

OVERVIEW

Across the world, a structural growth slowdown is under way. If current trends continue, the global rate of potential growth—the maximum rate at which an economy can grow without igniting inflation—is expected to fall to a three-decade low over the remainder of the 2020s. Nearly all the forces that have powered growth and prosperity since the early 1990s have weakened, not solely because of a series of shocks to the global economy over the past three years. The rates of growth of investment and total factor productivity are declining. The global labor force is aging—and expanding more slowly. International trade growth is much weaker now than it was in the early 2000s. The slowdown could be even more pronounced if financial crises erupt in major economies and spread to other countries, as these types of episodes often lead to lasting damage to potential growth. A persistent and broad-based decline in long-term growth prospects imperils the ability of emerging market and developing economies (EMDEs) to combat poverty, tackle climate change, and meet other key development objectives. These challenges call for an ambitious policy response at the national and global levels. The slowdown can be reversed by the end of the 2020s—if all countries replicate some of their best policy efforts of recent decades and accompany them with a major investment push grounded in robust macroeconomic frameworks. Boosting human capital and labor force participation and making sound climate-related investments can also make a measurable difference in lifting growth prospects. Increased cross-border cooperation and substantial financing from the global community will need to support bold policy actions at the national level.

Slowing growth, dimming prospects

In 2015, Kaushik Basu, the World Bank Group’s Chief Economist at the time, asked us to assess the long-term growth prospects of emerging market and developing economies (EMDEs). His request inspired us to prepare the study “Slowdown in Emerging Markets: Rough Patch or Prolonged Weakness?”¹ The question in the title was a deliberate choice, since the study documented a synchronous slowdown in these economies during 2010-15 but concluded that cyclical factors played a partial role and that policies could reverse the decline in growth. We now have a definitive answer to the question we posed in the title: These economies are in the midst of a prolonged period of weakness.

Note: This overview was prepared by M. Ayhan Kose and Franziska Ohnsorge.

¹Our earlier study focused on both cyclical and structural drivers of the slowdown (Didier et al. 2015). This study also acknowledges the importance of cyclical factors but focuses on structural drivers that have become more prominent in explaining the decline in growth. It is much more comprehensive than our earlier study, as it builds on, and expands, multiple studies we have conducted since then. Some of these have been featured in the World Bank Group’s flagship *Global Economic Prospects* report in which we have examined different aspects of growth in EMDEs.

This book argues that the current weakness in growth in EMDEs will likely extend through the remainder of the 2020s. It could be even more pronounced if financial crises erupt in major economies and, especially, if they trigger a global recession. The experience of the past two decades has shown that financial crises and recessions cause lasting damage to growth; this damage would compound the weaknesses in the main drivers of growth that are already embedded in current trends. In addition, the necessary policy interventions could be delayed, as has often happened during the past decade, such that global growth over the 2020s could disappoint once again.

It will take a herculean collective policy effort to restore growth in the next decade to the average of the previous one. At the national level, this effort will require these economies to repeat their own best 10-year records in a wide range of policy results. At the global level, given the cross-border nature of many challenges confronting growth, the policy response requires stronger cooperation, larger financing, and a reenergized push for mobilization of private capital.

Major shocks have battered the global economy over the past three years—including the coronavirus disease 2019 (COVID-19) pandemic and the war in Ukraine. After countries had provided the necessary support for businesses and individuals hurt by the pandemic, cyclical policies turned contractionary. A steep rise in inflation over the past two years has led to the sharpest tightening of global monetary policy in four decades. Fiscal policy has also become less supportive following a significant deterioration of government budget balances during the 2020 global recession, when debt levels reached historic highs. Amid these multiple adverse shocks and limited policy space, the global economy has experienced, over the past three years, the sharpest growth slowdown ever following a global recession.

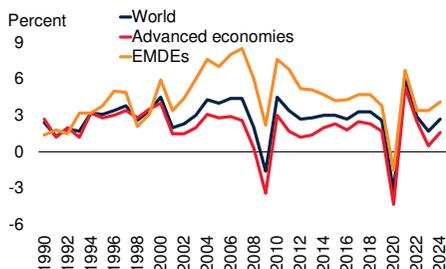
Even as policy makers confront these short-term challenges, a longer-term setback of considerable importance has been brewing quietly: a persistent decline in long-term growth prospects. In the past decade, growth in EMDEs has slowed sharply (table OA.1). Global growth declined from a recent peak of 4.5 percent in 2010 to a projected low of 1.7 percent in 2023 (figure O.1). The slowdown was widespread: in 80 percent of advanced economies and 75 percent of EMDEs, average annual growth was lower during 2011-21 than during 2000-10.

The slowdown was particularly pronounced in EMDEs. As a result, the pace at which the per capita incomes of these economies are catching up to those of advanced economies (so-called income convergence) has fallen: In 2011-21, EMDE per capita incomes grew more rapidly than per capita incomes in advanced economies by 2.0 percentage points a year. But that was considerably smaller than the differential of 3.4 percentage points a year during 2000-10. The income convergence process was set back in all EMDE regions (that is, regions with EMDEs). Middle-income EMDEs were hit somewhat harder than low-income countries (LICs). Per capita income growth slipped by 1.4 percentage points in middle-income countries, from 4.9 percent in 2000-10 to 3.5 percent in 2011-21 (table OA.2). LIC per capita income growth also slowed, by 1.2 percentage points, to 1.7 percent in 2011-21 from 2.9 percent in 2000-10.

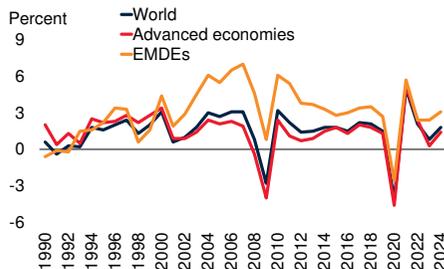
FIGURE O.1 Growth

Growth has slowed sharply—in aggregate and per capita terms and in the majority of countries—from its elevated rates in the early 2000s. The pace at which per capita incomes are converging toward those in advanced economies has slowed in all EMDE regions.

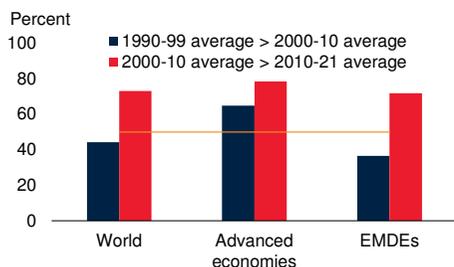
A. Growth



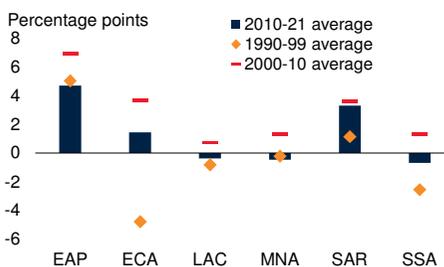
B. Per capita growth



C. Share of countries with slower growth than in the previous decade



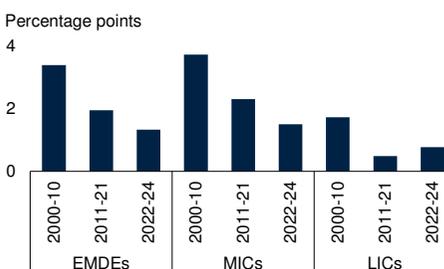
D. Annual average per capita income growth relative to advanced economies



E. Growth



F. Per capita growth relative to advanced economies



Source: World Bank.

Note: EMDEs = emerging market and developing economies.

A.B. Projections for 2023-24. Averages weighted by gross domestic product (GDP) (at 2010-19 average exchange rates and prices).

C. Yellow horizontal line indicates 50 percent.

D. 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.

E.F. GDP-weighted averages (at 2010-19 average exchange rates and prices). Unbalanced sample of up to 105 MICs and 26 LICs. Projections for 2022-24 from the World Bank's January 2023 *Global Economic Prospects* report. LICs = low-income countries; MICs = middle-income countries.

The slowdown represents a deepening crisis of development—because all the fundamental drivers of economic growth have faded (figure O.2). Ordinarily one of the most powerful drivers of economic growth, global trade in 2010-19 grew only as fast as overall economic growth, down from twice as fast during 1990-2011. Factor reallocation from less to more productive firms and sectors has also slowed. Gains from better education and health have faded as improvements in education and health care systems have leveled off. Continuing a decade of weakness prior to the pandemic, average growth of investment in EMDEs is projected at 3.5 percent per year, about half its 2000-21 average.² After rising over the preceding decades, the growth of the working-age population relative to overall global population growth declined to a three-decade low in 2017. Global policy uncertainty has risen, while attitudes toward trade integration have turned more cautious.

On top of this fading growth momentum, a series of shocks—including the pandemic and climate-related disasters—over the past decade have done lasting damage to the development process. This damage has been reflected in stalling poverty reduction.

Magnifying challenges

Weaker long-term growth gives rise to a wide range of challenges. First, it slows the pace of poverty reduction. At projected growth rates, the goal of reducing global extreme poverty to 3 percent of the population by 2030 is now out of reach. Second, slower output growth tends to reduce the resources available to invest in solving problems confronting the global economy. Without sustained investment growth, it will be difficult, if not impossible, to address climate change and make material progress toward other development goals. Third, slower long-term output growth implies limited job creation and wage growth, which provides fertile ground for social tensions and is likely to entail slower transitions from informal to formal economic activity. Finally, weaker long-term output growth curtails the resources available to pay off mounting debt loads, potentially undermining debt sustainability and leading to financial stress.

One tool for meeting multiple policy priorities

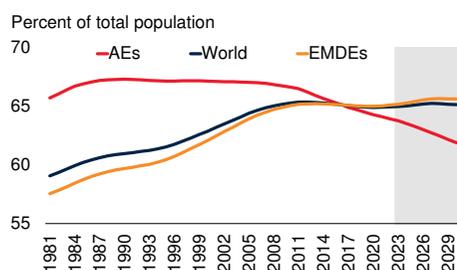
A raft of sometimes competing policy priorities accompany the intensifying development challenges the world faces: eliminating extreme poverty, reducing inequality, achieving higher growth, and combating climate change. The good news is that addressing each of these priorities requires the same recipe: sustained and robust investment and productivity growth. Through this mechanism, policy makers can overcome these enormous challenges and deliver sustained, sustainable, and inclusive growth. Measures to promote investment in human capital, foster gender equality, and strengthen social protection systems will need to accompany efforts along these lines.

²Throughout this book, unless otherwise specified, “investment” refers to real gross fixed-capital formation (public and private combined).

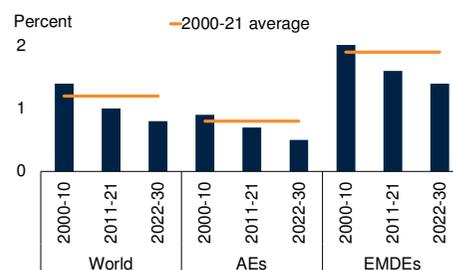
FIGURE 0.2 Drivers of output growth

All the fundamental drivers of output growth have slowed in the past decade. Improvements in human capital, growth of the labor force, investment (including because of policy uncertainty), and total factor productivity (including through factor reallocation) all decelerated. These drivers of growth are expected to slow further in the remainder of the current decade.

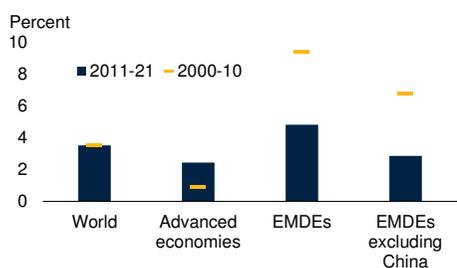
A. Working-age population



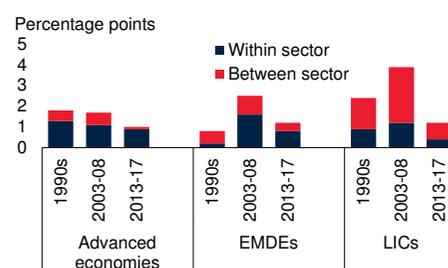
B. TFP growth



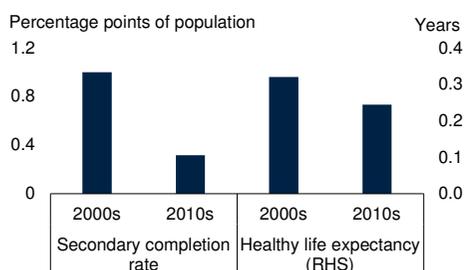
C. Investment growth



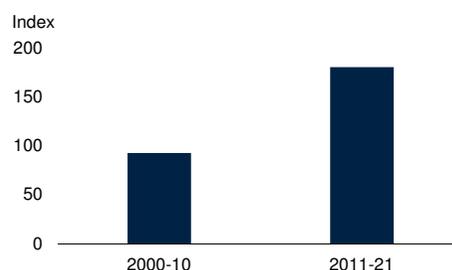
D. Contributions to labor productivity growth



E. Improvement in human capital indicators



F. Global policy uncertainty



Sources: Baker, Bloom, and Davis (2016); Barro and Lee (2013); Dieppe and Matsuoka (2021); UN population statistics; World Bank. Note: AEs = advanced economies; EMDEs = emerging market and developing economies; LICs = low-income countries; RHS = right-hand scale; TFP = total factor productivity.

A. Population-weighted averages. The working-age population is defined as people aged 15-64 years.

B. GDP-weighted arithmetic average of total factor productivity growth. Includes 53 EMDEs and 29 advanced economies.

B.-E. Arithmetic annual averages.

C. Averages weighted by gross domestic product (GDP) for the period indicated.

D. Based on samples of 94 countries during 1995-99 and 103 countries during 2003-17. Median of country-specific productivity contributions. Within-sector growth shows the contribution of initial productivity growth weighted by real value added, and between-sector growth shows the contribution from changes in the employment share.

E. For healthy life expectancy at birth, annual average change in population-weighted average for 179 countries between 2000 and 2010 and between 2011 and 2019. For lower secondary school completion rate (in percent of relevant age group), annual average change in world aggregate between 2000 and 2010 and between 2010 and 2019.

F. Period averages. The global policy uncertainty index is a GDP-weighted average of national economic policy uncertainty indexes for 21 countries: Australia; Brazil; Canada; Chile; China; Colombia; France; Germany; Greece; India; Ireland; Italy; Japan; Korea, Rep.; Mexico; the Netherlands; the Russian Federation; Spain; Sweden; the United Kingdom; and the United States (Baker, Bloom, and Davis 2016).

Achieving this goal is not easy: policies that are effective in lifting long-term growth and investment are often difficult to design and even more difficult to implement. They tend to involve structural interventions that can sometimes impose substantial, asymmetric costs on parts of society and therefore can face stiff resistance from vested interests. Some need to be accompanied by supportive measures to ensure inclusive growth. Moreover, their growth dividends often take time to accrue. Nonetheless, achieving strong and sustained growth is the only plausible path to durably addressing climate change, poverty, and a wide range of other development challenges.

Understanding long-term growth: A framework

This book frames long-term growth around the concept of potential growth: the maximum gross domestic product (GDP) growth rate that an economy can sustain in the long term at full employment and full capacity without igniting inflation. An economy's potential growth rate is effectively its speed limit. It influences the full spectrum of policies that determine economic and development outcomes: the level of benchmark interest rates, the scale of government spending, and even the expected size of returns to investors. The speed limit can be raised—through policies that expand the labor supply, boost productivity, and ramp up investment.

Although the concept of potential growth has been much explored, potential growth itself is not directly observable and must be inferred from other data. The book develops a variety of measures of potential growth and examines their evolution over time. It presents a detailed discussion of linkages between potential growth and its underlying drivers: capital accumulation (through investment growth), labor force growth, and the growth of total factor productivity (TFP), which is the part of economic growth that arises from more efficient use of inputs and often results from technological changes. The book also pays special attention to developments in the trade and services sectors, both of which have been key contributors to productivity growth and changes in labor markets.

Contributions to the literature

There is a rich literature on policies to improve long-term growth prospects.³ This book makes three key contributions with its introduction of a new database of potential

³Several studies have examined the links between growth and inequality (for example, Cerra et al. 2021) or between short-term shocks and long-term output trends (for example, Cerra, Fatás, and Saxena 2020). Others have looked in depth at specific drivers of growth, such as innovation (Aghion, Akcigit, and Howitt 2015; Aghion, Antonin, and Bunel 2021; Aghion and Howitt 2005), institutions (Acemoglu 2012; Acemoglu, Johnson, and Robinson 2005), culture (Gorodnichenko and Roland 2011), political economy (Acemoglu and Robinson 2012; Allen et al. 2014), trade (Rodrik 2016), finance (Arcand, Berkes, and Panizza 2015; Obstfeld 2009), digitalization (Brynjolfsson and McAfee 2014, 2017), and human capital (Schady et al. 2023). Some studies have examined growth prospects in different regions, such as Europe (Gill and Raiser 2012), Central America (Ulku and Zaourak 2022), Latin America (Alvarez and de Gregorio 2014), and Africa, Asia, and Latin America (seven country case studies by McMillan, Rodrik, and Sepúlveda 2017). Others, such as Loayza and Pennings (2022), have developed tools for modeling long-term growth. Finally, a group of studies has examined firm-level drivers of growth prospects (for example, Comin and Mulani 2009; Fisman and Svensson 2007; and Goedhuys and Veugelers 2012).

growth, emphasis on global and region-specific growth trends and prospects, and presentation of a rich menu of policies for delivering better growth outcomes.

Comprehensive database of potential growth. The book introduces the first comprehensive database of the nine most commonly used estimates of growth in potential output for the largest available country sample, up to 173 economies (37 advanced economies and 136 EMDEs) over 1981-2021 (chapter 1). These estimates are based on multiple methodologies. The book also examines prospects for potential growth based on projections of its structural drivers: growth of physical and human capital, growth of labor supply, and growth of TFP.⁴ In addition, using the new database, it presents the first detailed analysis of the damage to potential growth from many adverse developments in EMDEs, including recessions, banking crises, epidemics, and natural disasters (chapters 1 and 5).⁵

Regional aspects of potential growth and investment. This book is the first to examine regional trends in EMDEs and the prospects for the growth of potential output and investment since the onset of the COVID-19 pandemic. In dedicated chapters, the book also discusses regional policy priorities and options to strengthen investment and potential growth (chapters 2 and 4). Its analysis draws on specific literature and data for each of the six World Bank Group regions: East Asia and Pacific (EAP), Europe and Central Asia (ECA), Latin America and the Caribbean (LAC), the Middle East and North Africa (MNA), South Asia (SAR), and Sub-Saharan Africa (SSA).

Policies. The book explores, in a consistent framework, policy options to lift potential growth. In contrast to those in earlier studies, the discussion of policy options is directly based on empirical analysis.⁶ Some of these policies include reforms of education and health care systems as well as labor markets (chapter 5). The book also presents an extensive menu of policies for boosting investment and productivity growth and examines policy interventions geared toward promoting growth in services activity and international trade.

