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Inflation in the U.S. Economy: Causes and Policy Options

October 6, 2022

Congressional Research Service
https://crsreports.congress.gov
R47273

CRS REPORT
Prepared for Members and
Committees of Congress

Congressional Research Service
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SUMMARY

R47273

October 6, 2022

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Inflation in the U.S. Economy: Causes and Policy Options

The Federal Reserve (Fed) defines stable prices to be inflation (the general rise in the price of goods and services) of 2% annually. After decades of low inflation, inflation has been above the Fed's 2% target since March 2021. Since February 2022, inflation (measured as the 12-month change in the Personal Consumption Expenditures index) has exceeded 6%, its highest level in decades. For inflation to be problematic from a policy perspective, the increase has to be sustained, persistent, and sizeable. Inflation in 2022 meets all three of these criteria.

COVID-19 caused unprecedented disruptions to both the demand side (spending) and the supply side (output) of the economy. High inflation originated in some of the supply disruptions to specific markets. Faced with production shortages, prices rose. By late 2021, inflation ceased to be limited to specific disrupted markets and became widespread across virtually all goods and services. Inflation can be thought of as a mismatch between overall supply and demand. Supply was still constrained relative to its pre-pandemic path because of ongoing supply disruptions, which were then further exacerbated in 2022 by the war in Ukraine. In this context, demand would also need to be constrained to avoid an acceleration in inflation. Instead, demand made a relatively rapid recovery after the brief recession thanks in part to unprecedented fiscal and monetary stimulus. These imbalances are also evident in the labor market, where employers are unable to fill openings and the labor force participation rate remains below its pre-pandemic level.

Policymakers assumed that the initial increase in inflation in 2021 was transitory and decided to leave monetary and fiscal stimulus in place to guard against the economic recovery becoming derailed by the ongoing threat of the pandemic. In hindsight, inflation proved to be a bigger threat than a weak recovery was, but decades of sustained low inflation—at times, undesirably low inflation—may have led policymakers to underestimate the threat of high inflation. The Fed did not stop purchasing assets or start raising interest rates above zero until March 2022. Fiscal stimulus was designed to be temporary, but the American Rescue Plan Act of 2021 (ARPA, P.L. 117-2), increased the budget deficit by about $530 billion in FY2022. By the time stimulus began to be withdrawn, inflation was higher, more widespread, and more deeply embedded. To date, inflationary pressures have neither subsided on their own nor proven responsive to the tightening of policy that has taken place so far. The wait-and-see approach to tightening means that fiscal and monetary policy continue to be stimulative overall despite the significant withdrawal of stimulus that has occurred in 2022.

Some commentators have argued for addressing inflation by tackling its cause. In other words, supply-driven inflation should be controlled via supply-side solutions, and demand-driven inflation should be controlled via monetary or fiscal tightening. However, as inflation is caused by an imbalance in supply and demand, any solution that brings the two back into equilibrium would be successful, regardless of underlying cause. Demand-side tightening has the advantage of being potentially faster and having a more substantial impact than supply-side solutions, perhaps making it more attractive to those who seek to reduce inflation quickly. For example, the Fed can raise interest rates instantly, although their economic impact takes longer to be fully felt. Supply-side solutions take longer to be implemented and rely on individuals and businesses responding to incentives, making their effect more unpredictable and operating at the margins. In the current case, supply-side solutions are also hindered by the fact that many current supply problems, such as global supply chain disruptions and reductions in commodities output, are located outside of the United States. Some supply disruptions should eventually resolve themselves, relieving one source of inflationary pressures. The risk of waiting for supply to increase without trying to lower demand is that by the time that happens, expectations of high inflation will have become entrenched, making high inflation more difficult to reduce.

The last time inflation was this high was during the "Great Inflation" from the mid-1960s to the early 1980s, when a series of supply shocks, changes in inflation expectations, and a failure to sufficiently tighten monetary policy ultimately resulted in double-digit inflation. A number of policy initiatives over that period proved unsuccessful at reducing inflation, including price controls and credit controls. Inflation fell only after a long and deep recession in which the Fed raised interest rates as high as 19%.

The 117th Congress has debated legislative options to reduce inflation, such as the budget reconciliation measure commonly called the Inflation Reduction Act of 2022 (P.L. 117-169), and Congress has also debated whether earlier legislation, such as ARPA, has contributed to high inflation.

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Introduction

The COVID-19 pandemic has led to many unexpected and unprecedented economic developments.[1] One such development is higher price inflation than the United States has experienced in recent decades. The consensus view among economists is that inflation warrants a policy response only if it is high, widespread across goods and services, and sustained—exactly how high and for how long is open to debate. At this point, however, few disagree that inflation in 2022 meets all three of these criteria.

According to several measures, including the Consumer Price Index (CPI) and the Personal Consumption Expenditures (PCE) Index, prices have risen more rapidly than usual on a monthly basis each month since February 2021.[2] For 2021 as a whole, PCE inflation was 4.2%. Since February 2022, PCE inflation (measured as the 12-month change) has exceeded 6%. The last time PCE inflation ran that high was in the early 1980s at the end of the "Great Inflation."[3] Since peaking in the summer of 2022, inflation has fallen a little primarily because of falling energy prices. Excluding energy prices, other price increases show little sign of deceleration.

High inflation raises multiple policy issues for Congress. First, higher prices automatically increase spending on many mandatory government programs and reduce the spending capacity of other government programs at a given spending level. Second, high inflation is unpopular with the general public because it erodes purchasing power and creates inequities for those who cannot protect themselves against it. Third, rising inflation might be a signal of an overheating economy. Some economists fear that an overheating economy may result in a recession.[4] Finally, Congress has oversight responsibilities for the Federal Reserve, and Congress has mandated that the Fed achieve price stability.[5] Since March 2021, inflation has been higher than the 2% threshold that the Fed has chosen as its definition of price stability (when measured over the previous 12 months). The 117th Congress has examined legislative options to reduce inflation, enacting the budget reconciliation measure commonly called the Inflation Reduction Act of 2022 (P.L. 117-169), and debated whether other legislation, such as the American Rescue Plan Act of 2021 (ARPA, P.L. 117-2), has contributed to high inflation.

This report begins by explaining what inflation is and how it is measured. It then discusses the costs of inflation, as well as the costs of inflation being too low. Next, it discusses the potential causes of inflation. Then it discusses the history of inflation in the United States since World War II. Finally, the report analyzes the causes and implications of the current situation and prospects for future inflation.

[1] See CRS Report R47115, *U.S. Economic Recovery in the Wake of COVID-19: Successes and Challenges*, by Marc Labonte and Lida R. Weinstock.

[2] CPI inflation is the more commonly cited measure in the media, whereas PCE inflation is the Federal Reserve's preferred measure. PCE inflation is typically somewhat lower than CPI inflation but nonetheless has also been high of late. See Bureau of Economic Analysis (BEA), *Personal Consumption Expenditures Price Index*, at https://www.bea.gov/data/personal-consumption-expenditures-price-index.

[3] See the section below entitled "Great Inflation"

[4] See CRS Insight IN11963, *Where Is the U.S. Economy Headed: Soft Landing, Hard Landing, or Stagflation?*, by Marc Labonte and Lida R. Weinstock.

[5] See CRS In Focus IF11751, *Introduction to U.S. Economy: Monetary Policy*, by Marc Labonte.

What Is Inflation?

Inflation refers to the general increase in the price of goods and services (not including asset prices) across the economy. As inflation occurs, individuals can purchase fewer goods and services with the same amount of money. Thus, inflation can also be thought of as a general decrease in the value of money. Measures of inflation are used to adjust monetary figures to keep purchasing power constant over time, allowing for more accurate comparisons across disparate time periods. Monetary figures that have been adjusted for inflation are referred to as *real*, and non-inflation-adjusted figures are referred to as *nominal*.

The rate of inflation can be measured by observing changes in the average price of a consistent set of goods and services, often referred to as a market "basket." Inflation is generally measured using a price index, such as the CPI or PCE, which is constructed by dividing the price of a market basket in a given year by the price of the basket in a base year. *Chain weighting* considers changes in spending habits. The rate of inflation is then measured by calculating the percentage change in the price index across different periods.[6]

Different price indices use different goods and services within their market baskets and are generally used for different purposes. CPI includes consumer goods and services typically purchased by U.S. households and is often used to adjust household income over time. PCE measures inflation for all final goods and services purchased by consumers in the United States. Because of methodological differences, inflation as measured by CPI is slightly higher than as measured by PCE. PCE inflation is the Federal Reserve's preferred measure of inflation. There are a number of additional measures of inflation, which do not necessarily focus on what consumers purchase. For example, the gross domestic product (GDP) deflator, which is generally used to adjust GDP for inflation over time, measures inflation for all final goods and services produced in the United States, including those not typically purchased by consumers. Other inflation indices include the Producer Price Index, Employment Cost Index, and Import/Export Price Index. For the purposes of this report, PCE inflation will be the measure used moving forward.

Inflation is often characterized by one of two measurements: *headline* inflation or *core* inflation. Headline inflation includes the full set of goods and services within a given market basket, whereas core inflation excludes energy and food prices. Researchers often focus on core inflation due to the volatile nature of food and energy prices, which can mask the longer-term trends in headline inflation that concern policymakers and economists. However, headline inflation can provide a more accurate sense of the price changes that individuals actually face.[7]

As inflation measures the general increases in prices across the economy, a change in price of any single good or service does not equate to overall inflation. However, goods and services in a particular basket are given different weights to convey their relative importance to the overall economy. For example, food is weighted more heavily in determining overall inflation than a category of lesser importance, such as apparel.[8]

[6] See CRS In Focus IF10477, *Introduction to U.S. Economy: Inflation*, by Lida R. Weinstock.

[7] See CRS In Focus IF10477, *Introduction to U.S. Economy: Inflation*, by Lida R. Weinstock.

[8] Federal Reserve Bank of Cleveland, *Consumer Price Data*, https://www.clevelandfed.org/our-research/center-for-inflation-research/consumer-price-data.aspx.

Costs of Inflation

In general, inflation can be costly to the economy—especially when it is unexpected—because it tends to interfere with pricing mechanisms in the economy, resulting in individuals and businesses making suboptimal spending, saving, and investment decisions. Additionally, economic actors often engage in actions to protect themselves from the negative impacts of inflation, diverting resources from other, more productive activities.

Note that some of the costs of inflation also apply to deflation (falling prices), although they may manifest themselves in different ways. Most economists believe deflation to be even more costly to the economy than inflation is, as it is often associated with recessionary conditions, and therefore a small amount of inflation is considered to be ideal so as to make potential deflation less likely by giving the Fed room to conduct monetary policy.

This section describes several potential types of costs of inflation and the difficulty in measuring some of these costs. Many costs of inflation increase the higher or more sustained the inflation is. The discussion that follows provides a general description of potential costs, which may be felt more or less keenly depending on the particular circumstances.[9] In a case where inflation rises only temporarily and moderately, the costs described below would be expected to be modest relative to sustained and high increases.

Costs of Anticipated vs. Unanticipated Inflation

Some costs are incurred only when inflation is unanticipated, while other costs arise even when the inflation is fully anticipated. When unanticipated, price signals can become misinterpreted, and this can reduce economic efficiency. But once individuals adjust to the new higher inflation rate, accurate price signals are restored, and so this cost is only temporary. Only one-time increases in inflation are typically unexpected. Periods of sustained increasing inflation are typically anticipated because when prices rise in one month, individuals and markets may likely anticipate prices to rise in the following month. Thus, inflation is at least somewhat anticipated most of the time. Individuals can safeguard themselves against some of the effects of inflation if they expected the inflation. For example, if inflation is expected to rise, workers can demand an increase in nominal wages, or lenders can require that the interest rate they receive be tied to the rate of inflation in some way. In reality, inflation is never entirely predictable, and, as such, individuals and businesses attempt to put safeguards in place, especially when inflation is high. Some costs occur only because of the absence of appropriate safeguards: for example, the absence of indexed contracts.

To understand the costs of anticipated inflation, imagine a hypothetical, fully indexed economy—one in which all contracts are adjusted for changes in the price level. In such an economy, inflation can impose only two real costs: (1) the less efficient arrangement of transactions that result from holding smaller money balances; and (2) "menu costs," or the necessity to change posted prices more frequently.[10] Both individuals and businesses hold money balances in cash or

[9] Richard G. Anderson, *Inflation's Economic Cost: How Large? How Certain?* Federal Reserve Bank of St. Louis, July 1, 2006, https://www.stlouisfed.org/publications/regional-economist/july-2006/inflations-economic-cost-how-large-how-certain.

[10] To some extent, the advent of certain technologies has decreased menu costs. The name comes from the costs to restaurants of printing new menus—which, prior to personal computing, had to be contracted out to printing services—but refers more generally to the costs to producers of changing their nominal prices. For example, employees of many businesses still need to take time to monitor prices and make and communicate price change decisions, time that could have been used more efficiently in the absence of increasing inflation.

bank accounts because it allows them to arrange transactions in an optimal or least costly way (e.g., for business this involves paying employees, holding inventories, billing customers, maintaining working balances) and to provide security against an uncertain future. Holding wealth or assets in money form, however, incurs an opportunity cost—that is, what is given up when one action is taken as opposed to another. The opportunity cost of holding money is the nominal interest rate (equal to the real interest rate plus the inflation rate) that could be earned if the excess money were used to purchase an interest-earning asset. Thus, when the rate of inflation rises, holding money becomes more costly. Individuals and businesses then attempt to get by with smaller money balances. For businesses, this may mean billing customers more frequently. For employees, it may mean demanding to be paid more frequently. The new patterns are less efficient. They use more time or more resources to effect a given transaction. Similarly, efficiency is lost when more time and resources are used to frequently adjust prices to match inflation. This is an example of a permanent cost of inflation, which rises as inflation rises.

