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INTRODUCTION

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Macroeconomic Consequences of the Infrastructure and Budget Reconciliation Plans

BY MARK ZANDI AND BERNARD YAROS

Federal lawmakers are feverishly working on another massive fiscal plan,[1] including a nearly $600 billion bipartisan infrastructure deal and a $3.5 trillion package of spending and tax breaks to support a range of social investments that the Biden administration and congressional Democrats hope to pass into law via the budget reconciliation process. While this work is very much in progress, it is similar in spirit and size to the Build Back Better agenda President Biden proposed earlier this year. If this is close to where the legislation ultimately lands, it will strengthen long-term economic growth, the benefits of which would mostly accrue to lower- and middle-income Americans. The legislation is more-or-less paid for on a dynamic basis through higher taxes on multinational corporations and the well-to-do and a range of other pay-fors. Worries that the plan will ignite undesirably high inflation and an overheating economy are overdone. The fiscal support it provides is only sufficient to push the economy back to full employment from the recession caused by the COVID-19 pandemic. Because the package includes a myriad of spending and tax initiatives, some of which are new and uncertain, implementing this legislation as intended and in a timely way will take deft governance. In this white paper, we assess the macroeconomic impact of both the bipartisan infrastructure deal and the reconciliation package.

Bipartisan infrastructure deal

The bipartisan infrastructure deal is a skinny version of the American Jobs Plan proposed by Biden in April as part of his Build Back Better agenda. It includes nearly $600 billion in additional transportation and other physical infrastructure spending over the decade from 2022 to 2031 (see Table 1). Spending on roads and bridges, power systems, rail, broadband, water systems, and public transit gets the largest boost.

Biden's American Jobs Plan included more than $900 billion in further spending on these types of traditional infrastructure, and then an additional $1.7 trillion in other spending and tax credits. Much of this other proposed funding was for less traditional infrastructure such as housing, research and development, and manufacturing supply chains, and is included at least in part in the $3.5 trillion reconciliation package.

Scaling back the size of the infrastructure deal is necessary to ensure support from enough Republican Senators to avoid a filibuster and get it into law. It is also politically necessary for the additional infrastructure spending to be paid for over the 10-year budget horizon. Lawmakers pieced together a potpourri of pay-fors, ranging from revenues generated from public-private partnerships to repurposing unused pandemic relief funds and auctioning 5G spectrum. While the deal leaves a budget deficit on a static basis, it is more-or-less paid for on a dynamic basis. That is because the increased infrastructure spending supports stronger economic growth, which in turn generates more tax revenues and reduces other government spending on income support programs such as unemployment insurance.

Increasing infrastructure investment has significant macroeconomic benefits. Near term it has a large so-called multiplier—the increase in GDP for a dollar increase in investment. It is among the highest compared with other types of federal government spending and tax policy.[2] Long term, economic research is in strong agreement that public infrastructure provides a significantly positive contribution to GDP and employment.

Table 1: Bipartisan Infrastructure Deal

Static budget cost, $ bil

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2022-2026	2022-2031
Static budget deficit	**-77.3**	**5.5**	**33.9**	**53.3**	**43.7**	**25.5**	**10.4**	**-3.2**	**-14.9**	**-23.6**	**59.1**	**53.2**
Total infrastructure spending	**65.8**	**89.8**	**89.7**	**94.7**	**82.3**	**59.0**	**41.0**	**27.9**	**17.7**	**11.3**	**422.3**	**579.2**
Transportation infrastructure	**21.3**	**33.4**	**41.3**	**48.9**	**49.5**	**40.6**	**30.7**	**22.5**	**15.0**	**9.6**	**194.4**	**312.8**
Roads, bridges and major projects	7.3	13.1	16.5	19.3	18.5	13.3	8.7	6.1	4.3	2.9	74.7	110.0
Safety	0.5	1.1	1.6	2.1	2.1	1.4	0.8	0.6	0.5	0.4	7.4	11.0
Public transit	1.9	3.4	4.2	5.4	6.9	8.1	7.4	5.5	3.6	2.2	21.8	48.5
Passenger and freight rail	2.0	3.6	5.8	8.1	9.6	10.2	9.7	7.8	5.5	3.7	29.1	66.0
Electric vehicle infrastructure	0.1	0.3	0.6	1.2	1.4	1.4	1.2	0.9	0.3	0.0	3.6	7.5
Low carbon and electric buses and ferries	1.0	1.4	1.6	1.6	1.1	0.5	0.2	0.0	0.0	0.0	6.8	7.5
Reconnecting communities	0.0	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.5	1.0
Airports	2.4	4.1	4.5	4.8	4.6	2.8	1.1	0.5	0.2	0.1	20.4	25.0
Ports and waterways	3.1	2.0	2.1	2.2	1.9	1.7	1.5	1.0	0.5	0.2	11.3	16.3
Infrastructure financing	2.9	4.3	4.3	4.3	3.3	1.0	0.0	0.0	0.0	0.0	19.0	20.0
Other infrastructure	**44.5**	**56.4**	**48.4**	**45.8**	**32.8**	**18.4**	**10.3**	**5.3**	**2.7**	**1.8**	**227.9**	**266.4**
Water infrastructure	7.4	10.2	11.5	12.0	8.8	3.9	1.2	0.2	0.0	0.0	49.9	55.2
Broadband infrastructure	22.7	24.1	10.1	5.9	2.2	0.0	0.0	0.0	0.0	0.0	65.0	65.0
Environmental remediation	0.3	1.2	2.6	3.6	4.0	3.9	3.0	1.7	0.6	0.1	11.7	21.0
Power infrastructure	9.4	14.0	16.3	15.5	9.9	4.8	2.1	0.8	0.2	0.0	65.2	73.0
Western water storage	0.9	1.1	1.1	1.1	0.7	0.2	0.0	0.0	0.0	0.0	4.8	5.0
Resilience	3.9	5.8	6.9	7.6	7.1	5.6	4.1	2.7	1.9	1.6	31.3	47.2
Total pay-fors	**-143.1**	**-84.3**	**-55.8**	**-41.4**	**-38.6**	**-33.5**	**-30.6**	**-31.1**	**-32.6**	**-35.0**	**-363.2**	**-526.0**
UI program integrity (net of $8 bil investment)	0.0	0.0	-0.3	-1.4	-3.9	-6.9	-9.9	-13.2	-16.4	-19.8	-5.6	-72.0
Redirect unused UI relief funds	-25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-25.0	-25.0
Repurpose unused funds from 2020 emergency relief	-80.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-80.0	-80.0
State and local investment in broadband infrastructure	-7.0	-7.4	-3.1	-1.8	-0.7	0.0	0.0	0.0	0.0	0.0	-20.0	-20.0
Allow states to sell or purchase unused toll credits	-2.9	-4.3	-5.0	-5.5	-4.9	-3.2	-1.8	-1.1	-0.7	-0.5	-22.7	-30.0
Extend expiring customs user fees	-0.5	-0.5	-0.5	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-2.6	-6.0
Reinstate Superfund fees for chemicals	-1.0	-1.2	-1.2	-1.3	-1.3	-1.3	-1.4	-1.4	-1.4	-1.4	-6.1	-13.0
5G spectrum auction proceeds	0.0	-45.8	-17.9	-1.4	0.0	0.0	0.0	0.0	0.0	0.0	-65.0	-65.0
Extend mandatory sequester	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-4.5	-9.0
Strategic petroleum reserve sale	-6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-6.0	-6.0
Public-private partnerships, direct pay bonds	-9.8	-14.2	-16.8	-18.5	-16.4	-10.5	-6.0	-3.8	-2.4	-1.6	-75.7	-100.0
Other pay-fors	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-50.0	-100.0

Note: These budget cost estimates do not include any dynamic benefits.