- *Investment as a key driver of potential growth.* As noted earlier, investment is essential for delivering sustained growth in potential output, improving living standards, and making progress in achieving the Sustainable Development Goals (SDGs) and fulfilling commitments made under the Paris Agreement on climate change. This

⁴Previous studies have been confined to a single methodology, such as the production function approach (OECD 2014) or multivariate filters (ADB 2016; IMF 2015). Some earlier studies estimated trends for only a subset of measures of potential growth (for example, Chalaux and Guillemette 2019; Kilic Celik, Kose, and Ohnsorge 2020). The book's focus on long-term potential growth projections also contrasts with the previous literature, which has examined past trends (ADB 2016; Dabla-Norris et al. 2015; IMF 2015; OECD 2014).

⁵Earlier work has estimated the effects of recessions on potential growth, but those recessions were primarily confined to member countries of the Organisation for Economic Co-operation and Development and to one specific measure of potential growth (Furceri and Mourougane 2012; Mourougane 2017).

⁶Previous studies have investigated the link between actual growth of output or productivity and structural reforms, focusing on the near-term benefits (Prati, Onorato, and Papageorgiou 2013), productivity effects (Adler et al. 2017; Dabla-Norris, Ho, and Kyobe 2016), or a sample consisting of mostly advanced economies (Banerji et al. 2017; IMF 2015, 2016b).

book provides the first comprehensive analysis of investment growth in a large sample of EMDEs since the pandemic and the Russian Federation's invasion of Ukraine. It examines the likely medium- and long-term consequences of the damage to investment in EMDEs from recent adverse shocks, focusing on the effects on productivity, growth in potential output, trade, and the ability to achieve the SDGs and climate-related goals. It also describes a rich menu of policies to revive investment growth.

- *Trade as a traditional engine of growth.* Trade has been a powerful engine for EMDE growth over the past four decades, but its role is now under threat. The book presents a comprehensive analysis of trade costs and avenues for promoting trade growth (chapter 6). It goes beyond previous research in assessing the role of trade policy—including policy regarding tariffs and participation in trade agreements—in determining trade costs (Arvis et al. 2016; Chen and Novy 2012; World Bank 2021). An event study of the evolution of trade in goods and services around global recessions, including the pandemic-induced global recession of 2020, complements this analysis. Building on the econometric analysis, the chapter derives policy options to lower trade costs.
- *Services as a new engine of growth.* High hopes have been placed on the services sector as a new engine of economic growth as traditional engines of growth such as goods trade and resource sectors sputter.⁷ This book establishes a set of stylized facts that summarize the role of the services sector in growth and development over the past three decades (chapter 7). It presents growth decompositions that estimate the contributions of subsectors of services as well as the contributions of the growth of factor inputs versus TFP. The book also documents how the pandemic has affected prospects and policy priorities for services-led growth, building on some recent studies. It assesses future growth opportunities linked to the acceleration in digitalization, taking as a starting point the literature on how the digital economy is expanding opportunities to boost productivity in the services sector.

Key findings and policy messages

Using a comprehensive database of multiple measures of potential growth, this book examines trends in potential growth and its drivers (especially investment), global and regional prospects for potential growth and investment over the 2020s, and a range of policy options for lifting potential growth. It documents three major findings. First,

⁷ Major shifts are under way in commodity markets as part of the energy transition, as discussed in Baffes and Nagle (2022). Recent work considers the potential of services as an engine of growth and trade (Lee and McKibbin 2018; Nayyar, Hallward-Driemeier, and Davies 2021a, 2021b; OECD 2005; Park and Noland 2013) and trade (Baldwin 2016; Francois and Hoekman 2010). Some recent studies also consider the effects of the pandemic on growth and household income or firm sales distribution (Apedo-Amah et al. 2020; Chetty et al. 2020; Narayan et al. 2022). The book expands on the growing literature on structural change and productivity growth in EMDEs, which highlights changes in the relative contributions of the broader manufacturing and services sectors and demand- and supply-side factors (Fan, Peters, and Zilibotti 2021; Kinfemichael and Morshed 2019; McMillan and Rodrik 2011; Nayyar, Hallward-Driemeier, and Davies 2021a, 2021b; Rodrik 2016).

potential growth and its underlying drivers have declined in a protracted, broad-based way. Major adverse shocks have also reduced potential growth by leaving a lasting impact on these drivers. Second, the slowdown in potential growth is expected to persist for the rest of this decade. Finally, while these two matters are significant challenges confronting EMDEs, they are not insurmountable. It is possible to reverse the slowdown in potential growth and chart a sustained, sustainable, and inclusive growth path by implementing ambitious, broad-based, and forceful policies at the national and global levels.

Long-standing, widespread decline in potential growth

All measures document a widespread decline in potential growth in the decade 2011-21, relative to the preceding decade (chapter 1). Global potential growth fell to 2.6 percent a year during 2011-21 from 3.5 percent a year during 2000-10; meanwhile, EMDE potential growth fell to 5.0 percent a year during 2011-21 from 6.0 percent a year during 2000-10 (table OA.3).

The weakening of potential growth was highly synchronized across countries: during 2011-21, potential growth was below its 2000-10 average in almost all advanced economies and nearly 60 percent of EMDEs. Among EMDE regions, the steepest slowdown occurred in MNA, followed by that in EAP, although potential growth in EAP remained higher than that in all other EMDE regions except SAR, where potential growth remained broadly unchanged (chapter 2).

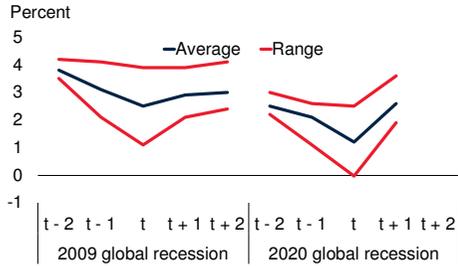
This slowdown in potential growth can be attributed to many factors, as all fundamental drivers of growth faded. Globally, slower growth in TFP, labor supply, and investment than in the period 2000-10 marked the period between 2011 and 2021. The period between 2011 and 2021 was marked globally by slower TFP growth, slower labor supply growth, and slower investment growth than in the period 2000-10. In addition, financial crises, global recessions, bouts of inflation, health crises such as epidemics and a pandemic, climate-related disasters, and wars and conflict of varying severity rocked the global economy. Almost all of these shocks, and especially the global recessions, left lasting legacies of damaged drivers of, and slower rates of, potential growth (figure O.3). Using a series of econometric approaches, this book quantifies this damage.

- *Recessions* resulted in lasting damage to the productivity capacity of the global economy. National recessions were associated with potential growth that was 1.4 percentage point slower, on average, even five years later (chapter 1). Over the medium term, recessions tended to have a somewhat more severe impact than did other adverse events—such as banking crises, epidemics, and other natural disasters. The effect of recessions on potential growth operated through multiple channels. Four to five years after a typical recession, investment growth, employment growth, and TFP growth remained significantly lower than in “normal” years—by 3.0 percentage points for investment, 0.7 percentage point for employment, and 0.7 percentage point for TFP.

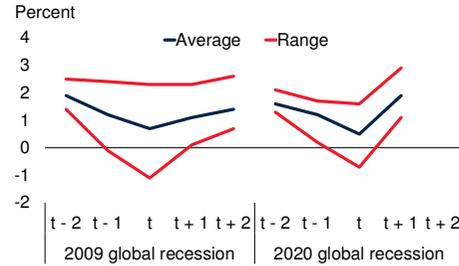
FIGURE 0.3 Recessions’ lasting damage to potential growth

Potential growth fell during the global recessions of 2009 and 2020, reflecting declines in investment growth, labor force growth, and total factor productivity growth. The decline was particularly steep in the COVID-19-induced global recession of 2020, which was unusual also in regard to the disproportionately large loss in services activity.

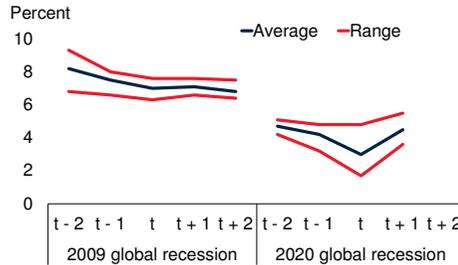
A. World: Potential growth



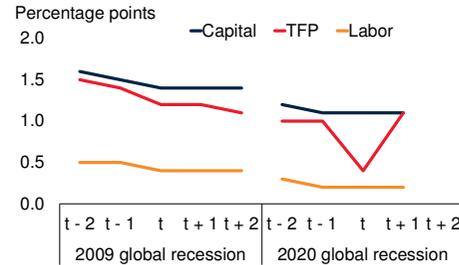
B. Advanced economies: Potential growth



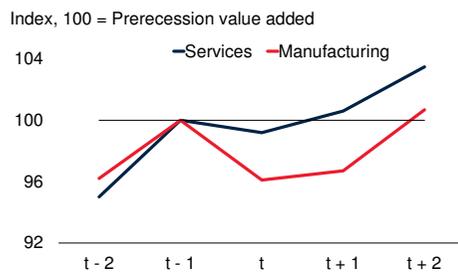
C. EMDEs: Potential growth



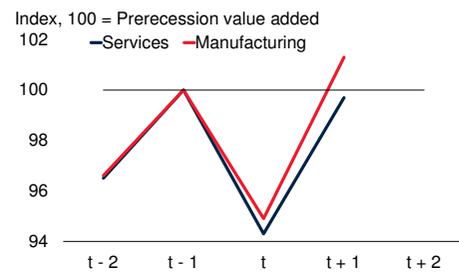
D. World: Contributions to potential growth



E. National recessions before 2020



F. National recession in 2020



Source: World Bank.

Note: In each panel, the horizontal axis shows years, with t representing the recession year. COVID-19 = coronavirus disease 2019; EMDEs = emerging market and developing economies.

A.-C. “Average” is an unweighted average of seven measures of potential growth (excluding forecasts). “Range” reflects the maximum and minimum. Figures show potential growth around t = 2009 and t = 2020.

D. Figures show the contributions of growth in capital, total factor productivity (TFP), and labor to potential growth around t = 2009 and t = 2020.

E.F. Figures show the unweighted average level of real value added in services (blue) and manufacturing (red) in the years around the recession year t, indexed to 100 for the year preceding the recession.

- *Banking crises* were associated with initially larger declines in potential growth than recessions, with the declines peaking at 1.8 percentage points after two years as a result of collapses in investment. However, quick recoveries in investment generally followed, such that the damage to potential growth after five years was only 1.2 percentage points—less than after recessions. In contrast to recessions, banking crises tended to be mainly associated with lasting productivity losses.
- *Climate change* has increased the frequency and severity of weather-related natural disasters. Over the past two decades, these natural disasters have caused a significant decline in potential growth (chapter 5). For example, over the medium term, depending on the magnitude and speed of reconstruction efforts, damage to potential growth varied from nil to 10 percent three years after the disaster. Some countries, especially small states, have suffered much larger damage than the average effect suggests: on average 5 percent of GDP per year. These losses have not occurred in a predictable pattern. Instead, it has not been uncommon for the damages from a single climate-related disaster to cost a substantial portion of a country's GDP, or even multiples of GDP in extreme cases.

A lost decade in the making? Weaker growth prospects

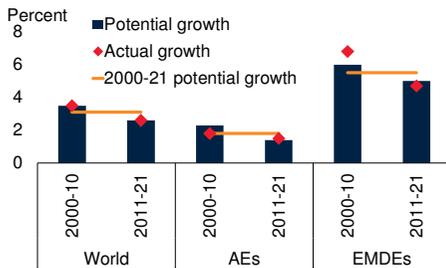
The slowdown in potential growth during 2011-21 is projected to extend into the remainder of the current decade (figure O.4). Projections for its fundamental drivers suggest that global potential growth will slow further, by 0.4 percentage point a year from 2011-21 to an average of 2.2 percent a year in 2022-30, the slowest pace since 2000 (chapter 5). About half of the projected slowdown will be due to demographic factors from an aging population, including slowing growth in the working-age population and declining labor force participation. EMDE potential growth is projected to slow by 1.0 percentage point a year to an average of 4.0 percent a year in 2022-30. The decline will be internationally widespread: Economies accounting for nearly 80 percent of global GDP, including most EMDEs, are projected to experience a slowdown in potential growth between 2011-21 and 2022-30. All traditional drivers of growth, including trade, are expected to weaken in the remainder of this decade. However, relatively healthier growth is expected in the services sector.

Investment. The slowdown in investment during 2011-21 will likely extend into the remainder of the current decade because of the effects of the COVID-19 pandemic, Russia's invasion of Ukraine, limited policy space, and tight financial conditions (figure O.5; chapter 3). In 2022-24, investment growth in EMDEs is projected to average 3.5 percent per year, about half its average annual growth during 2000-21 (chapter 3). Projected investment growth through 2024 will be insufficient to return aggregate EMDE investment to its prepandemic trend from 2010 to 2019 (the period between the highly disruptive 2009 and 2020 global recessions). Annual average investment growth in 2022-30 is now forecast to be 0.3-1.8 percentage points lower, on average, than in 2011-21 in all regions except in LAC and SAR, where adverse shocks that depressed investment growth in the 2010s are not expected to recur. After a gradual decline over

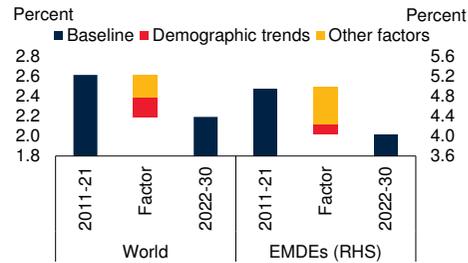
FIGURE 0.4 Potential growth

A broad-based weakening of potential growth in the past decade is expected to continue in the remainder of the current decade. In part, this reflects a weakening of investment growth that downgrades to consensus forecasts have reflected.

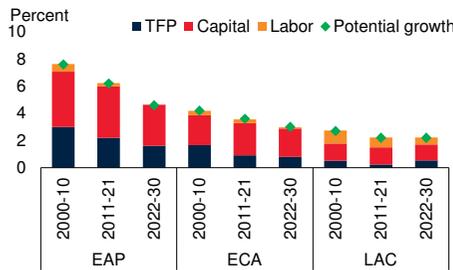
A. Potential growth



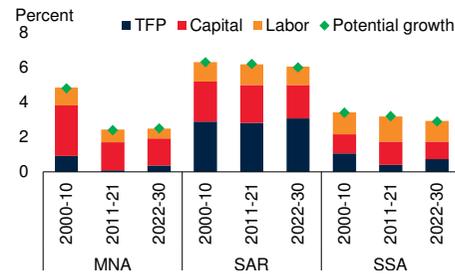
B. Potential growth



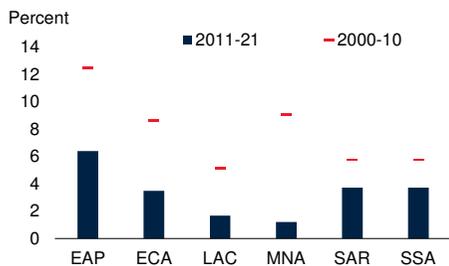
C. Contributions to potential growth



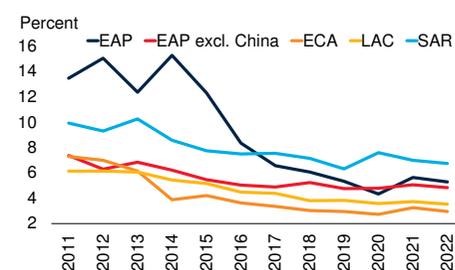
D. Contributions to potential growth



E. Investment growth, by region



F. Five-year-ahead consensus forecasts of investment growth



Sources: Consensus Economics; Penn World Table; World Bank.

Note: AEs = advanced economies; EAP = East Asia and Pacific; ECA = Europe and Central Asia; EMDEs = emerging market and developing economies; LAC = Latin America and the Caribbean; MNA = Middle East and North Africa; RHS = right-hand scale; SAR = South Asia; SSA = Sub-Saharan Africa; TFP = total factor productivity.

A.-E. Arithmetic annual averages.

A.B. Based on production function approach. Averages weighted by gross domestic product (GDP) for a sample of 29 advanced economies and 53 EMDEs.

C.D. Based on production function approach. Sample includes 4 countries in EAP, 9 in ECA, 15 in LAC, 7 in MNA, 2 in SAR, and 13 in SSA. Data for 2022-30 are forecasts.

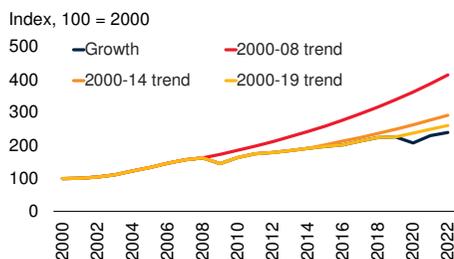
E. Weighted averages by real annual fixed investment in constant U.S. dollars. Sample includes 8 economies in EAP, 12 economies in ECA, 19 economies in LAC, 9 economies in MNA, 3 economies in SAR, and 19 economies in SSA.

F. Includes data for six economies in EAP (China, Indonesia, Malaysia, Philippines, Thailand, Vietnam), seven economies in ECA (Bulgaria, Croatia, Hungary, Poland, Romania, Russian Federation, Ukraine), six economies in LAC (Argentina, Brazil, Chile, Colombia, Mexico, Peru) and one economy in SAR (India). Single-year missing data are interpolated.

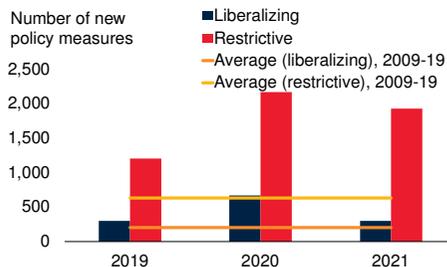
FIGURE 0.5 Global trade and investment

Global trade growth has slowed, in part on account of growing use of restrictive trade measures. Foreign direct investment inflows to EMDEs have weakened since the early 2000s. The recovery in EMDE investment from the 2020 global recession is expected to be less robust than that after the global recession of 2009.

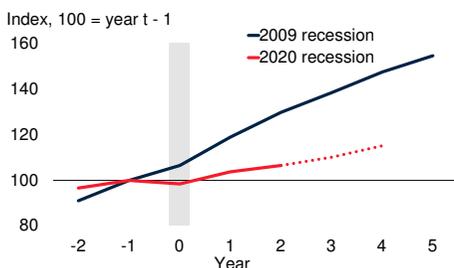
A. Global trade



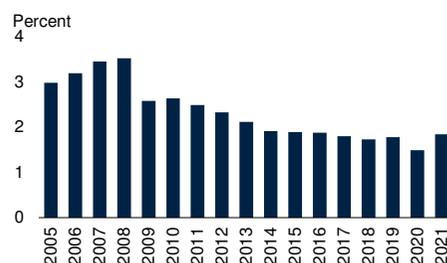
B. Policy interventions affecting trade



C. EMDE investment



D. Foreign direct investment in EMDEs



Sources: Global Trade Alert database; Haver Analytics; United Nations Conference on Trade and Development; World Bank.

Note: EMDEs = emerging market and developing economies.

A. Trade defined as exports and imports of goods and nonfactor services.

B. Data exclude late reports for the respective reporting years (the cut-off date is December 31 of each year).

C. Investment-weighted average (at 2010-19 average exchange rates and prices), indexed to 100 in the year before the global recession. "0" indicates the year of the global recession (2009 or 2020).

D. Last observation in 2021.

the past decade, foreign direct investment (FDI) will also likely remain weak over the remainder of the 2020s.

