Improving the impact of federal aid to the states

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Introduction and summary

On February 17, 2009, President Barack Obama signed into law the American Recovery and Reinvestment Act (ARRA).[1] The legislation represents the most recent attempt by the federal government to provide countercyclical aid to states and localities suffering from fiscal stress stemming from a broad-based economic recession.[2] The legislation follows the pattern of previous federal aid programs in that it provides a combination of direct program support (Medicaid, unemployment insurance, and education aid) and infrastructure grants. The intention is to provide two forms of relief. First, the program aid will serve as a stabilizer for state and local governments by allowing them to maintain (or at least minimize the reduction in) key expenditure areas. Second, the infrastructure money is intended to serve as a stimulus and potential job creator. The ARRA's emphasis on job creation and economic growth objectives makes it a little different from past federal aid programs; traditionally these have focused heavily on fiscal stabilization.[3]

While states and localities often support such generosity from Washington, there are several questions that remain regarding the efficacy of countercyclical federal aid. In this article, we discuss the rationale for federal assistance and examine different mechanisms for its distribution. Of particular interest is whether the aid program is calibrated to reflect changes in the business cycle. Since this is countercyclical aid, it is intended only to ameliorate changes in business cycle conditions that have a direct impact on state budgets and not to facilitate poor budget policy by state and local governments. Through empirical analysis, we model the effects of the use of different economic triggers to start and stop aid over the business cycle and examine how these triggers would have performed over previous business cycles. The triggers we use are the unemployment rate, measured as the excess rate above a specific unemployment threshold; the change in sales tax revenues, relative to a four-quarter moving average decline in revenues by more than 5 percent; and the change in a state-specific business cycle indicator (the Federal Reserve Bank of Philadelphia's state coincident indexes). Clearly, decisions about the timing and targeting of aid are critical to structuring an appropriate federal response to states' financial difficulties. We find that the Philadelphia Fed's coincident indexes do a relatively good job of timing aid to reflect both the local intensity of the business cycle in individual states and the duration of the recession on a national level. The use of such a trigger would improve the likelihood that the aid would reduce the stress related to the business cycle, as opposed to the stress caused by structural imbalances in a given state's economy or fiscal system.

Purpose and structure of aid

The idea of federal support for state (and local) governments in a downturn is hardly a new one. For example, in response to the recession of 1973–75,[4] Congress enacted the Antirecession Fiscal Assistance (ARFA) program, which was combined with general revenue sharing grants and the Local Public Works (LPW) program to provide unrestricted grants and infrastructure funding to the states. In addition, Congress passed the Comprehensive Employment and Training Act (CETA) in 1973 and, in conjunction with these other programs, this became an anti-recessionary mechanism

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for delivering job training. More recently, in 2003, Congress passed the Jobs and Growth Tax Relief Reconciliation Act, as states dealt with a slow recovery from the 2001 recession.

The purpose of such funding is primarily to stabilize fiscal behavior in the state government sector. This aid is intended to smooth the budgetary actions states would be forced to take in the face of declining revenues and increasing expenditure demands from programs such as Medicaid and unemployment insurance. In practice, the composition of state spending has become more countercyclical, given that health and education programs now consume larger shares (relative to spending in the past) of state budgets and tend to have rising program demands during economic downturns. The federal government sometimes adds an infrastructure element to its aid as a way of increasing demand in the construction sector and stimulating the economy. However, economic stimulus is clearly a secondary objective of this aid; if the federal government's primary purpose were to provide an economic stimulus, it would probably be better off simply spending the money directly rather than funneling it through the states.

Federal response to the 1973–75 recession

The 1973–75 recession lasted 16 months and was strongly associated with the rapid rise of oil prices and the U.S. moving off the gold standard. The Organization of Petroleum Exporting Countries (OPEC) quadrupled prices in 1973 and this, combined with high inflation, led to three quarters of negative growth and an unemployment rate that peaked at 9 percent in 1975. This recession was also notable for the government's creation of wage and price controls in an effort to restrain inflation.[5] Inflation peaked at 12.6 percent in the fourth quarter of 1974.

In response, the federal government passed three programs in 1976 designed to help states and localities. These were expanded in 1977. The package had three components: public works, anti-recession general assistance, and public employment and work force training. In all, $14.5 billion was allocated to the states from November 1975 to March 1978.[6]

Aid from the three programs was divided as follows: $5.7 billion for local public works, $2.5 billion for anti-recession fiscal assistance, and $6.3 billion for employment and training through the Comprehensive Education and Training Act (CETA). All three programs used measures of unemployment to trigger eligibility for aid. For the local public works and CETA programs, a national unemployment rate in excess of 6.5 percent was the baseline measure; for the anti-recessionary aid, a 6 percent national unemployment rate triggered fund allocations to states with local unemployment rates exceeding 4.5 percent.

Evaluating the effectiveness of the aid

Detailed evaluations of the aid programs were presented in reports by the U.S. General Accounting Office (GAO, 1977) and the Congressional Budget Office (CBO, 1978).

The GAO report specifically examined Title II of the Public Works Employment Act of 1976. This was one component of the federal government's response to the recession. The stated goal of the program was "to offset destabilizing fiscal action of state and local governments during recessions and, in particular, to maintain basic services customarily provided with the emphasis placed on wages and salaries of public employees."[7]

Specifically, Title II of the act authorized the distribution of $1.25 billion over five quarters from July 1976 through September 1977. The GAO report focused on five areas of inquiry:

- Was the provision of aid to state and local jurisdictions timely so that it was an effective tool to counter economic recession?
- What was the magnitude of destabilizing fiscal action by state and local governments during the economic downturn?
- Was the aid targeted effectively so that it was directed to those state and local jurisdictions that suffered most from the impact of the recession?
- Was the level of excess unemployment (which was defined in the law as any rate above 4.5 percent) the best indicator of the impact of the recession on states and localities?
- Was the effect of the recession a less serious problem for state and local governments than long-term structural problems associated with secular decline?

The report's findings suggested several flaws in the federal assistance program. For example, the excess unemployment rate trigger was not sensitive enough to reflect cyclical change in state economies. In addition, it was not clear that the recession by itself was sufficient to cause destabilizing state and local fiscal actions. In the case of this recession, inflation played a significant role. Further, the use of the excess unemployment rate to allocate aid also failed, as it was unclear that excess unemployment directly reflected the impact of the recession on the state or local budget. Finally, the report found that the program appeared to provide aid that was most closely related to patterns of secular/structural decline. Areas of the country that

experienced relatively low growth rates prior to the recession received disproportionate shares of aid. This was not the intent of the legislation.

The report identified a basic tension in the legislation between simply supporting the state and local government sector and anticipating that aid to state and local governments would stimulate the economy. The report had no direct findings on the degree to which the aid stimulated the economy, but suggested that this should be considered in crafting any future anti-recessionary response.[8]

In the CBO report, a key finding was that the intent of the federal action needed to be explicit. There can be conflicting pressures when programs are designed for both economic and fiscal stabilization. If the goal is economic stabilization (and the federal government wants to use states and localities as agents for distributing funds), the CBO suggested that targeted grants would be the best form of aid, since these can be earmarked for specific programs and populations that are in need of economic stabilization due to a recession. A further advantage is that targeted grants are less likely to serve as substitutes for state and local revenues and cannot be used to rebuild state or local surpluses. If the purpose is fiscal stabilization, unrestricted aid or broad block grants are more effective, since they allow states to maintain their aggregate spending level without (or with minimal) fiscal adjustment.[9]

Federal response to the double-dip recession, 1980 and 1981–83

The 1980 recession lasted only six months and was marked by record high interest rates and a spike in energy prices. This was followed by a deeper, 16-month recession beginning in July of 1981, during which the continued impact of high interest rates (peaking at 21.5 percent in June 1982) and high energy prices caused a spike in unemployment; the national unemployment rate reached 10.8 percent in November and December 1982.