Sources: U.S. Senate, White House, Moody's Analytics

It lowers business costs and thus improves competitiveness and productivity, allows workers to live closer to where they work and thus reduces commute times, improves labor participation, and reduces carbon emissions.

There is more debate on whether public infrastructure spending boosts GDP by as much as private capital does. One reason for this is that, unlike private investment, federal investment is not driven solely by market forces or maximizing economic returns. Federal infrastructure also has the goal of improving quality of life, reducing inequities, supporting the work of the federal government itself, and addressing other objectives that policymakers may have. The federal government also imposes various requirements that can increase the costs of the projects that it funds. We estimate the average return on private capital to be close to 10%—that is, a $1 increase in private investment, all else being equal, increases GDP by 10 cents over a year—while it is almost 7% for public infrastructure.[3]

Even so, this is an especially economically propitious time to increase infrastructure investment, since the return on that investment is substantially greater than the government's cost of financing given the extraordinarily low interest rates. Thirty-year Treasury bond yields are close to 2%, while the return on almost any public infrastructure project is likely to be meaningfully greater than that.

Reconciliation package

The $3.5 trillion reconciliation package includes parts of Biden's American Jobs Plan that did not make it into the bipartisan deal, many of the social investments he proposed in his American Family Plan, and other policy priorities of Senate Democrats (see Table 2). There are substantial funds in the package for early childhood and higher education, child and elder care, housing, healthcare, and climate change mitigation. There are also substantial tax breaks for lower-income households, including an extension of the expanded child tax credit that was included as part of the American Rescue Plan passed into law this March; families are getting checks beginning this month, but they will stop at year's end unless lawmakers extend them.

To help pay for the package, lawmakers are proposing higher taxes on multinational corporations and well-to-do individuals, and more revenues from closing the tax gap. There is also a new carbon border adjustment tax, which would effectively impose a tariff on imported products that have a large carbon footprint. The package also raises significant revenues from prescription drug reform.

While the particulars of the reconciliation package are in significant flux, under reasonable assumptions it is fair to say that while there is a meaningful static budget deficit over the 10-year budget horizon, the deficit largely closes on a dynamic basis.[4] This conclusion abstracts from the considerable uncertainties over the actual revenues that will be generated from such policies as closing the tax gap or implementing a new carbon border adjustment tax. There is also a reasonable concern that future lawmakers would not allow policies in the package that expire during the budget horizon to ensure they do not add to deficits outside the horizon and violate budget reconciliation rules to actually expire given what is sure to be intense political pressure to continue funding them.

The reconciliation package would provide both a near-term boost to the economy given the tax cuts in the plan for lower-income individuals and as spending on the various social programs gears up, and several important long-term economic benefits. First, it would increase the labor force participation and hours worked of mostly lower-income women by making childcare more affordable, providing for paid family and medical leave, and expanding the earned income tax credit that encourages low-income households to work. The package makes it more cost effective for more parents to work, and the extra time and scheduling flexibility created by childcare allows them to work more hours.

Research on the labor supply impact of lower childcare costs shows there are meaningful advantages, and our own research is consistent with this.[5] Accessible childcare facilitated by federal support to childcare providers has especially strong employment effects for single mothers, moms with young children, and lower-income mothers. Moreover, the personal financial costs to parents who leave the workforce to care for a young child because of the high cost of childcare are high. They accumulate fewer skills, and their productivity is diminished, resulting in lower wages when the parent eventually returns to the workforce. The effect tends to fade only after several decades. Further, a woman's career progression is reduced even more if she has more than three children, and the penalty to wages is never made up. Even when women remain engaged through part-time work, their career progress is reduced.

A second important macroeconomic impact of the reconciliation package is that it would increase labor productivity by raising the educational attainment of the workforce via universal pre-K, two years of free community college, expanded Pell Grants, and funds to help keep college students in school. The positive impact on educational attainment and productivity would of course play out over many years—well beyond the 10-year budget horizon considered in this analysis.

Stronger and fairer growth

We use the Moody's Analytics model of the U.S. and global economies to quantify the impact of the bipartisan infrastructure deal and the reconciliation package on the economy.[6] We consider five scenarios. To provide context, the first scenario assumes that Biden was unable to enact any major fiscal policy changes, including the American Rescue Plan that was passed into law in March. The second scenario assumes that lawmakers fail to pass any additional fiscal policy legislation beyond the ARP. The third and fourth scenarios assume the bipartisan infrastructure deal and the reconciliation package are each passed into law, respectively, but not the other. And the final scenario assumes that both the bipartisan infrastructure deal and the reconciliation package become law.

The Moody's Analytics model is simulated over the decade through 2031. This is consistent with the Congressional Budget Office's horizon for the federal government's budget and policy analysis. The assumption is that the fiscal policies considered will become law by the end of this year and be implemented beginning in 2022. We also assume there are no other significant fiscal policy changes. Monetary policy is determined in the model based on the Federal Reserve Board's recently implemented framework for conducting monetary policy in which the Fed has committed not to begin normalizing interest rates until the economy is at full employment and inflation has been consistently above the Fed's 2% inflation target. We assume that the worst of the COVID-19 crisis

