MOODY'S
INVESTORS SERVICE

CROSS SECTOR
RATING METHODOLOGY

Adjustments to US State and Local Government Reported Pension Data

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Introduction

This report describes our approach to adjusting pension assets and liabilities reported by US states and local governments for the purpose of our independent credit analysis.

Moody's will make four principal adjustments to as-reported pension plan data:

» Multiple-employer cost-sharing plan liabilities will be allocated to specific government employers based on proportionate shares of total plan contributions

» Accrued actuarial liabilities will be adjusted based on a high-grade long-term taxable bond index discount rate as of the date of valuation

» Asset smoothing will be replaced with reported market or fair value as of the actuarial reporting date

» The resulting adjusted net pension liability (i.e. adjusted liabilities less assets) will be amortized over 20 years using a level-dollar method to create a measure of annual burden related to the net pension liability.

These adjustments are part of our ongoing efforts to bring greater transparency and consistency to the analysis of pension liabilities, which have increased in size across the public sector in the past decade and driven credit rating downgrades and outlook changes for a number of states and local governments in recent years.

For details of the adjustments and sample calculations, please see Appendix A. This Appendix is now an integral part of the methodologies for rating general obligation bonds of US states and US local governments, which have been updated in connection with this report.

Impact of Pension Adjustments on Ratings

The application of the adjusted pension data in our ratings of state governments is discussed in "US States Rating Methodology" released simultaneously with this report. The incorporation of the pension adjustments into our updated methodology will have no immediate impact on state ratings.

Application of the adjusted pension data in our ratings of local governments will be made within the context of our methodology, "General Obligation Bonds Issued by US Local Governments". We expect that less than 2% of the total population of local general obligation (GO) and equivalent and related ratings will be placed under review for possible downgrade as a result of adopting the adjustments.. The affected ratings will be for those local governments whose adjusted pension obligations relative to their resources place them as significant outliers in their ratings categories.

The pension adjustments also apply to government entities in other US public finance sectors, such as public universities, public power and mass transit authorities. Pension obligations are typically not a driving rating factor in these sectors, either due to state government absorption of pension costs, low personnel levels, or other factors. However, any significant change in pension risk, such as a state government decision to offload funding responsibility onto an enterprise, will be assessed by using the same adjustments applied to state and local governments and monitored for impact on the enterprise's rating. The adjustments do not apply to the private non-profit sector, including hospitals and private higher education, which must meet uniform accounting standards set by the Financial Accounting Standards Board. Our adjustments to public sector pensions bring their measurement closer to that used in the private sector.

Rationale for Pension Adjustments

The purpose of the adjustments is to provide greater transparency and comparability of pension liability measures for use in our credit analysis of public sector entities. The adjustments create a balance sheet liability concept that is similar to that used in the private and not-for-profit sectors and comparable to measures of debt outstanding as of a specific point in time.

Moody's focus is the evaluation of credit risk of rated debt obligations. Because pensions represent material financial commitments that affect a government's financial risk profile, we have always incorporated pensions into our credit analysis where we have been aware of significant unfunded liabilities. As pension stress began to be a driving factor in a number of government rating downgrades over the past few years, we recognized a need to bring greater transparency and comparability to the pension measures used in our analysis. After two years of study, supplemented with an extensive centralized database collection and analysis effort, we believe the adjustments we are adopting provide us with improved pension measures that will be important and consistent inputs to our government credit analysis.

Our adjustments are not intended as a guide, standard or requirement for state or local governments to report or fund their obligations.

Adopted Adjustments Incorporate Market Feedback Following Comment Period

On July 2, 2012, we issued "Adjustments to US State and Local Government Reported Pension Data", a Request for Comment that laid out a proposed approach to modifying reported pension data for use in our credit analysis. The comment period ended on September 30, after which market feedback was digested and deliberated internally.[1]

In finalizing our approach, we have changed a number of elements of our original proposals. We decided to:

» Consider debt and pension liabilities separately;

» Modify our measurement of annual pension cost to include only amortization of adjusted net pension liabilities over a 20-year period, excluding the initially proposed adjustment to normal cost;

» Discount liabilities using the bond index rate as of the plan-specific valuation date rather than applying a single rate for all plans each year.

