CONGRESS OF THE UNITED STATES
CONGRESSIONAL BUDGET OFFICE

CBO

The Effects of Pandemic-Related Legislation on Output

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SEPTEMBER 2020

At a Glance

In March and April of 2020, four major federal laws were enacted to address the public health emergency and the economic distress created by the 2020 coronavirus pandemic. That legislation provides financial support to households, businesses, and state and local governments. In this report, the Congressional Budget Office estimates the legislation's effects on economic output.

- **Deficits.** The legislation is projected to add $2.3 trillion to the deficit in fiscal year 2020 and $0.6 trillion in 2021.

- **Short-Term Effects.** CBO estimates that the legislation will increase the level of real (inflation-adjusted) gross domestic product (GDP) by 4.7 percent in 2020 and 3.1 percent in 2021. From fiscal year 2020 through 2023, for every dollar that it adds to the deficit, the legislation is projected to increase GDP by about 59 cents.

- **Longer-Term Effects.** By increasing debt as a percentage of GDP, the legislation is expected to raise borrowing costs, lower economic output, and reduce national income in the longer term.

- **Uncertainty.** The estimates in this report are subject to considerable uncertainty, especially because of factors associated with the pandemic.

www.cbo.gov/publication/56537

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Notes

This report presents estimates of the effects of pandemic-related legislation on real (inflation-adjusted) gross domestic product. Those effects were incorporated into the Congressional Budget Office's July economic forecast (www.cbo.gov/publication/56442). The estimates in this report are presented in relation to an implied projection of real GDP that does not include the effects of the legislation—a projection computed by removing the estimated effects of the legislation from the July forecast. However, CBO did not construct a comprehensive projection of what the economy would have looked like without those legislative effects.

Unless the report indicates otherwise, all years referred to are calendar years.

Numbers in the text, tables, and figures may not add up to totals because of rounding.

For a more detailed discussion of the methods that CBO used, see John Seliski and others, *Key Methods That CBO Used to Estimate the Effects of Pandemic-Related Legislation on Output*, Working Paper 2020-07 (Congressional Budget Office, forthcoming).

The Effects of Pandemic-Related Legislation on Output

Summary

In March and April of 2020, four major federal laws were enacted in response to the 2020 coronavirus pandemic. Those laws, which contained a wide array of conventional and unconventional fiscal policies, will add $2.3 trillion to the deficit in fiscal year 2020 and $0.6 trillion in 2021, according to the Congressional Budget Office's estimates.

By providing financial support to households, businesses, and state and local governments, the legislation will offset part of the deterioration in economic conditions brought about by the pandemic.[1] CBO estimates that the legislation will boost the level of real (inflation-adjusted) gross domestic product (GDP) by 4.7 percent in 2020 and 3.1 percent in 2021.[2] From fiscal year 2020 through 2023, for every dollar that it adds to the deficit, the legislation is projected to increase GDP by about 59 cents.[3] In the longer term, the legislation will reduce the level of real GDP, CBO estimates. All of those estimates are subject to considerable uncertainty.

Short-Term Effects

In the short term—that is, from 2020 through 2023—the pandemic-related legislation will affect the economy through several channels. Payments and tax credits issued to individuals will boost the overall demand for goods and services by providing resources to households, many of which have experienced a significant loss in income. Loans, grants, and tax benefits will provide liquidity to businesses experiencing financial distress, increasing the likelihood that they will survive and preserve jobs for their employees while economic activity is weak. Federal assistance to state and local governments will help pay for rising expenditures related to the pandemic as those governments' tax revenues fall. And payments to health care providers will help support further testing for and treatment of COVID-19, the disease caused by the coronavirus.

Over the next several years, as a result of the pandemic, output is projected to remain well below its potential level, and inflation is projected to stay below the Federal Reserve's long-run objective. CBO therefore expects that the Federal Reserve will not respond to the legislation's effect on demand by raising short-term interest rates. So the boost to output is expected to be larger than it would have been if output had been closer to its potential and inflation had been higher, because then the Federal Reserve would have been more likely to respond.

In CBO's assessment, the short-term boost in economic activity caused by the legislation will be tempered by social distancing, especially during the second and third quarters of this year. Social distancing refers to certain actions that households, businesses, and governments in the United States and around the world have taken to limit in-person interactions and thus slow the spread of the coronavirus. Those actions include reducing social activities, dining out, and travel; curtailing the activity of schools and businesses; prohibiting large gatherings; and working from home. CBO estimates that social distancing will cause the economic boost resulting from the legislation to be smaller than it would have been during a period without social distancing. CBO also expects that some of the spending by individuals and businesses that is hampered in the near term by social distancing will resume as those measures continue to ease.

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1. The economic forecast that CBO published this past July incorporated the estimated economic effects of the recent legislation that are discussed in this report. See Congressional Budget Office, *An Update to the Economic Outlook: 2020 to 2030* (July 2020), www.cbo.gov/publication/56442.

2. Those estimates do not include the effects of nonlegislative actions, such as those taken by the Federal Reserve (for example, lowering interest rates and purchasing mortgage-backed and Treasury securities) and the Administration (for example, delaying deadlines for filing taxes). The estimates do account for the legislation's funding of lending facilities established by the Federal Reserve to support the flow of credit to businesses, households, and state and local governments.

3. That number does not incorporate the effects of the Federal Reserve's lending facilities.

Longer-Term Effects

The legislation will increase federal debt as a percentage of GDP, and in the longer term, CBO expects that increase to raise borrowing costs, lower economic output, and reduce the income of U.S. households and businesses. In addition, the higher debt—coming at a time when the longer-term path for debt was already high—could eventually increase the risk of a fiscal crisis or of less abrupt economic changes, such as higher inflation or the undermining of the U.S. dollar's predominant role in global financial markets. The timing and likelihood of those effects are not possible to estimate with precision.

Uncertainty

CBO's estimates of the economic effects of the legislation are subject to considerable uncertainty and represent the middle of the distribution of potential outcomes. Some important sources of that uncertainty are how consumers and businesses may respond to various policy changes included in the legislation; how the timing, scale, and breadth of the legislation may affect consumers' and businesses' confidence; how responses to policy changes may be altered by the pandemic and social distancing; what the course of the pandemic may be; how social distancing may change; and how quickly safe and effective vaccines and therapies may become widely available.

The Legislation

This past March and April, four major federal laws were enacted to address the public health emergency created by the pandemic and to directly assist households, businesses, and nonfederal governments affected by the economic downturn. The Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020 (Public Law 116-123), and the Families First Coronavirus Response Act (P.L. 116-127) increased federal funding for some federal agencies and for state and local governments, required employers to grant paid sick leave to employees, and provided payments and tax credits to employers. The Coronavirus Aid, Relief, and Economic Security (CARES) Act (P.L. 116-136) provided loans to businesses, payments to health care providers, payments and tax credits to individuals, additional funding to state and local governments, and reductions in certain business taxes. Finally, the Paycheck Protection Program and Health Care Enhancement Act (P.L. 116-139) increased federal funding for the loans to businesses and payments to health care providers supplied in the CARES Act.[4]

This report analyzes the following provisions in the four laws.