In an economy that is not fully indexed, inflation can lower the real value of income and the real rate of return on investments, both of which can distort incentives for individuals to work and businesses to grow their capital. For example, some parts of the tax system are indexed for inflation, but others are not. Consider what happens to the real after-tax rate of return on business capital during inflation. For tax purposes, the depreciation of business plant and equipment is based on actual or historical costs. When inflation rises, charging depreciation based on historical cost raises the nominal profits of businesses and the basis on which corporate profits taxes are levied. As a result, the after-tax real rate of return falls, and this discourages businesses from adding to their stock of plant, equipment, and structures—a basis for future economic growth. This is another example of a permanent cost associated with higher inflation.

Distributional Costs

Costs of inflation to individuals may not impose a burden on the overall economy because they represent a redistribution of income or wealth: What is lost by some is gained by others. Nevertheless, these redistributions can have real effects on the individuals affected. According to the Bank of International Settlements, that redistribution is likely to be regressive from lower-income households to higher-income households, because the latter are more capable of protecting themselves against inflation.[11] The bank's logic states that relatively low-income households largely hold their savings as cash (which earns no return and thus has a value that falls by the full rate of inflation) or in bank accounts (which typically earn no or low returns unlikely to keep up with inflation), whereas relatively high-income households avail themselves of a wider array of investment options, a number of which better control for inflation or have values that typically rise along with prevailing inflation.

In addition to savers, there is some amount of real redistribution of wealth felt by lenders and borrowers when inflation increases. Inflation lessens the value of money and therefore can be seen to benefit borrowers when the terms of repayment do not account for inflation—the borrower, for all intents and purposes, will pay the lender back with money that is worth less than it was when the money was first borrowed.

Inflation can also have differential effects on households across the income distribution, because a typical high-income household consumes a different basket of goods from a typical low-income household. For example, food at home comprises a larger share of spending for low income

[11] Bank for International Settlements (BIS), *Annual Economic Report*, 2021, ch. 2, https://www.bis.org/publ/arpdf/ar2021e2.pdf.

households, so if food at home had a higher-than-average inflation rate, inflation would negatively affect low-income households more than it would high-income households. However, that effect will not be consistent or predictable over time because the goods that experience above-average and below-average inflation are not consistent over time.[12]

Optimal Level of Inflation

Many economists have argued that low and stable inflation is conducive to higher long-term economic growth, because it minimizes the costs of inflation and reduces the risk of costly deflationary periods.[13] How exactly to define *low* and *stable* is subject to debate. High levels of inflation are clearly not optimal. For example, economies experiencing hyperinflation (when annual inflation reaches triple or quadruple digits) have historically experienced costly disruptions to the normal functioning of their economies. However, there is little consensus among economists over whether, say, 2% or 4% inflation is preferable.[14] Likewise, there is generally agreement that stable and predictable inflation is preferable, although there is some debate on how much inflation should be allowed to vary at the margins from its target. Since 2012, the Federal Reserve has identified an average inflation rate of 2% (as measured by the PCE) as optimal.[15] In practice, inflation always fluctuates a little from year to year, and since the early 1980s a rise in inflation in one year has not been predictably followed by higher inflation in the next year. At this time, arguments for transitioning to a slightly higher optimal inflation rate face the added challenge of whether doing so when inflation is too high would make it more difficult to keep inflation expectations anchored and to maintain the credibility of policymakers' commitment to price stability.

What Causes Inflation?

There are several potential causes of inflation in an economy. A change in the inflation rate usually reflects an imbalance between overall supply and demand, which can be demand or supply driven or both—as is the case today. Demand-driven inflation can be caused by fiscal or monetary stimulus or originate in private spending dynamics. But in the long run generally, inflation is said to be "always and everywhere a monetary phenomenon," meaning it is driven by monetary policy. It is useful to distinguish between supply and demand causes of rising inflation, because supply-driven (or cost-push) inflation is associated with a decline in output, while

[12] For example, see Jonathan Church, *The Cost of "Basic Necessities" Has Risen Slightly More Than Inflation over the Last 30 Years*, U.S. Department of Labor, Bureau of Labor Statistics (BLS), June 2015, https://www.bls.gov/opub/btn/volume-4/the-cost-of-basic-necessities-has-risen-slightly-more-than-inflation-over-the-last-30-years.htm; and Josh Klick and Anya Stockburger, *Experimental CPI for Lower and Higher Income Households*, BLS, March 8, 2021, pp. 1-20, https://www.bls.gov/osmr/research-papers/2021/pdf/ec210030.pdf.

[13] Testimony of Fed chairman Ben Bernanke before the Senate Committee on Banking, Housing, and Urban Affairs, in U.S. Congress, November 15, 2005.

[14] The low level of nominal interest rates that has prevailed since the 2008 financial crisis has led some economists to argue that the Fed should target a slightly higher rate of inflation than 2% so that the Fed is less likely to hit the zero lower bound on interest rates during economic downturns. (Economists assume that higher inflation will pass through on a one-to-one basis to higher nominal interest rates over time. A higher nominal rate would give the Fed more room to reduce rates before reaching the zero lower bound.) See Laurence Ball, *The Case for a Long-Run Inflation Target of Four Percent*, International Monetary Fund, June 2014, https://www.imf.org/external/pubs/ft/wp/2014/wp1492.pdf.

[15] Board of Governors of the Federal Reserve System, "Guide to Changes in the 2020 Statement on Longer-Run Goals and Monetary Policy Strategy," in *Review of Monetary Policy Strategy, Tools, and Communications*, https://www.federalreserve.gov/monetarypolicy/guide-to-changes-in-statement-on-longer-run-goals-monetary-policy-strategy.htm.

demand-driven (or demand-pull) inflation is associated with a rise in output. This section discusses in greater detail a few causal categories of inflation and the role of monetary policy in controlling inflation in the short and long term.

Demand-Pull Inflation

Inflation that is caused by an increase in aggregate demand (overall spending) absent a proportional increase in aggregate supply (overall production) is known as demand-pull inflation. When aggregate demand increases by more than its trend rate, typically the productive capacity of the economy does not immediately adjust to meet higher demand, particularly if the economy is at or near full employment.[16] In response to the increased demand in the economy, producers will attempt to increase the quantity of goods and services they provide. To increase production, producers may attempt to hire more workers by increasing wages. Assuming producers are not willing to eat into profits in order to ramp up production,[17] they are likely to increase the prices of their final goods and services to compensate themselves for the increase in wages (which increases production costs), thereby creating inflation.[18] Inflation can work to lower demand and increase supply and thus can be the means to bring supply and demand back into equilibrium, particularly in an overheating economy in which demand has risen above what the economy can produce at full employment.[19]

Any number of factors could contribute to increases in aggregate demand, including the normal ebbs and flows of the business cycle, consumer and investor sentiment, the value of the dollar, and fiscal and monetary policy, among others. Expansionary fiscal policies include an increase in the budget deficit by lowering taxes or increasing government spending or transfers to individuals. Such policies work to increase overall spending in the economy by driving up consumer demand, in the case of lower taxes, or both consumer demand and government purchases in the case of increased spending. This in turn can lead to increased production and decreasing unemployment levels. The downside to achieving these benefits through expansionary fiscal policy is that it can result in demand-pull inflation in the short term, particularly if the economy is at full employment. Expansionary fiscal policy is unlikely to cause sustained inflation, as it typically involves temporary increases in spending. Such one-time increases may produce similar one-time increases in inflation but would be likely to cause persistent increases in inflation only if such policy were persistently applied. Additionally, monetary policy can potentially be used to offset the inflationary effects of such policy.

The Role of Monetary Policy in Responding to Inflation

Economists generally believe that the long-run rate of inflation is tied to monetary policy. The Federal Reserve, which ultimately controls the supply of money, is tasked with maintaining stable prices in the economy. In other words, the Fed has a mandate to keep inflation in check. The Fed

[16] In an economy that is not near full employment, an increase in aggregate demand would be less likely to create inflation as this would imply that the economy is not working at its full productive capacity. In other words, if aggregate demand is lower than aggregate supply, aggregate demand has some room to increase before outstripping aggregate supply.

[17] Of note, producers do not always respond to wage increases with one-to-one price increases. A producer's willingness to eat into profits is a product of many factors, including the state of the economy, current profit margins, consumers' responsiveness to price changes, and how competitive markets are, among others.

[18] Federal Reserve Bank of San Francisco, *What Are Some of the Factors That Contribute to a Rise in Inflation?* October 2002, https://www.frbsf.org/education/publications/doctor-econ/2002/october/inflation-factors-rise/.

[19] An economy is typically thought to overheat when actual GDP surpasses potential GDP—that is, the theoretical GDP an economy is capable of achieving under a situation of full employment.

has tools to control inflation, mainly the federal funds interest rate (FFR)—the overnight rate at which banks lend to one another. Other interest rates in the economy tend to move in the same direction as the FFR, with shorter-term rates moving more closely with it and longer-term rates less so. Changes in interest rates affect overall economic activity by changing the demand for interest-sensitive spending (goods and services that are bought on credit). The main categories of interest-sensitive spending are business physical capital investment (e.g., plant and equipment), consumer durables (e.g., automobiles, appliances), and residential investment (i.e., new housing construction). All else equal, higher interest rates reduce interest-sensitive spending, and lower interest rates increase interest-sensitive spending.

Interest rates also influence the demand for exports and imports by affecting the value of the dollar. All else equal, higher interest rates increase net foreign capital inflows as U.S. assets become more attractive relative to foreign assets. To purchase U.S. assets, foreigners must first purchase U.S. dollars, pushing up the value of the dollar. When the value of the dollar rises, the price of foreign imports declines relative to U.S. import-competing goods, and U.S. exports become more expensive relative to foreign goods. As a result, net exports (exports less imports) decrease. When interest rates fall, all of these factors work in reverse and net exports increase, all else equal.

Business investment, consumer durables, residential investment, and net exports are all components of GDP. Thus, if expansionary monetary policy causes interest-sensitive spending to rise, it increases GDP in the short run. This increases employment, as more workers are hired to meet increased demand for goods and services. Most economists believe that monetary policy cannot permanently raise the level or growth rate of GDP or employment, because long-run GDP is determined by the economy's productive capacity (the size of the labor force, capital stock, technological innovation, and so on).[20] However, monetary policy can permanently change the inflation rate. If monetary policy pushes demand above what the economy can produce, then inflation should eventually rise to restore equilibrium.[21] Unless contractionary monetary policy is then used to slow economic activity, inflation is likely to remain at its new, higher level—in which case monetary policy is said to have accommodated higher inflation. When setting monetary policy, the Fed must take into account the lags between a change in policy and economic conditions. Otherwise, high inflation can become endemic, which might then require monetary policy to become contractionary enough to cause a recession to root it out. Although estimates vary, the general belief is that it can take from 18 months to several years for the effects of Fed policy changes to fully feed through to inflation and output.[22]

Cost-Push Inflation

Inflation that is caused by a decrease in aggregate supply as a result of increases in the cost of production absent a proportional decrease in aggregate demand is known as cost-push inflation. An increase in the cost of raw materials or any of the factors of production—land, labor, capital, entrepreneurship—will result in increased production costs.[23] Assuming producers' productivity

[20] Olivier Blanchard and David R. Johnson, *Macroeconomics*, 6th ed. (Upper Saddle River, NJ: Peason Education, 2013), p. 221.

[21] Olivier Blanchard and David R. Johnson, "The Phillips Curve, the Natural Rate of Unemployment, and Inflation," in *Macroeconomics*, p. 171.

[22] Tomas Havraneka and Marek Rusnak, *Transmission Lags of Monetary Policy: A Meta-Analysis*, International Journal of Central Banking, December 2013, p. 39, https://www.ijcb.org/journal/ijcb13q4a2.pdf. Of note, financial markets often react more quickly than other markets do.

[23] Federal Reserve Bank of St. Louis, "Factors of Production," in *The Economic Lowdown Podcast Series*,

is at or near its maximum, producers will not be able to maintain existing profit margins in response. Much the same as the demand-side issue, if producers cannot or will not accept lowered profits, they will raise prices.[24]

The classic example of cost-push inflation is the result of a commodity price shock, which sharply decreases the supply of a given commodity and increases its price. Certain commodities are inputs in the production process, and as the price of an important input good increases, so does the price of the final goods and services, resulting in inflation. Cost-push inflation, especially when caused by a supply shock, tends to result in only a temporary increase in inflation unless accommodated by monetary policy. Supply disruptions are often alleviated naturally, and for inflation to be persistently high, supply shock after supply shock would need to occur.[25]

One of the reasons a commodity shock in particular is a widely cited example of something that causes cost-push inflation is that demand for many commodities is considered to be *inelastic*. The elasticity of demand refers to how consumers' appetite for a good changes given the price it is offered at.[26] A completely inelastic good is one that consumers would purchase at the same rate regardless of the price. For example, demand for oil and its derivative petroleum products—such as gasoline, diesel fuel, and petrochemicals—is generally fairly inelastic, because they are necessary purchases for consumers and businesses, with few substitutes readily available.

