

RATING METHODOLOGY

US States Rating Methodology

Analyst Contacts:

NEW YORK	+1.212.553.1653
Emily Raimes	+1.212.553.7203
<i>Vice President - Senior Credit Officer</i>	
emily.raimes@moodys.com	
Nicole Johnson	+1.212.553.4573
<i>Senior Vice President</i>	
nicole.johnson@moodys.com	
Nick Samuels	+1.212.553.7121
<i>Vice President - Senior Credit Officer</i>	
nicholas.samuels@moodys.com	
Ted Hampton	+1.212.553.2741
<i>Vice President - Senior Analyst</i>	
ted.hampton@moodys.com	
Lisa Heller	+1.212.553.7812
<i>Vice President - Senior Analyst</i>	
lisa.heller@moodys.com	
Baye Larsen	+1.212.553.0818
<i>Vice President - Senior Analyst</i>	
baye.larsen@moodys.com	
Marcia Van Wagner	+1.212.553.2952
<i>Vice President - Senior Analyst</i>	
marcia.vanwagner@moodys.com	
Kimberly Lyons	+1.212.553.4673
<i>Assistant Vice President - Analyst</i>	
kimberly.lyons@moodys.com	
Julius Vizner	+1.212.553.0334
<i>Assistant Vice President - Analyst</i>	
julius.vizner@moodys.com	
Robert Canfield	+1.212.553.3801
<i>Associate Analyst</i>	
robert.canfield@moodys.com	
John Lombardi	+1.212.553.2829
<i>Associate Analyst</i>	
john.lombardi@moodys.com	
Andrew Nowicki	+1.212.553.2846
<i>Associate Analyst</i>	
andrew.nowicki@moodys.com	

>>contacts continued on the last page

Summary

This methodology provides an updated and detailed explanation of how Moody's assigns ratings to US state general obligations or their equivalents. The report provides market participants with insight into the factors we consider to be most important to our state ratings. This methodology applies to state general obligation ratings, or issuer ratings of states that do not issue general obligation debt; it does not cover how we rate state lease rental obligations, special tax bonds, or other state-issued securities.¹ This report updates and replaces "[Moody's State Rating Methodology](#)" published in November 2004. No rating changes are expected to result from this methodology update.

We also introduce a new state methodology scorecard. The scorecard's purpose is to provide a reference tool that can be used to approximate credit profiles for US states. The scorecard provides summarized guidance for the factors that generally are most important in assigning ratings to states. The scorecard is a summary that does not include every rating consideration, and our methodology also considers forward-looking elements. As a result, the scorecard-indicated rating is not expected to match the actual rating of each state in every case.

Our ratings are based on an assessment of certain quantitative and qualitative factors. The most important of these are captured in the new scorecard. However, our credit ratings are based on many factors, and the scorecard does not capture all of them. Therefore, analytical judgment can lead to a rating outcome that differs from the scorecard.

This report describes the various measures of economic strength, governance, financial strength, and debt position we consider during the rating process. Additionally, we describe the reasons states are highly rated compared to other governmental and corporate issuers, the attributes of states at each rating level, and the types of developments that can cause a state rating to fall outside of the normal state rating distribution.

Highlights of this report include:

- » An overview of the rated universe
- » A summary of the rating methodology
- » A description of the key factors that drive rating quality
- » Comments on the grid assumptions and limitations, including a discussion of rating considerations that are not included in the grid
- » How a US government bond rating change could affect US state ratings

¹ For methodologies on lease backed obligations, special tax bonds and other state-issued securities, please see Moody's [Index of Rating Methodologies](#).

Methodology Update Not Expected to Result in Rating Changes

This methodology update reflects refinements to our approach to rating US state general obligation credits. The four major rating factors—economy, governance, finances and debt—remain unchanged, as are the weightings assigned to each. The scorecard is designed to provide additional transparency to our approach by identifying qualitative and quantitative sub-factors as a starting point for analysis, and additional considerations that may affect the final rating assignment. These refinements to our published methodology reflect current rating practices that incorporate certain risks and considerations that became more prominent as a result of the 2008 financial crisis (for example, counterparty risks and exposures to variable-rate debt and unfunded pension liabilities).

We do not anticipate that this methodology update report or the application of the new scorecard will result in rating changes for US states.

Strong Institutional Framework and Low Systemic Risk Support High Ratings for US States

US states generally have high ratings compared to other global public-sector ratings, corporations and financial institutions, due to their strong institutional framework and low systemic risk reflected in the US government bond rating. States are highly rated in part because of the US government's credit strength, as well as their inherent financial strengths and low debt levels.

Institutional Strengths

In the US, the federal government is responsible for core functions such as governance and support of the banking system, and funding the military, social security and Medicare, thereby relieving states of these duties. In economic downturns, the federal government uses monetary and other policies to boost the economy. Additionally, the federal government has a long history of providing states with financial support following natural disasters. On occasion, the federal government may give direct aid, such as the temporary stimulus funding states received through the American Recovery and Reinvestment Act (ARRA) of 2009. However, in our state rating analysis, we do not assume the federal government will provide extraordinary financial support such as ARRA during economic downturns, nor do we expect that the federal government would intervene to ensure timely payment on a state's bonds.

Under the US Constitution, state and local governments have considerable independence from the federal government with respect to taxing authority, revenue and spending decisions, and debt financing decisions. They do not generally rely on the federal government to collect and redistribute revenues, as is the case for sub-sovereigns in other countries. We nevertheless anticipate that state and local government ratings would not be completely unaffected by significant pressure on the US sovereign rating, given the numerous connections between the three levels of government. State and local government borrowing costs typically move in tandem with the US Treasury market, and all three governments are to shared limits on combined taxing capacity.

State Government Credit Strengths

States have other credit strengths in addition to the independence provided through the US constitutional framework. Financial strength is derived from economic bases that are larger and more diverse than those of most other sub-national governments. In periods of fiscal weakness, they can reduce aid to local governments, mandate that they assume certain responsibilities previously shouldered by the state, or retain tax revenues normally distributed to local governments. In addition, states are sovereign entities, and their power to tax is generally not limited by the US Constitution, outside of interstate commerce or international trade constraints. In contrast, localities can only derive their power to tax from states, and this often constrains their fiscal flexibility.

States have relatively affordable direct debt burdens compared to most sovereign entities around the globe, and are not responsible for maintaining a military or dealing with the threat of foreign invasion or coups. Finally, a state's general obligation pledge represents an extremely strong legal payment obligation, and state governments have an institutionalized culture that places a high priority on debt repayment. Moreover, states cannot file for bankruptcy. As a result, there is no history of state general obligation debt default since the Great Depression, during which only one state temporarily defaulted on its bonds. The fundamental characteristics discussed above underpin the high distribution of state ratings. If these fundamental characteristics were to change, the rating distribution would likely change as well.

- » States rated Aaa have little history of financial and governance weakness, and a demonstrated ability to deal with economic downturns quickly and with sustainable solutions;
- » States with ratings high in the Aa category are likely to maintain structural balance or return to it quickly, and they tend to make decisions conducive to long-term stability;
- » States rated in the low-Aa category or lower may have difficulty achieving or maintaining structural balance, and tend to make short-term decisions in downturns that reduce long-term stability.

