



CHAPTER 3

GLOBAL ECONOMY

Heading into a Decade of Disappointments?

The COVID-19 pandemic has caused major disruptions in the global economy. Economic activity has been hit by reduced personal interaction, owing both to official restrictions and private decisions; uncertainty about the post-pandemic economic landscape and policies has discouraged investment; disruptions to education have slowed human capital accumulation; and concerns about the viability of global value chains and the course of the pandemic have weighed on international trade and tourism. As with previous economic crises, the pandemic is expected to leave long-lasting adverse effects on global economic activity and per capita incomes. It is likely to steepen the slowdown in the growth of global potential output—the level of output the global economy can sustain at full employment and capacity utilization—that had earlier been projected for the decade just begun. If history is any guide, unless there are substantial and effective reforms, the global economy is heading for a decade of disappointing growth outcomes. Especially given weak fiscal positions and elevated debt, institutional reforms to spur growth are particularly important. A comprehensive policy effort is needed to rekindle robust, sustainable, and equitable growth. A package of reforms to increase investment in human and physical capital and raise female labor force participation could help avert the expected impact of the pandemic on potential growth in emerging market and developing economies (EMDEs) over the next decade. In the past, the growth dividends from reform efforts were recognized and anticipated by investors in upgrades to their long-term growth expectations.

Introduction

The global economy headed into the COVID-19 pandemic on the heels of a decade of slowing productivity growth and weak investment. By 2018, labor productivity growth in advanced economies and emerging market and developing economies (EMDEs) had slowed to 0.8 and 3.5 percent, respectively, from 1.0 and 4.1 percent during the first decade of the 2000s (Dieppe 2020). In 2019, investment growth was below its 2000-09 average in two-thirds of the world's economies and in three-quarters of EMDEs (World Bank 2019a).

As these fundamental drivers of long-term growth weakened, growth in global potential output—the output that can be sustained at full employment and capacity utilization—had fallen to 2.2 percent in 2019, well below its annual average of 3.3 percent in the first decade of the 2000s. This decline in potential growth was broad-based, affecting three-quarters of countries, including two-thirds of EMDEs (World Bank 2018a; Kilic Celik, Kose, and Ohnsorge 2020).

In recognition of this weakening, forecasters repeatedly downgraded their long-term growth

expectations over the past decade. By 2019, ten-year-ahead forecasts for global growth had fallen to 2.4 percent, down from 3.3 percent in 2010. Over 2010-19, long-term growth forecasts were downgraded for almost all countries. For EMDEs, ten-year-ahead growth forecasts fell to 3.9 percent in 2019, down from 6.1 percent in 2010.

Since durable per capita income gains and poverty reduction can be achieved only with sustained improvements in potential growth, poverty reduction has slowed over the past decade. In the decade that ended in 2017, the prevalence of global extreme poverty declined by 9 percentage points of the global population, down from 11 percentage points in the preceding decade.

The new decade that began in 2020 was ushered in with the most severe global recession since the Second World War, triggered by the COVID-19 pandemic (World Bank 2020a). In less than a year, by December 2020, COVID-19 had cost the lives of more than 1.5 million people around the world and was gathering momentum once again in many advanced economies and some EMDEs (chapters 1 and 2). Like earlier severe economic disruptions, the pandemic will likely leave lasting economic and financial scars. Productivity-enhancing investment has plunged, education has been disrupted, and the pandemic has cast doubt on many countries' growth strategies, including global value chain participation, reliance on production and export of commodities, and

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specialization in hospitality and tourism (Dieppe 2020). The pandemic is also poised to increase inequality because it risks causing large human capital losses particularly among people who are already disadvantaged, making it harder for countries to return to inclusive growth even after the shock recedes (World Bank 2020b).

Against this backdrop, this chapter examines the following questions.

- What has been the impact of the pandemic on long-term growth prospects?
- What are the implications for growth expectations over the next decade?
- What policy options are available to boost growth prospects in the post-pandemic world?

Contributions. This chapter contributes to the literature in several dimensions.

- *Impact of the pandemic on long-term growth prospects.* This chapter breaks new ground by examining the impact of the pandemic on long-term global growth prospects. Earlier studies, such as World Bank (2020a) and Dieppe (2020), estimated the impact of past economic disruptions on growth in the subsequent few years. This chapter focuses on growth prospects over the next decade.
- *Two measures of long-term growth prospects.* This chapter uses two measures of long-term growth prospects: model-based estimates of potential growth and survey-based long-term growth forecasts. The model-based potential growth estimates are intended to capture major long-term drivers of growth: investment, quantity and quality of labor supply, and total factor productivity (TFP). The survey-based long-term growth forecasts are intended to capture the expectations underlying the decisions of investors and households about investment and consumption.¹

¹ Consumers facing weaker income growth prospects will tend to rein in their consumption (Bayer et al. 2019; Mody, Ohnsorge, and Sandri 2012); investors with weaker prospects for sales and earnings growth will delay investments (Cummins, Hassett, and Oliner 2006;

- *Weaker-than-expected growth after adverse events.* This chapter builds on a literature on evidence for a tendency towards initial over-optimism and subsequent disappointments by documenting how growth tends to be lower after adverse events and identifying the country features and circumstances that are most robustly associated with such growth outcomes. Previous studies have pointed to below-trend output and new IMF programs as correlates of disappointments (Ho and Mauro 2016). This chapter expands the range of correlates and compares them with current conditions. The patterns in disappointments serve as cautionary guidance to policy makers in countries that share these features and circumstances.
- *Possible over-optimism after the pandemic.* Previous research has established that growth forecasts over the past two to three decades have had a significant optimistic bias.² Sizeable short-term forecast errors and a failure to predict business cycle turning points a year in advance have been documented in large cross-country datasets.³ Over-optimism—that is, disappointing growth outcomes compared to forecasts—has been documented for forecasts at the three-year horizon (Frankel 2011), five-year horizon (Pritchett and Summers 2014), and five- to ten-year horizon, with greater over-optimism as the forecast horizon expanded (Ho and Mauro 2016).⁴ This study is the first to

Gennaioli, Ma, and Shleifer 2016). Therefore, weak long-term growth forecasts may create a self-fulfilling equilibrium (Chen and Shimomura 1998).

²The accuracy of short-term growth forecasts has been tested, for example, for China (Sun, Wang, and Zhang 2018), the euro area (Bowles et al. 2007), and Mexico (Capistrán and López-Moctezuma 2014).

³Some of these studies use *World Economic Outlook* forecasts (Ager, Kappler, and Osterloh 2009; Batchelor 2007; Loungani 2001; Timmermann 2007) whereas others consider Consensus Economics forecasts (Juhn and Loungani 2002).

⁴Forecasts several decades ahead have also proven overly optimistic. Forecasts in Onishi (1988) of 3.3 to 3.8 percent global growth over 1986-2000 also turned out to be higher than those that eventually materialized (3.0 percent). The optimism of growth forecasts partly reflects an initial underappreciation of structural headwinds in the economy, for example, demographics and weak investment. It could also be an outcome of the failure to predict negative shocks that trigger crises or turning points of business cycles.

examine the likely implications of such over-optimism for the current recovery from the pandemic.

- *Reforms in the post-pandemic world.* This chapter examines the link between growth-boosting reforms and long-term growth prospects. Econometric exercises examine the responses of investment and total factor productivity as well as long-term growth expectations to institutional reform advances and setbacks. A large literature on the link between specific reforms and growth is reviewed and its lessons are applied to the current growth outlook.

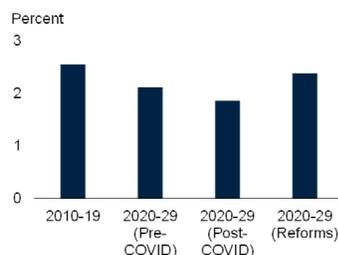
Main findings. The study reports the following findings (figure 3.1).

- *Damage from the pandemic to long-term growth prospects.* Even before the pandemic, trends in fundamental drivers of growth suggested that annual average potential output growth would slow by 0.4 percentage point globally and 1.0 percentage point in EMDEs over the 2020s. As a result the pandemic, the slowdown in potential growth over the 2020s may be 0.3 and 0.6 percentage point per year steeper for the global economy and EMDEs, respectively, than anticipated before the pandemic—unless effective policy action is taken or major technological advances materialize.
- *Prospect of a decade of growth disappointments.* Past recessions were typically followed by several years of disappointing growth outcomes and downgrades of long-term growth expectations. After the 2008 global financial crisis, long-term (ten-year-ahead) global growth forecasts were repeatedly downgraded, to 2.4 percent in 2019, 0.9 percentage point below their 2008 forecast (Kose, Ohnsorge, and Sugawara, forthcoming). Five years after country-specific recessions, long-term growth expectations were typically 1.5 percentage points lower than in countries without recessions. Long-term expectations were also weaker several years after financial crises. This experience suggests that the recent pandemic-related

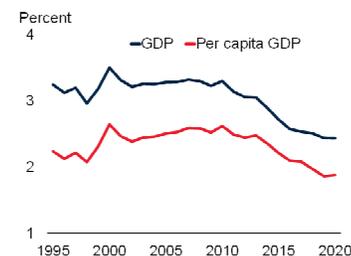
FIGURE 3.1 Long-term growth prospects

The global economy headed into the COVID-19 pandemic after a decade of forecast disappointments and slowing potential output growth. The pandemic is expected to steepen the slowdown previously projected over the 2020s. However, ambitious policy reforms to support investment, improve education, and raise labor force participation could reverse much of the adverse impact of the pandemic on potential growth prospects over the next decade. Institutional reforms could strengthen investment and output growth prospects, as they have done in the past.

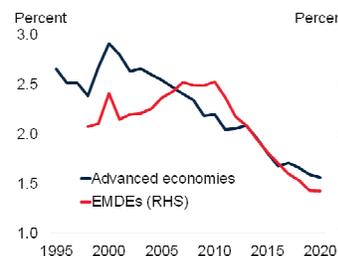
A. Global potential output growth



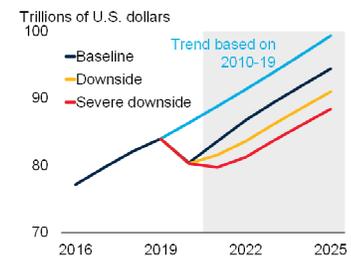
B. Ten-year-ahead growth forecasts for global output and per capita income



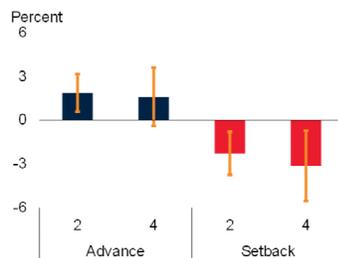
C. Ten-year-ahead output growth forecasts



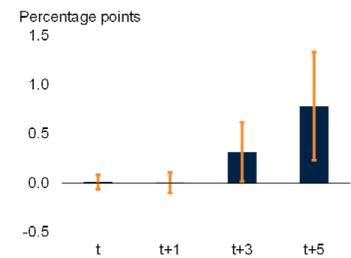
D. Global output levels



E. Cumulative change in EMDE investment two to four years after reform episodes



F. Cumulative response of long-term growth forecasts after institutional reform advances



Sources: Consensus Economics; Haver Analytics; International Country Risk Guide (database); Kilic Celik, Kose, and Ohnsorge (2020); World Bank; World Population Prospects 2019 (database).
 Note: EMDEs = emerging market and developing economies.
 A. GDP-weighted average (at 2010 prices and exchange rates) for 82 economies. Potential growth estimates based on a production function approach as described in Kilic Celik, Kose, and Ohnsorge (2020). "Pre-COVID," "Post-COVID," and "Reforms" defined as in figures 3.2, 3.4, and 3.12.
 B.C. Aggregate GDP growth calculated using GDP at 2010 prices and market exchange rates as weights. Per capita GDP growth is the difference between GDP growth and population growth. Results from the latest Consensus Economics surveys in each year are presented. Sample includes 84 countries (33 advanced economies and 51 EMDEs). The horizontal axis shows the years when Consensus Economics forecasts are surveyed.
 D. Data are in U.S. dollars at 2010 prices and market exchange rates. Shaded area indicates forecasts. Trend and baseline output is defined in figures B3.1.1 and 3.7. The downside and severe downside scenarios are described in boxes 1.4 and 3.1.
 E. Coefficients estimates of a local projection estimation for 71 EMDEs during 1998-2018 of cumulative investment growth on reform advances and setbacks at forecast horizons of two and four years. Reforms are defined in box 3.3. Vertical lines show 90 percent confidence intervals.
 F. Cumulative impulse responses of ten-year-ahead growth forecasts on reform advances started in year t, based on local projection estimations for 57 countries during 1990-2020. Reforms are defined in annex 3.1. Vertical orange lines show the 90 percent confidence intervals.

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recession may well be followed by several years of disappointing growth outcomes.

- *Reforms to boost growth prospects.* To avoid a repeat of the historical pattern of initial over-optimism followed by subsequent disappointments, a comprehensive policy effort is needed to promote a recovery that strengthened the foundations for growth. Such an effort would include reforms to improve governance and business climates; increase competition and level the playing field for firms; encourage productivity-enhancing investment in human and physical capital; foster economic flexibility; and diversify economies where activity is concentrated in a few sectors. If every country repeated its best ten-year improvement in investment and schooling and managed to close the gap between male and female labor force participation rates by as much as the most successful quartile of reformers, the adverse impact of the pandemic on EMDE potential growth could be reversed. A particular priority at the current juncture, when fiscal positions have been extremely stretched by the policy responses to the pandemic, are institutional reforms that have been associated with increased investment and stronger growth. In the past, investors have recognized the growth potential of such reform efforts, raising their long-term growth expectations by 0.8 percentage point, on average, five years after the reforms.

Data. This study uses two measures of long-term growth prospects. The first is potential output growth derived from a production function approach.⁵ Annual data and projections are available for 82 economies (including 30 advanced economies and 52 EMDEs, of which 12 are low-

⁵For details of this methodology, see as in Kilic Celik, Kose, and Ohnsorge (2020) and World Bank (2018a). Potential labor supply is derived from the labor force participation predicted by a panel regression of labor force participation in five age groups for each gender on education and health indicators, as well as cohort effects. Potential total factor productivity (TFP) growth is derived from the predicted value of a panel regression of trend TFP growth on education and health indicators, investment, and research and development spending. Potential capital is assumed to match actual capital.

income countries) for 1995-2029 (time series for 2020-29 are projections). These countries accounted for 95 percent of global GDP over the past five years.⁶ The second measure consists of ten-year-ahead output growth forecasts compiled by *Consensus Economics*. These are available on a semi-annual or quarterly basis for up to 86 economies (33 advanced economies and up to 53 EMDEs) as well as the euro area over 1990-2020. These countries accounted for 92 percent of global GDP over the past five years. Long-term output growth forecasts are complemented by long-term investment and private consumption growth forecasts which are available for a smaller set of up to 46 economies (24 advanced economies and up to 22 EMDEs) and the euro area.

Pre-pandemic decade of economic weakness

The pre-pandemic decade was marked by weakening momentum in all major drivers of potential growth and a series of growth disappointments. These were broad-based across countries and components of growth.

Structural weaknesses in growth

Weakening drivers of growth. The pre-pandemic decade was marked by structural weaknesses that weighed on growth. Global working-age population growth slowed from 2010, chiefly because of a slowdown in EMDEs (World Bank 2018a). The pace of sectoral reallocation slowed such that labor productivity gains from this source waned (Dieppe and Matsuoka 2020). Other major productivity growth drivers slowed as gains in life expectancy as well as school achievement and enrollment levelled off and global value chains—a major driver of productivity-enhancing investment and technology transfer—appeared to mature (Dieppe 2020). Governance reform efforts slowed as well. Global investment growth weakened to 2.5

⁶The latest available vintage in a year is used as the annual data series. Data on consensus forecasts are available since 1989, but long-term forecasts start in 1990. A full panel of data is available for 45 economies, including 18 EMDEs, for 1998-2020. The number of economies increased from 57 economies in the April 2019 vintage of consensus forecasts.

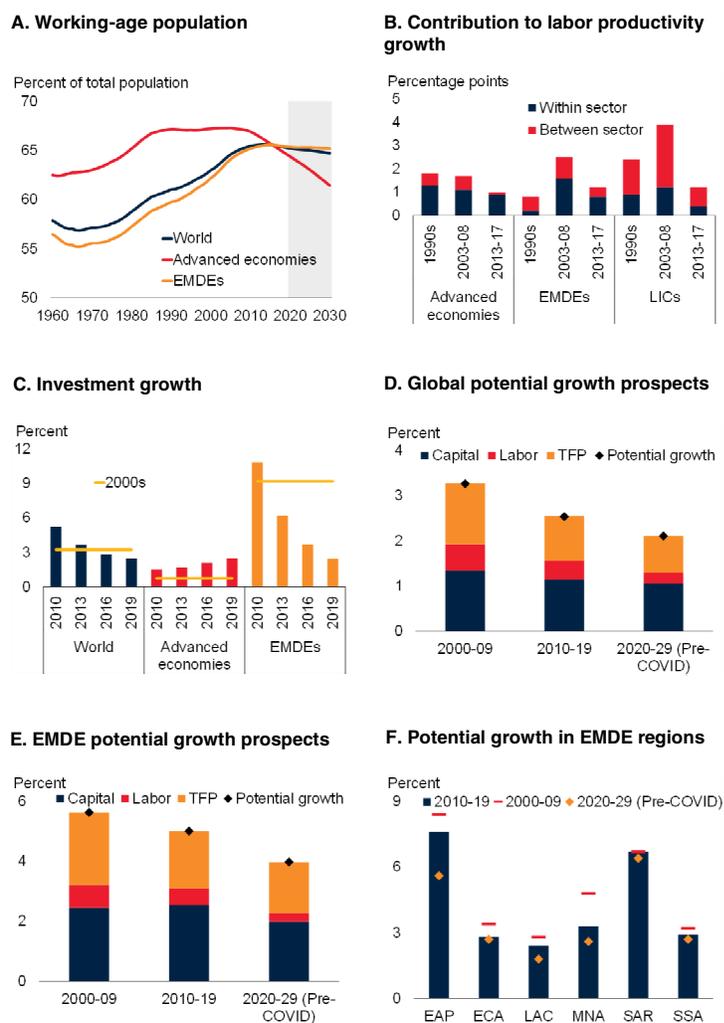
percent in 2019 from 3.3 percent, on average, in 2000-09 as crises disrupted bank finance in major advanced economies and FDI and other capital flows into EMDEs slowed. China implemented a policy-guided slowdown towards more sustainable growth, and policy uncertainty weighed on investment in EMDEs.

Broad-based slowdown in potential growth. Global potential output growth declined to 2.5 percent in 2010-19, well below its average of 3.3 percent a year in the preceding decade (figure 3.2). Almost one-half of this decline can be attributed to slower TFP growth, just over one-quarter to weaker capital accumulation, and the remainder to slower labor supply growth. The slowdown in global potential growth mainly reflected weaker potential growth in many EMDEs and in all EMDE regions except South Asia (SAR).

- *In advanced economies*, potential growth remained anemic at 1.4 percent a year, on average, over the 2010s as a substantial decline in capital accumulation and TFP growth (of about 0.3 percentage point a year each) relative to the preceding decade was compounded by slowing growth in the labor supply amid population aging.
- *In EMDEs*, potential growth slowed to 5.0 percent a year during the 2010s (and further to 4.4 percent a year in the second half of the 2010s), from 5.6 percent a year in the preceding decade. Four-fifths of this decline is accounted for by slower TFP growth, with the remainder the result of a slowdown in labor supply growth.
- *Investment-driven slowdowns: EAP, LAC, MNA, SSA.* The steepest regional decline in potential growth occurred in East Asia and Pacific (EAP): it weakened to 5.9 percent a year in 2018-19 from its 2010s average of 7.6 percent a year. This mostly reflected slowing capital accumulation, as China implemented a policy-guided rebalancing from investment to consumption. As in EAP, in Latin America and the Caribbean (LAC), the Middle East and North Africa (MNA), and Sub-Saharan Africa (SSA), at least half of the decline in

FIGURE 3.2 Evolution of growth prospects over the pre-pandemic decade

The global economy headed into the COVID-19 pandemic on the heels of a decade of slowing productivity growth, weak investment, and declining potential output growth.



