U.S. Economic Recovery in the Wake of COVID-19: Successes and Challenges

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SUMMARY

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U.S. Economic Recovery in the Wake of COVID-19: Successes and Challenges

The economic recession triggered by COVID-19 caused a historically rapid and deep decline in economic activity and employment. This decline was caused by reductions in supply (production of goods and services) and demand (spending).

Policymakers responded by rapidly implementing historically large fiscal and monetary stimulus beginning in spring 2020 and continuing into 2021. This stimulus, and the gradual reopening of the economy, led to a historically rapid economic recovery. However, the recovery was incomplete and uneven—the demand for goods and services recovered more quickly than supply did, and the demand for labor rebounded faster than labor supply did. Continued supply chain disruptions have caused shortages in the availability of products, such as automobiles. Firms have periodically suffered temporary disruptions due to COVID outbreaks among employees or foreign suppliers. More recently, the war in Ukraine has disrupted food, energy, and other commodity markets, causing a spike in their prices. The labor force participation rate has fallen from 63.4% before the pandemic to 62.2% in April 2022. Economic growth slowed in the second half of 2021 and was negative in the first quarter of 2022. Although demand may have roughly returned to its pre-pandemic trend in 2021, potential supply remains reduced until supply chain disruptions can be resolved and workers return to the labor force. Furthermore, the nature of the pandemic has changed the mix of demand, at least for the time being, in favor of goods instead of services, some of which cannot be consumed while socially distanced. A market imbalance where demand is higher than supply can be resolved only by prices rising. As a result, inflation has risen in 2022 to a level last seen in the early 1980s.

Policymakers have grappled with how to address these issues without undermining the economic recovery. To do so, monetary and fiscal policy needs to be normalized quickly enough to avoid high inflation from becoming endemic but not so quickly that it would cause a recession. Fiscal and monetary policy generally aim to maximize employment and keep prices stable. Since unemployment is already low by historical standards, maintaining stimulus absent other changes currently has greater potential to further increase inflation than to further reduce unemployment. When inflation is persistently high, it can become more costly to reduce. In 2021, policymakers took a wait-and-see approach to withdrawing the extraordinary pandemic-era fiscal and monetary policy, guarding against the possibility that private demand would be inadequate without stimulus and hoping that high inflation would prove transient because supply problems would resolve themselves quickly. In 2022, policymakers largely changed their view, believing that high inflation would not be resolved until policy was tightened, reducing demand. The Fed started raising interest rates and stopped purchasing assets in March 2022. The budget deficit has fallen by more than half as the economy has recovered and much of the COVID-19 relief has expired or been exhausted. But because of the wait-and-see approach in 2021 and gradual tightening in 2022, the amount of stimulus still in place is large.

Policymakers always face a tradeoff between inflation and employment when setting fiscal and monetary policy. The pandemic has introduced one unique consideration. To the extent that supply constraints are temporary, inflationary pressures may somewhat diminish once they are resolved. However, economists are uncertain on how quickly supply constraints can be resolved—if they even can be. For example, it is uncertain how many of the individuals who have left the labor force are willing to return during or after the pandemic. Policies aimed at demand can be adjusted quickly, but arguably, current supply constraints cannot be fully resolved through domestic policy, at least in the short run. For example, it is uncertain how the pandemic will evolve going forward, and many supply chain problems are originating overseas, disrupting the imports desired by U.S. consumers and as intermediate inputs by U.S. producers. If expectations of high inflation become entrenched, high inflation could become difficult to reverse. Inflation was high from the late 1960s until the early 1980s and was reduced only after interest rates reached 19% and the economy entered a deep and long recession.

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Introduction

The COVID-19 pandemic caused an unprecedented disruption to the basic functioning of the economy in spring 2020. According to the National Bureau of Economic Research (NBER), an independent, nonprofit research group, the U.S. economy experienced a two-month recession in March and April of 2020.[1] The recession was the deepest since the Great Depression, with gross domestic product (GDP) falling by the largest percentage in one quarter in the history of the data series and unemployment rising to its highest monthly rate in the history of that series. Just as economic activity had declined at a historically fast pace, it also started to recover at a historically fast pace. In May 2020, a new economic expansion began, spurred in large part by the historic nature of both fiscal and monetary stimulus throughout the initial months of the pandemic. The recovery continued throughout 2020 and 2021, bolstered by additional stimulus, the gradual loosening of travel restrictions and stay-at-home orders, and the eventual rollout of COVID-19 vaccines and treatments.[2]

Fiscal and monetary support continued through 2021, as did the economic recovery. Despite the brevity of the recession and the rapid recovery, most economic indicators—such as output and unemployment—had not fully recovered until the latter part of 2021. To date, in the aggregate, the recovery has been fairly robust, but there are nonetheless frictions in the economy that indicate it has not fully returned to normal yet. As the U.S. economy has rebounded from the disruptions caused by the initial stages of the pandemic, it is now characterized by relatively tight labor markets and inflation higher than the United States has experienced since the 1980s. In addition to high inflation, the key economic policy challenges going forward relate to supply disruptions, a low labor force participation rate, and maintaining financial stability in light of rapid asset price appreciation in 2020 and 2021.

This report details the initial economic impact of the pandemic and the ways in which the economy has recovered and continues to recover. This report further explores the ways in which this shock and recovery have been unusual and what this all might mean for the economy in the coming months and years. The state of the recovery has implications for how much and how quickly fiscal and monetary stimulus should be removed, which is also discussed. To understand what those implications are, the report first discusses what has happened in a simplified supply-demand framework. The report ends with two appendices. The first provides a theoretical framework for understanding the issues raised in this report. The second provides explanations of economic concepts used in this that might be unfamiliar to a lay reader.

The COVID-19 Recession and Recovery

The pandemic initially caused reductions in both aggregate supply (production) and aggregate demand (spending), as is discussed at greater length in **Appendix A**. In the initial months of the pandemic, social distancing measures and concerns about the spread of the virus caused a significant decrease in consumer spending, particularly in services.[3] As many businesses closed temporarily or permanently, millions of workers were laid off (including temporary furloughs),[4]

[1] National Bureau of Economic Research, *U.S. Business Cycle Expansions and Contractions*, https://www.nber.org/research/data/us-business-cycle-expansions-and-contractions.

[2] For more information, see CRS Report R46606, *COVID-19 and the U.S. Economy*, by Lida R. Weinstock.

[3] Real personal consumption expenditures fell by 33.4% in the second quarter of 2020, largely driven by a 42.4% drop in services expenditures.

[4] In April 2020, employment fell by 22,279,000 workers.

further exacerbating the decrease in spending. These dynamics together lowered aggregate demand in the economy.

As aggregate demand fell in the economy, so too did aggregate supply. In the beginning of the pandemic (and also during subsequent waves of the pandemic) the production process was slowed for businesses owing largely to health constraints on operations and workers, capacity limits on customers, and prohibitions on attendance at certain activities, such as mass sporting or musical events.[5] Businesses either laid off part of their workforces as aggregate demand fell or were otherwise forced to slow production as employees contracted COVID-19 at high rates.[6] In other words, the pandemic caused the productive capacity of the economy to shrink temporarily.

Additionally, demand for certain goods and services such as gasoline and dining away from home fell as workers began to telework at unprecedented rates and people stayed home. At the same time, demand for other products rose quickly and supply chains could not keep up. Grocery stores experienced shortages in food, toilet paper, and cleaning supplies, and personal protective equipment became scarce.[7] Many of these specific supply issues cleared over time, although several other specific bottlenecks have cropped up and continue to cause supply problems in the economy.[8]

As the public health situation continued to evolve, supply and demand continued to be affected to varying degrees. For the past several months, the economy has been in a state where demand has significantly recovered from the COVID-19 shock thanks in no small part to fiscal and monetary stimulus, but supply has remained constrained by COVID-19-related problems. Since 2021, these supply-side problems have included supply chain disruptions, man hours lost to sickness (peaking during the COVID-19 Omicron-variant surge), and a slow and incomplete return of workers to the labor force.

The Decline and Recovery in Output

Output, as measured by GDP,[9] declined at an annual rate of 31.2% in the second quarter of 2020, which was larger than any single quarterly change in GDP recorded (dating back to 1947). As shown in **Figure 1**, after falling in the first and second quarters of 2020, the growth rate of GDP since the third quarter of 2020 has generally been elevated compared to pre-pandemic rates because of "catch up" growth, as idled production was brought back on line. In 2021, GDP grew by 5.7%, compared to 2.3% in 2019. GDP surpassed its pre-pandemic (fourth quarter 2019) level in the second quarter of 2021. However, since potential GDP (see **Appendix B**) grows every quarter, output did not return to near its trend until the fourth quarter of 2021.

[5] See, for example, Brent Meyer, Mark E. Schweitzer, *The Impact of the Pandemic on US Businesses: New Results from the Annual Business Survey*, Federal Reserve Bank of Atlanta, March 2022, https://www.atlantafed.org/research/publications/policy-hub/2022/03/22/03—impact-of-pandemic-on-us-businesses—new-results-from-annual-business-survey.aspx.

[6] For example, see Josh Funk, "At Least 59,000 U.S. Meat Workers Caught COVID-19 in 2020, 269 Died," *PBS News Hour*, October 27, 2021, https://www.pbs.org/newshour/health/at-least-59000-u-s-meat-workers-caught-covid-19-in-2020-269-died.

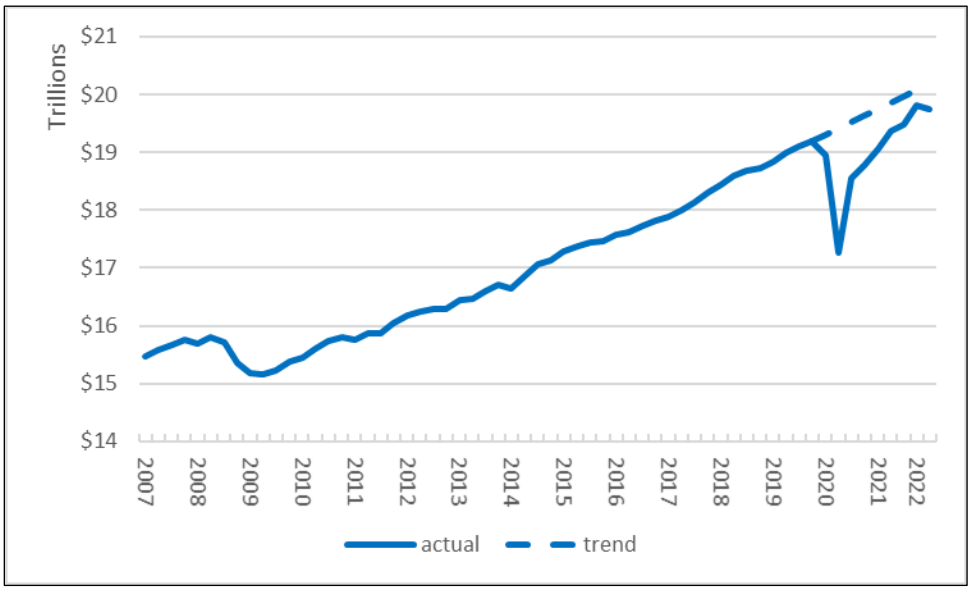
[7] Ana Swanson, "Global Trade Sputters, Leaving Too Much Here, Too Little There," *New York Times*, April 10, 2020, at https://www.nytimes.com/2020/04/10/business/economy/global-trade-shortages-coronavirus.html.

[8] For example, see Stephanie Yang and Jiyoung Sohn, "Global Chip Shortage 'Is Far from Over' as Wait Times Get Longer," *Wall Street Journal*, October 29, 2021, https://www.wsj.com/articles/global-chip-shortage-is-far-from-over-as-wait-times-get-longer-11635413402.

[9] Unless otherwise noted, all references to GDP in this report refer to inflation-adjusted, or real, GDP.

Figure 1. Real GDP

Q1 2007-Q1 2022



Source: Bureau of Economic Analysis (BEA), "National Data: National Income and Product Accounts."

Notes: Trend growth is calculated as average growth rate during 2009-2019 expansion.

After rapid catch up growth, economic output showed signs of slowing in the second half of 2021. (The labor market has not experienced a comparable slowdown.) GDP growth was 2.3% in the third quarter of 2021. It grew by almost 7% in the fourth quarter, but that was mostly attributable to firms restocking their inventories after their unusual depletion during the pandemic. Removing private inventory adjustments, the economy grew by 2% in the fourth quarter. Inventory restocking, once it is completed, will be a one-off contributor to growth.[10]

In the first quarter of 2022, the economy shrank by 1.4%. Although consistent with a slowdown, a closer look at the data suggest that this may not be a sign that the economy is reentering a recession. Both consumption and private investment grew at relatively healthy rates—the contraction was caused entirely by trade, which was influenced by the war in Ukraine, government spending (which is not indicative of the overall business cycle), and a modest inventory drawdown (which may be a reaction to the large inventory buildup in the previous quarter). The effect of higher inflation on the economy can be seen in the first quarter data—nominal GDP grew by 6.5%, while real GDP shrank by 1.4%.

All of the major private components of GDP—personal consumption, fixed investment, and international trade—showed the same pattern of an unprecedented contraction in the second quarter of 2020 and an unprecedented rebound in the following quarters. In contrast, the growth pattern of government spending (especially federal nondefense spending) has been driven largely by the timing of COVID-19-relief legislation, not the broader business cycle. However, a few subcomponents of GDP—particularly investment in structures and exports—have grown slowly since the economy began to rebound and have still not reached their pre-pandemic peak after

[10] Jason Furman and Wilson Powell III, *The US Economy Grew Faster Than Expected In 2021, but the Pandemic Transformed Its Composition*, Peterson Institute for International Economics, January 27, 2022, https://www.piie.com/blogs/realtime-economic-issues-watch/us-economy-grew-faster-expected-2021-pandemic-transformed-its.

adjusting for inflation. Other subcomponents have grown more quickly than overall GDP. Consumption and government spending are discussed in more detail below.

