

ANALYSIS

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Prepared by

Sarah Crane
Sarah.Crane@moodys.com
Economist

Colin Seitz
Colin.Seitz@moodys.com
Associate Economist

Contact Us

Email
help@economy.com
U.S./Canada
+1.866.275.3266
EMEA
+44.20.7772.5454 (London)
+420.224.222.929 (Prague)
Asia/Pacific
+852.3551.3077
All Others
+1.610.235.5299
Web
www.economy.com
www.moodysanalytics.com

Stress-Testing States 2019

Introduction

The business cycle is at a critical juncture. Recession risks in the U.S. are as high as they have been since the record-long economic expansion began more than a decade ago. Recessions and their place in the business cycle are an accepted fact of life in any organization, especially government. Therefore, preparing for recessions is an equally inescapable concept, with potentially devastating consequences for those who treat it as an afterthought. To help state governments better prepare for the next recession, Moody's Analytics has taken to performing annual stress tests on their budgets. This paper will serve as an update to our 2018 state stress-testing exercise. We estimate the amount of fiscal stress likely to be applied to state budgets under different recession scenarios and compare that stress to the amount of money that states have set aside in reserve.

Stress-Testing States 2019

BY SARAH CRANE AND COLIN SEITZ

The business cycle is at a critical juncture. Recession risks in the U.S. are as high as they have been since the record-long economic expansion began more than a decade ago. Recessions and their place in the business cycle are an accepted fact of life in any organization, especially government. Therefore, preparing for recessions is an equally inescapable concept, with potentially devastating consequences for those who treat it as an afterthought. To help state governments better prepare for the next recession, Moody's Analytics has taken to performing annual stress tests on their budgets. This paper will serve as an update to our 2018 state stress-testing exercise. We estimate the amount of fiscal stress likely to be applied to state budgets under different recession scenarios and compare that stress to the amount of money that states have set aside in reserve.

The overall results of the 2019 exercise relative to a year ago are unmistakably positive. State governments as a whole have never been more prepared for a downturn; 28 have enough cash on hand to weather a moderate recession without having to raise taxes or cut spending and 12 states are within striking distance, while only 10 are still significantly unprepared.

Though this paper focuses on states, most of the findings could apply just as easily to cities, counties, and other local governments. States, though, are key because their budgets not only experience some of the largest changes during a business cycle, but also because local government fiscal conditions depend in large part on the amount of aid and support they receive from states.

This time really was different

To put the results of our 2019 stress tests into context, it is helpful to look back at exactly what happens to state budgets during a recession. Breaking down the mechanics of a state budget during an economic downturn is a relatively straightforward process. As the economy worsens, demand for services goes up while revenue collections used to pay for those services falls. What makes state and local governments unique in relation to the

Stress-Test Findings

- » 28 states have the funds they need for the next recession
- » 12 states have most of the funds they need for the next recession
- » 10 states have significantly fewer funds than they need for the next recession

federal government is that their budgets are ultimately a zero-sum game. Unlike the federal government, municipal governments have no explicit way of issuing debt to pay for operations. Therefore, their decisions are much more constrained during a downturn and are often limited to those focused on immediate survival as opposed to long-term prosperity.

No example is more instructive to that end than the Great Recession, which stands out for its singular impact on state budgets even when controlling for its historic severity. Almost every state was forced to take extraordinary fiscal actions by raising revenues or cutting spending during and after the Great Recession. Many did both. In the five fiscal years immediately following the start of the Great Recession, state and local

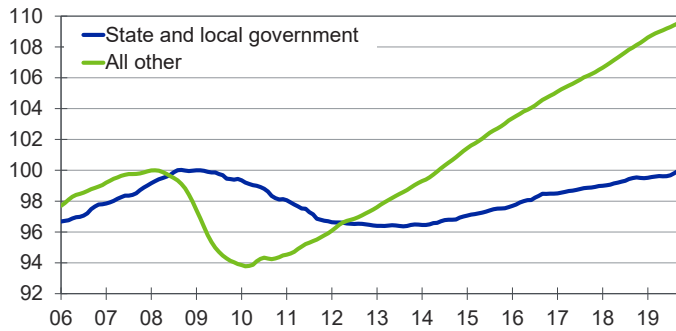
governments shed almost 750,000 jobs. Though this in many cases cut waste and increased efficiency in governments across the country, it also was a painful and disruptive change to many local economies. The loss of so many mid-wage jobs over so short a time is a big reason that the Great Recession was followed by the not-so-great recovery. Research shows that extraordinary fiscal actions can harm regional and national economic recoveries, differentiating performance relative to that of neighbors.¹ Today, despite a national unemployment rate of less than 4%, state and local government payrolls have only recently neared previous peak levels, more than five years later than the rest of the job market (see Chart 1). In fact, on a per capita basis, there are fewer state and local government employees today than at any time since the late 1980s. It is clear that this time really was different, but how?

In previous research Moody's Analytics identified three important lessons states need to have learned coming out of the Great Recession.

¹ Dan White, "A Tale of Two Recessions: The Influence of State Fiscal Actions on Regional Recoveries," Moody's Analytics Regional Financial Review (October 2011).

Chart 1: Delayed Recovery

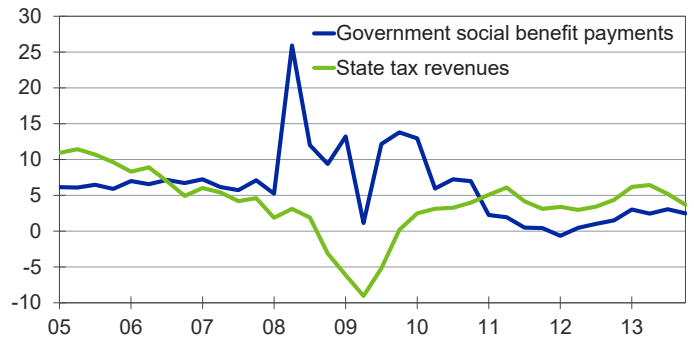
Employment, 3-mo MA, previous peak=100



Sources: BLS, Moody's Analytics

Chart 2: Shock to Revenues and Spending

% change yr ago



Sources: BEA, Moody's Analytics

Lesson 1: Recessions affect both revenues and spending.

The most recognizable sign of a recession for most observers is a decline in tax revenue collections. However, it is not necessarily the first state budget indicator to set off recession alarm bells.

For evidence, look back to the summer of 2008. State fiscal conditions were extremely healthy in most cases, and states were still hiring workers. Indeed, state government employment did not peak nationally until August of that year, despite the fact that the Great Recession was already in its ninth month. At the outset of fiscal 2009, beginning in July 2008 for most states, many legislatures were enacting large budget increases, and some were even giving rebates to taxpayers from what they thought were large surpluses. Though the recession had been in full swing for the better part of a year, many did not realize that something was genuinely wrong until the financial

crisis hit a fever pitch that September with the collapse of Lehman Brothers.

Meanwhile, there was at least one person in nearly every state who knew, or should have known, that we had entered a recession far earlier: the state Medicaid director. State Medicaid enrollment jumped significantly beginning in the first half of 2008 as the number of unemployed Americans began to rise in earnest (see Chart 2). To those looking for the signs, this indicated that things were not all right in the world of state fiscal policy almost a full nine months before state taxes began their first year-over-year declines. Increased Medicaid spending was more of a problem for states during the Great Recession than during previous downturns because that spending has consistently grown at a much faster rate than the revenues that states use to fund the program (see Chart 3). By regularly outpacing

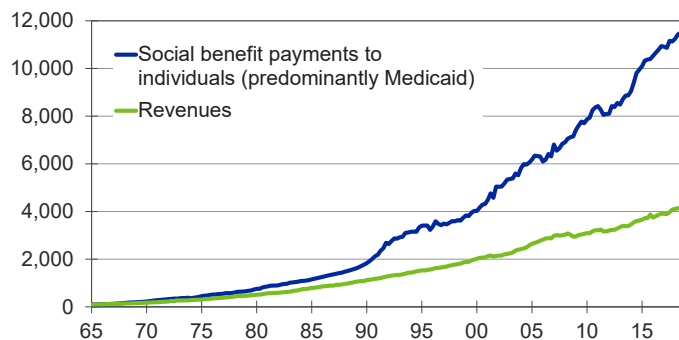
revenues, the zero-sum nature of state budgets has made Medicaid a much larger portion of total state spending over time. Therefore, an increase of a few percentage points from one year to the next has a much larger impact on overall budget flexibility than it has in the past.

