BOX 1.1 Long-term growth prospects: Downgraded no more?

Consensus forecasts for long-term growth have recently stabilized after a series of downgrades since 2010. Although this development could be another encouraging sign the global economy is finally enjoying a healthy expansion, long-term forecasts are often overly optimistic. While well below levels expected a decade ago, these forecasts are above potential growth estimates. Moreover, adverse structural forces continue to overshadow long-term growth prospects.

A prolonged period of weaker growth expectations, characterized by the systematic downgrading of long-term forecasts, seems to have come to an end. For the first time since 2010, the 10-year-ahead consensus forecast for global growth appears to have stabilized (Figure 1.1.1). In 2018, long-term growth expectations were upgraded for more than half of countries—the largest number since 2010—and there have also been recent upgrades in short-term forecasts.

A sustained upgrading of long-term forecasts could be another sign that the legacies of the global financial crisis are fading. Growth is expected to remain at a post-2011 high this year, and the negative global output gap is likely to be closed for the first time since 2008 (World Bank 2018a). The recent synchronized global upturn has even sparked hopes that the crisis-induced damage to potential growth—"hysteresis" effects, which entrench weak growth after deep recessions—could be reversed if investment, productivity and employment continue to improve (Yellen 2016; Draghi 2018).[1]

However, such enthusiasm needs to be tempered by several considerations. First, the benign short-term global growth outlook is predicated on highly accommodative monetary policy by major central banks and, in some advanced economies, significant fiscal stimulus. Second, long-term global growth forecasts are stabilizing at levels well below those expected a decade earlier and well below current growth rates. Third, long-term growth expectations have in the past proven overly optimistic and above model-based estimates of potential growth, which has been dampened by multiple structural forces.

Against this background, this box briefly analyzes the behavior of long-term global growth expectations to address the following questions:

- How have long-term global growth expectations evolved?
- How do these expectations compare with actual outcomes and estimates of potential growth?
- When do long-term growth expectations tend to be higher?
- What does the recent stabilization in forecasts imply for long-term prospects?

Over the past decade, the implications of rapid technological innovations for long-term growth prospects have been a subject of intense debate. Some claim that in the coming decades the global economy will enjoy a surge in productivity growth driven by new digital technologies (Brynjolfsson and McAfee 2014). Others argue that growth will be much slower because of the declining marginal impact of new technologies on productivity (Gordon 2016). This box focuses on long-term growth prospects as captured in 10-year-ahead growth forecasts and model-based potential growth estimates. It is very difficult, if not impossible, to undertake a credible quantitative analysis of the impact of new technologies on long-term productivity and growth outcomes.

Long-term growth expectations here refer to 10-year-ahead growth forecasts of real GDP from *Consensus*

Note: This box was prepared by M. Ayhan Kose, Franziska Ohnsorge and Naotaka Sugawara. Research assistance was provided by Shijie Shi.

[1]Hysteresis effects caused by the global financial crisis were sizable and persistent (Ball 2014; Lo and Rogoff 2015; Oulton and Sebastiá-Barriel 2017). Some argue that, absent monetary and fiscal demand stimulus, growth may have been much lower because of the underlying forces of "secular stagnation," a phenomenon of a rising propensity to save, weak demand and persistently low real interest rates (Summers 2015, 2016; Rachel and Smith 2015).

BOX 1.1 Long-term growth prospects: Downgraded no more? (*continued*)

Economics.[2] Short-term growth forecasts are defined as 1-year-ahead consensus forecasts. All forecasts are for annual growth and refer to averages of semi-annual or quarterly projections.

Evolution of expectations

Pre-crisis upgrades, post-crisis downgrades. The global financial crisis marked a turning point in long-term global growth expectations. From 1998 to 2007, long-term expectations improved slightly (from 3 percent to 3.4 percent). During the same period, 18 of the 38 economies' long-term growth forecasts were upgraded. Following the 2007-09 global financial crisis, however, long-term forecasts have steadily declined, from 3.3 percent in 2010 to 2.5 percent in 2017, reflecting a broad-based downgrading of growth prospects. Since the crisis, long-term growth forecasts were lowered for all economies (by about 1.4 percentage points, on average). The evolutions of forecasts over various horizons (from 2- to 10-year-ahead) all point to gradual deterioration in global growth expectations since the financial crisis.