Changing Patterns of Consumer Demand

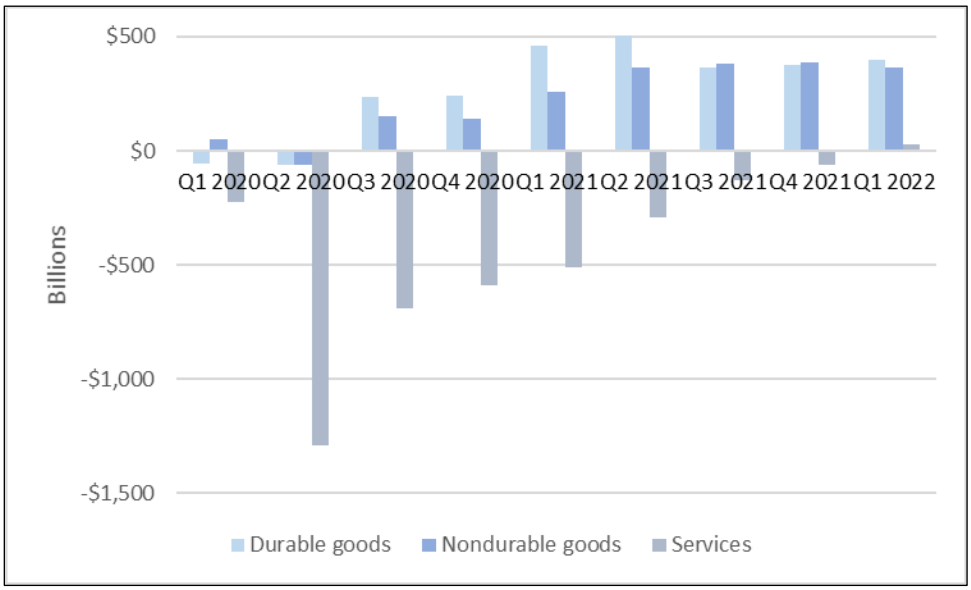
As discussed above, early in the pandemic, consumers held back on purchases due to economic uncertainty, COVID-19 fears, restrictions on services, and unavailability of products. Uncertainty about job prospects amid a wave of unemployment also held back consumer demand in 2020. As unemployment fell and job openings became plentiful in 2021, that constraint on demand was loosened. As these headwinds receded, consumers released some pent-up spending. Consumer spending exceeded its pre-pandemic peak in the first quarter of 2021 and increased by 7.9% in 2021, after adjusting for inflation. Consumption has grown more slowly since November 2021.

Consumer demand continues to be affected by the pandemic, but since 2021 this has mainly resulted in compositional changes in demand rather than a reduction in overall demand. Namely, there has been a shift from consumer spending on services to goods, especially durable goods, as shown in **Figure 2**. Spending on durable goods has been high because the supply and demand for services has been limited[11] and because fiscal and monetary stimulus have boosted demand for consumer durables relative to other spending. Adjusted for inflation, spending on services did not surpass its pre-pandemic peak until the first quarter of 2022, whereas spending on durable goods is now 22% higher than before the pandemic and nondurable spending is 12% higher. Spending on goods increased in the second half of 2020 and the first half of 2021 before falling back to trend in the second half of that year. Services spending, by contrast, was unusually strong in the second and third quarters of 2021. Both goods and services spending slowed in the fourth quarter, perhaps because of the COVID-19 Omicron-variant surge.

[11] Demand for services may be limited for a variety of reasons, including any social distancing measures and fears of the spread of COVID-19. For example, see Brett Nelson, "Fear, Not Government Shutdowns, Chilled the Economy," *Chicago Booth Review*, August 4, 2020, https://www.chicagobooth.edu/review/fear-not-government-shutdowns-chilled-economy.

Figure 2. Cumulative Change in Spending from Q4 2019

Q1 2020-Q1 2022



Source: CRS calculations based on BEA, "National Income and Product Accounts."

Notes: Data are annualized and inflation-adjusted.

GDP data show the intersection of supply and demand—in other words, what consumers have been able to purchase given the availability of products. Because of supply constraints (discussed below), supply has not been able to meet existing demand. Consumers would have purchased additional new houses, automobiles, and other consumer durables had they been available, which are not reflected in these statistics. Instead, prices of these goods rose in response to demand outpacing supply, as is discussed in the section below entitled "High and Rising Inflation."

Consumer spending has also been supported by fiscal and monetary policy. Monetary stimulus has led to historically low interest rates that have made the financing of consumer durables more affordable. Part of the fiscal stimulus came in the form of transfer payments to individuals through a variety of COVID-19-relief income transfer programs. Those transfers, by boosting household income (as discussed in the next section), have also boosted consumer spending.

The Spike in Personal Income and Saving

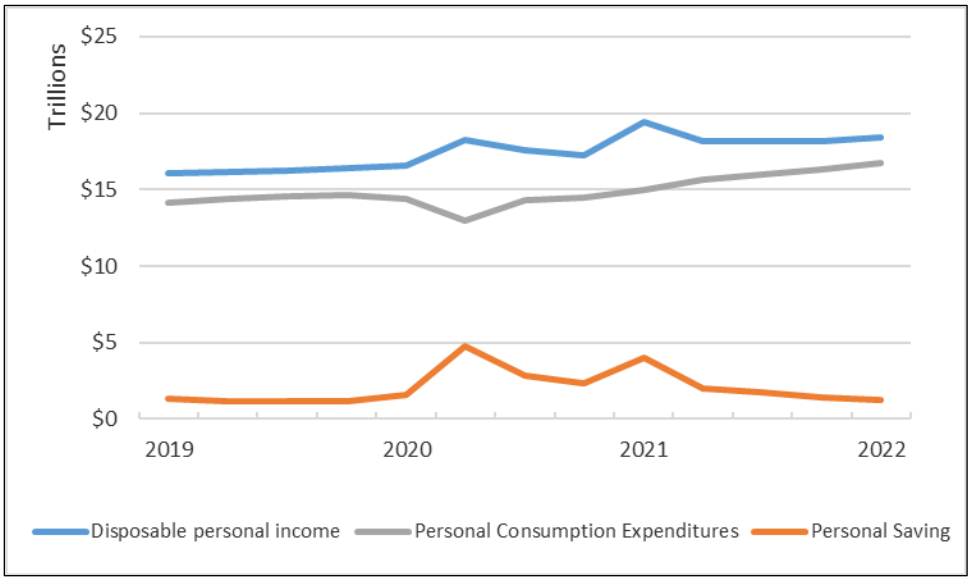
Frequently, in a recession, when demand falls and unemployment rises, overall levels of personal income decrease, as occurred during the 2001 and 2007-2009 recessions. Depending on the relative magnitude of spending and income decreases, levels of personal saving may also decrease. However, owing in large part to the fiscal policy response to COVID-19, overall personal income and saving increased during the first several months of the pandemic. The policy response, which is discussed in detail in a subsequent section, included direct government transfers to households (such as economic impact payments),[12] enhanced unemployment

[12] Economic impact payments provided direct payments to individuals with qualifying income and household size characteristics. For more information, see CRS Report R46415, *COVID-19 and Direct Payments: Resources and Experts*, coordinated by Margot L. Crandall-Hollick.

benefits,[13] and direct support to farmers and ranchers[14] impacted by pandemic-related supply chain issues, among others. These transfers directly increased personal income by an unprecedented amount, particularly in the two quarters with high levels of transfers—the second quarter of 2020 and the first quarter of 2021—as seen in **Figure 3**. Of the various transfer programs enacted, the economic impact payments contributed the most to personal income, although the three rounds of payment were all one-time transfers and therefore the effects dropped off quickly. Nonetheless, these payments contributed 12.3%, 7.7%, and 16.7% to personal income in April 2020, January 2021, and March 2021, respectively, contributing significantly to the second quarter 2020 and first quarter 2021 increases noted earlier. Personal income in March 2021 remained higher than pre-pandemic levels and was roughly $21.5 trillion in April 2022 as compared to roughly $19 trillion in February 2020 before the pandemic began.[15] COVID-19-relief income transfer programs have now expired or been exhausted, so research from Goldman Sachs projects that after-tax income will fall below trend in the first quarter of 2022 for the first time since the CARES Act (P.L. 116-136) was enacted.[16]

Figure 3. Total Personal Income, Saving, and Consumption

Q1 2019-Q1 2022



Source: BEA, "National Income and Product Accounts."

Notes: Not adjusted for inflation.

[13] During the pandemic unemployment benefits were "enhanced" in several ways, including through extended unemployment benefits, pandemic emergency unemployment compensation, pandemic unemployment assistance, and pandemic unemployment compensation payments. For more information, see CRS Report R46687, *Unemployment Insurance (UI) Benefits: Permanent-Law Programs and the COVID-19 Pandemic Response*, by Julie M. Whittaker and Katelin P. Isaacs.

[14] The Coronavirus Food Assistance Program provided direct payments to U.S. agricultural producers. For more information, see CRS Report R46395, *USDA's Coronavirus Food Assistance Program: Round One (CFAP-1)*, by Randy Schnepf; and CRS Report R46645, *USDA's Coronavirus Food Assistance Program: Round Two (CFAP-2)*, by Randy Schnepf.

[15] BEA, *Personal Income*, May 27, 2022, https://www.bea.gov/sites/default/files/2022-05/pi0422.pdf.

[16] Ronnie Walker, "One Step Back, Two Steps Forward: Q1 Growth and Omicron," *US Economics Analyst*, January 31, 2022.

With large and sudden increases in personal income and decreases in consumer spending, the personal saving rate also increased during the initial months of the pandemic, as seen in **Figure 3**. Individuals receive a certain amount of after-tax income that they can spend or save. By definition, what is not spent is saved. It follows that when personal consumption expenditures decreased and income increased as the coronavirus spread, personal saving as a percentage of disposable income would increase. The personal saving rate in the United States increased rapidly from 8.3% in February 2020 to 33.7% by April 2020.

As with the increase in personal income, the rise in the personal saving rate was driven, in part, by government transfers. For example, the three rounds of economic impact payments appear to have contributed notably to rising savings. The Federal Reserve Bank of New York Survey of Consumer Expectations found that respondents saved or expected to save 36.4% of the first round of stimulus, 37.1% of the second round of stimulus, and 41.6% of the third round of stimulus.[17] The inability to spend money due to business closures and social distancing was another reason for the spike in the personal saving rate early in the pandemic. Notably, most of the increase in saving in the initial months of the pandemic appears to be attributable to high-income households. According to an economic tracker based on private-sector data created by economists to record the effects of COVID-19 in real time, as of June 10, 2020, high-income households reduced spending by 17%, while low-income households reduced spending by 4%.[18]

After traversing several more relative peaks and valleys, the household saving rate returned to a rate similar to before the pandemic in the fourth quarter of 2021. The personal saving rate is 4.4% as of April 2022.[19] But since the saving rate measures current saving relative to current income, despite the return to trend, households have now amassed a large stock of excess savings that they could use to temporarily increase future consumption above trend. A TD Economics report estimates this stock of excess saving at $2.7 trillion.[20] A Goldman Sachs newsletter estimates that this excess saving is predominantly being held in bank accounts—which can be easily spent at any time—as opposed to less liquid investments or having been used to pay down household debt.[21] A Brookings study puts excess saving at $2.5 trillion and also finds it is predominantly being held in bank accounts.[22] Households may wish to temporarily consume (at above-trend rates) certain goods or services, such as personal travel, that were forgone in the early stages of the pandemic.

[17] Olivier Armantier et al., "An Update of How Households Are Using Stimulus Checks," Liberty Street Economics, April 7, 2021, https://libertystreeteconomics.newyorkfed.org/2021/04/an-update-on-how-households-are-using-stimulus-checks.html.

[18] Raj Chetty et al., *How Did COVID-19 and Stabilization Policies Affect Spending and Employment? A New Real-Time Economic Tracker Based on Private Sector Data*, National Bureau of Economic Research, Working Paper no. 27431, June 2020, p. 2.

[19] BEA, *Personal Income*, February 25, 2022, https://www.bea.gov/data/income-saving/personal-income.

[20] Maria Solovieva, *Where the Road of Excess [Saving] Leads*, TD Economics, September 16, 2021, https://economics.td.com/us-excess-savings.

[21] Joseph Briggs, "The Good and the Bad About the Consumer Spending Outlook," Goldman Sachs, *U.S. Economics Analyst*, March 20, 2022.

[22] Mitchell Barnes et al., *Bolstered Balance Sheets: Assessing Household Finances Since 2019*, Brookings Institution, March 22, 2022, https://www.brookings.edu/research/bolstered-balance-sheets-assessing-household-finances-since-2019.

Supply Disruptions

The pandemic has disrupted the production of many goods and services. Census survey evidence shows a surge in labor shortages, supply shortages, and logistic/transport constraints causing U.S. manufacturers to operate below capacity.[23] Although those disruptions have greatly waned since spring 2020, some continue to constrain production, exacerbating inflationary pressures (discussed below).

Supply continues to be constrained by disruptions to global supply chains, labor shortages, temporary business disruptions linked to COVID-19 outbreaks, and commodity shortages linked to the 2022 Russian invasion of Ukraine.[24] Pandemic-related shutdowns and production delays worldwide have caused a chain reaction of delays in the availability of products across a wide range of industries. Product availability has been disrupted for both final products sought by consumers and inputs used by American producers. Earlier shutdowns created backlogs that have taken months to unwind.