Lesson 2: Recessions affect revenues differently than they used to.

Although Medicaid will play a larger role in state budgets throughout the business cycle, the lion's share of recessionary state fiscal effects will still come by way of decreased tax revenues. However, the degree to which that revenue will decline because of a recession is not always as clear-cut as it might seem. The underlying relationship between state tax revenues and the economy has changed considerably over the past 20 years with tax revenues becoming much more sensitive to fluctuations in the

Chart 3: Unsustainable Medicaid Path

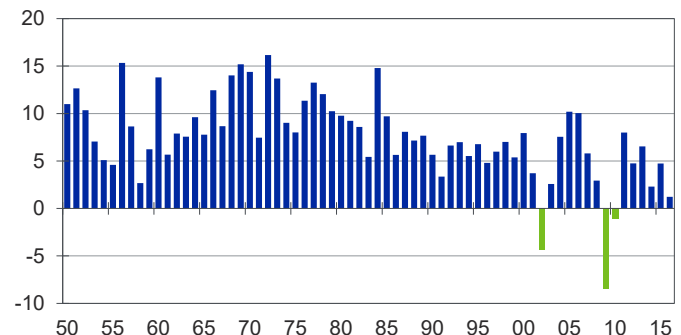
State and local governments, 1965Q1=100



Sources: BEA, Moody's Analytics

Chart 4: Revenues Are Stressing More

State tax revenue, % change



Sources: Census Bureau, Moody's Analytics

business cycle.² As an example of the gradual impact that changes in state tax policy have had, before the 2001 recession, cumulative U.S. state tax revenues had never experienced an outright year-over-year decline (see Chart 4). Growing volatility is primarily the result of two long-term trends in state tax policy.

First, states are relying more heavily on increasingly progressive personal income tax structures. This is in large part a result of long-term structural changes to the U.S. economy. As the economy has become more dependent on services relative to goods producers, income taxes capture a greater amount of overall economic activity than they used to relative to sales taxes.

Personal income tax revenues are much more volatile than sales taxes because they are linked explicitly to personal income and not personal consumption, which proves much more stable over time. What is more, as part of more explicit tax reforms, which have taken place largely over the past two decades, many states have exacerbated that volatility by moving to more progressive personal income tax structures targeting their highest earners. An unintended side effect of that progressivity is greater amounts of volatility in the tax code. By putting more of their eggs in one basket, states have made their tax bases more dependent on a smaller number of taxpayers with extremely volatile incomes, manifesting higher highs and lower lows for tax collections.

The second reason that state revenues have grown more volatile relates to distortions introduced through the growing use of economically targeted tax incentives. These incentives can generate faster economic growth but can also mean that some of the fastest growing pieces of an economy are growing tax-free. Additionally, these incentives are often not tracked closely. This decouples tax collections from underlying measures of economic growth and can make life extremely difficult for economists and revenue estimators, who try to project future revenue collections.

Lesson 3: Preparedness is key.

Past performance is not always a good indicator of future success or, in this case, failure. Even under the best of circumstances the most seasoned professional forecaster will not be able to consistently and routinely predict the precise timing and severity of every oncoming recession. Nevertheless, policymakers must make major decisions with the best available information. Although the risk of forecast error can never be eliminated, it can be mitigated through proper preparation and flexibility. This preparation can provide a government the fiscal resilience to help its economy thrive when others are struggling. If state policymakers are constantly in emergency mode, moving from one crisis to the next, they will have neither the time nor financial resources to focus on the longer-term investments necessary to help their economies stay competitive. These include investments in education, infrastructure and energy policies that help to keep a state ahead of the curve as it relates to the 21st century economy. No one wins in a recession, but states who do the best job of surviving a downturn often win the recovery.

One characteristic of the financial crisis that stands out most was the degree to which state and local governments were generally underprepared for any downturn, let alone one the size of the Great Recession. This lack of preparation left some policymakers budgeting without a net at the absolute worst time and has prevented them from being more proactive with their policy decisions even a decade later.

At the start of fiscal 2008 the median rainy-day fund balance of states was approximately 5% of general fund expenditures, which proved wholly inadequate to offset the full brunt of the Great Recession. It should be noted that total state balances were higher, at just more than 8% of general fund expenditures, giving those states with adequate financial flexibility a marginally higher line of defense against the recession.

However, many states had no such flexibility and were thus limited in their ability to react outside of budget cuts and tax hikes. What is more, some of the states

with sizable reserves had trouble using them because of vagaries about what the fund balances were intended for. In these instances, policy debates about the true intention of the reserves were often lengthy enough to delay the use of funds until economic and fiscal conditions had worsened considerably.

To properly prepare for the next recession, it is vital for states to formulate specifically targeted reserve levels with intentionally crafted policy goals. A well-crafted reserve policy, fiscal flexibility, and careful planning are still the best ways to protect a state's budget and economy in times of economic distress. This, of course, raises one additional question: How much should a state put away in its rainy-day reserve to truly be prepared?

There is not always an easy answer. Planning for the next recession involves the difficult balancing act of putting away enough money to avoid a major fiscal correction during a downturn without stunting the pace of economic growth during an expansion by underfunding investments in important public programs and services.

The tool that can make that balancing act more manageable is stress-testing.

Stress-testing states

In the wake of the Great Recession, the private sector has become acutely aware of the necessity of planning for economic downturns. Indeed, the U.S. government and financial regulators in some cases have moved to require the private sector, specifically banks, to publicly stress-test for a rainy day. These same principles can be redirected to government with the aim of protecting budgets and the economy.

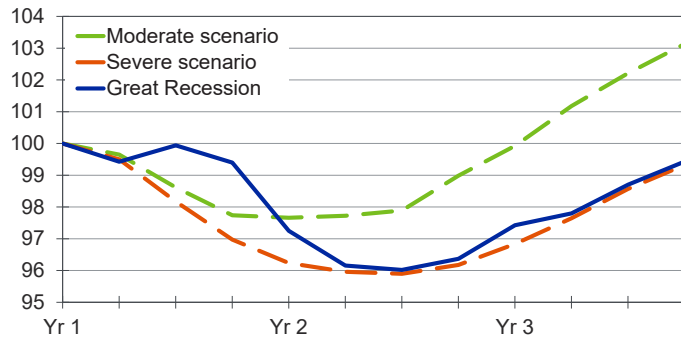
Moody's Analytics pioneered the concept of stress-testing the public sector several years ago, after our first study found that a typical state would need a dedicated rainy-day reserve fund of approximately 8.5% of general fund revenues to survive one year of recessionary effects without cutting spending or raising revenues.³ However, the outcome of that paper was limited by the fact that it modeled the effects of a hypo-

² Dan White, "Falling Behind: State Tax Revenues and the Economy," Moody's Analytics Regional Financial Review (October 2013).

³ Dan White, "Stress-Testing State and Local Reserves," Moody's Analytics Regional Financial Review (August 2014).

Chart 5: Alternative Scenarios

U.S. real GDP, prerecession peak=100



Sources: BEA, Moody's Analytics

thetical recession on state governments as a whole to determine the outcome for an average state over one year.

Subsequent research and the experience of Moody's Analytics working with individual states and local governments have highlighted the fact that the average state does not exist, and that a wide degree of variation can exist from one to another, especially in terms of revenue impacts. Also, a recession typically affects state budgets for at least two years, not just one. To address those variations, in 2017 Moody's Analytics started performing a full fiscal stress test on all 50 states individually over two fiscal years for a more accurate representation of their potential recessionary needs. This paper provides an annual update to those stress tests.