- *Paycheck Protection Program and Related Provisions.* Through the Paycheck Protection Program (PPP), the legislation funds loan guarantees for loans to small businesses to help them cover payroll and other costs. CBO expects most PPP loans to be forgiven, so they will effectively become grants. In addition, the legislation allocates funds to the Small Business Administration (SBA), which lends them to businesses, provides debt relief, and administers the Economic Injury Disaster Loan (EIDL) program. That program provides grants to businesses experiencing a temporary loss in income.

- *Enhanced Unemployment Compensation.* The legislation temporarily increased unemployment benefits by $600 per week through July 31, 2020. In addition, the legislation created a temporary program for people not otherwise eligible for unemployment benefits, such as self-employed workers and independent contractors, and extended the number of weeks of federally funded benefits available to beneficiaries who qualified for regular unemployment insurance in 2020. Finally, the legislation allowed states to waive work-search requirements for people receiving benefits.

- *Recovery Rebates for Individuals.* The legislation provides a refundable tax credit of $1,200 per qualifying adult and $500 per dependent child to taxpayers with income below specified limits. The tax credit begins phasing out once the income of individuals and of married couples filing jointly passes $75,000 and $150,000, respectively.

4. For the purposes of this analysis, to account for the estimated outlays of P.L. 116-123, CBO used its cost estimate for H.R. 6074, the Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020 (March 4, 2020), www.cbo.gov/publication/56227. In contrast, CBO's baseline budget projections incorporate funding for 2020 provided in P.L. 116-123 and adjust it for inflation for each subsequent year through fiscal year 2030. For more detail about the other laws' provisions and their budgetary effects, see Congressional Budget Office, *An Update to the Budget Outlook: 2020 to 2030* (September 2020), www.cbo.gov/publication/56517.

- *Direct Assistance for State and Local Governments.* The legislation provides grants to state and local governments—and to tribal and territorial governments as well—for spending related to the pandemic.

- *Other Spending Provisions.* The legislation provides funding to the Department of Health and Human Services, the Department of Defense, the Department of Agriculture, the Department of Housing and Urban Development, the Federal Emergency Management Agency, the Department of Veterans Affairs, and the Department of Transportation. It also increases funding for the Supplemental Nutrition Assistance Program and for public health programs, such as Medicaid and Medicare. Furthermore, it provides aid to people who have student loans (by temporarily suspending their loan payments), credit assistance to airlines and other businesses, and relief to aviation workers.

- *Other Revenue Provisions.* The legislation modifies the rules relating to net operating loss deductions and increases the limits on the losses and on the business interest deductions that businesses can use to offset their taxable income. Those changes provide businesses with liquidity by letting them claim certain tax benefits sooner than they would otherwise have been able to. The legislation also provides payroll tax credits to employers to encourage them to retain employees, along with refundable credits to compensate them for providing paid sick leave and family and medical leave. It delays payroll tax payments by businesses, further providing temporary liquidity. And it shifts some of the costs of unemployment benefits from state and local governments and nonprofits to the federal government.

- *The Federal Reserve's Emergency Lending Facilities.* The legislation provides loss-absorbing capital to Federal Reserve programs called facilities, which act as a backstop to financial markets by making loans or purchasing assets under the Federal Reserve's emergency lending authority.

In total, the pandemic-related legislation is projected to increase the federal deficit by about $2.3 trillion in fiscal year 2020 and $0.6 trillion the following year (see Table 1). Those amounts equal about 11.2 percent of GDP in 2020 and 2.7 percent in 2021. Over the 2020–2030 period, the laws are projected to add $2.6 trillion to the deficit (an amount that does not include budgetary changes resulting from the laws' effects on the economy).[5]

Some measures recently taken by the Federal Reserve are not analyzed in this report. The Federal Reserve lowered its target range for the federal funds rate—the interest rate that financial institutions charge each other for overnight loans of their monetary reserves—nearly to zero. It also established several facilities, some of them similar to those created during the 2007–2009 financial crisis, to support certain financial markets and to help corporations and municipalities raise funds. And it made temporary adjustments to regulations to let banks expand their balance sheets to support their customers.

The Economic Effects of the Legislation

CBO expects the pandemic-related legislation to affect the economy in both the short term and the longer term.[6] In the short term, the legislation will boost the economy, mainly by providing temporary support to individuals, businesses, and state and local governments and by stimulating the overall demand for goods and services. However, the boost to economic activity will be tempered by social distancing. Also, the economic effects of the legislation will diminish over time as the economy's output approaches its potential (or maximum sustainable) level, which is projected to grow more slowly over the next few years than CBO projected in January 2020 because of the pandemic.[7] And the various policies contained in the legislation will influence output in different ways, so the economic boost per dollar of budgetary cost will vary.

In the longer term, the legislation is projected to increase the ratio of federal debt to GDP. High and rising federal debt makes the economy more vulnerable to rising interest rates and also to rising inflation, depending on how that debt is financed. The growing debt burden

5. The amount is smaller than the increase in the deficit in fiscal years 2020 and 2021 because later in the period, the legislation will result in some increases in revenues.

6. CBO did not analyze the effects of any legislation enacted, executive orders made, or Federal Reserve actions taken after August 4, 2020.

7. See Congressional Budget Office, "Supplemental Material for *An Update to the Economic Outlook: 2020 to 2030*" (July 2020), www.cbo.gov/publication/56442.

Table 1.

The Effects of Pandemic-Related Legislation on the Deficit

Billions of Dollars

	2020	2021	2022	2023	Total 2020–2023	Total 2024–2030
Paycheck Protection Program and Related Provisions[a]	616	13	0	0	628	0
Enhanced Unemployment Compensation	370	71	0	0	442	0
Recovery Rebates for Individuals[b]	272	20	0	0	292	0
Direct Assistance for State and Local Governments	150	*	0	0	150	0
Other Spending Provisions[c]	359	218	101	21	700	13
Other Revenue Provisions[d]	539	253	-186	-182	425	-50
Federal Reserve's Emergency Lending Facilities	11	0	0	0	11	0
Total	**2,317**	**576**	**-85**	**-160**	**2,648**	**-37**

Sources: Congressional Budget Office; staff of the Joint Committee on Taxation.

The years shown are federal fiscal years.

Positive numbers indicate an increase in the deficit.

Because of rounding, values in this table may not correspond precisely to values in Congressional Budget Office, *An Update to the Budget Outlook: 2020 to 2030* (September 2020), www.cbo.gov/publication/56517. In addition, for the purposes of this analysis, to account for the estimated outlays of Public Law 116-123, CBO used its cost estimate for H.R. 6074, the Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020 (March 4, 2020), www.cbo.gov/publication/56227. In contrast, CBO's baseline budget projections incorporate funding for 2020 provided in P.L. 116-123 and adjust it for inflation for each subsequent year through fiscal year 2030.