Table 2: Fiscal 2022 Budget Resolution Framework

Static budget cost, $ bil

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2022-2026	2022-2031
Static budget deficit	**218.4**	**242.8**	**259.6**	**189.9**	**70.0**	**-24.0**	**-70.3**	**-102.7**	**-104.9**	**-84.0**	**980.7**	**594.7**
Total spending and tax cuts	**269.9**	**394.1**	**435.0**	**415.9**	**364.0**	**331.6**	**325.4**	**328.0**	**336.5**	**355.9**	**1,878.9**	**3,556.3**
Individual tax cuts	**94.2**	**136.8**	**136.9**	**106.7**	**47.9**	**23.3**	**23.1**	**22.8**	**22.5**	**22.1**	**522.5**	**636.3**
Expanded Child Tax Credit	85.9	119.0	117.1	85.9	27.2	3.0	2.9	2.8	2.7	2.6	435.1	449.1
Earned Income Tax Credit expansion	2.6	8.8	11.1	11.3	11.5	11.7	11.8	12.0	12.1	12.2	45.3	105.2
Expanded Child and Dependent Care Tax Credit	5.6	8.9	8.8	9.5	9.2	8.5	8.3	8.0	7.7	7.3	42.0	82.0
Climate change	**49.7**	**48.5**	**61.5**	**64.8**	**65.9**	**55.7**	**42.6**	**35.7**	**30.7**	**27.0**	**290.4**	**482.2**
Clean energy and vehicle tax incentives	8.8	26.2	39.0	44.7	50.4	46.2	38.6	34.5	30.0	26.5	169.1	344.8
Civilian Climate Corps	1.6	2.2	2.2	2.2	1.5	0.4	0.0	0.0	0.0	0.0	9.6	10.0
Climate smart ag, wildfire prevention	0.3	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.1	1.7	2.7
Federal procurement of clean technologies	3.8	6.6	8.1	9.9	9.7	7.0	2.9	0.4	0.0	0.0	38.1	48.4
Weatherization and electrification of buildings	8.3	13.2	11.9	7.6	4.0	1.8	0.9	0.7	0.5	0.4	45.0	49.2
Clean energy accelerator	27.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.0	27.0
Education, family leave, nutrition, housing	**43.5**	**81.9**	**94.6**	**98.6**	**101.5**	**107.6**	**119.9**	**132.0**	**146.5**	**168.0**	**420.1**	**1,094.1**
Universal pre-k for 3- and 4-yr-old children	2.7	6.5	9.5	11.4	13.3	15.6	18.5	22.6	28.4	36.3	43.4	164.8
High-quality and affordable child care	6.8	9.3	11.3	13.9	17.0	20.2	25.3	32.2	39.9	49.0	58.3	225.0
Community colleges, HBCUs and Pell Grants	14.6	30.3	34.6	32.3	29.3	28.4	28.0	27.5	27.4	27.6	141.2	280.1
Paid Family and Medical Leave	4.4	9.8	11.6	12.8	16.2	20.6	28.1	34.4	40.0	47.1	54.8	225.0
Nutrition assistance	2.6	3.4	3.9	4.5	4.8	4.9	5.0	5.2	5.3	5.4	19.2	45.0
Affordable housing	12.4	22.7	23.5	23.6	20.9	17.9	14.9	10.2	5.4	2.5	103.1	154.2
Healthcare	**35.7**	**46.7**	**53.3**	**60.8**	**76.8**	**93.6**	**102.4**	**110.3**	**114.7**	**117.5**	**273.2**	**811.7**
Medicare dental, vision and hearing benefit	0.1	0.1	4.3	10.5	27.4	46.1	56.8	66.2	71.8	74.4	42.4	357.7
Home, community-based services expansion	21.5	21.5	21.5	21.5	19.2	15.8	12.3	8.7	5.3	2.9	105.1	150.0
ACA expansion from American Rescue Plan	2.7	13.2	15.1	15.8	16.6	17.4	18.4	19.7	21.2	22.8	63.5	163.0
Close Medicaid coverage gap	11.5	11.9	12.4	13.0	13.6	14.3	15.0	15.7	16.5	17.3	62.3	140.9
Industry	**46.7**	**80.3**	**88.7**	**85.1**	**71.9**	**51.5**	**37.5**	**27.1**	**22.1**	**21.3**	**372.7**	**532.1**
Housing investments	0.2	0.7	1.8	3.1	4.2	5.3	6.2	7.0	7.8	8.8	9.9	45.0
Innovation and R&D upgrades	11.9	24.1	32.0	37.3	34.5	21.6	10.4	5.1	2.3	0.9	139.7	180.0
Small-business support	2.8	3.7	4.4	4.3	4.8	5.9	7.0	2.9	0.1	0.1	20.0	36.0
Manufacturing and supply chain funding	29.0	45.6	42.7	31.5	18.8	8.9	3.7	1.7	1.4	1.1	167.6	184.4
Investment in workers and communities	2.9	6.1	7.9	8.9	9.6	9.9	10.2	10.5	10.5	10.4	35.3	86.7
Total pay-fors	**-51.5**	**-151.3**	**-175.4**	**-226.0**	**-294.0**	**-355.5**	**-395.8**	**-430.7**	**-441.5**	**-439.9**	**-898.2**	**-2,961.6**
Tax increases	**-51.4**	**-130.1**	**-145.4**	**-180.8**	**-240.4**	**-270.6**	**-280.2**	**-291.0**	**-307.1**	**-326.7**	**-748.2**	**-2,223.9**
Corporate taxes	-60.1	-73.9	-74.1	-75.3	-76.5	-76.9	-76.5	-75.8	-76.4	-77.9	-359.9	-743.3
International corporate taxes	-15.8	-53.7	-59.7	-57.1	-54.6	-52.5	-50.6	-49.8	-50.3	-51.1	-240.9	-495.3
High-income individual taxes	43.4	31.8	30.7	3.0	-34.4	-52.5	-50.5	-50.0	-52.6	-56.6	74.4	-187.7
Greater tax enforcement	-18.8	-34.3	-42.4	-51.5	-62.7	-75.5	-88.9	-101.9	-114.3	-127.4	-209.6	-717.6
Carbon border adjustment tax	0.0	0.0	0.0	0.0	-12.2	-13.2	-13.7	-13.5	-13.5	-13.8	-12.2	-79.9
Other pay-fors	**-0.1**	**-21.1**	**-30.0**	**-45.2**	**-53.6**	**-84.9**	**-115.6**	**-139.6**	**-134.4**	**-113.2**	**-150.0**	**-737.7**
Reduced patient spending on prescriptions	0.4	-3.0	-10.6	-24.4	-31.3	-62.0	-92.1	-115.7	-110.2	-88.7	-68.9	-537.7
Repeal Trump rebate rule	0.0	-16.5	-16.7	-17.1	-17.5	-17.8	-18.3	-18.8	-19.1	-19.3	-67.8	-161.1
Pro-worker incentives and penalties	-0.5	-1.7	-2.7	-3.7	-4.7	-5.1	-5.1	-5.1	-5.1	-5.1	-13.3	-39.0

Note: These budget cost estimates do not include any dynamic benefits.

Sources: CBO, Tax Policy Center, White House, Moody's Analytics and its economic fallout are over, and that the pandemic will continue to wind down.