Periodic surges in COVID-19 cases have also caused labor shortages at times that have hobbled production. For example, the Omicron-variant surge led to employee absences that caused new supply disruptions last winter, including to flights and passenger rail.[25] The U.S. Bureau of Labor Statistics reported that 3.6 million employed individuals were unable to work at some point in January 2022 (when Omicron peaked) because of illness—more than twice as high as the pre-pandemic high.[26] In the same month, 6 million individuals were unable to work because their employers closed or lost business due to COVID-19. Absences and loss of business because of illness have been consistently above average throughout the pandemic.[27]

Supply chains are global, and a product can pass through several countries before reaching the United States.[28] A delay or disruption in any one of those countries can therefore cause supply problems for the United States. Different countries have experienced different kinds of production disruptions and at different times compared to the United States, with some countries lifting or re-imposing lockdowns and other work restrictions at different times than when such changes occurred in the United States. The Federal Reserve Bank of New York publishes an index

[23] Federal Reserve, *Monetary Policy Report*, February 2022, p. 20, https://www.federalreserve.gov/monetarypolicy/files/20220225_mprfullreport.pdf.

[24] See Gianluca Benigno et al., "Global Supply Chain Pressure Index: March 2022 Update," Federal Reserve Bank of New York, March 3, 2022, https://libertystreeteconomics.newyorkfed.org/2022/03/global-supply-chain-pressure-index-march-2022-update/.

[25] Eli Rosenberg, "Workers Are Out Sick in Record Numbers, Exacerbating Labor Shortage Woes," *Washington Post*, January 20, 2022, https://www.washingtonpost.com/business/2022/01/20/workers-out-sick-omicron-census/; Luz Lazo, "Amtrak to Reduce Train Service Amid Omicron Surge," *Washington Post*, January 20, 2022, https://www.washingtonpost.com/transportation/2022/01/20/amtrak-cuts-service-virus-surge/.

[26] BLS, *Absences from Work*, https://www.bls.gov/cps/absences.htm. Census also collects data on people who reported that they were "caring for someone or sick myself with coronavirus symptoms" and workers who reported that they were not working due COVID in its experimental Pulse survey. See U.S. Census Bureau, "Household Pulse Survey Data Tables," Employment Table 3, https://www.census.gov/programs-surveys/household-pulse-survey/data.html.

[27] BLS, "2.5 Million Unable to Work in March 2022 Because Employer Closed or Lost Business Due to COVID-19," *The Economics Daily*, April 6, 2022, https://www.bls.gov/opub/ted/2022/2-5-million-unable-to-work-in-march-2022-because-employer-closed-or-lost-business-due-to-covid-19.htm.

[28] See CRS Report R46641, *Global Value Chains: Overview and Issues for Congress*, coordinated by Rachel F. Fefer; and International Monetary Fund, *World Economic Outlook*, ch. 4, "Global Trade and Value Chains During the Pandemic," April 2022.

measuring how much pressure there is in global supply chains. For much of the pandemic, supply chains have faced significantly higher pressures than at any time in recent decades.

Shipping and U.S. port disruptions have also caused delays in imports arriving and being processed in the United States.[29] After falling early in the pandemic, import prices have risen more quickly than overall inflation (13.9% compared to 8.0% in the first quarter of 2022).

The complexity of global supply chains has led to unexpected problems. For example, disruptions in semiconductor (microprocessor) production led to a 2.3 million shortfall in new automobiles produced in 2021 in North America, because each automobile contains an average of 298 semiconductors.[30] As a result, demand for new automobiles outpaced supply, causing a spillover into the used auto market, and inflation in the 12 months ending in April 2022 was 13.2% for new automobiles and 22.7% for used automobiles.

The 2022 Russian invasion of Ukraine has resulted in a new set of supply shocks, increasing the world prices of energy and certain foodstuffs, metals, and other commodities and disrupting trade patterns.[31] It is still unclear the extent to which the invasion of Ukraine will disrupt global economic growth, notably through disruptions to energy and commodity markets. The Organisation for Economic Co-operation and Development (OECD) projects that if these supply shocks last for one year, they will reduce U.S. growth by almost one percentage point and raise U.S. inflation by almost 1.5 percentage points in the first full year.[32]

In addition, supply has been constrained by a decline in the labor supply—fewer workers means less overall production—that dates to the beginning of the pandemic, which is discussed in more detail in the next section.

Labor Market

Another contributing factor to lagging aggregate supply is an unusually tight labor market. The labor market has seen a rapid but incomplete recovery from the spring of 2020. Employers have been unable to hire as many workers as they would like in part due to workers leaving the labor force. For labor market related definitions, see **Appendix B**.

Low Unemployment but Remaining Employment Gap

Similar to GDP, employment experienced a sharp and rapid contraction in spring 2020 and then rapidly increased beginning in summer 2020. Employment fell by 22 million, and the unemployment rate rose from 3.5% to 14.7% between February 2020 and April 2020. Employment growth has been very strong since April 2020, adding an average of over 550,000 jobs per month in 2021. Many workers who were temporarily laid off returned to their old jobs, while other workers found new jobs.

Unlike real GDP, several measures of the labor market have not fully recovered. As of April 2022, employment remains over 760,000 jobs below its level in February 2020. Once accounting for the

[29] See CRS Insight IN11800, *Supply Chain Bottlenecks at U.S. Ports*, by John Frittelli and Liana Wong.

[30] See CRS In Focus IF12000, *Semiconductor Shortage Constrains Vehicle Production*, by Manpreet Singh.

[31] Of note, the Consumer Price Index does not directly include the price of most raw materials such as metal or other commodities, as these are not goods typically purchased by consumers. However, the prices of raw materials faced by producers tend to be reflected in the prices of final goods and services purchased by consumers.

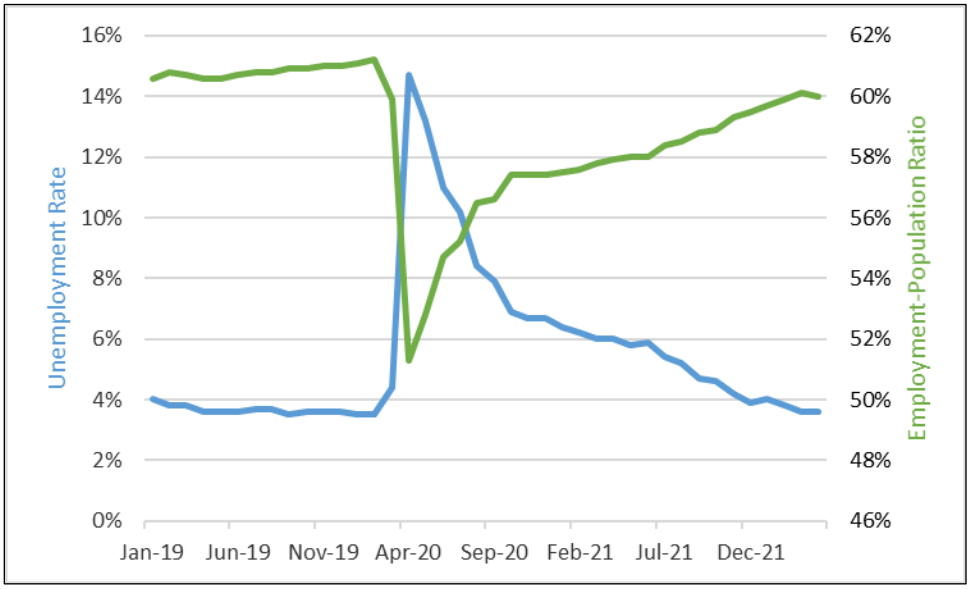
[32] OECD, "Economic and Social Impacts and Policy Implications of the War in Ukraine," *Economic Outlook, Interim Report*, March 2022, https://www.oecd.org/economic-outlook/#gdp-inflation-impact.

growth in the population over that period, employment is relatively lower—the employment/population ratio fell from 61.2% before the pandemic to 60.0% in April 2022 (as shown in **Figure 4**), representing nearly 2.9 million workers.

The unemployment rate fell rapidly in 2021, from 6.4% in January to 3.9% in December and to 3.6% in April 2022. It is now almost the same as it was before the pandemic, and it is around the lowest unemployment has reached in the past three long expansions (1991-2001, 2001-2007, 2009-2020).[33] Unlike those expansions, which initially featured "jobless recoveries," unemployment fell below 4% in less than two years after the recession had ended. Because unemployment is low, potential employment growth from further decreases in the ranks of the unemployed is limited.

Figure 4. Employment Situation

January 2019-March 2022



Source: Bureau of Labor Statistics (BLS), Current Population Survey (CPS).

Notes: Data are seasonally adjusted.

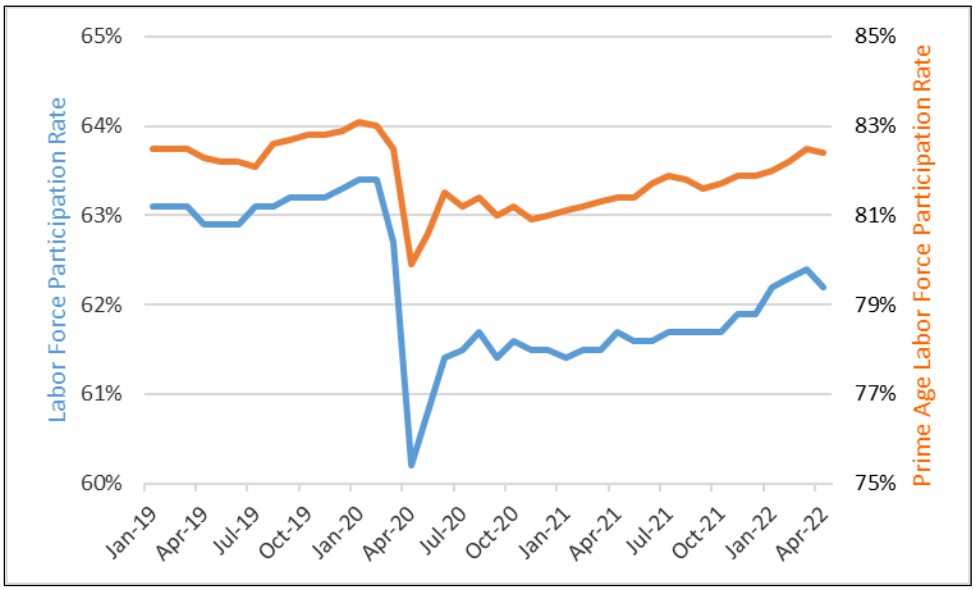
Low Labor Force Participation

The divergence between the unemployment rate and the employment/population ratio reflects the decline in labor force participation. The pandemic caused an unusually large decline in the labor force participation rate (LFPR—i.e., the employed and unemployed divided by the population). The LFPR was 63.4% in February 2020 before the pandemic began and fell to 60.2% in April 2020. It has rebounded more slowly than the unemployment rate since and has only partially recovered to 62.2% as of April 2022 (see **Figure 5**), which is still lower than at any point between the 1970s and the start of the pandemic. This suggests that if workers could be brought back into the labor force, there appears to be significant room for employment to grow (as suggested by job opening statistics, discussed in the following section). However, the likelihood of this occurring is highly uncertain.

[33] Unemployment reached a low of 3.9% in the 1990s expansion and 3.5% in the 2010s expansion. It never fell below 5% in the 1980s expansion or 4% in the 2000s expansion.

Figure 5. Labor Force Participation Rate

January 2019-April 2022



Source: BLS, CPS.

Notes: Data are seasonally adjusted.

Notably, the decline was and incomplete recovery is concentrated among older workers, while participation for those of prime age (25-54 years) has recovered to a larger extent. By February 2022, the LFPR for ages 55-64 had fully recovered to pre-pandemic levels, but the rate for ages 65-74 was still nearly two percentage points lower. The Federal Reserve (Fed) estimates the different contributors to the LFPR decline since the beginning of the pandemic through December 2021.[34] The Fed attributes about three-quarters of the decline to retirements. The share of *retired* older Americans increased during the pandemic.[35] About half of these retirements would have occurred in the absence of the pandemic because of the aging of the baby boomers—the LFPR is not calculated with an upper age limit—but the other half of retirements were in excess of what was expected. Workers unexpectedly retired in response to layoffs and job scarcity early in the pandemic and concerns about their health throughout the pandemic and did not return to the labor force when the economy improved. Although some older workers might change their minds and return to the labor force, the Fed indicated that most of the excess retirements were among workers in their 70s.

Retirement is not the entire story, since the LFPR of prime age workers (ages 25-54) has also declined. Prime age LFPR was 83% in February 2020 compared with 82.4% in April 2022. After retirements, the largest factors to cause the LFPR to decline were caregiving responsibilities of nonparents (for an elder or disabled household member, for example) and the "other" category, which includes fears of COVID-19. Notably, caregiving responsibilities of parents were a significant factor in December 2020 but were reducing the LFPR by 0.1 percentage points in

[34] Federal Reserve, *Monetary Policy Report*, February 2022, p. 8, https://www.federalreserve.gov/monetarypolicy/files/20220225_mprfullreport.pdf. The LFPR rose by 0.3 percentage points between December 2021 and January 2022, mainly because of the incorporation of new Census population estimates. Because of these new estimates, there is not a straightforward way to update the Fed's estimates.

[35] Richard Fry, "Amid the Pandemic, a Rising Share of Older U.S. Adults Are Now Retired," Pew Research Center, November 4, 2021, https://www.pewresearch.org/fact-tank/2021/11/04/amid-the-pandemic-a-rising-share-of-older-u-s-adults-are-now-retired/.

