Lessons from COVID-19 Aid to State and Local Governments for the Design of Federal Automatic Stabilizers

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ABSTRACT

In this paper we analyze pandemic-era federal fiscal assistance to state and local governments and draw lessons for the design of stabilization policy. We start by explaining why the federal government plays a key role in stabilizing state and local government budgets across the business cycle, before describing the shape this role currently takes. We then provide an overview of how the COVID-19 crisis was expected to affect state and local budgets, and how those expectations affected the amount of fiscal relief the federal government provided. We next assess the design of the federal response and evaluate its effectiveness. We conclude by drawing lessons for the design of future countercyclical federal aid to state and local governments. We argue for tying the quantity of aid provided to national measures of tax bases and propose three delivery mechanisms: rule-based grants, loans, and an insurance program.

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1. Introduction

As the economic crisis triggered by the COVID-19 pandemic unfolded, federal policymakers in the United States repeatedly allocated large amounts of funding to state and local governments. Particularly large amounts of such funding included the March 2020 Coronavirus Aid, Relief, and Economic Security Act (CARES) and the March 2021 American Rescue Plan Act (ARPA). Total federal relief for state and local governments over the course of the pandemic has amounted to about $900 billion.

We analyze these relief efforts and draw specific lessons for the design of fiscal stabilization policy. We start by explaining why and how the federal government plays a key role in stabilizing state and local government budgets across the business cycle. We then turn to an overview of how the COVID-19 crisis was expected to affect state and local budgets, and describe how those projections led to the approval of more federal assistance than was necessary to close revenue shortfalls. We next assess the impact of this federal assistance, arguing that it was less cost-effective in achieving its economic aims than were comparable past programs. We conclude by drawing specific lessons from the fiscal assistance provided to state and local governments during the COVID-19 pandemic for the design of similar future aid packages. We emphasize the need for rules-based assistance determinations premised on measures that more reliably predict revenues than does the unemployment rate. Our final section proposes three reform options for federal fiscal aid to state and local governments: rule-based grants, loans, and an insurance mechanism.

2. Fiscal federalism and stabilization policy

State and local governments in the United States, which play major roles in taxation, providing services, and administering federal safety net programs, are generally bound by a mix of statutory and constitutional balanced-budget requirements to avoid operating-budget deficits (National Association of State Budget Officers, 2021a). Among the fifty states, only Vermont does not face an explicit requirement of this sort, though historically even the Green Mountain State behaves as if it too were bound to balance its budget. The federal government has therefore assumed responsibility for ensuring that fiscal policy does not become (overly) countercyclical, and that revenue shortfalls at the subnational level do not trigger sudden cutbacks in the services provided by states, cities, counties, school districts, and similar government entities.

In theory, rainy-day funds and creative accounting (such as flexibility in the funding of public-sector employee pensions) could allow states to smooth operating expenditures and service provision without resorting to federal assistance. In practice, however, rainy-day funds have played little role in helping states to achieve balanced budgets.[1] This ineffectiveness reflects both

[1] Nationwide, states' rainy day fund balances rose by nearly $36 billion from Fiscal Year 2020 to Fiscal Year 2021 and declined by just under $13 billion from Fiscal Year 2021 to Fiscal Year 2022 (National Association of State

political and institutional factors. When governments experience budget surpluses, politicians are incentivized either to spend the surplus on public projects or to cut residents' taxes. Likewise, institutional constraints on states' ability to draw rapidly on rainy-day fund balances during recessions—or to invest considerably in building those balances during expansions—impede the funds' utility. Of course, some of these constraints may also reflect expectations of countercyclical federal aid.

These design features leave the federal government to play a primary role in macroeconomic stabilization through a wide range of policies, including monetary policy, direct payments to households and firms, and aid to state and local governments. In this paper, we focus our attention on the last of these. Federal aid to subnational governments comes in two forms: through so-called automatic stabilizers—programs legislated in advance of potential downturns—and through discretionary spending, which are typically one-off, temporary programs legislated in response to specific downturns.

Assessing how stabilization efforts might best be designed requires a framework for understanding what these programs are meant to accomplish. Generally, apportioning the responsibility for both raising revenues and providing services among federal, state, and local governments is meant to achieve a mix of distributional and efficiency-oriented goals. Several classic considerations enter the picture (Oates, 1999, 2008). For instance, the government's redistributive functions tend to work best when centralized at the federal level, to avoid creating incentives for corporations or high-income individuals to flock to low-tax destinations. And while local and state governments may be best suited to tailor services to the needs of local populations, the federal government may likewise be best suited to provide services that entail substantial border-crossing externalities or that exhibit substantial economies of scale.

Three aspects of efficient service delivery are particularly salient in the context of downturns or other economic emergencies. First, essential services including policing, fire safety, and public transit will tend to provide greater benefits if they are delivered consistently than if they fluctuate between lean years and years of plenty. Second, downturns and other crises might create context-specific needs, such as when a pandemic necessitates the public provision and administration of disease-testing and vaccination. Third, the demands on various income-support programs inevitably rise during economic downturns.

While keeping state and local government budgets balanced has been a repeated source of concern during economic downturns, multiple automatic stabilizers are built into the US system of fiscal federalism. The most prominent of these stabilizers relate directly to state-administered programs associated with the social safety net. First, not all state expenditures are subject to balanced budget requirements; unemployment insurance trust funds, for example, are separately

Budget Officers, 2021a, Table 26A). During the Great Recession, states spent down roughly half of their rainy-day fund balances, or $37 billion, between Fiscal Year 2006 and Fiscal Year 2009, at which time balances began to recover (National Association of State Budget Officers, 2009, Table 9).

accounted for, enabling states to dip into the revenues collected from payroll taxes during more robust times to pay out the escalated claims that occur during recessions. Second, the Medicaid program's matching grant structure shields states against a large fraction of the costs associated with increases in the number of beneficiaries that tend to occur during recessions.

Beyond these built-in stabilizers, a number of ad hoc policy measures have become regular features of the federal government's response to recessions. Interestingly, two of these measures are straightforward augmentations of existing mechanisms. During every recession since 1958,[2] Congress has enacted a temporary extension on unemployment benefits (Whittaker and Isaacs, 2014). During recent downturns, Congress has also enhanced the funding it channels through the Medicaid program by increasing each state's Federal Medical Assistance Percentage (FMAP), which determines the share of states' Medicaid expenditures that are reimbursed by the federal government.

In addition to augmenting built-in stabilizers, Congress has acted during the last two recessions to send states a more general form of fiscal assistance. During the Great Recession, Congress authorized roughly $225 billion in fiscal relief for state and local governments through the 2009 American Recovery and Reinvestment Act (ARRA) (Inman, 2010). And during the COVID-19 pandemic, federal fiscal assistance to state and local governments through ad hoc measures has reached roughly $900 billion. These relief programs have included not only general funds but also assistance earmarked for education, healthcare, transportation, and various other state and local government functions.