Our ratings assume states will take the actions needed to address economic and financial pressures. However, from time to time, state governments do not take those actions due to political stalemate, an unwillingness to make difficult decisions, or overall governance inflexibility. This may result in weak cash margins, government shutdowns or the threat of shutdowns, the inability to meet monthly payment obligations with monthly resources, large and increasing negative fund balances and other signs of stress. The persistence of these conditions indicates a relatively high degree of credit strain and would likely result in a rating outside of the historical rating distribution for the sector.

How Systemic Risk Can Affect State Ratings

Sovereign credit quality can directly affect the credit standing of other issuers domiciled within the sovereign, and, more generally, tends to be associated with macroeconomic and financial market trends that can be favorable or unfavorable for all issuers.²

Issuers that are exposed to similar pressures to the sovereign and/or to the macroeconomic and financial market conditions likely to accompany, or to result from, a change in sovereign creditworthiness will also suffer rating pressure. Examples include sub-sovereign regional and local governments through the associated impact on expenditures and revenues; banks through the expected increase in asset impairments; non-financial corporates through the impact on revenue; structured instruments through the impact on collateral performance and creditworthiness of servicing agents; and all such issuers through the impact on funding conditions and on the availability of debt finance and bank credit. Likewise, US states would not be immune to a downgrade of the US government bond rating. As a result of these indirect credit linkages, it is unusual for a governmental issuer to be rated more than one or two rating notches above its sovereign's rating. If the US rating dropped to Aa2 or lower, we would reflect that incremental systemic risk by applying some additional weight to systemic risks and less weight on the idiosyncratic risks measured by the state scorecard. Our framework for incorporating systemic risks in US state ratings is described in more detail in the Additional Factors section of the methodology.

² See Moody's Rating Implementation Guidance "[How Sovereign Credit Quality May Affect Other Ratings](#)", February 2012.

Assumptions, Limitations and Rating Considerations not Covered in the Scorecard

This methodology and scorecard describe generally how we formulate ratings for US states and US territories, including Puerto Rico, the US Virgin Islands, and the Northern Mariana Islands. The methodology and scorecard reflect current rating practices, and capture the factors we believe are most relevant to states' long-term credit quality, but it is not an exhaustive discussion of all factors that Moody's analysts consider in every US state rating.

The rating methodology scorecard incorporates a trade-off between simplicity that enhances transparency and greater complexity that would enable the scorecard to map more closely to actual ratings. The scorecard's four rating factors and 11 sub-factors do not constitute an exhaustive treatment of all of the considerations that are important to state ratings.

In choosing metrics for the methodology scorecard, we have excluded certain factors that are important to state ratings but may be either subjective or based on predictions about future events. Accordingly, ranking the factors by rating category in a grid would in some cases suggest too much precision and stability in the relative ranking of particular states. The expectation that a state's budgetary process may reach stalemate in the upcoming budgetary cycle is an example of a factor that has not been included in the scorecard but may factor into a rating.

Ratings may also reflect circumstances in which the actual weighting of a particular factor or sub-factor is significantly different from the weighting suggested by the scorecard. For example, a state's multi-year spending trend or persistent retirement system underfunding may pressure the financial stability of the state so significantly that we feel the scorecard-assigned weighting of one particular factor or sub-factor is insufficient. This variation in weighting as a rating consideration can also apply to factors not represented in the scorecard.

Our ratings incorporate expectations for future performance, while much of the information used in the scorecard is historical. In some cases, our expectations for future performance may differ from past performance, and may affect the rating.

Discussion of Key Scorecard Factors

Our fundamental analytical framework includes the following key factors and sub-factors which are incorporated into the rating scorecard, and the weighting assigned to each factor:

FIGURE 1
US States

Broad Rating Factors	Factor Weighting	Rating Sub-Factors	Sub-Factor Weighting
Economy	20%	Income	10%
		Industrial Diversity	5%
		Employment Volatility	5%
Governance	30%	Financial Best Practices	15%
		Financial Flexibility/Constitutional Constraints	15%
Finances	30%	Revenues	10%
		Balances and Reserves	10%
		Liquidity	10%
Debt	20%	Bonded Debt	10%
		Adjusted Net Pension Liabilities	10%
Total	100%	Total	100%

Our fundamental analytical framework also includes the following additional key rating factors and sub-factors that do not fall into the overall rating scorecard, but could shift a rating up or down anywhere from half a notch to multiple notches from what the scorecard suggests. These factors include:

I.	Additional Economic Factors
a.	Expected Economic Growth
b.	Poverty Rate

II.	Additional Governance Factors
a.	Conservative Governance
b.	Political Polarization
c.	Congressional Representation (states have congressional representation, while US territories do not)
d.	Lack of Appropriation for Debt Service
e.	Weakness in Fiscal Best Practices

III.	Additional Financial Factors
a.	Structural Imbalance
b.	Cash Flow Borrowing
c.	Lack of Market Access

IV.	Additional Debt Factors
a.	Pension liabilities/funding efforts
b.	Debt ratios or debt structure
c.	Borrowing on behalf of local governments

V.	Additional Other Factors
-----------	---------------------------------

VI.	Other factors specific to a state or credit that may affect rating
------------	---

VII.	Operating Environment
-------------	------------------------------

Factor 1: Economy (20%)

Why It Matters

A state's economic base ultimately generates the resources that repay its debt, and demographic factors drive expenditure demands. Thus, economic analysis is the fundamental starting point of the rating process. Moody's analyzes the current economic profile of each state in order to gauge specific economic strengths and weaknesses and to set expectations for future performance. We compare the relative economic strength of the states along with measures of personal and business income, industrial diversity, and volatility. We rely on regional economic analysis and forecasting by private economists and by state professionals. We also consult with Moody's corporate analysts for information on any dominant industry in a state.

How We Measure It for the Scorecard

Income

Per-capita income relative to US average

Income levels affect a state's taxing capacity, its spending demands, and support for its debt. Wealth levels vary tremendously among the states, with the 2011 personal income per capita of the poorest state equal to only about 77% of the national average, while the richest state's per-capita income is

about 139% of the national average.³ Per-capita personal income relative to the US average reflects the overall wealth of the state, and thus the state spending that may be required, as well as the economic base the state can draw upon.

Employment and Economic Diversity

Moody's pays close attention to employment data, for two reasons. First, jobs generate the income to pay taxes. Non-earned income such as capital gains may play an increasingly large role in state revenue growth and volatility, but employment is still a good measure of overall state economic health. Second, the federal government releases state-level data on employment frequently and relatively promptly, offering a real-time gauge of a state's economy relative to its peers. Moody's examines historic job trends and forecasts of job and income growth. We track the composition of job growth across industries and regions within a state and look at wage data to assess whether job growth is concentrated in high-paying or low-paying sectors. The geography of state job growth is important; some states have a geographic mismatch between population and jobs that statewide data can mask. Economically strained regions within a state can present serious spending needs even when aggregate state employment data give the appearance of economic strength. This is particularly true of regions that have experienced fundamental geographic and industrial shifts in their economic structure. Trends in the size of the labor force and labor force participation are important indicators of economic strength and more telling than unemployment rates alone.

Industrial Diversity

One of the most important variables in Moody's analysis of a state economy is diversity. All else equal, we expect a diverse economy to perform better than an economically concentrated one over the long run, and to suffer less during economic recessions that are concentrated in particular industries. In the recession that began in 2001, states concentrated in the manufacturing sector sustained the greatest economic and financial damage. In the recession that began in December 2007, states with high concentrations of construction employment, financial services, and tourism/gaming were hit disproportionately hard.