Trade. Global trade growth may weaken by another 0.4 percentage point per year, on average, during the remainder of the current decade compared with 2011-21, owing partly to slower global output growth and partly to the further waning of structural factors that have supported rapid trade expansion in recent decades (chapter 6). Fragmentation of trade and investment networks loom large over trade prospects amid policies that favor suppliers from allied countries (friend-shoring) or nearby countries (near-shoring). The historical record also shows that persistently weak investment growth tends to be associated with slow trade growth.

Services. A possible bright spot may be the services sector—provided its productivity potential can be unlocked (chapter 7). In particular, the pandemic has ushered in a

pronounced shift toward digitalization as firms have moved many of their activities online. This shift promises productivity gains if it can be harnessed for better delivery of services. Since the pandemic, there has also been a shift toward high-skilled offshorable services activities, such as digitally deliverable information and communications technologies (ICTs) and professional services.

From technological innovations to the “roaring 2020s”?

The implications of technological innovations for future growth prospects have been a subject of intense debate. Some claim that the global economy will enjoy a surge in economic growth in the coming decades, with that surge driven by improvements in productivity thanks to new technologies (for example, Brynjolfsson and McAfee 2014). Others caution that future growth could stall, or even fall, because new technologies will likely have a declining marginal impact on productivity and structural challenges associated with aging and sluggish growth of investment will adversely affect prospects (for example, Gordon 2017).

As the world gradually emerges from the pandemic-induced recession of 2020, it is tempting to look back to the 1918 Spanish flu epidemic and hope for a decade of rapid global growth reminiscent of the “Roaring Twenties” of that era because of recent technological innovations. Building on technological breakthroughs in earlier decades, Europe and North America enjoyed rapid modernization and strong economic growth in the 1920s. Automobiles replaced horse-drawn transportation and became ubiquitous as improvements in assembly lines cut costs. Newly built electrical grids paved the way for rapid industrial and household electrification. The economies of Japan, the United States, and some European countries became more productive. Global growth averaged 3.6 percent in the 1920s, double that of the preceding two decades.

There is no question about the potential of recent technological innovations to transform lives across the world, in many dimensions. However, in light of the trends of the past two decades and the persistent slowdown in the fundamental sources of growth, our analysis concludes that the 2020s are more likely to be “disappointing” than “roaring” for the global economy, unless a comprehensive set of policies are put in place.

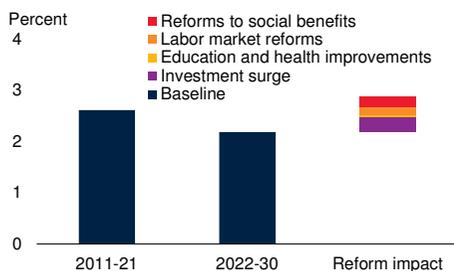
Trends are not destiny: Policies to boost potential growth

It is possible to reverse the slowdown in potential growth through structural policy interventions. Structural policies associated with higher investment in physical capital, improved human capital, and faster growth of the labor supply could raise potential growth by 0.7 percentage point a year in 2022-30—both globally and in EMDEs. This would offset the 0.4 percentage-point decline in global potential growth between 2011-21 and 2022-30 projected in the baseline scenario and most of the 1.0 percentage-point slowdown projected for EMDEs (figure O.6). Global potential growth would rise to 2.9 percent per year—above its 2011-21 average of 2.6 percent, but still well below its 2000-10 average of 3.5 percent; EMDE potential growth, at 4.7 percent per year, would remain below its 2011-21 average of 5.0 percent but by a much-reduced margin. Robust policy frameworks involving fiscal, monetary, and financial sector policies would need to

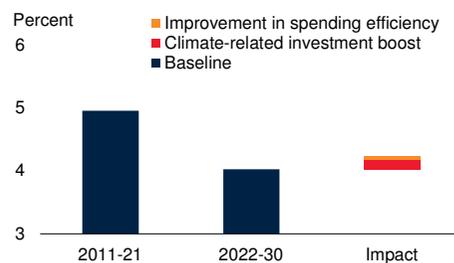
FIGURE 0.6 Policy options

Economic reforms comparable with past achievements, or a major investment boost to meet climate change-related goals, could lift potential growth. EMDEs have room for services sector productivity improvements. Broad-based reforms to shipping and logistics as well as border procedures could lower the costs of goods trade.

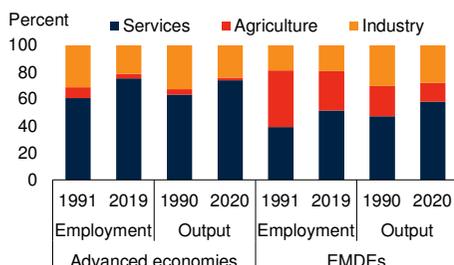
A. Global potential growth under reform scenarios



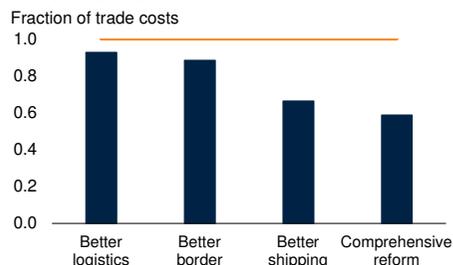
B. Potential growth in EMDEs in scenarios involving investment in climate-related infrastructure



C. Composition of output and employment



D. Reduction in overall trade costs associated with policy improvements



Sources: Nayyar, Hallward-Driemeier, and Davies (2021a); Penn World Table; World Bank.

Note: Averages weighted by gross domestic product (GDP). AEs = advanced economies; EMDEs = emerging market and developing economies.

A.-C. Arithmetic annual averages.

A. Scenarios assume a repeat, in each country, of each country's best 10-year improvement.

B. "Climate-related investment boost" assumes an increase in average annual investment over the course of 2022-30 of 2.3 percentage points of GDP, in line with the average of 13 countries covered in World Bank *Country Climate and Development Reports* (Argentina; China; Egypt, Arab Rep.; Ghana; Iraq; Jordan; Kazakhstan; Morocco; Peru; the Philippines; South Africa; Türkiye; and Vietnam). The regional differences are in line with Rozenberg and Fay (2019). "Improvement in spending efficiency" assumes that each EMDE moves up two quartiles in the distribution of spending efficiency.

C. Sample for employment includes 35 advanced economies and 143 EMDEs, with data until 2019. Sample for output includes 31 advanced economies and 140 EMDEs, with data until 2020.

D. Bars show the fraction of goods trade costs that would remain after policy improvements. Policy improvements assume that the average EMDE in the quartile of EMDEs with the poorest scores on the United Nations Conference on Trade and Development's Liner Shipping Connectivity Index and the World Bank's Logistics Performance Index improves to match the score of the average EMDE in the quartile of EMDEs with the best scores for the Liner Shipping Connectivity Index and Logistics Performance Index. The comprehensive package assumes that all three scores improve simultaneously. Data refer to 2018. Yellow line indicates 1 (that is, unchanged trade costs in 2018) among the sample of EMDEs scoring in the poorest quartile on these indicators.

accompany these policies. Interventions by the global community would also need to support them.

The book discusses measures to boost human capital, labor supply, and productivity and explores in depth policies to promote investment, services, and trade. It also explains the importance of strong macroeconomic policy frameworks and the need for support from the global community.

Investment. Policy makers in EMDEs can tap into opportunities to raise potential growth by focusing on interventions that can boost investment. Given the enormous challenges associated with climate change, there is a well-defined need for an ambitious investment push. Climate change is expected to exacerbate extreme poverty by reducing agricultural output, increasing food prices, and worsening food and water insecurity in EMDEs and increasing the disaster-related damages to the physical environment. As discussed earlier in this overview, climate-related disasters are becoming more common, and they weigh particularly heavily on vulnerable countries such as small states. They can also worsen government fiscal positions through lower tax receipts and lower productivity alongside increased spending on reconstruction and public services.

Addressing gaps between current spending on infrastructure and the level needed to meet development goals can promote investment growth. Making investment a priority in green infrastructure projects with high economic returns and fostering the widespread adoption of environmentally sustainable technologies can support higher growth levels in the long run while contributing to climate change mitigation. Sound investments aligned with climate goals in key areas—such as transport and energy, climate-smart agriculture and manufacturing, and land and water systems—can all boost long-term growth, while also enhancing resilience to future natural disasters.

Although green transitions need to be carefully managed, sustainable investments—including those by the private sector—offer significant opportunities. Besides their broader benefits, green investments may represent an important engine for job creation, as they tend to be labor intensive. Addressing climate change and other development challenges also requires structural reforms that encourage the mobilization of private capital and lower barriers of access for the private sector. In many EMDEs, governance and institutional reforms are necessary to improve and unify often-fragmented regulatory and institutional environments. Reforms that improve the business climate can stimulate private investment directly and amplify the positive effects of investment, such as less informality and more job creation. All of these policy interventions also help attract FDI.

All EMDE regions need to invest more heavily in infrastructure (chapter 4). This may be infrastructure intended to improve climate resilience, including that to protect against floods, storms, and drought and dampen their impact, especially in small states (EAP and LAC) and heavily agriculture-reliant economies (SAR and SSA). It may be infrastructure to improve chronically low levels of infrastructure development (SAR and SSA) or to accommodate rising levels of urbanization (EAP, LAC and SAR). Or it may be infrastructure to support productivity in sectors that employ a large proportion of the population (for example, agriculture in SSA) or to rebuild following conflict (ECA, MNA, and SSA) or to improve trade linkages (LAC and SAR).

The investment needed to achieve climate and development goals exceed many governments' ability to finance it. Hence, successfully leveraging private sector capital to boost investment requires a set of policies to balance the risks, costs, and returns of investment projects and overcoming common obstacles to private investment, such as

poor business conditions, insufficient project pipelines, and underdeveloped domestic capital markets.

Labor supply and human capital. Policies can aim to raise the active share of the working-age population, in particular policies to “activate” discouraged workers or groups with historically low participation rates, such as women and younger and older workers. Globally, average female labor force participation in 2011-21, at 54 percent, was three-quarters that of men, which stood at 72 percent; the gap between male and female participation was even larger in EMDEs, at 25 percentage points. Similarly, in both EMDEs and advanced economies, the average participation rate of workers aged 55 years or older was about half that of 30- to 45-year-old workers, and labor force participation among those aged 19-29 years was only four-fifths that of 30-45 year olds.

A set of reforms that gradually raises participation rates in each five-year age group from 55-59 years onward and that lifts female labor force participation rates by their best 10-year improvement on record could increase global rates of potential growth by as much as 0.2 percentage point per year on average during 2022-30. Regions such as MNA and SAR could achieve considerably greater boosts to potential growth, in excess of 1 percentage point per year, if they raised female labor force participation from their current levels of about half of the EMDE average to the EMDE average.

Improvements to health and—especially—education could be one prong of such a set of reforms to boost labor force participation, since better-educated workers tend to be more firmly attached to labor markets. In addition, improvements in education and health outcomes on par with the best 10-year improvement on record could boost productivity and lift EMDE potential growth by an additional 0.1 percentage point per year, on average, for the remainder of this decade and more over the longer term.

Trade. Trade has flagged over the past decade. A major effort to rekindle it could yield large growth dividends over the next one. The costs added to internationally traded goods remain high: on average, they are almost equivalent to a 100 percent tariff, roughly doubling the costs of internationally traded goods relative to domestic goods (chapter 6). Transportation and logistics, non-tariff barriers, and policy-related standards and regulations account for the bulk of the costs; tariffs amount to only 5 percent of average costs of trade in goods. Trade costs for services tend to be even higher than those for goods, largely reflecting regulatory restrictions.

To reduce elevated trade costs in EMDEs will require comprehensive reform packages. Trade agreements can reduce trade costs and promote trade, especially if they lower non-tariff barriers as well as tariffs and generate momentum for further domestic reforms (Baldwin and Jaimovich 2010; Plummer 2007). However, even if the global environment is not conducive to progress in regard to such agreements, countries can take action at home to rekindle trade. For example, they can streamline trade processes and customs clearance requirements, enhance domestic trade-supporting infrastructure, increase competition in domestic logistics and in retail and wholesale trade, reduce tariffs, lower the costs of compliance with standards and regulations, and reduce

corruption. Empirical analysis suggests that reforms that lift an EMDE in the quartile of countries with the highest shipping and logistics costs to the quartile of those with the lowest costs could cut its trade costs in half. For maximum effect, such reforms need to be embedded in broader improvements such as those in human capital and digital connectivity (Devarajan 2019; Okonjo-Iweala and Coulibaly 2019).

Trade can also play a critical role in climate-related transition (Devarajan et al. 2022). It has the potential to promote the production of goods and services necessary for transitioning to low-carbon economies. In addition, trade delivers goods and services that are key to helping countries recover from extreme weather events. However, evidence indicates that in some countries, greater carbon emissions have accompanied entry into global value chains in manufacturing and that global value chains have contributed to greater waste and increased shipping (World Bank 2020). Shipping accounts for 7 percent of global carbon emissions and 15 percent of global emissions of sulfur and nitrogen (World Bank 2020).

A number of policies can be implemented to reduce trade costs in a climate-friendly way. For example, policies can be designed to remove the current bias in many countries' tariff schedules favoring carbon-intensive goods and to eliminate restrictions on access to environmentally friendly goods and services (Brenton and Chemutai 2021; World Bank 2020). In addition, multilateral negotiations can focus not only on tariffs on environmental goods but also on nontariff measures and regulations affecting services—access to which is often vital for implementing the new technologies embodied in environmentally friendly goods.

Services. Policy interventions can also help countries unlock the potential of the services sector to drive economic growth (chapter 7). Supporting the diffusion of digital technologies in EMDEs remains central to delivering better growth outcomes. In this context, investing in ICT infrastructure, updating regulatory frameworks around data, and strengthening management capabilities and worker skills are important. Countries can promote the expansion of productive, high-skilled, offshorable services by enabling greater use of online communications and digital platforms, reducing barriers to services trade, and supporting training in relevant skills. Where education systems are weak, but reliable and widespread internet access exists, it would be possible to increase use of higher-quality online schooling and training. Digital technologies may expand access to finance in the poorest countries, enable more effective delivery of government services, and accelerate the trend toward the automation of some routine occupations. In addition, regulatory reforms can support investment to revive low-skilled contact services, such as transportation, that employ large numbers of people.

Climate change considerations will also influence the prospects for services-led growth. The services sector can play an important role in climate mitigation and adaptation. For instance, financial services can play a fundamental role in mobilizing the resources needed for necessary investments (Grippa, Schmittmann, and Suntheim 2019). Similarly, engineering and environmental consulting services will likely be central to enabling improvements in energy efficiency (World Economic Forum 2022).

Macroeconomic policies. Robust macroeconomic policy frameworks play an important role in boosting long-term growth prospects. They can help proactively smooth business cycles to avert the disruptions and distortions associated with adverse shocks. They can ensure that social protection systems are geared toward minimizing long-term damage from such shocks. In addition, they can instill confidence in sound policy making and buttress the credibility of institutions.

Robust fiscal and monetary policy frameworks are founded on transparent and rules-based approaches. Fiscal rules and medium-term budget frameworks can help countries maintain sustainable finances and accumulate reserves when their economies are doing well. These types of disciplined fiscal policy frameworks are especially critical nowadays to support growth prospects amid elevated debt levels and tight global financial conditions. In a deficit-neutral manner, they can guide government spending toward policies with long-term growth benefits, such as those in health, education, or transport, or expand revenue bases to increase financing for such priority policies. Better fiscal frameworks also assist monetary policy by restraining procyclical spending that could contribute to demand pressures.

A transparent and independent central bank will be better placed to maintain price stability, thereby helping to create a macroeconomic environment that is conducive to strong growth. In particular, by establishing an environment of low and stable inflation over the medium term, and thus fostering confidence in macroeconomic stability, central banks can support growth in private investment (World Bank 2022). Strong monetary policy frameworks are currently particularly important to overcome inflation and stabilize inflation expectations. Monetary policy can also play a countercyclical role through its management of interest rates and credit growth, thereby supporting investment growth when activity is weak and inflation is low but helping to contain investment when the economy is overheating.⁸

To avoid boom-bust cycles that do lasting damage to investment and potential growth, proactive financial sector supervision and regulation can mitigate risks—especially in countries with financial markets that are developing rapidly and becoming more integrated globally. In EMDEs without a prudential authority or prudential powers, creating or empowering institutions in these areas is a priority. In EMDEs with the appropriate institutions, flexible and well-targeted tools are needed to manage balance sheet mismatches, risk related to flows of foreign currency and capital, and misalignment of asset prices with economic fundamentals.

Global cooperation. Since many of the challenges EMDEs face transcend national borders, it is essential to strengthen global cooperation to address them. The increasing frequency and severity of climate-related disasters in recent years highlights the escalating costs of climate change: The global community must therefore work together to accelerate progress toward meeting the goals of the Paris Agreement. In addition, there is

⁸ Fiscal challenges combined with weak growth prospects complicate monetary policy when inflation is high (Ha, Kose, and Ohnsorge 2022) and increase the risk of recession (Guenette, Kose, and Sugawara 2022).

a pressing need to reduce the economic, health, and social costs of climate change, many of which vulnerable populations in EMDEs, particularly LICs, bear disproportionately. More pressingly, the global community can help expand the financing and capacity building needed to promote growth in EMDEs—including expanding it by scaling up adaptation to climate change, increasing green investments, and facilitating a green-energy transition (Bhattachariya, Kharas, and MacArthur 2023). The increase in investment spending (relative to GDP) needed to achieve the SDGs will be much larger for LICs than for the average EMDE. That implies that substantial additional financing from the global community and the private sector will be needed to close investment gaps in LICs. For some LICs that are already in—or at high risk of—debt distress, debt relief may need to accompany such financing to allow them to steer spending toward development goals instead of debt service.

Synopsis

The book features three interconnected parts. Part I analyzes the evolution of global and regional potential growth using a new comprehensive database. Part II focuses on global and regional investment dynamics and policies to promote investment growth. Part III presents a detailed analysis of prospects for potential growth and policy measures that can lift it. It turns to the roles of services and trade as engines of long-term economic growth. The book presents a wide menu of policy options for improving growth prospects in each chapter.

The remainder of this introduction presents a summary of each chapter. After establishing the motivation of the chapter, each summary explains the main questions the chapter explores, its contributions to the literature, and its analytical findings. It then discusses future research directions.

Part I. Potential Growth: An Economy's Speed Limit

Chapter 1 explores the conceptual framework and measurement of potential growth. Based on a new database introduced in the chapter, it describes the slowdown in potential growth in the past decade and its sources. Chapter 2 delves deeper into regional differences in the evolution of potential growth, describes regional prospects, and offers region-specific policy options.

Chapter 1. Potential Not Realized: An International Database of Potential Growth

In this chapter, Kilic Celik, Kose, Ohnsorge, and Ruch introduce the most comprehensive database of estimates of potential growth available to date. Potential growth is critical to reducing poverty; raising the resources needed to invest in solving global challenges; creating jobs and generating wage growth, especially in the formal sector; and achieving or sustaining debt sustainability.⁹

⁹ Ohnsorge and Yu (2022) discuss more broadly the challenges in shifting informal activity into the formal economy. For a discussion of the challenges of low growth for debt sustainability, see Kose, Ohnsorge, and Sugawara (2022), and of government debt reduction, see Kose et al. (2022).

