US Credit Update

National Association of State Budget Officers
Annual Meeting
Big Sky, Montana

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Agenda

1. State Sector Outlook
2. Puerto Rico
3. Pensions
4. Local Governments
5. Green Bonds Assessment (GBA) Overview

1 State Sector Outlook

Moderate revenue growth supports fiscal stability for most states in 2017

NEGATIVE

What could change outlook to negative

- Revenue growth falls below our projections for a multi-year period or if revenues decrease outright due to a recession
- A number of states adopt structurally unbalanced budgets and begin to draw down reserves

STABLE

- Continuing economic recovery will drive US real GDP growth of 2% to 3%
- Regional economic differences will be magnified, with the energy-producing states facing a particularly challenging environment
- Economic uncertainty, particularly China and Brexit, may impact states' economic and revenue growth
- Medicaid and pensions are perennial budget drivers but most states have the financial flexibility to manage them

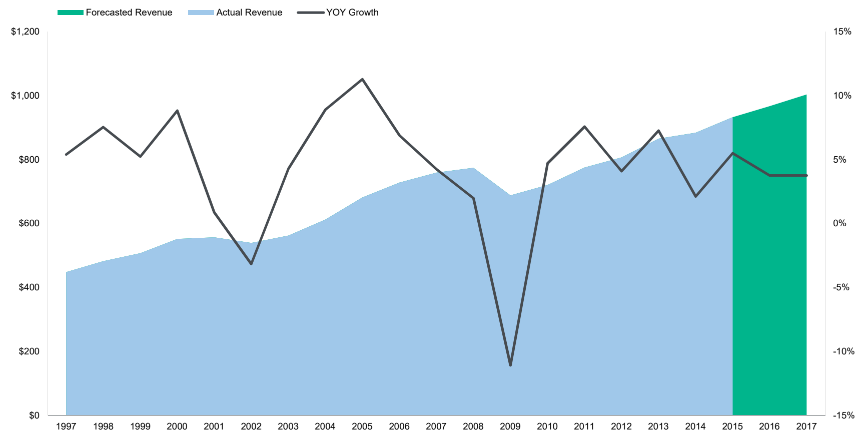
POSITIVE

What could change outlook to positive

- A favorable change in state/federal cost sharing for Medicaid
- Sustained revenue growth of more than 6% per year

Slower state revenue growth ahead

$ billions



Source: Moody's Investors Service

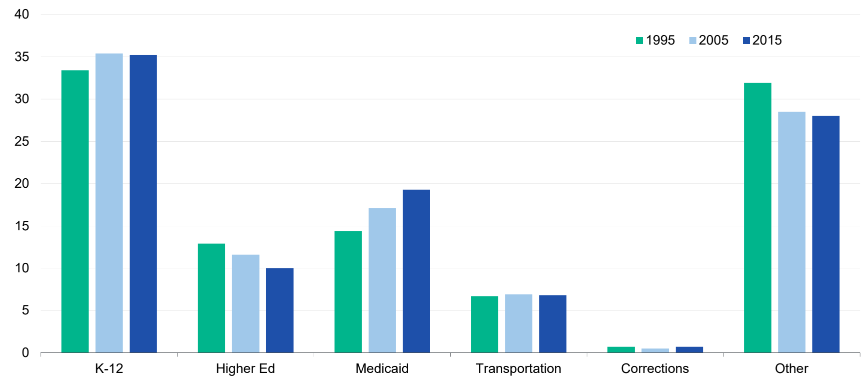
Moderate economic expansion will drive slow state tax revenue growth

	2013	2014	2015	2016e	2017f
Real GDP Growth	1.5%	2.4%	2.5%	2.0%	2.4%
Nominal GDP Growth	3.1%	4.1%	3.4%	3.3%	3.8%
S&P 500 Index at Year End	1,848	2,059	2,044		
Federal Tax Revenue Growth	13.3%	8.9%	7.6%	3.5%	4.3%
State Tax Revenue Growth	7.3%	2.0%	5.5%	3%-4%	3%-4%

Source: Moody's Investors Service, Congressional Budget Office, Rockefeller Institute of Government, S&P Dow Jones