The bipartisan infrastructure deal is small and thus supports only a modestly stronger economy (see Table 3). The most immediate impact in early 2022 is to reduce growth, since the pay-fors take effect right away while the increased infrastructure spending does not get going in earnest because of lags in starting infrastructure projects until late in the year. The apex in the boost to growth from the deal is expected in 2023, when real GDP increases 2.9%, compared with 2.3% when assuming only the ARP is passed into law. The deal creates close to 650,000 jobs at its peak impact in the middle of the decade, reducing the unemployment rate a couple tenths of a percentage point. The unemployment rate never falls below 4%, and the economy never returns to the full-employment conditions experienced pre-pandemic (see Chart 1). Longer term, the economy receives a bump to productivity growth due to the increase in the stock of public infrastructure, but it is small given the modesty of the infrastructure deal (see Chart 2).

The reconciliation package is large and thus meaningfully lifts economic growth and jobs and lowers unemployment. The boost to growth occurs quickly, with real GDP increasing 5.4% in 2022, more than a percentage more than if only the ARP is passed into law. The tax cuts for lower-income individuals in the package are mostly spent quickly, while the tax increases on corporations and high-income and wealthier households have a much smaller and slower impact on investment and consumer spending. The increased social investments in the package, particularly related to child and elder care, healthcare, and housing, also quickly support stronger GDP and jobs. There are more than 2 million more jobs by mid-decade and the unemployment rate is at least 0.5 percentage point lower. The unemployment rate returns to its pre-pandemic lows in the mid-threes, although labor force participation never fully recovers. Longer term, the economy's growth enjoys a measurable increase due to stronger productivity gains given greater educational attainment and higher labor force participation.

The reconciliation package also helps address the wide and growing disparity in the nation's income and wealth distribution. It targets most of the social investments to lower- and middle-income households and taxes multinational corporations and the well-to-do to help pay for these benefits. Moreover, high-income and wealthier households have arguably never been in a better financial position given the long-standing skewing of the income and wealth distribution and surging stock values and house prices. As measured by the Gini index of income inequality, if the reconciliation package becomes law, the income distribution would not skew meaningfully further in the coming decade.[7]

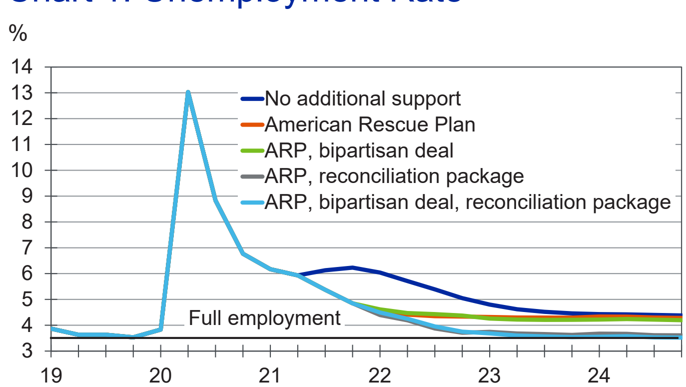
The economy performs best in the final scenario, in which both the bipartisan infrastructure deal and the reconciliation package become law. However, the economy's performance falls well short of how it would do under Biden's proposed American Jobs Plan and American Families Plan. Under his policies, real GDP growth would average 4.2% per annum during his presidential term and 3% over the next decade compared with 3.8% and 2.8% per annum under the infrastructure deal and reconciliation package. In terms of employment, Biden's proposed policies contribute to the creation of 14.4 million more jobs during his term and 20.1 million through the end of 2031. Under the infrastructure deal and reconciliation package, employment increases by 12.9 million during his term and 19.1 million by year-end 2031. Unemployment is similar under both policies, but only because labor force participation is measurably higher under Biden's policies than under the infrastructure deal and reconciliation package.

Inflation, higher taxes and execution risk

Several concerns have been expressed regarding the substantial additional fiscal support being considered by lawmakers. Some worry that the proposed fiscal policy is too expansive given support already provided to the economy during the pandemic, and this will exacerbate the inflation pressures that are evident as the economy reopens from the pandemic. Inflation will remain uncomfortably high even after the current disruptions to the supply side of the economy caused by pandemic are ironed out, and the economy could potentially overheat as the Federal Reserve is forced to respond by tightening monetary policy quickly.

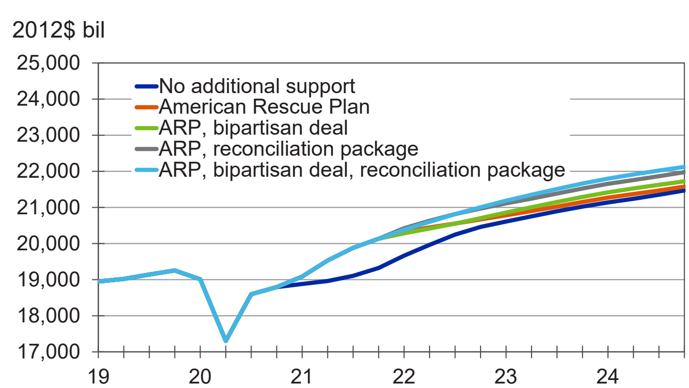
This concern cannot be dismissed, but it is likely misplaced. With unemployment still near 6% and labor force participation well below where it was pre-pandemic, the economy still has considerable slack, equal to approximately 10 percentage points of GDP.

Chart 1: Unemployment Rate



Sources: BLS, Moody's Analytics

Chart 2: Real GDP



Sources: BLS, Moody's Analytics

Table 3: Macroeconomic Impact of the Bipartisan Infrastructure Plan & Budget Reconcilation Package

