CHAPTER 1

GLOBAL PROSPECTS AND POLICIES

Subdued Momentum, Weak Trade and Industrial Production

Over the past year, global growth has fallen sharply. Among advanced economies, the weakening has been broad based, affecting major economies (the United States and especially the euro area) and smaller Asian advanced economies. The slowdown in activity has been even more pronounced across emerging market and developing economies, including Brazil, China, India, Mexico, and Russia, as well as a few economies suffering macroeconomic and financial stress.

One common feature of the weakening in growth momentum over the past 12 months has been a geographically broad-based, notable slowdown in industrial output driven by multiple and interrelated factors (Figure 1.1, panel 1):

- *A sharp downturn in car production and sales, which saw global vehicle purchases decline by 3 percent in 2018 (Box 1.1).* The automobile industry slump reflects both supply disruptions and demand influences—a drop in demand after the expiration of tax incentives in China; production lines adjusting to comply with new emission standards in the euro area (especially Germany) and China; and possible preference shifts as consumers adopt a wait-and-see attitude with technology and emission standards changing rapidly in many countries, as well as evolving car transportation and sharing options.
- *Weak business confidence amid growing tensions between the United States and China on trade and technology.* As the reach of US tariffs and retaliation by trading partners has steadily broadened since January 2018, the cost of some intermediate inputs has risen, and uncertainty about future trade relationships has ratcheted up. Manufacturing firms have become more cautious about long-range spending and have held back on equipment and machinery purchases. This trend is most evident in the trade- and global-value-chain-exposed economies of east Asia. In Germany and Japan, industrial production was recently lower than one year ago, while its growth slowed considerably in China and the United Kingdom and, to some extent, in the United States (Figure 1.1, panel 2). The weakness appeared particularly pronounced in the production of capital goods.[1]
- *A slowdown in demand in China, driven by needed regulatory efforts to rein in debt and exacerbated by the macroeconomic consequences of increased trade tensions.*

With the slowdown in industrial production, trade growth has come to a near standstill. In the first half of 2019, the volume of global trade stood just 1 percent above its value one year ago—the slowest pace of growth for any six-month period since 2012. From a geographical standpoint, major contributors to the weakening in global imports were China and east Asia (both advanced and emerging) and emerging market economies under stress (Figure 1.2). Downturns in global trade are related to reduced investment spending—as was the case, for instance, in 2015–16. Investment is intensive in intermediate and capital goods that are heavily traded. Global investment did indeed slow (Figure 1.3), in line with reduced import growth, reflecting cyclical factors, the steep downturn in investment in stressed economies, and the impact of increased trade tensions on business sentiment in the manufacturing sector. Another contributor to the slowdown in global trade has been the downturn in car production and sales, which is reflected in a slowdown in purchases of consumer durables (Figure 1.4).

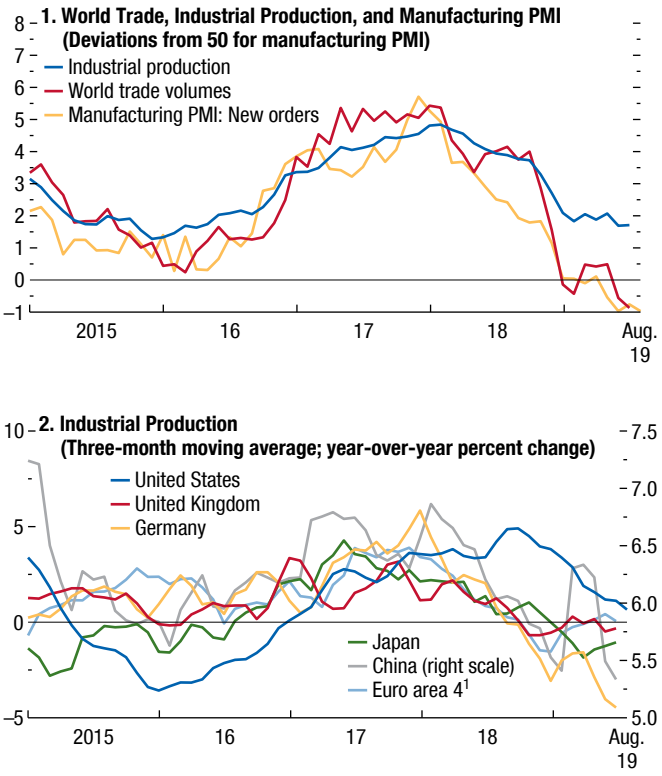
In China—the country with the highest investment spending in the world—the slowdown in investment in 2019 has been much more limited than the slowdown in imports, similar to what happened in 2015–16. Factors contributing to import weakness (beyond domestic capital spending) include reduced export growth, which is intensive in imports, and a decline in demand for cars (Box 1.1) and technology products, such as smartphones. The front-loading of exports, before tariffs were imposed in late 2018, likely also played a role by bringing forward demand for import components.

[1]Global semiconductor sales declined in 2018, in part related to seeming market saturation in smartphones and fewer launches of new tech products more broadly (ECB 2019).

Figure 1.1. Global Activity Indicators

(Three-month moving average; year-over-year percent change, unless noted otherwise)

Over the past 12 months there has been a geographically broad-based, notable slowdown in industrial output.

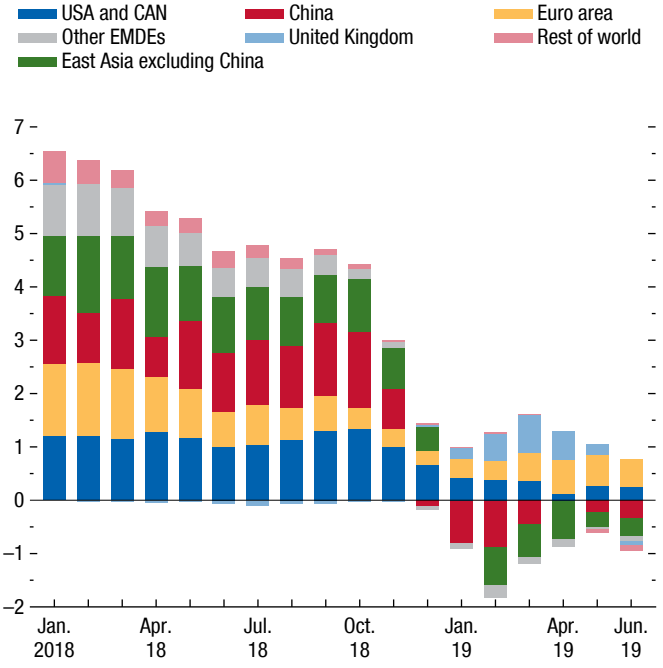


Sources: CPB Netherlands Bureau for Economic Policy Analysis; Haver Analytics; Markit Economics; and IMF staff calculations.
Note: PMI = purchasing managers' index.
[1]Euro area 4 comprises France, Italy, the Netherlands, and Spain.

Figure 1.2. Contribution to Global Imports

(Percentage points, three-month moving average)

In the first half of 2019, the volume of global trade stood just 1 percent above its value one year ago—the slowest pace of growth for any six-month period since 2012.



Source: IMF staff calculations.
Note: CAN = Canada; EMDEs = emerging market and developing economies; USA = United States.

While manufacturing lost steam, services (a larger share of the economy) broadly held firm (Figure 1.5, panel 1). Resilient services activity has meant steady aggregate employment creation, which supported consumer confidence (Figure 1.5, panel 2) and, in turn, household spending on services. This favorable feedback cycle between service sector output, employment, and consumer confidence has supported domestic demand in several advanced economies.

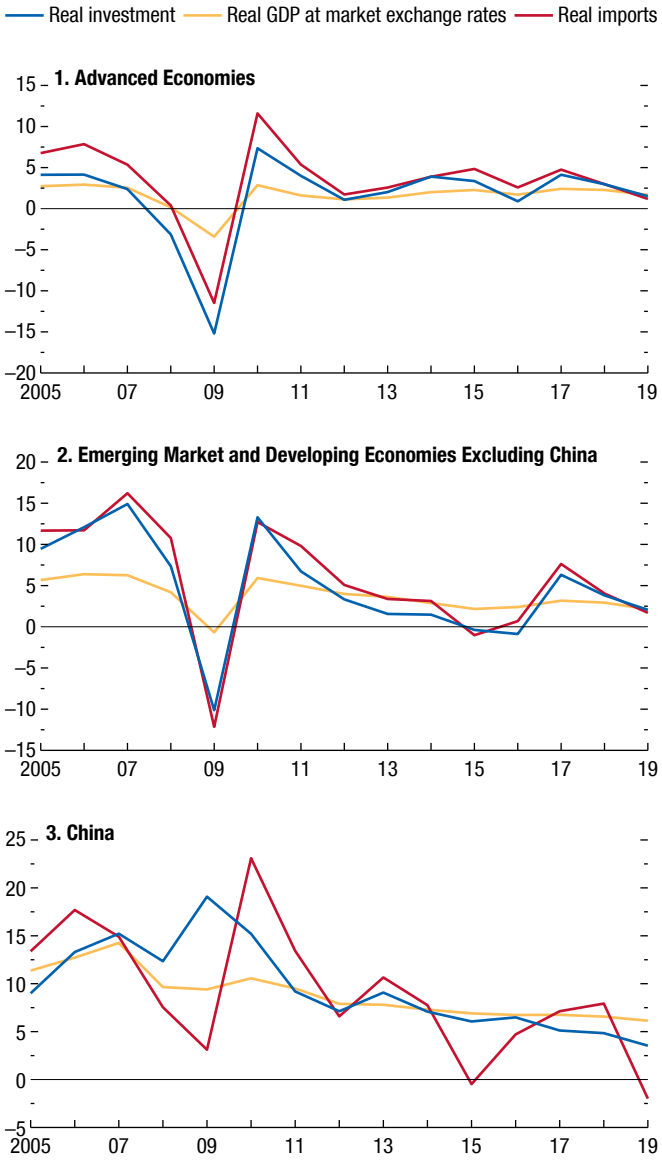
Weakening Growth

Growth in the advanced economy group stabilized in the first half of 2019, after a sharp decline in the second half of 2018. The US economy shifted to a somewhat slower pace of expansion (about 2 percent on an annualized basis) in the past few quarters as the boost from the tax cuts of early 2018 faded, and the UK economy slowed, with investment held back by Brexit-related uncertainty. The euro area economy registered stronger growth in the first half of this year than in the second half of 2018, but the German economy contracted in the second quarter as industrial activity slumped. In general, weak exports have been a drag on activity in the euro area since early 2018, while domestic demand has, so far, stayed firm. Japan posted strong growth in the first half of this year, driven by robust private and public consumption.

Preliminary data suggest a modest pickup in growth in the first half of 2019 for the emerging market and developing economy group, but well below its pace in 2017 and early 2018. China's growth was lifted by fiscal stimulus and some easing

Figure 1.3. Global Investment and Trade
(Percent change)

Global investment slowed in 2019, in line with reduced import growth.



Source: IMF staff estimates.

Figure 1.4. Spending on Durable Goods
(Percent change from a year ago)

Weaker spending on machinery, equipment, and consumer durables has been an important contributor to the slowdown in global trade.

Sources: Haver Analytics; Markit Economics; and IMF staff calculations.
[1]Australia, Brazil, Canada, Chile, China, euro area, India, Indonesia, Japan, Korea, Malaysia, Mexico, Russia, South Africa, Turkey, United Kingdom, United States.
[2]Australia, Brazil, Canada, Chile, China, euro area, Indonesia, Japan, Korea, Malaysia, Mexico, South Africa, Turkey, United Kingdom, United States.

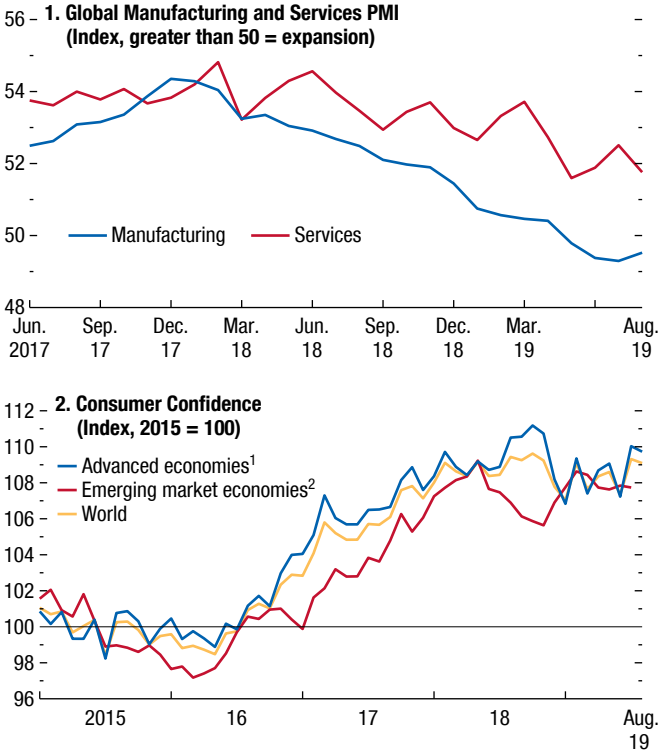
of the pace of financial regulatory strengthening initiated in the second half of 2018. India's economy decelerated further in the second quarter, held back by sector-specific weaknesses in the automobile sector and real estate as well as lingering uncertainty about the health of nonbank financial companies. In Mexico, growth slowed sharply during the first half of the year owing to elevated policy uncertainty, budget under-execution, and some transitory factors. On the other hand, growth resumed in the second quarter in Brazil after a first-quarter contraction driven in part by a mining disaster. Likewise, growth recovered modestly in the second quarter in South Africa, helped by improved electricity supply. Growth recovered in Turkey in the first half of the year following a deep contraction in the second half of 2018, benefiting from more favorable global financial conditions and fiscal and credit support. In contrast, the contraction in Argentina continued through the first half of the year, albeit at a slower pace, and risks going forward are clearly to the downside due to the sharp deterioration in market conditions.

Muted Inflation

The broad synchronized global expansion from mid-2016 through mid-2018 helped narrow output gaps, particularly in advanced economies, but did not

Figure 1.5. Global Purchasing Managers' Index and Consumer Confidence

While manufacturing lost steam, services broadly held firm.

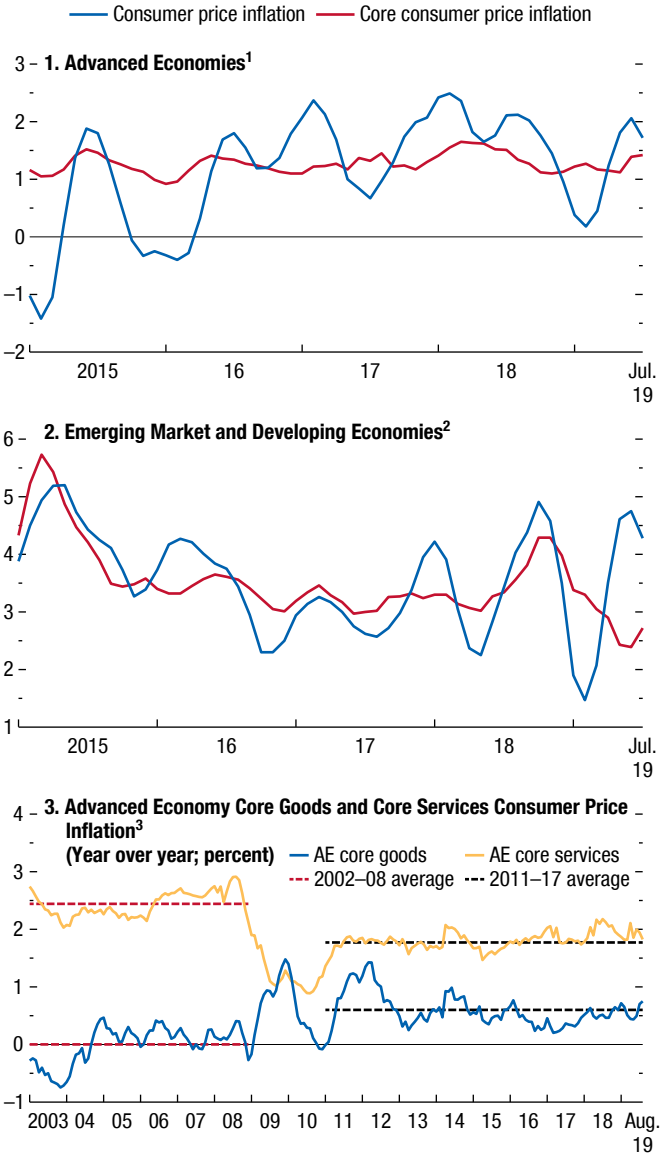


Sources: Haver Analytics; Markit Economics; and IMF staff calculations.
[1]Australia, Czech Republic, Denmark, euro area, Hong Kong SAR, Israel, Japan, Korea, Norway, Sweden, Switzerland, Taiwan Province of China, United Kingdom, United States.
[2]Argentina, Brazil, Chile, China, Colombia, Hungary, Indonesia, Malaysia, Mexico, Philippines, Poland, Russia, South Africa, Thailand, Turkey, Ukraine.

Figure 1.6. Global Inflation

(Three-month moving average; annualized percent change, unless noted otherwise)

Since mid-2018, core inflation has slid further below target across advanced economies and below historical averages in many emerging market and developing economies.



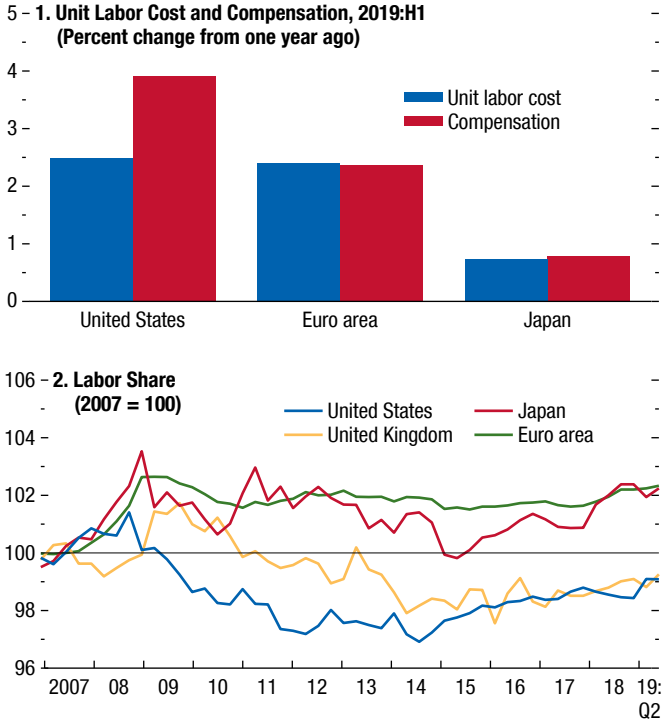
Sources: Consensus Economics; Haver Analytics; and IMF staff calculations.
Note: Country lists use International Organization for Standardization (ISO) country codes.
[1]Advanced economies are AUT, BEL, CAN, CHE, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HKG, IRL, ISR, ITA, JPN, KOR, LTU, LUX, LVA, NLD, NOR, PRT, SGP, SVK, SVN, SWE, TWN, USA.
[2]Emerging market and developing economies are BGR, BRA, CHL, CHN, COL, HUN, IDN, IND, MEX, MYS, PER, PHL, POL, ROU, RUS, THA, TUR, ZAF.
[3]Sample comprises 16 advanced economies (AE): Australia, Austria, Canada, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, United Kingdom, and United States.

generate sustained increases in core consumer price inflation. Not surprisingly, as the global expansion has weakened, core inflation has slid further below target across advanced economies and below historical averages in many emerging market and developing economies (Figure 1.6). The few exceptions to this broad pattern of softening are economies where large currency depreciations have fed through to higher domestic price pressure (such as in Argentina) or where there are acute shortages of essential goods (Venezuela).

Despite higher import tariffs in some countries, cost pressures have generally remained subdued. Wage growth has inched up from modest levels as unemployment rates have dropped further (close to record lows, for example, in the United States and the United Kingdom) (Figure 1.7, panel 1). The labor share of

Figure 1.7. Wages, Unit Labor Costs, and Labor Shares

Wage growth and the labor share of income have increased recently in some advanced economies.

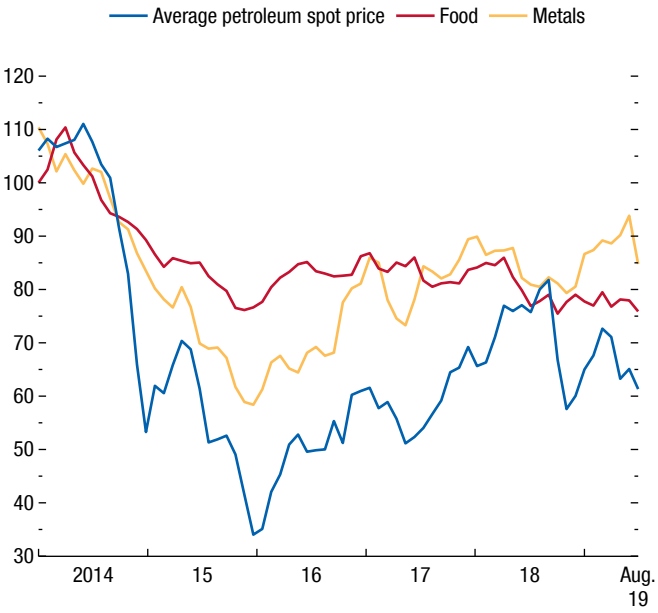


Sources: Haver Analytics; and IMF staff calculations.

Figure 1.8. Commodity Prices

(Deflated using US consumer price index; 2014 = 100)

Commodity price indices have generally softened since the spring.



Sources: IMF, Primary Commodity Price System; and IMF staff calculations.

income has been on a gentle upward trend since around 2014 in Japan, the United Kingdom, and the United States, and has increased in the euro area since early 2018 (Figure 1.7, panel 2). These developments appear not to have passed through to core consumer price inflation, suggesting some modest compression of firms' profit margins. In the emerging and developing Europe region, labor shortages have contributed to robust wage growth in many economies. Nonetheless, as discussed in Chapter 2 of the *Regional Economic Outlook* for Europe, wage growth has not transmitted to rising final goods price inflation across the region (Turkey's relatively high inflation can be attributed to other drivers, including past currency depreciation).

Energy prices declined by 13 percent between the reference periods for the April 2019 and current *World Economic Outlook* (WEO) as record-high US crude oil production, together with soft demand, outweighed the influence of supply shortfalls related to US sanctions on Iran, producer cuts by the Organization for the Petroleum Exporting Countries, and strife in Venezuela and Libya (Figure 1.8). The September 14 attack on key oil refining facilities in Saudi Arabia threatened severe supply disruptions, causing crude oil prices to spike by more than 10 percent in the immediate aftermath. Prices subsequently retreated somewhat on reports of less damage than initially feared. Coal and natural gas prices also declined between the reference periods as a result of weak demand prospects. Metal prices remained broadly flat, with declines in copper and aluminum prices offsetting increases in those for nickel and iron ore between the two reference periods (see the Commodities Special Feature).

Overall, low core inflation readings and subdued impulses from commodity prices to headline inflation have led to declines in market pricing of expected inflation, especially in the United States and the euro area.

Volatile Market Sentiment, Monetary Policy Easing

Market sentiment has been volatile since April, reflecting multiple influences that include additional US tariffs on Chinese imports and retaliation by

China, fears of disruptions to technology supply chains, prolonged uncertainty on Brexit, geopolitical strains, and policy rate cuts and dovish communication by several central banks. The net effect of these forces is that financial conditions across advanced economies are now generally easier than at the time of the April 2019 WEO, but they are broadly unchanged across most emerging market and developing economies (see the October 2019 *Global Financial Stability Report* (GFSR)).

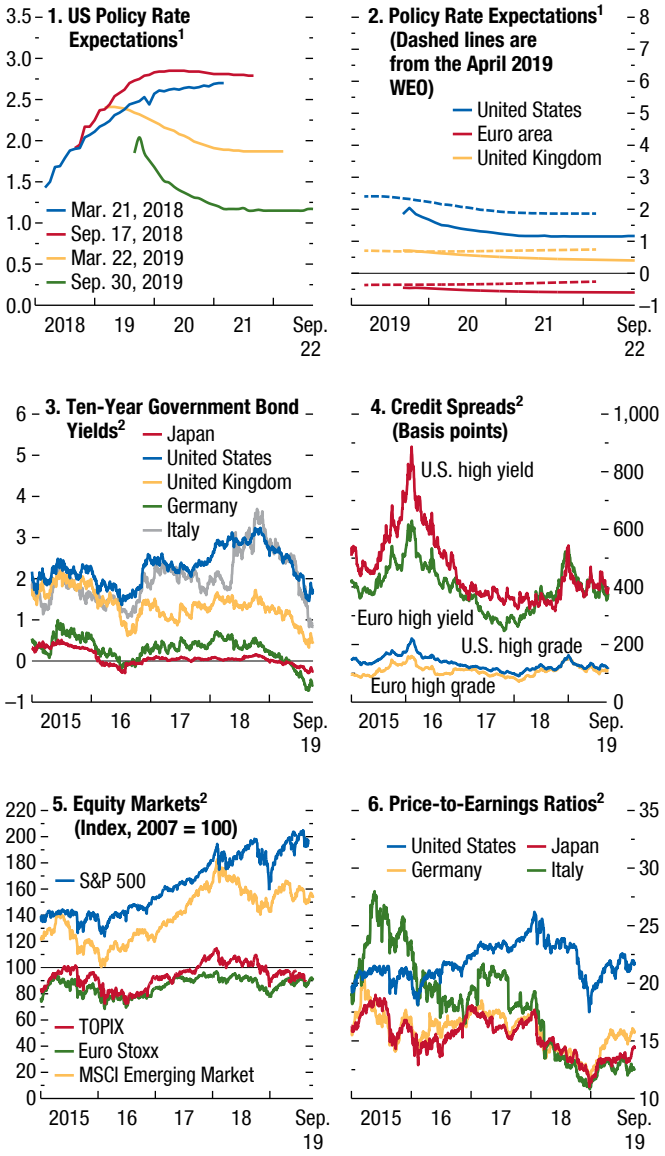
Among *advanced economies*, major central banks have turned more accommodative, with a dovish shift in communications earlier in the year followed by easing actions during the summer. The US Federal Reserve cut the Federal Funds rate in July and September and ended its balance sheet reduction. In September, the European Central Bank reduced its deposit rate and announced a resumption of quantitative easing. These policy shifts, together with rising market concerns of slower growth momentum, contributed to sizable declines in sovereign bond yields—in some cases, deep into negative territory (Figure 1.9). Yields on 10-year US Treasury notes, UK gilts, German bunds, and French securities, for example, dropped between 60 and 100 basis points from March to late September, while yields on Italian 10-year bonds declined by 175 basis points on the formation of a new government. Prices of riskier securities have been volatile. Credit spreads on US and euro area high-yield corporate securities have widened marginally since April but remain below their levels in late 2018. Equity markets in the United States and Europe have lost some ground since April but are still well above the lows during the sell-off at the end of 2018.

Currency movements for advanced economies have been notable in some cases. In real effective terms, the yen appreciated by more than 5 percent and the Swiss franc by 3 percent between March and late September as market volatility spiked. In contrast, the British pound has depreciated by 4 percent on increased concern about a no-deal Brexit. The US dollar has strengthened by about 2½ percent, whereas the euro has depreciated by about 1½ percent. Financial flows to and from advanced economies have remained generally subdued, especially since early 2018. One factor explaining these developments is the notable decline in foreign direct investment flows, which have been affected by financial operations of multinational corporations following tax reform in the United States (Box 1.2).

Figure 1.9. Advanced Economies: Monetary and Financial Market Conditions

(Percent, unless noted otherwise)

Sovereign bond yields have declined notably in recent months, in some cases, deep into negative territory.



Sources: Bloomberg Finance L.P.; Haver Analytics; Thomson Reuters Datastream; and IMF staff calculations.
Note: MSCI = Morgan Stanley Capital International; S&P = Standard & Poor's; TOPIX = Tokyo Stock Price Index; WEO = *World Economic Outlook*.
[1]Expectations are based on the federal funds rate futures for the United States, the sterling overnight interbank average rate for the United Kingdom, and the euro interbank offered forward rate for the euro area; updated September 30, 2019.
[2]Data are through September 27, 2019.

Among *emerging market and developing economies*, central banks in several countries (for example, Brazil, Chile, India, Indonesia, Mexico, Peru, Philippines, Russia, South Africa, Thailand, and Turkey) have cut policy rates since April. Sovereign spreads have been broadly stable over this period, with a few exceptions (Figure 1.10). Spreads narrowed in Brazil on growing optimism that the long-awaited pension reform would be enacted. Mexico's sovereign spreads widened temporarily following a credit rating downgrade in June. Meanwhile, in Argentina, the primary elections in August triggered a sharp increase in government bond yields amid a wider sell-off in Argentine assets. In Turkey, spreads decompressed significantly following municipal elections in June and are still wider than in April. Emerging market equity indices are broadly trading at April levels, which reflects offsetting influences on earnings prospects from increased domestic and external monetary policy support and intensifying trade tensions (Figure 1.11).

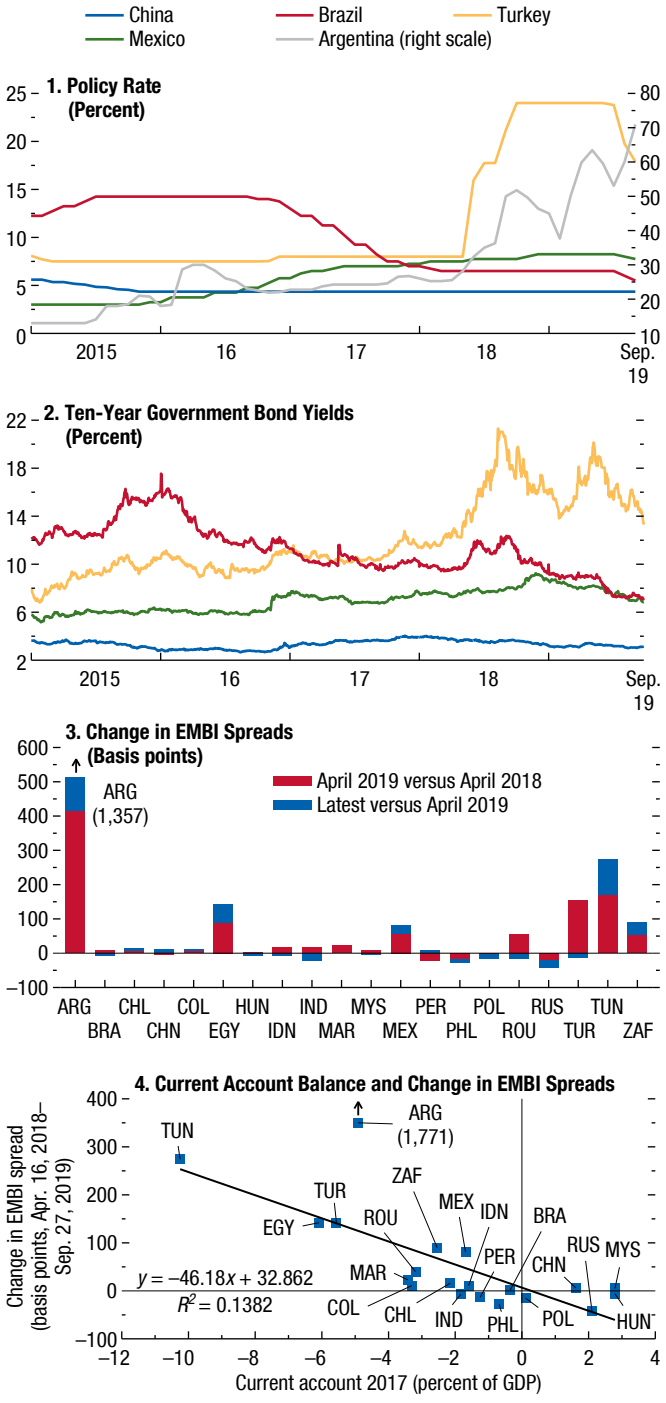
Capital flows to emerging market economies have reflected the broader shifts in risk sentiment since April, with investors lowering their exposure to equities and rotating toward hard currency bonds (Figure 1.12). Portfolio flows into the emerging market asset class remain stronger overall than during the retrenchment of late 2018; investors continue to differentiate across individual economies based on economic and political fundamentals. Most currencies appreciated between March and July, helped by the US Federal Reserve's dovish communications and move toward a more accommodative stance. But several currencies lost ground in August with the deterioration in risk sentiment, particularly the Argentine peso. The Chinese renminbi has depreciated by about 3½ percent since March (Figure 1.13).