The mechanics of stress-testing are relatively simple and depend on the use of alternative economic scenarios. As part of its monthly forecasting process, Moody's Analytics generates 10 alternative economic scenarios to accompany the U.S. and regional baseline forecasts. These scenarios are designed to capture the most pressing forecast risks facing the economy today, from an oil price shock to a stock market selloff. These monthly scenarios are estimated at the national, state and metro area level, and custom scenarios can be generated at the county level, giving policymakers the ability to stress-test fiscal assumptions with increasing granularity.

For this year's exercise we again select two recession scenarios, one moderate

and one severe, to give us as broad a range of downside options as possible. Before describing these scenarios, it should be made clear that although odds of a recession late next year have increased, Moody's Analytics does not project a full-blown recession in its baseline forecast.

Nevertheless, each of the recession scenarios used in this stress test are assumed to begin almost immediately. The moderate recession scenario⁴ is roughly in line with what economists would characterize as a normal recession, if such a thing exists, while the severe scenario⁵ would be more in line with the losses experienced during the Great Recession (see Chart 5).

These two scenarios are most appropriate for the overwhelming majority of states, as they are predicated on widespread national economic downturns. However, more targeted scenarios may be applicable for certain states. For example, natural resource states are likely to find our low oil price scenario⁶ more appropriate to stress their budgets with than those included in this analysis. States are again encouraged to tailor their own stress-testing exercise to best suit their respective risk factors in order to truly prepare for the next recession.

To perform the stress tests, several additional simplifying assumptions were made. First, state balanced-budget requirements were assumed to hold. State and local governments, in general, are not permitted to issue long-term debt for operations. There are some practical ways around this, particularly with regard to public pensions and other post-employment benefits, but

for the purposes of this exercise, we assume that state spending is constrained by the amount of revenue collected.

Second, the levers used to stress state budgets were limited to changes in general fund revenues and Medicaid spending. As revenues decline during a recession, subnational governments have less to spend, even as there is more demand for government services. To avoid having to drastically cut spending or raise taxes, governments would need to hold in reserve at least enough funds to make up for declines in revenue and meet higher demands for services. These services obviously extend beyond Medicaid. Funding demands for other general fund programs would also increase, along with programs that typically fall outside of a state's general fund such as unemployment insurance. However, these programs pale in comparison with the scope of Medicaid in terms of their state general fund impact. Therefore, the recessionary effects estimated on the spending side of the ledger in this exercise should be considered a lower bound. More precise spending effects could be estimated by individual states, both for social services programs and discretionary needs such as education, by injecting more detailed spending data into the process.

Third, because the Moody's Analytics baseline in 2019 already includes a significant slowdown in economic growth toward the end of the two-year stress-testing window, it proved inadequate for true stress-testing purposes. As a result, the alternative forecasts in this paper will be compared with the "optimistic" Moody's Analytics scenario.⁷ The "optimistic" scenario assumes stable economic growth through the entire two-year stress-testing window, making it a more effective baseline from which to judge overall levels of fiscal stress. As in 2018, alternative scenarios for revenues will be judged compared with the underlying rate of inflation. However, the forecast for inflation over the next two years has increased from 2018. Prices are expected to increase at a rate of 3% in 2020 and 2.7% in 2021.⁸ All else being

4 A moderate scenario would be in line with Moody's Analytics standard S3 scenario.

5 A severe scenario would be in line with Moody's Analytics standard S4 scenario.

6 A low oil price scenario is part of Moody's Analytics standard S8 scenario.

7 The optimistic scenario is based on Moody's Analytics S1 scenario.

8 Forecast is for the U.S. consumer price index from the S1 August 2019 vintage.

equal, this produces marginally more stress in terms of state revenues compared with 2018. Though state policymakers may have originally included more revenue growth in their fiscal 2020 and fiscal 2021 budgets, it is more realistic to compare changes in revenue with the previous year's figures plus inflation as opposed to a potentially optimistic or inconsistent baseline revenue forecast. This gives us a true measure of how many funds would be necessary to strictly avoid disruptive fiscal corrections during and after a recession.

General fund revenues were forecast using Moody's Analytics proprietary state revenue models. These models rely on ordinary least squares regression techniques to tie underlying forecasts for major economic variables to future changes in state revenues. The regressions are based on historical general fund revenue data reported by the National Association of State Budget Officers in its semiannual Fiscal Survey of the States publications and control for legislative tax changes, which can distort historical revenue data during economic downturns. These forecasts are prepared using an individual regression equation for each state, allowing the use of specific economic drivers custom-tailored to each state's specific tax and industrial structure.

Spending needs were forecast using Moody's Analytics proprietary Medicaid models.⁹ This is accomplished through OLS regression techniques tying forecasts for measures of underlying economic growth, specifically the number of unemployed people in the economy, to future levels of Medicaid enrollment. As part of the Affordable Care Act, 33 states have voluntarily expanded their Medicaid programs to include new enrollees funded in large part by the federal government. Three additional states—Utah, Nebraska and Idaho¹⁰—have passed initiatives to begin Medicaid expansion, but all

three are still in negotiations with the federal government about the scope of expansion and various waiver requests.

The Medicaid projections also assume a current law baseline as of September 2019, meaning that no new states are assumed to expand their Medicaid programs during the forecast period. Last, enrollment forecasts are married to costs per enrollee in order to develop a full estimate of future state Medicaid spending needs. Costs-per-enrollee forecasts are taken from the Centers for Medicare & Medicaid Services Annual Actuarial Report on the Financial Outlook of Medicaid, and individual state costs are assumed to maintain their current relationship to the national average throughout the forecast.

Additionally, one methodological difference in the way our economic assumptions were constructed this year compared to previous years is a more granular look at cross-state migration. The new approach built into our underlying economic forecasts creates linkages between states and produces more cyclical population forecasts that better account for a state's relative economic performance. The practical effect is that the total movement between states increases when an economy is performing well and decreases during downturns. This means that a strong economy helps states with net in-migration, such as Arizona or Florida, and hurts those with net out-migration, such as New York or Illinois. For states with persistent out-migration, a downside scenario may lead to more favorable near-term population forecasts due to reduced movement overall. Compared with previous stress tests, that can mean a smaller fiscal shock, all else equal, for out-migration states and a larger one for in-migration states.

Measuring fiscal shock

The results of our 2019 state stress tests reveal that a typical state would need to have 11.3% of its general fund revenues put into a reserve fund to weather a moderate recession without having to raise taxes or cut spending. This is only a marginally larger shock than last year, owing largely to higher inflation expectations over the forecast period relative to a year ago. Because revenue

shocks are measured versus the expected rate of inflation, the size of the shock should have increased slightly all else being equal. To weather an even larger downturn, akin to the Great Recession, a typical state would need approximately 16% (see Tables 1 and 2). This is 2 percentage points less than a year earlier because the overall severity of the severe recession scenario has declined. The peak U.S. unemployment rate for that scenario was revised down from close to 10% to 8.3% as a result of updated simulations and recent post-crisis economic conditions. Other than this factor, the level of shock from the next downturn has remained relatively unchanged from one year to the next.

The makeup of the fiscal shock is relatively unchanged as well. About 85% of the fiscal shock that states would experience under a moderate recession would still come by way of lower general fund revenues. The remaining 15% would be a result of higher mandatory spending needs.

Each state's tax and industrial structure again provides for a relatively wide distribution of revenue shocks across the country. This underlines the need for individual states and local governments to stress-test themselves internally based on the most readily available data. A one-size-fits-all, cookie-cutter approach is not possible. The largest potential fiscal shock is once again seen in Alaska because of its reliance on oil (see Chart 6). Even the small decline in energy prices under a moderate recession scenario would be enough to shave almost 40% from its budget over the next two years.