The federal response was along two dimensions. First, the Surface Transportation Assistance Act was passed in 1983. This was forecasted to create 320,000 jobs. The act also authorized up to six weeks of extended unemployment insurance benefits. Second, the Emergency Jobs Act of 1983 was passed. This provided $9 billion for 77 different federal programs designed to stimulate economic growth and job creation (U.S. General Accounting Office, 1986).

Evaluating the effectiveness of the aid

The GAO evaluated the Emergency Jobs Act in December 1986. Their evaluation focused on: 1) when funds were spent; 2) when and how many people were employed; 3) how many unemployed persons were provided with jobs; 4) what efforts were made to provide employment to the unemployed; and 5) what benefits, other than employment, were provided.

The GAO found that the program was enacted faster than previous countercyclical federal programs. The bill became law 21 months after the beginning of the 1981 recession. The previous average for congressional action was 27 months after the onset of a recession. However, the GAO also found that funds from the act were spent slowly and unevenly and relatively few jobs could be attributed to the program. In all, the GAO estimated that by June of 1984 only 35,000 jobs could be attributed directly to the act. Specifically the report states, "…from its review of projects and available data, GAO found that 1) unemployed persons received a relatively small portion of the jobs provided, and 2) project officials' efforts to provide employment opportunities to the unemployed ranged from no effort being made to working closely with state unemployment agencies to locate unemployed persons" (U.S. General Accounting Office, 1986).

In conclusion, the GAO report suggested that future job creation programs should emphasize channeling money to programs that are able to spend money quickly and have projects available that can be implemented immediately. Further, it recommended that agencies should be obligated to spend funds within a specific period.

Federal response to the 1990–91 recession

The 1990–91 recession followed the savings and loan crisis of the 1980s. In addition, the first Gulf War and a spike in energy prices were drags on the economy during this period. This recession was relatively brief (eight months) and mild; GDP fell 1.3 percentage points from peak to trough. The impact of this recession was felt mostly on the East and West Coasts of the United States and, given its limited nature, no significant anti-recessionary aid was offered beyond the usual programs such as extensions in unemployment insurance. Congress also passed the $151 billion Intermodal Surface Transportation Efficiency Act, which helped serve as a stimulus for state and local transportation infrastructure, but this was not a direct response to the recession. For the most part, states drew on budget reserves and adjusted spending and tax policies to fill gaps. State revenue growth slowed during this period, but remained positive at 3.3 percent in fiscal year (FY) 1991 (U.S. Census Bureau, 1993).

Federal response to the 2001 recession

The 2001 recession reflected the bursting of the tech bubble and the September 11 terrorist attacks. Like the 1990–91 recession, the 2001 downturn was

relatively short and mild. The economy contracted by –0.5 percent in the first quarter and –1.4 percent in the third quarter. Unemployment peaked at 6 percent after the recession ended in June 2003. However, unlike the 1990–91 recession, this time state tax revenues collapsed. In particular, states with high dependence on the income tax found that collections turned highly volatile as the underlying tax base became less predictable (see Mattoon and McGranahan, 2008). States quickly exhausted any reserve funds and were reluctant to raise major taxes. In addition, the labor market was slow to recover. States also complained about increased spending that was required to meet new security standards in the wake of the terrorist attacks. Given these circumstances, states pressed for federal assistance. The federal government responded with the Jobs and Growth Relief and Reconciliation Act of 2003.

Evaluating the effectiveness of the aid

The GAO (2004) evaluated the effect of $10 billion in fiscal relief that was provided to the states on a largely unrestricted basis in the aftermath of the 2001–02 recession. The aid was provided in even $5 billion allotments for FY2003 and FY2004. The act was in response to a slow labor market recovery from the recession and the unanticipated sharp decline in state revenues that had left states with large cumulative deficits (the National Conference of State Legislatures estimated deficits at nearly $26 billion). The act authorized federal funds to be used for "providing essential government services" and to "cover the costs of complying with federal intergovernmental mandate."

The GAO review looked at two areas:

- What is known about the potential impacts of unrestricted fiscal relief on state fiscal behavior?
- How were the relief payments distributed among the states relative to their fiscal circumstances?

According to state budget officials, how were the funds used? The GAO study noted that while the funds were authorized 19 months after the end of the recession, the slow recovery in labor markets and continuing fiscal stress in the states made the timing of the aid a secondary concern. From the outset, the funds did not appear to be particularly targeted to reflect the relative fiscal or economic stress each state was experiencing. The funding formula did not take into account the impact of the recession, fiscal capacity, or the cost of expenditure responsibilities in any individual state. Funds were allocated on a per capita basis with an adjustment that provided a minimum payment for smaller states.

The report found that by April 2004, the cumulative budget gap for the states had fallen to $720 million from $21.5 billion the previous year. States had closed the gap through a combination of using their own reserve funds and the federal fiscal relief funds. The study also found that it was hard to identify specifically where the federal dollars went once they were commingled with state resources. The major criticism of the program was that, with unrestricted funds, issues of timing and targeting were all the more important. Since the unrestricted funds were provided to all states, the potential existed for states with little need to substitute the federal funds for their own revenues to lower taxes, increase spending, or place funds into state reserves. None of these actions would effectively stabilize state budgets. Of particular concern was the potential for states to use the federal funds to avoid prudent financial planning, such as building budget reserves in anticipation of an economic downturn.

When examining the specific pattern of relief provided, the GAO focused on the relationship between the per capita federal aid provided and changes in each state's nonfarm employment and gross state product (GSP). On the one hand, Wyoming, which had fared relatively well in the recession—with a gain of more than 1 percent in nonfarm employment and above the national average gross state product per capita—received a much larger fiscal relief payment per capita than the national average. On the other hand, Indiana, Michigan, and Tennessee—with below national average GSP per capita and employment losses ranging from 1.5 percent to nearly 2 percent—received slightly less than the national average per capita fiscal relief.[10]

In conclusion, the GAO made two observations regarding the effectiveness of the program:

- Fiscal relief payments arrived when the economy was already in recovery (as measured by GDP growth). As such, the economic stimulus value of the payments was doubtful.
- However, given that employment growth lagged the recovery, states continued to see pressure on income and sales tax receipts, making the aid important in helping to improve the fiscal stability of state governments. However, the formula used to distribute funds was relatively insensitive to the degree of economic stress individual states were experiencing, which calls into question the targeting of the funds.

A final caution issued by the GAO concerned the potential moral hazard of federal intervention. If states believe that the federal government will always intercede to provide countercyclical relief, they will have little incentive to develop their own budgetary strategies to address recessions. In particular, savings programs such as rainy day funds may be severely undercapitalized.

Federal response to the 2007–09 recession

The most recent recession has been termed the worst since the Great Depression of the 1930s. Both the depth and duration of the recession have been notable, although GDP turned positive by the third quarter of 2009, possibly signaling the end of the cycle. For states and localities, tax revenues have suffered broad declines. Total state tax revenues turned negative in the fourth quarter of 2008 and remained negative through the fourth quarter of 2009. For local governments, property tax revenues have been falling as communities face a combination of falling real estate prices and foreclosures. In particular, localities that favored real estate transaction and construction fees have found these revenue sources drying up in the current cycle.

In response, the federal government passed the American Recovery and Reinvestment Act of 2009. The package targets three areas. The first is economic stimulus through $288 billion in tax cuts for individuals and businesses. The second is fiscal stabilization through targeted state programs of $224 billion for education, health care, and unemployment insurance. The third component is infrastructure spending targeted to job creation and investment in the form of $275 billion of federal contracts, grants, and loans. The fiscal stabilization portion of the aid package requires states to demonstrate a maintenance of effort in health care and education programs to be eligible for the aid; and the infrastructure funding is geared to "shovel ready" projects that are past the planning stage and ready for construction.