Global Growth Outlook: Modest Pickup amid Difficult Headwinds

Projected growth for 2019, at 3.0 percent, is the weakest since 2009. Except in sub-Saharan Africa, more than half of countries are expected to register per capita growth lower than their median rate during the past 25 years. The marked deceleration reflects carryover from broad-based weakness in the second half of 2018, followed by a mild growth uptick in the first half of 2019 and supported, in some cases, by more accommodative policy stances (such as in China and, to some extent, the United States). With growth estimates for both the second half of 2018 and the

Figure 1.10. Emerging Market Economies: Interest Rates and Spreads

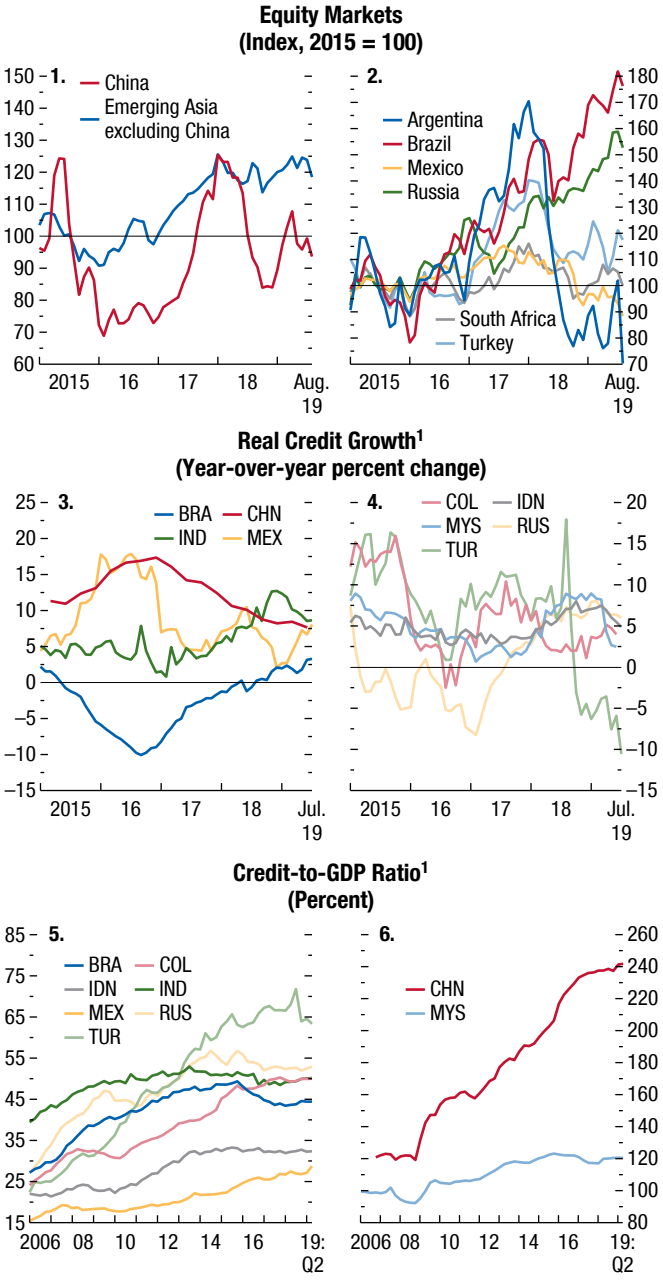
Barring a few cases, emerging market sovereign spreads have been broadly stable since April.



Sources: Haver Analytics; IMF, *International Financial Statistics*; Thomson Reuters Datastream; and IMF staff calculations.
Note: EMBI = J.P. Morgan Emerging Markets Bond Index. All financial market data are through September 27, 2019. Data labels use International Organization for Standardization (ISO) country codes.

Figure 1.11. Emerging Market Economies: Equity Markets and Credit

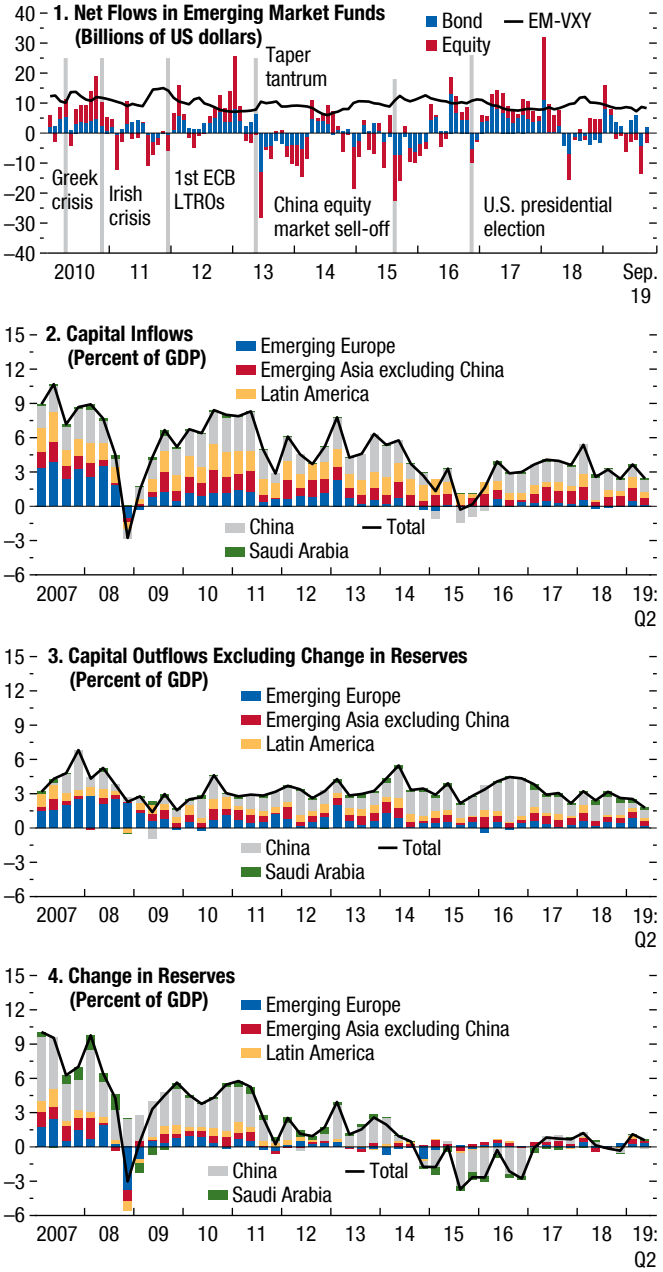
Emerging market equity indices are broadly trading at April levels, which reflects offsetting influences on earnings prospects from increased domestic and external monetary policy support and intensifying trade tensions.



Sources: Bloomberg Finance L.P.; Haver Analytics; IMF, *International Financial Statistics* (IFS); Thomson Reuters Datastream; and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.
[1]Credit is other depository corporations' claims on the private sector (from IFS), except in the case of Brazil, for which private sector credit is from the Monetary Policy and Financial System Credit Operations published by Banco Central do Brasil, and China, for which credit is total social financing after adjusting for local government debt swaps.

Figure 1.12. Emerging Market Economies: Capital Flows

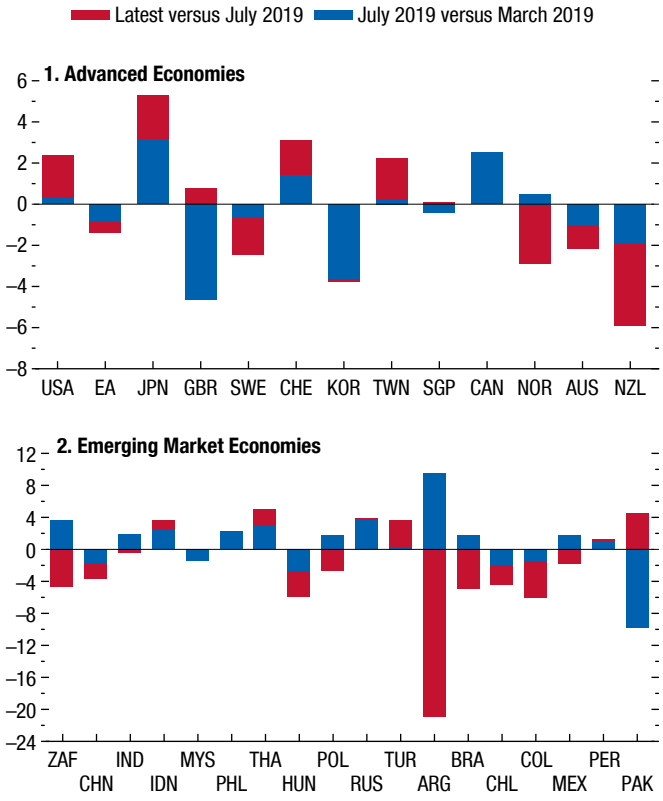
Capital flows to emerging market economies have reflected the broader shifts in risk sentiment since April, with investors lowering their exposure to equities and rotating toward hard currency bonds.



Sources: EPFR Global; Haver Analytics; IMF, *International Financial Statistics*; Thomson Reuters Datastream; and IMF staff calculations.
Note: Capital inflows are net purchases of domestic assets by nonresidents. Capital outflows are net purchases of foreign assets by domestic residents. Emerging Asia excluding China comprises India, Indonesia, Malaysia, the Philippines, and Thailand; emerging Europe comprises Poland, Romania, Russia, and Turkey; Latin America comprises Brazil, Chile, Colombia, Mexico, and Peru. ECB = European Central Bank; EM-VXY = J.P. Morgan Emerging Market Volatility Index; LTROs = long-term refinancing operations.

Figure 1.13. Real Effective Exchange Rate Changes, March 2019–September 2019
(Percent)

Most emerging market currencies appreciated between March and July, helped by the US Federal Reserve's dovish communications and move toward a more accommodative stance. But several currencies lost ground in August with the deterioration in risk sentiment.



Source: IMF staff calculations.
Note: EA = euro area. Data labels use International Organization for Standardization (ISO) country codes. Latest data available are for September 27, 2019.

first half of this year marked down, the 2019 growth projection is 0.3 percentage point weaker than in the April 2019 WEO.

The forces behind the slowdown in global growth during 2018–19—apart from the direct effect of very weak growth or contractions in stressed economies—include a return to a more normal pace of expansion in the US economy; softer external demand and disruptions associated with the rollout of new car emission standards in Europe, especially Germany; weaker macroeconomic conditions, largely because of idiosyncratic factors, in a group of key emerging market economies such as Brazil, Mexico, and Russia; a softening in China's growth because of necessary financial regulatory strengthening and drag from trade tensions with the United States; slowing demand from China and broader global trade policy uncertainty weighing on east Asian economies; a slowdown in domestic demand in India; and the shadow cast by the possibility of a no-deal Brexit on the United Kingdom and the European Union more broadly.

Continued macroeconomic policy support in major economies and projected stabilization in some stressed emerging market economies are expected to lift global growth modestly over the remainder of 2019 and into 2020, bringing projected global growth to 3.4 percent for 2020 (Table 1.1). The forecast markdown of 0.2 percentage point for 2020 relative to the April 2019 WEO largely reflects the fact that tariffs have risen and are costing the global economy: following tariff announcements in May and August 2019, the average US tariff on imports from China will rise to just over 24 percent by December 2019 (compared with about 12¼ percent assumed in the April 2019 WEO), while the average China tariff on imports from the United States will increase to about 26 percent (compared with about 16½ percent assumed in the April 2019 WEO). Scenario Box 1.2 provides simulations of the direct impact of the tariffs included in the baseline on global economic activity as well as their potential repercussions for financial market sentiment, business confidence, and productivity. As Scenario Box 1.2 illustrates, trade diversion spillovers for some economies, while positive, are temporary and are likely outweighed by business confidence and financial market sentiment effects. Box 1.3 provides more details on the key policy and commodity price assumptions behind the global growth forecast.

Figure 1.14 illustrates the countries and regions where growth fluctuations have affected changes in world growth since its peak in 2017. The dramatic worsening of macroeconomic conditions between 2017 and 2019 in a small number of economies under severe distress (in particular Argentina, Iran, Turkey, and Venezuela) accounts for about half of the decline in world growth from 3.8 percent in 2017 to 3.0 percent in 2019. These same economies—together with Brazil, Mexico, and Russia, all three of which are expected to grow by about 1 percent or less in 2019—account for over 70 percent of the pickup in growth for 2020. Argentina's economy is projected to contract again in 2020, but by less than this year; and in Venezuela, the multiyear collapse in output is projected to continue,

Table 1.1. Overview of the *World Economic Outlook* Projections

(Percent change, unless noted otherwise)

		Projections		Difference from July 2019 WEO Update[1]		Difference from April 2019 WEO[1]	
	2018	2019	2020	2019	2020	2019	2020
World Output	**3.6**	**3.0**	**3.4**	**–0.2**	**–0.1**	**–0.3**	**–0.2**
Advanced Economies	**2.3**	**1.7**	**1.7**	**–0.2**	**0.0**	**–0.1**	**0.0**
United States	2.9	2.4	2.1	–0.2	0.2	0.1	0.2
Euro Area	1.9	1.2	1.4	–0.1	–0.2	–0.1	–0.1
Germany[2]	1.5	0.5	1.2	–0.2	–0.5	–0.3	–0.2
France	1.7	1.2	1.3	–0.1	–0.1	–0.1	–0.1
Italy	0.9	0.0	0.5	–0.1	–0.3	–0.1	–0.4
Spain	2.6	2.2	1.8	–0.1	–0.1	0.1	–0.1
Japan	0.8	0.9	0.5	0.0	0.1	–0.1	0.0
United Kingdom	1.4	1.2	1.4	–0.1	0.0	0.0	0.0
Canada	1.9	1.5	1.8	0.0	–0.1	0.0	–0.1
Other Advanced Economies[3]	2.6	1.6	2.0	–0.5	–0.4	–0.6	–0.5
Emerging Market and Developing Economies	**4.5**	**3.9**	**4.6**	**–0.2**	**–0.1**	**–0.5**	**–0.2**
Emerging and Developing Asia	6.4	5.9	6.0	–0.3	–0.2	–0.4	–0.3
China	6.6	6.1	5.8	–0.1	–0.2	–0.2	–0.3
India[4]	6.8	6.1	7.0	–0.9	–0.2	–1.2	–0.5
ASEAN-5[5]	5.2	4.8	4.9	–0.2	–0.2	–0.3	–0.3
Emerging and Developing Europe	3.1	1.8	2.5	0.6	0.4	0.6	0.2
Russia	2.3	1.1	1.9	–0.1	0.0	–0.5	0.2
Latin America and the Caribbean	1.0	0.2	1.8	–0.4	–0.5	–1.2	–0.6
Brazil	1.1	0.9	2.0	0.1	–0.4	–1.2	–0.5
Mexico	2.0	0.4	1.3	–0.5	–0.6	–1.2	–0.6
Middle East and Central Asia	1.9	0.9	2.9	–0.5	–0.3	–0.9	–0.4
Saudi Arabia	2.4	0.2	2.2	–1.7	–0.8	–1.6	0.1
Sub-Saharan Africa	3.2	3.2	3.6	–0.2	0.0	–0.3	–0.1
Nigeria	1.9	2.3	2.5	0.0	–0.1	0.2	0.0
South Africa	0.8	0.7	1.1	0.0	0.0	–0.5	–0.4
Memorandum							
European Union	2.2	1.5	1.6	–0.1	–0.2	–0.1	–0.1
Low-Income Developing Countries	5.0	5.0	5.1	0.1	0.0	0.0	0.0
Middle East and North Africa	1.1	0.1	2.7	–0.6	–0.4	–1.2	–0.5
World Growth Based on Market Exchange Rates	3.1	2.5	2.7	–0.2	–0.2	–0.2	–0.2
World Trade Volume (goods and services)	**3.6**	**1.1**	**3.2**	**–1.4**	**–0.5**	**–2.3**	**–0.7**
Imports							
Advanced Economies	3.0	1.2	2.7	–1.0	–0.6	–1.8	–0.5
Emerging Market and Developing Economies	5.1	0.7	4.3	–2.2	–0.8	–3.9	–1.0
Exports							
Advanced Economies	3.1	0.9	2.5	–1.3	–0.4	–1.8	–0.6
Emerging Market and Developing Economies	3.9	1.9	4.1	–1.0	–0.5	–2.1	–0.7
Commodity Prices (US dollars)							
Oil[6]	29.4	–9.6	–6.2	–5.5	–3.7	3.8	–6.0
Nonfuel (average based on world commodity import weights)	1.6	0.9	1.7	1.5	1.2	1.1	0.6
Consumer Prices							
Advanced Economies	2.0	1.5	1.8	–0.1	–0.2	–0.1	–0.3
Emerging Market and Developing Economies[7]	4.8	4.7	4.8	–0.1	0.1	–0.2	0.1
London Interbank Offered Rate (percent)							
On US Dollar Deposits (six month)	2.5	2.3	2.0	–0.1	–0.3	–0.9	–1.8
On Euro Deposits (three month)	–0.3	–0.4	–0.6	–0.1	–0.3	–0.1	–0.4
On Japanese Yen Deposits (six month)	0.0	0.0	–0.1	0.0	–0.1	0.0	–0.1

Note: Real effective exchange rates are assumed to remain constant at the levels prevailing during July 26–August 23, 2019. Economies are listed on the basis of economic size. The aggregated quarterly data are seasonally adjusted. WEO = *World Economic Outlook*. Beginning with the October 2019 WEO, the regional group Commonwealth of Independent States (CIS) is discontinued. Four of the CIS economies (Belarus, Moldova, Russia, and Ukraine) are added to the regional group Emerging and Developing Europe. The remaining eight economies—Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan, which comprise the regional subgroup Caucasus and Central Asia (CCA)—are combined with Middle East, North Africa, Afghanistan, and Pakistan (MENAP) to form the new regional group Middle East and Central Asia (MECA).

[1]Difference based on the rounded figures for the current WEO, July 2019 WEO Update, and April 2019 WEO forecasts and on revised and new groups.

[2]For Germany, the definition of GDP has been changed from a working-day-adjusted basis (through the April 2019 WEO) to an unadjusted basis from the July 2019 WEO Update onward. The change in definition implies a higher level of GDP for 2020, which is a leap year.

[3]Excludes the Group of Seven (Canada, France, Germany, Italy, Japan, United Kingdom, United States) and euro area countries.

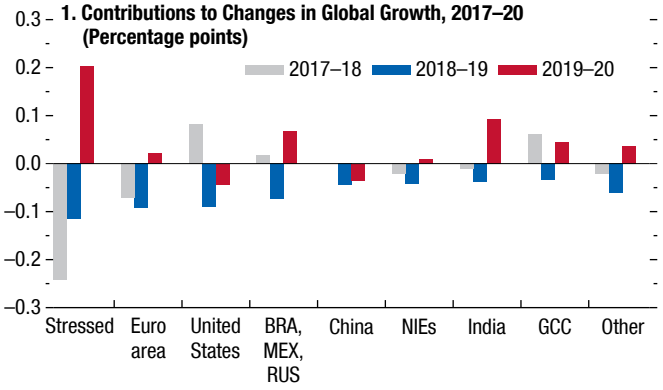
Table 1.1 *(continued)*

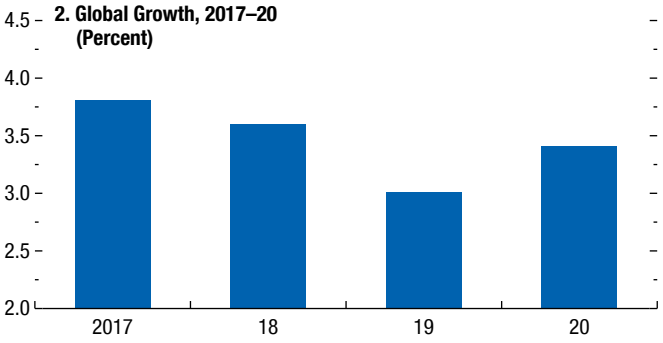
	Year over Year				Q4 over Q4[8]			
			Projections				Projections	
	2017	2018	2019	2020	2017	2018	2019	2020
World Output	**3.8**	**3.6**	**3.0**	**3.4**	**4.1**	**3.2**	**3.2**	**3.4**
Advanced Economies	**2.5**	**2.3**	**1.7**	**1.7**	**2.8**	**1.8**	**1.6**	**1.8**
United States	2.4	2.9	2.4	2.1	2.8	2.5	2.4	2.0
Euro Area	2.5	1.9	1.2	1.4	3.0	1.2	1.0	1.8
Germany[2]	2.5	1.5	0.5	1.2	3.4	0.6	0.4	1.3
France	2.3	1.7	1.2	1.3	3.0	1.2	1.0	1.3
Italy	1.7	0.9	0.0	0.5	1.7	0.0	0.2	1.0
Spain	3.0	2.6	2.2	1.8	3.1	2.3	2.0	1.8
Japan	1.9	0.8	0.9	0.5	2.4	0.3	0.3	1.2
United Kingdom	1.8	1.4	1.2	1.4	1.6	1.4	1.0	1.6
Canada	3.0	1.9	1.5	1.8	2.9	1.6	1.8	1.7
Other Advanced Economies[3]	2.9	2.6	1.6	2.0	3.0	2.2	1.7	2.1
Emerging Market and Developing Economies	**4.8**	**4.5**	**3.9**	**4.6**	**5.2**	**4.5**	**4.5**	**4.7**
Emerging and Developing Asia	6.6	6.4	5.9	6.0	6.8	6.0	6.0	5.9
China	6.8	6.6	6.1	5.8	6.7	6.4	6.0	5.7
India[4]	7.2	6.8	6.1	7.0	8.1	5.8	6.7	7.2
ASEAN-5[5]	5.3	5.2	4.8	4.9	5.4	5.2	4.8	4.9
Emerging and Developing Europe	3.9	3.1	1.8	2.5	. . .	. . .	. . .	. . .
Russia	1.6	2.3	1.1	1.9	0.5	2.9	1.8	1.2
Latin America and the Caribbean	1.2	1.0	0.2	1.8	1.3	0.3	0.4	1.8
Brazil	1.1	1.1	0.9	2.0	2.2	1.1	1.2	2.3
Mexico	2.1	2.0	0.4	1.3	1.5	1.6	1.0	0.7
Middle East and Central Asia	2.3	1.9	0.9	2.9	. . .	. . .	. . .	. . .
Saudi Arabia	–0.7	2.4	0.2	2.2	–1.3	4.3	–0.9	3.0
Sub-Saharan Africa	3.0	3.2	3.2	3.6	. . .	. . .	. . .	. . .
Nigeria	0.8	1.9	2.3	2.5	. . .	. . .	. . .	. . .
South Africa	1.4	0.8	0.7	1.1	2.2	0.2	0.8	0.6
Memorandum								
European Union	2.8	2.2	1.5	1.6	3.0	1.7	1.3	1.8
Low-Income Developing Countries	4.7	5.0	5.0	5.1	. . .	. . .	. . .	. . .
Middle East and North Africa	1.8	1.1	0.1	2.7	. . .	. . .	. . .	. . .
World Growth Based on Market Exchange Rates	3.2	3.1	2.5	2.7	3.5	2.6	2.5	2.8
World Trade Volume (goods and services)	**5.7**	**3.6**	**1.1**	**3.2**	**. . .**	**. . .**	**. . .**	**. . .**
Imports								
Advanced Economies	4.7	3.0	1.2	2.7	. . .	. . .	. . .	. . .
Emerging Market and Developing Economies	7.5	5.1	0.7	4.3	. . .	. . .	. . .	. . .
Exports								
Advanced Economies	4.7	3.1	0.9	2.5	. . .	. . .	. . .	. . .
Emerging Market and Developing Economies	7.3	3.9	1.9	4.1	. . .	. . .	. . .	. . .
Commodity Prices (US dollars)								
Oil[6]	23.3	29.4	–9.6	–6.2	19.6	9.5	–3.8	–8.8
Nonfuel (average based on world commodity export weights)	6.4	1.6	0.9	1.7	3.5	–1.8	4.9	–1.0
Consumer Prices								
Advanced Economies	1.7	2.0	1.5	1.8	1.7	1.9	1.7	1.6
Emerging Market and Developing Economies[7]	4.3	4.8	4.7	4.8	3.7	4.2	4.1	4.0
London Interbank Offered Rate (percent)								
On US Dollar Deposits (six month)	1.5	2.5	2.3	2.0	. . .	. . .	. . .	. . .
On Euro Deposits (three month)	–0.3	–0.3	–0.4	–0.6	. . .	. . .	. . .	. . .
On Japanese Yen Deposits (six month)	0.0	0.0	0.0	–0.1	. . .	. . .	. . .	. . .

[4]For India, data and forecasts are presented on a fiscal year basis, and GDP from 2011 onward is based on GDP at market prices with fiscal year 2011/12 as a base year.
[5]Indonesia, Malaysia, Philippines, Thailand, Vietnam.
[6]Simple average of prices of UK Brent, Dubai Fateh, and West Texas Intermediate crude oil. The average price of oil in US dollars a barrel was $68.33 in 2018; the assumed price, based on futures markets, is $61.78 in 2019 and $57.94 in 2020.
[7]Excludes Venezuela. See country-specific note for Venezuela in the "Country Notes" section of the Statistical Appendix.
[8]For World Output, the quarterly estimates and projections account for approximately 90 percent of annual world output at purchasing-power-parity weights. For Emerging Market and Developing Economies, the quarterly estimates and projections account for approximately 80 percent of annual emerging market and developing economies' output at purchasing-power-parity weights.

Figure 1.14. Global Growth

The slowdown in global growth since 2017 and the projected pick up in 2020 reflects a major downturn and projected recovery in a group of emerging market economies under severe distress.





Source: IMF staff estimates.
Note: NIEs = newly industrialized Asian economies (Hong Kong SAR, Korea, Macao SAR, Singapore, Taiwan Province of China); stressed = Argentina, Iran, Libya, Sudan, Turkey, Venezuela; GCC = Gulf Cooperation Council (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates). Data labels use International Organization for Standardization (ISO) country codes.

albeit at a less dramatic pace than in 2019. In Iran, modest growth is expected to resume after recession. Activity should pick up in Brazil, Mexico, Russia, Saudi Arabia, and Turkey. The projected uptick in global growth also relies importantly on financial market sentiment staying supportive and continued fading of temporary drags, notably in the euro area, where industrial output is expected to improve gradually after protracted weakness. In turn, these factors rely on a conducive global policy backdrop that ensures that the dovish tilt of central banks and the buildup of policy stimulus in China are not blunted by escalating trade tensions or a disorderly Brexit.

The world economy faces difficult headwinds over the forecast horizon. Despite the recent decline in long-term interest rates creating more fiscal room, the global environment is expected to be characterized by relatively limited macroeconomic policy space to combat downturns and weaker trade flows, in part reflecting the increase in trade barriers and anticipated protracted trade policy uncertainty (global export and import volume projections have been cumulatively marked down by about 3½ percent over the forecast horizon relative to the April 2019 WEO). Weighed down by aging populations and tepid productivity growth, advanced economies are expected to return to their modest potential rate of expansion. Moreover, China is projected to slow gradually to a more sustainable rate of growth.

Against this backdrop, beyond 2020 global growth is projected at about 3.6 percent. The forecast relies, to a large extent, on durable normalization in emerging market and developing economies currently in macroeconomic distress and on continued healthy performance of relatively faster-growing emerging market and developing economies. The resultant shifting weights in the global economy toward faster-growing emerging market and developing economies help support the projected stable medium-term growth profile, contributing ¼ percentage point to global growth by the end of the forecast horizon, compared with a global growth projection with country weights held constant at their 2018 level.

Growth Forecast for Advanced Economies

For advanced economies, growth is projected to soften to 1.7 percent in 2019 and 2020. The forecast is 0.1 percentage point lower for 2019 than in the April 2019 WEO.

- In the *United States*, the economy maintained momentum in the first half of the year. Although investment remained sluggish, employment and consumption were buoyant. Growth in 2019 is expected to be 2.4 percent, moderating to 2.1 percent in 2020. The projected moderation reflects an assumed shift in the fiscal stance from expansionary in 2019 to broadly neutral in 2020 as stimulus from the recently adopted two-year budget deal offsets the fading effects of the 2017 Tax Cuts and Jobs Act. Overall, the growth forecast is revised up from the April 2019 WEO (0.1 percentage point higher for 2019 and 0.2 for 2020). Revisions to past GDP data imply weaker carryover into 2019, and trade-related policy uncertainty imparts further

negative effects, but the two-year budget deal and the Federal Reserve's policy rate cuts yield net upward revisions.

- In the *euro area*, weaker growth in foreign demand and a drawdown of inventories (reflecting weak industrial production) have kept a lid on growth since mid-2018. Activity is expected to pick up only modestly over the remainder of this year, and into 2020, as external demand is projected to regain some momentum and temporary factors (including new emission standards that hit German car production) continue to fade. Growth is projected at 1.2 percent in 2019 (0.1 percentage point lower than in April) and 1.4 percent in 2020. The 2019 forecast is revised down slightly for *France* and *Germany* (due to weaker-than-expected external demand in the first half of the year). Both the 2019 and 2020 forecasts were marked down for *Italy*, owing to softening private consumption, a smaller fiscal impulse, and a weaker external environment. The outlook is also slightly weaker for *Spain*, with growth projected to slow gradually from 2.6 percent in 2018 to 2.2 percent in 2019 and 1.8 percent in 2020 (0.1 percentage point lower than in April).
- The *United Kingdom* is set to expand at 1.2 percent in 2019 and 1.4 percent in 2020. The unchanged projection for both years (relative to the April 2019 WEO) reflects the combination of a negative impact from weaker global growth and ongoing Brexit uncertainty and a positive impact from higher public spending announced in the recent Spending Review. The economy contracted in the second quarter, and recent indicators point to weak growth in the third quarter. The forecast assumes an orderly exit from the European Union followed by a gradual transition to the new regime. However, as of early September, the ultimate form of Brexit remains highly uncertain.
- *Japan*'s economy is projected to grow by 0.9 percent in 2019 (0.1 percentage point lower than anticipated in the April 2019 WEO). Strong private consumption and public spending in the first half of 2019 outweighed continued weakness in the external sector. Growth is projected at 0.5 percent in 2020 (unchanged from the April 2019 WEO), with temporary fiscal measures expected to cushion part of the anticipated decline in private consumption following the October 2019 increase in the consumption tax rate.

Beyond 2020, growth in the advanced economy group is projected to stabilize at about 1.6 percent, similar to the April 2019 WEO forecast. A modest uptick expected in productivity is projected to counteract the drag on potential output growth from slower labor force growth as populations continue to age.

Growth Forecast for Emerging Market and Developing Economies

Growth in the emerging market and developing economy group is expected to bottom out at 3.9 percent in 2019, rising to 4.6 percent in 2020. The forecasts for 2019 and 2020 are 0.5 percentage point and 0.2 percentage point lower, respectively, than in April, reflecting downward revisions in all major regions except emerging and developing Europe.[2]

- *Emerging and Developing Asia* remains the main engine of the world economy, but growth is softening gradually with the structural slowdown in China. Output in the region is expected to grow at 5.9 percent this year and at 6.0 percent in 2020 (0.4 and 0.3 percentage point lower, respectively, than in the April 2019 WEO forecast). In *China*, the effects of escalating tariffs and weakening external demand have exacerbated the slowdown associated with needed regulatory strengthening to rein in the accumulation of debt. With policy stimulus expected to continue supporting activity in the face of the adverse external shock, growth is forecast at 6.1 percent in 2019 and 5.8 percent in 2020—0.2 and 0.3 percentage point lower than in the April 2019 WEO projection. *India*'s economy is set to grow at 6.1 percent in 2019, picking up to 7 percent in 2020. The downward revision relative to the April 2019 WEO of 1.2 percentage points for 2019 and 0.5 percentage point for 2020 reflects a weaker-than-expected outlook for domestic demand. Growth will be supported by the lagged effects of monetary policy easing, a reduction in corporate income tax rates, recent measures to address corporate and environmental regulatory

[2]Beginning with the October 2019 WEO, the regional group Commonwealth of Independent States (CIS) is discontinued. Four of the CIS economies (Belarus, Moldova, Russia, and Ukraine) are added to the regional group Emerging and Developing Europe. The remaining eight economies—Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan, which comprise the regional subgroup Caucasus and Central Asia (CCA)—are combined with Middle East, North Africa, Afghanistan, and Pakistan (MENAP) to form the new regional group Middle East and Central Asia (MECA).

uncertainty, and government programs to support rural consumption.