Another commonly cited example of cost-push inflation is caused by increases in the cost of labor, often referred to as wage-push inflation. An increase in the federal minimum wage, for example, could theoretically cause inflation. When producers need to pay their workers more, they may opt to pass that cost along to the consumer, reduce profits to pay the increased cost, or decrease the amount of workers they employ to keep costs down. The extent to which an increase in wages affects the price level depends largely on how many workers are affected by the wage increase and the size of the increase. In the case of the minimum wage, very few workers or very many workers could be affected, depending on the level of increase.

Expectations

Inflation expectations can add to inflationary pressures and become self-fulfilling. When individuals expect prices to rise, they generally behave according to this belief. For example, if a consumer expects prices to rise in the future, he or she may decide to spend more today, before the purchasing power of the dollar decreases. If expectations change across the economy, this can lead to increased levels of spending and therefore increased aggregate demand, which, all else equal, would result in demand-driven inflation. Likewise, workers may demand wage increases to compensate themselves for future inflation, which can result in cost-push inflation, particularly if wage growth outstrips inflation. When expectations are met, this serves to further ingrain expectations that inflation will persist or even accelerate, which in turn leads to more inflation, and so on and so on. This situation is often referred to as a *wage-price spiral* in the case when wage and price growth continue to cause each other to increase, leaving the potential for inflation to become increasingly high and hard to reduce.[27]

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https://www.stlouisfed.org/education/economic-lowdown-podcast-series/episode-2-factors-of-production.

[24] Federal Reserve Bank of San Francisco, *What Are Some of the Factors That Contribute to a Rise in Inflation?*

[25] Dallas S. Batten, *Inflation: The Cost-Push Myth*, Federal Reserve Bank of St. Louis, June 1981, p. 21, https://files.stlouisfed.org/files/htdocs/publications/review/81/06/Inflation_Jun_Jul1981.pdf.

[26] Federal Reserve Bank of St. Louis, *Price Elasticities of Demand*, https://research.stlouisfed.org/dashboard/9575.

[27] Blanchard and Johnson, "The Phillips Curve, the Natural Rate of Unemployment, and Inflation," p. 164.

Inflation expectations can be measured by surveying consumers or professional economists, or it can be gleaned from market data, such as Treasury Inflation-Protected Securities. Historical experience suggests that individuals respond to a significant increase in actual inflation by increasing their expectations of future inflation, although this may not occur instantaneously. Another determinant of expectations is how credible individuals find the Fed's commitment to low inflation.

Inflation Trends

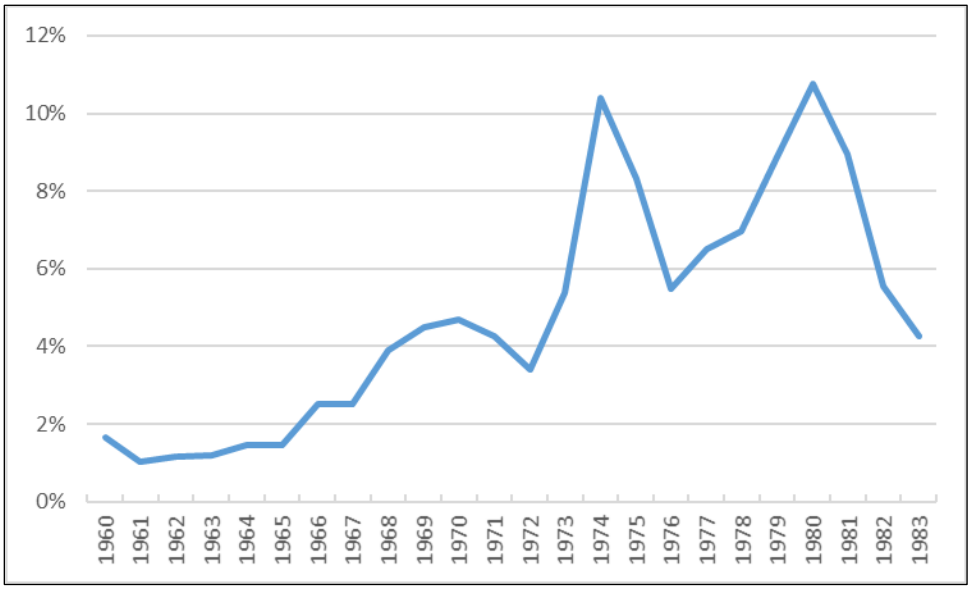
Earlier high inflation experiences in U.S. history may provide insights on how to address high inflation today. There are two notable types of high inflation periods to consider: the "Great Inflation" from the mid-1960s to early 1980s and some shorter-lived inflationary episodes surrounding U.S. wars.

"Great Inflation"

As shown in **Figure 1**, after averaging around 1% in the first half of the 1960s, inflation (as measured by the PCE) began rising to 2.5% in 1966, above 4.5% in 1970, nearly 10.5% in 1974, and above 10.5% in 1980. (CPI showed a similar but somewhat higher pattern.) Inflation then began declining rapidly, with PCE falling below 4% in 1984, and it was mostly low from then until 2021, as discussed below.

Figure 1. Annual Inflation, 1960-1983

PCE Index



Source: CRS calculations using U.S. Department of Commerce, Bureau of Economic Analysis data.

Economists attribute this "Great Inflation" to several causes.[28] In thinking about those causes, it can be helpful to distinguish between "supply shocks" that caused short-term spikes in inflation

[28] Michael Bryan, "The Great Inflation," *Federal Reserve History*, November 2013, https://www.federalreservehistory.org/essays/great-inflation. See also Edward Nelson, "How Did It Happen? The Great Inflation of the 1970s and Lessons for Today," Board of Governors of the Federal Reserve System, June 2022,

during that period and causes of the long-term upward trend in inflation.[29] Short-term causes include the removal of wage and price controls (implemented in 1971 and completely removed in 1974),[30] the end of fixed exchange rates in 1971 and subsequent depreciation of the dollar in real terms,[31] oil price shocks in 1973-1974 and 1979, and food price shocks in the 1970s. Inflation reached a new high after each of these shocks, which would have been unlikely to occur in their absence. But each of these factors would be expected to increase inflation only temporarily. A one-time increase in the price of oil in isolation, for example, would lead to a one-time increase in the inflation rate, but if oil prices then levelled off at the higher level, it would make no further contribution to inflation in later years (because inflation measures the change in prices, not the level of prices).

The long-term upward trend in inflation over the entire period is attributed to monetary policy that was persistently too "easy" (i.e., stimulative) and the unmooring of inflation expectations.[32] (Fiscal stimulus was employed sporadically over this period but not consistently enough to explain the long-term upward trend and not in the years with the largest increases in inflation.) The reason policy was too easy differed in the 1960s and 1970s. During the 1960s, policymakers attempted to exploit the Phillips Curve, a belief that lower unemployment could be achieved at the cost of higher inflation. At first, this seemed to work—unemployment fell from 4.5% in 1965 to 3.5% in 1969—but then unemployment began rising and did not return to 4.5% again for the remainder of the Great Inflation. Once inflation expectations rose,[33] higher inflation no longer yielded lower unemployment, and higher unemployment was not sufficient to bring inflation down to low levels.[34] In the 1970s, when inflation rose in response to oil shocks, the Fed faced a tradeoff between raising interest rates to mitigate the inflationary effects or "accommodating" inflation to mitigate the negative effects on growth and employment. The Fed largely chose the latter option throughout the decade. The high inflation period was brought to an end when the Fed sharply tightened monetary policy under new Fed Chair Paul Volcker in the early 1980s, bringing inflation expectations back under control but triggering a deep recession in the process. For more information on Volcker-era inflation and policies, see CRS In Focus IF12177, *Back to the Future? Lessons from the "Great Inflation,"* by Marc Labonte and Lida R. Weinstock.

Because equilibrium interest rates, economic growth rates, and unemployment rates are not constant over time, it was not obvious during the Great Inflation that monetary policy was too easy. Although short-term interest rates rose at times in nominal terms, monetary policy remained

https://www.federalreserve.gov/econres/feds/the-great-inflation-of-the-1970s-and-lessons-for-today.htm.

[29] Alan S. Blinder and Jeremy B. Rudd, "The Supply-Shock Explanation of the Great Stagflation Revisited," in Michael D. Bordo and Athanasios Orphanides, eds., *The Great Inflation: The Rebirth of Modern Central Banking*, (Chicago: University of Chicago Press, June 2013), https://www.nber.org/system/files/chapters/c9160/c9160.pdf.

[30] The removal of wage and price controls allowed pent-up price increases to occur, causing inflation to rise.

[31] The depreciation of the dollar caused import prices to rise and increased demand for exports, which put upward pressure on overall inflation.

[32] Allan Meltzer, "Origins of the Great Inflation," *Federal Reserve Bank of St. Louis Review*, vol. 87, no. 2, Part 2 (March/April 2005), pp. 145-175, https://files.stlouisfed.org/files/htdocs/publications/review/05/03/part2/Meltzer.pdf.

[33] Data on inflation expectations going back to the 1960s is limited, but what is available seems to confirm this view. See Jan J. J. Groen and Menno Middeldorp, "Creating a History of U.S. Inflation Expectations," Federal Reserve Bank of New York, August 21, 2013, https://libertystreeteconomics.newyorkfed.org/2013/08/creating-a-history-of-us-inflation-expectations/.

[34] One lesson taken from this experience was that persistently keeping labor markets "too hot" would not yield any lasting benefits in terms of labor market outcomes. The experience of keeping labor markets "too hot" without any noticeable increase in inflation in the years before the pandemic (and, to a lesser extent, in the 1990s) casts doubt on whether this lesson still holds.

easy because interest rates did not increase quickly enough to keep up with inflation, so real rates were low or even negative.[35] In hindsight, real rates compatible with the stable inflation experienced in periods before and after turned out to be too low during the Great Inflation, as will be discussed in more detail below. Further, equilibrium growth rates were falling and unemployment rates were rising, but because policymakers did not realize it quickly enough, they were still aiming to achieve what had become unachievable growth and unemployment rates. By current standards, budget deficits were also small—they exceeded 3% of GDP in only two years of the Great Inflation. Thus, the main evidence after the fact that policy was too easy is that inflation was too high, not that interest rates were lower or budget deficits were higher than in other periods.

Some commentators have compared current inflation with the Great Inflation period,[36] leading to concerns that current inflation could become entrenched if it does follow the patterns of the Great Inflation. Some parallels can be drawn between these two periods, including low unemployment and supply shocks. However, the economic context is not an exact match, and, therefore, the extent to which the economy is headed for another Great Inflation is not at all certain. For more information on the lessons of the Great Inflation and whether they might hold today, see CRS In Focus IF12177, *Back to the Future? Lessons from the "Great Inflation,"* by Marc Labonte and Lida R. Weinstock.

Policymakers took several actions to lower inflation during the Great Inflation that are discussed in the section below entitled "Historical Policies."

Wars

Unlike the Great Inflation, in which inflation became entrenched in the economy and long lasting, there have been several periods of high inflation when inflation fell quickly after the causes abated, notably during wars. The shift to a wartime economy can lead to a sudden increase in the production of military equipment and a sudden reduction in the production of nonmilitary goods and services and, in some cases, temporarily high household saving as a result.[37]

The Vietnam War occurred during the Great Inflation period, covered in the previous section. This experience would seem to lend credence to the idea that wars can have long-lasting effects on inflation, but as the previous section outlines, several other factors are seen as the primary causes of high inflation at that time. Instead, the best examples of wars leading to inflationary pressures are World War II and the Korean War.

As shown in **Figure 2**, inflation was high during and after World War II. It was above 4% each year from 1941 to 1948, peaking at 12% in 1942 and 10% in 1947, as measured by the PCE. Prices then fell in 1949 and generally remained low until the late 1960s.[38] The one year when inflation was high in that period—almost 7% in 1951—was during the Korean War.[39] By 1952,

[35] The FFR was not the Fed's policy target at the time, but rates that the Fed set directly, such as the discount rate, were also increased.

[36] For example, see Jeff Sommer, "Lessons from the '80s, When Volcker Reigned and Rates Were High," *New York Times*, August 5, 2022, https://www.nytimes.com/2022/08/05/business/inflation-investing-paul-volcker.html.

[37] Laura Nicolae, "US Daily: Pent-Up Savings and Inflation After World War 2," Goldman Sachs Research, February 25, 2021.