Is there a better way?

In reviewing the recent history of countercyclical federal aid, it is clear that the programs must balance many competing interests. Regardless of the relative severity of the recession in a given state, there is a desire to provide aid to all states rather than targeting aid to those suffering the most. This is most likely a political necessity needed to gain passage of an aid program. There is also a tension between simply stabilizing the performance of the state and local sector and providing stimulus to the national economy through infrastructure and capital projects. Should the federal government attach strings to the aid in an effort to redirect state fiscal policy? The intent of countercyclical aid is often muddled and this makes evaluating its effectiveness difficult.

Finally, the timing of the aid is almost always problematic. The nature of the legislative process almost guarantees that the aid arrives well after the recession's effects are being felt in a state. A key question is whether providing aid earlier in the cycle might enable states to adapt to recessions with less dislocation.

Defining criteria for distributing federal aid

If an aid program is primarily designed to counter downturns in the business cycle, the ideal program might be one that is almost mechanical in responding to business cycle movements. This would take the politics out of constructing aid packages and also would help eliminate the inevitable delay that occurs before Congress can act to authorize an aid program. As the business cycle dips, a trigger could be switched on once the decline reaches a designated point. Similarly, the trigger could be switched off once recovery is under way. In other words, the trigger would be timed to reflect the business cycle expansion and contraction.

Furthermore, aid should reflect the severity of the downturn in each state. It would seem obvious that states bearing the brunt of the recession should receive a larger share of aid than states that are less severely affected. However, a complicating factor is that the aid needs to be calibrated to only offset the cyclical stress of the recession. If a state enters a recession with a structural deficit caused by inept fiscal management, the federal aid should not act to make the state whole. Given that moral hazard is a real concern with federal aid, then ideally, federal aid should come with strings attached to encourage states to plan better for future business cycle declines through their own countercyclical measures (such as maintaining a rainy day fund).

Timing of aid

For federal countercyclical aid to be effective, it must be timed to counter the economic effects associated with a decline in the business cycle. This is easier said than done. Ideally, the aid should start arriving to the states shortly after the peak in the cycle and be discontinued either once a recovery has begun or when a recovery is firmly established. In addition, there is the issue of whether the amount of aid should be scaled to reflect the severity of the downturn. Ideally, the level of aid would be recalibrated during each quarter to reflect the cyclical stress being felt by the states; this is preferable to the aid being distributed as a lump sum based on a one-time reading of the states' economic condition.

Another issue with timing is recognizing the lags in distributing the aid. Unless there is an automatic mechanism for triggering aid, the first lag is often the time it takes to secure passage of an aid bill by Congress. Consider the current circumstances: The National Bureau of Economic Research (NBER) dates the current recession as having begun in December 2007, and the aid package was enacted in February 2009. So, nearly five quarters had passed before aid became available to the states. The second lag is the time it takes for the federal government to distribute the aid money to the states. Further, the states often have to set up mechanisms

for channeling the funds into the necessary programs. All of this slows the process of spending the money during the recession. In the GAO's assessment of the aid programs enacted in response to the 1973–75 recession, it found that only 50 percent of the federal money appropriated had actually been spent by the states even after the recession ended.[11] The balance went either to build surpluses or reduce the states' deficits. In the case of the Jobs and Growth Tax Relief Reconciliation Act of 2003, the first federal funds were distributed 19 months after the end of the recession.[12]

An experiment based on three triggers

In this article, we use three different triggers for turning aid on and off over the business cycle. Our goal in selecting the three possible triggers was to find indicators that are both state specific and reported on a timely basis. We selected the excess unemployment rate, state sales tax revenues, and the Philadelphia Fed's state coincident indexes. As our analysis shows, each trigger performs quite differently over the business cycle.

Trigger 1: Excess unemployment rate

The excess unemployment rate has been used in the past and offers several advantages. First, it is available on a reasonably timely basis and can be reported at different geographic levels. The transparency of the measure makes it easier to assess the relative stress that different regions are facing and also allows for more precise targeting, since (in theory) intra-state variation can be considered, allowing for specific metropolitan aid strategies. A clear limitation of the unemployment rate is that it can reflect structural change in the economy and, therefore, tend to be higher in some regions and lower in others. As such it is not necessarily a cyclical indicator. Also, unemployment is a lagging indicator, meaning it follows the business cycle's direction with some delay in both upturns and downturns. As a result, it is likely to continue to trigger aid even when recovery is well under way. For this article, the unemployment trigger that initiates the distribution of funds will be an increase in the national unemployment rate from its most recent trough of more than 1 percentage point. Aid will be turned off when the national unemployment rate falls by at least 1 percentage point. To ensure that funding reflects cyclicality, once the unemployment trigger has begun the distribution of funds, the monthly level of funds allocated to each state will depend on that state's net increase in unemployment relative to its most recent trough.

Trigger 2: State sales tax revenues

The general sales tax is the first or second largest source of general fund revenues in most states and is heavily relied upon for funding expenditures. Therefore, a decline in sales tax revenues is usually a harbinger of fiscal stress. Arguably, movements in sales tax revenues are best able to track macroeconomic cycles and do not suffer from the high volatility demonstrated in income tax revenues, where factors such as capital gains and bonus income can distort the tax base. In particular, since the sales tax reflects households' big ticket expenditures, a downturn in the economy (particularly in housing or auto sales) will be reflected in sales tax receipts. Finally, sales tax data are available on a timely basis.

The disadvantage to sales tax receipts as an indicator is that policy changes enacted by states can impact the sales tax base or rate. For example, many states have gradually added services as taxable activities. This has expanded the sales tax base, but the treatment of services is hardly uniform from state to state. Similarly, states have varying sales tax rates and often allow for local optional tax add-ons. The fact that neither the rate nor base is static makes assessing how much is raised in a given year somewhat harder. Ideally, you would want to measure the natural rate of growth in a fixed sales tax base. In our experiment, the sales tax trigger will turn on when the four-quarter moving average of national sales tax revenues falls by 5 percent and turn off when it returns to previous levels. Finally, there is also the difficulty that some states do not have a general sales tax. Therefore, the behavior of what for these states would be a hypothetical revenue stream would have to be imputed. (We exclude the states without a sales tax from our experiment.)

Trigger 3: Philadelphia Fed's state coincident indexes

The biggest advantage to the state coincident indexes is that they provide a state-specific index reading for how each state responds to the business cycle. As such, they allow for a measurement of variation in state response that permits a better understanding of which states are seeing the largest effects from the recession. In addition, the indexes are available monthly, allowing for reasonably current analysis. Also, since they are published for all 50 states, they allow for transparency and offer a clear methodology that can be easily understood. Specifically, the coincident indexes consist of four state-level variables: nonfarm payroll employment, average hours worked in manufacturing, the unemployment rate, and wage and salary disbursements deflated by the consumer price index (U.S. city average). The trend for each state's index is set to the trend of its gross state product, so long-term growth in the state's index matches long-term growth in its GSP. For this trigger in our experiment, a drop of

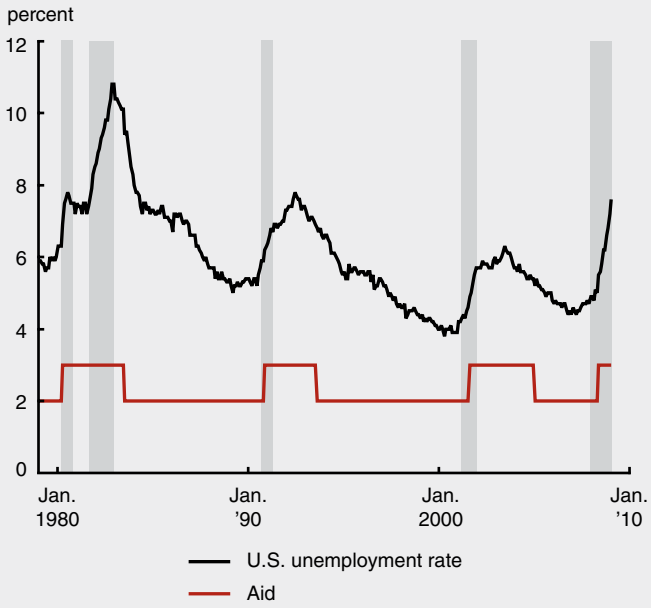
0.1 percentage points in the month-over-month difference in the log measure of the national index (which is a summary measure of all the state indexes) will turn aid on and the return of the monthly change in the national log measure to 0 will turn aid off.