Based on an extensive analysis of the earlier literature, the authors present three main approaches to estimating growth in potential output—each of which has its advantages and disadvantages.

- *Production function approach.* The first approach measures potential growth based on production function estimates. This makes it possible to study the contributions of what theory suggests are the fundamental drivers of growth—the growth of inputs of the factors of production (labor and capital) and technological progress—but involves assumptions that may be viewed as restrictive.
- *Time-series methods.* The second approach obtains measures of potential growth from statistical filters that generate smoothed versions of actual output growth data as measures of potential output. This may provide the most consistency between estimates of potential growth and output gaps, on the one hand, and indicators of domestic demand pressures, on the other. However, it provides no links between estimated potential growth and its plausible fundamental drivers.
- *Long-term growth expectations.* A third approach uses long-term (say, five-year-ahead) forecasts of output growth from economic analysts, which may be assumed to incorporate the forecasters' judgments about potential growth but whose drivers are highly uncertain.

Chapter 1 introduces the most comprehensive international database for the nine most common measures of potential growth based on these three approaches. This database and the analysis in this chapter serve as the foundation for chapters 2 and 5—which examine past and prospective potential growth globally, by country group, and by region and policies that can be implemented to improve them. Specifically, this chapter addresses the following questions.

- How has global potential growth evolved in the past three decades?
- How have recessions and other adverse events affected potential growth?
- Through which channels have such events affected potential growth?

Contributions. Chapter 1 makes the following contributions to the literature. First, it introduces the first comprehensive database for the nine most commonly used measures of potential growth for the largest-available country sample, up to 173 economies (37 advanced economies and 136 EMDEs) over 1981-2021. One of the nine measures is based on the production function approach, five are based on the application of univariate time-series filters (Hodrick-Prescott, Baxter-King, Christiano-Fitzgerald, Butterworth, and unobserved-components filters), one applies a multivariate Kalman filter, and two are based on analysts' long-term growth forecasts.¹⁰

¹⁰ Univariate filters are applied only to actual output; multivariate filters are applied to multiple series, including actual output. Both types of filters generate smoothed output series that are considered estimates of potential output.

By including a measure that builds potential growth from its fundamental drivers, the database allows later chapters to examine the role of policy initiatives such as an investment push to address climate change. Previous studies have limited themselves to a single method of measuring potential growth, such as the production function approach (OECD 2014) or multivariate filters (ADB 2016; IMF 2015). The database updates an earlier version published before the pandemic (Kilic Celik, Kose, and Ohnsorge 2020).

Second, chapter 1 documents that all measures of potential growth show a decline in global potential growth in 2011-21, relative to 2000-10, and that this decline was internationally widespread. Earlier studies have documented the decline for only a subset of measures (for example, Chalaux and Guillemette 2019; Kilic Celik, Kose, and Ohnsorge 2020).

Third, chapter 1 describes the first systematic study of the long-term damage to potential growth from a range of short-term economic disruptions—such as recessions, banking crises, and epidemics—in a large set of countries and for a wide range of measures of potential growth. Only a few earlier studies have estimated the effects of recessions on growth in potential output, and they were confined to a smaller sample of countries and the production function approach (Furceri and Mourougane 2012; Mourougane 2017). Chapter 1 broadens the earlier research by estimating the effects of recessions, banking crises, and epidemics in a large sample of advanced economies and EMDEs and for a wide range of measures of potential growth.

Fourth, chapter 1 uses a set of local-projection models to estimate empirically the channels through which short-term economic disruptions dampen long-term potential growth. Specifically, it estimates, in a consistent framework, the effects of disruptions on the growth of the labor force, the growth of the capital stock (through investment), and the growth of TFP. Previous studies have typically examined overall effects on output growth or effects through individual channels only.¹¹

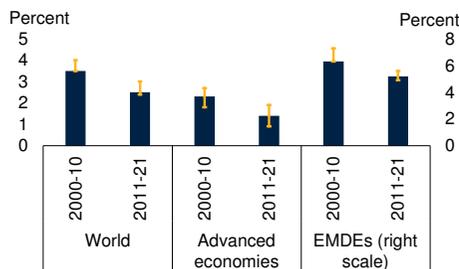
Findings. Chapter 1 reports several novel findings. First, an internationally widespread decline in potential growth occurred in 2011-21 relative to 2000-10 (figure O.7). All estimates of potential growth, globally and for both advanced economies and EMDEs, show this decline. Global potential growth, as estimated using the production function approach, fell to 2.6 percent a year during 2011-21 from 3.5 percent a year during 2000-10; advanced-economy potential growth fell to 1.4 percent a year during 2011-21 from 2.2 percent a year during 2000-10; and EMDE potential growth fell to 5.0 percent a year during 2011-21 from 6.0 percent a year during 2000-10. The weakening of

¹¹The theoretical literature has modeled several mechanisms through which output disruptions may cause lasting damage: lower expected profitability of productivity-increasing research and development (Fatás 2000) or of the adoption of new, productivity-increasing technology (Anzoategui et al. 2017); lower asset prices (Caballero and Simsek 2017); restricted firm access to credit and start-up capital (Queralto 2013; Wilms, Swank, and de Haan 2018); resource misallocation (Furceri et al. 2021); and human capital losses (Blanchard and Summers 1987; Lockwood 1991). Empirical estimates have shown some of these mechanisms at work during past recessions (Nguyen and Qian 2014; Oulton and Sebastia-Barriel 2016). None of these studies, however, systematically estimates and compares the various channels through which short-term disruptions reduce potential growth.

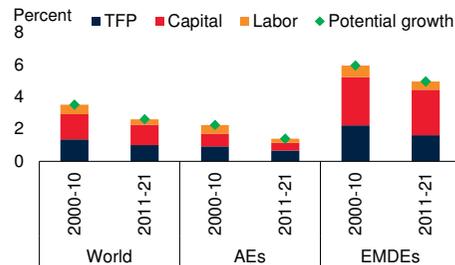
FIGURE 0.7 Evolution of potential growth

Potential growth slowed in 2011-21 from 2000-10 across country groups, with all major drivers of growth weakening. Adverse events—such as banking crises, recessions, and epidemics—damaged potential growth by persistently lowering total factor productivity growth, investment growth (recessions and epidemics), and employment growth (epidemics).

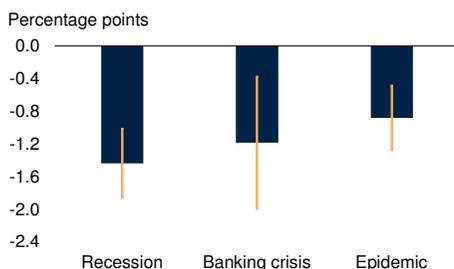
A. Estimates of potential growth (range across methodologies)



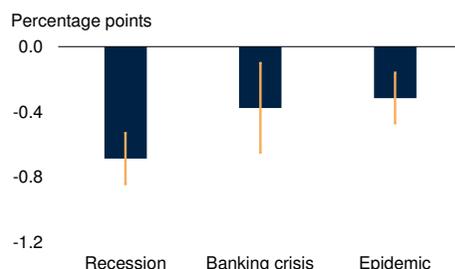
B. Contributions to potential growth



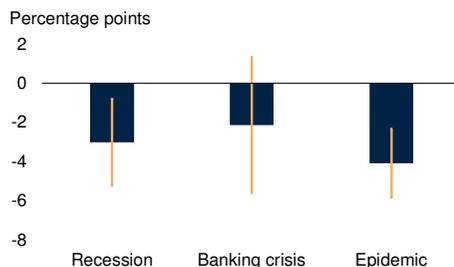
C. Response of growth in potential output five years after events



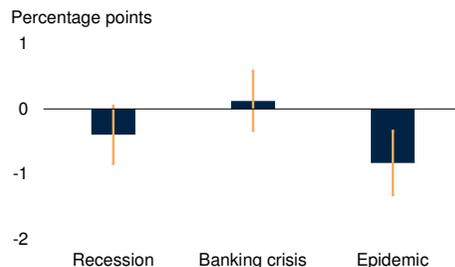
D. Response of potential TFP growth five years after events



E. Response of investment growth five years after events



F. Response of employment growth five years after events



Sources: Penn World Table; World Bank.

Note: AEs = advanced economies; EMDEs = emerging market and developing economies; TFP = total factor productivity.

A. Blue bars denote production function-based estimates. Vertical lines indicate range of eight filter- or expectations-based estimates. Decade averages of average estimates, weighted by gross domestic product (GDP), of potential growth of varying samples.

B. Based on production function approach.

C.-F. Blue bars are coefficient estimates from local-projections model. Vertical lines indicate 90 percent confidence intervals.

Chapter 1 describes sample and methodology.

potential growth was highly synchronized across countries: during 2011-21, potential growth was below its 2000-10 average in 96 percent of advanced economies and 57 percent of EMDEs. This widespread decline reflected a multitude of factors. In terms of the production function framework, all the fundamental drivers of growth faded in 2011-21: TFP growth slowed, investment growth weakened, and labor force growth declined.

Second, recessions were associated, on average, with a decline of about 1.4 percentage points in potential growth even after five years. This refers to potential growth estimated using the production function approach; other measures yielded different estimates (with a range of 0.2-1.4 percentage points), but all were statistically significant. The effect was somewhat stronger in EMDEs—with potential growth 1.6 percentage points lower five years after the average recession—than in advanced economies, in which potential growth was, on average, 1.3 percentage points lower.

Third, recessions tended to have a more severe medium-term impact on potential growth than other adverse events. Banking crises were associated with initially larger falls in potential growth, with those falls peaking at 1.8 percentage points after two years, as a result of collapses in investment. However, rapid recoveries in investment tended to follow these declines, such that the fall in potential growth after five years was only 1.2 percentage points. Epidemics were associated with more modest, but still statistically significant, short- and medium-term declines in potential growth. These effects were more severe in EMDEs than in advanced economies, possibly reflecting the greater ability of advanced economies to limit the economic damage with fiscal and monetary policy support as well as their better-developed health care systems.

Fourth, the chapter provides evidence that recessions affected potential growth through multiple channels. Five years after an average recession, the growth rate of investment was 3 percentage points lower than in “normal” years, and those of employment and TFP were both 0.7 percentage point lower. This contrasts with what took place in respect to banking crises, which tended to be associated with lasting losses of TFP growth, and in respect to epidemics, which were often associated only with lasting employment losses. These losses possibly reflected prolonged effects on the health of the labor force and behavioral responses to epidemics.

Fifth, different estimates of potential growth were found to display different features. Estimates based on forecasts tended to be the highest, and those based on univariate filtering techniques the lowest. Estimates based on filtering techniques tended to be the most volatile and to track actual growth most closely, as expected. Estimates based on the production function approach tended to be the most stable and the least correlated in the short term with actual growth.

Chapter 2. Regional Dimensions of Potential Growth: Hopes and Realities

In chapter 2, Kasyanenko, Kenworthy, Kilic Celik, Ruch, Vashakmadze, and Wheeler build on chapter 1 to explore regional dimensions of potential growth. Their starting

point is the finding that potential growth slowed in 2011-21 relative to the preceding decade in almost all of the World Bank's six EMDE regions. Yet wide differences are apparent in recent developments and prospects across the regions, and these have implications for regional policy priorities. Chapter 2 explores these regional differences by considering the following questions.

- How have potential growth and its drivers evolved in each region since the turn of the century?
- What are the prospects for regional potential growth?
- What policies would lift regional potential growth?

Contributions. Chapter 2 adds regional detail to the analysis of global potential growth in chapters 1 and 5 and does so in a consistent manner across the EMDE regions. Drawing on a rich body of regional studies and using the new database introduced in chapter 1, the chapter provides the first systematic analysis of potential growth in all six EMDE regions. Other major cross-country studies of potential growth have largely focused on advanced economies (Dabla-Norris et al. 2015; IMF 2015; OECD 2014) or Asian economies (ADB 2016). Chapter 2 examines data for up to 53 EMDEs—6 in EAP, 9 in ECA, 16 in LAC, 5 in MNA, 3 in SAR, and 14 in SSA—over the past two decades (2000-2021) and considers prospects for the remainder of this decade (2022-30).

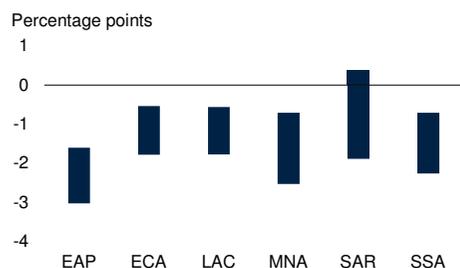
Findings. Chapter 2 documents an array of regional differences (figure O.8). First, the slowdown in potential growth between 2000-10 and 2011-21 was steepest in MNA, followed by EAP, although potential growth in EAP remained higher than in all other regions except SAR. ECA and LAC experienced less pronounced slowdowns, but potential growth in LAC remained the lowest among all EMDE regions. In SAR, potential growth was almost unchanged, at the highest rate among EMDE regions, while in SSA, potential growth weakened only moderately but remained one of the lowest among EMDE regions, at about half the average for SAR.

Second, EAP is expected to show the sharpest decline among EMDE regions in the growth of both aggregate and per capita potential output during 2022-30. The decline is expected to amount to about 1.6 percentage points a year, on average, and mainly reflects slower projected capital accumulation and TFP growth in China as the country implements policies to shift from an investment-led to an increasingly consumption-led growth model. ECA is projected to experience the second-largest decline in potential growth in 2022-30, with that decline resulting in part from the fallout of the war in Ukraine, but also from continued weakness in labor force growth. In SSA, potential growth is expected to decline moderately as strengthening TFP growth is expected to partially offset slowing investment and population growth. Elsewhere, potential growth is projected to be broadly unchanged in LAC and SAR and to rise in MNA in 2022-30 as strengthening TFP growth offsets demographic headwinds to potential growth.

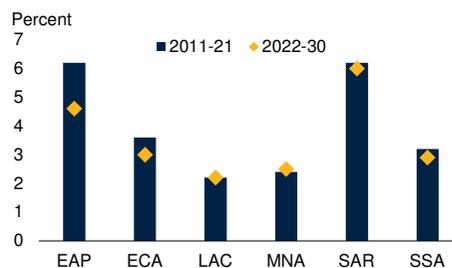
FIGURE 0.8 Potential growth in EMDE regions

The Middle East and North Africa (MNA) experienced the steepest slowdown in potential growth between 2000-10 and 2011-21, followed by East Asia and Pacific (EAP), although potential growth in EAP remained higher than in all other regions except South Asia (SAR). In 2022-30, EAP is expected to have the sharpest declines in growth of aggregate and per capita gross domestic product (GDP), mainly reflecting slower capital accumulation in China. Potential growth is projected to be broadly unchanged in LAC, SAR, and SSA and to rise in MNA; stronger total factor productivity (TFP) growth and, in SAR and SSA, stronger investment growth are expected to offset demographic headwinds.

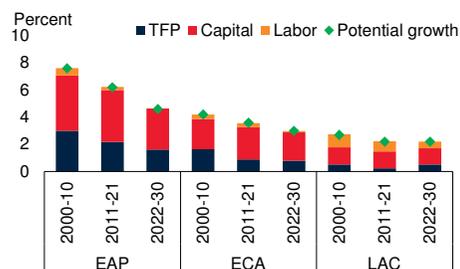
A. Changes in potential growth between 2000-10 and 2011-21 (across methodologies)



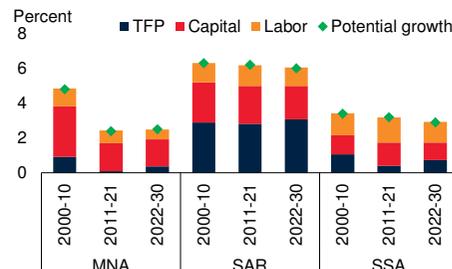
B. Potential growth



C. Contributions to potential growth



D. Contributions to potential growth



Sources: Penn World Table; World Bank.

Note: ECA = Europe and Central Asia; LAC = Latin America and the Caribbean; MNA = Middle East and North Africa; SSA = Sub-Saharan Africa. Period averages of annual GDP-weighted averages.

A. Samples differ across measures, depending on data availability. PF = production function approach. MVF = multivariate filter-based. UVF = univariate filter-based (specifically, the Hodrick-Prescott filter). "Exp." = estimates based on five-year-ahead *World Economic Outlook* growth forecasts. For SAR, insufficient data available for filter-based estimates until 2010. The sample includes three countries in EAP (China, Philippines, and Thailand), six countries in ECA (Bulgaria, Croatia, Hungary, Kazakhstan, Poland, and Romania), ten countries in LAC (Bolivia, Brazil, Chile, Colombia, Costa Rica, Honduras, Mexico, Paraguay, Peru, and Uruguay), three countries in MNA (Jordan, Morocco, and Tunisia), four countries in SAR (Bangladesh, India, Pakistan, and Sri Lanka), and three countries in SSA (Cameroon, Namibia, and South Africa). Due to the limited sample, other measures are excluded from the SAR region.

B. C. D. Based on production function approach. Sample includes 4 countries in EAP, 9 in ECA, 15 in LAC, 7 in MNA, 2 in SAR, and 13 in SSA. Note that quantitative estimates may differ from those presented in panels A and B because of sample differences. Panels A and B ensures sample consistency across measures; panels C and D ensure sample consistency across time. 2022-30 are forecasts.

Third, persistently weak TFP growth in LAC, MNA, and SSA makes policy action to raise productivity growth especially important for these regions. There is also considerable room to boost labor force growth in MNA and SAR by encouraging female labor force participation and, in EAP and ECA, by raising participation among older workers. SAR and MNA lag especially far behind other EMDE regions in female labor force participation (Klasen 2019). LAC and SSA have particularly weak prospects for investment growth, and a wide range of measures is likely to be required to reignite it. Chapter 4 discusses such measures. A climate-related investment push could catalyze a boost to potential growth in all EMDE regions.

Part II. Investment: Time for a Big Push

Part II of this volume describes the weakening of investment growth in EMDEs in the past decade, examines its causes, and considers policy options to help lift investment growth. Chapter 3 examines trends in a broad group of EMDEs, and chapter 4 delves deeper into regional characteristics and identifies region-specific policy priorities for lifting investment growth.

Chapter 3. The Global Investment Slowdown: Challenges and Policies

In this chapter, Stamm and Vorisek draw attention to the weakening of investment growth in EMDEs even before the onset of the COVID-19 pandemic (figure O.9).¹² By the time the pandemic began in early 2020, investment growth had already slowed in EMDEs over the previous decade, from nearly 11 percent in 2010 to less than 4 percent in 2019. When China is excluded from the EMDE group, investment growth had fallen more sharply: from about 9 percent in 2010 to just under 1 percent in 2019. The slowdown occurred in all regions, in both commodity-importing and commodity-exporting country groups, and in a large portion of individual economies. In advanced economies, by contrast, investment growth was more sluggish but also more stable, hovering around its long-term average of 2 percent per year.

In 2020, the pandemic triggered a severe investment contraction in EMDEs excluding China—a far deeper decline than in the 2009 global recession triggered by the global financial crisis. Even when China is included, EMDEs did not avoid an investment contraction in 2020, as they had in 2009. In advanced economies, however, because large-scale fiscal support packages and expansionary monetary policies buttressed investment, it shrank less in 2020 than in 2009. After having rebounded sharply in 2021, investment growth in EMDEs is projected to slow back to rates that are about half the average of the previous two decades.