The industrial diversity index published by Moody's Analytics in its State Précis reports is defined as the extent to which a state's industrial structure approximates the US industrial structure. Figure 6 at the end of the report provides the latest available index. A value closer to zero signifies that the state has a very different industrial structure from that of the US and is much less diverse than the US, while a value closer to one reflects a state with an industrial structure that more closely mirrors the diversity of the US.

Employment Volatility

Another important economic variable is volatile the economy. To measure this, we use the Moody's Analytics measure of employment volatility, also published in the State Précis reports and reprinted in Figure 6 at the end of this report. This metric is defined as the standard deviation in a state's monthly, year-over-year, non-agricultural employment growth compared to the standard deviation for the US. This is measured over the most recent 10-year period, and a volatility of 100 means that employment volatility in a state is equal to that of the US. Greater than 100 indicates more volatility than the US, and a lower number reflects less volatility.

³ Bureau of Economic Analysis, US Department of Commerce

These economic variables are backward-looking metrics. We may adjust the scorecard-indicated rating to reflect a forward-looking view of economic growth.

FIGURE 1

Economy (20%)

Sub-Factor	Measurement	Aaa	Aa1	Aa2	Aa3	A	Baa and below
Income	Per capita income relative to US average	>100% of	90%-100% of	85%-90%	80%-85%	50%-80%	<50%
Employment and Economic Diversity	Industrial diversity (1=most diverse)	> 0.85	0.7-0.85	0.55-0.7	0.4-0.55	0.1-0.4	< 0.1
	Employment Volatility (US=100)	< 95	95-120	120-140	140-180	180-300	> 300

Factor 2: Governance (30%)**Why It Matters**

This category of rating factors examines the quality of financial decision-making and execution. Some of the governance factors are embedded in law, but others are practices that have developed over many years. Some states have relatively strong financial management laws but weak actual practices, while others have a weak financial management legal structure but strong practices.

The governance factors capture willingness to take proactive policy actions, in contrast to ability-to-pay measures (such as fiscal capacity). As applied to state ratings, these actions indicate a state's willingness to take financial policy actions that ensure maintenance of a reliable financial cushion. The speed with which such decisions are implemented is important, because delays can be very costly when expenditures are outpacing revenues. The most effective governance systems involve enacting a balanced budget at the beginning of the fiscal year based on realistic forecasts, closely monitoring the budget during the year, and then quickly making adjustments if it begins to veer off course.

Financial results are affected heavily by the degree to which state policy makers are realistic about the tradeoffs involved in budget policy choices. This in turn requires governors and legislatures to have accurate and objective information about the costs and benefits of programs and the revenue implications of tax policy changes, which is aided by good management information systems and professional legislative and executive branch fiscal staff.

States that attempt to increase expenditures for popular programs and simultaneously pledge not to raise taxes or cut other programs generally see their balance sheets deteriorate as reserves are drawn down, debt loads grow, and off-balance-sheet devices are used to fund deficits.

Budget Development and Management Practices

A number of specific fiscal management practices tend to produce the strongest results. Most states use some of these, but highly rated states tend to use most of them. These practices are most effective when institutionalized in a state's management culture and transcend changes in administrations, parties, or legislative leadership.

While our methodology weights governance more heavily than economic factors, some states have good practices, but economic attributes that exert a downward pull on the rating. Conversely, some states may not have a predominance of best practices, but have such deep economic resources that their fiscal capacity and flexibility produce strong financial results.

Most states' financial performance looks good when the economy is booming, but the real test occurs when the economy declines. State practices diverge dramatically when confronted with severe revenue shortfalls. Some states address the problem quickly with solutions that involve recurring revenues and expenditure reductions while others postpone decisions, hoping that the economy will bounce back. Those that react faster are able to realign their budgets and maintain a stronger financial position, while those that wait are likely to see their finances weaken materially. Over time, the net effect of governance effectiveness accumulates in a state's financial statements. We use information about these governance factors to project how a state's financial health will hold up under stress.

How We Measure It for the Scorecard

Financial Best Practices

States where the executive branch has strong constitutional power to control spending are generally better positioned to stay on top of revenue shortfalls and unexpected spending increases. When the executive branch is prohibited from limiting spending without accompanying legislative action, delays to necessary budget adjustments can ensue, compounding the problem. In some states, the executive branch has extensive powers to allocate or "allot" appropriations to the agencies, either on a monthly or quarterly basis. Budget managers in some states allot less than the full appropriation during the early months of the year and then, depending on revenue performance, gradually release spending authority. As a result, they are able to swiftly reduce spending when revenues begin to weaken during a recession. In addition, states may have a history of best practices that bolster the ability to maintain balanced budgets and healthy finances. We look at state best practices including:

- » Does the state have a binding consensus revenue forecasting process? If so, how many times per year are the forecasts updated?
- » Does the state produce detailed and credible multi-year financial plans?
- » Is there unlimited executive authority to cut expenses mid-year without legislative approval?
- » Does the state publish a debt affordability analysis?
- » Does the state have timely audited financial reporting and timely budgets?

Generally, a state with four or five of the best practices will score a Aaa or Aa1 on this measure, while states with three will score Aa1 or Aa2, and states with two or fewer of the five best practices will likely score a Aa3 or lower.

Financial Flexibility/Constitutional Constraints

The constitutions of some states include provisions that limit financial flexibility and weaken the institutional governance framework. The initiative and referendum process can particularly constrain flexibility over time. California, Oregon, and Washington are among the states with the most active voter initiative processes, and in all three there have been long-run budgetary effects. Some states are constitutionally blocked from increasing revenues unless they put a referendum to the voters. Those states often can only look to the expenditure side of their budgets to close deficits when a two-pronged approach would offer more flexibility.

Some of the characteristics we consider in assessing flexibility include:

- » Does the state have an initiative and referendum process?
- » Does the state have constitutional caps on raising revenues?
- » Is a super-majority of the legislature required to pass revenue increases or the budget?
- » Are there criteria ensuring maintenance of a Rainy Day Fund?
- » Are there requirements to replenish the Rainy Day Fund if drawn upon?

Generally, a state that scores positively on four or five of the five characteristics of flexibility would receive a Aaa score on this measure, a state with three would score Aa1, and a state with none would score Baa.

FIGURE 2
Governance (30%)

Sub-Factor	Measurement	Aaa	Aa1	Aa2	Aa3	A	Baa and below
	Financial best practices	Strongest financial best practices	Very strong financial best practices, but without all of the strongest characteristics	Moderately strong financial best practices	Sufficiently strong financial best practices	Adequate financial best practices that can exacerbate budgetary problems	Weakest financial practices
Flexibility	Financial Flexibility/Constitutional constraints	Greatest financial flexibility: strongest institutional governance with no constitutional constraints	Strong financial flexibility: strong institutional governance with very few constitutional constraints	Moderately strong financial flexibility: moderately strong institutional governance with some constitutional constraints	Adequate financial flexibility: institutional governance and/or constitutional constraints that can inhibit budget solutions	Less than adequate financial flexibility: institutional governance and/or constitutional constraints that often inhibit budget solutions	Weakest financial flexibility: institutional governance and/or constitutional constraints that consistently inhibit budget solutions

Factor 3: Financial Strength (30%)

Why It Matters

Unlike economic factors, which are largely beyond the states’ control, financial results are the product of many decisions and practices determined by state policy makers. While tax collections and expenditures reflect fiscal capacity, and they ebb and flow with economic cycles, the financial choices states make given the economic situations they face—at any point in the economic cycle—are critical to the rating.