Defining the experiment

The first stage of this experiment is to examine how the three potential triggers behave over the business cycle. Specifically, how long does it take for aid to be triggered after a recession is under way, and when does the aid turn off when recovery is detected? The second stage of the experiment concerns targeting of the aid. Using a set of rules for how the aid is distributed based on state-specific criteria, we distribute a hypothetical aid package. Then we evaluate the level of aid received by each state. Figures 1, 2, and 3 demonstrate the pattern of aid that each trigger would have produced from 1979 through 2009. In each figure, a period in which aid would have been dispersed is indicated by a plateau in the "aid" line (the specific values attained on the respective vertical axes by the aid lines are meaningless). The vertical axis in each figure corresponds to the values of its respective trigger. In the case of figure 3, the left axis corresponds to the coincident index, and the right axis corresponds to the differenced log coincident index.

FIGURE 1

Unemployment rate trigger



Note: Shaded areas represent periods of recession as defined by the National Bureau of Economic Research.
Source: Authors' calculations based on data from the U.S. Bureau of Labor Statistics and the National Bureau of Economic Research provided by Haver Analytics.

As the figures demonstrate, both the unemployment rate trigger and the sales tax trigger perform unpredictably. The unemployment rate trigger appears to "turn on" in a relatively timely fashion but given the significant lag in employment growth relative to overall economic growth in the past several recessions, aid would have continued flowing to the states well after these recessions were technically over. While it would be possible to simply change the sensitivity of the trigger so that it turns off with only a modest improvement in unemployment, this might be difficult for political reasons because it would mean ending aid to the states when high unemployment is still present (and state safety net programs are under stress). Similarly, the sales tax indicator shows idiosyncratic behavior. In the double-dip recession of the early 1980s, aid would have turned on too early and would have stayed on well past the turn in the cycle. In 1990, it turns on and turns off after the recession ends; and in 2001, it turns on late and then persists well into the recovery. In the current cycle, it turns on a little early.

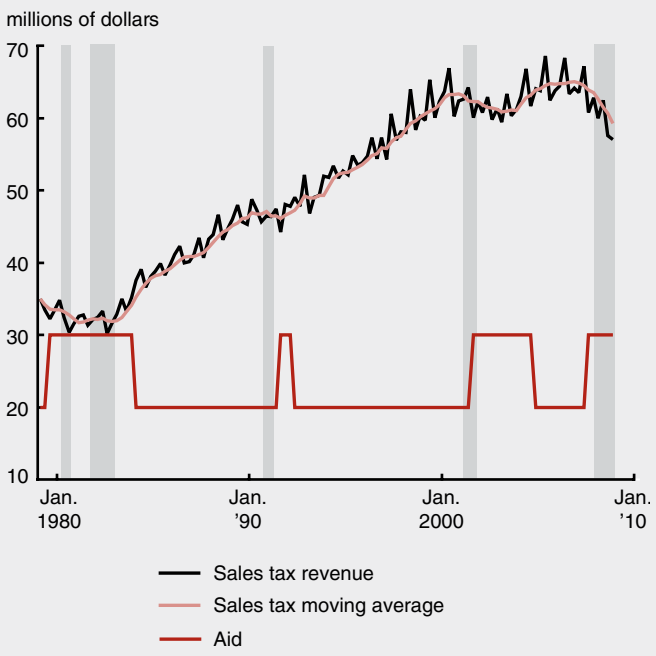
In terms of matching the business cycle, it is not surprising that a business cycle indicator would do the best job of switching aid on and off. From a purely technical view, a rule based on changes to the Philadelphia Fed's state coincident indexes would switch aid on and off based on cyclical movements in the economy. It would appear then that this would be our winning candidate. States might argue that if this trigger were used, they could be exposed to continuing fiscal stress after the aid stopped due to lags in their expenditure cycles. The argument for the use of such a trigger is that the goal of the aid is only to maintain state spending during the contraction of the business cycle.

Rules for distributing the aid

Once the trigger has been activated in our experiment, aid will be distributed to reflect the severity of the downturn in the indicator for each state. Specifically, states will be divided into quintiles each period (either month or quarter, depending on the availability of data) according to the change in their indicator relative to

FIGURE 2

Sales tax rate trigger



Note: Shaded areas represent periods of recession as defined by the National Bureau of Economic Research.
Source: Authors' calculations based on data from the U.S. Bureau of the Census and the National Bureau of Economic Research provided by Haver Analytics.

its most recent peak or trough. Aid will then be allocated according to a set of rules that rely on these quintile rankings. And if a state does not have a change in its individual indicator to match that of the national trigger, it will receive no aid.

The specific rules that govern the distribution of aid are designed to satisfy three guidelines that we refer to as "equity principles." Each of these equity principles is intended to prevent allocations that would likely be regarded as unfair or unjust from the perspective of the states. They are as follows: 1) during a given month, all states in a given quintile should receive equal aid per capita; 2) during a given month, states in higher quintiles should receive more aid per capita than states in lower quintiles; and 3) within a given quintile, aid per capita during earlier quarters of a recession should meet or exceed aid per capita during later quarters.

One type of distribution plan that conforms to these equity principles requires policymakers to first select a parameter, z, which governs the size of the aid program. When the trigger deems necessary, each state then receives aid per capita equal to the product of z and two other constants. More specifically, let x_q be the fraction of $\$z$ in aid per capita allocated to states in quintile q = 1, 2, 3, 4, or 5 during an entire recession; and let y_r be the fraction of this aid allocated per capita to states during the rth quarter of aid distribution. In other words, the x_q values determine the distribution of aid per capita across quintiles, and the y_r values determine the distribution of aid across quarters. The only restrictions on these variables are $0 \leq = x_q < x_{q+1}$ for all q and $0 \leq = y_{r+1} < y_r$ for all r, which must hold in order for the distribution plan to satisfy the equity principles. Using this notation, a state in quintile q during the rth quarter of aid distribution will receive $\$x_q y_r z$ of aid per capita, as long as it meets the initial aid criteria; otherwise, it will not receive aid. In the analysis that follows, the values we use for these variables are $z = \$130$, $x_1 = 10\%$, $x_2 = 15\%$, $x_3 = 20\%$, $x_4 = 25\%$, $x_5 = 30\%$, $y_1 = 30\%$, $y_2 = 25\%$, $y_3 = 20\%$, $y_4 = 15\%$, $y_5 = 10\%$, and $y_n = 0$ for all $n > 5$.