3. Projected state and local revenue losses during the COVID-19 pandemic and federal aid to states and localities

At the beginning of the pandemic, analysts drew on the experience of the Great Recession in worrying that strains on state budgets would inhibit states' responses to the pandemic along several dimensions, including their provision of standard public services, their administration of the safety net, and their administration of pandemic-related health services. Some analysts forecasted that the pandemic would result in massive revenue shortfalls. For instance, W. E. Upjohn Institute for Employment Research labor economist Timothy J. Bartik's 2020 report forecasted combined state and local government budget shortfalls summing to $959 billion over the 2020 and 2021 calendar years. McNichol, Leachmen, and Marshall (2020) similarly estimated a shortfall of $500 billion for state governments alone.

Bartik's analysis, which drew on historical estimates of the relationship between budget outcomes and unemployment rates (Furman, Fielder, and Powell, 2019), attributed more than 90 percent of these budgetary gaps to revenue shortfalls. We now know that state government tax

[2] Except the 1980 recession, if we consider that to be a separate episode from the 1981-82 recession.

revenues ultimately exceeded pre-pandemic forecasts for the 2020 and 2021 fiscal years by 2.2 percent (National Association of State Budget Officers, 2021b). Nonetheless, Bartik's early projection is quite close to what Congress would ultimately deliver across four major pieces of legislation: approximately $900 billion in federal support for state and local governments.

The disparity between analysts' initial projections and the pandemic's realized impacts on state and local tax revenues provides important lessons for the design of future state and local fiscal assistance. A first lesson is that formula-driven aid, which adjusts automatically in response to economic conditions, has a crucial advantage over ad hoc fiscal assistance packages. For example, the Congressional Budget Office's dire economic forecasts from the pandemic's early months need not have served as the principal basis for the design of fiscal assistance packages. Had the forecasts of need been updated to reflect conditions on the ground, for example, Bartik's unemployment-based estimates would ultimately have called for around $400 billion in aid rather than $959 billion.

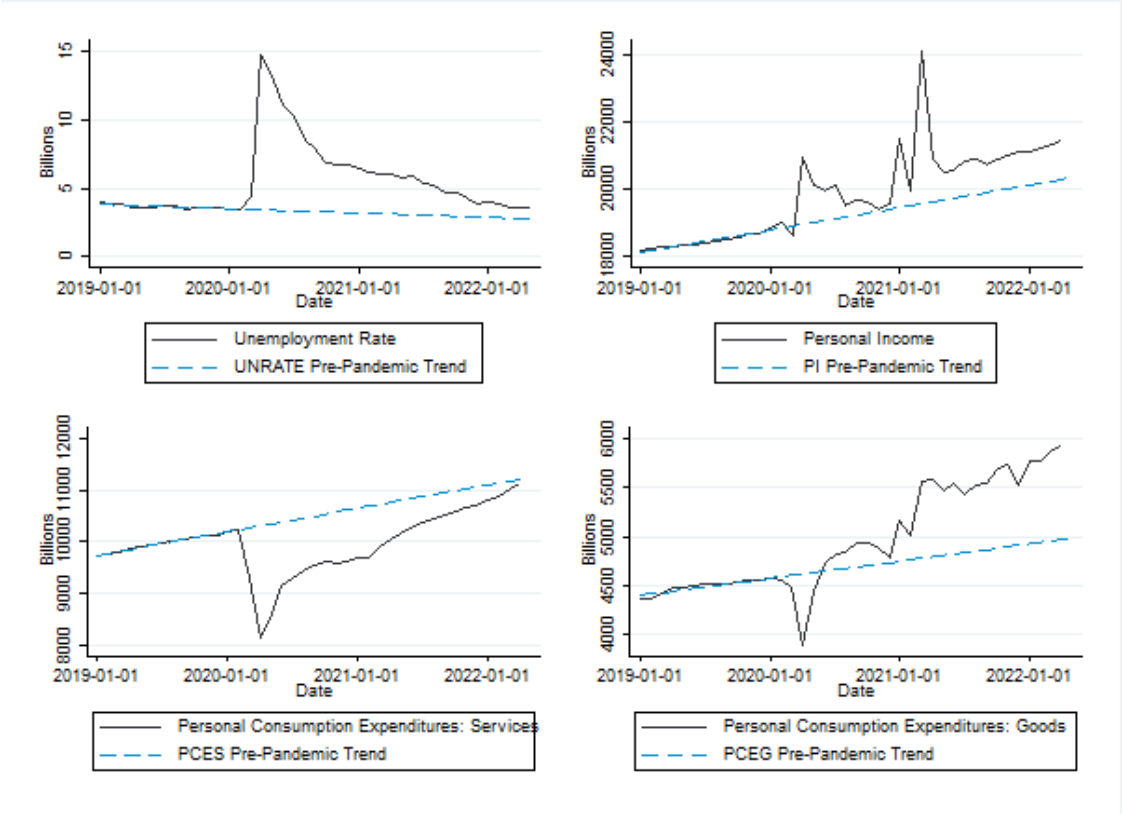
Economic forecasts from the pandemic's initial months were wrong in no small part because they did not (and were not meant to) incorporate the economic effects of the pandemic relief packages that Congress had not yet authorized. These relief packages would ultimately buoy household incomes and firms' balance sheets such that aggregate income *exceeded* pre-pandemic forecasts. By buoying both incomes and spending, these relief packages bolstered state and local governments' tax bases. It was therefore a mistake for forecasters to view the "shortfalls" facing households, businesses, and governments as separate gaps in need of being filled independently, when in fact they were closely intertwined. A benefit of formula-driven automatic stabilizers that incorporate new information as it becomes available is that they take these interactions into account.

A second lesson for the design of automatic stabilizers is that the unemployment rate is not the most suitable macroeconomic aggregate for forecasting revenue shortfalls. Fiscal assistance formulas commonly call for aid to depend on local unemployment rates. However, these unemployment rates connect only indirectly to state and local tax bases. COVID-era analyses that forecasted revenue shortfalls based on variables that proxy more directly for tax bases tended to produce smaller and more accurate forecasts of revenue shortfalls (Auerbach et al., 2020; Clemens and Veuger, 2020a, 2020b; Chernick et al., 2020; Whitaker, 2020a, 2020b). These analyses used more detailed information than the analyses based primarily on unemployment-rate predictions. Clemens and Veuger (2020a, 2020b), for example, used aggregate income to proxy for the income-tax base, and consumption to proxy for the sales-tax base. Likewise, by accounting for industry variations in job losses in their analysis of the income-tax base, Auerbach et al. (2020) captured the pandemic's disparate impact on relatively low-paying industries, which would prove to moderate the decrease in individual income-tax revenues. And Whitaker (2020a, 2020b) improved sales-tax receipts forecasts by accounting for variations in spending across consumption categories. Disaggregated spending data proved essential for tracking the performance of typical sales-tax bases during the pandemic.