* = between zero and $500 million.

a. The provisions related to the Paycheck Protection Program provide funds to the Small Business Administration to support business liquidity through existing lending programs, debt relief, and the Economic Injury Disaster Loan program.

b. Incorporates the effects of the Coronavirus Aid, Relief, and Economic Security (CARES) Act on both outlays and revenues.

c. Includes aid for student loans, credit assistance for airlines and other businesses, relief for aviation workers, subsidies for paid sick leave, health care spending, the education stabilization fund, and increased funding for the Department of Health and Human Services, the Federal Emergency Management Agency, the Department of Veterans Affairs, and the Department of Transportation.

d. Includes payroll tax credits for employers, modifications of the net operating loss and business interest deductions, limitations on the losses that businesses can use to offset tax liability, and a delay of payroll taxes.

also raises borrowing costs, slowing the growth of the economy and national income, and it could increase the risk of a fiscal crisis or a gradual decline in the value of Treasury securities.

In addition to affecting overall economic activity as measured by real GDP, the legislation will affect other important aspects of the economy and people's well-being. For example, several provisions of the legislation affect people's access to medical care and food. Other provisions fund medical research to develop a vaccine. Still other provisions delay evictions and mortgage foreclosures. Also, the legislation has significant effects on the distribution of income. And it may prevent some longer-term damage to the economy and to people's financial prospects—for example, by reducing the adverse effects of entering the labor market for the first time during a recession. All of those effects are beyond the scope of this report.

How the Overall Legislation Affects Output in the Short Term

CBO estimates that the legislation will boost the economy over the next few years by increasing federal spending and reducing federal revenues. The legislation will increase the level of real GDP by 4.7 percent in 2020 and 3.1 percent in 2021, CBO projects (see Table 2). And from fiscal year 2020 through 2023, the legislation is projected to increase GDP by about 59 cents for every dollar that it adds to the deficit (see Table 3).[8] The effects of the legislation on economic activity will be largest in

8. That number does not incorporate the effects of the Federal Reserve's lending facilities.

Table 2.

The Effects of Pandemic-Related Legislation on Real GDP

Percent

Policy	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2021 Q1	2021 Q2	2021 Q3	2021 Q4	Annual 2020	Annual 2021	Annual 2022	Annual 2023
Paycheck Protection Program and Related Provisions[a]	0	0.9	1.4	1.0	0.7	0.4	0.2	0.1	0.8	0.3	*	*
Enhanced Unemployment Compensation	0	1.1	1.8	1.5	0.8	0.5	0.3	0.1	1.1	0.4	*	*
Recovery Rebates for Individuals[b]	0	1.1	0.8	0.6	0.6	0.3	0.1	0.1	0.6	0.3	*	*
Direct Assistance for State and Local Governments	0	0.3	0.9	0.8	0.4	0.2	0.1	*	0.5	0.2	*	*
Other Spending Provisions[c]	0	1.2	2.3	1.9	1.8	1.4	1.1	0.7	1.3	1.3	0.4	0.1
Other Revenue Provisions[d]	0	0.4	0.7	0.4	0.3	0.8	0.3	0.2	0.3	0.4	-0.1	-0.1
Federal Reserve's Emergency Lending Facilities	0	*	0.2	0.3	0.4	0.3	0.2	0.2	0.1	0.3	*	*
Total	**0**	**5.0**	**8.1**	**6.4**	**5.0**	**4.0**	**2.4**	**1.3**	**4.7**	**3.1**	**0.3**	**0.1**
Memorandum:												
Real GDP Without the Effects of the Legislation												
Real GDP (Billions of 2012 dollars)	4,744	4,064	4,103	4,250	4,369	4,466	4,596	4,680	17,161	18,112	19,158	19,617
Growth since previous quarter (Percent)	-1.3	-14.3	1.0	3.6	2.8	2.2	2.9	1.8	n.a.	n.a.	n.a.	n.a.
Growth at annualized rates (Percent)	-5.0	-46.2	3.9	15.1	11.7	9.2	12.2	7.5	-10.0	5.5	5.8	2.4
Real GDP in CBO's Current Economic Forecast												
Real GDP (Billions of 2012 dollars)	4,744	4,266	4,436	4,522	4,588	4,646	4,706	4,740	17,968	18,679	19,222	19,631
Growth since previous quarter (Percent)	-1.3	-10.1	4.0	1.9	1.5	1.3	1.3	0.7	n.a.	n.a.	n.a.	n.a.
Growth at annualized rates (Percent)	-5.0	-34.6	17.0	7.9	6.0	5.1	5.3	2.9	-5.8	4.0	2.9	2.1

Source: Congressional Budget Office.

These values are presented as a percentage of an implied projection of real GDP that does not include the effects of pandemic-related legislation—a projection computed by removing the estimated effects of the legislation from CBO's July economic forecast. However, CBO did not construct a comprehensive projection of what the economy would have looked like without those legislative effects. See Congressional Budget Office, *An Update to the Economic Outlook: 2020 to 2030* (July 2020), www.cbo.gov/publication/56442.

n.a. = not applicable; * = between -0.05 percent and 0.05 percent.

a. The provisions related to the Paycheck Protection Program provide funds to the Small Business Administration to support business liquidity through existing lending programs, debt relief, and the Economic Injury Disaster Loan program.

b. Incorporates the effects of the Coronavirus Aid, Relief, and Economic Security (CARES) Act on both outlays and revenues.

c. Includes aid for student loans, credit assistance for airlines and other businesses, relief for aviation workers, subsidies for paid sick leave, health care spending, the education stabilization fund, and increased funding for the Department of Health and Human Services, the Federal Emergency Management Agency, the Department of Veterans Affairs, and the Department of Transportation.

d. Includes payroll tax credits for employers, modifications of the net operating loss and business interest deductions, limitations on the losses that businesses can use to offset tax liability, and a delay of payroll taxes.

the second half of 2020 and smaller thereafter. CBO's estimates take into account the effects of social distancing, the Federal Reserve's policy, and increased federal borrowing.

The estimated effects of the legislation on real GDP are presented in relation to an implied projection of real GDP that does not include the effects of the legislation—a projection computed by removing the estimated effects of the legislation from the economic forecast that CBO published in July. However, CBO did not construct a comprehensive projection of what the economy would have looked like without those legislative effects.[9]

CBO's current projections of real GDP growth (which include the effects of the legislation) are –5.8 percent in 2020 and 4.0 percent in 2021. CBO's analysis indicates that without the legislation, real GDP growth would

9. Such a comprehensive projection would include, for example, projections of employment, interest rates, and inflation.

Table 3.