At this point, we must emphasize that this is a purely illustrative distribution plan. Although it was designed to satisfy certain constraints, its parameters are somewhat arbitrary, and there is surely room for improvement. For example, it might well be the case that to have the largest macro effect, the distribution of aid should be further front-loaded to ensure that as much as possible is spent in the first two quarters of a recession. Another important question (that we do not deal with here) is what should be the size of the federal aid package? While this proposal has the advantage of not distributing money to states that do not need the money (making it possible for the aid package to distribute less than what is originally appropriated), it does not offer guidance on the size of the original appropriation. It is possible that the package could be calibrated to some projection of aggregate state deficits, but these numbers are notoriously volatile and often in dispute. If the states are going to receive federal aid, then there is little incentive for them to understate the size of a deficit. Ideally, the size of the federal aid should only reflect the cyclically related portion of state deficits and not structural imbalances that are unrelated to a decline in the business cycle.

Attaching strings to the aid

Another possible modification to countercyclical aid is to limit how much of the federal money is

available in outright grants. We would propose that some of the aid be reserved as loans that states would have to repay once revenues are restored. This would help limit the moral hazard problem of simply bailing out the states; and, like any loan program, the terms could be constructed to reflect the specific conditions of the borrower.

Aid projections based on triggers and formula allocation

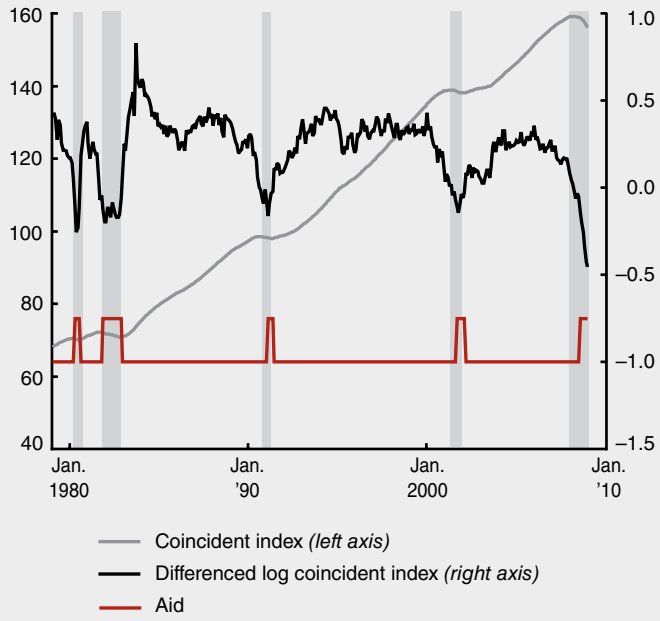
Tables A1, A2, and A3 in the appendix show the quintile rankings for all states across four different recessions based on our three triggers—excess unemployment (table A1), sales tax revenues (table A2), and the state coincident indexes (table A3). Unlike the other two triggers, the state coincident indexes trigger treats the 1980–82 recession as two separate recessions, 1980 and 1982 (see figures 1–3). The quintile assignment is based on the average quintile rank over the cycle and, therefore, is simply an illustration of where the stationary rank would fall if the entire recession were treated as one period. In practice, what we propose is a system where the quintile ranks would be recalibrated upon the release of new data, so that states could move up and down rankings as conditions either improved or worsened. As such, a state showing significant improvement might move down from the fifth quintile (most in need of aid based on the indicator) to the first quintile (least in need). Such a move would significantly reduce the level of aid the state receives. What these tables illustrate is that the group of states that would receive the largest share of aid (quintile 5) would differ from recession to recession. For example, the 1980 and 1982 recessions had a more significant impact on manufacturing states, while the 1991 recession had an East Coast/New England bias.

Due to the poor timing of the sales tax trigger (as shown in figure 2), we will focus this part of our experiment on the coincident index and unemployment triggers. One way to compare the quintiles that these two indicators generate is with scatter plots like those in figure 4. The vertical axis in each chart corresponds to the average coincident index quintile, and the horizontal axis gives the average unemployment quintile. So each data point reveals the values of these two variables for a given state during a given recession. The two charts depicted here are of the 2001 (panel A) and 2008 (panel B) recessions. For the 2001 recession, the average quintiles for the two indicators have a correlation coefficient of 0.6716; and for the 2008 recession, their correlation coefficient is 0.6994. In other words, the quintile rankings generated by the coincident index and unemployment indicators are similar but not identical.

Since the quintile rankings of the various indicators often differ, it is possible that one indicator may favor certain states over another, which could have political repercussions. For example, if the unemployment quintiles of a given state have been historically higher than its coincident index quintiles, then we might expect the state's legislators to push for the use of the unemployment trigger. Table A4 lists the states in ascending order according to the average ratio of their coincident index quintiles to their unemployment quintiles. A value of less than one for this ratio indicates that the state's unemployment quintiles were higher, on average, than its coincident index quintiles; and a value of greater than one indicates the reverse. So we might expect states with ratios significantly lower than one to prefer the unemployment quintile because

FIGURE 3

Philadelphia Fed state coincident indexes trigger

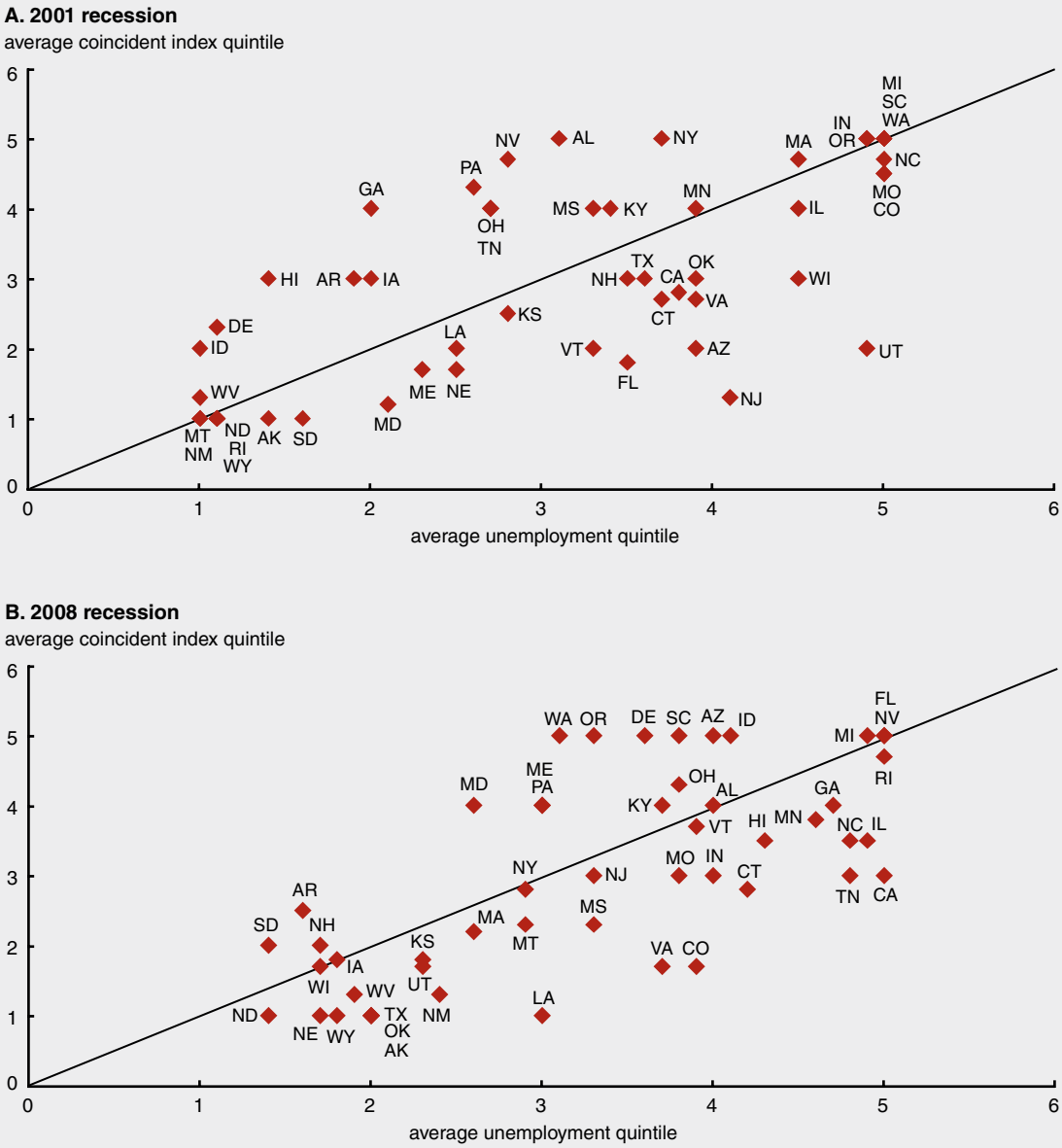


Note: Shaded areas represent periods of recession as defined by the National Bureau of Economic Research.

