

# MONETARY POLICY REPORT

June 12, 2020



Board of Governors of the Federal Reserve System



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## LETTER OF TRANSMITTAL

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BOARD OF GOVERNORS OF THE  
FEDERAL RESERVE SYSTEM

Washington, D.C., June 12, 2020

THE PRESIDENT OF THE SENATE  
THE SPEAKER OF THE HOUSE OF REPRESENTATIVES

The Board of Governors is pleased to submit its *Monetary Policy Report* pursuant to section 2B of the Federal Reserve Act.

Sincerely,

A handwritten signature in black ink that reads "Jerome H. Powell".

Jerome H. Powell, Chair

# STATEMENT ON LONGER-RUN GOALS AND MONETARY POLICY STRATEGY

*Adopted effective January 24, 2012; as amended effective January 29, 2019*

The Federal Open Market Committee (FOMC) is firmly committed to fulfilling its statutory mandate from the Congress of promoting maximum employment, stable prices, and moderate long-term interest rates. The Committee seeks to explain its monetary policy decisions to the public as clearly as possible. Such clarity facilitates well-informed decisionmaking by households and businesses, reduces economic and financial uncertainty, increases the effectiveness of monetary policy, and enhances transparency and accountability, which are essential in a democratic society.

Inflation, employment, and long-term interest rates fluctuate over time in response to economic and financial disturbances. Moreover, monetary policy actions tend to influence economic activity and prices with a lag. Therefore, the Committee's policy decisions reflect its longer-run goals, its medium-term outlook, and its assessments of the balance of risks, including risks to the financial system that could impede the attainment of the Committee's goals.

The inflation rate over the longer run is primarily determined by monetary policy, and hence the Committee has the ability to specify a longer-run goal for inflation. The Committee reaffirms its judgment that inflation at the rate of 2 percent, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run with the Federal Reserve's statutory mandate. The Committee would be concerned if inflation were running persistently above or below this objective. Communicating this symmetric inflation goal clearly to the public helps keep longer-term inflation expectations firmly anchored, thereby fostering price stability and moderate long-term interest rates and enhancing the Committee's ability to promote maximum employment in the face of significant economic disturbances. The maximum level of employment is largely determined by nonmonetary factors that affect the structure and dynamics of the labor market. These factors may change over time and may not be directly measurable. Consequently, it would not be appropriate to specify a fixed goal for employment; rather, the Committee's policy decisions must be informed by assessments of the maximum level of employment, recognizing that such assessments are necessarily uncertain and subject to revision. The Committee considers a wide range of indicators in making these assessments. Information about Committee participants' estimates of the longer-run normal rates of output growth and unemployment is published four times per year in the FOMC's Summary of Economic Projections. For example, in the most recent projections, the median of FOMC participants' estimates of the longer-run normal rate of unemployment was 4.4 percent.

In setting monetary policy, the Committee seeks to mitigate deviations of inflation from its longer-run goal and deviations of employment from the Committee's assessments of its maximum level. These objectives are generally complementary. However, under circumstances in which the Committee judges that the objectives are not complementary, it follows a balanced approach in promoting them, taking into account the magnitude of the deviations and the potentially different time horizons over which employment and inflation are projected to return to levels judged consistent with its mandate.

The Committee intends to reaffirm these principles and to make adjustments as appropriate at its annual organizational meeting each January.

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NOTE: The Committee did not reaffirm this statement in January 2020 in light of its ongoing review of its monetary policy strategy, tools, and communications practices. This statement is a reprint of the statement affirmed in January 2019.

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**NOTE: This report reflects information that was publicly available as of 2 p.m. EDT on June 10, 2020.**

Unless otherwise stated, the time series in the figures extend through, for daily data, June 9, 2020; for monthly data, May 2020; and, for quarterly data, 2020:Q1. In bar charts, except as noted, the change for a given period is measured to its final quarter from the final quarter of the preceding period.

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## SUMMARY

The COVID-19 outbreak is causing tremendous human and economic hardship across the United States and around the world. The virus and the measures taken to protect public health have induced a sharp decline in economic activity and a surge in job losses, with the unemployment rate, which had been at a 50-year low, soaring to a postwar record high. Weaker demand and significantly lower oil prices are holding down consumer price inflation. The disruptions to economic activity here and abroad significantly affected financial conditions and impaired the flow of credit to U.S. households and businesses. In response to these developments, the Federal Reserve quickly lowered its policy rate to close to zero to support economic activity and took extraordinary measures to stabilize markets and bolster the flow of credit to households, businesses, and communities. Financial conditions have improved, in part reflecting policy measures to support the economy and the flow of credit. The Federal Reserve is committed to using its full range of tools to support the U.S. economy in this challenging time, thereby promoting its maximum-employment and price-stability goals.

### *Economic and Financial Developments*

**Economic activity.** In response to the public health emergency precipitated by the spread of COVID-19, many protective measures were adopted to limit the transmission of the virus. These social-distancing measures effectively closed parts of the economy, resulting in a sudden and unprecedented fall in economic activity and historic increases in joblessness. Although virus mitigation efforts in many places did not begin until the final two weeks of March, real personal consumption expenditures (PCE) plummeted 6.7 percent in March and an unprecedented 13.2 percent in April. Indicators suggest spending rose in May, but the April data and May indicators taken together point

to a collapse in second-quarter real PCE. Likewise, in the housing market, residential sales and construction in April posted outsized declines that are close to some of the largest ever recorded, and heightened uncertainty and weak demand have led many businesses to put investment plans on hold or cancel them outright. These data, along with other information, suggest that real gross domestic product will contract at a rapid pace in the second quarter after tumbling at an annual rate of 5 percent in the first quarter of 2020.

**The labor market.** The severe economic repercussions of the pandemic have been especially visible in the labor market. Since February, employers have shed nearly 20 million jobs from payrolls, reversing almost 10 years of job gains. The unemployment rate jumped from a 50-year low of 3.5 percent in February to a post–World War II high of 14.7 percent in April and then moved down to a still very elevated 13.3 percent in May. The most severe job losses have been sustained by those with lower earnings and by the socioeconomic groups that are disproportionately represented among low-wage jobs.

**Inflation.** Consumer price inflation has slowed abruptly. The 12-month change in the price index for PCE was just 0.5 percent in April. The 12-month measure of PCE inflation that excludes food and energy items (so-called core inflation), which historically has been a better indicator of where overall inflation will be in the future than the total figure, fell from 1.8 percent in February to 1.0 percent in April. This slowing reflected monthly readings for March and April that were especially low because of large price declines in some categories most directly affected by social distancing. Overall inflation also has been held down by substantially lower energy prices, which more than offset the effects of surging prices for food. Despite the sharp slowing in

inflation, survey-based measures of longer-run inflation expectations have generally been stable at relatively low levels. However, market-based measures of inflation compensation have moved down to some of the lowest readings ever seen.

**Financial conditions.** In late February and over much of March as COVID-19 spread, equity prices plunged and nominal Treasury yields dropped substantially, with yields on longer-term securities reaching all-time record lows. Spreads of yields on corporate bonds over those on comparable-maturity Treasury securities widened significantly as the credit quality of firms declined and market functioning deteriorated; in addition, loans were unavailable for most firms, particularly firms below investment grade. At the most acute phase of this period, trading conditions became extremely illiquid and some critical markets stopped functioning properly. Consumer borrowing also fell as spending slumped. Several markets supporting consumer lending experienced severe strains around this period, including the agency residential mortgage-backed securities (MBS) market as well as the auto, credit card, and student loan securitization markets. In response, the Federal Reserve took unprecedented measures to restore smooth market functioning and to support the flow of credit in the economy, including the creation of a number of emergency credit and liquidity facilities.<sup>1</sup> These actions, along with the aggressive response of fiscal policy, stabilized financial markets and led to a notable improvement in financial conditions for both firms and households as well as state and local governments. Even so, lending standards for both households and businesses have become less accommodative, and borrowing conditions are tight for low-rated households and businesses.

**Financial stability.** The COVID-19 pandemic has abruptly halted large swaths of economic activity and led to swift financial repercussions. Despite increased resilience from the financial and regulatory reforms adopted since 2008, financial system vulnerabilities—most notably those associated with liquidity and maturity transformation in the nonbank financial sector—have amplified some of the economic effects of the pandemic. Accordingly, financial-sector vulnerabilities are expected to be significant in the near term. The strains on household and business balance sheets from the economic and financial shocks since March will likely create persistent fragilities. Financial institutions may experience strains as a result. The Federal Reserve, with approval of the Secretary of the Treasury, established new credit and liquidity facilities under section 13(3) of the Federal Reserve Act to alleviate severe dislocations that arose in a number of financial markets and to support the flow of credit to households, businesses, and state and local governments. Furthermore, as financial stresses abroad risked spilling over into U.S. credit markets, the Federal Reserve and several other central banks announced the expansion and enhancement of dollar liquidity swap lines. In addition, the Federal Reserve introduced a new temporary repurchase agreement facility for foreign monetary authorities. The Federal Reserve has also made a number of adjustments to its regulatory and supervisory regime to facilitate market functioning and reduce regulatory impediments to banks supporting households, businesses, and municipal customers affected by COVID-19. (See the box “Developments Related to Financial Stability” in Part 1.)

**International developments.** The spread of COVID-19 throughout the world and the measures taken to contain it have produced devastating effects on the global economy. Amid widespread and stringent shutdowns, recent data suggest that global economic activity in the first half of the year has experienced a sharp and synchronized contraction greater than that in the Global Financial Crisis. The many mandated closures

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<sup>1</sup> A list of funding, credit, liquidity, and loan facilities established by the Federal Reserve in response to COVID-19 is available on the Board’s website at <https://www.federalreserve.gov/funding-credit-liquidity-and-loan-facilities.htm>.

of nonessential businesses abroad and the collapse in consumer demand contributed to a significant deterioration in labor markets and subdued inflation. Unlike past recessions, services activity in the foreign economies has dropped more sharply than manufacturing, with restrictions on movement having severely curtailed spending on travel, tourism, restaurants, and recreation. Against this backdrop, foreign governments and central banks have responded strongly and swiftly to support incomes and to improve market liquidity and the provision of credit. More recently, economic activity has begun to revive in some foreign economies as authorities eased social-distancing restraints.

The rapid spread of COVID-19 weighed heavily on global risk sentiment, with financial stresses intensifying and liquidity conditions deteriorating in many foreign financial markets. Aggressive fiscal and monetary policy responses in the United States and abroad, however, helped boost sentiment and improve market functioning. On balance, financial conditions abroad remain tighter than at the beginning of the year, especially in some emerging market economies. Since February, global equity prices moved lower, sovereign interest rates in the European periphery increased somewhat, and measures of sovereign spreads in emerging market economies widened significantly. In many advanced economies, long-term interest rates reached historically low levels.

## Monetary Policy

**Easing monetary policy.** In light of the effects of COVID-19 on economic activity and on risks to the outlook, the FOMC rapidly lowered the target range for the federal funds rate. Specifically, at two meetings in March, the FOMC lowered the target range for the federal funds rate by a total of 1½ percentage points, bringing it to the current range of 0 to ¼ percent. The Committee expects to maintain this target range until it is confident that the economy has weathered recent events and is on track to achieve its maximum-employment and

price-stability goals. The Committee noted that it would continue to monitor the implications of incoming information for the economic outlook, including information related to public health, as well as global developments and muted inflation pressures, and that it would use its tools and act as appropriate to support the economy.

**Safeguarding market functioning.** Market functioning deteriorated in many markets in late February and much of March, including the critical Treasury and agency MBS markets. The Federal Reserve swiftly took a series of policy actions to address these developments. The FOMC announced it would purchase Treasury securities and agency MBS in the amounts needed to ensure smooth market functioning and the effective transmission of monetary policy to broader financial conditions. The Open Market Desk began offering large-scale overnight and term repurchase agreement operations. The Federal Reserve coordinated with other central banks to enhance the provision of liquidity via the standing U.S. dollar liquidity swap line arrangements and announced the establishment of temporary U.S. dollar liquidity arrangements (swap lines) with additional central banks. The Federal Reserve also established a temporary repurchase agreement facility for foreign and international monetary authorities. (Separately, the Board introduced several facilities with the backing of the U.S. Treasury to more directly support the flow of credit to the economy.) Since these policy actions were announced, the functioning of Treasury and MBS markets has gradually improved. (See the box “Federal Reserve Actions to Ensure Smooth Functioning of Treasury and MBS Markets” in Part 2.) Reflecting these policy responses, the size of the Federal Reserve’s balance sheet increased significantly. (See the box “Developments on the Federal Reserve’s Balance Sheet” in Part 2.)

**Fed Listens.** The Federal Reserve has released a report on its *Fed Listens* initiative. This initiative is part of a broad review of the monetary policy

strategy, tools, and communication practices the Federal Reserve uses to pursue its statutory dual-mandate goals of maximum employment and price stability. A key component of the review was a series of public *Fed Listens* events aimed at consulting with a broad range of stakeholders in the U.S. economy on issues pertaining to the dual-mandate objectives.

## Special Topics

**Disparities in job loss during the pandemic.** The deterioration in labor market conditions since February has been sudden, severe, and widespread. At the same time, workers in some industries, occupations, demographic groups, and locations have experienced more significant employment declines than others. Although disparities in labor market outcomes often arise during recessions, factors unique to this episode have also contributed to the recent divergence. Job losses have been especially severe for those with lower earnings and for the socioeconomic groups that are disproportionately represented among low-wage jobs. (See the box “Disparities in Job Loss during the Pandemic” in Part 1.)

**Small businesses during the COVID-19 crisis.** Small businesses make up nearly half of U.S. private-sector employment and play key roles in local communities. The pandemic poses acute risks to the survival of many small businesses. Their widespread failure would adversely alter the economic landscape of local communities and potentially slow the economic recovery and future labor productivity growth. The Congress, the

Federal Reserve, and other federal agencies are making aggressive efforts to support small businesses. (See the box “Small Businesses during the COVID-19 Crisis” in Part 1.)

**Federal fiscal policy response to COVID-19.** While the economic consequences resulting from the pandemic have been historically large, the amount of fiscal support that has been enacted constitutes the fastest and largest fiscal response to any postwar economic downturn. The pieces of legislation enacted since the arrival of the pandemic that have composed this response are expected to raise government outlays and reduce tax revenues by nearly \$2 trillion in the current fiscal year. (See the box “Federal Fiscal Policy Response to COVID-19” in Part 1.)

**Policy response to COVID-19 in foreign economies.** Authorities in many foreign economies have implemented fiscal, monetary, and regulatory measures to mitigate disruptions caused by the COVID-19 pandemic. Sizable fiscal packages targeted the sudden loss of income by firms and households. Actions by central banks, including purchases of sovereign and private bonds, have aimed to restore market functioning, sustain the provision of credit to businesses and households during the pandemic, and support the economic recovery. Regulatory changes have focused on ensuring that banks sustain their capacity to absorb pandemic-related losses while continuing to lend to households and firms. (See the box “Policy Response to COVID-19 in Foreign Economies” in Part 1.)

# PART 1

## RECENT ECONOMIC AND FINANCIAL DEVELOPMENTS

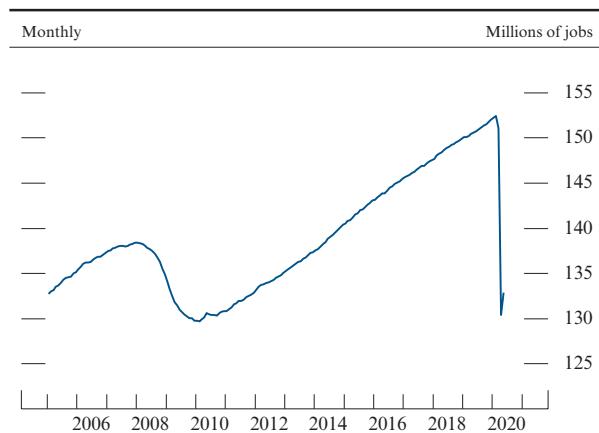
### *Domestic Developments*

#### The COVID-19 outbreak has led to an acute weakening in the labor market since February

In response to the public health crisis caused by the spread of COVID-19, households, businesses, and governments took dramatic measures to slow the spread of the virus. As a result, many sectors of the economy were effectively closed from mid-March through April but have seen some gradual lifting of restrictions since then. The severity, scope, and speed of the ensuing downturn in economic activity have been significantly worse than any recession since World War II. After posting strong gains in both January and February, payroll employment plummeted by an unprecedented 22 million in March and April before adding back 2.5 million jobs in May (figure 1). The unemployment rate jumped to 14.7 percent in April, the highest level since the Great Depression. In May, the unemployment rate fell to 13.3 percent, which was almost 10 percentage points above the February level (figure 2). Although unemployment soared for all major racial and ethnic groups, the unemployment rate for Hispanics posted the largest increase over this period (figure 3). (For more discussion of the pandemic's effects on the labor market, see the box "Disparities in Job Loss during the Pandemic.")

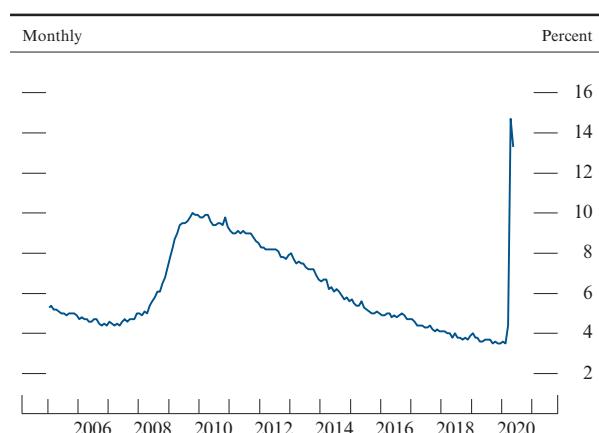
Data received since the survey week for payroll employment in May suggest that job gains have continued.<sup>2</sup> Although initial claims for

#### 1. Nonfarm payroll employment



SOURCE: Bureau of Labor Statistics via Haver Analytics.

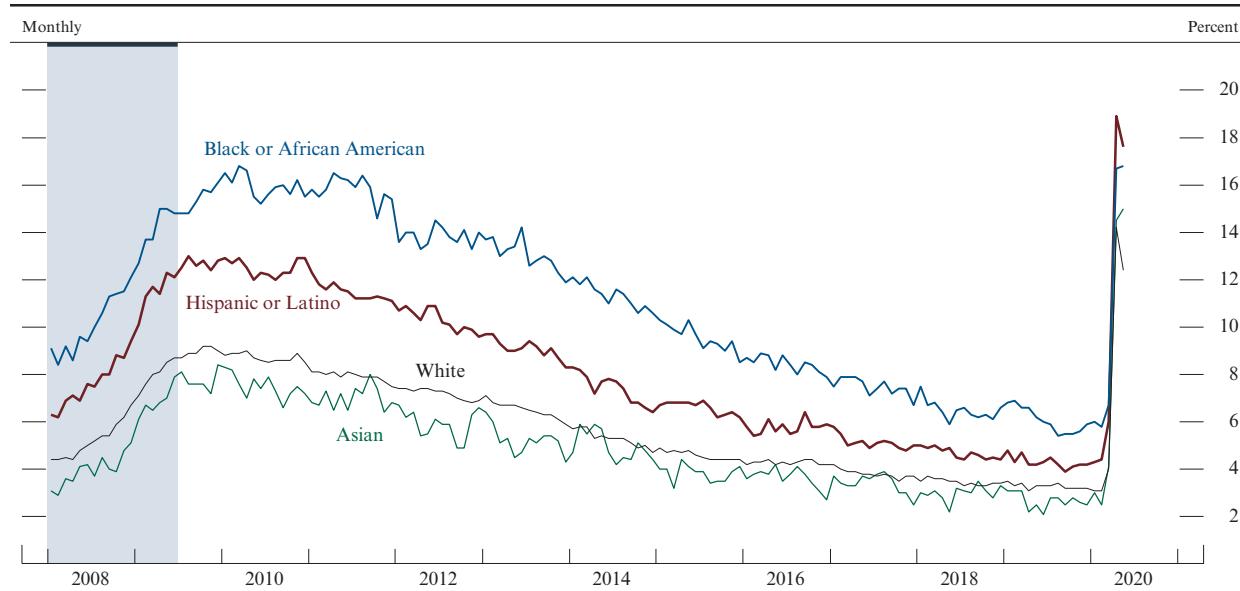
#### 2. Civilian unemployment rate



SOURCE: Bureau of Labor Statistics.

2. The Bureau of Labor Statistics (BLS) conducts a monthly survey, the Current Employment Statistics survey, to estimate payroll employment. In that survey, employers are asked to report the number of workers on their payrolls during the reference period, which is the pay period that includes the 12th of the month. The unemployment and labor force participation rates (along with other data) are estimated based on a separate monthly survey conducted by the Census Bureau for the BLS, the Current Population Survey, which references the week including the 12th of the month.

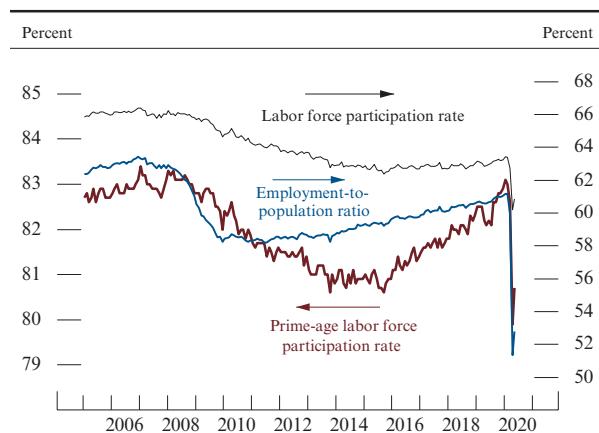
## 3. Unemployment rate, by race and ethnicity



NOTE: Unemployment rate measures total unemployed as a percentage of the labor force. Persons whose ethnicity is identified as Hispanic or Latino may be of any race. The shaded bar with top cap indicates the period of the Great Recession as defined by the National Bureau of Economic Research (NBER). The NBER has determined that recent economic activity peaked in February 2020.

SOURCE: Bureau of Labor Statistics via Haver Analytics.

## 4. Labor force participation rates and employment-to-population ratio



NOTE: The data are monthly. The prime-age labor force participation rate is a percentage of the population aged 25 to 54. The labor force participation rate and the employment-to-population ratio are percentages of the population aged 16 and over.

SOURCE: Bureau of Labor Statistics via Haver Analytics.

unemployment insurance have remained high, it is unclear whether these new claims reflect additional large numbers of layoffs or that states are clearing their backlogs of applications. In addition, weekly employment data from the payroll processor ADP indicate that rehiring has continued and that payroll employment will likely move up again in June, albeit from what remains a very low level.

The labor force participation rate (LFPR)—the share of the population that is either working or actively looking for work—fell from around 63½ percent early this year to 60.8 percent in May (figure 4). The May LFPR reading was one of the lowest since the early 1970s.<sup>3</sup> Poor employment prospects or concerns about safety in the workplace might have caused some of the newly unemployed to exit the labor force or induced others to refrain from entering.<sup>4</sup> However, with so much

3. The LFPR in April, at 60.2 percent, was the lowest since January 1973.

4. Individuals who have been placed on temporary layoff or expect to be recalled are classified as in the labor force and unemployed. Recently, the BLS reported

of the labor market shut in and most new hiring at a standstill, the distinction between being unemployed and out of the labor force likely has become especially blurred. The employment-to-population ratio for individuals 16 and over—the share of that segment of the population who are working—combines movements in both unemployment and labor force participation. This measure was 51.3 percent in April and 52.8 percent in May, the lowest readings in the history of this series, which began in 1948.

### **Wages are likely being held down, although compositional shifts have temporarily boosted some wage measures**

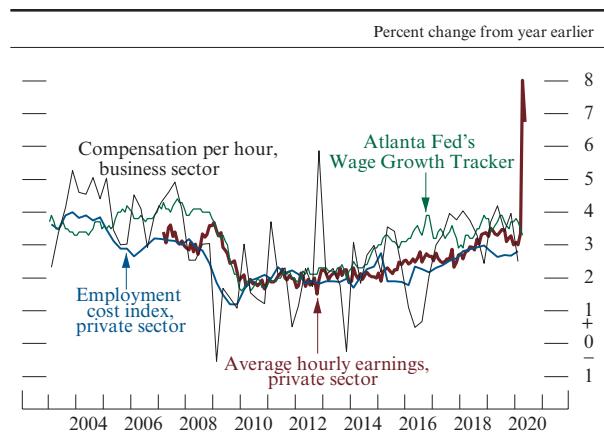
While reliable data are limited, anecdotal evidence suggests that the economic downturn is putting downward pressure on wages. The series on wage growth computed by the Federal Reserve Bank of Atlanta, which tracks the median 12-month wage growth of individuals reporting to the Current Population Survey, has changed little in recent months (figure 5).<sup>5</sup> In contrast, measures that look at average wage costs have jumped because of compositional effects, as COVID-19 mitigation efforts and weaker demand have disproportionately affected lower-wage workers and left relatively more higher-wage workers on payrolls. Indeed, average hourly earnings from the payroll survey jumped 6.7 percent over the 12 months ending in May, largely reflecting this change in the composition of private payrolls. In the first quarter, both the employment cost index (ECI) and compensation per hour, which include both wages and benefits, posted moderate

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that a large number of job losers on temporary layoff improperly classified themselves as being “employed but on unpaid absence” in March, April, and May. If these respondents had correctly classified themselves as unemployed but on temporary layoff, the unemployment rate would have been 5 percentage points higher in April and 3 percentage points higher in May.