	REAL GDP									
	No additional support		American Rescue Plan		ARP & Bipartisan Deal		ARP & Reconciliation		ARP, Bipartisan & Reconciliation	
	2012$ bil	Ann. growth, %	2012$ bil	Ann. growth, %	2012$ bil	Ann. growth, %	2012$ bil	Ann. growth, %	2012$ bil	Ann. growth, %
2020Q1	19,011	(5.0)	19,011	(5.0)	19,011	(5.0)	19,011	(5.0)	19,011	(5.0)
2020Q2	17,303	(31.4)	17,303	(31.4)	17,303	(31.4)	17,303	(31.4)	17,303	(31.4)
2020Q3	18,597	33.4	18,597	33.4	18,597	33.4	18,597	33.4	18,597	33.4
2020Q4	18,794	4.3	18,794	4.3	18,794	4.3	18,794	4.3	18,794	4.3
2021Q1	18,881	1.9	19,086	6.4	19,086	6.4	19,086	6.4	19,086	6.4
2021Q2	18,963	1.7	19,531	9.6	19,531	9.6	19,531	9.6	19,531	9.6
2021Q3	19,105	3.0	19,880	7.3	19,880	7.3	19,880	7.3	19,880	7.3
2021Q4	19,324	4.7	20,134	5.2	20,134	5.2	20,134	5.2	20,134	5.2
2022Q1	19,665	7.2	20,327	3.9	20,283	3.0	20,425	5.9	20,381	5.0
2022Q2	19,963	6.2	20,446	2.4	20,415	2.6	20,631	4.1	20,600	4.4
2022Q3	20,247	5.8	20,553	2.1	20,552	2.7	20,815	3.6	20,814	4.2
2022Q4	20,461	4.3	20,668	2.2	20,702	2.9	20,970	3.0	21,004	3.7
2023Q1	20,609	2.9	20,783	2.2	20,858	3.0	21,112	2.7	21,187	3.5
2023Q2	20,752	2.8	20,900	2.3	21,006	2.9	21,245	2.5	21,351	3.1
2023Q3	20,895	2.8	21,023	2.4	21,151	2.8	21,384	2.6	21,511	3.0
2023Q4	21,023	2.5	21,151	2.5	21,290	2.7	21,525	2.7	21,663	2.9
2024Q1	21,138	2.2	21,272	2.3	21,417	2.4	21,653	2.4	21,798	2.5
2024Q2	21,239	1.9	21,370	1.8	21,526	2.0	21,758	2.0	21,914	2.1
2024Q3	21,351	2.1	21,469	1.9	21,626	1.9	21,865	2.0	22,021	2.0
2024Q4	21,469	2.2	21,575	2.0	21,723	1.8	21,975	2.0	22,123	1.9
2025Q1	21,582	2.1	21,673	1.8	21,815	1.7	22,075	1.8	22,218	1.7
2025Q2	21,687	1.9	21,764	1.7	21,902	1.6	22,169	1.7	22,307	1.6
2025Q3	21,789	1.9	21,858	1.7	21,989	1.6	22,265	1.7	22,396	1.6
2025Q4	21,892	1.9	21,953	1.7	22,082	1.7	22,362	1.7	22,491	1.7
2026Q1	21,995	1.9	22,050	1.8	22,172	1.6	22,460	1.8	22,583	1.6
2026Q2	22,101	1.9	22,151	1.8	22,268	1.7	22,562	1.8	22,680	1.7
2026Q3	22,205	1.9	22,253	1.9	22,365	1.8	22,663	1.8	22,775	1.7
2026Q4	22,314	2.0	22,359	1.9	22,472	1.9	22,767	1.8	22,880	1.8
2027Q1	22,426	2.0	22,470	2.0	22,580	1.9	22,873	1.9	22,984	1.8
2027Q2	22,547	2.2	22,587	2.1	22,688	1.9	22,987	2.0	23,089	1.8
2027Q3	22,671	2.2	22,709	2.2	22,802	2.0	23,105	2.1	23,198	1.9
2027Q4	22,795	2.2	22,831	2.2	22,916	2.0	23,224	2.1	23,309	1.9
2028Q1	22,917	2.2	22,953	2.2	23,032	2.0	23,339	2.0	23,418	1.9
2028Q2	23,038	2.1	23,074	2.1	23,147	2.0	23,453	2.0	23,526	1.9
2028Q3	23,161	2.1	23,196	2.1	23,264	2.0	23,565	1.9	23,633	1.8
2028Q4	23,280	2.1	23,314	2.1	23,379	2.0	23,678	1.9	23,743	1.9
2029Q1	23,400	2.1	23,434	2.1	23,493	2.0	23,797	2.0	23,857	1.9
2029Q2	23,520	2.1	23,554	2.1	23,607	2.0	23,919	2.1	23,972	1.9
2029Q3	23,637	2.0	23,674	2.0	23,727	2.0	24,040	2.0	24,094	2.0
2029Q4	23,756	2.0	23,794	2.1	23,846	2.0	24,166	2.1	24,217	2.1
2030Q1	23,878	2.1	23,917	2.1	23,965	2.0	24,297	2.2	24,345	2.1
2030Q2	24,000	2.1	24,039	2.1	24,084	2.0	24,433	2.3	24,479	2.2
2030Q3	24,123	2.1	24,162	2.1	24,205	2.0	24,574	2.3	24,617	2.3
2030Q4	24,247	2.1	24,287	2.1	24,328	2.0	24,718	2.4	24,759	2.3
2031Q1	24,372	2.1	24,412	2.1	24,451	2.0	24,865	2.4	24,904	2.4
2031Q2	24,498	2.1	24,538	2.1	24,573	2.0	25,015	2.4	25,049	2.4
2031Q3	24,624	2.1	24,665	2.1	24,697	2.0	25,161	2.4	25,193	2.3
2031Q4	24,751	2.1	24,793	2.1	24,822	2.0	25,304	2.3	25,333	2.2
2020	18,426	-3.5	18,426	-3.5	18,426	-3.5	18,426	-3.5	18,426	-3.5
2021	19,068	3.5	19,658	6.7	19,658	6.7	19,658	6.7	19,658	6.7
2022	20,084	5.3	20,498	4.3	20,488	4.2	20,710	5.4	20,700	5.3
2023	20,820	3.7	20,964	2.3	21,076	2.9	21,316	2.9	21,428	3.5
2024	21,299	2.3	21,422	2.2	21,573	2.4	21,813	2.3	21,964	2.5
2025	21,737	2.1	21,812	1.8	21,947	1.7	22,218	1.9	22,353	1.8
2026	22,154	1.9	22,203	1.8	22,320	1.7	22,613	1.8	22,729	1.7
2027	22,610	2.1	22,649	2.0	22,747	1.9	23,047	1.9	23,145	1.8
2028	23,099	2.2	23,134	2.1	23,206	2.0	23,509	2.0	23,580	1.9
2029	23,578	2.1	23,614	2.1	23,668	2.0	23,980	2.0	24,035	1.9
2030	24,062	2.1	24,101	2.1	24,145	2.0	24,506	2.2	24,550	2.1
2031	24,561	2.1	24,602	2.1	24,636	2.0	25,086	2.4	25,120	2.3

Table 3: Macroeconomic Impact of the Bipartisan Infrastructure Plan & Budget Reconcilation Package (Cont.)

