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The Fiscal Policy Response to the Pandemic

ABSTRACT This paper provides estimates of the size and determinants of the fiscal policy response to the COVID-19 pandemic across thirty advanced economies. In contrast to the fiscal response to financial crises, I find no evidence that fiscal space was an important determinant of the aggressiveness of pandemic fiscal packages. Focusing in on the US fiscal policy response, I discuss the policy implications of the unique features of a pandemic recession. I argue that the social insurance and public health components of the $5.2 trillion US package, such as expanded unemployment insurance and government funding of vaccine development and distribution, were highly appropriate, whereas broad-based stimulus measures, such as the onetime payments to households, were not. Finally, I consider some of the longer-run consequences of the US fiscal policy actions. The aggressive fiscal expansion, along with extensive private saving during the pandemic, is likely to generate rapid growth over the next few years. The rise in the debt-to-GDP ratio, caused by both the policy response and the pandemic recession itself, could limit future fiscal action if anti-debt sentiment reemerges.

The fiscal policy response to the pandemic in the United States has been extraordinary. Including the recently passed American Rescue Plan Act, pandemic-related legislation has had a budgetary cost of more than $5 trillion.[1] As a share of GDP, that is nearly equivalent to what the

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1. Committee for a Responsible Federal Budget (CRFB), "COVID Money Tracker," https://www.covidmoneytracker.org/. The size estimate is corroborated by Gravelle and Marples (2021) and the CBO (2020, 2021).

United States spent on war production in 1943.[2] Or, to put it in a more modern context, it is about four times as large as the 2009 American Recovery and Reinvestment Act passed to help the US economy recover from the global financial crisis. Though the United States has had one of the most aggressive fiscal responses, other countries have done a great deal as well.

As we begin the second year of the pandemic, it is useful to take a step back and assess these extraordinary actions. What determined the aggressiveness of the fiscal policy response across countries? Was the composition of the US fiscal package appropriate for the special circumstances of the pandemic economy? And finally, will the fiscal response have repercussions for the future?

I. What Determined the Aggressiveness of the Fiscal Response?

I.A. Size of Early Fiscal Packages

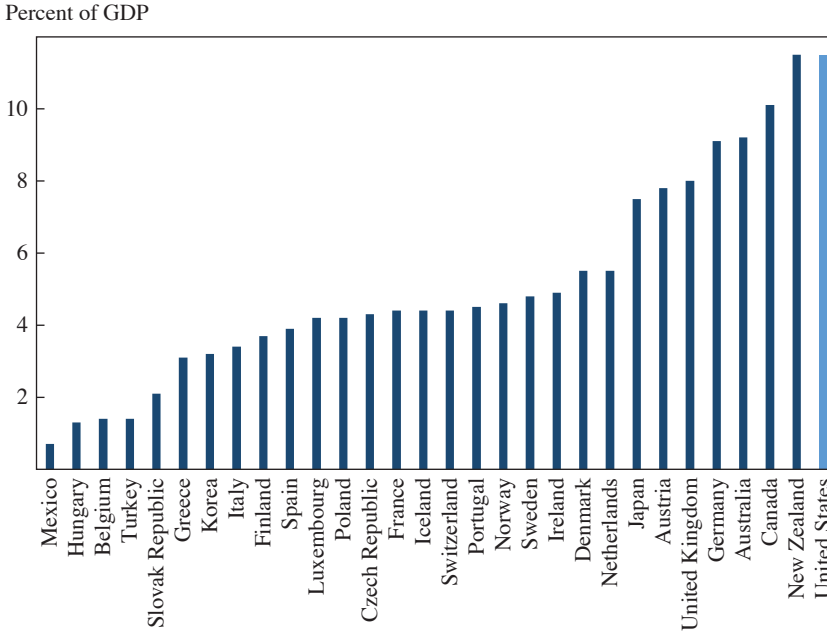
A natural place to begin is with data on the size of the fiscal policy response in various countries. David Romer and I have constructed estimates of the sizes of initial fiscal responses to the pandemic for the thirty countries in the OECD as of 2000. We aim to include only the actual budgetary impact of actions, not the headline amount of loan guarantees, liquidity provision, and similar programs. As discussed in the online appendix, we use a variety of previous fiscal policy data collection efforts (Bruegel, the IMF, and the OECD), secondary sources (Fitch Ratings and the Economist Intelligence Unit), and primary sources (country budget proposals, government announcements, and official reports) to derive our estimates of the size of fiscal packages through the end of July 2020. The online appendix describes our final adjudication for the thirty countries in our sample.

Figure 1 shows the fiscal packages (as a share of the country's 2019 GDP) ordered from lowest to highest.[3] One thing that stands out is just how extraordinary the early US fiscal response to the pandemic was. Only New Zealand spent as much relative to the size of its economy. The United States spent about 50 percent more than the United Kingdom, and roughly three times as much as France, Italy, or Spain.

2. The data on war production (based on federal contract data) were provided by Gillian Brunet.

3. We use the convention that a positive value corresponds to an increase in the budget deficit, so a larger value implies more fiscal expansion.

Figure 1. Early Pandemic Fiscal Packages in OECD Countries



Source: Author's calculations. See the online appendix for details.

The fiscal packages enacted early in the pandemic are systematically larger than early packages enacted in response to the 2008 financial crisis. The OECD (2009, 110) collected data on crisis fiscal packages in March 2009, which are similar in timing for that episode to the data we have collected for the pandemic. The average fiscal package early in the pandemic was 5.2 percent of GDP (with a median of 4.4 percent); the average package early in the Great Recession was 1.4 percent of GDP (with a median of 1.6 percent).[4] Thus, the typical package was three to four times larger in the recent episode.