5. The Federal Reserve Bank of Atlanta’s measure differs from others in that it measures the wage growth only of workers who were employed both in the current survey month and 12 months earlier.

### **5. Measures of change in hourly compensation**



NOTE: Business-sector compensation is on a 4-quarter percent change basis. For the private-sector employment cost index, change is over the 12 months ending in the last month of each quarter; for private-sector average hourly earnings, the data are 12-month percent changes and begin in March 2007; for the Atlanta Fed's Wage Growth Tracker, the data are shown as a 3-month moving average of the 12-month percent change and extend through April 2020.

SOURCE: Bureau of Labor Statistics; Federal Reserve Bank of Atlanta, Wage Growth Tracker; all via Haver Analytics.

## Disparities in Job Loss during the Pandemic

For nearly all industries, occupations, demographic groups, and locations, employment was substantially lower in May than in February. While job loss has been pervasive, some groups have experienced more severe employment declines than others, particularly workers with lower earnings and the socioeconomic groups that are disproportionately represented among low-wage jobs; employment declines have also been larger in some states than in others. Although disparities in labor market outcomes across groups often widen during recessions, certain factors unique to this episode—in particular, the social-distancing measures taken by households, businesses, and governments to limit in-person interactions—have contributed to the recent divergence.

Because jobs differ in the degree to which they involve personal contact and physical proximity, in whether they provide an “essential function,” and in whether their business operations can be conducted remotely, social-distancing measures have had disparate consequences across industries and, in turn, on particular types of workers who tend to work in heavily affected industries. For example, the net proportion of jobs lost since February has been greater in industries such as accommodation and food services (where social-distancing regulations have severely affected many businesses and where workers are frequently unable to work from home) and smaller in industries such as professional and business services and financial activities (where workers may be less affected by social distancing and are generally more able to conduct work from home).<sup>1</sup> In keeping with this pattern, states that rely heavily on tourism—such as Hawaii and Nevada—saw exceptionally large increases in unemployment through April (the most recent month for which state unemployment rate data are available).

Net job loss since February thus far has been concentrated in lower-wage industries, suggesting that employment declines have been disproportionately

1. In May, employment in the accommodation and food service industry was 40 percent lower than in February. By contrast, employment in professional and business services was around 10 percent lower than in February, and employment in financial activities was 3 percent lower. Responses to a 2017–18 survey by the U.S. Census Bureau indicated that less than 20 percent of workers in accommodation and food service reported being able to work from home, compared with more than 50 percent in professional and business services and financial activities. See Bureau of Labor Statistics (2019), “Job Flexibilities and Work Schedules—2017–2018 Data from the American Time Use Survey,” press release, September 24, <https://www.bls.gov/news.release/pdf/flex2.pdf>.

large among lower-paid workers who may be less able to financially weather an extended period of unemployment. Indeed, estimates of employment declines based on a worker’s previous wage (using data from the payroll provider ADP), shown in figure A, also indicate this disproportionate pattern of job loss. From February to mid-April, employment fell substantially more for workers who were previously earning wages in the bottom fourth of wage earners, compared with other workers. Despite somewhat more rapid job growth for lower-wage earners in subsequent weeks, employment for lower-wage earners remains roughly 35 percent lower than in February, compared with 5 to 15 percent lower employment for higher-wage earners. These differences are also consistent with results from a recent survey conducted by the Federal Reserve Board that indicated that among households with an annual income of \$40,000 or less, nearly 40 percent of individuals who were employed in February experienced job loss in March or early April, compared with 20 percent of the population overall.<sup>2</sup>

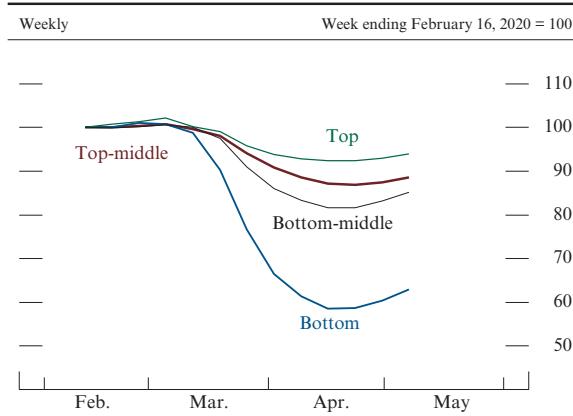
Figure B illustrates that the decline in employment (as a fraction of the population) has also been especially large for people aged 16 to 24 compared with older workers, for people without a bachelor’s degree compared with those with at least a bachelor’s degree, and for Hispanics compared with other races and ethnicities. In addition, employment rates have dropped somewhat more for women than for men, and for Asians and African Americans compared with whites. In general, the groups with the larger employment declines are most commonly employed in the industries that have experienced the greatest net employment declines thus far, such as accommodation, food service, and retail trade; these demographic groups are also less likely to report being able to work from home.

In the months ahead, labor market prospects for the unemployed and underemployed—both overall and for particularly hard-hit groups of workers—will largely depend on the course of the COVID-19 outbreak itself and on actions taken to halt its spread. Recent job losses differ from those of previous recessions not only in the suddenness and severity with which they occurred, but also in the unusually high share of

(continued)

2. See Board of Governors of the Federal Reserve System (2020), *Report on the Economic Well-Being of U.S. Households in 2019, Featuring Supplemental Data from April 2020* (Washington: Board of Governors, May) <https://www.federalreserve.gov/publications/files/2019-report-economic-well-being-us-households-202005.pdf>.

### A. Employment declines for low-, middle-, and high-wage workers



NOTE: Data are weekly and extend through May 10, 2020. Wage quartiles are defined using the February wage distribution.

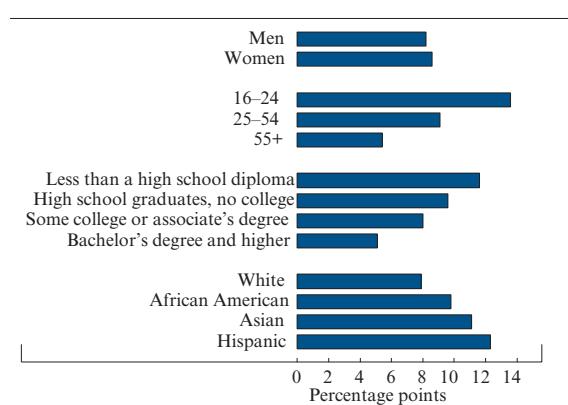
SOURCE: Federal Reserve Board staff calculations using ADP, LLC, microdata.

workers who expect them to be temporary.<sup>3</sup> Research has shown that workers who return to their previous employers after a temporary layoff tend to earn wages similar to what they were making previously, whereas laid-off workers who do not return to their previous employer experience a longer-lasting decline in earnings.<sup>4</sup> If public health conditions improve quickly so that social-distancing measures can be further relaxed and consumers become more willing to engage in a wider range of commercial activities,

3. Among unemployed job losers surveyed in the Current Population Survey, fully 90 percent of those surveyed in mid-April reported that they expected to be recalled by their previous employer. This proportion declined slightly to 87 percent among those surveyed in mid-May. In addition, the Federal Reserve Board's recent survey of U.S. households reports that around 90 percent of individuals who experienced job loss in March or early April said that their employer indicated that they would return to their job at some point; see Board of Governors, *Report on the Economic Well-Being of U.S. Households in 2019*, in box note 2. By comparison, the share of job losers who expected to be recalled by their previous employer never exceeded 50 percent at any point during the Great Recession.

4. See Louis S. Jacobson, Robert J. LaLonde, and Daniel G. Sullivan (1993), "Earnings Losses of Displaced Workers," *American Economic Review*, vol. 83 (September), pp. 685–709; Shigeru Fujita and Giuseppe Moscarini (2017), "Recall and Unemployment," *American Economic Review*, vol. 107 (December), pp. 3875–916; and Marta Lachowska, Alexandre Mas, and Stephen A. Woodbury (forthcoming), "Sources of Displaced Workers' Long-Term Earnings Losses," *American Economic Review*.

### B. Decline in employment-to-population ratio, by demographic group



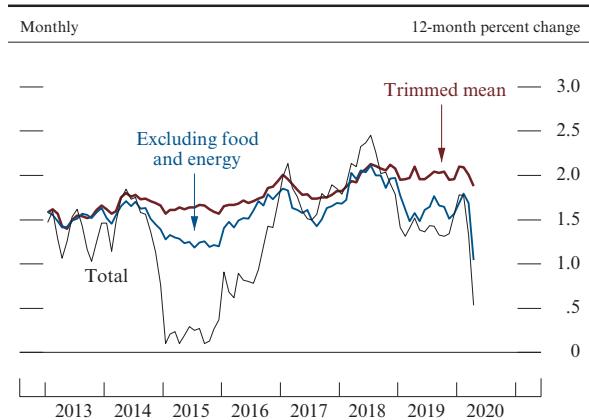
NOTE: The data are seasonally adjusted and represent the change from February to May 2020.

SOURCE: Bureau of Labor Statistics via Haver Analytics.

workers' expectations of being recalled may prove true, and many recent job losses may turn out to be temporary layoffs from which workers can quickly recover. However, if economic activity remains weak for a prolonged period, businesses that had intended to reopen at full capacity may instead be compelled to shutter completely or to resume operations at a diminished scale, turning many temporary layoffs into permanent job losses. Perhaps reflecting this possibility, the number of unemployed workers reporting that they had permanently separated from their previous employer rose by roughly 300,000 between April and May, even as the total number of unemployed persons began to decline. As lower-paid workers are disproportionately employed by small businesses—which typically have fewer financial resources than larger firms—they may be at heightened risk of seeing their former employers shut down and hence experiencing the scarring effects of permanent separations.<sup>5</sup>

5. See Gregory Acs and Austin Nichols (2007), "Low-Income Workers and Their Employers: Characteristics and Challenges," paper presented at "Public and Private Roles in the Workplace: What Are the Next Steps in Supporting Working Families?" a roundtable held at the Urban Institute, Washington, May 23, [http://webarchive.urban.org/UploadedPDF/411532\\_low\\_income\\_workers.pdf](http://webarchive.urban.org/UploadedPDF/411532_low_income_workers.pdf); and Nicholas Bloom, Fatih Guvenen, Benjamin S. Smith, Jae Song, and Till von Wachter (2018), "The Disappearing Large-Firm Wage Premium," *American Economic Review Papers and Proceedings*, vol. 108 (May), pp. 317–22.

6. Change in the price index for personal consumption expenditures



NOTE: The data extend through April 2020.

SOURCE: For trimmed mean, Federal Reserve Bank of Dallas; for all else, Bureau of Economic Analysis; all via Haver Analytics.

gains, with neither series reflecting much of the pandemic's repercussions.<sup>6</sup>

### Price inflation has moved significantly lower

As measured by the 12-month change in the price index for personal consumption expenditures (PCE), inflation was just 0.5 percent in April, compared with 1.6 percent over the same period a year ago (figure 6). The abrupt slowing in total PCE price inflation this year partly reflects sharp declines in consumer energy prices that resulted from the collapse in oil prices. In contrast, food prices have moved higher despite declines in food commodity prices, likely reflecting higher demand at retail grocery stores in combination with pandemic-related supply chain issues. In addition to the drop in energy prices, the unprecedented reductions in demand for some services as a result of social distancing have led to sharp drops in prices for airfares and lodging away from home. These price declines led the 12-month measure of core PCE inflation—that is, inflation excluding volatile consumer food and energy prices—to move significantly lower, falling from 1.8 percent in February to just 1.0 percent in April, as the monthly readings for March and April were exceptionally low. An appreciation of the dollar has also contributed to the slowing in core inflation.

The trimmed mean measure of PCE price inflation constructed by the Federal Reserve Bank of Dallas provides an alternative way to purge measured inflation of transitory influences, and it is less sensitive than the core measure to extreme price movements such as the recent outsized swings in airfares and lodging.<sup>7</sup> The 12-month change in this measure

6. The ECI references the March survey week, a period before most of the pandemic-induced layoffs. The wage component of compensation per hour also references the March survey week but was adjusted by the BLS with additional information to better capture job losses during the latter half of March.

7. The trimmed mean price index excludes whichever prices showed the largest increases or decreases in a given month. Over the past 20 years, changes in the trimmed

edged down to 1.9 percent in April from 2.1 percent in February.

### **Oil prices are notably lower this spring**

Against the backdrop of a global collapse in the demand for oil and a rapid increase in oil inventories, the Brent price of crude oil plunged from about \$65 per barrel in early January to around \$20 per barrel at the end of April (figure 7).<sup>8</sup> More recently, prices have rebounded to about \$40 per barrel, as an agreement between OPEC (Organization of the Petroleum Exporting Countries) and Russia to cut oil production by nearly 10 percent of global output appears to have taken effect. Additionally, the dramatic downturn in global oil demand appears to be abating as countries begin to ease their COVID-19 lockdown policies. The decline in oil prices has contributed to similar movements in retail gasoline prices, which have also fallen in recent months.

### **Reported prices of imports other than energy fell**

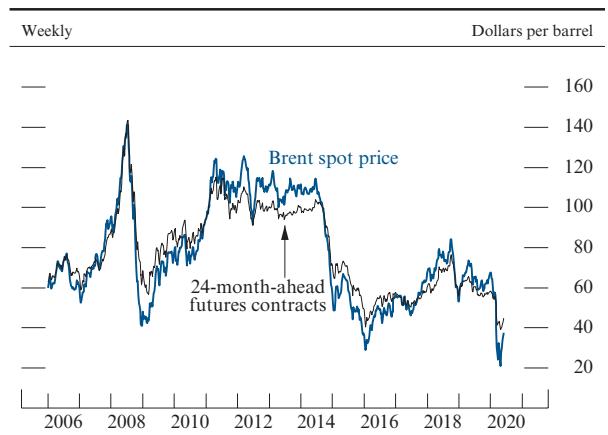
After rising early this year, nonfuel import prices fell in April, as the dollar appreciated and the sharp decline in global demand put downward pressure on non-oil commodity prices—a substantial component of nonfuel import prices (figure 8). Prices of industrial metals fell sharply in the first months of the year but edged up in May, as economic activity in some economies began to revive.

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mean index have averaged about  $\frac{1}{4}$  percentage point above core PCE inflation and 0.1 percentage point above total PCE inflation.

8. On April 20, the price of front-month oil futures contracts for West Texas Intermediate (WTI) closed at negative \$38 per barrel. These WTI futures contracts are settled by physical delivery; as worries about the lack of available storage space intensified, prices spiraled downward. Few contracts were actually traded at these negative prices, and prices recovered in the following days.

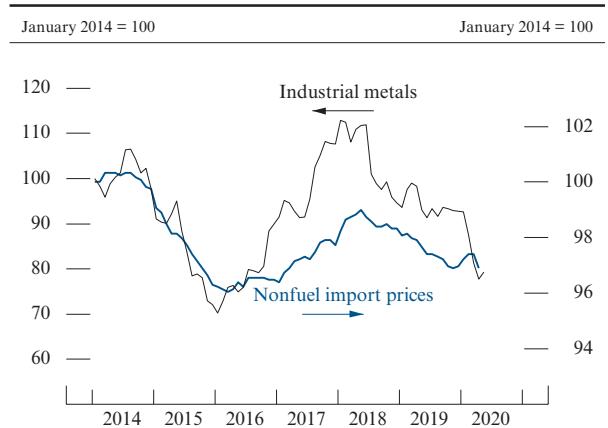
### **7. Spot and futures prices for crude oil**



NOTE: The data are weekly averages of daily data. The weekly data begin on Thursdays and extend through June 3, 2020.

SOURCE: ICE Brent Futures via Bloomberg.

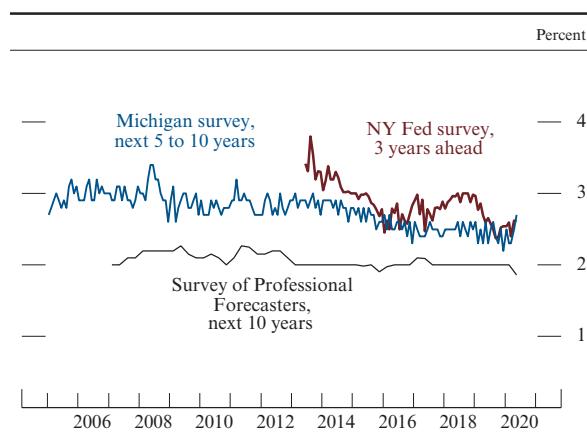
### **8. Nonfuel import prices and industrial metals indexes**



NOTE: The data for nonfuel import prices are monthly and extend through April 2020. The data for industrial metals are monthly averages of daily data and extend through May 31, 2020.

SOURCE: For nonfuel import prices, Bureau of Labor Statistics; for industrial metals, S&P GSCI Industrial Metals Spot Index via Haver Analytics.

## 9. Surveys of inflation expectations



NOTE: The series are medians of the survey responses. The Michigan survey data are monthly. The Survey of Professional Forecasters data for inflation expectations for personal consumption expenditures are quarterly, begin in 2007:Q1, and extend through 2020:Q2. The NY Fed survey data are monthly and begin in June 2013.

SOURCE: University of Michigan Surveys of Consumers; Federal Reserve Bank of New York, Survey of Consumer Expectations; Federal Reserve Bank of Philadelphia, Survey of Professional Forecasters.

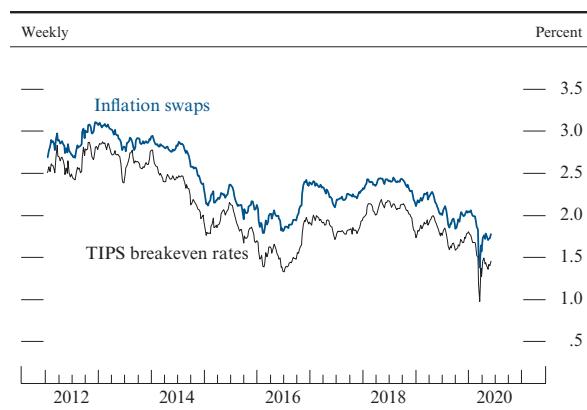
**However, survey-based measures of long-run inflation expectations have been broadly stable . . .**

Despite the tumultuous situation of recent months, survey-based measures of inflation expectations at medium- and longer-term horizons, which likely influence actual inflation by affecting wage- and price-setting decisions, so far have changed little (figure 9). In the University of Michigan Surveys of Consumers, the median value for inflation expectations over the next 5 to 10 years was 2.7 percent in May and has fluctuated around 2½ percent since the end of 2016. In the Survey of Consumer Expectations, conducted by the Federal Reserve Bank of New York, the median of respondents' expected inflation rate three years ahead moved lower, on net, in the second half of last year and has averaged 2.5 percent since. In the Survey of Professional Forecasters, conducted by the Federal Reserve Bank of Philadelphia, the median expectation for the annual rate of increase in the PCE price index over the next 10 years edged down to 1.9 percent in the second-quarter survey, below the 2 percent level that had been reported for some time.

. . . but market-based measures of inflation compensation are notably lower

Market-based measures of inflation compensation can also be used to make inferences about inflation expectations. However, the inference is not straightforward because market-based measures can be importantly affected by changes in premiums that provide compensation for bearing inflation and liquidity risks. Measures of longer-term inflation compensation—derived either from differences between yields on nominal Treasury securities and those on comparable-maturity Treasury Inflation-Protected Securities (TIPS) or from inflation swaps—have decreased, on net, since the end of 2019 (figure 10). The 5-year and 5-to-10-year-forward measures of inflation compensation are about 60 basis points and 40 basis points lower, respectively, than at the

## 10. 5-to-10-year-forward inflation compensation



NOTE: The data are weekly averages of daily data and extend through June 5, 2020. TIPS is Treasury Inflation-Protected Securities.

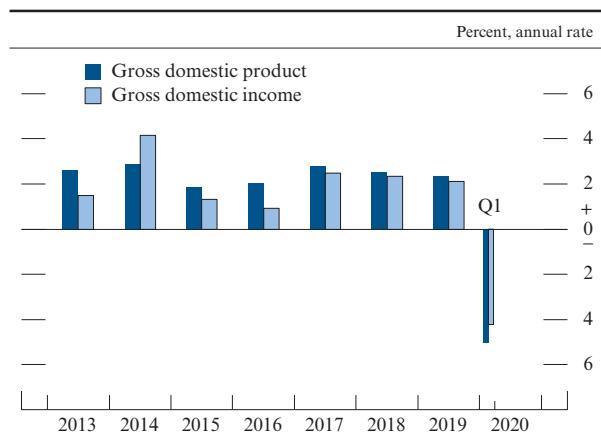
SOURCE: Federal Reserve Bank of New York; Barclays; Federal Reserve Board staff estimates.

beginning of the year.<sup>9</sup> Both measures dropped sharply in March, with the 5-year measure reaching the lowest level since the Global Financial Crisis and the 5-to-10-year measure hitting new historical lows. These declines partly reflected a reduction in the relative liquidity of TIPS compared with nominal Treasury securities. As liquidity improved, inflation compensation partially retraced. The TIPS-based measure of 5-to-10-year-forward inflation compensation and the analogous measure from inflation swaps are now about 1½ percent and 1¾ percent, respectively.<sup>10</sup>

### Real gross domestic product has contracted severely and with unprecedented speed

After posting a moderate gain in 2019, real gross domestic product (GDP) fell at an annual rate of 5 percent in the first quarter, with that decline likely all occurring in the final weeks of the quarter (figure 11). In the second quarter, real GDP appears to be plummeting at a breathtaking pace. Indeed, many professional forecasters are projecting second-quarter real GDP to fall at an annual rate of 30 to 40 percent. This severe contraction reflects a steep drop in consumer spending associated with measures to contain the spreading virus. Uncertainty about the economic outlook also likely has pushed down business fixed investment, and events abroad have led to a steep drop in exports. In the manufacturing sector, output fell sharply in March and posted its largest decline on record in April as many factories closed temporarily for all or most of

### 11. Change in real gross domestic product and gross domestic income

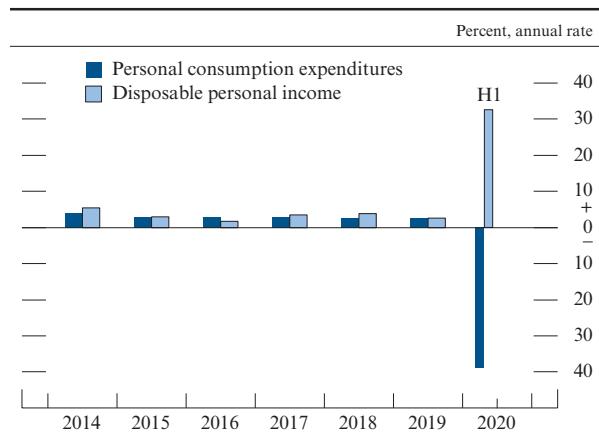


SOURCE: Bureau of Economic Analysis via Haver Analytics.

9. Inflation compensation implied by the TIPS breakeven inflation rate is based on the difference, at comparable maturities, between yields on nominal Treasury securities and yields on TIPS, which are indexed to the total consumer price index (CPI). Inflation swaps are contracts in which one party makes payments of certain fixed nominal amounts in exchange for cash flows that are indexed to cumulative CPI inflation over some horizon. Inflation compensation derived from inflation swaps typically exceeds TIPS-based compensation, but week-to-week movements in the two measures are highly correlated.

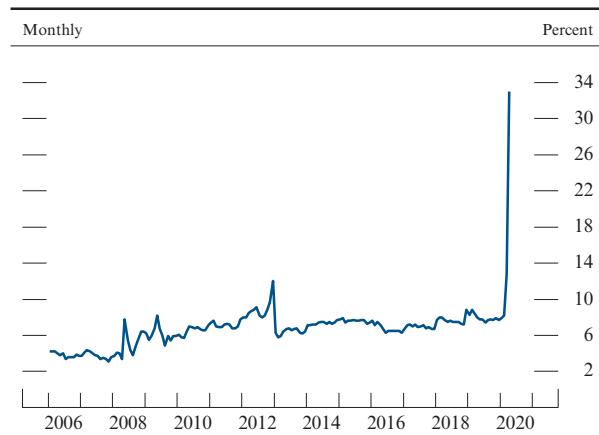
10. As these measures are based on CPI inflation, one should probably subtract about ¼ percentage point—the average differential with PCE inflation over the past two decades—to infer inflation compensation on a PCE basis.

12. Change in real personal consumption expenditures and disposable personal income



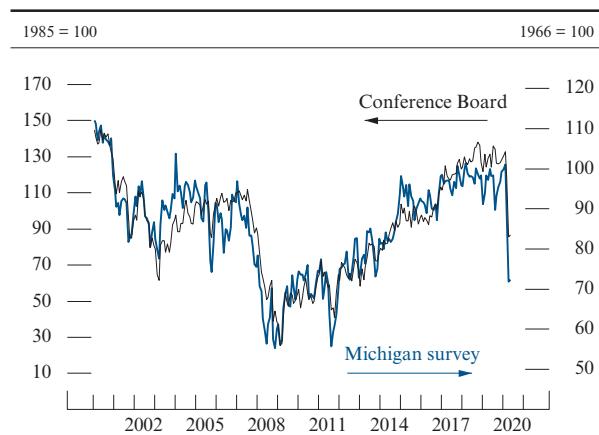
NOTE: The values for 2020:H1 are the annualized April/Q4 changes.  
SOURCE: Bureau of Economic Analysis via Haver Analytics.