- Subdued growth in *emerging and developing Europe* in 2019 largely reflects a slowdown in Russia and flat activity in Turkey. The region is expected to grow at 1.8 percent in 2019 and 2.5 percent in 2020. The upward revision to 2019 growth relative to the April 2019 forecast reflects a shallower-than-expected downturn in *Turkey* in the first half of the year as a result of fiscal support. In *Russia*, by contrast, growth has been weaker this year than forecast in April, but is projected to recover next year, contributing to the upward revision to projected 2020 growth for the region. Several countries in central and eastern Europe, including *Hungary* and *Poland,* are experiencing solid growth on the back of resilient domestic demand and rising wages.
- In *Latin America*, activity slowed notably at the start of the year across the larger economies, mostly reflecting idiosyncratic factors. Growth in the region is now expected at 0.2 percent this year (1.2 percentage point lower than in the April 2019 WEO). The sizable downward revision for 2019 reflects downgrades to *Brazil* (where mining supply disruptions have hurt activity) and *Mexico* (where investment remains weak and private consumption has slowed, reflecting policy uncertainty, weakening confidence, and higher borrowing costs). *Argentina*'s economy is expected to contract further in 2019 on lower confidence and tighter external financing conditions. *Chile*'s growth projection is revised down, following weaker-than-expected performance at the start of the year. The deep humanitarian crisis and economic implosion in *Venezuela* continue to have a devastating impact, with the economy expected to shrink by about one-third in 2019. For the region as a whole, growth is expected to firm up to 1.8 percent in 2020 (0.6 percentage point lower than in the April forecast). The projected strengthening reflects expected recovery in Brazil (on the back of accommodative monetary policy) and in Mexico (as uncertainty gradually subsides), together with less severe contractions for 2020 compared to this year in Argentina and Venezuela.
- Growth in the *Middle East and Central Asia* region is expected to be 0.9 percent in 2019, rising to 2.9 percent in 2020. The forecast is 0.9 and 0.4 percentage point lower, respectively, than in the April 2019 WEO, largely due to the downward forecast revision for *Iran* (owing to the effect of tighter US sanctions) and *Saudi Arabia*. While non-oil growth is expected to strengthen in 2019 on higher government spending and confidence, oil GDP in Saudi Arabia is projected to decline against the backdrop of the extension of the OPEC+ agreement and a generally weak global oil market. The impact on growth of the recent attacks on Saudi Arabia's oil facilities is difficult to gauge at this stage but adds uncertainty to the near-term outlook. Growth is projected to pick up in 2020 as oil GDP stabilizes and solid momentum in the non-oil sector continues. Civil strife in some other economies, including *Libya*, *Syria*, and *Yemen*, weigh on the region's outlook.
- In *sub-Saharan Africa*, growth is expected at 3.2 percent in 2019 and 3.6 percent in 2020, slightly lower for both years than in the April 2019 WEO. Higher, albeit volatile, oil prices earlier in the year have supported the subdued outlook for *Nigeria* and some other oil-exporting countries in the region, but *Angola*'s economy—because of a decline in oil production—is expected to contract this year and recover only mildly next year. In *South Africa*, despite a moderate rebound in the second quarter, growth is expected to be weaker in 2019 than projected in the April 2019 WEO following a very weak first quarter, reflecting a larger-than-anticipated impact of labor strikes and energy supply issues in mining, together with weak agricultural production. While the three largest economies of the region are projected to continue their lackluster performance, many other economies—typically more diversified ones—are experiencing solid growth. About 20 economies in the region, accounting for about 45 percent of the sub-Saharan African population and 34 percent of the region's GDP (1 percent of global GDP), are estimated to be growing faster than 5 percent this year while growth in a somewhat larger set of countries, in per capita terms, is faster than in advanced economies.

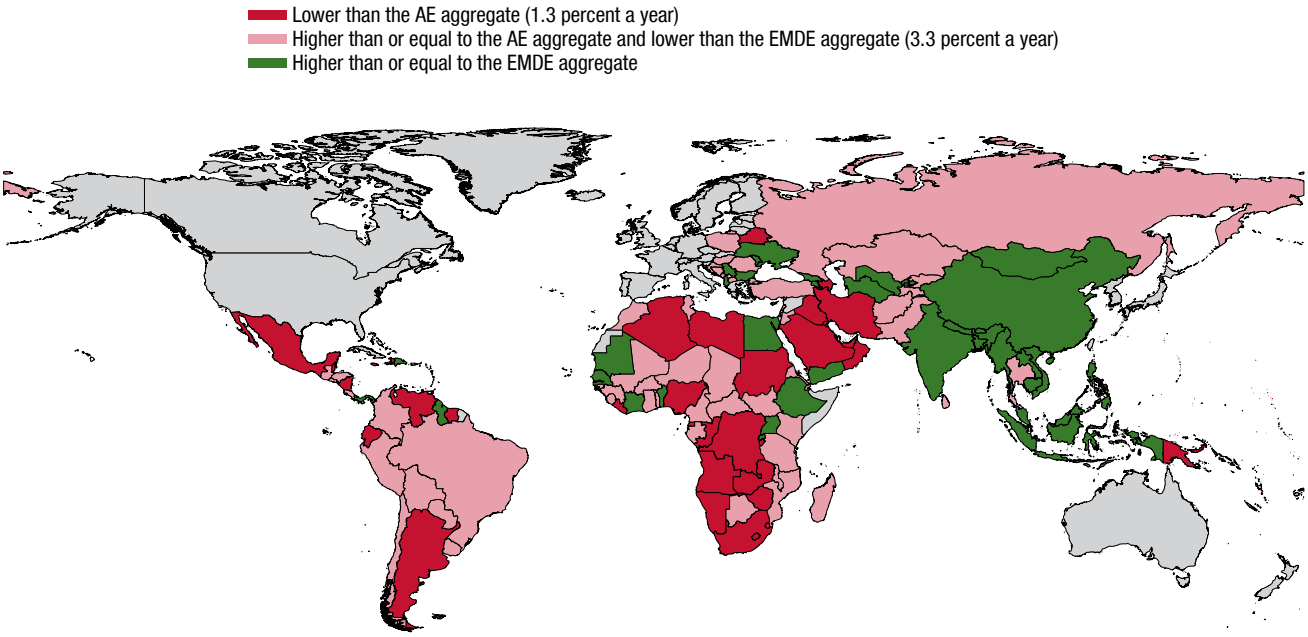
Over the medium term, growth for the emerging market and developing economies group is projected to stabilize at about 4.8 percent, but with important differences across regions. In emerging and developing Asia, it is expected to remain at about 6 percent through the forecast horizon. This smooth growth profile rests on a gradual slowdown in China to 5.5 percent by 2024 and firming and

stabilization of growth in India at about 7.3 percent over the medium term, based on continued implementation of structural reforms. In Latin America, growth is projected to increase from the 1.8 percent projected for 2020, but remain below 3 percent over the medium term as structural rigidities, subdued terms of trade, and fiscal imbalances (particularly for Brazil) weigh on the outlook. Activity in emerging and developing Europe is projected to pick up from its current post-global-financial-crisis low, with the region expected to grow at about 2½ percent over the medium term. Prospects vary across sub-Saharan Africa, but growth for the region as a whole is projected to increase from 3.6 percent in 2020 to 4.2 percent in 2024 (although for close to two-fifths of economies, the average growth rate over the medium term is projected to exceed 5 percent). The medium-term outlook for the Middle East and Central Asia region is largely shaped by the outlook for fuel prices, needed adjustment to correct macroeconomic imbalances in certain economies, and geopolitical tensions.

Forty emerging market and developing economies (about a quarter of the total) are projected to grow in per capita terms above the 3.3 percent weighted average of the group, which is more than 2 percentage points above the average for advanced economies (Figure 1.15). For these economies—which include China, India, and Indonesia—the challenge is to ensure that these growth rates materialize and that the benefits of growth are shared widely. Convergence prospects are instead bleak for some emerging market and developing economies. Across sub-Saharan Africa and in the Middle East and Central Asia region, 47 economies, accounting for about 10 percent of global GDP in purchasing-power-parity terms and close to 1 billion in population, are projected to grow by less than advanced economies in per capita terms

Figure 1.15. Emerging Market and Developing Economies: Per Capita GDP Growth
(2019–24 average)

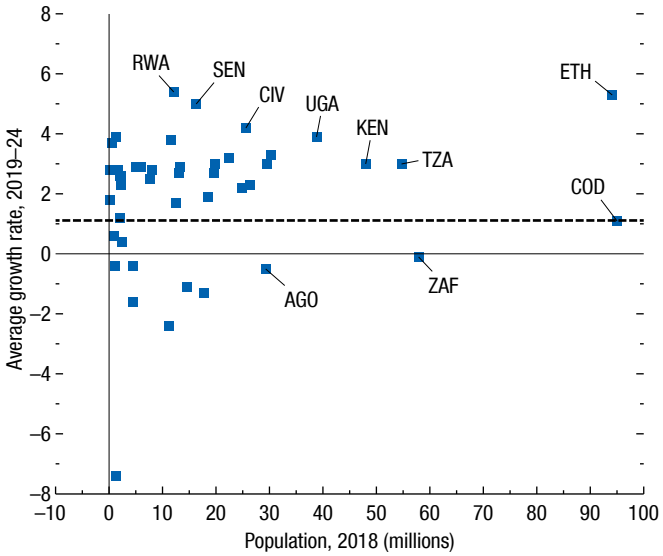
Forty emerging market and developing economies are projected to grow in per capita terms above the 3.3 percent weighted average of the group, which is more than 2 percentage points above the average for advanced economies.



Source: IMF staff estimates.
Note: The AE (EMDE) aggregate per capita growth rate refers to the growth rate of per capita real GDP in the advanced economy (emerging market and developing economy) group, calculated as the sum of real GDP at purchasing-power-parity rates divided by total population in the group. See also Annex Table 1.1.6.
AE = advanced economy; EMDE = emerging market and developing economy. Country borders shown on this map do not imply official endorsement or acceptance by the IMF.

Figure 1.16. Sub-Saharan Africa: Population in 2018 and Projected Growth Rates in GDP per Capita, 2019–24

In sub-Saharan Africa, most countries are projected to grow at rates well above the weighted average for the region.



Sources: National statistical agencies; United Nations; and IMF staff estimates.
Note: The dashed line shows the weighted average per capita growth rate in sub-Saharan Africa during 2019–24. Nigeria is not shown on the chart as its population, estimated by the United Nations at about 196 million in 2018, is outside the *x*-axis range. Its average projected per capita growth rate in 2019–24 is about zero. Data labels use International Organization for Standardization (ISO) country codes.

over the next five years, implying that their income levels are set to fall further behind those economies. Figure 1.16 documents the heterogeneity in per capita growth rates in sub-Saharan Africa, where most countries are projected to grow at rates well above the weighted average for the region.

Inflation Outlook

Consistent with the softening of energy prices and the moderation in growth, consumer price inflation is expected to average 1.5 percent this year in advanced economies, down from 2.0 percent in 2018. With the US economy operating above potential, core consumer price inflation is projected at about 2.6 percent in 2020–21, above its medium-term value of 2.2 percent (the level consistent with the medium-term target of 2.0 percent for personal consumption expenditure inflation). Japan's core inflation rate (excluding fresh food and energy) is projected to rise to about 1 percent in 2019–20 due to the October consumption tax rate increase, inching up further to 1.2 percent in the medium term. Headline inflation is expected to rise gradually in the euro area, from 1.2 percent in 2019 to 1.4 percent in 2020.

Inflation in emerging market and developing economies excluding Venezuela is expected to inch down to 4.7 percent this year. Exceptions include Argentina, where inflation has increased on the back of the peso depreciation; Russia, where an increase in the value-added tax rate early in the year boosted inflation; and, to a lesser degree, China, in part due to rising pork prices. As inflation expectations become better anchored around targets in some economies and the pass-through from previous depreciations wanes further, inflation in the emerging market economy group is set to moderate to about 4.4 percent over the medium term.

External Sector Outlook

Trade Growth

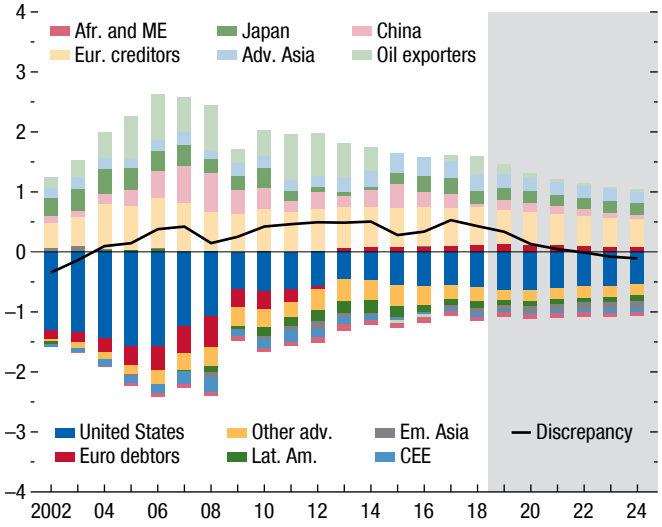
After peaking in 2017 global trade growth slowed considerably in 2018 and the first half of 2019 and is projected at 1¼ percent in 2019. The slowdown reflects a confluence of factors, including a slowdown in investment, the impact of increased trade tensions on spending on capital goods (which are heavily traded), a tech cycle, and a sizable decline in trade in cars and car parts. Global trade growth is projected to recover to 3.2 percent in 2020 and 3.75 percent in subsequent years. The waning of some temporary factors, together with some recovery in global economic activity in 2020, buttressed by a gradual pickup in investment demand in emerging market and developing economies, should support the pickup in trade growth, offsetting the slowdown in capital spending in advanced economies that is projected for 2020 and beyond. However, there is sizable uncertainty concerning the future structure of value chains and the repercussions of tensions related to technology, and these could weigh on trade growth.

Current Account Positions

After widening marginally in 2018, primarily reflecting higher oil prices, global current account deficits and surpluses are projected to gradually narrow in 2019 and subsequent years (Figure 1.17). Among surplus countries, current account balances are projected to gradually decline in oil exporters, advanced European creditors, and advanced Asian economies in 2019 and into the medium term.

Figure 1.17. Global Current Account Balance
(Percent of world GDP)

Global current account deficits and surpluses are projected to gradually narrow in 2019 and subsequent years.



Source: IMF staff estimates.
Note: Adv. Asia = advanced Asia (Hong Kong SAR, Korea, Singapore, Taiwan Province of China); Afr. and ME = Africa and the Middle East (Democratic Republic of the Congo, Egypt, Ethiopia, Ghana, Jordan, Kenya, Lebanon, Morocco, South Africa, Sudan, Tanzania, Tunisia); CEE = central and eastern Europe (Belarus, Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovak Republic, Turkey, Ukraine); Em. Asia = emerging Asia (India, Indonesia, Pakistan, Philippines, Thailand, Vietnam); Eur. creditors = European creditors (Austria, Belgium, Denmark, Finland, Germany, Luxembourg, Netherlands, Norway, Sweden, Switzerland); Euro debtors = euro area debtors (Cyprus, Greece, Ireland, Italy, Portugal, Spain, Slovenia); Lat. Am. = Latin America (Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay); Oil exporters = Algeria, Azerbaijan, Iran, Kazakhstan, Kuwait, Nigeria, Oman, Qatar, Russia, Saudi Arabia, United Arab Emirates, Venezuela; Other adv. = other advanced economies (Australia, Canada, France, Iceland, New Zealand, United Kingdom).

The modest widening of China's current account surplus in 2019 is projected to be reversed in subsequent years as the rebalancing process continues. Current account deficits are projected to shrink in central and eastern Europe in 2019, reflecting the balancing of the current account in Turkey following a sharp reduction in domestic demand. After widening in 2019–20, driven by expansionary fiscal policy and a strengthening dollar, the US current account deficit is projected to shrink over the medium term as the growth rate of domestic demand declines.[3]

[3]Balance of payments data show a notable positive world current account discrepancy in recent years. This discrepancy is assumed to decline gradually during the forecast period, with projected global current account surpluses compressing more than global current account deficits.

The recently imposed trade measures by the United States and retaliatory actions by trading partners are expected to have a limited impact on overall external imbalances (see the IMF's 2018 *External Sector Report* and Chapter 4 of the April 2019 WEO for a discussion of the relationship between trade costs and external imbalances).

As highlighted in the 2019 *External Sector Report*, many countries' current account imbalances in 2018 were too large in relation to country-specific norms consistent with underlying fundamentals and desirable policies. As shown in panel 1 of Figure 1.18, excess current account balances in 2019 are projected to decline modestly, with medium-term projections suggesting, on average, further movement in the same direction (Figure 1.18, panel 2).[4] At the same time, given that changes in macroeconomic fundamentals relative to 2018 affect not only current account balances but also their equilibrium values, the path of future excess imbalances cannot be precisely inferred from this exercise.[5]

International Investment Positions

Changes in international investment positions reflect both net financial flows and valuation changes arising from fluctuations in exchange rates and asset prices. Given that WEO projections assume broadly stable real effective exchange rates and limited variation in asset prices, changes in international investment positions are driven by projections for net external borrowing and lending (in line with the current account balance), with their ratios to domestic and world GDP affected by projected growth rates for individual countries and for the global economy as a whole.[6,7]

[4]The change in the current account balance during 2019 is estimated to have offset, on average, about one-fifth of the 2018 current account gap; the change between 2018 and 2024 would offset less than half of the 2018 gap.

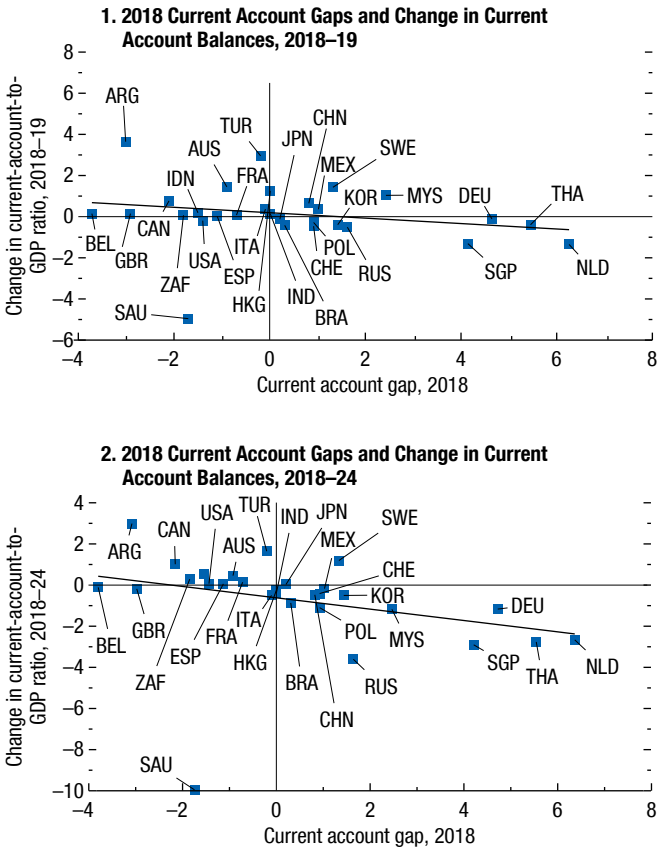
[5]For instance, an improvement in the terms of trade is typically associated with a more appreciated equilibrium exchange rate.

[6]WEO forecasts include projections of 10-year government bond yields, which would affect bond prices, but the impact of those changes in bond prices on the valuation of external assets and liabilities is typically not included in international investment position forecasts.

[7]In addition to changes in exchange rates, the decline in global equity prices in late 2018 (compared with levels at the end of 2017) implies deterioration of international investment positions at the end of 2018 in countries with significant net holdings of equity and foreign direct investment abroad, and a corresponding improvement in positions for countries with net equity liabilities.

Figure 1.18. Current Account Balances in Relation to Economic Fundamentals

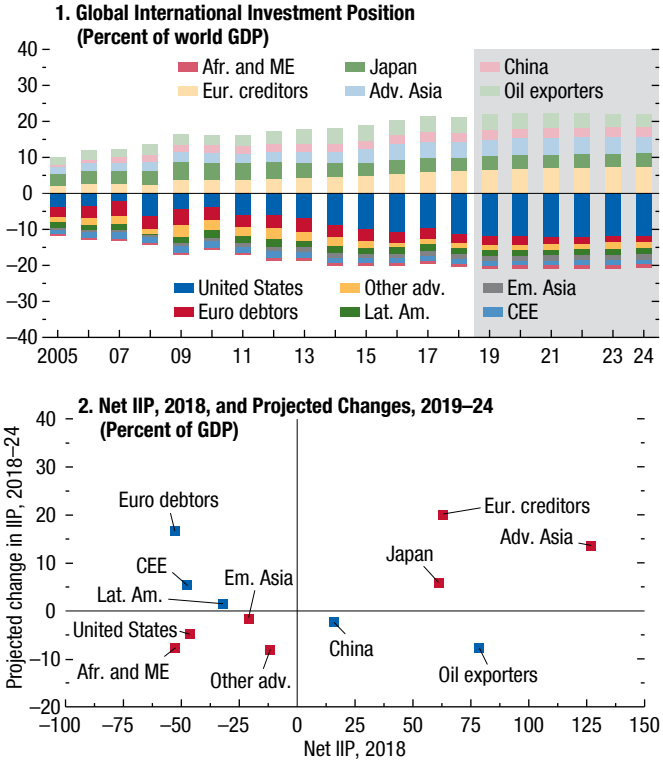
Excess current account balances in 2019 are projected to decline modestly, with medium-term projections suggesting, on average, further movement in the same direction.



Source: IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.

Figure 1.19. Net International Investment Position

Creditor and debtor positions as a share of world GDP are projected to widen slightly this year and then stabilize over the forecast horizon.



Source: IMF staff estimates.
Note: Adv. Asia = advanced Asia (Hong Kong SAR, Korea, Singapore, Taiwan Province of China); Afr. and ME = Africa and the Middle East (Democratic Republic of the Congo, Egypt, Ethiopia, Ghana, Jordan, Kenya, Lebanon, Morocco, South Africa, Sudan, Tanzania, Tunisia); CEE = central and eastern Europe (Belarus, Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovak Republic, Turkey, Ukraine); Em. Asia = emerging Asia (India, Indonesia, Pakistan, Philippines, Thailand, Vietnam); Eur. creditors = European creditors (Austria, Belgium, Denmark, Finland, Germany, Luxembourg, Netherlands, Norway, Sweden, Switzerland); Euro debtors = euro area debtors (Cyprus, Greece, Ireland, Italy, Portugal, Spain, Slovenia); IIP = international investment position; Lat. Am. = Latin America (Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay); Oil exporters = Algeria, Azerbaijan, Iran, Kazakhstan, Kuwait, Nigeria, Oman, Qatar, Russia, Saudi Arabia, United Arab Emirates, Venezuela; Other adv. = other advanced economies (Australia, Canada, France, Iceland, New Zealand, United Kingdom).

As panel 1 of Figure 1.19 shows, creditor and debtor positions as a share of world GDP are projected to widen slightly this year, and then to stabilize as a share of world GDP over the forecast horizon. On the creditor side, the growing creditor positions of a group of European advanced economies and—to a lesser extent—of advanced economies in Asia is partly offset by some reduction in the creditor position of China and oil exporters. On the debtor side, the net liability position of the United States increases initially and then stabilizes with the forecast reduction in its current account deficit as fiscal stimulus is withdrawn, while the position of euro area debtor countries improves further.

Similar trends are highlighted in panel 2 of Figure 1.19, which shows projected changes in net international investment positions as a percentage of domestic GDP across countries and regions between 2018 and 2024, the last year of the WEO projection horizon. The net creditor position is projected to be more than 80 percent GDP for European advanced economies, more than 65 percent for Japan, and more than 140 percent of GDP for smaller advanced

economies in Asia, while the net creditor position of China would decline to about 12 percent. The debtor position of the United States is projected to rise to about 50 percent of GDP, some 5 percentage points above the 2018 estimate, while the net international investment position of a group of euro area debtor countries, including Italy and Spain, is expected to improve by more than 16 percentage points of their collective GDP.

Implications of Imbalances

Sustained excess external imbalances in key economies and policy actions that threaten to widen such imbalances pose risks to global stability. Expansionary fiscal policy in the United States is projected to increase the current account deficit over 2019–20, which could further aggravate trade tensions. Over the medium term, widening debtor positions in key economies could constrain global growth and possibly result in sharp and disruptive currency and asset price adjustments (see also the 2019 *External Sector Report*).

As discussed in the "Policy Priorities" section, the US economy—which is already operating beyond full employment—should implement a medium-term plan to reverse the rising ratio of public debt, accompanied by fiscal measures to gradually boost domestic supply potential. This would help ensure more sustainable growth dynamics and contain external imbalances. Stronger reliance on demand growth in some creditor countries, especially those such as Germany with the policy space to support it and facing a weakening of demand, would help facilitate domestic and global rebalancing while sustaining global growth over the medium term.

Risks: Skewed to the Downside

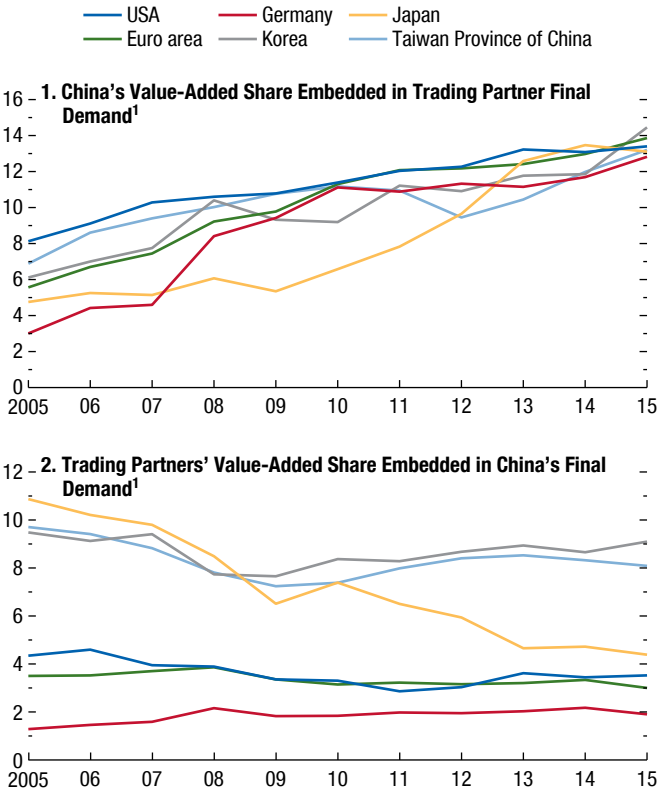
Risks around the baseline forecasts remain skewed to the downside. Though the recent easing of monetary policy in many countries could lift demand more than projected, especially if trade tensions between the United States and China ease and a no-deal Brexit is averted, downside risks seem to dominate the outlook. As discussed in the section on the Global Growth Outlook, about 70 percent of the projected 2020 pickup in global growth is accounted for by a small group of emerging market and developing economies in severe distress or currently underperforming relative to past averages. Moreover, the global forecast is predicated on continued steady growth in a number of emerging market economies that are expected to maintain relatively healthy performance, even as growth is projected to moderate in the United States and China. Global growth will fall short of the projected baseline if strains fail to dissipate in the stressed and underperforming economies, or if activity disappoints among the group of economies expected to maintain healthy rates of expansion.

Further disruptions to trade and supply chains: Tensions in trade and technology linkages have continued to ratchet up in recent months. Since the spring, financial markets have been buffeted by the broadening of US tariffs to all imports from China, restrictions placed by the United States on commerce with Chinese technology companies, and a greater perceived risk of a no-deal Brexit (see Scenario Box 1 of the April 2019 WEO for a discussion of the macroeconomic implications of the United Kingdom withdrawing from the European Union without a free trade deal). These developments have followed a sequence of tariff hikes and threats since early 2018 between the United States and China that have contributed to the generalized retreat in business confidence and investment and the marked slowdown in global trade, leading fiscal and monetary policymakers, in some cases, to deploy policy space to counter drags on confidence and demand. If tensions in these areas were to intensify, the harm to investment would deepen and could lead to dislocation of global supply chains as well as reduced technology spillovers, harming productivity and output growth into the medium term (see Scenario Box 1.1 for an analysis of the impact of advanced economy firms reshoring production in response to growing uncertainty on trade policies). The latest data on input-output linkages point to ever-more-interrelated technology, including the US technology sector's increasing dependence on imports of value added from Chinese producers (Figure 1.20). Trade policy uncertainty and barriers have risen more broadly, including with Japan and Korea imposing strengthened procedures for exports to one another. While these restrictions have had limited effects so far, an escalation of tensions could affect both economies significantly, with regional repercussions through technology sector supply chains.

As discussed above, still-resilient service sector activity is a relative bright spot in the global economy, particularly

Figure 1.20. Tech Hardware Supply Chains
(Percent)

Input-output linkages point to ever-more-interrelated technology, including the US technology sector's increasing dependence on imports of value added from Chinese producers.



Source: Organisation for Economic Co-operation and Development, Trade in Value Added database.
[1]Computers, electronics, and electrical equipment.

among advanced economies. With protracted weakness in global manufacturing, business-facing services, such as logistics, finance, legal, and wholesale trading, are vulnerable to a softening in demand. Depending on the severity, firms in these services categories could cut back on hiring and weaken the feedback cycle between employment growth, consumer confidence, and consumer spending. Resultant lower demand for consumer-facing services, such as retail and hospitality, would dampen business sentiment among these categories and amplify the feedback to the labor market.

Abrupt declines in risk appetite: Amid easy monetary policy and supportive financial conditions in many economies, financial markets are susceptible to abrupt drops in sentiment. In recent months, rising tensions between the United States and China surrounding trade and technology companies triggered rapid declines in global risk appetite and flight to safe assets. Scenario Box 1.2—which updates the scenarios first presented in the October 2018 WEO to incorporate recent tariff measures—highlights the large effects of trade tensions on global growth via worsening financial market sentiment as well as productivity. Potential triggers for risk-off episodes remain plentiful. These include further increases in trade tensions; protracted fiscal policy uncertainty and worsening debt dynamics in some high-debt countries; an intensification of stress in large emerging markets currently undergoing difficult macroeconomic adjustment processes; a no-deal Brexit; or a sharper-than-expected slowdown in China, which is dealing with multiple drags on growth from trade tensions and needed domestic regulatory strengthening. An abrupt risk-off episode could expose financial vulnerabilities accumulated during years of low interest rates and depress global growth as highly leveraged borrowers find it difficult to roll over debt and as capital flows retrench from emerging market and frontier economies (see the October 2019 GFSR for further discussion on financial vulnerabilities).

Continued buildup of financial vulnerabilities: Muted inflation pressures have allowed central banks to ease policy in response to mounting downside risks to growth. These actions, together with shifts in market expectations regarding future policy moves, have helped ease financial conditions (possibly more than warranted by central bank communications, notably in the case of the market-implied path of the federal funds rate, which remains well below the Federal Open Market Committee's "dot plot" projection). While easier financial conditions have supported demand and employment, they could also lead to an underpricing of risk in some financial market segments. Insufficient regulatory and supervisory responses to risk underpricing in this context could allow for a further buildup of financial vulnerabilities, potentially amplifying the next downturn.

Threat of cyberattacks: Cyberattacks on financial infrastructure pose a threat to the outlook because they can severely disrupt cross-border payment systems and the flow of goods and services.