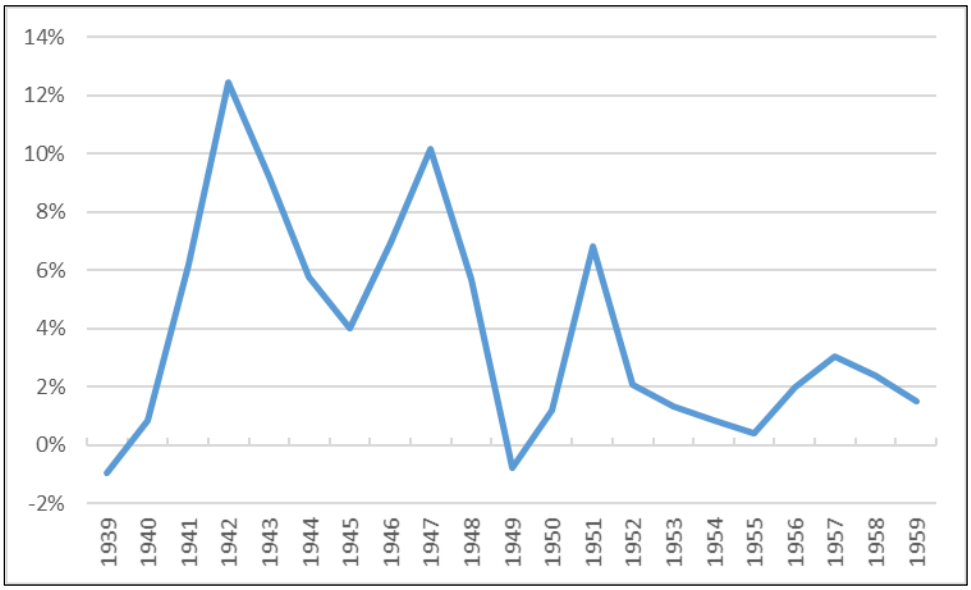
[38] World War I featured an even more extreme case of high inflation followed by deflation. That experience may be less relevant today, however, because monetary policy was then governed by the gold standard.

[39] Joseph E. Gagnon, "Inflation Fears and the Biden Stimulus: Look to the Korean War, Not Vietnam," Peterson Institute for International Economics, February 25, 2021, https://www.piie.com/blogs/realtime-economic-issues-watch/inflation-fears-and-biden-stimulus-look-korean-war-not-vietnam.

inflation was below 2% again, where it would remain through 1956. The economy did not experience the same unmooring of inflation expectations and long-lasting wage-price spiral as the Great Inflation. This may be because a recession occurred shortly after both wars (in 1948-1949 and 1953-1954) that contributed to the decline in inflation. Nevertheless, both episodes demonstrate that a rise in inflation does not necessarily have to be persistent.

Figure 2. Annual Inflation, 1939-1959

PCE Index



Source: CRS calculations using U.S. Department of Commerce, Bureau of Economic Analysis data.

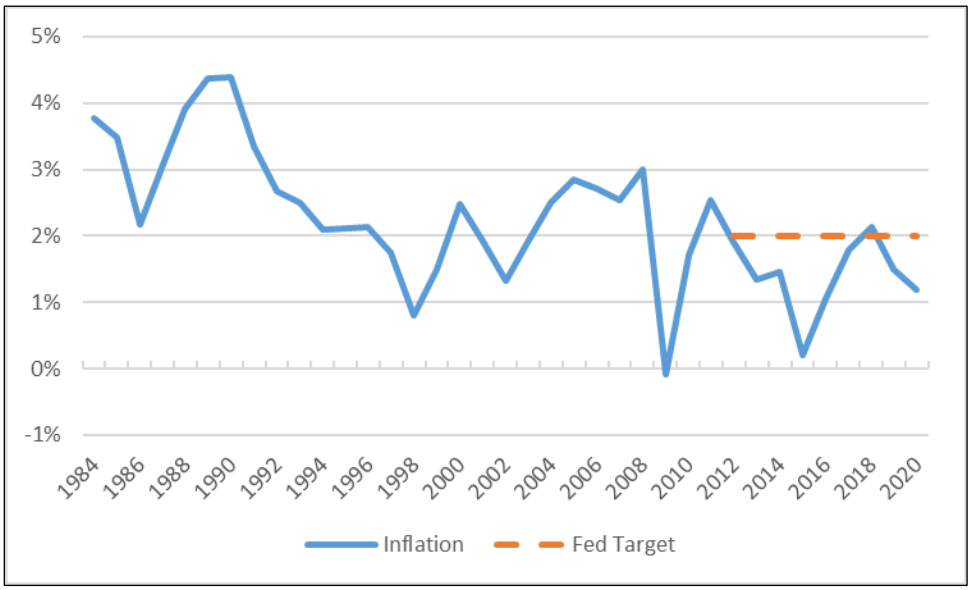
More recent wars—such as the first and second Iraq Wars and the Afghanistan War—were arguably too small in terms of military expenditures and economic impact to have a significant effect on inflation.

1980s-2020

After the recessions of the early 1980s, the economy did not experience comparably high inflation again until 2021. From 1984 to 1991, it averaged about 3.5%. On an annual basis, inflation (as measured by the PCE) averaged a little under 2% from 1992 to 2020, as shown in **Figure 3**. (As measured by CPI, inflation has been slightly higher.) As a result, many economists and policymakers believed high inflation was no longer likely enough to present serious concern.

Figure 3. Annual Inflation, 1984-2020

PCE Index



Source: CRS calculations based on U.S. Department of Commerce, Bureau of Economic Analysis data.

Notes: In 2012, the Fed instituted an inflation target of 2%, as measured by the PCE index.

The highest annual inflation rate since 1992 was in 2008, when it nearly reached 3%. This was mainly driven by a 14% increase in energy prices that year. That episode also featured three consecutive months of unusually rapid price increases, similar to the present. The Fed did not react to this increase in inflation—in the midst of the deepest and longest recession since the Great Depression—by tightening monetary policy.[40] Instead, the Fed was engaged in a then-novel asset purchase program (popularly referred to as "quantitative easing" or QE) that caused an unprecedented increase in the monetary base, which many critics worried would lead to runaway inflation. Critics' fears were not realized. In 2009, the economy experienced slight price deflation. This example illustrates that inflation can temporarily rise even during an unusually deep recession but that a rise in inflation does not necessarily lead to sustained high inflation. In hindsight, some believe that a mistaken concern with inflation that never materialized led policymakers to tighten fiscal and monetary policy prematurely, leading to a weaker recovery and prolonged return to full employment after the Great Recession.

Many economists believe that monetary policy was too easy during the Great Inflation, and some believe it was too tight during and after the Great Recession. Yet the FFR averaged 6.8% from 1968 to 1978 and 0.7% from 2008 to 2020. This illustrates that the interest rate consistent with stable inflation is not itself constant over time. For one thing, interest rates need to be adjusted for inflation, but even once this is taken into account, "real" interest rates were higher (0.9%) from 1968 to 1978—when monetary policy was viewed as too easy—than from 2008 to 2020 (-0.9%, meaning nominal rates were on average lower than inflation)—when policy was viewed as too

[40] As this example illustrates, the Fed has typically been more concerned with core inflation than headline inflation. Core inflation was only 2% in 2008. Unlike the 1970s, increases in food and energy prices did not feed through to increases in core inflation in the low inflation period, because inflation expectations remained stable and energy was less important to production.

tight.[41] This undercuts arguments that monetary policy has been too easy since 2021 based solely on the fact that nominal interest rates were low.[42]

Since the 2007-2009 financial crisis, the Federal Reserve, as well as many economists and policymakers, have been more concerned that inflation has been too low. Since the Fed identified its ideal longer-run goal for inflation to be 2% in 2012, inflation was below 2% each year through 2020 except for 2018, when it very slightly rose above. This persistent undershooting led the Fed to switch its focus (in terms of achieving its price stability mandate) from preventing too high inflation to preventing too low inflation. As a result, the Fed changed its monetary policy strategy in 2020 by explicitly stating that it would try to overshoot 2% inflation after periods when inflation has been below 2% in order to achieve a 2% average over time.[43]

Recent High Inflation

The first year of the pandemic saw low and even falling prices in some months due to the collapse in demand, particularly for services. With the rapid economic recovery underway, high inflation initially manifested itself in 2021 as large price increases in a handful of goods and services that were particularly disrupted by the pandemic, with most other prices remaining stable. For example, as will be discussed below, disruptions to automobile production resulted in used automobile prices rising by as much as 10% a month (or an annualized rate of 120%) in the spring of 2021.

As the months went by, inflation became higher and more widespread across a greater share of goods and services until virtually all categories were rising rapidly. One way to measure this is through the trimmed mean PCE, produced by the Federal Reserve Bank of Dallas.[44] The trimmed mean reports the inflation rate after removing outliers, meaning the goods with the highest and lowest inflation rates for the month. Although overall inflation started rising in February 2021, the trimmed mean was not unusually high until September 2021 and remains above 4% as of July 2022 (as measured by the percent change in the past 12 months). And although the trimmed mean omits goods and services with the fastest rising prices, representing 30% of the overall consumption basket, it nevertheless includes individual goods and services whose prices have risen as much as 11% at an annualized rate over the past month. Official and private forecasters expect inflation for 2022 as a whole to be lower than the 12-month changes seen in the first half of 2022 (as earlier price spikes drop out of the data) but remain well above 2%.

Higher inflation has not been limited to the United States. The International Monetary Fund reports that inflation in advanced economies increased from 0.7% in 2020 to 3.1% in 2021 and projects that it will average 5.7% in 2022.[45] Inflation has been high nearly everywhere because all

[41] Adjusted using actual headline PCE.

[42] One challenge that the Fed has experienced since the Great Recession of 2007-2009 is the limits on monetary policy imposed by the "zero lower bound." The Fed has been limited in how much stimulus it can provide by lowering the FFR, because it cannot be reduced below zero. As a result, the FFR was essentially zero from December 2008 to December 2015 and from March 2020 to March 2022. Arguably, this limit on conventional monetary policy made it more difficult in the years following the Great Recession for the economy to recover and made the Fed reliant on unconventional policy to stimulate the economy.

[43] Federal Reserve, *2020 Statement on Longer-Run Goals and Monetary Policy Strategy*, August 27, 2020, https://www.federalreserve.gov/monetarypolicy/review-of-monetary-policy-strategy-tools-and-communications-statement-on-longer-run-goals-monetary-policy-strategy.htm. For more information, see CRS Insight IN11499, *The Federal Reserve's Revised Monetary Policy Strategy Statement*, by Marc Labonte.

[44] Data and methodology available at https://www.dallasfed.org/research/pce.

[45] International Monetary Fund (IMF), *World Economic Outlook*, April 2022, https://www.imf.org/external/datamapper/datasets/WEO.

of the world is experiencing many of the same root causes as the United States is. However, inflation has been higher in the United States than in most other advanced economies.

Rising Asset Prices and Inflation

Asset prices are not included in the calculation of inflation, which is meant to measure only the change in the price of goods and services. Notably, houses are considered assets, so rising house prices do not factor directly into inflation. However, "owners' equivalent rent" is a large share of consumer price inflation measures and represents the hypothetical rent that homeowners would pay if they rented their houses.[46]

Equity (stock) prices, housing prices, and prices of alternative assets (such as cryptocurrencies) all increased significantly through the end of 2021 after initially declining at the beginning of the pandemic, with housing prices continuing to rise in 2022. Because assets are not included in inflation measures, the rise in asset prices has no direct effect on inflation. Nonetheless, rising asset prices could have added to inflationary pressures. This connection is most direct in residential housing. If home prices rise, that may cause rents to go up, which would cause owners' equivalent rent and hence inflation to rise. More broadly, there can be a "wealth effect" on consumption when owners of assets, such as stocks, that have risen in value decide to spend more in response to their newfound wealth, which can add to inflationary pressures.

Potential Causes of Current Inflation

The fact that high inflation has persisted ultimately indicates a mismatch between aggregate supply and aggregate demand in the economy, as described above. In the case of current inflation, the roots of inflation can be found in the specific supply disruptions caused by the sudden and widespread changes in consumer behavior, spread of the virus, and mandated restrictions. However, once inflation became widespread throughout goods and services in the economy, the concept of supply disruptions as the sole cause of inflation was no longer a convincing one. Supply disruptions cause relative price changes: When all prices are rising simultaneously and persistently, it indicates that current demand is too high relative to current supply—regardless of whether current supply is constrained.[47] While supply constraints remain in the economy, stimulative monetary and fiscal policy also remain, although both have been tightened in recent months. This section discusses both why inflation started rising in 2021 and why it continues to be high in 2022.

Roots in Pandemic Disruptions

The pandemic initially caused reductions in both aggregate supply and aggregate demand that were larger and more sudden than the economy had experienced before.[48] Fears of the virus and social distancing measures resulted in decreased spending[49] and increased unemployment,[50] resulting in a negative shock to aggregate demand. On the supply side, disruptions to the production process—owing to health constraints on operations and workers, capacity limits on

[46] It is not based on house prices or mortgage payments, which determine what homeowners actually pay out of pocket for their housing costs. It is imputed using actual rents of similar rented properties.

[47] See Adam Hale Shapiro, *Decomposing Supply and Demand Driven Inflation*, September 22, 2022, Federal Reserve Bank of San Francisco, https://www.frbsf.org/wp-content/uploads/sites/4/wp2022-18.pdf; Julian di Giovanni, "How Much Did Supply Constraints Boost U.S. Inflation?," Federal Reserve Bank of New York, August 24, 2022, https://libertystreeteconomics.newyorkfed.org/2022/08/how-much-did-supply-constraints-boost-u-s-inflation/.

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

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

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

customers, and prohibitions on attendance at certain activities[51]—contributed to a negative supply shock as well.

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.[52] 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.[53]

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 in the winter of 2021-2022, including to flights and passenger rail.[54] 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.[55] 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.[56]

These earlier disruptions are still affecting the economy today in ways that are contributing to high inflation. Earlier shutdowns and shifts in demand led to extremely large layoffs in certain industries, such as the leisure and hospitality industry, and spikes in demand in other areas, such as consumer durables, that could not be easily met. After those shutdowns ended and demand began recovering, businesses were unable to quickly ramp their production and workforces back up, causing labor and supply chain shortages that continue to the present.