13. Personal saving rate



NOTE: The data extend through April 2020.  
SOURCE: Bureau of Economic Analysis via Haver Analytics.

14. Indexes of consumer sentiment



NOTE: The data are monthly.  
SOURCE: University of Michigan Surveys of Consumers; Conference Board.

both months. This decrease in factory output included nearly all motor vehicle and civilian aircraft manufacturers. However, amid some easing of restrictions, there are signs that manufacturing activity moved up in May, partly as a result of the ramp-up in automotive production.

**Social distancing has led to a dramatic plunge in household spending and earnings**

After having increased at a solid 2.7 percent pace in 2019, real PCE fell at an annual rate of 6.8 percent in the first quarter of 2020, one of the largest quarterly drops in the history of this series (figure 12).<sup>11</sup> As concerns about the virus outbreak grew and government restrictions mounted, real PCE collapsed, falling 6.7 percent in March and a record 13.2 percent in April. Although indicators point to an increase in May—which is consistent with some relaxation of government restrictions—taken together, the April data and May indicators point to an unprecedented decline in second-quarter consumer outlays. Real disposable personal income (DPI), a measure of households' after-tax purchasing power, fell in the first quarter, mostly because of a drop in household income from wages and salaries. However, in April, real DPI jumped 13½ percent, pushing its April level up relative to the fourth quarter at an annual rate of more than 30 percent. Although aggregate earnings from employment collapsed in April, this income loss was more than offset by government income support from unemployment insurance and stimulus payments.<sup>12</sup> With households unwilling or unable to spend a commensurate amount of their available aggregate income, the April saving rate shot up to 33 percent (figure 13).

11. Quarterly real PCE begins in the first quarter of 1947.

12. These programs boosted aggregate DPI; however, the income of many individuals and households was lower in April than in February either because they did not qualify for benefits or because of delays between job loss and the receipt of those benefits.

## Consumer sentiment has tumbled . . .

Households' concerns about their economic situation, as reflected in consumer sentiment, may be leading them to save more for precautionary reasons. The University of Michigan Surveys of Consumers index of consumer sentiment dropped almost 29 points between February and May (figure 14), with declines in both the current and expected conditions indexes. The Conference Board survey measure in May also was down sharply from February, with respondents similarly grim about current prospects but somewhat more upbeat than in the Michigan survey about future conditions.

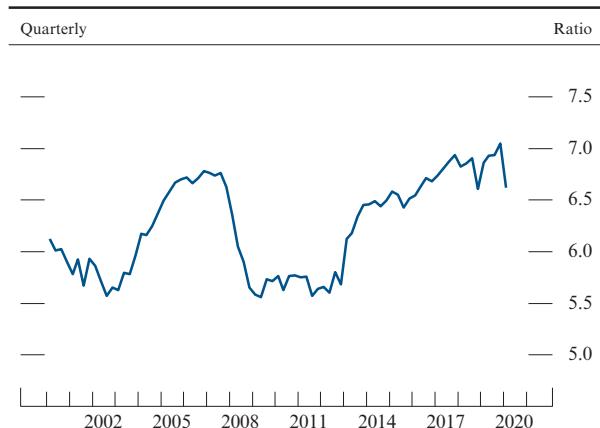
## . . . and overall household wealth fell in the first quarter

In the first quarter, the ratio of aggregate household net worth to household income fell, driven by sharp declines in equity prices (figure 15). House prices—which tend to respond to economic developments more slowly than equity prices and are of particular importance for the value of assets held by a large portion of households—continued to increase in the first quarter and moved up further in April (figure 16). Since March, equity prices have posted sizable gains but are still below their February peak.

## Consumer lending standards have become less accommodative, but credit is still available to households with strong credit profiles

Since the onset of the pandemic, consumer lending standards have become less accommodative on balance. Borrowing conditions are tight for individuals with low credit ratings, but credit remains available to those with strong credit profiles. Nevertheless, consumer borrowing has fallen as spending has slumped (figure 17). While banks have tightened lending standards on credit card and auto loans, according to the April Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS), captive auto lenders have rolled out generous loan incentives to boost

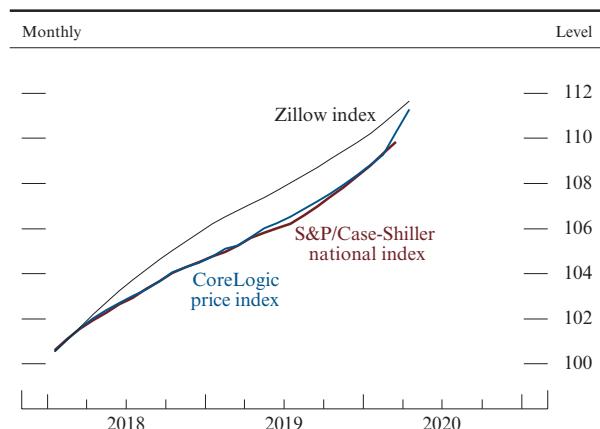
## 15. Wealth-to-income ratio



NOTE: The series is the ratio of household net worth to disposable personal income. Household net worth incorporates preliminary estimates for 2020:Q1.

SOURCE: For net worth, Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States"; for income, Bureau of Economic Analysis via Haver Analytics.

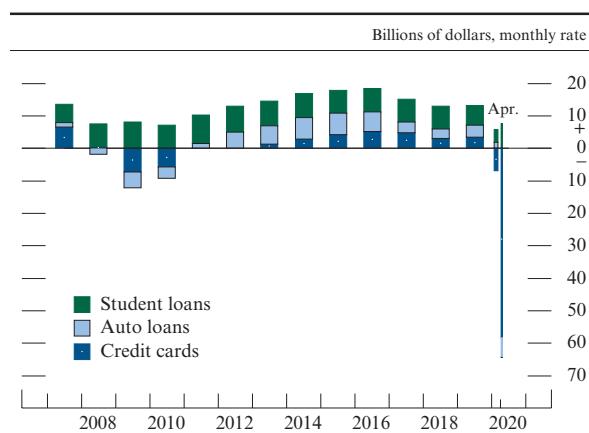
## 16. Prices of existing single-family houses



NOTE: The data for the S&P/Case-Shiller index extend through March 2020. The data for the Zillow index and CoreLogic index extend through April 2020.

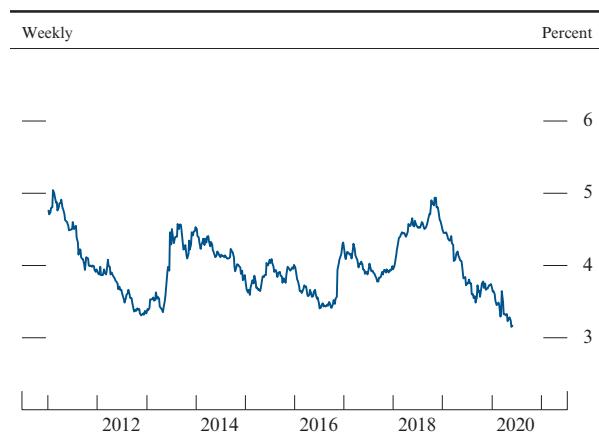
SOURCE: CoreLogic Home Price Index; Zillow; S&P/Case-Shiller U.S. National Home Price Index. The S&P/Case-Shiller index is a product of S&P Dow Jones Indices LLC and/or its affiliates. (For Dow Jones Indices licensing information, see the note on the Contents page.)

## 17. Consumer credit flows



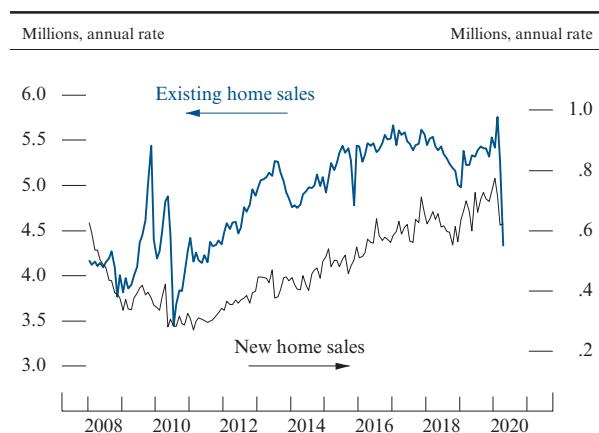
NOTE: The data are seasonally adjusted by the Federal Reserve Board.  
SOURCE: Federal Reserve Board, Statistical Release G.19, "Consumer Credit."

## 18. Mortgage rates



NOTE: The data are weekly through June 4, 2020.  
SOURCE: Freddie Mac Primary Mortgage Market Survey.

## 19. New and existing home sales



NOTE: The data are monthly and extend through April 2020. New home sales includes only single-family sales. Existing home sales includes single-family, condo, townhome, and co-op sales.

SOURCE: For new home sales, Census Bureau; for existing home sales, National Association of Realtors; all via Haver Analytics.

sales.<sup>13</sup> Due to the high cost of servicing loans in forbearance and uncertainty about whether borrowers will be able to resume making payments when the forbearance period ends, mortgages have become hard to obtain for borrowers with low credit scores or with incomes that are difficult to document. Credit conditions have also tightened significantly for other higher-risk loans, such as jumbo loans and cash-out refinances, and the increase in costs and risks associated with originating mortgages has raised primary mortgage rates relative to yields on mortgage-backed securities (MBS). Nevertheless, mortgage rates currently have fluctuated around the lowest levels seen in the past 10 years (figure 18).

### Housing-sector activity has fallen sharply after starting the year on a solid footing . . .

After turning up starting around the middle of 2019 as mortgage rates moved lower, new home sales, existing home sales, and single-family starts and permits have posted outsized declines beginning in March that are all close to the largest ever recorded (figures 19 and 20). Similarly, the COVID-19 outbreak and mitigation efforts have caused households' perceptions of homebuying conditions and builders' ratings of current sales to move down despite historically low mortgage rates.

### . . . and business fixed investment has tumbled . . .

The pandemic has curtailed business investment, as many investment projects were delayed or canceled because of lower profit expectations, concerns about future demand, reduced credit availability, and uncertainty about how businesses will operate in the future. Real business fixed investment—that is, private expenditures for equipment, structures, research and development (R&D), and other intellectual property—contracted at an annual rate of about 8.0 percent in the first quarter of 2020, coming off a drop of 0.4 percent for 2019 as a whole (figure 21). The decline was centered in equipment investment as well

13. Even with lending standards unchanged, credit access can tighten as people lose their jobs, fall behind on their payments, and see their scores deteriorate.

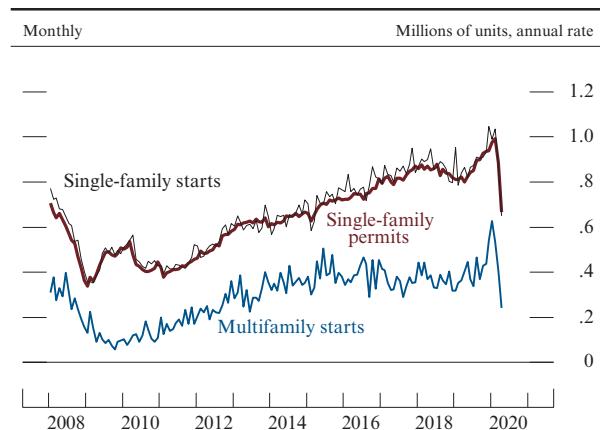
as in outlays for nonresidential buildings. In addition, lower oil prices contributed to a drop in investment in drilling and mining structures. Investment in intellectual property like software, R&D, and entertainment originals recorded a tepid increase in the first quarter after posting solid gains in 2019. Forward-looking indicators of business spending, such as new orders of nondefense capital goods, excluding the volatile aircraft category, have plunged recently amid sharply lower business sentiment and profit expectations from industry analysts.

### **... while corporate financing conditions have deteriorated**

Financing conditions for nonfinancial firms were robust early in the year but tumbled during the global spread of COVID-19 (figure 22). The gross issuance of corporate bonds in the investment-grade segment was solid until late February, when it became intermittent at best as market functioning deteriorated. Meanwhile, issuance in the speculative-grade segment was essentially nonexistent following the broad risk-off sentiment in the market over the public health crisis. While investment-grade issuance recovered at a strong pace following the March Federal Reserve announcement on corporate credit funding facilities, high-yield issuance began to pick up only after the April announcement to expand the facilities to include support for some recent “fallen angels”—bonds downgraded to a speculative-grade credit rating from an investment-grade rating because of declining credit quality—and high-yield exchange-traded funds.<sup>14</sup> The solvency outlook of corporate bonds for both the investment- and speculative-grade segments of the market dropped over the first

14. See Board of Governors of the Federal Reserve System (2020), “Federal Reserve Announces Extensive New Measures to Support the Economy,” press release, March 23, <https://www.federalreserve.gov/newsreleases/monetary20200323b.htm>; and Board of Governors of the Federal Reserve System (2020), “Federal Reserve Takes Additional Actions to Provide Up to \$2.3 Trillion in Loans to Support the Economy,” press release, April 9, <https://www.federalreserve.gov/newsreleases/monetary20200409a.htm>.

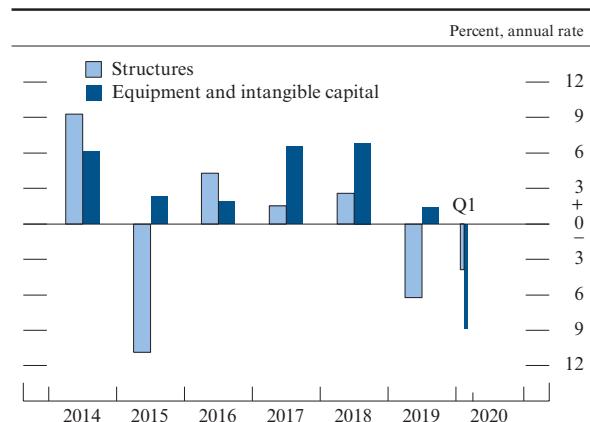
### **20. Private housing starts and permits**



NOTE: The data extend through April 2020.

SOURCE: Census Bureau via Haver Analytics.

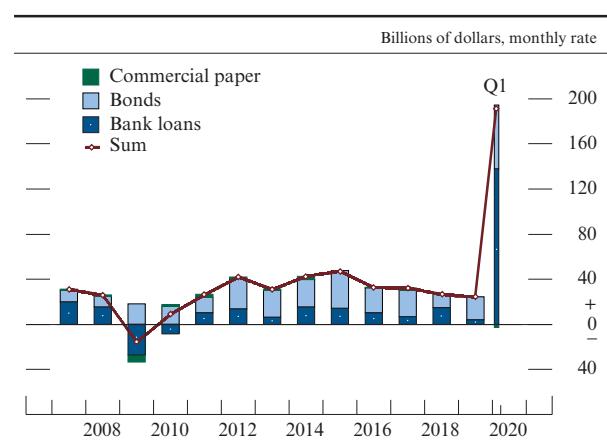
### **21. Change in real business fixed investment**



NOTE: Business fixed investment is known as “private nonresidential fixed investment” in the national income and product accounts.

SOURCE: Bureau of Economic Analysis via Haver Analytics.

### **22. Selected components of net debt financing for nonfinancial businesses**



NOTE: The data incorporate preliminary estimates for 2020:Q1.

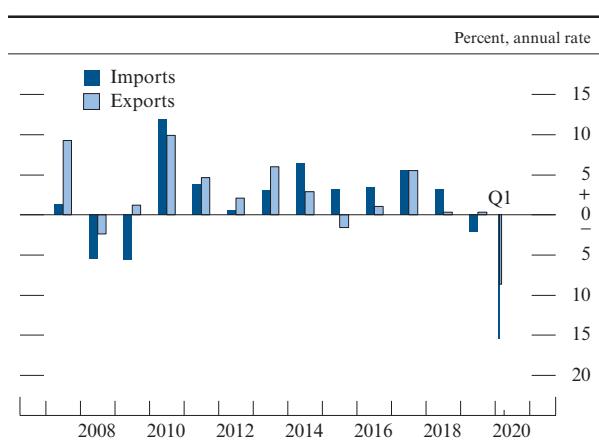
SOURCE: Federal Reserve Board, Statistical Release Z.1, “Financial Accounts of the United States.”

half of the year as the pace of downgrades intensified and the volume of defaults picked up. Furthermore, the monthly volume of fallen angels reached a record high in March, and market analysts forecast this trend to continue with a record annual volume of debt being downgraded to high yield this year amid declining earnings and elevated leverage. Spreads on corporate bond yields over comparable-maturity Treasury securities have widened substantially amid worsening credit conditions. Institutional leveraged loan issuance volume was robust to start the first quarter, but it subsequently came to a standstill in March because of the pandemic. Newly launched volume increased somewhat starting in April but remains at subdued levels. Banks tightened standards and terms significantly on commercial and industrial (C&I) loans, according to respondents to the April SLOOS, and demand for C&I loans strengthened amid concerns about the pandemic. C&I loan growth at banks has picked up in the first half of the year, largely driven by soaring credit-line drawdowns since the beginning of March, as firms with existing credit lines sought to increase their internal cash buffers, and by lending to smaller businesses through the Paycheck Protection Program (PPP) since April.<sup>15</sup>

### Both exports and imports declined sharply in the first quarter

The sudden drop in global demand and production and stifled global value chains took a toll on international trade. U.S. real exports of goods and services in the first quarter declined at an annual rate of nearly 9 percent, as exports of services—including travel to the United States—plunged (figure 23). Real imports fell just over 15 percent, as U.S. consumers and firms cut back on spending, travel abroad halted, and shipments of imported goods were delayed. The trade

#### 23. Change in real imports and exports of goods and services



SOURCE: Bureau of Economic Analysis via Haver Analytics.

15. For a more detailed description of the economic conditions for small businesses, including a discussion of the support provided by Federal Reserve facilities, see the box “Small Businesses during the COVID-19 Crisis.”

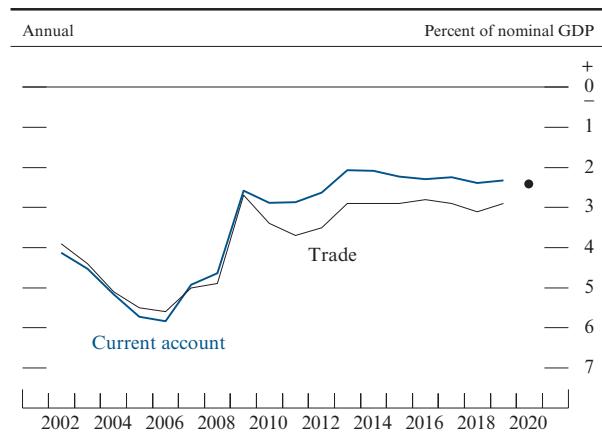
deficit, relative to GDP, narrowed in the first quarter compared with 2019 (figure 24).

### Federal fiscal stimulus will provide substantial support to economic activity in 2020 while also significantly boosting the budget deficit and debt . . .

Federal fiscal policy measures enacted in response to the pandemic have provided income support for households and businesses; increased grants-in-aid to state and local governments; and facilitated loans to businesses, households, states, and localities. The Congressional Budget Office (CBO) projects that in fiscal year 2020, the additional federal government expenditures and foregone revenues from these policies will total more than \$2 trillion, around 10 percent of nominal GDP.<sup>16</sup> (For a more detailed discussion of these policies, see the box “Federal Fiscal Policy Response to COVID-19.”) In addition, the decline in economic activity has pushed down tax collections while pushing up outlays for certain transfer programs—most notably for unemployment insurance and Medicaid (figure 25). These tax decreases and transfer

16. The CBO’s forecasts and estimates can be found at Congressional Budget Office (2020), “Discretionary Spending under Division A, the Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020” (table 1), March 4, <https://www.cbo.gov/system/files/2020-03/hr6074.pdf>; Phillip L. Swagel (2020), “Preliminary Estimate of the Effects of H.R. 6201, the Families First Coronavirus Response Act,” Congressional Budget Office, letter to Nita M. Lowey, April 2, <https://www.cbo.gov/system/files/2020-04/HR6201.pdf>; Phillip L. Swagel (2020), “Preliminary Estimate of the Effects of H.R. 748, the CARES Act, Public Law 116-136, Revised, with Corrections to the Revenue Effect of the Employee Retention Credit and to the Modification of a Limitation on Losses for Taxpayers Other Than Corporations,” Congressional Budget Office, letter to Mike Enzi, revised April 27, <https://www.cbo.gov/system/files/2020-04/hr748.pdf>; Congressional Budget Office (2020), “Changes in Direct Spending under Division A, Small Business Programs” (table 1), April 22, <https://www.cbo.gov/system/files/2020-04/hr266.pdf>; and Phillip L. Swagel (2020), “CBO’s Current Projections of Output, Employment, and Interest Rates and a Preliminary Look at Federal Deficits for 2020 and 2021, CBO Blog, April 24, <https://www.cbo.gov/publication/56335>.

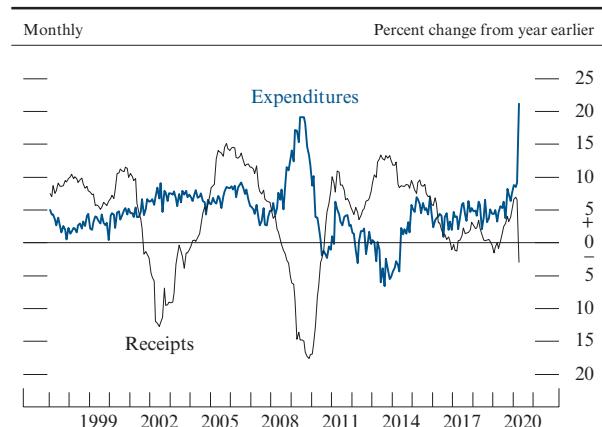
### 24. U.S. trade and current account balances



NOTE: GDP is gross domestic product. The black dot refers to the trade balance in 2020:Q1. The data for the current account balance are through 2019.

SOURCE: Bureau of Economic Analysis via Haver Analytics.

### 25. Federal receipts and expenditures



NOTE: The data extend through April 2020 and are 12-month moving sums.

SOURCE: Office of Management and Budget via Haver Analytics.

## Federal Fiscal Policy Response to COVID-19

In response to the immense health and economic consequences of the COVID-19 pandemic, federal lawmakers have enacted a variety of measures. These measures are expected to raise government outlays and reduce tax revenues—the sum of which we refer to as fiscal support—by nearly \$2½ trillion over 10 years, of which about \$2 trillion is expected in the current fiscal year, according to the Congressional Budget Office (CBO) (figure A, row 5). The legislation also included \$454 billion for the Department of the Treasury to fund lending facilities established by the Federal Reserve and \$46 billion to provide loans to the airline industry.<sup>1</sup> Consistent with the historically large economic consequences resulting from the COVID-19 pandemic, the amount of fiscal support that has been enacted constitutes the fastest and largest fiscal response to any postwar economic downturn.

Figure B breaks down the estimated fiscal support for fiscal year 2020 (figure A, column 1) into four broad categories: (1) direct aid to households, (2) loans or grants to small businesses, (3) other aid to businesses, and (4) government purchases of goods and services or grants to state and local governments.

The rest of this discussion provides a brief overview of the main components of the four stimulus bills, focusing on the CBO's estimate of fiscal support (increased outlays minus reduced tax revenues) for fiscal 2020, organized by the four categories assigned in the figure.

### Direct Aid to Households: \$740 billion

The largest component of income support is roughly \$290 billion in one-time payments to households. These stimulus checks provide households with a one-time refundable tax credit of \$1,200 per adult and \$500 per child 16 and under, with a phaseout at incomes between \$75,000 and \$100,000 for individuals and between \$150,000 and \$200,000 for couples. By the end of May, according to the

A. Fiscal support in response to COVID-19, by legislation (billions of dollars)

	Fiscal years		
	2020	2021	2020–2030
(1) Coronavirus Preparedness & Response Act	1	4	8
(2) Families First Coronavirus Response Act	134	57	192
(3) Coronavirus Aid, Relief, and Economic Security Act	1,606	448	1,721
(4) Paycheck Protection Program and Healthcare Enhancement Act	434	43	485
<b>(5) Total</b>	<b>2,176</b>	<b>551</b>	<b>2,406</b>

NOTE: The full title of the act in row 1 is Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020. Values are in billions of dollars. Funding for the Department of the Treasury to provide loans to the airline industry and to fund lending facilities established by the Federal Reserve are not included. Fiscal support is smaller over the 2020–30 period than over the 2020–21 period mainly because of the payment of deferred payroll tax liabilities.

SOURCE: Congressional Budget Office.