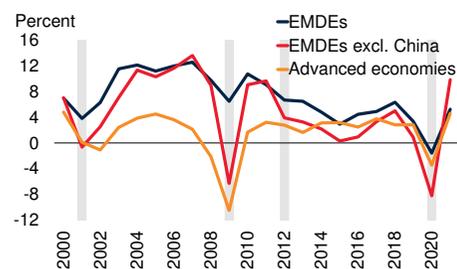
Slowing investment growth is a concern because it is critical to sustaining growth of potential output and per capita income. Capital accumulation raises labor productivity,

¹² Throughout the book, “investment” refers to real gross fixed-capital formation (public and private combined). Investment growth is measured as the annual percent change in real investment. In international averages, investment growth rates are weighted by average 2010-19 investment levels. For a discussion of factor reallocation across firms and sectors, see Dieppe (2021).

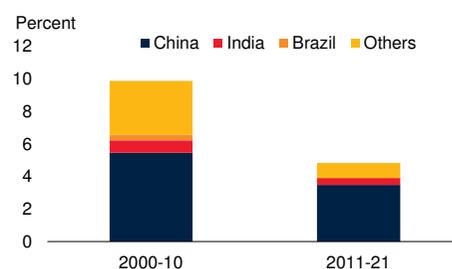
FIGURE 0.9 Global investment

The pandemic-induced 2020 global recession was associated with steep investment contractions and more muted subsequent recoveries than was the 2009 global recession. The weakening of investment growth in the 2010s reflected a range of factors, including slower credit growth, deteriorating terms of trade for commodity exporters, slowing reform momentum, and a shift in China's growth strategy away from reliance on fixed investment.

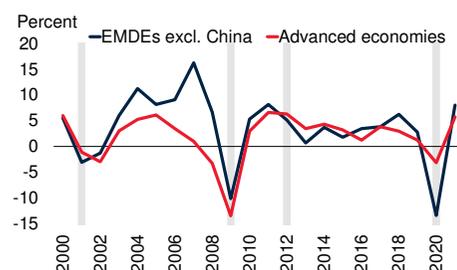
A. Investment growth



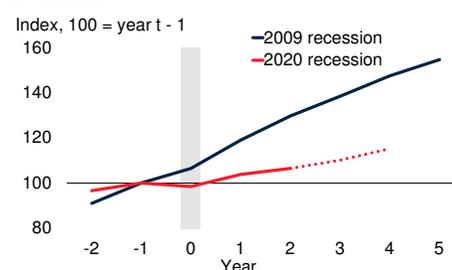
B. Contributions to EMDE investment growth, by country



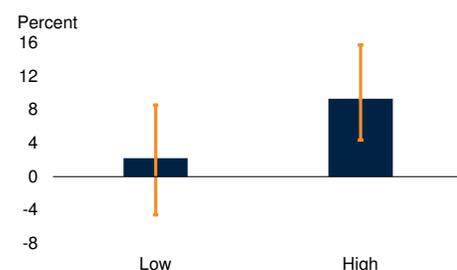
C. Growth in private investment



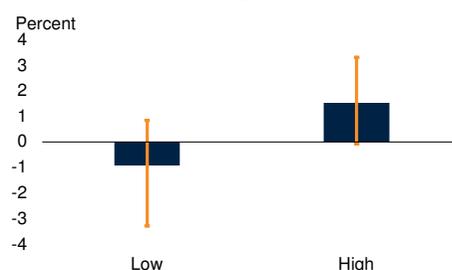
D. Investment in EMDEs around global recessions



E. Investment growth in EMDEs with high and low credit growth, 2000-21



F. Total factor productivity growth in EMDEs with high and low investment growth, 2000-21



Sources: Haver Analytics; World Bank.

Note: Period averages of annual GDP-weighted averages. Investment refers to gross fixed-capital formation. EMDEs = emerging market and developing economies.

A.C. Investment-weighted averages. Shaded areas indicate global recessions (in 2009 and 2020) and slowdowns (in 2001 and 2012). Sample for aggregate investment (panel A) includes 69 EMDEs and 35 advanced economies. Sample for private investment (panel C) includes 32 EMDEs (China is excluded) and 11 advanced economies.

B. Bars show the percentage-point contribution of each country or country group to EMDE investment growth during the indicated years. Height of the bars is average EMDE investment growth during the indicated years. Sample includes 69 EMDEs.

D. On the horizontal axis, year 0 refers to the year of global recessions in 2009 and 2020. Dotted portion of red line represents forecasts. Sample includes 69 EMDEs.

E.F. Bars show group medians; vertical lines show interquartile ranges. "Low" and "High" indicate years when real growth in private sector credit observations (panel E) or investment growth observations (panel F) were in the bottom and top third of the distribution, respectively, during 2000-21. Difference in medians between "Low" and "High" subsamples is significant at the 1 percent level. Sample includes 69 EMDEs.

the key determinant of real wages and household incomes, both through capital deepening—equipping workers with more capital—and by embodying productivity-enhancing technological advances.

Slowing investment growth has held back progress toward meeting the SDGs and fulfilling commitments made under the Paris Agreement on climate change. Meeting these goals and commitments will require filling substantial unmet infrastructure needs, including growing needs for climate-resilient infrastructure and infrastructure that reduces net emissions of greenhouse gases. Given limited fiscal space in EMDEs, such scaling up of investment will require additional financing from the private sector and the international community.

Against this backdrop, chapter 3 addresses four questions:

- How has investment growth evolved over the past decade, and how does the performance of investment during the 2020 global recession compare with its performance during previous recessions?
- What are the key factors associated with investment growth?
- What does weak investment growth imply for development prospects?
- Which policies can help promote investment growth?

Contributions. Chapter 3 makes several contributions to the literature on investment. It provides the first analysis of investment growth in a large sample of EMDEs since the pandemic and Russia’s invasion of Ukraine. Moreover, because FDI is a potentially critical source of technology spillovers and financing, the chapter reviews a large set of studies on the link between FDI and output or aggregate domestic investment.

In addition, the chapter examines the likely medium- and long-term consequences of the damage to investment in EMDEs from the pandemic and from Russia’s invasion of Ukraine, focusing on the effects on productivity, growth in potential output, trade, and the ability to achieve the SDGs and climate-related goals. Finally, the chapter describes policies to revive investment growth, including identifying opportunities the pandemic created.

Previous studies of investment in EMDEs have generally been based on pre-global financial crisis data, confined to analysis of the behavior of investment around the global financial crisis, or focused on specific regions.¹³ A number of studies have explored

¹³ See, for example, the analysis of the drivers of investment in Anand and Tulin (2014); Bahal, Raissi, and Tulin (2018); Caselli, Pagano, and Schivardi (2003); Cerra et al. (2017); and Qureshi, Diaz-Sanchez, and Varoudakis (2015). Firm-level studies include Li, Magud, and Valencia (2015) and Magud and Sosa (2015). On investment weakness, see Banerjee, Kearns, and Lombardi (2015); IMF (2015); Leboeuf and Fay (2016); and Ollivaud, Guillemette, and Turner (2016).

investment weakness in advanced economies. This study updates and extends two previous studies of investment trends and correlates in a large sample of EMDEs (World Bank 2017a, 2019a).

Findings. Chapter 3 presents four main findings. First, investment in EMDEs has recovered more slowly from the trough of the COVID-19 pandemic in 2020 than it did from the 2009 recession that followed the global financial crisis. In EMDEs excluding China, investment shrank by about 2 percentage points more in 2020 than during the 2009 global recession, despite easier financial conditions and the provision of sizable fiscal stimulus in many large EMDEs. This partly reflects the more widespread impact of the pandemic on investment: investment shrank in nearly three-quarters of EMDEs in 2020, compared with just over 50 percent of EMDEs in 2009. The effects of the pandemic, the war in Ukraine, and monetary policy tightening by major central banks have extended the prolonged and broad-based slowdown in investment growth in EMDEs in the 2010s, which occurred in all regions and in both commodity-exporting and commodity-importing economies. Growth in both private and public investment was more sluggish during the 2010s than in the previous decade.

Second, the weakening of investment growth in EMDEs over the past decade has reflected a wide range of headwinds. It has been correlated with weaker output growth, declining net capital inflows relative to GDP, slower real growth in private sector credit, and a deterioration of the terms of trade energy exporters face. Conversely, spurts in reform of the investment climate tended to be associated with stronger real investment growth.

Third, after a robust rebound in 2021, investment growth is projected to average 3.5 percent per year in 2022-24 in EMDEs, about half its 2000-21 average, and 4.1 percent a year in EMDEs excluding China—one-fifth less than the 2000-21 average. For all EMDEs, projected investment growth through 2024 will be insufficient to return investment to its prepandemic (2010-19) trend. This investment outlook dampens long-term prospects for the growth of output and productivity as well as global trade and makes meeting development and climate goals even more challenging.

Fourth, a sustained improvement in investment growth in EMDEs will require both the use of domestic policy tools and, for some of them, international financial support—with appropriate prescriptions dependent on country circumstances. Macroeconomic policies can support investment in a number of ways, but particularly by encouraging private investment through establishing confidence in macroeconomic stability and improving business climates. Reducing unproductive expenditures and subsidies and strengthening spending efficiency and revenue collection can increase public investment. To boost private investment, institutional reforms could address a range of impediments and inefficiencies, such as high business start-up costs, weak property rights, inefficient labor and product market policies, weak corporate governance, costly trade regulation, and small financial sectors. Setting appropriate, predictable rules governing investment, including rules for public-private partnerships, is also important.

Fifth, a review of the literature since 1990 finds mixed evidence on the relationship between FDI and output growth but a mostly positive relationship between FDI and domestic investment. That said, several country characteristics, time period specifics, and features of FDI have influenced the relationship between FDI, output growth, and investment. Greenfield investment in upstream and export-intensive, nonprimary sectors has tended to be more conducive to growth and aggregate investment. FDI has also tended to raise growth and investment more in countries with better institutions, more skilled labor forces, greater financial development, and trade openness.

Chapter 4. Regional Dimensions of Investment: Moving in the Right Direction?

In chapter 4, Kasyanenko, Kenworthy, Ruch, Vashakmadze, Vorisek, and Wheeler note that slowdowns in investment growth between the periods 2000-10 and 2011-21 occurred in all six EMDE regions. Several of these regions have mediocre outlooks for investment growth, with 2021's strong rebound from the 2020 investment collapse having subsided. Given the importance of investment growth for growth in potential output, this puts a premium on policies that can help meet the large and diverse investment needs of countries across all six EMDE regions.

Chapter 4 explores cross-regional differences in investment growth by addressing the following questions:

- How has investment growth evolved in each of the six EMDE regions?
- What are the current and prospective investment needs of each EMDE region?
- Which policies can help address investment needs in each EMDE region?

Contributions. Chapter 4 adds regional detail to the analysis of global investment growth in the previous chapter, applying a consistent framework across all EMDE regions. It draws on a rich body of regional studies that have examined the constraints on investment and possible policy solutions.

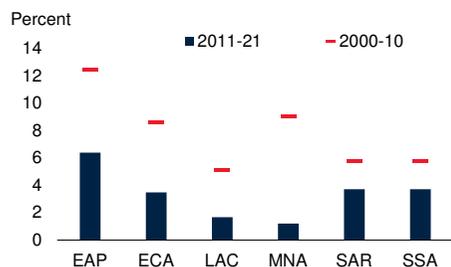
Findings. Chapter 4 identifies several regional patterns. First, investment growth slowed in the past decade in all EMDE regions, but most sharply in EAP and MNA (figure O.10). In EAP, a policy shift in China aimed at reducing reliance on credit-fueled investment for economic growth and mitigating risks to financial stability was largely responsible for the slowdown. In MNA, an oil price slide in 2014-16, armed conflicts, and persistent policy uncertainty in several countries contributed to the slowdown.

Second, investment growth is projected to remain well below its 2000-21 average in the near term in EAP, ECA, LAC, and SAR but to be close to its two-decade average in MNA and SSA. Consensus long-term (five-year-ahead) forecasts for investment growth have been downgraded repeatedly. Annual average investment growth in 2022-30 is now forecast to be 0.3-1.8 percentage points lower, on average, than in 2011-21 in all regions except in LAC and SAR, where adverse shocks that depressed investment growth in the 2010s are not expected to recur.

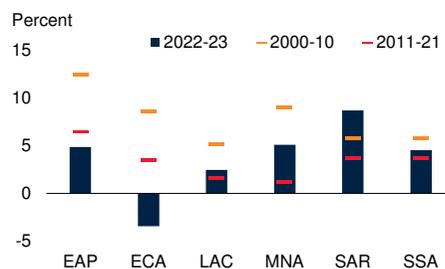
FIGURE O.10 Investment in EMDE regions

Investment growth slowed sharply in all EMDE regions in 2011-21 but most sharply in East Asia and Pacific (EAP) and the Middle East and North Africa (MNA). It is expected to remain below its 2011-21 average in 2022-30 except in Latin America and the Caribbean (LAC) and South Asia (SAR), where it is assumed that the adverse shocks that depressed investment growth in the 2010s will not be repeated.

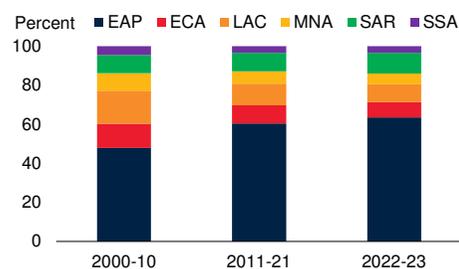
A. Investment growth, by region



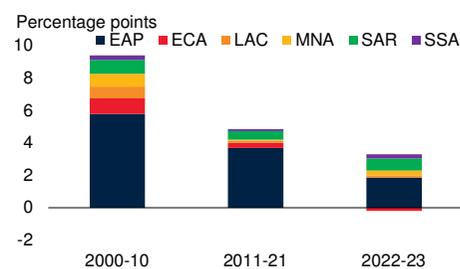
B. Investment growth by region



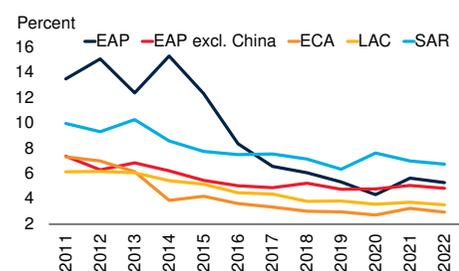
C. Regional shares of EMDE investment



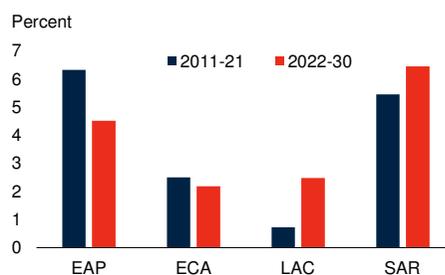
D. Contribution to EMDE investment growth



E. Five-year-ahead forecasts for investment growth



F. Actual and forecast investment growth



Sources: Consensus Economics; World Bank.

Note: Geometric means over indicated time spans of investment-weighted averages (at real fixed investment in constant U.S. dollars). ECA = Europe and Central Asia; EMDEs = emerging market and developing economies; SSA = Sub-Saharan Africa.

A.B. Sample includes 8 economies in EAP, 12 economies in ECA, 19 economies in LAC, 9 economies in MNA, 3 economies in SAR, and 19 economies in SSA.

C.D. Shares for 2000-10, 2011-21, and 2022-23 are simple averages of weighted real investment growth. Sample includes 8 economies in EAP, 12 economies in ECA, 19 economies in LAC, 9 economies in MNA, 3 economies in SAR, and 19 economies in SSA.

E.F. Include data for six economies in EAP (China, Indonesia, Malaysia, Philippines, Thailand, Vietnam), seven economies in ECA (Bulgaria, Croatia, Hungary, Poland, Romania, Russian Federation, Ukraine), six economies in LAC (Argentina, Brazil, Chile, Colombia, Mexico, Peru) and one economy in SAR (India). Single-year missing data are interpolated.

F. Geometric mean of actual investment growth in 2011-21 and of current-year to eight-year-ahead consensus forecasts for investment growth for 2022-30, as of September 2022. Includes six economies each in EAP, ECA, and LAC, and one economy in SAR.

Third, all regions have large needs for investment in physical and human capital, whether it is to mitigate and adapt to climate change and reverse pandemic-related learning losses (all regions); improve very low levels of infrastructure development (SAR and SSA); accommodate rising levels of urbanization (EAP, LAC, and SAR); support productivity growth, particularly in sectors that employ large proportions of the population (for example, agriculture in SSA); rebuild following conflicts (ECA, MNA, and SSA); improve trade linkages (LAC and SAR); or prepare for future public health crises (EAP and SSA).

Fourth, a range of policies is required to lift investment. Priorities include strengthening the efficiency of public investment (especially in SAR and SSA), boosting private investment (especially in LAC and MNA), and expanding the availability of financing for investment, which is a significant need in all regions.

Part III. Policies: Recognition, Formulation, and Implementation

Part III of this volume examines policy options for improving long-term growth prospects. Using the conceptual framework provided by the production function, chapter 5 develops scenarios that enable the benefits to potential growth from a range of possible policy actions to be quantified. Chapters 6 and 7 focus on two areas in which there may be considerable untapped growth potential that the right policies could unlock: international trade (chapter 6) and the services sector (chapter 7).

Chapter 5. Prospects for Potential Growth: Risks, Rewards, and Policies

In this chapter, Kilic Celik, Kose, and Ohnsorge start from the observation in chapter 1 that global potential growth in 2011-21 was significantly lower than that in 2000-10. This weakening of growth was widespread globally, across country groups, and in the majority of countries.

This trend decline raises concerns about the underlying strength of economic growth over the next several years, following the recovery from the pandemic-related recession of 2020. The chapter sets out a baseline projection that shows a further slowing of global potential growth in 2022-30. This baseline projection is subject to downside risks from a number of adverse events, including climate-related disasters. In some EMDEs, especially commodity-exporting economies in ECA and MNA, a further slowing of potential growth could set back convergence of per capita incomes with those of advanced economies. The projected slowdown in potential growth is therefore a major concern in regard to prospects for growth and income convergence in EMDEs and a formidable challenge to the international community's ability to meet its development goals.

Chapter 5 explores these issues by addressing the following questions:

- What are the prospects for growth in potential output?
- What are the main risks that could lower future potential growth?
- What policy options are available to lift growth in potential output?

Contributions. Chapter 5 makes three key contributions to the literature on potential growth. It presents the first comprehensive set of projections of growth in potential output for the largest sample of countries for which data are available—83 countries (30 advanced economies and 53 EMDEs) that account for 95 percent of global GDP. The chapter’s estimates of and projections for growth in potential output are based on the production function approach presented in chapter 1.

Second, the chapter analyzes the possible effects of weather-related disasters, which are expected to become even more frequent because of climate change. It also examines the possible effects that investment to alleviate the effects of climate change may have on potential growth. Several studies—reviewed in Botzen, Deschenes, and Sanders (2019); Klomp and Valckx (2014); and Shabnam (2014)—have found mixed evidence for both short-term and long-term effects of natural disasters on incomes and output growth, with possibly larger and more lasting effects in LICs. Broadly consistent with this literature, chapter 5 documents small, but statistically significant, damage to growth in the short term, which dissipates quickly. The chapter goes on to estimate the impact that investment to mitigate, or reduce the damage from, climate change may have on potential growth, drawing on the investment needs estimated in chapter 3.