Source: Authors' calculations based on data from the Federal Reserve Bank of Philadelphia and the National Bureau of Economic Research provided by Haver Analytics.

FIGURE 4

Unemployment plotted against state coincident indexes



Source: Authors' calculations based on data from the Federal Reserve Bank of Philadelphia and the U.S. Bureau of Labor Statistics provided by Haver Analytics.

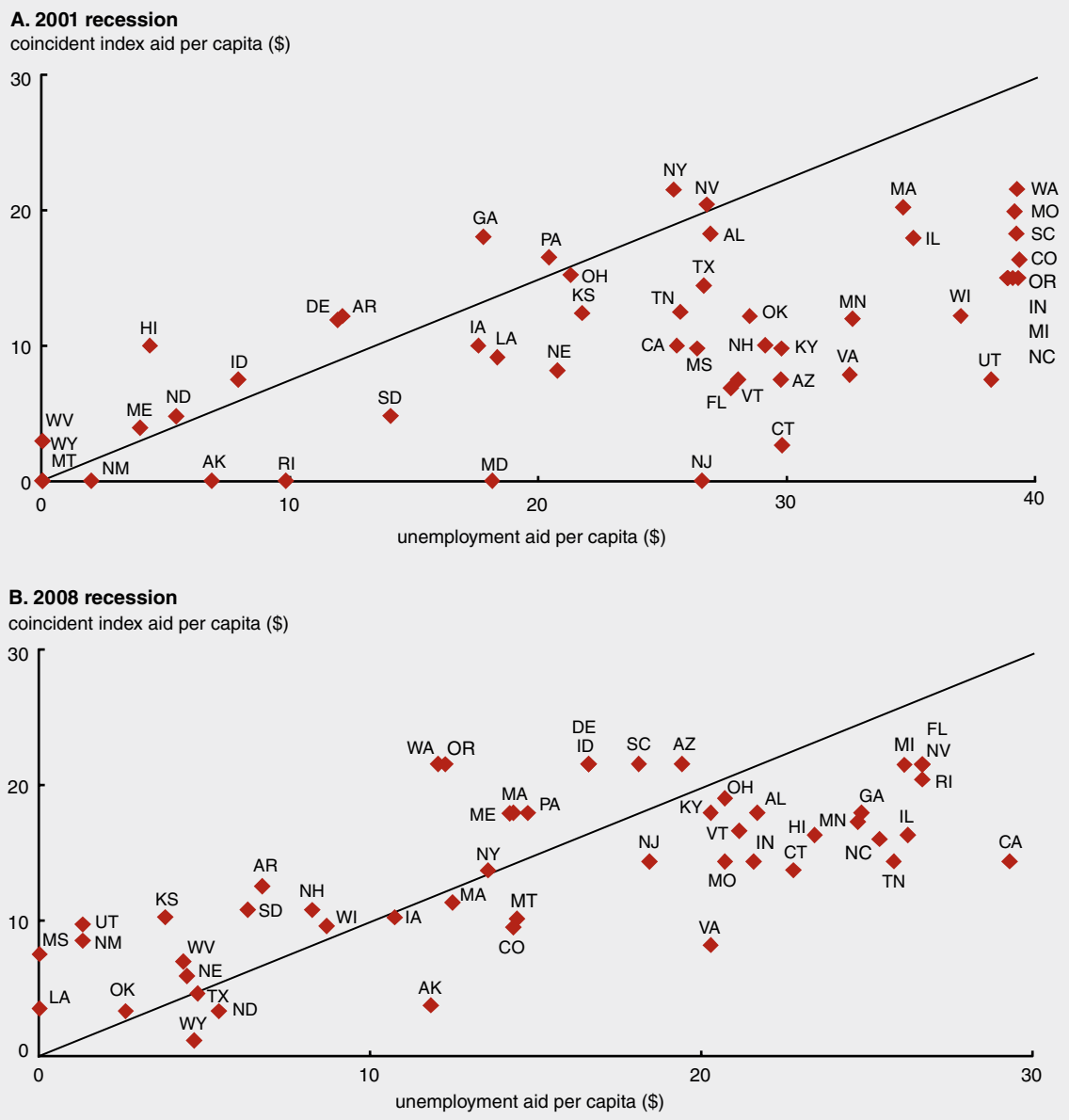
it would result in more federal aid, and vice versa for states with ratios significantly greater than one.

Distributing the aid

The results of a hypothetical implementation of our aid plan, with z = $130, are displayed in figure 5. These charts contrast the amounts of per capita aid that each state would have received under the unemployment and coincident index triggers for the 2001 (panel A) and 2008 (panel B) recessions. The diagonal line in each chart is a 45 degree line, so states that fall below this line would have received more aid per capita with the unemployment trigger than with the coincident index trigger. This feature is most visible in the 2001 recession, reflecting the fact that the unemployment trigger was active for a longer period than the coincident index trigger.

FIGURE 5

Per capita aid by recession



Source: Authors' calculations based on data from the Federal Reserve Bank of Philadelphia and the U.S. Bureau of Labor Statistics provided by Haver Analytics.

Conclusion

This article examines the use of three automatic triggers for starting and stopping countercyclical aid to state governments during a recession. While none of the triggers is perfect, it appears that the Philadelphia Fed's state coincident indexes would do a better job of timing aid to reflect both the local intensity of the business cycle in individual states and the duration of the recession on a national level. The use of such a trigger would ensure that the aid is designed to reduce the stress related to the business cycle and not the stress caused by structural imbalances in a state's economy or fiscal system.

What this article does not address is whether there should be a standing federal policy of providing recessionary aid to the states. The use of any automatic

stabilizing policy assumes that maintaining state government programs should be a primary concern of federal policy. While the current structure allows for an arbitrary decision as to when the federal government does intervene, creating a federal insurance policy for state fiscal behavior clearly would raise some concerns. Some might argue that periodic budget crises may be necessary to force states to re-examine their spending priorities and bring them in line with what taxpayers are willing to pay. It may be possible to address the possible moral hazard concerns by creating additional mechanisms that would prevent states from undertaking risky budget behavior or punish them for doing so. For example, more robust rainy day funds might be required or a "stress test" for each state's budget under different economic scenarios. Similarly, it might be wise to require states to pay into a national rainy day fund, thereby creating their own insurance system so they could self-fund countercyclical aid without relying on federal assistance (see Mattoon, 2003).

A related issue is a closer examination of the efficiency with which states might spend recessionary aid. States will always prefer unrestricted aid that permits them to substitute new federal dollars for state dollars, but should federal aid come with strings attached? Further, is the state the proper recipient of the money? State funding formulas are often criticized for distributing aid to less populated areas, whereas money directed to large metropolitan areas might have a greater impact. Should the federal government take a larger role in targeting the aid to promote the efficiency of aid spending?