December 2021 as children returned to school and other child care. However, the effect appears to differ by gender. The female prime age LFPR was still 1.1 percentage points below its pre-pandemic level, whereas the male prime age LFPR was 0.4 percentage points below in February 2022.

It does not appear that the LFPR is currently being held down by a large increase in discouraged workers who have dropped out of the labor force—that rate was high in absolute terms and compared to the unemployment rate in 2020 but fell to a normal level in 2021. There are also some factors that increased the LFPR relative to the beginning of the pandemic, according to the Fed: Fewer workers were out of the labor force because of disability, illness, and school attendance. Some might decide to leave the labor force and return to school now that in-person learning has resumed, which would reverse some of this particular trend.

Another factor holding back employment growth is the decline in immigration in recent years, although this would not have a significant effect on the LFPR because it affects both the numerator and denominator of the ratio.[36] The foreign-born workforce declined in 2020 but returned to its pre-pandemic share of the labor force in 2021.[37]

A Tight Labor Market

The relatively low supply of available workers (i.e., low unemployment rate and low LFPR) combined with the relatively high demand for labor by businesses have resulted in a tight labor market.[38] The job openings rate and worker quits rate additionally both remain considerably elevated compared to pre-pandemic rates and significantly higher than when unemployment was low in 2000, 2007, and 2020.[39] As of March 2022, the job openings rate was 7.1%, and the quits rate was 3.0%, compared, respectively, to 4.4% and 2.3% in February 2020.[40] **Figure 6** shows the level of job openings and unemployed workers over the past two decades. As the economy has recovered from the initial shock of the pandemic, the number of unemployed workers has fallen to levels lower than the number of job openings. In other words, since May 2021, there has been more than one job opening per unemployed worker. This labor shortage may be more pronounced in some industries compared with others. For example, the job openings rate in the accommodation and food services industry in March 2022 was 9.9% compared to an average of 7.5% across private industries.[41]

[36] The LFPR of the foreign-born population was three percentage points higher than the U.S.-born population, so a decline in the foreign-born population would modestly reduce the LFPR, all else equal.

[37] BLS, *Foreign-Born Workers: Labor Force Characteristics—2021*, May 18, 2022, https://www.bls.gov/news.release/pdf/forbrn.pdf.

[38] For a more in-depth analysis of current labor market trends and labor market tightness, see CRS Insight IN11770, *Labor Market Tightness and the Economic Recovery, Part 1*, by Marc Labonte and Lida R. Weinstock; and CRS Insight IN11771, *Labor Market Tightness and the Economic Recovery, Part 2*, by Marc Labonte and Lida R. Weinstock.

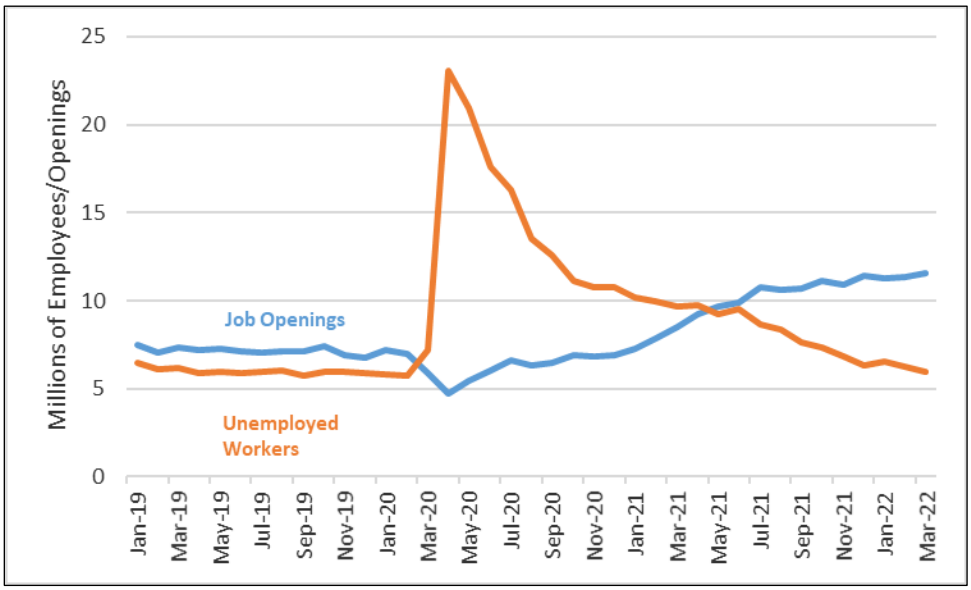
[39] These data series begin in December 2000, so today's data can be compared only to the very end of the 1991-2001 expansion. For more information, see CRS Insight IN11770, *Labor Market Tightness and the Economic Recovery, Part 1*, by Marc Labonte and Lida R. Weinstock; and CRS Insight IN11771, *Labor Market Tightness and the Economic Recovery, Part 2*, by Marc Labonte and Lida R. Weinstock.

[40] For data on job openings and turnover, see BLS, *Job Openings and Labor Turnover Survey*, https://www.bls.gov/jlt/.

[41] BLS, *Job Openings and Labor Turnover—March 2022*, May 3, 2022, https://www.bls.gov/news.release/jolts.nr0.htm.

Figure 6. Job Openings vs. Workers

January 2019 to March 2022



Source: BLS, CPS, and "Job Openings and Labor Turnover Survey," https://www.bls.gov/jlt/.

Notes: Data are seasonally adjusted.

Employment would be higher today if employers were able to fill job openings and retain employees at a more historically normal rate. This fact, and the low LFPR, suggests that low employment is being caused by lack of labor supply, not lack of labor demand. Labor market tightness may be contributing to inflationary pressures, as will be discussed in the next section.

High and Rising Inflation

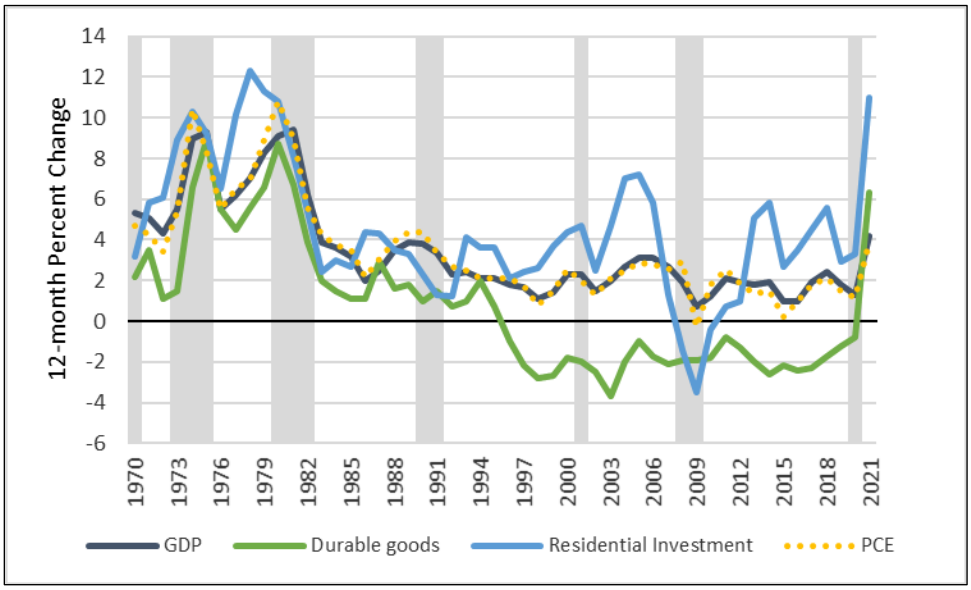
Unlike other indicators, inflation did not become problematic until the second year of the pandemic.[42] Prices fell in spring 2020 and then rose at fairly normal rates through January 2021. Consumer price inflation has been unusually high each month since February 2021, however, and was 6.3% in the 12 months ending in April 2022, as measured by the Personal Consumption Expenditures (PCE) price index. (Another measure of inflation, the Consumer Price Index, has shown larger rates of increase but a similar pattern over time.) At first, inflation was concentrated in a few specific goods and services that were particularly affected by supply chain disruptions (as discussed above), such as automobiles, or were in particular demand because of the demand shift in consumption patterns caused by the pandemic. For example, durable goods prices rose at an annualized rate of 7.6% in the third quarter of 2020. Unless other prices fall, a large increase in a subset of prices will cause the overall inflation rate to rise. But many goods and services exhibit price "stickiness," which means that they do not tend to fall immediately. This offers a plausible explanation of why inflation started to rise in early 2021, and inflation up to that point did not necessarily imply that high inflation would be long-lasting, since supply disruptions were not expected to be long-lasting.

[42] For more information, see CRS Report R46890, *Inflation in the Wake of COVID-19*, by Marc Labonte and Lida R. Weinstock.

Over the course of 2021, virtually all goods and services eventually began experiencing high inflation rates.[43] For the year as a whole, inflation exceeded 3% for every major category of GDP except non-residential investment, led by an 11% increase in the price of residential investment. This indicates that inflation is not being caused by relative price changes (although issues in specific markets explain why some goods have experienced higher inflation than others have) but that overall demand is too high relative to supply, meaning that inflation would be expected to remain high until demand falls or supply rises. Explanations for the imbalance between supply and demand include labor shortages, supply disruptions, and stimulative monetary and fiscal policy. Each of these factors is discussed in detail in the "Policy Issues Moving Forward" section below.

Figure 7. Inflation for Selected Components of GDP

1970-2021



Source: BEA, "National Income and Product Accounts."

Notes: Gray bars denote recessions.

Typically, one would expect inflation to rise when the economy has been running hot—when the level of GDP is above potential (see **Appendix B** for definitions). One seeming puzzle is why inflation is so high given that GDP is not particularly high and employment is still lower than before the pandemic, both of which would tend to indicate that current GDP is not above its potential. GDP growth has been high since the recession has ended, but it has been mainly catch-up growth that has restored the level of GDP from the 31% decline it experienced in the second quarter of 2020 (which followed a 5% decline in the first quarter). If there had never been a pandemic recession and the economy had continued to grow at its pre-pandemic average since the beginning of 2020, CRS estimates that the economy would have been 0.2%-1.4% larger in the fourth quarter of 2021 than it was in inflation-adjusted terms, depending on the starting point used (see **Figure 1** for reference).[44]

[43] Although consumer price inflation receives the most attention, inflation rates are calculated for all categories of spending.

[44] The 0.2% estimate uses a starting point of the beginning of the 2007-2009 recession to calculate the average growth

The fact that inflation is high but GDP does not appear to be high relative to the pre-pandemic trend raises the possibility that inflationary pressures are the result of actual GDP being high relative to potential because the growth path of potential GDP has fallen (either temporarily or permanently). In other words, the economy may not be capable of producing as much today as it would be if the pandemic had not occurred, all else equal. A more sophisticated analysis takes into account structural reasons why the potential growth rate might have changed from the recent historical average. Economists Jason Furman and Wilson Powell estimate that potential GDP has declined by 0.7 percentage points compared to before the pandemic due to a smaller capital stock and population, which grew less because of higher mortality and lower immigration. Assuming potential GDP has declined, they find that actual GDP was slightly above potential GDP at the end of 2021.[45] Notably, this estimate does not include current supply disruptions or the decline in LFPR, so potential GDP may temporarily be lower than this estimate, although it may rebound as temporary factors disappear in future years.

If the economy is, in fact, producing above its potential currently, there may be other demand-side factors that could be of concern now or in the future. For example, in response to labor market tightness, some commentators have warned of a "wage-price spiral," where wages rise too quickly in response to higher inflation, causing inflation to rise further as businesses pass higher labor costs on to consumers in the form of higher prices of goods and services. Wage growth has accelerated since 2021 but to date has been lower than overall inflation. For example, the Federal Reserve Bank of Atlanta wage growth tracker reached its highest growth rate since data was first collected in 1997 (6.0% for the three-month average for April 2022), but that is still lower than the PCE for February (6.6%).[46] In other words, although nominal wages are rising, inflation-adjusted wages are falling. But if all employers continually raise wages beyond the productivity gains of workers, it could eventually result in a wage-price spiral that could make it harder to restore price stability. Thus, if the high productivity rates seen in the pandemic persist, a wage-price spiral would be less likely.

Booming Financial Conditions During the Pandemic

After a large initial decline in asset prices during spring 2020, asset prices—such as equity (e.g., stock) prices—experienced an above-average rate of increase through November 2021, even after taking into account higher inflation. This increase first reversed the early pandemic losses by summer 2020 and then took asset prices to historic heights both in absolute terms and relative to various valuation metrics, such as the price-earnings ratio. Asset prices have been volatile in 2022. They are down this year but remain above pre-pandemic levels thus far.

House prices have also risen rapidly, reaching historic highs in inflation-adjusted terms. According to the Federal Housing Finance Agency, house prices rose 17.5% in nominal terms between the fourth quarter of 2020 and the fourth quarter of 2021 and 11.1% in the four quarters before that.[47] To date, house prices have shown no sign of reversal.

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rate (1.7%). The 1.4% estimate uses a starting point of the beginning of the 2009-2020 expansion, yielding an average growth rate of 2.3%.

[45] Furman and Powell, *The US Economy Grew Faster Than Expected in 2021*.

[46] There are several different measurements of wage growth. The Atlanta Fed's measure was chosen because it tracks wage growth for the same individual over time. Available at https://www.atlantafed.org/chcs/wage-growth-tracker?panel=1.

[47] See Federal Housing Finance Agency, "House Price Index," https://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index.aspx.