The Effects of Pandemic-Related Legislation on the Deficit and on GDP, Fiscal Years 2020 to 2023

Policy	Effect on the Deficit (Billions of Dollars)[a]	Cumulative Effect on GDP (Billions of Dollars)	Cumulative Effect on GDP per Dollar of Effect on the Deficit (Dollars)
Paycheck Protection Program and Related Provisions[b]	628	231	0.37
Enhanced Unemployment Compensation	442	301	0.68
Recovery Rebates for Individuals[c]	292	177	0.61
Direct Assistance for State and Local Governments	150	133	0.89
Other Spending Provisions[d]	700	621	0.89
Other Revenue Provisions[e]	425	100	0.24
Total[f]	**2,637**	**1,564**	**0.59**

Sources: Congressional Budget Office; staff of the Joint Committee on Taxation.

GDP = gross domestic product.

a. Positive numbers indicate an increase in the deficit.

b. The provisions related to the Paycheck Protection Program provide funds to the Small Business Administration to support business liquidity through existing lending programs, debt relief, and the Economic Injury Disaster Loan program.

c. Incorporates the effects of the Coronavirus Aid, Relief, and Economic Security (CARES) Act on both outlays and revenues.

d. Includes aid for student loans, credit assistance for airlines and other businesses, relief for aviation workers, subsidies for paid sick leave, health care spending, the education stabilization fund, and increased funding for the Department of Health and Human Services, the Federal Emergency Management Agency, the Department of Veterans Affairs, and the Department of Transportation.

e. Includes payroll tax credits for employers, modifications of the net operating loss and business interest deductions, limitations on the losses that businesses can use to offset tax liability, and a delay of payroll taxes.

f. The effects of the Federal Reserve's emergency lending facilities on GDP are not directly related to the facilities' effects on the deficit. Therefore, CBO did not include the effects of those facilities on the deficit or on GDP in the totals in this table or calculate their effects on GDP per dollar of effect on the deficit.

have been about –10.0 percent in 2020 and 5.5 percent in 2021.[10]

Social Distancing. In CBO's assessment, though the legislation will increase economic activity by boosting overall demand, social distancing will temper that increase. When people limit their social interactions, they reduce households' and businesses' demand for goods and services. In addition, many businesses are operating at limited capacity, and the number of hours worked is lower than usual because of public health considerations, keeping the supply of certain goods and services suppressed.

In its current economic projections, CBO expects that the degree of social distancing will decline by about two-thirds from its April 2020 peak during the second half of this year and diminish further next year. As the pandemic wanes and social distancing declines, some of the spending by individuals and businesses that is hampered by social distancing will resume, CBO expects. After the first half of 2021, social distancing is expected to stop inhibiting the effects of the legislation on overall demand, though lingering uncertainty about the safety of some activities may continue to hold back spending on some services.

Economic Conditions and the Federal Reserve's Policy. To estimate the effects of higher federal spending and lower revenues on overall demand, CBO considers evidence about the effects of similar policies in the past and uses results produced by macroeconomic models.[11]

10. Growth would have been faster in 2021 without the legislation because the growth rate depends on the level of GDP in 2020, which would have been lower without the legislation.

11. For a recent review of research about the economic effects of fiscal policy, see Valerie A. Ramey, "Ten Years After the Financial Crisis: What Have We Learned From the Renaissance in Fiscal Research?" *Journal of Economic Perspectives*, vol. 33, no. 2 (Spring 2019), pp. 89–114, https://doi.org/10.1257/jep.33.2.89.

In CBO's assessment, the effects of changes in spending or revenues on output are larger when the economy is weak or when short-term interest rates are near zero and are expected to remain there for several years, a situation known as being at the effective lower bound.[12] At such times, the Federal Reserve would not respond, in CBO's view, by raising short-term interest rates to restrain the boost in overall demand. In contrast, if the increase in spending or the reduction in revenues occurred when output was at or above its potential level, the Federal Reserve would probably raise the path of short-term interest rates to prevent inflation from rising above its long-term goal, thereby restraining the boost in overall demand and output.

CBO expects the economy to operate considerably below its potential level over the next several years. The Federal Reserve is therefore expected to keep interest rates low over that period. As a result, the legislation's changes to federal spending and revenues—most of which are projected to occur in 2020 and 2021—will boost overall demand and output more than they would under normal economic conditions, CBO expects.

Crowding Out. The legislation will increase federal deficits substantially in fiscal years 2020 and 2021, and that borrowing could have long-lasting economic effects.[13] Under normal circumstances, the increased deficits would reduce national saving, and then private investment, in part by causing interest rates to be higher than they would be otherwise, a process called crowding out.[14] As a result, workers would, on average, have less capital to use in their jobs. They would be less productive, their compensation would be lower, they would thus be inclined to work less, and output would decline.

However, under current conditions, the crowding out of private investment by increased federal deficits will be minimal in the short term, CBO expects. That is mainly because the economy is expected to operate well below its potential level for several years, resulting in the Federal Reserve's keeping interest rates very low through the middle of the decade. Moreover, to the extent that fiscal stimulus supports greater demand for goods and services in the short term, businesses will increase their demand for equipment, structures, and other capital goods, thereby reducing the effect of higher deficits and debt on private investment.

Another factor mitigating crowding out in the short term is the Federal Reserve's increased holdings of Treasury securities. CBO expects the Federal Reserve to continue purchasing Treasury securities on the secondary market through 2025, a policy that it initiated in response to the economic fallout from the pandemic. In CBO's projections, those purchases initially offset the upward pressure on interest rates that increases in federal debt would normally create. But CBO expects the Federal Reserve's holdings of Treasury securities, measured as a percentage of GDP, to decline gradually, beginning in 2025.[15] Other things being equal, the consequent boost to interest rates would increase the government's borrowing costs and reduce private investment and output.

12. Several studies examining the effects of government purchases on output have found larger effects in recessions than in expansions. See, for example, Òscar Jordà and Alan M. Taylor, "The Time for Austerity: Estimating the Average Treatment Effect of Fiscal Policy," *The Economic Journal*, vol. 126, no. 590 (February 2016), pp. 219–255, https://doi.org/10.1111/ecoj.12332; Alan J. Auerbach and Yuriy Gorodnichenko, "Measuring the Output Responses to Fiscal Policy," *American Economic Journal: Economic Policy*, vol. 4, no. 2 (May 2012), pp. 1–27, https://doi.org/10.1257/pol.4.2.1; and Rüdiger Bachmann and Eric R. Sims, "Confidence and the Transmission of Government Spending Shocks," *Journal of Monetary Economics*, vol. 59, no. 3 (April 2012), pp. 235–249, https://doi.org/10.1016/j.jmoneco.2012.02.005. In contrast, one recent study has found no evidence that government spending has different effects in recessions and in expansions; see Valerie A. Ramey and Sarah Zubairy, "Government Spending Multipliers in Good Times and in Bad: Evidence From U.S. Historical Data," *Journal of Political Economy*, vol. 126, no. 2 (April 2018), pp. 850–901, https://doi.org/10.1086/696277. In addition, several studies have found that government spending can have larger effects on output when interest rates are near zero. See Lawrence Christiano, Martin Eichenbaum, and Sergio Rebelo, "When Is the Government Spending Multiplier Large?" *Journal of Political Economy*, vol. 119, no. 1 (February 2011), pp. 78–121, https://doi.org/10.1086/659312; Michael Woodford, "Simple Analytics of the Government Expenditure Multiplier," *American Economic Journal: Macroeconomics*, vol. 3, no. 1 (January 2011), pp. 1–35, https://doi.org/10.1257/mac.3.1.1; and John F. Cogan and others, "New Keynesian Versus Old Keynesian Government Spending Multipliers," *Journal of Economic Dynamics and Control*, vol. 34, no. 3 (March 2010), pp. 281–295, https://doi.org/10.1016/j.jedc.2010.01.010.