Structural budget balance is a central concept in evaluating state financial strength. A structurally balanced budget is one for which the forecast shows that recurring revenues under reasonable economic growth assumptions can support recurring baseline expenditure commitments, given anticipated demographic trends and current policies. We expect governors and legislatures to make taxing and spending decisions for each budget cycle that will affect this equation, but current laws indicate the baseline from which to start the evaluation of structural balance. To assess the degree of structural balance, we look at each side of the budget in turn, using the audited financials to assess structural balance in the past, and current and future budget projections to estimate a state’s future structural balance.

How We Measure It for the Scorecard

Revenue Diversity, Volatility, and Growth

During a recession, states with the broadest and most diverse revenue streams generally fare better against downward economic pressures than those with concentrated revenue structures. Over time we have observed that states that impose all three of the most broad-based taxes—corporate income tax, personal income tax, and sales tax, as well as an array of more narrowly-based taxes and fees—are best positioned to manage revenue downturns. A broader tax base also generally does a better job of generating tax revenue that keeps pace with the state's economic growth, which aids structural budget balance.

The volatility of a state's revenue stream is an important rating consideration. Sales and income taxes are less volatile than narrower, targeted taxes, such as real estate or gasoline taxes. Generally speaking, Moody's expects that states with both major taxes would have a less volatile revenue stream than those with only one. The predictability of each type of state tax also varies. Corporate income tax collections can swing significantly because companies have substantial tax planning flexibility and thus tax revenue performance is not linked closely to corporate profits. However, because this tax accounts for only about 5% of the states' revenues on average,⁴ these fluctuations matter less than volatility in the sales and income taxes.

When state budgets are projected to grow, Moody's monitors current and forecasted revenue growth to determine whether the revenues can accommodate the growing expenditure base. Revenue growth both before and after any tax law changes is important, as is the source of the revenue growth. State income taxes have become increasingly progressive as various states have passed laws to raise the income threshold at which they levy the income taxes and added bracket structures to tax higher income earners at higher marginal rates. As a result, income tax revenue grows more rapidly than income in some states and conversely, falls more precipitously when income falls. The sales tax can also vary in how well it captures economic growth, depending on how broad the taxable base is. Some states tax services, while others tax only goods, and many states vary in their taxation of food and drugs. As political constraints have led states to avoid increases to their broad-based taxes, many have looked toward smaller revenue sources, which we consider less valuable. Not only can these taxes and fees be more volatile, but in some cases, they can also grow less rapidly than the economy. Such smaller and more risky revenues include various "sin" taxes (cigarette, alcohol, and gaming) as well as a variety of fee increases that are rarely indexed to inflation and grow only with transaction volume. The structure of income and sales taxes can also affect how well they capture economic growth in a state.

Moody's also examines whether revenue growth is expected to be recurring because this has implications for future structural balance. Nonrecurring revenues, such as diversion of dedicated taxes to the General Fund or raids on other funds, are a common feature of state budgets in difficult times and can play a reasonable role if used in moderation as a bridge to better times. However, depending on their scale, they can undermine structural budget balance and set the stage for future fiscal stress. Other one-shots include asset sales, draw-downs of various state funds, accelerated tax collections, deferrals of tax refunds or other payments, and deficit financings. States that depended heavily on these types of solutions during the recent recession were more likely to see downward rating actions compared to those that addressed the widespread budget stress with recurring solutions.

To measure revenue diversity, volatility, and growth, we assess the past ten years of revenue collections by looking at the number of years of revenue declines, the largest one year decline, and the concentration of the revenue streams.

⁴ Nelson A. Rockefeller Institute of Government State Revenue Report, August 2012

As most states are required to enact balanced budgets, with revenues equaling expenditures, the willingness and ability of a state to cut spending in times of revenue decline is important. We assess a state's ability to adjust spending by looking at the percent of a state's spending that is fixed (debt service and pension contributions, for example) versus discretionary. We also note states that have requirements to cut spending when revenues decline, which automatically balances the budget without legislative wrangling. States that have historically been less willing or able to cut spending in downturns tend to have large negative available balances through the downturn. This information is an input into our forward looking view on future available balances.

Balances and Rainy Day Fund

Available Balances as Percent of Operating Revenues

Moody's looks at a number of balance sheet measures, but the fund balances presented in Comprehensive Annual Financial Reports (CAFR) provide a critical point of comparison of state financial conditions. During the legislative budget process, state policymakers generally consult financial information prepared using various state-specific approaches. In many states, these are cash-basis budget or accounting presentations. In an effort to make apples-to-apples comparisons among the states, Moody's relies heavily on audited GAAP (Generally Accepted Accounting Principles) financial statements.

Fund balance comparisons from the audited financial statements are an important analytic tool capturing the cumulative effect of budget actions. Fund balance measures generally reflect standardized revenue and expenditure accrual policies under GAAP accounting, and thus show the effects of actions a state may have taken to balance the budget by deferring the cash funding of current obligations. Most state constitutions require a balanced budget, but few states measure balance on a GAAP basis for that purpose. Two states might have comparable June 30 cash cushions, for example, but one may plan on deferring school aid payments for the school year that just ended to the early part of the next fiscal year. A state that has already paid its school aid is in a better comparative fiscal condition.

The primary measure of fund balance that we use is the Unreserved, Undesignated Fund Balance (UUFB), plus any other reserves available outside of the General Fund (usually Rainy Day Funds). Almost all states maintain a Rainy Day Fund, which may be part of the general fund balance or separate from it, depending on the state's accounting approach. The combination of UUFB plus other available reserves is a key metric in our analysis that we term "Available Balances." As a percent of revenues, Available Fund Balance provides a measure of the financial reserves potentially available to fund unforeseen contingencies. Under new fund balance reporting rules (GASB 54), states have begun to report balances with slightly different labels (Unassigned Fund Balance instead of Unreserved, Undesignated Fund balance, for example).

While most states have some form of a Rainy Day Fund, there is a wide variation on how these funds are maintained, added to, or tapped. Financial statements reveal the results of past practices. In our analysis, we look at a state's rules and its actual practices and form a view of how the rainy day fund will be managed over time. For example, some states require some or all of the revenues in excess of the forecast, or in some cases the net surplus at the end of the year, to be deposited to the fund. A state seeking to build up reserves can deliberately project revenues at the low end of the forecast range. Some of the states with weak Rainy Day Fund guidelines or practices may have a reserve fund on the books, but keep it at such low funding levels that it is of little use to the state should the budget tighten.

Liquidity

Cash Management and Liquidity

Since fund balance is based on accrual-based accounting, we also look at cash-basis liquidity measures to assess states' relative degrees of financial cushion. Quite simply, states pay debt service, vendor bills and payroll with cash. States provide Moody's with year-end cash statements and, in the case of states with narrower margins, monthly, weekly and even daily cash flow statements and projections. While many states' GAAP and cash positions are aligned, some states may look quite different and thus, Moody's finds it necessary to examine both sets of statements to get a full financial picture of a state. Some states may have positive GAAP balances but still have tight liquidity positions at certain points during the year. Conversely, some states may have a negative GAAP balance, but may still have ample cash on hand, either in the General Fund or outside of it.

A good indicator of liquidity levels for states is the cash cushion available to it at the end of the fiscal year. Whether or not a state has issued short-term cash flow notes, which it may do to smooth an imbalance between revenue collections and spending, we look at the cash available at the end of the year relative to annual own source revenues to determine whether the state has strong or weak cash margins. A history of weak year-end liquidity likely signifies a tight cash position throughout the year, with little cushion available if revenues dip unexpectedly. In addition, we look at whether a state needs to do external cash flow borrowing and/or internal cash flow borrowing, and whether a state has alternate liquidity available.