Consumers' shift away from services and towards goods tended to enhance sales-tax collections, since states' sales-tax bases exempt most services and rely disproportionately on goods (Kaeding, 2017).

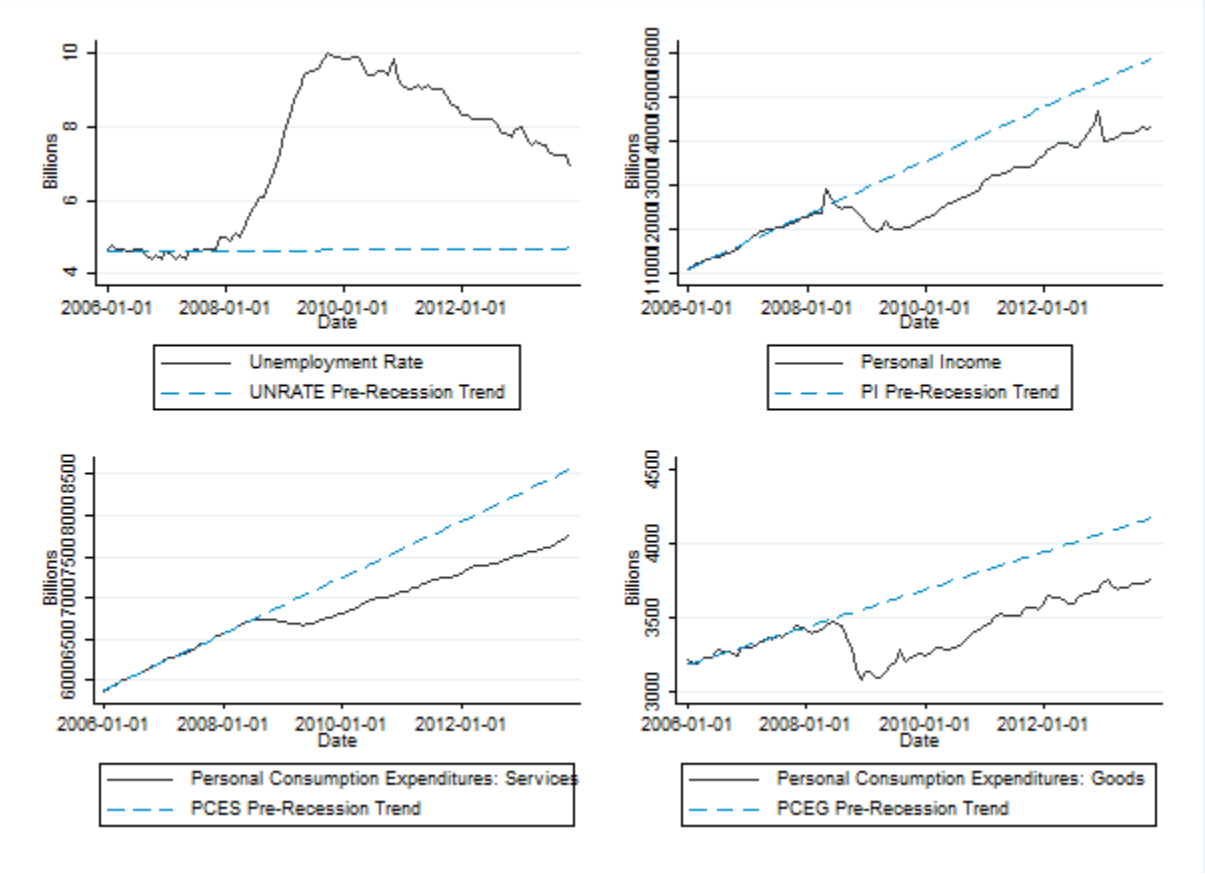
Figures 1 and 2, which present time series for the unemployment rate, aggregate income, services consumption, and goods consumption during the COVID-19 pandemic (Figure 1) and during the Great Recession (Figure 2), illustrate the relevance of benchmarking fiscal assistance to proxies for tax bases. During the Great Recession, these macroeconomic time series moved in unison: unemployment rose substantially while income, services consumption, and goods consumption all declined relative to trend. Consequently, the particular mix of macroeconomic data used in a fiscal-assistance formula would not have made an appreciable difference, as unemployment, income, and consumption all indicated a similar need for assistance. During the COVID-19 pandemic, by contrast, the implications of unemployment, income, and consumption data diverged. While unemployment remained elevated (though less than initially expected), pandemic relief packages caused incomes to rise relative to trend. Services consumption declined relative to trend, and goods consumption rose relative to trend after a short-lived decline. State governments' heavy reliance on both income taxes and the taxation of goods played an important role in state tax revenues exceeding pre-pandemic forecasts (National Association of State Budget Officers, 2021b).

Figure 1. Income and Expenditures Over the Pandemic



Note: The figure presents national time series on the unemployment rate (top left), personal income (top right), personal consumption expenditures on services (bottom left), and personal consumption expenditures on goods (bottom right). Underlying data is derived from the US Bureau of Labor Statistics and the Bureau of Economic Analysis. The dashed blue lines in each panel, labeled Pre-Pandemic Trend, are simple linear time trends estimated using monthly data from January 2019 through February 2020.

Figure 2. Income and Expenditures Over the Great Recession



Note: The figure presents national time series on the unemployment rate (top left), personal income (top right), personal consumption expenditures on services (bottom left), and personal consumption expenditures on goods (bottom right). Underlying data is derived from the US Bureau of Labor Statistics and the Bureau of Economic Analysis. The dashed blue lines in each panel, labeled Pre-Recession Trend, are simple linear time trends estimated using monthly data from January 2006 through December 2007.

Ultimately the congressional response delivered far more fiscal assistance than state and local governments needed to balance their budgets, by several hundred billion dollars. This error is particularly frustrating when considered in tandem with Congress' other legislative responses to the pandemic. Through mid-2022, for example, Congress has struggled to pass legislation that would dedicate appropriate funds to COVID-19 therapeutics and vaccines, which would cost less than the assistance packages by an order of magnitude (Ruoff and Wilkins, 2022).

4. Undesirable features of the federal COVID-19 aid to states and localities

In addition to its overall size, two key features of federal fiscal relief to state and local governments were less than ideal from an economic perspective: (1) the delay and uncertainty

around its eventual design and size and (2) the role of politics in shaping how funds were allocated across states. This section describes those features.

The $900 billion in total federal funds for state and local governments were contained in four distinct pieces of legislation. The CARES Act of March 2020, the Families First Coronavirus Response Act (FFCRA) of March 2020, the Response and Relief Act (RRA) of December 2020, and the ARPA of March 2021 were enacted during an approximately one-year period that spanned two different presidential administrations.