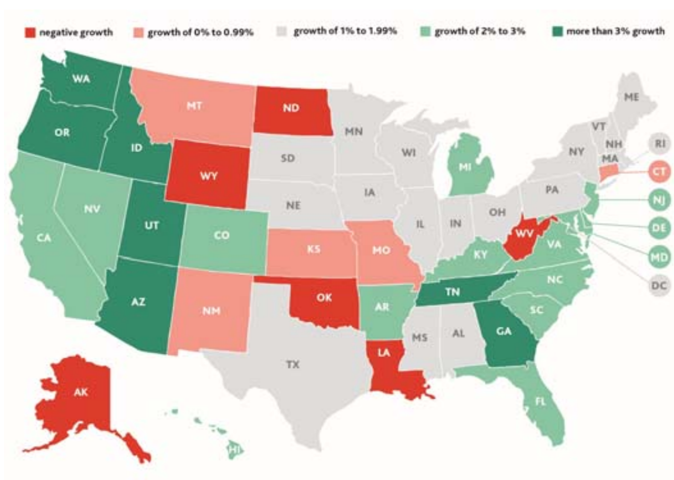
States prioritize K-12 education, Medicaid over time

General Fund Expenditures (% of Total)



Source: National Association of State Budget Officers

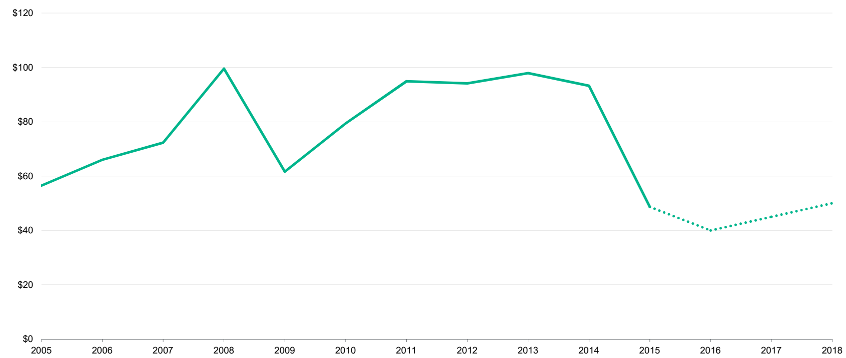
Employment growth highlights regional differences



Source: Bureau of Labor Statistics

Oil prices poised to rebound but energy sector remains stressed

West Texas Intermediate Crude, $/barrel



Source: Moody's Investors Service

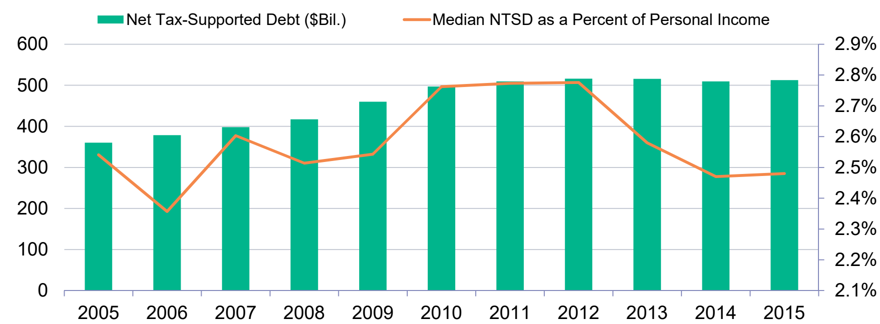
Forward view of recession preparedness is a credit factor

	Revenue Volatility	Coverage by Reserves in 1st Year Downturn Scenario (times coverage)	Revenue and Spending Flexibility	Fixed Costs as % of Revenues	Recession Preparedness
Texas	Moderate	3.15	Stronger	8.5%	**Stronger**
Florida	Moderate	1.31	Moderate	5.7%	**Moderate**
New York	Moderate	0.36	Moderate	13.2%	**Moderate**
California	Higher	0.48	Weaker	12.5%	**Weaker**

Source: Moody's Investors Service

Trend of limited growth in state debt

- Ratios of debt to GDP, personal income and per-capita have improved
- Median debt service to revenues is 4.3%
- Deferred capital needs will eventually drive more capital spending & state debt issuance
- Availability payment P3s comprise ~1% of total state debt, but interest is growing