Although the economy has become less affected by the pandemic, supply and demand continue 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 with the help of fiscal and monetary stimulus (discussed in the next section), but supply has remained constrained by COVID-19-related problems (see the section below entitled "Supply Disruptions in 2022") and low labor force participation (see the section below entitled "The Post-Pandemic Labor Market").

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[51] See, for example, Brent Meyer and 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/-/media/documents/research/publications/policy-hub/2022/03/22/03—impact-of-pandemic-on-us-businesses—new-results-from-annual-business-survey.pdf.

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

[53] 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.

[54] 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/.

[55] BLS, *Absences from Work*, https://www.bls.gov/cps/absences.htm. Census also collects data in its experimental Pulse survey 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 to COVID. See U.S. Census Bureau, "Household Pulse Survey Data Tables," Employment Table 3, https://www.census.gov/programs-surveys/household-pulse-survey/data.html.

[56] BLS, "2.5 Million Unable to Work in March 2022 Because Employer Closed or Lost Business Due to COVID-19," 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.

Fiscal and Monetary Stimulus in the Pandemic

In response to the pandemic and subsequent 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 and was not inflationary at that point, because the economy was well below full employment. However, continued stimulus—both fiscal and monetary policy remain expansionary, although to a lesser degree than early in the pandemic—may be contributing to the mismatch between supply and demand. Fiscal and monetary policy are expected to continue to provide less stimulus to the economy, but not return to a neutral or contractionary stance, in 2022.

Stimulus is not always inflationary, but stimulus can lead to high inflation if it causes the economy to overheat. Stimulus helped stabilize an economy where output fell by about one-third in the first half of 2020 without causing inflation to rise. But now that the economy is at full employment and prices have been rising, expansionary fiscal and monetary policy may be exacerbating the rise in prices.

Fiscal Policy

In FY2020 and FY2021, Congress passed several laws to provide economic stimulus and assistance to the American people, including 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, P.L. 116-136) Act; the Paycheck Protection Program and Health Care Enhancement Act (P.L. 116-139); the Consolidated Appropriations Act, 2021 (P.L. 116-260); and ARPA (P.L. 117-2).[57]

The easiest way to gauge the size of the fiscal stimulus is through its effect on the budget deficit.[58] Deficit-financed government spending on goods and services boost total spending directly. Deficit-financed tax cuts or transfers to individuals (which is recorded as government spending) boosts their income, inducing private spending.[59] Based on Congressional Budget Office (CBO) data (shown below in **Table 1**), the stimulus acts increased projected deficits by roughly a combined $2.3 trillion in FY2020 (of which $1.6 trillion is attributable to the CARES Act), $2.6 trillion in FY2021 (of which $1.2 trillion is attributed to ARPA), and $0.6 trillion in FY2022 (mostly attributed to ARPA).[60]

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[57] The Infrastructure Investment and Jobs Act (P.L. 117-58) was enacted in November 2021 but had little short-term stimulative effect, because its outlays will occur mostly in future years. See CBO, *Senate Amendment 2137 to H.R. 3684, the Infrastructure Investment and Jobs Act*, Cost Estimate, August 5, 2021, at 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.

[58] 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.

[59] In economic theory, an increase in government spending would need to be deficit financed to have a significant stimulative effect. If it were offset by higher taxes or reductions in other spending, that would offset most or all of its stimulative effect.

[60] See CBO, The Budgetary Effects of Laws Enacted in Response to the 2020 Coronavirus Pandemic, March and April 2020, June 16, 2020, at https://www.cbo.gov/publication/56403; 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; CBO, Preliminary Estimate of the Effects of H.R. 748, the CARES Act, P.L. 116-136, Revised, with Corrections to the Revenue Effect of the Employee Retention Credit and to the Modification of a Limitation on Losses for Taxpayers Other Than Corporations, April 27, 2020, https://www.cbo.gov/system/files/2020-04/hr748.pdf; CBO, Estimated Budgetary Effects of H.R. 1319, American Rescue Plan Act of 2021, https://www.cbo.gov/system/files/2021-03/

Table 1. Timing of Fiscal Stimulus

trillions of dollars

	FY2020	FY2021	FY2022	10-Year Total	Debt Service Included?
FY2020 Legislation	$2.3	$0.6	-$0.08	$2.8	Yes
Divisions M and N of the CAA	$0	$0.8	$0.07	$0.9	No
ARPA	$0	$1.2	$0.5	$1.9	No
Total	**$2.3**	**$2.6**	**$0.5**	**$5.6**	

Source: CRS calculations using CBO data.

Notes: See text for details of stimulus legislation. Negative numbers reduce the deficit. CAA = Consolidated Appropriations Act, 2021.

As a result of this fiscal stimulus and the decline in economic activity,[61] FY2020 and FY2021 budget deficits were unusually large by historical standards. 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).[62] These were the largest deficits as a share of GDP since World War II, as shown in **Figure 4**.

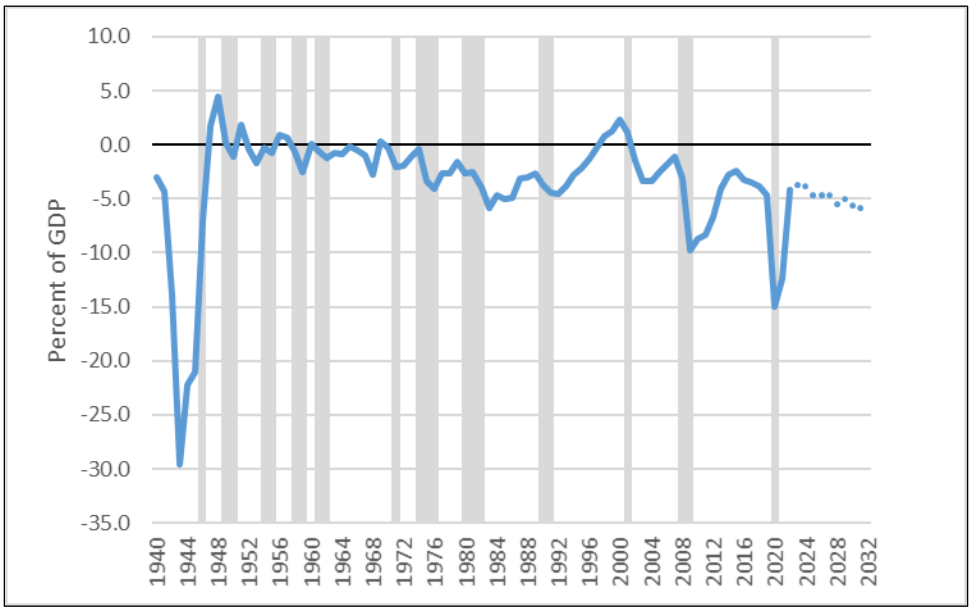
Estimated_Budgetary_Effects_of_HR_1319_as_passed_0.pdf; CBO, Summary Estimate for Divisions M Through FF H.R. 133, Consolidated Appropriations Act, 2021, January 14, 2021, https://www.cbo.gov/system/files/2021-01/PL_116-260_Summary.pdf; and CBO, The Budget and Economic Outlook: 2022 to 2032, May 2022, https://www.cbo.gov/system/files/2022-05/57950-Outlook.pdf.

[61] 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."

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

Figure 4. Deficit-to-GDP Ratio

FY1940-FY2032



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

Notes: Data for FY2022-FY2032 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 had expired or been exhausted by FY2022. 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.[63] In other words, deficits are still large by historical standards but have been shrinking, providing less support to overall demand. Nonetheless, fiscal policy is still expansionary and therefore continues to put upward pressure on 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.[64]

The extent to which current inflation can be tied specifically to pandemic stimulus is not agreed upon.[65] The initial COVID response, including the CARES Act (which had the largest budgetary impact), occurred when inflation was falling and the economy was in freefall. Given that much of the spending and revenue reductions in the FY2020 legislation was projected to be spent in FY2020 (see **Table 1**), when inflation was still low, it is not likely that those acts would still be causing inflation. By contrast, ARPA was enacted about halfway through FY2021 and had its main budgetary effects in that fiscal year and FY2022. Combined with the remaining stimulus from earlier bills, a total of $2.6 trillion in stimulus was projected to be delivered in FY2021 (of

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

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

[65] For a working paper finding relatively large effects of fiscal policy on inflation, see Francois de Soyres, Ana Maria Santacreu, and Henry Young, *Demand-Supply Imbalance During the Covid-19 Pandemic: The Role of Fiscal Policy*, International Finance Discussion Papers Number 1353, August 2022, https://www.federalreserve.gov/econres/ifdp/files/ifdp1353.pdf.

which at least $1.2 trillion was delivered in the second half of the year through ARPA) and an additional $0.5 trillion in FY2022, whereas inflation started rising about halfway through FY2021 and continued to rise in FY2022. (CBO does not provide a breakdown of which months the projected budgetary effects occur within the fiscal year.[66]) In short, fiscal stimulus was large enough to have a significant effect on demand in FY2021, although much of it may have occurred before inflation started rising. Stimulus in FY2022 was smaller and so would have had a smaller effect on demand, although inflation may have been more sensitive to changes in demand at that point.

Economists and policymakers have debated ARPA's contribution to inflation, among other things. Proponents of the law said that the stimulus was necessary for the economy to fully recover from COVID-19, while skeptics expressed concern that it was too large relative to the output gap at the time and would therefore increase aggregate demand too much, causing inflation.[67] Indeed, as discussed above, after the passage of ARPA, inflation did rise, giving credence to the argument that it would boost aggregate demand by more than aggregate supply could keep up with.[68] The question remains, after the initial outlay, whether ARPA has continued to cause inflation. CBO projected that ARPA would continue to increase deficits through FY2025 (and decrease them thereafter), so, in theory, that deficit spending could be contributing to increased demand, exacerbating the current inflation problem. However, given that the effects on deficits decrease each fiscal year and are small after FY2022, these projections also indicate that ARPA should likely have a decreasing effect on inflation over time.[69]

Relatedly, some have pointed to large increases in government transfers included in pandemic relief legislation as potentially causing inflation to rise.[70] Notably, the three rounds of economic impact payments (popularly called "stimulus checks") contributed notably to increases in personal income. (These payments represented 12.3%, 7.7%, and 16.7% of total personal income

[66] BEA provides data on the effects of pandemic-relief income transfers on personal income, which were a major category of pandemic fiscal stimulus. Its data shows most transfers occurring in the first quarter of 2021 (of which the largest category was Economic Impact Payments) and dropping off steeply after that. However, such transfers were lower in the first quarter of 2021 than in the last quarter of 2020, so personal disposable income declined in the first quarter. See BEA, *Effects of Selected Federal Pandemic Response Programs on Personal Income, 2022Q2 Advance*, July 28, 2022, https://www.bea.gov/recovery.

[67] The difference between actual and potential GDP is known as the output gap. See, for example, Lawrence H. Summers, "The Biden Stimulus Is Admirably Ambitious. But It Brings Some Big Risks, Too," *Washington Post*, February 4, 2021, https://www.washingtonpost.com/opinions/2021/02/04/larry-summers-biden-covid-stimulus/; Olivier Blanchard, "In Defense of Concerns over the $1.9 Trillion Relief Plan," Peterson Institute for International Economics, February 18, 2021, https://www.piie.com/blogs/realtime-economic-issues-watch/defense-concerns-over-19-trillion-relief-plan; and Jason Furman, "Why Did (Almost) No One See the Inflation Coming?," *Intereconomics*, vol. 57, no. 2 (2022), pp. 79-86, https://www.intereconomics.eu/contents/year/2022/number/2/article/why-did-almost-no-one-see-the-inflation-coming.html. The IMF projected that if the American Rescue Plan, American Jobs Plan, and American Families Plan had all been enacted, inflation would have risen from below 2% to above 3% in 2021 before falling below 3% in 2022. The IMF also projected that GDP would be higher and unemployment would be lower. IMF, *United States 2021 Article IV Consultation—Press Release*, https://www.imf.org/en/Publications/CR/Issues/2021/07/22/United-States-2021-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-462540.

[68] Regis Barnichon, Luiz E. Oliveira, and Adam H. Shapiro, "Is the American Rescue Plan Taking Us Back to the '60s?," Federal Reserve Bank of San Francisco, October 18, 2021, https://www.frbsf.org/economic-research/publications/economic-letter/2021/october/is-american-rescue-plan-taking-us-back-to-1960s/.

[69] CBO, *Estimated Budgetary Effects of H.R. 1319, American Rescue Plan Act of 2021*, https://www.cbo.gov/system/files/2021-03/Estimated_Budgetary_Effects_of_HR_1319_as_passed_0.pdf.

[70] Òscar Jordà et al., "Why Is U.S. Inflation Higher Than in Other Countries?," Federal Reserve Bank of San Francisco, March 28, 2022, https://www.frbsf.org/economic-research/publications/economic-letter/2022/march/why-is-us-inflation-higher-than-in-other-countries/.

in April 2020, January 2021, and March 2021, respectively.[71]) As a result, personal income exceeded its pre-pandemic trend beginning in April 2020, although GDP was still far below trend at that point. The three rounds of payment were all one-time transfers, and therefore the effects on income dropped off quickly, however. Furthermore, inflation did not begin to rise in earnest until March 2021, meaning that only the last of these transfers occurred when inflation was high.