Together, this resulted in a large overall increase in financial and real estate wealth. A Brookings study estimates an overall increase in inflation-adjusted household wealth of $24 trillion from the fourth quarter of 2019 to the fourth quarter of 2021.[48] Even "paper gains" in wealth can affect real economic activity if households reduce their saving rate in response to feeling wealthier or borrow against more valuable assets to finance higher consumption.

Since the beginning of the pandemic, financial conditions have been characterized by historically low interest rates that have made borrowing more attractive to households and businesses. (Interest rates have risen in 2022 but remain low by historical standards, especially if adjusted for inflation.) Nonfinancial business borrowing is high relative to GDP by historical standards, although it has fallen from its peak earlier in the pandemic and is lower than it was around the 2007-2009 financial crisis. Household debt relative to GDP is significantly lower than it was around the financial crisis but higher than it was from the 1980s to 2001.[49] Low interest rates are partly the result of monetary policy (discussed in the next section) but also other worldwide factors that have made private savings plentiful relative to investment demand. Interest rates have been generally low for both riskless and risky corporate borrowers as investors have "reached for yield."[50]

In addition, broader financial conditions have been supported by the Fed's response to COVID-19 (discussed in the next section). For example, when the Fed purchases assets, it creates more liquidity in the financial system by design. As a result, after an initial liquidity freeze in March 2020, capital and liquidity have been plentiful, contributing to large financial flows into traditional and non-traditional investment classes, such as private equity and crypto assets. At some point after the Fed starts reducing its balance sheet in June, liquidity will likely stop being overabundant in the financial system.

Fiscal and Monetary Policy Stimulus

In response to the pandemic and resultant economic downturn, unprecedentedly large monetary and fiscal stimulus was put in place. This contributed to the rapid recovery in economic activity after the initial contraction. Additionally, some of the unusual phenomena in this recovery can be traced to this stimulus, such as the trends in personal income and saving, the sudden improvement in financial conditions, and possibly inflation. Fiscal and monetary policy are expected to provide less stimulus to the economy, but not return to a neutral or contractionary stance, in 2022. For more detailed definitions of fiscal and monetary stimulus, see **Appendix B**.

Fiscal Policy

In March and April 2020, Congress passed four laws to provide economic stimulus and assistance to the American people—the Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020 (P.L. 116-123); the Families First Coronavirus Response Act (P.L. 116-127); the Coronavirus Aid, Relief, and Economic Security (CARES) Act; and the Paycheck Protection Program and Health Care Enhancement Act (P.L. 116-139). Additional relief and stimulus was enacted in December 2020 and March 2021 in the Consolidated Appropriations Act,

[48] Barnes et al., *Bolstered Balance Sheets*.

[49] Federal Reserve, *Financial Stability Report*, November 2021, Figure 2-2, https://www.federalreserve.gov/publications/2021-november-financial-stability-report-borrowing.htm.

[50] Federal Reserve, *Financial Stability Report*, November 2021, Figure 1-5, https://www.federalreserve.gov/publications/2021-november-financial-stability-report-borrowing.htm.

2021 (P.L. 116-260) and the American Rescue Plan Act of 2021 (P.L. 117-2), respectively. The Congressional Budget Office (CBO) estimated at the time that the initial fiscal policy response in March and April 2020 would increase real GDP by 4.7% in 2020 and 3.1% in 2021.[51]

While the pandemic has been a large legislative focus, Congress has enacted other stimulus as well. Of note, the Infrastructure Investment and Jobs Act (P.L. 117-58) was enacted in November 2021[52] and increased discretionary spending by $415 billion over the FY2021-FY2031 period (and added $256 billion to projected FY2021-FY2031 deficits),[53] though the fact that these outlays will come in the future means that this last spending package has likely had little direct effect on current conditions.

The easiest way to gauge the size of the fiscal stimulus is the change in the budget deficit.[54] CBO projects that the stimulus enacted in FY2020 will increase FY2020-FY2030 deficits by $2.6 trillion[55] and that the stimulus enacted in FY2021 will further increase FY2021-FY2031 deficits by roughly $870 billion.[56]

As a result of this fiscal stimulus and the decline in economic activity,[57] FY2020 and FY2021 budget deficits were unusually large by historical standards. In total, the FY2020 federal budget deficit totaled $3.1 trillion, more than triple its FY2019 value, and the FY2021 budget deficit totaled nearly $2.8 trillion. As a percentage of GDP, these deficits were equal to 15% in FY2020 and 12.4% in FY2021, compared to 4.7% in the year before the pandemic (FY2019).[58] These were the largest deficits as a share of GDP since World War II.

[51] CBO, *The Effects of Pandemic-Related Legislation on Output*, September 2020, https://www.cbo.gov/system/files/2020-09/56537-pandemic-legislation.pdf.

[52] November 2021 is part of FY2022 and therefore the Infrastructure Investment and Jobs Act is not included in the FY2021 deficit.

[53] CBO, *Senate Amendment 2137 to H.R. 3684, the Infrastructure Investment and Jobs Act*, Cost Estimate, August 5, 2021, https://www.cbo.gov/publication/57406. The effect of P.L. 117-58 on budget deficits is smaller than its increase in spending because of offsetting provisions.

[54] The COVID relief legislation included unusual temporary measures taken to prevent economic hardship, including forgivable loans to small businesses and moratoria on foreclosures, evictions, and student loan payments. As a result, the increase in the deficit does not fully capture the magnitude of fiscal stimulus provided.

[55] CBO, *An Update to the Budget Outlook: 2020 to 2030*, September 2, 2020, p. 29, https://www.cbo.gov/system/files/2020-09/56517-Budget-Outlook.pdf.

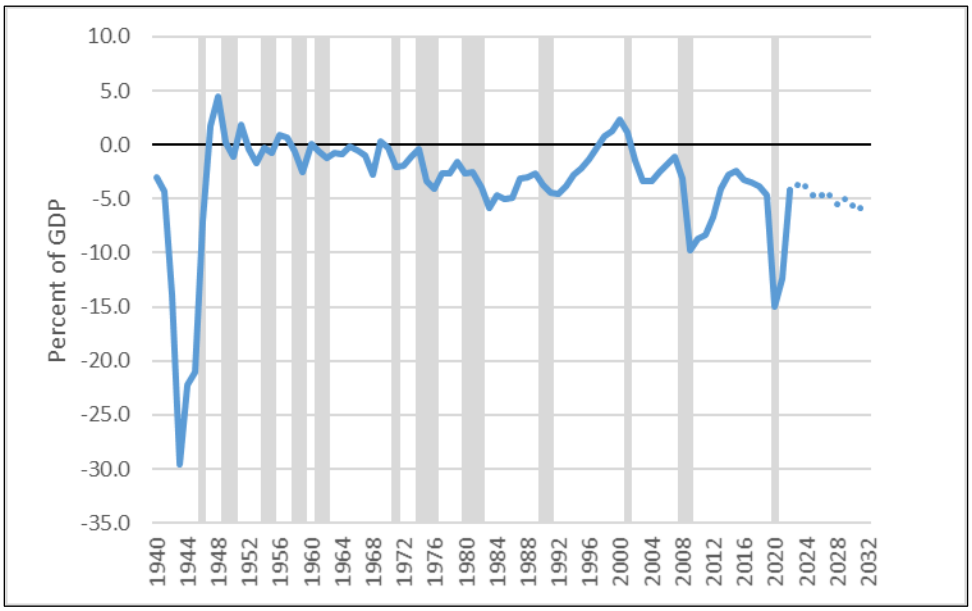
[56] CBO, *The Budgetary Effects of Major Laws Enacted in Response to the 2020-2021 Coronavirus Pandemic, December 2020 and March 2021, September 2021*, https://www.cbo.gov/system/files/2021-09/57343-Pandemic.pdf.

[57] Without policy changes, tax revenues automatically fall and means-tested spending automatically rises, causing the deficit to automatically increase when economic activity declines. These are referred to as "automatic stabilizers."

[58] CBO, *Monthly Budget Review: Summary for Fiscal Year 2021*, November 8, 2021, https://www.cbo.gov/system/files/2021-11/57539-MBR.pdf.

Figure 8. Deficit-to-GDP Ratio

FY1940-FY2032



Source: OMB, *Budget of the U.S. Government Fiscal Year 2023*, and CBO, *Budget and Economic Outlook, 2022-2032*.

Notes: Data for 2022-2032 are projections using current law. Gray bars denote recessions.

Reflecting its emergency nature, COVID relief was designed to be mostly temporary and delivered quickly, so much of it has expired or been exhausted. As a result, CBO projects that the budget deficit as a share of GDP will decline by more than half to 4.2% of GDP between FY2021 and FY2022.[59] In other words, deficits are still large by historical standards but have been shrinking, providing less support to overall demand. Goldman Sachs estimates that fiscal stimulus since 2020 boosted GDP by 6% in (calendar year) 2021 and 2.25% in 2022 but will boost GDP by less than 1% beginning in the second half of 2023.[60] However, legislative changes, if enacted, could make fiscal policy more expansionary. For example, the House passed the Build Back Better Act (H.R. 5376) in November 2021, which CBO estimates would increase the deficit by $155 billion in FY2022 and $365 billion over 10 years.[61]

Monetary Policy

The Fed provided monetary stimulus in spring 2020 by lowering the federal funds rate (FFR; the overnight interbank lending rate and the Fed's main monetary policy tool) to a range of 0%-0.25%, purchasing assets (mainly Treasury securities and mortgage-backed securities), reviving and creating new emergency credit facilities, and encouraging use of the discount window.[62] As a

[59] CBO, *The Budget and Economic Outlook: 2022 to 2032*, May 2022, https://www.cbo.gov/system/files/2022-05/57950-Outlook.pdf.

[60] Alec Phillips, "How Much Fiscal Drag?," Goldman Sachs, *US Economics Analyst*, April 11, 2022. Goldman Sachs reports that the contribution of legislation not already enacted to their estimates is modest.

[61] CBO, *Budgetary Effects of H.R. 5376 as Passed by the House of Representatives*, letter to Honorable John Yarmouth, December 8, 2021, https://www.cbo.gov/system/files/2021-12/hr5376_letter.pdf; CBO, *Summary of Cost Estimate for H.R. 5376, the Build Back Better Act*, November 18, 2021, https://www.cbo.gov/publication/57627.

[62] For more information on the Federal Reserve's response to the COVID-19 pandemic, see CRS Report R46411, *The*

result of these actions, the Federal Reserve's balance sheet expanded from $4.7 trillion on March 19, 2020, to $7 trillion on May 20, 2020, to almost $9 trillion on March 16, 2022, a level that the Fed has announced it plans to start reducing in June 2022.[63] Thus, the Fed continued to add extraordinary stimulus and liquidity to the economy even as economic conditions significantly improved.

As the economy has improved, the Fed has withdrawn historically large monetary stimulus slowly. Emergency lending facilities were mostly closed at the end of December 2020 or March 2021. The Fed's asset purchases (called "quantitative easing," or "QE") continued at a pace of $120 billion per month until November 2021. Between November 2021 and March 2022, it "tapered" (reduced the pace of) its asset purchases before ending those purchases in March 2022. On March 16, 2022, the Fed raised the FFR by 0.25 percentage points—the first time that rates were raised above the zero range since the onset of the pandemic. In May, the Fed announced that it would begin to gradually reduce the size of its balance sheet in June 2022.

Projections from Fed officials indicate that they foresee further interest rate increases in 2022 but believe it will be appropriate to leave interest rates below what they view as the long-run equilibrium through the end of 2022. In other words, Fed officials believe monetary policy should still be stimulative—but less so than it is today—through 2022. However, to date, interest rates have not risen as quickly as inflation has, so in real (inflation-adjusted) terms interest rates are negative and falling, as shown in **Figure 9**.[64] Since real rates influence economic activity, even as the Fed has raised nominal rates, policy has become more stimulative.

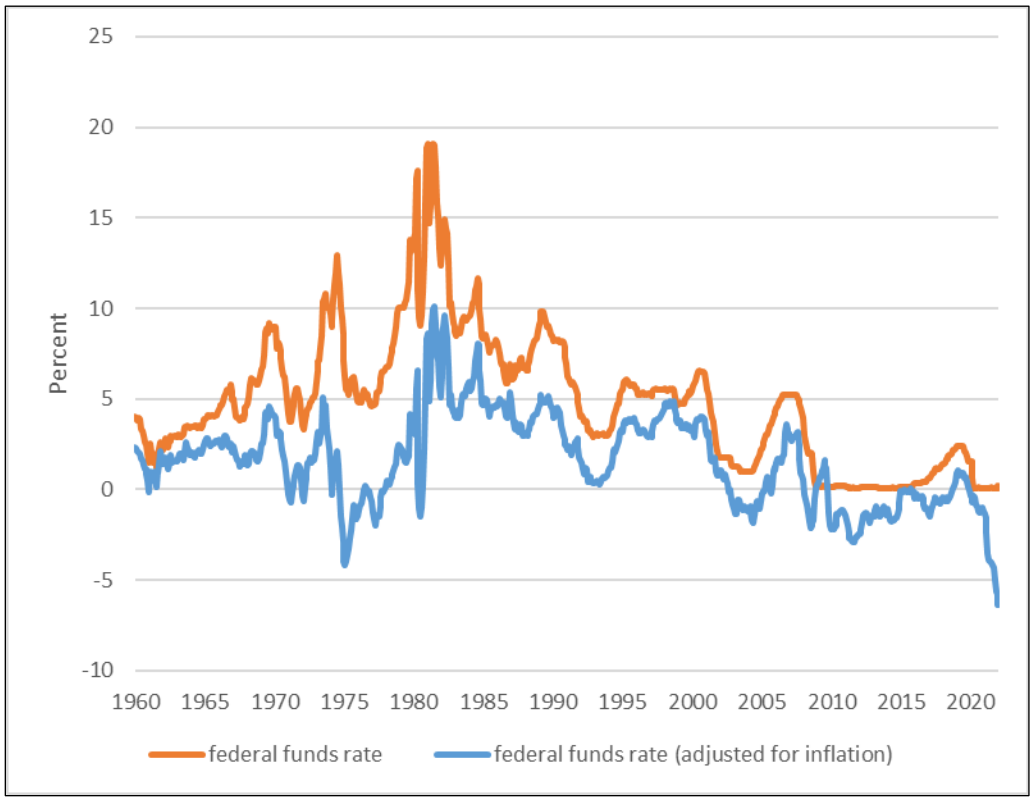
Federal Reserve's Response to COVID-19: Policy Issues, by Marc Labonte.