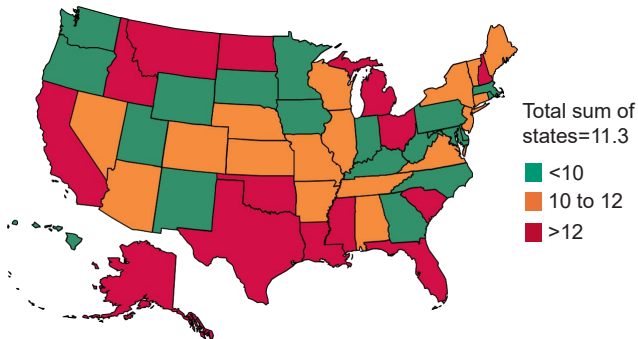
In general, states that rely the most on commodities and very progressive income taxes experience the most potential stress. Differentiation among states can also reflect their economic profiles. Both Pennsylvania and Florida, for example, have relatively stable tax structures. Both rely heavily on sales taxes with little or no emphasis on income taxes. Pennsylvania has a flat personal income tax rate structure, and Florida collects no personal income tax. However, the level of potential fiscal shock in Florida is much larger than in Pennsylvania because of its high reliance

9 Dan White and Michael Brisson, "Moody's Analytics State Medicaid Forecast Model," Moody's Analytics Regional Financial Review (June 2015).

10 Recent developments indicate that Idaho will press ahead with Medicaid expansion despite the federal government rejecting the 1332 Coverage Choice Waiver. At the time of the enrollment calculations, Idaho had not fully expanded, and for the purposes of this paper we have considered Idaho to be a non-expansion state.

Chart 6: Recessions Not Created Equal

Fiscal shock from moderate recession, % of est. 2019 revenues



Sources: NASBO, Moody's Analytics

on tourism and housing versus Pennsylvania's reliance on the more acyclical health-care and education industries.

Variations in fiscal stress from higher Medicaid spending were less significant, though some general patterns observed in 2017 and 2018 did again emerge. The Medicaid expansion provisions of the ACA adopted by 33 states and the District of Columbia have increased the states' long-term liabilities. As a result, Medicaid will continue to make up an even larger share of their general fund budgets. However, an interesting side effect of these increased liabilities is less volatility as it relates to the business cycle. Because a larger proportion of their populations are already enrolled in Medicaid, states have fewer citizens who are caught up in the ebb and flow of enrollment changes, which occur during the business cycle.

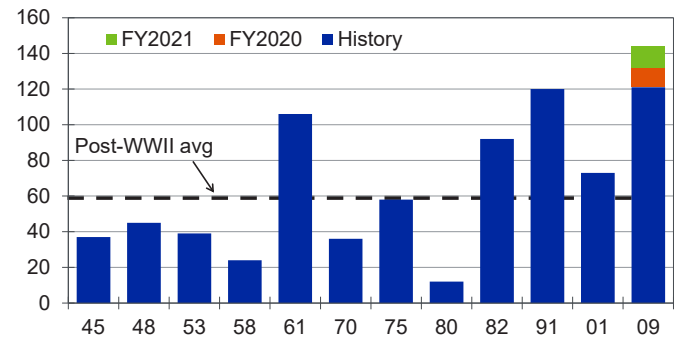
Measuring preparedness

With the amount of potential fiscal shock relatively unchanged from last year's stress-testing exercise, the real question is: Are states any more prepared now than they were a year ago? A year on from last year's exercise the U.S. economy has hit a high note (see Chart 7). The national unemployment rate is at a 50-year low, and the U.S. labor market is having difficulty sustaining the breakneck job gains of even a few quarters ago. The Moody's Analytics baseline forecast puts the highest odds of the next recession in mid-2020. As such, the impact would be greatest on most states' fiscal 2021 budgets, preparation for which are already under way.

The good news is that the overall results of this test relative to 2018 are unmistakably positive. State governments as a whole are much better prepared for a recession in 2019 than they were in 2008. State fiscal conditions are the best they have been in almost a

Chart 7: Expansion Goes the Distance

Duration of business cycle expansion, mo, state fiscal yr



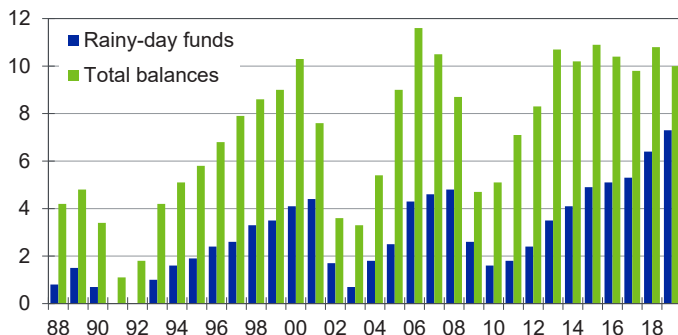
Sources: NBER, Moody's Analytics

decade and states are adding to their rainy-day reserves at a pace seldom seen before. Overall balances have risen to all-time highs, meaning that states are better prepared than ever for a downturn (see Chart 8) and 28 states are within 1 percentage point of the reserves they need to weather a moderate recession over the next two fiscal years (see Tables 3 and 4). That represents marked improvement from a year ago, when only 23 states were prepared for a moderate downturn. In 2017, only 16 states were prepared.

Leading the way once again are commodity states Wyoming, Alaska and West Virginia, which are used to budgeting under uncertain circumstances (see Chart 9). North Dakota is the most improved state relative to a year ago. The state has historically been a standout for its levels of preparedness, especially following the historic oil boom that took place during and after the Great Recession. North Dakota used its plentiful reserves to battle

Chart 8: States Better Prepared Than Ever

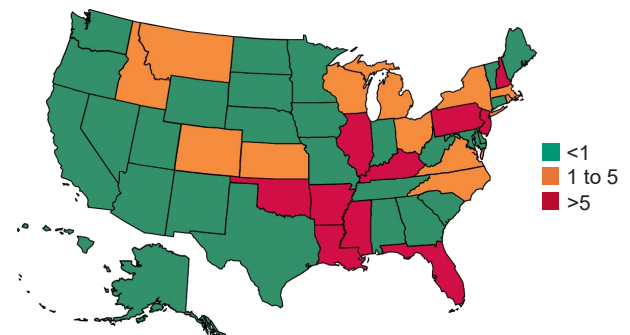
State fund balances as a % of expenditures, state fiscal yr



Sources: NASBO, Moody's Analytics

Chart 9: More States Ready for Recession

Difference between actual and necessary total balances, ppts



Sources: NASBO, Moody's Analytics

the recession it experienced after oil prices cratered in 2014. Few states could have survived such a downturn with less fiscal disruption, but in the process the state depleted nearly all of its sizable reserves. The state has aggressively rebuilt its rainy-day funds from the ground up as the economy has recovered, transforming it from one of the worst prepared states in 2018 to one of the best prepared this year. What was most encouraging about this year's results, however, was the significant improvement of some states not traditionally dependent on commodities for revenues, such as Arizona and Connecticut. Anecdotally, policymakers in these states are holding more discussions around recession preparations, and the effects of that increased focus are beginning to show.

In addition to those states that appear to be fully prepared for another downturn, there are 12 that are within at least 5 percentage points of the reserves they need. With a quick response and adequate flexibility, this may be enough to avoid having to enact drastic fiscal measures to keep the state budget afloat during a recession. For political reasons, it is unlikely that policymakers in most states will wish to rely entirely on reserves during a recession. Therefore, at least some of the recessionary liabilities calculated in this stress-testing exercise are likely to be covered by less harmful fiscal changes from policymakers. Thus, a state need not have its entire liability covered within its reserves to be able to reasonably weather a recession's effects on its budget and economy. This ultimately boils down to a policy choice and risk assessment from the appropriate policymakers in each state, which again underlines the need for individual states to perform these types of evaluations on their own and design the best recession plan for their needs and risk appetites.

Last, the number of states that are significantly unprepared for a moderate recession has decreased from 2018, but this improvement is not uniform. At least 10 states are more than 5 percentage points away from the reserves they need to survive even a moderate recession, down from 17 in 2018 and 15 in 2017. The difference between the states that are fully prepared and those that are not has narrowed slightly after widening

in 2018. Of the approximately \$103.8 billion in total balances that states were estimated to have on hand at the end of fiscal 2019, more than \$75 billion, or 73%, were concentrated in the top 28 states.

