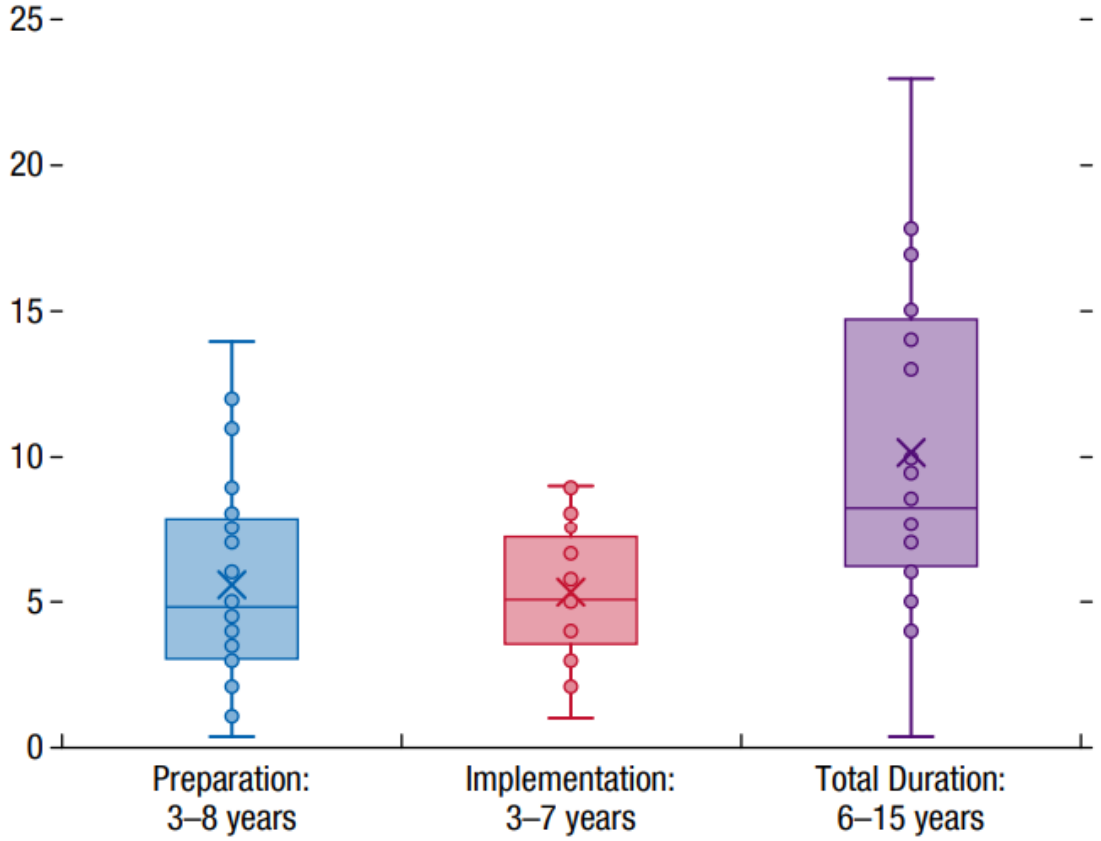
Standard deviation across forecasters
(under high uncertainty)



Source: IMF staff estimates.
Note: ** for significant at two standard deviation confidence interval. Data cover 72 AEs and EMs. See Gbohoui (Annex 2.5)