I.B. Influence of Debt Ratios

In previous work, Romer and I (2018) analyzed why some countries undertook much more aggressive fiscal responses to financial crises than

4. The OECD does not include fiscal package estimates for the Great Recession episode for two countries included in our pandemic sample (Greece and Turkey). The mean pandemic package excluding Greece and Turkey is 5.4 percent (with a median of 4.5 percent).

others and, as a result, experienced much less severe post-crisis recessions. We found that a country's prior debt-to-GDP ratio had a large contractionary effect on the fiscal response to a crisis. Among OECD countries in the period since 1980, countries with initial debt ratios one standard deviation below the sample mean increased their high-employment budget deficits by over 3 percent of GDP in response to significant financial distress. On the other hand, countries with initial debt ratios one standard deviation above the sample mean actually *decreased* their high-employment deficits by 2–3 percent of GDP—meaning that they switched to highly contractionary fiscal policy.

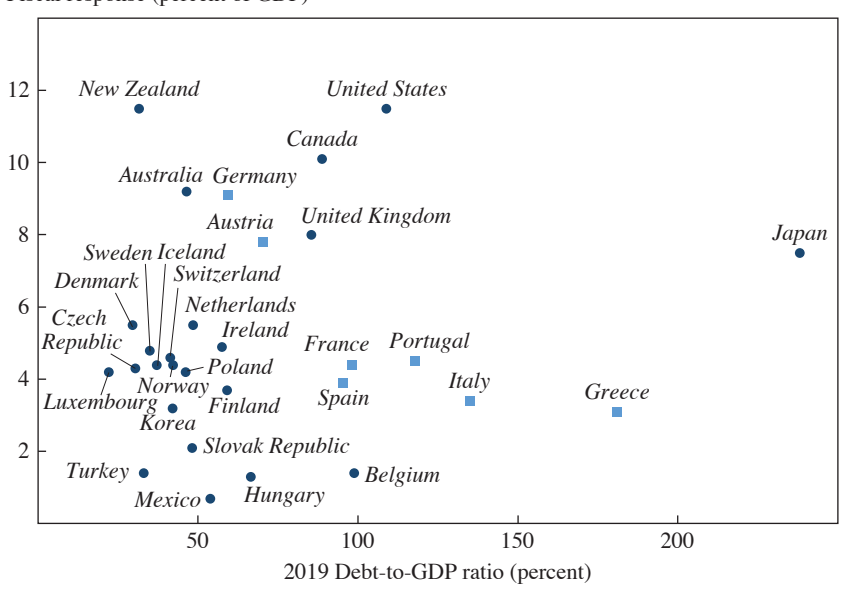
Subsequent investigation into why the fiscal response to a crisis depended on the debt ratio found only modest evidence that debt mattered because of its impact on market access (Romer and Romer 2019). For example, controlling for a country's sovereign bond rating or relative interest rate on government bonds did not noticeably reduce the impact of the debt ratio on the fiscal response to a crisis. Instead, narrative evidence suggests that "anti-debt" ideas played a crucial role. Policymakers were influenced in how they responded to a crisis by their ideas about the harms of high debt and the benefits of fiscal austerity.

Here, I examine the early COVID-19 relief packages for the same sample of countries to see if the size of the relief packages was similarly dependent on the prior debt ratio. Figure 2 shows a scatterplot of early pandemic-related fiscal packages and countries' debt-to-GDP ratios at the end of 2019.[5] There is no clear relationship between the COVID-19 relief packages and the prior debt-to-GDP ratio. Some countries with low debt, like New Zealand and Australia, took very aggressive action, but other low-debt countries, like Luxembourg and South Korea, did relatively little. At the other end of the spectrum, some high-debt countries, like Japan and the United States, did a great deal of fiscal expansion, while other high-debt countries, like Greece and Italy, did relatively little.

If one focuses on some of the core countries of the eurozone (shown in squares in figure 2), something like the expected negative relationship between debt and fiscal actions appears to hold. Low-debt Germany and Austria had early fiscal packages of about 8 percent of GDP; medium-debt France, Spain, and Portugal had packages of about 4 percent of GDP;

5. The debt data are from the International Monetary Fund (IMF) World Economic Outlook Database, October 2020. For the baseline analysis I use the gross debt ratio; I also consider the net debt ratio as a robustness exercise.

Figure 2. Scatterplot of Early Pandemic Fiscal Packages and Debt-to-GDP Ratios



Sources: Author's calculations; IMF World Economic Outlook Database.

Notes: See the online appendix for details about the fiscal response measure. The gross debt ratio data are from the IMF World Economic Outlook Database, October 2020. The countries marked with squares are the seven countries of the eurozone with the largest GDP.

and high-debt Greece and Italy had fiscal expansions of about 3 percent. However, a number of low-debt European countries, particularly the Nordic countries and new European Union members (the Czech Republic, Hungary, and the Slovak Republic), had quite modest fiscal responses to the pandemic.

Regressions confirm the sense from the figure that debt does not appear to have been destiny when it came to the pandemic fiscal response. Table 1 reports the results of simple cross-section regressions of the size of the early fiscal response on the 2019 debt-to-GDP ratio, with and without various control variables. Column 1 shows that in the most basic specification, the coefficient on the debt ratio actually enters positively; that is, countries with higher initial debt levels undertook more aggressive fiscal expansion. However, the standard error is so large that the two-standard-error confidence band encompasses both positive and negative values. Column 2 shows that the same pattern holds when net debt is used in place of gross debt.