In the original Request for Comment, we proposed to:

» Allocate multiple-employer cost-sharing plan liabilities to specific government employers based on proportionate shares of total plan contributions;

» Adjust accrued actuarial liabilities based on a high-grade (rated Aa or higher) long-term bond index discount rate;

» Replace asset smoothing with reported current market or fair value of assets;

» Adjust annual pension contributions to reflect the foregoing changes and a common amortization period

» Combine debt and adjusted unfunded pension liabilities into a single metric to measure long-term liabilities

EXHIBIT 1

Proposed adjustments	Final adjustments
Combine debt and pension into one metric	Present and consider them separately
Allocate cost-sharing plans based on share of contributions	No change
Adjust annual contribution by adjusting normal cost and amortizing unfunded liability on level-dollar basis over 17-year amortization period	Replace with cost metric based only on amortization of Moody's adjusted net pension liability over a period of 20 years
Use current fair value of assets	No change
Discount pension liabilities using long-term bond index	No substantive change
Use common duration for liability adjustment	No change (unless/until disclosed)

[1] See Appendix C for a summary of feedback and our response.

Unchanged Elements of the Original Proposal

The following elements of our adjustments have not changed:

» **Allocation of multiple-employer cost-sharing plan liabilities.** As proposed, we will make estimated allocations among participating governments, based on information available regarding proportional plan contributions.

» **Market value of assets.** As proposed, we will retain the market or fair value method to measure assets.

» **Market-based discount rate.** As proposed, we will use a high-grade long-term taxable bond index rate to compute the present value of future benefits. This approach yields a point-in-time liability measure that promotes better comparability among governments for the purposes of balance sheet analysis. We will use the bond index rate posted as of the valuation date of each plan. This timing issue is a change from our original proposal and is discussed in the next section.

The bond index approach to the discount rate is a significant departure from the discount rate typically used in the public sector. In the public sector actuarial approach, the measurement focus is tied to an objective of developing a long-term funding strategy for the pension plan. The discount rate is set equal to the assumed long-term investment rate of return on plan assets and the resulting actuarial accrued liability is essentially a present value of expected future government contributions to the plan. In contrast, our approach estimates the present value of the stream of future benefit payments accrued by current employees, using current market interest rates as the guide to the current value of future cash flows.[2]

We recognize the value of the actuarial approach for governments, who are ultimately concerned with budgetary planning. However, we do not view it as appropriate for balance sheet analysis because it incorporates an element of market risk that increases with larger assumed investment returns. It also results in different present value estimates for otherwise identical projected future benefits because of differing assumptions about investment returns, hampering comparison among governments. For example, two governments with identical workforce characteristics and pension benefits may, under current accounting practices, systematically report different liabilities due solely to the difference in their discount rates. Since ordinal comparisons are critical to our ratings, this disparity has become a serious shortcoming from a credit analysis perspective.

Because interest rates are currently at an historic low, the market approach to measuring liabilities results in much larger current total liabilities than those reported using the conventional governmental approach. In conjunction with our use of market asset valuations, which currently fall below smoothed asset valuations that have not yet fully factored in the impacts of 2008-2009 equity declines, this leads Moody's adjusted net pension liabilities to be much greater than actuarial unfunded liabilities. The approach also introduces greater volatility into the measurement of the adjusted net pension liability. "US States Rating Methodology", released simultaneously with this report, explains how these issues are interpreted and addressed in our US state rating methodology, which reflects the differences between government and corporate credits.

[2] This approach is similar to that used in corporate accounting to derive net pension liability. Because the accrued liabilities of most government pensions include projections of active employees' future salary increases, while corporate pension liabilities do not, our measure of government net pension liability will be more conservative.

- **Common duration**. As proposed, we will use a common duration of 13 years to implement our discount rate adjustment. We recognize that public pension plans have a wide range of durations and that the use of a common duration results in an imperfect adjustment. One of the new reporting requirements under the Governmental Accounting Standards Board Statement No. 68, *Accounting and Financial Reporting for Pensions,* will be disclosure of the impact of a 1 percentage point change in the discount rate on liabilities. When that information is disclosed, we will use it to develop better plan-specific duration estimates.

Changes Made to the Original Proposal

Further internal analysis and review of market feedback led us to make changes to the following components of our original proposal:

- **Combined debt and pension metrics.** We will measure and evaluate debt and pensions separately to reflect a number of factors that differentiate pension liabilities from bonded debt. Most municipal market debt service payments are predictable, set contractually, and subject to default. Pension liabilities are estimates (including an element of future salary growth for current employees) and in many cases can be changed through policy action. Governmental pension contributions are generally not subject to default.
- **Adjusted annual pension costs.** We will not include adjusted normal cost as part of our annual cost metric, and will amortize adjusted net pension liabilities on a level dollar basis over a period of 20 years rather than the proposed 17 year period. The change to 20 years makes the amortization similar to a bond payment structure, as opposed to the average employee remaining service life concept on which the 17-year proposal was based. The resulting metric is a pro-forma measure of the potential annual cost of addressing prior service liabilities over a time period similar to that of bonded debt. This metric does not constitute a funding expectation or requirement by Moody's.