Disinflationary pressures: Concerns about disinflationary spirals eased during the cyclical upswing of mid-2016 to mid-2018. Slower global growth and a softening of core inflation across advanced and emerging market economies have revived this risk. Lower inflation and entrenched lower inflation expectations can increase the real costs of debt service for borrowers and weigh

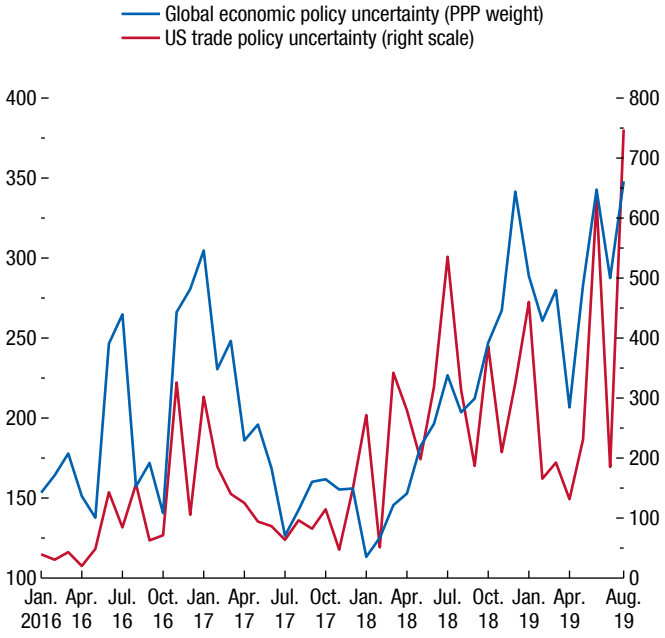
on corporate investment spending. By keeping nominal interest rates low, softer inflation would also constrain the monetary policy space that central banks have to counter downturns, meaning that growth could be persistently lower for any given adverse shock.

Geopolitical tensions, domestic political uncertainty, and conflict: Perceived changes in the direction of policies in some countries and elevated uncertainty regarding reforms have been weighing on investment and growth. At the same time, some geopolitical risk factors discussed in previous WEOs have become more salient—notably rising tensions in the Persian Gulf following attacks on major oil refining facilities in Saudi Arabia, which have added to broader conflict in the Middle East—and tensions in east Asia (Figures 1.21 and 1.22). These factors in isolation may not have a strong impact on growth beyond the countries directly affected, but an accumulation of such events—combined with trade tensions and tighter global financial conditions—could have outsized effects on sentiment that are felt on a broader scale. At the same time, ongoing civil strife in many countries raises the risks of horrific humanitarian costs, migration strains in neighboring countries, and—together with geopolitical tensions—higher volatility in commodity markets.

Climate change: Mitigating the serious threats posed by climate change to health and livelihoods in many countries requires a rapid transition to a low-carbon economy on an ambitious scale (Chapter 2 of the *Fiscal Monitor*). However, domestic mitigation policy strategies are failing to muster wide societal support in some countries, while international cooperation is diluted by large emitters declining to participate (see Commodities Special Feature Box 1.SF.1 for more discussion on emissions). The Intergovernmental Panel on Climate Change warned in October 2018 that, at current rates of increase, global warming could reach 1.5°C above preindustrial levels between 2030

Figure 1.21. Policy Uncertainty and Trade Tensions
(Index)

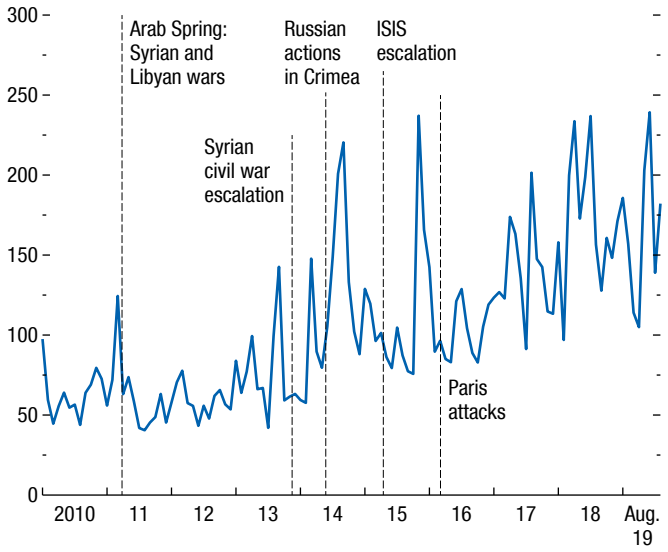
Global economic policy uncertainty remains elevated.



Source: Baker, Bloom, and Davis (2016).
Note: Baker Bloom Davis Index of Global Economic Policy Uncertainty (GEPU) is a GDP-weighted average of national EPU indices for 20 countries: Australia, Brazil, Canada, Chile, China, France, Germany, Greece, India, Ireland, Italy, Japan, Korea, Mexico, the Netherlands, Russia, Spain, Sweden, the United Kingdom, and the United States. Mean of global economic policy uncertainty index from 1997 to 2015 = 100; mean of US trade policy uncertainty index from 1985 to 2010 = 100. PPP = purchasing power parity.

Figure 1.22. Geopolitical Risk Index
(Index)

High geopolitical tension raises the risk of severe humanitarian costs and intensifying economic strains in some regions.



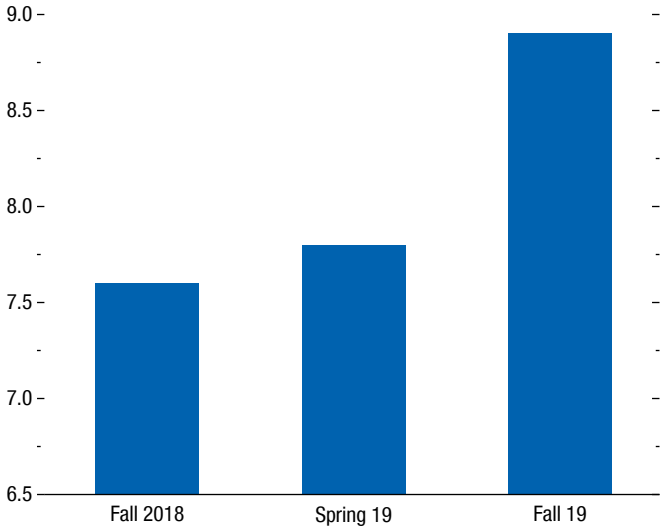
Source: Caldara and Iacoviello (2018).
Note: The Caldara and Iacoviello Geopolitical Risk (GPR) index reflects automated text-search results of the electronic archives of 11 national and international newspapers. The index is calculated by counting the number of articles related to geopolitical risk in each newspaper for each month (as a share of the total number of news articles) and normalized to average a value of 100 in the 2000–09 decade. ISIS = Islamic State.

and 2052, accompanied by extremes of temperature, precipitation, and drought. Given the uncertainties, the climate could warm faster, engendering more catastrophic outcomes, which would have devastating humanitarian effects and inflict severe, persistent output losses across many economies. Climate change may also exacerbate inequality within countries, even in advanced economies, which are expected to be more adaptable (see Chapter 2, Box 2.2).

Globally consistent risk assessment of the WEO forecast: Confidence bands for the WEO forecast are obtained using the G20MOD module of the IMF's Flexible System of Global Models.[8] The confidence bands for the WEO forecast for most regions are asymmetric, skewed toward lower growth than in the baseline. This reflects both the preponderance of negative growth surprises in the past and limited monetary policy space available to offset negative growth shocks as interest rates in most advanced economies are at or close to their effective lower bounds.[9] The resulting risk assessment can also be used to calculate the probability of a global economic downturn. The estimated probability of one-year-ahead global growth below 2.5 percent—the 10th percentile of global growth outturns in the past 25 years—has increased since the spring and now stands at close to 9 percent (Figure 1.23).

Figure 1.23. Probability of One-Year-Ahead Global Growth of Less than 2.5 Percent
(Percent)

The estimated probability of one-year-ahead global growth below 2.5 percent—the 10th percentile of global growth outturns in the past 25 years—has increased since the spring.



Source: IMF staff estimates.
Note: Probabilities are calculated using the G20MOD module of the IMF's Flexible System of Global Models. G20MOD is a global, structural model of the world economy, capturing international spillovers and key economic relationships among the household, corporate, and government sectors, including monetary policy.

Policy Priorities

The global economy remains at a delicate juncture. Even if the threats discussed in the previous section are thwarted, as assumed in the baseline, per capita growth is projected to stay below past norms across most groups, except in sub-Saharan Africa, over the medium term. Moreover, conditions are very challenging for a number of emerging market economies that need to adjust their macroeconomic policies sharply.

As discussed in the section on the Global Growth Outlook, the world economy is confronting a diverse set of headwinds. These headwinds affect countries differently, adding to idiosyncratic factors and varied cyclical positions, meaning that policy objectives and priorities vary widely across countries. A common thread and the foremost priority, in many cases, is to remove policy-induced uncertainty or threats to growth. Policy missteps at this juncture, such as a no-deal Brexit or a further deepening of trade disputes, could severely undermine sentiment, growth, and job creation and may exhaust policy space for avoidable reasons.

Multilateral Policies

Multilateral cooperation is indispensable for tackling some of the short- and long-term issues that threaten the sustainability and inclusiveness of

[8]G20MOD is a global, structural model of the world economy, capturing international spillovers and key economic relationships among the household, corporate, and government sectors, including monetary policy.

[9]Using the model to provide a risk assessment of the forecast is done in two steps. First, the model is used to solve for economic shocks that drove the world economy in the past. Historically, the key drivers of the cyclical dynamics of output, inflation, and interest rates were domestic demand and oil price shocks. Second, these estimated shocks are then used to generate a large number of counter-factual scenarios for the world economy by sampling five-year histories from their empirical joint distribution function. The resulting joint predictive distribution for a rich set of economic variables is internally and globally consistent and is suitable for risk assessment both at the global and individual-country level.

global growth. The most pressing needs for greater cooperation are in the areas of trade and technology. Likewise, closer multilateral cooperation on international taxation, global financial regulatory reform, climate change, and corruption would help address vulnerabilities and broaden the gains from economic integration.

Trade and technology: Policymakers should work together to reduce trade tensions, which have weakened global activity and hurt confidence. They should also expeditiously resolve uncertainty around changes to long-standing trade arrangements (including those between the United Kingdom and the European Union as well as between Canada, Mexico, and the United States). Countries should not use tariffs to target bilateral trade balances. More fundamentally, trade conflicts signal deeper frustrations with gaps in the rules-based multilateral trading system. Policymakers should cooperatively address the roots of dissatisfaction with the system and improve the governance of trade. This requires resolving the deadlock over the World Trade Organization (WTO) dispute settlement system's appellate body to ensure the continued enforcement of existing WTO rules; modernizing WTO rules to encompass areas such as e-commerce, subsidies, and technology transfer; and advancing negotiations in new areas, such as digital trade. The idea that all countries need to participate in all negotiations could be reconsidered, potentially allowing countries that wish to move further and faster to do so, while keeping new agreements inside the WTO and open to all its members. At the least, calling a truce on further escalation of trade barriers would avoid injecting more destabilizing forces into a slowing global economy. Policymakers should also cooperate more closely to curb cross-border cyberattacks on national security and commercial entities, as well as limit distortionary practices, such as requiring companies to hand over their intellectual property in return for market access. Without definite progress in these areas, technology tensions are likely to intensify, impeding the free flow of ideas across countries and potentially impairing long-term productivity growth.

International taxation: With the rise of multinational enterprises, international tax competition has made it increasingly difficult for governments to tackle tax evasion and collect revenue needed to finance their budgets. Efforts to minimize cross-border opportunities for tax evasion and avoidance, such as the Organisation for Economic Co-operation and Development–G20 Base Erosion and Profit Shifting initiative (see Box 1.3 of the April 2019 *Fiscal Monitor*), should be reinforced. As discussed in IMF (2019), this initiative has made significant progress in international tax cooperation, but vulnerabilities remain. Limitations of the arm's-length principle—under which transactions between related parties are to be priced as if they were between independent entities—and reliance on notions of physical presence of the taxpayer to establish a legal basis to impose income tax have allowed apparently profitable firms to pay little tax. Some improvements can be achieved unilaterally or regionally, but more fundamental solutions require stronger institutions for global cooperation.

Financial regulatory reforms and global financial safety net: The reform agenda begun after the global financial crisis is still unfinished. Some areas of progress—such as greater supervisory intensity for globally important financial institutions and more effective resolution regimes—are under pressure or being reversed. Policymakers should ensure the reform agenda is completed, including through enhanced international resolution frameworks and further improvements to macroprudential policy frameworks (which may entail simplification of complex rules in some areas, as discussed in Adrian and Obstfeld 2017). Emerging risks to cybersecurity in the financial system, and combating money laundering and the financing of terrorism, also require coordinated and collective action. Complementing these moves, policymakers should ensure that the global financial safety net is adequately resourced to help counteract disruptive portfolio adjustments in a world economy heavily laden with debt and reduce the need for countries to self-insure against external shocks.

Climate change and migration: Curbing greenhouse gas emissions and containing the associated consequences of rising global temperatures and devastating climate events are urgent global imperatives.[10] In that respect, the ongoing political polarization and discord in many economies does not bode well for reaching agreement on domestic and international strategies in time to contain climate change to manageable levels. A redoubling of efforts is urgently needed, which will require a distribution of the costs and benefits in a

[10]See Chapter 3 of the October 2017 WEO on the macroeconomic impacts of weather shocks and IMF (2019) and Chapter 2 of the October 2019 *Fiscal Monitor* for a discussion of fiscal policy options for implementing climate change mitigation and adaptation strategies.

manner than can muster sufficient domestic and international political support. By adding to migrant flows, climate-related events also compound an already-complex situation of refugee flight from conflict areas. International migration will become increasingly important, too, as many advanced economies confront issues related to aging populations. International cooperation would facilitate the integration of migrants—and, so, help to maximize the labor supply and productivity benefits they bring to destination countries—and to support remittance flows that lessen the burden on source countries.

Corruption and governance: A global effort is also needed to curb corruption, which is undermining faith in government and institutions in many countries (see the April 2019 *Fiscal Monitor*). Left unchecked, pervasive corruption can lead to distorted policies, lower revenue, declining quality of public services, and deteriorating infrastructure.

Country-Level Policies

In response to continued weakness and downside risks, macroeconomic policies—particularly monetary policy—have already turned more supportive in many countries. Looking ahead, macroeconomic policies in most economies should seek to stabilize activity and strengthen the foundations for a recovery or continued growth. Where fiscal space is available and growth has decelerated sharply, more active fiscal policy support—including through greater public investment in workforce skills and infrastructure to raise growth potential—may be warranted. Making growth more inclusive and avoiding protracted downturns that disproportionately affect the most vulnerable segments of population are essential for securing better economic prospects for all. Strengthening resilience to adverse shifts in financial market sentiment and alleviating structural constraints on potential output growth also remain overarching needs.

Advanced Economies

For advanced economies, where growth in final demand is generally subdued, inflation pressure is muted, and market-pricing-implied measures of inflation expectations have softened in recent months, accommodative monetary policy remains appropriate to guard against a further deceleration in activity and a downshift in inflation expectations. This is especially important in economies with inflation persistently below target and output that already is, or may fall below, potential. As discussed in Box 1.4, the sluggishness in inflation suggests that potential output could be higher and output gaps could be more negative than currently estimated. However, given that continued monetary accommodation can foster a buildup of financial vulnerabilities, stronger macroprudential policies and a proactive supervisory approach will be critical. As discussed in the October 2019 GFSR, financial sector policies should aim to secure the strength of balance sheets and limit systemic risks by deploying such tools as liquidity buffers, countercyclical capital buffers, or targeted sectoral capital buffers; developing borrower-based tools to mitigate debt vulnerabilities where needed; and enhancing macroprudential oversight of nonbank financial institutions. In some countries, bank balance sheets need further repair to mitigate the risk of sovereign-bank feedback loops. Avoiding a rollback of postcrisis regulatory reforms is of essence in the context of continued monetary policy accommodation and high debt levels.

Considering the precarious outlook and large downside risks, fiscal policy can play a more active role, especially where room to ease monetary policy is limited. The low level of policy rates in many countries and the decline in long-term interest rates to historically very low or negative levels, while reducing the likely impact of further monetary policy easing, expands fiscal room as long as these conditions last. In this context, in countries where activity has weakened or could decelerate sharply, fiscal stimulus can be provided if fiscal space exists and fiscal policy is not already overly expansionary. In countries where demand is weak, yet fiscal consolidation is necessary, its pace could be slowed if market conditions permit, to avoid prolonged economic weakness and disinflationary dynamics. Policymakers would need to prepare for a contingent fiscal policy response, in advance, to be able to act quickly and plan ahead for the appropriate composition of fiscal easing. Infrastructure spending or investment incentives (including for clean energy sources) would be ideal as they would boost output not only in the near term but also in the medium term, helping to improve debt sustainability. More generally, modest medium-term potential output in most advanced economies calls for the composition of fiscal spending and taxes to be calibrated carefully, with a view to raising labor force participation rates and productivity growth through public investment in

workforce skills, physical infrastructure, and research and development.

National structural policies that encourage more open and flexible markets in advanced economies would not only boost economic resilience and potential output, but could also help reduce within-country disparities in performance and improve the labor market adjustment to shocks by lagging regions within countries (see Chapter 2). There is also a pressing need to reduce carbon emissions to avert the severe economic and social risks associated with climate change. Moving toward less-carbon-intensive production structures—including through carbon taxation, boosting low-carbon infrastructure, and encouraging innovation in green technologies (see Chapter 2 of the October 2019 *Fiscal Monitor*)—are therefore necessary. Beyond fiscal measures to boost potential output, protecting opportunities and dynamism—by ensuring that competition policies facilitate new-firm entry and curb incumbents' abuse of market power—remains vital when a minority of big firms are capturing increasingly larger market shares in advanced economies (Chapter 2 of the April 2019 WEO).

In the *United States*, where the unemployment rate is historically low and inflation is close to target, a combination of accommodative monetary policy, vigilant financial regulation and supervision, and a gradual fiscal consolidation path would help maintain the expansion and limit downside risks. The absence of strong wage and inflation pressures (inflation has averaged just below target over the past year, and expectations have recently softened) has allowed the Federal Reserve to reduce the federal funds rate to guard against downside risks from the global economy. The path of the policy interest rate going forward should depend on the economic outlook and risks, as informed by incoming data. Supportive financial conditions require maintaining the current risk-based approach to regulation, supervision, and resolution (and strengthening it in the case of nonbank financial institutions) to limit vulnerabilities from rising corporate leverage and emerging cybersecurity threats. Public debt remains on a clear upward trajectory, calling for consolidation. There is a need to raise the revenue-to-GDP ratio by putting in place a broad-based carbon tax, a federal consumption tax, and a higher federal gas tax. Doing so would create the fiscal space to provide support to low- and middle-income families (including through help with childcare expenses and smoothing out the existing "cliffs" in social benefits) and to pursue policies that raise potential growth—infrastructure investment (including to facilitate the supply of green energy alternatives), support for lifelong learning and workforce skills, and steps to raise labor force participation. Counteracting the anticipated rise in aging-related spending requires indexing social security benefits to chained inflation and raising the retirement age.

In the *United Kingdom*, desired policy settings in the near term will depend on the ultimate form of the country's departure from the European Union. The extra public spending envisaged by the government should mitigate the cost of Brexit for the economy, but continued efforts to bring down the debt ratio remain important to build buffers against future shocks. In case of a disorderly Brexit accompanied by a sharp rise in barriers to goods and services trade with the European Union, the policy response will need to take into account the extent of the adverse financial market reaction and its likely impact on macroeconomic stability. Structural reforms should focus on improving infrastructure quality and boosting labor skills as well as ensuring smooth reallocation of workers to expanding sectors from those adversely affected by Brexit.

In the *euro area*, monetary policy has become appropriately more accommodative in response to stubbornly weak core inflation and a significant loss of momentum since mid-2018. The fiscal stance, though ideally more supportive than envisaged before the slowdown, needs to vary across countries depending on the extent of fiscal space. In *Germany*, where there is room to ease fiscal policy and growth has been weak, raising public investment in physical and human capital or reducing the labor tax wedge would boost demand, help reduce the excess current account surplus, and strengthen potential output. In countries with high debt, including *France, Italy*, and *Spain*, fiscal buffers should be rebuilt gradually while protecting investment. Credibly committing to a downward-sloping debt path over the medium term is particularly critical in Italy, where debt and gross financing needs are large. If growth were to weaken significantly, countries with fiscal space would need to use it more actively to complement monetary easing to guard against disinflationary dynamics and a prolonged period of weak growth. In parallel, the path of fiscal consolidation could be adjusted temporarily in countries where fiscal space is at risk, provided their financing conditions remain amenable and debt sustainability is not jeopardized. A synchronized fiscal response, albeit differentiated appropriately across

member countries, can amplify the area-wide impact. Completing the banking union and continuing the cleanup of bank balance sheets remain vital for raising resilience and strengthening credit intermediation in some economies. Amid prolonged monetary accommodation and disparate cyclical positions, regulators need to calibrate macroprudential instruments to address any emergent financial stability risks. Reforms are urgently needed in many economies to lift productivity and competitiveness. Further deepening the single market for services would boost efficiency across the European Union. EU-level instruments can be used to foster reform efforts at the national level. Raising labor market flexibility, removing barriers to entry in product markets, upgrading the functioning of corporate insolvency regimes, and cutting administrative burdens are cross-cutting needs.

In *Japan*, demand is expected to slow from its recent strong pace following the October consumption tax rate increase, while government mitigating measures will moderate the decline. Inflation remains well below the central bank's target. Sustained monetary accommodation will be necessary over a long period to durably lift inflation expectations. Fiscal policy should be geared toward long-term fiscal sustainability amid a rapidly aging and shrinking population while protecting demand and the reflation effort. Averting fiscal risks over the long term requires additional increases in the consumption tax rate and reforms to curb pension, health, and long-term-care spending. Some progress has been made on structural reforms with the adoption of the Work Style Reform that aims at improving working conditions, a new residency status for foreign workers with professional and technical skills, and further trade integration with the European Union and the economies comprising the Comprehensive and Progressive Agreement for Trans-Pacific Partnership. More effort is needed on labor market reform—including to improve workers' skills and career opportunities for nonregular workers, reduce duality, and raise mobility—and in product market and corporate reforms to lift productivity and investment.

Emerging Market and Developing Economies

The circumstances of emerging market and developing economies are diverse. Some economies are experiencing extremely challenging conditions because of political discord or cross-border conflict; others are experiencing tight external financing conditions, given their macroeconomic imbalances and needed policy adjustments. Among countries facing more stable conditions, the recent softening of inflation has given central banks the option of easing monetary policy to support activity. Against a volatile external backdrop and possible adverse turns in market sentiment, ensuring financial resilience is a key objective for many emerging market and developing economies. Regulation and supervision should ensure adequate capital and liquidity buffers to guard against disruptive shifts in global portfolios and a possible deterioration in growth and credit quality. Efforts to monitor and minimize currency and maturity mismatches on balance sheets are also vital to preserve financial stability and will help exchange rates to cushion against shocks. In the many economies with high public debt, fiscal policy should generally aim for consolidation to contain borrowing costs and create space to counter future downturns as well as to address development needs, while adjusting its pace and timing to avoid prolonged weakness. Improving the targeting of subsidies, rationalizing recurrent expenditure, and broadening the revenue base can help preserve investments needed to boost potential growth and social spending—on education, health care, and safety net policies. Revenue mobilization is particularly important in low-income developing countries that need to advance toward the United Nations Sustainable Development Goals.

Beyond getting the mix of macroeconomic and financial policies right, many emerging market and developing economies can strengthen their institutions, governance, and policy frameworks through structural reforms to bolster their growth prospects and resilience. Indeed, the key findings of Chapter 3 make a strong case for a renewed structural reform push in emerging market and developing economies. The chapter documents that much scope remains for further reforms in domestic and external finance, trade, labor and product market regulations, and governance in these countries, especially in low-income developing countries. The chapter finds that, for a typical economy, major simultaneous reforms across these areas could add 1 percentage point to growth over 5–10 years, roughly doubling the speed of convergence.

In *China*, the overarching policy objective is to raise the sustainability and quality of growth while navigating headwinds from trade tensions and weaker global demand. Meeting this goal calls for short-term

action to support the economy while making progress with shifting the underlying sources of growth from credit-fueled investment toward private consumption, and improving the allocation of resources and efficiency in the economy. In addition to some monetary easing, fiscal support (financed mainly on-budget) has prevented trade tensions from exerting a sharp drag on confidence and activity. Any further stimulus should emphasize targeted transfers to low-income households, rather than large-scale infrastructure spending. In support of the transition to sustainable growth, regulatory efforts to restrain shadow banking have helped lessen reliance on debt, but corporate leverage remains high and household debt is growing rapidly. Further progress with reining in debt requires continued scaling back of widespread implicit guarantees and enhancing the macroprudential toolkit. Meanwhile, continuing with reducing the role of state-owned enterprises and lowering barriers to entry in such sectors as telecommunications and banking would help raise productivity while improving labor mobility. Moving toward a more progressive tax code and higher spending on health care, education, and social transfers would help lower precautionary saving and support consumption.

In *India*, monetary policy and broad-based structural reforms should be used to address cyclical weakness and strengthen confidence. A credible fiscal consolidation path is needed to bring down India's elevated public debt over the medium term. This should be supported by subsidy-spending rationalization and tax-base enhancing measures. Governance of public sector banks and the efficiency of their credit allocation needs strengthening, and the public sector's role in the financial system needs to be reduced. Reforms to hiring and dismissal regulations would help incentivize job creation and absorb the country's large demographic dividend. Land reforms should also be enhanced to encourage and expedite infrastructure development.

In *Brazil*, pension reform is an essential step toward ensuring the viability of the social security system and the sustainability of public debt. Further gradual fiscal consolidation will be needed to comply with the constitutional expenditure ceiling over the next few years. Monetary policy should remain accommodative to support economic growth, provided that inflation expectations remain anchored. To lift potential growth, the government will need to pursue an ambitious reform agenda, including tax reforms, trade openness, and infrastructure investment.

In *Mexico*, adherence to the government's medium-term fiscal consolidation plan is essential to preserve market confidence and stabilize public debt. More ambitious medium-term fiscal targets would create larger buffers to respond to negative shocks and better deal with long-term spending pressure from demographic trends. If inflation remains on a downward path toward the target and inflation expectations are anchored, monetary policy could become more accommodative in the coming months. The exchange rate should remain flexible, with foreign-exchange intervention being used only if market conditions are disorderly.

In *Russia*, the authorities should move toward a more growth-friendly composition of taxes and public spending while refraining from using the National Welfare Fund for quasi-fiscal activities. Monetary policy can be eased toward a neutral stance if inflationary pressures continue to abate. To enhance the efficiency of credit intermediation, the authorities should continue to consolidate the banking sector while reducing the state's footprint. Further structural reforms are needed to boost potential growth, including measures to enhance competition, improve public procurement, and reform the labor market.

In *Turkey*, a comprehensive and clearly communicated policy plan is needed to repair private balance sheets; increase public balance sheet transparency; and ultimately restore the credibility, independence, and rules-based functioning of economic institutions. To achieve these goals, the policy agenda should include (1) keeping monetary policy rates on hold until there is a durable downturn in inflation and inflation expectations, which would also help underpin the lira and rebuild reserves; (2) steps to bolster medium-term fiscal strength; (3) restoring confidence in banks through thorough assessment (third-party asset quality reviews, rigorous stress tests), credible bank recapitalization plans, and reining in state bank credit; (4) further improving the insolvency regime and the out-of-court restructuring framework to promote meaningful restructuring solutions and free up lending capacity to healthy and productive firms; and (5) focusing structural reforms to support more sustainable, total-factor-productivity-led growth.

In *South Africa*, gradual but meaningful and growth-friendly fiscal consolidation is needed to stabilize public debt. Measures should include reducing the public wage bill, downsizing and eliminating wasteful spending by public entities, expanding the tax base,

and strengthening tax administration. Monetary policy should continue to be data-dependent and carefully monitor inflation risks. Structural reforms are needed to regain investors' trust, lift growth potential, and foster job creation. Priorities include revamping the business models of state-owned enterprises, improving competition in the product market by reducing entry barriers and streamlining regulations, and increasing labor market flexibility.

Low-income countries share many of the policy priorities of the emerging market economy group, especially in enhancing resilience to volatile external conditions. Several "frontier" low-income countries have seen external financing conditions fluctuate sharply in the past year. Strengthening monetary and macroprudential policy frameworks while preserving exchange rate flexibility will help them withstand this environment. During the recent period of low interest rates, public debt stocks in this group have increased rapidly. When financial conditions turn less accommodative, rollover risks may rise, and wider sovereign spreads may lead to higher borrowing costs for firms and households. Fiscal policy should be geared toward ensuring debt sustainability while protecting measures that help the vulnerable and support progress toward the United Nations Sustainable Development Goals. This requires broadening the revenue base; improving tax administration; eliminating wasteful subsidies; and prioritizing spending on infrastructure, health care, education, and poverty reduction. Low-income countries also bear the brunt of natural disasters and increasing climate change. Lowering the fallout from these events will require adaptation strategies that invest in disaster readiness and climate-smart infrastructure, incorporate appropriate technologies and zoning regulations, and deploy well-targeted social safety nets to help reduce vulnerability and improve countries' ability to respond.

Commodity-exporting developing economies have similar policy priorities, but face additional pressure on their public finances from the subdued outlook for commodity prices. Beyond placing public finances on a sustainable footing, economies in this group also need to diversify away from dependence on resource extraction and refining. Although country circumstances differ, policies to help achieve this broad goal include sound macroeconomic management; lifting of education quality and worker skills to encourage more broad-based labor force participation; investment to reduce infrastructure shortfalls; boosting of financial development and inclusion; strengthening of property rights, contract enforcement; and reduction of trade barriers to incentivize the entry of firms and private investment.

Scenario Box 1.1. Implications of Advanced Economies Reshoring Some Production

Activity would suffer in advanced and emerging market economies if production were reshored to advanced economies that could not match the efficiency and lower labor costs of the abandoned foreign value chains. If multinational firms absorb some of the implications by allowing margins to be squeezed, it could soften the implications. However, a possibly more likely outcome is that a less open global economy could constrain technology diffusion, causing activity to fall further.

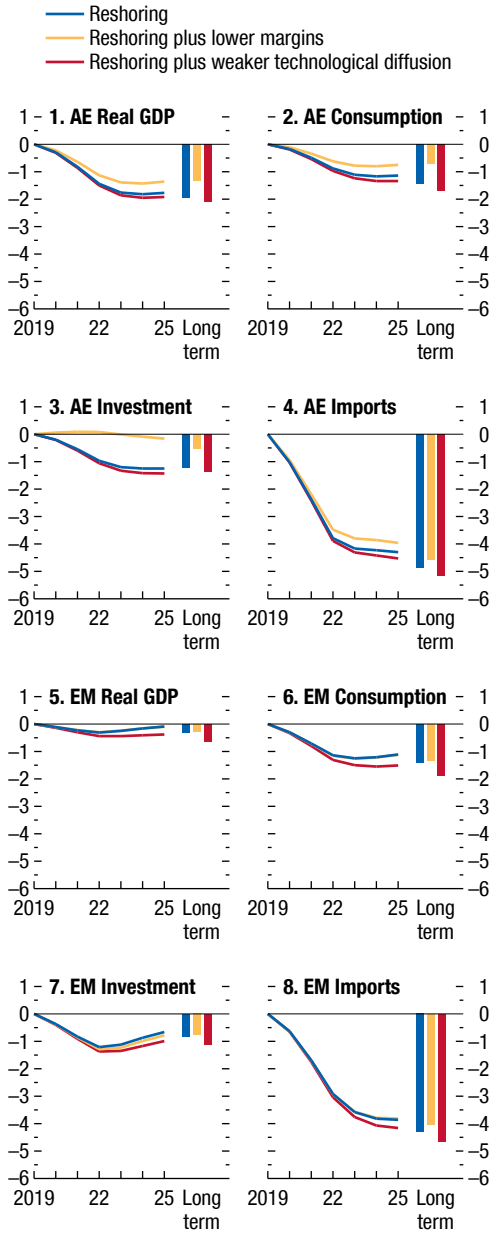
The IMF's Global Integrated Monetary and Fiscal Model is used here to examine the implications of multinational firms reshoring production to advanced economies. This reshoring could be motivated by a desire to keep some production closer to final consumers to avoid potential supply chain disruptions from developments in distant countries or by policy actions closer to home. A very stylized experiment is considered, designed to illustrate the implications and highlight the possible channels through which they could play out.