Sources: Dieppe and Matsuoka (2020); Haver Analytics; Kilic Celik, Kose, and Ohnsorge (2020); World Bank; World Population Prospects 2019 (database).
 Note: EMDEs = emerging market and developing economies, LICs = low-income countries, EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, SAR = South Asia, SSA = Sub-Saharan Africa. TFP = total factor productivity.
 A. Population-weighted averages. Working-age population is defined as population aged 15-64 years. Shaded area indicates forecasts.
 B. Based on samples of 94 countries during 1995-99 and 103 countries during 2003-17. Median of countries' annual average productivity growth. Within-sector contribution is the contribution of real value-added weighted sectoral productivity growth. Between-sector contribution is the contribution of changes in sectoral employment shares. Medians of country-specific contributions.
 C. Investment refers to gross fixed capital formation. Aggregate growth calculated using investment at 2010 prices and market exchange rates as weights. Sample includes 97 countries, consisting of 34 advanced economies and 63 EMDEs.
 D.-F. GDP-weighted average (at 2010 prices and exchange rates) for 82 countries, including 52 EMDEs. Potential growth estimates and projections are based on a production function approach as described in Kilic Celik, Kose, and Ohnsorge (2020). Pre-COVID projections for the 2020s assume that investment grows at its historical average rate, working-age population and life expectancy evolve as envisaged by the UN Population Projections, and secondary and tertiary school enrollment and completion rates improve at their historical average rate.
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potential growth in 2018-19 was due to slowing capital accumulation.

- *TFP and labor supply driven slowdown: ECA.* Europe and Central Asia (ECA) was the only EMDE region where investment growth picked up in the 2010s, but this was offset by shrinking labor supply and slowing TFP growth, leaving potential growth roughly unchanged.
- *Productivity-driven acceleration: SAR.* In SAR, a modest softening in labor supply growth was more than offset by increases in TFP growth and accelerating capital accumulation, causing the rate of potential growth to rise in 2018-19 above the decade average.

Lower potential growth prospects before COVID-19. Based on pre-pandemic trends and population forecasts, global and EMDE potential growth would already have been expected to slow further in the coming decade. Global and EMDE potential growth over 2020-29 would have been 0.4 and 1.0 percentage point a year, respectively, lower than in the 2010s, falling to averages of 2.1 and 4.0 percent a year, respectively, during the 2020s.⁷ In this pre-pandemic scenario, almost half of the decline would have resulted from slowing labor supply growth amid population aging and more than one-third from weakening TFP growth.⁸ At this pace, there would have been limited progress towards narrowing the large per capita income gaps between advanced economies and EMDEs, where per capita incomes current amount to one-fifth of those in advanced economies on average (Dieppe 2020).

Downgraded expectations

Repeated global growth downgrades. The pandemic followed a decade of successive downgrades in long-term growth expectations (as measured by *Consensus Economics* forecasts) after a turning point marked by the global financial crisis

⁷This scenario assumes that investment grows at its historical average rate, working-age population evolves as envisaged by the UN *Population Projections*, and secondary and tertiary school enrollment and completion rates improve at their historical average rates (Kilic Celik, Kose, and Ohnsorge 2020).

⁸The specific assumptions underlying this scenario are detailed in Kilic Celik, Kose, and Ohnsorge (2020).

of 2008 (figure 3.3). In the decade preceding the global financial crisis (1998-2007), long-term global growth expectations had improved slightly (from 3.0 percent to 3.3 percent a year) and had been upgraded for about one-half of countries (Kose, Ohnsorge, and Sugawara, forthcoming). In the decade following the global financial crisis, however, long-term global growth expectations declined steadily, from 3.3 percent a year in 2010 to 2.4 percent a year in 2019.

Broad-based downgrades across countries, drivers. Downgrades in expectations for long-term growth between 2010 and 2019 applied to almost all countries. The decline in long-term output growth expectations over the past decade was accompanied by weakening prospects for global investment and consumption growth as well as per capita income growth. Long-term expectations of global per capita income growth declined from 2.6 percent in 2010 to 1.9 percent in 2019. Expectations for EMDE per capita income growth ten years ahead fell from 5.3 percent in 2010 to 3.2 percent in 2019, narrowing the gap between EMDE and advanced-economy per capita income growth—and hence the pace of income convergence—by 1.7 percentage points. The downgrade to long-term expectations for per capita income growth was broad-based, applying to 95 percent of EMDEs and advanced economies. Over 2010-19, long-term expectations of global investment growth declined from 4.3 percent to 2.6 percent. During the same period, long-term forecasts of global consumption growth declined by 0.4 percentage point, to 2.1 percent in 2019.⁹

Economic impact of the pandemic

The pandemic has disrupted key drivers of long-term economic growth. Unless this disruption is offset by technological and policy breakthroughs, the pandemic is likely to weaken growth prospects for the decade just begun.

⁹Long-term per capita income growth expectations were downgraded from 2.6 percent in 2010 to 1.9 percent in 2019, below their 1998 level. Forecast downgrades to per capita growth largely reflected downgrades to aggregate output growth.

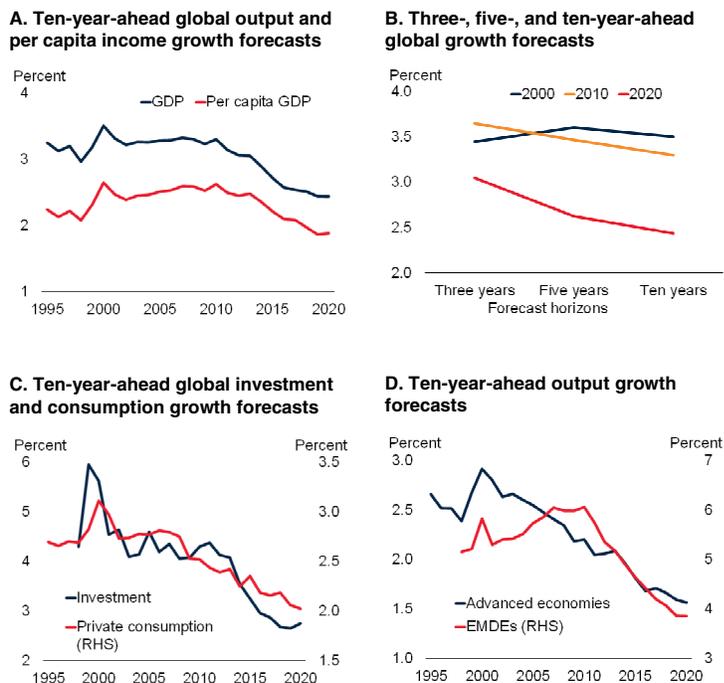
Channels. The pandemic may set back long-term growth prospects through multiple channels. The deep economic contractions across many countries and heightened uncertainties about the post-pandemic global economic landscape may discourage investment. A prolonged period of depressed capital spending would be particularly damaging to long-term growth prospects in EMDEs, coming on the heels of several years of weak investment (World Bank 2017a, 2019a). Higher unemployment is likely to erode human capital, while disruptions to education and training can obstruct human capital accumulation (World Bank 2020a). Supply chains and working arrangements in many industries may go through costly reconfigurations as companies attempt to accommodate physical distancing of employees and customers and diversify the sourcing of inputs and the destination of outputs. The latter is a process that may have already begun as a result of rising trade tensions over the past few years. There may also be long-lasting shifts in consumer behavior, including in the composition of spending. Households may also opt for increased precautionary saving in view of heightened uncertainty about health care costs and employment and income prospects (Jordà, Singh, and Taylor 2020; Mody, Ohnsorge, and Sandri 2012). Both consumer spending and business investment may suffer from sustained declines in confidence.

Already large output losses. The pandemic-induced global recession has already turned the 2010s into a lost decade for many EMDEs (box 3.1). In about 30 percent of EMDEs, per capita income losses in 2020 have reversed 10 years or more of gains; in more than half of EMDEs, at least half a decade of income gains has been reversed (figure 3.4). In LAC and MNA, income gains of at least half a decade have been reversed in more than 80 percent of countries. The number of people living in poverty, globally, is estimated to rise by more than a hundred million by 2021 compared to pre-pandemic trends, reversing several years of poverty reduction (World Bank 2020b; Lakner et al., forthcoming).

Increase in inequality. As a result of the pandemic, 60 percent of households in nearly 100

FIGURE 3.3 Evolution of growth expectations over the pre-pandemic decade

In recognition of structural growth weaknesses, forecasters have repeatedly downgraded their long-term growth forecasts over the past decade.



Sources: Consensus Economics; World Bank; World Population Prospects 2019 (database). Note: EMDEs = emerging market and developing economies. Aggregate growth calculated using weights based on GDP (panels A, B, D), or investment and private consumption (panel C) at 2010 prices and market exchange rates. Per capita GDP growth is computed as the difference between GDP growth and population growth. Results from the latest Consensus Economics surveys in each year are presented. Sample for GDP growth includes 84 economies, consisting of 33 advanced economies and 51 EMDEs. Sample for investment and private consumption includes 44 countries. A.C.D. The horizontal axis shows the years when Consensus Economics forecasts were compiled. [Click here to download data and charts.](#)

countries reported income losses in April–July 2020 and those with lower education levels were at greater risk of losing jobs; yet, only 20 percent of households reported receiving public social assistance (Sanchez-Paramo and Narayan 2020). COVID-19 is expected to increase global inequality, both within and between countries (Furceri et al. 2020). Within countries, the pandemic has hit particularly hard lower-paid workers—the informally employed, women, immigrants, and the low-skilled.¹⁰

After past epidemics, unemployment increases were larger and more persistent among lower-

¹⁰ See IMF (2020a) for a literature review.

BOX 3.1 Global economy: A lost decade ahead?

Past global recessions were associated with highly persistent output losses. The pandemic-induced global recession has already reversed a decade or more of per capita income gains in roughly 30 percent of emerging market and developing economies (EMDEs). By 2025, global output is still expected to be 5 percent below the pre-pandemic trend—a cumulative output loss that is equivalent to 36 percent of the world’s 2019 output. Policy makers need to undertake comprehensive and credible reform programs to set the stage for stronger long-term growth.

Introduction

After experiencing its worst recession in 2020 since World War II, the global economy is expected to recover in 2021 (figure B3.1.1). However, the pandemic-induced global recession has already turned the 2010s into a lost decade for many emerging market and developing economies (EMDEs; Kose and Sugawara, forthcoming). In about 30 percent of EMDEs, per capita income losses in 2020 reversed ten years or more of gains; in more than half of these economies, at least half a decade of income gains has been reversed. In Latin America and the Caribbean and in the Middle East and North Africa, income gains of at least half a decade were reversed in 80 percent of countries. As a result, the number of people living in poverty, globally, is estimated to rise by more than a hundred million by 2021 compared to pre-pandemic trends, reversing several years of poverty reduction (World Bank 2020b; Lakner et al., forthcoming).

Against this backdrop, this box examines the following questions.

- What were the consequences of past recessions for output?
- How much larger could output losses be in a downside scenario?
- How large have output losses been after previous global recessions?

Consequences of recessions: Large output losses

Past country-specific recessions were associated with persistent output losses. A wide range of factors led to these losses: depressed capacity utilization discouraged investment and led to a legacy of obsolete capacity; elevated uncertainty and expectations of weak growth depressed investment; weak investment delayed the adoption of capital-embodied productivity-enhancing

technologies; and protracted unemployment caused losses of human capital and reduced job-search activity.

Five years after the average country-specific recession, potential output was still about 6 percent below baseline in EMDEs (World Bank 2020a). Recessions in EMDEs that were accompanied by financial crises were associated with even larger potential output losses in EMDEs, of 8 percent relative to baseline after five years. The pandemic is likely to exacerbate the trend slowdown in growth of potential output and productivity that had been underway for a decade, particularly by increasing uncertainty about growth prospects, disrupting human capital accumulation, and raising concerns about the viability of global value chains (Dieppe 2020; Kilic Celik, Kose, and Ohnsorge 2020).

Looming danger: Even larger income losses

Output losses in the baseline scenario. Even after the recovery gets underway, there is expected to be a protracted period of below-trend global output, with substantial per capita income losses. In the baseline scenario, global output in 2025 would be about 5 percent below the pre-pandemic trend and there would be a cumulative output loss during 2020-25 equivalent to 36 percent of 2019 global GDP.

Output losses in risk scenario. A more protracted pandemic than expected could lead to even larger income losses (box 1.4). In a downside scenario of persistently higher caseloads and delayed vaccination, global output in 2025 would be about 8 percent below earlier expectations and there would be a cumulative loss equivalent to 54 percent of 2019 global output. Delays in vaccine deployment could disappoint financial markets and trigger a repricing of risks. Amid record-high debt, higher borrowing costs could tip many firms into bankruptcy, weakening bank balance sheets, possibly to an extent that could trigger a financial crisis. In such a severe downside scenario, global output could contract by another 0.7 percent in 2021. Cumulative output losses over 2020-25 could amount to 68 percent of 2019 output globally and 78 percent of 2019 output for EMDEs, with wide variation across EMDE regions. Small-state IDA countries

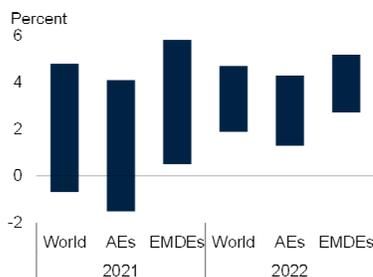
Note: This box was prepared by Naotaka Sugawara.

BOX 3.1 Global economy: A lost decade ahead? (continued)

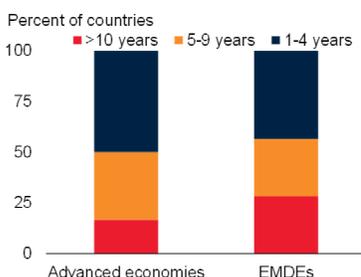
FIGURE B3.1.1 Repercussions of the COVID-19 pandemic

The pandemic has already reversed a decade of income gains in a considerable share of countries. It is expected to cause lasting output losses over the next half-decade.

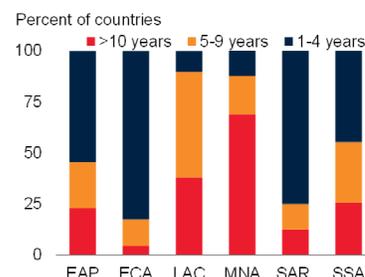
A. World Bank Group growth scenarios



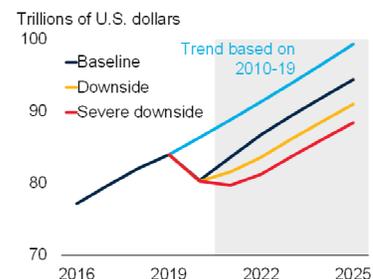
B. Share of countries, by years of per capita income gains reversed in 2020



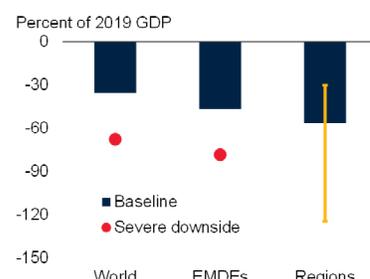
C. Share of countries, by years of per capita income gains reversed in 2020, by region



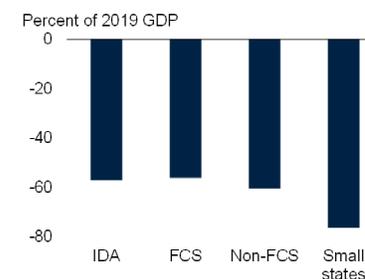
D. Global output levels



E. Global and EMDE cumulative output losses, 2020-25



F. Cumulative output losses during 2020-25, by country characteristics



Sources: Consensus Economics; World Bank.

Note: AEs = advanced economies, EMDEs = emerging market and developing economies, EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, SAR = South Asia, SSA = Sub-Saharan Africa.

A. Bars show ranges of growth scenarios for 2021 and 2022, depending on rollout of vaccines and financial stress, as discussed in box 1.4. Aggregate growth calculated using GDP at 2010 prices and market exchange rates as weights.

B.C. The share of countries with per capita income gains reversed in 2020, by the number of years indicated.

D.-F. Data are in U.S. dollars at 2010 prices and market exchange rates. Shaded area indicates forecasts. Trend is assumed to grow at the regression-estimated trend growth rate of 2010-19. For global and EMDE output, baseline output is based on the baseline estimates and forecasts in chapter 1 over 2020-22 and, for 2023-25, is assumed to grow at the rates computed with long-term consensus forecasts surveyed in October 2020. The downside and severe downside scenarios are described in the main text of the chapter and box 1.4. For regions and IDA aggregates, baseline output is assumed to grow at the baseline estimates and forecasts in chapter 1 over 2020-22 and, for 2023-25, is assumed to grow at the same rates as in the trend. Samples for IDA include 70 IDA-eligible countries, including 31 FCS, 39 non-FCS, and 23 small states.

E.F. Bars show cumulative output losses over 2020-25, based on baseline growth forecasts, and, for regions, an average of six EMDE regions is presented. Red circles are based on growth forecasts under the severe downside scenario. A vertical yellow line for regions shows the minimum-maximum range among the six regions. Cumulative losses are computed as deviations from trend in U.S. dollars, expressed as a share of GDP in 2019.

F. "FCS" refers to economies in fragile and conflict-affected situations. "IDA" refers to countries that are eligible to borrow from the International Development Association, the part of the World Bank Group that helps the world's poorest countries.

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generally face larger losses than other IDA countries or EMDEs.

An outcome to avoid: Another lost decade

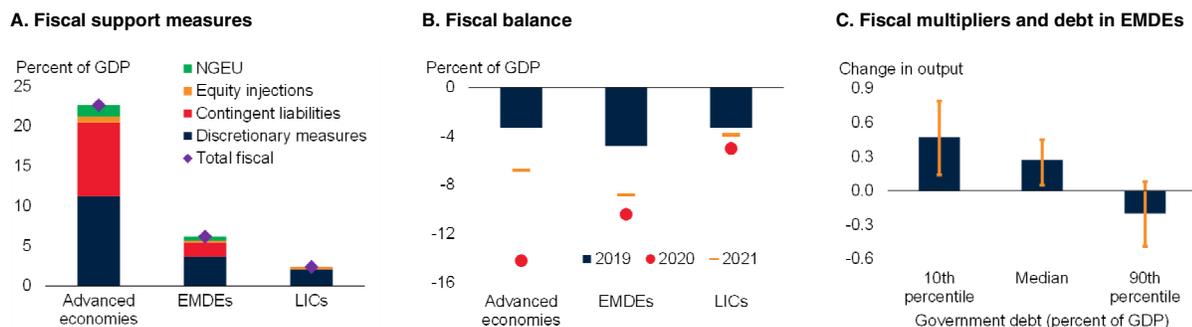
Large output losses. Like its predecessors, the pandemic-induced global recession will likely lead to highly protracted output losses. In the past, the losses from global

recessions were associated with a wide range of factors: depressed capacity utilization; discouraged investment because of uncertainty and weak growth expectations; slower productivity-enhancing technology adoption; and loss of human capital due to persistent unemployment. The pandemic is expected to exacerbate the trend slowdown in potential growth and productivity growth in EMDEs that had already been underway for a decade.

BOX 3.1 Global economy: A lost decade ahead? (continued)

FIGURE B3.1.2 Increasing fiscal risks

Fiscal support and economic contractions have raised debt to record-high levels. Unless accompanied by credible commitments to return to sustainable fiscal positions, high debt and deficits can erode the effectiveness of fiscal policy.



Sources: Huidrom et al. (2020); International Monetary Fund; Kose et al. (2020a); World Bank.

Note: EMDEs = emerging market and developing economies, LICs = low-income countries.

A. Fiscal stimulus measures are derived from the October 2020 IMF Fiscal Monitor database and include measures planned or under consideration. Aggregates are the GDP-weighted average of the total fiscal package and its components. "Discretionary measures" includes revenue and expenditure measures; "Contingent liabilities" includes loan guarantee and other quasi-fiscal measures; and "Equity injections" includes equity injections, loans, and asset purchases. "NGEU" refers to Next Generation EU funds. Sample includes 35 advanced economies, 139 EMDEs, and 23 LICs.

B. Aggregates computed with current GDP in U.S. dollars as weights.

C. Bars are the median conditional fiscal multipliers after two years. Fiscal multipliers are the cumulative change in output relative to cumulative change in government consumption to a 1-unit government consumption shock. Orange lines are the 16-84 percent confidence bands.

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Intensifying fiscal risks. Record high debt levels may also weigh on output growth and investment in many EMDEs (box 1.1). In 2019, global total debt reached a historic record of 230 percent of GDP and global government debt rose to 83 percent of GDP (Kose et al. 2020a). Like advanced economies, EMDEs have implemented considerably larger fiscal stimulus programs than in 2009, equivalent to about 6 percent of GDP in 2020 (figure B3.1.2; World Bank 2020a). While appropriate to support aggregate demand and activity and to protect vulnerable groups and sectors during the downturn, such stimulus translated into record fiscal deficits. As a result, global government debt is expected to rise by 17 percentage points of GDP, to 100 percent of GDP in 2021 (IMF 2020b, 2020c). Current low interest rate reduce debt service cost. Nevertheless, unless accompanied by credible commitments to return to sustainable fiscal positions, record-high debt and deficits can erode the effectiveness of fiscal policy (World Bank 2015a, Huidrom et al. 2020). Past episodes of rapid debt accumulation often resulted in financial crises: about one-half of the more than 500 episodes of rapid debt accumulation in EMDEs since 1970 were associated with financial crises within two years of the

debt peak, at considerable economic cost (Kose et al. 2020c, World Bank 2020c).