The pattern of initial strength and subsequent weakness in growth expectations is broadly shared, albeit at different speeds and intensities, among different country groups and alternative measures of growth. Emerging market and developing economies (EMDEs) enjoyed improvements in their growth prospects before the crisis, while advanced economies began experiencing a gradual decline in growth forecasts in the early 2000s. Post-crisis, both groups witnessed deteriorating long-term growth forecasts. Similar trends occurred in per capita growth and medium-term (5-year-ahead) forecasts. In addition, the post-crisis decline in long-term output growth expectations was accompanied by weakening forecasts for global investment and consumption growth.

The pattern of pre-crisis upgrades and post-crisis downgrades in long-term forecasts was also evident in some major economies (Figure 1.1.2). In 1998, U.S. growth was expected to be about 2.4 percent over the following decade but, by 2008, the long-term growth forecasts had been revised upwards by 0.3 percentage point. Similarly, growth in China was expected to be 7.5 percent over the following decade in 1998, but by 2008, the long-term forecast had been increased by 0.2 percentage point following its remarkably strong performance in the previous decade. Although long-term growth forecasts for Brazil and India were upgraded in 2008 relative to expectations a decade earlier, these upgrades did not last. By 2018, all of these economies' long-term growth forecasts had declined (0.3-2.4 percentage points) below their 1998 levels.

Recent stabilization. Since 2017, long-term growth expectations have stabilized. In 21 of 38 economies, long-term growth expectations improved from 2017 to 2018—the largest number of countries since 2010. Ten-year-ahead forecasts for EMDEs registered their first upgrade in 2018 following seven consecutive years of declines.

Factors driving the evolution of forecasts. The evolution of long-term forecasts has reflected the global economy's roller coaster ride over the past two decades. Pre-crisis strength in growth prospects in part reflected rapid expansion of investment and international trade and financial flows with the spread of information and communications technology (Kose and Prasad 2010; World Bank 2018a). Thanks to these developments, the global economy registered one of its best growth records since the early 1970s in the 2003-07 period.

Tailwinds, however, turned into headwinds during the 2009 global recession, which was followed by an anemic recovery, especially in advanced economies. The post-crisis period was marked by widespread unemployment and weak investment growth. In many countries, elevated debt burdens weighed on

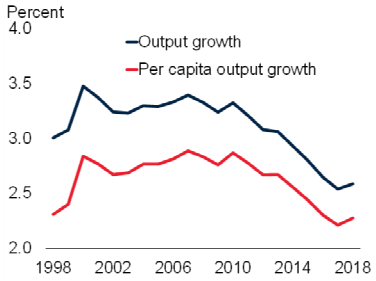
[2] Consensus Economics reports an average of 6- to 10-year-ahead growth forecasts, which are labelled here as "10-year-ahead forecast." These forecasts are consistently available for 38 countries (20 advanced economies and 18 EMDEs) from 1998. These 38 countries constitute 87 percent of global GDP in 2010-18. Forecasts are available for 45 countries (25 advanced economies and 20 EMDEs) for as early as 1989. Consensus Economics has been canvassing long-term forecasts from multiple institutions four times a year since 2015. Prior to that, long-term forecasts were made available twice a year or three times a year. The forecast made in a particular year is defined as the average of the 2-4 available forecast vintages in that year. For 2018, the forecast is the average of January and April vintages.

BOX 1.1 Long-term growth prospects: Downgraded no more? (*continued*)

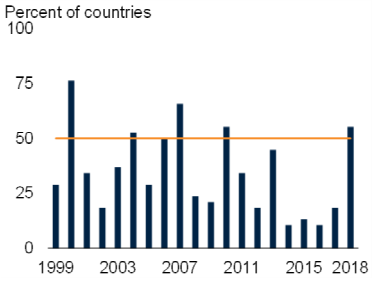
FIGURE 1.1.1 Growth forecasts: Global, groups, and aggregates

After a prolonged period of downgrades, long-term forecasts of global growth, per capita growth, investment, and consumption may have stabilized in 2018, while short-term forecasts have been upgraded recently. This still leaves current long-term forecasts considerably lower than a decade ago. Downgrades were particularly steep, but started later (after the global financial crisis), for EMDEs than for advanced economies.