Table 1. Relationship between Early Pandemic Fiscal Packages and Debt Ratios

Sample	*(1)* Full	*(2)* Full	*(3)* No Japan	*(4)* No Poor	*(5)* Full	*(6)* Full
Explanatory variable						
Gross debt/GDP	0.006		–0.001	0.005	0.007	0.020
	(0.009)		(0.013)	(0.009)	(0.008)	(0.007)
Net debt/GDP		0.001				
		(0.008)				
COVID-19 deaths					–0.002	
					(0.002)	
S&P rating						0.472
						(0.093)
Constant	4.745	5.276	5.108	5.541	4.981	–8.558
	(0.815)	(0.610)	(0.966)	(0.789)	(0.931)	(2.693)

Source: Author's calculations.

Notes: The dependent variable is the size of early pandemic fiscal packages (as a percentage of 2019 GDP), where a positive value corresponds to fiscal expansion. The gross and net debt ratios are as of the end of 2019 and are measured in percentage points; COVID-19 deaths are as of April 30, 2020; and the S&P rating is as of the end of 2019. The "No Poor" sample excludes Greece, Hungary, Mexico, Poland, the Slovak Republic, and Turkey. The standard errors reported are heteroscedasticity-consistent (Eicker-White) standard errors.

Column 3 shows that the lack of a relationship remains even if one takes out Japan, the most noticeable outlier, though the sign of the point estimate does flip to the expected negative relationship.[6] Column 4 shows that the lack of relationship also holds if one considers only relatively wealthy countries (and so excludes the six countries with the lowest GDP per capita in the sample—Greece, Hungary, Mexico, Poland, the Slovak Republic, and Turkey).

Column 5 shows that controlling for the initial severity of the COVID-19 outbreak in a country also does not reveal a negative effect of debt. I include cumulative COVID-19 deaths per 100,000 people as of April 30, 2020, on the assumption that countries with a worse outbreak would take more aggressive fiscal action for a given debt level.[7] Interestingly, COVID-19 deaths enter negatively (but insignificantly), and gross debt continues to enter positively (but again very insignificantly).

I also try including a direct measure of market access as a predictor of the early fiscal response to the pandemic. In particular, I include a country's

6. Excluding other outliers, such as Greece and the United States, also has little impact on the estimates.

7. The data on deaths come from Our World in Data, "Covid-19-data," https://github.com/owid/covid-19-data/blob/master/public/data/ecdc/total_deaths_per_million.csv, accessed February 11, 2021.

S&P sovereign bond rating as of the end of 2019 in the regression that also includes the gross debt-to-GDP ratio.[8] Column 6 of table 1 shows that the coefficient on the S&P rating is strongly positive and highly statistically significant. The coefficient estimate implies that a country with a rating three points higher (say AA versus A) is predicted to have an early pandemic fiscal package (as a percent of GDP) that is 1.4 percentage points higher.[9] The coefficient on the debt ratio remains positive and is now marginally significant.

That market access is a much more important determinant of the fiscal response to the pandemic than initial debt suggests an important change from the 2008 financial crisis. Countries in 2020 appear to have been constrained in their fiscal choices not by ideas related to debt and deficits but by their ability to borrow. This could suggest an evolution of economic ideas away from unwarranted concern about debt levels in times of stress. However, it could also reflect the unique terror engendered by the pandemic and countries' desire to combat it. Only time, and the next crisis, will tell.

II. Evaluating the US Fiscal Policy Response

The data on the size of fiscal responses to the pandemic across countries show that the US response was nothing short of enormous. But was it well conceived and appropriate for the unique conditions of a pandemic recession? Does it appear to have been effective?

II.A. Differences between Ordinary and Pandemic Recessions

The first step in evaluating the desirability of recent fiscal measures is thinking about how a pandemic recession differs from an ordinary recession. Most recessions involve a decline in aggregate demand, precipitated by a variety of factors, such as contractionary monetary policy, financial distress, or falls in consumer and business confidence. The pandemic recession also

8. The S&P data are from S&P Global, "Browse Ratings by Practice," https://www.standardandpoors.com/en_US/web/guest/entity-browse, accessed September 5, 2020. I convert it to a numerical scale, where AAA corresponds to 30, AA to 27, A to 24, and so on. Pluses and minuses move the value up or down one unit.

9. My findings about predictors of the fiscal response echo those Benmelech and Tzur-Ilan (2020) derived using a different sample of countries and a different approach to measuring fiscal responses. Balajee, Tomar, and Udupa (2020), Hosny (2021), and Apeti and others (2021) also examine the cross-country evidence concerning the fiscal response to the pandemic. One interesting finding from Apeti and others (2021) is that an alternative measure of fiscal space—a lower ratio of government debt to tax revenues—is associated with a larger fiscal policy response to the pandemic.

involved a large fall in demand. The high-frequency data on restaurant reservations, plane flights, and trips to retail establishments from last March show that consumers responded to emerging news about the virus by hunkering down—even before shelter-in-place orders required it.[10] Very high saving rates in the United States suggest that demand remained low throughout 2020. But that is where the similarity between ordinary and pandemic recessions stops.

DESIRABLE AMOUNT OF STIMULUS One difference involves the appropriate amount of aggregate demand stimulus. In an ordinary recession, a key role of policy is to try to get aggregate demand up any way possible. The goal is to fill the hole in demand and thus return output to full employment quickly. But a pandemic thrives on human interaction, and hence on economic activity. Even if fiscal policy could counteract the decline in aggregate demand caused by virus fears and uncertainty and thus maintain full employment, policymakers should not want to do so. Certain activities—indoor dining at restaurants, cruise travel, concerts, conventions, and sporting events—simply cannot occur safely during a pandemic. The goal of policy during a pandemic is to stimulate only as much production and employment as can happen relatively safely.