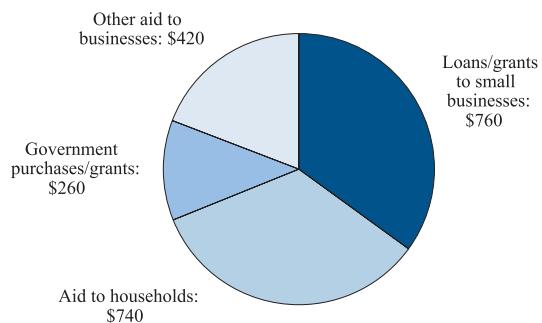
Treasury Department, nearly all of the stimulus checks had been disbursed. The second major piece of household income support is \$230 billion in expanded unemployment insurance (UI) benefits. UI benefits were increased by \$600 per week through the end of July; eligibility was expanded through December for “gig” workers, the self-employed, and those who are unable to work as a result of the COVID-19 outbreak; and benefit durations were extended by 13 weeks through December. According to the CBO, around \$70 billion in the more generous weekly benefits had been paid through the end of May. The legislation also provides student loan and mortgage relief, suspending loan payments and interest accrual on federal student loans until the end of September and reducing or suspending mortgage payments for mortgages backed by government-sponsored enterprises.<sup>2</sup> Another component of the legislation provides federally mandated paid sick leave for workers at employers with

(continued)

1. The CBO estimates that the amounts committed will significantly increase total lending by the Treasury Department and the Federal Reserve. However, the CBO does not expect the lending will result in budgetary outlays as calculated on a net present value basis, and so it is not included in our measure of fiscal support.

2. The CBO did not provide an explicit estimate of the mortgage relief provisions, and their effects are not included in the \$740 billion total because they were partially implemented by the various agencies involved before the passage of the CARES Act.

## B. Fiscal support in fiscal year 2020



NOTE: Funding for the Department of the Treasury to provide loans to the airline industry and to fund lending facilities established by the Federal Reserve are not included. Fiscal support is in billions of dollars and rounded to the nearest \$10 billion.

SOURCE: Congressional Budget Office.

fewer than 500 employees. The cost of the sick leave is rebated to employers through refundable payroll tax credits, which are expected to total about \$90 billion in fiscal 2020. Employees are entitled to up to two weeks of paid leave equal to normal earnings for employees or family members who are directly affected by COVID-19 or COVID-19-related closures; additionally, employees are entitled to 10 weeks of paid leave at two-thirds normal pay for those caring for a child whose school or daycare is closed. In addition, about \$90 billion in tax relief was provided to households in fiscal 2020, primarily through expanding the deductibility of certain business losses from individual tax liabilities.

### **Loans and Grants to Small Businesses: \$760 billion**

The Paycheck Protection Program provides about \$670 billion in support to businesses with fewer than 500 employees through loans of up to 250 percent of monthly payroll costs before the crisis (subject to a cap of \$10 million). These loans will be forgiven if employment and compensation are maintained relative to a pre-crisis level. In addition, small businesses are supported by about \$90 billion in Small Business Administration (SBA) Economic Injury Disaster Loans

and by six-month loan payment deferrals for new and existing SBA borrowers.

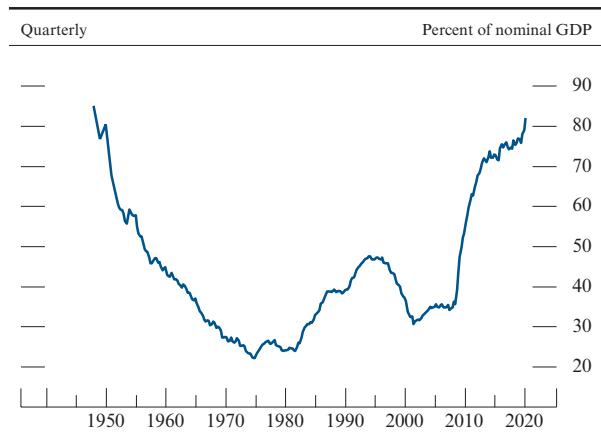
### **Other Aid to Businesses: \$420 billion**

Businesses are aided by several provisions that reduce tax revenues in fiscal 2020, with the largest reduction coming from delayed payment of employer-side payroll taxes until 2021 and 2022, which is expected to reduce tax payments by \$210 billion in fiscal 2020 but mostly be made up in subsequent years. An additional roughly \$90 billion reduction in fiscal 2020 tax liability results from modifications of the treatment of net operating losses and interest expenses for corporations. The legislation also provides nearly \$50 billion in payroll tax relief for businesses significantly affected by COVID-19 shutdowns in order to retain employees. Aside from tax relief, about \$20 billion in loans and grants are expected to go to passenger and cargo air carriers and related contractors to support payroll expenses for aviation workers affected by the pandemic. In addition, about \$50 billion in funds are expected to go to hospitals to support health-care-related expenses or provide relief for lost revenues. Finally, while they do not show up in the CBO's estimates of fiscal support, the legislation provided up to \$454 billion for the Treasury Department to fund lending facilities established by the Federal Reserve to offer loans to businesses as well as state and local governments and provided up to \$46 billion to offer loans to the airline industry.

### **Direct Government Purchases and Aid to State and Local Governments: \$260 billion**

The largest part of this aid category consists of about \$150 billion in relief funding to state and local governments for expenses related to dealing with the COVID-19 pandemic. State governments will also receive an extra \$30 billion through a temporary increase in the share of Medicaid expenditures that the federal government covers. In addition, the Federal Emergency Management Agency is expected to spend \$50 billion in disaster relief funds to provide assistance to individuals and organizations affected by the COVID-19 crisis.

### 26. Federal government debt held by the public



**NOTE:** The data for gross domestic product (GDP) are at an annual rate. Federal debt held by the public equals federal debt less Treasury securities held in federal employee defined-benefit retirement accounts, evaluated at the end of the quarter. The data for federal debt begin in 1947 and are annual from 1947 to 1950. The value for 2020:Q1 incorporates preliminary estimates.

**SOURCE:** For GDP, Bureau of Economic Analysis via Haver Analytics; for federal debt, Federal Reserve Board, Statistical Release Z.1, “Financial Accounts of the United States.”

increases, working in tandem with the discretionary stimulus, will support aggregate demand and help blunt the extent of the economic downturn.

The combination of the discretionary stimulus measures and the response of receipts and expenditures to the decline in economic activity—referred to as automatic stabilizers—are expected to cause the budget deficit to balloon from its already elevated level. The CBO expects the federal unified budget deficit to widen from 4½ percent of nominal GDP in fiscal 2019 to 18 percent of nominal GDP in fiscal 2020, the largest annual deficit as a share of GDP in the post–World War II era.<sup>17</sup> The ratio of federal debt held by the public to nominal GDP is expected to rise from 79 percent in fiscal 2019 to 101 percent by the end of fiscal 2020, the highest debt-to-GDP ratio since 1947 (figure 26).

### ... and state and local governments confront a fiscal crisis as tax revenue shrinks

A sharp reduction in tax revenues due to a collapse in income and retail sales tax revenue is placing significant stress on state governments. Local governments, which rely on more cyclically stable property taxes, will be somewhat less directly affected. Nevertheless, local governments rely on aid from their state governments, particularly for primary and secondary education, and the budget strains at the state level will therefore likely be passed down to localities. In April and May, state and local governments shed more than 1½ million jobs as schools and universities closed early and local governments reduced their noneducation workforce. These state and local budget strains will be partially offset by grants from the federal government. (See the box “Federal Fiscal Policy Response to COVID-19” for further details.)

17. See Phillip L. Swagel (2020), “CBO’s Current Projections of Output, Employment, and Interest Rates and a Preliminary Look at Federal Deficits for 2020 and 2021,” *CBO Blog*, April 24, <https://www.cbo.gov/publication/56335>.

## Risks to the outlook are greater than usual

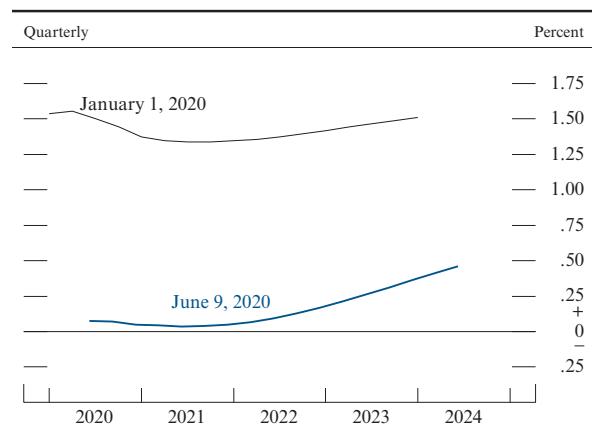
The path ahead is extraordinarily uncertain. First and foremost, the pace of recovery will ultimately depend on the evolution of the COVID-19 outbreak in the United States and abroad and the measures undertaken to contain it. Importantly, some small businesses and highly leveraged firms might have to shut down permanently or declare bankruptcy, which could have longer-lasting repercussions on productive capacity. (For a more in-depth discussion of the potential consequences of the shutdowns on small businesses, see the box “Small Businesses during the COVID-19 Crisis.”) In addition, there is uncertainty about future labor demand and productivity as firms shift their production processes to increase worker safety, realign their supply chains, or move services online. Furthermore, if employees are not called back to their former jobs, their period of unemployment could increase, potentially leading to lower wages when they do eventually find a job. Finally, applications for employer identification numbers, which are an early indicator of new business formations, are tracking well below levels from recent years and may suggest a slower pace of future job creation through this channel.

## Financial Developments

### The expected path of the federal funds rate over the next several years has fallen to near zero

The expected path of the federal funds rate over the next several years has declined since early January and is now flat at the effective lower bound for the next few years (figure 27). Before the Federal Reserve lowered the target range for the federal funds rate to 0 to  $\frac{1}{4}$  percent in March, policy expectations dropped substantially in late February and early March as COVID-19 concerns intensified. Market-based measures suggest that the expected federal funds rate remains below 0.25 percent through mid-2023.<sup>18</sup>

27. Market-implied federal funds rate path



NOTE: The federal funds rate path is implied by quotes on overnight index swaps—a derivative contract tied to the effective federal funds rate. The implied path as of January 1, 2020, is compared with that as of June 9, 2020. The path is estimated with a spline approach, assuming a term premium of 0 basis points. The January 1, 2020, path extends through January 2024 and the June 9, 2020, path through May 2024.

SOURCE: Bloomberg; Federal Reserve Board staff estimates.

18. These measures are based on a straight read of market quotes and are not adjusted for term premiums.

## Small Businesses during the COVID-19 Crisis

Small businesses employ nearly half of U.S. private-sector workers, play key roles in local communities, and provide income to millions of business owners. The COVID-19 pandemic poses acute risks to the survival of many small businesses. Widespread failure of small businesses would create economic insecurity for millions of workers and business owners, slow down the economic recovery, and alter the economic landscape of local communities. The Congress, the Federal Reserve, and other federal agencies are making aggressive efforts to support small businesses.

More than 99 percent of U.S. firms have fewer than 500 employees, and almost 90 percent have fewer than 20 employees. Altogether, businesses with fewer than 500 employees account for almost half of private-sector jobs.<sup>1</sup> Small businesses and small nonprofit organizations are particularly prevalent in service industries and include examples such as car dealers, restaurants, barber shops, medical offices, legal offices, home repair contractors, and religious organizations. These businesses and organizations are part of the economic and social landscape of local communities and neighborhoods. Small businesses are also prevalent in manufacturing supply chain industries.<sup>2</sup> Moreover, the businesses that spur innovation, contribute to nationwide job and productivity growth, and turn into large household names typically start out as small businesses.<sup>3</sup>

1. See U.S. Census Bureau (2020), 2017 SUSB Annual Data Tables by Establishment Industry, <https://www.census.gov/data/tables/2017/econ/susb/2017-susb-annual.html>. The data in this discussion refer to “employer” businesses—the roughly six million businesses with formal employees. There are also roughly 26 million “nonemployer” businesses in the United States, such as freelance consultants or ride-sharing drivers.

2. For example, small businesses constitute at least 80 percent of employment in machine shops; precision turned product manufacturing; miscellaneous fabricated metal product manufacturing; commercial screen printing; and electroplating, plating, polishing, anodizing, and coloring.

3. See Ryan Decker, John Haltiwanger, Ron Jarmin, and Javier Miranda (2014), “The Role of Entrepreneurship in U.S. Job Creation and Economic Dynamism,” *Journal of Economic Perspectives*, vol. 28 (Summer), pp. 3–24.

Small businesses are particularly vulnerable to social distancing for two main reasons. First, small businesses are prevalent in sectors that have seen especially large declines in revenue due to social distancing; small businesses make up about 60 percent of employment in the “leisure and hospitality” sector and about 85 percent of employment in the “other services” sector (which includes assorted neighborhood fixtures like churches and beauty salons). Second, small firms tend to be more financially constrained than larger firms. For example, bank account data suggest that roughly half of small businesses entered the COVID-19 crisis with cash reserves sufficient for fewer than 15 days of operations without revenue.<sup>4</sup> Moreover, even under normal circumstances, many small firms face financial challenges and lack access to liquid financial markets, relying instead on bank loans, credit cards, and the personal resources of owners.<sup>5</sup>

A wide variety of data reveal an alarming picture of small business health during the COVID-19 crisis. Surveys of small businesses suggest that pessimism about business viability is prevalent.<sup>6</sup> The majority of small businesses have seen revenue losses, and half of

(continued)

4. See JPMorgan Chase & Co. Institute (2019), *Place Matters: Small Business Financial Health in Urban Communities* (New York: JPMorgan Chase & Co., September), <https://institute.jpmorganchase.com/content/dam/jpmc/jpmorgan-chase-and-co/institute/pdf/institute-place-matters.pdf>.

5. See Federal Reserve System (2019), *Small Business Credit Survey: 2019 Report on Employer Firms* (New York: Federal Reserve Bank of New York), <https://www.fedsmallbusiness.org/mediabinary/fedsmallbusiness/files/2019/sbcs-employer-firms-report.pdf>; and Michael Siemer (2019), “Employment Effects of Financial Constraints during the Great Recession,” *Review of Economics and Statistics*, vol. 101 (March), pp. 16–29.

6. See John Eric Humphries, Christopher Neilson, and Gabriel Ulyssea (2020), “The Evolving Impacts of COVID-19 on Small Businesses since the CARES Act,” Cowles Foundation Discussion Paper 2230 (New Haven, Conn.: Cowles Foundation for Research in Economics, April), <https://cowles.yale.edu/sites/default/files/files/pub/d22/d2230.pdf>; and MetLife and U.S. Chamber of Commerce (2020), *Special Report on Coronavirus and Small Business* (Washington: Chamber of Commerce, April 3), <https://www.uschamber.com/report/special-report-coronavirus-and-small-business>.

small businesses do not expect to return to their usual level of operations within the next six months.<sup>7</sup>

Employment declines have been deeper among small businesses than among larger businesses (figure A). Moreover, the share of total job losses accounted for by small businesses stopping paycheck issuance entirely (that is, going inactive) is substantial (light blue areas in figure A).<sup>8</sup> Data from Homebase, a provider of scheduling and time sheet services for small local businesses, show that between 30 and 40 percent of establishments in sectors deeply affected by social distancing have gone inactive since February 15.<sup>9</sup> Data from Womply, a provider of credit card transaction processing services, suggest that spending at small restaurants was down 80 percent (versus a year earlier) by early April and was still down 50 percent in early June.<sup>10</sup> Taken together, these data suggest considerable risk of failure for a large number of small businesses.

The inflow of new businesses (which are typically small businesses) also plummeted, as shown in figure B. The Census Bureau reports that, in late March, applications for new employer business tax identifiers were down more than 40 percent relative to a year

(continued on next page)

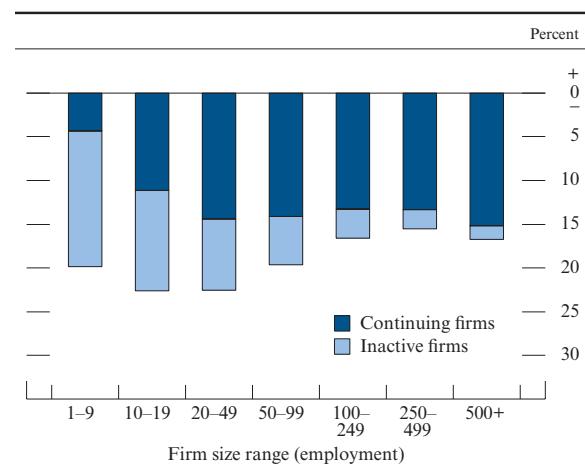
7. Data are from the U.S. Census Bureau's Small Business Pulse Survey for the week ending May 30, 2020. Survey results are available at <https://portal.census.gov/pulse/data>.

8. Figure A reports results from staff calculations on administrative payroll data from ADP; see Tomaz Cajner, Leland Crane, Ryan Decker, John Grigsby, Adrian Hamins-Puertolas, Erik Hurst, Christopher Kurz, and Ahu Yildirmaz (2020), "The U.S. Labor Market during the Beginning of the Pandemic Recession," NBER Working Paper Series 27159 (Cambridge, Mass.: National Bureau of Economic Research, May), <https://www.nber.org/papers/w27159>.

9. Homebase data initially included about 60,000 active businesses. Business inactivity is defined as zero hours worked during the week ending May 30 in the leisure and hospitality and the other services sectors. More information is available on the Homebase website at <https://joinhomebase.com/blog/real-time-covid-19-data>.

10. For additional details, see Womply (2020), "Data Dashboard: How Coronavirus/COVID-19 Is Impacting Local Business Revenue across the U.S.," *Womply Blog*, May 28, <https://www.womply.com/blog/data-dashboard-how-coronavirus-covid-19-is-impacting-local-business-revenue-across-the-u-s>.

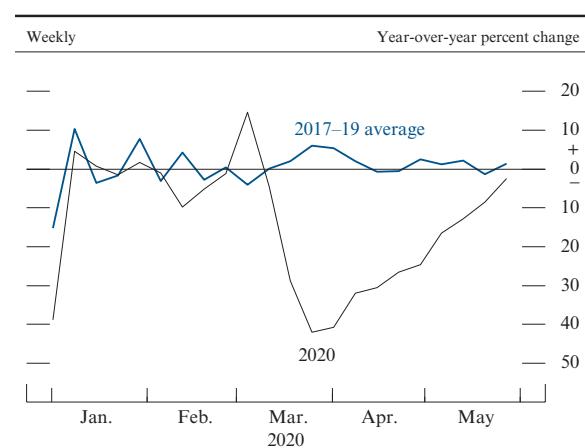
#### A. Change in employment, by firm size



NOTE: Employment declines are relative to February 15 and extend through May 9, 2020. The key identifies bars in order from top to bottom.

SOURCE: Cajner and others (2020) (see box note 8); Federal Reserve Board staff calculations using ADP, LLC, microdata.

#### B. New business applications



NOTE: The data extend through May 30, 2020. The data are derived from applications for employment identification numbers that list a planned date for initial wage payments.

SOURCE: Census Bureau via Haver Analytics.

## Small Businesses during the COVID-19 Crisis *(continued)*

earlier; the series has only gradually recovered and was still just below last year's pace as of late May. Business entry is a key contributor to job creation; with business exits and associated job destruction likely to be elevated during the COVID-19 episode, new firm creation is even more important than usual.<sup>11</sup>

The Congress, the Federal Reserve, and other federal agencies have acted swiftly to help address the risk of widespread small business failure. As part of the CARES Act (Coronavirus Aid, Relief, and Economic Security Act), the Congress created the Paycheck Protection Program (PPP) to provide small businesses with funds to retain employees for roughly two months. The Federal Reserve is bolstering the effectiveness of the PPP through the Paycheck Protection Program Liquidity Facility, which extends credit to eligible financial institutions to finance PPP loans. About three-fourths of small businesses with employees have applied for PPP assistance, suggesting the program is extremely valuable and timely, and a large share of these applications have been approved; however, some industries may face an ongoing need after the program expires.<sup>12</sup>

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11. Research suggests that a drop in new business formation and the resulting "lost generation" of firms during the Great Recession contributed to a slow recovery in output and employment. See, for example, Petr Sedláček (2020), "Lost Generations of Firms and Aggregate Labor Market Dynamics," *Journal of Monetary Economics*, vol. 111 (May), pp. 16–31.

12. Data are from the U.S. Census Bureau's Small Business Pulse Survey; see box note 7.

The Federal Reserve is also supporting lending to small businesses through the Term Asset-Backed Securities Loan Facility, which lends to holders of, among others, securities backed by loans guaranteed by the Small Business Administration. In addition, the Federal Reserve has established the Main Street Lending Program (MSLP), which features a range of facilities designed to provide support to small and medium-sized firms.<sup>13</sup>

Small businesses make vital contributions to labor markets and their local communities, and a critical subset of small businesses are young, innovative firms with the potential to create many jobs and increase overall productivity. The nature of the economic recovery that follows the COVID-19 crisis will depend in part on the survival of small businesses. Small business failures not only destroy jobs, but also erase the productive knowledge within the firms, deplete the assets of business owners, alter the character of communities and neighborhoods, and, in some cases, deprive the country of innovations. The Federal Reserve will continue to monitor the conditions of small businesses and support this fundamental segment of the economy.

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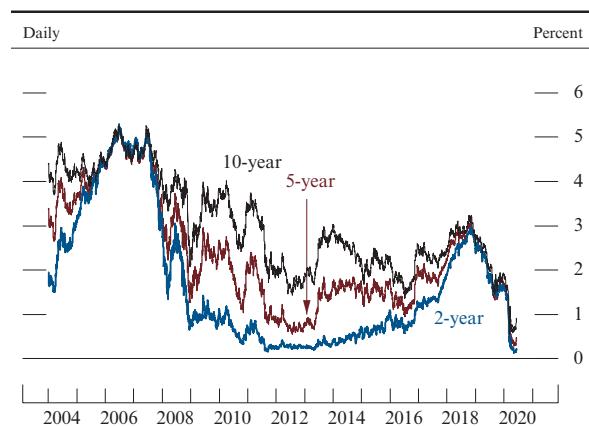
13. A current description of the MSLP is available on the Board's website at <https://www.federalreserve.gov/monetarypolicy/mainstreetlending.htm>.

Survey-based measures of the expected path of the policy rate also moved down from the levels observed at the end of 2019. According to the results of the Survey of Primary Dealers and Survey of Market Participants, both conducted by the Federal Reserve Bank of New York in April, the median of respondents' modal projections implies a flat trajectory for the target range of the federal funds rate at the effective lower bound for the next few years.<sup>19</sup>

### The U.S. nominal Treasury yield curve has shifted down sharply . . .

After moving lower over the second half of 2019, nominal Treasury yields fell sharply in late February and early March as investors' concerns regarding the implications of the COVID-19 outbreak for the economic outlook led to both falling policy expectations and flight-to-safety flows, with longer-term Treasury security yields dropping to historically low levels (figure 28). Longer-term yields increased moderately and realized volatility spiked for a period in March as selling pressures grew, leading to dealer balance sheet capacity constraints and impaired trading conditions, before falling back again after the Federal Reserve's actions helped restore smooth market functioning. (See the box "Federal Reserve Actions to Ensure Smooth Functioning of Treasury and MBS Markets" in Part 2 for a more detailed description of the Treasury market during March.) More recently, yields on longer-term Treasury securities rose somewhat, linked at least partially to the expected increase in the issuance of longer-term Treasury securities as well as some improvement in investor sentiment. Options prices suggest that near-term uncertainty about longer-dated Treasury yields rose sharply in March to levels not seen since the Global Financial Crisis before retracing.

28. Yields on nominal Treasury securities



SOURCE: Department of the Treasury via Haver Analytics.

19. The results of the Survey of Primary Dealers and the Survey of Market Participants are available on the Federal Reserve Bank of New York's website at [https://www.newyorkfed.org/markets/primarydealer\\_survey\\_questions.html](https://www.newyorkfed.org/markets/primarydealer_survey_questions.html) and [https://www.newyorkfed.org/markets/survey\\_market\\_participants](https://www.newyorkfed.org/markets/survey_market_participants), respectively.

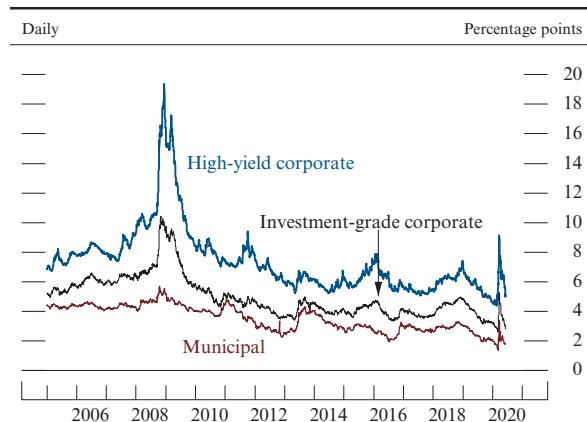
29. Yield and spread on agency mortgage-backed securities



NOTE: Data are daily and extend through June 8. Yield shown is for the Fannie Mae 30-year current coupon, the coupon rate at which new mortgage-backed securities would be priced at par, or face, value. Spread shown is to the average of the 5- and 10-year nominal Treasury yields.

SOURCE: Department of the Treasury; Barclays Live.

30. Corporate bond yields, by securities rating and municipal bond yield



NOTE: Investment-grade corporate is the 10-year triple-B, which reflects the effective yield of the ICE BofAML 7-to-10-year triple-B U.S. Corporate Index (C4A4). High-yield corporate is the 10-year high yield and reflects the effective yield of the ICE BofAML 7-to-10-year U.S. Cash Pay High Yield Index (J4A0). Municipal is the Municipal Market Advisors 20-year yield.

SOURCE: ICE Data Indices, LLC; Municipal Market Advisors, used with permission.

### ... but spreads of other long-term debt to Treasury securities rose

Yields on 30-year agency MBS—an important determinant of mortgage interest rates—decreased somewhat, on balance, though less than the yields on nominal Treasury securities, since the start of the year and remained very low by historical standards (figure 29).