New risks from unconventional monetary policy. Recognizing the benefits of prompt policy action—one of the lessons of the 2009 global recession—many central banks and governments have implemented unprecedented monetary policy easing measures. While this was appropriate to cushion the recession, it may erode the hard-won distance of central banks from political pressures and fiscal authorities in EMDEs where inflation expectations tend to be more poorly anchored (Ha, Kose, and Ohnsorge 2019). If this leads to an upward reassessment of inflation expectations, it could trigger capital outflows, depreciation, and inflationary pressures.

Conclusion

The immediate policy priorities remain to save lives, protect vulnerable groups, and preserve functioning markets. However, increasingly, policy makers need to turn their attention to averting and reversing long-term economic damage from the pandemic by strengthening policies and institutions for a resilient recovery.

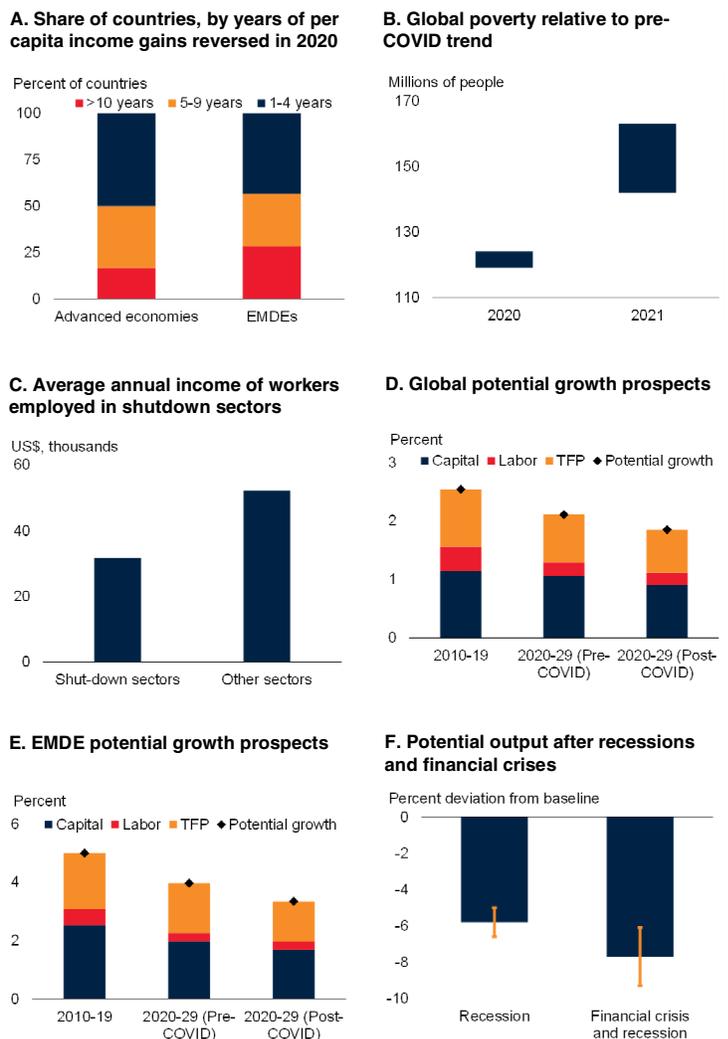
skilled workers (Ma, Rogers, and Zhou 2020). Lower-income workers tend to be less able to work from home than higher-income workers and, hence, are more likely to be exposed to the pandemic at work and are more vulnerable to job or income losses due to lockdowns (Adams-Prassl et al. 2020; Brussevich, Dabla-Norris, and Khalid 2020). The share of lower-paid workers is higher in essential services where workers are more exposed to the pandemic (Goldin and Muggah 2020). Social benefits may fail to reach middle-income households that have suffered income losses but are outside existing poverty alleviation programs (Lustig et al. 2020; World Bank 2020b, 2020d). With regard to inequality between countries, lower-income countries tend to have large informal sectors that concentrate in activities, and operate in facilities, that require close interactions and are particularly vulnerable to pandemic-related disruptions (World Bank 2020a).

Steeper slowdown in potential growth. In addition to causing losses in output *levels*, the pandemic has set back fundamental drivers of long-term output *growth*—investment, improvements in education and health, and increases in female labor force participation. Weakening fundamental drivers of growth will be reflected in lower potential growth prospects over the 2020s. Global potential growth would slow by another 0.3 percentage point a year compared with pre-pandemic trends, to 1.9 percent a year over 2020-29, below the 2.1 percent a year expected before the pandemic. The decline in EMDE potential growth over the 2020s would be 0.6 percentage point a year more than expected before the pandemic, with potential growth reaching 3.3 percent a year over 2020-29, far below its 5.0 percent average during 2010-19.

- **Investment.** Uncertainty has risen sharply as a result of COVID-19, contributing to a collapse in investment (box 3.2; Altig et al. 2020). If EMDE investment growth were to match current long-term consensus forecasts, it would slow to 2.7 percent a year, on average, over the 2020s. This would lower EMDE potential growth by 0.4 percentage point a year both directly, because of slower

FIGURE 3.4 Impact of the pandemic on long-term growth prospects

For almost one-third of EMDEs, the pandemic has wiped out a decade or more of per capita income gains. It has sharply raised poverty and lockdowns have disproportionately hit low-income workers. This adverse impact of the pandemic, along with a broader weakening of all major drivers of long-term growth, is expected to steepen the expected decline in potential growth over the next decade and cause lasting output losses.



Sources: Blundell et al. (2020); Consensus Economics; Eurostat (database); Haver Analytics; Kilic Celik, Kose, and Ohnsorge (2020); U.S. Bureau of Labor Statistics (database); Vavra (2020); World Bank; World Bank (2020a).
 Note: EMDEs = emerging market and developing economies. TFP = total factor productivity.
 A. The share of countries with per capita gains reversed in 2020, by the number of years indicated.
 B. The estimated number of poor, defined with the poverty line at \$1.90 per day, relative to the pre-COVID trend.
 C. GDP-weighted average of annual incomes of those U.S. and euro area workers employed in shutdown sectors as defined in Blundell et al. (2020) and Vavra (2020) and in other sectors.
 D. E. GDP-weighted average (at 2010 prices and exchange rates) for 82 countries, including 52 EMDEs. Potential growth estimates based on a production function approach as described in Kilic Celik, Kose, and Ohnsorge (2020). Pre-COVID prospects for the 2020s assume that investment grows at its historical average rate, working-age population and life expectancy evolve as envisaged by the UN Population Projections, and secondary and tertiary school enrollment and completion rates improve at their historical average rate. Post-COVID prospects assume that investment grows as expected by consensus forecasts and secondary attainment rates decline by 2.5 percentage points.
 F. Bars show cumulative responses of potential output four years after respective events. Vertical orange lines show 90 percent confidence intervals. Sample includes 75 EMDEs.
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growth of capital stocks, and indirectly, by dampening TFP growth, because of slower absorption of new technology embodied in new investments and a higher average age of the capital stock.¹¹

- *Education.* COVID-19 has caused the “largest disruption of education systems in history” (UN 2020). As a hypothetical example to illustrate the possible impact of this disruption, the secondary school completion rate is assumed to decrease for the next half-decade and thereafter return to its trend increase, in line with evidence from the Ebola epidemic, which lowered secondary school completion rates by 2.5 percentage points in some of the affected countries.¹² Under this assumption, the secondary school completion rate would decline to 30 percent in EMDEs, on average, over the next decade. This could raise labor force participation among the young because of their earlier entry into the labor market but would reduce potential TFP growth, on balance resulting in 0.2 percentage point lower potential growth over the 2020s compared with pre-pandemic expectations.

Impact smaller than in past recessions, for now.

Up to now, these effects of the pandemic on growth prospects are smaller than declines after past recessions, but further deterioration remains a risk (chapter 1). Potential output in EMDEs was, on average, 6 percent below baseline five years after past recessions, considerably more than suggested by the scenario considered here (3.1 percent; World Bank 2020a). In part, the difference reflects the unprecedented policy response to the pandemic-induced global recession of 2020. Prompt and large monetary and fiscal stimulus supported activity and, thus far at least, has averted a financial crisis. The stimulus as well as historic production cuts by OPEC, have helped

to partially reverse the initial oil price collapse. In contrast, among the past recessions in EMDEs that were considered in World Bank (2020a), many were accompanied by financial crises (23 percent of recessions) or oil price plunges (19 percent of recessions), which caused additional long-term damage.

Circumstances associated with downgraded prospects

Past recessions and financial crises were often followed by years of growth disappointments and repeated downgrades to long-term growth expectations.

Downgrades after the global financial crisis

Legacy of the last global recession. After the last global recession, in 2009, the global economy rebounded in 2010 but, in the following years, long-term growth forecasts were repeatedly downgraded, usually for the majority of countries, amid a string of growth disappointments. Growth outcomes fell short of earlier expectations in all years except in 2010. Long-term growth forecasts did not bottom out until the stimulus-fueled global upturn of 2017 (Kose, Ohnsorge, and Sugawara, forthcoming; World Bank 2018a). By 2019, expectations for long-term global growth were 0.8 percentage point lower, and expectations for long-term EMDE growth were 2.1 percentage point lower, than a decade earlier. The downgrades to output growth expectations were accompanied by repeated downgrades to expectations for investment and consumption growth (figure 3.3).

Downgrades after country-specific adverse events

Years of initial over-optimism and subsequent disappointments have not been limited to global recessions. Even after country-specific adverse events, long-term growth forecasts for the countries concerned had to be repeatedly downgraded.

Estimated of the effects of adverse events: Methodology. Two methods are used to examine the behavior of long-term (ten-year-ahead) consensus growth forecasts during and after

¹¹Evidence of embodied technical progress in new capital investment has been found, for example, by Boileau (2002); Cummins and Violante (2002); Doraszelski and Jaumandreu (2013); Fisher (2006); Greenwood, Hercowitz, and Krusell (1997, 2000); He and Liu (2008); Hendricks (2000); and Levine and Warusawitharana (2014).

¹²Data on the impact of past epidemics on schooling is sparse. Individual country experiences may deviate materially from this illustrative example.

disruptive events. First, in a series of estimations of a local projections model as in Jordà (2005), with an adjustment as in Teulings and Zubanov (2014), the response of ten-year-ahead growth forecasts to adverse events is quantified. While the regression uses output growth forecasts as the dependent variable, the results are robust to using per capita growth forecasts. The model is estimated over a forecast horizon of up to five years using two lags of the dependent variable. The sample includes three types of “acutely adverse” events in 86 economies: 124 recessions (defined as years of per capita output contractions), 108 financial crises (defined as in Laeven and Valencia 2020), and 76 natural disasters (defined as in Dieppe 2020; annex 3.1). These are distinct events: for example, less than one-half of financial crises were associated with recessions.

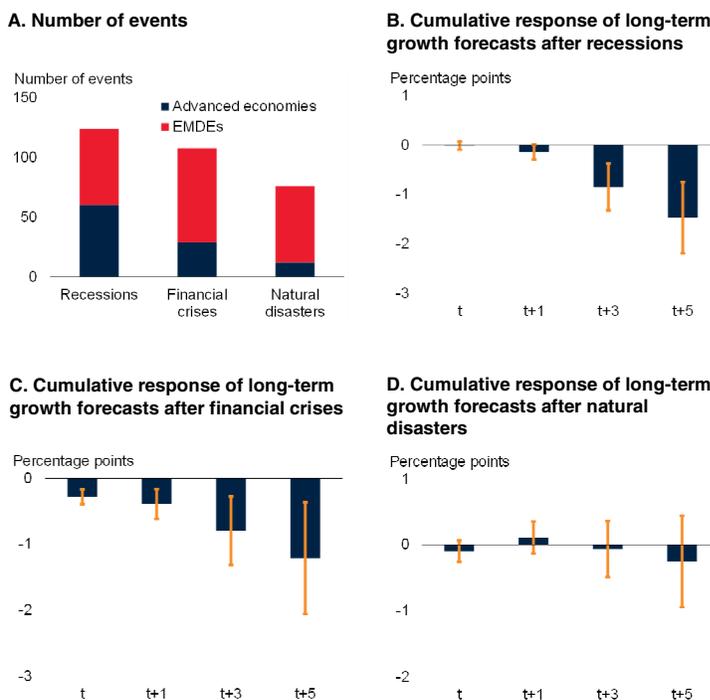
Second, in a series of event studies, the behavior of long-term growth forecasts through periods of “persistently adverse” economic developments is quantified. These periods include 63 episodes when actual growth fell short of growth forecasts made in the preceding year over three or more consecutive years (“growth disappointments”); 41 episodes of negative investment growth in three or more consecutive years (“investment slowdowns”); and 49 periods of repeatedly slowing TFP growth (“productivity slowdowns”). The length of these episodes averaged four years across these episodes. Again, these periods of persistent economic pressures are distinct from recessions: Only around one-half of the episodes of growth disappointments or productivity slowdowns shared at least one year with recessions, and less than two-thirds of investment slowdowns did.

Forecast downgrades after acutely disruptive events. After an initial lag, recessions and financial crises typically ushered in periods of repeated and deepening long-term growth forecast downgrades (figure 3.5). In contrast, after natural disasters, there were no statistically significant changes to long-term growth forecasts.

- *Recessions.* After the average recession, long-term consensus forecasts were initially stable for about a year before a series of downgrades set in. These downgrades began to be

FIGURE 3.5 Long-term growth prospects after country-specific adverse events

Long-term growth forecasts for affected countries were downgraded multiple times after recessions and financial crises, but not after natural disasters.



Sources: Consensus Economics; Dieppe (2020); EM-DAT (database); Laeven and Valencia (2020); World Bank.

Note: EMDEs = emerging market and developing economies.

A. The number of acutely adverse events over 1990-2020 in 86 countries where long-term Consensus Economics growth forecasts are available. The number of recessions is represented by the number of peak years identified during the sample period. For the definition of events and identification methodology, refer to annex 3.1.

B.-D. Bars are coefficient estimates for (B) a dummy on country-specific recessions, identified in a Harding-Pagan algorithm; (C) financial crises, as defined in Laeven and Valencia (2020); and (D) natural disasters, as taken from EM-DAT, in local projection estimations of ten-year-ahead growth forecasts during 1990-2020. Year t indicates the year of the business cycle peak (B), the financial crisis (C), or the natural disaster (D). Vertical orange lines show 90 percent confidence intervals. Samples include 55 countries (B), 52 countries (C), and 57 countries (D).

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statistically significant from the second year following the recession and only bottomed out around five years after the recessions. Five years after the recession, the long-term growth forecast in countries with recessions was 1.5 percentage points, on average, lower than in countries without recessions.

- *Financial crises.* In contrast to recessions, financial crises were immediately followed by statistically significant forecast downgrades, with forecasts in countries with crises 0.3 percentage point lower than in those without

BOX 3.2 Impact of COVID-19 on investment: Deep, persistent, and broad based

Investment in emerging market and developing economies (EMDEs) collapsed in 2020, following a decade of persistent weakness. It is expected to expand again in 2021, but not sufficiently to reverse the decline in 2020. Based on the experience of past epidemics, investment is likely to remain weak for several years following the COVID-19 pandemic, but it is possible that renewed investment in digital technologies will spur productivity gains in some sectors. A supportive policy environment will be key to laying the groundwork for an investment rebound in EMDEs.

Introduction

The plunge in global economic activity during the COVID-19 pandemic has been accompanied by an even larger collapse in investment. The investment contraction in 2020 was deeper in advanced economies than in emerging market and developing economies (EMDEs) but the investment downturn in EMDEs was considerably sharper than during the global financial crisis.

Against this backdrop, this box addresses three questions about investment in EMDEs:

- How has the pandemic impacted investment?
- What are the prospects for it?
- What will be the long-term effects of the pandemic?

Investment before and during the pandemic

Pre-pandemic trends. As the pandemic began, the world had already experienced a decade-long slowdown in investment growth (figure B3.2.1). From a peak of 10.8 percent in 2010, investment growth in EMDEs had fallen to 2.5 percent in 2019, complicating progress toward the Sustainable Development Goals (SDGs) related to infrastructure (Vorisek and Yu 2020).^a Periods of weakness in global commodity prices and associated adverse terms-of-trade developments, policy uncertainty, and rising corporate leverage had all curtailed investment over this period (Kose et al. 2017; World Bank 2017a, 2019a). The sluggishness of investment growth was broad-based, with more than half of EMDEs experiencing investment growth below their 2000-19 average in every year since 2012.

Deep investment collapse during the pandemic. Investment plunged particularly sharply in EMDEs excluding China as the pandemic took hold. In the full year 2020, investment in EMDEs shrank by an estimated 4.5 percent, and by a much deeper 10.6 percent if

excluding China. This contraction for EMDEs excluding China was more than 4 percentage points deeper than during the 2009 global recession, despite financial conditions being substantially easier in 2020. The contraction in 2020 was sharpest in Latin America and the Caribbean and South Asia, where GDP also declined the most. The decline in investment in 2020 was smallest in East Asia, where activity was supported by large fiscal stimulus programs in China and Vietnam and also resilient foreign direct investment (FDI) inflows to Vietnam.

Investment prospects

Subdued investment rebound, by historic standards. Even with the pandemic expected to recede in 2021, the short-term rebound in EMDE investment is projected to be much weaker in 2021, at 5.7 percent, than the rebound in 2010 (10.8 percent) following the global financial crisis. For most EMDEs, investment growth during the forecast period will remain at or below average rates during the 2010s (figure B3.2.2). These growth rates will be insufficient to reverse the investment losses during 2020. After the substantial fiscal stimulus of 2020, the transition to tighter fiscal policy in EMDEs in order to retain creditworthiness and contain debt service costs will constrain public investment projects. Private investment will be limited by uncertainty about the post-pandemic economic landscape and the viability of existing production structures. Overall investment growth in EMDEs is projected to soften to 4.3 percent in 2022. China is expected to contribute half or more of aggregate EMDE investment growth in 2021 and 2022. Without China, investment in EMDEs is projected to be still below the pre-pandemic level by 2022.

Long-term effects of the pandemic

Lasting investment losses. History suggests that the adverse effects on investment of the pandemic will linger. After epidemics in the past, losses to investment have been deeper and longer lasting than GDP losses, perhaps because of lasting effects of uncertainty and risk aversion on investment (figure B3.2.3). These same mechanisms, along with sharply lower corporate profits, can be expected

Note: This box was prepared by Naotaka Sugawara and Dana Vorisek.

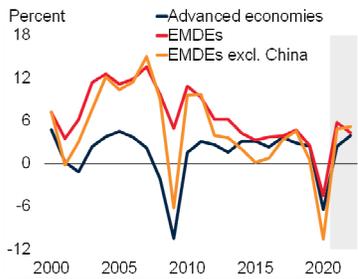
^a Investment is defined as gross fixed capital formation.

BOX 3.2 Impact of COVID-19 on investment: Deep, persistent, and broad based (continued)

FIGURE B3.2.1 Investment trends

Following a decade-long, broad-based declining trend in investment growth in EMDEs prior to the COVID-19 pandemic, investment contracted sharply in 2020. The collapse in investment was much sharper in large EMDEs (excluding China) than in large advanced economies.

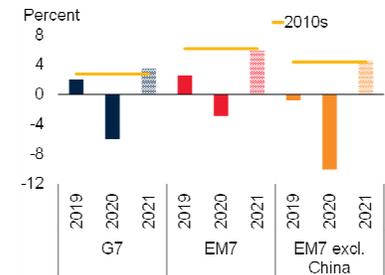
A. Investment growth



B. Share of EMDEs with investment growth below 2000-19 average



C. Investment growth, by country groups



Sources: Haver Analytics; World Bank.

Note: EMDEs = emerging market and developing economies. Data for 2020 are estimates and for 2021-22 are forecasts (shaded bars and areas). Investment refers to gross fixed capital formation. Aggregate growth is calculated with investment at 2010 prices and market exchange rates as weights.

A.B. Sample includes 97 countries, consisting of 34 advanced economies and 63 EMDEs.

B. Figure shows share of EMDEs with investment growth below their own average during 2000-19.

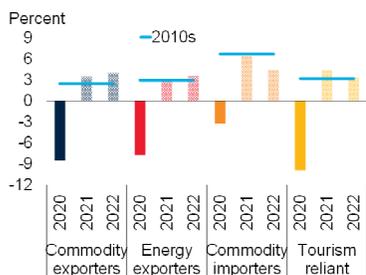
C. "G7" includes Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States. "EM7" refers to the seven largest EMDEs and includes Brazil, China, India, Indonesia, Mexico, the Russian Federation, and Turkey.