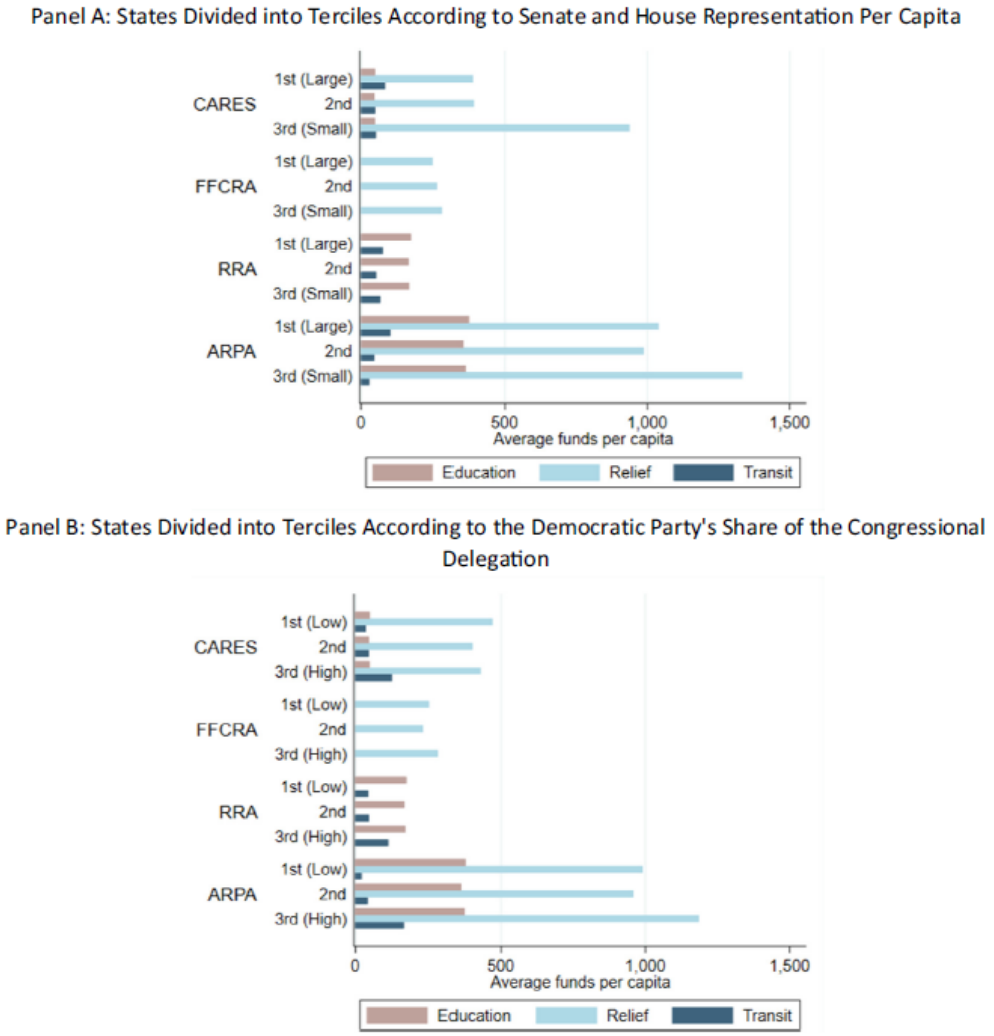
These four pieces of legislation provided fiscal assistance on a scale that reflected the most pessimistic budgetary assessments from the early months of the pandemic. At the same time, by delaying approval of more than half of the fiscal assistance until March 2021, a year after the start of the pandemic, Congress failed to provide clarity to state and local policymakers as they drew up their budgetary responses to the downturn (cf. Sheiner, 2022). Because both the RRA and the ARPA were enacted well into the pandemic's second fiscal year, state and local revenue forecasts and spending plans could not take these funds into account when they were needed most. Furthermore, the fiscal support promised in the March 2021 American Rescue Plan Act in particular seemed unlikely to take effect until the Democratic Party secured control of the Senate with wins in the January runoff elections in Georgia.

Politically-driven small-state bias, arising from the underlying political processes that determine Congress' composition, also affected the shape and scope of the fiscal assistance directed to states during the pandemic. As illustrated in Panel A of Figure 3, the disproportionate representation in Congress of states with fewer residents led to greater per capita fiscal support directed toward those states. In Clemens and Veuger (2021) and Clemens, Hoxie, and Veuger (2022), we show that this small-state bias was substantial. Across the four bills, an additional Senator or Representative per million residents translated to an additional $530 to $1,450 in aid per capita. The smallest and hence most over-represented states enjoyed allocations in excess of $3,000 per capita larger than the largest and least represented states.

The transition from divided government to a Democratic trifecta in late January 2021 changed the relative power held by Democrats and Republicans, and shifted the allocation of resources as well. Panel B of Figure 3 demonstrates this shift. As we show in Clemens and Veuger (2021), states with congressional delegations more aligned with the Democratic party benefited from the swing in political momentum. States with unanimously Democratic delegations received approximately $300 more per resident than did states with entirely Republican delegations, as compared against the distributions in previous bills. This change reflected two factors. First, the modest skew towards Democratic-leaning states that pervaded all four relief packages was amplified by ARPA's sheer size. Second, the distribution of transportation funds and, to a lesser extent, general relief funds, skewed more strongly toward Democratic-leaning states in the ARPA than in the earlier relief bills.

The conceptual considerations discussed in this and the previous section suggest that federal fiscal relief to states and localities during the COVID-19 pandemic was too generous, ill-timed, and targeted, at least in part, in accord with political pressures. The next section provides evidence from a results-based perspective: how did fiscal assistance impact macroeconomic and public-health outcomes?

Figure 3. Average Funds Per Capita Depending on Congressional Representation and Congressional Democratic Party Share



Note: This figure replicates Figure 1 from Clemens and Veuger (2021) and presents data on the distribution of COVID relief funds per capita across the four major pieces of COVID relief legislation. Panel A groups states into terciles by the number of senators and representatives per million residents, with the first tercile containing the largest states and the third tercile containing the smallest states. Panel B groups states into terciles by the share of their congressional delegation that are Democrats, with the first tercile containing states with less Democratic congressional delegations and the third tercile containing states with more Democratic congressional delegations.

5. Economic impact of federal COVID-19 aid to states and localities

In early 2022, Deputy Secretary of the Treasury Wally Adeyemo argued that the aid to state and local governments in the American Rescue Plan Act would "ensure that governments across the country have the flexibility they need to vaccinate their communities, keep schools open, support small businesses, prevent layoffs, and ensure a long-term recovery" (US Department of the Treasury, 2022). Preserving state and local government employment, macroeconomic recovery, and the delivery of vital health and educational services were the primary stated goals of the federal government's fiscal assistance to state and local governments during the pandemic.[3]

To what extent were these goals accomplished? In Clemens, Hoxie, and Veuger (2022), we investigate that question empirically and offer a decidedly mixed assessment. Using the overallocation of funds to states over-represented in Congress as a source of quasi-experimental variation, we estimate that the federal government allocated $855,000 for each state or local government job-year preserved, with plausible estimates ranging from $400,000 to $1.3 million. We find little evidence for spillovers to either the broader labor market or to macroeconomic metrics including output and income.