Third, chapter 5 explores, in a consistent framework, policy options to lift growth in potential output. A large literature has considered the impact of different policies and other factors on growth, including human capital improvements (World Bank 2018), governance improvements (World Bank 2017b), increased international trade and integration into global value chains (World Bank 2020), new technologies (World Bank 2016, 2019b), and labor market changes (World Bank 2013). In contrast to the analysis in these and other earlier studies, the discussion of growth-enhancing policy options in chapter 5 is based on the framework provided by the production function approach.¹⁴

Findings. Chapter 5 presents several findings. First, the slowdown in potential growth in the past two decades, described in chapter 1, is projected to extend into the remainder of this decade. Trends in the fundamental drivers of growth suggest that potential growth in global output will slow further, by 0.4 percentage point a year on average, to 2.2 percent a year during 2022-30 (figure O.11). About half of this projected slowdown is due to demographic factors from an aging population, including slowing growth in the working-age population and declining labor force participation.

EMDE potential growth is projected to weaken considerably more, by about 1.0 percentage point a year, to 4.0 percent a year during 2022-30. In advanced economies, potential growth is expected to slow by 0.2 percentage point a year, to 1.2 percent a year, on average, during 2022-30. The slowdown will be internationally widespread: Economies accounting for nearly 80 percent of global GDP, including most EMDEs,

¹⁴ Several studies have investigated the link between the growth of output or productivity and structural reforms, focusing on the near-term benefits (Prati, Onorato, and Papageorgiou 2013) or productivity effects (Adler et al. 2017; Dabla-Norris, Ho, and Kyobe 2016). In some of these studies, the sample has consisted mostly of advanced economies (Banerji et al. 2017; de Haan and Wiese 2022; IMF 2015, 2016b).

are projected to experience a slowdown in potential growth between 2011-21 and 2022-30. Global potential growth over the remainder of this decade could be even slower than projected in this baseline scenario, by another 0.2-0.9 percentage point a year, if investment growth, improvements in health and education outcomes, or developments in labor markets disappoint or if unforeseen adverse events materialize.

Second, climate change is likely to have a sizable adverse effect on growth in potential output over the remainder of this decade, given that the frequency and intensity of weather-related disasters is expected to increase. Over the past two decades, the average natural disaster has lowered potential growth in the affected country by 0.1 percentage point in the year of the disaster. Over the medium term, however, the damage to potential growth has varied widely depending on the speed and magnitude of reconstruction efforts. For example, three years after a climate disaster, TFP growth has been anywhere between nil and 10 percent lower than in countries and years without disasters (Dieppe, Kilic Celik, and Okou 2020). The average small state has suffered losses and damages from climate-related disasters of about 5 percent of GDP per year, on average (World Bank 2023). However, increased infrastructure investment to alleviate the effects of climate change could more than offset this damage. For example, the literature review in chapter 3 summarizes estimates of climate-related investment needs averaging 2.3 percentage points of GDP per year; for EMDEs, this is equivalent to about one-third of the investment boost that would occur if they repeated their best 10-year investment growth performance.¹⁵ Such additional investment over the remainder of this decade could raise global potential growth by 0.1 percentage point and EMDE potential growth by 0.3 percentage point a year.

Third, a number of policies could help reverse the projected further weakening of global potential growth and return it to its 2011-21 average rate. Reforms associated with higher investment in physical capital, enhanced human capital, and faster growth of the labor supply could raise potential growth by 0.7 percentage point a year in 2022-30, both globally and in EMDEs. This would offset the 0.4 percentage-point decline in global potential growth between 2011-21 and 2022-30 projected in the baseline scenario and most of the 1.0 percentage-point slowdown projected for EMDEs. The policy options considered here could raise potential growth even more in EAP, ECA, and SSA, where large investment needs remain or where countries have strong track records of boosting investment.

Chapter 6. Trade as an Engine of Growth: Sputtering but Fixable

In chapter 6, Ohnsorge and Quaglietti note that the growth of international trade, powered by trade liberalization and falling transport costs, has historically been an important engine of output and productivity growth. In recent decades, it has helped about a billion people to escape poverty and many EMDEs to integrate into the world economy. Empirical studies indicate that an increase of 1 percentage point of GDP in an

¹⁵ Stern and Romani (2023) have also put climate-related investment needs globally at 2-3 percent of GDP.

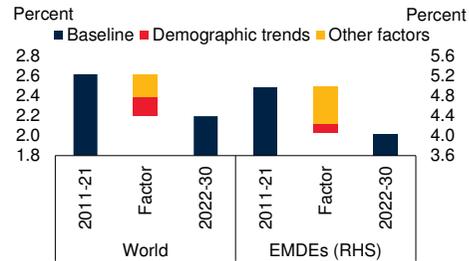
FIGURE O.11 Prospects for potential growth and policies to lift it

Forces similar to those that slowed global potential growth in the past decade are expected to depress it further in the remainder of the current decade. The slowing could be steeper than projected in the baseline if adverse shocks recur or if, for other reasons, current expectations again turn out to be overly optimistic. A menu of policy options is available to help reverse the slowing trend, including initiatives to lift the growth of physical and human capital—such as an investment boost to mitigate and adapt to climate change—and encourage labor force participation by women and older workers.

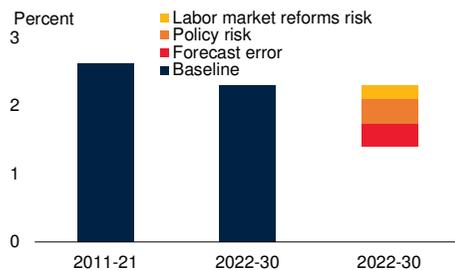
A. Potential growth



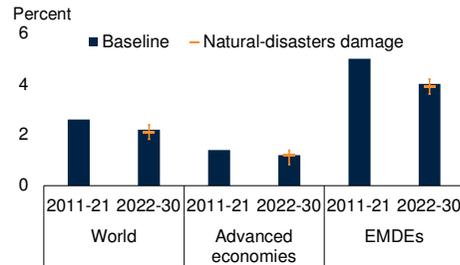
B. Potential growth



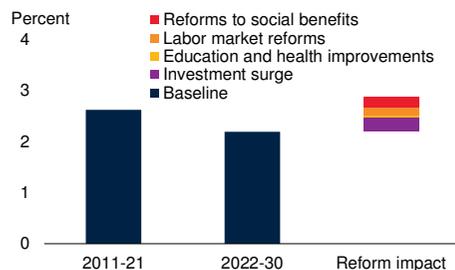
C. Global potential growth, corrected for potential forecast disappointments



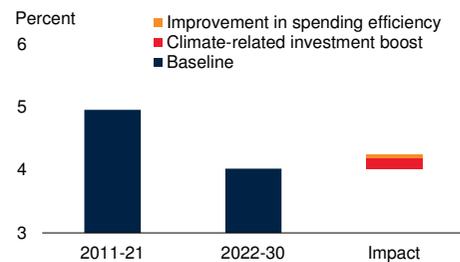
D. Potential growth with more frequent natural disasters



E. Global potential growth under reform scenarios



F. EMDE potential growth under scenarios involving investment in climate-related infrastructure



Sources: Penn World Table; World Bank.

Note: Period averages of annual averages weighted by gross domestic product (GDP). AEs = advanced economies; EMDEs = emerging market and developing economies; RHS = right-hand scale.

A. Based on production function approach. Sample includes 29 advanced economies and 53 EMDEs.

B. Derived using production function-based potential growth. "Other factors" reflects declining population growth, convergence-related productivity growth, policy changes, cohort effects, and a slowdown in investment growth relative to output growth. "Factor" reflects the percentage-point changes between the averages for 2011-21 and 2022-30.

C. Baseline and corrections as defined in chapter 5.

D. Impact of damage from natural disasters assumes that the number of climate disasters in 2022-30 will increase as much as it rose between 2011-21 and 2000-10 for each country, that is, from once every two years to twice every three years, on average. Orange whiskers display one standard deviation of the impact of climate disasters.

E. Scenarios assume a repeat, in each country, of each country's best 10-year improvement.

F. Climate-related investment boost and improvement in spending efficiency as described in chapter 5.

economy's trade openness has tended to lift per capita income by 0.2 percent (World Bank 2020).

The expansion of global value chains can account for a large part of the gains from trade in recent decades (World Bank 2020). Participation in global value chains generates efficiency gains and supports the transfer of knowledge, capital, and other inputs across countries—which boosts productivity. Integration into global value chains has also been associated with reduced vulnerability of economic activity to domestic shocks, although it has come with increased sensitivity to external shocks (Constantinescu, Mattoo, and Ruta 2020; Espitia et al. 2021).

In the past decade and a half, global trade growth has slowed as global value chains have matured, weaker investment growth has weighed on goods trade, political support for trade liberalization has waned, and trade tensions have emerged between major economies (World Bank 2015, 2017a). As a result, instead of growing twice as fast as global output growth, as it did during 1970-2008, global trade in goods and services grew less than one-half as fast in 2011-19 as global output growth.

The COVID-19 pandemic hit global trade particularly hard, and the latter fell by nearly 16 percent in the second quarter of 2020. It subsequently rebounded swiftly, however, especially global trade in goods, and much more quickly than it did after the 2007-09 global financial crisis. That said, since 2021, global trade growth has slowed again, amid COVID-19 outbreaks, supply chain strains, and Russia's invasion of Ukraine in February 2022.

Unless there is a major policy push, trade growth is likely to weaken further in the remainder of the current decade, not only because of the prospect of slower output growth, but also because some of the key structural factors that supported rapid trade expansion in the past seem, at least for now, to have run their course. Supply chains have been remarkably resilient given the magnitude of recent shocks. However, the COVID-19 pandemic and Russia's invasion of Ukraine could accelerate the erosion of globally integrated supply chains that was already underway, including by leading to further insourcing and regionalization of production networks and by increasing digitalization. Multinational corporations operating in EMDEs have already increased their use of digital technologies and diversified suppliers and production sites to increase their resilience to supply chain shocks (Saurav et al. 2020). As multinationals seek to diversify, EMDEs with business environments, institutions, and governance of the prerequisite quality may have new opportunities to integrate into global supply chains.

As discussed in chapter 1, growth in potential output is expected to slow in many EMDEs in the remainder of the current decade amid unfavorable demographics and weak investment and TFP growth. One way policy makers in EMDEs can boost the long-term growth of output and productivity is by promoting trade integration through measures to reduce trade costs.

Chapter 6 examines the following questions:

- What is the link between trade growth and long-term output growth?
- What are the prospects for trade growth in the coming decade?
- How large are trade costs?
- What are the correlates of trade costs?
- Which policies can help reduce trade costs?

Contributions. Chapter 6 contributes to the literature in several ways. First, the chapter expands on an earlier study with a new, comprehensive review of the theoretical and empirical literature on the links between trade and output growth (World Bank 2021). Second, it shows the evolution of trade in goods and services through global recessions, including the pandemic-induced global recession of 2020.

Third, the chapter revisits estimates of trade costs and their correlates in some earlier studies (Arvis et al. 2016; Novy 2013; World Bank 2021). The chapter uses estimates of the costs of goods trade for up to 180 countries (29 advanced economies and 151 EMDEs) from the UN Economic and Social Commission for Asia and the Pacific (ESCAP)-World Bank Trade Cost Database for 1995-2019. It estimates the determinants of the costs of goods trade, which accounts for about 75 percent of world and EMDE trade in goods and services, econometrically. The chapter also quantifies the costs of one type of services trade—logistics and shipping services—relative to the costs of goods trade. In addition, the chapter goes beyond previous research in assessing the role of trade policy—tariffs, participation in trade agreements, and nontariff barriers—in trade costs.

Fourth, the chapter discusses policy options for lowering trade costs. In particular, it offers scenarios that indicate the potential effects of various policy measures on trade costs.

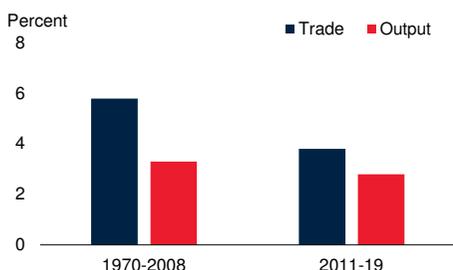
Findings. Chapter 6 offers several findings. First, the theoretical literature indicates that international trade boosts long-term growth of output and productivity by promoting a more efficient allocation of resources, technological spillovers, and human capital accumulation. The empirical literature supports the theory by finding statistically significant positive relationships between trade openness and output growth, although these relationships may be conditional on the presence of sound institutions and a supportive business environment in exporting countries. Overwhelmingly, empirical studies find that international trade enhances productivity growth.

Second, the COVID-19-induced global recession of 2020 triggered a collapse of global trade in goods and services that was followed by a rapid rebound (figure O.12). Before the end of 2020, global goods trade had recovered to pre-pandemic levels, and by

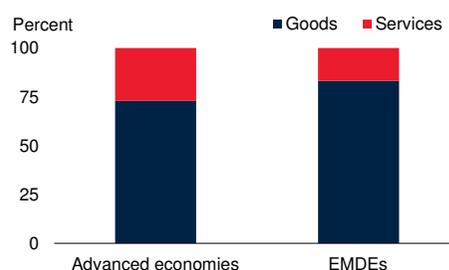
FIGURE O.12 Reducing trade costs to boost growth prospects

World trade growth has slowed sharply since the early 2000s. The pandemic hit services trade particularly hard. Trade costs, on average, roughly double the cost of internationally traded goods relative to domestically traded goods. Tariffs amount to only one-twentieth of average trade costs. Comprehensive reform packages to lower trade costs could yield large dividends: EMDEs with the most challenging business climates could halve their trade costs by implementing reforms that improve logistics performance and maritime connectivity to the standards of EMDEs with the least challenging business climates.

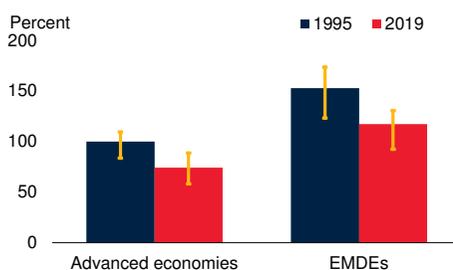
A. Global trade and output growth



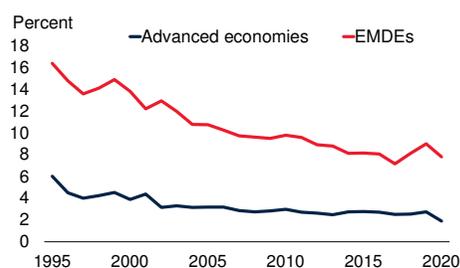
B. Composition of global trade, 2010-19



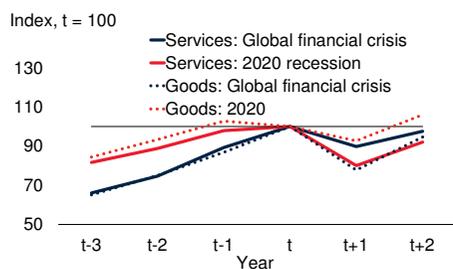
C. Trade costs



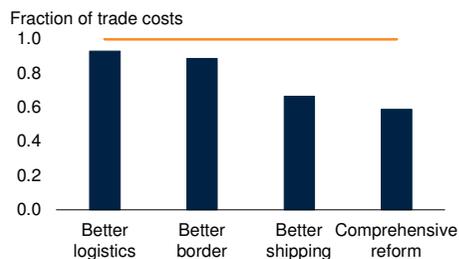
D. Tariff rates



E. Goods and services trade around global recessions



F. Reduction in overall trade costs associated with policy improvements



Sources: UN Comtrade (database); UN Economic and Social Commission for Asia and the Pacific (ESCAP)-World Bank Trade Cost Database; World Bank; World Trade Organization.

Note: EMDEs = emerging market and developing economies.

A. Annual average growth. Trade growth refers to the average growth of import and export volumes of goods and services.

C. Bilateral trade costs are aggregated into individual-country measures using 2018 shares of bilateral country exports from the UN Comtrade database. Bars show unweighted cross-country averages; whiskers show interquartile ranges. Sample for 1995 includes 33 advanced economies and 46 EMDEs. Sample for 2019 includes 23 advanced economies and 53 EMDEs.

D. Unweighted cross-country averages of applied weighted tariff rates. Sample includes up to 35 advanced economies and 123 EMDEs. Primary tariffs are used as a proxy for agriculture tariffs.

E. Levels of goods and services trade around past recessions and in 2020. t refers to the year before the recession.

F. Fraction of trade costs that would remain after policy improvements, as described in chapter 6. Data refer to 2018. Orange line indicates 1 (that is, unchanged trade costs in 2018) among the sample of EMDEs scoring in the poorest quartile on these indicators.

September 2021, global services trade had reached prepandemic levels, even though trade in travel and tourism services was still 40 percent lower than before the pandemic. The decline in services trade was considerably more pronounced and its recovery more subdued than in past global recessions, whereas movements in goods trade were broadly comparable to those in past global recessions.

Third, global trade growth is likely to weaken by another 0.4 percentage point per year in the remainder of the current decade as a result of slower global output growth as well as of the further waning of structural factors that supported rapid trade expansion in the past, such as the expansion of global value chains. The disruptions caused by the pandemic and the war in Ukraine may also continue to dampen trade growth over the medium term. A major policy effort to reduce trade costs could help reverse the trade slowdown.

Fourth, trade costs for goods are high: on average, they are almost equivalent to a 100 percent tariff—making internationally traded goods cost roughly twice as much as domestic goods. Tariffs amount to only one-twentieth of average trade costs; transportation and logistics, nontariff barriers, and policy-related standards and regulations account for the bulk of trade costs. Despite a one-third decline since 1995, trade costs in EMDEs remain about one-half higher than those in advanced economies. Higher shipping and logistics costs can explain about two-fifths of the explained difference in trade costs between EMDEs and advanced economies, and trade policy (including trade policy uncertainty) can explain a further two-fifths. Services trade tends to have considerably higher costs than goods trade; those higher costs can, to large extent, be attributed to regulatory restrictions.¹⁶

Fifth, reducing elevated trade costs in EMDEs requires comprehensive reform packages, including reforms to streamline trade processes and customs clearance requirements, enhance domestic trade-supporting infrastructure, increase competition in domestic logistics and in retail and wholesale trade, lower tariffs, lower the costs of compliance with standards and regulations, and reduce corruption. Trade agreements can also reduce trade costs and promote trade, especially if they lower nontariff barriers as well as tariffs. The chapter's empirical analysis suggests that an EMDE in the 25 percent of EMDEs with the highest shipping and logistics costs can cut its trade costs in half if it improves conditions in these areas to match those in the 25 percent of EMDEs with the lowest costs of shipping and logistics.

Chapter 7. Services-Led Growth: Better Prospects after the COVID-19 Pandemic?

In chapter 7, Nayyar and Davies document that services, generally the largest sector of economic activity, have also been the main source of growth over the past three decades. In 2019, services accounted for 63 percent of global output and 57 percent of global employment. Between 1995 and 2019, services accounted for two-thirds of global

¹⁶That said, there is some evidence that professional services now have trade costs comparable to those in manufacturing industries (Gervais and Jensen 2019).

output growth and almost three-quarters of global employment growth. Although the services sector accounts for a smaller part of economic activity in EMDEs than in advanced economies, the difference is not large: even in EMDEs, services accounted for 60 percent of output and 52 percent of employment in 2019.