Among those least-prepared, some would need to raise taxes or cut spending by upward of 10% of their entire budget if a recession were to hit this fiscal year. Such a necessity would carry major economic implications for their respective recoveries, likely creating enough fiscal drag to cause those state economies to underperform throughout any subsequent recovery (see Chart 10).

Beyond preparedness

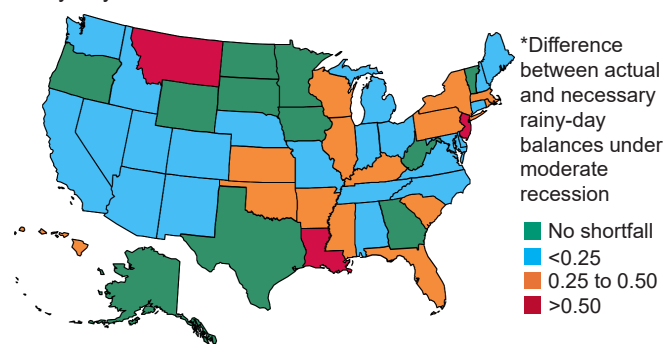
Though the results of this exercise are relatively clear-cut, they do need some context. These results are based on projections using Moody's Analytics economic scenarios and historical state budget data from the National Association of State Budget Officers. Some of budget data were preliminary at the time it was collected, and therefore may differ slightly from final audited numbers eventually reported by states. Furthermore, the way in which certain funds or reserves are accounted for may differ significantly from one state to the next, causing some of the findings in this report to differ from what has been reported by individual states.

This report is meant to inform policymakers and other key stakeholders about the broad fiscal risks of the next recession on state budgets and their economies and should not serve as a substitute for states performing their own comprehensive stress tests. To best mitigate the risks of recession, states are encouraged to undertake their own stress-testing exercises using their own data.

While there are some standouts, many are not as good or bad as they might first appear. Some states that have typically been

Chart 10: Material Economic Implications

Rainy-day fund shortfall* as a % of GSP



Sources: BEA, NASBO, Moody's Analytics

well prepared for a recession fell behind in 2019 after withdrawing rainy-day funds for emergencies. For instance, North Carolina moved money out of reserves to help with Hurricane Florence recovery efforts, leaving it less capable of enduring the increased fiscal shock from an economic emergency.

Other states stand out for the manner in which they have built up their reserves. Though total state balances are enough in 28 states to weather a moderate recession, things look considerably less rosy when we look strictly at those balances that are explicitly designated as rainy-day reserves. This is a difference that can carry a big distinction. Fund balances are not always equivalent to available reserves, as they can often be obligated for other uses and are not explicitly set aside for fiscal emergencies. NASBO estimates in its most recent Fiscal Survey of the States that less than three-quarters of total state balances are actually designated as reserves.

The remainder are balances that have accumulated either because of revenues exceeding budgeted targets or spending coming in below expectations on a onetime basis. This is evident in a handful of states that scored very well on Moody's Analytics stress tests but have yet to formally set aside a significant portion of their reserves for a rainy day. Arizona, for example, is projected to finish fiscal 2019 with among the largest total balances of any non-natural resource state. With cash on hand at more than 13% of its revenues, the state has just enough to get through a moderate recession. However,

if only those balances explicitly set aside for a rainy day are considered, Arizona's reserve levels fall to just more than 4% of its budget, not nearly enough to weather the next downturn.

Putting money away for a rainy day is a great accomplishment, but it is also only part of the battle. Fund balances alone are not enough to ward off the effects of a recession. Research shows that in addition to adequate balances, the purpose of the funds being used for reserves should be explicit to prevent some of the indecision that can cost states valuable time during a recession.¹¹ During the Great Recession, several states with sizable reserves used those funds late, if at all, while policymakers debated the funds' true purpose. As a result, several state rainy-day funds were marginalized during one of the largest downpours in American history.

This paper does not address how economic stress translates to state pension funds, but it is clear that putting off pension payments is a recipe for long-term fiscal disaster. Doing so regularly is the closest thing that states have to accumulating long-term debt, and some states have already seen those debts climb to tens of billions of dollars. Almost every state that is struggling today, from Illinois to Kentucky to New Jersey, can trace its problems back to decisions not to fully fund their pension plans. Thus, even though the impacts of a recession on state pension plans are not cause for immediate economic alarm, their implications for the long-term fiscal health of a state, especially for those states whose pension plans are already most stressed, are still important to contemplate.

Takeaways

The results of this year's state stress-testing exercise are an encouraging sign at this stage of the business cycle. At least 28 states are prepared for at least a moderate recession, with 12 more within striking distance. This means that the amount of fiscal drag from states and local governments should be considerably less during the next recession and ensuing recovery than the U.S. experi-

enced during and after the Great Recession. This will result, all else being equal, in a faster recovery, particularly in those states that are most prepared. However, a troubling number of states are still not ready and, even in those that are, continued improvement must be made in two key areas.

First, states must continue to focus on the distinction between rainy-day funds and total balances. Several states that performed well on this year's stress tests did so because they had significant amounts of cash from budget surpluses, though they were not necessarily designated as actual reserves. This is a dangerous policy that can prevent those funds from being properly used during the next recession. What is more, if they are not specifically designated as reserves, there is also risk that policymakers may appropriate some of those balances for other purposes before the next recession comes along, leaving them unavailable in an emergency. Anecdotally, we have evidence that at least some states with larger than expected fiscal 2019 surpluses have begun to explicitly designate more of that money as rainy-day reserves. Therefore, we are hopeful that when NASBO next releases fund balance estimates this fall, states will look even better than they do today.

Second, having a plan is just as important as having a fund. Many states have adequate reserve funds for the first time in years. However, most have not yet put together a plan for what to do with them when the business cycle does eventually turn. The importance of being purposeful with rainy-day reserves and developing a plan before it starts to rain cannot be overstressed. It is encouraging to see more state governments such as Maine, Utah and Minnesota implementing their own stress-testing exercises as a part of their normal budget procedures. Over the long run, these types of practices allow policymakers to better maximize their state's long-term economic outlook by focusing more on forward-looking policy and investment decisions as opposed to day-to-day funding challenges and should, therefore, be viewed as best practices among states.

For those states that performed poorly in this year's test, one takeaway is most clear:

Every little bit helps. Although it may be too late to get reserves up to the level necessary to fully weather the effects of the next recession, every dollar that can be put away in the meantime is a dollar that will not have to be raised via taxes or spending cuts in a few years. The economic impact of putting that dollar aside today when the economy is strong will be much less painful than trying to pull it out of the economy at the height of the next recession. It is never too late to provide at least some cushion from the difficult decisions set to take place during the next downturn.

During the past year, several states have stood out for following this advice, most notably Pennsylvania. The state has continually fallen short of necessary reserves despite the fact that the impact of a fiscal shock in Pennsylvania is among the smallest in the country. The state took its first important steps toward shoring up its reserves in fiscal 2019 by making a \$22 million down payment toward the next recession. That was shortly followed by an additional \$317 million, the largest ever single-year contribution to the state's reserves, at the start of fiscal 2020. After the contribution Pennsylvania's reserves still fall well short of what will be needed for the next downturn, but the impact on the state's economy and its residents will be much less severe.

How policymakers prepare for downturns matters a great deal in the pace of economic recovery. Unpreparedness can lead to disruptive decisions to drastically cut spending or raise revenues just at the time the economy can least afford it. Preparedness, on the other hand, can lend stability to a struggling economy and help conditions recover more quickly. These preparations can be a difficult balancing act, however, necessitating as much objective care and precision as possible in such an imprecise discipline as budget forecasting.

To sufficiently protect their budgets and their economies from increased volatility and fiscal drag, state and local government policymakers should be investing in their budget processes and making stress-testing a higher priority. This stress-testing exercise should only serve as guidance to states. We

¹¹ Emily Raimés, et al., "Fiscal Stress Test: Ability to Withstand Next Recession Depends on Reserves, Flexibility," Moody's Investors Service: Sector In-Depth (April 21, 2016).

encourage policymakers to develop their own stress tests to identify fiscal strengths and vulnerabilities and help guard against economic downturns.