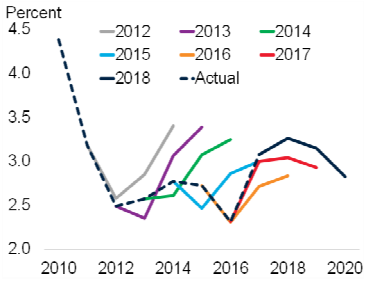
A. Ten-year-ahead global growth forecasts



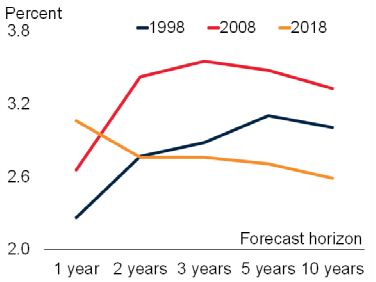
B. Share of countries with upgrades in 10-year-ahead growth forecasts



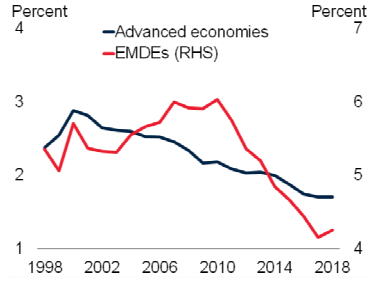
C. One- to three-year-ahead global growth forecasts



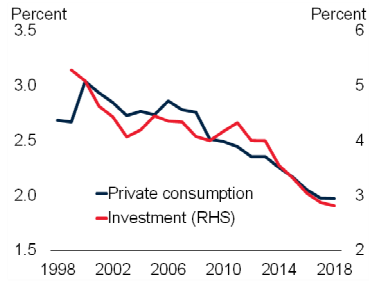
D. Global growth forecasts, by forecast horizon



E. Ten-year-ahead output growth forecasts



F. Ten-year-ahead global investment and consumption growth forecasts



Sources: Consensus Economics, United Nations, World Bank.

Notes: Sample includes 38 countries, consisting of 20 advanced economies and 18 EMDEs, for which consensus forecasts are consistently available during 1998-2018. These economies account for 87 percent of global GDP over 2010-18. Unless otherwise noted, annual averages of results from multiple surveys conducted in each year are presented.

A.B.E.F. The horizontal axis refers to the year of consensus forecast surveys.

A.C.D.E. Global, advanced-economy, and EMDE growth is computed with constant 2010 U.S. dollar GDP weights.

A. Per capita global output growth is computed as the difference between 10-year-ahead global growth forecasts and population growth estimates in the years for which forecast surveys are conducted.

B. Share of countries with positive changes in 10-year-ahead growth forecasts from the previous year.

C. Lines are based on consensus forecast surveys conducted in September or October of denoted years, except 2018, for which data are based on surveys in April.

D. Lines show the years of consensus forecast surveys.

F. Global private consumption and investment growth is computed, respectively, with constant 2010 U.S. dollar private consumption and investment weights.

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investment growth (World Bank 2017a). Over 2010-15, long-term prospects were further clouded by the 2011-12 Euro Area debt crisis, and by a sharp slowdown in EMDEs that was partly related to the bursting of the commodity price boom.

These adverse cyclical effects were compounded by structural weaknesses, namely poor productivity growth and a broadening slowdown in the growth of working-age population (Didier et al. 2015; World Bank 2018a). A slowdown in total factor productivity growth that had begun in advanced economies in 2004 was compounded, from 2008, by an even steeper decline in EMDEs.[3] Similarly,

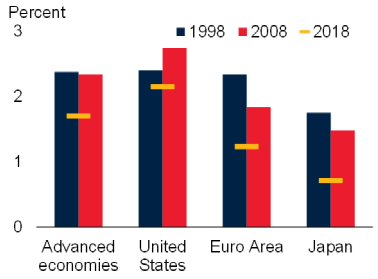
[3] In advanced economies, the highly synchronized slowdown in productivity growth has been attributed to several factors, including the lack of transformative technologies, slowing improvements in educational attainment, and the maturation of information technologies (Cette, Fernald, and Mojon 2016; Hirata, Islamaj, and Kose 2018; Kilic Celik et al. 2018; World Bank 2018a).