13. CBO projects that the deficit will equal 16.0 percent and 8.6 percent of GDP in fiscal years 2020 and 2021. The legislation is projected to account for 11.2 and 2.7 percentage points, respectively, of those deficits.

14. For the basis of that estimate, see Jonathan Huntley, *The Long-Run Effects of Federal Budget Deficits on National Saving and Private Domestic Investment*, Working Paper 2014-02 (Congressional Budget Office, February 2014), www.cbo.gov/publication/45140.

15. See Congressional Budget Office, *An Update to the Budget Outlook: 2020 to 2030* (September 2020), www.cbo.gov/publication/56517.

How Different Provisions of the Legislation Affect Output in the Short Term

CBO expects different provisions of the legislation to affect the economy differently. As a result, those provisions will have different effects on real GDP per dollar of budgetary cost incurred. The provisions will have different effects on output because they will stimulate the economy through different channels and because they will support people and sectors that have been affected by the pandemic in different ways.

For example, provisions that directly increase government purchases of goods and services add to overall demand on a dollar-for-dollar basis. But for provisions that increase payments to people, reduce taxes, and increase aid to state and local governments, the size of the effect on demand depends on the provision's impact on recipients' behavior and on how the pandemic and social distancing affect recipients' spending and other economic activities. In particular, increases in payments boost spending more among lower-income people than among higher-income people, partly because a larger share of lower-income people could not previously borrow as much money as they would have wished in order to spend more. Also, in CBO's assessment, under pandemic and social-distancing conditions, households initially tend to save a large proportion of the benefits that they receive—but they will spend some of those savings in subsequent months, as the pandemic eases. In CBO's estimates, therefore, the government's payments to people continue to be spent for several quarters after they are received, reducing the possibility of a sudden drop in demand when the government stops making those payments.

Paycheck Protection Program and Related Provisions. The PPP stimulates the economy by providing businesses with funds (most of which will effectively become grants) to be spent on maintaining their payroll and covering other business expenses.[16] In addition, the loans provided through the SBA and the expansion of the EIDL program strengthen businesses' financial standing and help bolster people's income.

In CBO's assessment, the effect of the PPP on output per dollar of federal spending varies depending on how the funding is used by the recipient. The effect is expected to be largest when the funds are used to preserve jobs that would have been lost without them. CBO estimates that the PPP saved approximately 106 million job-weeks in 2020, though the program provided funds to finance substantially more than that.[17] By contrast, when businesses use PPP funds to finance their payroll expenses for jobs that would have persisted anyway, the federal spending has a smaller effect on output.[18] In those cases, the businesses are able to repurpose resources to cover expenses in other areas of their operations that would not have qualified for loan forgiveness. The per-dollar effect of that spending is similar to the per-dollar effect of PPP spending on nonpayroll business expenses that qualify for loan forgiveness. Finally, the per-dollar effects of PPP spending are lowest when the businesses must repay the funds.

All told, the PPP and related provisions are projected to quicken the pace of the recovery by limiting the number of business closures and preserving relationships between employees and employers. CBO estimates that

16. Some PPP funds are projected to cover nonqualifying expenses and as a result will have to be repaid to the government, but even those funds are a subsidy because the interest rate on PPP loans is below the market rate.

17. Because the PPP finances both part-time and full-time jobs for various periods, CBO expresses those jobs as job-weeks, one of which represents the average hours worked by full-time and part-time workers in a typical workweek. CBO estimates that 70 percent of the job-weeks were saved in the second quarter of 2020.

18. CBO's estimates of the effects of the PPP on employment are broadly similar to others' findings, but those findings vary significantly, depending on each study's methods, data sources, and time frame. For more details, see David Autor and others, *An Evaluation of the Paycheck Protection Program Using Administrative Payroll Microdata* (Massachusetts Institute of Technology, July 2020), https://economics.mit.edu/files/20094 (PDF, 3 MB); and Raj Chetty and others, *How Did COVID-19 and Stabilization Policies Affect Spending and Employment? A New Real-Time Economic Tracker Based on Private Sector Data*, Working Paper 27431 (National Bureau of Economic Research, June 2020), www.nber.org/papers/w27431. Also, the PPP made funds broadly available, not targeting particularly distressed businesses or geographic areas. For more details, see Alexander W. Bartik and others, *The Targeting and Impact of Paycheck Protection Program Loans to Small Businesses*, Working Paper 27623 (National Bureau of Economic Research, July 2020), www.nber.org/papers/w27623; and Robert P. Bartlett III and Adair Morse, *Small Business Survival Capabilities and Policy Effectiveness: Evidence From Oakland*, Working Paper 27629 (National Bureau of Economic Research, July 2020), www.nber.org/papers/w27629.

from fiscal year 2020 through 2023, the PPP and related provisions will boost GDP by 37 cents for every dollar of budgetary cost. The agency projects that the program will increase real GDP by about 0.8 percent in 2020 and 0.3 percent in 2021 (see Table 2 on page 5).[19]

Enhanced Unemployment Compensation. The legislation expanded eligibility for unemployment compensation, temporarily increased the amount of the benefits, and let people receive benefits for a longer time. The overall effect of those changes on output depends on several factors.

First, additional unemployment benefits boost overall demand for goods and services by providing resources to people who have experienced a significant loss in earned income. That effect by itself increases output.[20]

Second, enhanced unemployment compensation weakens recipients' incentive to search for and take jobs, thereby reducing the supply of labor and output. In CBO's assessment, that effect is smaller under high unemployment and social distancing than under normal conditions.[21] That is because fewer job openings, along with widespread business closures, make a job search less likely to quickly result in employment, so the reduction in overall job-searching induced by enhanced unemployment benefits matters less. Pushing in the opposite direction is that during periods of high unemployment, unemployment benefits replace a larger portion of a worker's future, or "forward-looking," earnings from a potential new job because those benefits are based on "backward-looking" earnings from the worker's old job and not on the lower-paying jobs now available. So the net gain from returning to work is smaller when unemployment is high, weakening recipients' incentives to seek work.[22]

Third, because the legislation expanded eligibility for unemployment compensation to many more workers—including, for instance, self-employed workers and independent contractors—CBO expects it to reduce the fraction of unemployed workers who are not receiving regular benefits. That smaller pool of people without benefits means that a larger proportion of applicants for a given job would be less likely to accept a job offer. That lower job acceptance rate implies that the average duration of an unemployment spell would increase, making unemployment higher than it would have been if not for the enhanced unemployment compensation. The ultimate result is lower output.