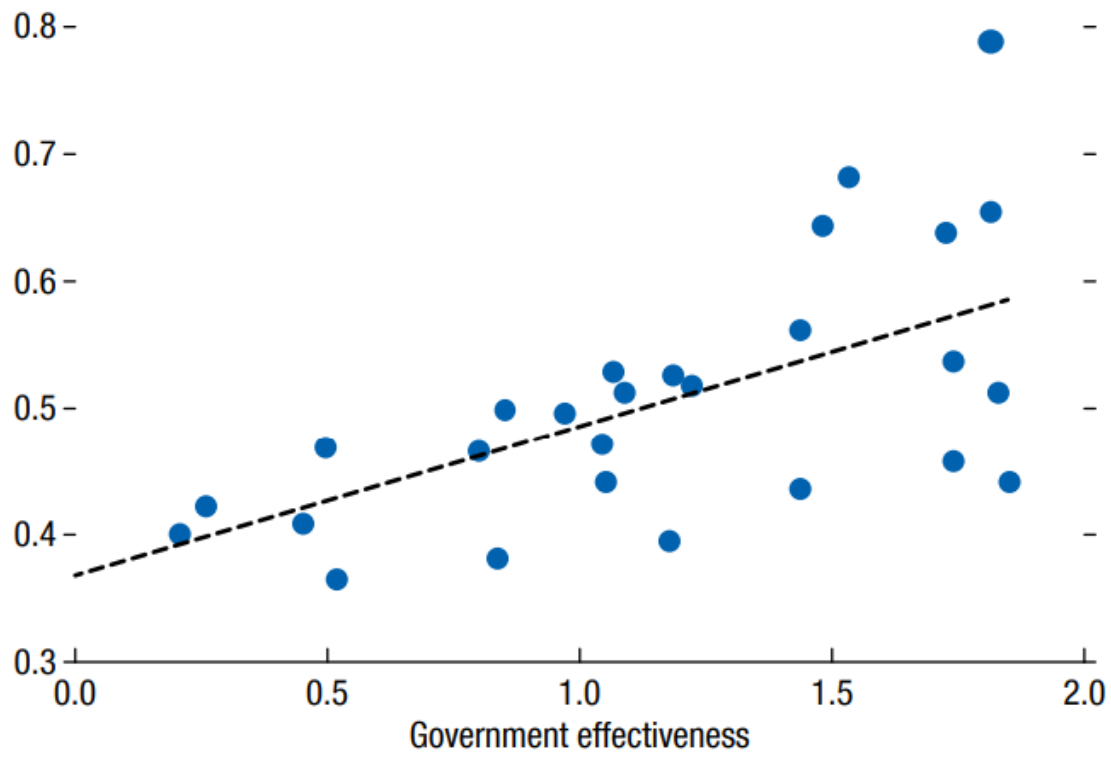
Infrastructure takes time to materialize

Duration of Infrastructure Projects
(Number of years)



Sources: IMF staff calculations based on Klakegg, Williams, and Shiferaw 2016; Avellan, Cavalcanti, and Lotti 2019; and GIH 2019.

Government Effectiveness and Speed of Execution in Europe (Amounts spent in 2014–19, in proportion of amounts allocated for 2014–20)