Source: Moody's Investors Service

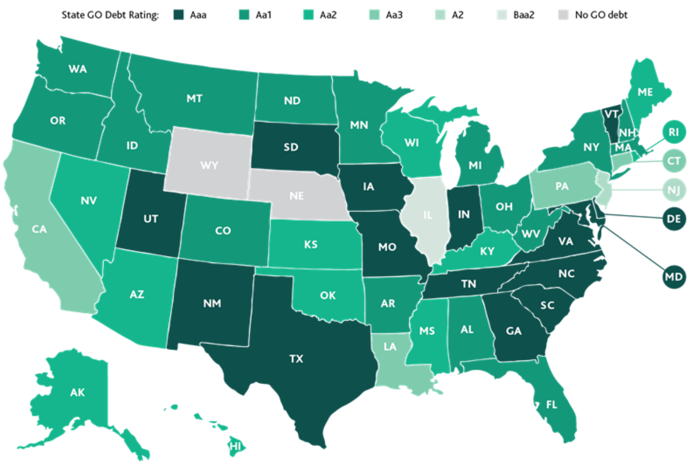
Ten states with the highest fixed cost ratios

State	Fixed Cost Ratio	ARC Ratio	Debt Service Ratio	OPEB Contribution Ratio
Illinois	27.5%	17.1%	8.1%	2.2%
Connecticut	27.4%	12.6%	11.8%	3.0%
Hawaii	24.7%	7.2%	11.7%	5.9%
West Virginia	23.3%	8.9%	10.0%	4.3%
Louisiana	22.8%	16.1%	4.6%	2.1%
New Jersey	22.0%	9.8%	8.1%	4.1%
Kentucky	21.1%	10.5%	7.7%	2.9%
Massachusetts	21.1%	6.3%	12.7%	2.1%
Maryland	18.1%	10.0%	6.2%	1.9%
New Mexico	15.8%	9.9%	4.2%	1.7%
50-State Median	9.8%	3.3%	4.4%	0.9%

Data are fiscal 2014. Fixed cost ratio reflects debt service + pension ARC + OPEB contribution.

Source: State CAFRs; Moody's Investors Service

State credit quality remains high



Source: Moody's Investors Service

State rating changes 2007-2016

Rating Actions	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Sub-total
Upgrades	**5**	**1**	**0**	**2**	**0**	**0**	**0**	**2**	**2**	**2**	**14**
Downgrades	**1**	**0**	**7**	**2**	**4**	**3**	**1**	**3**	**2**	**4**	**27**

» Downgrades continue to outpace upgrades in recent years
  - In 2016, Alaska (x2), Louisiana, and Illinois have been downgraded, South Dakota has been upgraded
  - Currently have 10 negative outlooks (AK, CT, IL, KS, LA, NJ, ND, OK, PA, WV)
  - Two positive (HI and WI) and 37 stable outlooks