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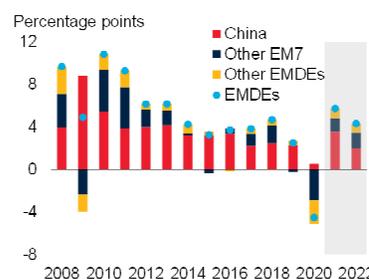
FIGURE B3.2.2 Investment prospects

The speed of recovery in investment will vary by EMDE group, but is expected to be weak overall. Excluding China, investment in EMDEs is projected to remain below pre-pandemic levels through 2022.

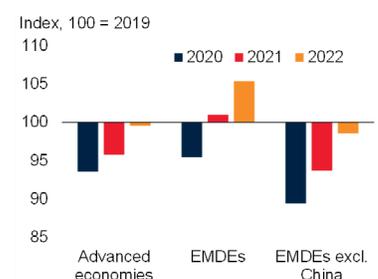
A. Investment growth forecasts by EMDE group



B. Contributions to EMDE investment growth



C. Investment levels



Sources: Haver Analytics; World Bank.

Note: EMDEs = emerging market and developing economies. Data for 2020 are estimates and for 2021-22 are forecasts (shaded bars or areas). Investment refers to gross fixed capital formation. Aggregate growth is calculated with investment at 2010 prices and market exchange rates as weights.

A. Sample includes 40 EMDE commodity exporters, 15 EMDE energy exporters, 23 EMDE commodity importers, and 19 tourism-reliant EMDEs. Tourism-reliant EMDEs are defined as those with above-average international tourism expenditures as a share of GDP.

B. "EM7" refers to the seven largest EMDEs and includes Brazil, China, India, Indonesia, Mexico, the Russian Federation, and Turkey. "Other EMDEs" includes 56 economies.

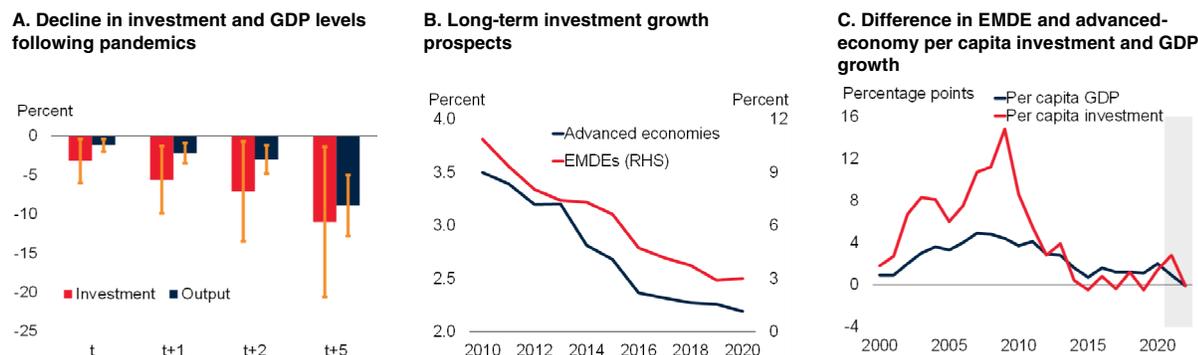
C. Sample includes 34 advanced economies and 63 EMDEs.

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BOX 3.2 Impact of COVID-19 on investment: Deep, persistent, and broad based (continued)

FIGURE B3.2.3 Long-term impact of the pandemic on investment

The decline in investment after pandemics tends to be deep and long lasting. The pandemic could lead to a further decline in long-term investment growth, which has already been on a downward trajectory, and will also likely hinder EMDEs' per capita income convergence with advanced economies.



Sources: Consensus Economics; Haver Analytics; World Bank (2020a); World Bank.

Note: EMDEs = emerging market and developing economies. Investment refers to gross fixed capital formation.

A. Bars show the cumulative estimated impacts of the four most severe biological epidemics on investment and output levels relative to non-affected EMDEs. Orange lines display the range of the estimates with 90th percentile significance. The four epidemics considered are SARS (2002-03), MERS (2012), Ebola (2014-15), and Zika (2015-16). Swine flu (2009), which coincided with the 2008-09 global financial crisis, is excluded to limit possible confounding effects. Sample includes 116 economies, including 30 advanced economies and 86 EMDEs.

B. Long-term prospects refer to ten-year-ahead forecasts. The horizontal axis shows the year when long-term forecasts are surveyed. Sample includes 24 advanced economies and 20 EMDEs.

C. Data for 2020 are estimates and for 2021-22 are forecasts. Sample for per capita investment includes 97 countries, consisting of 34 advanced economies and 63 EMDEs.

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to constrain investment during and after the COVID-19 pandemic (Caballero and Simsek 2020; Stiglitz 2020).

Weak investment, a source of slowing potential growth.

The prospect of weak investment in EMDEs during the medium to long term, after the severe contraction in 2020, raises concerns about the effects on EMDEs' potential growth—the growth rate EMDEs can sustain at full employment and capacity. The sustained weakening of investment growth during the 2010s, together with declining total factor productivity growth, has already contributed to a slowdown in labor productivity growth in EMDEs and, as a result, limited EMDEs' convergence toward per capita income levels in advanced economies (Dieppe 2020).

Upside risk in some sectors. On the other hand, a productivity-enhancing investment surge triggered by the pandemic remains a possibility. This boost could materialize through renewed investment in digital technologies in sectors such as manufacturing, finance, and

education, or through the onshoring of production of some essential products (Dieppe 2020). The pandemic also creates opportunities to shift infrastructure investment toward more resilient and environmentally sustainable options, in turn raising productivity and supporting progress toward the SDGs in the long term (Hallegatte and Hammer 2020).

Conclusion

The adverse effect of the COVID-19 pandemic on investment in EMDEs, already large, could extend for a prolonged period. Given the importance of investment in supporting productivity and per capita income gains, it is important that impediments to productive investment, including those related to financing, be reduced. For EMDEs, boosting public investment can have particularly large benefits due to high multipliers (Izquierdo et al. 2020). At the same time, improving business climates and reducing policy uncertainty is key in supporting private investment.

crises. This difference widened over time, to 1.2 percentage points after five years.

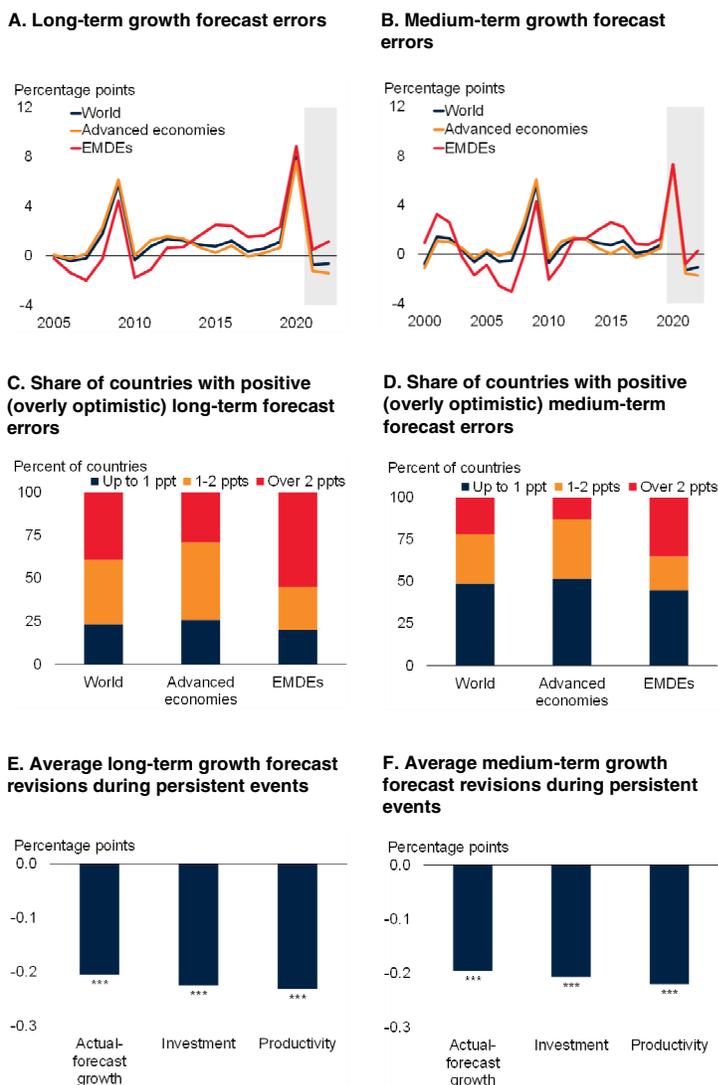
- Natural disasters.** Natural disasters, in contrast, were not followed by significant long-term growth forecast downgrades, either initially or later. These episodes tended to be short-lived and subsequent reconstruction efforts typically triggered a growth rebound that averted long-term economic damage (Dieppe, Kilic Celik, and Okou 2020).

Forecast downgrades after persistently unfavorable growth outcomes. Given that forecasts have an element of extrapolation from recent experience, the lagged but repeated forecast downgrades after past recessions and financial crises may in part be seen as a response to persistent growth disappointments following these episodes. Since 1998, ten-year-ahead global growth forecasts have been disappointed by actual growth outcomes in every year except 2010, when the global economy rebounded from the 2009 global recession. For all countries except China, long-term and medium-term forecast errors showed over-optimism over this period; for more than half of EMDEs, long-term growth forecasts were overly optimistic by 2 percentage points a year or more, on average (figure 3.6).

- Output growth disappointments.** In seven out of the ten years following the global recession of 2009, global output growth fell short of expectations formed in the preceding year, and, for EMDEs, this was true for eight out of the ten years. Repeated output growth disappointments were typically accompanied by significant forecast downgrades that tended to be spread evenly throughout the period. During a spell of growth disappointments, long-term growth forecasts were downgraded by a statistically significant 0.2 percentage point per year, on average. Over the average length of a spell of growth disappointments (3.8 years), this amounted to a cumulative 0.8 percentage point downgrade. Consistent with this, the repeated global growth disappointments after 2010 were accompanied by long-term global growth forecast downgrades in every year.

FIGURE 3.6 Growth forecast errors

Global long-term growth forecasts have been overly optimistic in every year since 1998 except 2010, when the global economy rebounded from the global financial crisis. Over-optimism in five-year-ahead and ten-year-ahead forecasts extended to all countries except China. Extended spells of economic weakness were accompanied by significant medium- and long-term growth forecast downgrades.



Sources: Consensus Economics; Dieppe (2020); World Bank.
 Note: EMDEs = emerging market and developing economies.
 A.B. Difference between ten-year-ahead (A) or five-year-ahead (B) growth forecasts and actual growth outcomes. A positive number indicates an overly optimistic forecast. In shaded areas, growth forecasts in chapter 1 are used to compute the differences.
 C.D. Share of countries by the size of average forecast errors computed with available data up to 2020. Positive forecast errors indicate growth forecasts made 10 years (C) or 5 years (D) ago are higher than realized growth.
 E.F. Average changes in long-term (ten-year-ahead, E) and medium-term (five-year-ahead, F) growth forecasts during persistent spells of unfavorable events. *** denotes that changes during such events are statistically significantly different from zero.
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- *Investment slowdowns.* Global investment growth slowed in seven out of the ten years following the global recession of 2009. Spells of multi-year investment slowdowns were accompanied by statistically significant downgrades of long-term output growth forecasts of about 0.2 percentage point a year, on average. Over the average length of a spell of consecutive investment slowdowns (3.7 years), this amounted to a cumulative 0.8 percentage point downgrade.
- *Productivity slowdowns.* In most years since the global recession of 2009, global productivity growth slowed. Spells of multi-year TFP growth slowdowns were accompanied by somewhat larger, and statistically significant, downgrades of long-term output growth forecasts of about 0.2 percentage point a year, on average. Over the average length of a spell of consecutive productivity slowdowns (3.9 years), this amounted to a cumulative 0.9 percentage point downgrade.

Hysteresis, super-hysteresis, and structural change. The successive downgrades of long-term growth forecasts documented in these exercises could stem from three sources—with differing policy implications.

- *Hysteresis.* Acute adverse events such as crises or recessions could cause hysteresis—lasting damage to output levels, in part because human capital has been depleted by long-term unemployment or capital stocks rendered outdated for lack of investment. The possibility of hysteresis implies a need for proactive macroeconomic policy stimulus to dampen the recession.
- *Super-hysteresis.* Acute adverse events could cause super-hysteresis—not only lasting damage to output levels, but also to output growth because the fundamental drivers of productivity and output growth have been dampened (Cerra, Fatas, and Saxena 2020). Like hysteresis, super-hysteresis calls for prompt macroeconomic policy stimulus, bolstered by growth-enhancing reforms.

- *Structural change.* Acute adverse events could coincide with structural change that causes long periods of slowing TFP growth, as has been hypothesized in the case of the global financial crisis more than a decade ago (Fernald et al. 2017). Such structural change calls for a focus on long-term growth-enhancing reforms.

The evidence presented here suggests that elements of all three forces have been at work. The decline in long-term forecasts of output growth, not just output levels, documented above are consistent with super-hysteresis. In addition, since there is limited overlap between recessions and persistent productivity slowdowns, the results above also suggest that structural change may have played a role in repeated forecast downgrades.

Reform options

To prevent another decade of initial growth over-optimism followed by disappointments, comprehensive reforms are needed to boost long-term growth. These include reforms to improve governance and business climates, encourage productivity-enhancing investment in human and physical capital, foster economic flexibility, and diversify economies in which activity is concentrated in few sectors.

The cost of inaction: Permanent output losses. Absent a sustained reform push to raise growth, the global economy, advanced economies, and EMDEs are likely to see permanent income and output losses relative to pre-pandemic expectations (box 3.1; figure 3.7). A major reform push may avert such an outcome and help spur a job-rich recovery that benefits all. Such reforms could increase, and improve the quality of, human and physical capital, and improve the efficiency of their use, for example by strengthening governance and business climates (annex 3.2). Although this section examines each of these reforms in isolation, based on the standard conceptual framework of a production function, there can be important interactions between reforms that deserve careful consideration in the design of a comprehensive reform package (annex 3.2).

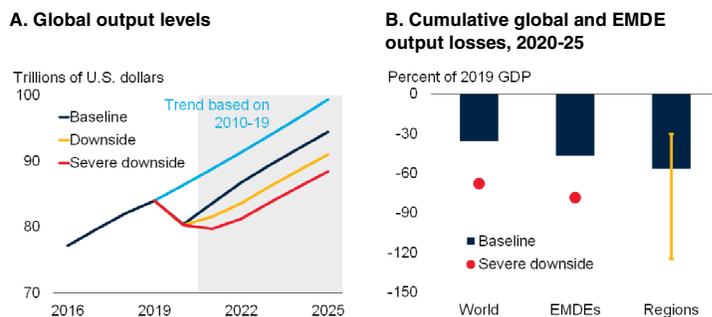
Differences in country priorities. The most pressing policy priority in the short-run in most countries is likely to be rapid and widespread distribution of COVID-19 vaccines (box 1.4). However, beyond this immediate policy priority, more action is needed to promote a return to robust long-term growth. This section offers a broad menu of policy options, but priorities will differ among individual countries depending on their country characteristics. At the country level, some of the most pressing reforms are long overdue; other long-standing reform needs have been cast into a new, more urgent light by the pandemic; and yet other reforms are needed to address new challenges raised by the pandemic.

- *Where fiscal positions are stretched*, the most urgent and most cost-effective reforms need to be prioritized. Areas that need to be shielded from fiscal consolidation to ensure future growth need to be identified. In countries with long-standing challenges in raising government revenues, domestic resource mobilization could be prioritized (Kose et al. 2020b).
- *Where weak infrastructure service provision*, such as in electricity or telecommunications, as well as weak fiscal positions weigh on the recovery, reforms to foster competition or efficiency can be priorities (Rozenberg and Fay 2019).¹³
- *Where institutional weaknesses* stand in the way of limiting the economic damage from the pandemic, reforms to improve governance, strengthen government efficiency, and build trust may be priorities (Loayza et al. 2020).
- *Where economies are heavily reliant on individual sectors*—be it tourism or production or export of commodities—diversification programs can be advanced (Gill et al. 2014).
- *Where the education of today’s cohort of students has been disrupted* by a lack of remote learning, digital infrastructure investment and

¹³ Some countries have already started on this path, such as with fuel subsidy reform (Nigeria), energy reform (South Africa), and liberalization of the telecom sector (Ethiopia).

FIGURE 3.7 Output losses

Steep recessions during the pandemic and a subsequent potential growth slowdown are expected to cause lasting output losses.



Sources: Consensus Economics, World Bank.

Note: EMDEs = emerging market and developing economies.

A. Data are in U.S. dollars at 2010 prices and market exchange rates. Shaded area indicates forecasts. Trend is assumed to grow at the regression-estimated trend growth rate of 2010-19. Baseline output is based on the baseline estimates and forecasts in chapter 1 over 2020-22 and, for 2023-25, is assumed to grow at the rates computed with long-term consensus forecasts surveyed in October 2020. The downside and severe downside scenarios are described in boxes 1.4 and 3.1.

B. Data are in U.S. dollars at 2010 prices and market exchange rates. Bars show cumulative output losses over 2020-25, based on baseline growth forecasts, and, for regions, an average of six EMDE regions is presented. Red circles are based on growth forecasts under the severe downside scenario. A vertical yellow line for regions shows the minimum-maximum range among the six regions. Cumulative losses are computed as deviations from trend in U.S. dollars, expressed as a share of GDP in 2019. For global and EMDE output, baseline output is based on the baseline estimates and forecasts in chapter 1 over 2020-22 and, for 2023-25, is assumed to grow at the rates computed with long-term consensus forecasts surveyed in October 2020. For regions, baseline output is assumed to grow at the baseline estimates and forecasts in chapter 1 over 2020-22 and, for 2023-25, is assumed to grow at the same rates as in the trend. Trend is assumed to grow at the regression-estimated trend growth rate of 2010-19. The severe downside scenarios are described in boxes 1.4 and 3.1.

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redoubled efforts to improve learning outcomes, especially for the most affected groups of students, can be prioritized (Azevedo et al. 2020).¹⁴

- *Economies particularly at risk of damage from climate change*, especially small islands, may need to prevent climate-related damage compounding pandemic-related damage by prioritizing investment for greater climate resilience (Rozenberg and Fay 2019).
- *Fragile states* may be at particular risk because of severe institutional capacity constraints and lack of fiscal resources; they may require enhanced international support in the recovery as well as in a return to peace, in particular by addressing grievances around

¹⁴ Some governments have already aimed to facilitate network expansion and reduce congestion, such as by adopting new technologies (Google’s Loon network in Kenya and Mozambique) and temporary releasing additional spectrum to boost internet efficiency (Ghana, South Africa, and Zambia).

exclusion from power, opportunities, and security (World Bank 2018b).

Human capital accumulation

The pandemic has disrupted education for 90 percent of the world's children (World Bank 2020e). In quality-adjusted terms, the pandemic could lower average years of schooling by 0.6 years and raise the share of lower-secondary school children below minimum proficiency levels by one-quarter (Azevedo et al. 2020). The pandemic may roll back years of improvements in human capital—and even before the pandemic, the average newborn could only be expected to achieve 56 percent of her potential productivity as a future worker (World Bank 2020d). By 2040, about one-third of the world's workforce will be composed of individuals whose schooling was disrupted by the pandemic and, on average, human capital of the global workforce would be almost 1 Human Capital Index (HCI) point lower—equivalent to 1 percent below-potential productivity—than in the absence of the pandemic (World Bank 2020d). In addition, the global unemployment rate increased by about 2 percentage points in the first half of 2020 alone. The longer unemployment remains high, the more pronounced will be associated human capital losses. Finally, while EMDEs' younger populations may be somewhat less vulnerable to the pandemic than older populations in advanced economies, the pandemic has revealed the severe lack of capacity of EMDEs' health care systems (World Bank 2020a).

Policy measures to enhance education. The school closures caused by the pandemic have heightened educational inequalities both between countries that offer remote learning and those that cannot, and within countries between children with private tutors and remote learning, and those without (Vegas and Winthrop 2020). The learning losses associated with the shift to remote learning have led to a renewed appreciation of the value of public schooling (Reimers and Schleicher 2020). The short-term challenge is a safe re-opening of schools and keeping students, especially girls because they are at greater risk of dropout, in school while the long-term challenge

is to reverse some of the pandemic-related losses in learning outcomes.