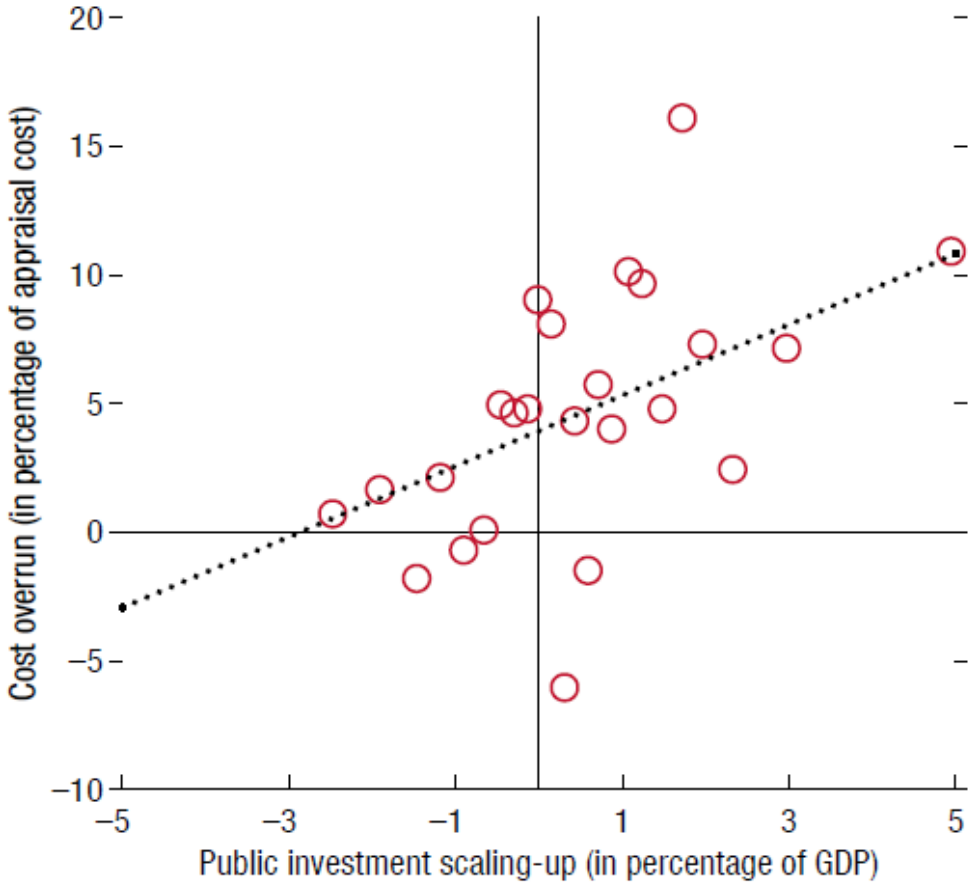


Sources: European Structural and Investment Funds; World Bank Worldwide Governance Indicators; and IMF staff calculations. Instrument for Pre-Accession Assistance not included.

Good governance and preparation limits absorptive capacity constraints

- We did a granular analysis of project execution
  - ➢ Cost overruns
  - ➢ Time delays
- Using text-mining of 2,200 World Bank projects, covering 120 countries over 30 years
- Looking at project- and macro-level variables
- Absorptive capacity constraints can lead to cost overruns of 10 percent.

Cost overruns are frequent and increase when investment is scaled-up



Source: Analysis of the performance of more than 2,200 World Bank-financed projects approved in more than 120 countries. Binned scatter plot controls for project-specific and macro variables as well as fixed effects. See Annex 2.3 and Espinoza and Presbitero (forthcoming).

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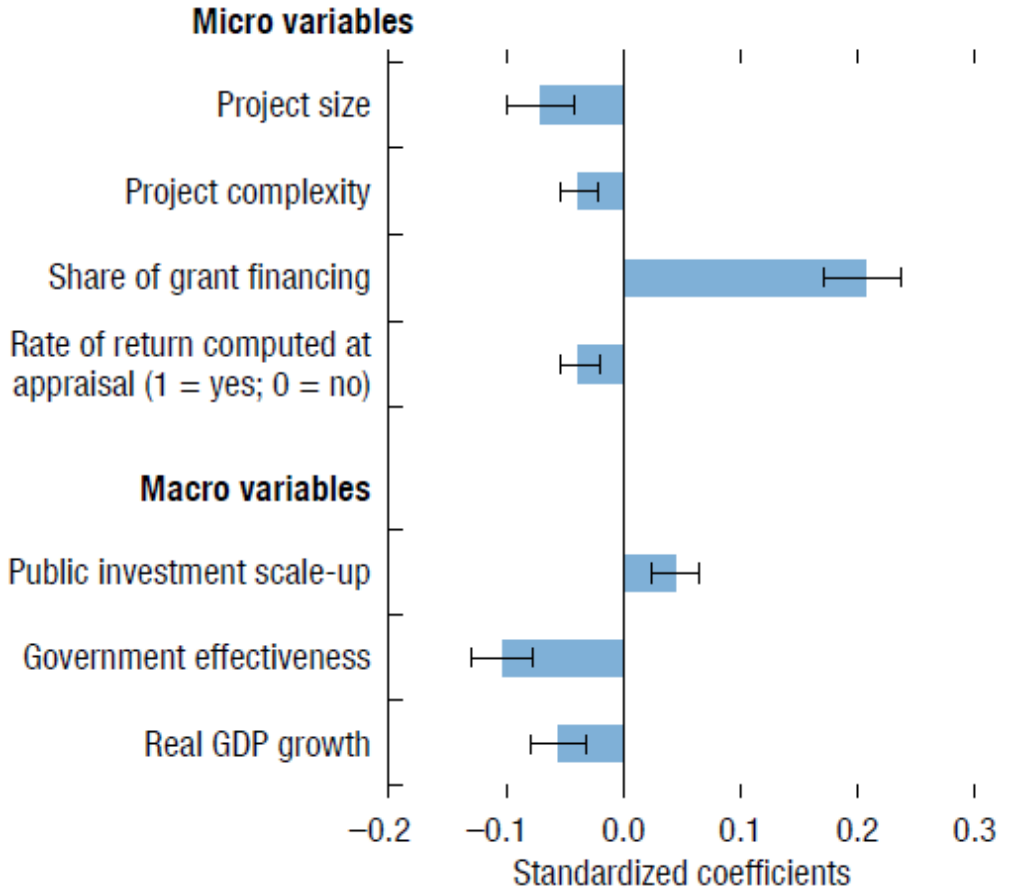
- Limited local ownership associated with delays

Projects get delayed if less ownership of for countries with less effective administrations