[63] Federal Reserve, *Credit and Liquidity Programs and the Balance Sheet: Recent Balance Sheet Trends*, https://www.federalreserve.gov/monetarypolicy/bst_recenttrends.htm.

[64] Real interest rates are calculated in **Error! Reference source not found.** using the current inflation rate. This may o verstate the decline in real interest rates if inflation falls in the next year. However, real interest rates would have still fallen and would have been negative if projected inflation for 2022 had been used instead.

Figure 9. Federal Funds Rate

1960-2022



Source: CRS calculations based on data from Federal Reserve and BEA.

Notes: Adjusted for inflation using the PCE.

Policy Issues Moving Forward

As this report catalogues, the economy has made a rapid recovery in many aspects from the deep contraction at the onset of the pandemic. Still, COVID-19 has left a lasting mark on the economy that policymakers are still grappling with even as economic life gradually returns to normal. As the recovery strengthens, four major challenges remain:

1. high inflation,
2. low LFPR,
3. supply disruptions related to COVID-19 and the war in Ukraine, and
4. falling asset prices.

Policymakers have also grappled with how to address these issues without undermining the economic recovery. To do so, monetary and fiscal policy needs to be normalized quickly enough to avoid high inflation from becoming endemic—but not so quickly that it would cause a recession. Some of these challenges are still in flux. COVID-19 and the war in Ukraine continue to pose unpredictable problems to the global economy. Asset prices remain volatile, but a potential reversal in the large run-up in asset prices could depress investment and consumer demand or, in a worst-case scenario, cause a sharp reduction in available credit, which would make it harder to avoid a deep recession.

Returning to supply and demand (see **Appendix A**), these challenges are interrelated: Supply disruptions and low LFPR exacerbate inflationary pressures, but conversely, tight labor markets, high inflation, and supply shortages may also be symptoms of excessive demand. The low LFPR and supply chain disruptions are constraining aggregate supply. They can be addressed through microeconomic policy solutions but to some extent may be beyond the scope of domestic policy, as they partly reflect personal choices that are not easily reversed in the former case and international developments in the latter. These constraints may eventually resolve themselves but could take a considerable amount of time to do so. They may also worsen in the short run if COVID-19 or war disruptions worsen. However, both of these risks do not necessarily imply that stimulus should be maintained, because they simultaneously weaken growth and add to inflationary pressures.

Meanwhile, inflation that is high, widespread (i.e., across most goods and services), and persistent (i.e., continually rising for an extended period of time) reflects excess demand at current levels of supply. Various targeted microeconomic policy changes can lead to a one-time decline in the price of one or several goods, but high, widespread, and persistent inflation can be addressed only by government policies that change overall demand. Specifically, demand can be reduced by tightening monetary policy (raising interest rates), fiscal policy (reducing the budget deficit), or both. When supply constraints are resolved, that might alleviate inflationary pressures, which might reduce how much policy tightening is needed, but at that point it may be too late to avoid a prolonged episode of high inflation. Once expectations of high inflation become endemic, inflation can remain at a new high equilibrium even when supply and demand are no longer imbalanced.

The next section addresses the macroeconomic question of how much fiscal and monetary tightening would be needed to restore low inflation. A later section addresses the separate but related issue of restoring fiscal sustainability. The remaining sections address the microeconomic questions of how to boost LFPR and remove supply chain constraints.

Removing Fiscal and Monetary Stimulus

The efficacy of stimulus depends on the state of the economy. Fiscal and monetary stimulus helped expedite a return to full employment when unemployment was high in 2020 and 2021. Yet, despite labor market tightness and low unemployment indicating the economy has been at—or close to—full employment since late 2021, much of that stimulus remains in place.[65] Stimulative policy is inconsistent with returning to price stability—regardless of why inflation is high—at full employment. At full employment with low inflation, a neutral fiscal and monetary policy (i.e., a policy that neither stimulates nor constrains demand) may be appropriate. At full employment with high inflation, contractionary fiscal and monetary policy that curbs demand may be required to reduce inflation, especially if expectations of high inflation have become endemic.

In 2021, policymakers took a wait-and-see approach to withdrawing the extraordinary pandemic-era fiscal and monetary policy, guarding against the possibility that maintaining adequate private demand was still dependent on stimulus and hoping that supply problems would resolve themselves quickly and high inflation would prove transient. In 2022, policymakers (notably, the Fed) largely changed their view, believing that high inflation would not be resolved until policy was tightened, reducing demand. But because of the wait-and-see approach in 2021, the amount

[65] Although overall employment is still relatively low because of the low LFPR, in this context unemployment may be a better gauge of full employment as it indicates excess demand for labor. The low LFPR, by contrast, appears to reflect an inadequate supply of labor.

of stimulus that still needs to be withdrawn before policy is neutral is still large, as discussed below.

Now the outstanding question is whether it is too late to restore price stability by withdrawing stimulus in a way that allows the economy to maintain low unemployment (see **Appendix B** for further discussion of the relationship between prices and unemployment, sometimes called the "Phillips Curve"). Lags between policy implementation and its effect on the economy mean that tightening today will take some time to translate to lower inflation. Policymakers aspire to achieve a "soft landing," where growth slows and unemployment rises only modestly, if at all, before price stability is restored. But if expectations of high inflation have become entrenched and inflation enters a wage-price spiral, so much tightening could be required to restore price stability that a "hard landing," where the economy enters a recession, would result. Alternatively, policymakers could inadvertently trigger a hard landing by tightening too quickly, even if high inflation expectations are not endemic. Gradual policy changes are more likely to result in a soft landing but are also more likely to fail to put a dent in inflation, given the amount of tightening still required at this point just to return policy to neutral. Thus, there is the risk that successfully avoiding a mild recession could lead to worse outcomes down the road.

Policymakers still express hope (and forecast) that inflation will be relatively easy to reduce on the grounds that, after 40 previous years of persistently low inflation, households will view the last year as an anomaly and will therefore be easy to convince to keep their expectations of future inflation low. This was not the case in the 1970s, however, when inflation remained high even during economic slowdowns. Federal Reserve Bank of New York data show an increase in inflationary expectations well above 2%—the level of inflation at which the Fed has defined price stability—since 2021.[66] Once expectations incorporate higher inflation as permanent, inflation would be expected to stay high even if the economy were no longer growing rapidly and unemployment were not unusually low. At that point, a recession might be needed to wring high inflation out of expectations, as was the case in the early 1980s.

Although the removal of fiscal and monetary stimulus has already begun, in both cases, the amount of stimulus still in place is large by historical standards. Monetary policy changes can be made more quickly and precisely than fiscal policy changes and have a more direct relationship with inflation, since the Fed directly influences the money supply, so the Fed is widely seen as taking the leading role in addressing inflation.

The Federal Reserve and Interest Rates

Although the Fed began raising interest rates and stopped purchasing assets in March 2022, monetary policy is still highly stimulative—though less stimulative than it was previously. Liquidity will likely remain abundant for some time after the Fed starts its planned gradual reduction in its $8.9 trillion balance sheet in June. Meanwhile, by historical standards, interest rates remain unusually low. Despite rising in nominal terms, after adjusting for inflation, they are lower than they have been at any time since 1960. The FFR is currently negative in real terms, meaning investors' compensation when repaid has less real purchasing power than did the amount initially lent out.[67] Since inflation varies by measure, the size of the difference between nominal

[66] Federal Reserve Bank of New York, *Survey of Consumer Expectations*, April 11, 2022, https://www.newyorkfed.org/microeconomics/sce#/inflexp-1.

[67] Using actual inflation could overstate how negative real rates currently are if inflation falls. Current interest rates would still be negative, but less so, if adjusted by expected inflation for the coming year instead of actual inflation over the past year.

interest rates and real interest rates today depends on the measure used. If inflation (as measured by PCE) stays at 7%, with an effective FFR of 0.3% currently, the real rate would be -6.7%. Alternatively, if inflation for the year meets the Fed's projection of 4.3%, then the real rate would currently be -4%.[68] The other time real interest rates reached as low as -4% was in 1975, when inflation exceeded 10% and nominal rates were between 5.5% and 7%.

Economists have theorized that there is a neutral rate of short-term interest rates where monetary policy is neither stimulative nor contractionary. Prior to the 2007-2009 financial crisis, the neutral rate was thought to be about 2% after adjusting for inflation (i.e., 2% plus the prevailing inflation rate.) Following the financial crisis, there was evidence that the neutral rate was variable over time and had fallen in the past decade.[69] One well-known estimate has it falling to around 0.5% during the pandemic.[70] Using the inflation assumptions above, the Fed would need to raise interest rates to between 4.8% and 7.5% just to achieve a neutral monetary policy—assuming the real neutral rate is still 0.5%—or 6.3%-9.0% if the neutral rate returned to 2% as pandemic-related factors waned. If instead contractionary policy is needed to reduce inflation for reasons discussed above, interest rates would need to be higher than the neutral rate to restore price stability. By contrast, Fed leadership is now projecting that an appropriate FFR in real terms would be negative in 2022 and about zero in 2023. The Fed prefers gradual interest rate increases so that financial markets are not disrupted by large and sudden changes, which slows down how quickly stimulus can be withdrawn. Although monetary policy would remain stimulative in this projection, they project that this will cause inflation to fall to a range of 2.2% to 3.5% in 2023 with no increase in unemployment—the "soft landing" scenario.[71]

A historical comparison helps illustrate how unusually long the Fed waited to begin raising rates and how unusually stimulative current monetary policy remains. The Fed has begun tightening monetary policy at some point in each economic recovery since 1958. **Figure 10** plots the inflation rate and unemployment rate at the point when tightening began. Since each recovery is a different speed, recoveries can instead be compared relative to the remaining progress to achieve the Fed's mandate. As can be seen, current unemployment is the lowest and inflation is the second-highest of all of the episodes since 1958. In other words, the Fed has waited longer into the recovery in terms of unemployment and inflation to start raising interest rates than in any previous recovery. In each of these cases except for 2015 and 2022, interest rates were above zero when the Fed started raising rates. As the figure shows, inflation was often above the Fed's target of 2%—which it formally introduced in 2012, at the onset of monetary tightening—but it was above 4% only during the 1970s and early 1980s episodes, when the inflation rate was persistently high. Between 1969 and 1983, inflation averaged 6.6%. This points to the risks of waiting too long to raise rates.

[68] Federal Open Market Committee, *Summary of Economic Projections*, March 16, 2022, https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20220316.pdf.

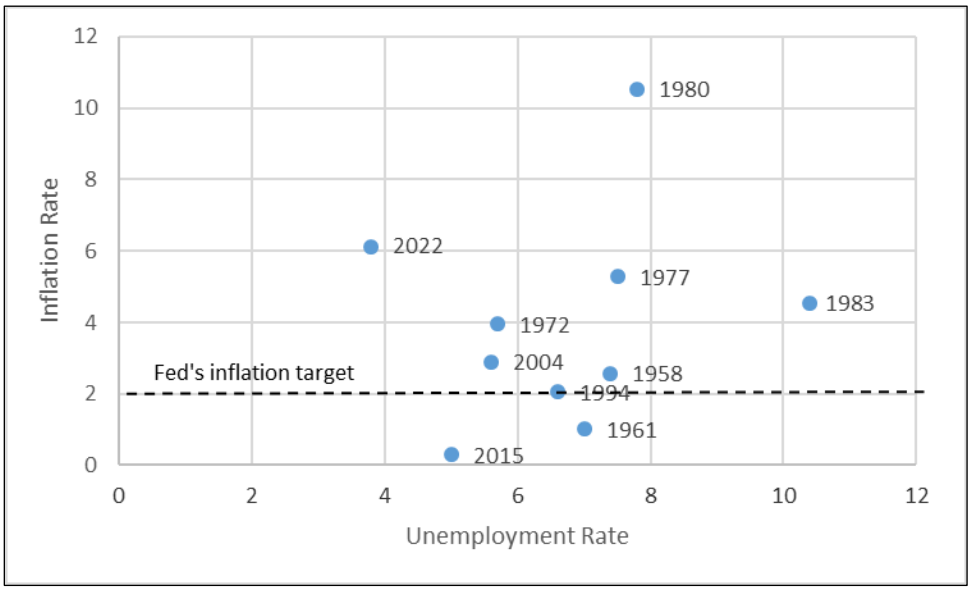
[69] For more information, see CRS Insight IN11056, *Low Interest Rates, Part 2: Implications for the Federal Reserve*, by Marc Labonte.

[70] Federal Reserve Bank of New York, *Measuring the Natural Rate of Interest*, https://www.newyorkfed.org/research/policy/rstar.

[71] Federal Open Market Committee, *Summary of Economic Projections*, March 16, 2022, https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20220316.pdf.

Figure 10. Inflation and Unemployment When the Fed Began Raising Rates

Following Recessions Since 1958



Source: CRS calculations based on data from BEA and BLS.