Long-term improvements start with better measurement of education outcomes to help target interventions more effectively (figure 3.8; World Bank 2019b). School meals programs and early childhood interventions can help make students better prepared for learning. To strengthen their effectiveness, teachers can be supported with coaching, motivated with incentives, and provided with appropriate technologies. Community and parent support will be critical to improve learning. Retraining programs for workers in the hardest-hit sectors can facilitate their re-employment.

Policies to improve health. The pandemic has revealed the capacity constraints of health care systems in many countries. In the short run, health systems need to be equipped to contain the pandemic. Needs include enhanced data gathering, pandemic surveillance, encouraging non-pharmaceutical interventions such as mask wearing and handwashing, and preparedness to deploy vaccines as widely and quickly as possible. COVID-19 has provided a reminder that fighting a pandemic is considerably more costly than prevention measures, such as enhanced food safety standards to prevent the spread of zoonotic diseases (Schwab 2020; van Nieuwkoop 2020).

Looking ahead, while a fully equipped health care system may exceed the resources of many countries, some lower-cost policy interventions can materially improve public health. These include child vaccination programs and services targeted at women and children during pregnancy and around child birth, as well as nutrition programs for groups at risk of malnutrition (Bhutta et al. 2013; World Bank 2015b). These need to be complemented with policies such as improving access to clean water and sanitation, and stronger safety nets that allow vulnerable populations to access health services (Galasso et al. 2017).

Infrastructure investment

The pandemic has dealt a blow to investment. In the second quarter of 2020, investment contracted by 11.0 percent, on average, in advanced

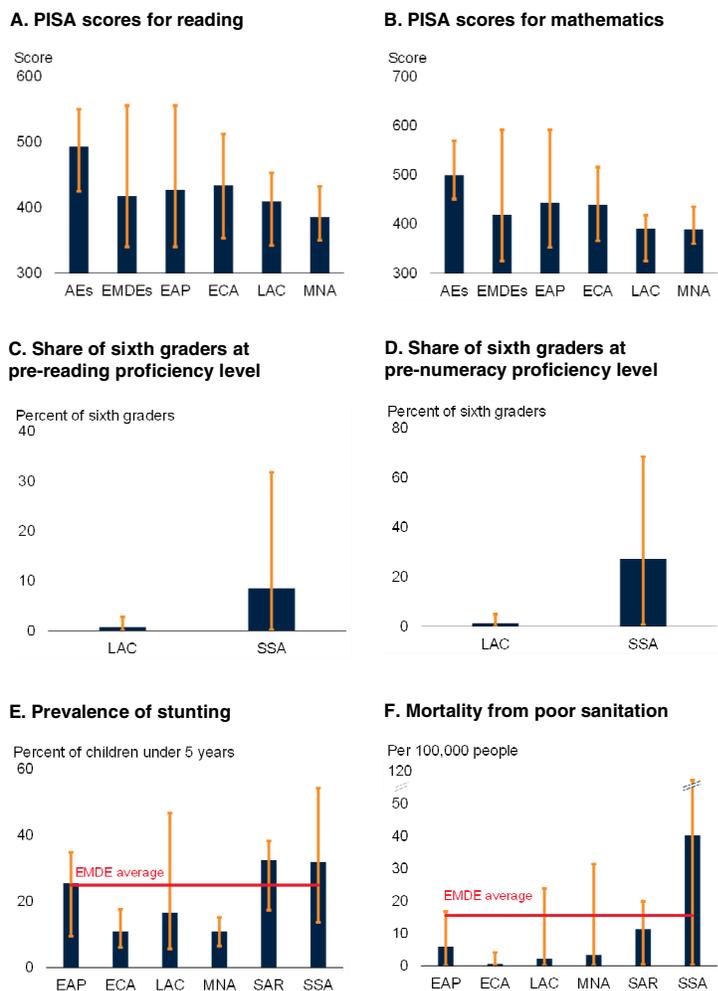
economies and by 6.8 percent in EMDEs. A rebound is held back by uncertainty about the course of the pandemic and the post-pandemic economic landscape. Meanwhile, in some countries, the pandemic may have shifted investment priorities towards digital infrastructure from other forms of investment.

Policies to improve infrastructure. The fiscal stimulus packages implemented to support economies through the pandemic have provided an opportunity to help fill infrastructure gaps. Fiscally constrained governments have additional options for closing infrastructure gaps: improving the quality of infrastructure spending within existing spending envelopes, choosing a cost-effective sequencing of infrastructure investment by focusing on the projects with the highest economic returns and speeding up preparation for priority projects in the pipeline, planning immediately for new projects aligned with climate-resilient and equitable priorities, and implementing reforms that ensure more efficient use and provision of infrastructure services (Rozenberg and Fay 2019).

- Quality.** Measures to improve the quality of infrastructure spending may include a renewed emphasis on funding maintenance and operations. For water, sanitation, and transport infrastructure, better maintenance alone could halve life-cycle cost (Rozenberg and Fay 2019).
- Sequencing.** Infrastructure investment can be sequenced to prioritize initially lower-cost solutions to address basic needs before upgrading to costlier and more comprehensive solutions (Straub 2008). In the case of water-related infrastructure, for example, septic tanks can provide basic water and sanitation services before a fully managed sewage and sanitation system is rolled out (figure 3.9). For power infrastructure, basic access to power for small devices and lighting can be rolled out widely before rolling out access to power for large consumer appliances.
- Efficiency.** Complementary reforms can improve the efficiency of use and provision of infrastructure services. In the power sector, for

FIGURE 3.8 Education and health outcomes

Many EMDEs have ample room to improve learning outcomes and public health.



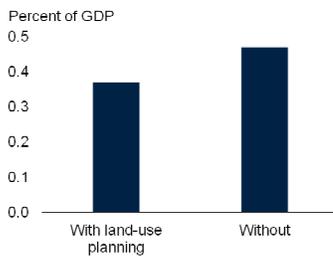
Source: World Bank.
 Note: AEs = advanced economies, EMDEs = emerging market and developing economies, EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, SAR = South Asia, SSA = Sub-Saharan Africa.
 A.B. PISA scores in reading and mathematics for 15-year-olds in 35 advanced economies and 44 EMDEs (7 in EAP, 18 in ECA, 11 in LAC, and 8 in MNA). Bars show unweighted averages and vertical orange lines show the minimum-maximum ranges. Data are for 2018.
 C.D. Percent sixth grade students in 15 EMDEs in LAC and 10 EMDEs in SSA with the lowest (pre-reading) reading proficiency level and lowest (pre-numeracy) mathematics proficiency level. Data is only available for EMDEs in LAC and SSA. Bars show unweighted averages and vertical orange lines show the minimum-maximum ranges. Data are for 2013 or 2014.
 E. Percent of children aged under 5 years who are stunted, that is, whose height-for-age is more than two standard deviations below the median for the international reference population aged 0-59 months. Unweighted averages for 68 EMDEs, with vertical orange lines showing the minimum-maximum ranges. Data are for 2015-19.
 F. Mortality rate attributed to unsafe water, unsafe sanitation, and lack of hygiene (per 100,000 population) in 147 EMDEs. Bars show unweighted averages and vertical orange lines show the minimum-maximum ranges. Data are for 2016.
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example, smart meters can incentivize more efficient power use. In the transport sector, an integrated planning process for land use and transport can cut transport infrastructure

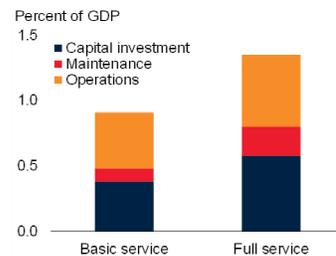
FIGURE 3.9 Infrastructure investment

Infrastructure investment costs can be lowered by complementary policies (such as land-use planning in the context of urban transport infrastructure) or by appropriately sequencing investment (such as providing basic infrastructure before rolling out more ambitious infrastructure). Fiscal stimulus can be reoriented towards less carbon-intensive purposes, and digital infrastructure can be expanded.

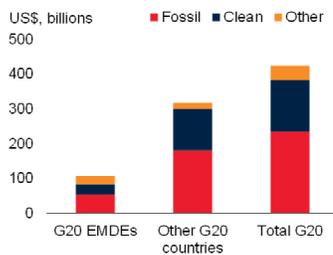
A. Average annual cost of investment in urban transport infrastructure



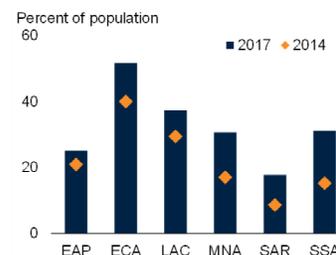
B. Annual average cost of capital, maintenance, and operation in water and sanitation



C. Amount of support committed toward energy initiatives in 2020



D. People making or receiving digital payments in the past year



Sources: Energy Policy Tracker (database); Rozenberg and Fay (2019); World Bank. Note: EMDEs = emerging market and developing economies, EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, SAR = South Asia, SSA = Sub-Saharan Africa.

- A. Estimates for low-carbon investment in urban infrastructure based on scenario for 2015-30.
 B. Capital, operations, and maintenance costs are for both new and existing users. They represent the amount needed both to expand service and to continue serving existing users. "Full service" is one in which every new household served is provided with safely managed water and sanitation; "Basic service" rolls out universal access to basic services before upgrading to safely managed services. Mid-point of estimate ranges for 2015-30.
 C. Figure shows the fiscal support committed toward fossil fuel-based, clean fuel-based and other energy initiatives in G20 countries. Data as of November 18, 2020.
 D. Number of people having made or received digital payments in the past year, in percent of the population aged 15 years or older. Medians across countries in each region and year.

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investment cost by one-quarter. This process would prioritize rail and bus transport over private road transport, incentivize rail use for passenger and freight transport, plan land use to increase density (and thus reduce mobility needs), and carefully prioritize the financing of rural roads.

Green investment. To date, fiscal stimulus in G20 countries to combat the pandemic has benefited both carbon-intensive and environmentally friendlier activities (VFDI 2020). As fiscal support

continues, a tilt towards longer-term climate and environmental goals can be considered. In addition to boosting short-term growth, investment in green infrastructure and fostering the widespread adoption of environmentally sustainable technologies can support faster growth in the long run while contributing to climate change mitigation.¹⁵ Recovery packages that target environmental and climate-related spending will increase EMDEs' resilience to future climate-related shocks and reduce risks, and can have large fiscal multiplier effects when such spending is both labor intensive and productivity enhancing (Agrawala, Dussaux, and Monti 2020; IEA 2020). Nonetheless, the distributional effects of green policies need to be carefully managed—particularly job losses in traditional energy industries—as do the trade-offs between policies that achieve short-term goals at the expense of progress towards longer-term ones (World Bank 2013a). Beyond climate change, environmental protection policies help improve long-run health and growth outcomes (IMF 2020a).

Investment in digital infrastructure. The pandemic has pushed firms to increasingly rely on digital solutions (Apedoh-Amah et al. 2020). Education and health care systems have expanded their reliance on online learning or consultations.¹⁶ The use of online payment

¹⁵ Rozenberg and Fay (2019) show, for example, that mini-grid and off-grid electricity solutions are both environmentally sustainable technologies and cost-effective for moving toward sustainable development goals. For the short term, OECD (2020) and IMF (2020a) argue that well-designed recovery packages can promote a strong, equitable, and environmentally friendly recovery. Particularly effective policies in the short term include clean physical infrastructure, efficiency retrofits, investment in education and training, natural capital investment, and clean R&D; in lower- and middle-income countries, rural support spending can be effective (Hepburn et al. 2020). Energy efficiency, nature conservation, clean energy options, and the sustainability of transport are also priority areas for stimulus investments (Hallegatte and Hammer 2020). However, Strand and Toman (2010) caution that most "green stimulus" programs with large short-run employment and environmental effects may have less significant positive effects for long-run growth, and programs that yield larger employment effects may lead to more employment gains for largely lower-skilled workers.

¹⁶ For experience with online teaching in Australia, see Scull et al. (2020); in Brunei and Pakistan, see Qazi et al. (2020); in China, see Sun, Tang, and Zhuo (2020); in Georgia, see Basilaia and Kvavadze (2020); in the Netherlands, see van der Spoel et al. (2020); and in Oman, see Mohammed et al. (2020). For developments in online medical care, see Hollander and Carr (2020) and Taylor, Fitzsimmons-Craft, and Graham (2020).

systems and other forms of cashless payments as well as online commerce has expanded rapidly (Barrero, Bloom, and Davis 2020; Kenney and Zysman 2020). Online food shopping has expanded, which in some cases has benefited smaller farms over agribusiness (Chang and Meyerhoefer 2020). In some countries, government assistance payments have shifted to mobile delivery (Davidovic et al. 2020; Gelb and Mukherjee 2020).

Wider availability of digital services can mitigate the impact of mobility restrictions and accelerate access to government assistance and other financial services).¹⁷ It can facilitate job search, accelerate the discovery of new job opportunities, and increase employment (El-Mallakh 2020; Hjort and Poulsen 2019; Viollaz and Winkler 2020). It can reduce uncertainty and information asymmetries in product markets (World Bank 2019c). It can support education and learning, including where learning facilities are currently limited (Aker, Ksoll, and Lybbert 2012). Finally, it has been associated with higher firm-level productivity (Cusolita, Lederman, and Pena 2020). Expanded use of digital services requires investment in digital infrastructure but also appropriate regulation of internet and mobile operators to promote competition and ensure safety, efficiency and minimum quality standards (Agur, Martinez Peria, and Rochon 2020; Guerhazi and Seligman 2020). These regulatory frameworks need to be accompanied by modern and transparent licensing frameworks and robust regulatory enforcement (Broadband Commission 2019; World Bank 2019c).

Increasing the labor supply

While job losses have been severe overall, COVID-19 has hit the services sectors, which tend to have high female employment shares, particularly hard (Alon et al. 2020). Services sectors account for 43 percent of employment in EMDEs, and women account for 61 percent of

employment in services. If steep employment losses in these sectors persist, they may eventually cause female workers to exit the labor force entirely, lowering potential output. Reforms can boost employment, especially of female workers.

Policies to raise female labor force participation.

Before the pandemic, several broad economic forces had helped raise female labor force participation, such as higher women's wages, changes in cultural attitudes, technological changes to have made it easier for women to work outside the home, and rapid growth in sectors that employ women intensively (Fernandez 2013; Klasen and Pieters 2015).

In addition, there have been policies aimed at raising female labor force participation, with their success depending on country circumstances (Cascio, Haider, and Nielson 2015). Early indications from advanced economies are that the pandemic has reversed some of the earlier gains in female labor force participation and exacerbated gender gaps as women with young children have disproportionately scaled back work hours and exited employment (Landivar et al. 2020). Governments can help women return to the labor market by facilitating access to high-quality childcare, lifting restrictions and disincentives to women working, and investing in education and infrastructure that increases women's longer-term attachment to the labor market. In the past, several policies have been successful in some countries. Over time, there may be a virtuous circle with rising female labor force participation shifting social norms (Duflo 2012).

- *Support for young families.* In some advanced economies, the additional within-family child care hours made necessary by the pandemic have been more equally split between fathers and mothers than pre-pandemic childcare hours (Sevilla and Smith 2020). With the right incentives, the pandemic may offer an opportunity to entrench a more equal distribution of these activities. Greater day care availability and expanded parental leave have been associated with higher female labor force participation in OECD countries and some developing economies (Dao et al. 2016; de Barros et al. 2013; Jaumotte 2004). These

¹⁷For studies documenting the impact of digital technologies on access to finance or government support, see Aker et al. (2013); Davidovic et al. (2020); Gelb and Mukherjee (2020); Ky, Rugemintwari, and Sauviat (2018); Machasio (2020); and Mbiti and Weil (2016).

policies need to be carefully crafted to encourage gender balance.¹⁸ More flexible work arrangements to facilitate childcare by parents have generally been associated with greater female labor force participation (Dao et al. 2016). However, to the extent that these policies disproportionately encourage women to self-select into part-time work, they can lower women's labor market attachment (Blau and Kahn 2013).

- *Education.* Looking beyond the pandemic, better education for girls and women can increase their labor market attachment (Solotaroff et al. 2020). In many countries, girls' school enrollment or attainment still lags that of boys (World Bank 2013b). Even where school enrollment is comparable between boys and girls, girls tend to enroll later and drop out faster during times of economic stress, thus undermining their labor market prospects (World Bank 2012).
- *Legal and tax provisions.* The pandemic provides an opportunity to lower long-standing legal and tax barriers to female employment. The gaps between male and female labor force participation rates have been narrower in the presence of equal property, inheritance and contracting rights; joint titling rights for married couples; and equal rights to open legal proceedings, pursue a profession, or conduct economic transactions such as opening bank accounts (Duflo 2012; Gonzales et al. 2015). In Japan, lifting restrictions on working hours, such as on night-time work or on women's participation in professions that are considered dangerous, helped raise female labor force participation (Shambaugh, Nunn, and Portman 2017). In OECD countries, lower marginal income tax rates and the replacement of tax allowances with transferable tax credits for second-income earners have been associated with higher female labor force participation and full-time employment (Bosch and van der

Klaauw 2009; Dao et al. 2016; Jaumotte 2004).

- *Infrastructure.* The fiscal stimulus packages introduced to mitigate the economic impact of the pandemic can be geared towards infrastructure investment that can unlock female employment. In poorer countries, better infrastructure, such as access to clean water or heating materials, can free women's time for more productive employment; better infrastructure of the type that is disproportionately used by women, such as pedestrian pathways, can facilitate access to markets; better internet and mobile infrastructure can expand women's access to markets and resources and labor force participation (Das et al. 2017; Rasmussen 2016; Violaz and Winkler 2020; World Bank 2012). Employer-provided transport can encourage female labor force participation by ensuring safety during the commute (IFC 2019).

Creating a growth-friendly environment

The pandemic may introduce lasting changes to workplaces, consumption patterns, and trade networks. It has already revealed the fragility of growth strategies concentrated on a narrow set of sectors. Economies will need to be sufficiently flexible to adjust to the demands of the post-pandemic economic landscape. This will require reforms that allow such flexibility and encourage competition and innovation.¹⁹ Meanwhile, unprecedented macroeconomic policy stimulus may mask widespread corporate insolvency that may be revealed once stimulus is unwound. Strong macroeconomic and financial policy frameworks are needed to weather such stress.

Improving governance and business climates.

There is early evidence that compliance with pandemic-control measures has been greater in countries and subnational entities with stronger

¹⁸ For example, overly generous maternity leave have tended to reduce labor market attachment of women. To address this, the Nordic countries introduced "father's quotas" of parental leave that could not be transferred to mothers (Winkler 2016).

¹⁹ The Marshall Plan offered \$13 billion in financing to Europe for post-war reconstruction during 1948-51. Arguably, the conditionality for market-based reforms attached to the financing provided under the Marshall Plan was a more important catalyst for post-war growth than the financing itself (De Long and Eichengreen 1991).

trust in government (Devine et al. 2020). Improvements in governance, especially to emphasize accountability, can promote trust in government (World Bank 2017b). While progress has been made in some countries in reducing corruption, there have been setbacks in the rule of law over the past decade (box 3.3).

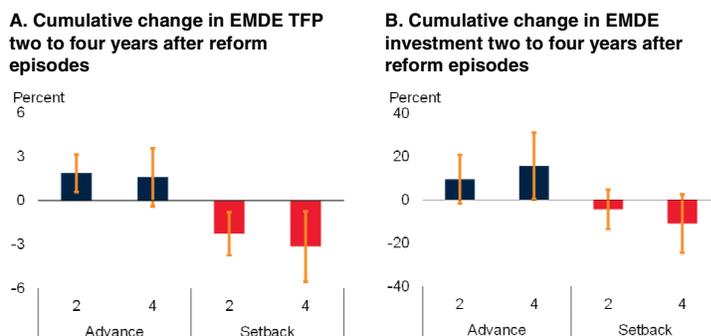
Governance reforms have tended to be associated with stronger growth, albeit with mixed results across countries. Governance as well as business climate reforms can raise investment and TFP growth directly by raising private returns on productivity-enhancing investment in human and physical capital. They can also promote investment and TFP growth indirectly, by removing obstacles to other drivers of long-term growth such as innovation, openness to international trade and finance, competition, and financial development. Such reforms can facilitate a re-allocation of factors of production towards more productive sectors (Dieppe and Matsuoka 2020). Major reform initiatives to improve business climates or governance have been followed by significantly higher TFP growth in the near-term and investment growth in the medium-term (figure 3.10). In contrast, reform setbacks have often been associated with TFP growth slowdowns that set in early and were not reversed over the subsequent five years.

Strengthening macroeconomic policy frameworks. The pandemic has shown once again how financial crises or deep recessions can set back years of per capita income gains. Hence, policies to moderate business and financial cycles remain one of the key components of a growth-enhancing policy agenda. To be effective, such policies need to be conducted within robust and credible frameworks.