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Public Investment for the Recovery

Fiscal Monitor | Chapter 2

2021 Infrastructure Grades

AVIATION	↑ D+
BRIDGES	↓ C
DAMS	D
DRINKING WATER	↑ C-
ENERGY	↑ C-
HAZARDOUS WASTE	D+
INLAND WATERWAYS	↑ D+
LEVEES	D
PARKS AND RECREATION	D+
PORTS	↑ B-
RAIL	B
ROADS	D
SCHOOLS	D+
SOLID WASTE	C+
STORM WATER	D
TRANSIT	D-
WASTEWATER	D+

America's Cumulative Infrastructure Grade

A	EXCEPTIONAL
B	GOOD
C	MEDIOCRE
D	POOR
F	FAILING

Investment Needs

Category	Total Needs	Funded	Funding Gap
SURFACE TRANSPORTATION[1]	**$2,834**	**$1,619**	**$1,215**
WATER/ WASTEWATER/ STORMWATER[2]	$1,045	$611	$434
ELECTRICITY[2]	$637	$440	$197
AIRPORTS[2]	$237	$126	$111
INLAND WATERWAYS & MARINE PORTS[2]	$42	$17	$25
DAMS[3]	$93.6	$12.5	$81
HAZARDOUS & SOLID WASTE[4]	$21	$14.4	$7
LEVEES[5]	$80	$10.1	$70
PUBLIC PARKS & RECREATION[6]	$77.5	$9.5	$68
SCHOOLS[7]	$870	$490	$380
TOTALS	**$5,937**	**$3,350**	**$2,588**