The assumption is that, over a three-year horizon, multinational firms in the United States, the euro area, and Japan reshore enough production that their nominal imports decline by 10 percent (blue line in Scenario Figure 1.1.1). Given the relative costs of production, reshoring leads to higher-priced consumption and investment goods in advanced economies. Domestic demand declines, as does output, despite the decline in imports.[1] In emerging market economies, lower production and exports reduce incomes, households and firms cut expenditure, and output declines more modestly than in advanced economies. However, households in both advanced and emerging market economies suffer equally, owing to the deterioration in emerging market economies' terms of trade. Advanced economy exchange rates appreciate, raising the real cost of emerging market economies' imports. More emerging market production must be exported to pay for their import bundle, leaving less for domestic consumption.

[1]It is worth noting that, in sectors where domestic production expands, employment could increase; here, however, the aggregate net impact is shown, which is negative.

Scenario Figure 1.1.1. Advanced Economies Reshoring

(Percent deviation from control)



Source: IMF staff estimates.
Note: AE = advanced economy; EM = emerging market.

Scenario Box 1.1 *(continued)*

One possible response of multinational firms might be to not pass on the higher production costs fully and, so, allow their profit margins to be squeezed (yellow line). Moderating the resulting price increase helps maintain household consumption and supports investment as firms need more capital to produce the additional goods. The extent to which firms would compress margins is highly uncertain, and the modest reduction considered here is for illustrative purposes only. The more margins are squeezed, the less harmful is the impact of reshoring on advanced economies. However, lower margins do little to ameliorate the impact on emerging markets.

Although reductions in profit margins could offset some of the negative implications of reshoring, a less favorable implication of a more closed global economy could be less technological diffusion. Empirical evidence points to trade openness as a key driver of technological diffusion.[2] If multinational firms shorten supply chains by producing more goods closer to final consumers in advanced economies, emerging markets could have much less access to the latest technological developments. This box considers modest temporary reductions in productivity growth in tradable goods sectors (red line) that are a function of a country's or region's distance from the productivity frontier and relative openness (0.1 percentage point for advanced economies, 0.25 percentage point for emerging markets).[3] Weaker technological diffusion would notably amplify the negative implications for emerging markets and modestly exacerbate the impact on advanced economies.

[2]See "Is Productivity Growth Shared in a Globalized Economy?" in Chapter 4 of the April 2018 *World Economic Outlook*.

[3]A temporary decline in productivity growth is assumed. However, it is possible that a more closed global economy could lead to some lasting damage to productivity growth. If that were the case, the longer-term implications would be much worse than those estimated here.

Scenario Box 1.2. Trade Tensions: Updated Scenario

Updates of the estimated impact of ongoing global trade tensions on economies are generated here using the IMF's Global Integrated Monetary and Fiscal Model (GIMF). Inputs to the model's simulations include explicit tariff measures and off-model analysis of the possible impact of confidence effects on investment, financial conditions for firms, and productivity developments that result when resources are reallocated across economies. Given that all of the tariff measures considered in these simulations are incorporated in the baseline projections of this *World Economic Outlook* (WEO), their impact on global GDP should be interpreted as relative to a no-tariff baseline (such as the one in the October 2017 WEO).[1]

The first three layers (out of six) of the analysis estimate the direct trade impacts of tariff measures, both implemented and announced. All of the measures are assumed to be permanent. The first layer contains the impact of implemented tariff measures included in the April 2019 WEO baseline. Among them are tariffs that the United States imposed on aluminum and steel, 25 percentage points in tariffs on $50 billion in imports from China, and 10 percentage points in tariffs on an additional $200 billion in imports from China. All retaliatory measures by US trading partners are included in this layer. The second layer adds the impact of the May 2019 US tariff increase of $200 billion on Chinese imports and China's retaliation. The third layer adds the US imposition of 15 percentage points in tariffs on all goods from China (roughly $300 billion) that had not yet incurred tariffs, starting in September 2019, and a 5 percentage-point increase on the already-tariffed $250 billion in imports from China. China's retaliation is included in this layer.

The remaining three layers are based on off-model analysis. The fourth layer adds the potential impact on investment of declining confidence. This is the same temporary effect that is included in the October 2018 WEO analysis of the impact of trade tensions on investment via confidence effects.[2] However, the timing has been altered to more closely match changes in timing of implementation of tariff measures from that assumed in 2018. The peak impact on activity is delayed, given that the tariff measures were imposed later than had been assumed. The fifth layer adds the impact on corporate spreads of the potential market reaction to the trade tensions. The size of the impact is identical to that used in the October 2018 WEO, but the timing is adjusted to match the delayed implementation of the tariff measures. The peak in the increase in corporate bond spreads now occurs in 2020, one year later than assumed in the October 2018 WEO analysis.[3] The final layer adds the potential impact on productivity resulting from the reallocation of resources across sectors within economies. This layer is new and is not included in the analysis in the October 2018 WEO. The impact of tariff measures in GIMF captures the macroeconomic distortions that tariffs induce in the utilization of productive factors, capital, and labor, as well as income effects. However, tariffs also lead to sectoral distortions from the reallocation of factors across sectors within economies, which highly aggregated models, such as GIMF, cannot capture. Computable general equilibrium (CGE) trade models, in contrast, capture the impact on output of the shift of resources across sectors,

[1]The analysis in the October 2018 WEO also includes a layer of US-imposed tariffs on all imported cars and car parts. This layer is not included in this analysis.

[2]The magnitude of this effect was calibrated based on the Baker, Bloom, and Davis (BBD) overall "economic policy uncertainty" measure and its estimated impact on investment in the United States. (For details on the BBD Uncertainty Index, see http://www.policyuncertainty.com.) A one-standard-deviation increase in the BBD uncertainty measure (which is roughly one-sixth of the change during the global financial crisis) leads to an estimated 1 percent drop in investment in the United States in one year. Here, this 1 percent decline in investment is spread over three years, with the peak effect in 2020. The impact of the decline in investment in other countries is then scaled by their trade openness relative to the United States—countries more dependent on trade than the United States experience greater declines in investment than does the United States. Note that, since fall 2018, some of this impact would already be factored into WEO forecasts, given that the tariff measures were imposed.

[3]The magnitude of this tightening is based on several financial market participants' estimates of the impact on US corporate earnings of a worst-case United States–China trade war. (In the worst-case scenario, the United States imposes tariffs of 25 percent on all Chinese imports and China does the same in response.) Based on historical relationships, this estimated 15 percent decline in earnings is then mapped into an increase in US corporate bond spreads. The rise in US spreads is then mapped into corporate bond spreads in other countries based on their credit rating relative to US corporate debt. This increase in spreads is assumed to start in 2019 and peak in 2020, with half of the peak increase remaining in corporate spreads in 2021.

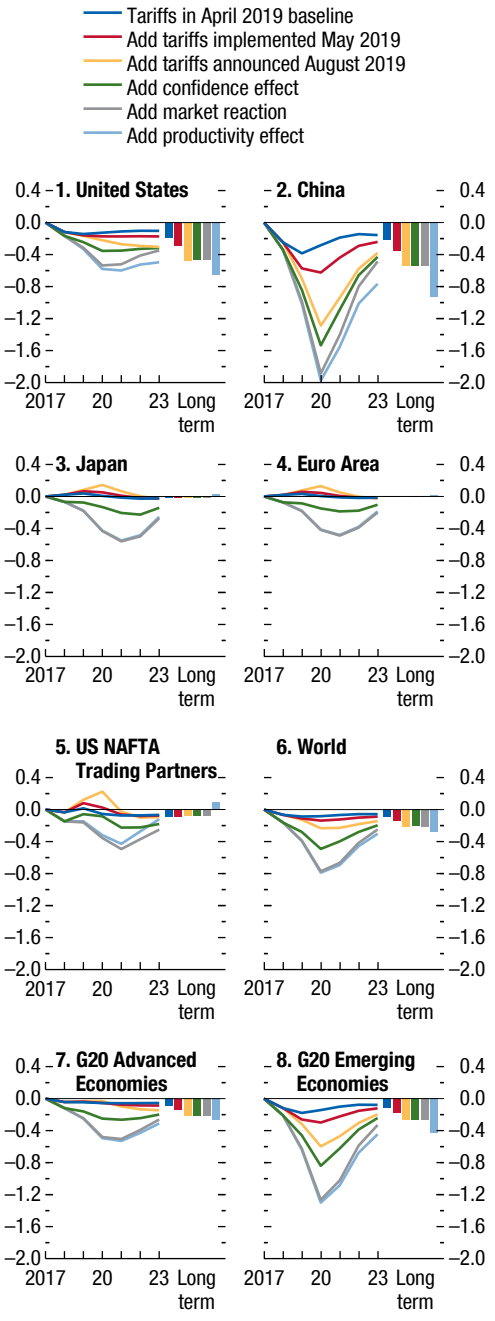
Scenario Box 1.2 *(continued)*

under the assumption that total utilization of resources remains unchanged. Implicitly, this is an estimate of the impact on productivity of the movement of factors between sectors with different underlying productivity. To estimate the possible magnitude of this productivity effect, the tariff increases in the first three layers are run on a new global CGE model detailed in Caliendo and others (2017). The resulting impact on activity is an estimate of the medium-term effect and embodies an implicit change in labor productivity. The final layer adds this change in labor productivity, phased in over five years beginning in 2020.

Consistent with past scenarios, all layers assume that the euro area and Japan are unable to ease (conventional) monetary policy further in response to macroeconomic developments, given the lower bound on nominal interest rates. If other unconventional monetary policy measures are implemented, the decline in GDP in Japan and the euro area would be smaller in the near term than estimated here. In all other countries and regions, conventional monetary policy responds according to a Taylor-type reaction function. It is important to note the considerable uncertainty surrounding the magnitude and persistence of the confidence effects on investment and the tightening in corporate spreads. These effects could be either milder or more severe than assumed here. Regarding the layer that contains the tightening in corporate spreads, one aspect not included in the analysis is the potential for safe-haven flows to mitigate the impact of financial tightening in such countries as Germany, Japan, and the United States.

The estimated impact on activity (shown in Scenario Figure 1.2.1) indicates that tariffs included in the April 2019 WEO baseline (dark blue line) are estimated to have a fairly mild direct effect: the United States and China are most affected and China bears the greatest burden. The largest effect falling on the United States and China also holds true for the direct effect of tariff measures implemented in May 2019 (gray line) and those announced in August 2019 (yellow line). However, the magnitude of the impact becomes much more material. The short-term spillovers on other countries from these measures are estimated to be positive as some countries—notably the North American trading partners of the United States—benefit from trade diversion. These benefits, however, disappear in the medium term, and the spillovers become negative as households and firms in China and the United States are able to source more goods domestically that

Scenario Figure 1.2.1. Real GDP
(Percent deviation from control)



Source: IMF staff estimates.
Note: G20 = Group of Twenty; NAFTA = North American Free Trade Agreement.

Scenario Box 1.2 *(continued)*

were previously imported. Adding the confidence effects on investment (green line) and the increase in corporate spreads (red line) results in a negative result for all countries. For the United States and China, adding the estimated productivity effects (light blue line) amplifies the economic damage, but because they are phased in over five years, that negative impact grows over time and is substantial in both the medium and the long term. For some other countries, the productivity impact is positive, but small. Changes in global demand reallocate resources in these countries from less to more productive sectors.[4]

Overall, China suffers the most, as output falls by 2 percent in the short term and 1 percent in the long term (light blue bar). The United States runs a close second, with output falling by 0.6 percent in both time spans. The trough in global activity is estimated to take place in 2020, with output about 0.8 percent below baseline. The trough in activity across advanced economies is very similar to the trough in the United States, at roughly –½ percent. Unlike in the United States, the long-term direct trade effects are small and negative in advanced economies, although they are more than offset by positive productivity effects in some countries.

[4]As noted earlier, the productivity effect arises from resources shifting between sectors with different productivity. The countries with the closest trading ties to Canada, Mexico, and the United States benefit the most. In the trade model analysis, resources shifting from agriculture and mining to manufacturing in these two countries drives the improvement in aggregate productivity.

Box 1.1. The Global Automobile Industry: Recent Developments and Implications for the Global Outlook

The automobile industry contracted in 2018 for the first time since the global financial crisis, contributing to the global slowdown since last year. Two main factors explain the downturn: the removal of tax breaks in China and the rollout of new carbon emission tests in Europe. Near-term prospects for the industry remain sluggish, and efforts to decarbonize pose a fundamental challenge in the medium term.

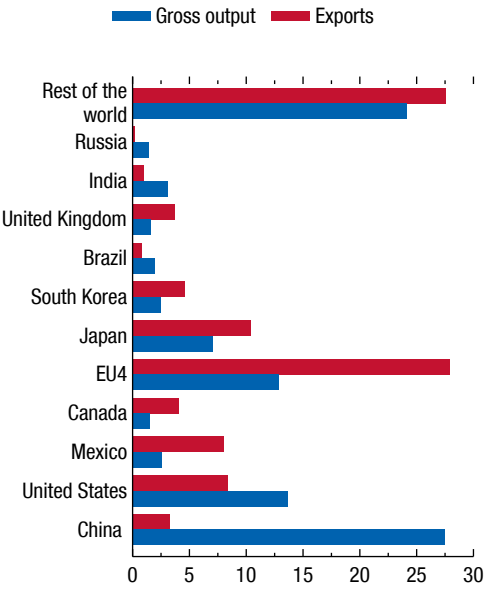
The automobile sector is a globally interconnected industry with a large economic footprint. The size of the sector's gross output (that is, the sum of its value added and intermediate consumption) is about 5.7 percent of global output, according to the World Input-Output Database (Timmer and others 2015). Vehicles and related parts are the world's fifth largest export product, accounting for about 8 percent of global goods exports in 2018 (Figure 1.1.1). The sector is also a major consumer of commodities, other manufactured products, and services: the vehicle industry is the second largest consumer of steel and aluminum and demands significant amounts of copper, rubber, plastic, and electronics (Figure 1.1.2).

During the 2018 contraction (measured in units; Figure 1.1.3, panel 1) global automobile production declined by about 1.7 percent, or about –2.4 percent after correcting for differences in unit values (for example, German cars, on average, are more expensive than Indian cars). Global car sales fell by about 3 percent. China (the largest vehicle market in the world) experienced a 4 percent contraction in units produced, its first decline in more than two decades. Large declines were registered in Germany, Italy, and the United Kingdom, while production in the United States and large emerging markets expanded marginally (Figure 1.1.3, panel 2). The downturn has continued into 2019, as indicated by declining global light vehicle sales through June 2019 (Figure 1.1.4, panel 1) on continued subdued momentum in China and Europe. Consistent with performance, stock prices of the largest 14 car manufacturers have declined by 28 percent, on average, since March 2018 (compared with about a 1 percent increase in the MSCI World index during that time).

The industry's downturn contributed to the slowdown in global growth beginning in the second half of 2018. National income account data by sector are not yet available for 2018 in many countries. However, assuming a proportional decline in value added, IMF estimates suggest that the contraction in car production directly subtracted 0.04 percentage point from global output growth last year (following a positive contribution of 0.02 percentage point in 2017). Considering that global growth slowed by 0.2 percentage point last year—from 3.8 percent in 2017 to 3.6 percent—these estimates suggest that automobile production has been an important factor in the global slowdown.

Developments in the automobile industry also played a role in global trade dynamics. Automobile exports from the 14 biggest car-producing countries fell by 3.1 percent in 2018 when measured in units. Controlling for differences in unit values across exporters, IMF estimates suggest that the contraction in car exports directly subtracted 0.12 percentage point from global trade volumes

Figure 1.1.1. Global Vehicle Industry: Share of Total, 2018
(Percent)

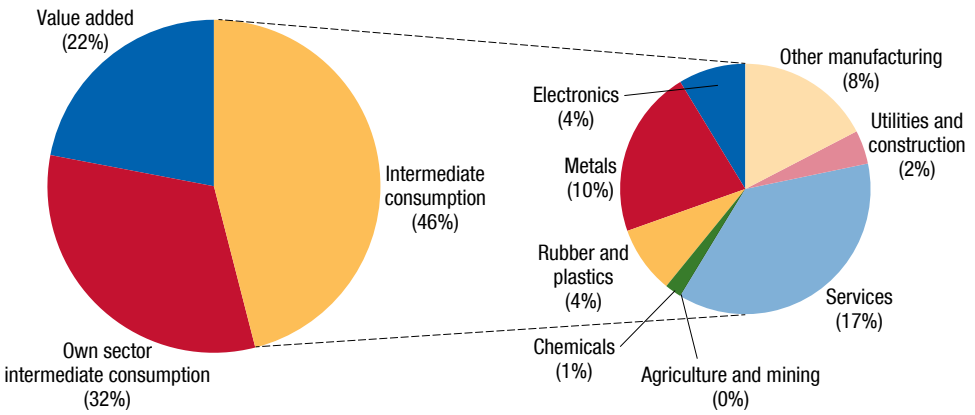


Sources: CEIC; Haver Analytics; Japan Automobile Manufacturers Association; National statistics offices; Spanish Association of Automobile and Truck Manufacturers (ANFAC); Statista; Society of Motor Manufacturers and Traders; United Nations Conference on Trade and Development; World Input-Output Database; and IMF staff calculations.
Note: EU4 = France, Germany, Italy, Spain.

The author of this box is Luisa Charry, with research assistance from Aneta Radzikowski.

Box 1.1 *(continued)*

Figure 1.1.2. Global Vehicle Industry: Structure of Production, 2014



Sources: World Input-Output Database; and IMF staff calculations.

in 2018 (following a positive contribution of 0.03 percent in 2017). In addition, the sector's extensive value-chain linkages imply that the overall effects may be larger once the impact on trade in car parts—for which volume data are not yet available for a sufficiently large number of countries—and other intermediate goods used in car production is considered. A global input-output framework based on Bems, Johnson, and Yi (2011) suggests that the sector may have subtracted as much as 0.5 percentage point from global trade in 2018, once these spillover effects are factored in. For reference, the growth of all global exports of goods and services was 3.8 percent points in 2018 (down from 5.4 percent growth in 2017).

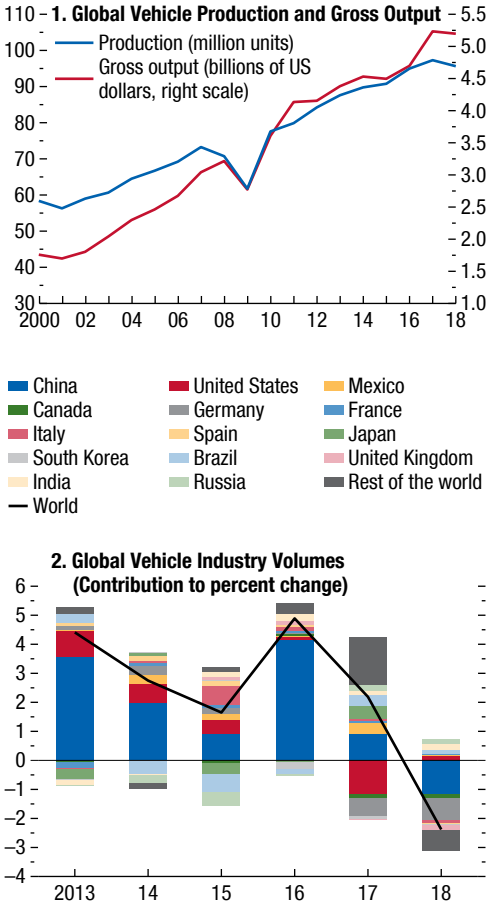
Several factors help explain the sector's performance:

- Vehicle demand in China was weighed down by higher taxes and tighter financial conditions. Tax breaks have been used in China to encourage vehicle ownership. In late 2015, the purchase tax on small and medium vehicles was lowered to 5 percent from 10 percent and subsequently increased to 7.5 percent in 2017 and to 10 percent in 2018 (Figure 1.1.4, panel 2). According to industry analysts, the lower tax rates in 2016–17 brought sales forward by 2–7 million units (about 20 percent of total production), which then reduced sales in 2018–19.[1] Tighter regulations on peer-to-peer lending also weighed on demand, while tariff increases on US car imports and decreases on car imports from other countries may have led consumers to take a precautionary stance.
- The rollout of new emission tests in Europe disrupted car production and trade. In September 2018, a new euro-area-wide emission test (known as WLTP) went into effect. The large number of models requiring certification led to bottlenecks at testing agencies, and several automakers had to adjust production schedules to avoid unwanted inventory accumulation. Other developments weighing on activity included falling demand from emerging markets (most notably Turkey) and the United Kingdom and acceleration of the shift out of diesel into gasoline and alternative-fuel vehicles.
- Car demand in the United States held up in 2018 despite tighter financial conditions (and the higher steel and aluminum tariffs). Although higher interest rates on car financing throughout 2017–18, and tighter lending standards, weighed on demand, provisions for vehicle depreciation in the Tax Cuts and Jobs Act provided support. In addition, although higher tariffs on steel and aluminum added an estimated $240 to the production cost of an average car in the United States in 2018 (Schultz and others 2019), it is unclear how much of that was passed on to final consumers.

[1]Mian and Sufi (2012) document similar intertemporal reallocation in the United States during the "Cash for Clunkers" program of 2009.

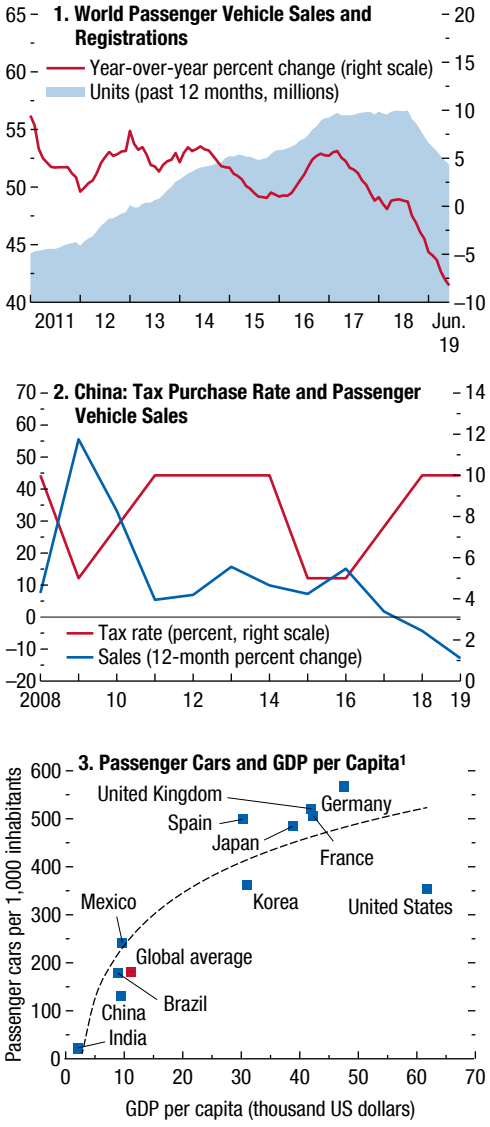
Box 1.1 *(continued)*

Figure 1.1.3. Global Vehicle Production



Sources: International Organization of Motor Vehicle Manufacturers; national statistics offices; World Input-Output Database; and IMF staff calculations.

Figure 1.1.4. World Passenger Vehicle Sales and Usage



Sources: Economist Intelligence Unit; Haver Analytics; International Organization of Motor Vehicle Manufacturers; and IMF staff calculations.
[1]Dashed line indicates logarithmic trend.

The outlook for the industry remains conservative. Some analysts (such as IHS Markit) anticipate a 4 percent contraction in light vehicle production in 2019 and flat growth in 2020 (0.1 percent). In China, higher tariffs on light vehicle imports from the United States (set to take effect in December 2019), increasing market

Box 1.1 *(continued)*

saturation (Figure 1.1.4, panel 3), a young vehicle fleet, and lower subsidies on purchases of electric vehicles are likely to continue to hold back demand; the introduction of a new emission standard in mid-2019 could also disrupt production. The outlook for Europe is affected by falling demand for diesel-powered vehicles, continued Brexit-related uncertainty, and emission tests set for late 2019. Elsewhere, easier financial conditions should provide support, especially in the United States and large emerging markets, but ongoing discussions around Section 232 tariffs on US imports from the European Union and Japan could weigh on activity in the near term.

More fundamentally, efforts to decarbonize are set to shape the medium-term outlook. A significant ramp-up of investment in the production of electric and other alternative-fuel vehicles is expected in the medium term, particularly in Europe. However, the supply chains for electric vehicles are several orders of magnitude shorter than those for fuel-powered vehicles. Furthermore, entry-level prices remain higher than for fuel-powered cars, which could limit demand uptake. Accordingly, automakers are facing challenges that mean they will have to make changes to business models above and beyond those required by technological reconfiguration.

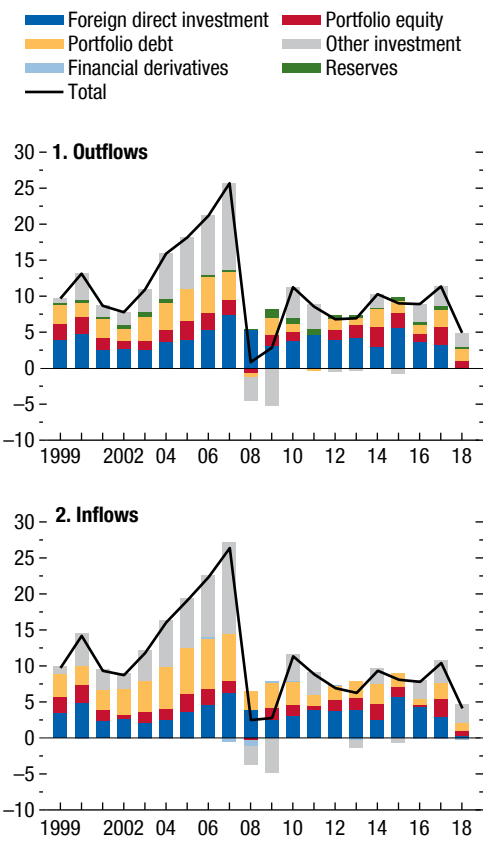
Box 1.2. The Decline in World Foreign Direct Investment in 2018

Financial flows to and from advanced economies have been much weaker since the global financial crisis (Figure 1.2.1). In particular, portfolio debt flows have weakened, reflecting a combination of factors: large government debt asset purchases by central banks, increased fragmentation in euro area debt markets, and much-reduced accumulation of reserves by emerging market and developing economies. Other investment flows have also fallen sharply as global banks reduced the size of their balance sheets after dramatic expansion of their cross-border activities during the precrisis boom. But, until the end of 2017, foreign direct investment (FDI) flows had actually increased slightly relative to the precrisis period, averaging more than 3 percent of GDP annually (more than $1.8 trillion).

The data for 2018 show a different picture: FDI abroad by advanced economies, as well as inward FDI, came to a virtual standstill. This box looks at the factors behind this large decline as well as the implications for emerging market and developing economies. Does this decline in FDI point to increased fragmentation? This box argues that it does not and that most of the decline in FDI reflects purely financial operations by large multinational corporations, including in response to changes in US tax law.

Specifically, a significant policy development affecting FDI in 2018 was the 2017 US Tax Cuts and Jobs Act, which generally eliminated taxes on repatriated earnings by US multinationals.[1] In response to the law, US multinational corporations repatriated accumulated prior earnings of their foreign affiliates. During 2011–17 these multinationals, on average, reinvested in their overseas affiliates about $300 billion a year in earnings on FDI (about two-thirds of their total overseas earnings), but in 2018 they repatriated $230 billion. In other words, the dividends paid to parent companies by overseas affiliates exceeded these affiliates' earnings by $230 billion (Figure 1.2.2, panel 1, blue bars). This repatriated amount exceeded new FDI abroad and, hence, total FDI abroad by US corporations was negative in 2018 (Figure 1.2.2, panel 1, black line).

Figure 1.2.1. Advanced Economies: Financial Flows
(Percent of GDP)



Source: IMF staff calculations.

Where did this repatriation of earnings originate? As documented by the US Bureau of Economic Analysis and as discussed in Setser (2019), it originated primarily in a few financial centers, with dividends paid out of Bermuda, the Netherlands, and Ireland accounting for about $500 billion—almost three times more than the income reported by US affiliates in these locations. The evidence also suggests that the repatriated assets were invested primarily from overseas in US financial instruments (Smolyansky, Suarez, and Tabova 2019). Hence, the repatriation of earnings would reduce FDI abroad and, correspondingly, reduce claims of nonresidents

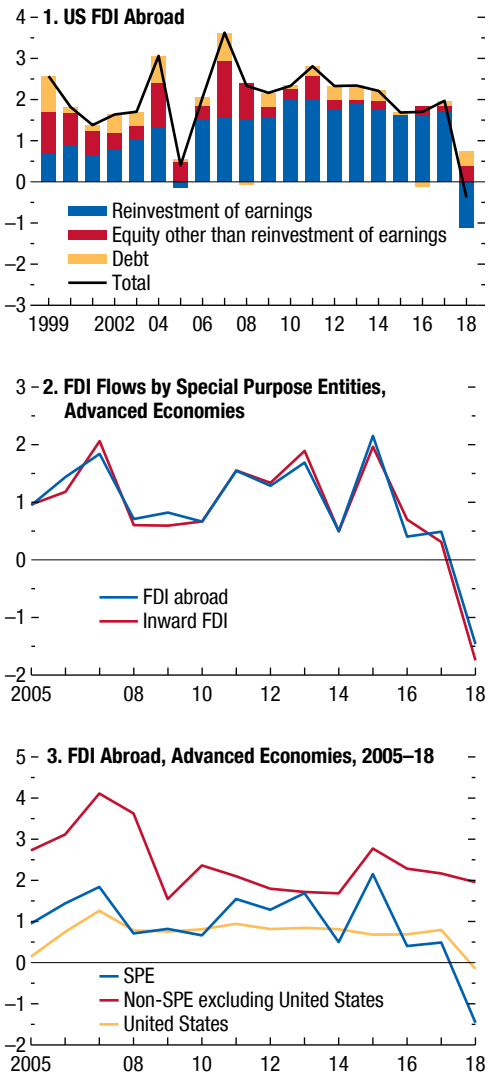
The author of this box is Gian Maria Milesi-Ferretti.

[1]Earnings by foreign affiliates can be repatriated to the parent company in the form of dividends or reinvested in the foreign affiliate. Both types of earnings are reflected as primary income in the current account, and reinvested earnings are counted as new FDI abroad (a financial outflow). Under the previous tax system, US companies would typically retain most of their earnings abroad.

Box 1.2 *(continued)*

Figure 1.2.2. Foreign Direct Investment Flows

(Percent of GDP)



Sources: Organisation for Economic Co-operation and Development; US Bureau of Economic Analysis; and IMF staff calculations.
Note: FDI = foreign direct investment; SPE = special purpose entity.

on the US economy (for instance, in the form of portfolio investment in debt securities), given that overseas affiliates of US multinational corporations are residents of the country where they are established.

But the decline in US FDI abroad by itself explains only part of the $1.5 trillion reduction in advanced economies' FDI abroad between 2017 and 2018. The remainder comes mostly from the euro area, in particular from Luxembourg and the Netherlands, where FDI abroad fell from $340 billion in 2017 to –$730 billion in 2018. In these countries, the lion's share of FDI reflects financial operations of special purpose entities. These multinational corporation affiliates are pass-through entities with little or no employment or value added, whose financial balance sheets are composed primarily of cross-border assets and liabilities. They are established to (1) access capital markets or sophisticated financial services, (2) isolate owner(s) from financial risk, (3) reduce regulatory and tax burdens, or (4) safeguard the confidentiality of their transactions and owner(s).[2]

Statistics published by the Organisation for Economic Co-operation and Development suggest that FDI abroad by advanced economy special purpose entities—mostly domiciled in Luxembourg and the Netherlands—declined from $240 billion in 2017 to –$740 billion in 2018 and hence accounts for more than 90 percent of the decline in FDI flows. Panel 2 of Figure 1.2.2 shows the pattern of special purpose entities' investment in advanced economies since 2005, highlighting the large decline in 2018 as well as the symmetry between the behavior of assets and liabilities.[3] The decline in FDI positions by special purpose entities is also the main factor explaining the sharp reduction in inward FDI for advanced economies highlighted in panel 2 of Figure 1.2.1. Panel 3 of Figure 1.2.2 highlights the contributions of the United States and of special purpose entities to the decline in advanced economies' FDI abroad.

[2]See IMF (2018) for a discussion of the nature of special purpose entities and the recording of their activities in the balance of payments.

[3]Not all countries report FDI transactions and holdings by special purpose entities separately; hence, the estimates in the figure understate to some extent their role.