If these transfers were spent when they were received, they would not have any effect on inflation after the fact when inflation was high. But the personal income growth during the pandemic was also associated with an unprecedented increase in the personal saving rate, reaching 34% in April 2020. While the saving rate subsequently returned to pre-pandemic levels, households amassed a large stock of savings during the pandemic. The difference between that savings and a baseline of what would have been saved in the absence of the pandemic can be thought of as excess savings. If that excess savings was drawn down once the health situation improved, it could be contributing to inflation after the fact. For example, households may be temporarily consuming (at above-trend rates) certain goods or services, such as personal travel, that were forgone in the early stages of the pandemic. How large this effect might be is uncertain. Estimates of excess savings range between $2.2 trillion and $2.7 trillion.[72] Most of this excess savings is estimated to be held by higher-income households with lower spending propensities, leaving it unclear if this glut of savings will contribute to inflationary pressures moving forward.[73]

Monetary Policy

The Fed has a statutory mandate to achieve maximum employment and stable prices, which it defines as 2% inflation as measured by the PCE. It provides monetary stimulus when employment or prices are below their mandated goals and tightens policy when they are higher. When the pandemic first hit, the unemployment rate spiked and the economy experienced some month-over-month deflation, spurring the Fed to quickly provide monetary stimulus.

The Fed provided monetary stimulus in the spring of 2020 by lowering the 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.[74] As a 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 before the Fed started reducing it in

[71] For related data, see BEA, *Personal Income and Outlays*, https://www.bea.gov/data/income-saving/personal-income.

[72] A TD Economics report estimates this stock of excess savings at $2.7 trillion. See Maria Solovieva, *Where the Road of Excess [Saving] Leads*, TD Economics, September 16, 2021, https://economics.td.com/us-excess-savings. A Goldman Sachs newsletter estimates that this excess saving is being held predominantly in bank accounts—which can easily be spent at any time—as opposed to less liquid investments or having been used to pay down household debt. See Joseph Briggs, "The Good and the Bad About the Consumer Spending Outlook," Goldman Sachs, *U.S. Economics Analyst*, March 20, 2022. A Brookings study puts excess saving at $2.5 trillion and also finds that it is being held predominantly in bank accounts. See 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.

[73] Joseph Briggs, "The Growth Boost from Excess Savings Is Probably Mostly Behind Us," Goldman Sachs, *U.S. Daily*, August 16, 2022.

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

June 2022.[75] Thus, the Fed continued to add extraordinary stimulus and liquidity to the economy even as economic conditions significantly improved.

As the economy improved, the Fed waited unusually long to begin withdrawing monetary stimulus that was historically large. 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. The Fed began a series of increases in the FFR target on March 16, 2022—the first time that rates were raised above the zero range since the onset of the pandemic. The Fed began gradually reducing the size of its balance sheet in June 2022.

The decision to not begin withdrawing stimulus until March 2022 in reaction to inflation that was already above its 2% target underlines how its strategy for achieving price stability has changed. From the 1980s to the financial crisis, the Fed's strategy for achieving price stability was to tighten monetary policy preemptively *before* higher inflation had emerged. It believed that this was necessary because of lags in the time it took for a change in monetary policy to affect inflation and in order to keep inflationary expectations contained. Now, the Fed decided to wait until *after* higher inflation had proven to be persistent to raise rates.

The decision to wait until March 2022 to start withdrawing stimulus had at least three motivations. First, the Fed did not want to jeopardize the fledgling recovery. Second, it initially believed that inflation was caused by supply disruptions that would prove transitory. Finally, it reflected a strategy announced in 2020 to achieve an average inflation target of 2% that features periods of above 2% inflation to compensate for periods of below 2% inflation. Because inflation was below 2% by the Fed's preferred measure (PCE) in most years since the 2007-2009 financial crisis, the Fed saw a period of inflation modestly above 2% as desirable to help break the cycle of persistently low inflation. As part of this strategy, the Fed also stated that it would no longer tighten monetary policy in response to unemployment that was below the natural rate.[76] Through December 2021, when the unemployment rate was 3.9%, the Fed stated that it did not intend to raise interest rates above zero "until labor market conditions have reached levels consistent with the committee's assessments of maximum."[77]

While the Fed was focused on risks to withdrawing stimulus too soon, there were also risks of waiting too long that are now making it harder to control inflation today. Arguably, inflation had become embedded in the economy before the Fed decided to start withdrawing stimulus. While expectations of inflation in five years are fairly stable (the median five-year ahead expected inflation rate was 2.35% in July 2022), one-year expectations remain high (at 6.2% in July 2022),[78] which could signal that lowering inflation might prove challenging in the short term (and costly if Fed actions result in a recession). If individuals stop believing that the Fed is committed to low inflation, it makes it harder for the Fed to achieve low inflation, because it keeps inflationary expectations anchored.

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

[76] Federal Reserve, "Review of Monetary Policy Strategy, Tools, and Communications," https://www.federalreserve.gov/monetarypolicy/review-of-monetary-policy-strategy-tools-and-communications.htm.

[77] Federal Reserve, *Federal Reserve Issues FOMC Statement*, press release, December 15, 2021, https://www.federalreserve.gov/monetarypolicy/files/monetary20211215a1.pdf.

[78] Federal Reserve Bank of New York, *Survey of Consumer Expectations*, https://www.newyorkfed.org/microeconomics/sce#/.

Money Supply Growth and Inflation

Some commentators attribute high inflation to monetary policy based on a "monetarist" explanation of inflation—that inflation rises when the money supply persistently and significantly outpaces the demand for money. The Fed's policies during the pandemic have been mostly financed by a rapid increase in the monetary base (currency and bank reserves), notably its monthly purchases of Treasury securities and mortgage-backed securities until March 2022. Increases in the monetary base can lead to increases in the broader money supply, and one measure of the money supply (M2) increased 27% from February 2020 to February 2021 and an additional 11% in the 12 months after that. Since then, the growth rate of M2 has been around its historical average.[79] However, rapid increases in the money supply (albeit not as rapid as the growth between February and May 2020) did not result in higher inflation during the Great Recession, and the Fed has introduced new tools, such as paying interest on bank reserves and the Overnight Reverse Repurchase Agreement Facility, to contain inflationary pressures caused by growth in the monetary base.[80] In the Fed's view, the growth in the money supply to date has few implications for inflation.[81]

Supply Disruptions in 2022

As mentioned above, the pandemic has disrupted the production of many goods and services. Various indicators show a surge in labor shortages, supply shortages, and logistic/transport constraints causing U.S. manufacturers to operate below capacity.[82] Although those disruptions have greatly waned since spring 2020, some continue to constrain production, exacerbating inflationary pressures. In 2021, 60% of small businesses surveyed reported supply chain issues to be one of their top operational challenges.[83] The belief that supply disruptions would prove transitory did not come to fruition, as in 2022 alone, supply has been constrained by ongoing labor shortages (discussed in the next section), temporary business disruptions linked to COVID-19 outbreaks, and commodity shortages linked to the 2022 Russian invasion of Ukraine.

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.

Supply chains are global, and a product can pass through several countries before reaching the United States.[84] 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

[79] M1, a narrower measure of the money supply, cannot be used over this time period, because a definitional change to include savings accounts caused it to quadruple.

[80] The Fed's goal in expanding the monetary base was to put downward pressure on interest rates and, in the spring of 2020, prevent a liquidity crisis by flooding the financial system with liquidity. It does not assess its policies based on their effect on the money supply.

[81] Federal Reserve, *Historical Approaches to Monetary Policy*, https://www.federalreserve.gov/monetarypolicy/historical-approaches-to-monetary-policy.htm.

[82] Federal Reserve, *Monetary Policy Report*, June 2022, p. 8, https://www.federalreserve.gov/monetarypolicy/files/20220617_mprfullreport.pdf.

[83] Federal Reserve, *Small Business Credit Survey*, 2022, https://www.fedsmallbusiness.org/medialibrary/FedSmallBusiness/files/2021/2022-sbcs-employer-firms-report.

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

occurred in the United States. Global supply chain disruptions have improved significantly since peaking in December 2021 but remain higher than at any period before the pandemic.[85]

Shipping and U.S. port disruptions have also caused delays in imports arriving and being processed in the United States.[86] This could raise the cost of imports, which could feed through to overall inflation.[87] After falling early in the pandemic, import prices have risen more quickly than overall inflation has (13.2% compared to 8.9% in the second quarter of 2022).[88]

The complexity of global supply chains has led to unexpected problems—for example, disruptions in semiconductor (microprocessor) production. With the proliferation of smart devices, microchips are now found in numerous types of consumer goods, including household appliances and vehicles. As a result, supply disruptions have emerged across a range of products. For example, microchip shortages contributed to a 2.3 million shortfall in new automobiles produced in 2021 in North America, because each automobile contains an average of 298 semiconductors.[89] As a result, demand for new automobiles outpaced supply, causing a spillover into the used auto market, and 12-month inflation peaked at 45% for used automobiles in June 2021 and 13% for new automobiles in April 2022. Disruptions have since eased somewhat, with used auto prices declining (but still above pre-pandemic prices) in 2022. New auto prices have continued to rise rapidly in 2022, however.

The 2022 Russian invasion of Ukraine has resulted in a new set of supply shocks, increasing the world prices of energy and certain foods, metals, and other commodities and disrupting trade patterns.[90] While the war continues, some of the initial supply shocks have had lessening effects on inflation over time and could eventually become deflationary if they continue to fall. For example, after spiking in the immediate aftermath of the invasion, gas prices fell by 7.7% in July 2022 and 10.6% in August 2022.[91] Nonetheless, this conflict may still result in relatively long-lasting supply shocks that complicate efforts to achieve low inflation and full employment.[92]

Individual supply disruptions, supply shocks, and bottlenecks are, by their nature, likely to be temporary and therefore would cause only a temporary increase in inflation. Many specific problems have already shown improvement. A close look at the price of any one good or service

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[85] See Federal Reserve Bank of New York, "Global Supply Chain Pressure Index," https://www.newyorkfed.org/research/policy/gscpi#/interactive. Their series starts in 1998.

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

[87] Maggie Isaacson and Hannah Rubinton, *Shipping Prices and Import Price Inflation*, Federal Reserve Bank of St. Louis, August 2022, https://doi.org/10.20955/wp.2022.017.

[88] BEA, *Gross Domestic Product (Second Estimate), Corporate Profits (Preliminary Estimate), Second Quarter 2022*, August 25, 2022, https://www.bea.gov/sites/default/files/2022-08/gdp2q22_2nd.pdf.

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

[90] Of note, the CPI 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.

[91] BLS, *Consumer Price Index Summary*, August 10, 2022, https://www.bls.gov/news.release/cpi.nr0.htm.

[92] Initial estimates of the effects of the Russian invasion of Ukraine vary. The Organisation for Economic Co-operation and Development (OECD) projected that if the supply shocks lasted for one year, they would 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. See OECD, "Economic and Social Impacts and Policy Implications of the War in Ukraine," March 2022, https://www.oecd.org/economic-outlook/#gdp-inflation-impact. Other research from the Federal Reserve suggests that, compared to a scenario in which the invasion did not take place, the war may reduce the level of global GDP about 1.5% and increase global inflation by about 1.3 percentage points. See Dario Caldara et al., "The Effect of the War in Ukraine on Global Activity and Inflation," *FEDS Notes*, May 27, 2022, https://www.federalreserve.gov/econres/notes/feds-notes/the-effect-of-the-war-in-ukraine-on-global-activity-and-inflation-20220527.htm.

tends to be explainable by certain unique factors. But nearly every major category in the CPI has shown an above-average increase at some point. When added together, these various factors that are ubiquitous and persistent indicate that in the aggregate they are actually being driven by a supply-demand imbalance and point to a more general and longer lasting overheating of the economy.

The Post-Pandemic Labor Market

Another sign of the current supply-demand imbalance in the economy is the tight labor market and labor shortages. Labor demand is high—employment has increased at a rapid pace in all but one month since May 2020—yet employers are still unable to fill job openings and retain employees at a more historically normal rate. Their struggles are caused in part because the labor supply is low by historical standards. As of July 2022, the unemployment rate and level of payroll employment had returned to pre-pandemic levels.[93] However, as a percentage of the population, both employment and labor force participation are still lagging, resulting in a relatively smaller labor force than before the pandemic began.

Ultimately, 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), which is the percentage of the working-age population that is either working (employed) or actively looking for work (unemployed). 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 62.1% as of July 2022, 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. However, the likelihood of this occurring is highly uncertain. For example, much of the decline is driven by retirements, which for many workers is a permanent decision, so it is uncertain if many older workers will reenter the labor force.[94] Worryingly, the LFPR has shown no upward trend in 2022 despite the booming job 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, has resulted in a tight labor market.[95] The job openings rate and worker quits rate additionally both remain considerably elevated compared to pre-pandemic rates and significantly higher than when unemployment reached lows in 2000, 2007, and 2020.[96] As of June 2022, the job openings rate was 6.6%, and the

[93] BLS, *Employment Situation Summary*, August 5, 2022, https://www.bls.gov/news.release/empsit.nr0.htm.