At the very least, states and local governments should be reviewing their reserve

policies and checking on their adequacy following such a tumultuous fiscal period as the past decade. At best, policymakers should be diligently implementing statutory reserve guidelines based on such reviews and working to expand reserve

levels while budget conditions are still improving. Continuation of current policies in a number of states risks a repeat of the lackluster recovery that followed the Great Recession and is not conducive to long-term economic growth.

Table 1: Stress-Test Results—Moderate Recession Scenario

	Tax revenue shortfall		Medicaid spending increase		Combined fiscal shock	
	%	\$ mil	%	\$ mil	%	\$ mil
Sum of states	-9.2%	\$(81,138.50)	2.0%	\$17,306.64	-11.2%	\$(98,445.14)
Alabama	-7.8%	\$(707.88)	2.2%	\$196.89	-10.0%	\$(904.76)
Alaska	-38.9%	\$(1,043.34)	0.4%	\$11.65	-39.3%	\$(1,054.99)
Arizona	-9.5%	\$(1,021.26)	2.2%	\$233.84	-11.7%	\$(1,255.10)
Arkansas	-8.8%	\$(498.81)	1.4%	\$78.96	-10.2%	\$(577.77)
California	-10.9%	\$(14,979.16)	2.2%	\$2,993.36	-13.1%	\$(17,972.51)
Colorado	-8.4%	\$(1,026.57)	2.7%	\$331.57	-11.1%	\$(1,358.14)
Connecticut	-9.2%	\$(1,797.25)	0.8%	\$162.95	-10.1%	\$(1,960.20)
Delaware	-7.5%	\$(335.92)	1.0%	\$46.24	-8.5%	\$(382.17)
Florida	-11.9%	\$(3,973.70)	3.1%	\$1,030.54	-14.9%	\$(5,004.23)
Georgia	-8.7%	\$(2,208.77)	1.0%	\$241.64	-9.7%	\$(2,450.41)
Hawaii	-8.6%	\$(674.43)	0.6%	\$45.72	-9.2%	\$(720.15)
Idaho	-15.4%	\$(577.01)	2.4%	\$88.47	-17.7%	\$(665.48)
Illinois	-9.1%	\$(3,410.14)	1.8%	\$673.90	-10.9%	\$(4,084.04)
Indiana	-7.7%	\$(1,253.79)	2.2%	\$353.75	-9.8%	\$(1,607.55)
Iowa	-6.8%	\$(525.48)	1.8%	\$139.52	-8.6%	\$(664.99)
Kansas	-9.9%	\$(722.76)	1.3%	\$92.61	-11.2%	\$(815.36)
Kentucky	-8.6%	\$(968.61)	1.4%	\$159.01	-10.0%	\$(1,127.62)
Louisiana	-17.6%	\$(1,657.51)	1.3%	\$124.55	-18.9%	\$(1,782.05)
Maine	-8.5%	\$(319.43)	1.8%	\$68.77	-10.3%	\$(388.20)
Maryland	-6.9%	\$(1,250.07)	1.4%	\$255.33	-8.3%	\$(1,505.40)
Massachusetts	-8.3%	\$(3,777.29)	1.1%	\$516.56	-9.4%	\$(4,293.85)
Michigan	-11.6%	\$(1,185.35)	4.9%	\$495.74	-16.5%	\$(1,681.09)
Minnesota	-7.1%	\$(1,629.61)	1.6%	\$376.06	-8.8%	\$(2,005.67)
Mississippi	-11.1%	\$(625.21)	1.2%	\$68.00	-12.3%	\$(693.20)
Missouri	-6.6%	\$(638.23)	3.7%	\$358.71	-10.4%	\$(996.94)
Montana	-11.9%	\$(289.67)	0.8%	\$18.74	-12.7%	\$(308.41)
Nebraska	-9.0%	\$(433.65)	1.4%	\$66.89	-10.4%	\$(500.54)
Nevada	-8.9%	\$(377.74)	1.8%	\$77.10	-10.7%	\$(454.85)
New Hampshire	-9.8%	\$(159.55)	4.0%	\$65.35	-13.8%	\$(224.89)
New Jersey	-9.4%	\$(3,495.48)	1.0%	\$387.16	-10.4%	\$(3,882.63)
New Mexico	-8.0%	\$(600.40)	0.8%	\$57.23	-8.8%	\$(657.64)
New York	-8.5%	\$(6,022.23)	1.8%	\$1,245.55	-10.3%	\$(7,267.78)
North Carolina	-7.7%	\$(1,843.73)	2.0%	\$476.61	-9.6%	\$(2,320.35)
North Dakota	-20.6%	\$(365.65)	1.3%	\$22.91	-21.8%	\$(388.57)
Ohio	-7.6%	\$(2,535.75)	4.6%	\$1,534.48	-12.2%	\$(4,070.24)
Oklahoma	-13.8%	\$(1,061.80)	2.3%	\$177.12	-16.1%	\$(1,238.91)
Oregon	-5.0%	\$(522.77)	2.0%	\$207.74	-7.0%	\$(730.51)
Pennsylvania	-4.7%	\$(1,608.84)	2.8%	\$967.58	-7.5%	\$(2,576.42)
Rhode Island	-7.9%	\$(316.16)	1.9%	\$76.80	-9.8%	\$(392.96)
South Carolina	-12.2%	\$(1,030.21)	2.0%	\$168.21	-14.2%	\$(1,198.41)
South Dakota	-6.5%	\$(106.03)	1.1%	\$17.80	-7.5%	\$(123.83)
Tennessee	-8.3%	\$(1,248.81)	2.6%	\$394.26	-11.0%	\$(1,643.07)
Texas	-10.9%	\$(6,175.89)	1.5%	\$839.27	-12.4%	\$(7,015.16)
Utah	-7.9%	\$(593.76)	1.2%	\$87.98	-9.0%	\$(681.75)
Vermont	-9.1%	\$(148.85)	2.6%	\$41.72	-11.7%	\$(190.57)
Virginia	-8.4%	\$(1,746.91)	1.9%	\$393.48	-10.3%	\$(2,140.39)
Washington	-8.4%	\$(1,855.13)	1.3%	\$286.47	-9.6%	\$(2,141.61)
West Virginia	-7.7%	\$(353.82)	1.5%	\$69.85	-9.2%	\$(423.67)
Wisconsin	-8.1%	\$(1,357.56)	2.8%	\$460.58	-10.9%	\$(1,818.15)
Wyoming	-6.7%	\$(80.55)	1.8%	\$21.42	-8.5%	\$(101.97)