A related point is that what happens during a pandemic recession depends crucially on the public health situation. The course of the virus determines how much and what can be produced safely. It also plays a key role in demand. Without effective public health measures, aggregate demand stimulus would likely cause the virus to surge. This, in turn, would cause private demand to collapse, countering any benefits of the fiscal stimulus.

UNEQUAL IMPACT A second difference between ordinary and pandemic recessions involves the inequality in harm to different types of workers. While the effects of any recession tend to be unequal, the effects of a pandemic recession are uniquely so. Some workers, particularly nonmedical professionals in the service sector, are able to switch easily to working from home. Assuming demand for their remote services does not decline substantially, these workers are likely to experience relatively modest increases in unemployment during a pandemic. And, to the degree that people prefer the flexibility provided by working from home and not commuting, the benefits of working may even increase for such workers during a pandemic.

On the other hand, workers in sectors particularly affected by the pandemic, such as hospitality and brick-and-mortar retail, are likely to

10. See, for example, Goolsbee and Syverson (2021) and Chetty and others (2020).

be severely harmed. Whether because demand dries up or because of shutdown orders, workers in these sectors are likely to experience prolonged unemployment. Workers in essential sectors, such as health care or food manufacturing, who cannot work remotely are unlikely to become unemployed, but their jobs become riskier or less pleasant. As a result, they are also particularly harmed.

DOES STIMULUS FLOW THROUGHOUT THE ECONOMY? A third difference is that the benefits of aggregate demand stimulus do not flow throughout the economy during a pandemic recession. In an ordinary recession, it is not necessary to target aggregate demand stimulus to the particular sectors or people affected. For example, if residential construction declines, it is not necessary to focus on measures closely tied to residential construction. Any measure that stimulates demand will cause an increase in income that will flow through to increased demand for housing and so help the construction sector. This is much less true in a pandemic recession. Because some sectors cannot operate safely in a pandemic, general demand stimulus will do little to help unemployed workers in those sectors. The usual knock-on effects behind a traditional Keynesian multiplier—spending in one area flows to spending throughout the economy—fail to operate when part of the economy is shut down.[11]

IMPLICATIONS The unique characteristics of a pandemic recession imply that fiscal policy during a pandemic should be geared much more toward helping those who are directly harmed rather than toward increasing aggregate demand more generally. That is, it should be aimed at providing social insurance rather than broad stimulus. As we formalize and discuss in Romer and Romer (2021), the sensible role of policy during a pandemic is to provide people with the compensation they would have received if they had been able to insure themselves against the effects of a pandemic. Such targeted aid should ideally compensate not only those who become unemployed but also those who remain employed but at high risk of exposure because of the essential nature of their jobs. Directing aid to those affected deals directly with the problem of grossly unequal harms from the pandemic recession. It also deals with the problem that general stimulus does not flow throughout the economy during a pandemic.

Of course, to the extent that output during the pandemic is below the level that can be produced safely because of an aggregate demand shortfall, broad fiscal stimulus would be appropriate and desirable. Another benefit of

11. This point is formalized in the model of Guerrieri and others (2020). They also show that shutdowns can themselves have aggregate demand consequences.

Table 2. Deficit Impact of US Pandemic-Related Legislation

Provision	*Impact on deficit ($ billions)*
Enhanced unemployment benefits	748
Direct assistance to state and local governments[a]	597
Health care spending[b]	629
Direct payments to households	870
Paycheck Protection Program	808
Other loan and grant provisions	232
Other spending provisions[c]	890
Tax reductions	426
Total	5,200

Source: Author's calculations.

Notes: Data come from the Committee for a Responsible Federal Budget (CRFB) Covid Money Tracker (https://www.covidmoneytracker.org/explore-data/interactive-table), accessed April 24, 2021. The numbers were corroborated where possible using CBO documents.

[a]In addition to the $150 billion provided by the CARES Act for the Coronavirus Relief Fund and the $362 billion provided by the American Rescue Plan for the Coronavirus State and Local Fiscal Recovery Funds, I also include the $85 billion for Medicaid Matching Funds Increase provided by the Families First Act and extended by other acts.

[b]Of the $697 billion CRFB includes in health spending, $67.8 billion is more sensibly categorized as other spending because it is largely transfers to households. In particular, $22.8 billion is for government coverage of COBRA payments and $45 billion is for ACA subsidies.

[c]Other spending provisions include both the $401 billion CRFB reports in this category and pieces from other categories (such as the transfer components of health spending) that I subtract to get my preferred breakdown.

targeting aid only to those directly harmed is that such households are likely to spend the aid and thus contribute to overall demand. At the same time, because targeted fiscal support is more likely to be spent on necessities such as rent and food than general stimulus, it is less likely to encourage consumption and production that is unsafe, such as travel or entertainment.

II.B. Particular Fiscal Measures

With these general principles in mind, let me turn to a high-level evaluation of the fiscal measures taken in the United States in response to the pandemic. Table 2 shows the major components of the US fiscal response. Roughly 14 percent of the $5.2 trillion the United States allocated to pandemic aid went to expanded unemployment insurance (UI), and another 17 percent went to onetime direct payments to households (the so-called economic impact payments or stimulus checks). Another 16 percent went to the Paycheck Protection Program, which provided forgivable loans to small businesses if they maintained payrolls. About 11 percent went to aid to state and local governments. The remaining 42 percent of the total budgetary impact was attributable to an array of temporary spending increases and tax cuts. Of the miscellaneous spending, roughly $629 billion (or about 12 percent of

the total fiscal impact) went to public health measures, such as paying for COVID-19 care, vaccine development, and testing.