Early in the year, yields on both investment- and speculative-grade corporate bonds as well as primary- and secondary-market municipal bonds were near record lows (figure 30). Spreads on corporate bond yields over comparable-maturity Treasury yields were in the lower end of their historical distribution. Since mid-February, corporate spreads have increased appreciably as market functioning deteriorated and credit quality declined. In March, spreads to comparable-maturity Treasury securities increased sharply for corporate debt but remained below those observed during the 2008 Global Financial Crisis. Spreads started to normalize following the Federal Reserve announcements of corporate bond facilities in late March, particularly for investment-grade corporate debt, but remain higher than at the end of 2019. Similarly, yields and spreads for municipal debt rose strikingly in March, with spreads to comparable-maturity Treasury securities spiking to their highest level since the Global Financial Crisis as market functioning declined and concerns about municipal credit quality arose. Yields on municipal debt partially recovered following Federal Reserve announcements in late March and April of support to municipal debt markets through liquidity facilities.

### Liquidity in markets for Treasury securities and mortgage-backed securities deteriorated sharply before recovering following various Federal Reserve actions

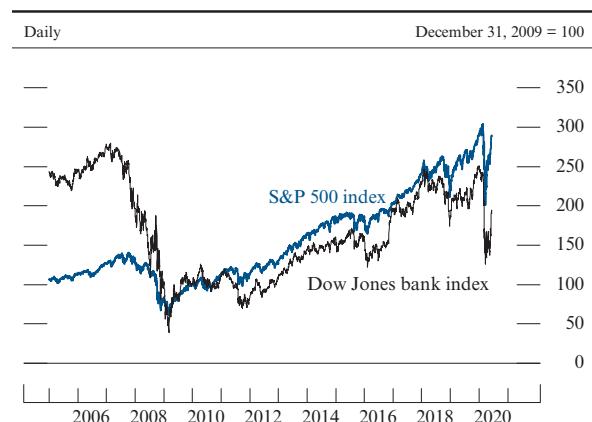
A number of indicators of Treasury market functioning—including bid-ask spreads, bid

sizes, estimates of transaction costs, and measures of market depth—deteriorated significantly in late February and March, but conditions improved considerably following Federal Reserve asset purchases and the creation of credit and liquidity facilities. (See the box “Federal Reserve Actions to Ensure Smooth Functioning of Treasury and MBS Markets” in Part 2.) Bid-ask spreads remain higher than those seen at the end of the year in the off-the-run market and for the 30-year bond in the on-the-run market, and market depth remains low. MBS spreads have fallen back markedly, but prepayment risk and uncertainty about forbearance continue to put upward pressure on spreads. Strains remain in some less liquid parts of the market.

### Broad equity prices dropped notably amid the global spread of COVID-19 before rebounding

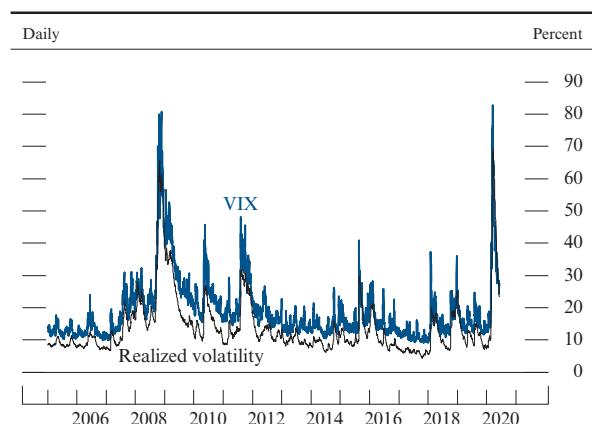
Equity prices continued to increase early in the year before tumbling in March, dropping as much as 34 percent from peak to trough. Prices have mostly recovered against a background of unprecedented, forceful, and rapid monetary and fiscal policy responses as well as recent tentative signs of economic revival associated with the easing of restrictions and in the face of bleak forecasts for U.S. firms’ earnings in 2020 (figure 31). The decline in stock prices was widespread across all sectors, with the largest declines in the energy and banking sectors. Measures of implied and realized stock price volatility for the S&P 500 index—the VIX and the 20-day realized volatility—spiked to levels that were most recently observed during the financial crisis (figure 32). They have since retraced much of that increase but remain at elevated levels. (For a discussion of financial stability issues, see the box “Developments Related to Financial Stability.”)

### 31. Equity prices



SOURCE: S&P Dow Jones Indices LLC via Bloomberg. (For Dow Jones Indices licensing information, see the note on the Contents page.)

### 32. S&P 500 volatility



NOTE: The VIX is a measure of implied volatility that represents the expected annualized change in the S&P 500 index over the following 30 days. For realized volatility, 5-minute S&P 500 returns are used in an exponentially weighted moving average with 75 percent of weight distributed over the past 20 days.

SOURCE: Cboe Volatility Index® (VIX®) via Bloomberg; Federal Reserve Board staff estimates.

## Developments Related to Financial Stability

The COVID-19 pandemic has abruptly halted large swaths of economic activity and led to swift financial repercussions. Despite increased resilience from the financial and regulatory reforms adopted since 2008, financial system vulnerabilities—most notably those associated with liquidity and maturity transformation in the nonbank financial sector—have amplified some of the economic effects of the pandemic. Accordingly, financial-sector vulnerabilities are expected to be significant in the near term. This discussion reviews vulnerabilities in the U.S. financial system at the onset of the pandemic and describes some of the extraordinary measures taken by the Federal Reserve to mitigate the brunt of the shock.

At the onset of the pandemic, asset valuation pressures in the United States were elevated. Spreads, risk premiums, and implied volatility were at the low ends of their historical distributions among several large asset categories, including domestic equities and corporate bonds. Beginning in late February, expectations for global economic growth plummeted and uncertainty increased sharply, driving down risky asset prices and putting downward pressure on Treasury yields. Equity prices plunged as concern over the COVID-19 outbreak grew and volatility surged to extreme levels. Trading conditions became impaired across several markets, posing significant challenges to price discovery and increasing trading costs. Yields on corporate bonds over comparable-maturity Treasury securities widened to the highest levels since the Global Financial Crisis (GFC). Leveraged loan spreads also widened, especially for lower-rated loans. Since late March, however, investors' tolerance for risk increased somewhat following interventions by the Federal Reserve; subsequently, risky asset prices partially retraced their course and market functioning improved. While the data on real estate prices mostly predate the COVID-19 outbreak, commercial real estate markets, in particular, had elevated valuation pressures at the beginning of 2020, making them vulnerable to significant price declines stemming from the unfolding effects of the pandemic.

On the eve of the pandemic, vulnerabilities associated with total private-sector debt stood at a moderate level relative to their historical norms. However, this assessment masks differences across the business and household sectors. Household borrowing advanced more slowly than overall economic activity and remained heavily concentrated among borrowers with high credit scores. By contrast, business debt

levels were high relative to either business assets or gross domestic product, with the riskiest firms accounting for most of the increase in debt in recent years. Against this backdrop, the COVID-19 outbreak poses severe risks to businesses and millions of households. For businesses, as economic activity continues to contract, the related reduction in earnings and additional debt needed to bridge the downturn will increase the debt burden and default risk. For households, the sudden and outsized increase in unemployment and sharp decline in family incomes may give rise to widespread delinquencies and defaults.

In the financial sector, banks, as of the fourth quarter of 2019, were well capitalized relative to historical levels, in part due to the regulatory reforms enacted after the GFC. To date, banks have been able to meet surging demand for draws on credit lines while also building loan loss reserves to absorb higher expected defaults. Leverage at broker-dealers changed little in the second half of 2019 and remained at historically low levels. However, in March, constraints on dealers' intermediation capacity, including internal risk-management practices and regulatory constraints on the bank holding companies under which many dealers operate, were cited as possible reasons for deteriorating liquidity in even usually liquid markets. Leverage at life insurance companies has reached post-2008 highs. Moreover, the capitalization of the life insurance sector is likely to deteriorate in coming quarters because of lower-than-expected asset valuations and lower long-term interest rates. Some measures suggest that hedge fund leverage continued to expand through the end of 2019. Higher leverage left hedge funds vulnerable to asset price declines and to the increase in market volatility accompanying the COVID-19 shock. The subsequent deleveraging by hedge funds likely contributed to market dislocations in February and March.

Funding markets proved less fragile than during the 2007–09 episode in the face of the COVID-19 outbreak and the associated financial market turmoil. The subdued reliance of large bank holding companies on short-term funding and their robust holdings of high-quality liquid assets have prevented any considerable stress in the banking sector. Nonetheless, significant strains emerged and emergency Federal Reserve actions were required to stabilize short-term funding markets. Recent growth in prime money market mutual funds (MMFs) and large holdings of corporate debt

*(continued)*

by other mutual funds increased the vulnerabilities in the financial system. These vulnerabilities produced considerable strains in March as asset prices fell and investors became more risk averse. Prime MMFs and bond mutual funds experienced significant outflows in March, leading to severe strains in markets funded by these institutions—notably, commercial paper (CP) and corporate bond markets. The tensions began to ease only after the Federal Reserve took several actions targeted at these markets, as will be discussed.

The outlook for the pandemic and economic activity is uncertain. In the near term, risks associated with the course of COVID-19 and its effects on the U.S. and global economies remain high. In addition, there is potential for stresses to interact with preexisting vulnerabilities stemming from financial system or fiscal weaknesses in Europe, China, and emerging market economies. In turn, these risks have the potential to interact with the vulnerabilities identified in this discussion and produce additional strains for the U.S. financial system.

## **Facilities to Support the Economy since the COVID-19 Outbreak**

The Federal Reserve, with the approval of the Secretary of the Treasury, established new credit and liquidity facilities under section 13(3) of the Federal Reserve Act to alleviate severe dislocations that arose in a number of financial markets and to support the flow of credit to households and businesses.<sup>1</sup> These actions fall into two categories: stabilizing short-term funding markets and providing more direct support for the extension of credit across the economy.

As investors moved rapidly toward cash and the most liquid assets, an acute liquidity squeeze emerged in short-term funding markets in mid-March. In the CP market, funding dried up even for companies in good financial standing. At the same time, investors contributed to the stress by starting to pull away from some prime MMFs, which typically hold CP and other highly liquid, short-term debt instruments. In response, the Federal Reserve set up the Commercial Paper Funding Facility, for which the Treasury Department has provided \$10 billion of credit protection. In addition,

the Federal Reserve established the Money Market Mutual Fund Liquidity Facility (MMLF), for which the Treasury Department will provide up to \$10 billion of credit protection. The Federal Reserve established a companion facility, the Primary Dealer Credit Facility, to provide loans against high-quality collateral to primary dealers that are critical intermediaries in short-term funding markets. The announcement of these facilities strongly affected the targeted markets. After an initial wave of borrowing from the facilities, market strains eased and the use of these facilities has abated.

To provide more direct support for credit across the economy, the Federal Reserve established a number of facilities in March and April. The Treasury's equity investments in many of these facilities were authorized by the CARES Act (Coronavirus Aid, Relief, and Economic Security Act). Together, these facilities will support the flow of up to \$2.6 trillion of credit to large employers, small and medium-sized businesses, households, and state and local governments. The Primary Market Corporate Credit Facility (PMCCF) and the Secondary Market Corporate Credit Facility (SMCCF) were established to support employment and spending of large, investment-grade businesses. Following the announcement of the PMCCF and the SMCCF, spreads of both investment- and speculative-grade corporate bonds declined notably, and issuance of investment-grade corporate bonds strengthened. To support the longer-term, market-based financing that is critical to real economic activity, the Federal Reserve reestablished the Term Asset-Backed Securities Loan Facility to purchase securities backed by auto loans, equipment leases, credit card loans, and other lending. The Municipal Liquidity Facility was set up to help U.S. state and local governments manage cash flow pressures by providing credit secured through their short-term obligations. The Federal Reserve established the Main Street Lending Program to provide up to \$600 billion in four-year loans for small and medium-sized businesses that were in good financial standing before the pandemic. Finally, the Paycheck Protection Program Liquidity Facility (PPPLF) was established to bolster the effectiveness of the Paycheck Protection Program (PPP) of the Small Business Administration. The CARES Act created the PPP program to provide loans that can help small businesses keep their workers on payrolls. The PPPLF extends credit to eligible financial institutions to finance PPP loans, taking the loans as collateral.

*(continued on next page)*

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1. A list of funding, credit, liquidity, and loan facilities established by the Federal Reserve in response to COVID-19 is available on the Board's website at <https://www.federalreserve.gov/funding-credit-liquidity-and-loan-facilities.htm>.

## Developments Related to Financial Stability *(continued)*

The Federal Reserve is deeply committed to transparency and recognizes that the need for transparency is heightened when it is called upon to use its emergency powers. Transparency helps promote the accountability of the Federal Reserve to the Congress and the public. Specifically, the Board of Governors will report substantial amounts of information on a monthly basis for the liquidity and lending facilities using CARES Act funding as well as for the PPPLF, including the names and details of participants in each facility; amounts borrowed and interest rate charged; and overall costs, revenues, and fees for each facility. For the few programs that are targeting financial market functioning, the Federal Reserve will provide a full accounting of transactions in these facilities. Real-time disclosure would risk stigmatizing participation in these facilities and undermining the Federal Reserve's ability to provide assurance that these systemically important markets will continue their critical function in times of severe market stress. The delay in disclosure will be no longer than necessary to ensure that participants do not hesitate to participate. While the facilities are operating, the Federal Reserve will disclose extensive and regular aggregate information on total borrowing, collateral and fees, and interest income.

### Tools to Lessen Strains in Dollar Funding Markets

The Federal Reserve has taken actions to help maintain the flow of credit to U.S. households and businesses by reducing financial stresses abroad, which can spill over into U.S. credit markets. The Federal

Reserve's dollar liquidity swap lines improve liquidity conditions in dollar funding markets in the United States and abroad by providing foreign central banks with the capacity to deliver U.S. dollar funding to institutions in their jurisdictions during times of market stress. These swap lines provide U.S. dollars to a foreign central bank in exchange for the equivalent amount of funds in that central bank's currency based on the market exchange rate at the time of the transaction. The Federal Reserve and each participating foreign central bank agree to swap back the same quantities of their two currencies at a specified date in the future. During the week of March 15, 2020, the network of swap lines was expanded and enhanced by adding additional central bank counterparties, lowering the price on the lines, and increasing the frequency and maturity of dollar operations.

In addition to the swap line enhancements, on March 31, the Federal Reserve announced a new program to support dollar funding markets, the temporary FIMA (Foreign and International Monetary Authorities) Repo Facility. This facility should help support the smooth functioning of the U.S. Treasury market by providing a temporary source of U.S. dollars to a broad range of countries, many of which do not have swap line arrangements with the Federal Reserve. Under this facility, FIMA account holders can enter into overnight repurchase agreements (repos) with the Federal Reserve, temporarily exchanging U.S. Treasury securities they hold at the Federal Reserve for U.S. dollars. The repos are overnight but can be rolled over as needed. The facility reduces the need for central banks to sell their Treasury securities outright, thus

*(continued)*

helping to avoid disruptions to the Treasury market and upward pressure on yields. Since its inception, take-up at the facility has been modest.

## **Regulatory and Supervisory Actions to Support the Economy since the COVID-19 Outbreak**

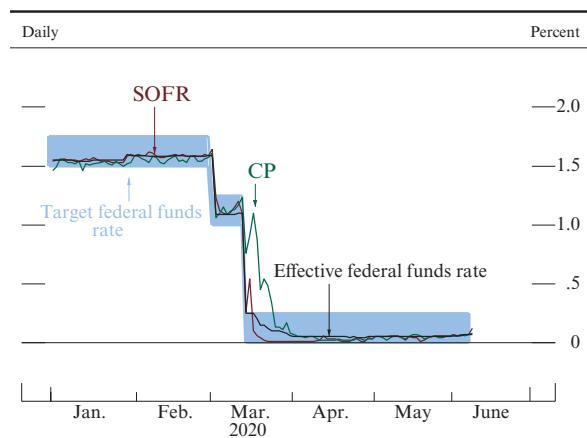
The Federal Reserve has also made several adjustments to its regulatory and supervisory regime to facilitate market functioning and reduce regulatory impediments to banks supporting households, businesses, and municipal customers affected by COVID-19. These actions fall into the following four categories:

1. acceleration of previously planned, permanent adjustments to certain regulatory requirements to address specific impediments to market functioning
2. provision of additional time for banking organizations to phase in new regulatory requirements
3. temporary relaxation of certain regulatory requirements or requirements imposing supervisory burden
4. supervisory statements encouraging banks to support those affected by COVID-19

The first category includes changing the definition of eligible retained income to ensure capital and total loss-absorbing capacity buffers function as intended; allowing early adoption of a new method for certain banking organizations to measure counterparty credit

risk derivatives contracts; reducing reserve requirement ratios to zero; and amending Regulation D (Reserve Requirements of Depository Institutions) to delete the six-per-month limit on convenience transfers from the “savings deposit” definition. The second category includes allowing certain banking organizations additional time to delay the effects of the Current Expected Credit Losses accounting standard in their regulatory capital and extending the initial compliance with the Single-Counterparty Credit Limit rule by 18 months. The third category includes excluding Treasury securities and reserves from the supplementary leverage ratio denominator; modifying the liquidity and capital rules to allow banking organizations to neutralize the regulatory effects of participating in the PPPLF and MMLF programs; introducing a change to support the favorable treatment of term primary credit loans from the discount window under the liquidity rules; providing temporary waivers to banks for limits on transactions with nonbank affiliates that offer credit and intermediation; temporarily lowering the community bank leverage ratio to 8 percent; giving banks flexibility in the timing of regulatory reports; and granting mortgage servicers flexibility to work with struggling consumers affected by COVID-19. Finally, the fourth category includes encouraging banks to use their capital and liquidity buffers to work constructively with borrowers and to make short-term loan modifications on a good faith basis, as well as encouraging lenders to offer responsible small-dollar loans to consumers and small businesses and to support low- and moderate-income borrowers through loans and banking fee waivers.

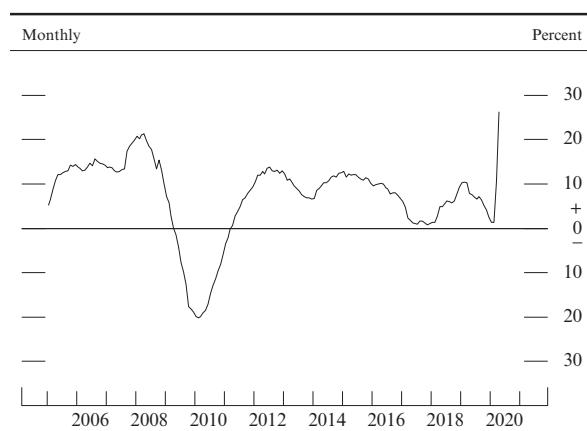
## 33. Selected money market rates



NOTE: The Secured Overnight Financing Rate (SOFR) is a broad measure of rates on overnight Treasury general collateral repurchase agreement (repo) transactions and bilateral Treasury repo transactions. CP refers to overnight double-A nonfinancial commercial paper.

SOURCE: Federal Reserve Bank of New York; Federal Reserve Board.

## 34. Commercial and industrial loan growth



NOTE: Data are calculated as monthly year-over-year growth rates and extend through April 2020.

SOURCE: Federal Reserve Board, Statistical Release H.8, "Assets and Liabilities of Commercial Banks in the United States."

**While overnight money market rates generally moved down in line with decreases in the Federal Open Market Committee's target range, short-term funding markets experienced strains before the announcement and launch of Federal Reserve facilities**

Decreases in the Federal Open Market Committee's (FOMC) target range for the federal funds rate in March transmitted effectively through overnight money markets, with yields on a broad set of money market instruments moving lower in response to the FOMC's policy actions. Over the first half of the year, the effective federal funds rate (EFFR) remained within the target range (figure 33). After printing at the top of the target range for a few days following the March 15 rate cut, the EFFR softened considerably to trade near the bottom of the range amid substantial increases in reserves. Though upward pressures on interest rates in overnight money markets were generally well contained during March, short-term funding markets experienced a liquidity squeeze. Certain other short-term interest rates, including those pertaining to commercial paper and negotiable certificates of deposit, moved up markedly. However, since the announcement and launch of the Federal Reserve liquidity facilities directed toward these markets, short-term funding rates have declined significantly.

**Bank credit continued to expand, while bank profitability declined**

Aggregate credit provided by commercial banks trended up through the first half of 2020, driven largely by soaring C&I credit-line drawdowns since early March and by loans originated under the PPP since April (figure 34). While commercial real estate loan growth remained strong, growth in residential real estate loans on banks' balance sheets has slowed since the beginning of the year, and outstanding consumer loans contracted in

April. First-quarter earnings reports of larger banks indicate that bank profitability declined considerably in the first quarter of 2020 because of narrower net interest margins and notable increases in loan loss provisions.<sup>20</sup>

## International Developments

### Economic activity abroad plunged in the first half of the year

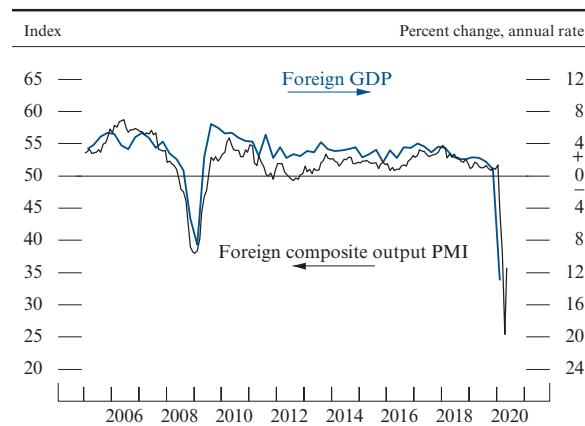
The spread of COVID-19 throughout the world and the measures taken to contain it have produced devastating effects on the global economy. Many countries closed nonessential businesses and restricted people's movement during the first months of the year, leading to a sharp global economic contraction.

Foreign GDP declined at about a 13 percent annualized rate in the first quarter, and recent indicators point to an even larger contraction in the second quarter (figure 35). Available data suggest that the decline in foreign activity in the first half of the year has been greater than during the Global Financial Crisis.

The collapse in economic activity across countries followed the progression of the virus. In China, where regions underwent strict lockdowns as early as January, GDP in the first quarter dropped at a stunning 36 percent annualized rate (figure 36). As the virus spread to Europe, many countries in the region imposed strict social-distancing restrictions; euro-area GDP contracted nearly 14 percent in the first quarter of 2020. The substantial decline in commodity prices also depressed activity of commodity exporters such as Canada and several Latin American countries. Recent data indicate that Chinese production began to revive in the spring, as infection rates fell and restrictions were

20. Official measures of first-quarter profitability for the entire banking sector have been delayed to give banks more time to file their regulatory reports in response to the COVID-19 pandemic.

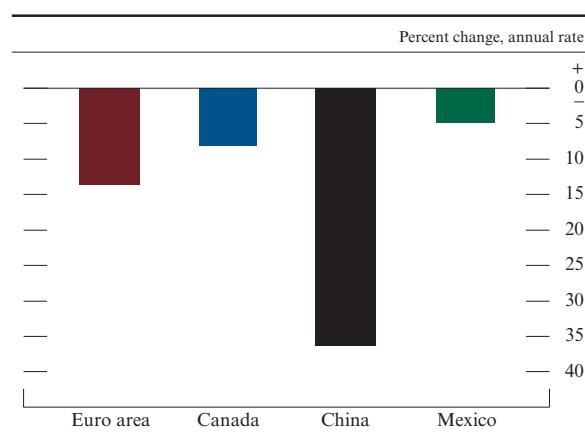
### 35. Foreign real gross domestic product and composite output purchasing managers index



NOTE: For the foreign composite output purchasing managers index (PMI), values greater than (less than) 50 indicate better (worse) business conditions, on average, for the participants surveyed relative to conditions at the time of the previous survey. The data for PMI are monthly and extend through May 2020. The data for foreign GDP are quarterly and extend through 2020:Q1.

SOURCE: For PMI, IHS Markit, Purchasing Managers Index (PMI) Global; for real GDP, Federal Reserve Bank of Dallas, Real Gross Domestic Product.

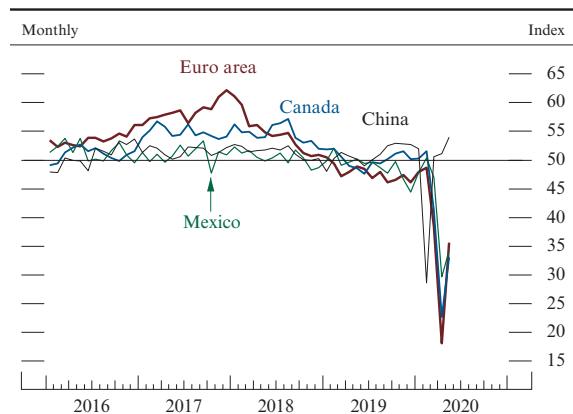
### 36. Real gross domestic product in selected foreign economies



NOTE: The data are for 2020:Q1.

SOURCE: For the euro area, Eurostat; for Canada, Statistics Canada; for China, National Bureau of Statistics of China; for Mexico, Instituto Nacional de Estadística y Geografía; all via Haver Analytics.