Source: Moody's Analytics

Table 2: Stress-Test Results—Severe Recession Scenario

	Tax revenue shortfall		Medicaid spending increase		Combined fiscal shock	
	%	\$ mil	%	\$ mil	%	\$ mil
Sum of states	-13.8%	\$(120,987.22)	2.3%	\$20,216.47	-16.1%	\$(141,203.69)
Alabama	-10.8%	\$(976.95)	2.5%	\$223.43	-13.3%	\$(1,200.38)
Alaska	-60.7%	\$(1,627.41)	0.5%	\$13.59	-61.2%	\$(1,641.00)
Arizona	-12.3%	\$(1,316.37)	2.5%	\$267.55	-14.8%	\$(1,583.92)
Arkansas	-9.4%	\$(537.51)	1.6%	\$91.51	-11.1%	\$(629.02)
California	-14.9%	\$(20,394.88)	2.5%	\$3,423.79	-17.4%	\$(23,818.67)
Colorado	-12.4%	\$(1,519.72)	3.1%	\$379.25	-15.5%	\$(1,898.96)
Connecticut	-13.8%	\$(2,693.17)	1.0%	\$188.88	-14.8%	\$(2,882.05)
Delaware	-12.5%	\$(560.42)	1.2%	\$53.28	-13.7%	\$(613.70)
Florida	-16.6%	\$(5,571.54)	3.5%	\$1,176.02	-20.2%	\$(6,747.56)
Georgia	-12.1%	\$(3,065.09)	1.1%	\$278.01	-13.2%	\$(3,343.10)
Hawaii	-11.7%	\$(911.95)	0.7%	\$52.65	-12.4%	\$(964.61)
Idaho	-20.3%	\$(761.50)	2.7%	\$100.83	-23.0%	\$(862.32)
Illinois	-14.7%	\$(5,503.82)	2.1%	\$769.90	-16.8%	\$(6,273.72)
Indiana	-14.1%	\$(2,311.55)	2.5%	\$402.15	-16.6%	\$(2,713.70)
Iowa	-10.5%	\$(811.37)	2.1%	\$160.13	-12.6%	\$(971.51)
Kansas	-16.0%	\$(1,173.20)	1.5%	\$106.89	-17.5%	\$(1,280.08)
Kentucky	-14.2%	\$(1,602.03)	1.6%	\$182.36	-15.8%	\$(1,784.39)
Louisiana	-25.3%	\$(2,391.82)	1.5%	\$143.79	-26.8%	\$(2,535.60)
Maine	-12.4%	\$(467.83)	2.1%	\$79.07	-14.5%	\$(546.89)
Maryland	-9.6%	\$(1,729.42)	1.6%	\$294.05	-11.2%	\$(2,023.47)
Massachusetts	-11.8%	\$(5,373.34)	1.3%	\$593.80	-13.1%	\$(5,967.14)
Michigan	-16.8%	\$(1,718.61)	6.5%	\$665.99	-23.3%	\$(2,384.61)
Minnesota	-10.7%	\$(2,455.51)	1.9%	\$431.38	-12.6%	\$(2,886.89)
Mississippi	-14.4%	\$(814.71)	1.4%	\$78.53	-15.8%	\$(893.24)
Missouri	-12.8%	\$(1,235.60)	5.3%	\$510.53	-18.1%	\$(1,746.12)
Montana	-15.6%	\$(379.45)	0.9%	\$21.69	-16.5%	\$(401.14)
Nebraska	-12.7%	\$(611.35)	1.6%	\$77.30	-14.3%	\$(688.65)
Nevada	-13.1%	\$(556.41)	2.1%	\$88.27	-15.2%	\$(644.68)
New Hampshire	-13.2%	\$(215.95)	4.6%	\$74.80	-17.8%	\$(290.76)
New Jersey	-15.7%	\$(5,857.61)	1.2%	\$445.19	-16.9%	\$(6,302.80)
New Mexico	-12.5%	\$(939.74)	0.9%	\$66.11	-13.4%	\$(1,005.85)
New York	-14.2%	\$(10,001.37)	2.0%	\$1,436.27	-16.2%	\$(11,437.64)
North Carolina	-10.7%	\$(2,586.03)	2.2%	\$541.25	-13.0%	\$(3,127.28)
North Dakota	-31.8%	\$(566.21)	1.5%	\$26.55	-33.3%	\$(592.77)
Ohio	-12.0%	\$(3,986.85)	5.9%	\$1,952.98	-17.9%	\$(5,939.83)
Oklahoma	-20.6%	\$(1,581.94)	2.6%	\$202.52	-23.2%	\$(1,784.46)
Oregon	-9.9%	\$(1,026.86)	2.3%	\$237.69	-12.1%	\$(1,264.55)
Pennsylvania	-7.4%	\$(2,532.88)	3.2%	\$1,108.53	-10.6%	\$(3,641.41)
Rhode Island	-10.1%	\$(405.75)	2.2%	\$88.14	-12.3%	\$(493.89)
South Carolina	-15.5%	\$(1,310.12)	2.3%	\$191.78	-17.8%	\$(1,501.90)
South Dakota	-8.5%	\$(140.12)	1.3%	\$20.57	-9.8%	\$(160.69)
Tennessee	-12.1%	\$(1,818.40)	3.0%	\$447.75	-15.1%	\$(2,266.15)
Texas	-17.3%	\$(9,799.49)	1.7%	\$964.87	-19.0%	\$(10,764.36)
Utah	-11.0%	\$(833.00)	1.3%	\$100.23	-12.3%	\$(933.22)
Vermont	-11.3%	\$(183.52)	2.9%	\$47.90	-14.2%	\$(231.42)
Virginia	-10.8%	\$(2,242.12)	2.2%	\$450.67	-12.9%	\$(2,692.79)
Washington	-13.6%	\$(3,011.29)	1.5%	\$330.06	-15.0%	\$(3,341.35)
West Virginia	-16.1%	\$(742.98)	1.7%	\$79.84	-17.9%	\$(822.82)
Wisconsin	-11.4%	\$(1,906.12)	3.1%	\$523.68	-14.6%	\$(2,429.80)
Wyoming	-18.8%	\$(226.35)	2.0%	\$24.51	-20.8%	\$(250.86)

Source: Moody's Analytics

Table 3: State Preparedness—Moderate Recession Scenario*% of estimated fiscal 2019 revenues*

	Rainy-day balances*	Total balances*	Fiscal shock moderate recession	Rainy-day surplus/shortfall**	Total surplus/shortfall**
Wyoming	138.3%	138.3%	-8.5%	129.9%	129.9%
Alaska	134.3%	120.5%	-39.3%	95.0%	81.1%
North Dakota	41.7%	45.3%	-21.8%	19.8%	23.5%
Oregon	11.6%	25.6%	-7.0%	4.6%	18.6%
Texas	20.8%	28.2%	-12.4%	8.4%	15.8%
West Virginia	16.0%	23.2%	-9.2%	6.8%	14.0%
Nevada	7.7%	22.7%	-10.7%	-3.0%	12.0%
Delaware	5.4%	17.2%	-8.5%	-3.2%	8.7%
New Mexico	8.7%	16.4%	-8.8%	-0.1%	7.6%
Alabama	9.4%	15.2%	-10.0%	-0.6%	5.2%
Minnesota	10.6%	13.3%	-8.8%	1.8%	4.5%
Iowa	9.9%	12.3%	-8.6%	1.3%	3.7%
Indiana	8.4%	13.5%	-9.8%	-1.4%	3.6%
Hawaii	4.9%	12.7%	-9.2%	-4.3%	3.5%
California	13.0%	16.5%	-13.1%	-0.1%	3.4%
South Dakota	10.7%	10.7%	-7.5%	3.2%	3.2%
Nebraska	7.0%	13.5%	-10.4%	-3.5%	3.0%
Connecticut	10.0%	12.6%	-10.1%	-0.1%	2.5%
South Carolina	6.3%	16.6%	-14.2%	-7.9%	2.4%
Utah	8.8%	11.1%	-9.0%	-0.2%	2.1%
Georgia	11.1%	11.1%	-9.7%	1.4%	1.4%
Maryland	4.9%	9.3%	-8.3%	-3.4%	1.0%
Sum of states	8.2%	11.8%	-11.2%	-3.1%	0.6%
Arizona	4.3%	12.2%	-11.7%	-7.4%	0.5%
Maine	7.5%	10.6%	-10.3%	-2.8%	0.3%
Tennessee	5.8%	11.2%	-11.0%	-5.1%	0.2%
Vermont	11.8%	11.8%	-11.7%	0.1%	0.1%
Washington	7.2%	9.7%	-9.6%	-2.4%	0.0%
Missouri	3.3%	9.8%	-10.4%	-7.0%	-0.5%
North Carolina	5.2%	8.5%	-9.6%	-4.4%	-1.1%
Idaho	13.2%	16.4%	-17.7%	-4.5%	-1.3%
New York	2.9%	8.9%	-10.3%	-7.4%	-1.4%
Ohio	8.1%	10.6%	-12.2%	-4.1%	-1.6%
Kansas	0.0%	9.3%	-11.2%	-11.2%	-1.9%
Colorado	9.2%	9.2%	-11.1%	-1.9%	-1.9%
Michigan	11.3%	13.6%	-16.5%	-5.2%	-2.8%
Massachusetts	5.5%	5.7%	-9.4%	-4.0%	-3.8%
Montana	1.9%	8.8%	-12.7%	-10.8%	-3.8%
Virginia	5.8%	6.0%	-10.3%	-4.5%	-4.3%
Rhode Island	5.1%	5.1%	-9.8%	-4.7%	-4.7%
Wisconsin	1.9%	6.1%	-10.9%	-9.0%	-4.8%
Florida	4.4%	9.3%	-14.9%	-10.5%	-5.6%
New Hampshire	7.7%	7.7%	-13.8%	-6.1%	-6.1%
Arkansas	2.7%	3.8%	-10.2%	-7.4%	-6.3%
Mississippi	5.6%	5.6%	-12.3%	-6.7%	-6.7%
Pennsylvania	0.1%	0.1%	-7.5%	-7.4%	-7.4%
New Jersey	0.0%	2.9%	-10.4%	-10.4%	-7.5%
Oklahoma	5.9%	8.6%	-16.1%	-10.2%	-7.5%
Kentucky	1.1%	1.1%	-10.0%	-8.8%	-8.8%
Illinois	0.0%	1.0%	-10.9%	-10.9%	-10.0%
Louisiana	3.7%	7.0%	-18.9%	-15.2%	-11.9%