BOX 1.1 Long-term growth prospects: Downgraded no more? (*continued*)

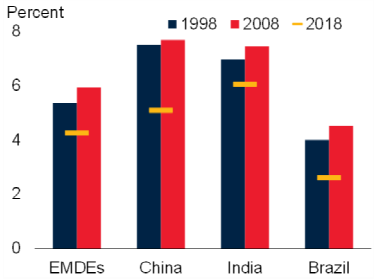
FIGURE 1.1.2 Growth forecasts in major economies and in comparison with actual and potential growth

Since the global financial crisis, long-term growth forecasts have declined in all major economies. This slowdown has followed adverse cyclical effects, compounded by structural weakness, including declines in the share of the working-age population. For most countries, long-term growth forecasts have systematically exceeded potential growth and actual growth over the past decade, and forecast optimism is stronger for longer-term forecasts than for shorter-term forecasts.

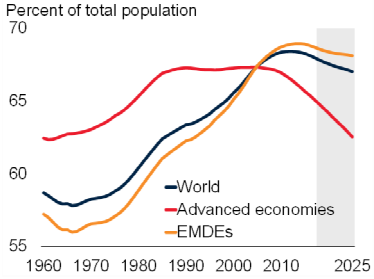
A. Ten-year-ahead growth forecasts in advanced economies



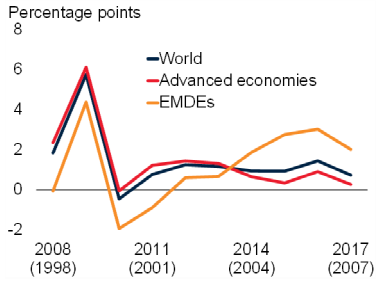
B. Ten-year-ahead growth forecasts in EMDEs



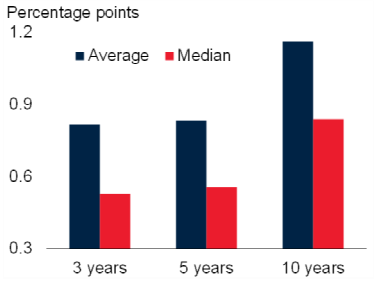
C. Global working-age population



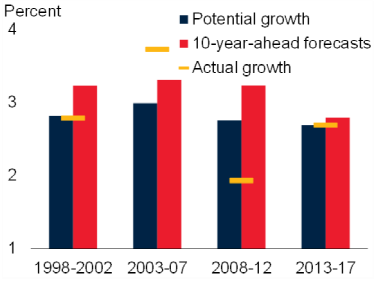
D. Ten-year-ahead growth forecast errors



E. Global growth forecast errors, by forecast horizon



F. Comparison of global forecasts and potential growth



Sources: Consensus Economics, Kilic Celik et al. (2018), United Nations, World Bank.
Notes: Sample includes 38 countries (20 advanced economies and 18 EMDEs).
A.B. Years denoted show the years of consensus forecast surveys.
A.B.D.E.F. For growth forecasts, annual averages of results from multiple surveys conducted in each year are presented.
A.B.D.F. Growth in aggregate groups is computed with constant 2010 U.S. dollar GDP weights.
A. Euro Area is a weighted average of France, Germany, Italy, the Netherlands, and Spain.
C. Population-weighted averages. The working-age population is defined as people aged 15-64 years. Shaded area refers to forecasts.
D. A forecast error is defined as a difference between consensus output growth forecasts a decade earlier and actual growth, weighted by GDP. The horizontal axis refers to the years for which growth forecasts are surveyed, with the forecast survey years in parentheses.
E. A forecast error is defined as a difference between growth forecasts at different horizons (over three years, five years, and 10 years) and actual growth. Averages and medians are computed from available observations up to 2017.
F. Figure shows period averages of GDP-weighted global actual growth, potential growth, and growth forecasts. For 10-year-ahead growth forecasts, the horizontal axis refers to the forecast survey years. Potential growth is measured by production function.
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in 2010, the share of the working-age population in EMDEs began, first, to plateau and, then, started to fall—a turning point that advanced economies had already passed in the mid-1980s. As a result, global potential growth—the rate of change in output an economy would sustain at full capacity utilization and full employment—was 0.9 percentage point lower in 2013-17 than a decade earlier (World Bank 2018a).