EXPANDED UNEMPLOYMENT INSURANCE The expansion of unemployment insurance was clearly appropriate to the unique circumstances of the pandemic. Pandemic-related legislation expanded the coverage of the unemployment insurance program to include workers such as Uber drivers and the self-employed. As discussed by Ruffini and Wozniak (2021), the ratio of those receiving benefits to the total number unemployed (the recipiency rate) was only about 30 percent in the twenty-five years before the pandemic. Thanks to the recent emergency measures, the recipiency rate has risen to close to 100 percent in the last year. In addition to covering workers who previously did not qualify for UI, emergency measures increased both the generosity of benefit payments and their duration. The increase in payments, particularly the across-the-board extra $600 per week provided by the Coronavirus Aid, Relief, and Economic Security (CARES) Act, raised replacement rates to well over 100 percent for unemployed low-wage workers (Ganong, Noel, and Vavra 2020).

The expanded unemployment insurance is firmly in the social insurance branch of fiscal policy. It provides aid to those directly affected by the pandemic. Increased replacement rates are also appropriate in a recession where many jobs are forbidden for public health reasons. However, a policy resulting in replacements rates in excess of 100 percent was clearly designed to accomplish additional goals, such as poverty reduction or aggregate demand stimulus.

As aggregate demand stimulus, the expanded unemployment insurance appears to have been quite effective. One heartening development during the pandemic has been the burgeoning of economics research on the effects of the pandemic itself and the policy response. Many of these studies use innovative, high-frequency data from private sector sources. For example, using proprietary bank account records, Farrell and others (2020) estimate that the spending of benefit recipients increased $0.73 for every $1 of additional benefits. Thus, to the degree that aggregate demand stimulus was appropriate during the pandemic, the UI expansion was a cost-effective way to provide it.

Examining the pandemic fiscal response through the lens of social insurance leads naturally to consideration of government-provided hazard pay. In addition to those who lose their jobs, people who remain employed as frontline essential workers are also directly economically affected by the pandemic. At the same wage as before, the benefits of working are reduced—perhaps substantially so—by the risks of social contact and the

unpleasantness of protective measures. Notions of fairness and a need to maintain a fully staffed essential sector suggest that extra payments to frontline essential workers are desirable. To the degree that such payments are called for because the government's provision of unemployment insurance reduces frontline workers' incentives to continue working, it is natural for the government (rather than private employers) to pay them.

There have been pilot programs and proposals for hazard pay during the pandemic (Kinder, Stateler, and Du 2020). The CARES Act allowed state and local relief funds to be used to cover limited programs for hazard pay.[12] A number of states, including Pennsylvania, Vermont, Louisiana, Maryland, and New Hampshire, set up such programs. The Health and Economic Recovery Omnibus Emergency Solutions (HEROES) Act, passed by the House of Representatives in May 2020, included a $200 billion fund for "pandemic premium pay." This provision was removed before a greatly changed and slimmed down relief measure was passed in December 2020. The failure to include a substantial hazard pay program is an important missed opportunity in the fiscal response to the pandemic.

STATE AND LOCAL FISCAL RELIEF Aid to state and local governments is another type of targeted fiscal support. State governments faced substantial increases in spending because of the pandemic.[13] The sources ranged from the obvious increase in public health expenditure and funds for the switch to online education, to the less obvious spending to stem the spread of the virus through the homeless population and the additional costs of providing state services remotely or in person with additional safety precautions. At the same time, state tax revenues dropped at least somewhat as unemployment rose (Auerbach and others 2020). Because most states have balanced budget requirements, some have already been forced to cut other types of spending and raise taxes, and many others are on the verge of doing so.

Sensible public policy suggests that useful state spending should not be cut simply because states cannot borrow to smooth over temporary emergency expenditures or falls in revenue. Transfers from the federal government, which can borrow, help states to maintain services and employment during a crisis. This spending can be thought of as another type of social insurance. It prevents cuts in state spending that citizens would likely

12. See "Department of the Treasury, Coronavirus Relief Fund for States, Tribal Governments, and Certain Eligible Local Governments," *Federal Register*, January 15, 2021.

13. See National Conference of State Legislatures, "State Fiscal Responses to Coronavirus (COVID-19)," https://www.ncsl.org/research/fiscal-policy/state-fiscal-responses-to-covid-19.aspx.

have wished to insure against had they contemplated the possibility of a pandemic.

Such transfers also provide some of the most cost-effective aggregate demand stimulus. Chodorow-Reich and others (2012) found that the state fiscal relief in the 2009 American Recovery and Reinvestment Act provided positive employment benefits both inside and outside the public sector at the remarkably low cost per job of just $27,000. The study also looked at the behavior of rainy-day funds following the 2009 state fiscal relief and found no evidence that the transfers were saved—contradicting a common fear expressed about such payments.

One of the earliest pandemic fiscal measures, the Families First Coronavirus Response Act, included an increase in the Medicaid matching percentage, which is a form of state fiscal relief. The CARES Act, passed later in March 2020, included about $150 billion of direct payments to state and local governments. The American Rescue Plan Act, passed in March 2021, included another $362 billion of such funds. In addition to maintaining state services and helping to deal with the effects of the pandemic, these funds are likely to have a substantially expansionary impact on aggregate demand in 2021. Whether this expansionary impact is desirable or not will depend on the evolution of the public health situation.