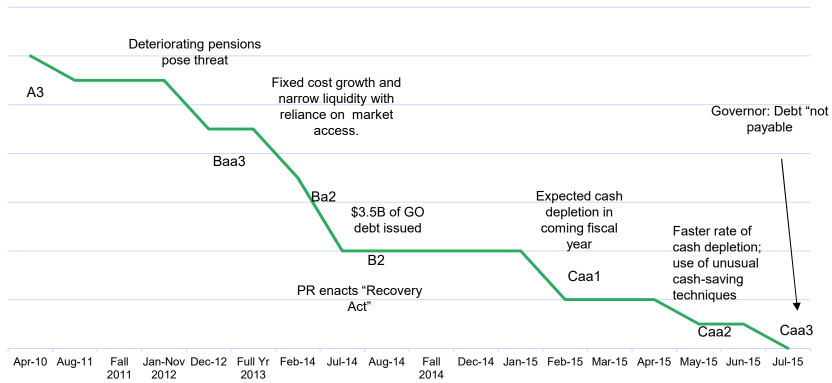
2

Puerto Rico

Puerto Rico: background to a debt crisis

- Protracted period of economic stagnation, job loss and outmigration
  - In recession since 2006, key industries have experienced massive contraction
  - Population fell 7% in the past five years, to an estimated 3.47 million (July 2015)
  - Real economic output down about 13% in past decade
- Debt burden grew through deficit financing
  - Total debt of about $72 billion, or 69% of GDP (vs 8.8% for highest US state)
  - Annual debt service rising to about $4bn on $17 billion general government budget
  - Near-insolvent pension system with annual benefit payments of $2.4bn
- Insufficient liquidity to run government and service debt
- Default and losses expected on all of Puerto Rico's various debt types
  - General obligations and senior sales tax bonds at Caa3 (38% of total par)
  - Electric and water utility bonds at Caa3 (17% of total par)
  - Ten bond classes at Ca, and one class at C

Puerto Rico downgrades accelerated in past two years



Source: Moody's Investors Service

Federal 'PROMESA' is positive step for bondholders

» The law imposes a stay on litigation related to defaults on Puerto Rico's debt
  – Precludes "rush to court"/protracted legal battle among holders of various securities
  – Transfers among Puerto Rico entities barred so this limited stay is not abused
» Legislation respects "relative lawful priorities" and liens
  – Bonds with strong legal provisions (e.g., constitutionally supported GO debt) should get better recoveries
» Oversight board must improve financial management practices
  – Independent board appointed by federal government (President and Congress)
  – Requires fiscal plans that move Puerto Rico toward balanced operating budgets
  – Must demonstrate procedures to deliver timely audited financials in order to restructure
» Federal intervention should stabilize Puerto Rico's economic base
  – Removes uncertainty over resolution of crisis, improving business conditions
  – Seeks to prioritize key infrastructural improvements
  – Forms task force to look at how to resuscitate Puerto Rico's economy
» What happens to pensions?

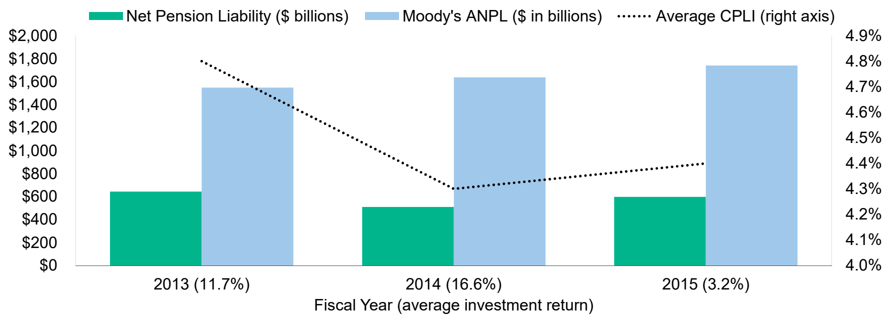
PROMESA: significance for broader municipal sector

No federal bailout	Congressional debate made it clear that no bailout funding for the commonwealth or its investors was intended
Debt relief	PROMESA recognizes the need to reduce debt service to allow Puerto Rico to provide core government services
Pensions v. debt	Prior municipal bankruptcies treated pensions favorably and with a high percentage of PR residents members of public pensions, that could be repeated
Federal Oversight	Congress has clear authority over territories, but unlikely it could or would establish similar oversight for a state

3 Pensions

Reported pension liabilities rising again

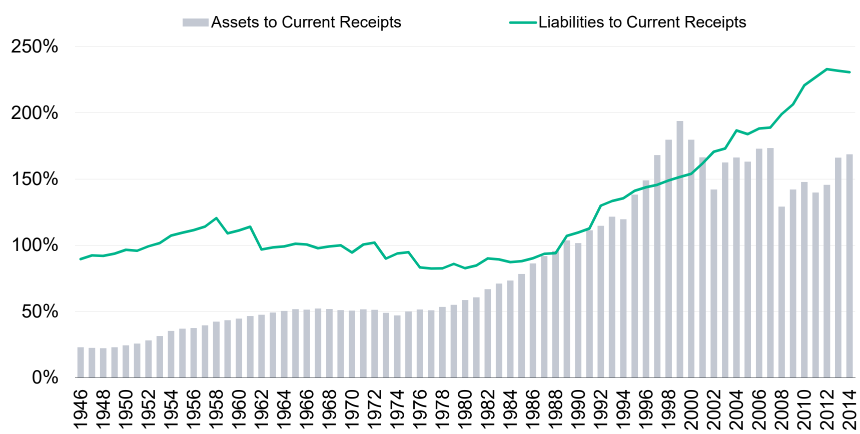
- » Federal reserve data – unfunded pension liabilities for all state and local governments increased 22% in 2015, to $1.69 trillion (or 9% of GDP)
  - – Follows improvement in 2013 and 2014 due to strong investment performance
- » Moody's 56-plan sample data – GASB 67 net pension liabilities increased 17% in 2015, to $597 billion, and Moody's ANPLs for the same plans increased by 6%, to $1.7 trillion