  As initially proposed, our adjusted annual cost measure required computation of normal cost for each issuer. In many cases, actual normal costs are not reported and must be estimated from percentages set in actuarial valuations from previous years. This process was arduous, introduced errors into our data, and was impractical to apply to the local government sector, which consists of about 8,000 rated entities.

- **Align discount rate with valuation date**. We proposed using the three-month (May, June and July) average of the Citibank Pension Liability Index to discount the liabilities of all plans in a given year. Instead, we will use the index rates as of each valuation date to better align the valuation of liabilities with the valuation of the associated assets.
- **Nomenclature**. To reduce confusion regarding the meaning of our liability adjustments, we will implement a change in nomenclature. The difference between our adjusted liabilities and the market value of assets will be referred to as "Moody's adjusted net pension liability" rather than as adjusted unfunded liabilities. As we stated in our RFC, we are not suggesting that our adjusted pension figures be used as a guide, standard or requirement for a state or local government to fund these obligations. Instead, we are introducing these adjustments solely for the purpose of evaluating pension risk in the context of our credit ratings.

Appendix B provides a summary of state and local pension liabilities as of fiscal 2011 on a reported basis and as adjusted.

Interim Adjustments

We expect that some of our adjustments will serve in an interim capacity until new GASB 68 reporting guidelines are implemented. In addition to reporting the sensitivity of liabilities to changes in the discount rate (i.e. duration estimate), governments will be reporting pension expense, normal cost, their share of cost-sharing plan liabilities, and other details about their pension plans that may either substitute for adjustments we have made or allow us to increase the accuracy of our adjustments.

Implementation of Pension Adjustments for State and Local Governments

Application of Adjustments Explained in Methodology. The application of the adjusted pension data in our ratings of state governments is discussed in "US States Rating Methodology". The updated methodology includes a scorecard, within which Moody's adjusted net pension liability will account for 10% of a state's overall score as part of the debt category. The scoring of the pension factor is flexible and can accommodate analyst and rating committee views of qualitative considerations pertaining to a particular state's pension finances and management. As described in the methodology, the output of the scorecard is an indicator of approximate credit quality, but does not represent the final or actual state rating. Final ratings are determined in each case by a committee composed of experienced analysts.

Ratings Implications for States. The incorporation of the pension adjustments into our updated methodology will have no immediate impact on state ratings. Prior to developing our pension adjustments, we had a strong qualitative understanding of the pension-related credit pressures facing states. Since 2010, we have taken rating actions with respect to Connecticut, Illinois, Pennsylvania, New Jersey, Hawaii, Puerto Rico and Kentucky partly or primarily due to pension funding pressures. In the future, growth of Moody's adjusted net pension liabilities or adherence to unsustainable pension practices could put additional downward pressure on individual state ratings. Alternatively, future reductions in these liabilities could lead to upward pressure on ratings.

Adoption of Pension Adjustments for Local Governments. Application of the adjusted pension data in our ratings of local governments will be made within the context of our methodology, "General Obligation Bonds Issued by US Local Governments". This methodology does not include a scorecard, but does outline four broad "rating factors" with specific weightings for each factor. Evaluation of pension obligations is included within the Debt Profile factor, which has a baseline weighting of 10% in the methodology. All final ratings - and thus the effective weights applied to the rating factors in specific circumstances - are determined by a rating committee.

Rating Implications for Local Governments. With the implementation of this cross-sector methodology, less than 2% of the total population of general obligation (GO) and equivalent and related ratings will be placed under review for possible downgrade. As pensions are just one of many factors we consider in a rating, any downgrades resulting from the subsequent reviews are likely to be limited to two notches. The affected ratings will be for those local governments whose adjusted pension obligations relative to their resources place them as significant outliers in their current rating categories.

Publication of Moody's Pension Adjustments. We intend to publish our adjusted pension statistics for individual state governments and the largest local governments, as well as adjusted pension median statistics by rating category for our total rated local government population, on an annual basis. In addition, adjusted statistics for individual local governments will be incorporated in specific reports on such issuers, typically at the time of a new bond sale, rating or outlook change, or other occasion prompting a specific issuer report.