FIGURE 3

Finances (30%)

Sub-Factor	Measurement	Aaa	Aa1	Aa2	Aa3	A	Baa and below
Revenues	Revenue Diversity, Volatility, and Growth	Strongest revenue growth, very low to no volatility, low reliance on volatile revenues	Strong revenue growth, low volatility, low reliance on volatile revenues	Moderate revenue growth or volatility, some reliance on volatile revenues	Modest revenue growth, marked volatility, some reliance on volatile revenues	Many years of revenue declines and/or steep declines, reliance on volatile revenues	Persistent revenue declines, high negative volatility, heavy reliance on volatile revenues
Structural Balance and Rainy Day Fund	Available Balances as % of Operating Revenue (5-yr avg.)	Available Balances greater than 10%, with requirements to rebuild Rainy Day Fund if drawn upon	Available Balances from 5% to 10%, likely to rebuild Rainy Day Fund if drawn upon	Available Balances from 0% to 5%, likely to rebuild Rainy Day Fund if drawn upon	Available Balances from 0% to -5%, no plans to rebuild Rainy Day Fund if drawn upon	Available Balances -5% to -40%, no plans to rebuild Rainy Day Fund if drawn upon	Available Balances less than -40%, no plans to rebuild Rainy Day Fund if drawn upon
Liquidity	Cash Management and Liquidity	No external cash flow borrowing in current year, no need for internal borrowing or use alternate liquidity	No external cash flow borrowing; may use internal borrowing, but leads to healthy liquidity position; no other cash management tools needed	External or internal cash flow borrowing, but ending cash is moderate to healthy	External cash flow borrowing or inter-year cash management tools like payment delays); leads to adequate liquidity	May use both external and internal liquidity borrowing, and other cash management tools; liquidity position still weak	External or internal borrowings are rolled across fiscal years and increasing over time; liquidity position still weak

Factor 4: Debt (20%)

Why It Matters

The fourth factor, debt, captures the state's debt and other long term liabilities as part of our assessment of the state's overall financial health. The starting point for our analysis is to assess relative debt burdens and debt affordability. From there we take into account the state's debt structure. We also consider the state's capacity to meet its other long-term obligations, such as unfunded pension liabilities.

Long-Term Liabilities

We have historically assessed the credit risk of states' long-term obligations by comparing the amount of outstanding bonds to the size of state tax bases and economies. We have ranked states in our annual debt medians reports based on the par value of outstanding bonds (net tax-supported debt), as a percentage of income, on a per-capita basis and more recently, as a share of states' gross domestic product and as a share of state revenues.

The total unfunded liability of state pension plans have also been regularly factored into our analysis of state credit. In assessing state long-term liabilities we treat pension liabilities as a form of debt, and look at the state's unfunded pension liabilities as a percent of state revenues.

How We Measure It for the Scorecard

Debt as Percent of Revenues

Debt compared to revenues indicate the relative affordability of the state's debt obligations based on current revenue sources. For this metric we use Moody's reported figure for net tax-supported debt (NTSD), as reported in our annual Debt Medians reports and in Moody's Financial Ratio Analysis (MFRA), divided by the total by total governmental fund revenues.

Unfunded Pension Liabilities as Percent of Revenues

Unfunded pension liabilities represent a long-term liability for a state. In some states retiree benefits are constitutionally protected, and, in most, benefits are protected to some degree. Thus a state's unfunded pension benefits can present future budgetary pressure if not reduced. We adjust the state's reported unfunded actuarial accrued liabilities (UAAL) to reflect our preference for the use of a market-determined discount rate. We also assign liabilities to other participating governments in those cases where the state's reported liabilities are inclusive of all the sponsoring entities of multiple-employer cost-sharing plans. The resulting adjusted net pension liability is averaged over a three-year period to reduce year-to-year volatility. The metric is then calculated by dividing the average adjusted net pension liability by the state's most recent total governmental fund revenues.⁵

Other factors are important in evaluating the credit implications of a state's pension finances. Many of them are related to pension governance and management and reflect choices made by the state, such as how much to contribute to the pension plan annually and the use of conservative or optimistic assumptions to calculate liabilities. We have always considered these factors. Analysts will be able to adjust the placement into rating categories of the pension metric to reflect such factors as a state's history of funding adequacy, the use of an exceptionally high or low discount rate, an especially long or short amortization period or whether the state has taken definitive and effective steps to reduce its

⁵ At this time we have two years of adjusted pension data (2010 and 2011), and will use the average of the two years in the scorecard. As the data for 2012 are collected and adjusted, we will use a three-year average.

unfunded liability. Analysts will also be able to make below-the-line notching adjustments to reflect these factors.

FIGURE 4

Debt (20%)

Sub-Factor	Measurement	Aaa	Aa1	Aa2	Aa3	A	Baa and below
Debt Measure	NTSD/ Total Governmental Fund Revenues	Less than 15%	15%-30%	30%-50%	50%-90%	90%-130%	Greater than 130%
Pension Measure	3 Year Average Adjusted Net Pension Liability/ Total Governmental Fund Revenues	Less than 25%	25%-40%	40%-80%	80%-120%	120%-180%	Greater than 180%

Additional Factors Not Included in the Scorecard

Inputs for all of the factors and sub-factors described above, with the weights shown on page 4 applied to each factor, determines a starting point for a state rating. There are times, however, when events in a state or certain characteristics of a state may be more significant determinants of a rating than the scorecard weightings imply. In these cases, certain additional factors might bring a rating up or down anywhere from half a notch to multiple notches. On occasion, this may change a rating by multiple notches. They include (but are not limited to) the following:

Additional Economic Factors

- » A very narrow economy, with little expectation of growth and/or diversification, and/or shrinking population due to outmigration (could bring rating down)
- » A poverty rate that is greater than 30% (could bring rating down)
- » Expected future status as growth state (could bring rating up)

Additional Governance Factors

- » Political polarization that makes budgeting and financial decisions difficult (could bring rating down)
- » Lack of congressional representation (in the case of commonwealth or US territories) (could bring rating down)
- » Weakness in fiscal best practices, such as late CAFRs, weakness in consensus revenue estimating process, etc. (could bring rating down)
- » Heightened risk of lack of appropriation for debt service, or other nonpayment of debt service (could bring rating down)
- » Long history of conservative financial management, and/or frequent revenue estimating (at least four times per year) (could bring rating up)

Additional Financial Factors

- » Large structural imbalance, even in economic upswings (could bring rating down)
- » Cash flow notes or other cash management tools used due to severe liquidity strain, may cross fiscal years or be rolled (could bring rating down)

- » Lack of market access (could bring rating down)
- » Delaying vendor payments due to cash flow strain (could bring rating down)

Additional Debt Factors

- » Significantly strong or weak pension characteristics not reflected in grid (could bring rating up or down)
- » Inflexible or risky debt structure, including high variable-rate and swap exposure relative to liquidity (could bring rating down)
- » Extremely high debt ratios (debt/personal income greater than 50%, for example) (could bring rating down)
- » Any structural subordination of GO debt (could bring rating down)
- » Consolidated borrowing on behalf of local governments (could bring rating up)

Additional Other Factors

- » There may be other miscellaneous factors particular to a certain credit that affect the rating but are so specific that we have not included them in the scorecard. An example would be exposure to state-sponsored property insurance companies in a hurricane-prone region (could bring rating up or down), or severely underfunded other post-employment benefits (OPEB) liabilities.
- » Operating environment below Aa2 level (could bring rating down)

Operating Environment: US Macroeconomic and Financial Market Conditions are Favorable for US States

Why It Matters

Moody's analysis of US states is focused predominantly on state-specific characteristics, primarily because US states benefit from being in the generally favorable macroeconomic and financial market conditions of the Aaa-rated United States. With the change in the outlook on the US government bond rating to negative from stable, analysts have contemplated what, if any, impact the slight weakening of the operating environment will have for state credit quality.