These effects are modest when compared to the estimated effects of similar support programs during previous periods. For instance, research on the effects of the American Recovery and Reinvestment Act of 2009 suggest an employment multiplier ranging between $50,000 and $112,000 per job-year (Ramey, 2019), approximately an eighth of the cost per job-year compared to pandemic-related state and local aid. Our estimated cost per job-year also exceeds that of the Paycheck Protection Program (PPP), which Autor et al. (2022a and 2022b) describe as costly. Furthermore, we find null effects on aggregate income and output multipliers, while estimates from previous periods dating back to the 1930s range from 0.5 to 2 (Ramey, 2019; Chodorow-Reich, 2020).

Explanations for the different impacts of federal fiscal assistance during the COVID era as compared to the Great Recession plausibly include the volume of fiscal assistance provided, the ongoing measures taken by public and private actors alike to mitigate the spread of the novel coronavirus, and the pandemic's macroeconomic context, which features substantial inflationary pressures, whereas the Great Recession featured shortfalls in aggregate demand.

Additional goals for state and local aid during the pandemic included the maintenance of education services and the provision of public health services. The latter includes the distribution of tests and vaccines and the collection of data describing the pandemic's advance. The evidence

[3] As the Biden administration (The White House, 2021) stated elsewhere, the Act would: "Distribute more than $360 billion in emergency funding for state, local, territorial, and Tribal governments to ensure that they are in a position to keep front line public workers on the job and paid, while also effectively distributing the vaccine, scaling testing, reopening schools, and maintaining other vital services. State and local employment has fallen by around 1.4 million jobs since the pandemic began including layoffs of 1 million educators, compared to around 750,000 job losses during the Great Recession."

of effectiveness here is also somewhat mixed. In Clemens, Hoxie, Kearns, and Veuger (2022) we analyze whether states that received more generous allocations of fiscal assistance established more robust testing and vaccination campaigns. Relying once more on small-state bias as our instrument, we find that fiscal assistance had at most a modest impact on the pace of vaccine rollouts. However, we also find that federal dollars may have improved the equitability of vaccine administration and had a substantial impact on the volume of tests administered.

While improvements in vaccine equity and testing rollouts have the potential to be valuable, such gains surely fall far short of justifying the expenditure of hundreds of billions of dollars. A full cost-benefit analysis would include additional outcomes, such as the delivery of in-person education, learning outcomes, graduation rates, and rates of college matriculation, particularly given the strains the pandemic placed on education. These outcomes will be important topics for future research.

Various financing mechanisms are available to federal policymakers looking to advance specific goals. The advantage of general fiscal assistance is that states retain maximum flexibility to deploy that money toward the uses they deem best, limited only by the amount of funding delivered. But because federal and state governments may not share the same goals or policy preferences, federal policymakers might prefer to constrain states' spending, allocating the money only for particular uses or toward particular objectives. And during times of crisis, when the required emergency services might vary in substantial and unpredictable ways, efforts to design a single automatic stabilizer to meet all needs simultaneously may be complicated.

In light of these tradeoffs, an attractive approach is to separate the goal of revenue stabilization from the goal of financing emergency spending needs. Emergency spending needs might best be met through funds set aside to deliver on federal commitments that arise in the wake of a formal declaration of a Natural Disaster, as through the Stafford Act, or through a Public Health Emergency.

The federal government's treatment of the Medicaid program during the COVID-19 pandemic provides an interesting case study of the links between fiscal instruments and program-specific goals. The federal government made available an important funding stream—a 6.2 percentage point increase in states' Federal Medical Assistance Percentages (FMAPs)—contingent on their compliance with a requirement to maintain continuous coverage of Medicaid beneficiaries. As analyzed by Clemens, Ippolito, and Veuger (2021), this FFCRA requirement generated a remarkable expansion of the Medicaid program. The continuous coverage provision required, for example, that beneficiaries not be disenrolled from the Medicaid program for exceeding the program's usual maximum income limit. By making the FMAP increase contingent on continuous coverage, the federal government blurred the line between general and targeted fiscal assistance. We make two observations about the federal government's use of the FMAP and continuous coverage provisions in this context.

First, linking each state's fiscal assistance allocation to their pre-pandemic Medicaid spending does not serve clear revenue stabilization goals. Notably, this approach neither targets assistance based on increases in program enrollment nor does it employ estimates of fiscal need. In fact, as we discuss in our work with Ippolito (2021), transfers triggered by the FMAP increase had been, as of late 2020, less correlated with increases in Medicaid spending than was the funding included in the American Rescue Plan.

Second, the continuous coverage provision has created an as-of-yet unresolved enrollment cliff. Because the determination of a public health emergency, first declared by Secretary Azar on January 31, 2020, has been renewed for now over two years, the continuous coverage provision has also remained in effect. Between February 2020 and February 2022, national Medicaid and CHIP enrollments rose by nearly 17 million beneficiaries, of whom 11 million were adults (Centers for Medicare and Medicaid Services, 2022). The timing of this rise, which included 10 million net new beneficiaries after September 2020, suggests that the continuous coverage provision was a primary driver of increased enrollment, rather than insurance losses connected to the pandemic's impact on the labor market. Indeed, rates of employer coverage were surprisingly stable over the first year of the pandemic and declined by only 1-3 percent during the recession (Ruhter et al., 2021). As many as 17 million Medicaid and CHIP beneficiaries may thus be poised to lose coverage when the continuous coverage provision lapses and eligibility is re-examined. This ad hoc measure has unintentionally created a scramble for guidance and transition assistance among state-level policymakers and program administrators (Gould, 2021).

6. Three specific lessons from the COVID era for setting the amount of federal assistance to state and local governments

Our observations result in three clear implications for the policy question of how to determine the amount of federal aid state and local governments need:

1. **Rule-based determinations are likely more desirable than discretionary practices.**