The recent stabilization in long-term growth expectations is associated with improved global growth and trade since mid-2016, tight labor markets and a rebound in industrial production in major advanced economies that also benefited their trading partners, and recoveries in some large commodity-exporting EMDEs. Indeed, global GDP is expected to return to its potential this year for the first time since 2008.

BOX 1.1 Long-term growth prospects: Downgraded no more? (*continued*)

Comparison with outcomes and potential growth

Systematic optimism. Not surprisingly, during 2008-17, long-term global growth forecasts made a decade earlier exceeded actual growth outcomes in all years except 2010. Growth forecasts were higher than eventual growth outcomes in the majority of countries in almost all years since 2008, except during 2010-11. Even during those two years, forecasts were overly optimistic for around 50 percent of advanced economies and 25 percent of EMDEs. The analysis here covers mainly the crisis and post-crisis periods that witnessed an unusual series of negative growth shocks. However, it is widely documented that forecasts for long-term growth tend to be more optimistic than growth outcomes even in data samples that include the pre-crisis period (Ho and Mauro 2016). Moreover, the longer the forecast horizon, the larger the degree of over-optimism is. On average, 10-year-ahead growth forecasts overshot by 1.2 percentage points and 5-year-ahead forecasts over-estimated growth by 0.8 percentage point over the period until 2017.[4]

Above potential growth. Since long-term growth expectations presumably abstract from cyclical effects, they should reflect forecasters' judgment about an economy's potential growth. By comparison, model-based estimates of potential growth can be made using a number of methods. To study whether long-term growth expectations differ from other measures of potential growth, estimates of potential growth based on a production function model are compared with 10-year-ahead growth forecasts made in the same year (Kilic Celik et al. 2018; World Bank 2018a). Ten-year-ahead forecasts for global growth often exceed the model-based global potential growth over the next decade.[5] The gap between long-term expectations and the model-based estimate is mostly driven by advanced economies but long-term growth forecasts are currently larger than potential growth in the majority of countries.

Causes of optimism. The over-optimism in long-term growth forecasts is a result of both cyclical and structural factors. In part, this optimism reflected an initial underappreciation of the headwinds to potential growth, especially in advanced economies, from demographics and weak investment and productivity. In part, optimism was a natural outcome of the failure to predict, or even recognize in real time, shocks that could trigger crises or business cycle turning points and their lasting impact (Juhn and Loungani 2002; Ho and Mauro 2016).[6]

The global financial crisis, one of the largest such episodes in a century, was not foreseen by most forecasters. The post-crisis period has also been marked by additional severe and unforeseen shocks, such as the Euro Area debt crisis and the 2014-16 oil price collapse. These episodes—which could not be foreseen 10 years earlier—were followed by substantial and persistent downward growth revisions. They were accompanied by weak business confidence and policy uncertainty. Long-term forecasts adjusted gradually, as new information revealed the lasting damage these shocks had dealt to the global economy. Indeed, long-term growth forecast downgrades have been historically associated with disappointing growth outcomes: when growth fell short of 1-year-ahead forecasts in three consecutive years (in a sample of 55 country-year episodes), 10-year-ahead forecasts were, on average, downgraded by 0.2 percentage point. When compared with forecast changes in other years, this downgrade was statistically significant.

Factors associated with higher long-term forecasts

As shown in the preceding section, long-term forecast revisions are quite common over time and across

[4] For 5-year-ahead forecasts, this is larger than the average growth disappointments of 0.34 percentage point in *World Economic Outlook* forecasts for 188 countries for 1990-2012 (Ho and Mauro 2016).

[5] Estimating potential output is fraught with measurement challenges (World Bank 2018a). However, 10-year-ahead forecasts remain above multiple model-based measures of potential growth available in Kilic Celik et al. (2018). For commodity exporters, accounting for resource rents can materially alter potential growth estimates and may account in part for the difference between 10-year-ahead forecasts and cross-country-consistent potential growth estimates.