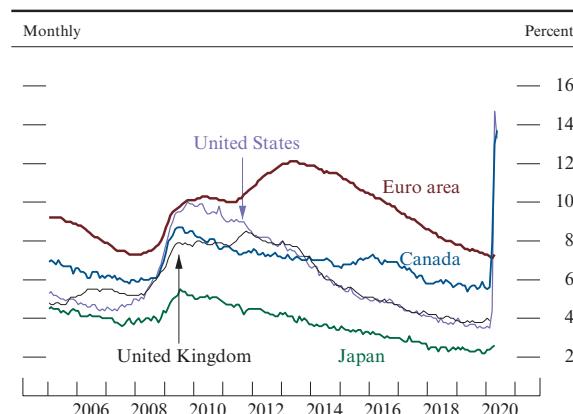
37. Manufacturing output purchasing managers index in selected foreign economies



NOTE: For the foreign manufacturing output purchasing managers index (PMI), values greater than (less than) 50 indicate better (worse) business conditions, on average, for the participants surveyed relative to conditions at the time of the previous survey.

SOURCE: IHS Markit, Purchasing Managers Index (PMI) Global.

38. Unemployment rate in selected advanced economies



NOTE: The data for the United Kingdom extend through February 2020 and are centered three-month averages of monthly data. The data for the euro area and Japan extend through April 2020.

SOURCE: For the United Kingdom, Office for National Statistics; for Japan, Ministry of Health, Labour, and Welfare; for the euro area, Statistical Office of the European Communities; for Canada, Statistics Canada; for the United States, Bureau of Labor Statistics; all via Haver Analytics.

gradually lifted (figure 37). Indicators of Chinese consumption, however, remain weak. A number of advanced foreign economies (AFEs) began to relax social-distancing restraints in recent weeks.

### Labor market conditions deteriorated and inflation fell . . .

Amid widespread business closures and collapsing demand, labor market conditions abroad have deteriorated sharply in recent months, albeit with differences across countries. Several European and Asian countries have thus far experienced sizable declines in hours worked but relatively small increases in unemployment given the size of the drop in economic activity, partly reflecting direct wage subsidies provided by the governments to keep workers on firms' payrolls (figure 38). In other countries, unemployment rates increased markedly.

Although the shutdowns across the world have reduced the global supply of goods and services, the depressive effects on demand of lower income, social distancing, and increased uncertainty have predominated, driving down inflation in the foreign economies. In several AFEs, recent inflation readings have been well below central bank targets, reflecting large declines in energy prices as well as subdued core inflation (figure 39).

### . . . prompting swift and substantial policy responses

Foreign fiscal authorities have aimed to fill income gaps resulting from businesses closing and workers staying home. Many national governments acted decisively to support firms' balance sheets through tax deferrals, loans, and loan guarantees; to encourage firms to retain workers through wage subsidies; and to support household spending through enhanced unemployment benefits and cash transfers.

In addition, many foreign central banks reduced their policy rates, initiated or enhanced credit facilities, and relaxed

capital requirements for financial institutions. Several AFE central banks also ramped up asset purchase programs to alleviate liquidity strains in their domestic capital markets. Some emerging market economy (EME) central banks followed suit. See the box “Policy Response to COVID-19 in Foreign Economies” for a more detailed discussion of fiscal and monetary policies implemented abroad.

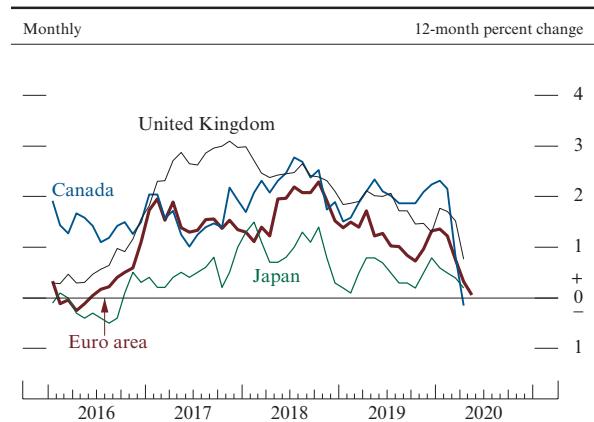
### Downside risks remain high

Despite aggressive fiscal and monetary policy actions, risks abroad are skewed to the downside. The future progression of the pandemic remains highly uncertain, with resurgence of the outbreak a substantial risk. In addition, the economic damage of the recession may be quite persistent. The collapse in demand may ultimately bankrupt many businesses, thereby reducing business dynamism and innovation. Unlike past recessions, services activity has dropped more sharply than manufacturing—with restrictions on movement severely curtailing expenditures on travel, tourism, restaurants, and recreation—and social-distancing requirements and attitudes may further weigh on the recovery in these sectors. Disruptions to global trade may also result in a costly reconfiguration of global supply chains. Persistently weak consumer and firm demand may push medium- and longer-term inflation expectations well below central bank targets, particularly in regions with already low inflation at the onset of the recession. Finally, additional expansionary fiscal policies—possibly in response to future large-scale outbreaks of COVID-19—could significantly increase government debt and add to sovereign risk, especially for countries with already limited fiscal space.

### Financial conditions abroad tightened, especially in some emerging market economies

The precipitous spread of COVID-19 in the first months of the year weighed heavily on

### 39. Consumer price inflation in selected advanced foreign economies



NOTE: The data go through April 2020, except for the euro area, which incorporates the flash estimate for May 2020.

SOURCE: For the United Kingdom, Office for National Statistics; for Japan, Ministry of Internal Affairs and Communications; for the euro area, Statistical Office of the European Communities; for Canada, Statistics Canada; all via Haver Analytics.

## Policy Response to COVID-19 in Foreign Economies

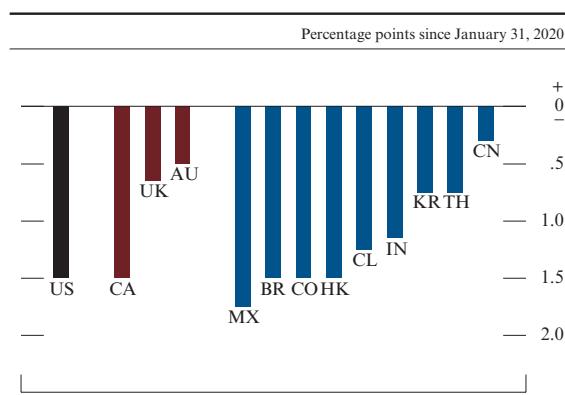
Authorities in foreign economies have announced a wide array of fiscal, monetary, and regulatory measures to mitigate disruptions caused by the COVID-19 pandemic.

Many foreign governments have enacted sizable fiscal packages to address the sudden loss of income by firms and households, with a special focus on the most vulnerable groups, such as low-income individuals, the unemployed, and small and medium-sized enterprises. The size of the support is, on average, considerably larger in advanced foreign economies (AFEs) than in emerging market economies (EMEs), as many EME governments have more limited fiscal space.

The measures targeted at firms aim to keep them afloat in the near term, with the hope of preserving businesses until demand returns. Such measures include loans at favorable terms and loan guarantees; deferrals of taxes and social security contributions; tax breaks and cash transfers, especially for small and medium-sized enterprises; and targeted sectoral support. For households, the measures aim to provide income to those in need and alleviate payment difficulties. These policies include increased unemployment and pension payments, mortgage deferrals, accelerated transfer payments, and direct cash payments. In addition, several AFEs and some Asian emerging economies have adopted large direct wage subsidies to keep workers on firms' payrolls. Such measures may help limit dislocations in the labor markets of these countries by subsidizing a significant reduction in hours worked. The hope of these programs is that workers' continued attachment to their firms will preserve human capital and make it readily available to the firms during the recovery that follows the crisis.

Many central banks have reduced their policy rates (figure A)—often to or near their effective lower bounds—and have taken substantial actions to start or expand asset purchases and to support the flow of credit. Although central banks acted quickly to lower interest rates, some policymakers in the EMEs expressed concerns about intensifying capital outflows, while a

### A. Cumulative policy rate cuts by selected central banks



NOTE: Advanced foreign economies are in dark red; emerging market economies are in blue. From left to right, economies are the United States (US), Canada (CA), the United Kingdom (UK), Australia (AU), Mexico (MX), Brazil (BR), Colombia (CO), Hong Kong (HK), Chile (CL), India (IN), South Korea (KR), Thailand (TH), and China (CN). The data extend through June 9, 2020.

SOURCE: For the United States, Federal Reserve Board; for Canada, Bank of Canada; for the United Kingdom, Bank of England; for Australia, Reserve Bank of Australia; for Mexico, Banco de México; for Brazil, Banco Central do Brasil; for Colombia, Banco de la República; for Chile, Banco Central de Chile; for Hong Kong, Bank for International Settlements; for India, Reserve Bank of India; for South Korea, Bank of Korea; for Thailand, Bank of Thailand; for China, People's Bank of China; all via Haver Analytics.

few AFE central banks worried about the potential harm to banks' financial health.

Several AFE central banks have purchased government debt in response to the crisis. These purchases have been primarily aimed at restoring market functioning and providing liquidity, but the purchases have also eased financial conditions by lowering long-term yields. The Bank of England (BOE) restarted its purchases of gilts, and the Swedish Riksbank increased the pace of its existing program. The European Central Bank (ECB) and the Reserve Bank of New Zealand introduced and expanded asset purchase programs. The Reserve Bank of Australia (RBA) began bond purchases to target the three-year

(continued)

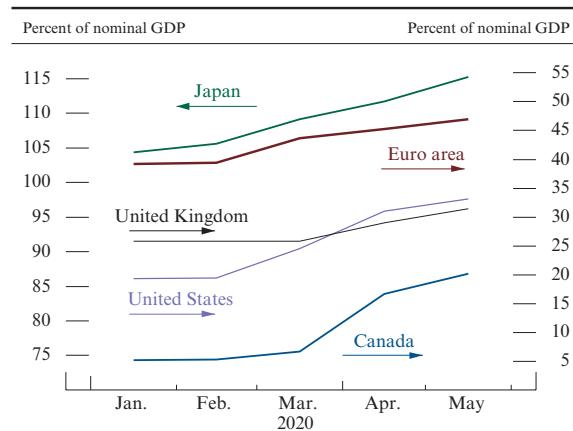
government bond yield at 0.25 percent, the same as its overnight rate. Some central banks, such as the Bank of Canada (BOC) and the RBA, have started purchases of provincial and state bonds to support liquidity in those markets. To ensure the smooth transmission of its monetary actions, the ECB has used its flexibility to weight its purchases more heavily toward bonds of euro-area member states that face higher yields.

Monetary authorities have also adopted policies to sustain the provision of credit to businesses and households during the pandemic. Central banks have purchased a variety of private assets, thus directly addressing distress in funding markets and helping ease financial conditions for firms. These assets include corporate bonds purchased by the BOE, ECB, and Bank of Japan (BOJ); commercial paper bought by the BOC, BOE, BOJ, and Riksbank; and exchange-traded funds and real estate investment trusts purchased by the BOJ. These actions have significantly expanded the balance sheets of major foreign central banks (figure B). Some central banks in EMEs have also begun purchasing private assets, with the central banks of Chile and Colombia buying bank bonds.

Several central banks have also activated funding-for-lending facilities to provide relatively inexpensive funding to banks as long as they maintain defined lending benchmarks, in some cases with extra incentives to lend to small and medium-sized enterprises. The BOE, BOJ, ECB, RBA, Riksbank, and Bank of Korea currently have such programs.

Regulators in a number of foreign economies have introduced various measures that provide relief for banks to help sustain their capacity to absorb pandemic-related losses while continuing to lend to the economy. These measures include temporarily easing capital requirements, such as the reduction—and, in some cases, elimination—of conservation and countercyclical capital buffers; deferring the implementation of new, stricter Basel capital requirements; temporarily easing liquidity requirements

#### B. Central bank assets for selected advanced economies

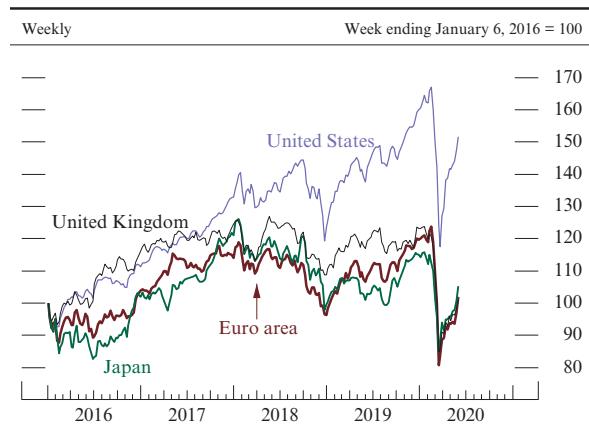


NOTE: Assets are calculated as a percentage of 2019 nominal gross domestic product (GDP). U.K. assets are calculated as the sum of sterling-denominated corporate bond and U.K. government bond holdings, foreign currency reserve assets, and term funding schemes. The data are monthly.

SOURCE: For U.S. GDP, Bureau of Economic Analysis; for euro-area GDP, Statistical Office of the European Communities; for U.K. GDP, Office for National Statistics; for Canada GDP, Statistics Canada; for Japan GDP, Cabinet Office of Japan; for U.S. assets, Federal Reserve Board; for euro-area assets, European Central Bank; for U.K. assets, Bank of England; for Canada assets, Bank of Canada; for Japan assets, Bank of Japan; all via Haver Analytics.

(for example, in France, Germany, and the United Kingdom); and giving banks and their supervisors more flexibility in dealing with nonperforming loans (for example, the ECB). In addition, some regulators have temporarily excluded central bank reserves and certain safe assets from the calculation of leverage exposures. Some foreign regulators are considering the reduction or even elimination of risk weights on new loans guaranteed by the government. Regulators also emphasize that banks should continue to apply sound underwriting standards and conduct solid capital and liquidity planning and robust risk management.

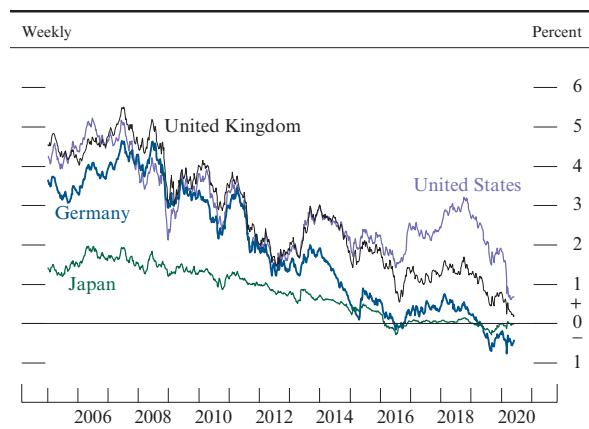
## 40. Equity indexes for selected advanced economies



NOTE: The data are weekly averages of daily data. The weekly data begin on Thursdays and extend through June 3, 2020.

SOURCE: For euro area, DJ Euro Stoxx Index; for Japan, TOPIX Stock Index; for United Kingdom, FTSE 100 Stock Index; for United States, S&P 500 Index; all via Bloomberg.

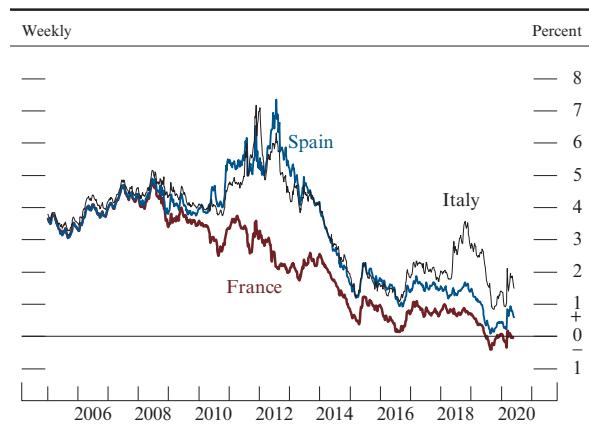
## 41. Nominal 10-year government bond yields in selected advanced economies



NOTE: The data are weekly averages of daily benchmark yields. The weekly data begin on Thursdays and extend through June 3, 2020.

SOURCE: Bloomberg.

## 42. Nominal 10-year government bond yields in selected euro-area economies



NOTE: The data are weekly averages of daily benchmark yields. The weekly data begin on Thursdays and extend through June 3, 2020.

SOURCE: Bloomberg.

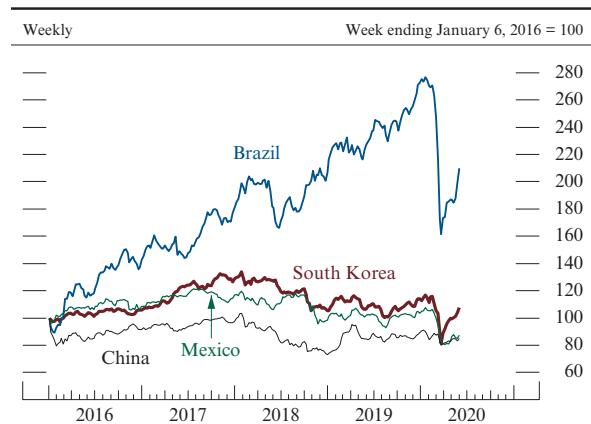
global risk sentiment, and many financial markets suffered from severe illiquidity. Aggressive fiscal and monetary policy responses in the United States and abroad, however, helped boost sentiment and improve market functioning, contributing to a partial retracement. On net, financial conditions abroad remain tighter than at the beginning of the year, especially in some EMEs.

Financial conditions in the AFEs largely tracked financial market developments in the United States. Major AFE equity indexes dropped substantially as news about the spread of COVID-19 and the associated measures to contain it were reported, but those indexes rebounded following the announcement of extraordinary monetary and fiscal policy actions and, more recently, tentative signs of economic stabilization (figure 40).

Notwithstanding temporary increases due to poor market functioning, long-term sovereign yields in major advanced economies fell, on net, as flight-to-safety demand surged, policy rates reached their effective lower bounds in several countries, and expectations of future policy rates declined markedly (figure 41). Sovereign interest rates for economies in the euro-area periphery were sensitive to news about the size and form of European-wide fiscal support for the recovery and, on net, remain a bit higher than at the beginning of the year (figure 42). In recent months, Fitch and DBRS Morningstar downgraded Italy's long-term debt ratings.

Financial conditions in some EMEs tightened, especially in Latin American countries. Equity indexes suffered widespread losses early in the year, and rebounds since then have been uneven across countries. While equity indexes in emerging Asia partially recovered, Mexican and Brazilian equity indexes underperformed other EME equities (figure 43). In March, borrowing rates for corporations increased to levels not seen since the Global Financial Crisis, although they have subsequently declined somewhat. In the first half of the year, funds dedicated to investing in EMEs

#### 43. Equity indexes for selected emerging market economies



NOTE: The data are weekly averages of daily data. The weekly data begin on Thursdays and extend through June 3, 2020.

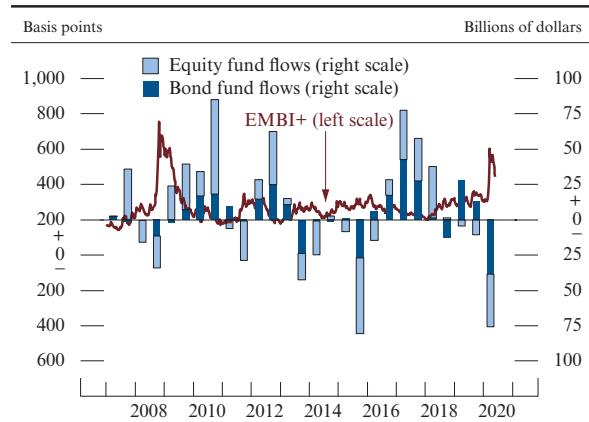
SOURCE: For China, Shanghai Composite Index; for Brazil, Bovespa Index; for South Korea, Korean Composite Index; for Mexico, IPC Index; all via Bloomberg.

experienced outflows, and sovereign borrowing spreads increased sharply before moving down more recently (figure 44). The tightening in some EME financial conditions appears to reflect investors' preference for safe and liquid assets; a reduced confidence in the ability of some governments to contain the health crisis; and heightened uncertainty about the prospects for EME public finances, commodity prices, and global trade.

#### The dollar appreciated

The foreign exchange value of the dollar increased nearly 5 percent since the start of the year, as the boost from safe-haven demand outweighed the effects of lower U.S. interest rates (figure 45). On a trade-weighted basis, the dollar increased about 1.5 percent against AFE currencies and 7 percent against EME currencies. The Mexican peso and Brazilian *real* depreciated about 16 percent and 30 percent, respectively, partly in response to lower commodity prices. The Chinese renminbi fluctuated largely in response to news about the outbreak and policy actions of Chinese authorities and, on net, depreciated slightly since the beginning of the year.

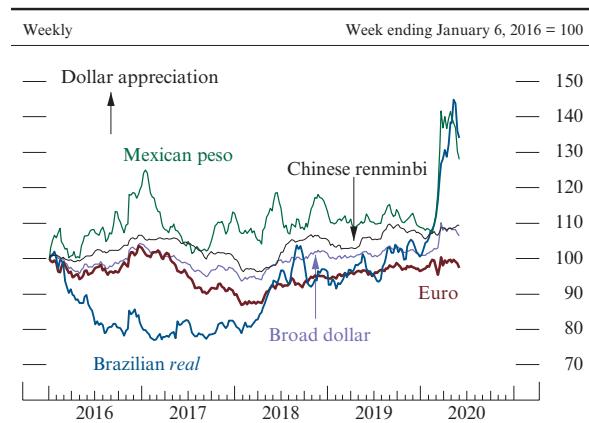
#### 44. Emerging market mutual fund flows and spreads



NOTE: The bond and equity fund flows data are semiannual sums of weekly data from December 28, 2006, to May 27, 2020. Weekly data span Thursday through Wednesday, and the 2020:H1 values are sums over weekly data for weeks ending in January 2020 through May 2020. The fund flows data exclude funds located in China. The J.P. Morgan Emerging Markets Bond Index Plus (EMBI+) data are weekly averages of daily data. The weekly data begin on Thursdays and extend through June 3, 2020. The EMBI+ data exclude Venezuela.

SOURCE: For bond and equity fund flows, EPFR Global; for EMBI+, J.P. Morgan Emerging Markets Bond Index Plus via Bloomberg.

#### 45. U.S. dollar exchange rate indexes



NOTE: The data, which are in foreign currency units per dollar, are weekly averages of daily data. The weekly data begin on Thursdays and extend through June 3, 2020. As indicated by the leftmost arrow, increases in the data represent U.S. dollar appreciation and decreases represent U.S. dollar depreciation.

SOURCE: Federal Reserve Board, Statistical Release H.10, "Foreign Exchange Rates."



## PART 2

### MONETARY POLICY

#### The Federal Open Market Committee quickly reduced the federal funds rate to the effective lower bound . . .

In light of the effects of COVID-19 on the economy and on risks to the outlook, the Federal Open Market Committee (FOMC) lowered the target range for the federal funds rate by a total of 1½ percentage points—from a range of 1½ to 1¾ percent to one of 0 to ¼ percent—over two meetings in early and mid-March (figure 46).<sup>21</sup> Specifically, in early March, the Committee lowered the target range for the federal funds rate ½ percentage point, to 1 to 1¼ percent. In mid-March, the Committee further lowered the target range 1 percentage point, to 0 to ¼ percent. The Committee expects to maintain this target range until it is confident that the economy

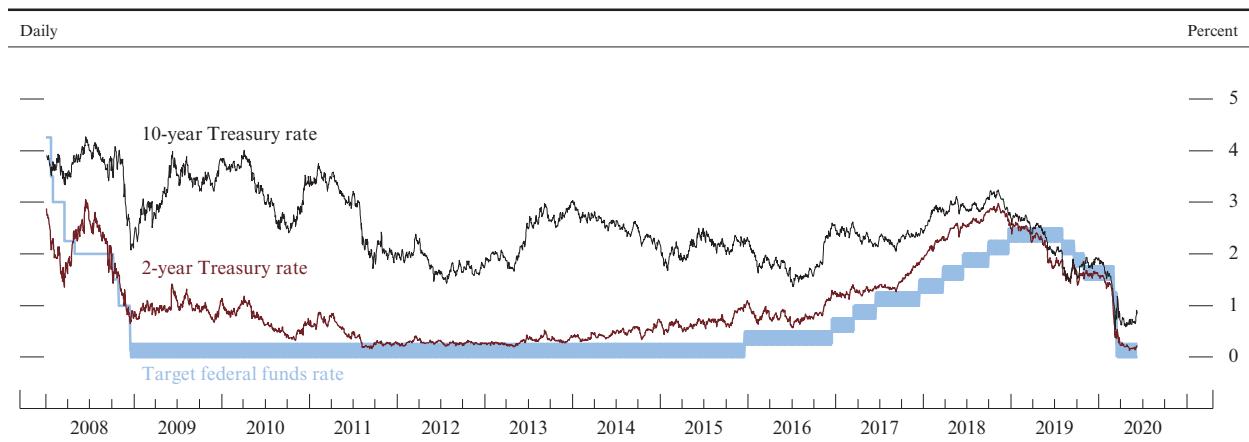
21. See the FOMC statements issued after the March meetings, which are available (along with other postmeeting statements) on the Monetary Policy portion of the Board's website at <https://www.federalreserve.gov/moneyandpolicy.htm>.

has weathered recent events and is on track to achieve its maximum-employment and price-stability goals. In connection with the changes in the target range, the Federal Reserve reduced the interest paid on reserve balances and decreased the interest rate offered on overnight reverse repurchase agreements at the two March meetings.