SPENDING ON PUBLIC HEALTH Spending on public health measures accounts for about $629 billion of the $5.2 trillion spent on pandemic relief. Given the widespread infections with COVID-19 and the large number of deaths, this spending was clearly necessary and valuable. Such spending was also consistent with the unique nature of the pandemic recession. Because both the recovery of demand and the safe pace of economic growth depend on getting the virus under control, it was imperative to take aggressive action on public health measures. Indeed, it is hard to imagine that more should not have been spent. Take, for example, what has clearly been one of the public health triumphs: vaccine development. The somewhat unfortunately named Operation Warp Speed used direct government spending and guaranteed sales contracts to encourage private pharmaceutical companies to develop vaccines. A number of highly effective vaccines were available within a year of the recognition of the virus—a record for vaccine development. However, the painfully slow progression from vaccine discovery to actual inoculation strongly suggests that more funding and effort was needed to set up effective and rapid distribution programs. Much larger capital expenditures for mobile refrigeration units and production facilities, along with free training for emergency providers, could likely have gotten the vaccines into many more arms much faster.

The United States has also failed to establish a truly effective virus monitoring program. Though testing has increased markedly, we still conduct fewer tests per one thousand people than many other rich countries. For example, Denmark currently conducts about nine times as many tests per person as the United States; the United Kingdom about seven times as many.[14] The United States is even worse at genetic sequencing of cases to identify variants and patterns of transmission. Iceland sequences about 60 percent of all cases; the United States sequences less than 1 percent. We currently rank thirty-second in the world for sequences completed per one thousand COVID-19 cases.[15] As a result, we know much less about emerging variants and where transmission is coming from. Based on the experience of other countries, we could have done much better at getting the virus under control if we had had a more effective and wider-reaching public health response.

The failure to spend adequately on public health measures may reflect, in part, policymakers' failure to realize the fundamental difference between a pandemic recession and an ordinary recession. Thinking of the current recession as just a replay of the Great Recession, with a virus in place of a global financial crisis, may have led policymakers to focus too much on dealing with the economic fallout of the pandemic and not enough on combating the root cause. Of course, a refusal to follow scientific evidence and advice also surely played a role.

ONETIME STIMULUS PAYMENTS Roughly $870 billion of the budgetary impact of the COVID-19 fiscal response came from onetime stimulus payments. The payments went to everyone below a certain income threshold. For example, the original checks of $1,200 per adult authorized in the CARES Act went to married couples earning up to $198,000. Because of their broad reach, the payments had at least some impact on reducing inequality temporarily, and they surely gave many households a much-needed boost at a difficult time.

What is not to like about the stimulus payments? The main drawback is that the help is very poorly targeted. Most of the money went to people who remained employed during the pandemic. The $1,200 checks (followed by $600 and $1,400 checks) were surely helpful to those hurt by the pandemic, but they were not nearly enough to truly hold life together for the most

14. Our World in Data, "Daily COVID-19 Tests per Thousand People," https://ourworldindata.org/grapher/full-list-daily-covid-19-tests-per-thousand.

15. The statistics come from COVID CG, "Global Lineage Surveillance," https://covidcg.org, accessed March 15, 2021, which use data from GISAID.

affected. A related problem goes back to the idea that general stimulus does not flow to those in need during a pandemic recession. Ordinarily, anything that raises aggregate demand in a recession eventually helps unemployed workers throughout the economy. But during a pandemic, general stimulus cannot help workers in sectors that remain closed or greatly restricted.

Another potential concern about the economic impact payments is that they could stimulate output and employment beyond the safe level. Particularly if the payments were spent on risky items like travel or indoor restaurant dining, the payments could exacerbate the pandemic. Interestingly, at least in the case of the initial round, the COVID-19 stimulus payments seem unlikely to have stimulated aggregate demand excessively. Coibion, Gorodnichenko, and Weber (2020) conducted a survey of a large sample of recipients. Most respondents said that they saved the payment or used it to pay down debt. Only about 15 percent of people surveyed report that they mostly spent their payment.[16] While this small effect is perhaps desirable from a disease-control viewpoint, it also suggests that the payments were not particularly valuable as a relief or recovery mechanism.

PAYCHECK PROTECTION PROGRAM A novel and very substantial component of the fiscal policy response in the United States was the Paycheck Protection Program, or PPP. The program shares some features with the widely admired *Kurzarbeit* program in Germany. By providing loans that morphed into grants to small businesses that used the money primarily to maintain payrolls, the program was designed to preserve worker-firm matches. Workers received most, if not all, of their pay without becoming officially unemployed or applying for unemployment insurance.

One peculiarity of the program is that the forgivable loans were only available to firms with fewer than three hundred employees. Though one can tell stories that might lead policy to focus on firms facing borrowing constraints, being above or below three hundred employees is surely an extremely crude proxy on which to build an $808 billion program. Related to this point, there is some evidence that PPP loans tended to go toward firms that already had banking relationships (and so perhaps already had access to credit), rather than to the neediest ones (Liu and Volker 2020).