The services sector is diverse. It includes high-skilled offshorable services (such as information and communications technologies, finance, and professional services) that have been internationally traded much like goods since the ICT revolution in the 1990s. It also includes low-skilled contact services (transportation, hospitality, retail, personal, arts, entertainment and recreation, and administrative and support) that have typically required physical proximity of providers and consumers. Many services in both of these categories provide important inputs for non-services-sector activity. For example, transportation and logistics services are essential for international trade in agricultural commodities and manufactured goods, while ICT services are central to increasingly data-intensive production processes, including those in manufacturing.¹⁷

Chapter 7 shows the uneven blows that the pandemic has dealt to different activities in the services sector. Social-distancing regulations and precautions against the spread of the virus have hit low-skilled contact services, such as transportation and hospitality, particularly hard. But it has affected high-skilled offshorable services, such as ICT and professional services, much less, because they are amenable to home-based work. The productivity benefits resulting from high-skilled services and ICT can boost economic growth more broadly through the important linkages between services and other sectors of the economy.

To explore these issues, chapter 7 addresses the following questions:

- How has the services sector shaped global economic growth over the past three decades?
- How has the pandemic affected the services sector?
- How can digitalization enhance the services sector's growth as countries recover from the pandemic?
- Which policies can help harness the services sector's growth potential?

Contributions. Chapter 7 makes several contributions to the literature. First, it establishes a set of stylized facts that describe the role of the services sector in the global economy over the past three decades. These stylized facts complement a growing literature on structural change and productivity growth in EMDEs that highlights the shifting contributions of the manufacturing and services sectors.¹⁸ In particular, a set of decompositions by services subsector compares the contributions of growth in different

¹⁷ Chapter 7 does not focus on social services (education and health care), which are largely publicly provided.

¹⁸ On the contributions of manufacturing and services sectors to economic growth, see, for example, Fan, Peters, and Zilibotti (2021); KinfeMichael and Morshed (2019); McMillan and Rodrik (2011); Nayyar, Hallward-Driemeier, and Davies (2021a, 2021b); and Rodrik (2016).

categories of demand—private domestic demand, exports, and government consumption—and, on the supply side, the contributions of growth in factor inputs and TFP.

Second, the chapter analyzes how the pandemic has affected prospects for services-led growth by tracing patterns of recovery and assessing growth opportunities linked to the acceleration in digitalization. This builds on recent studies that examine the effects of the pandemic on growth and income distribution (Apedo-Amah et al. 2020; Chetty et al. 2020; Narayan et al. 2022).

Third, the chapter discusses policies that can leverage the services sector's potential growth after the pandemic. This adds to the policy discussion in Nayyar, Hallward-Driemeier, and Davies (2021a, 2021b) by focusing on what has changed since the pandemic. Policies discussed include reducing regulatory barriers and improving skill development, not only for high-skilled offshorable services that have best withstood the pandemic, but also for low-skilled services such as transportation that have important linkages with other sectors.

Findings. Chapter 7 presents several novel findings. First, the services sector has led economic growth over the past three decades, accounting for more than half of the growth in GDP and employment in both advanced economies and EMDEs between 1995 and 2018-19 (figure O.13). However, the composition of services sector growth has differed between advanced economies and EMDEs. While low-skilled contact services have made a similar contribution to growth in EMDEs and advanced economies, high-skilled offshorable services have contributed about twice as much to growth in advanced economies as in EMDEs. High-skilled offshorable services have accounted for about one-third of GDP growth in advanced economies, but only one-sixth of GDP growth in EMDEs, and for about one-half of employment growth in advanced economies compared with one-ninth in EMDEs. The difference will matter for productivity growth, because low-skilled contact services have been associated with slower export growth than growth in domestic demand and with slower TFP growth than growth of labor and capital inputs.

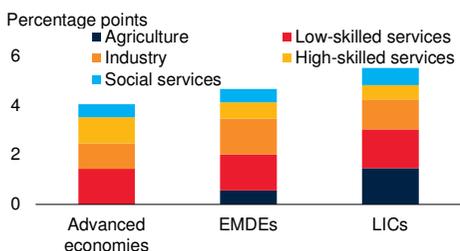
Second, although overall services activity collapsed during the pandemic, the impact on low-skilled contact services reliant on face-to-face interactions with consumers was far more severe than the impact on high-skilled offshorable services, which are more amenable to remote communication through digital delivery, such as ICT and professional services. The latter were among the activities the pandemic affected least adversely; indeed in some cases, especially that of ICT services, output and investment expanded.

Third, the increased digitalization that occurred during the pandemic augurs well for growth prospects in the services sector. Among high-skilled offshorable services, digitally deliverable ICT and professional-services exports from EMDEs have increased sharply, to more than 50 percent of their total services exports in 2021 from 40 percent in 2019. Even where physical proximity remains important, digitalization has expanded

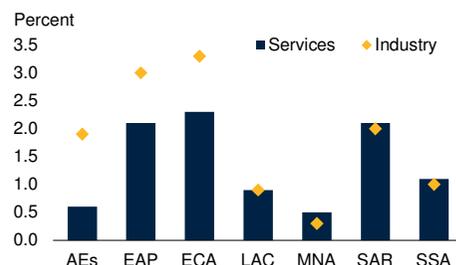
FIGURE O.13 The role of services in the global economy

The services sector accounted for more than half of the growth in gross domestic product (GDP) and employment in both advanced economies and EMDEs in 1995-2018. Services include both high-skilled offshorable services, such as information and communications technology, and low-skilled contact services, such as retail and hospitality. Most labor productivity growth in EMDEs during 1995-2018 was due to within-sector improvements rather than intersectoral shifts. The pandemic-induced recession of 2020 was unusual in the disruptions it caused to services activity.

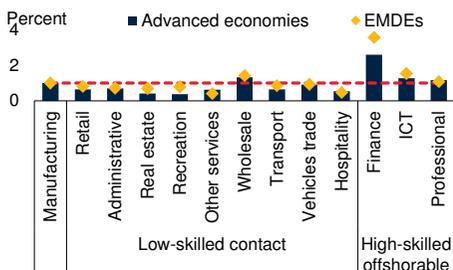
A. Sectoral contributions to value-added growth, 1990-2019/20



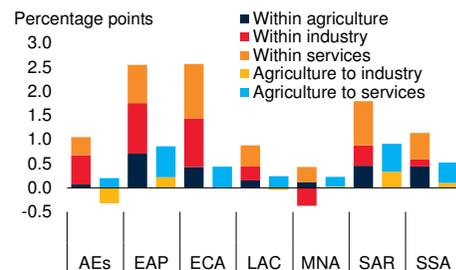
B. Productivity growth, 1995-2018



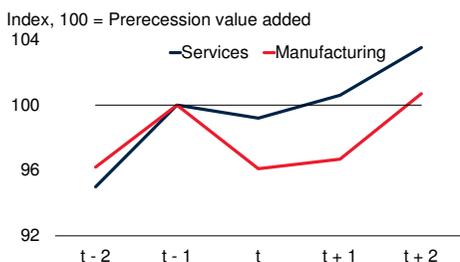
C. Total factor productivity in services relative to that in manufacturing



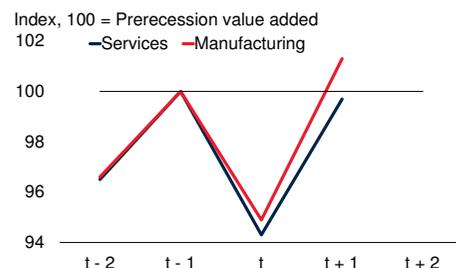
D. Contributions to labor productivity growth, 1995-2018



E. Recessions before 2020



F. Recessions in 2020



Sources: Groningen Growth and Development Centre (GGDC); Nayyar, Hallward-Driemeier, and Davies (2021a, 2021b); World Bank. Note: AEs = advanced economies; EAP = East Asia and Pacific; ECA = Europe and Central Asia; EMDEs = emerging market and developing economies; ICT = information and communications technology; LAC = Latin America and the Caribbean; LICs = low-income countries; MNA = Middle East and North Africa; SAR = South Asia; SSA = Sub-Saharan Africa. A. Bars represent the average contribution of individual sectors to value-added growth between 1990 and 2018. Sample from the GGDC/United Nations University-World Institute for Development Economics Research (UNU-WIDER) Economic Transformation Database includes 6 advanced economies, 39 EMDEs, and 6 LICs. B. Average compounded annual growth rates in labor productivity (value added per worker) across each region between 1995 and 2018. Unweighted average across country groups. C. Total factor productivity relative to manufacturing sector in the same country, estimated as in chapter 7. Data are from 56 countries, including 35 EMDEs across all regions, and are for the latest available year between 2010 and 2017. D. Bars represent labor productivity growth attributed to each sector and movement between sectors for the period 1995-2018. E,F. Recessions are defined as in chapter 7. Figures show the unweighted average level of real value added in services (blue) and manufacturing (red) in the years around the recession year t , indexed to 100 for the year preceding the recession.

opportunities, including opportunities for scale economies. For example, e-commerce platforms have enabled retailers and restaurants to reach beyond their local neighborhoods, while ICT and management practices have enabled the standardization of production over many establishments. Greater reliance on services sectors for growth may also help mitigate the adverse impacts of climate change on agricultural production.

Fourth, policy interventions can help countries leverage the potential of the services sector to drive economic growth as they continue to recover from the pandemic. Policy support for the diffusion of digital technologies in EMDEs remains central, given that the share of firms using email to communicate with clients was less than one-third as recently as 2018. Investing in ICT infrastructure, updating regulatory frameworks around data, and strengthening management capabilities and worker skills all matter. Countries can target the expansion of productive high-skilled offshorable services by reducing barriers to market access and promoting the improvement of skills. They can also support investments and regulatory reforms to revive low-skilled contact services, such as transportation, that employ large numbers of people.

Future research directions

The book suggests several directions for future research. These directions range from improvements in estimates of potential growth to more granular estimates of the effects of climate change and various structural policy measures.

Improvements in measurement

Estimates of potential growth could be improved in a number of ways. In particular, several refinements would be useful in applications of the production function approach (chapter 1):

- Especially for countries that rely heavily on natural resources, the estimation of production function-based potential growth could take into account natural resources as a factor of production.
- TFP growth estimates should take into account the role of new drivers of productivity, such as digital technologies, foreign direct investment, and integration into global value chains.
- Application of the production function approach could be improved by estimation of a broader measure of human capital, beyond the enrollment and completion metrics and life expectancy used in the analysis in this book. The World Bank's Human Capital Index offers one such measure, but currently covers only a few recent years (World Bank 2020).

Other estimates of potential growth could also be refined. For example, estimates of potential growth based on multivariate filters could be extended to calculate output gaps and their relationship with inflation and other measures of demand pressures. External

drivers of business cycles—such as global tourism for tourism-reliant countries and global liquidity for financial centers—could also be included.

Data improvements could also benefit the analysis of the role of services in the global economy (chapter 7). Addressing several methodological challenges in measuring services outputs, inputs, and trade flows could improve estimates of the contribution of the services sector to economic growth.

International trade in services has particularly poor data availability (chapter 6). Measures of the costs of trade in services remain scant, which makes it difficult to assess and quantify their determinants. Since these costs are largely associated with regulatory barriers, further analysis of the implications for trade costs of variations in regulations across sectors, countries, and regions is warranted. This would allow a more in-depth analysis of patterns and correlates of the costs of trade in services.

Effects of climate change

Chapter 5 outlines one approach for quantifying the effects of various factors related to climate change on long-term output growth. Estimates of these effects could be refined to identify how country characteristics, circumstances, and policy responses are related to the extent of damage to growth from extreme weather events. In addition, the channels through which climate change affects economic growth could be explored in greater detail. This is particularly important for understanding long-standing growth weakness in small states (World Bank 2023).

Spillovers from natural disasters in one country to its trading partners could also be examined. For example, natural disasters may cause the largest domestic damage in small island states but may have limited international spillovers, whereas disasters that disrupt production of an internationally traded commodity in a major producer can have substantial global repercussions.

Transportation associated with international trade is one of the largest contributors to global emissions of greenhouse gases (chapter 6). Depending on their impact on global patterns of trade, reforms to reduce trade costs may therefore increase or reduce such emissions. Further research could aim to provide a better understanding of the climate-related effects of reducing trade costs.

Effects of other structural policies

Several structural policy changes not considered in this book could be explored, drawing on longer-term data. In the 1970s, 1980s, and 1990s, labor markets, product markets, financial sectors, and fiscal and monetary policy frameworks underwent major structural changes and widespread reforms. These changes and reforms could not be explored with the large cross-country sample used in this study, because it extends only as far back as 2000. However, for at least a subset of countries, data might be available that go further back in time. This could facilitate the analysis of the longer-term effects of the structural

changes that occurred in the 1970s, 1980s, and 1990s. A longer time period may also allow a better assessment of the “cleansing” effects of adverse shocks in raising overall productivity.

Many EMDEs host large state-owned and private enterprises in which activity is excessively concentrated, with associated market power. Reforms of state-owned enterprises and measures to break up monopolies, where appropriate, or otherwise reform their regulation could trigger higher productivity growth by reallocating capital and labor toward more productive uses. A better understanding of the quantitative impact on potential growth in EMDEs as well as the identification of conducive preconditions and complementary reforms would be helpful.

Many EMDEs have weak governance and business climates. An assessment of the effects of improvements in various dimensions of governance and business climates on potential growth, including on firm productivity and household employment decisions, would be helpful.

As noted previously, the pandemic has triggered a sharp increase in digitalization. Several countries have launched policy initiatives to encourage further digitalization. Future research could analyze the effects of such digitalization efforts on trade and innovation and how digitalization has changed growth patterns in the services sector.

Finally, the pandemic has highlighted the challenges that disruptions in global value chains can present. Through complex global value chains, with multiple border crossings, trade costs and disruptions can snowball. Future research could investigate which policy measures can be most effective in reducing trade costs in the context of global value chains.

ANNEX OA Tables

TABLE OA.1 Actual GDP growth (percent)

Country group	Period	Growth	Country group	Period	Growth	Country group	Period	Growth
EMDEs	2000-10	6.0	EMDEs	2000-09	5.9	EMDEs	2000-08	6.3
	2011-21	4.4		2010-19	5.1		2011-19	4.9
	2022-24	3.6		2022-24	3.6		2022-24	3.6
MICs	2000-10	6.3	MICs	2000-09	6.1	MICs	2000-08	6.5
	2011-21	4.6		2010-19	5.3		2011-19	5.0
	2022-24	3.6		2022-24	3.6		2022-24	3.6
LICs	2000-10	6.0	LICs	2000-09	5.9	LICs	2000-08	6.0
	2011-21	4.8		2010-19	5.4		2011-19	5.2
	2022-24	4.9		2022-24	4.9		2022-24	4.9

Source: World Bank.

Note: EMDEs = emerging market and developing economies; GDP = gross domestic product; LICs = low-income countries; MICs = middle-income countries.

TABLE OA.2 Per capita growth (percent)

Country group	Period	Growth	Country group	Period	Growth	Country group	Period	Growth
EMDEs	2000-10	4.6	EMDEs	2000-09	4.4	EMDEs	2000-08	4.8
	2011-21	3.2		2010-19	3.5		2011-19	3.5
	2022-24	2.7		2022-24	2.7		2022-24	2.7
MICs	2000-10	4.9	MICs	2000-09	4.7	MICs	2000-08	5.1
	2011-21	3.5		2010-19	4.1		2011-19	3.8
	2022-24	2.8		2022-24	2.8		2022-24	2.8
LICs	2000-10	2.9	LICs	2000-09	2.8	LICs	2000-08	2.9
	2011-21	1.7		2010-19	2.3		2011-19	2.1
	2022-24	2.1		2022-24	2.1		2022-24	2.1

Source: World Bank.

Note: EMDEs = emerging market and developing economies; GDP = gross domestic product; LICs = low-income countries; MICs = middle-income countries.

TABLE OA.3 Potential GDP growth (percent)

Country group	Period	Growth	Country group	Period	Growth	Country group	Period	Growth
World	2000-10	3.5	Advanced economies	2000-10	2.2	EMDEs	2000-10	6.0
	2011-21	2.6		2011-21	1.4		2011-21	5.0
	2022-24	2.2		2022-24	1.2		2022-24	4.0

Source: World Bank.

Note: EMDEs = emerging market and developing economies; GDP = gross domestic product.

References

- Acemoglu, D. 2012. "Introduction to Economic Growth." *Journal of Economic Theory* 147 (2): 545-50.
- Acemoglu, D., S. Johnson, and J. A. Robinson. 2005. "Institutions as a Fundamental Cause of Long-Run Growth." In *Handbook of Economic Growth*, vol. 1, edited by P. Aghion and S. N. Durlauf, 385-472. Amsterdam: Elsevier.
- Acemoglu, D., and J. A. Robinson. 2012. *Why Nations Fail: The Origins of Power, Prosperity and Poverty*. New York: Norton.
- ADB (Asian Development Bank). 2016. *Asian Development Outlook 2016: Asia's Potential Growth*. Manila: Asian Development Bank.
- Adler, G., R. Duval, D. Furceri, S. Kilic Celik, K. Koloskova, and M. Poplawski-Ribeiro. 2017. "Gone with the Headwinds: Global Productivity." Staff Discussion Note 17/04, International Monetary Fund, Washington, DC.
- Aghion, P., U. Akcigit, and P. Howitt. 2015. "The Schumpeterian Growth Paradigm." *Annual Review of Economics* 7 (1): 557-75.
- Aghion, P., C. Antonin, and S. Bunel. 2021. *The Power of Creative Destruction*. Cambridge, MA: Harvard University Press.
- Aghion, P., and P. Howitt. 2005. "Growth with Quality-Improving Innovations: An Integrated Framework." In *Handbook of Economic Growth*, vol. 1, edited by P. Aghion and S. N. Durlauf, 67-110. Amsterdam: Elsevier.
- Allen, F., J. R. Behrman, N. Birdsall, S. Fardoust, D. Rodrik, A. Steer, and A. Subramanian. 2014. *Towards a Better Global Economy: Policy Implications for Citizens Worldwide in the Twenty-First Century*. Oxford, U.K.: Oxford University Press.
- Alvarez, R., and J. De Gregorio. 2014. "Understanding Differences in Growth Performance in Latin America and Developing Countries between the Asian and the Global Financial Crises." *IMF Economic Review* 62 (4): 494-525.
- Anand, R., and V. Tulin. 2014. "Disentangling India's Investment Slowdown." Working Paper 14/47, International Monetary Fund, Washington, DC.
- Anzoategui, D., D. Comin, M. Gertler, and J. Martinez. 2017. "Endogenous Technology Adoption and R&D as Sources of Business Cycle Persistence." NBER Working Paper 22005, National Bureau of Economic Research, Cambridge, MA.
- Apedo-Amah, M. C., B. Avdiu, X. Cirera, M. Cruz, E. Davies, A. Grover, L. Iacovone, et al. 2020. "Unmasking the Impact of COVID-19 on Businesses: Firm-Level Evidence from across the World." Policy Research Working Paper 9434, World Bank, Washington, DC.
- Arcand, J. L., E. Berkes, and U. Panizza. 2015. "Too Much Finance?" *Journal of Economic Growth* 20 (2): 105-48.
- Arvis, J.-F., Y. Duval, B. Shepherd, C. Utoktham, and A. Raj. 2016. "Trade Costs in the Developing World: 1996-2010." *World Trade Review* 15 (3): 451-74.
- Baffes, J., and P. Nagle. 2022. *Commodity Markets: Evolution, Challenges and Policies*. Washington, DC: World Bank.
- Bahal, G., M. Raissi, and V. Tulin. 2018. "Crowding-Out or Crowding-In? Public and Private Investment in India." *World Development* 109 (September): 323-33.