Finally, all of those effects are complicated by the extent of social distancing and the fact that workers considering a return to work may weigh the risk of increasing their exposure to the coronavirus. That could result in employers' offering higher wages than they would have otherwise, which would reduce the effect of enhanced unemployment benefits on work incentives and ultimately on output.

In CBO's assessment, the effects of enhanced unemployment compensation on the labor supply were smallest earlier this year and will increase as social distancing wanes. All told, CBO estimates, the net effect of the enhanced unemployment benefits will be to boost GDP by 68 cents for each one-dollar increase in budgetary cost from fiscal year 2020 through 2023. The agency projects that the enhanced unemployment compensation will increase real GDP by 1.1 percent in 2020 and 0.4 percent in 2021.

Recovery Rebates for Individuals. These tax credits provide direct payments to people at a time when many households are experiencing a significant loss

19. The Paycheck Protection Program Flexibility Act of 2020 (P.L. 116-142) modified the conditions under which PPP loans may be forgiven. The effects of those modifications on GDP are reflected in these estimates.

20. Researchers have recently shown that spending among recipients of enhanced unemployment benefits fell 22 percent below prepandemic levels in the weeks before they received the benefits and rose roughly 10 percent above prepandemic levels once they received the benefits. See JPMorgan Chase Institute, *Consumption Effects of Unemployment Insurance During the Covid-19 Pandemic* (July 2020), https://tinyurl.com/y2o8jpn3.

21. For some preliminary evidence—based on data through early July 2020—that is consistent with that assessment, see Joseph Altonji and others, *Employment Effects of Unemployment Insurance Generosity During the Pandemic* (Tobin Center for Economic Policy, July 2020), https://tinyurl.com/y3mkataz (PDF, 2 MB).

22. For more details about how unemployment insurance benefits affect incentives to work during times of high unemployment, see Congressional Budget Office, *Unemployment Insurance in the Wake of the Recent Recession* (November 2012), www.cbo.gov/publication/43734.

in income. The funds help people meet their financial obligations, such as mortgage, rent, or credit-card payments, and support overall demand for goods and services, thereby boosting output.[23] In CBO's assessment, higher-income households, whose income was less disrupted by the pandemic, probably spend a smaller portion of the funds they receive than lower-income households do.[24] CBO estimates that the tax credits will boost GDP by 61 cents for every dollar of budgetary cost from fiscal year 2020 through 2023. CBO also expects most of the effect on output to occur in the second and third quarters of 2020, near the time when people received the payments.[25] The agency projects that the rebates will increase real GDP by 0.6 percent in 2020 and 0.3 percent in 2021.

Direct Assistance for State and Local Governments. Federal assistance helps state, local, tribal, and territorial governments pay for rising expenditures related to the pandemic as their tax revenues decline. CBO expects that additional funding to increase overall demand, and thus increase output, by reducing the size of the tax increases and spending cuts that would have been required for many state and local governments to balance their budgets.

The size of the effects of such assistance on output depends on how it is targeted and on whether it is disbursed in a timely fashion. The effects also depend on how large the assistance is; there may be diminishing effectiveness for very large programs. CBO estimates that the assistance provided by the legislation will be disbursed mostly during 2020, that the assistance will amount to less than the governments lose in tax revenues losses in that year, and that much of the assistance was provided for specific purposes. Some of the additional funding will be used to replenish or avoid drawing down states' reserve funds, CBO expects; funding used in that way will not boost the economy in the short term.

All told, CBO estimates that increased funding for the governments will boost GDP by 89 cents for every dollar of budgetary cost from fiscal year 2020 through 2023. The agency projects that the direct assistance to state and local governments will boost the level of real GDP by 0.5 percent in 2020 and 0.2 percent in 2021.

Other Spending Provisions. The major components of the other spending provisions increase funding for various federal departments, agencies, and programs. Those provisions, in addition to several smaller ones, will increase direct government spending on goods and services, boosting GDP by 89 cents for every dollar of budgetary cost from fiscal year 2020 through 2023. The agency projects that the increased spending will lift real GDP by 1.3 percent in 2020 and 1.3 percent in 2021.

Other Revenue Provisions. The legislation's other revenue provisions include payroll tax credits for employers, the deferral of certain payroll taxes for businesses, modifications of net operating loss and business interest deductions, limits on business losses that can be used to offset tax liability, and payroll tax credits to support compensation for sick, family, and medical leave for employees. CBO expects that those provisions, especially the payroll tax credits, will boost overall demand, mostly by increasing businesses' cash flow and spending. In addition, the provisions modifying net operating loss and business interest deductions will improve liquidity for businesses (and thus increase overall demand) by allowing them to use losses for tax years 2018, 2019, and 2020 to offset taxable income from earlier years. In total, the revenue provisions will boost GDP by 24 cents

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23. The Internal Revenue Service provided a larger proportion of these credits within a few weeks of their authorization than it did in 2008, when a similar tax rebate program was implemented in the wake of the recession then.

24. CBO estimates that families in the top 5 percent of the income distribution will receive virtually none of the benefits.

25. Several recent studies have estimated the initial boost to the consumption of goods and services caused by the recovery rebates. One of them found that for every dollar of rebate, consumption in goods and services increased by 25 cents to 35 cents during the first 10 days after the rebate was received; see Scott R. Baker and others, *Income, Liquidity, and the Consumption Response to the 2020 Economic Stimulus Payments*, Working Paper 27097 (National Bureau of Economic Research, May 2020), www.nber.org/papers/w27097. Another estimated the overall increase in consumption per dollar of rebate as 40 cents, noting that the change in consumption varied substantially among households; see Olivier Coibion, Yuriy Gorodnichenko, and Michael Weber, *How Did U.S. Consumers Use Their Stimulus Payments?* Working Paper 27693 (National Bureau of Economic Research, August 2020), www.nber.org/papers/w27693. Similarly, another study found that for every dollar of rebate, consumption increased by 48 cents during the first two weeks and then returned to prior levels. That study also found that households that historically tended to spend most of their income increased their consumption by 68 cents per dollar of rebate, whereas households that tended to save a large portion of their income increased their consumption by 23 cents per dollar of rebate. See Ezra Karger and Aastha Rajan, *Heterogeneity in the Marginal Propensity to Consume: Evidence From Covid-19 Stimulus Payments*, Working Paper 2020-15 (Federal Reserve Bank of Chicago, May 2020), https://tinyurl.com/y4p6dgzm.

for every dollar of budgetary cost from fiscal year 2020 through 2023, CBO estimates. The agency projects that those revenue provisions will increase real GDP by 0.3 percent in 2020 and 0.4 percent in 2021.