Source: Plan CAFRs, Moody's Investors Service

Pension leverage will be a long-term drag on the sector

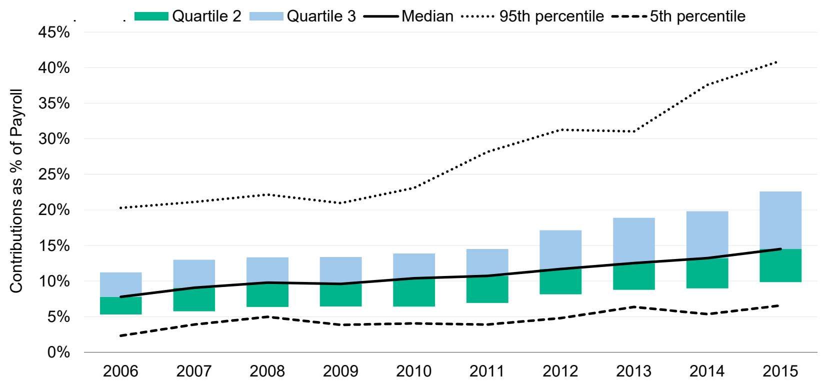
State and local pension liabilities relative to receipts are at historic highs



Source: US Bureau of Economic Analysis ,Board of Governors of the Federal Reserve System, "Financial Accounts of the United States" Historic Annual Tables, September 18, 2015 release

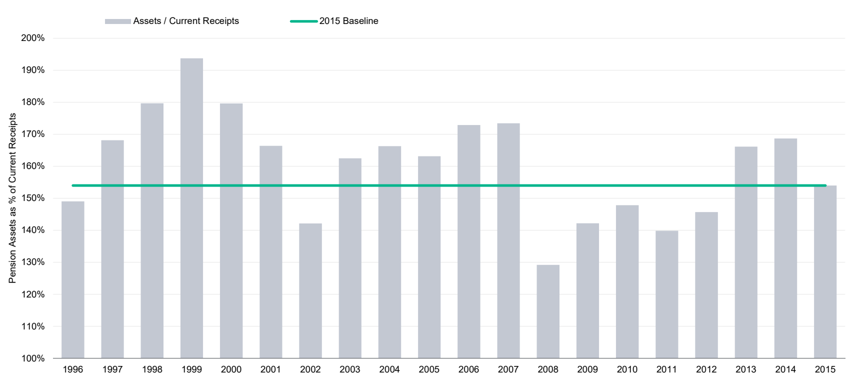
Unfunded liability build-up drives higher budgetary costs

- In a large plan sample, the median contribution relative to payroll has increased by 60% over 10 years, 95th percentile exceeds 40% of payroll compared to roughly 20% in 2006
- 2015 and 2016 results suggest trend of contribution rates to continue for most plans



Source: Plan CAFRs

Pension loss risk relative to budgets at pre-downturn levels



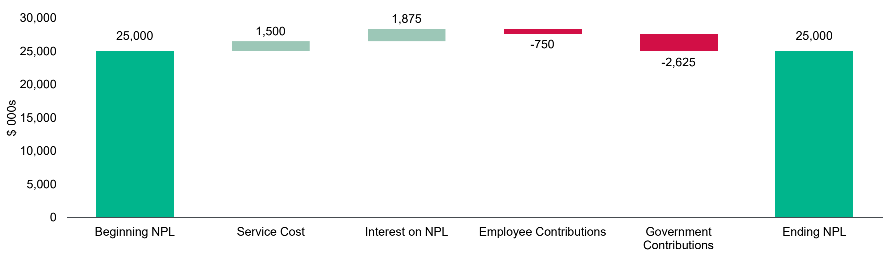
Source: Plan CAFRs

Moody's "tread water" analysis

Moody's "Tread Water" Analysis Uses Reported Data and Assumptions to Gauge Relative Strength of Government Pension Contributions