- Baker, S. R., N. Bloom, and S. J. Davis. 2016. "Measuring Economic Policy Uncertainty." *Quarterly Journal of Economics* 131 (4): 1593-636.
- Baldwin, R. 2016. *The Great Convergence: Information Technology and the New Globalization*. Cambridge, MA: Harvard University Press.
- Baldwin, R., and D. Jaimovich. 2010. "Are Free Trade Agreements Contagious?" NBER Working Paper 16084, National Bureau of Economic Research, Cambridge, MA.
- Banerjee, R., J. Kearns, and M. Lombardi. 2015. "(Why) Is Investment Weak?" *BIS Quarterly Review* (March): 67-82.
- Banerji, A., C. H. Ebeke, D. Furceri, E. Dabla-Norris, R. A. Duval, T. Komatsuzaki, T. Poghosyan, and V. Crispolti. 2017. "Labor and Product Market Reforms in Advanced Economies: Fiscal Costs, Gains, and Support." IMF Staff Discussion Note 17/03, International Monetary Fund, Washington, DC.
- Barro, R. J., and J. W. Lee. 2013. "A New Data Set of Educational Attainment in the World, 1950-2010." *Journal of Development Economics* 104 (September): 184-98.
- Bhattacharya, A., H. Kharas, and J. W. McArthur. 2023. *Keys to Climate Action: How Developing Countries Could Drive Global Success and Local Prosperity*. Washington, DC: Brookings Institution.
- Blanchard, O. J., and L. H. Summers. 1987. "Hysteresis in Unemployment." *European Economic Review* 31 (1-2): 288-95.
- Botzen, W. W., O. Deschenes, and M. Sanders. 2019. "The Economic Impacts of Natural Disasters: A Review of Models and Empirical Studies." *Review of Environmental Economics and Policy* 13(2): 167-88.
- Brenton, P., and V. Chemutai. 2021. *The Trade and Climate Change Nexus: The Urgency and Opportunities for Developing Countries*. Washington, DC: World Bank.
- Brynjolfsson, E., and A. McAfee. 2014. *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. New York: Norton.
- Brynjolfsson, E., and A. McAfee. 2017. *Machine, Platform, Crowd: Harnessing Our Digital Future*. New York: WW Norton & Company.
- Caballero, R. J., and A. Simsek. 2017. "A Risk-Centric Model of Demand Recessions and Macroprudential Policy." NBER Working Paper 23614, National Bureau of Economic Research, Cambridge, MA.
- Caselli, F., P. Pagano, and F. Schivardi. 2003. "Uncertainty and the Slowdown in Capital Accumulation in Europe." *Applied Economics* 35 (1): 79-89.
- Cerra, V., A. Cuevas, C. Goes, I. Karpowicz, T. Matheson, I. Samake, and S. Vtyurina. 2017. "Determinants of Infrastructure and Its Financing." *Emerging Economy Studies* 3 (2): 113-26.
- Cerra, V., B. Eichengreen, A. El-Ganainy, and M. Schindle, eds. 2021. *How to Achieve Inclusive Growth*. Oxford, U.K.: Oxford University Press.
- Cerra, V., A. Fatás, and M. S. C. Saxena. 2020. "Hysteresis and Business Cycles." IMF Working Paper 20/73, International Monetary Fund, Washington, DC.
- Chaloux, T., and Y. Guillemette. 2019. "The OECD Potential Output Estimation Methodology." OECD Economics Department Working Paper 1563, OECD Publishing, Paris.

- Chen, N., and D. Novy. 2012. "On the Measurement of Trade Costs: Direct vs. Indirect Approaches to Quantifying Standards and Technical Regulations." *World Trade Review* 11 (3): 401-14.
- Chetty, R., J. N. Friedman, N. Hendren, and M. Stepner. 2020. "The Economic Impacts of COVID-19: Evidence from a New Public Database Built Using Private Sector Data." NBER Working Paper 27431, National Bureau of Economic Research, Cambridge, MA.
- Comin, D., and S. Mulani. 2009. "A Theory of Growth and Volatility at the Aggregate and Firm Level." *Journal of Monetary Economics* 56 (8): 1023-42.
- Constantinescu, C., A. Mattoo, and M. Ruta. 2020. "The Global Trade Slowdown: Cyclical or Structural?" *World Bank Economic Review* 34 (1): 121-42.
- Dabla-Norris, E., M. S. Guo, V. Haksar, M. Kim, M. K. Kochhar, K. Wiseman, and A. Zdzienicka. 2015. *The New Normal: A Sector-Level Perspective on Productivity Trends in Advanced Economies*. Washington, DC: International Monetary Fund.
- Dabla-Norris, E., G. Ho, and A. Kyobe. 2016. "Structural Reforms and Productivity Growth in Emerging Market and Developing Economies." IMF Working Paper 16/15, International Monetary Fund, Washington, DC.
- de Haan, J., and R. Wiese. 2022. "The Impact of Product and Labour Market Reform on Growth: Evidence for OECD Countries Based on Local Projections." *Journal of Applied Econometrics* 37(4): 746-70.
- Devarajan, S. 2019. "Has Globalization Gone Too Far—Or Not Far Enough?" *Future Development* (blog), September 3, 2019. <https://brookings.edu/blog/future-development/2019/09/03/globalization-gone-too-far-or-not-far-enough>
- Devarajan, S., D. Go, S. Robinson, and K. Thierfelder. 2022. "Which Trade Policies Are Most Effective at Spurring Countries to Decarbonize?" PIIE Charts, September 16, Peterson Institute for International Economics, Washington, DC. <https://piie.com/research/piie-charts/which-trade-policies-are-most-effective-spurring-countries-decarbonize>
- Didier, T., M. A. Kose, F. Ohnsorge, and L. S. Ye. 2015. "Slowdown in Emerging Markets: Rough Patch or Prolonged Weakness." Policy Research Note 4, World Bank, Washington, DC.
- Dieppe, A., ed. 2021. *Global Productivity: Trends, Drivers, and Policies*. Washington, DC: World Bank.
- Dieppe, A., S. Kilic Celik, and C. Okou. 2020. "What Happens to Productivity during Major Adverse Events." In *Global Productivity: Trends, Drivers, and Policies*, edited by A. Dieppe, 141-200. Washington, DC: World Bank.
- Dieppe, A., and H. Matsuoka. 2021. "Sectoral Sources of Productivity Growth." In *Global Productivity: Trends, Drivers, and Policies*, edited by A. Dieppe, 357-89. Washington, DC: World Bank.
- Espitia, A., A. Mattoo, N. Rocha, M. Ruta, and D. Winkler. 2021. "Pandemic Trade: COVID-19, Remote Work and Global Value Chains." Policy Research Working Paper 9508, World Bank, Washington, DC.
- Fan, T., M. Peters, and F. Zilibotti. 2021. "Service-Led or Service-Biased Growth? Equilibrium Development Accounting across Indian Districts." NBER Working Paper 28551, National Bureau of Economic Research, Cambridge, MA.
- Fatás, A. 2000. "Do Business Cycles Cast Long Shadows? Short-Run Persistence and Economic Growth." *Journal of Economic Growth* 5 (2): 147-62.

- Fisman, R., and J. Svensson. 2007. "Are Corruption and Taxation Really Harmful to Growth? Firm-Level Evidence." *Journal of Development Economics* 83 (1): 63-75.
- Francois, J., and B. Hoekman. 2010. "Services Trade and Policy." *Journal of Economic Literature* 48 (3): 642-92.
- Furceri, D., S. Kilic Celik, J. T. Jalles, and K. Koloskova. 2021. "Recessions and Total Factor Productivity: Evidence from Sectoral Data." *Economic Modelling* 94 (January): 130-38.
- Furceri, D., and A. Mourougane. 2012. "The Effect of Financial Crises on Potential Output: New Empirical Evidence from OECD Countries." *Journal of Macroeconomics* 34 (3): 822-32.
- Gervais, A., and J. B. Jensen. 2019. "The Tradability of Services: Geographic Concentration and Trade Costs." *Journal of International Economics* 118 (May): 331-50.
- Gill, I. S., and M. Raiser. 2012. *Golden Growth: Restoring the Lustre of the European Economic Model*. Washington, DC: World Bank.
- Goedhuys, M., and R. Veugelers. 2012. "Innovation Strategies, Process and Product Innovations and Growth: Firm-Level Evidence from Brazil." *Structural Change and Economic Dynamics* 23 (4): 516-29.
- Gordon, R. J. 2017. *The Rise and Fall of American Growth: The U.S. Standard of Living since the Civil War*. Princeton, NJ: Princeton University Press.
- Gorodnichenko, Y., and G. Roland. 2011. "Which Dimensions of Culture Matter for Long-Run Growth?" *American Economic Review* 101(3): 492-98.
- Grippa, P., J. Schmittmann, and F. Suntheim. 2019. "Climate Change and Financial Risk." *Finance and Development* (December): 26-29.
- Guenette, J. D., M. A. Kose, and N. Sugawara. 2022. "Is a Global Recession Imminent?" Equitable Growth, Finance, and Institutions Policy Note 4, World Bank, Washington, DC.
- Ha, J., M. A. Kose, and F. Ohnsorge. 2022. "Global Stagflation." Discussion Paper 17381, Centre for Economic Policy Research, London, U.K.
- IMF (International Monetary Fund). 2015. *World Economic Outlook: Uneven Growth: Short- and Long-Term Factors*. April. Washington, DC: International Monetary Fund.
- IMF (International Monetary Fund). 2016a. "Fiscal Policies for Innovation and Growth." In *Fiscal Monitor: Acting Now, Acting Together*. April. Washington, DC: International Monetary Fund.
- IMF (International Monetary Fund). 2016b. "Time for a Supply-Side Boost? Macroeconomic Effects of Labor and Product Market Reforms in Advanced Economies." In *World Economic Outlook: Too Slow for Too Long*. April. Washington, DC: International Monetary Fund.
- Kilic Celik, S., M. A. Kose, and F. Ohnsorge. 2020. "Subdued Potential Growth: Sources and Remedies." In *Growth in a Time of Change: Global and Country Perspectives on a New Agenda*, edited by H.-Y. Kim and Z. Qureshi, 25-74. Washington, DC: Brookings Institution.
- Kinfemichael, B., and A. K. M. M. Morshed. 2019. "Unconditional Convergence of Labor Productivity in the Service Sector." *Journal of Macroeconomics* 59 (March): 217-29.
- Klasen, S. 2019. "What Explains Uneven Female Labor Force Participation Levels and Trends in Developing Countries?" *World Bank Research Observer* 34 (2): 161-97.
- Klomp, J., and K. Valckx. 2014. "Natural Disasters and Economic Growth: A Meta-analysis." *Global Environmental Change* 26 (1): 183-95.

- Kose, M. A., F. Ohnsorge, C. M. Reinhart, and K. S. Rogoff. 2022. "The Aftermath of Debt Surges." *Annual Review of Economics* 14: 637-63.
- Kose, M. A., F. Ohnsorge, and N. Sugawara. 2022. "A Mountain of Debt: Navigating the Legacy of the Pandemic." *Journal of Globalization and Development* 13 (2): 233-68.
- Leboeuf, M., and R. Fay. 2016. "What Is Behind the Weakness in Global Investment?" Working Paper 2016-5, Bank of Canada, Ottawa.
- Lee, J. W., and W. J. McKibbin. 2018. "Service Sector Productivity and Economic Growth in Asia." *Economic Modelling* 74 (August): 247-63.
- Li, D., N. Magud, and F. Valencia. 2015. "Corporate Investment in Emerging Markets: Financing vs. Real Options Channel." Working Paper 15/285, International Monetary Fund, Washington, DC.
- Loayza, N., and S. Pennings. 2022. *The Long Term Growth Model: Fundamentals, Extensions, and Applications*. Washington, DC: World Bank.
- Lockwood, B. 1991. "Information Externalities in the Labour Market and the Duration of Unemployment." *Review of Economic Studies* 58 (4): 733-53.
- Magud, N., and S. Sosa. 2015. "Investment in Emerging Markets: We Are Not in Kansas Anymore . . . Or Are We?" IMF Working Paper 15/77, International Monetary Fund, Washington DC.
- McMillan, M. S., and D. Rodrik. 2011. "Globalization, Structural Change and Productivity Growth." NBER Working Paper 17143, National Bureau of Economic Research, Cambridge, MA.
- McMillan, M. S., D. Rodrik, and C. Sepúlveda. 2017. *Structural Change, Fundamentals, and Growth: A Framework and Case Studies*. Washington, DC: International Food Policy Research Institute and World Bank.
- Mourougane, A. 2017. "Crisis, Potential Output and Hysteresis." *International Economics* 149 (May): 1-14.
- Narayan, A., A. Cojocaru, S. Agrawal, T. Bundervoet, M. Davalos, N. Garcia, C. Lakner, et al. 2022. "COVID-19 and Economic Inequality." Policy Research Working Paper 9902, World Bank, Washington, DC.
- Nayyar, G., M. Hallward-Driemeier, and E. Davies. 2021a. *At Your Service? The Promise of Services-Led Development*. Washington, DC: World Bank.
- Nayyar, G., M. Hallward-Driemeier, and E. Davies. 2021b. "The Promise of Services-Led Development." *Future Development* (blog), October 13, 2021. <https://brookings.edu/blog/future-development/2021/10/13/the-promise-of-services-led-development>
- Nguyen, H., and R. Qian. 2014. "Demand Collapse of Credit Crunch to Firms? Evidence from World Bank's Financial Crisis Survey in Eastern Europe." *Journal of International Money and Finance* 47: 125-44.
- Novy, D. 2013. "Gravity Redux: Measuring International Trade Costs with Panel Data." *Economic Inquiry* 51 (1): 101-21.
- Obstfeld, M. 2009. "International Finance and Growth in Developing Countries: What Have We Learned?" *IMF Staff Papers* 56 (1): 63-111.
- OECD (Organisation for Economic Co-operation and Development). 2005. *Growth in Services: Fostering Employment, Productivity, and Innovation*. Paris: OECD.

OECD (Organisation for Economic Co-operation and Development). 2014. "Growth Prospects and Fiscal Requirements over the Long Term". In *OECD Economic Outlook*, Vol. 2014/1. Paris: OECD.

Ohnsorge, F., and S. Yu., eds. 2022. *The Long Shadow of Informality: Challenges and Policies*. Washington, DC: World Bank.

Okonjo-Iweala, N., and B. Coulibaly. 2019. "Making Globalization Work for Africa." Op-Ed, May 30, 2019, Brookings Institution, Washington, DC. <https://brookings.edu/opinions/making-globalization-work-for-africa>

Ollivaud, P., Y. Guillemette, and D. Turner. 2016. "Links between Weak Investment and the Slowdown in Productivity and Potential Output Growth across the OECD." Working Paper 1304, Organisation for Economic Co-Operation and Development, Paris.

Oulton, N., and M. Sebastia-Barriel. 2016. "Effects of Financial Crises on Productivity, Capital and Employment." *Review of Income and Wealth* 63 (s1): S90-S112.

Park, D., and M. Noland. 2013. *Developing the Service Sector as an Engine of Growth for Asia*. Manila: Asian Development Bank.

Plummer, M. G. 2007. "'Best Practices' in Regional Trading Agreements: An Application to Asia." *World Economy* 30 (12): 1771-96.

Prati, A., M. G. Onorato, and C. Papageorgiou. 2013. "Which Reforms Work and Under What Institutional Environment?" *Review of Economics and Statistics* 95 (3): 946-68.

Queralto, A. 2013. "A Model of Slow Recoveries from Financial Crises." International Finance Discussion Papers 1097, Board of Governors of the Federal Reserve System, Washington, DC.

Qureshi, Z., J. L. Diaz-Sanchez, and A. Varoudakis. 2015. "The Post-crisis Growth Slowdown in Emerging Economies and the Role of Structural Reforms." *Global Journal of Emerging Market Economies* 7 (2): 179-200.

Rodrik, D. 2016. "Premature Deindustrialization." *Journal of Economic Growth* 21 (1): 1-33.

Rozenberg, J., and M. Fay. 2019. *Beyond the Gap: How Countries Can Afford the Infrastructure They Need While Protecting the Planet*. Washington, DC: World Bank.

Saurav, A., P. Kusek, R. Kuo, and B. Viney. 2020. "The Impact of COVID-19 on Foreign Investors: Evidence from the Second Round of a Global Pulse Survey." World Bank, Washington, DC.

Schady, N., A. Holla, A. A. Sabarwal, J. Silva, and A. Yi Chang. 2023. *Collapse and Recovery: How the COVID-19 Pandemic Eroded Human Capital and What to Do about It*. Washington, DC: World Bank.

Shabnam, N. 2014. "Natural Disasters and Economic Growth: A Review." *International Journal of Disaster Risk Science* 5 (2): 157-63.

Stern, N., and M. Romani. 2023. *The Global Growth Story of the 21st Century: Driven by Investment and Innovation in Green Technologies and Artificial Intelligence*. London: London School of Economics.

Ulku, H., and G. R. Zaourak. 2022. *Unleashing Central America's Growth Potential: Synthesis Report*. Washington, DC: World Bank.

Wilms, P., J. Swank, and J. de Haan. 2018. "Determinants of the Real Impact of Banking Crises: A Review and New Evidence." *North American Journal of Economics and Finance* 43 (January): 54-70.

World Bank. 2013. *World Development Report 2013: Jobs*. Washington, DC: World Bank.

World Bank. 2015. *Global Economic Prospects: Having Fiscal Space and Using It*. January. Washington, DC: World Bank.

World Bank. 2016. *World Development Report 2016: Digital Dividends*. Washington, DC: World Bank.

World Bank. 2017a. *Global Economic Prospects: Weak Investment in Uncertain Times*. January. Washington, DC: World Bank.

World Bank. 2017b. *World Development Report 2017: Governance and the Law*. Washington, DC: World Bank.

World Bank. 2018. *Learning to Realize Education's Promise*. Washington, DC: World Bank.

World Bank. 2019a. *Global Economic Prospects: Heightened Tensions, Subdued Investment*. June. Washington, DC: World Bank.

World Bank. 2019b. *World Development Report 2019: The Changing Nature of Work*. Washington, DC: World Bank.

World Bank. 2020. *World Development Report 2020: Trading for Development in the Age of Global Value Chains*. Washington, DC: World Bank.

World Bank. 2021. *Global Economic Prospects*. June. Washington, DC: World Bank.

World Bank. 2022. *Global Economic Prospects*. January. Washington, DC: World Bank.

World Bank. 2023. *Global Economic Prospects*. January. Washington, DC: World Bank.

World Economic Forum. 2022. "Carbon-Neutral Manufacturing Is Possible: Here's How." Davos Agenda 2022, January 12. <https://weforum.org/agenda/2022/01/carbon-neutral-manufacturing-possible-net-zero>