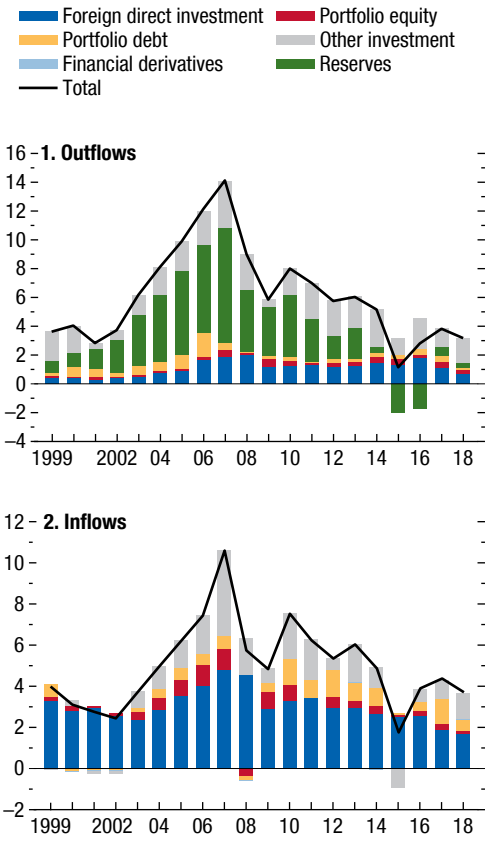
Box 1.2 *(continued)*

As noted in DNB (2019) and BCL (2019), these transactions reflect mostly operations by US-based multinationals seeking to simplify their international group structure by liquidating intermediate holdings, also in relation to the US tax reform of 2017. Similarly, SNB (2019) notes that the US tax reform led foreign-controlled finance and holding companies domiciled in Switzerland to reduce their balance sheets. On the liability side, inward FDI was negative: nonresident parent companies withdrew equity capital from companies in Switzerland. Other factors are also likely to have been at play, including ongoing broader tax reform initiatives, such as the Base Erosion and Profit Shifting initiative and the European Union's Anti-Tax Avoidance Directives 1 and 2.

Figure 1.2.3 depicts the pattern of capital flows to and from the largest emerging market economies. Inflows in 2018 were weaker than in 2017, but FDI inflows fell only slightly in relation to GDP, and this decline is entirely accounted for by another large reduction in FDI positions by special purpose entities in Hungary. The picture for financial outflows also shows some decline in 2018, including in FDI. The largest component of this decline is, again, the reduction in FDI by special purpose entities in Hungary, coupled with some reduction in FDI abroad by China, which is the largest overseas investor among emerging market economies. On net, emerging market economies remain FDI destinations, and their FDI liabilities exceed their assets.

In sum, the sharp decline in global FDI flows in 2018 seems to be explained almost entirely by multinational corporations' financial operations, with no meaningful aggregate impact on emerging market economies. These developments further underscore how FDI transactions and positions recorded in the balance of payments are often unrelated to greenfield investment or mergers and acquisitions, but rather reflect tax and regulatory optimization strategies by large multinational corporations (see, for instance, Lane and Milesi-Ferretti 2018 and Damgaard and Elkjaer 2017). Efforts under way to enhance data collection on the activity of special purpose entities should help clarify the nature of FDI flows and positions.

Figure 1.2.3. Emerging Markets: Financial Flows
(Percent of GDP)



Source: IMF staff calculations.

Box 1.3. Global Growth Forecast: Assumptions on Policies, Financial Conditions, and Commodity Prices

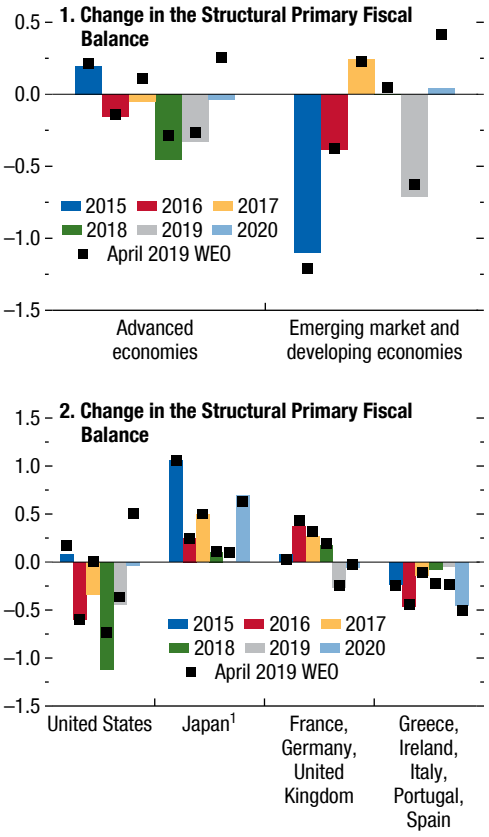
The global forecast rests on the following key assumptions on policies, financial conditions, and commodity prices:

- *Tariffs*: The tariffs imposed and announced by the United States as of August 2019 and retaliatory measures by trading partners are factored into the baseline forecast. For US actions, besides tariffs on solar panels, washing machines, aluminum, and steel announced in the first half of 2018, these include a 25 percent tariff on $50 billion in imports from China (July and August 2018), rising to 30 percent in October 2019; tariffs on an additional $200 billion in imports from China (September 2018, at 10 percent until May 2019, 25 percent from May through September 2019, and 30 percent thereafter); and the August 2019 announcement of a further 10 percent tariff on the remaining $325 billion of imports from China (subsequently increased to 15 percent for a subset of the list beginning in September 2019 and the remainder beginning in December 2019). China's retaliation included a 25 percent tariff on $50 billion of imports from the United States (July and August 2018); tariffs of 5–10 percent on $60 billion of imports from the United States (September 2018); and additional tariffs of 5–10 percent on $75 billion of imports from the United States (effective September and December 2019). Following the May and August 2019 announcements, the average US tariff on imports from China will rise to just over 24 percent by December 2019 (compared with about 12¼ percent assumed in the April 2019 *World Economic Outlook* (WEO)), while the average Chinese tariff on imports from the United States will increase to about 26 percent (compared with about 16½ percent assumed in the April 2019 WEO).
- *Fiscal policy*: Fiscal policy in 2019 is projected to be expansionary both in advanced economies (Canada, Germany, Hong Kong SAR, Korea, Spain, United States) and emerging market economies (China, Turkey). It is assumed to be neutral across advanced economies in 2020—as opposed to contractionary as assumed in the April 2019 WEO—given that the unwinding of the US tax stimulus will be more than offset by spending increases in a new budget deal. It is expected to be contractionary in emerging market economies, given that stimulus in China is assumed to unwind to some extent (Figure 1.3.1).
- *Monetary policy*: Compared with the April 2019 WEO, monetary policy of major central banks is assumed to be more accommodative over the forecast horizon. The US federal funds rate is expected to be in the 1.75–2 percent range through 2023, rising to 2–2.25 percent in 2024. Policy rates are assumed to remain below zero in the euro area and Japan through 2024.
- *Commodity prices*: Based on oil futures contracts, average oil prices are projected at $61.8 in 2019, declining to $57.9 in 2020 (compared with $59.16 and $59.02, respectively, in the April 2019 WEO). Oil prices are expected to decline to about $55 a barrel by 2023 (lower than in the April 2019 WEO forecast), consistent with subdued medium-term demand prospects (Figure 1.3.2). Metal prices are expected to increase by 4.3 percent year over year in 2019, before declining by 6.2 percent in 2020 (compared with a decrease of 6 percent and a further decline of 0.8 percent in the April 2019 WEO assumptions). Price forecasts of most major agricultural commodities have been revised down for 2019. Food prices are projected to decline by 3.4 percent year over year in 2019 before increasing by 2.8 percent in 2020 (compared with the projected decrease of 2.6 percent and increase of 1.7 percent in the April 2019 WEO).

Box 1.3 *(continued)*

Figure 1.3.1. Forecast Assumptions: Fiscal Indicators

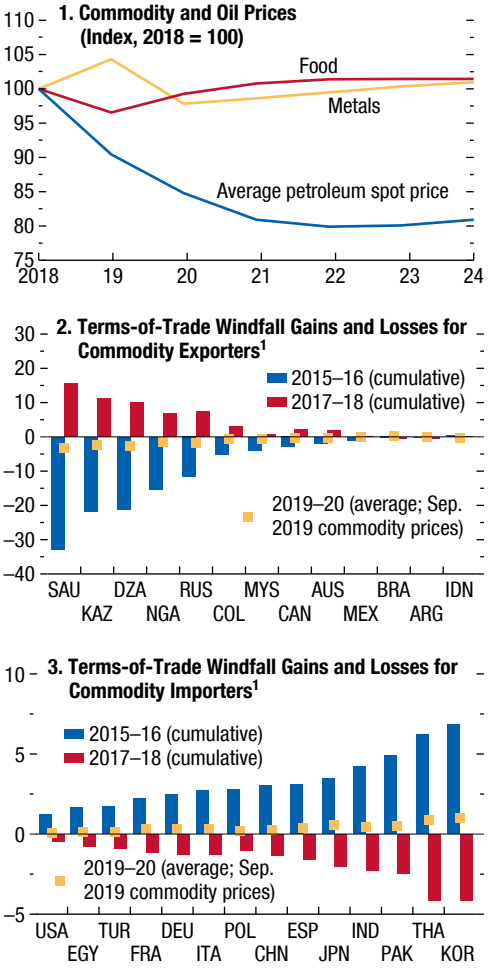
(Percent of GDP)



Source: IMF staff estimates.
Note: WEO = *World Economic Outlook*.
[1]Japan's latest figures reflect comprehensive methodological revisions adopted in December 2016.

Figure 1.3.2. Commodity Price Assumptions and Terms-of-Trade Windfall Gains and Losses

(Percent of GDP, unless noted otherwise)



Sources: IMF, Primary Commodity Price System; and IMF staff estimates.
Note: Data labels use International Organization for Standardization (ISO) country codes.
[1]Gains (losses) for 2019–20 are simple averages of annual incremental gains (losses) for 2019 and 2020. The windfall is an estimate of the change in disposable income arising from commodity price changes. The windfall gain in year t for a country exporting x US dollars of commodity A and importing m US dollars of commodity B in year $t-1$ is defined as $(\Delta p_t^A x_{t-1} - \Delta p_t^B m_{t-1}) / Y_{t-1}$, in which Δp_t^A and Δp_t^B are the percentage changes in the prices of A and B between year $t-1$ and year t, and Y is GDP in year $t-1$ in US dollars. See also Gruss (2014).

Box 1.4. The Plucking Theory of the Business Cycle

According to conventional business cycle theory, the economy fluctuates symmetrically around a certain level of potential output. Consistent with this view, estimates of potential output are generally obtained by fitting a smooth trend through output, removing business cycle fluctuations. These techniques imply that several advanced economies are now operating close to or above potential, facing inflation risks. Nonetheless, inflation has been remarkably subdued in recent years, raising questions about the state of the business cycle and suggesting that potential output could be higher than currently estimated.

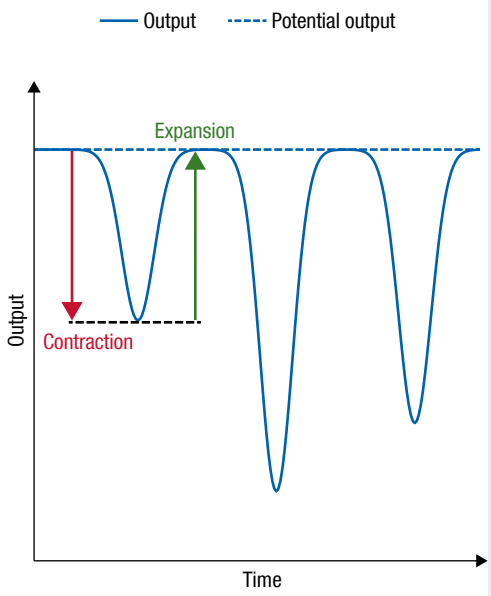
The sluggish behavior of inflation has renewed interest in alternative interpretations of the business cycle. One prominent hypothesis is that economic fluctuations may behave in line with the "plucking theory" originally proposed by Friedman (1964, 1993). According to this view, the economy suffers occasional contractions that reduce the level of output below potential, as illustrated in Figure 1.4.1. In Friedman's words, "output is viewed as bumping along the ceiling of maximum feasible output except that every now and then it is plucked down by a cyclical contraction."

Dupraz, Nakamura, and Steinsson (2019) shows that business cycle dynamics consistent with the plucking theory can occur when wages are sticky downward but can freely adjust upward. In this case, negative shocks pluck the economy below potential, while positive shocks are absorbed through higher prices. Accordingly, potential output should be estimated not by smoothing out economic fluctuations, but by interpolating historical peaks of the business cycle. Therefore, current estimation techniques may significantly underestimate potential output and provide premature alarms about the risk of overheating.

Conventional estimates of potential output can be too conservative, even if wages are also sticky upward, provided downward nominal rigidities are more severe. Building on this idea, Abbritti and Fahr (2013) provides a model in which asymmetric wage rigidities generate economic contractions below potential that are more severe than economic expansions above it. Aiyar and Voigts (2019) points out that this leads, on average, to negative output gaps and that, when conventional filtering techniques are applied to the model-generated data, they underestimate potential output by generating output gaps centered around zero.

The author of this box is Damiano Sandri.

Figure 1.4.1. An Illustration of the Plucking Theory



Source: IMF staff.

To test the validity of the plucking theory, the business cycle can be analyzed for particular asymmetries. As shown in Figure 1.4.1, if output is temporarily plucked down by occasional contractions, the severity of an economic downturn should predict the strength of the subsequent economic expansion. By contrast, the amplitude of economic expansions should have no bearing on the depth of subsequent contractions.

Dupraz, Nakamura, and Steinsson (2019) performs a similar test looking at the behavior of the unemployment rate in the United States.[1] Consistent with the plucking theory, the study finds that increases in the unemployment rate during economic downturns tend to be followed by reductions of a similar size (Figure 1.4.2, panel 1). Declines in unemployment during economic expansions are, however, not

[1]The method requires identifying peaks and troughs in seasonally adjusted monthly unemployment rates. A point in the unemployment series, u_t, qualifies as a trough if it satisfies the following criterion. Take the first month in which the unemployment rate increases by 1.5 percent above u_t. If up to that month the unemployment rate never falls below u_t, then u_t is an unemployment trough. A symmetric procedure is used to identify unemployment peaks.

Box 1.4 *(continued)*

correlated with subsequent unemployment increases (Figure 1.4.2, panel 2).

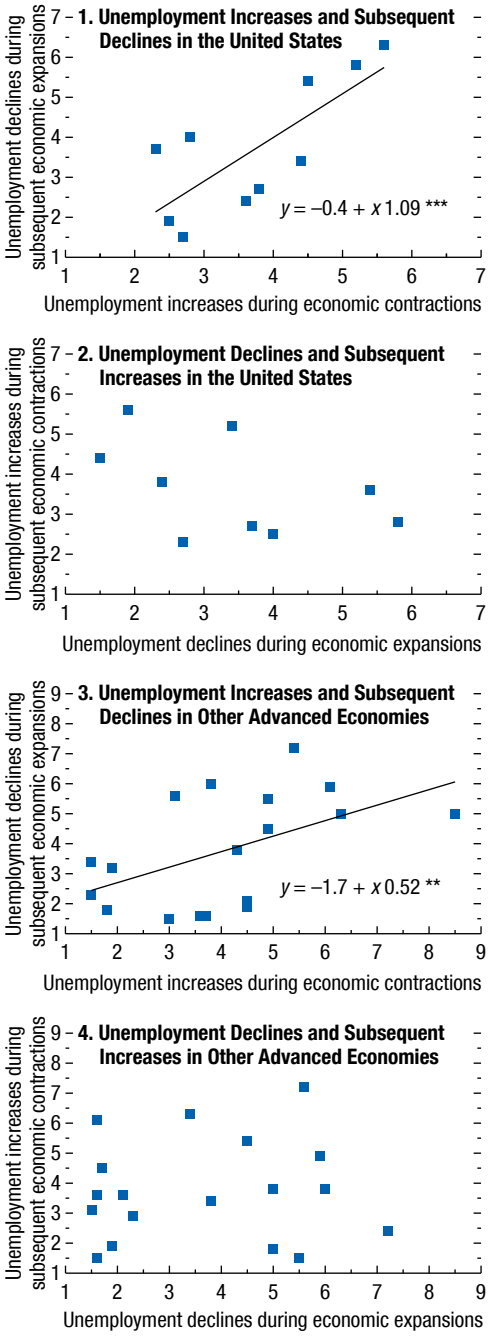
How well does the plucking theory fit the data for other economies? Unemployment dynamics in other Group of Twenty advanced economies reveal similar behavior. Panel 3 of Figure 1.4.2 displays the pooled data.[2] It shows that increases in unemployment during economic contractions are followed by proportional unemployment declines during subsequent recoveries. However, the relationship is marginally weaker than in the United States, and the regression coefficient, equal to 0.52, indicates that increases in the unemployment rate are only partially reversed during subsequent economic expansions, reflecting a trend increase in structural unemployment. Consistent with the plucking theory, there is no significant relationship between unemployment declines and subsequent increases (Figure 1.4.2, panel 4).

In sum, unemployment dynamics in major advanced economies display patterns that appear consistent with theories that generate asymmetric business cycle fluctuations; while increases in unemployment are at least partially reversed, declines in unemployment are not. More research on the robustness of these asymmetric dynamics and the mechanisms behind them is warranted.

The implications of the plucking theory for macroeconomic policy are not trivial. For example, the insight that conventional filtering techniques underestimate potential output could be used to argue that countries have a stronger structurally adjusted fiscal position (and a smaller fiscal consolidation need) than generally assessed. However, the plucking theory also implies that economies operate below potential, on average. Therefore, a proper assessment of fiscal sustainability should not be based on a measure of potential output consistent with the plucking theory, but on the lower expected output path. Regarding monetary policy, the plucking theory implies a non-linear Philips curve, with prices being slow to decline in a downturn because of downward nominal rigidities. Monetary policy may therefore want to rely more on measures of economic slack to calibrate the appropriate level of stimulus, withdrawing accommodation only when inflationary pressures are clearly materializing.

[2]Data is pooled across the other advanced economies, given that they display much fewer observations for the analysis than in the case of the United States. This is for two reasons. First, the unemployment rate series in the United States starts in the late 1940s, while data for the other countries tend to be available beginning in the 1970s. Second, the US unemployment rate involves much more regular swings, while it follows more slow-moving trends in other countries.

Figure 1.4.2. Unemployment Dynamics in Advanced Economies
(Percentage points)



Sources: Haver Analytics; and IMF staff calculations.
Note: *** $p < 0.01$, ** $p < 0.05$.

Special Feature: Commodity Market Developments and Forecasts

Energy prices—especially for coal and natural gas—have seen a broad-based decline since the release of the April 2019 World Economic Outlook *(WEO). After a temporary rebound in April led by positive market momentum and supply cuts, oil prices have retrenched following record-high US production growth and weaker economic growth prospects, especially in emerging markets. In response to declining oil prices, Organization for the Petroleum Exporting Countries (OPEC) and non-OPEC oil exporters (including Russia) agreed to extend their production cuts until March 2020. While supply concerns caused iron ore and nickel prices to rally, most base metal prices declined following continued trade tensions and fears of a global economic slowdown. Agricultural prices decreased slightly as an increase in meat prices caused by disease outbreaks was more than offset by price declines of other foods. This special feature includes an in-depth analysis of precious metals.*

The IMF's primary commodity price index declined by 5.5 percent between February 2019 and August 2019, the reference periods for the April 2019 and current WEO, respectively (Figure 1.SF.1, panel 1). Energy prices drove that decline, falling by 13.1 percent; food prices decreased by 1.2 percent, and base metal prices decreased by 0.9 percent, driven by continued trade tensions and fears of a global economic slowdown only partially offset by the supply-driven price rally in the iron ore and nickel markets. Oil prices rebounded sharply at the beginning of the year, surpassing $71 a barrel in April,[1] driven by positive momentum in financial markets, supply cuts, and declining US crude oil stockpiles. Since then, however, oil prices have retrenched substantially due to record-high production growth in the United States and subdued global economic growth (especially in emerging markets). In response to the price decline, OPEC and non-OPEC oil exporters (including Russia) in July agreed to extend their December 2018 production cuts to the end of the first quarter of 2020. Coal and natural gas prices decreased amid a decline in industrial activity and power generation across regions.

The authors of this special feature are Christian Bogmans, Lama Kiyasseh, Akito Matsumoto, Andrea Pescatori (team leader), and Julia Xueliang Wan, with research assistance from Lama Kiyasseh, Claire Mengyi Li, and Julia Xueliang Wang.

[1]Oil price in this document refers to the IMF average petroleum spot price, which is based on UK Brent, Dubai Fateh, and West Texas Intermediate, equally weighted, unless specified otherwise.

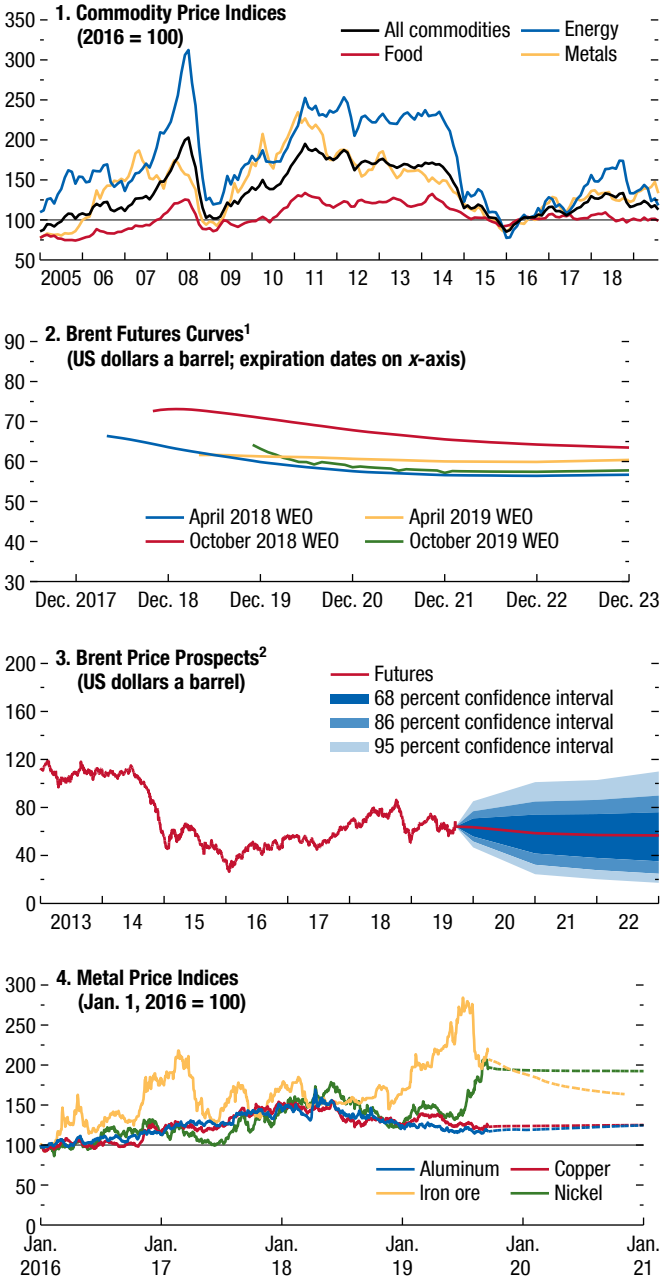
Oil Prices in a Narrow Range amid Energy Prices' Decline and Heightened Uncertainty

Oil prices have been relatively stable, trading within a narrow range this year despite heightened geopolitical uncertainty. In April, they surpassed $71, their highest for 2019, and hit their recent bottom of $55 in August before rebounding back above $60 in September. Initially, prices were pushed higher by the recovery of financial conditions as well as outages in Venezuela and US tensions with Iran. But in late spring a weaker global economy raised concern about the strength of global oil demand, which was amplified by a buildup of US crude oil stockpiles.

Supply outages and geopolitical tensions, however, masked the oil demand weakness and, so, temporarily supported prices. Venezuela suffered production loss after a power outage in March, and Russian oil exports were partially halted in May because of pipeline contamination. Although these outages were temporary, they helped balance the market, resulting in lower US inventories in early spring. In addition, in May, previously issued US waivers to eight major importers of Iranian crude oil were not extended. Moreover, geopolitical tensions in the Middle East rose because of several attacks on Saudi oil infrastructures and oil tankers near the Strait of Hormuz; given that about 20 percent of global crude oil trade passes through the Strait, the fear of a conflict in that area drives up precautionary oil demand and insurance costs. On September 14, an attack on two key oil facilities in Saudi Arabia knocked out 5.7 million barrels per day of production for a few days (that is, about half of Saudi Arabia's total production, or 5 percent of global oil production), raising initially the fear of disruptions in the physical crude oil market and further escalating tensions. Further support for oil prices came from OPEC and non-OPEC oil exporters (including Russia), which, on July 1, 2019, agreed to extend their crude oil production cuts beyond their initial six-month period for an additional nine months until March 2020, by 0.8 million barrels a day (mbd) and 0.4 mbd, respectively.

On the demand side, weaker global economic fundamentals have contributed to lower prices.

Figure 1.SF.1. Commodity Market Developments



Sources: Bloomberg Finance L.P.; IMF, Primary Commodity Price System; Thomson Reuters Datastream; and IMF staff estimates.
Note: WEO = *World Economic Outlook*.
[1]WEO futures prices are baseline assumptions for each WEO and are derived from futures prices. October 2019 WEO prices are based on September 17, 2019, closing.
[2]Derived from prices of futures options on September 17, 2019.

The IMF's October downward revision of the global growth forecast—by 0.3 percent to 3.0 percent and by 0.2 percent to 3.4 percent for 2019 and 2020, respectively, from its April forecast—illustrates a slowdown in global activity, driven in particular by emerging markets and the euro area. In line with this slowdown, the International Energy Agency revised its oil demand growth forecast as of September for this year down to 1.1 mbd from 1.4 mbd in February.

In the natural gas market, spot prices have been declining in recent months amid increased production and higher stock levels due to lower global power demand. Coal prices have decreased in tandem because of declining power generation. Further downward pressure followed last year's record retirement of US coal-fired power capacity. Its replacement by cheaper gas-fired power plants, as part of a global trend, has lowered the share of coal in US power generation. Despite the ongoing decarbonization of the power sector in the United States and the rest of the world, however, global greenhouse gas emissions increased again in 2018 following strong global growth (see Box 1.SF.1).

As of late September 2019, oil futures contracts indicate that Brent prices will gradually decline to $55 over the next five years (Figure 1.SF.1, panel 2). Baseline assumptions, also based on futures prices, suggest average annual prices of $61.8 a barrel in 2019—a decrease of 9.6 percent from the 2018 average—and $57.9 a barrel in 2020 for the IMF's average petroleum spot prices. Despite the weaker demand outlook, risks are tilted to the upside in the near term but balanced in the medium term (Figure 1.SF.1, panel 3). Upside risks to prices in the short term include ongoing geopolitical events in the Middle East disrupting oil supply and contributing to rising insurance and shipping costs of oil cargoes. Downside risks include higher US production and exports thanks to new Permian pipelines coming online, noncompliance among OPEC and non-OPEC members, and a downturn in petrochemical demand. Further, a rise in trade tensions and other risks to global growth could decelerate global activity and reduce oil demand in the medium term.

Metal Prices Mixed

Base metal prices declined slightly by 0.9 percent between February 2019 and August 2019 as continued trade policy uncertainty and fears of a global economic slowdown—especially in China—were only partially offset by supply-driven price increases in iron ore

and nickel. Precious metal prices rose, reflecting in part increased expectations of monetary easing in the United States and a flight to safety amid trade tensions.

Iron ore prices increased 6.7 percent between February 2019 and August 2019. Widespread disruptions—including the Vale dam collapse in Brazil and tropical cyclone Veronica in Australia—coupled with record-high steel output in China pushed iron ore prices to five-year highs during the first half of 2019. However, the normalization of previously disrupted operations and escalating trade tensions between the United States and China triggered a sharp correction in August, partially offsetting the gains since the beginning of the year. The price of nickel, a key input for stainless steel and batteries in electric vehicles, gained 24.1 percent between February 2019 and August 2019 on supply concerns as Indonesia, the world's largest nickel producer, introduced a complete ban on exports of raw nickel ore beginning in January 2020.

Other base metal prices suffered from a weaker global economy, however. Copper prices declined 9.4 percent on global trade uncertainty despite recent production cuts in the Republic of Congo, a labor dispute in Chuquicamata (Chile), and increasing extraction costs in Indonesia's Grasberg mine. The price of aluminum fell by 6.6 percent because of overcapacity in China and weakening demand from the vehicle market there. The price of zinc, which is used mainly to galvanize steel, decreased 16 percent from February to August 2019 as steel demand prospects deteriorated. The price of cobalt continued its downward trend and declined by 6.1 percent, reflecting a supply glut after production was ramped up in the Democratic Republic of the Congo.

The IMF annual base metals price index is projected to increase by 4.3 percent in 2019 (relative to its average in 2018) and decrease by 6.2 percent in 2020. Major downside risks to the outlook include prolonged trade negotiations and a further slowdown of industrial activity globally. Upside risks are supply disruptions and more stringent environmental regulations in major metal producing countries.

Meat Prices Higher Following Animal Disease Outbreaks

The IMF's food and beverage price index has decreased slightly, by 1.3 percent, as price declines of cereals, vegetables, vegetable oils, and sugar overwhelmed a large, 13.2 percent increase in the meat index.

Following the rapid spread of African swine fever across China (the world's largest producer and consumer of pork) and other parts of Southeast Asia, prices of pork jumped by 42.8 percent. News of disease outbreaks and animal culling have raised uncertainty regarding Chinese pork supplies in the near future. The outbreak has also led to tighter supplies and higher prices in Europe and the United States as domestic producers increased exports to China. In the wake of the crisis, prices of some other animal proteins surged too, with beef, for example, rising by 8.3 percent.

Record rainfall in the Midwest of the United States delayed corn and soybean-planting in May and June, introducing a high weather premium into grain markets. This premium then left the markets between late July and end of August, however, as US corn acreage and yields surpassed expectations. Strong global production also weighed on corn prices, which ultimately decreased by 3.6 percent between February and August. Soybeans experienced a net loss of 5.9 percent as trade tensions and the African swine fever outbreak in China continued to depress animal feed demand.

Cocoa prices decreased by 2.7 percent following favorable weather conditions in west Africa during July and August. Palm oil prices declined, by 2.6 percent, given that inventories are expected to increase and global demand in 2019–20 may shrink for the first time in two decades, following environmental concerns in some importing countries and rising competition from other vegetable oils.

Food prices are projected to decrease by 3.4 percent a year in 2019, mainly because of higher prices in the first half of 2018, and then increase by 2.8 percent in 2020. Weather conditions have been unusual in recent months and additional weather disruptions remain an upside risk to the forecast. On August 9, 2019, the US National Oceanic and Atmospheric Administration announced that El Niño climate conditions that started last September are now officially over. A resolution of the trade conflict between the United States—the world's largest food exporter—and China remains the largest source of upside potential for prices.

Precious Metals

What determines fluctuations in the prices of precious metals? What are they used for primarily? Are gold and other precious metals the ultimate haven and hedging instruments against the loss of monetary

discipline, or is their role as a store of value overstated? This section tries to answer these questions by offering a brief historical overview, then investigating the basic characteristics of precious metals, including the geographical distribution of their production, and, finally, through an econometric analysis to test some possible answers to these questions.