In Moody's view, generally, the better the operating environment, the less it impinges on the intrinsic strength of an issuer's credit profile. When the US operating environment is equal to or more favorable than most states' own intrinsic credit profiles, it is not a material consideration in the rating analysis. Furthermore, operating environments at Aa-or-better rating levels are considered to be sufficiently strong so as to be neutral with respect to states' credit profiles, and are therefore not included in the scorecard. Consequently, operating environments would have only a neutral to negative impact on our ratings for states.

Macroeconomic conditions in a country affect the credit profiles of other domestic issuers. National fiscal and monetary policies will impact national and regional economic growth, with consequent impacts on government finances. Moreover, a strong macroeconomic environment that strengthens the sovereign's fiscal position through faster revenue growth would typically have the same direct effect on the finances of RLGs, as conversely, a weaker macroeconomic environment would dampen revenue growth.

Financial linkages also affect the credit risk of both sovereigns and RLGs. For instance, declining sovereign credit quality is often accompanied by a contraction in domestic credit and, *in extremis*, a banking crisis. Only those sub-sovereigns with limited refinancing needs and not running deficits requiring external financing would be insulated from financial market pressures.

In most cases, sub-sovereigns, as well as non-financial corporates and insurance companies, will not be rated more than two notches above the sovereign, and banks not more than one notch, due to multiple channels of shared exposure and contagion for issuers in the same sovereign environment.⁶ Exceptions do, however, exist. In most cases these issuers have reliable external support, or sufficient access to assets, revenues and financing resources that are domiciled outside their home sovereign environment.

Conditions for Rating States Higher than the US Sovereign Rating

Sovereign rating downgrades often coincide with an increase in long-term credit risk for other domestic issuers, even in the absence of a direct credit linkage. Declining sovereign credit quality is often accompanied by:

1. Deteriorating macroeconomic conditions, which also affect the credit profiles of other domestic issuers;
2. Large budget deficits or high inflation, which can prompt fiscal and monetary policy tightening that slows economic growth;
3. An increased likelihood that the sovereign will raise taxes and reduce services, adversely affecting issuers in the sectors directly affected;
4. Contraction in domestic credit availability and, in the extreme, a banking crisis; and
5. Large currency depreciations, which sharply increase the costs of servicing foreign currency debt.

The importance of these indirect credit linkages is supported by empirical evidence that when sovereigns default, the default rates of their domestic corporations, banks, and local and regional governments also spike upward. Accordingly, the credit linkages between the sovereign and other domestic issuers will likely be greater as the sovereign's rating declines, to a degree that will depend on the magnitude of the issuer's exposure to the macro economy, federal taxation, the revision of government services, the domestic banking system, and foreign exchange rates.

As a result of these indirect credit linkages, it is unusual for a governmental issuer to be rated more than one or two rating notches above its sovereign's rating. If the US rating dropped to Aa2 or lower, we would reflect that weakness by applying some additional weight to the operating environment and less weight on the scorecard outcome.

Determining the Scorecard-Indicated Rating

To determine the scorecard-indicated rating, each of the assigned scores for the sub-factors is converted into a numerical value based on the following scale:

⁶ See Moody's Rating Implementation Guidance "[How Sovereign Credit Quality May Affect Other Ratings](#)", February 2012.

Rating Category	Aaa	Aa1	Aa2	Aa3	A	Baa And Below
	1	2	3	4	6	9

Each sub-factor's value is multiplied by its assigned weight and then summed to produce a weighted average score. This score is then mapped to the ranges specified in the table below, and a corresponding alpha-numeric rating is determined based on where the total score falls within the ranges. This produces the grid-indicated rating. This grid indicated rating is then adjusted up or down, in minimum half-notch increments, for applied notching considerations. A half-notch adjustment up or down may not necessarily result in a rating change, depending on the raw grid-indicated score. The outcome of this weighted average approach is one input into our credit analysis of State General Obligation Bonds.

Indicated Rating	Overall Weighted Score
Aaa	1 to 1.7
Aa1	1.7 to 2.7
Aa2	2.7 to 3.7
Aa3	3.7 to 4.7
A1	4.7 to 5.7
A2	5.7 to 6.7
A3	6.7 to 7.7
Baa1	7.7 to 8.7
Baa2	8.7 to 9.7

FIGURE 5

State General Obligation and Issuer Ratings ⁽¹⁾

Jan-13

Aaa	Aa1	Aa2	Aa3	A1	A2	Baa2	Baa3
Alaska	Alabama	Hawaii	Arizona ⁽²⁾	California	Illinois	US Virgin Islands	Puerto Rico
Delaware	Arkansas	Kentucky ⁽²⁾	New Jersey				
Georgia	Colorado ⁽²⁾	Louisiana	Connecticut				
Indiana ⁽²⁾	Florida	Maine					
Iowa ⁽²⁾	Idaho ⁽²⁾	Michigan					
Maryland	Kansas ⁽²⁾	Mississippi					
Missouri	Massachusetts	Nevada					
New Mexico	Minnesota	New York					
North Carolina	Montana	Oklahoma					
South Carolina	New Hampshire	Pennsylvania					
Tennessee	North Dakota ⁽²⁾	Rhode Island					
Texas	Ohio	Wisconsin					
Utah	Oregon						
Virginia	Washington						
Vermont	West Virginia						

(1) Moody's ratings are subject to change. Because of the possible time lapse between Moody's assignment of or a change in a rating and your use of this publication, we suggest that you verify the current rating of any security of issuer in which you are interested.

(2) Issuer Rating

US Territories and the State Rating Scorecard

US territories including Puerto Rico, the US Virgin Islands, and the Commonwealth of the Northern Mariana Islands (CNMI) are rated using the State Rating Methodology. While they are not states, they share certain characteristics that make them comparable to US states. These characteristics include taxing power, the power to push problems down on local governments, no history of default, and the likelihood of federal aid in the event of a natural disaster.

At the same time, there are many fundamental differences between the territories and US states, including relatively weaker economic diversity and financial strength. The ratings assigned to the territory ratings reflect all of the scorecard factors, but also heavily reflect adjustments made using the additional factors that in particular capture more directly the unique qualities of the territories' unique economies and governance.