The Federal Reserve's Emergency Lending Facilities. The existence of the Federal Reserve's emergency lending facilities bolsters the confidence of market participants, leading to easier credit conditions and less volatility in financial markets. In addition, the facilities make credit available to businesses, households, and state and local governments—which would otherwise face higher borrowing costs or fail to secure loans altogether. In CBO's assessment, the increase in confidence and the lending boost overall demand by supporting businesses' and consumers' spending, helping increase businesses' chance of survival, and preserving production capacity, all of which will help expedite a recovery.

The Federal Reserve's lending is projected to generate interest income and other income for the federal government that will roughly offset the budgetary cost of the lending facilities, in CBO's assessment. Also, although the emergency lending facilities will have effects on GDP, those effects are not strongly related to the facilities' budgetary cost because they result mainly from the facilities' existence, not the actual lending. Taking those considerations into account, CBO did not calculate the cumulative GDP effect per dollar of budgetary cost, as it did with the other provisions. CBO estimates that the lending facilities will increase real GDP by 0.1 percent in 2020 and 0.3 percent in 2021.

How the Legislation Affects Output in the Longer Term

By increasing the deficit in the short term, the legislation influences investment, output, and income in the longer term. In CBO's current projections, federal budget deficits raise the ratio of federal debt to GDP from 79 percent in 2019 to 109 percent in 2030. The legislation is responsible for roughly 9 percentage points of that increase (an amount that does not include budgetary changes resulting from the laws' effects on the economy). CBO expects that over the longer term, accumulated debt resulting from the legislation will raise interest rates, increase borrowing costs, and crowd out private investment, reducing the level of real GDP by about 0.4 percent in 2030. Also, higher interest payments associated with the higher debt will increase remittances from the Treasury to foreign holders of U.S. debt, further reducing U.S. national income.

The legislation's contributions to rising federal debt could have further negative consequences in the longer term. The higher debt, adding to an already high longer-term path for debt, would increase the risk of a fiscal crisis—that is, a situation in which investors lose confidence in the U.S. government's ability to service and repay its debt, causing interest rates to increase abruptly, inflation to spiral upward, or other disruptions to take place. Rising debt could also have less abrupt negative effects, such as creating expectations of higher inflation and undermining the U.S. dollar's predominant role in global financial markets. In addition, high and rising debt would contribute to businesses' and households' uncertainty about government policies and economic conditions. Finally, the burden of higher interest payments on federal debt could limit policymakers' ability to respond to future economic downturns by borrowing to finance a stimulus.

Uncertainty Surrounding the Effects of the Legislation

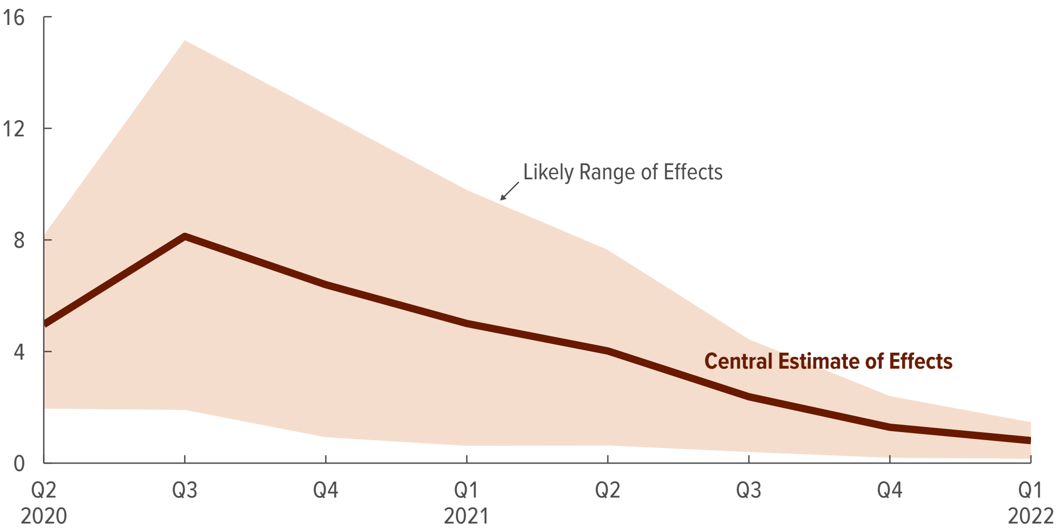
CBO's estimates of the effects of the pandemic-related legislation on real GDP are subject to significant uncertainty. To illustrate that uncertainty, CBO is reporting not only a central estimate of the legislation's economic effects but also a likely range of outcomes. Those outcomes reflect different assessments of two parameters—how much changes in federal spending and revenues affect overall demand, and how much changes in overall demand affect output in the short term—for each set of policies contained in the legislation. CBO's range is intended to cover roughly the middle two-thirds of the likely outcomes when those parameters are varied.[26] Accounting for those two sources of uncertainty, CBO estimates that the increase in the level of real GDP attributable to the legislation would probably be between 2.0 percent and 8.2 percent in the second quarter of 2020, for example, and between 1.9 percent and 15.2 percent in the third quarter of 2020 (see Figure 1).

In addition to those two sources of uncertainty, which are quantifiable on the basis of existing evidence, there are several factors that are very difficult to assess and that are not accounted for in CBO's range of estimates. Those factors include the effects of changes in fiscal policy on the economy under current circumstances and the

26. To calculate the range of estimates for the effects of each set of provisions, CBO used a range of values for each parameter. To calculate the central estimates, CBO used values for the parameters at the midpoints of those ranges.

Figure 1.

The Likely Range of the Effects of Pandemic-Related Legislation on Real GDP



CBO's estimates of the economic effects of pandemic-related legislation are uncertain. Therefore, the agency is reporting a likely range of outcomes that accounts for two sources of uncertainty: how much changes in federal spending and revenues affect overall demand, and how much changes in overall demand affect output in the short term.

Source: Congressional Budget Office.

These values are presented as a percentage of an implied projection of real GDP that does not include the effects of pandemic-related legislation—a projection computed by removing the estimated effects of the legislation from CBO's July economic forecast. However, CBO did not construct a comprehensive projection of what the economy would have looked like without those legislative effects. See Congressional Budget Office, *An Update to the Economic Outlook: 2020 to 2030* (July 2020), www.cbo.gov/publication/56442.

CBO's likely range is intended to cover roughly the middle two-thirds of the outcomes after accounting for uncertainty about how much changes in federal spending and revenues affect overall demand and how much changes in overall demand affect output in the short term.