Coinage, Money, and Precious Metals: A Brief Historical Overview

Since ancient times, luster, ductility, rarity, and remarkable chemical stability have conferred high value on precious metals (that is, gold and silver and, later, platinum and palladium, which share similar physical properties).[2] The first use of gold and silver for ornaments, rituals, and to signal social status dates to prehistoric times and was widespread across cultures and civilizations (Green 2007). The combination of these unique characteristics made precious metals excellent *stores of value* and probably was crucial in fostering the introduction of *coins*—a fundamental innovation in the history of money and a transition in the development of civilization itself (Mundell 2002). Coinage, in turn, inextricably connected precious metals to money and currencies for centuries.[3]

Thanks also to their density, gold and silver coins were strongly favored as medium of exchange relative to other metals (such as copper), especially for (sizable) international transactions. As a result, some gold and silver coins minted by reliable entities gained wide international acceptance (for example, gold florins and ducats in the Middle Ages and silver pesos in modern times)—facilitating and stimulating trade across kingdoms and civilizations (Vilar 1976).[4]

Mixed metallic standards, in which government or central bank notes are convertible into metal coins at a fixed price, were a natural evolution to overcome some of the obvious limitations of pure coin standards (Officer 2008). After centuries of widespread bimetallism, in which the gold–silver ratio is given by the mint price, in the third quarter of the 19th century, following the lead of Britain, monometallic gold standards prevailed across the major economic powers of that time—possibly stimulating global trade.[5] As silver was demonetized across the world, silver prices declined substantially, especially after the 1873 Coinage Act (also known as the "Crime of '73"; Friedman 1990). Hence, after thousands of years of relative stability, the silver–gold price ratio became volatile and shot up from 16:1 in the mid-1800s to almost 100:1 in subsequent decades (Figure 1.SF.2, panel 2).[6]

The stability of gold purchasing power was quite remarkable—with the exception of the world wars and the Great Depression—until the suspension of dollar-gold convertibility in 1971, which two years

[2]Gold and silver belong to the seven metals of antiquity (with copper, tin, lead, iron, and mercury). Today 86 metals are known. The first European reference to platinum appears in 1557 in the writings of the Italian humanist Giulio Cesare della Scala. Only at the end of 18th century, however, did platinum gain appreciation as a precious metal. Palladium was discovered by William Hyde Wollaston in 1802 (curiously named after the asteroid 2 Pallas) and has been used as a precious metal in jewelry since 1939 as an alternative to platinum in alloys called "white gold." (The naturally white color of palladium does not require rhodium plating.) Other precious metals, in addition to those analyzed, include the platinum group metals: ruthenium, rhodium, osmium, and iridium, which are, however, not widely traded.

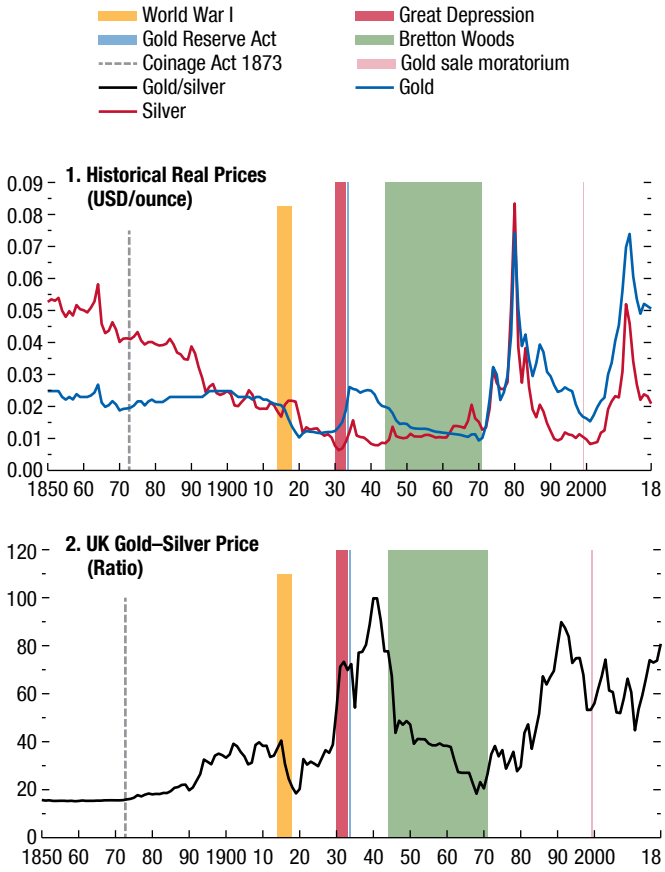
[3]The introduction of coinage is still shrouded in mystery, but it seems likely that the first coin (the *electrum*, a mix of gold and silver) was minted in Lydia around 600 BCE, and it rapidly spread throughout the Mediterranean area. The Lydian electrum coins were overvalued, yielding profit or seigniorage to the issuer. This overvaluation indicates that the issuing state must have been strong enough to enforce a monopoly of coinage, inhibiting entry by means of drastic prohibitions (Mundell 2002).

[4]By 500 BCE, after Darius conquered Lydia, Persia embraced coinage (opting for a bimetallic monetary standard) and struck massive quantities of Persian *sigloi* (a silver coin), which became the international currency of its time, along with two other Anatolian coins (that is, the gold coins of Lampsacus and the electrum coins of Cyzicus) (Mundell 2002). After the Roman *aureum*, in the middle ages, the gold Florentine florins and Venetian ducats became accepted across Europe, while the silver peso (also known as the "piece of eight"), minted in the Spanish Empire, was the international currency of modern times, the antecedent of the US dollar, and was legal tender in the United States until the Coinage Act of 1857 (Vilar 1976).

[5]Some studies have found that the rise of the classical gold standard, between 1870 and 1913, could account for 20 percent of the increase in global trade between 1880 and 1910—strongly supporting the idea that commodity money regime coordination and currency unions were an important catalyst for 19th century globalization (Lopez-Cordova and Meissner 2003).

[6]Silver was demonetized first in the United Kingdom in 1819, later during the 1870s in Germany, France, the Scandinavian Union, the Netherlands, Austria, Russia, and in the Latin Monetary Union (Belgium, Italy, and Switzerland), and in the United States with the 1973 Coinage Act. By the late 1870s, China and India were the only major countries effectively on a silver standard.

Figure 1.SF.2. Gold and Silver Prices



Sources: Measuringworth.com; Minneapolis Federal Reserve; and IMF staff calculations.
Note: USD = US dollars.

later led to the collapse of the system, inaugurating a new era of fluctuating gold prices and indefinitely severing the link between precious metals and currencies (Figure 1.SF.2).

Even today in a world of fiat currencies, the legacy of gold-currency convertibility is visible as official holdings of gold—mostly held by central banks and international institutions such as the IMF and the Bank for International Settlements—still represent a large share of the total stock of the precious metals of official reserves and, sometimes, even of a country's public debt (Table 1.SF.1).

The next section investigates the current role of precious metals in the global economy, looking at their production volumes and values (sizable for various countries) and their usage.

Basic Facts about Precious Metals

The Production of Precious Metals and Its Geographical Distribution

The production of precious metals, especially platinum and palladium, is concentrated in a few places. The global flow of production for gold was about 3,260 metric tons in 2018, equivalent to about $134 billion. The top five producers (China, Australia, Russia, United States, Canada) make up more than 40 percent of production. The value of gold production is bigger than copper and dwarfs other precious metals. Global production of silver, palladium, and platinum was $13 billion, $9 billion, and $4 billion in 2018, respectively. Their production, however, is much more concentrated; for example, the two largest silver producers (Mexico and Peru) represent almost 40 percent of global production. Similarly, Russia and South Africa account for three-quarters of global palladium production, while South Africa alone accounts for more than two-thirds of global platinum production (Table 1.SF.2).

Taken as a group, total production and reserves of precious metals represent a nonnegligible share of GDP (exports) for various countries (Figure 1.SF.3), especially for medium and small low-income countries (for example, Burkina Faso, Ghana, Mali, Suriname). Fluctuations in prices may, thus, induce significant income and wealth effects on a wide variety of countries.

The mining of precious metals is relatively inelastic to prices, as a price boom in the mid-2000s showed (Erb and Harvey 2013). Precious metal production ratios exhibit no clear trend over a long period, and the gold–silver ratio was, surprisingly, barely affected by the American silver production boom of the 16th and 17th centuries (Table 1.SF.3).[7] In addition, silver–gold production and price ratios have shown no obvious relationship in the past decade, suggesting that the relative supply of precious metals has not been a significant source of price fluctuations.

The Use of Precious Metals

Demand for precious metals can be classified as follows: industrial, jewelry, and investment and net official purchases by central banks and

[7]Interestingly, while the production volume of precious metals has increased about 500 times since 1500, global GDP and population have increased 50 and 15 times, respectively (Malanima 2009). Over the same period, the purchasing power of gold and silver has not declined (Erb and Harvey 2013).

Table 1.SF.1. Official Gold Reserves

	Tons						Value ($ billions)	Percent of Reserves	Percent of Public Debt
	1970	1980	1990	2000	2010	2019		2019	
United States	9,839	8,221	8,146	8,137	8,133	8,133	332	75	2
Germany	3,537	2,960	2,960	3,469	3,407	3,368	137	70	6
International Monetary Fund	3,856	3,217	3,217	3,217	2,934	2,814	115	–	#N/A
Italy	2,565	2,074	2,074	2,452	2,452	2,452	100	66	4
France	3,139	2,546	2,546	3,025	2,435	2,436	99	61	4
Russian Federation	–	–	–	343	710	2,183	88	19	39
China	–	398	395	395	1,054	1,900	77	2	1
Switzerland	2,427	2,590	2,590	2,538	1,040	1,040	42	5	15
Japan	473	754	754	754	765	765	31	2	0
India	216	267	333	358	558	613	25	65	5
Netherlands	1,588	1,367	1,367	912	612	612	25	6	1
European Central Bank	–	–	–	747	501	505	21	28	#N/A
Taiwan Province of China	73	98	421	421	424	424	17	4	8
Portugal	802	689	492	607	383	383	16	60	5
Kazakhstan	–	–	–	56	67	367	15	56	40
Uzbekistan	–	–	–	–	–	355	14	53	136
Saudi Arabia	106	142	143	143	323	323	13	3	9
United Kingdom	1,198	586	589	563	310	310	13	8	1
Turkey	113	117	127	–	–	296	12	14	5
Lebanon	255	287	287	287	287	287	12	23	14

Sources: IMF, *International Financial Statistics*; World Gold Council; and IMF staff calculations.
Note: 2019 values are as of March.

Table 1.SF.2. Precious Metals Production, 2016–18

Gold	Value ($ billions)	Cumulative World Share (Percent)	Silver	Value ($ billions)	Cumulative World Share (Percent)
China	13.1	11	Mexico	3.1	21
Australia	9.3	18	Peru	2.3	37
Russia	8.5	26	China	1.7	48
Kazakhstan	8.4	32	Chile	0.7	53
United States	7.4	39	Russia	0.7	58
Ghana	7.4	45	Poland	0.7	63
Peru	6.2	50	Australia	0.7	67
Canada	6.2	55	Bolivia	0.7	72
Brazil	5.6	59	Kazakhstan	0.6	76
Papua New Guinea	4.7	63	Argentina	0.6	80
South Africa	4.5	67	United States	0.5	84
Mexico	4.2	71	Other Countries	2.4	100
Other Countries	35.6	100	World	14.8	
World	121.3				

Palladium	Value ($ billions)	Cumulative World Share (Percent)	Platinum	Value ($ billions)	Cumulative World Share (Percent)
Russia	2.2	39	South Africa	3.9	70
South Africa	2.1	75	Russia	0.7	82
Canada	0.5	83	Zimbabwe	0.4	89
United States	0.4	90	Canada	0.3	95
Zimbabwe	0.3	95	United States	0.1	97
Other Countries	0.3	100	Other Countries	0.2	100
World	5.8		World	5.6	

Sources: IMF, Primary Commodity Price System; United States Geological Survey; and IMF staff calculations.
Note: Three-year average (2016–18) of both prices and production.

Figure 1.SF.3. Macro Relevance of Precious Metals
(Percent)

Sources: IMF, Primary Commodity Price System; S&P Global Market Intelligence; Thomson Reuters Datastream; UN, COMTRADE; United States Geological Survey; World Bank, World Development Indicators; and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.

international organizations. More than half of newly mined gold is used in jewelry (Figure 1.SF.4). Silver, instead, has various industrial applications, which account for half of silver consumption, while only 25 percent of silver demand is for jewelry. Investment demand for gold and silver (in the form of coins and bars or holdings in exchange-traded funds) varies significantly as it is more sensitive to prices.[8] Industrial use is more important for platinum and, especially, palladium—which are used in catalytic converters by the car industry.

Official sector gold holdings are large, accounting for about 30 percent of the global stock of gold. Their sale can disrupt the market and therefore has been limited to 400 metric tons a year.[9] The declining role of gold in the balance sheets of central banks in advanced economies, however, has been more than offset by a recent surge in emerging market gold reserves (Table 1.SF.1). The next section will take a financial investment perspective on precious metals by looking at them as an asset class, analyzing their major price determinants, and paying attention to their safe haven and hedging properties during market turmoil and against high inflation.

Price Properties of Precious Metals

Precious metals can be considered an asset class of their own. Their returns show a high correlation among themselves, especially gold, silver, and platinum, consistent with their respective ranking in industrial use (Figure 1.SF.5). At monthly frequencies, gold and silver have the highest correlation, 0.72, while palladium and gold have the lowest, at 0.33. At lower frequencies, palladium prices are more related to industrial metals (such as copper) than to gold, but the highest correlation for palladium is still with its close substitute, platinum. Movements in global industrial production have, however, minor implications for precious metal prices, even for palladium and platinum (Table 1.SF.5).

The relationship between precious metals and inflation throughout history has changed with the monetary system in place. In historical metallic regimes, in

[8]The exchange-traded fund GLD holds 20 percent of total stock scattered in warehouses across the world. Scrap metal is another significant, price-sensitive source of supply, which for gold is almost half of mining production.

[9]The central bank moratorium on gold sales, in September 1999, led the price of gold to rise by 25 percent within a month. There have since been three further agreements, in 2004, 2009, and 2014, limiting the amount of gold that signatories can sell in any one year.

Table 1.SF.3. Relative Rarity
(Production ratios of volume)

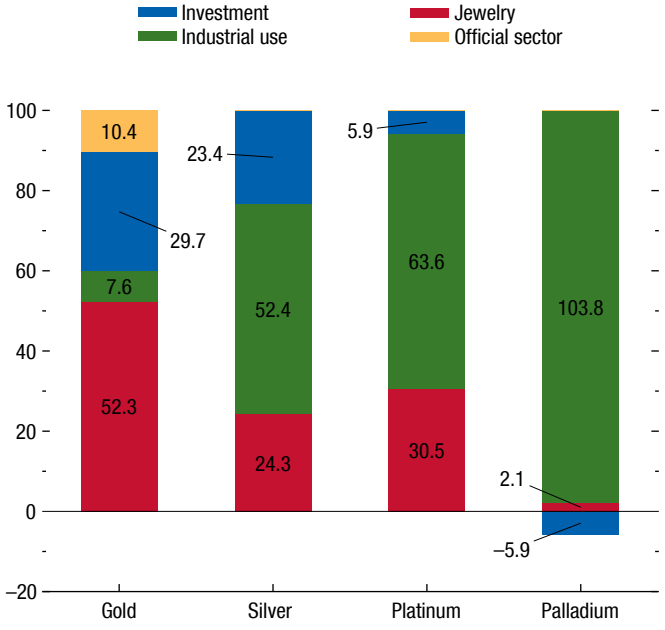
	American Silver Production Boom										
	Early 1500s	1500s	1600s	1700s	1800s	1900–10	1995–99	2000–04	2005–09	2010–14	2015–18
Silver (volume in metric tons)	47	233	373	570	2,223	5,655	16,260	19,280	21,120	24,920	26,775
Silver to Platinum							104	102	100	132	144
Silver to Palladium							119	105	104	126	124
Silver to Gold	8.1	32.7	40.8	30.0	11.9	10.2	7.0	7.6	8.8	9.1	8.5
Silver to Copper							0.0014	0.0014	0.0014	0.0015	0.0013
Gold–Silver Price Ratio	11.0	11.3	13.5	15.0	19.2	35.7	64.8	64.2	57.9	56.9	75.4

Sources: Broadberry and Gupta (2006); United States Geological Survey; Vilar (1976); and IMF staff calculations.
Note: Historical production ratios are century averages.

which a currency was pegged to metals, such as under the Bretton Woods system, an increase in price was associated with a decline in the real price of metals (Figure 1.SF.6). This result is, however, reversed in contemporary fiat currency regimes.

Bekaert and Wang (2010) proposes testing whether an asset is a good inflation hedge by simply regressing its nominal return on inflation, arguing that if the regression slope (inflation beta) is 1 then the asset is a good inflation hedge. Averages of precious metals' inflation betas calculated across a broad set of countries during 1978–2019[10] are below 1 at monthly frequencies but get close to 1 as the horizon increases, especially for gold and silver (Table 1.SF.4). However, the regression fit is usually modest, and betas vary substantially across countries (see Online Annex Table 1.SF.1), suggesting that precious metals, including gold and silver, are not a reliable and robust inflation hedge.[11] This result, however, is not that surprising, given that the volatility of precious metal prices increased substantially after the end of the Bretton Woods agreements, even for gold. It does, however, suggest that gold prices peaked in 1980 and 2012, two periods during which there was fear, justified or not, of a globally widespread wave of high inflation.[12] This observation would call

Figure 1.SF.4. Share of Total Demand
(Percent)



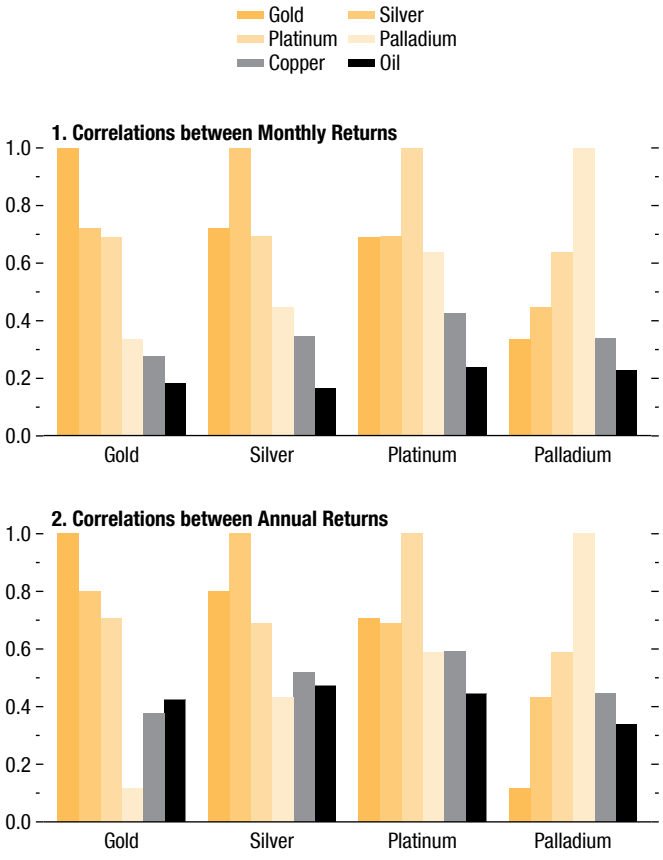
Sources: 2018 World Silver Survey; PGM Market Report; and World Gold Council.
Note: Investment includes coins, bars, and exchange traded funds' inventory changes; for silver, jewelry includes silverware; for platinum and palladium, industrial use includes autocatalysts; 2015–17 averages.

[10]Executive Order 6102, issued in 1933, prohibited hoarding of gold coins, gold bullion, and gold certificates in the continental United States. The limitation on gold private ownership in the United States was repealed in 1974, leading to a resumption of gold bullion trading in spot and futures markets in 1975.

[11]A similar conclusion is obtained when testing for the presence of a unit root in the real price of precious metals over a long time span. Most of the tests are inconclusive, suggesting that metal prices are not an obvious inflation hedge. In fact, even though long-term real returns are close to zero, fluctuations in the real price of precious metals can be very persistent, especially in local currency.

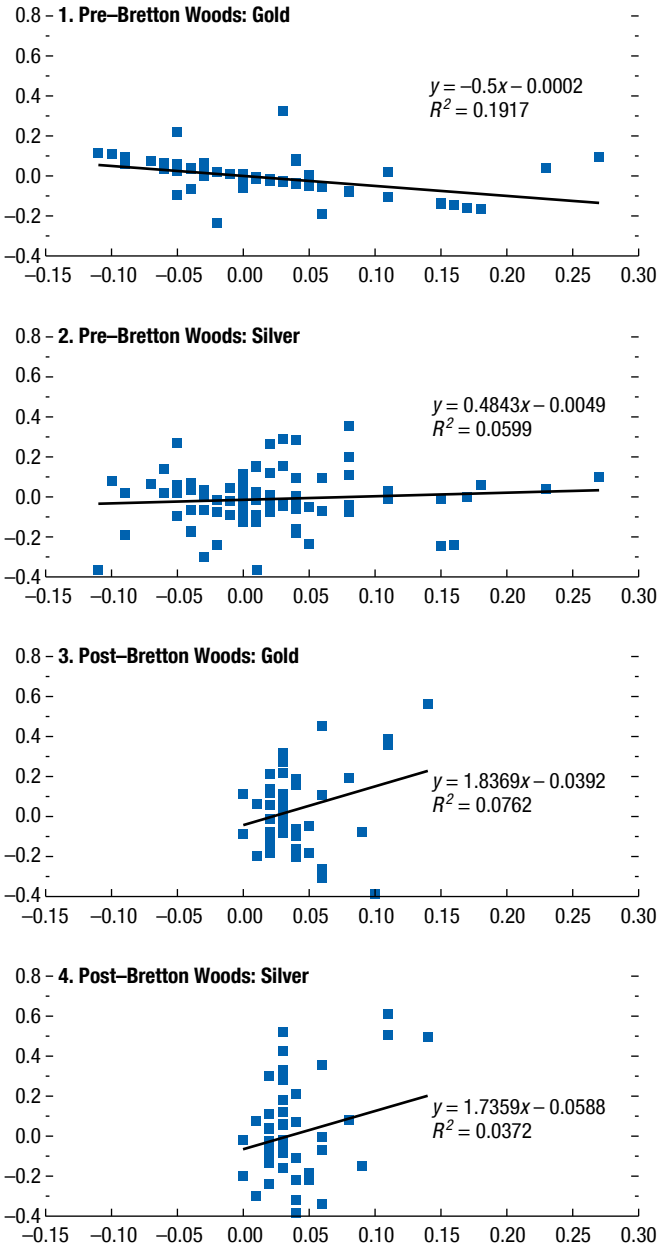
[12]In early 1980 US consumer price inflation peaked at almost 15 percent. By 2012 many central banks around the world had embarked on quantitative easing; the Federal Reserve balance sheet doubled in size while consumer price inflation in the United States had peaked at almost 4 percent in the previous year. Bekaert and Wang (2010) argues that the "recent crisis has made market observers and economists wonder whether inflation will rear its ugly head again in years to come. Central banks across the world have injected substantial amounts of liquidity in the financial system, and public debt has surged everywhere. It is not hard to imagine that inflationary pressures may resurface with a vengeance once the economy rebounds." In both episodes, however, concerns were probably overplayed given that inflation declined in the subsequent years (in most advanced economies).

Figure 1.SF.5. Correlation: Precious Metals, Copper, and Oil



Sources: IMF, Primary Commodity Price System; and IMF staff calculations.
Note: Sample period of gold, silver, copper, and oil is from 1970:M1 to 2019:M5; Platinum starts in 1976; Palladium starts in 1987.

Figure 1.SF.6. Precious Metals versus Consumer Price Index Inflation



Sources: Measuringworth.com; Minneapolis Federal Reserve; and IMF staff calculations.
Note: A regression of annual real gold price change (silver) on US consumer price index inflation shows a negative coefficient before 1973 but positive thereafter.

for testing precious metals' ability to hedge against tail events, such as the collapse of major fiat currency systems—a daunting task, however, given that that has never happened.

A more viable alternative is to regress precious metal prices on a measure of inflation risk (such as past inflation volatility or inflation forecast dispersion) and a set of control variables (Table 1.SF.5). Results of the analysis support the view that precious metal prices react to inflation concerns. The analysis uses monthly data starting in 1978 and controlling for the exchange rate (traditionally, an important determinant), Treasury yields (a proxy for carrying costs), mean reversion, and expected and surprise inflation. An increase in inflation uncertainty by one standard deviation tends, within a month, to raise the price of gold by 0.8 percent and silver by 1.6 percent. A decline in inflation uncertainty can explain half of the observed gold price decline of the 1990s and one-third of the price rise after 2008.

The role of inflation uncertainty is, instead, positive but not significant for platinum and palladium, yet irrelevant for copper. Interestingly, because of dollar invoicing, an appreciation of the US dollar has a similar strong negative effect on all metals tested, including copper. What is more surprising is a coefficient above

Table 1.SF.4. World Average Inflation Betas

Horizon	Gold	Silver	Platinum	Palladium
1 Month	0.42	0.48	0.44	0.40
6 Months	0.77	0.81	0.77	0.66
12 Months	0.90	0.89	0.82	0.61
5 Years	1.05	1.05	0.89	0.72

Sources: IMF, *International Financial Statistics*; IMF, Primary Commodity Price System; Newey and West (1987); and IMF staff calculations.
Note: The betas reported are weighted averages across all countries (weight = the inverse of the Newey–West standard errors). For each country, betas come from regressions between log difference of 1-month, 6-month, 12-month, and 5-year nominal precious metal prices in local currency and inflation corresponding to the same horizon.

unity, suggesting that metal prices are excessively sensitive to the US dollar.[13]

In addition to tail events in the monetary sphere, precious metals have been considered safe assets during sharp movements in economic and policy uncertainty, as proxied by stock price changes. Table 1.SF.6 shows that gold and (to a lesser extent) silver returns do not correlate during days of high stock market swings: the top 30 stock market booms are associated with a stable gold price, on average, while the top 30 stock market declines are associated with an average slight increase in gold prices (there is still-sizable uncertainty around the average reaction). This safe haven property—which stands out for gold and, to a lesser extent, silver but is not present for platinum nor, especially, palladium—is shared by the US dollar and Treasury notes, typical safe haven assets. It is not shared by other base metals. Finally, cryptocurrencies, which have some similarities to gold

[13]Capie, Mills, and Wood (2005) and Sjaastad (2008) examine the hedge property of gold with respect to changes of the US dollar and show that dollar exchange rates and gold prices are inversely related. This result has also been found for oil prices (Kilian and Zhou 2019).

Table 1.SF.5. Determinants of One-Month Return on Precious Metals

	(1) Gold	(2) Silver	(3) Platinum	(4) Palladium	(5) Copper
Industrial Production	0.095	–0.018	0.487	1.049	1.993***
	(0.26)	(–0.03)	(0.94)	(1.43)	(3.79)
Inflation Surprise	2.583*	2.690	3.117*	0.407	1.297
	(2.24)	(1.32)	(2.41)	(0.22)	(1.06)
Lag of Inflation Expectation	0.406	–0.086	–0.128	–2.235**	–0.062
	(0.86)	(–0.10)	(–0.24)	(–3.29)	(–0.15)
Oil Price	–0.001	0.002	0.002	0.00292*	0.00371***
	(–0.74)	(1.14)	(1.59)	(2.01)	(3.98)
US Treasury Bill	–17.210	5.885	0.061	60.04*	–5.640
	(–1.87)	(0.31)	(0.01)	(2.15)	(–0.74)
Lag of US Treasury Bill	12.330	–10.760	–2.681	–53.170	4.101
	(1.34)	(–0.59)	(–0.32)	(–1.86)	(0.52)
Lag of Precious Metal Real Price	–0.0163**	–0.0341***	–0.0286**	–0.012	–0.013
	(–3.31)	(–3.43)	(–3.06)	(–1.24)	(–1.69)
Exchange Rate	–1.219***	–1.437***	–1.456***	–0.561	–1.365***
	(–6.93)	(–4.17)	(–6.19)	(–1.68)	(–4.99)
Inflation Volatility	0.909*	2.373**	0.821	1.327	0.254
	(2.34)	(2.8)	(1.55)	(1.62)	(0.57)
Constant	0.0293**	–0.0792**	0.0654**	0.0456*	0.049
	(2.62)	(–3.28)	(3.22)	(2.02)	(1.85)
Sample Start Date	1980m1	1980m1	1980m1	1987m2	1980m1
Sample End Date	2018m12	2018m12	2018m12	2018m12	2018m12
R^2	0.18	0.15	0.21	0.15	0.26

Sources: Consensus Economics Forecast; IMF, Primary Commodity Price System; Thomson Reuters Datastream; University of Michigan, Survey of Consumers; and IMF staff calculations.
Note: Variables are in logarithmic scale. Industrial Production and Oil Price are in log difference. Lag of Precious Metal Real Price = real price of dependent variable in US dollars. Exchange Rate = exchange rate constructed to be orthogonal to other independent variables using nominal effective exchange rate. Inflation Volatility = rolling standard deviation of inflation over 36-month window. t statistics in parentheses.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 1.SF.6. Asset Returns Associated with Largest Single-Day Changes in the S&P 500 Index
(Percent change)

	S&P 500	Gold	Silver	Platinum	Palladium	US dollar	10Y Yield	Metals	Bitcoin
Top 30	5.3	0.0	–0.2	0.1	0.7	–0.3	4.9	0.5	1.2
	(4.3,5.5)	(–1.1,1)	(–2.5,0.9)	(–1.2,1.6)	(–1.2,3.7)	(–0.8,0.3)	(–2.9,11.2)	(–1.7,2.3)	(–1.2,1.7)
Top 50	4.7	–0.4	–0.6	0.2	0.3	–0.2	5.3	0.4	0.9
	(3.8,4.9)	(–1.3,0.7)	(–2.5,0.6)	(–0.9,1.7)	(–1.5,2.2)	(–0.6,0.5)	(–2.5,12.8)	(–1.4,2.1)	(–0.8,2.5)
Top 100	3.9	–0.3	–0.4	0.3	0.3	–0.1	5.6	0.6	0.0
	(3.1,4.2)	(–0.7,0.5)	(–1.6,0.7)	(–0.7,1.5)	(–0.8,1.4)	(–0.6,0.5)	(–0.9,12.2)	(–0.4,1.8)	(–3.9,0.9)
Bottom 30	–6.0	0.6	0.2	–0.5	–0.9	0.3	–9.2	–2.7	–0.3
	(–6.9,–4.8)	(–0.8,1.8)	(–0.4,0.7)	(–1.5,0.9)	(–2,1.3)	(–0.2,0.8)	(–17.7,–3)	(–4,–1.8)	(–2.5,4.1)
Bottom 50	–5.2	0.5	0.1	–0.4	–1.0	0.1	–9.1	–2.0	–2.6
	(–6,–3.9)	(–0.8,1.8)	(–0.6,0.6)	(–1.6,1.1)	(–2.2,0.9)	(–0.5,0.8)	(–14.2,–3.4)	(–3.8,–0.4)	(–4.3,4.2)
Bottom 100	–4.2	0.3	0.0	–0.4	–0.9	0.1	–7.5	–1.5	–1.4
	(–4.6,–3.1)	(–0.6,1.2)	(–1,1.1)	(–1.4,1.1)	(–2.1,0.8)	(–0.5,0.7)	(–11.7,–3.6)	(–2.7,–0.1)	(–4,3.7)

Sources: Thomson Reuters Datastream; and IMF staff calculations.
Note: Numbers represent asset returns (percent change) associated with large changes in the S&P 500. For example, Top 30 and Bottom 30 refer to the average percent change of the 30 largest single-day increases and decreases, respectively, of the S&P 500. Data for all asset returns are sorted based on S&P 500. 10Y Yield is the daily basis point difference on 10-year US bond yields. For all other indicators, data are daily growth rates. For Bitcoin, the time period is August 18, 2011, to August 19, 2019. Metals is the IMF base metals index. For all other indicators, the time interval is January 1, 1998, to August 19, 2019. Bitcoin numbers are adjusted by multiplying by the ratio of the S&P 500 movements over the aforementioned time intervals. Data in the parenthesis are the interquartile range.

and silver, do not appear to be safe havens during stock market routs.[14,15] Moreover, unlike gold and silver, they do not have intrinsic value.

Conclusions

Precious metals are macrorelevant (more so for some low-income countries) and have relevant industrial use, especially platinum and palladium—even though their price is only mildly affected by global activity. Gold and silver can function as inflation hedges, but this property should not be overstated, especially when changes in inflation are modest. Instead, given their historical role in monetary systems and purchasing power stability, gold and silver seem to have been buoyed at times by the (possibly irrational) fear of a collapse of major fiat currency systems. The safe haven properties of precious metals have probably been more apparent during some (but not all) major economic and policy shocks, proxied by stock market swings, that triggered or reversed investor flight to safety—with gold standing out as a safe asset, much like US Treasury notes. Crypto assets do not seem to share this property, so far.