	NONFARM EMPLOYMENT									
	No additional support		American Rescue Plan		ARP & Bipartisan Deal		ARP & Reconciliation		ARP, Bipartisan &Reconciliation	
	Mil	Change, ths	Mil	Change, ths	Mil	Change, ths	Mil	Change, ths	Mil	Change, ths
2020Q1	151.9	130	151.9	133	151.9	133	151.9	133	151.9	133
2020Q2	133.7	(18,210)	133.7	(18,208)	133.7	(18,208)	133.7	(18,208)	133.7	(18,208)
2020Q3	140.8	7,090	140.8	7,089	140.8	7,089	140.8	7,089	140.8	7,089
2020Q4	142.6	1,817	142.6	1,817	142.6	1,817	142.6	1,817	142.6	1,817
2021Q1	143.1	431	143.4	731	143.4	731	143.4	731	143.4	731
2021Q2	143.5	448	145.0	1,648	145.0	1,648	145.0	1,648	145.0	1,648
2021Q3	144.3	810	147.0	2,041	147.0	2,041	147.0	2,041	147.0	2,041
2021Q4	145.3	950	148.6	1,592	148.6	1,592	148.6	1,592	148.6	1,592
2022Q1	146.2	960	149.7	1,079	149.6	998	149.8	1,176	149.7	1,095
2022Q2	147.2	970	150.3	586	150.3	653	150.6	796	150.6	863
2022Q3	148.1	900	150.7	441	150.8	541	151.1	493	151.2	593
2022Q4	149.0	890	151.2	413	151.3	516	151.6	480	151.8	583
2023Q1	149.8	840	151.6	425	151.8	465	152.1	495	152.3	535
2023Q2	150.6	770	152.0	426	152.2	431	152.6	485	152.8	490
2023Q3	151.3	690	152.4	369	152.6	391	153.0	440	153.3	462
2023Q4	151.8	510	152.6	275	153.0	376	153.4	376	153.7	478
2024Q1	152.2	410	152.9	294	153.3	341	153.8	418	154.2	465
2024Q2	152.5	300	153.3	335	153.7	313	154.3	476	154.6	454
2024Q3	152.8	260	153.5	239	153.9	271	154.7	414	155.1	446
2024Q4	153.0	240	153.7	228	154.2	260	155.1	372	155.5	404
2025Q1	153.2	200	153.9	132	154.4	229	155.3	274	155.9	371
2025Q2	153.4	160	154.0	132	154.6	204	155.6	244	156.2	316
2025Q3	153.5	160	154.1	140	154.8	173	155.8	231	156.5	264
2025Q4	153.7	210	154.3	141	154.9	154	156.0	226	156.7	239
2026Q1	153.9	220	154.5	166	155.1	151	156.3	236	156.9	221
2026Q2	154.2	220	154.6	169	155.2	142	156.5	233	157.1	206
2026Q3	154.3	170	154.8	163	155.4	140	156.7	218	157.3	195
2026Q4	154.5	190	155.0	173	155.5	140	156.9	225	157.5	192
2027Q1	154.7	190	155.1	176	155.7	145	157.2	218	157.7	187
2027Q2	154.9	200	155.3	194	155.8	150	157.4	225	157.9	181
2027Q3	155.1	190	155.5	201	156.0	161	157.6	222	158.1	182
2027Q4	155.3	210	155.7	210	156.2	174	157.8	218	158.2	182
2028Q1	155.5	210	156.0	224	156.3	184	158.1	236	158.4	196
2028Q2	155.8	230	156.2	240	156.5	183	158.3	259	158.6	202
2028Q3	156.0	230	156.4	238	156.7	192	158.6	250	158.8	204
2028Q4	156.2	230	156.7	236	156.9	193	158.8	255	159.0	212
2029Q1	156.5	250	156.9	236	157.1	201	159.1	249	159.3	214
2029Q2	156.7	240	157.2	238	157.3	216	159.3	242	159.5	220
2029Q3	156.9	240	157.4	238	157.5	223	159.5	236	159.7	221
2029Q4	157.2	240	157.6	238	157.8	231	159.8	228	159.9	220
2030Q1	157.4	250	157.9	251	158.0	233	160.0	241	160.1	223
2030Q2	157.7	240	158.1	249	158.2	233	160.3	240	160.4	224
2030Q3	157.9	240	158.4	246	158.5	236	160.5	234	160.6	224
2030Q4	158.2	240	158.6	246	158.7	237	160.7	232	160.8	223
2031Q1	158.4	240	158.9	245	158.9	236	161.0	234	161.0	225
2031Q2	158.6	240	159.1	242	159.2	237	161.2	229	161.3	225
2031Q3	158.9	240	159.3	240	159.4	239	161.4	224	161.5	223
2031Q4	159.1	240	159.6	240	159.7	239	161.6	225	161.7	224
2020	142.3	(8,672.2)	142.3	(8,671.3)	142.3	(8,671.3)	142.3	(8,671.3)	142.3	(8,671.3)
2021	144.0	1,765.7	146.0	3,740.2	146.0	3,740.2	146.0	3,740.2	146.0	3,740.2
2022	147.6	3,589.5	150.5	4,468.9	150.5	4,513.8	150.8	4,765.7	150.8	4,810.6
2023	150.9	3,250.0	152.1	1,675.4	152.4	1,899.1	152.7	1,978.2	153.0	2,201.9
2024	152.6	1,745.0	153.4	1,218.6	153.8	1,362.3	154.4	1,698.4	154.9	1,842.2
2025	153.5	837.5	154.1	710.6	154.7	916.0	155.7	1,234.5	156.3	1,439.9
2026	154.2	795.0	154.7	625.9	155.3	616.1	156.6	921.6	157.2	911.8
2027	155.0	770.0	155.4	727.8	155.9	592.2	157.5	888.1	158.0	752.5
2028	155.9	857.5	156.3	888.9	156.6	713.8	158.4	950.1	158.7	775.0
2029	156.8	955.0	157.3	949.7	157.4	817.8	159.4	987.1	159.6	855.2
2030	157.8	970.0	158.2	979.6	158.4	921.9	160.4	946.2	160.5	888.4
2031	158.8	960.0	159.2	976.5	159.3	946.0	161.3	925.7	161.4	895.2

Table 3: Macroeconomic Impact of the Bipartisan Infrastructure Plan & Budget Reconcilation Package (Cont.)