[6] The average 10-year-ahead forecast error for the growth in years up to 2000-08 was correspondingly smaller, at 0.1 percentage point, compared with 1.2 percentage points for the sample from 2000-17.

BOX 1.1 Long-term growth prospects: Downgraded no more? (*continued*)

countries. To analyze the major factors associated with higher forecasts, two simple event studies are undertaken. These illustrate how forecasts are revised during periods of strong output or investment growth. These episodes are particularly relevant considering that the recent stabilization in growth expectations has also coincided with above-potential growth in some major economies and an acceleration in investment since mid-2016.

Sustained output growth. Sustained periods of above-potential growth were generally accompanied by higher 10-year-ahead growth forecasts. The event study sample includes 55 episodes (of which 43 concluded before the global financial crisis in 2009) during which actual growth exceeded potential growth in at least three consecutive years. Conversely, in 49 setback episodes, of which 17 straddled the crisis and 24 were pre-crisis, actual growth fell short of potential growth in three or more consecutive years. During growth spurts, long-term growth forecasts were, on average, 0.3 percentage point (and statistically significantly) higher than during growth setbacks (Figure 1.1.3).

Investment surges. The event sample includes 88 episodes (of which 66 ended before 2009) in which investment growth was positive in at least three consecutive years and 41 setback episodes in which investment growth was negative for at least three consecutive years. Again, long-term growth forecasts were, on average, 1 percentage point (and statistically significantly) higher during investment growth spurts than investment growth contractions.

Implications: A respite from gloom about growth prospects?

Recent long-term growth forecasts indicate that the period of post-crisis gloom about growth prospects may be coming to an end. Long-term growth forecasts currently envision global growth in 2028 at 2.6 percent—slightly higher than a year ago but less than this year's projected growth (3.1 percent). If the recent stabilization of long-term growth forecasts heralds a period of sustained upgrades, it may signal that the effects of the global financial crisis are waning.

However, past experience cautions that long-term forecasts may yet again turn out to be overly optimistic. Specifically, if forecast errors of the magnitude observed in the past materialize yet again, growth in the coming decade may turn out to be much weaker than current long-term growth forecasts, around 2.1 percent instead of 2.8 percent. Over-optimism has reflected an underappreciation of structural headwinds to potential growth as well as a failure to forecast global recessions. Over the past half-century, the global economy experienced a recession every decade (in 1975, 1982, 1991, and 2009).[7] This record suggests that it is possible that the global economy is due for another recession over the next 10 years.

Yet, even if a growth forecast disappointment is not triggered by an outright global recession, average potential growth over the next decade is estimated to be slower than during 2013-17. This reflects an awareness that weak productivity growth, increasingly unfavorable demographic trends, and subdued investment prospects are likely to weigh on global potential growth in the coming years. Model-based estimates suggest that average global potential growth during 2018-27 will be about 2.5 percent, much lower than the post-crisis average actual growth of 3 percent (World Bank 2018a).

Over a decade, such seemingly small differences in growth outcomes translate into significant changes in global income and living standards. For example, should global growth average current consensus forecasts, incomes a decade from now would be, cumulatively, 31 percent higher than in 2018 (but 3 percentage points less than if growth remained at its post-crisis average pace). This income gain could turn

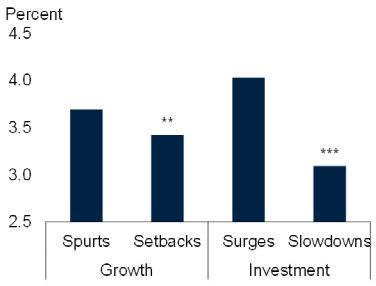
[7] In 1975, a surge in oil prices coincided with recessions in major advanced economies and debt crises in EMDEs. In 1982, monetary policy tightening in major advanced economies precipitated further debt crises in many EMDEs. In 1991, an abrupt tightening of credit in the United States coincided with banking and currency crises in many European countries. And in 2007-09, there were particularly deep financial crises in major advanced economies. In addition to these four global recessions, the global economy experienced two major slowdowns: during 1997-98, the Asian Crisis was followed by the Russian crisis and, in 2001, the U.S. stock market corrected in the dot-com crash (Kose and Terrones 2015).