- *Monetary policy frameworks.* Resilient monetary policy frameworks allow policy makers more room for proactive monetary policy. Exchange rate pass-through from depreciation to inflation tends to be smaller in countries with more credible, transparent, and independent central banks; inflation-targeting monetary policy regimes; and better-anchored inflation expectations (Ha, Stocker, and Yilmazkuday 2019; Kose et al. 2019).

FIGURE 3.10 Total factor productivity and investment after reform advances and setbacks

Reform advances have been associated with boosts to total factor productivity (TFP) and investment two and four years after the reform advances. Governance reform setbacks have lowered TFP.



Source: World Bank.

Note: EMDEs = emerging market and developing economies. TFP = total factor productivity. Sample includes 71 EMDEs with population exceeding 4 million people during 1998-2018; sample is smaller for TFP. Reform episodes are identified as two-standard-error changes in one of four Worldwide Governance Indicators—for 155 EMDEs and 51 advanced economies during 1996-2018. Episodes in which there were advances in one measure and simultaneous setbacks in another are excluded. A detailed methodology is available in box 3.3. TFP growth is estimated as in Dieppe (2020). Figure shows regression coefficients of cumulative TFP (A) and real investment (B) growth on dummies for reform advances and setbacks from a local projection estimation at forecast horizons of 2 and 4 years. Vertical orange lines show 90 percent confidence interval.

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Establishing and maintaining resilient monetary policy frameworks is especially important against the backdrop of the recent launch of unconventional monetary policy tools—particularly asset purchases—by EMDE central banks (chapter 4).

- *Fiscal policy frameworks.* Fiscal rules can help prevent fiscal slippages, ensure that revenue windfalls during times of strong growth are prudently managed, and contain and manage risks from contingent liabilities.²⁰ Strong fiscal frameworks have also been associated with lower inflation and inflation volatility, suggesting that they tend to support the central bank in delivering its mandate (Ha, Kose, and Ohnsorge 2019).

²⁰Romer and Romer (2019) show that many shifts to austerity were motivated by reasons other than lack of financial market access, including fiscal rules. Cebotari (2008) discusses in greater detail good practices for managing risks from contingent liabilities. For example, Currie and Velandia (2002) call for adding contingent liabilities to government balance sheet analysis. In another example, Ülgentürk (2017) documents the role of debt managers and the involvement of debt management offices in managing contingent liabilities.

BOX 3.3 From institutional reforms to long-term growth

Reforms to improve governance and business climates have been associated with higher total factor productivity (TFP) and investment—two key drivers of long-term output growth. Institutional reforms should be prioritized to help build the foundation for a robust and sustained economic recovery from the pandemic-induced global recession.

Introduction

The decade leading up to the pandemic-induced global recession in 2020 was marked by a steady slowdown in productivity growth and pronounced investment weakness (World Bank 2017a, 2020a). These developments were accompanied by weakening growth in potential output—the output that can be sustained at full employment and capacity utilization (World Bank 2018a). The COVID-19 pandemic has exacerbated these adverse trends. Exceptionally high uncertainty about growth prospects and policies has discouraged investment. Human capital accumulation has been set back by disruptions to education and widespread unemployment. Disruptions to global supply chains in the early stages of the pandemic may trigger a re-assessment of their viability. Lasting changes in consumer behavior, such as reduced demand for hospitality, travel, tourism, and services that involve personal interactions, may render some existing capital assets obsolete (Dieppe 2020).

A renewed boost to underlying growth is needed, a boost that could be provided by reforms to governance and business climates. Strong institutions and conducive business climates set the preconditions for vigorous growth. They encourage private sector investment and innovation by establishing secure and enforceable property rights, minimizing expropriation risk, creating a stable and confidence-inspiring policy environment, lowering the costs of doing business, and encouraging participation in the formal sector where productivity tends to be higher (World Bank 2018a, 2019d). Good governance also ensures competitive and flexible markets with limited market concentration, effective regulation, and the efficient and equitable provision of public services, including healthcare, education, and public infrastructure (Acemoglu and Johnson 2005; Dort, Méon, and Sekkat 2014; Gwartney, Holcombe, and Lawson 2006).

The potential benefits of reforms in these areas are underscored by the fact that in many emerging market and developing economies (EMDEs), weak institutions and governance remain a substantial obstacle to sustained

robust growth of investment and productivity (World Bank 2018a). The lack of secure and enforceable property rights, pervasive corruption and crime, and large informal sectors are formidable constraints on the ability of private firms to invest, innovate, and close the productivity gap with high-income countries. Thus, there is considerable scope for EMDE governments to stem or reverse a slowdown in productivity and potential growth by strengthening institutions, reducing corruption, dismantling regulatory barriers to doing business and entrepreneurship, and ensuring effective regulation conducive for the efficient working of competitive markets (Kilic Celik, Kose, and Ohnsorge 2020).

Against this backdrop, this box addresses the following questions.

- Through what channels do governance and business regulations affect growth?
- How have productivity and investment growth evolved during major reform episodes?

Links between reforms and growth

Institutional quality and growth. There is now a broad consensus in the literature that market-friendly institutional reforms have been associated with stronger economic growth, albeit with wide heterogeneity across countries, and disagreements about the optimal type of institutional arrangements (Bluhm and Szirmai 2011; Nawaz 2015; Prati, Onorato, and Papageorgiou 2013). Institutional change can raise investment and productivity growth directly by raising private returns to productivity-enhancing investment in human and physical capital. Institutional reforms can also promote investment and productivity growth indirectly, by removing obstacles to other drivers of long-term growth such as innovation, openness, competition, and financial development (Acemoglu et al. 2005; Botero, Ponce, and Shleifer 2012; Glaeser et al. 2004; Glaeser, Ponzetto, and Shleifer 2007).

- *Corruption.* Over 30 percent of firms in EMDEs identify corruption and competition from the informal sector as major constraints to their growth. Several studies show that anticorruption reforms have significantly boosted long-term growth and

Note: This box was prepared by Sergiy Kasyanenko. Research assistance was provided by Kaltrina Temaj.

BOX 3.3 From institutional reforms to long-term growth (*continued*)

investment, albeit with substantial variation in outcomes across countries.^a

- *Informality.* Informality is associated with considerably weaker development outcomes and well-designed reforms to reduce informality have often been associated with higher growth (World Bank 2019d). There is also a strong correlation between weak institutions—such as inefficient governance, excessive regulation, and high incidence of corruption—and informality (Guillermo et al. 2007).
- *Political stability and rule of law.* Studies show that political stability encourages stronger growth and investment, and may also improve fiscal discipline (Aisen and Veiga 2013). Security, the protection of property rights, and the removal of undue influence on courts are strongly correlated with higher growth or lower growth volatility (Acemoglu, Johnson, and Robinson 2001; Haggard and Tiede 2011; World Bank 2017b). Well-established legal systems and property rights, high-quality institutions, and mature patent laws foster deeper integration into global supply chains, which require dependable interactions between producers and suppliers across multiple stages of production and jurisdictions (Alfaro et al. 2019; WTO 2019). Global supply chains, in turn, have been associated with the absorption of productivity-enhancing technologies through foreign direct investment (Alfaro 2017).
- *Education and innovation.* By encouraging human capital accumulation and innovative activities, institutions can promote forms of economic activity that are associated with greater economic complexity and higher productivity growth (Dieppe 2020; Vu 2019). Secure intellectual property rights are critical to incentivize firms to innovate, increase research and development spending, invest in knowledge-based capital, and promote knowledge diffusion (Andrews and Criscuolo 2013; Cong 2013).
- *Reforms to improve regulatory quality.* Burdensome business regulations amplify the adverse effect of corruption on firms' labor productivity (Amin and Ulku 2019). Substantial improvement in regulatory quality is often associated with a significant increase in long-term growth as it encourages the entry of more productive firms, including multinational companies, and stimulates research and development spending (Alam, Uddin, and Yazdifar 2019; Egan 2013).
- *Reforms to increase labor market flexibility.* Labor market regulations are designed to provide social protection and improve workplace safety. If excessively distortionary or poorly enacted, they can discourage formal employment and constrain firm size.^b Reforms to increase labor market flexibility can help improve firm-level productivity, increase labor force participation, reduce informality, and encourage a more efficient allocation of labor (Blanchard, Jaumotte, and Loungani 2013).
- *Reforms to improve business climates.* EMDEs with business-friendly regulations tend to have higher levels of economic inclusiveness, have smaller informal sectors, and grow faster (Djankov, McLiesh, and Ramalho 2006; World Bank 2014). For example, trade restrictions are associated with lower firm productivity, especially when accompanied by intrusive domestic industrial policy (Topalova and Khandelwal 2011). Weak business environments may diminish complementarities between public and foreign direct investment and domestic investment (Kose et al. 2017). Major improvements in business environments have been associated with increased output growth (Divanbeigi and Ramalho 2015; Kirkpatrick 2014).

Business climates and growth. Poor business climates allow anticompetitive practices to flourish, perpetuate corruption, discourage innovation, and distort the efficient allocation of factors of production (Aghion and Schankermann 2004; Bourles et al. 2013; Buccirossi et al. 2013).

Correlates of success of reforms. The impact of reforms often depends on the country's stage of development and the distance to the technological frontier (Dabla-Norris, Ho, and Kyobe 2016). Investments in physical and human capital are often associated with stronger long-term outcomes when the quality of institutions already exceeds certain thresholds (Hall, Sobel, and Crowley 2010; Jude and Levieuge 2017). EMDEs with stronger institutions and better regulations may achieve greater output gains from financial liberalization and trade openness (Atkin and

^a See Cieřlik and Goczek (2018); de Vaal and Ebben (2011); Gründler and Potrafke (2019); Hodge et al. (2011); OECD (2015); and Shleifer and Vishny (1993).

^b See Bruhn (2011); La Porta and Shleifer (2014); Loayza, Oviedo, and Serven (2005); and Loayza and Serven (2010).

BOX 3.3 From institutional reforms to long-term growth (continued)

Khandelwal 2020; Slesman, Baharumshah, and Azman-Saini 2019; Williams 2019).

Political economy of reforms. The ability of governments to maintain the pace of institutional reforms is often uneven, in part because growth dividends from reforms often materialize with substantial lags and reforms may initially be politically costly, especially during elections (Alesina et al. 2020). Major growth downturns have sometimes been associated with subsequent reform accelerations; conversely, growth-enhancing reforms have also been delayed or even reversed during times of economic stress and in economies with high debt burdens (Gokmen et al. 2020; Muller, Storesletten, and Zilibotti 2019). Even during more tranquil times, meaningful reforms are often postponed due to unfavorable redistributive outcomes (Gradstein 2007).

Productivity and investment growth during major reform episodes

Methodology and data. A series of event studies and a local projection approach are used to estimate the impact of major governance and regulatory reforms on total factor productivity (TFP) and investment growth, two critical drivers of long-term output growth. Three different data sets are used to measure the quality of institutions and business climates in a large sample of EMDEs.

- *Worldwide Governance Indicators.* Major institutional reform advances (or setbacks) are defined as improvements (or deteriorations) in at least one of four *Worldwide Governance Indicators* (government effectiveness, control of corruption, rule of law, and regulatory quality) by two or more standard errors over the span of two years (as in Didier et al. 2015).
- *Doing Business indicators.* Major business climate reform advances (or setbacks) are identified in a similar manner—as those that over two years close (or widen) the gap with the best regulatory practice on at least one of ten *Doing Business* indicators by two or more standard deviations.
- *International Country Risk Guide (ICRG) indicators.* As an alternative to the *Worldwide Governance Indicators*, sustained institutional advances or setbacks are defined as an increase or decrease, respectively, in the unweighted average of four ICRG indicators—bureaucracy quality, law and order, corruption, and investment profile—provided the increase is not unwound for at least three consecutive years.

The event study examines the evolution of investment growth and total factor productivity (TFP) growth in the year immediately following the reform advance or setback. The local projection model estimates the effect of the reform event on cumulative investment growth and TFP growth over horizons of two and four years after the start of the event (annex 3.3).^c

Progress on reforms over the past decade. Progress on institutional reforms has been mixed over the past decade (figure B3.3.1). Institutional change appears to be highly persistent: both achievements in reform advances and setbacks tend to endure (figure B3.3.2).

- *Business climate reform* advances became more common, while setbacks become less frequent (figure B3.3.1; Ruch 2020). The main reform advances were in the areas of access to credit, starting a business, and insolvency procedures, and setbacks mainly concerned paying taxes, trade, and property registration.
- *Governance reforms*, as captured in the *Worldwide Governance Indicators*, decelerated substantially in the aftermath of the global financial crisis as reform advances were offset by reform setbacks. From 1998 to 2018, less than one-fifth of all institutional reform advances in EMDEs were associated with an improvement across more than one dimension in *Worldwide Governance Indicators*, and about one in nine setbacks occurred with a simultaneous deterioration across more than one measure of institutional quality. Better control of corruption accounted for the largest proportion of the reform advances (45 percent of advances); while setbacks were most often associated with declining quality of the rule of law (37 percent of setbacks).
- *Sustained advances in the quality of institutions*, as identified by ICRG indicators, initially became less frequent after the global financial crisis when they were often offset by reform setbacks. Since the mid-2010s, however, improvements have become more frequent and setbacks rarer. Most episodes of sustained reform advances, as well as setbacks, were associated with changes in the investment profile and anticorruption measures.

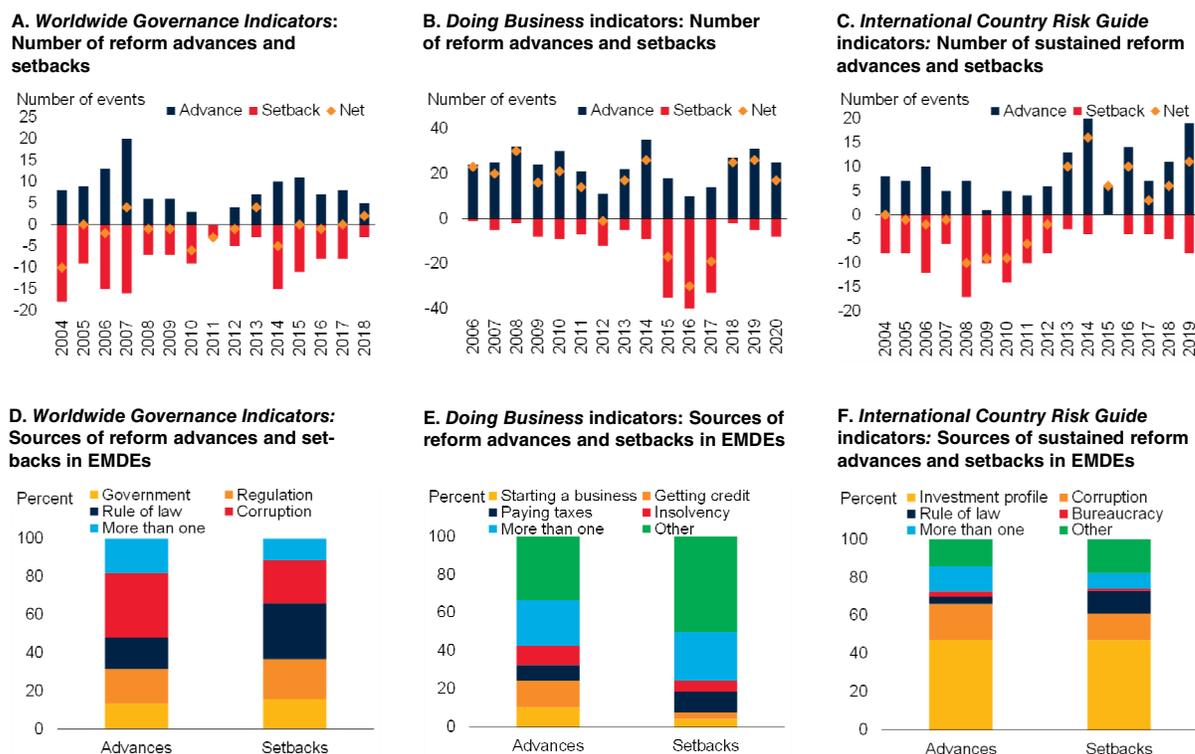
Initial impact of reforms. TFP and investment growth in the year following reform episodes tended to be higher

^c Sample includes up to 94 (115) EMDEs and 35 (39) advanced economies with data on TFP (investment) growth, depending on data availability for reforms.

BOX 3.3 From institutional reforms to long-term growth (continued)

FIGURE B3.3.1 Reform advances and setbacks

There have been a larger number of sustained improvements than setbacks in institutional quality and in business climates since the mid-2010s.



Source: World Bank.

Note: EMDEs = emerging market and developing economies. Episodes in which there were advances in one measure and simultaneous setbacks in another are excluded. A detailed methodology is available in annexes 3.1 and 3.3.

A. For *Worldwide Governance Indicators*, reform events are defined as two-standard-error changes in one of four *Worldwide Governance Indicators* for 155 EMDEs and 49 advanced economies during 1996-2018.

B. For *Doing Business* indicators, reform events are defined as two-standard-deviation changes in distance to frontier (the best practice across all countries) in one of ten *Doing Business* indicators in 67 EMDEs and 28 advanced economies during 2004-20. Sample excludes fragile and conflict states and small economies with population less than 4 million people.

C. Sustained institutional advances or setbacks are defined as an increase or decrease in the unweighted average of four *International Country Risk Guide* indicators—bureaucracy quality, law and order, corruption, and investment profile—provided the increase or the decrease is not unwound for at least three consecutive years. Sample includes 102 EMDEs and 39 advanced economies.

D. Based on 127 episodes of reform advances and 147 episodes of reform setbacks in 1998-2018 identified in 110 EMDEs with a median of 2 episodes per economy.

E. Based on 260 episodes of reform advances and 120 episodes of reform setbacks in 2006-20 identified in 67 EMDEs with a median of 6 episodes per economy.

F. Based on 106 episodes of sustained reform advances and 85 episodes of sustained reform setbacks during 2004-19 identified in 100 EMDEs with a median of 2 episodes per economy. “Other” indicates episodes when a sustained increase or decrease in the average of four indicators was not associated with any particular indicator.

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than in “normal” years (without advances or setbacks), while reform setbacks were associated with lower TFP and investment growth.

- *Reform advances* reflected in *Worldwide Governance Indicators* and *ICRG* indicators, were associated with 0.8-1.2 percentage point a year higher TFP growth compared to “normal” years in EMDEs (figure

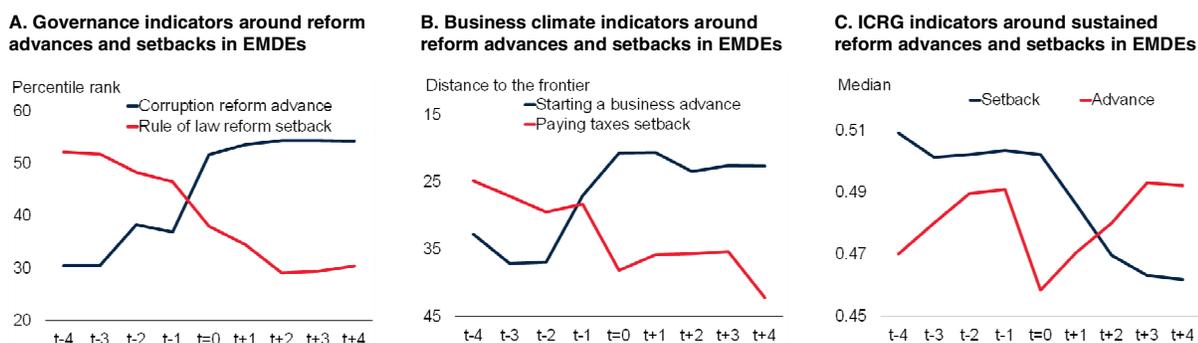
B3.3.3).^d Reform advances that emphasized efforts to reduce corruption and strengthen the rule of law were followed by somewhat larger TFP increases. Investment growth in the year following reform

^dThis compares with 0.4 percent and 6.7 percent annual average global TFP growth and investment growth, respectively, during “normal” years in the median country that had neither a reform advance or setback. All comparisons refer to medians.

BOX 3.3 From institutional reforms to long-term growth (continued)

FIGURE B3.3.2 Persistence of reform advances and setbacks

Institutional change is very persistent: both achievements in reform advances and setbacks tend to endure.



Source: World Bank.

Note: Episodes are identified in a similar way as in figure B3.3.1. A detailed methodology is available in annexes 3.1 and 3.3.

A.B. Median percentile rank (A) and distance from frontier (B). $t=0$ indicates the year of the reform advance or setback as identified using *Worldwide Governance Indicators* or *Doing Business Indicators*. Only the earliest episode is selected for the reform advances (setbacks) occurring in two consecutive years.