At least two studies have used the fact that eligibility was discontinuous to try to measure what the program accomplished (Chetty and others 2020; Autor and others 2020). Both find that employment declined less at firms

16. Using high-frequency data, Chetty and others (2020) found evidence of an immediate impact of the payments on consumer spending. However, the estimates do not show whether the effects were quickly undone or more persistent.

just below the eligibility cutoff than at those just over. However, the difference was quite small. Indeed, under reasonable assumptions, the implied cost per job (and hence per employee-firm match preserved) was very high—$224,000 in Autor and others (2020) and $377,000 in Chetty and others (2020). And, as pointed out by Hubbard and Strain (2020), it is too early to know if the matches were truly preserved or if workers will eventually take other jobs or be laid off once the program ends.

One reason why the cost per job preserved has been so high is that firms could receive grants to maintain matches that would have been maintained without government support. Another source of the high program cost is that the replacement rates and the maximum covered salary expenses were substantially higher than under conventional unemployment insurance. As discussed in Romer and Romer (2021), in a social insurance framework, high-income earners would likely choose to self-insure rather than purchase pandemic insurance. Thus, covering their wages during unemployment is not a sensible component of a public insurance program. The bottom line is that the PPP was an interesting and noble experiment, but it was problematic on many levels.

Overall, the fiscal response to the pandemic in the United States runs the gamut from highly useful and appropriate to largely ineffective and wasteful. Spending on programs such as unemployment compensation and public health was exactly what was called for by the unique nature of the pandemic recession. Spending on broad-based payments and other general stimulus measures was much less useful in a recession where the impacts were highly unequal and the Keynesian multiplier was likely substantially reduced by lockdowns.

III. Will the Pandemic Fiscal Response Have Repercussions for the Future?

The preceding analysis examined the more immediate appropriateness of various pandemic fiscal measures. I want to turn now to possible longer-term repercussions. Will the extraordinary fiscal measures taken during the pandemic have consequences for the future?

III.A. Is the Economy Likely to Boom?

One area of current discussion is whether the economy is likely to recover rapidly following the passage of the Biden administration's American Rescue Plan Act in March 2021. Considering the unique nature of the pandemic recession, the answer depends most heavily on what happens

to the virus. If the vaccination program is successful and COVID-19 cases moderate further, the economy is likely to do well. If vaccinations flag or become less effective as new variants emerge, recovery is likely to slow or stall.

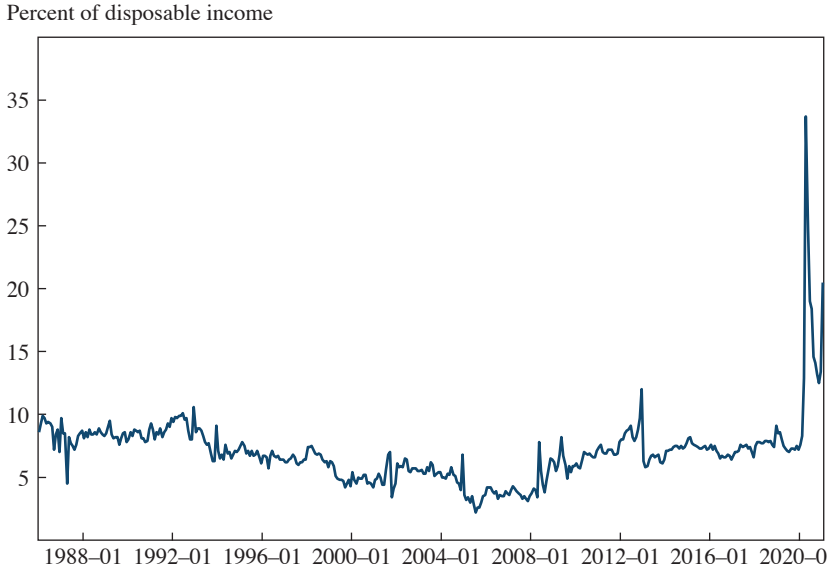
The American Rescue Plan Act provides $155 billion in health care spending, of which about $60 billion is focused more narrowly on vaccine and treatment development, vaccine distribution, and COVID-19 testing, tracing, and monitoring.[17] As discussed in section II, this funding is surely valuable and likely to speed control of the virus. By doing so, this aspect of the bill should help accelerate recovery. The unemployment insurance enhancements, stimulus payments, and state fiscal relief also included in the act are likely to provide a substantial fillip to aggregate demand. This demand increase, combined with greater virus control, could generate substantial increases in output and employment over the next two years.

Probably more important than the direct stimulus from the most recent pandemic fiscal package is the accumulated savings of American households. As can be seen in figure 3, the personal saving rate in the United States has been two to three times higher than normal since the virus emerged. Between this increased saving and the rise in stock prices, the level of financial assets of households and nonprofit organizations has risen almost $10 trillion since the fourth quarter of 2019. In recent work, Brunet (2019, 2021) suggests that the best parallel to the current situation is the buildup of savings during World War II. The combination of rationing, increased earnings, and production limitations forced households to save tremendously during the war. Following the war, households increased personal consumption just as tremendously. Using county-level data, Brunet (2019) finds that residential investment and related spending on household durables following the war increased significantly more in counties where the buildup of savings was larger. It is very possible that we will see a similar burgeoning of consumer demand driven by accumulated savings following the pandemic, once it is safe for people to shop and produce the goods that consumers desire.

There are, of course, factors that could hold back this surge of spending. It is possible that living through a pandemic will lead households to

17. The estimates are from the Committee for a Responsible Federal Budget (CRFB) COVID Money Tracker. I exclude the $67.8 billion for COBRA coverage and ACA subsidies from the CRFB's estimate of health spending in the American Rescue Plan Act. The act provides another $10 billion to purchase, manufacture, and distribute critically needed medical supplies and equipment under the authority of the Defense Production Act.