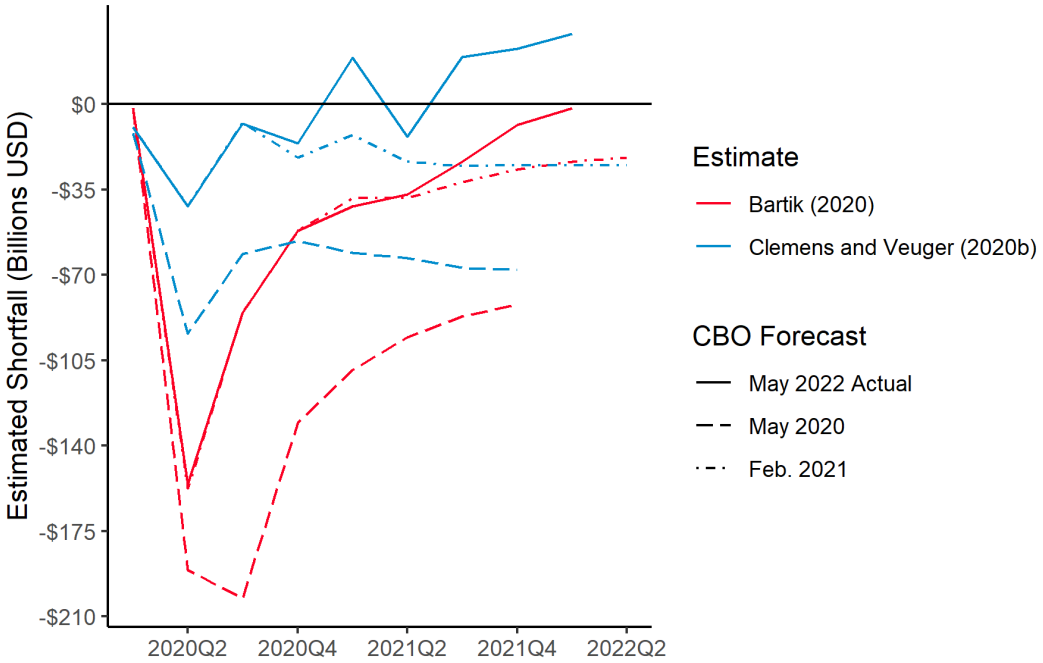
Formulaic approaches—as opposed to discretionary allocations—hold the promise of producing fiscal assistance packages that are more proportionate to the magnitude of state and local budget shortfalls. The two most recent downturns saw allocations of relief to state and local governments that were perceived as off the mark (Gordon, 2012; Oliff et al., 2012). After the Great Recession, observers argued that this led to persistent employment losses and contributed to the nation's slow recovery. In the current pandemic cycle, wrong-sized allocations have added inflationary pressure in a context of excess demand and increased the federal debt in an environment of surging interest rates.

2. **Rule-based determinations should be based on indicators that are closely tied to revenue.**

The most pessimistic estimates of likely state and local revenue shortfalls were based on poor proxies for revenue, such as the expected unemployment rate. A robust research literature demonstrates that tax bases, and forecasts thereof, are superior proxies for estimating revenue shortfalls (Auerbach et al., 2020; Clemens and Veuger, 2020a, 2020b; Chernick et al., 2020; Whitaker, 2020a; 2020b).

Tax bases have also recovered faster than expected in the COVID era, in part due to other policy interventions targeting households and firms. This context contrasts with the lasting demand shortfalls that followed the global financial crisis of the late 2000s (Eichengreen, 2015; Summers, 2015; Eggertsson et al., 2019). And while CBO forecasts, central to many of the analyses discussed, do not account for policy changes that have not yet been approved, policymakers must update their estimates of state and local needs as information becomes available, including regarding legislative relief packages that are likely to pass. As Figure 4 illustrates, updating would have dramatically reduced overshooting. The revenue shortfalls implied by May 2020 forecasts for unemployment, income and consumption far exceeded those implied by subsequent forecasts and the realized performance of the economy.

Figure 4. Estimated Shortfall in USD from 2020 (Q2) – 2022 (Q2)



Note: This figure presents estimates of revenue shortfalls based on the approaches in Bartik (2020), in red, and in Clemens and Veuger (2020b), in blue. The solid lines are estimated using realized GDP, employment, and consumption as of May 2022, from the Bureau of Economic Analysis and the US Bureau of Labor Statistics. The long-dashed and short-dashed lines rely on macro forecasts from the Congressional Budget Office from May 2020 and February 2021, respectively.

Fiscal assistance based on a formulaic approach incorporating the most up-to-date information delivers the best of both worlds: support of the right size and predictability for state and local policymakers. If macroeconomic forecasts are too pessimistic, for example, a state's own-source revenue will be greater than expected while the support it receives from a formula-driven assistance model will simultaneously be decreased. Similarly, if forecasts are overly optimistic, own-source revenues will be lower than expected while federal aid will be higher. The key outcome for state and local policymakers is that combined aid and own-source revenues will, in both instances, hew closely to their forecast for total revenue. Indeed, offsetting unexpected revenue shocks is precisely the purpose an effective stabilization program is meant to serve.

3. **The goals of revenue stabilization and funding for crisis-specific spending needs can most effectively be achieved if they are decoupled from one another.**

Federal policymakers may also want to provide targeted relief or to guide state and local policymakers toward specific spending priorities, such as vaccine distribution during the COVID pandemic. For these purposes, discretionary legislation is more appropriate. Targeted relief can be tied to emergency declarations, while federal paternalism can be embodied in specific, narrowly defined new spending programs that accompany the automatic stabilizers proposed here. These measures should, in our view, be decoupled from revenue stabilization. Blurring the line between revenue stabilization and other goals (such as public health) can, as discussed above in the context of Medicaid, result in unintended consequences and dilute the efficacy with which either outcome is targeted. Policymakers instead should heed the Tinbergen (1952) rule by targeting distinct policy goals with distinct policy tools. Independent policy objectives are best met with independent policy instruments.

7. Reforming the design of federal aid to states and localities in light of the above

There has long been support for more automatic stabilizers in the US system of fiscal federalism. A leading proposal advanced by Fiedler, Furman, and Powell (2019) would automatically increase federal shares of spending on Medicaid and the Children's Health Insurance Program when a state's unemployment rate exceeds a pre-specified level determined by the state's average historical unemployment rate. We evaluate this proposal against the three criteria described above.

By incorporating economic data into a formula that automatically adjusts FMAPs, the federal government's fiscal relief packages would better reflect changes in economic circumstances. But the leading proposal's reliance on unemployment rates can result in aid that is poorly correlated with revenue shocks, as described above. Nor do frequent updates fully address this problem. These FMAP adjustments would also be oddly targeted in that both the upside and downside will

be exaggerated in states with relatively high baseline levels of Medicaid spending compared to their peer states.[4]

Instead, federal assistance should be tied to proxies for the principal state and local tax bases, such as state or nationwide measures of consumption and income. These tax bases are closely tied to revenue, in many cases proportionately so.

An ostensible objection to relying on consumption and income data—the two most important tax bases for our purposes—is that they do not become available at the same speed as estimates of the unemployment rate. However, for macroeconomic stabilization purposes it is reasonable to rely on nationwide measures of income and of the components of consumption that correspond closely to states' tax bases. These data become available within a month of national unemployment data, a rather modest data lag that would have little impact on the timing with which assistance is delivered.

Moreover, the timing of aid to state and local governments is less urgent than the timing of aid to households. A program of automatic stabilizers would enable subnational officials to conduct their usual budgetary processes without the threat that revenue shortfalls will require an unwelcome search for sudden spending cuts and tax increases. The certainty that aid is forthcoming will suffice in all but the most extreme cases, for which more targeted discretionary support would presumably be better suited. Basing such aid on consumption and income data would not be worth waiting years but is well worth waiting a month.