C. Average of four indicators: bureaucracy quality, law and order, corruption, and investment profile. $t=0$ indicates the year when a sustained reform advance or setback started as identified using *International Country Risk Guide* (ICRG) indicators.

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advances was 1.5-5.0 percentage points higher in EMDEs than in “normal” years, with considerably larger increases after reform efforts to rein in corruption and strengthen the rule of law.

- *Reform setbacks*, as identified using the *Worldwide Governance Indicators* or the *ICRG* indicators, were associated with slowdowns of 0.4-1.3 percentage point a year in TFP growth in EMDEs. When these reform setbacks were associated with greater corruption, EMDE TFP growth declined by an additional 0.3 percentage points. Similarly, investment growth fell by about 2 percentage points in EMDEs after reform setbacks, and by an additional 1-3 percentage points when these setbacks involved increased corruption or poorer government effectiveness.

Effects of reforms over time. The local projection estimation indicates that the effects of institutional reform advances and setbacks, identified using *Worldwide Governance Indicators* or *ICRG* indicators, have tended to accumulate over time.^c It takes several years for TFP or

investment growth dividends to materialize after institutional reform advances; the adverse impact of reform setbacks is more heterogeneous.

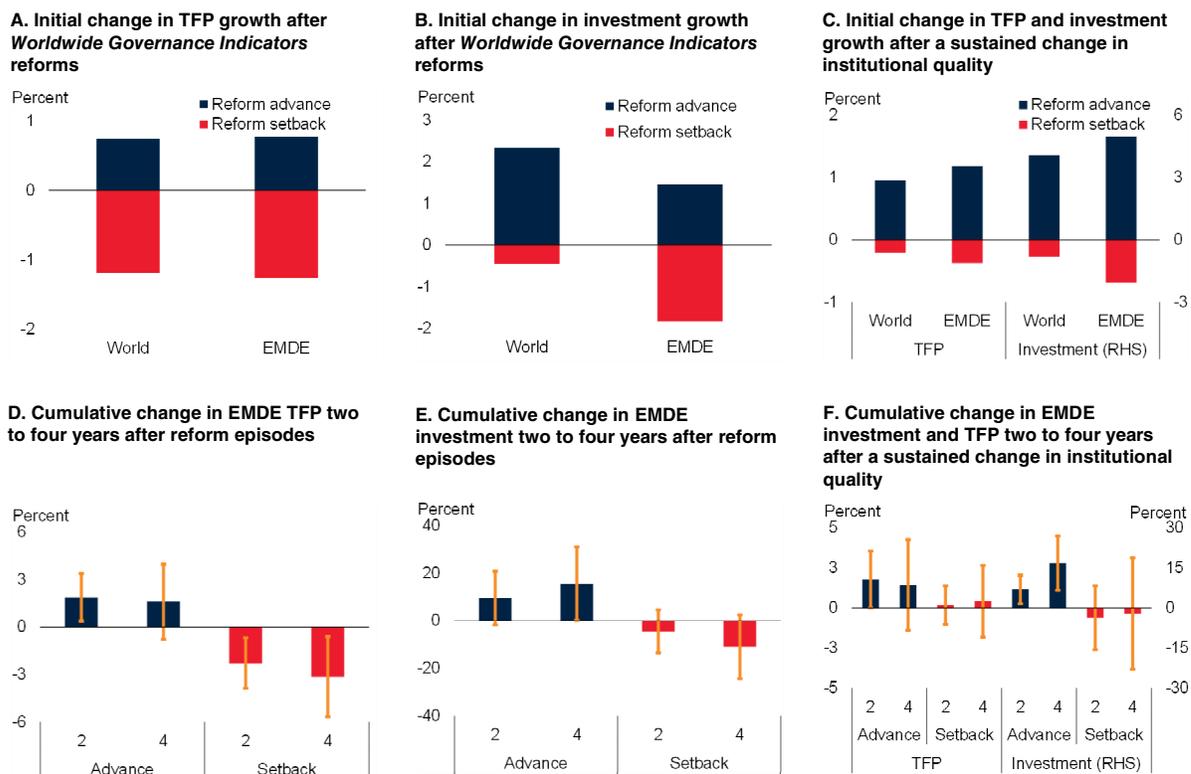
- *Reform advances.* TFP in EMDEs was about 1.9 percent above the baseline two years after reform advances reflected in *Worldwide Governance Indicators* or *ICRG* indicators. Over time, this impact became more heterogeneous and more difficult to estimate precisely. EMDE investment responded initially in a heterogeneous manner but a more well-defined effect crystallized over time. Four years after reform advances, captured by either the *Worldwide Governance Indicators* or the *ICRG* indicators, EMDE investment tended to be 16-17 percent above the baseline.
- *Reform setbacks.* EMDE TFP fell statistically significantly after reform setbacks as identified using *Worldwide Governance Indicators*, and the effect grew over subsequent years. In contrast, sustained reforms setbacks, as captured by the *ICRG* indicators, were followed by a wide range of TFP growth outcomes. Similarly, EMDE investment, evolved in too heterogeneous a manner for a well-defined estimate of the impact to be obtained but typically fell sharply below the baseline over several years.

^c Detailed methodology is presented in annex 3.3. A similar exercise for the *Doing Business* indicators is not possible due to data constraints.

BOX 3.3 From institutional reforms to long-term growth (continued)

FIGURE B3.3.3 TFP and investment growth around reform advances and setbacks

Reform advances have been associated with a boost to total factor productivity (TFP) and investment growth two and four years after the reform advances. Some governance reform setbacks have lowered TFP.



Source: World Bank.

Note: EMDEs = emerging market and developing economies. TFP = total factor productivity. TFP growth is as estimated in Dieppe (2020). For the *Worldwide Governance Indicators* (A-B and D-E) sample starts in 1998; for the *International Country Risk Guide indicators* (C and F) sample starts in 1985. Reform episodes are identified in a similar way as in figure B3.3.1. A detailed methodology is available in annexes 3.1 and 3.3.

A,B. Median of TFP (A) and investment (B) growth in the year following reform advances and setbacks minus median TFP and investment growth for all country-year pairs ("World") or for EMDE country-year pairs only ("EMDE") outside such episodes, using *Worldwide Governance Indicators*.

C. Bars indicate responses of investment and TFP growth one year into the start of the episode of sustained changes in institutional quality identified using *International Country Risk Guide* indicators. Sustained increases or decreases in institutional quality are defined as years (that is, year "t") in which the average of four indicators by the *International Country Risk Guide* (ICRG)—bureaucracy quality, law and order, corruption, and investment profile—increases or decreases, and such changes are not unwound for at least three consecutive years.

D-F. Regression coefficients of TFP (D) and investment (E) growth on dummies for reform advances and setbacks from local projection estimation for lags of two and four years. (F) shows coefficients from similar regressions with dummies for the start of sustained reform advances and setbacks. Vertical orange lines show the 90-percent confidence intervals.

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Conclusion

While the years 2018-20 have seen a number of countries launching reforms to improve business climates, in governance reform advances have largely been offset by reform setbacks. The majority of governance reform advances involved anticorruption reforms while reform setbacks most frequently involved the weakening of the rule of law. Reforms have been associated with gains in TFP and investment that tended to accumulate over time.

At the current juncture, with fiscal space depleted by emergency measures to mitigate the impact of the pandemic, institutional reforms, which typically do not require large-scale commitment of public resources, can offer a feasible way to help energize long-term growth. Institutional reforms are particularly urgent in EMDEs with poor-quality institutions, since the literature has shown that gains from reforms tend to grow as the institutional environment improves.

- *Macroprudential and financial sector policies.* During the pandemic, authorities in several countries have eased regulatory requirements and exercised forbearance. To avoid the emergence of zombie firms, these measures will eventually need to be unwound. Robust financial sector regulation and supervision remain critical to ensuring a sound financial system and stronger banking systems have been associated with stronger growth over the longer term (Reinhart and Reinhart 2015). Carefully implemented domestic financial reforms and capital account liberalization have been associated with stronger growth and faster sectoral labor reallocation (ElFayoumi et al. 2018; Prati, Onorato, and Papageorgiou 2013). Countercyclical macroprudential policies have helped smooth asset price swings in some countries (Bruno, Shim, and Shin 2017; Claessens 2015).

Diversifying economies. Countries that are heavily reliant on tourism or on primary commodities have been particularly hard-hit by the pandemic (World Bank 2020a; figure 3.11). Over time, an ambitious program of diversification can reduce these economies' vulnerabilities to external shocks. Many energy exporters have made strides toward diversification since the oil price plunge of 2014-16 (Wheeler et al. 2020). These efforts can be continued and deepened, and tourism-reliant countries may consider similar efforts.

These can be supplemented by policies to encourage sectoral reallocation of labor from lower-productivity to higher-productivity sectors or firms (Dieppe and Matsuoka 2020). Investments in education, better government service delivery, and intensified efforts to ensure a level playing field for entrepreneurs and innovators can nudge economies along a path towards greater diversification (Gill et al. 2014). In addition, rapidly growing use of digital tools can help tourism-reliant countries entice back tourists, including possibly from a broadened set of host countries (Lopez-Cordova 2020).

Strengthening insolvency frameworks and facilitating firm startups. Many governments have

put in place moratoriums on debt, rent, or utility payment defaults and encouraged regulatory forbearance for banks. Over time, such barriers to corporate restructuring will have to be lifted to avoid locking resources in non-viable "zombie" firms at the expense of viable firms and startups (Andrews, McGowan, and Millot 2017a). At that point, a wave of insolvencies may follow (Franklin 2020). These insolvencies will need to be worked through efficiently so that viable firms can be saved and workers and finance from non-viable ones can swiftly be reallocated towards productive uses, thus boosting overall labor productivity and allowing a lower cost of credit (Andrews, McGowan, and Millot 2017b; Feyen and Zuccardi Huertas 2020; Menezes 2014). This will help preserve financial stability. Strong insolvency frameworks are associated with milder impacts of economic shocks on firms' probability of default (Gopalakrishnan and Mohapatra 2020).

However, in EMDEs, insolvency processes take more time, cost a larger fraction of the estate, yield considerably smaller recovery values, and are set in weaker legal frameworks than in OECD countries (figure 3.11). Informal or hybrid workouts that avoid the procedural complexities of court cases can be encouraged, bridge financing can be encouraged and protected in the event of future bankruptcy, procedural deadlines can be extended for limited periods, adequate time can be allowed to develop restructuring plans, and out-of-court solutions can be prioritized (Menezes, Muro, and Utramchandani 2020).

Efficient insolvency frameworks need to be complemented by efforts to facilitate firm startup. Even short-term disruptions to firm startup can slow employment growth in the long-run (Sedlacek and Sterk 2020). Startups can be encouraged by streamlining registration and licensing requirements including through greater use of electronic channels and one-stop shops, ensuring ready access to finance, and lowering the cost of tax compliance.

Enhancing social safety nets. Fiscal stimulus, including income support to households and firms, has been critical to cushioning the economic impact of the pandemic. However,

access to this support has often been limited, especially in lower-income countries (Apedo-Amah et al. 2020; Cirera et al. 2020).

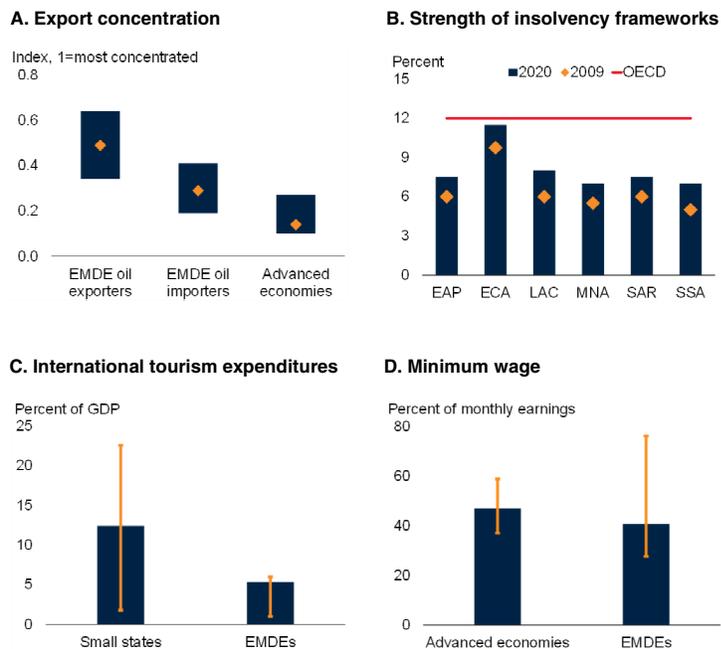
Going forward, robust social safety nets can underpin a productivity-driven recovery if, by ensuring against catastrophic income losses, it can encourage workers to move into more productive jobs and to take the risks required to seize new economic opportunities. By helping prevent household coping strategies with long-term cost—such as school dropout or malnutrition—social safety nets can help preserve and build human capital. A system centered on a publicly funded core system, which ensures against catastrophic losses, can allow governments to reduce their reliance on distortionary policies, such as high minimum wages or heavy-handed labor market restrictions (Packard et al. 2019).

Encouraging international trade. International trade collapsed in the pandemic. Yet, notwithstanding early concerns, global value chains have proven unexpectedly resilient with global goods trade rebounding to pre-pandemic levels (chapter 1). Increasing global value chain participation has been a critical driver of growth and job creation over the past several decades. A 1 percent increase in global value chain participation has been estimated to boost per capita income by more than 1 percent—much more than the 0.2 percent income gain from standard trade (World Bank 2020f).

Historically, some of the biggest growth spurts occurred when countries transitioned out of exporting commodities and into exporting basic manufactured products using imported inputs. The pandemic may provide momentum for automation and digitalization that can further promote EMDEs' shift into higher-productivity activities in global value chains, especially if supported by investment in transport and digital connectivity. To reap the gains from global value chain participation, countries can lower nontariff barriers, liberalize transport and internet and communications services, strengthen customs efficiency, lower barriers to services trade, and facilitate reallocation of resources across sectors (World Bank 2020f).

FIGURE 3.11 Growth-enhancing reforms

Depending on country circumstances, reforms to boost growth may include those aimed at diversifying economies reliant on commodities or tourism, strengthening insolvency frameworks, and facilitating the reallocation of resources to more productive uses.



Sources: Doing Business (2020); Haver Analytics; ILOstat (database); UNCTAD (database); World Bank.

Note: EMDEs = emerging market and developing economies; EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, SAR = South Asia, SSA = Sub-Saharan Africa, OECD = Organisation for Economic Co-operation and Development.

A. Orange diamonds denote the median and blue bars represent the interquartile range of individual country groups. Sample includes 33 energy-exporting EMDEs (excludes South Sudan), 118 energy importing EMDEs, and 35 advanced economies. Concentration index measures the degree of product concentration, where values closer to 1 indicate a country's exports are highly concentrated on a few products.

B. Strength of insolvency frameworks is a subindex of the "Resolving insolvency index" in the Doing Business indicators. Medians across countries in each region and year.

C. Tourism expenditures by international inbound visitors. Bars show simple averages for country groups and whiskers show interquartile ranges. Bars show 2016-18 averages. Sample contains 18 EMDE small states with a population of 1.5 million or less and 108 EMDEs.

D. Statutory gross nominal monthly minimum wage in percent of mean nominal monthly earnings. Latest data available. Bars denote cross-country medians, whiskers denote interquartile ranges.

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Collaborating globally. In many areas, international global collaboration can support countries in their reform efforts (chapter 1). In the area of climate change, global efforts at climate change mitigation can complement efforts at climate adaptation. In the area of COVID-19 control, coordinated global efforts can hasten the production and global distribution of vaccines. Trade integration, promoted, for example, by recent trade agreements in Africa and Asia, can help build trust and spur productivity. Coor-

minated debt relief can provide support to some of the poorest countries in the world.

Effects of reforms

Reforms to increase investment in physical and human capital and to raise the labor supply could more than reverse the pandemic's damage to potential growth over the 2020s. Investors have typically recognized past reform efforts with upgrades to their long-term growth expectations.

Effects on potential growth

Policies matter. A combination of ambitious, but not unprecedented, reforms could stem, although not reverse, the potential growth slowdown projected over the 2020s. If countries repeated their own strongest ten-year performances in the growth in investment and improvement in education and closed one-third of the gap between male and female labor force participation rates (as much as the “best” quartile of countries over the past three decades), EMDE potential output growth could be 0.9 percentage point higher than in the post-pandemic scenario, more than reversing the damage caused by the pandemic and returning EMDE potential growth to 4.3 percent a year over the 2020s. This would still constitute a slowdown from the 5.0 percent average of the 2010s but less than half of the 1.7 percentage point slowdown expected in the absence of reforms (figure 3.12).

- *Investment.* Most EMDEs have considerable investment needs (Vashakmadze et al. 2018). If each country accelerated its investment growth over the next decade as much as its largest increase over any historical ten-year interval, investment growth would rise to 7.5 percent a year over the next decade (2020-29). This could be achieved directly through a boost to public investment and indirectly through a boost to private investment resulting from improved business climates, governance, and policy predictability.
- *Female labor force participation.* Targeted measures, such as wider access to quality day

care facilities, can help raise female labor force participation. In a scenario in which female labor force participation, between 2020 and 2030, gradually rises to close one-third of the gap with male labor force participation (as much as in the “best” quartile of countries over the past three decades), female labor force participation would average 54 percent over the 2020s, up from 50 percent over the 2010s.

- *Education.* The pandemic may offer new opportunities for those countries that can seize them, to leverage online learning to raise the quality of education. If secondary school completion rates improved as much as their largest increase over any historical ten-year interval, they would rise to average 36 percent over the 2020s, from 27 percent over the 2010s.

Effects on growth expectations

Investors have often recognized and anticipated the benefits of reforms for growth. This has been reflected in upgrades to long-term growth expectations when countries have implemented major institutional reforms, even if these upgrades have sometimes materialized only slowly. Similarly, expectations were downgraded when there were major institutional reform setbacks in countries.

Methodology. A local projection approach similar to the exercise described above and in annex 3.1 is applied to estimate the impact of reform events on long-term growth forecasts. Reform events are defined as sustained increases in the average of four indicators of institutional quality produced by the International Country Risk Guide (ICRG)—bureaucracy quality, law and order, corruption, and investment profile. This yields 163 reform advances among 78 countries and 128 reform setbacks among 69 countries during 1990-2020 (annex 3.1).

Better prospects after reforms. Efforts to improve institutions have been recognized in the past by consensus forecasters through increases in their long-term growth expectations, although the effect

was initially small and statistically insignificant (figure 3.13). Five years after the average reform advance, however, long-term growth forecasts for reforming countries were a statistically significant 0.8 percentage point a year higher than in non-reforming countries. In the event of reform setbacks, in contrast, forecasts were 0.7 percentage point lower. Upgrades in the event of reform advances not statistically significant until the third year after the reform advance, whereas downgrades became statistically significant two years after a reform setback.

Conclusion

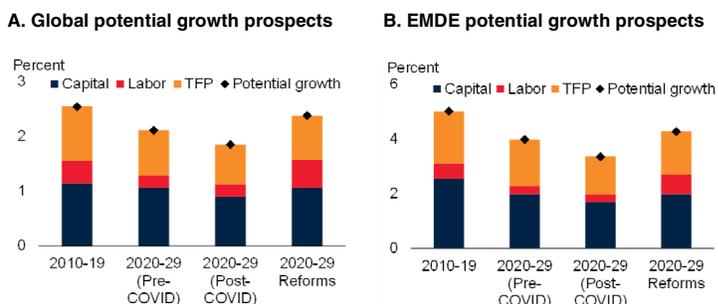
The pandemic has plunged the global economy into its deepest recession since the Second World War. By weakening the fundamental drivers of growth, it is expected to steepen the slowdown in labor productivity growth and potential output growth that had already been underway before the pandemic. As a result, lasting output losses can be expected, relative to pre-pandemic expectations. Based on experience after past recessions, the global economy is heading into a decade beset by slowing growth and repeated growth disappointments.

While lasting economic damage is the most likely outcome of the pandemic, a scenario involving better growth outcomes cannot be ruled out. The pandemic may yet unleash technology and policy breakthroughs that boost long-term growth prospects. It may also create opportunities that countries with the right preconditions can seize to their advantage (Dieppe 2020).