Finally, further research is needed to examine whether the state fiscal cycle is significantly different from the business cycle. If it is likely that there are lags in which states experience fiscal pressure both entering and exiting a business cycle downturn, the timing of aid might need to be adjusted to reflect this. This might favor a trigger that starts aid several quarters after a national recession begins and extends aid past the end of the recession.

NOTES

[1]The breakdown for expenditures related to the American Recovery and Reinvestment Act of 2009 is: $288 billion in tax cuts for individuals and businesses; $224 billion for education, health care, and unemployment insurance; and $275 billion for federal contracts, grants, and loans. See www.recovery.gov/About/Pages/The_Act.aspx.

[2]The business cycle refers to the periodic but irregular up-and-down movements in economic activity, measured by fluctuations in real gross domestic product and other macroeconomic variables. Countercyclical aid, provided by the federal government, is intended to smooth revenue contractions and expenditure increases that are associated with business cycle declines.

[3]The ARRA differs from previous aid programs in that its stated goals emphasize economic stimulus and job creation, even though most of the money going to the states will go toward stabilizing Medicaid, education, and unemployment insurance. Specifically, the act's three immediate goals are to: 1) create new jobs and save existing ones; 2) spur economic activity and invest in long-term economic growth; and 3) foster unprecedented levels of accountability and transparency in government spending. See www.recovery.gov/About/Pages/The_Act.aspx.

[4]Throughout this article, we refer to official periods of recession as identified by the National Bureau of Economic Research.

[5]Amadeo (2010).

[6]Advisory Commission on Intergovernmental Relations (1978).

[7]U.S. General Accounting Office (1977), p. i.

[8]Ibid., p. 19.

[9]Congressional Budget Office (1978), p. 60.

[10]U.S. General Accounting Office (2004), p. 7.

[11]U.S. Government Accounting Office (1977), pp. 6–7.

[12]U.S. Government Accounting Office (2004), p. 2.

APPENDIX: STATE RANKINGS BASED ON OUR THREE TRIGGERS

TABLE A1

Ranking of states' need for aid based on unemployment rate trigger

Quintile 1 (lowest need)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (highest need)
		1981–83 recession		
Delaware	Rhode Island	Idaho	Washington	Utah
Hawaii	Connecticut	Louisiana	Iowa	Kentucky
New York	New Mexico	Kansas	Minnesota	Mississippi
Florida	Maryland	Vermont	Arkansas	Illinois
New Jersey	Maine	South Dakota	Nevada	Ohio
Massachusetts	Oklahoma	Nebraska	North Carolina	Indiana
Virginia	Montana	New Hampshire	Wyoming	Michigan
California	Pennsylvania	Colorado	Alabama	Missouri
Texas	Georgia	Arizona	Oregon	Wisconsin
Alaska	North Dakota	Tennessee	South Carolina	West Virginia
		1991 recession		
South Dakota	North Dakota	Illinois	Louisiana	Maryland
Montana	Alabama	Missouri	Mississippi	Delaware
Utah	New Mexico	Washington	South Carolina	Connecticut
Georgia	Arkansas	Ohio	Virginia	Massachusetts
Iowa	Idaho	Tennessee	Florida	Maine
Nebraska	Texas	Oregon	Pennsylvania	New Hampshire
Colorado	Oklahoma	Wisconsin	North Carolina	New Jersey
Wyoming	Arizona	Nevada	Michigan	New York
Hawaii	Minnesota	Alaska	California	Rhode Island
Kansas	Indiana	Kentucky	West Virginia	Vermont
		2001 recession		
Idaho	South Dakota	Tennessee	Connecticut	Wisconsin
Montana	Arkansas	Kansas	New York	Oregon
New Mexico	Georgia	Nevada	California	Utah
West Virginia	Iowa	Alabama	Minnesota	Indiana
North Dakota	Maryland	Mississippi	Oklahoma	Colorado
Rhode Island	Maine	Vermont	Arizona	Michigan
Delaware	Louisiana	Kentucky	Virginia	Missouri
Wyoming	Nebraska	Florida	New Jersey	North Carolina
Alaska	Pennsylvania	New Hampshire	Illinois	South Carolina
Hawaii	Ohio	Texas	Massachusetts	Washington
		2008 recession		
North Dakota	Oklahoma	Maine	Ohio	Minnesota
South Dakota	Texas	Pennsylvania	South Carolina	Georgia
Arkansas	Kansas	Washington	Colorado	North Carolina
Nebraska	Utah	Mississippi	Vermont	Tennessee
New Hampshire	New Mexico	New Jersey	Alabama	Illinois
Wisconsin	Massachusetts	Oregon	Arizona	Michigan
Iowa	Maryland	Delaware	Indiana	California
Wyoming	Montana	Kentucky	Idaho	Florida
West Virginia	New York	Virginia	Connecticut	Nevada
Alaska	Louisiana	Missouri	Hawaii	Rhode Island

Source: Authors' calculations based on data from the U.S. Bureau of Labor Statistics provided by Haver Analytics.

TABLE A2

Ranking of states' need for aid based on sales tax rate trigger

Quintile 1 (lowest need)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (highest need)
		1981–83 recession		
Texas	North Dakota	Hawaii	Wyoming	Missouri
Oklahoma	New Mexico	Iowa	West Virginia	Maryland
Maine	Arizona	Nevada	California	Washington
Connecticut	Louisiana	South Carolina	Ohio	New York
Idaho	Mississippi	Virginia	Tennessee	Kentucky
South Dakota	Nebraska	New Jersey	Alabama	Pennsylvania
Utah	Rhode Island	Florida	Colorado	Massachusetts
Vermont	Arkansas	Kansas	Michigan	Illinois
Minnesota	Georgia	North Carolina	Wisconsin	Indiana
		1991 recession		
Kentucky	Iowa	Texas	Wyoming	Colorado
Arkansas	Idaho	Vermont	Florida	Georgia
North Carolina	Kansas	Hawaii	Indiana	Ohio
Virginia	Maine	Illinois	Louisiana	Maryland
Washington	Minnesota	Oklahoma	Michigan	New York
New Mexico	Nebraska	Pennsylvania	Missouri	South Carolina
Arizona	New Jersey	South Dakota	Mississippi	Connecticut
Alabama	Nevada	North Dakota	Rhode Island	Massachusetts
California	Tennessee	Utah	Wisconsin	West Virginia
		2001 recession		
Rhode Island	Wyoming	Pennsylvania	Nevada	New Mexico
Arkansas	Kansas	Wisconsin	Massachusetts	Ohio
Arizona	North Carolina	Colorado	Missouri	Connecticut
Idaho	Mississippi	Virginia	Tennessee	Washington
New Jersey	North Dakota	Alabama	Texas	Kentucky
Nebraska	Oklahoma	Illinois	New York	Florida
South Dakota	Hawaii	Maine	South Carolina	Utah
Vermont	Iowa	Maryland	Georgia	California
West Virginia	Louisiana	Michigan	Indiana	Minnesota
		2008 recession		
North Dakota	Utah	Mississippi	Iowa	Massachusetts
Oklahoma	Alabama	North Carolina	New Mexico	Michigan
South Dakota	Indiana	Virginia	South Carolina	Connecticut
Wyoming	Maine	Colorado	Arizona	Pennsylvania
Idaho	Kansas	Nebraska	Kentucky	California
Vermont	West Virginia	Tennessee	Missouri	Florida
Rhode Island	Arkansas	Louisiana	Wisconsin	Minnesota
Texas	Washington	New Jersey	Georgia	New York
Hawaii	Maryland	Nevada	Illinois	Ohio

Note: States that do not have a sales tax were excluded from the analysis. As a result, each quintile in this table lists nine states instead of ten.
Source: Authors' calculations based on data from the U.S. Bureau of the Census provided by Haver Analytics.