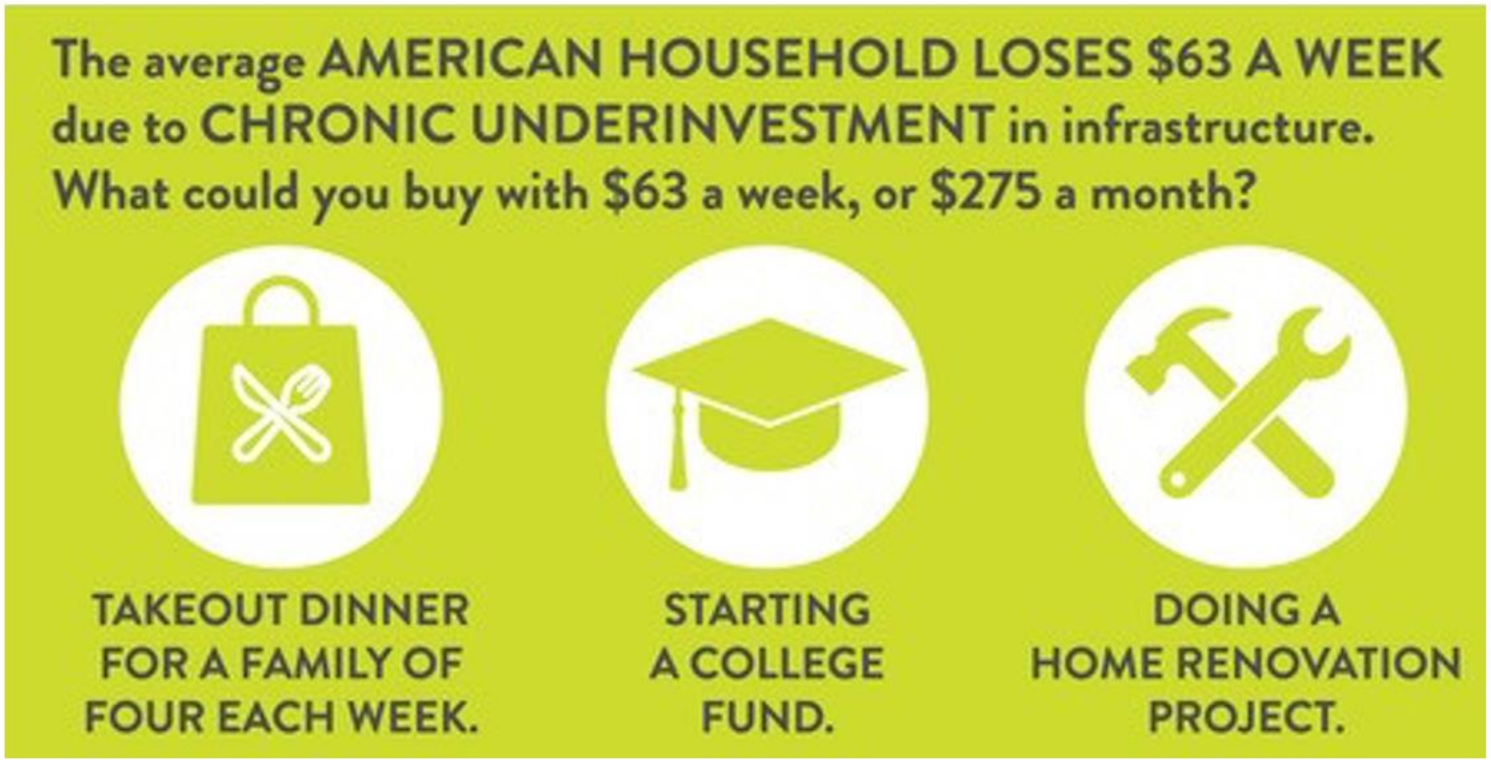
$2.59
Trillion
needed

CURRENT FUNDING | FUNDING GAP

FAILURE TO ACT

Economic Impacts of Status Quo
Investment Across Infrastructure Systems

Our report finds that the over the next 20 years, **the average American household will spend $3,300 a year** due to infrastructure deficiencies. This lost disposable income comes from the disruptions of inadequate infrastructure **like sitting in traffic, hitting a pothole, power outages, and water main breaks.**



What About the American Jobs Plan and Made in America Tax Plan?

Counter Offers
$568 Billion
$1.7 Trillion

American Jobs Plan & Made In America Tax Plan (Billions of US$)

Infrastructure Spending (Public)		**621**
	Highways, Roads, Bridges Repair	115
	Road Safety	20
	Modernize Transit Systems	85
	Amtrak Repair	80
	Electric Vehicle Charger **Grants**	174
	Revamp Airports	25
	Inland Waterways and Ports	17
	Transportation Infrastructure	45
	Infrastructure resilience	50
	Other	10
Infrastructure Spending 'At Home'		**650**
	Retrofit 2 million homes	213
	High-speed Broadband	100
	Rehab Public Housing	40
	Clean Drinking Water	45
	Public School Building	100
	Grants	*50*
	Bonds	*50*
	Community College Infrastructure	12
	Upgrade child-care Facilities	25
	VA Hospital Modernization	18
	Federal Buildings Revamp	10
	Conservation and Resilience Workers	10
	Clean Energy Accelerator	27
	Other	50

Care Economy	**Housing for the Aged and disabled persons**	**400**
R&D, Manufacturing & Training Spending		**580**
	R&D	180
	Strengthen Supply Chains	50
	Semiconductor Manufacturing	50
	Pandemic Preparedness	30
	Clean Manufacturing	46
	Regional Innovation Hubs	20
	NIST	14
	Domestic Manufacturing	52
	Small Business Aid	31
	Workforce Development	100
	Other	7
Revenue	**Total over 15 years**	**2000**
	Raise corporate tax rate from 21 to 28%	
	All Other	
	Raise global min tax rate from 13 to 21%	
	End federal tax breaks for fossil fuel companies	
	Loophole closure	
	Inversion elimination	
	Eliminate expense deductions for offshoring	
	Eliminate credit expenses for onshoring	
	Min Tax on /Large Corporations Book Income	
	Ramp up enforcement against corporations	
	Extension of Energy Tax Credits	**?**