[94] A recent Goldman Sachs newsletter attributed 1.9 million of the labor force shortfall to retirements and 1.4 million to workers under age 55. David Mericle, "Taming Inflation Without a Recession: A Progress Report," Goldman Sachs, August 14, 2022, https://publishing.gs.com/content/research/en/reports/2022/08/15/85315ba4-5859-41ea-b7d7-cf2a654d4fda.html.

[95] 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.

[96] 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.

quits rate was 2.8%, compared, respectively, to 4.4% and 2.3% in February 2020.[97] Since May 2021, there has been more than one job opening per unemployed worker, as shown in **Figure 5**. In 2021, 60% of small businesses surveyed reported hiring or retaining qualified employees to be one of their top operational challenges.[98]

Figure 5. Job Openings vs. Workers

January 2019 to June 2022

Source: Bureau of Labor Statistics, Current Population Survey and Job Openings and Labor Turnover Survey.

Notes: Data are seasonally adjusted.

Labor market tightness may be contributing to inflationary pressures. Some commentators have warned of a "wage-price spiral."[99] Wage growth has accelerated since 2021 but to date has been lower than overall inflation (although wage growth has been notably stronger than average for periods in certain industries such as leisure and hospitality). For example, the Federal Reserve Bank of Atlanta wage growth tracker reached its highest growth rate since data was first collected in 1997 (6.7% for the three-month average for June 2022), but that is still lower than the PCE for June (6.8%).[100] 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. In that regard, the recent decline in productivity growth could be problematic if it continues. Labor productivity has declined in three of the past four quarters.

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

[98] Federal Reserve, *Small Business Credit Survey*, 2022, https://www.fedsmallbusiness.org/medialibrary/FedSmallBusiness/files/2021/2022-sbcs-employer-firms-report.

[99] For example, a recent BIS paper discusses the potential for a wage-price spiral and several factors affecting the likelihood of such an event, including the relatively low current correlation between wage growth and inflation, declines in bargaining power and cost-of-living-adjustment coverage, increases in pricing power on the part of firms, and increasing inflation expectations. See Frederic Boissay et al., "Are Major Advanced Economies on the Verge of a Wage-Price Spiral?," *BIS Bulletin*, vol. 53 (May 4, 2022), https://www.bis.org/publ/bisbull53.pdf.

[100] 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.

Demand in 2022

If high inflation is attributable to a supply-demand imbalance, how much of that imbalance is being caused by rising demand? Several indicators suggest that aggregate demand bounced back strongly after collapsing during the onset of the pandemic. A large part of that aggregate demand recovery was due to a bounce back in private demand, some of which may still be occurring. As the economy reopened and health restrictions were removed, real final sales to private domestic purchasers (i.e., spending by U.S. businesses and households) grew at an annualized rate of almost 17% from the third quarter of 2020 through the second quarter of 2021. Much of this represented "catch up" growth after the large decline in output in the second quarter of 2020. As discussed above, personal income and personal saving rose during the pandemic as a result of fiscal stimulus, which created pent-up demand that was later released when economic conditions normalized and households could spend on a full range of goods and services again. Spending was also stimulated by low interest rates, as discussed above. It is difficult to disentangle how much of private demand growth was spurred by fiscal and monetary stimulus compared to growth that occurred independently because of the rebound in economic prospects and sentiment.

Since that catch up growth was completed, real final sales growth has averaged less than 2% over the past four quarters. This slowdown is seen across consumption and investment categories, with the exception of spending on services, which continues to grow rapidly, as it was the last category to rebound from the pandemic due to social distancing. In the second quarter of 2022, real final sales to private domestic purchasers grew at 0.5%, which may indicate that the removal of fiscal and monetary stimulus and deteriorating consumer and business confidence are starting to weigh on spending. The most interest-sensitive categories of spending—consumer durables, business fixed investment, and residential investment—all declined in the second quarter of 2022. If demand is cooling, it may begin to relieve inflationary pressures, assuming that inflationary expectations have not become unmoored and the economy does not experience further supply shocks.

The interaction of demand and inflation can be seen when comparing real to nominal data—nominal final sales to private domestic purchasers has continued to grow rapidly in the past four quarters, averaging almost 9% annualized. In other words, U.S. households and businesses have continued to increase spending at a rapid rate over the past four quarters, but inflation has reduced their purchasing power.

How quickly reduced demand can translate into lower inflation depends in part on how much the economy has "overheated," which can be measured in terms of how much the economy overshot potential GDP (i.e., how much the economy is capable of producing at full employment). This is hard to ascertain, because it is difficult to determine how much the pandemic might have reduced potential GDP and how long it would take for potential GDP to recover from pandemic disruptions.[101] If potential GDP had been unaffected by the pandemic, it would not appear that GDP had risen enough to cause significant overheating. The fact that the economy nonetheless seems to have overheated suggests that potential GDP may have reduced. In terms of the labor market, the historically low unemployment rate coupled with the decades-low LFPR (as discussed above) would also indicate overheating in the presence of reduced potential.

[101] John Fernald and Huiyu Li, "The Impact of COVID on Productivity and Potential Output," Federal Reserve Bank of San Francisco, September 2022, https://doi.org/10.24148/wp2022-19.

Policy Options for Congress

Given that inflation results from an imbalance between aggregate supply and aggregate demand, ultimately the two ways to rein in inflation through policy are to increase aggregate supply or decrease aggregate demand (or a combination of both). Aggregate demand is generally easier to adjust in the short term than is aggregate supply. For this reason, historically, the most effective policy tool to combat inflation has been monetary policy, specifically increasing interest rates. In the words of Fed Chair Powell, "The first lesson [from the history of inflation] is that central banks can and should take responsibility for delivering low and stable inflation."[102] However, fiscal policy can also lower aggregate demand by decreasing the budget deficit. Monetary policy can typically be enacted much more quickly than fiscal policy can, allowing the Fed to raise interest rates whenever it chooses. However, interest rates are a fairly blunt tool, and their use to control inflation in the past has often resulted in recession. The fact that inflationary problems are partly caused by supply shocks that reduce output (relative to trend) unfortunately means that policies that try to offset the reduction in growth and income can inadvertently make inflation worse. This section reviews policy options and considerations from the perspective of economic theory and current conditions. The success of historical policies aimed at lowering inflation is also discussed. One theme of this review is that, as economic theory would predict, policies that do not or cannot reduce supply-demand imbalances have either failed to reduce inflation or only temporarily restrained price pressures, which then caused a surge in inflation when the policies were lifted.

Removing Fiscal and Monetary Stimulus

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, policy remains stimulative at present.[103] Although the removal of fiscal and monetary stimulus has already begun, the decision to "wait and see" rather than tighten when inflation first emerged in 2021 meant that the remaining monetary stimulus will not be removed until at least 2023 and the budget deficit remains relatively large under current policy.

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.

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. Once expectations incorporate higher inflation as permanent,

[102] Jerome H. Powell, Chair, Federal Reserve, "Monetary Policy and Price Stability," August 26, 2022, https://www.federalreserve.gov/newsevents/speech/powell20220826a.htm.

[103] 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.

inflation would be expected to stay high even if the economy were no longer growing rapidly and unemployment were not unusually low.

The recently enacted Inflation Reduction Act (P.L. 117-2) is aimed at reducing inflation by reducing budget deficits, among other goals. CBO projected that under an earlier version of the bill, "In calendar year 2022, enacting the bill would have a negligible effect on inflation, in CBO's assessment. In calendar year 2023, inflation would probably be between 0.1 percentage point lower and 0.1 percentage point higher under the bill than it would be under current law."[104] That is because, in part, the earlier bill's effect on the deficit in 2022 and 2023 was small relative to GDP, although according to CBO, the bill was expected to reduce deficits over the 2022-2031 period.[105]

This points to the challenge of addressing inflation using fiscal policy: Economic models suggest that very large changes in short-term deficits are needed to generate significant reductions in inflation. For that reason, the mainstream consensus among economists is that fiscal policy takes a secondary role to monetary policy in achieving price stability. Monetary policy changes can be made more quickly and precisely than fiscal policy changes can (in theory and practice) and have a more direct relationship with inflation, as 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

Since the Fed began raising interest rates and stopped purchasing assets in March 2022, monetary policy has become less stimulative, but it nevertheless remains highly stimulative at present. The Fed waited longer than usual after a recession to start tightening and waited to raise rates until it had very gradually phased out asset purchases. As a result, to move to a neutral or contractionary monetary stance, it must now first make up lost ground.[106] The Fed started its planned gradual reduction in its $8.9 trillion balance sheet in June, but liquidity will likely remain abundant for some time. Meanwhile, by historical standards, interest rates remain unusually low.

After adjusting for inflation, 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. In fact, as inflation rose, real rates became more negative and thus more expansionary through March 2022, as economic activity is generally influenced by real rates. Since then, rates have risen but remain negative. Because inflation varies by measure, the size of the difference between nominal interest rates and real interest rates today depends on the measure used. If inflation (as measured by PCE) stays at 6%, with a FFR of 3% currently, the real rate would be -3%. Alternatively, if inflation for the year meets the Fed's projection of 5.5%, then the real rate would currently be -2.5%.[107]

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

[104] CBO, *Letter to Honorable Lindsey Graham*, August 4, 2022, https://www.budget.senate.gov/imo/media/doc/58357-Graham.pdf.

[105] CBO, *Estimated Budgetary Effects of H.R. 5376, the Inflation Reduction Act of 2022, as Amended in the Nature of a Substitute (ERN22335) and Posted on the Website of the Senate Majority Leader on July 27, 2022*, August 5, 2022, https://www.cbo.gov/system/files/2022-08/hr5376_IR_Act_8-3-22.pdf. To date, CBO has not provided a budget estimate of the version of the bill that was signed into law.

[106] See CRS Insight IN11868, *The Federal Reserve and Inflation*, by Marc Labonte.

[107] Federal Open Market Committee, *Summary of Economic Projections*, June 15, 2022, https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20220615.pdf.

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.[108] One well-known estimate has it falling to around 0.5% during the pandemic.[109] Using the inflation assumptions above, the Fed would need to raise interest rates from 2.3% 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% to 9.0% if the neutral rate returned to 2% as pandemic-related factors waned.[110] If contractionary policy is needed instead to reduce inflation, interest rates 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 at the end of 2022 and almost 2% at the end of 2023. In other words, Fed officials believe monetary policy should still be stimulative—but less so than it is today—through 2022. Although monetary policy would remain stimulative in this projection, they project that this will cause inflation to fall to a range of 2.4% to 4.1% in 2023 with little increase in unemployment—the "soft landing" scenario.[111] Critics have questioned how the Fed expects inflation to fall so quickly without a sizable increase in unemployment.[112] 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 now could lead to worse outcomes down the road.

Alternatively, 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. The Fed could also inadvertently trigger a hard landing by tightening too quickly, even if high inflation expectations are not endemic. It remains to be seen whether the Fed would be willing to continue to pursue low inflation if the economy were to return to recession. For more information, see CRS Insight IN11963, *Where Is the U.S. Economy Headed: Soft Landing, Hard Landing, or Stagflation?*, by Marc Labonte and Lida R. Weinstock.

Targeting Supply Chains

Another option for policymakers to address current inflation is to increase aggregate supply. However, policy options to alleviate supply disruptions can be ineffective at reducing inflation in the short run because they are time-consuming to implement, frequently require the private sector to respond to incentives to be successful, and, depending on how they are financed, could even make inflation worse by adding to aggregate demand.

Capacity constraints causing bottlenecks can typically be relieved through new infrastructure investments. However, by nature, those investments are long-term projects that cannot bring new

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

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

[110] Because CPI is higher than PCE, if CPI is a more accurate measure of "true" inflation, rates need to be higher than these estimates to achieve the same economic outcomes.

[111] Federal Open Market Committee, *Summary of Economic Projections*, September 21, 2022, https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20220921.pdf.

[112] Laurence Ball, Daniel Leigh, and Prachi Mishra, *Understanding U.S. Inflation During the COVID Era*, Brookings Institution, August 2022, https://www.brookings.edu/wp-content/uploads/2022/09/Ball-et-al-Conference-Draft-BPEA-FA22.pdf.

capacity on line quickly. 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.[113]

Firms with bottlenecks in production and distribution caused by labor shortages face the same hiring and retention challenges as other firms do. Reversing historically low U.S. labor force participation rates has been a challenging policy issue.[114] While COVID-related constraints on participation may have been driving much of the decrease earlier in the pandemic, at this point, much of the drop in participation is due to retirements that have traditionally proven hard to reverse.[115]

Current 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. Unfortunately, disruptions caused by the invasion could reduce growth without constraining price inflation.

The Biden Administration has implemented some targeted micro-policies and plans to alleviate supply chain bottlenecks but is limited legally in what it can do without statutory changes. For more information, see CRS Insight IN11926, *Supply Disruptions and the U.S. Economy*, by Marc Labonte and Lida R. Weinstock.

Income Relief Policies

When prices of key goods such as food or gasoline rise, policymakers sometimes suggest providing broad relief to affected households through gas tax holidays, rebates, temporary tax cuts, and so on. These proposals are sometimes made on equity grounds, which is beyond the scope of this report to evaluate. However, they disrupt market adjustment, thereby reducing economic efficiency. Price increases in the marketplace signal greater scarcity and induce a reduction in demand to adapt to that scarcity. In terms of their effect on inflation, they are doubly counterproductive—they further stimulate demand by boosting after-tax incomes and, when targeted to the product that has risen in price, they increase demand for the commodity whose price rise contributed to inflation in the first place. Since the commodity's price has risen because of increased scarcity, an increase in demand would be likely to translate largely into further price increases, because supply has already proven to be unable to increase in response to higher prices.[116]

[113] 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/.