* Rainy-day and total balances are estimated as of the end of fiscal 2019 by NASBO. All numbers are shown as a % of fiscal 2019 general fund revenues also estimated by NASBO.

** The estimated shortfalls refer to the amount of fiscal shock that would not be covered by actual reserves under a moderate recession scenario. A negative percentage means a state would not be able to make up for the entire fiscal shock associated with a moderate recession.

Source: Moody's Analytics

Table 4: State Preparedness—Severe Recession Scenario*% of estimated fiscal 2019 revenues*

	Rainy-day balances*	Total balances*	Fiscal shock severe recession	Rainy-day surplus/ shortfall**	Total surplus/ shortfall**
Wyoming	138.3%	138.3%	-20.8%	117.5%	117.5%
Alaska	134.3%	120.5%	-61.2%	73.2%	59.3%
Oregon	11.6%	25.6%	-12.1%	-0.5%	13.4%
North Dakota	41.7%	45.3%	-33.3%	8.3%	12.0%
Texas	20.8%	28.2%	-19.0%	1.8%	9.2%
Nevada	7.7%	22.7%	-15.2%	-7.5%	7.5%
West Virginia	16.0%	23.2%	-17.9%	-1.9%	5.3%
Delaware	5.4%	17.2%	-13.7%	-8.4%	3.5%
New Mexico	8.7%	16.4%	-13.4%	-4.8%	2.9%
Alabama	9.4%	15.2%	-13.3%	-3.9%	2.0%
South Dakota	10.7%	10.7%	-9.8%	0.9%	0.9%
Minnesota	10.6%	13.3%	-12.6%	-2.0%	0.7%
Hawaii	4.9%	12.7%	-12.4%	-7.4%	0.3%
Iowa	9.9%	12.3%	-12.6%	-2.7%	-0.3%
Nebraska	7.0%	13.5%	-14.3%	-7.4%	-0.9%
California	13.0%	16.5%	-17.4%	-4.4%	-0.9%
South Carolina	6.3%	16.6%	-17.8%	-11.5%	-1.1%
Utah	8.8%	11.1%	-12.3%	-3.6%	-1.3%
Maryland	4.9%	9.3%	-11.2%	-6.3%	-1.9%
Georgia	11.1%	11.1%	-13.2%	-2.1%	-2.1%
Connecticut	10.0%	12.6%	-14.8%	-4.8%	-2.2%
Vermont	11.8%	11.8%	-14.2%	-2.4%	-2.4%
Arizona	4.3%	12.2%	-14.8%	-10.5%	-2.5%
Indiana	8.4%	13.5%	-16.6%	-8.1%	-3.1%
Maine	7.5%	10.6%	-14.5%	-7.1%	-3.9%
Tennessee	5.8%	11.2%	-15.1%	-9.3%	-3.9%
Sum of states	8.2%	11.8%	-16.1%	-7.9%	-4.2%
North Carolina	5.2%	8.5%	-13.0%	-7.8%	-4.5%
Washington	7.2%	9.7%	-15.0%	-7.8%	-5.4%
Colorado	9.2%	9.2%	-15.5%	-6.3%	-6.3%
Idaho	13.2%	16.4%	-23.0%	-9.8%	-6.6%
Virginia	5.8%	6.0%	-12.9%	-7.1%	-6.9%
Rhode Island	5.1%	5.1%	-12.3%	-7.3%	-7.2%
Arkansas	2.7%	3.8%	-11.1%	-8.3%	-7.2%
Ohio	8.1%	10.6%	-17.9%	-9.8%	-7.2%
New York	2.9%	8.9%	-16.2%	-13.3%	-7.3%
Massachusetts	5.5%	5.7%	-13.1%	-7.6%	-7.5%
Montana	1.9%	8.8%	-16.5%	-14.6%	-7.6%
Kansas	0.0%	9.3%	-17.5%	-17.5%	-8.2%
Missouri	3.3%	9.8%	-18.1%	-14.8%	-8.3%
Wisconsin	1.9%	6.1%	-14.6%	-12.7%	-8.5%
Michigan	11.3%	13.6%	-23.3%	-12.1%	-9.7%
New Hampshire	7.7%	7.7%	-17.8%	-10.2%	-10.2%
Mississippi	5.6%	5.6%	-15.8%	-10.2%	-10.2%
Pennsylvania	0.1%	0.1%	-10.6%	-10.5%	-10.5%
Florida	4.4%	9.3%	-20.2%	-15.7%	-10.9%
New Jersey	0.0%	2.9%	-16.9%	-16.9%	-13.9%
Oklahoma	5.9%	8.6%	-23.2%	-17.3%	-14.6%
Kentucky	1.1%	1.1%	-15.8%	-14.6%	-14.6%
Illinois	0.0%	1.0%	-16.8%	-16.8%	-15.8%
Louisiana	3.7%	7.0%	-26.8%	-23.1%	-19.9%

* Rainy-day and total balances are estimated as of the end of fiscal 2019 by NASBO. All numbers are shown as a % of fiscal 2019 general fund revenues also estimated by NASBO.

** The estimated shortfalls refer to the amount of fiscal shock that would not be covered by actual reserves under a severe recession scenario. A negative percentage means a state would not be able to make up for the entire fiscal shock associated with a severe recession.

Source: Moody's Analytics

About the Authors

Sarah Crane is an economist at Moody's Analytics, where she conducts government consulting and regional economic research with an emphasis on fiscal policy and economic development. In this role she produces revenue forecasts for a variety of state and local governments, and she regularly presents to clients and conferences. She also oversees several regional economic modeling projects and works closely with a number of governments and other organizations in an advisory role.

Sarah's most recent research has focused on federal, state, and local government fiscal multipliers in times of recession. She and her colleagues evaluated the economic policies that Congress typically authorizes during a downturn and sized them up against one another based on their overall economic impact at different points in the business cycle. In particular, the study analyzed general aid to states and localities, unemployment insurance benefits, food stamps, infrastructure, and tax cuts.

Before joining Moody's Analytics, Sarah worked as an economic researcher for the American Road and Transportation Builders Association in Washington DC, where she evaluated issues related to transportation infrastructure and the transportation construction industry. She earned an MA in economics from American University and holds an undergraduate degree in communications from Boston University.

Colin Seitz is an associate economist at Moody's Analytics. He covers the economies of Maryland and several U.S. metropolitan areas, as well as Uruguay and Lebanon. He is also involved in various labor economic consulting projects and works closely with a number of governments and economic development boards in an advisory role.

Colin's most recent research focused on developing a quality of life indicator for metropolitan areas. Using data from a variety of sources focused on economy and well-being, he created estimates of quality of life across nearly all the metropolitan areas in the U.S. Colin has also done research on trade in Latin America.

He has a bachelor's degree in economics from Haverford College.

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