[14]Cryptocurrency prices, proxied by Bitcoin, are calculated for 2011–19.

[15]As is true of gold and silver, the supply of some cryptocurrencies is limited. Cryptocurrencies also appeal to users and investors because of their decentralized nature and anonymity.

Box 1.SF.1. What's Happening with Global Carbon Emissions?

To slow the pace of climate change, carbon emissions need to be reduced. But how have emissions changed over the past decade? And which countries are driving those changes? Although global carbon emissions were flat between 2014 and 2016, they alarmingly rebounded in 2017 and 2018 (Figure 1.SF.1.1).

China has been a key driver of emission growth since the turn of the century, but its impact has diminished in recent years as economic reforms have picked up pace. India and other emerging markets, instead, are partially filling the gap. In 2018 emissions decreased in all Group of Seven economies besides the United States, whose emissions increased because of a resurgence of industrial production and bad weather (see BP 2019).

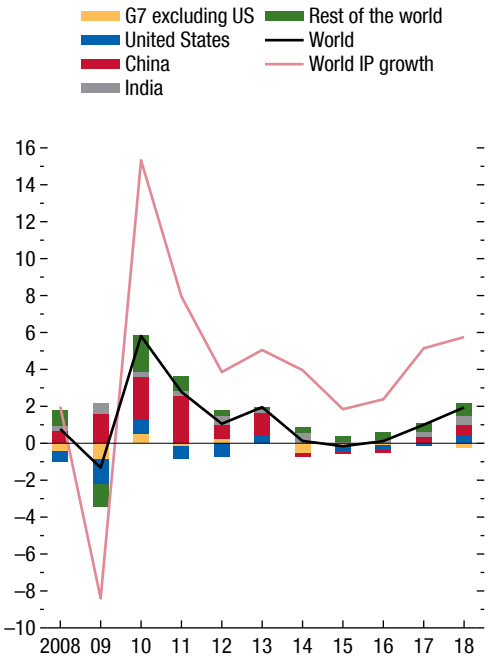
The authors of this box are Christian Bogmans, Akito Matsumoto, and Andrea Pescatori.

It is possible to decompose total emissions E as a product of carbon intensity c (carbon emissions per unit of energy), energy intensity e (energy per unit of GDP), GDP per capita y, and human population P (Kaya and Yokobori 1997):

$$E = \frac{E}{Energy} * \frac{Energy}{GDP} * \frac{GDP}{P} P = c * e * y * P.$$

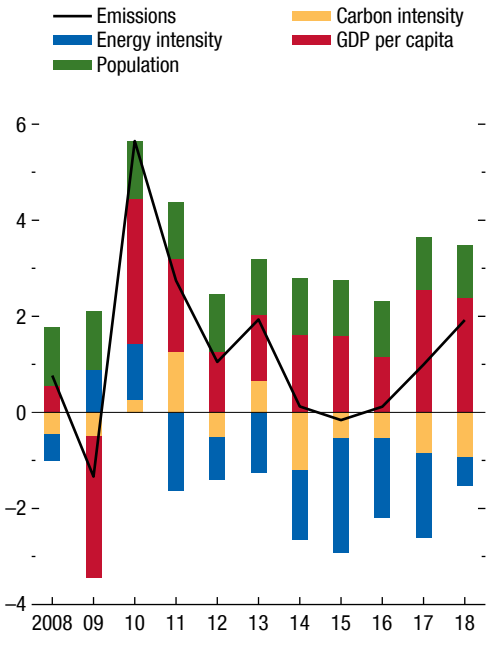
The contribution of income growth to the growth of carbon emissions is larger, on average, and more cyclical than that of population growth (Figure 1.SF.1.2). Declining energy intensity has consistently helped reduce emission growth, but in 2018 its contribution was lower, possibly because of a cyclical pickup in global industrial production. In 2018 decarbonization was the most important mitigation force as wind, solar, and natural gas slowly replaced coal as the energy source of choice in the power sectors of all major emitters.

Figure 1.SF.1.1. Contribution to World Emissions, by Location
(Percent change)



Sources: British Petroleum; International Energy Agency; and IMF staff calculations.
Note: G7 = Group of Seven; IP = industrial production.

Figure 1.SF.1.2. Contribution to World Emissions, by Source
(Percent change)



Sources: British Petroleum; International Energy Agency; World Bank, World Development Indicators; and IMF staff calculations.

Annex Table 1.1.1. European Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment

(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020
Europe	**2.3**	**1.4**	**1.8**	**3.3**	**3.2**	**2.8**	**2.5**	**2.5**	**2.2**	. . .	. . .	. . .
Advanced Europe	**1.9**	**1.2**	**1.5**	**1.9**	**1.4**	**1.5**	**2.7**	**2.7**	**2.6**	**7.1**	**6.7**	**6.6**
Euro Area[4,5]	1.9	1.2	1.4	1.8	1.2	1.4	2.9	2.8	2.7	8.2	7.7	7.5
Germany	1.5	0.5	1.2	1.9	1.5	1.7	7.3	7.0	6.6	3.4	3.2	3.3
France	1.7	1.2	1.3	2.1	1.2	1.3	–0.6	–0.5	–0.5	9.1	8.6	8.4
Italy	0.9	0.0	0.5	1.2	0.7	1.0	2.5	2.9	2.9	10.6	10.3	10.3
Spain	2.6	2.2	1.8	1.7	0.7	1.0	0.9	0.9	1.0	15.3	13.9	13.2
Netherlands	2.6	1.8	1.6	1.6	2.5	1.6	10.9	9.8	9.5	3.8	3.3	3.3
Belgium	1.4	1.2	1.3	2.3	1.5	1.3	–1.3	–1.1	–0.8	6.0	5.5	5.5
Austria	2.7	1.6	1.7	2.1	1.5	1.9	2.3	1.6	1.8	4.9	5.1	5.0
Ireland	8.3	4.3	3.5	0.7	1.2	1.5	10.6	10.8	9.6	5.8	5.5	5.2
Portugal	2.4	1.9	1.6	1.2	0.9	1.2	–0.6	–0.6	–0.7	7.0	6.1	5.6
Greece	1.9	2.0	2.2	0.8	0.6	0.9	–3.5	–3.0	–3.3	19.3	17.8	16.8
Finland	1.7	1.2	1.5	1.2	1.2	1.3	–1.6	–0.7	–0.5	7.4	6.5	6.4
Slovak Republic	4.1	2.6	2.7	2.5	2.6	2.1	–2.5	–2.5	–1.7	6.6	6.0	5.9
Lithuania	3.5	3.4	2.7	2.5	2.3	2.2	1.6	1.1	1.1	6.1	6.1	6.0
Slovenia	4.1	2.9	2.9	1.7	1.8	1.9	5.7	4.2	4.1	5.1	4.5	4.5
Luxembourg	2.6	2.6	2.8	2.0	1.7	1.7	4.7	4.5	4.5	5.0	5.2	5.2
Latvia	4.8	2.8	2.8	2.6	3.0	2.6	–1.0	–1.8	–2.1	7.4	6.5	6.7
Estonia	4.8	3.2	2.9	3.4	2.5	2.4	1.7	0.7	0.3	5.4	4.7	4.7
Cyprus	3.9	3.1	2.9	0.8	0.7	1.6	–7.0	–7.8	–7.5	8.4	7.0	6.0
Malta	6.8	5.1	4.3	1.7	1.7	1.8	9.8	7.6	6.2	3.7	3.8	4.0
United Kingdom	1.4	1.2	1.4	2.5	1.8	1.9	–3.9	–3.5	–3.7	4.1	3.8	3.8
Switzerland	2.8	0.8	1.3	0.9	0.6	0.6	10.2	9.6	9.8	2.5	2.8	2.8
Sweden	2.3	0.9	1.5	2.0	1.7	1.5	1.7	2.9	2.7	6.3	6.5	6.7
Czech Republic	3.0	2.5	2.6	2.2	2.6	2.3	0.3	–0.1	–0.2	2.2	2.2	2.3
Norway	1.3	1.9	2.4	2.8	2.3	1.9	8.1	6.9	7.2	3.9	3.6	3.5
Denmark	1.5	1.7	1.9	0.7	1.3	1.5	5.7	5.5	5.2	5.0	5.0	5.0
Iceland	4.8	0.8	1.6	2.7	2.8	2.5	2.8	3.1	1.6	2.7	3.3	3.6
San Marino	1.1	0.8	0.7	1.5	1.3	1.5	0.4	0.4	0.2	8.0	8.1	8.1
Emerging and Developing Europe[6]	**3.1**	**1.8**	**2.5**	**6.2**	**6.8**	**5.6**	**1.7**	**1.6**	**0.6**	. . .	. . .	. . .
Russia	2.3	1.1	1.9	2.9	4.7	3.5	6.8	5.7	3.9	4.8	4.6	4.8
Turkey	2.8	0.2	3.0	16.3	15.7	12.6	–3.5	–0.6	–0.9	11.0	13.8	13.7
Poland	5.1	4.0	3.1	1.6	2.4	3.5	–0.6	–0.9	–1.1	3.8	3.8	3.8
Romania	4.1	4.0	3.5	4.6	4.2	3.3	–4.5	–5.5	–5.2	4.2	4.3	4.6
Ukraine[7]	3.3	3.0	3.0	10.9	8.7	5.9	–3.4	–2.8	–3.5	9.0	8.7	8.2
Hungary	4.9	4.6	3.3	2.8	3.4	3.4	–0.5	–0.9	–0.6	3.7	3.5	3.4
Belarus	3.0	1.5	0.3	4.9	5.4	4.8	–0.4	–0.9	–3.4	0.4	0.5	0.9
Bulgaria[5]	3.1	3.7	3.2	2.6	2.5	2.3	4.6	3.2	2.5	5.3	4.9	4.8
Serbia	4.3	3.5	4.0	2.0	2.2	1.9	–5.2	–5.8	–5.1	13.3	13.1	12.8
Croatia	2.6	3.0	2.7	1.5	1.0	1.2	2.5	1.7	1.0	9.9	9.0	8.0

Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
[1]Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Tables A6 and A7 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may differ.
[4]Current account position corrected for reporting discrepancies in intra-area transactions.
[5]Based on Eurostat's harmonized index of consumer prices except for Slovenia.
[6]Includes Albania, Bosnia and Herzegovina, Kosovo, Moldova, Montenegro, and North Macedonia.
[7]See country-specific note for Ukraine in the "Country Notes" section of the Statistical Appendix.

Annex Table 1.1.2. Asian and Pacific Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment

(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020
Asia	**5.5**	**5.0**	**5.1**	**2.4**	**2.4**	**2.6**	**1.3**	**1.5**	**1.3**	. . .	. . .	. . .
Advanced Asia	**1.8**	**1.3**	**1.3**	**1.3**	**1.0**	**1.3**	**4.0**	**3.9**	**3.6**	**3.2**	**3.2**	**3.2**
Japan	0.8	0.9	0.5	1.0	1.0	1.3	3.5	3.3	3.3	2.4	2.4	2.4
Korea	2.7	2.0	2.2	1.5	0.5	0.9	4.4	3.2	2.9	3.8	4.0	4.2
Australia	2.7	1.7	2.3	2.0	1.6	1.8	–2.1	–0.3	–1.7	5.3	5.1	5.1
Taiwan Province of China	2.6	2.0	1.9	1.5	0.8	1.1	12.2	11.4	10.8	3.7	3.8	3.8
Singapore	3.1	0.5	1.0	0.4	0.7	1.0	17.9	16.5	16.6	2.1	2.2	2.2
Hong Kong SAR	3.0	0.3	1.5	2.4	3.0	2.6	4.3	5.5	5.1	2.8	2.9	3.0
New Zealand	2.8	2.5	2.7	1.6	1.4	1.9	–3.8	–4.1	–4.3	4.3	4.3	4.5
Macao SAR	4.7	–1.3	–1.1	3.0	2.4	2.7	35.2	35.7	35.3	1.8	1.8	1.8
Emerging and Developing Asia	**6.4**	**5.9**	**6.0**	**2.6**	**2.7**	**3.0**	**–0.1**	**0.4**	**0.2**	. . .	. . .	. . .
China	6.6	6.1	5.8	2.1	2.3	2.4	0.4	1.0	0.9	3.8	3.8	3.8
India[4]	6.8	6.1	7.0	3.4	3.4	4.1	–2.1	–2.0	–2.3	. . .	. . .	. . .
ASEAN-5	**5.2**	**4.8**	**4.9**	**2.8**	**2.4**	**2.6**	**0.2**	**0.4**	**0.1**	. . .	. . .	. . .
Indonesia	5.2	5.0	5.1	3.2	3.2	3.3	–3.0	–2.9	–2.7	5.3	5.2	5.0
Thailand	4.1	2.9	3.0	1.1	0.9	0.9	6.4	6.0	5.4	1.2	1.2	1.2
Malaysia	4.7	4.5	4.4	1.0	1.0	2.1	2.1	3.1	1.9	3.3	3.4	3.4
Philippines	6.2	5.7	6.2	5.2	2.5	2.3	–2.6	–2.0	–2.3	5.3	5.2	5.1
Vietnam	7.1	6.5	6.5	3.5	3.6	3.7	2.4	2.2	1.9	2.2	2.2	2.2
Other Emerging and Developing Asia[5]	**6.3**	**6.3**	**6.2**	**5.0**	**5.3**	**5.3**	**–3.1**	**–2.8**	**–2.9**	. . .	. . .	. . .
Memorandum												
Emerging Asia[6]	**6.4**	**5.9**	**6.0**	**2.5**	**2.6**	**2.9**	**0.0**	**0.5**	**0.3**	. . .	. . .	. . .

Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
[1]Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Tables A6 and A7 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may differ.
[4]See country-specific note for India in the "Country Notes" section of the Statistical Appendix.
[5]Other Emerging and Developing Asia comprises Bangladesh, Bhutan, Brunei Darussalam, Cambodia, Fiji, Kiribati, Lao P.D.R., Maldives, Marshall Islands, Micronesia, Mongolia, Myanmar, Nauru, Nepal, Palau, Papua New Guinea, Samoa, Solomon Islands, Sri Lanka, Timor-Leste, Tonga, Tuvalu, and Vanuatu.
[6]Emerging Asia comprises the ASEAN-5 (Indonesia, Malaysia, Philippines, Thailand, Vietnam) economies, China, and India.

Annex Table 1.1.3. Western Hemisphere Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment

(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020
North America	**2.7**	**2.1**	**2.0**	**2.7**	**2.0**	**2.3**	**–2.4**	**–2.4**	**–2.4**	**. . .**	**. . .**	**. . .**
United States	2.9	2.4	2.1	2.4	1.8	2.3	–2.4	–2.5	–2.5	3.9	3.7	3.5
Canada	1.9	1.5	1.8	2.2	2.0	2.0	–2.6	–1.9	–1.7	5.8	5.8	6.0
Mexico	2.0	0.4	1.3	4.9	3.8	3.1	–1.8	–1.2	–1.6	3.3	3.4	3.4
Puerto Rico[4]	–4.9	–1.1	–0.7	1.3	–0.1	1.0	. . .	. . .	. . .	9.2	9.2	9.4
South America[5]	**0.4**	**–0.2**	**1.8**	**7.1**	**9.2**	**8.6**	**–1.8**	**–1.6**	**–1.4**	**. . .**	**. . .**	**. . .**
Brazil	1.1	0.9	2.0	3.7	3.8	3.5	–0.8	–1.2	–1.0	12.3	11.8	10.8
Argentina	–2.5	–3.1	–1.3	34.3	54.4	51.0	–5.3	–1.2	0.3	9.2	10.6	10.1
Colombia	2.6	3.4	3.6	3.2	3.6	3.7	–4.0	–4.2	–4.0	9.7	9.7	9.5
Chile	4.0	2.5	3.0	2.3	2.2	2.8	–3.1	–3.5	–2.9	7.0	6.9	6.9
Peru	4.0	2.6	3.6	1.3	2.2	1.9	–1.6	–1.9	–2.0	6.7	6.7	6.7
Venezuela	–18.0	–35.0	–10.0	65,374.1	200,000	500,000	6.4	7.0	1.5	35.0	47.2	50.5
Ecuador	1.4	–0.5	0.5	–0.2	0.4	1.2	–1.4	0.1	0.7	3.7	4.3	4.7
Paraguay	3.7	1.0	4.0	4.0	3.5	3.7	0.5	–0.1	1.3	5.6	6.1	5.9
Bolivia	4.2	3.9	3.8	2.3	1.7	3.1	–4.9	–5.0	–4.1	3.5	4.0	4.0
Uruguay	1.6	0.4	2.3	7.6	7.6	7.2	–0.6	–1.7	–3.0	8.4	8.6	8.1
Central America[6]	**2.6**	**2.7**	**3.4**	**2.6**	**2.7**	**3.0**	**–3.2**	**–2.7**	**–2.6**	**. . .**	**. . .**	**. . .**
Caribbean[7]	**4.7**	**3.3**	**3.7**	**3.7**	**2.8**	**4.4**	**–1.6**	**–1.8**	**–2.2**	**. . .**	**. . .**	**. . .**
Memorandum												
Latin America and the Caribbean[8]	1.0	0.2	1.8	6.2	7.2	6.7	–1.9	–1.6	–1.5	. . .	. . .	. . .
Eastern Caribbean Currency Union[9]	4.0	3.6	3.4	1.3	1.5	2.0	–8.4	–7.9	–7.7	. . .	. . .	. . .

Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
[1]Movements in consumer prices are shown as annual averages. Aggregates exclude Venezuela. Year-end to year-end changes can be found in Tables A6 and A7 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may differ.
[4]Puerto Rico is a territory of the United States but its statistical data are maintained on a separate and independent basis.
[5]Includes Guyana and Suriname. See country-specific notes for Argentina and Venezuela in the "Country Notes" section of the Statistical Appendix.
[6]Central America comprises Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.
[7]The Caribbean comprises Antigua and Barbuda, Aruba, The Bahamas, Barbados, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago.
[8]Latin America and the Caribbean comprises Mexico and economies from the Caribbean, Central America, and South America. See country-specific notes for Argentina and Venezuela in the "Country Notes" section of the Statistical Appendix.
[9]Eastern Caribbean Currency Union comprises Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines as well as Anguilla and Montserrat, which are not IMF members.

Annex Table 1.1.4. Middle East and Central Asia Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment

(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020
Middle East and Central Asia	**1.9**	**0.9**	**2.9**	**9.9**	**8.2**	**9.1**	**2.7**	**–0.4**	**–1.4**	**. . .**	**. . .**	**. . .**
Oil Exporters[4]	**0.6**	**–0.7**	**2.3**	**8.5**	**6.9**	**8.0**	**5.9**	**1.6**	**0.1**	**. . .**	**. . .**	**. . .**
Saudi Arabia	2.4	0.2	2.2	2.5	–1.1	2.2	9.2	4.4	1.5	6.0	. . .	. . .
Iran	–4.8	–9.5	0.0	30.5	35.7	31.0	4.1	–2.7	–3.4	14.5	16.8	17.4
United Arab Emirates	1.7	1.6	2.5	3.1	–1.5	1.2	9.1	9.0	7.1	. . .	. . .	. . .
Iraq	–0.6	3.4	4.7	0.4	–0.3	1.0	6.9	–3.5	–3.7	. . .	. . .	. . .
Algeria	1.4	2.6	2.4	4.3	2.0	4.1	–9.6	–12.6	–11.9	11.7	12.5	13.3
Kazakhstan	4.1	3.8	3.9	6.0	5.3	5.2	0.0	–1.2	–1.5	4.9	4.9	4.9
Qatar	1.5	2.0	2.8	0.2	–0.4	2.2	8.7	6.0	4.1	. . .	. . .	. . .
Kuwait	1.2	0.6	3.1	0.6	1.5	2.2	14.4	8.2	6.8	1.3	1.3	1.3
Oman	1.8	0.0	3.7	0.9	0.8	1.8	–5.5	–7.2	–8.0	. . .	. . .	. . .
Azerbaijan	1.0	2.7	2.1	2.3	2.8	3.0	12.9	9.7	10.0	5.0	5.0	5.0
Turkmenistan	6.2	6.3	6.0	13.2	13.4	13.0	5.7	–0.6	–3.0	. . .	. . .	. . .
Oil Importers[5]	**4.4**	**3.8**	**3.9**	**12.7**	**10.7**	**11.3**	**–6.6**	**–6.0**	**–5.3**	**. . .**	**. . .**	**. . .**
Egypt	5.3	5.5	5.9	20.9	13.9	10.0	–2.4	–3.1	–2.8	10.9	8.6	7.9
Pakistan	5.5	3.3	2.4	3.9	7.3	13.0	–6.3	–4.6	–2.6	6.1	6.1	6.2
Morocco	3.0	2.7	3.7	1.9	0.6	1.1	–5.4	–4.5	–3.8	9.8	9.2	8.9
Uzbekistan	5.1	5.5	6.0	17.5	14.7	14.1	–7.1	–6.5	–5.6	. . .	. . .	. . .
Sudan	–2.2	–2.6	–1.5	63.3	50.4	62.1	–13.6	–7.4	–12.5	19.5	22.1	21.0
Tunisia	2.5	1.5	2.4	7.3	6.6	5.4	–11.1	–10.4	–9.4	15.4	. . .	. . .
Jordan	1.9	2.2	2.4	4.5	2.0	2.5	–7.0	–7.0	–6.2	18.3	. . .	. . .
Lebanon	0.2	0.2	0.9	6.1	3.1	2.6	–25.6	–26.4	–26.3	. . .	. . .	. . .
Afghanistan	2.7	3.0	3.5	0.6	2.6	4.5	9.1	2.0	0.2	. . .	. . .	. . .
Georgia	4.7	4.6	4.8	2.6	4.2	3.8	–7.7	–5.9	–5.8	12.7	. . .	. . .
Tajikistan	7.3	5.0	4.5	3.8	7.4	7.1	–5.0	–5.8	–5.8	. . .	. . .	. . .
Armenia	5.2	6.0	4.8	2.5	1.7	2.5	–9.4	–7.4	–7.4	18.2	17.7	17.5
Kyrgyz Republic	3.5	3.8	3.4	1.5	1.3	5.0	–8.7	–10.0	–8.3	6.6	6.6	6.6
Memorandum												
Caucasus and Central Asia	4.2	4.4	4.4	8.3	7.6	7.6	0.3	–1.3	–1.7	. . .	. . .	. . .
Middle East, North Africa, Afghanistan, and Pakistan	1.6	0.5	2.7	10.1	8.3	9.3	2.9	–0.3	–1.4	. . .	. . .	. . .
Middle East and North Africa	1.1	0.1	2.7	11.0	8.4	8.9	3.8	0.1	–1.3	. . .	. . .	. . .
Israel[6]	3.4	3.1	3.1	0.8	1.0	1.3	2.7	2.4	2.5	4.0	4.0	4.0
Maghreb[7]	3.0	1.4	2.7	4.3	2.3	3.7	–7.3	–8.6	–9.1	. . .	. . .	. . .
Mashreq[8]	4.8	5.0	5.4	18.8	12.5	9.1	–6.7	–6.9	–6.2	. . .	. . .	. . .

Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
[1]Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Tables A6 and A7 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may differ.
[4]Includes Bahrain, Libya, and Yemen.
[5]Includes Djibouti, Mauritania, and Somalia. Excludes Syria because of the uncertain political situation.
[6]Israel, which is not a member of the economic region, is included for reasons of geography but is not included in the regional aggregates.
[7]The Maghreb comprises Algeria, Libya, Mauritania, Morocco, and Tunisia.
[8]The Mashreq comprises Egypt, Jordan, and Lebanon. Syria is excluded because of the uncertain political situation.

Annex Table 1.1.5. Sub-Saharan African Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment

(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020
Sub-Saharan Africa	**3.2**	**3.2**	**3.6**	**8.5**	**8.4**	**8.0**	**–2.7**	**–3.6**	**–3.8**	**. . .**	**. . .**	**. . .**
Oil Exporters[4]	**1.3**	**2.0**	**2.4**	**13.0**	**11.4**	**11.4**	**1.9**	**–0.1**	**–0.3**	**. . .**	**. . .**	**. . .**
Nigeria	1.9	2.3	2.5	12.1	11.3	11.7	1.3	–0.2	–0.1	22.6	. . .	. . .
Angola	–1.2	–0.3	1.2	19.6	17.2	15.0	6.1	0.9	–0.7	. . .	. . .	. . .
Gabon	0.8	2.9	3.4	4.8	3.0	3.0	–2.4	0.1	0.9	. . .	. . .	. . .
Republic of Congo	1.6	4.0	2.8	1.2	1.5	1.8	6.7	6.8	5.3	. . .	. . .	. . .
Chad	2.4	2.3	5.4	4.0	3.0	3.0	–3.4	–6.4	–6.1	. . .	. . .	. . .
Middle-Income Countries[5]	**2.8**	**2.8**	**2.9**	**4.6**	**4.6**	**5.2**	**–3.6**	**–3.6**	**–3.9**	**. . .**	**. . .**	**. . .**
South Africa	0.8	0.7	1.1	4.6	4.4	5.2	–3.5	–3.1	–3.6	27.1	27.9	28.4
Ghana	6.3	7.5	5.6	9.8	9.3	9.2	–3.1	–3.6	–3.8	. . .	. . .	. . .
Côte d'Ivoire	7.4	7.5	7.3	0.4	1.0	2.0	–4.7	–3.8	–3.8	. . .	. . .	. . .
Cameroon	4.1	4.0	4.2	1.1	2.1	2.2	–3.7	–3.7	–3.5	. . .	. . .	. . .
Zambia	3.7	2.0	1.7	7.0	9.9	10.0	–2.6	–3.6	–3.4	. . .	. . .	. . .
Senegal	6.7	6.0	6.8	0.5	1.0	1.5	–8.8	–8.5	–11.1	. . .	. . .	. . .
Low-Income Countries[6]	**6.2**	**5.3**	**5.9**	**7.6**	**9.2**	**7.4**	**–7.0**	**–7.9**	**–8.0**	**. . .**	**. . .**	**. . .**
Ethiopia	7.7	7.4	7.2	13.8	14.6	12.7	–6.5	–6.0	–5.3	. . .	. . .	. . .
Kenya	6.3	5.6	6.0	4.7	5.6	5.3	–5.0	–4.7	–4.6	. . .	. . .	. . .
Tanzania	7.0	5.2	5.7	3.5	3.6	4.2	–3.7	–4.1	–3.6	. . .	. . .	. . .
Uganda	6.1	6.2	6.2	2.6	3.2	3.8	–8.9	–11.5	–10.5	. . .	. . .	. . .
Democratic Republic of the Congo	5.8	4.3	3.9	29.3	5.5	5.0	–4.6	–3.4	–4.2	. . .	. . .	. . .
Mali	4.7	5.0	5.0	1.7	0.2	1.3	–3.8	–5.5	–5.5	. . .	. . .	. . .
Madagascar	5.2	5.2	5.3	7.3	6.7	6.3	0.8	–1.6	–2.7	. . .	. . .	. . .
Memorandum												
Sub-Saharan Africa Excluding												
South Sudan	3.2	3.2	3.6	8.2	8.3	8.0	–2.7	–3.6	–3.8	. . .	. . .	. . .

Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
[1]Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Table A7 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may differ.
[4]Includes Equatorial Guinea and South Sudan.
[5]Includes Botswana, Cabo Verde, Eswatini, Lesotho, Mauritius, Namibia, and Seychelles.
[6]Includes Benin, Burkina Faso, Burundi, the Central African Republic, Comoros, Eritrea, The Gambia, Guinea, Guinea-Bissau, Liberia, Malawi, Mali, Mozambique, Niger, Rwanda, São Tomé and Príncipe, Sierra Leone, Togo, and Zimbabwe.

Annex Table 1.1.6. Summary of World Real per Capita Output

(Annual percent change; in international currency at purchasing power parity)

	Average									Projections		
	2001–10	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2024
World	**2.4**	**3.0**	**2.0**	**2.2**	**2.3**	**2.1**	**2.1**	**2.5**	**2.4**	**1.8**	**2.3**	**2.5**
Advanced Economies	**1.1**	**1.2**	**0.7**	**0.9**	**1.6**	**1.8**	**1.2**	**2.0**	**1.8**	**1.3**	**1.3**	**1.2**
United States	0.8	0.8	1.5	1.1	1.8	2.2	0.9	1.7	2.3	1.8	1.5	1.1
Euro Area[1]	0.8	1.3	–1.2	–0.5	1.2	1.8	1.6	2.4	1.8	1.0	1.3	1.2
Germany	1.0	3.9	0.2	0.2	1.8	0.9	1.4	2.1	1.2	0.5	1.2	1.3
France	0.6	1.7	–0.2	0.1	0.4	0.7	0.8	2.0	1.6	1.1	1.0	1.1
Italy	–0.2	0.2	–3.2	–2.3	–0.3	0.9	1.3	1.8	1.0	0.2	0.7	0.9
Spain	0.8	–1.4	–3.0	–1.3	1.7	3.8	3.2	3.0	2.5	1.7	1.4	1.2
Japan	0.6	–0.3	1.7	2.2	0.5	1.3	0.6	2.1	1.0	1.1	0.8	1.0
United Kingdom	1.0	0.8	0.8	1.4	2.2	1.5	1.0	1.2	0.8	0.6	0.9	1.1
Canada	0.8	2.1	0.7	1.3	1.8	–0.1	0.1	1.7	0.5	0.3	0.8	0.8
Other Advanced Economies[2]	2.7	2.5	1.3	1.7	2.1	1.4	1.6	2.2	1.9	0.9	1.2	1.7
Emerging Market and Developing Economies	**4.6**	**4.8**	**3.6**	**3.6**	**3.2**	**2.8**	**3.1**	**3.3**	**3.2**	**2.5**	**3.3**	**3.5**
Emerging and Developing Asia	7.2	6.7	5.9	5.9	5.8	5.7	5.7	5.6	5.5	5.0	5.1	5.1
China	9.9	9.0	7.4	7.3	6.7	6.4	6.1	6.2	6.2	5.8	5.5	5.3
India[3]	5.9	5.2	4.1	5.0	6.0	6.6	6.8	5.8	5.4	4.7	5.6	5.9
ASEAN-5[4]	3.7	3.1	4.7	3.7	3.3	3.6	3.8	4.2	4.1	3.7	3.8	4.2
Emerging and Developing Europe	4.4	5.6	2.7	2.7	1.6	0.4	1.6	3.7	2.9	1.6	2.4	2.4
Russia	5.1	5.0	3.5	1.5	–1.1	–2.4	0.1	1.6	2.3	1.1	1.9	2.0
Latin America and the Caribbean	1.9	3.4	1.7	1.7	0.2	–0.9	–1.8	0.2	0.1	–0.9	1.1	1.9
Brazil	2.5	3.1	1.0	2.1	–0.3	–4.4	–4.1	0.3	0.3	0.2	1.4	1.7
Mexico	0.2	2.4	2.4	0.2	1.7	2.2	1.8	1.1	1.0	–0.6	0.4	1.6
Middle East and Central Asia	2.2	3.7	0.9	0.4	0.5	0.4	2.8	–0.2	–0.1	–1.2	1.0	1.4
Saudi Arabia	0.3	6.8	2.5	–0.1	2.5	1.7	–0.6	–3.3	0.0	–1.8	0.2	0.5
Sub-Saharan Africa	2.9	2.5	1.5	2.4	2.4	0.4	–1.3	0.3	0.6	0.6	0.9	1.5
Nigeria	6.1	2.1	1.5	2.6	3.5	0.0	–4.2	–1.8	–0.7	–0.3	–0.1	0.1
South Africa	2.1	1.7	0.7	0.9	0.3	–0.3	–1.1	–0.1	–0.7	–0.9	–0.4	0.2
Memorandum												
European Union	1.2	1.6	–0.6	0.0	1.6	2.1	1.8	2.5	2.0	1.3	1.5	1.4
Low-Income Developing Countries	3.8	3.6	1.7	3.6	3.7	1.9	1.2	2.4	2.8	2.7	2.9	3.2
Middle East and North Africa	1.9	6.1	0.3	–0.3	–0.2	0.0	3.1	–1.1	–1.1	–2.1	0.8	0.8

Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
[1]Data calculated as the sum of individual euro area countries.
[2]Excludes the G7 (Canada, France, Germany, Italy, Japan, United Kingdom, United States) and euro area countries.
[3]See country-specific note for India in the "Country Notes" section of the Statistical Appendix.
[4]Indonesia, Malaysia, Philippines, Thailand, Vietnam.

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