[114] For more information, see CRS Insight IN11711, *The Post-Pandemic Labor Market and Rising Inflation*, by Lida R. Weinstock.

[115] Federal Reserve, *Monetary Policy Report*, February 25, 2022, https://www.federalreserve.gov/monetarypolicy/files/20220225_mprfullreport.pdf.

[116] For more information, see CRS Insight IN11879, *Potential Impacts of a Federal Gasoline Tax Moratorium*, by Anthony A. Cilluffo and Robert S. Kirk.

Corporate Profits

Some commentators have argued that inflation has risen in part because corporations have raised prices to increase profits.[117] (Although the debate is often framed in terms of corporate profits, it should be noted that many businesses are unincorporated.) In general, theory and evidence suggest that corporations seek to maximize profits and will charge the price that does so based on various factors. Given that corporations are typically always seeking to maximize profits, it is unclear in this explanation why they would choose to wait until inflation is high to raise prices sufficiently to increase profits and not have done so previously. Some commentators have suggested that corporations have taken advantage of the high inflation environment to raise prices more than necessary to cover increased costs while being shielded from criticism.[118]

Higher prices alone are not sufficient evidence to establish that profits have risen. Corporations could also be raising prices with no increase in profits because their inputs of labor, capital, and raw material have risen in cost because of inflation. Finally, sustained inflation represents continually rising prices, but corporations cannot continually raise prices to boost profits without reducing demand for their products, inducing competitors to undercut their sales, and so on. Thus, higher profits could potentially explain a one-time increase in prices but not the continual increase in general prices that occurs in a sustained inflationary period like the present.

Trade Liberalization

The United States and its trading partners have imposed a number of new trade barriers, such as tariffs, on each other in recent years, many of which remain in place at present.[119] Trade barriers work by raising the prices of imports, directly or indirectly, which in turn may raise the prices of import-competing goods or domestic goods and services that use imports as intermediate inputs. All of these goods and services appear in the baskets of different inflation indices, so when their prices rise, overall inflation rises, if other prices are assumed to stay constant.[120]

Conversely, reducing import barriers could theoretically reduce the prices of these goods and services. Thus, some have proposed trade liberalization as a policy option to reduce U.S. inflation.[121] As a practical matter, using trade policy to reduce inflation would be limited in size because imports are equal in value to about 16% of GDP (and so make up a limited amount of any price index basket), and tariffs and trade barriers vary by product type but are mostly low, so there are limits on potential reductions. Further, reducing trade barriers would result in only a

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[117] Josh Bivens, *Corporate Profits Have Contributed Disproportionately to Inflation. How Should Policymakers Respond?*, Economic Policy Institute, April 21, 2022, https://www.epi.org/blog/corporate-profits-have-contributed-disproportionately-to-inflation-how-should-policymakers-respond/.

[118] One study found that while increased prices in an industry are often associated with increasing corporate profits, it did not find evidence that higher inflation resulted in higher profits. See Mathias Andler and Anna Kovner, *Do Corporate Profits Increase When Inflation Increases?*, Federal Reserve Bank of New York, July 13, 2022, https://libertystreeteconomics.newyorkfed.org/2022/07/do-corporate-profits-increase-when-inflation-increases/.

[119] See CRS Report R45529, *Trump Administration Tariff Actions: Frequently Asked Questions*, coordinated by Brock R. Williams.

[120] See Mary Amiti, Sebastian Heise, and Noah Kwicklis, "The Impact of Import Tariffs on U.S. Domestic Prices," Federal Reserve Bank of New York, January 4, 2019, https://libertystreeteconomics.newyorkfed.org/2019/01/the-impact-of-import-tariffs-on-us-domestic-prices.html.

[121] Jeffrey Frankel, "How Liberalizing Economic Trade Could Reduce Inflation and Supply Chain Woes," *Los Angeles Times*, June 21, 2022, https://www.latimes.com/opinion/story/2022-06-21/trade-inflation-tariffs-supply-chain.

one-time reduction in prices, whereas current inflation can be characterized as a continual increase in prices.[122]

Harder to quantify, liberalizing trade could increase competition in domestic markets and among domestic producers. This could boost the supply side of the economy in the long run, helping to alleviate the supply-demand imbalance that is driving high inflation. For example, a Peterson Institute for International Economics study estimates that a 2 percentage point tariff-equivalent reduction would result in a one-time 1.3 percentage point reduction in CPI, comprised of a 0.2 percentage point direct effect through lower import prices and a 1.1 percentage point reduction in domestic prices through its effect on competition.[123] Although beyond the scope of this report, liberalizing trade would have other positive effects on overall economic growth and efficiency, as well as redistributive effects on different actors within the economy (i.e., there would be "winners" and "losers" from policy changes).

Historical Policies

Over the years, policymakers have taken several kinds of policy action to lower inflation, but few have ultimately proven successful. Several of the policies discussed in this section were enacted during the Great Inflation era. However, it was not until the Federal Reserve began aggressive monetary policy tightening under the leadership of Paul Volcker (1979-1987) that inflation fell and remained low. As a result, most economists credit monetary policy with ending the Great Inflation.

Price Controls

Office of Price Administration

Executive Order 8734 established the Office of Price Administration and Civilian Supply (OPACS) on April 11, 1941.[124] The title of OPACS was changed to the Office of Price Administration (OPA) by Executive Order 8875 on August 28, 1941.[125] The purpose of OPA was to stabilize prices and rents by establishing price ceilings for commodities (except agricultural commodities) and rents. Additionally OPA was authorized to implement rations and subsidies for scarce and essential commodities. OPA was abolished effective as of May 29, 1947.[126]

The effectiveness of OPA is debated.[127] Average annual inflation between 1941 and 1947 (and for a few years thereafter) was relatively high, although significantly lower than during World War I.

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[122] How quickly the tariff reduction resulted in lower consumer prices would depend on how quickly businesses passed through lower prices to consumers.

[123] Gary Clyde Hufbauer, Megan Hogan, and Yilin Wang, *For Inflation Relief, the United States Should Look to Trade Liberalization*, Peterson Institute for International Economics, March 2022, https://www.piie.com/sites/default/files/documents/pb22-4.pdf.

[124] UC Santa Barbara: The American Presidency Project, *Executive Order 8734 Establishing the Office of Price Administration and Civilian Supply*, https://www.presidency.ucsb.edu/documents/executive-order-8734-establishing-the-office-price-administration-and-civilian-supply.

[125] UC Santa Barbara: The American Presidency Project, *Executive Order 8875 Establishing the Supply Priorities and Allocations Board*, https://www.presidency.ucsb.edu/documents/executive-order-8875-establishing-the-supply-priorities-and-allocations-board.

[126] National Archives, *Records of the Office of Price Administration*, https://www.archives.gov/research/guide-fed-records/groups/188.html.

[127] Meg Jacobs, "'How About Some Meat?:' The Office of Price Administration, Consumption Politics, and State Building from the Bottom Up, 1941-1946," *Journal of American History*, vol. 84, no. 3 (December 1997), pp. 910-941,

Annual inflation was relatively low throughout most of the 1950s, although this was likely a result of a recession in the late 1940s, as opposed to actions taken by the OPA before it was abolished. Of note, during the time period in question, the Federal Reserve was working under a different context and without the congressionally mandated goal of price stability (which Congress mandated in 1977). It was not until 1951 that interest rate controls were ended and the Fed was given more freedom to control inflation via monetary policy.[128] Finally, the primary purpose of OPA was to support the war effort, which required major disruptions in economic activity. Therefore, the economic and policy context in which OPA was created is not necessarily analogous to the context of today.

Nixon-Era Controls

In an attempt to lower inflation without causing an increase in unemployment, the Nixon Administration enacted price controls. Pursuant to the Economic Stabilization Act of 1970 (P.L. 91-379),[129] which gave the President the authority to impose price controls to fight inflation, President Nixon signed Executive Order 11615 to impose a 90-day freeze on prices, rents, and earnings.[130] The controls were then extended by Executive Order 11627, which specified that the authority to stabilize rents, wages, and salaries would remain "for so long as the Economic Stabilization Act, as amended, is in effect or until such other time as the President may hereafter prescribe."[131] These controls artificially put a price ceiling on most goods and services, rents, and earnings until 1973, when the controls began to be removed in stages. While the controls were in place, inflation did fall but then spiked to double-digit rates after the controls were dismantled. During the period of prize freeze, demand grew and supply fell as consumers and producers reacted to the artificially low prices. Ultimately, this period led to pent-up demand in the economy that supply could not keep up with once the controls ended, leading to the increase in inflation.

Whip Inflation Now

During the Great Inflation era, the economy experienced several energy supply shocks, which gave rise to a series of policies aimed at rationing oil and bringing down energy prices. The energy price shocks also contributed to already high inflation during this period. In late 1974, following one of these shocks, President Ford set out on a public relations campaign to "Whip Inflation Now," known as the WIN program. The WIN program was a set of voluntary measures to encourage higher saving and lower spending, and while it initially had public support, the program was not taken up at a rate high enough to lower aggregate demand significantly.[132]

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https://www.jstor.org/stable/2953088; Andrew Bartels, "The Office of Price Administration and the Legacy of the New Deal, 1939-1946," *Public Historian*, vol. 5, no. 3 (1983), pp. 5-29, https://www.jstor.org/stable/3377026.

[128] Federal Reserve, *Overview: The History of the Federal Reserve*, https://www.federalreservehistory.org/essays/federal-reserve-history#wwii.

[129] Amended by P.L. 92-210.

[130] UC Santa Barbara: The American Presidency Project, *Executive Order 11615—Providing for Stabilization of Prices, Rents, Wages, and Salaries*, https://www.presidency.ucsb.edu/documents/executive-order-11615-providing-for-stabilization-prices-rents-wages-and-salaries.

[131] UC Santa Barbara: The American Presidency Project, *Executive Order 11627—Further Providing for the Stabilization of the Economy*, https://www.presidency.ucsb.edu/documents/executive-order-11627-further-providing-for-the-stabilization-the-economy.

[132] Amy Farber, "Historical Echoes: Whip Inflation Now … and Then," Federal Reserve Bank of New York, July 13, 2012, https://libertystreeteconomics.newyorkfed.org/2012/07/historical-echoes-whip-inflation-now-and-then/.

Humphrey-Hawkins Act

Popularly known as the Humphrey-Hawkins Act, the Full Employment and Balanced Growth Act of 1978 (P.L. 95-895) was enacted in 1978 as an amendment to the Employment Act of 1946. The Humphrey-Hawkins Act had several goals, including the reduction of inflation, provided that its reduction did not interfere with employment goals.[133] Some policy recommendations included establishing stockpiles of agricultural commodities, increasing exports, and enforcing antitrust and patent laws to improve the "economic climate" for small businesses.[134] The act set goals and a 3% or below target for inflation (with a goal of zero inflation by 1988)[135] but required additional legislative or executive actions to accomplish them, and thus the law provided no tangible measures to reduce inflation. Inflation continued to rise in 1978 and 1979, reaching an average annual inflation rate of 7.6% and 11.3% in those years as measured by the CPI and 7% and 8.8% as measured by the PCE index, respectively.[136]

Credit Controls

In 1980, under the authority of the Credit Control Act (12 U.S.C. §§1901 et seq.), President Carter enacted credit controls via Executive Order 12201.[137] The 1980 credit controls restrained spending and investing via credit in an attempt to lower spending in the economy. During the months in which the credit controls were in place (March-July), consumer spending did drop notably and interest rates became very volatile, resulting in a brief recession from February to July. As with price controls, once the credit controls were removed, pent-up demand resulted in an increase in spending, increasing inflationary pressures in the economy once more.[138]

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[133] Federal Reserve, *Full Employment and Balanced Growth Act of 1978 (Humphrey-Hawkins)*, https://www.federalreservehistory.org/essays/humphrey-hawkins-act.

[134] Federal Reserve Bank of St. Louis, *Full Employment and Balanced Growth Act (Humphrey-Hawkins Act)*, https://fraser.stlouisfed.org/title/full-employment-balanced-growth-act-humphrey-hawkins-act-1034.

[135] Federal Reserve, *Full Employment and Balanced Growth Act of 1978 (Humphrey-Hawkins)*.

[136] During this time, the Carter Administration additionally put in place some deregulatory measures, such as the Airline Deregulation Act of 1978 (P.L. 95-504), aimed at reducing inflation by removing unnecessary costs. Such measures did not prove impactful on inflation, as evidenced by the high inflation of the late 1970s and early 1980s. For an overview, see Council of Economic Advisers, *Economic Report of the President*, January 1979, ch. 2.

[137] UC Santa Barbara: The American Presidency Project, *Executive Order 12201—Credit Control*, https://www.presidency.ucsb.edu/documents/executive-order-12201-credit-control.

[138] Stacey L. Schreft, "Credit Controls: 1980," Federal Reserve Bank of Richmond, pp. 25-55, https://www.richmondfed.org/~/media/richmondfedorg/publications/research/economic_review/1990/pdf/er760603.pdf.

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