	UNEMPLOYMENT RATE, %				
	No additional support	American Rescue Plan	ARP & Bipartisan Deal	ARP & Reconciliation	ARP, Bipartisan & Reconciliation
2020Q1	3.8	3.8	3.8	3.8	3.8
2020Q2	13.0	13.0	13.0	13.0	13.0
2020Q3	8.8	8.8	8.8	8.8	8.8
2020Q4	6.8	6.8	6.8	6.8	6.8
2021Q1	6.2	6.2	6.2	6.2	6.2
2021Q2	5.9	5.9	5.9	5.9	5.9
2021Q3	6.1	5.4	5.4	5.4	5.4
2021Q4	6.2	4.8	4.8	4.8	4.8
2022Q1	6.0	4.5	4.6	4.4	4.5
2022Q2	5.7	4.4	4.5	4.2	4.3
2022Q3	5.4	4.4	4.4	3.9	4.0
2022Q4	5.1	4.3	4.4	3.7	3.8
2023Q1	4.8	4.3	4.3	3.7	3.7
2023Q2	4.6	4.3	4.2	3.7	3.6
2023Q3	4.5	4.3	4.2	3.7	3.6
2023Q4	4.5	4.3	4.2	3.6	3.5
2024Q1	4.4	4.3	4.2	3.7	3.6
2024Q2	4.4	4.3	4.2	3.7	3.6
2024Q3	4.4	4.3	4.2	3.6	3.5
2024Q4	4.4	4.3	4.2	3.6	3.5
2025Q1	4.4	4.3	4.2	3.6	3.6
2025Q2	4.4	4.3	4.2	3.7	3.6
2025Q3	4.4	4.4	4.2	3.9	3.7
2025Q4	4.5	4.4	4.2	3.9	3.7
2026Q1	4.5	4.5	4.3	3.9	3.7
2026Q2	4.5	4.5	4.3	3.9	3.7
2026Q3	4.6	4.5	4.3	3.9	3.7
2026Q4	4.6	4.5	4.2	4.0	3.7
2027Q1	4.6	4.5	4.2	4.1	3.8
2027Q2	4.6	4.5	4.2	4.1	3.8
2027Q3	4.6	4.5	4.2	4.1	3.8
2027Q4	4.5	4.5	4.3	4.0	3.8
2028Q1	4.5	4.5	4.3	4.0	3.8
2028Q2	4.5	4.5	4.3	4.0	3.8
2028Q3	4.5	4.5	4.3	4.0	3.8
2028Q4	4.5	4.5	4.3	4.0	3.8
2029Q1	4.5	4.5	4.3	4.0	3.8
2029Q2	4.5	4.4	4.4	3.9	3.8
2029Q3	4.5	4.4	4.4	3.8	3.8
2029Q4	4.5	4.4	4.4	3.8	3.8
2030Q1	4.5	4.4	4.4	3.8	3.8
2030Q2	4.5	4.4	4.4	3.9	3.9
2030Q3	4.5	4.4	4.4	3.9	3.9
2030Q4	4.5	4.4	4.4	3.9	3.9
2031Q1	4.5	4.4	4.4	3.9	3.9
2031Q2	4.5	4.4	4.4	3.9	3.9
2031Q3	4.5	4.4	4.4	3.9	3.9
2031Q4	4.5	4.4	4.4	3.9	3.9
2020	8.1	8.1	8.1	8.1	8.1
2021	6.1	5.6	5.6	5.6	5.6
2022	5.5	4.4	4.5	4.0	4.1
2023	4.6	4.3	4.2	3.7	3.6
2024	4.4	4.3	4.2	3.6	3.5
2025	4.4	4.4	4.2	3.8	3.6
2026	4.5	4.5	4.3	3.9	3.7
2027	4.6	4.5	4.2	4.1	3.8
2028	4.5	4.5	4.3	4.0	3.8
2029	4.5	4.4	4.4	3.9	3.8
2030	4.5	4.4	4.4	3.9	3.9
2031	4.5	4.4	4.4	3.9	3.9

Table 3: Macroeconomic Impact of the Bipartisan Infrastructure Plan & Budget Reconcilation Package (Cont.)

	LABOR FORCE PARTICIPATION RATE, %				
	No additional support	American Rescue Plan	ARP & Bipartisan Deal	ARP & Reconciliation	ARP, Bipartisan & Reconciliation
2020Q1	63.2	63.2	63.2	63.2	63.2
2020Q2	60.8	60.8	60.8	60.8	60.8
2020Q3	61.5	61.5	61.5	61.5	61.5
2020Q4	61.5	61.5	61.5	61.5	61.5
2021Q1	61.4	61.4	61.4	61.4	61.4
2021Q2	61.6	61.6	61.6	61.6	61.6
2021Q3	61.8	62.1	62.1	62.1	62.1
2021Q4	61.9	62.3	62.3	62.3	62.3
2022Q1	62.0	62.5	62.5	62.5	62.5
2022Q2	62.1	62.6	62.6	62.6	62.6
2022Q3	62.1	62.6	62.6	62.6	62.6
2022Q4	62.1	62.6	62.6	62.7	62.7
2023Q1	62.1	62.7	62.7	62.7	62.7
2023Q2	62.1	62.7	62.7	62.7	62.7
2023Q3	62.1	62.7	62.7	62.8	62.8
2023Q4	62.2	62.7	62.7	62.8	62.8
2024Q1	62.2	62.7	62.7	62.8	62.8
2024Q2	62.3	62.7	62.7	62.9	62.9
2024Q3	62.3	62.7	62.8	62.9	62.9
2024Q4	62.3	62.7	62.8	62.9	62.9
2025Q1	62.3	62.7	62.8	62.9	62.9
2025Q2	62.3	62.7	62.7	62.9	62.9
2025Q3	62.3	62.7	62.7	62.9	62.9
2025Q4	62.3	62.7	62.7	62.9	62.9
2026Q1	62.3	62.7	62.7	62.9	62.9
2026Q2	62.3	62.7	62.7	62.9	62.9
2026Q3	62.3	62.7	62.7	62.9	62.9
2026Q4	62.3	62.7	62.7	62.9	62.9
2027Q1	62.3	62.7	62.7	62.9	62.9
2027Q2	62.3	62.6	62.7	62.9	62.9
2027Q3	62.3	62.6	62.6	62.9	62.9
2027Q4	62.2	62.6	62.6	62.9	62.9
2028Q1	62.2	62.6	62.6	62.8	62.9
2028Q2	62.2	62.6	62.6	62.8	62.9
2028Q3	62.2	62.6	62.6	62.8	62.9
2028Q4	62.2	62.5	62.6	62.8	62.9
2029Q1	62.2	62.5	62.5	62.8	62.9
2029Q2	62.1	62.5	62.5	62.8	62.9
2029Q3	62.1	62.5	62.5	62.8	62.9
2029Q4	62.1	62.5	62.5	62.8	62.9
2030Q1	62.1	62.5	62.5	62.8	62.8
2030Q2	62.1	62.4	62.5	62.8	62.8
2030Q3	62.1	62.4	62.5	62.8	62.8
2030Q4	62.1	62.4	62.4	62.8	62.8
2031Q1	62.1	62.4	62.4	62.8	62.8
2031Q2	62.1	62.4	62.4	62.8	62.9
2031Q3	62.1	62.4	62.4	62.8	62.9
2031Q4	62.1	62.4	62.4	62.8	62.9
2020	61.8	61.8	61.8	61.8	61.8
2021	61.7	61.9	61.9	61.9	61.9
2022	62.1	62.6	62.6	62.6	62.6
2023	62.1	62.7	62.7	62.7	62.7
2024	62.3	62.7	62.7	62.9	62.9
2025	62.3	62.7	62.7	62.9	62.9
2026	62.3	62.7	62.7	62.9	62.9
2027	62.3	62.6	62.6	62.9	62.9
2028	62.2	62.6	62.6	62.8	62.9
2029	62.1	62.5	62.5	62.8	62.9
2030	62.1	62.4	62.5	62.8	62.8
2031	62.1	62.4	62.4	62.8	62.9

Source: Moody's Analytics

But the bipartisan infrastructure deal and reconciliation package will deliver less than a percentage point of GDP growth in 2022 and closer to 2 percentage points of GDP growth each year from 2023 to 2025. Given the fiscal support still in train, mostly from the ARP, this would be just enough to provide the added GDP needed to get the economy back to full employment. Moreover, much of the additional fiscal support being considered is designed to lift the economy's longer-term growth potential and ease inflation pressures. For example, consider the additional spending on new rental housing supply for lower-income households, which is critical to rein in rent growth and housing costs, or the efforts to reduce prescription drug costs.