GDP = gross domestic product.

impact of social distancing and the trajectory of the pandemic on the effectiveness of fiscal policy in stimulating economic activity.

Furthermore, in CBO's assessment, the timing, scale, and breadth of the legislation may have bolstered consumers' and businesses' confidence—and therefore economic output—beyond what is estimated in this report. Those effects would be positive, but CBO does not currently have enough information to quantify them. Moreover, that effect on confidence was probably strongest in response to legislation passed in March, and it could be weaker if future rounds of stimulus arrive when economic activity is increasing and some uncertainty has already been alleviated.

Economic Effects of Changes in Fiscal Policy Under Current Circumstances

CBO's analysis of the economic effects of the legislation is informed by evidence about how past legislative actions—those that are most comparable to the pandemic-related legislation—affected economic activity. Such evidence may be less informative than usual, however, given the unique circumstances surrounding the pandemic and the related economic developments.

Individuals, businesses, and state and local governments could respond more (or less) readily than CBO expects to the large amount of federal support being provided to the economy, resulting in higher (or lower) levels of economic output than CBO anticipates. A specific area of uncertainty is how certain provisions—in particular, those that increased weekly unemployment benefits and expanded eligibility for unemployment benefits, provided loans and credit assistance to businesses, provided funding for state and local governments' operations, and reduced certain business taxes—will affect people's incentives to work and businesses' incentives to hire workers. For example, the effects of business loans on economic activity depend on the number of distressed businesses, how distressed they were before the pandemic, and their financial viability. Moreover, CBO did not consider how the decisions about spending and working made by households, businesses, and state and local governments in response to the existing legislation might be affected by their anticipation of further pandemic-related legislation.

There is also uncertainty about the legislation's long-term effects on the economy. For example, if the legislation is successful in preserving businesses—particularly small businesses—it may preserve capital (both the physical and the intangible kinds) and reduce the cost of reallocating labor across industries or locations. The legislation could also help alleviate long-term harm to the job prospects and lifetime earnings of many workers, especially younger ones. Some studies have shown that people entering the labor market for the first time during a recession suffer adverse consequences—for example, lower earnings—even after the economy has recovered.[27] Furthermore, the support to businesses, households, and communities offered by the legislation may prevent workers from having to move to different locations to find employment, reducing the pandemic's disparate effects on different regions. Constructing a precise estimate of those effects is particularly challenging because of the unique nature of this crisis; however, CBO expects them to grow weaker as time passes.

Another contributor to uncertainty about the legislation's economic effects is uncertainty about the pandemic's effect on long-term potential output. When output is near its potential level, the economy's resources of labor and capital are closer to being fully used, and fiscal stimulus is more likely to bid up the price of those resources—resulting in inflationary pressure, rising interest rates, and the crowding out of private investment. As a result, the effect of fiscal stimulus on real GDP is smaller at such times. Therefore, should the growth of potential output, in relation to that of actual output, be slower (or faster) than CBO projects, the resulting boost to real GDP from the legislation could be smaller (or larger) than CBO estimates.

Effects of Social Distancing and the Trajectory of the Pandemic

CBO is uncertain about the extent to which social distancing will dampen the economic effects of the legislation. Moreover, the evolution of social distancing itself is unclear, and the speed at which disrupted economic activity will resume is unknown. And the development and administration of safe and effective vaccines and therapies remain a significant source of uncertainty.

As the nation learns more about how to reduce the spread of the coronavirus, that knowledge may alter the economic effects of the legislation. For example, fiscal policies might prove more effective if measures were adopted that reduced the scale of social distancing needed to slow the spread of the coronavirus, such as more widespread use of masks, greater testing, and increased contact tracing.

In addition, many factors that will influence the progress of the pandemic, including people's social distancing and various epidemiological characteristics of the coronavirus, are unclear. CBO's economic projections account for the possibility that social distancing could increase or decrease, depending on whether the transmission rate of the virus rises or falls. If infections and social distancing subside sooner than CBO projects, the boost in economic activity resulting from the legislation will be larger than CBO's central estimate. By the same token, if social distancing persists longer than CBO projects, the economic effects of the legislation will be weaker than CBO's central estimate.

27. See Hannes Schwandt and Till von Wachter, "Unlucky Cohorts: Estimating the Long-Term Effects of Entering the Labor Market in a Recession in Large Cross-Sectional Data Sets," *Journal of Labor Economics*, vol. 37, no. S1 (January 2019), pp. S161–S198, http://doi.org/10.1086/701046.

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About This Document

This report provides additional information about the economic projections that the Congressional Budget Office presented in *An Update to the Economic Outlook: 2020 to 2030* (July 2020), www.cbo.gov/publication/56442. It examines the effects—which were incorporated into those projections—that federal policies adopted in response to the 2020 coronavirus pandemic and recession are expected to have on economic outcomes. In keeping with CBO's mandate to provide objective, impartial analysis, the report makes no recommendations.

Prepared with guidance from Jeffrey Werling, John Kitchen, and Devrim Demirel, the report represents the work of many analysts at CBO. Jaeger Nelson wrote the report, James Otterson prepared the tables and figures, and Sarah Robinson fact-checked the report. Robert Arnold, Aaron Betz, William Carrington, Yiqun Gloria Chen, Justin Falk, Michael Falkenheim, Daniel Fried, Edward Gamber, Edward Harris, Wendy Kiska, Mark Lasky, Junghoon Lee, Michael McGrane, Jaeger Nelson, James Otterson, Kerk Phillips, Brooks Pierce, John Seliski, Robert Shackleton, Chad Shirley, and Christopher Williams estimated the macroeconomic effects. Kim Cawley (formerly of CBO), Chad Chirico, Meredith Decker, Kathleen FitzGerald, Nathaniel Frentz, Kathy Gramp, Lori Housman, Justin Humphrey, Aaron Krupkin, Paul Masi, Jeffrey Perry, Dan Ready, Sarah Sajewski, and Susan Willie estimated the budgetary effects. Christina Hawley Anthony, Sebastien Gay, Theresa Gullo, Deborah Kilroe, John McClelland, and Sam Papenfuss provided helpful comments.

CBO thanks external reviewers Alan Auerbach, Karen Dynan, Wendy Edelberg (formerly of CBO), Gregory Mankiw, Emi Nakamura, Jonathan Parker, Valerie Ramey, David Wilcox, and Mark Zandi for their valuable feedback. (The assistance of external reviewers implies no responsibility for the final product, which rests solely with CBO.)

Mark Doms and Jeffrey Kling reviewed the report. Benjamin Plotinsky was the editor, and Casey Labrack was the graphics editor. An electronic version of the report is available on CBO's website (www.cbo.gov/publication/56537).

CBO continually seeks feedback to make its work as useful as possible. Please send any comments to communications@cbo.gov.

Phillip L. Swagel
Director
September 2020