Sources: The White House, Oxford Economics, and The Conference Board

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June 23, 2021

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Moderator

Dana M Peterson
Executive Vice President & Chief Economist
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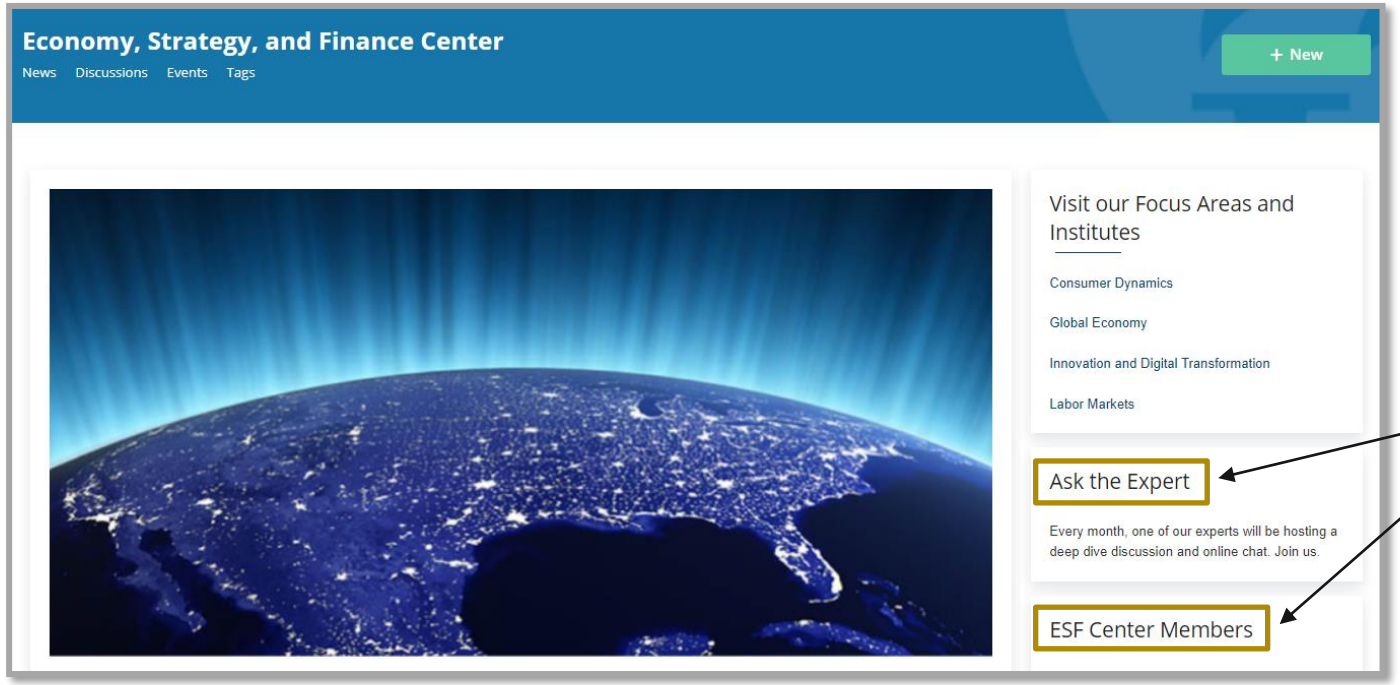
ESF Community is launching June 15!



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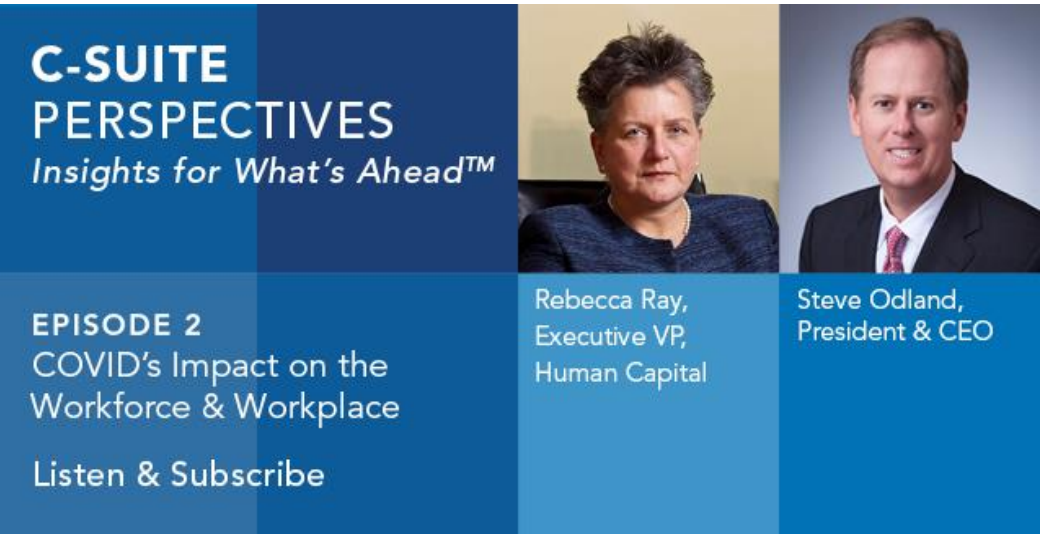

Hosted by our CEO, **Steve Odland**, this bi-monthly series features in-depth interviews with thought leaders from The Conference Board to provide senior and C-suite executives with data-driven insights to prepare them for what's ahead.

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