Relying on statewide, rather than national, macroeconomic data would entail tradeoffs, including an additional delay as the data is gathered. Further, the use of statewide data increases the risk that state and local governments might distort their tax policies to "game" the metrics on which federal assistance is calculated. Using statewide measures to calculate federal assistance also disincentivizes states from relying on broad tax bases that can help to insulate states and localities from idiosyncratic shocks. It does this by reducing the cost of narrowly targeting taxation on particular income or consumption types.

Relying on nationwide measures, however, reduces states' insurance against state-specific disturbances. Hawaii, for example, is more exposed to the tourism industry than are other states, and would have been underserved during the pandemic by a revenue stability program based on national metrics. A second-order downside of relying on nationwide measures is therefore that aid would not be tailored to specific states' tax bases, which may well have been carefully chosen to fit a state's circumstances.

[4] Because the Fiedler, Furman, and Powell (2019) proposal is designed to be budgetarily neutral at the state level, this would not be expected to result in a redistribution of dollars across states over the long run. The odd targeting property is that the amount of revenue stabilization, on both the upside and downside, would be arbitrarily greater in states that happen to spend generously on Medicaid than their stingier counterparts.

Setting aside these issues, we now consider how the generosity of revenue stabilization transfers should be calibrated. We propose a simple approach that would achieve several goals, including long-run budget neutrality, timely injections of aid during recessions, an expectation of aid when forecasters anticipate revenue shortfalls, and ease of implementation. We illustrate the general approach by providing a detailed look at two examples: income tax revenue shortfalls and sales tax revenue shortfalls.

We propose the straightforward use of aggregate income as a proxy for the income tax base, and consumption expenditures on goods as a proxy for the sales tax base. During the Great Recession, each of these variables dropped substantially below their pre-recession trends.

We propose benchmarking aid allocations using a simple algorithm for assessing the performance of major tax bases relative to trend. The basic idea is to forecast the growth of each tax base based on its recent history. A key parameter is therefore how many years' worth of recent historical data to include in the forecasting formulae. Here we illustrate how such forecasts would have performed during the Great Recession had forecasts been based on a seven-year history of monthly data on income or goods consumption.

The technical details are as follows: We begin by indexing the income and goods consumption series such that each takes a value of one in December 2007. Consider by way of illustration the forecast for income in January 2009. The forecast for income in January 2009 is constructed by estimating the trend growth in income from January 2002 through December 2008 and using the estimated trend to forecast one month ahead. The estimated shortfall of the income tax base is equal to the forecasted value of the indexed series minus the realized value of the indexed series. A positive value, as we observe in January 2009, indicates that income came in below trend. Our algorithm would therefore call for positive allocations of federal fiscal assistance.

Figure 5 illustrates the resulting "indexed shortfalls" for each month from January 2003 through December 2019. Both series would have called for net payments from states into the stabilization program during the mid-2000s expansion, comparatively large payments to states during the Great Recession, and modest but sustained net payments from subnational governments into the stabilization program during the subsequent economic expansion.

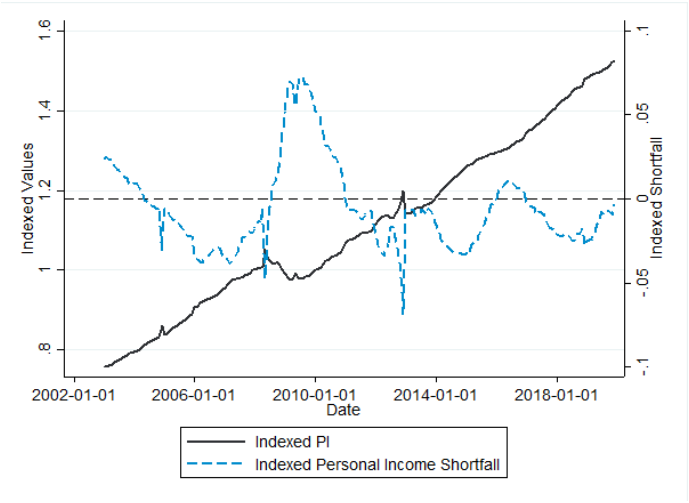
The precise magnitude of revenue stabilization payments would depend on the program's additional details. The income shortfall series, for example, takes an average value of 4.2 percent across the period extending from July 2008 through December of 2010. The series on goods consumption takes an average value of 6.2 percent over that same time period. Benchmarked to 2008 state and local sales and income tax revenues, which totaled $755 billion nationwide, the implied revenue shortfall would be around $79 billion over this two-and-a-half-year period if revenues move proportionally with both revenue bases.

Two additional questions need to be answered to arrive at a comprehensive revenue stabilization program. First, federal policymakers may want to account for the extent to which a revenue base

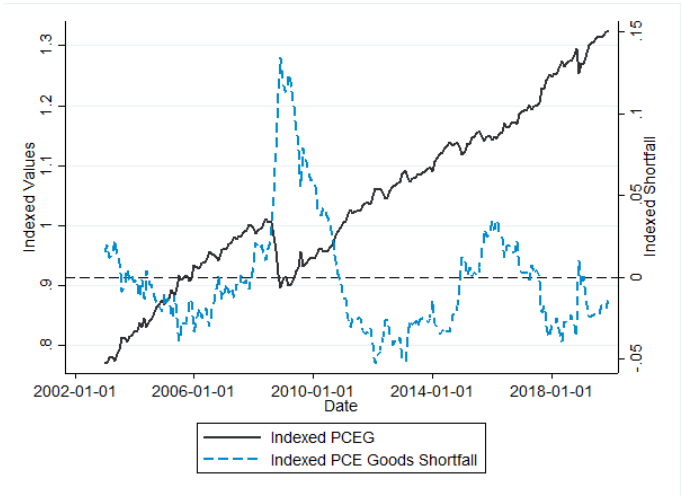
moves disproportionately relative to its tax base. A progressive income tax, for example, will typically move more than proportionately with the income tax base. A second question relates to revenue from income and sales taxes accounting for a moderate fraction of state and local governments' total own-source revenues. In 2008, for example, these tax revenues accounted for only 39 percent of total own-source revenues. Scaling the $79 billion estimate from above by this fraction, for example, would yield an estimated revenue shortfall of $204 billion. Interestingly, this estimate is roughly in line with the amount of aid distributed through the ARRA. An alternative approach would expand the set of matches between revenue sources and macroeconomic data, as in the work of Whitaker (2020a and 2020b), which enables a more detailed accounting for likely revenue shortfalls. The tradeoff here is between precision and simplicity.

Figure 5: Indexed Tax Base Shortfalls and Surpluses Based on Simple Linear Forecasts

Panel A: Income



Panel B: Goods Consumption



Note: This figure presents data on personal income and personal consumption expenditures on goods. The underlying data is derived from the Bureau of Economic Analysis. The "Indexed PI" and "Indexed PCEG" series are obtained by straightforwardly normalizing the income (PI) and goods consumption (PCEG) series relative to their values in December 2007. Shortfalls are calculated as described in the text.