Tread Water Payment	Interest Rate	If government contributions greater than "Tread water"	If government contributions less than "Tread Water"
Employer service cost + interest on reported net pension liability at beginning of year	Prior year reported discount rate	Reported Net Pension Liability will decrease if plan assumptions are met	Reported Net Pension Liability will increase if plan assumptions are met

- In the hypothetical example below, the plan's assumptions are met exactly and contributions equal the "tread water" indicator
  - The net pension liability (NPL) does not change



4 Local Governments

Local government sector outlook is stable

NEGATIVE

What could change outlook to negative

- A return to economic recession
- Property tax levies revert back to negative growth rates, leading to declines in fund balance levels
- Rising pension and fixed costs significantly challenge local government budgets

STABLE

- Property tax revenues on a modest growth trajectory
- Strong to moderate institutional frameworks support operating stability
- Pension leverage will continue to grow and is a long-term drag on the sector
- State/sector pressure persists, but is not reflective of the sector overall

POSITIVE

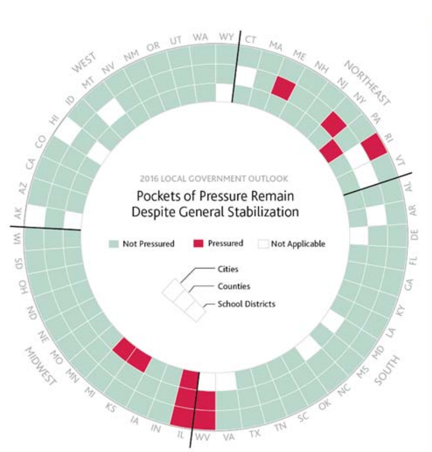
What could change outlook to positive

- Robust economic growth contributed to accelerated property tax revenue growth, operating surpluses, and improved financial positions
- Wide-scale pension and employee health care reform mitigating long-term liabilities

Pockets of pressure persist, but are not reflective of sector overall

2015

2016



Source: Moody's Investors Service

5

Green Bonds Assessment (GBA) Overview

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Green Bonds

- Green bonds are no different than conventional bonds, except that bond proceeds are earmarked for environmentally beneficial projects.
- Issued by corporations, financial institutions, development banks, sub-sovereign, US public finance, and in form of structured transactions.
- About $100 billion issued to-date.

Initiative & Motivation

- One leg of Moody's Environmental, Social, and Governance (ESG) risks initiative.
- Role for Moody's in promoting further disclosure and transparency and set a standard for green bond issuances across sectors and geographies.
- Meet needs of issuers and investors.
- First NRSO to offer GBA.

GBA Assessment

- Forward looking opinion of the relative effectiveness of an issuer's approach to managing, administering, allocating proceeds to and reporting on environmental projects financed with green bond proceeds.
- Five key factors analyzed, using a scorecard.
- Grades range from GB1-GB5.

Process

- Requested assessment.
- Publicly available information, supplemented by issuer provided input.
- Issuer interaction.
- Committee process; PR and green bond report disseminated.
- Annual refresh or in line with issuer's reporting cycle on use of proceeds.

Green Bonds Assessment scorecard

Assessment Factor	Weight
1. Organization	15%
2. Use of proceeds	40%
3. Disclosure on the use of proceeds	10%
4. Management of proceeds	15%
5. Ongoing reporting and disclosure	20%

Explanation

- Each of the five factors is scored on a scale from 1 to 5.
- For factors 1, 3, 4, and 5, scoring is based on the number of sub-factors for which the stated criteria is satisfied.
- For example, in order to achieve a factor score of 1 the criteria for all five sub-factors must be satisfied. In the same way, in order to achieve a score of 2, four of the five sub-factors must be satisfied, etc. In contrast, scoring for factor 2 is based on qualitative and quantitative gradations that are shown in the scorecard.

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