#### . . . and the FOMC increased the holdings of Treasury securities and agency mortgage-backed securities in the System Open Market Account

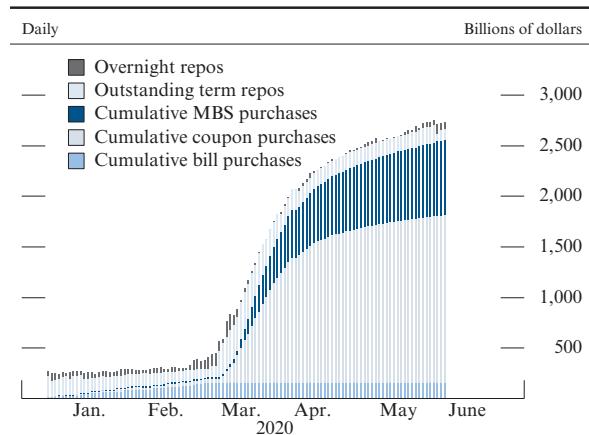
At its mid-March meeting, along with its decision to lower the target range for the federal funds rate, the FOMC emphasized that it is prepared to use its full range of tools to support the flow of credit to households and businesses, thereby promoting its maximum-employment and price-stability goals. To support the smooth functioning of markets for Treasury securities and agency mortgage-backed securities (MBS)—markets central to the flow of credit to households

46. Selected interest rates



NOTE: The 2-year and 10-year Treasury rates are the constant-maturity yields based on the most actively traded securities.  
SOURCE: Department of the Treasury; Federal Reserve Board.

## 47. Federal Reserve open market operations



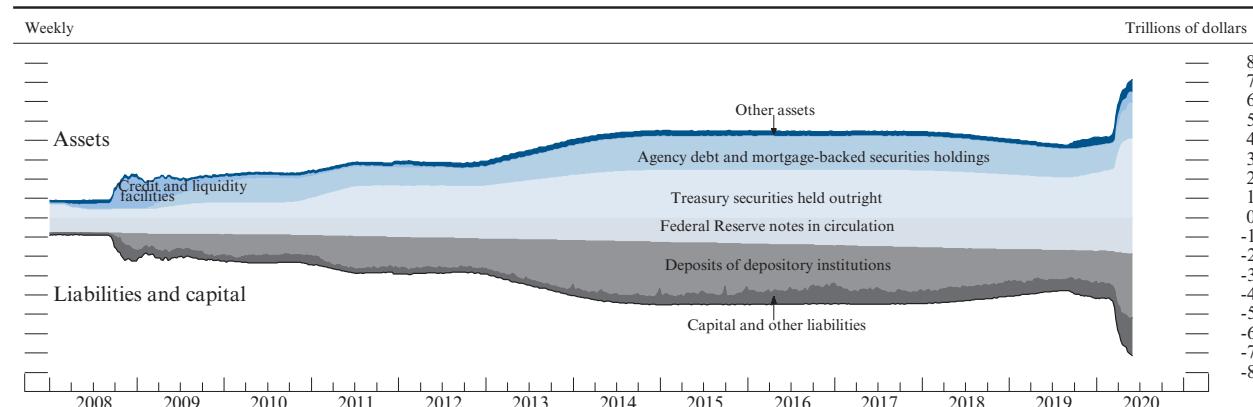
NOTE: The data are at a business-day frequency, excluding the holidays on January 20, February 17, and May 25. The data begin January 2, 2020. Repo is repurchase agreement. MBS is mortgage-backed security.

SOURCE: Federal Reserve Bank of New York; Federal Reserve Board staff calculations.

and businesses—the Committee announced that it would increase its holdings of Treasury securities by at least \$500 billion and its holdings of agency MBS by at least \$200 billion over coming months (figure 47). (See the box “Federal Reserve Actions to Ensure Smooth Functioning of Treasury and MBS Markets.”) Later in March, the Committee announced that it would continue to purchase Treasury securities and agency MBS in the amounts needed to support smooth market functioning and the effective transmission of monetary policy to broader financial conditions (figure 48). The Committee also included agency commercial MBS in its purchases for the first time. In June, the Committee announced that, over coming months, the Federal Reserve will increase its holdings of Treasury securities and agency residential and commercial MBS at least at the current pace to sustain smooth market functioning, thereby fostering effective transmission of monetary policy to broader financial conditions.

The Federal Reserve has continued rolling over at auction all principal payments from its holdings of Treasury securities. Before

## 48. Federal Reserve assets and liabilities



NOTE: “Agency debt and mortgage-backed securities holdings” includes agency residential mortgage-backed securities and agency commercial mortgage-backed securities. “Credit and liquidity facilities” consists of primary, secondary, and seasonal credit; term auction credit; central bank liquidity swaps; support for Maiden Lane, Bear Stearns Companies, Inc., and AIG; and other credit and liquidity facilities, including the Primary Dealer Credit Facility, the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility, the Commercial Paper Funding Facility, the Term Asset-Backed Securities Loan Facility, the Primary and Secondary Market Corporate Credit Facilities, the Paycheck Protection Program Liquidity Facility, the Municipal Liquidity Facility, and the Main Street Lending Program. “Other assets” includes repurchase agreements, FIMA repurchase agreements, and unamortized premiums and discounts on securities held outright. “Capital and other liabilities” includes reverse repurchase agreements, the U.S. Treasury General Account, and the U.S. Treasury Supplementary Financing Account. The data extend through June 3, 2020.

SOURCE: Federal Reserve Board, Statistical Release H.4.1, “Factors Affecting Reserve Balances.”

## Federal Reserve Actions to Ensure Smooth Functioning of Treasury and MBS Markets

### Deterioration in Market Functioning in February and March

Between late February and early March, functioning in U.S. Treasury securities and agency mortgage-backed securities (MBS) markets became increasingly strained. Amid growing concerns about the economic implications of COVID-19, investors sought to sell large volumes of long-maturity Treasury securities and MBS and reallocate their portfolios into shorter-term, more liquid assets. While the yields on long-maturity Treasury securities initially dropped sharply, in mid-March they started to increase in the face of these strong selling pressures (figure A). Around the same time as the increase in long-maturity Treasury yields, the spreads between yields on MBS and Treasury securities of comparable duration widened sharply. Indications of severe dislocations in both markets were also present. For example, bid-ask spreads for Treasury securities and agency MBS widened significantly (figure B shows indicative Treasury bid-ask spreads).

One factor that may explain these market dislocations is the effect of widespread selling of Treasury securities and MBS to primary dealers, who intermediate a large proportion of trading in these markets. As a wide range of domestic and foreign investors (including foreign official investors) rushed to raise cash or rebalance their portfolios by selling assets, dealers took large amounts of less liquid

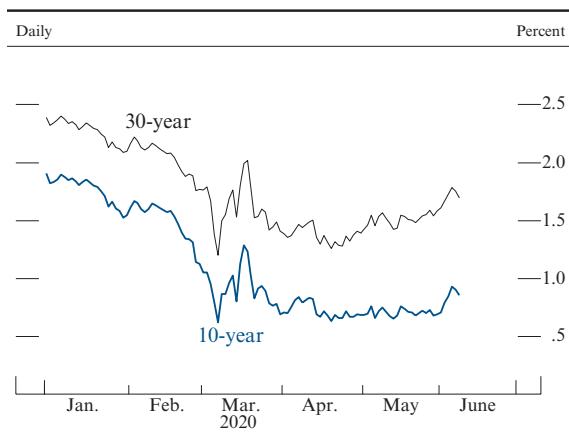
securities, including off-the-run Treasury securities and agency MBS, onto their balance sheets. At the same time, mortgage refinancing picked up, prompting substantial turnover in the MBS market. By early March, some dealers had reportedly run into balance sheet constraints that hampered their ability to purchase additional securities, leading to a deterioration in the functioning of a number of dealer-intermediated markets.

In the market for Treasury securities, liquidity conditions were particularly poor for more seasoned, or “off the run,” securities. However, the most liquid parts of the market, where newly issued, or “on the run,” securities are traded electronically, saw unprecedented strains: The volume of posted quotes, or “market depth,” dropped sharply, while intraday bid-ask spreads were exceptionally volatile, particularly for the longest-maturity securities. These strains in the most liquid part of the market suggest that principal trading firms—market participants who specialize in high-frequency and automated intermediation—were significantly less active than usual.

### Federal Reserve Policy Actions

The disruptions to the functioning of the Treasury and MBS markets were notable in view of the status  
*(continued on next page)*

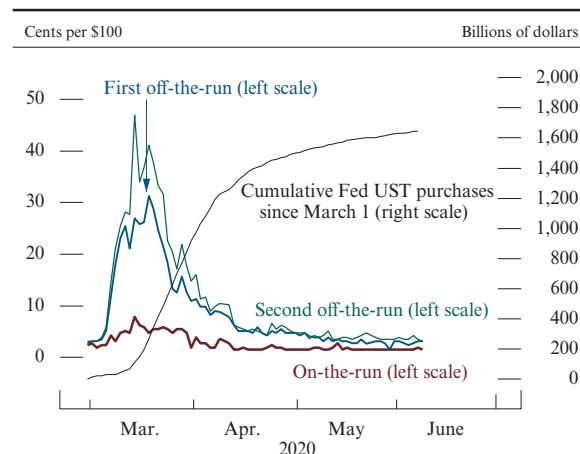
#### A. Nominal Treasury yields



NOTE: Yields are taken from a smoothed curve fitted to off-the-run securities.

SOURCE: Federal Reserve Bank of New York; Federal Reserve Board staff calculations.

#### B. Federal Reserve Treasury purchases and indicative Treasury bid-ask spreads



NOTE: The data are daily. UST is U.S. Treasury. Indicative bid-ask spreads are for 10-year Treasury notes. The data for cumulative Fed UST purchases extend through June 8, 2020.

SOURCE: Federal Reserve Bank of New York, New Price Quote System.

## Federal Reserve Actions to Ensure Smooth Functioning of Markets *(continued)*

of these markets as cornerstones for the operation of the U.S. and global financial systems and for the transmission of monetary policy. The Federal Reserve therefore took a series of policy measures designed to ensure the smooth functioning of these markets. These measures included the expansion of repurchase operations, an increase in purchases of Treasury and agency MBS securities, the expansion of financing arrangements for primary dealers, and a temporary change to the regulatory capital requirements of bank holding companies and depository institutions.

Beginning March 9, 2020, following a directive from the Federal Open Market Committee (FOMC), the Federal Reserve Bank of New York's Open Market Desk increased the size of overnight and term repurchase operations in order to ensure that the supply of reserves remained ample and to support the smooth functioning of the markets in which primary dealers obtain a substantial proportion of their short-term funding.<sup>1</sup> These changes expanded the supply of short-term funding available to primary dealers to finance their increased holdings of Treasury securities and agency MBS at a time when funding costs from other sources were increasing. Further, on March 12, the Desk introduced new weekly recurring one- and three-month term repurchase agreement (repo) operations of up to \$500 billion to address the disruption in Treasury financing markets.<sup>2</sup> Finally, on March 16, the Desk introduced a second daily overnight repo operation and increased the amount offered in each to \$500 billion.<sup>3</sup> Usage of Federal Reserve repo operations peaked on March 17, with overnight and term repo outstanding of \$496 billion, and has since fallen to \$167 billion as funding strains have eased. In light of more stable repo market conditions, on May 4, the Desk returned to once daily overnight repo operations.<sup>4</sup> Further, on May 14, the Desk discontinued its three-month term repo operations.<sup>5</sup>

1. See Federal Reserve Bank of New York (2020), "Statement Regarding Repurchase Operations," March 9, [https://www.newyorkfed.org/markets/opolicy/operating\\_policy\\_200309](https://www.newyorkfed.org/markets/opolicy/operating_policy_200309).

2. See Federal Reserve Bank of New York (2020), "Statement Regarding Treasury Reserve Management Purchases and Repurchase Operations," March 12, [https://www.newyorkfed.org/markets/opolicy/operating\\_policy\\_200312a](https://www.newyorkfed.org/markets/opolicy/operating_policy_200312a).

3. See Federal Reserve Bank of New York (2020), "Statement Regarding Repurchase Operations," March 16, [https://www.newyorkfed.org/markets/opolicy/operating\\_policy\\_200316](https://www.newyorkfed.org/markets/opolicy/operating_policy_200316).

4. See Federal Reserve Bank of New York (2020), "Statement Regarding Repurchase Operations," April 13, [https://www.newyorkfed.org/markets/opolicy/operating\\_policy\\_200413](https://www.newyorkfed.org/markets/opolicy/operating_policy_200413).

5. See Federal Reserve Bank of New York (2020), "Statement Regarding Repurchase Operations," May 13, [https://www.newyorkfed.org/markets/opolicy/operating\\_policy\\_200513](https://www.newyorkfed.org/markets/opolicy/operating_policy_200513).

Despite the much larger volume of repo operations during the week of March 9, strains in Treasury and agency MBS markets continued to build. Beginning in mid-March, therefore, the FOMC directed the Desk to purchase Treasury securities and agency MBS in order to support smooth market functioning. On March 15, the FOMC directed the Desk to increase its holdings of Treasury securities by at least \$500 billion and of agency MBS by at least \$200 billion, with purchases to take place across maturities.<sup>6</sup> To provide greater flexibility in addressing the strains, on March 23, the FOMC authorized purchases of these securities in the amounts needed to support smooth market functioning and effective transmission of monetary policy to broader financial conditions. The securities targeted for purchase were also expanded to include agency commercial MBS. Since mid-March, the Desk has purchased approximately \$1.6 trillion and \$719 billion of Treasury securities and agency MBS, respectively.<sup>7</sup> The daily amounts of purchases peaked at approximately \$75 billion and \$41 billion for Treasury securities and agency MBS, respectively, in late March before being reduced in stages to the current average daily amounts of around \$4.0 billion for Treasury securities and \$4.5 billion for agency MBS (including reinvestments). These purchases helped reduce financial market volatility by providing a predictable source of demand for these securities and by taking up some of the inventories from dealers' balance sheets.

On March 17, the Board, with the approval of the U.S. Treasury Secretary, established the Primary Dealer Credit Facility (PDCF) to provide primary dealers with access to term funding against a broad range of collateral.<sup>8</sup> The PDCF helped alleviate funding pressures faced by primary dealers by allowing them to source financing more easily for their increased securities holdings. The amount of PDCF loans outstanding peaked at around \$35 billion in mid-April but has since declined to around \$6 billion.

On March 31, the Federal Reserve announced the establishment of the temporary FIMA (Foreign and

*(continued)*

6. See the FOMC statement issued after the March 15 meeting, which is available (along with other postmeeting statements) on the Monetary Policy portion of the Board's website at <https://www.federalreserve.gov/monetarypolicy.htm>.

7. The MBS purchase amount includes purchases that have yet to settle.

8. See Board of Governors of the Federal Reserve System (2020), "Federal Reserve Board Announces Establishment of a Primary Dealer Credit Facility (PDCF) to Support the Credit Needs of Households and Businesses," press release, March 17, <https://www.federalreserve.gov/newsreleases/monetary/20200317b.htm>.

International Monetary Authorities) Repo Facility to allow FIMA account holders, which consist of central banks and other international monetary authorities with accounts at the Federal Reserve Bank of New York, to exchange their Treasury securities for U.S. dollars.<sup>9</sup> This facility allows foreign official institutions to raise U.S. dollars, if needed, without having to sell Treasury securities in the open market during periods of heightened volatility or impaired market functioning. Since its inception, take-up of the facility has been modest, as stresses in the U.S. Treasury market have declined.

On April 1, the Federal Reserve released an interim final rule indicating that holdings of U.S. Treasury securities and deposits at Federal Reserve Banks by bank holding companies would be excluded from the calculation of the supplementary leverage ratio (SLR) until March 31, 2021.<sup>10</sup> Further, on May 15, 2020, the federal bank regulatory agencies (the Board of Governors, Federal Deposit Insurance Corporation, and Office of the Comptroller of the Currency) released an interim final rule allowing depository institutions that are subject to the SLR the option to similarly exclude U.S. Treasury securities and deposits at Federal Reserve Banks from their SLR calculations through March 31, 2021.<sup>11</sup> These temporary exemptions are expected to ease liquidity pressures for primary dealers and depository institutions subject to these leverage ratios by providing them with greater flexibility to intermediate trades with clients in the presence of temporarily larger inventories of Treasury securities.

9. See Board of Governors of the Federal Reserve System (2020), "Federal Reserve Announces Establishment of a Temporary FIMA Repo Facility to Help Support the Smooth Functioning of Financial Markets," press release, March 31, <https://www.federalreserve.gov/newsevents/pressreleases/money20200331a.htm>.

10. See Board of Governors of the Federal Reserve System (2020), "Federal Reserve Board Announces Temporary Change to Its Supplementary Leverage Ratio Rule to Ease Strains in the Treasury Market Resulting from the Coronavirus and Increase Banking Organizations' Ability to Provide Credit to Households and Businesses," press release, April 1, <https://www.federalreserve.gov/newsevents/pressreleases/bcreg20200401a.htm>.

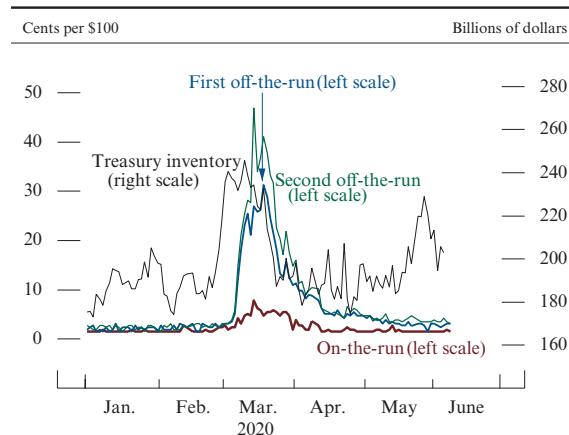
11. See Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, and Office of the Comptroller of the Currency (2020), "Regulators Temporarily Change the Supplementary Leverage Ratio to Increase Banking Organizations' Ability to Support Credit to Households and Businesses in Light of the Coronavirus Response," joint press release, March 15, <https://www.federalreserve.gov/newsevents/pressreleases/bcreg20200515a.htm>.

## Improvements in Market Functioning

Since the announcement of these policy actions, trading conditions in the markets for Treasury securities and MBS have improved steadily. The purchases of Treasury securities and agency MBS contributed to the subsequent decline in primary dealers' inventories (figure C). Bid-ask spreads have narrowed, particularly in the case of on-the-run Treasury securities, while MBS spreads have also come down from their peaks in mid-March. In addition to the Federal Reserve's actions, the passage of the CARES Act (Coronavirus Aid, Relief, and Economic Security Act), together with an improvement in sentiment among investors regarding the economic implications of COVID-19, likely contributed to the improvement in market functioning. In late May, these inventories temporarily increased to levels previously seen in March, largely because of increased dealer holdings of Treasury bills. However, Treasury markets did not exhibit a recurrence of the notable strains in trading conditions witnessed earlier this year.

Although trading conditions have improved substantially since mid-March, bid-ask spreads for longer-maturity and off-the-run Treasury securities remain wider than in mid-February. Market depth for on-the-run securities remains low, particularly for longer-maturity securities. MBS market functioning and liquidity have largely returned to pre-February norms, though strains remain in some less liquid parts of the market.

### C. Net dealer inventories and indicative bid-ask spreads



NOTE: The data are daily and extend through June 5, 2020, for the Treasury inventory and June 9, 2020, for the on-the-run and off-the-run spreads. Indicative bid-ask spreads are for 10-year Treasury notes. The volume of dealers' non-rehypothecated Treasury repurchase agreements serves as a proxy for the total dealer securities inventory.

SOURCE: Federal Reserve Bank of New York, New Price Quote System; Federal Reserve Board, Form FR 2052a, Complex Institution Liquidity Monitoring Report.

mid-March, to allow for a gradual runoff of agency securities, the Federal Reserve reinvested principal payments from agency debt and agency MBS of up to \$20 billion per month in Treasury securities; agency MBS principal payments in excess of \$20 billion each month were reinvested in agency MBS. Beginning in mid-March, the Committee announced it would reinvest all principal payments from the Federal Reserve's holdings of agency debt and agency MBS back into agency MBS. (The box "Developments on the Federal Reserve's Balance Sheet" discusses changes in the size and composition of the Federal Reserve's balance sheet over the past year.)

### **The Federal Reserve eased lending terms for primary credit borrowing . . .**

Primary credit is the Federal Reserve lending program available to depository institutions in generally sound financial condition. Amid increasing stress in funding markets in mid-March, the Federal Reserve announced several changes to the primary credit program. Importantly, the primary credit rate was set at the top of the target range for the federal funds rate rather than 50 basis points above the top of the range. The term of primary credit loans, which had previously been mainly overnight advances, was extended to allow depository institutions to borrow for up to 90 days. Federal Reserve communication encouraged the use of the discount window to help meet the demand for credit from households and businesses.

Discount window borrowing under the primary credit program increased significantly following these developments. Primary credit outstanding reached a peak of around \$50 billion in late March 2020—its highest level since the financial crisis and well above the typical level of around \$10 million that prevailed in 2019. Use of primary credit was fairly widespread, with discount window loans being extended to institutions across a range of size categories. Overall, the outstanding

amount of primary credit loans declined to about \$10 billion by early June.

### **. . . and undertook actions with other central banks to support U.S. dollar funding markets**

The Federal Reserve announced coordinated actions with other central banks to enhance the provision of liquidity via the standing U.S. dollar liquidity swap line arrangements and the establishment of temporary U.S. dollar liquidity arrangements (swap lines) with nine additional central banks. (See the box "Developments Related to Financial Stability" in Part 1 for a more detailed discussion of the swap lines.) The size of the swap lines increased from close to zero in mid-March to almost \$450 billion by the end of April. The Federal Reserve also established a temporary repo facility for foreign and international monetary authorities.

### **The FOMC is committed to using its tools to promote maximum employment and price stability**

The ongoing public health crisis will weigh heavily on economic activity, employment, and inflation in the near term and pose considerable risks to the economic outlook over the medium term. The FOMC is committed to using its full range of tools to support the U.S. economy in this challenging time, thereby promoting its maximum-employment and price-stability goals. The Committee will continue to monitor the implications of incoming information for the economic outlook, including information related to public health, as well as global developments and muted inflation pressures, and it will use its tools and act as appropriate to support the economy.

### **The Federal Reserve has continued to review its strategic framework for monetary policy**

In 2019, the Federal Reserve began a broad review of the monetary policy strategy,

tools, and communication practices it uses to pursue its statutory dual-mandate goals of maximum employment and price stability. A key component of the review was a series of public *Fed Listens* events. The Federal Reserve held 14 events around the country in 2019 to consult with a range of organizations on the effects that labor market conditions, inflation, and interest rates have on them and their communities. In light of the rapidly changing public health and economic environments due to COVID-19, the Federal Reserve convened another event in May 2020 to get an update. The Federal Reserve has released a report on its *Fed Listens* initiative.<sup>22</sup> The lessons learned

from the *Fed Listens* initiative were never more important than they are today as Americans navigate through these challenging times. The Federal Reserve expects to complete the review of its monetary policy strategy, tools, and communication practices later this year. The Federal Reserve remains focused on the attainment of its goals of maximum employment and price stability, including laying the foundation for the return to a strong labor market.

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22. The report is available on the Board's website at <https://www.federalreserve.gov/publications/files/fedlistens-report-20200612.pdf>.

## Developments on the Federal Reserve's Balance Sheet

### The Size of the Federal Reserve's Balance Sheet Has Increased Considerably

In response to the financial and economic disruptions caused by the COVID-19 pandemic, the Federal Reserve has eased the stance of monetary policy and has deployed various tools to promote smooth functioning of financial markets and the flow of credit to households and businesses. This discussion reviews the implications of these actions for the Federal Reserve's balance sheet.

To support the smooth functioning of those credit markets that are critical for the economy, the Federal Reserve purchased Treasury securities and agency residential and commercial mortgage-backed securities (MBS), expanded repurchase agreement (repo) operations, and introduced several credit and liquidity facilities. As a result of these actions, the size of the Federal Reserve's balance sheet increased from \$4.2 trillion at the beginning of 2020, approximately 19 percent of U.S. nominal gross domestic product (GDP), to \$7.2 trillion in June 2020, approximately 33 percent of U.S. nominal GDP.<sup>1</sup> The \$3 trillion increase in the size of the balance sheet was driven by asset purchases and other extraordinary actions (figure A).<sup>2</sup>

### Open Market Operations, the Discount Window, and U.S. Dollar Liquidity Swap Lines

Since the beginning of 2020, System Open Market Account holdings of Treasury securities and agency

1. Data based on the "second" estimate of first-quarter 2020 current-dollar GDP of \$21.5 trillion released by the Bureau of Economic Analysis; see Bureau of Economic Analysis (2020), "Gross Domestic Product, 1st Quarter 2020 (Second Estimate); Corporate Profits, 1st Quarter 2020 (Preliminary Estimate)," press release, May 28, <https://www.bea.gov/news/2020/gross-domestic-product-1st-quarter-2020-second-estimate-corporate-profits-1st-quarter>.

2. In September 2019, the Federal Reserve started purchasing Treasury bills and conducting term and overnight repo operations to ensure the supply of reserves would remain ample and help forestall the possibility of money market pressures that could adversely affect policy implementation. In January and February 2020, the Open Market Desk primarily purchased Treasury bills to provide liquidity and supply of reserves. Beginning in mid-March, the Desk started purchasing Treasury securities across a range of maturities and agency MBS in order to support smooth market functioning. For more information, see the box "Federal Reserve Actions to Ensure Smooth Functioning of Treasury and MBS Markets."