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

This Appendix A is an integral part of the methodologies for rating the general obligation bonds of US state governments ("US States Rating Methodology") and local governments ("General Obligation Bonds Issued by US Local Governments").

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.[3]

» **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.

3 Market asset values are not commonly disclosed for many local government pension systems, but should become available when the new GASB reporting standards are implemented. Until this data is consistently available, we will compute local government adjusted net pension liabilities using reported actuarial value of assets.

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	$377,335

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.

Appendix B - State and local government 2011 pension data aggregate summary

This appendix presents data summarizing Moody's adjustments applied to pension data reported for the 50 states and approximately 8,000 rated local governments, which participate in more than 3,500 pension plans. Our data exclude small plans at both the state and local levels.

The database is organized according to government financial reporting year – i.e. fiscal years ended during 2011. In many cases, the pension data included in government financial reports lag by six months to a year. Some have longer lags, though these are typically for small and closed plans.

Cost Sharing Adjustment

The first step in our adjustments is to allocate cost-sharing plan liabilities to participating employers based on the proportional share of contributions to the plan. Exhibit 1 presents the aggregate distribution of as-reported liabilities among the 50 states, Moody's-rated local governments and entities that are unrated.

EXHIBIT 1
Cost-Sharing Allocation of Reported Liabilities
(in billions)

	CSP Total	CSP allocation to 50 states	CSP allocation to rated local governments	CSP allocation to unrated entities
Unfunded Liabilities	630.8	299.8	284	47

Adjusted Pension Liabilities for the 50 States

Exhibit 2 shows the aggregated adjustment of pension liabilities for the state sector, starting with reported data. In fiscal 2011, reported AAL for the states was $1.45 trillion and AVA of $1.05 trillion was about 9% greater than the market value of pension assets. Reported pension liabilities were based on a median discount rate (investment rate of return) of 8%. Our adjustments produced an adjusted total pension liability of $1.9 trillion and a net pension liability of $960 billion, or 6.46% of GDP. That amount would amortize on a level-dollar basis over 20 years at $76 billion per year. The median bond index rate used to discount the liabilities and compute amortizations was 5.67%.

EXHIBIT 2
Moody's Adjustments to State Reported Pension Data for Fiscal 2011
(in billions)

	50-state total*
Reported AAL	1,427
Reported AVA	1,019
Median discount rate	8.00%
Market Value of Assets	948
Moody's Adjusted Pension Liability	1,912
Moody's Adjusted Net Pension Liability (ANPL)	964
Median discount rate for Moody's adjustments	5.67%
Amortized ANPL	76
ANPL as % of US GDP	6.48%

*excludes Commonwealth of Puerto Rico

Adjusted Pension Liabilities for Local Governments

Exhibit 3 presents adjusted pension liabilities for Moody's-rated local governments for fiscal 2011. For this sector, reported AAL and AVA were $1.57 trillion and $1.2 trillion, respectively, comparable in size to state sector liabilities and assets. The 7.5% median local government discount rate was lower than for the state sector. For the local sector, market value of assets is not consistently disclosed. Consequently, we adjust the AAL but not the AVA to derive our adjusted net pension liability, which in the local government sector is $911 billion or 6.22% of US GDP. That amount would amortize on a level-dollar 20-year basis at $73 million per year. The median bond index rate used to discount the liabilities and compute amortizations was 5.54%. This is slightly lower than the state sector median rate due to a differing mix of pension valuation dates.

EXHIBIT 3

Moody's Adjustments to Local Reported Pension Data for Fiscal 2011

(in billions)

	Rated local governments
Reported AAL	1,577
Reported AVA	1,203
Median discount rate	7.50%
Moody's Adjusted Pension Liability	2,114
Moody's Adjusted Net Pension Liability (ANPL)*	911
Median discount rate	5.54%
Amortized ANPL	73
ANPL as % of US GDP	6.22%

* ANPL for local governments not based on market value of assets due to data unavailability. Moody's adjusted local liability data exclude liabilities absorbed by states through state pension contributions on behalf of local government employers.

Appendix C

Summary of market feedback on Moody's proposed pension adjustments

The July 2012 Request for Comment generated a high level of interest and feedback. Because Moody's adjusted net pension liability is much greater than reported unfunded liabilities for state and local governments, much of the feedback expressed questions and concerns regarding the potential impacts of our adjustments on ratings. However, we also received many comments that addressed other aspects of the complexity of pension accounting and reporting.