Notes: Inflation is measured as the 12-month change in the PCE.

If price stability is not restored quickly and expectations of high inflation become endemic, it could ultimately become more costly to restore later, as the last period of high inflation demonstrates. Low inflation was not restored during the periods of monetary tightening beginning in 1972 or 1977, when the Fed was unwilling to tighten policy sufficiently—even after a recession lasting from 1973 to 1975. Although the FFR exceeded 10% in nominal terms in both episodes, rates peaked below 3% after adjusting for inflation. In the early 1980s, low inflation was eventually restored—but only after the Fed raised the FFR to 19% and maintained double-digit interest rates until 1982, contributing to an unusually long and deep recession. While inflation fell steadily in response to high interest rates in the early 1980s, it did not reach low levels until the mid-1980s.

Supply Disruptions

The Biden Administration has announced a series of initiatives to address supply chain disruptions. Such actions have included executive orders to review sectors and products that rely on imports[72] and promote domestic manufacturing.[73] The Administration has taken other actions, such as holding a summit with several countries and the European Union on global supply chain resilience focused on near- and longer-term supply-chain bottlenecks.[74]

[72] Executive Office of the President, "America's Supply Chains," *Federal Register* 11849-11854, March 1, 2021, https://www.federalregister.gov/documents/2021/03/01/2021-04280/americas-supply-chains.

[73] Executive Office of the President, "Ensuring the Future Is Made in All of America by All of America's Workers," *Federal Register* 7475-7479, January 28, 2021, https://www.federalregister.gov/documents/2021/01/28/2021-02038/ensuring-the-future-is-made-in-all-of-america-by-all-of-americas-workers.

[74] The White House, "FACT SHEET: Summit of Global Supply Chain Resilience to Address Near-Term Bottlenecks and Tackle Long-Term Challenges," October 31, 2021, https://www.whitehouse.gov/briefing-room/statements-releases/2021/10/31/fact-sheet-summit-on-global-supply-chain-resilience-to-address-near-term-bottlenecks-and-tackle-long-term-challenges/.

If policymakers wish to curb inflation without reducing demand, supply disruptions must be resolved. However, policy options to alleviate supply disruptions can be ineffective at reducing inflation in the short run because they are time-consuming to implement and, depending on how they are financed, could even potentially make inflation worse by adding to aggregate demand.

Capacity problems causing bottlenecks require new infrastructure investment that, by nature, are long-term projects that cannot bring new capacity on line instantly. At the same time, increased infrastructure investment could exacerbate labor and supply shortages in the short run, as the infrastructure projects themselves require labor, commodities, and other inputs. In 2021, the Infrastructure Investment and Jobs Act (P.L. 117-58) was enacted to boost public infrastructure investment, and the Administration has set goals to increase investment in port and waterway infrastructure.[75]

Even if additional investments are made, firms with bottlenecks in production and distribution caused by labor shortages face the same hiring and retention challenges as other firms, making bottlenecks difficult to remove at the moment. (Options for expanding labor supply are discussed in the next section.)

Supply chain problems are also difficult for U.S. policy to address due to their global nature. Lockdowns in China and the Ukraine invasion demonstrate that foreign supply disruptions due to the pandemic, foreign governments' policies, or both are largely beyond U.S. influence. Policy options to work around these disruptions are more long-term in nature, although the Administration has announced a release of 1 million barrels of oil a day for six months from the Strategic Petroleum Reserve,[76] a U.S. government complex that stores crude oil, to provide short-term relief.[77] Disruptions caused by the invasion have the potential to reduce growth without constraining price inflation.

Low Labor Force Participation

Tight labor markets make it more challenging to reduce inflation, as employers may pass higher labor costs on to consumers through higher prices. By historical standards, job openings are plentiful but have not lured enough workers back into the labor force to restore the LFPR to historical norms. Current problems businesses face with labor shortages can be resolved through an economic slowdown that reduces the demand for labor, by increasing immigration, or by more American workers reentering the labor force. If businesses cannot hire enough workers, it would directly constrain future economic (and income) growth. If permanent, a smaller workforce has both social and economic implications. A permanently smaller workforce would permanently reduce the level of GDP, all else equal. If the economy has fewer workers, it can produce fewer goods and services. By definition, lower potential GDP means lower national income relative to pre-pandemic trend.[78]

[75] The White House, "FACT SHEET: The Biden-Harris Action Plan for America's Ports and Waterways," November 9, 2021, https://www.whitehouse.gov/briefing-room/statements-releases/2021/11/09/fact-sheet-the-biden-harris-action-plan-for-americas-ports-and-waterways/.

[76] U.S. Department of Energy, Office of Fossil Energy and Carbon Management, "Strategic Petroleum Reserve," https://www.energy.gov/fecm/strategic-petroleum-reserve-9.

[77] The White House, "FACT SHEET: President Biden's Plan to Respond to Putin's Price Hike at the Pump," March 31, 2022, https://www.whitehouse.gov/briefing-room/statements-releases/2022/03/31/fact-sheet-president-bidens-plan-to-respond-to-putins-price-hike-at-the-pump/.

[78] Technically, GDP is equal to gross domestic income by accounting identity. The difference between gross domestic income and national income is the difference between income generated in the United States and income generated by

The LFPR is low for a number of reasons discussed above—not all of which are caused by the pandemic—suggesting that a multifaceted approach by business and government may be needed to increase it.[79] Although not exhaustive, this section outlines some of the major drivers of labor force participation that policy could address.

The growing share of older Americans is a demographic reality that cannot be easily reversed and will place continued downward pressure on the LFPR in coming decades if retirement patterns remain unchanged.[80] A challenge facing policymakers is that relatively few workers typically reverse their decisions to retire. Policy could also attempt to make it more attractive for older workers who have not yet retired to stay in the labor force.

The pandemic has highlighted the challenge that working parents face in meeting child care needs. Child care is currently both a cause and victim of labor shortages, as child care workers have been in particular short supply.[81] Similarly, there was an increase in workers who left the labor force to care for adults, and institutional facilities for adults have faced staffing shortages during the pandemic.[82] Policymakers have debated the federal government's optimal role in supporting families' care needs.

The pandemic may still be causing some workers in some industries—especially those where social distancing is impossible—to find work to be too risky or undesirable from a health perspective. If workers could move seamlessly among industries, this might have little effect on the overall LFPR. But if workers find a skills mismatch or geographic mismatch, then it may be hard to transition into other industries or occupations. In the longer term, these mismatches could be addressed through policies that encourage training, education, and labor mobility.[83]

For prime age men, there has been a long-term downward trend in their LFPR, and in the past 10 years it has been lower than at any other point in the history of the series going back to 1948.[84] This points to problems unrelated to the pandemic that could be addressed through policy, such as barriers to finding work caused by discrimination or criminal records, in addition to skills and geographic mismatches.[85]

Americans. In addition, national income is adjusted for capital depreciation, and GDP is not.

[79] Economists have debated whether enhanced unemployment insurance benefits and other income support measures provided by COVID-19 relief bills were constraining employment growth earlier in the pandemic. However, those measures ended at various points in 2021, and unemployment insurance generally requires recipients to seek work, which means the individual would, by definition, be in the labor force (although labor force statistics are not drawn from beneficiary records).

[80] According to the Social Security trustees, the elderly share of the population relative to the prime age share will continue to rise until 2080. Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2021 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, Table V.A3, https://www.ssa.gov/oact/TR/2021/tr2021.pdf.

[81] Sarah House et al, "Who Cares? How the Childcare Industry's Problems Are Every Employer's Problem," Wells Fargo, March 1, 2022.

[82] Howard Gleckman, "How Nursing Home Staff Shortages Are Hurting Hospital Care," *Forbes*, February 17, 2022, https://www.forbes.com/sites/howardgleckman/2022/02/17/how-nursing-home-staff-shortages-are-hurting-hospital-care/.

[83] See CRS Report R47059, *Skills Gaps: A Review of Underlying Concepts and Evidence*, by Sarah A. Donovan et al.

[84] The female prime age LFPR has leveled off since the late 1990s after a long increase in the decades before that. It remains below the male prime age LFPR.

[85] See, for example, Shawn Bushway et al., "Barred from Employment: More Than Half of Unemployed Men in Their 30s Had a Criminal History of Arrest," *Science Advances*, vol. 8, no. 7 (February 2022), https://www.science.org/doi/10.1126/sciadv.abj6992.

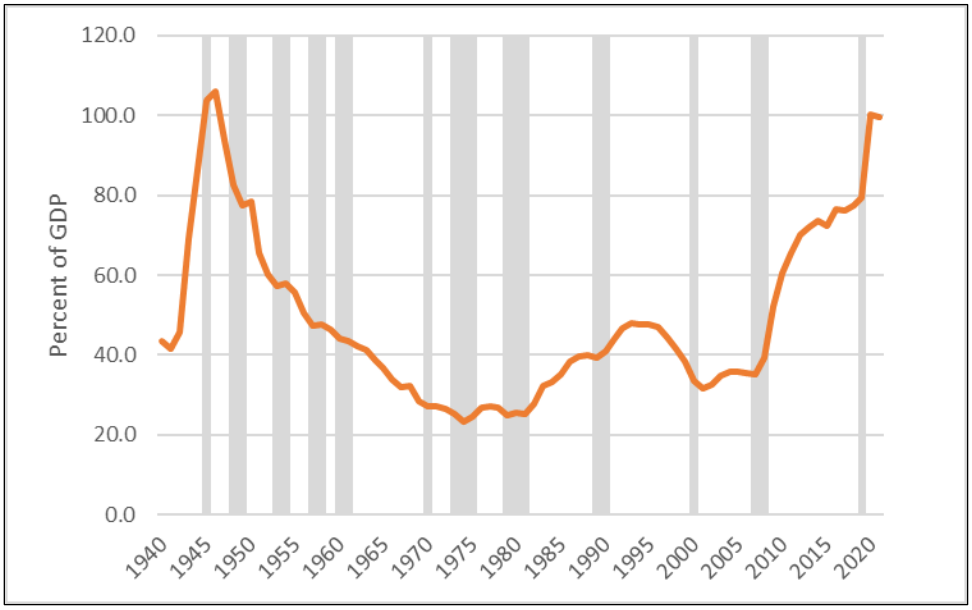
Alternatively, labor shortages could be alleviated by boosting immigration. Policymakers could consider whether to offset the policies put in place in the years before and during the pandemic that recently kept immigration inflows below average.

Federal Debt Sustainability

As discussed previously, the size of the fiscal stimulus enacted in response to the pandemic was unprecedented, causing dramatic increases in both annual budget deficits and the federal debt (see **Figure 11**). The FY2022 federal debt held by the public is projected to reach its highest share of GDP since 1946. CBO projects that deficits would remain between 3.8% and 6.1% of GDP over the next 10 years under current policy, causing the federal debt to continue to grow as a share of GDP.[86] Although smaller than in the past three years, these deficits are still projected to be higher as a share of GDP than all but two periods since 1947—the periods from FY1982 to FY1986 and FY2009 to FY2013.

Figure 11. Debt-to-GDP Ratio

FY1940-FY2021



Source: OMB, *Budget of the U.S. Government.*

Notes: Gray bars denote recessions.

Eventually, Congress would face a decision on reducing deficits through policy changes that reduce spending, raise taxes, or both to stabilize the debt as a share of GDP. Otherwise, debt service would eventually exceed revenues.[87] Before that has happened in foreign countries, sustainability concerns have triggered financial crises that have led to debt defaults. However, with debt service still low due to low interest rates, financial market participants currently place little risk on a sustainability crisis, and the dollar's "reserve currency" status gives the United

[86] CBO, *The Budget and Economic Outlook: 2022 to 2032*.

[87] For more information, see CRS Report R46729, *Federal Deficits, Growing Debt, and the Economy in the Wake of COVID-19*, by Lida R. Weinstock.

States a borrowing advantage relative to other countries.[88] Thus, achieving debt sustainability is not urgent in the short run from a financial stability perspective.[89] Nevertheless, debt sustainability and short-term macroeconomic stabilization considerations are complementary at present. Deficit reduction would help curb inflation.

Because of the aftermath of the pandemic and future pressures on elderly entitlement spending related to the aging population, the amount of deficit reduction that is eventually needed to stabilize the debt under current policy is large. In simulations by the Government Accountability Office (GAO), the debt would stay close to its current level until between FY2025 and FY2030 (depending on assumptions) and then increase exponentially for the rest of the long-term forecast to levels that would exhaust financing capacity. GAO projects that to stabilize the publicly held debt at 100% of GDP (its FY2020 level) in 30 years, federal non-interest spending would need to be immediately and permanently reduced by 20% or revenue would need to be increased by 27% from FY2020 levels.[90] In this scenario, the government would still run reduced budget deficits that would allow debt to rise in dollar terms at the same rate as nominal GDP. Gradual deficit reduction initiated today minimizes the amount needed to achieve sustainability and is less likely to destabilize the recovery than implementing it all at once.

What If Asset Prices Continue to Fall?

Low interest rates, ample liquidity, and high savings rates contributed to the rapid increase in asset prices during the pandemic. Since the beginning of 2022, stock and bond prices have been volatile and fallen on net, although stock prices remain significantly higher than they were before the pandemic. Cryptocurrencies and other more exotic assets have fallen even more in value in 2022. Asset prices could lose more of their value in the future in response to higher interest rates or because of turmoil in the world economy or because an asset bubble bursts. (A bubble is a rapid run up in asset prices caused, in part, by "irrational exuberance" among investors, which is then followed by a sharp decline in prices.) One concern is that falling asset prices could cause financial instability or a credit crunch or lead to a larger-than-desired cutback in business and household spending. If so, would that derail the economic recovery? Or would a more normal economic environment be enough to offset higher interest rates and keep asset prices above pre-pandemic levels?