TABLE A3

Ranking of states' need for aid based on Philadelphia Fed state coincident indexes trigger

Quintile 1 (lowest need)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (highest need)
		1980 recession		
Colorado	Connecticut	North Carolina	Alabama	Idaho
Florida	Arizona	Maryland	Arkansas	Indiana
Hawaii	Delaware	Maine	Iowa	Kentucky
Louisiana	Georgia	Mississippi	Illinois	Michigan
New Hampshire	Massachusetts	North Dakota	Kansas	Missouri
Oklahoma	New Jersey	Rhode Island	Minnesota	Montana
Texas	Nevada	South Carolina	Nebraska	Ohio
Virginia	New York	Tennessee	South Dakota	Oregon
Wyoming	Utah	Vermont	Wisconsin	Pennsylvania
California	New Mexico	Alaska	Washington	West Virginia
		1982 recession		
Alaska	New Mexico	Louisiana	Nebraska	Idaho
Connecticut	New York	Maine	Nevada	Indiana
Florida	Delaware	Hawaii	Kansas	Pennsylvania
New Hampshire	Massachusetts	Rhode Island	Arkansas	Iowa
Utah	California	Tennessee	South Dakota	Michigan
Georgia	Arizona	Wyoming	Alabama	Montana
Colorado	North Dakota	South Carolina	Kentucky	Ohio
New Jersey	Oklahoma	Wisconsin	Minnesota	Oregon
Virginia	Vermont	Maryland	Missouri	Washington
Texas	North Carolina	Mississippi	Illinois	West Virginia
		1991 recession		
Arkansas	New Mexico	Nevada	Missouri	Michigan
Arizona	Oklahoma	California	North Carolina	Pennsylvania
Colorado	South Dakota	Alabama	New Jersey	Alaska
Hawaii	Tennessee	Delaware	Ohio	Connecticut
Iowa	Texas	Florida	Oregon	Massachusetts
Idaho	Utah	Georgia	South Carolina	Maryland
Louisiana	Wisconsin	Illinois	Washington	Maine
Montana	Kansas	Indiana	West Virginia	New Hampshire
North Dakota	Mississippi	Kentucky	New York	Rhode Island
Nebraska	Minnesota	Virginia	Wyoming	Vermont
		2001 recession		
Alaska	Maine	Connecticut	Georgia	Massachusetts
Montana	Nebraska	Virginia	Illinois	North Carolina
North Dakota	Florida	California	Kentucky	Nevada
New Mexico	Arizona	Arkansas	Minnesota	Alabama
Rhode Island	Idaho	Hawaii	Mississippi	Indiana
South Dakota	Louisiana	Iowa	Ohio	Michigan
Wyoming	Utah	New Hampshire	Tennessee	New York
Maryland	Vermont	Oklahoma	Pennsylvania	Oregon
New Jersey	Delaware	Texas	Colorado	South Carolina
West Virginia	Kansas	Wisconsin	Missouri	Washington

TABLE A3 (CONTINUED)

Ranking of states' need for aid based on Philadelphia Fed state coincident indexes trigger

Quintile 1 (lowest need)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (highest need)
		2008 recession		
Alaska	Utah	Arkansas	North Carolina	Rhode Island
Louisiana	Virginia	Connecticut	Vermont	Arizona
North Dakota	Wisconsin	New York	Minnesota	Delaware
Nebraska	Iowa	California	Alabama	Florida
Oklahoma	Kansas	Indiana	Georgia	Idaho
Texas	New Hampshire	Missouri	Kentucky	Michigan
Wyoming	South Dakota	New Jersey	Maryland	Nevada
New Mexico	Massachusetts	Tennessee	Maine	Oregon
West Virginia	Mississippi	Hawaii	Pennsylvania	South Carolina
Colorado	Montana	Illinois	Ohio	Washington

Source: Authors' calculations based on data from the Federal Reserve Bank of Philadelphia provided by Haver Analytics.

TABLE A4

Average ratio of state coincident index to unemployment

State	Quintile ratio	State	Quintile ratio
Louisiana	0.60	Kentucky	1.07
Virginia	0.74	Nebraska	1.08
Oklahoma	0.80	New Hampshire	1.08
California	0.81	North Dakota	1.09
Wisconsin	0.82	Maine	1.09
North Carolina	0.82	West Virginia	1.12
Mississippi	0.83	Maryland	1.13
Texas	0.84	Oregon	1.17
Florida	0.86	Alaska	1.19
New Mexico	0.87	Massachusetts	1.21
Vermont	0.87	Alabama	1.27
Colorado	0.88	New York	1.30
Utah	0.90	South Dakota	1.30
Connecticut	0.90	Rhode Island	1.31
Indiana	0.92	Hawaii	1.35
Arizona	0.93	Ohio	1.37
New Jersey	0.94	Washington	1.37
Minnesota	0.94	Wyoming	1.42
Illinois	0.95	Georgia	1.43
Missouri	0.97	Montana	1.48
Tennessee	0.99	Idaho	1.54
South Carolina	1.01	Arkansas	1.57
Nevada	1.02	Delaware	1.62
Michigan	1.03	Iowa	1.63
Kansas	1.04	Pennsylvania	1.67

Note: A value less than 1.0 indicates that the state's unemployment quintiles were higher, on average, than its coincident index quintiles; a value greater than 1.0 indicates the reverse.
Source: Authors' calculations based on data from the Federal Reserve Bank of Philadelphia provided by Haver Analytics.

REFERENCES

Advisory Commission on Intergovernmental Relations, 1978, "Countercyclical aid and economic stabilization," report, Washington, DC: U.S. Government Printing Office, No. A-69, December, available at www.library.unt.edu/gpo/acir/Reports/policy/A-69.pdf.

Amadeo, Kimberly, 2010, "The history of recessions in the United States," *About.com: US Economy*, January 23, available at http://useconomy.about.com/od/grossdomesticproduct/a/recession_histo.htm.

American Recovery and Reinvestment Act of 2009, available at www.recovery.gov/About/Pages/The_Act.aspx.

Congressional Budget Office, 1978, "Countercyclical uses of federal grant programs," background paper, Washington, DC: U.S. Government Printing Office, November, available at www.cbo.gov/ftpdocs/92xx/doc9257/78-cbo-046.pdf.

Gill, Kathy, "Recessions and politics: Federal government action in economic crisis," *About.com: US Politics*, available at http://uspolitics.about.com/od/economy/tp/recessions_and_politics.htm.

Mattoon, Richard H., 2003, "Creating a national rainy day fund: A modest proposal to improve future state fiscal performance," Federal Reserve Bank of Chicago, working paper, No. WP-2003-20, November, available at www.chicagofed.org/webpages/publications/working_papers/2003/wp_20.cfm.

Mattoon, Richard H. and Leslie McGranahan, 2008, "Revenue bubbles and structural deficits: What's a state to do?," Federal Reserve Bank of Chicago, working paper, No. WP-2008-15, July, available at www.chicagofed.org/webpages/publications/working_papers/2008/wp_15.cfm.

U.S. Census Bureau, 1993, "Recessions matter for state tax collections," statistical brief, No. SB/93-11, July, available at www.census.gov/apsd/www/statbrief/sb93_11.pdf.

U.S. General Accounting Office, 2004, "Federal assistance: Temporary state fiscal relief," report, No. GAO-04-736R, Washington, DC, May 7, pp. 2–7, available at www.gao.gov/products/GAO-04-736R.

_____, 1986**,** "Emergency Jobs Act of 1983: Funds spent slowly, few jobs created," report, No. HRD-87-1, Washington, DC, December, available at http://archive.gao.gov/f0102/132063.pdf.

_____, 1977, "Antirecession assistance: An evaluation," report, No. PAD-78-20, Washington, DC, November 29, pp. 6–7, available at www.gao.gov/products/PAD-78-20.