BOX 1.1 Long-term growth prospects: Downgraded no more? (*concluded*)

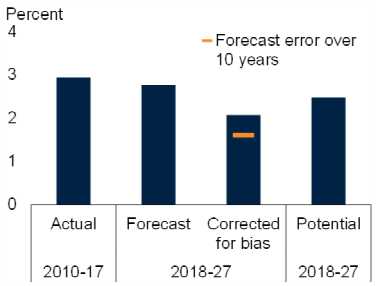
FIGURE 1.1.3 Growth forecasts and change in global GDP

Revisions in long-term growth forecasts are common over time and across countries. Ten-year-ahead forecasts became higher during sustained growth spurts and investment surges. Over a decade, growth disappointments can make a major difference to global incomes.

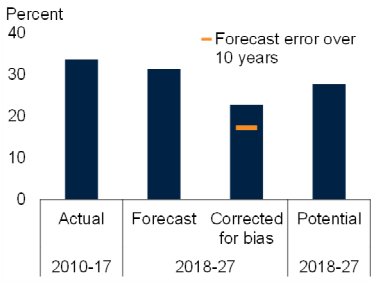
A. Ten-year-ahead growth forecasts during strong growth and investment episodes



B. Global growth forecasts and potential growth



C. Cumulative change in global GDP, 2018-27



Sources: Consensus Economics, Kilic Celik et al. (2018), World Bank.

Note: For growth forecasts, annual averages of results from multiple surveys conducted in each year are presented.

A. Bars show average growth forecasts during events. *** and ** denote that average forecasts between two events are statistically significantly different at the 1 percent and 5 percent levels, respectively. Sample includes 45 countries for which consensus forecasts are available even over the shorter period. Growth spurt and setback events are defined as, respectively, at least three consecutive years of actual growth above and below potential growth: 55 spurts in 37 countries and 49 setbacks in 36 countries. Investment surge and slowdown events are defined as, respectively, at least three consecutive years of positive and negative investment growth from the previous year: 88 surges in 42 countries and 41 slowdowns in 26 countries.

B.C. Growth in aggregate groups is computed with constant 2010 U.S. dollar GDP weights. Potential growth is measured by production function. Sample includes 38 countries.

B. Actual growth (2010-17) and potential growth (2018-27) are period-averages. A bar for "forecast" is an average of growth forecasts for 2018-27 surveyed in 2018. Bias in forecast is corrected in the following ways: A bar refers to an average of consensus growth forecasts for 2018-27 after an average forecast error for each time horizon (as partly shown in Figure 1.1.2.E) is adjusted; and an orange ticker shows average forecast growth corrected for the average error over 10 years.

C. Cumulative change in global GDP since 2018, when growth in every year during 2018-27 is assumed to be as defined in Panel B.

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out to be 4 percentage points lower should growth instead average its estimated potential rate, and about 9 percentage points lower should growth fall short of consensus forecasts by the average historical forecast error.

The analysis here warns that the recent stabilization in long-term growth prospects may be fleeting. The risk of further adverse shocks and underlying structural weaknesses still suggest an urgent need to press ahead with growth-enhancing policy adjustments—including reforming product and labor markets, raising investment in human capital, and building the policy buffers needed to allow an appropriate counter-cyclical response to shocks when they materialize.

over 2018-2020 (CBO 2018a; CBO 2018b; CBO 2018c; JCT 2017). In all, the stimulus adds just over 1 percentage point to the growth forecast over the next couple of years, but is expected to lead to budget deficits of around 5 percent of GDP for the next decade, up from 3.5 percent in 2017. As a consequence, net federal public debt, currently at about 80 percent of GDP, is set to rise in coming years (Auerbach, Gale, and Krupkin 2018). As fiscal stimulus measures have been introduced and inflation has moved toward target, the Federal Reserve has signaled a faster pace of policy tightening.

Recent trade policy changes are not expected to have a substantial effect on U.S. growth, which is projected to reach 2.7 percent in 2018 and edge down to 2.5 percent in 2019. As fiscal and