Once these questions are settled, the next step is to secure budget neutrality over the business cycle. The algorithm we sketched above provides one pathway for achieving that goal. That is, the indexed shortfalls for both income and goods consumption average close to zero, both over the time period shown in Figure 5 and when estimated over longer time horizons. One key consideration when fine-tuning such an algorithm is how quickly the algorithm transitions from periods of payouts to periods of pay-ins. The transitions displayed in Figure 5 strike us as

reasonable. Alternative paths can be obtained either by tweaking our algorithm or by adopting an alternative pay-in structure such as a premium structure, as would be included in the revenue insurance option we discuss below.

What would our algorithm have implied for payouts and pay-ins during the COVID-19 pandemic? Because both income and goods consumption were above trend for most of the pandemic, our algorithm would have called in large part for net pay-ins, with the exception of a substantial early-pandemic payout associated with a brief period during which the consumption of goods collapsed alongside the consumption of services. While this outcome may be surprising in light of early-pandemic forecasts, it corresponds appropriately with the path of subnational tax revenues. As the National Association of State Budget Officers has reported, revenues were ultimately 2.2 percent higher than pre-pandemic forecasts for the 2020 and 2021 fiscal years (National Association of State Budget Officers, 2021b).

The absence of large payouts during the pandemic might initially strike many as a bug rather than a feature. A common intuition suggests that pandemic-driven uncertainty justified substantial payouts. This intuition, however, misses a central benefit of a well-designed revenue stabilization program: revenue stabilization programs stabilize both revenues *and* revenue forecasts. Under a revenue stabilization regime, a revenue agency that forecasts contracting tax bases would also forecast an inflow of federal assistance. And as the pandemic unfolded, resilient revenue bases would have resulted in higher-than-expected tax revenues and lower-than-expected assistance payments. Whether the macroeconomic forecast turns out to be right or wrong, the forecast for tax revenues and federal transfers combined can remain on target.

8. Reforming the delivery of federal aid to states and localities

We propose three options for how fiscal assistance, calculated on the basis of shocks to tax bases and neutral over the business cycle, can be delivered.

(1) Grants-in-aid

The first option is the most straightforward: the federal government could continue its current practice of relying on grants-in-aid—federal money granted to fund projects or programs. Grants-in-aid tend to have long-run budgetary implications, since debates over fiscal assistance arise only when there is a reason to send aid and not when funds are left over after the economy recovers. The algorithm described above has the benefit of achieving revenue neutrality so long as growth *rates* are neither persistently rising nor persistently declining. Achieving budgetary neutrality is a key reason why automatic adjustments to an existing stream of funding, such as federal Medicaid spending, can be an attractive mechanism for delivering the aid called for by the stabilization formula.

(2) *A federal lending program*

The second option, a lending program, has the benefit of providing a straightforward means to overcome concerns related to budgetary neutrality. A further benefit of operating through a lending program is that states would be encouraged to request only those funds that suit their needs, making federal efforts to measure the magnitude of shocks less necessary. Nevertheless, capping the size of loans that can be requested through such a program may be helpful to avoid the temptation of after-the-fact bailouts and to avoid political lending cycles at the state and local level.

One major concern with a lending program is that it sits uneasily with the spirit of balanced-budget requirements that create the need for a federal role in stabilizing state and local government revenues. Whether a lending program can be structured to sidestep this concern, either by lending to state rainy-day funds or by varying FMAPs in a countercyclical, state-specific fashion, remains an open question. An objection to such an approach is that withholding future Medicaid matching funds may not be politically palatable or credible.

(3) A revenue insurance scheme

A final option is for the federal government to sponsor a revenue insurance scheme.[5] Such a scheme would require state and local governments to pay-in premiums, and would enable them to collect payouts when negative shocks materialize. As with grants-in-aid, it would be necessary for federal policymakers to specify formulae that determine when payouts are appropriate and how large those payouts should be in response to particular economic shocks. The formula we propose above strikes us as sensible for calculating the payouts to be made through a program of revenue insurance, just as it could be used to calculate grants-in-aid.

The core difference between the insurance and grants-in-aid models involves their funding. When implemented through grants-in-aid, our formula would imply both payments out and payments in. Under the insurance model, by contrast, the necessary premiums must be inferred based on estimates of the expected stream of payouts. A benefit of the insurance program as compared to other options is that premiums can be spread evenly across the business cycle. Calculating the needed premiums, however, would pose both political and conceptual challenges to federal administrators. And a question policymakers must answer is whether premiums and payouts ought to be determined based on nationwide factors or state-specific factors.

Under the insurance model, a key question is how the federal government might incentivize the participation of states and other localities. An effective program would require sufficient incentives to ensure widespread if not universal participation by the states. It would be essential, however, for these incentives not to run afoul of the prohibition against federal

[5] In the spirit of Shiller (2004), who argued for widespread adoption of ideas from financial risk management throughout the economy.

"commandeering" exemplified for instance in *National Federation of Independent Business v. Sebelius*, 567 U.S. 519 (2012), a constitutional limitation on the federal government's ability to influence state budgetary choices. Negative incentives, such as FMAP or highway fund reductions for non-participants, could also play a role in inducing participation.

The three options sketched above—grants-in-aid, a loan program, and a revenue insurance program–-are each imbued with potential strengths and weaknesses. And there is reason to worry that budgetary neutrality may prove elusive. Formulas like those we propose above would deliver on budgetary neutrality only so long as Congress does not succumb to the temptation to postpone, reduce, or waive states' contributions during economic expansions. Grants-in-aid, as noted above, have arisen as ad hoc sources of assistance, and political pressures may similarly convert loans into grants. Such pressures may also make a revenue insurance model prone to underfunding, with top-ups arriving at future taxpayers' expense.[6] Additionally, while automatic stabilizers may make Congressional action less necessary during economic downturns, the allure of "saving the day" through ad hoc interventions will surely persist.

These issues notwithstanding, a well-designed program for stabilizing state and local government revenues has substantial advantages over current approaches. Under the status quo, booms and busts carry state and local governments through alternating cycles of bloat and beseeching the federal government for aid. A formula-based revenue stabilization program would relieve these pressures. States and other subnational governments would see their spending restrained to responsible levels during booms, while assistance would flow formulaically during busts. During downturns, this flow would enable subnational budgeting agencies and federal policymakers to focus their attentions on the myriad other concerns facing their constituents.

[6] The insurance model of the Pension Benefit Guaranty Corporation (PBGC) provides an illustrative example. The PBGC's multi-employer program was projected in its 2020 report to become insolvent in 2026 (Pension Benefit Guarantee Corporation, 2020). This impending insolvency was pushed back through the Special Financial Assistance program legislated through the American Rescue Plan Act (Pension Benefit Guarantee Corporation, 2021).

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