Below are the main themes of comments we received in letters, meetings and calls, along with our responses:

1) **Feedback: Our approach may undermine the new GASB 68 requirements or cause confusion by introducing additional numbers into the market.** Since GASB sets public accounting standards, many market participants believe we should postpone our adjustments and adopt the new GASB rules when they are implemented rather than introducing adjusted pension metrics that may be confused with the standard pension accounting of governments.

   Response: We focus on credit risk. Pressure from pension funding has driven many of our recent rating actions. As a result, we believe that credit conditions necessitate implementing adjustments now to better inform our credit ratings.

   Response: We have a responsibility to the market to be transparent and timely in our analysis. The new GASB standards are not required to be implemented until fiscal 2015. Conforming financial statements will not be available until late in calendar year 2015 or, for many governments, early 2016. We do not believe that credit conditions allow us to wait years before making these adjustments. We likewise believe that consistent with our efforts to be transparent, we need to disclose the analysis underlying our ratings. We believe that the market can digest an additional metric, and as explained above will implement a change in nomenclature to provide clarity.

2) **Feedback: The use of common factors in our adjustments will lead to a loss of issuer-specific analysis.** Concern has been expressed that by applying the same parameters to all pension plans, we will lose sight of the unique characteristics of each issuer's obligations, legal environment, investment parameters and funding practices.

   Response: We take a balanced approach that includes both statistical comparisons and an appreciation of plan-specific and government-specific factors. The latter include government funding policies, trend of funding effort and material differences in key actuarial assumptions for which we are not making adjustments.

3) **Feedback: Our adjustments will lead to volatility in pension liabilities and possibly to ratings.** Since our approach uses market factors, such as the market value of assets and a bond index rate, the resulting numbers will be more volatile and pose challenges for management of ratings.

   Response: While our adjusted net pension liabilities may be more volatile than currently-reported unfunded actuarial accrued liabilities, this will not lead to volatile credit ratings. Our rating methodologies will take this volatility into account by evaluating a 3-year average of the adjusted net pension liability in addition to the annual numbers and [tolerating] greater pension liabilities for each rating category than is true for debt. Moreover, pension liabilities are only one factor in our credit analysis.

4) **Feedback: A market discount rate approach is inappropriate.** Our approach to the discount rate is viewed by many as inappropriate for governmental accounting.

   Response: We view the market approach as more appropriate to provide a balance sheet concept. We recognize the many differences between governments and private corporations and take those into account in our credit analysis. From a credit analysis perspective, however, we believe the measurement of pension liabilities should be consistent across sectors.

5) **Feedback: Pensions may be a long-term liability, but they aren't debt.** We received feedback that our proposal to combine debt and pension liabilities into a single metric was unwarranted because pension liabilities are sufficiently different from debt to merit separate consideration.

   Response: We agree with the argument that bonded debt and pensions should not be considered in a single metric and have reflected that view in our final approach. However, we will continue to treat accrued pension commitments as a debt-like long-term obligation, incorporating these liabilities into the debt portion of our methodologies.

6) **Feedback: Our adjustments don't lead to comparability.** Some argued that we cannot achieve greater comparability without also adjusting for factors such as inflation and wage growth.

   Response: We recognize that pension valuation and accounting are complex topics, but we believe we have adjusted for the most material differences in assumptions across pension plans. Our adjusted net pension liabilities may not be perfectly comparable, but we believe they are considerably more comparable than reported numbers.

7) **Feedback: The public may misperceive our pension adjustments.** A number of responders expressed concern that the public and the media might have difficulty understanding the implications and role of our pension adjustments, leading to unanticipated political repercussions.

   Response: Our role in the market is to provide an independent opinion on credit risk. We are not a standard setting body and do not refrain from performing a rating analysis or taking a rating action based on whether others might disagree or based on the potential financial, economic or other effect on issuers or investors.

Moody's Related Research

Special Comment:

» Adjustments to US State and Local Government Reported Pension Data: Frequently Asked Questions, August 2012 (144863)

Rating Methodologies:

» General Obligation Bonds Issued by US Local Governments, April 2013 (151690)

» US States Rating Methodology, April 2013 (129816)

Request for Comment:

» Adjustments to US State and Local Government Reported Pension Data, July 2012 (143254)

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