Figure 3. Personal Saving Rate in the United States since 1986



Source: Bureau of Economic Analysis, National Income and Product Accounts, table 2.6, accessed March 18, 2021.

Note: The data are for the period January 1986–January 2021.

permanently increase their precautionary saving. Likewise, households that were allowed to miss rent or loan payments will face higher debt loads as a result of the deferrals and so may be less able to spend. Many workers are also facing difficult transitions. For example, workers who had to leave the labor force to take care of children will likely face difficulties returning to the labor market at their previous wage. And the pandemic may lead to permanent changes in the sectoral composition of the economy that will require workers to retrain and find new employment. All of these are factors that could mute some of the surge in consumption that would otherwise occur. Nevertheless, I strongly suspect that the positive forces will outweigh these negative ones.

While output and employment are likely to increase markedly as the virus recedes and consumer demand increases, it is important to note just how far employment in the United States is below its normal trend level. Payroll employment in February 2021 was 9.5 million below its prepandemic high in February 2020. This is greater than the peak loss of jobs in the 2008 recession. Taking into account the normal trend growth of employment

adds at least another million jobs that are currently missing from the US economy. As a result, the United States needs to grow rapidly for a sustained period to heal the labor market, and it can do so without pushing up against the capacity constraints of the economy.

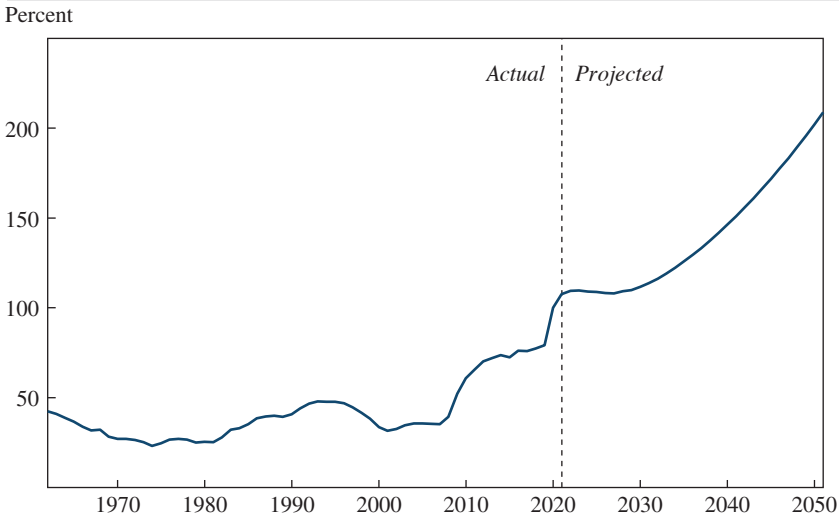
III.B. Reduction in Fiscal Space

A longer-term repercussion of the enormous fiscal response to the pandemic in the United States involves the increase in government debt. Figure 4 shows actual and projected federal debt-to-GDP ratios from 1962 to 2051. The data are from the Congressional Budget Office, updated to include the CBO's estimates of the deficit impact of the American Rescue Plan Act (CBO 2021).[18] The debt-to-GDP ratio stood at 79 percent at the end of fiscal year 2019 (before the pandemic had emerged). It is projected to reach 110 percent by the end of fiscal 2023 (when the spending from the American Rescue Plan has had its full impact). This sharp rise is obviously related not just to the deliberate fiscal response to the pandemic but also to the operation of automatic stabilizers. At the same time, sharp falls in current and expected interest rates brought about by the pandemic have been a factor pushing the debt ratio in the opposite direction (because lower interest rates reduce the cost of debt service). Nevertheless, the net result has been a substantial rise in the debt-to-GDP ratio, and thus a reduction in our fiscal space.

The high debt loads are unlikely to precipitate any kind of fiscal crisis in the United States. Demand for US government debt remains as strong as ever. But that does not mean that the rise in the debt ratio is costless. I fear it could lead to inaction on a number of national priorities. As discussed in section I, previous research shows that the fiscal response to financial distress in the postwar period has depended strongly on the initial debt-to-GDP ratio: countries throughout the OECD behaved as if they were constrained by high debt when responding to a financial crisis. While this does not seem to have been true of the response to the pandemic, the historical behavior could reemerge as the pandemic wanes. As the United States recovers and policymakers seek to tackle issues such as climate change, crumbling infrastructure, and persistent poverty, they may find increased opposition to further spending. Thus, one potential legacy of the extraordinary fiscal actions to fight the pandemic may be that the country fails to deal with other pressing needs.

18. I am grateful to Alan Auerbach for providing these data.

Figure 4. Actual and Projected US Federal Debt-to-GDP Ratio



Sources: CBO; calculations by Alan Auerbach.

Notes: The data through 2020 are from the CBO, "Budget and Economic Data: Historical Budget Data," https://www.cbo.gov/data/budget-economic-data, accessed February 2021. The data after 2020 are from calculations by Alan Auerbach, which take the long-term projections from CBO (Long-Term Budget Projections, March 2021) and adjust them for CBO's estimates of the ten-year costs of the American Rescue Plan Act (CBO 2021). The estimates assume no macroeconomic feedback from the act, and so hold the paths of GDP and the debt service/debt ratio constant.

This possibility puts the enormous size and significant flaws of the US fiscal response in a somewhat harsher light. Though much that was done was useful and unquestionably necessary, some was misguided and wasteful. If something like the nearly $1 trillion spent on stimulus payments that did little to help those most affected by the pandemic ends up precluding spending $1 trillion on infrastructure or climate change in the next few years, the United States will have made a very poor bargain indeed.

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