A. Balance sheet comparison  
(Billions of dollars)

	6/3/2020	1/1/2020	Change
<b>Assets</b>			
Total securities			
Treasury securities	4,134	2,329	1,805
Agency debt and MBS*	1,838	1,411	427
Net unamortized premiums	300	111	188
Repurchase agreements	212	256	-44
Loans	102	0	102
Central bank liquidity swaps	447	4	443
Other assets	133	63	70
<b>Total assets</b>	<b>7,165</b>	<b>4,174</b>	<b>2,992</b>
<b>Liabilities and capital</b>			
Federal Reserve notes	1,904	1,759	144
Reserves held by depository institutions	3,257	1,549	1,709
U.S. Treasury General Account	1,431	404	1,028
Other deposits	172	79	93
Other liabilities and capital	401	382	19
<b>Total liabilities and capital</b>	<b>7,165</b>	<b>4,174</b>	<b>2,992</b>

\* Includes only settled holdings in par values; the purchases of agency mortgage-backed securities (MBS) not yet settled was approximately \$130 billion on June 3, 2020.

Source: Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

MBS increased by \$1,805 billion and \$427 billion, respectively.<sup>3</sup> The markets for both Treasury securities and agency MBS play a critical role in the U.S. economy, and the Federal Reserve's purchases have fostered a substantial improvement in the functioning of these markets and the conditions prevailing in them.<sup>4</sup>

(continued)

3. The increase in MBS holdings on the balance sheet is less than the total MBS purchase amounts because the purchases include reinvestments of principal received and some of the purchases have not settled yet.

4. The daily purchase amounts peaked at approximately \$75 billion and \$41 billion for Treasury securities and agency MBS, respectively, in late March. Subsequently, given the improvements in market functioning and liquidity conditions, the pace of purchases was significantly reduced to the average daily amounts of \$4.0 billion for Treasury securities and \$4.5 billion for agency MBS in June. For more information, see the box "Federal Reserve Actions to Ensure Smooth Functioning of Treasury and MBS Markets."

Furthermore, to address strains in short-term U.S. dollar funding markets, the Federal Reserve Bank of New York's Open Market Desk expanded its offerings of overnight and term repo operations. The amount of repos outstanding reached a peak of \$442 billion in mid-March. Subsequently, given the improvement in funding market conditions, the Desk announced several reductions in the frequency of repo operations. As of June 3, all repos outstanding had declined to \$212 billion, lower than the amount outstanding early in the year, amid substantial increases in reserves and improved funding market conditions.

On March 15, the Federal Reserve announced changes to the discount window and encouraged depository institutions to use the discount window to meet unexpected funding needs and support the flow of credit to households and businesses.<sup>5</sup> The changes include lowering the primary credit rate by 150 basis points to 0.25 percent and extending borrowing terms for up to 90 days. The total outstanding discount window primary credit borrowing peaked at around \$51 billion in late March and has since declined to \$11 billion in June. Furthermore, the Federal Reserve maintains standing dollar liquidity swap line agreements with the central banks of several countries and instituted temporary agreements with the central banks of additional countries. After initially ramping up to \$439 billion in March and April, the total agreements outstanding stayed mostly flat in May to reach \$447 billion as of June 3 (figure B).

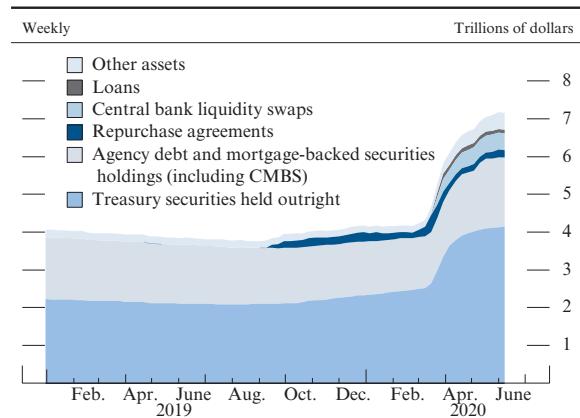
### Lending Programs and Liquidity Facilities under Section 13(3) of the Federal Reserve Act

In addition to the open market operations and initiatives described earlier, the Federal Reserve further expanded measures to enhance liquidity and the flow of credit to U.S. households and businesses. Under the authority of section 13(3) of the Federal Reserve Act, with the approval of the Secretary of the Treasury, the Federal Reserve Board implemented various measures in response to intensified stresses in several markets.<sup>6</sup>

5. A list of regulatory and supervisory actions by the Federal Reserve related to COVID-19 is available on the Board's website at <https://www.federalreserve.gov/supervisory-regulatory-action-response-covid-19.htm>.

6. For more information, see the box "Developments Related to Financial Stability" in Part 1.

### B. Federal Reserve assets



NOTE: "Other assets" include unamortized premiums and discounts on securities held outright, the Commercial Paper Funding Facility, the Secondary Market Corporate Credit Facility, and the Municipal Liquidity Facility. "Loans" consist of primary, secondary, and seasonal credit as well as other credit and liquidity facilities, including the Primary Dealer Credit Facility, the Money Market Liquidity Facility, and the Paycheck Protection Program Liquidity Facility. Key identifies areas in order from top to bottom: CMBS is commercial mortgage-backed security. The data extend through June 3, 2020.

SOURCE: Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

The combined size of the Money Market Mutual Fund Liquidity Facility and the Primary Dealer Credit Facility increased to \$86 billion in April, but the size of the facilities declined to \$36 billion by June 3. The combined size of other facilities, such as the Paycheck Protection Program Lending Facility, the Commercial Paper Funding Facility, the Secondary Market Corporate Credit Facility, and the Municipal Liquidity Facility, has been steadily rising and reached \$65 billion as of June 3 (figure C).<sup>7</sup>

(continued on next page)

7. Figures exclude the 85 percent of the Treasury's equity contributions invested in nonmarketable Treasury securities for the net portfolio holdings of Commercial Paper Funding Facility II LLC, Corporate Credit Facilities LLC, and Municipal Liquidity Facility LLC.

Note that all of these programs require approval from the Secretary of the Treasury and are subject to high standards for transparency, including CARES Act (Coronavirus Aid, Relief, and Economic Security Act) reporting for some facilities. For more information, see Board of Governors of the Federal Reserve System (2020), *Financial Stability Report* (Washington: Board of Governors, May), pp. 9–18, <https://www.federalreserve.gov/publications/files/financial-stability-report-20200515.pdf>.

## Developments on the Federal Reserve's Balance Sheet (*continued*)

### C. Liquidity and credit market facilities

Name	Target	Maximum size	Utilization as of 6/3/2020
Primary Dealer Credit Facility	Broker-dealer liquidity	Unlimited	\$6 billion
Money Market Mutual Fund Liquidity Facility	MMF liquidity	Unlimited	\$30 billion
Paycheck Protection Program Lending Facility	Funding of PPP loans	Unlimited	\$55 billion
Commercial Paper Funding Facility*	Newly issued CP	Issuer max outstanding limit	\$4 billion
Primary Market Corporate Credit Facility	Newly issued corporate debt	Combined \$750 billion	\$0 billion
Secondary Market Corporate Credit Facility*	Secondary market corporate debt	Combined \$750 billion	\$4 billion
Main Street New Loan Facility	Small and medium-sized businesses	Combined \$600 billion	\$0 billion
Main Street Expanded Loan Facility			
Main Street Priority Loan Facility			
Municipal Liquidity Facility*	States and municipal governments	\$500 billion	\$1 billion
Term Asset-Backed Securities Loan Facility	Newly issued ABS	\$100 billion	\$0 billion

Note: CP is commercial paper, MMF is money market fund, ABS is asset-backed securities, and PPP is Paycheck Protection Program.

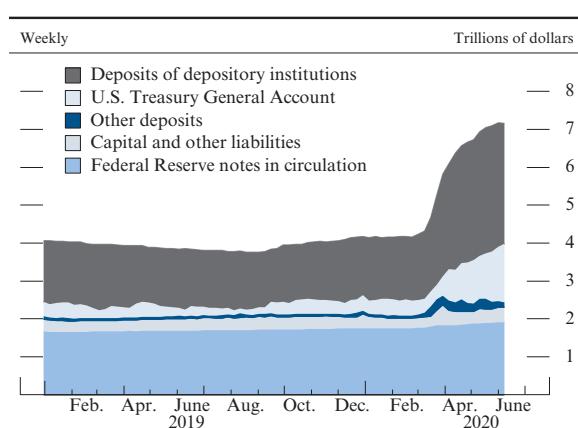
\* Excludes assets purchased pursuant to terms of the credit facility and amounts related to Treasury contributions to the facility.

Source: Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

### The Expansion of Total Assets Led to Higher Reserve Balances Held by Depository Institutions

The increase in the Federal Reserve's assets led to a commensurate increase in the size of liabilities on the Federal Reserve's balance sheet. The expansion of total assets from the outright purchases and other

### D. Federal Reserve liabilities



NOTE: "Capital and other liabilities" include reverse repurchase agreements and Treasury contributions. Key identifies areas in order from top to bottom. The data extend through June 3, 2020.

SOURCE: Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

actions resulted in reserve balances of \$3.3 trillion, an increase of \$1.7 trillion from the beginning of the year. Additionally, several nonreserve liabilities increased. In March and April, Federal Reserve notes grew faster than normal, partially in response to the COVID-19 pandemic, and reached \$1.9 trillion, an increase of \$144 billion from the beginning of the year.

Furthermore, the U.S. Treasury's General Account (TGA) at the Federal Reserve, which the Treasury uses to receive taxes and proceeds of Treasury auctions and to process the government's outlays, increased substantially. At the beginning of 2020, the TGA balance was approximately \$400 billion. In preparation for the fiscal spending related to the CARES Act (Coronavirus Aid, Relief, and Economic Security Act) and other stimulus measures, the TGA balance reached a high of \$1.4 trillion on June 3 (figure D).<sup>8</sup>

8. By statute, the Federal Reserve serves a special role as fiscal agent or banker for the federal government.

## PART 3

### SUMMARY OF ECONOMIC PROJECTIONS

In conjunction with the Federal Open Market Committee (FOMC) meeting held on June 9–10, 2020, meeting participants submitted their projections of the most likely outcomes for real gross domestic product (GDP) growth, the unemployment rate, and inflation for each year from 2020 through 2022 and over the longer run. Each participant's projections were based on information available at the time of the meeting, together with his or her assessment of appropriate monetary policy and assumptions about other factors likely to affect economic outcomes. The longer-run projections represent each participant's assessment of the value to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy.<sup>23</sup> “Appropriate monetary policy” is defined as the future path of policy that each participant deems most likely to foster outcomes for economic activity and inflation that best satisfy his or her individual interpretation of the Federal Reserve's congressionally mandated goals of promoting maximum employment and price stability.

All participants judged that the uncertainty attending their projections was higher than the average of the past 20 years. The median of participants' projections for real GDP growth was negative 6.5 percent for 2020, with individual projections ranging from negative 10.0 to negative 4.2 percent (table 1 and figure 1). The median of projections for real GDP growth was 5.0 percent for 2021 and 3.5 percent for 2022. The median assessment of real GDP growth in the longer run was 1.8 percent, down 0.1 percentage point since the December 2019 projections included in the February 2020 *Monetary Policy Report*.

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23. One participant did not submit longer-run projections in conjunction with the June 2020 FOMC meeting.

The median of projections for the unemployment rate in the fourth quarter of 2020 was 9.3 percent, with individual projections ranging from 7.0 to 14.0 percent. The median of projections for the unemployment rate was 6.5 percent and 5.5 percent in the fourth quarter of 2021 and 2022, respectively. These values are above the median assessment of the longer-run normal unemployment rate, 4.1 percent, which was unchanged from December.

The median of projections for inflation, as measured by changes in the price index for personal consumption expenditures (PCE), was 0.8 percent for 2020, 1.6 percent for 2021, and 1.7 percent for 2022. Almost all participants expected inflation to run below the Committee's longer-run objective of 2 percent through 2022. The medians of projections for core PCE inflation were 1.0 percent for this year, 1.5 percent for 2021, and 1.7 percent for 2022.

With regard to participants' projections of appropriate monetary policy, almost all participants expected to maintain the target range for the federal funds rate at 0 to  $\frac{1}{4}$  percent through at least the end of 2022 (figure 2). These projections represent participants' individual assessments of appropriate policy consistent with their projections of economic growth, employment, inflation, and other factors. However, the economic outlook is inherently uncertain; thus, each participant's assessment of appropriate policy is also necessarily uncertain and will change in response to changes to the economic outlook and associated risks. The median estimate of the longer-run level for the federal funds rate, 2.5 percent, was unchanged from December.

*A more complete description of the Summary of Economic Projections will be released with the minutes of the June 9–10, 2020, FOMC meeting on July 1.*

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assumptions of projected appropriate monetary policy, June 2020

Percent

Variable	Median <sup>1</sup>				Central tendency <sup>2</sup>				Range <sup>3</sup>			
	2020	2021	2022	Longer run	2020	2021	2022	Longer run	2020	2021	2022	Longer run
Change in real GDP . . . . .	-6.5	5.0	3.5	1.8	-7.6– -5.5	4.5–6.0	3.0–4.5	1.7–2.0	-10.0– -4.2	-1.0–7.0	2.0–6.0	1.6–2.2
December projection..	2.0	1.9	1.8	1.9	2.0–2.2	1.8–2.0	1.8–2.0	1.8–2.0	1.8–2.3	1.7–2.2	1.5–2.2	1.7–2.2
Unemployment rate. . . . .	9.3	6.5	5.5	4.1	9.0–10.0	5.9–7.5	4.8–6.1	4.0–4.3	7.0–14.0	4.5–12.0	4.0–8.0	3.5–4.7
December projection..	3.5	3.6	3.7	4.1	3.5–3.7	3.5–3.9	3.5–4.0	3.9–4.3	3.3–3.8	3.3–4.0	3.3–4.1	3.5–4.5
PCE inflation . . . . .	0.8	1.6	1.7	2.0	0.6–1.0	1.4–1.7	1.6–1.8	2.0	0.5–1.2	1.1–2.0	1.4–2.2	2.0
December projection..	1.9	2.0	2.0	2.0	1.8–1.9	2.0–2.1	2.0–2.2	2.0	1.7–2.1	1.8–2.3	1.8–2.2	2.0
Core PCE inflation <sup>4</sup> . . . . .	1.0	1.5	1.7		0.9–1.1	1.4–1.7	1.6–1.8		0.7–1.3	1.2–2.0	1.2–2.2	
December projection..	1.9	2.0	2.0		1.9–2.0	2.0–2.1	2.0–2.2		1.7–2.1	1.8–2.3	1.8–2.2	
Memo: Projected appropriate policy path												
Federal funds rate . . . . .	0.1	0.1	0.1	2.5	0.1	0.1	0.1	2.3–2.5	0.1	0.1	0.1–1.1	2.0–3.0
December projection..	1.6	1.9	2.1	2.5	1.6–1.9	1.6–2.1	1.9–2.6	2.4–2.8	1.6–1.9	1.6–2.4	1.6–2.9	2.0–3.3

NOTE: Projections of change in real gross domestic product (GDP) and projections for both measures of inflation are percent changes from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The projections for the federal funds rate are the value of the midpoint of the projected appropriate target range for the federal funds rate or the projected appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. The December projections were made in conjunction with the meeting of the Federal Open Market Committee on December 10–11, 2019. One participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate in conjunction with the December 10–11, 2019, meeting, and one participant did not submit such projections in conjunction with the June 9–10, 2020, meeting. No projections were submitted in conjunction with the March 2020 FOMC meeting.

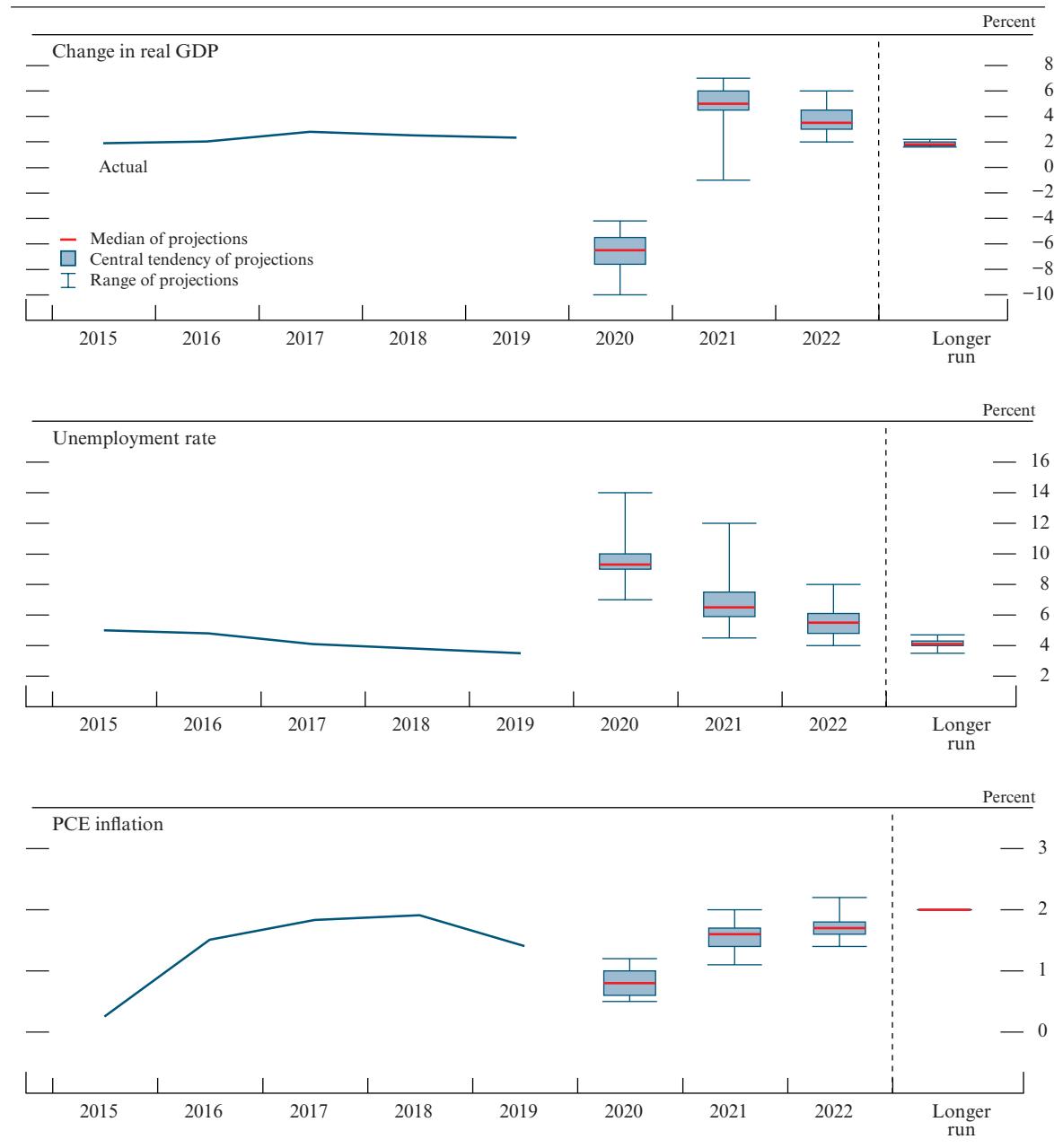
1. For each period, the median is the middle projection when the projections are arranged from lowest to highest. When the number of projections is even, the median is the average of the two middle projections.

2. The central tendency excludes the three highest and three lowest projections for each variable in each year.

3. The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.

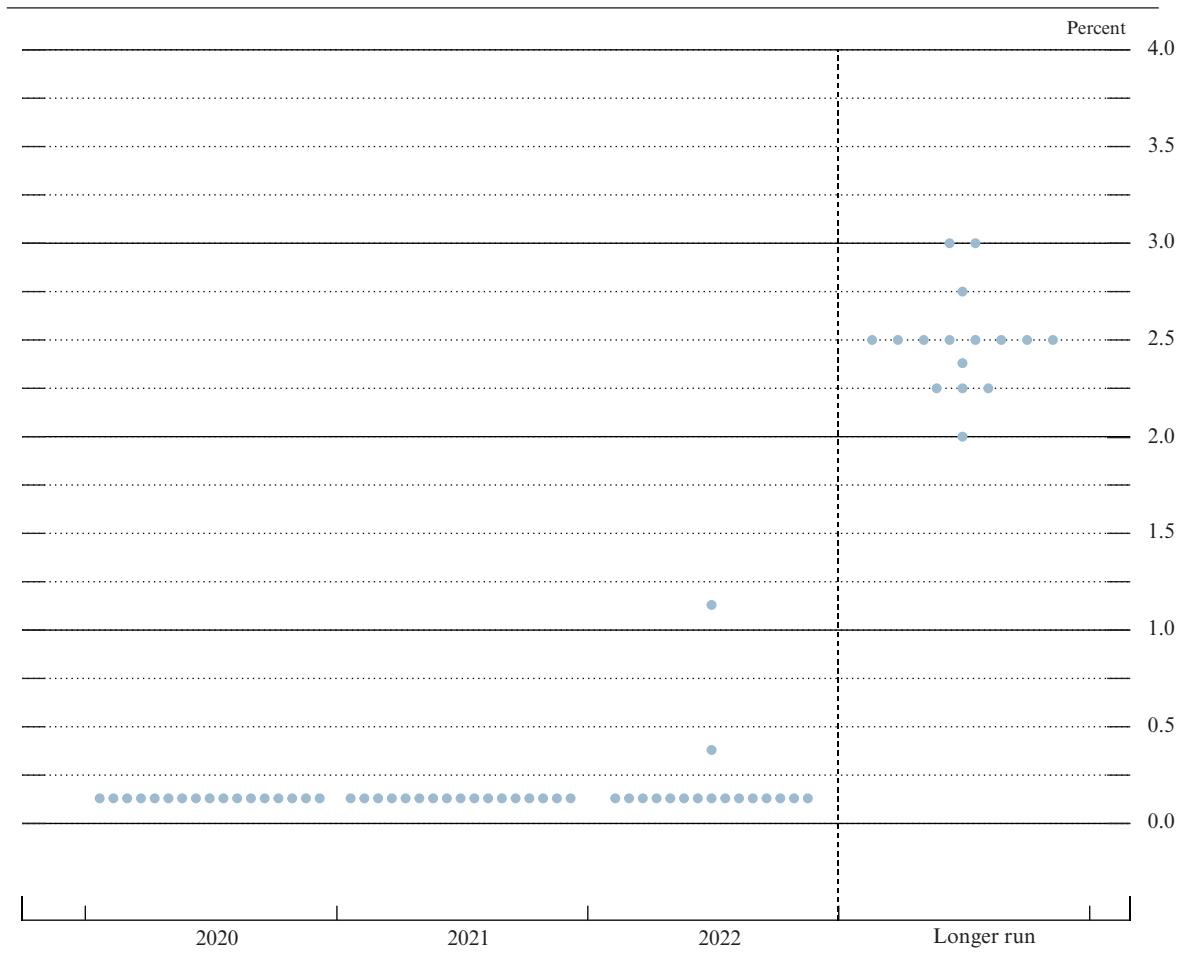
4. Longer-run projections for core PCE inflation are not collected.

Figure 1. Medians, central tendencies, and ranges of economic projections, 2020–22 and over the longer run



NOTE: Definitions of variables and other explanations are in the notes to table 1. The data for the actual values of the variables are annual.

Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate



NOTE: Each shaded circle indicates the value (rounded to the nearest 1/8 percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. One participant did not submit longer-run projections for the federal funds rate.

## ABBREVIATIONS

AFE	advanced foreign economy
BLS	Bureau of Labor Statistics
BOC	Bank of Canada
BOE	Bank of England
BOJ	Bank of Japan
CARES Act	Coronavirus Aid, Relief, and Economic Security Act
CBO	Congressional Budget Office
C&I	commercial and industrial
COVID-19	coronavirus disease 2019
CP	commercial paper
CPI	consumer price index
DPI	disposable personal income
ECB	European Central Bank
ECI	employment cost index
EFFR	effective federal funds rate
EME	emerging market economy
FIMA	Foreign and International Monetary Authorities
FOMC	Federal Open Market Committee; also, the Committee
GDP	gross domestic product
GFC	Global Financial Crisis
LFPR	labor force participation rate
MBS	mortgage-backed securities
MMF	money market fund
MMLF	Money Market Mutual Fund Liquidity Facility
MSLP	Main Street Lending Program
OPEC	Organization of the Petroleum Exporting Countries
PCE	personal consumption expenditures
PDCF	Primary Dealer Credit Facility
PMCCF	Primary Market Corporate Credit Facility
PPP	Paycheck Protection Program
PPPLF	Paycheck Protection Program Liquidity Facility
RBA	Reserve Bank of Australia

R&D	research and development
repo	repurchase agreement
SBA	Small Business Administration
SLOOS	Senior Loan Officer Opinion Survey on Bank Lending Practices
SLR	supplementary leverage ratio
SMCCF	Secondary Market Corporate Credit Facility
TGA	Treasury General Account
TIPS	Treasury Inflation-Protected Securities
UI	unemployment insurance
VIX	implied volatility for the S&P 500 index
WTI	West Texas Intermediate