- *Organizational and technological changes.* The pandemic may trigger lasting organizational improvements in businesses and encourage the adoption of more efficient production technologies (Barrero, Bloom, and Davis 2020; Caballero and Hammour 1996; Foster, Grim, and Haltiwanger 2016).
- *More diverse and resilient supply chains.* Supply chains may be restructured in ways that increase their diversity and resilience. In countries with strong or credibly improving business climates and governance, this could

FIGURE 3.12 Impact of reforms on potential growth prospects

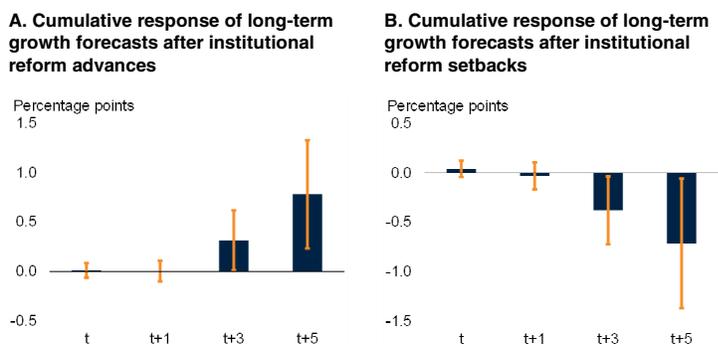
Decisive policy action in multiple dimensions can help stem the steep slowdown in potential growth expected over the 2020s.



Sources: Kilic Celik, Kose, and Ohnsorge (2020); World Bank.
 Note: TFP = total factor productivity. GDP-weighted average (at 2010 prices and exchange rates) for 82 countries, including 52 EMDEs. Potential growth estimates based on a production function approach as described in Kilic Celik, Kose, and Ohnsorge (2020). Post-COVID estimates for 2020s assume that investment grows as expected by consensus forecasts; working-age population and life expectancy evolve as envisaged by the UN *Population Projects*; and secondary attainment rates decline by 2.5 percentage points. "Reforms" scenario assumes that each country matches its own highest ten-year average investment growth and ten-year improvements in school enrollment and completion rates; and closes its gap between male and female labor force participation by as much as the "best" quartile of countries over the past thirty years (that is, closes the gap by one-third).
[Click here to download data and charts.](#)

FIGURE 3.13 Long-term growth forecasts after reform advances and setbacks

Reform advances were associated with long-term growth forecasts upgrades, although these upgrades sometimes materialized only slowly. In contrast, reform setbacks were associated with long-term growth forecast downgrades.



Sources: Consensus Economics; International Country Risk Guide (database); World Bank.
 Note: Cumulative impulse responses of ten-year-ahead growth forecasts on reform advances and setbacks started in year t, based on local projection estimations for 57 countries during 1990-2020. Reform advances and setbacks are defined, respectively, as years in which the average of four indicators by the International Country Risk Guide—bureaucracy quality, law and order, corruption, investment profile—increases and decreases, and such changes are not unwound for at least three years. A methodology is described in annex 3.1. Vertical orange lines show the 90 percent confidence intervals.
[Click here to download data and charts.](#)

open new opportunities to join global value chains that promote trade, foreign direct investment, and knowledge transfer (Alfaro 2017; Alfaro and Charlton 2009; World Bank 2020f).

- *Improvements in education.* Where education systems are weak but reliable and widespread internet access exists, the pandemic could increase utilization of higher-quality online schooling and training. It may also trigger a reconsideration and rationalization of examination systems and school curriculums (World Bank 2020e).
- *Financial development.* Digital technologies tested in the pandemic may expand access to finance in the poorest countries, enable more effective government service delivery and accelerate the trend toward the automation of some routine occupations (Hershbein and Kahn 2018; Jaimovich and Siu 2019; Leduc and Liu 2020).

To stem or reverse the economic damage from the pandemic, or to take advantage of any opportunities the pandemic may offer, comprehensive reforms are needed. In an environment of constrained fiscal resources, institutional reforms and efforts at economic diversification can facilitate the reallocations of resources that economies may need to adjust to a post-pandemic economic landscape. They can also spur the private investment needed for a vigorous recovery while fiscal positions are stretched. Meanwhile, investment in human capital will be vital to rebuild after the damage done by the pandemic.

ANNEX 3.1 Methodology: Local projection estimation

Event identification

The exercises used on this chapter examine several types of events: acutely adverse events (recessions, financial crises, and natural disasters), persistently adverse events (growth disappointments,

productivity and investment slowdowns), and institutional reforms.

Recessions are defined applying the algorithm in Harding and Pagan (2002) to annual per capita GDP. The turning points of cycles are defined with a parameter of minimum cycle length of seven years. This ensures that the duration of the cycles is sufficiently long. Peak years are used as the beginning of recessions and then event years. For 86 countries with data available for long-term growth forecasts, this results in 124 episodes of per capita output contractions (“recessions”), of which 64 occurred in EMDEs, since 1990.

Financial crises and **natural disasters** are identified using at least five-year intervals. If other crises or natural disasters occur within five years, the one associated with the lowest GDP growth (for financial crises) or the largest estimated damage (for natural disasters; in percent of GDP) is chosen as an event. For the 86 countries included in the dataset, since 1990, this results in 108 financial crises, as defined in Laeven and Valencia (2020), of which 79 occurred in EMDEs; and 76 natural disasters, including geophysical, hydrological, meteorological, or climatological disasters, as defined in Dieppe, Okou, and Kilic Celik (2020), of which 64 occurred in EMDEs.

The identification of **institutional reforms** is based on the length of states after a change in respective indicators. After a positive change (for reform advances) or negative change (for reform setbacks) is identified, it is kept if no changes in the opposite direction are found within three years since the beginning of previous changes. The initial years are then chosen as event years. If the initial year of the next episode in the same direction is within five years, the next one is merged with the previous episode. If an episode is ongoing, that episode is used, regardless of the length.

Reform events are defined as sustained increases in the average of four indicators of institutional quality produced by the International Country Risk Guide (ICRG)—bureaucracy quality, rule of law, corruption, and investment profile. For countries with data available for long-term

consensus forecasts over 1990-2020, this yields 163 reform advances among 78 countries and 128 reform setbacks among 69 countries.

The coincidence of acutely adverse events is not high. For example, only 45 percent of 108 financial crisis episodes (discussed above) occurred during recessions. Only three episodes of natural disasters coincided with financial crises, and only 12 natural disasters occurred during recessions.

Methodology

The effects of acutely adverse disruptive events and institutional reforms on long-term growth forecasts are estimated with the following equation,

$$\sum_{p=0}^h g_{i,t+p} = \gamma^h x_{i,t} + \sum_{j=1}^J \beta_j^h g_{i,t-j} + \sum_{k=1}^K \gamma_k^h x_{i,t-k} + \sum_{m=1}^{h-1} \nu_m^h x_{i,t+h-m} + C_{i,t} + \mu_i^h + \delta_t^h + \varepsilon_{i,t}^h$$

where $g_{i,t}$ is the long-term growth forecast in country i in year t . $x_{i,t}$ is a dummy variable for an adverse event (that is, recession, financial crisis, and natural disaster) or institutional reform in country i in year t . C includes a vector of control variables, including a dummy for advanced economies, population, trade openness, and total debt. Country fixed effects, μ , and year fixed effects, δ , are also included.

Cumulative responses of adverse or reform events are computed up to 5 years (that is, $h = 0, 1, \dots, 5$). The equation includes two lags ($J = 2$; $K = 2$) of growth forecasts and the event dummy. To control for the possibility events occur during the forecast horizon, it also considers events happening between year t and $t + h$ (Teulings and Zubanov 2014; World Bank 2020a).

The variable of interest is $x_{i,t}$, and the coefficient shows impulse responses to cumulative growth forecasts at different horizons (up to five years) after the occurrence of an acutely adverse event or an institutional reform in year t . It shows that, h years after an acutely adverse event (or institutional reform), long-term growth forecasts are different by γ^h percentage points between countries with an event (or a reform) and without it.

The results are robust to using per capita growth forecasts instead of aggregate growth forecasts. In particular, recessions and financial crises are still followed by statistically significantly lower per capita growth forecasts five years after the event. Per capita growth forecast changes after natural disasters are not statistically significant.

Like in any regression, the possibility remains that reform spurts coincided with other favorable developments that spurred growth. The methodology cannot disentangle these two forces.

ANNEX 3.2 Literature review: Reforms and growth

An extensive literature has explored the consequences for economic growth of various structural reforms over the past several decades. This annex reviews the main findings of the literature on reforms to improve human capital, broaden and improve infrastructure investment, and raise female labor force participation.

Human capital and growth: Conceptual links. Human capital accumulation is a key driver of productivity growth, the foundation of sustained, robust growth in living standards.²¹ As a factor of production, human capital accumulation can directly raise output growth (Mankiw, Romer, and Weil 1992). It can also indirectly raise growth by stimulating technological progress, technology adoption, and knowledge spillovers.²² The literature is divided on the degree to which human capital can explain cross-country differences in income.²³ Two dimensions of human capital

²¹ See Dieppe (2020), de la Fuente (2011), Flabbi and Gatti (2018), and World Bank (2018a).

²² The role of education in encouraging technological progress is discussed in Acemoglu and Autor (2012); its role in technology adoption is discussed in Danquah and Amankwah-Amoah (2017), Che and Zhang (2018), and Huffman (2020); and its role in knowledge spillovers is discussed in Klenow and Rodríguez-Clare (2005), Easterly (2005), and Ehrlich and Pei (2020).

²³ Some studies find that only 10-50 percent of cross-country income variation can be explained by human capital accumulation (Caselli 2005; Caselli and Ciccone 2013; Klenow and Rodríguez-Clare 1997; Mankiw, Romer, and Weil 1992). Other studies, which differentiate between different types of human capital and skill complementarity, find that the majority of cross-country differences can be attributed to human capital (Hendricks and Schoellman 2017; Jones 2014; Malmberg 2016; Sasso and Ritzen 2016).

accumulation have been studied for their impact on output growth: education and health.

Education and growth: Empirical evidence. A large literature has established that a better educated population is associated with higher incomes or faster income growth. Both school enrollment and the quality of education have been shown to benefit growth or income levels, especially when combined with a supporting environment.

- *Schooling.* Greater school enrollment or educational attainment—especially in primary and secondary education—is associated with stronger growth.²⁴ Primary and secondary education appears to be more important for knowledge diffusion, and post-secondary education for innovation and creation of new knowledge (Vandenbussche, Aghion, and Meghir 2006).
- *Quality of schooling.* The growth-enhancing effect of better-quality education is even stronger than that of simply more schooling as captured in enrollment and attainment ratios.²⁵ For example, measures of greater acquisition of specific skills or academic achievement, such as test scores, are statistically significantly associated with higher growth.²⁶ Especially in lower-income countries, better education is strongly correlated with growth (Hanushek, Ruhose, and Woessmann 2017a, 2017b).
- *Supporting factors.* Other factors can slow human capital accumulation or dampen its growth-enhancing effects. At the individual level, this includes an unsupportive household environment (Hanushek 2002; Woessmann 2003a). At the country level, this includes a

weak institutional environment that diverts highly skilled labor into unproductive uses such as rent-seeking.²⁷ Similarly, a stagnating economy that struggles to create jobs will also struggle to employ productively a better-educated workforce and may therefore not reap the full gains in terms of growth (World Bank 2018a).

- *Feedback loops.* Some studies find evidence of self-reinforcing feedback loops from higher growth to higher investment in human capital.²⁸

Health, nutrition, and growth: Empirical evidence. Both at the worker level and at the country level, health has been associated with greater productivity and higher incomes. Early childhood interventions appear to be particularly beneficial (Grantham-McGregor et al. 2007). For children, better nutrition has been associated with better educational performance and, once they enter the labor market, higher incomes.²⁹ As with education, there appear to be positive feedback loops as higher incomes allow more investment into health infrastructure (Weil 2014).

Infrastructure and growth: Conceptual links. Like human capital accumulation, infrastructure investment raises growth directly by increasing the capital stock and indirectly through its collateral benefits for productivity. Good infrastructure investment can raise productivity by improving competitiveness; lowering production costs; facilitating trade; strengthening human capital; and encouraging innovation and knowledge diffusion (Agenor 2013; Demetriades and Mamuneas 2000). For example, better transportation networks can reduce the cost and time of new construction and installation of new equipment (Turnovsky 1996); improved access to electricity and better sanitation can raise educational attainment and public health standards (Agenor 2011; Getachew 2010). The

²⁴ See Barro (1991, 1997); Krueger and Lindahl (2001); Mankiw, Romer, and Weil (1992); Sala-i-Martin, Doppelhofer, and Miller (2004); Sianesi and Van Reenen (2003); Topel (1999); and Temple (2001). For the impact of primary and secondary schooling, see Barro and Sala-i-Martin (1995).

²⁵ See Barro (2001); Bosworth and Collins (2003); Coulombe and Tremblay (2006); Hanushek (2002); Hanushek and Woessmann (2008); and Woessmann (2003a, 2003b).

²⁶ See Hanushek and Kimko (2000) and Hanushek and Woessmann (2015a, 2015b, 2016).

²⁷ See Easterly (2001); Pritchett (2001); and Murphy, Shleifer, and Vishny (1991).

²⁸ See Bils and Klenow (2000), Pritchett (2001, 2006), and Weil (2014).

²⁹ See Galasso et al. (2017), Vermeersch and Kremer (2005), Luo et al. (2012), and Taras (2005).

growth-enhancing effect of infrastructure investment depends on its quality and, for some types of infrastructure investment, interconnectedness of networks and their freedom from congestion.³⁰

Infrastructure investment and growth: Empirical evidence. Studies of the impact of infrastructure investment spending typically find that such investment raises output, but only modestly and without accompanying productivity increases (Straub and Terada-Hagiwara 2010).³¹ The mixed results have been attributed to uncaptured spillovers, weak institutions, corruption, and inadequate public spending management that impairs the overall efficiency of public investment management.³² In contrast, physical measures of infrastructure capital have been associated with significantly higher output.³³ Access to specific infrastructure services, such as electricity, better roads, or telephones, has also been associated with higher growth or higher income.³⁴

Female labor force participation and growth: Empirical evidence. Greater female labor force

participation raises labor supply and thus output. However, women often face restrictions in freely pursuing occupations or engaging in economic transactions, or face gaps in education or health care (Gonzalez et al. 2015; World Bank 2012). To the extent that this holds them back from realizing their most productive employment, it weighs on output. Increased female labor force participation may also generate lasting effects by improving education outcomes of children or encouraging other women to enter the labor market (Duflo 2012; Fogli and Veldkamp 2011).

Reinforcing interactions between reforms. Interactions between reforms in multiple areas tend to strengthen their growth dividends. Infrastructure investment in safe water, sanitation, electricity, and transportation improves population health, increases school attendance, and improves learning outcomes (Agénor 2010; Agénor and Moreno-Dodson 2006). Healthier students perform better in school and are more likely to attend, while healthier populations are associated with better-qualified staff in the education sector (Agénor and Moreno-Dodson 2006; Behrman 2010). In turn, better education of mothers improves infant health and prospects (Fuchs, Pamuk, and Lutz 2010). Higher educational attainment is associated with greater labor force participation (Eckstein and Lifshitz 2011; Steinberg and Nakane 2012). Infrastructure investment in electricity, clean water, and sanitation also facilitates female labor force participation by freeing women's time for gainful employment (Ghani, Kerr, and O'Connell 2013; Norando 2010). Better governance is also associated with better education (Gerged and Elheddad 2020) and greater and better-quality infrastructure investment (Aghion et al. 2016; Chen et al. 2020; d'Agostino, Dunne, and Pironi 2016).

ANNEX 3.3 Methodology: Impact of reforms

Definitions

Three types of indicators are used to define major reform events: the World Bank's *Worldwide Governance Indicators* and *Doing Business*

³⁰ See Hulten (1994), OECD (2007), and Sanchez-Robles (1998).

³¹ Surveys of the literature include Pereira and Andraz (2013), Bom and Ligthart (2014), and Romp and de Haan (2007). IMF (2014) finds long-term output elasticities of infrastructure investment in excess of 1. In contrast, more recent studies also find that monetary measures of infrastructure investment either do not significantly raise output or growth, or raises output by less than its expense (Ganelli and Tervala 2016).

³² In a meta-analysis of 68 studies over 1983-2008, Bom and Ligthart (2014) find that output elasticities of public capital at the regional level are considerably less than those of public capital at the central government level, suggesting that cross-regional spillovers are not taken into account. IMF (2015) argues that countries with stronger public investment management institutions have more predictable, credible, efficient, and productive investments, and that strengthening these institutions could close up to two-thirds of the public investment efficiency gap. IMF (2018) argue that better public sector asset management is associated with higher revenues, greater effectiveness and returns on assets, and lower risk. Pritchett (2000) casts doubt on the robustness of econometric estimates of output elasticities.

³³ Canning (1999); Calderón and Servén (2003); and Calderón, Moral-Benito and Servén (2015) find output gains from electricity generation capacity, transportation networks, and telephone networks. Easterly (2001) finds an association between telephone lines and growth. Fernald (1999) shows that road infrastructure investment raised U.S. productivity. Roller and Waverman (2001) find a positive link between telecommunications networks and growth.

³⁴ For access to electricity, see Khandker et al. (2012), Kumar and Rauniyar (2011), and Rud (2012). For access to better roads, see Datta (2012), Hu and Liu (2010), and Queiroz and Gautam (1992). For access to telephones, see Canning and Pedroni (2008).

indicators, and *International Country Risk Guide* indicators.

Worldwide Governance Indicators. Reform advances (setbacks) in governance are defined as two-year increases (decreases) by two standard errors in one or more indexes of government effectiveness, regulatory quality, rule of law, and control of corruption from the *Worldwide Governance Indicators*. The average of the standards errors at time t and $t-2$ (the first and last year of the event interval) is used for the standard deviation. This yields 142 reform advances (of which 127 are in EMDEs) and 163 reform setbacks (of which 147 are in EMDEs) in 110 EMDEs and 21 advanced economies during 1996-2018.

Doing Business indicators. Similarly, reform advances (setbacks) in business climates are defined as two-year increases (decreases) by two country-specific standard deviations in the distance to frontier (best practice across all countries and years) of one or more of the ten *Doing Business* indicators: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, and resolving insolvency. The sample is restricted to EMDEs with populations of over 4 million people and excludes EMDEs in fragile and conflict-affected situations (FCS). This yields 260 reform advances and 120 reform setbacks in 67 EMDEs during 2006-20.

International Country Risk Guide (ICRG) indicators. Episodes of sustained improvements or deteriorations in institutional quality are defined as an increase or decrease, respectively, in the unweighted average of four ICRG indicators—bureaucracy quality, law and order, corruption, and investment profile—provided the increase is not unwound for at least three consecutive years. This yields 106 episodes of sustained reform advances and 85 episodes of sustained reform setbacks in 100 EMDEs during 2004-19.

Methodology

Two exercises are conducted: an event study comparing medians and a local projection estima-

tion. Small countries (those with populations less than 4 million) are excluded from the sample. Only the earliest episode is selected when reform advances (setbacks) occur in two consecutive years.

Event study. This exercise looks at the median growth rates of TFP and investment one year after the reform event to evaluate the on-impact effect of reform advances and setbacks. The short-term effect of a reform event is defined as the difference between the median growth (of either TFP or real investment) after all reform advances (setbacks) and the median growth during all “normal” years without such events (figure B3.3.3). The medians are calculated both for the full sample and for EMDEs only.

Local projection estimation. A local projection estimation as in Jordà (2005) using the bias-correction specification of Teulings and Zubanov (2014) is estimated to identify the effects of reform events on TFP and real investment growth over time. The main advantages of local projection estimations include their simplicity of estimation, robustness to model misspecifications, ease of inference, and flexibility to incorporate highly nonlinear specifications and interactions of various regressors. In impulse responses, the model estimates the effect of reform events in country i in year t (the dummy variable $shock_{i,t}$) on cumulative growth in TFP or real investment over a horizon h :

$$y_{i,t+h} - y_{i,t} = \alpha^h + \beta^h shock_{i,t} + \sum_j^2 \theta_{1,j}^h shock_{i,t-j} + \sum_j^{h-1} \theta_{2,j}^h shock_{i,t+h-j} + \sum_j^2 \theta_{3,j}^h dy_{i,t-j} + \theta_{4,i}^h X_i + \mu_i^h + \tau_t^h + \epsilon_{i,t}$$

where y refers to the log level of TFP (or real investment), dy to its annual growth rate, and μ_i^h and τ_t^h to country and year fixed effects. Additional controls X_i include a dummy indicating whether a country is a commodity exporter, dummies for financial crises occurring during the period h , and the log level of real GDP per capita at t . Since $y_{i,t+h} - y_{i,t}$ is a cumulative growth in either TFP or real investment over horizon h , the

coefficient β^h represents an estimate of the cumulative response of growth in TFP (or real investment) by time $t+h$ to the reform advance (setback) that happened at time t .

The results are robust to using non-overlapping episodes. That said, like any regression, the possibility remains that the events selected here coincided with other favorable or adverse developments that spurred or slowed growth and the methodology cannot disentangle these two forces.

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