Although a modest decrease in asset prices is unlikely to be problematic, there is precedent for falling asset prices causing recessions. The bursting of asset bubbles were key contributors to the two recessions prior to the pandemic. The 2001 recession featured the bursting of the dot-com bubble, and the 2007-2009 recession featured the bursting of the housing bubble. Although the former recession was mild by historical standards, the latter one was unusually long and deep because the bursting of the bubble resulted in a broader financial crisis.

Policymakers have been reluctant to tighten policy specifically in response to rising asset prices in the past and have shown little desire to do so in this case, either. In part, this is because they cannot easily identify whether price changes are based on market fundamentals or represent price

[88] For more information, see CRS In Focus IF11707, *The U.S. Dollar as the World's Dominant Reserve Currency*, coordinated by Rebecca M. Nelson.

[89] If interest rates rise more than OMB projects—OMB projects rates will rise over the course of the projection but will be low by historical standards—deficits could be significantly larger. This could make deficit reduction more urgent.

[90] The required fiscal tightening estimated by GAO is relative to FY2020 spending and deficit levels, which were near peak pandemic highs. Thus, some of the tightening called for in these estimates is already occurring in FY2022. GAO, *The Nation's Fiscal Health: After Pandemic Recovery, Focus Needed on Achieving Long-Term Fiscal Sustainability*, GAO-21-275SP, March 23, 2021, Table 3, https://www.gao.gov/assets/gao-21-275sp.pdf.

bubbles. They are also afraid that the cure could be worse than the disease. While policymakers are concerned that a bursting bubble could cause a decline in employment and recession, they fear that tightening policy to prevent a bubble could cause the same outcome.

If the price rise proves to have been a bubble, then the downside to not tightening policy in response to rising asset prices is that a larger bubble would cause a larger crash when it bursts. Furthermore, the pandemic response may have made bubbles more likely, as the Fed's decision to create emergency facilities and purchase securities to support financial markets may exacerbate bubbles by creating an expectation among some that the Fed will intervene in some fashion every time there are major losses in financial markets in ways that then make securities more valuable, at least in the short run.[91]

[91] For more information, see CRS Report R46411, *The Federal Reserve's Response to COVID-19: Policy Issues*, by Marc Labonte.

Appendix A. Understanding the Economy Under COVID-19 in a Supply and Demand Framework

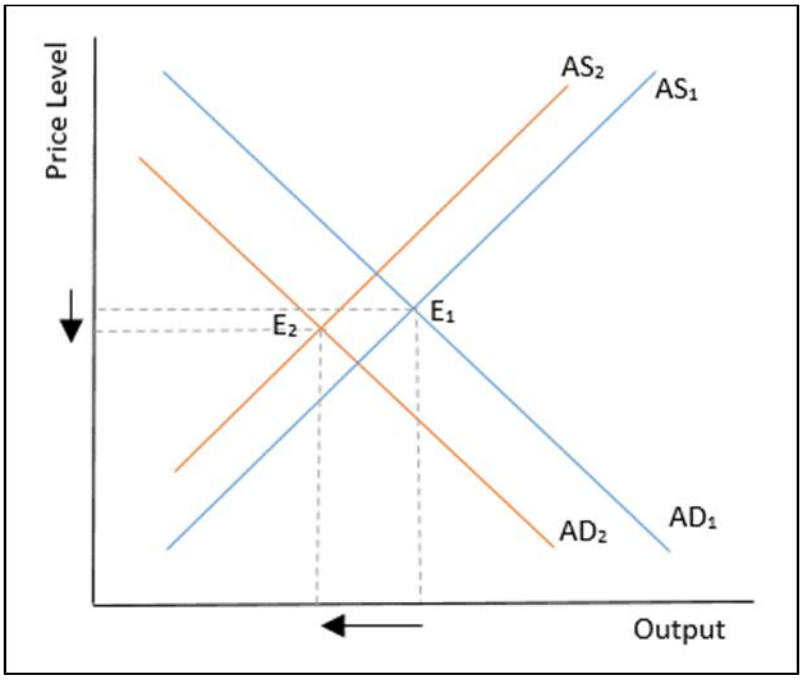
To understand the nature of the economic recovery, and some of the unusual phenomena occurring, it is important to first understand the nature of the initial economic decline and how events unfolded thereafter. Most recessions are caused either by an aggregate demand shock—a sudden change in the amount of goods and services desired to be purchased at a specific price point—or an aggregate supply shock—a sudden change in the amount of goods and services available for sale at a specific price point. However, the pandemic caused initial problems to both aggregate supply and aggregate demand, as discussed above.

Figure A-1 shows a simplified version of aggregate demand and aggregate supply upon the initial pandemic shock. Within the theoretical framework of aggregate supply and aggregate demand in the short run, the two metrics are plotted by output and price level. Here, aggregate demand is shown as a downward sloping line (AD_1), indicating that as the price level increases in the economy, total spending will decrease. Aggregate supply is an upward sloping line (AS_1),[92] indicating that as the price level in the economy increases, the total amount of output produced will increase in the short run. The two lines meet at an equilibrium price level (E_1) in which total spending equals output produced. This model can be used to analyze outside shocks to the economy (e.g., the pandemic), as well as fiscal and monetary policy responses.

When the pandemic initially shocked the economy, both aggregate demand and aggregate supply fell. This is represented by the shift from the blue curves (AD_1, AS_1) to the orange curves (AD_2, AS_2) in the below graph. Such decreases unambiguously result in lowered output. However, depending on the magnitude of the demand and supply shocks, such a scenario could result in increased, decreased, or unchanged price levels. To the extent that anything definitive can be determined about the magnitude of the supply and demand shocks in March and April, month-over-month deflation (falling prices) in April suggest that aggregate demand fell by a larger magnitude than did aggregate supply initially.

[92] In the full version of the AD-AS model, aggregate supply is represented in the short run and long run. In the long run, aggregate supply is fixed, meaning that it is represented by a vertical line, because in the long run prices are fully flexible and output is at a level associated with full employment. In the short run, prices take time to adjust and therefore the upward sloping supply curve represents how producers adjust to changing prices. Certain factors can affect long-run aggregate supply, such as technology and resources, but long-run supply will always be a vertical line owing to fully flexible prices and wages.

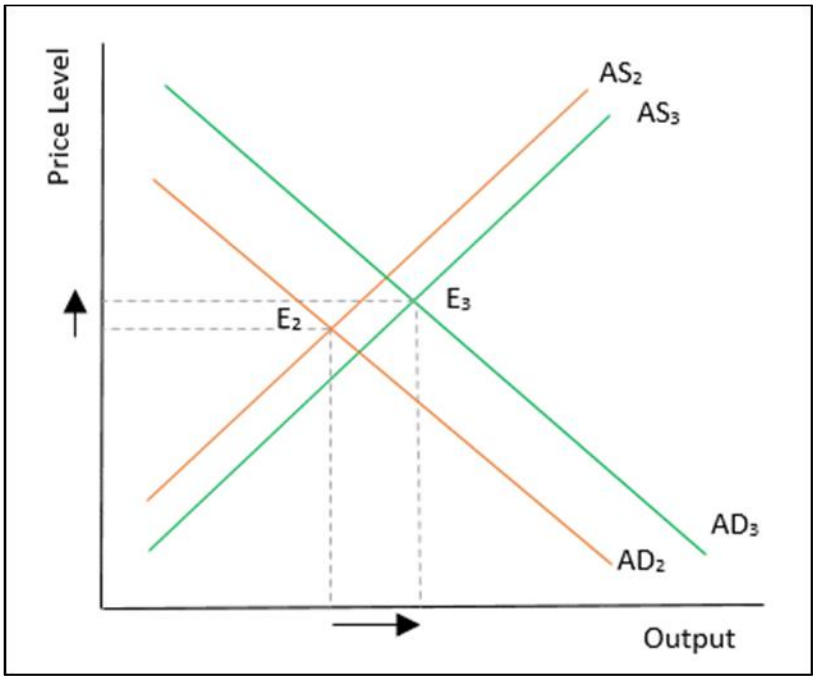
Figure A-1. Initial COVID-19 Economic Shock Represented in a Simple Aggregate-Supply-Aggregate-Demand Framework



Source: CRS.

Over time, initial problems depressing supply and demand have been largely resolved, as discussed above, but new problems have risen that are still constraining supply, preventing the aggregate supply curve to shift all the way back to its pre-pandemic path. Meanwhile, fiscal and monetary stimulus have caused the aggregate demand curve to shift to a higher combination of output and prices. As shown in **Figure A-2**, even if supply has considerably recovered from the initial shock, a situation where demand has fully recovered (AD_3) and supply has only partially recovered (AS_3) has resulted in high and rising inflation, as discussed in the "High and Rising Inflation" section above. In other words, Americans would like to buy more goods and services than U.S. businesses can currently produce. At current levels of supply and demand, the only way to resolve this imbalance is through higher prices (E_3).

Figure A-2. Current Supply-Constrained Economy Represented in a Simple Aggregate-Supply-Aggregate-Demand Framework



Source: CRS.

Appendix B. Defining Economic Concepts

This appendix provides a brief description of some of the major economic concepts found in this report.

Short-term changes in overall economic activity can be thought of in a supply and demand framework. A common way economists define **aggregate demand** is total spending, including private and public, in the economy. Therefore, when individuals and businesses spend less, all else equal, this causes a drop in aggregate demand. One way to think about **aggregate supply** is as total production in the economy.

Potential output, sometimes referred to as potential GDP, is an estimate of total output in the economy given optimal conditions (i.e., no business cycle fluctuations), including fully flexible prices and fully utilized resources.[93] Likewise, **full employment** is an estimate of employment in an economy that is producing at its potential.[94] Full employment does not necessarily mean an economy with an unemployment rate of zero; rather it indicates that cyclical unemployment has been minimized. A precise definition of *full employment* is not widely agreed upon, but BLS defines it as a situation in which the unemployment rate is as low as possible without causing inflation to rise, there is no cyclical unemployment, and GDP is at potential.[95] Using this definition, an economy at less than full employment cannot meet potential output in any given short-run time frame. The difference between actual and potential output is known as the output gap. A negative output gap indicates that the economy is not producing at its full capacity, while a positive output gap indicates that the economy is producing above capacity and may be overheating.[96]

Full employment and potential output are both theoretical constructs that cannot be directly measured but can nonetheless be helpful in understanding the dynamics of the economy. Numerical estimates of these concepts are produced by a number of agencies, including CBO and the OECD.

The trend of potential output and full employment is important for long-term economic growth. At any given time, employment and output may fluctuate from these potentials. However, short-term fluctuations do not necessarily permanently change the trajectory of these potentials. That being said, certain economic trends may cause permanent changes to potential output, full employment, or both. For example, a concern currently is that the labor force may remain permanently smaller than pre-pandemic levels, thereby lowering full employment and potential output permanently as well.

The word *unemployed* can mean different things in common usage and technical economic statistics. To be counted as **unemployed** in official government statistics, an individual without a job must also be actively seeking work. If not actively seeking work, that individual is recorded as **not in the labor force**. There are various reasons that individuals might decide not to be in the labor force, including retirement, care for family members, or education or because they have

[93] Charles I. Jones, *Macroeconomics*, ed. Jack Repcheck, 3rd ed. (W. W. Norton and Company, 2008), p. 12.

[94] OECD, *OECD Glossary of Statistical Terms*, 2008, p. 218, https://www.oecd-ilibrary.org/docserver/9789264055087-en.pdf.

[95] BLS, *Full Employment: An Assumption Within BLS Projections*, November 2017, https://www.bls.gov/opub/mlr/2017/article/full-employment-an-assumption-within-bls-projections.htm.

[96] Sarwat Jahan and Ahmed Saber Mahmud, *What Is the Output Gap?*, International Monetary Fund, September 2013, https://www.imf.org/external/pubs/ft/fandd/2013/09/basics.htm.

become discouraged from seeking work. The **labor force participation rate** is measured as the sum of the employed and unemployed divided by the total population.

The Phillips Curve is an economic model that suggests there is an inverse relationship between unemployment and inflation (or wages in the original model). The theory suggests that as the economy grows and unemployment decreases, prices will rise because demand will rise as more workers become employed and have more disposable income, and wages will rise as the demand for labor increases, leading firms to raise prices in order to account for the wage increases. The curve of the slope represents the strength of the relationship between the two variables. For example, a flatter Phillips Curve indicates that prices are not very sensitive to changes in the unemployment rate, whereas a steeper curve indicates more price sensitivity.

Fiscal stimulus is an increase in government spending, a decrease in tax revenue, or a combination of the two. All else equal, it increases the budget deficit. **Monetary stimulus** is, conventionally, a decrease in interest rates and is expected to temporarily spur economic activity. Both fiscal and monetary stimulus work to increase aggregate demand in the economy. (They do not affect aggregate supply in the standard model.) In the case of fiscal stimulus, an increase in public spending on goods and services directly increases total spending in the economy, while an increase in government transfers or decrease in, for example, individual taxes increases the disposable income of affected individuals, potentially resulting in increased private expenditures. In the case of monetary stimulus, a decrease in interest rates tends to increase aggregate demand by incentivizing interest-sensitive spending, such as consumer durables, business investment, and residential investment.[97]

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[97] For more detailed information on fiscal and monetary policy and stimulus, see CRS In Focus IF11253, *Introduction to U.S. Economy: Fiscal Policy*, by Lida R. Weinstock; and CRS In Focus IF11751, *Introduction to U.S. Economy: Monetary Policy*, by Marc Labonte.

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