FIGURE 6

Moody's Analytics Scorecard Inputs

State	Industrial Diversity (1=most diverse)	Employment Volatility Relative to the U.S. (U.S.=100)
Alabama	0.79	118
Alaska	0.21	45
Arizona	0.83	202
Arkansas	0.70	79
California	0.84	127
Colorado	0.89	125
Connecticut	0.75	93
Delaware	0.63	110
Florida	0.86	168
Georgia	0.81	130
Hawaii	0.48	128
Idaho	0.72	163
Illinois	0.89	101
Indiana	0.72	115
Iowa	0.67	81
Kansas	0.76	95
Kentucky	0.74	98
Louisiana	0.66	129
Maine	0.68	66
Maryland	0.84	72
Massachusetts	0.79	87
Michigan	0.75	123
Minnesota	0.83	89
Mississippi	0.65	94
Missouri	0.89	86
Montana	0.70	105
Nebraska	0.67	65
Nevada	0.28	249
New Hampshire	0.78	81
New Jersey	0.85	76
New Mexico	0.72	107
New York	0.80	76
North Carolina	0.83	139
North Dakota	0.56	71
Ohio	0.86	98
Oklahoma	0.72	113
Oregon	0.78	150
Pennsylvania	0.85	72
Rhode Island	0.74	92

FIGURE 6

Moody's Analytics Scorecard Inputs

State	Industrial Diversity (1=most diverse)	Employment Volatility Relative to the U.S. (U.S.=100)
South Carolina	0.80	134
South Dakota	0.67	70
Tennessee	0.84	120
Texas	0.87	111
Utah	0.85	161
Vermont	0.72	71
Virginia	0.78	92
Washington	0.69	131
West Virginia	0.39	62
Wisconsin	0.73	93
Wyoming	0.32	148
Puerto Rico	0.47	120

Source: 2012 Précis Report, Moody's Analytics

FIGURE 7

Economy (20%)

Sub-Factor	Measurement	Aaa (1)	Aa1 (2)	Aa2 (3)	Aa3 (4)	A (6)	Baa and Below (9)	Weight
Income	Per capita income relative to US average	Per capita income >100% of US average	Per capita income 90%-100% of US average	Per capita income 85%-90% of US average	Per capita income 80%-85% of U.S average	Per capita income 50%-80% of US average	Per capita income <50% of US average	10.0%
Employment and Economic Diversity	Industrial Diversity (1=most diverse)	Industrial diversity greater than 0.85	Industrial diversity 0.7-0.85	Industrial diversity 0.55-0.7	Industrial diversity 0.4-0.55	Industrial diversity 0.1-0.4	Industrial diversity less than 0.1	5.0%
	Employment Volatility (US=100)	Employment volatility less than 95	Employment volatility 95-120	Employment volatility 120-140	Employment volatility 140-180	Employment volatility 180-300	Employment volatility greater than 300	5.0%

Governance (30%)

Sub-Factor	Measurement	Aaa (1)	Aa1 (2)	Aa2 (3)	Aa3 (4)	A (6)	Baa and Below (9)	Weight
Flexibility	Financial best practices	Strongest financial best practices	Very strong financial best practices, but without all of the strongest characteristics	Moderately strong financial best practices	Sufficiently strong financial best practices	Adequate financial best practices that can exacerbate budgetary problems	Weakest financial practices	15%
	Financial Flexibility/Constitutional constraints	Greatest financial flexibility: strongest institutional governance with no constitutional constraints	Strong financial flexibility: strong institutional governance with very few constitutional constraints	Moderately strong financial flexibility: moderately strong institutional governance with some constitutional constraints	Sufficiently strong financial flexibility: institutional governance and/or constitutional constraints that can inhibit budget solutions	Adequate financial flexibility: institutional governance and/or constitutional constraints that often inhibit budget solutions	Weakest financial flexibility: institutional governance and/or constitutional constraints that consistently inhibit budget solutions	15%

Finances (30%)

Sub-Factor	Measurement	Aaa (1)	Aa1 (2)	Aa2 (3)	Aa3 (4)	A (6)	Baa and Below (9)	Weight
Revenues	Revenue Diversity, Volatility, and Growth	Strongest revenue growth, very low to no volatility, low reliance on volatile revenues	Strong revenue growth, low volatility, low reliance on volatile revenues	Moderate revenue growth or volatility, some reliance on volatile revenues	Weak revenue growth, marked volatility, some reliance on volatile revenues	Many years of revenue declines and/or steep declines, reliance on volatile revenues	Persistent revenue declines, high negative volatility, heavy reliance on volatile revenues	10%
Structural Balance and Rainy Day Fund	Available Balances as % of Operating Revenue (5-yr avg.)	Available balances greater than 10%, with requirements to rebuild Rainy Day Fund if drawn upon	Available balances from 5% to 10%, likely to rebuild Rainy Day Fund if drawn upon	Available balances from 0% to 5%, likely to rebuild Rainy Day Fund if drawn upon	Available Balances from 0% to -5%, no plans to rebuild Rainy Day Fund if drawn upon	Available balances -5% to -40%, no plans to rebuild Rainy Day Fund if drawn upon	Available balances less than -40%, no plans to rebuild Rainy Day Fund if drawn upon	10%

Liquidity	Cash Management and Liquidity	No external cash flow borrowing in current year, no need to do internal borrowing or use alternate liquidity	No external cash flow borrowing; may use internal borrowing, but leads to healthy liquidity position; no other cash management tools needed	External or internal cash flow borrowing, but ending cash is moderate to healthy	External cash flow borrowing or inter-year cash management tools (like payment delays); leads to adequate liquidity	May use both external and internal liquidity borrowing, and other cash management tools; liquidity position still weak	External or internal borrowings are rolled across fiscal years and increasing over time; liquidity position still weak	10%
-----------	-------------------------------	--	---	--	---	--	--	-----

Debt (20%)

Sub-Factor	Measurement	Aaa (1)	Aa1 (2)	Aa2 (3)	Aa3 (4)	A (6)	Baa and Below (9)	Weight
Debt Measure	NTSD/ Total Governmental Fund Revenues	Less than 15%	15%-30%	30%-50%	50%-90%	90%-130%	Greater than 130%	10%
Pension Measure	3 Year Average Adjusted Net Pension Liability/ Total Governmental Fund Revenues	Less than 25%	25%-40%	40%-80%	80%-120%	120%-180%	Greater than 180%	10%

Glossary of Terms Used in Scorecard

Available Balances: Unreserved, undesignated fund balance (UUFb), or Unassigned Fund Balance, as reported in the state's consolidated annual financial report (CAFR), plus any additional reserves available but not reported in the General Fund.

Debt: Net tax-supported debt for the most recent year published and available. Each state's net tax-supported debt data are compiled annually by Moody's and published in our annual State Debt Medians Report. The last five years' of debt data and debt as a percent of personal income are also reported in MFRA.

Industrial Diversity: As reported in Moodys Economy.com Precis reports, the extent to which a state's industrial structure approximates the US industrial structure. The diversity measure is bounded between 0 and 1. 1 means the state has the same industrial structure as the US, while 0 means it has a totally different industrial structure from the US.

Employment Volatility: As reported in Moodys Economy.com Precis reports, the standard deviation in a state's monthly year-over-year percentage non-agricultural employment growth relative to the standard deviation for the US. This is from the most current 10 year of historical data available. A volatility of 100 means that employment volatility in a state is equal to that of the US.

Adjusted net pension liability: The most recently reported present value of actuarial accrued liabilities minus pension system assets (on an actuarial valuation basis), adjusted by Moody's (see Appendix A). If the state is involved in the funding of multiple defined benefit systems, the combined liability is used. The data are collected by Moody's from publicly-available sources. The scorecard data are based on the most recent year for which a great majority of states have reported data. Despite the effort to ensure reporting period comparability, the use of differing actuarial methods and assumptions by the states may still limit the true comparability of the data. In addition, most states participate in multiple-employer cost-sharing plans with other governmental entities including local governments. We have used reported contribution information to identify the state portion of liabilities. To the extent that this information may be missing or incomplete, our cost-sharing allocations will not correctly reflect the state's share.