Others are concerned that the included tax increases to help pay for the legislation will have serious negative economic consequences. To be sure, all else being equal, higher taxes will weigh on economic growth, but the impact on the economy from the higher proposed taxes will be small. In part, the tax increases being considered on high-income and wealthy households would be the first meaningful tax hike on individuals since the early 1990s. And from a historical perspective they are, on net, modest.[8] Effective tax rates will remain close to historical norms.

The proposed tax increases for corporations, similarly, only partially roll back the large tax cuts they received with the Tax Cut and Jobs Act in 2018. The top marginal corporate tax rate was reduced from 35% to 21% in the TCJA, and we assume in the reconciliation package they would be increased back to 25%. Moreover, there is little evidence to date that the TCJA led to a meaningful sustained increase in business investment, hiring or wages, or prompted businesses to shift production to the U.S. from overseas as intended. While it is difficult to disentangle all that is going on in the economy to isolate the impacts of the TCJA, it is difficult to conclude that the tax cuts in the TCJA have supported a stronger economy. This suggests that partially undoing those tax cuts will not meaningfully hurt the economy.

The most serious concern is around execution risk. That is, the bipartisan infrastructure deal and reconciliation package are complex, with lots of massive moving parts. Successfully organizing them would be difficult even among the best-managed private companies. Scaling up existing programs as envisaged in the legislation is one thing but standing up new programs and tax policy is another. In our analysis, we try to account for expected lags and delays in implementation, but this could be trickier than we are anticipating. This is especially the case for much of the new policy related to addressing climate change.

Moreover, on paper the plan is largely paid for and does not add meaningfully to the nation's deficits and debt. But there is a risk that spending and tax credits in the plan that are slated to ultimately expire will not—the politics of ending any government program are vexed. Heightened tax enforcement may also not raise as much additional revenue as anticipated as wealthy taxpayers will work to avoid paying more. The result would be larger federal budget deficits and debt. Running large deficits makes a lot of sense during the pandemic, so those hit hard can manage through. It also makes sense as the pandemic winds down, the economy gets back to full employment. But once the economy has returned to full employment, focusing on our long-term fiscal problems will become critical.

Conclusions

The nation has long underinvested in both physical and human infrastructure and has been slow to respond to the threat posed by climate change, with mounting economic consequences. The bipartisan infrastructure deal and reconciliation package help address this. Greater investments in public infrastructure and social programs will lift productivity and labor force growth, and the attention on climate change will help forestall its increasingly corrosive economic effects. Moreover, the policies being considered would direct the benefits of the stronger growth to lower-income Americans and address the long-running skewing of the income and wealth distribution. Passage of legislation is far from certain but failing to pass legislation would certainly diminish the economy's prospects.

Endnotes

1. Since the COVID-19 pandemic struck the United States in March 2020, federal government fiscal support has totaled an estimated more than $5 trillion, equal to close to 25% of the nation's GDP.
2. In a full-employment economy, the GDP multiplier on traditional infrastructure is estimated to be 1.23 one year after the investment, and 1.12 for nontraditional infrastructure. It is higher when the economy is operating below full employment.
3. This differs from the Congressional Budget Office's estimate that the average rate of return on private sector investment is about 10% and that the average return on federal investment is about half that. The difference is largely because the CBO assumes that a significant part of the increased federal spending on infrastructure will be offset by less infrastructure spending by state and local governments. We do not expect this offset to be nearly as large with this infrastructure deal.
4. A more detailed description of the programs and tax changes in the reconciliation package is available on request.
5. For more information on the labor force participation rate impacts, a literature review is available in L. J. Bettendorf, E. L. Jongen, and P. Muller, Child Care Subsidies and Labour Supply—Evidence From a Large Dutch Reform, Labour Economics (2015).
6. A description of the Moody's Analytics model of the U.S. economy is available here. More detailed validation documentation is available on request. The Moody's Analytics model is similar in theory and empirics to those used by the Federal Reserve Board and Congressional Budget Office for forecasting, budgeting and policy analysis. The model has been used to evaluate the plethora of fiscal and monetary policies implemented during the COVID-19 pandemic.
7. The Gini index is a statistical measure of economic inequality. A value of zero represents perfect economic equality, and a value of one represents perfect economic inequality. The 2019 Gini index for income in the U.S. was 0.465 and has been steadily rising since the late 1970s, indicating that there has been steady skewing of the income distribution.
8. Of all the tax increases since World War II, this would rank 24th largest as a percent of GDP.

About the Authors

Mark Zandi is chief economist of Moody's Analytics, where he directs economic research. Moody's Analytics, a subsidiary of Moody's Corp., is a leading provider of economic research, data and analytical tools. Dr. Zandi is a cofounder of Economy.com, which Moody's purchased in 2005.

Dr. Zandi's broad research interests encompass macroeconomics, financial markets and public policy. His recent research has focused on mortgage finance reform and the determinants of mortgage foreclosure and personal bankruptcy. He has analyzed the economic impact of various tax and government spending policies and assessed the appropriate monetary policy response to bubbles in asset markets.

A trusted adviser to policymakers and an influential source of economic analysis for businesses, journalists and the public, Dr. Zandi frequently testifies before Congress on topics including the economic outlook, the nation's daunting fiscal challenges, the merits of fiscal stimulus, financial regulatory reform, and foreclosure mitigation.

Dr. Zandi conducts regular briefings on the economy for corporate boards, trade associations and policymakers at all levels. He is on the board of directors of MGIC, the nation's largest private mortgage insurance company, and The Reinvestment Fund, a large CDFI that makes investments in disadvantaged neighborhoods. He is often quoted in national and global publications and interviewed by major news media outlets, and is a frequent guest on CNBC, NPR, Meet the Press, CNN, and various other national networks and news programs.

Dr. Zandi is the author of *Paying the Price: Ending the Great Recession and Beginning a New American Century*, which provides an assessment of the monetary and fiscal policy response to the Great Recession. His other book, *Financial Shock: A 360º Look at the Subprime Mortgage Implosion, and How to Avoid the Next Financial Crisis*, is described by The New York Times as the "clearest guide" to the financial crisis.

Dr. Zandi earned his BS from the Wharton School at the University of Pennsylvania and his PhD at the University of Pennsylvania. He lives with his wife and three children in the suburbs of Philadelphia.

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