Appendix A - Using Moody's pension adjustments to derive Moody's adjusted net pension liability⁷

The steps we take to adjust reported pension liabilities are:

- » **Allocating cost-sharing plan liabilities.** We will allocate to state and rated local governments their proportionate shares of CSP liabilities based on the share of total plan contributions represented by each participating government's reported contribution. In cases where there is a known actuarially required contribution (ARC) that is greater than the actual contribution, the entity's proportional share will be calculated using the employer ARC relative to the plan ARC.
- » **Discounting accrued liabilities using a market discount rate.** We will use Citibank's Pension Liability Index ("Index") and a common duration of 13 years to adjust each plan's reported actuarial accrued liabilities (AAL). The Index is composed of high credit quality (Aa rated or higher) taxable bonds and is duration-weighted by Citibank for purposes of creating a discount rate for a typical pension plan in the private sector. The reported AAL is projected forward for 13 years at the plan's reported discount rate and then discounted to the present using the Index's value as of the valuation date. This calculation results in an increase in AAL of between 13% and 14% for each one percentage point difference between the Index and the plan's reported discount rate.
- » **Determining the value of plan assets.** We will value plan assets at the reported market or fair value as of the valuation date.
- » **Calculating adjusted net pension liability.** The difference between the adjusted liabilities and the market or fair value of assets is the adjusted net pension liability. This is the number that Moody's will use to calculate the pension liability ratio incorporated in the state GO scorecard, as per our rating methodology. It is also a key number for Moody's pension analysis under our local government rating methodology
- » **Amortizing adjusted net pension liability.** The adjusted net pension liability will be amortized over a 20-year period on a level dollar basis, using the interest rate provided by the Index. This measure will be considered by rating committees along with other supplementary information about a government's pension obligations.

⁷ For an in-depth discussion of Moody's pension adjustments for US States and Local Governments, please refer to the Cross Sector Rating Methodology "[Adjustments to US State and Local Government Reported Pension Data](#)", April 2013

Applying Moody's Adjustments to a Government's Pension Liability

Indicative Calculation Example

(\$000)

Reported AAL	\$50,000,000
Asset Market or Fair Value	\$40,000,000
Assumed investment rate of return	8.00%
Valuation date	6/30/2010
Citibank Pension Liability Index at valuation date	5.47%
Government A contributions to plan / Total employer contributions to plan (i.e. Government A's proportional share)	17.0%
AAL projected forward 13 years at 8.00%	\$135,981,186
Discounted at 5.47%	\$68,045,989
Adjusted net pension liability (ANPL)	\$28,045,989
Government A's 17% share of ANPL	\$4,767,818
Government A's amortization of ANPL	\$397,975

Criteria for Sufficient Information to Assign or Maintain Ratings

If, in our opinion, sufficient information to effectively assess creditworthiness is not available and is unlikely to soon become available, we will decline to assign ratings, or we will withdraw outstanding ratings for a rated entity. To support ratings on entities with material pension liabilities, we expect regular updates to pension valuations or equivalent measures.

In the US public finance sector, pension valuations commonly lag a government's financial reporting date by 6 to 12 months. We would view valuation information that lags by more than 24 months to be non-timely and as possible grounds for rating withdrawal.

Moody's Related Research

Outlooks:

- » [US States Sector Outlook Remains Negative, February 2013 \(149843\)](#)
- » [Global Macro Outlook 2013-2014: Downside Risks Have Diminished, February 2013 \(149555\)](#)

Median Report:

- » [2012 State Debt Medians Report, May 2012 \(141767\)](#)

Special Comments:

- » [Why Most US Public Finance Sectors Still Face a Negative Outlook Despite Economic Growth, April 2013 \(151846\)](#)
- » [Rating Changes for the 50 States from 1973, April 2013 \(151661\)](#)
- » [The Sequester Series: Impact on States, March 2013 \(151575\)](#)
- » [Update: Ratings of Aaa Municipal Credits Indirectly Linked to the US Government, February 2013 \(149799\)](#)
- » [The Fiscal Cliff and Sequestration: Myriad Risks for Public Finance Credits, December 2012 \(148553\)](#)
- » [US State and Local Governments Face Risks with Pension Funding Bonds, December 2012 \(147919\)](#)
- » [State Ratings not Likely Affected by Decisions on Joining Medicaid Expansion, August 2012 \(144787\)](#)

Rating Methodologies:

- » [General Obligation Bonds Issued by US Local Governments, April 2013 \(151690\)](#)
- » [Adjustments to US State and Local Government Reported Pension Data, April 2013 \(151398\)](#)
- » [Regional and Local Governments, January 2013 \(147779\)](#)

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

» contacts continued from page 1

Analyst Contacts:

NEW YORK	+1.212.553.1653
Xavier Smith	+1.212.553.7108
<i>Associate Analyst</i>	
xavier.smith@moodys.com	
Brien Wigand	+1.212.553.0299
<i>Associate Analyst</i>	
brien.wigand@moodys.com	
Timothy Blake	+1.212.553.0849
<i>Managing Director</i>	
timothy.blake@moodys.com	
Robert Kurtter	+1.212.553.4453
<i>Managing Director</i>	
robert.kurtter@moodys.com	
Anne Van Praagh	+1.212.553.3744
<i>Managing Director - Chief Credit Officer</i>	
anne.vanpraagh@moodys.com	

Report Number: 129816

Author
Emily Raimes

Production Associates
Joaquin Jimenez

© 2013 Moody's Investors Service, Inc. and/or its licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. ("MIS") AND ITS AFFILIATES ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND CREDIT RATINGS AND RESEARCH PUBLICATIONS PUBLISHED BY MOODY'S ("MOODY'S PUBLICATIONS") MAY INCLUDE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL, FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS AND MOODY'S OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. CREDIT RATINGS AND MOODY'S PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. NEITHER CREDIT RATINGS NOR MOODY'S PUBLICATIONS COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS AND PUBLISHES MOODY'S PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process. Under no circumstances shall MOODY'S have any liability to any person or entity for (a) any loss or damage in whole or in part caused by, resulting from, or relating to, any error (negligent or otherwise) or other circumstance or contingency within or outside the control of MOODY'S or any of its directors, officers, employees or agents in connection with the procurement, collection, compilation, analysis, interpretation, communication, publication or delivery of any such information, or (b) any direct, indirect, special, consequential, compensatory or incidental damages whatsoever (including without limitation, lost profits), even if MOODY'S is advised in advance of the possibility of such damages, resulting from the use of or inability to use, any such information. The ratings, financial reporting analysis, projections, and other observations, if any, constituting part of the information contained herein are, and must be construed solely as, statements of opinion and not statements of fact or recommendations to purchase, sell or hold any securities. Each user of the information contained herein must make its own study and evaluation of each security it may consider purchasing, holding or selling.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY SUCH RATING OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

MIS, a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MIS have, prior to assignment of any rating, agreed to pay to MIS for appraisal and rating services rendered by it fees ranging from \$1,500 to approximately \$2,500,000. MCO and MIS also maintain policies and procedures to address the independence of MIS's ratings and rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold ratings from MIS and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moodys.com under the heading "Shareholder Relations — Corporate Governance — Director and Shareholder Affiliation Policy."

For Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail clients. It would be dangerous for retail clients to make any investment decision based on MOODY'S credit rating. If in doubt you should contact your financial or other professional adviser.