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CREDIT OPINION
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Massachusetts (Commonwealth of)

Update to credit analysis

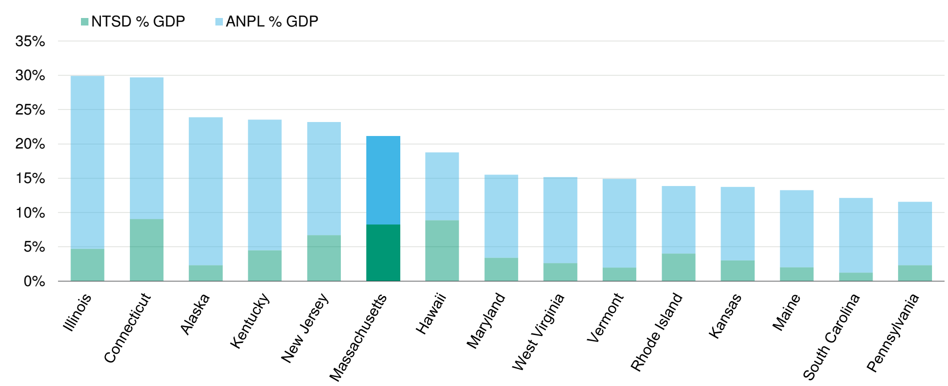
Summary

Massachusetts (Aa1 stable) benefits from long-term economic growth that has outpaced the nation, anchored by healthcare, education and technology sectors. A slowdown may be on the horizon, however, as the state's population growth slows and current residents age. Strong financial management in recent years resulted in balanced budgets. More recently, strong year-over-year tax revenue growth, along with prudent planning, have afforded the commonwealth the opportunity to build up reserves. Debt and pension liabilities remain among the highest in the nation, though these figures include borrowing and benefits for local governments.

Exhibit 1

Massachusetts debt and pension liabilities are sixth highest in the nation

State net tax supported debt (NTSD) and state adjusted net pension liability (ANPL) as a % of gross domestic product 2016



*State NTSD debt data as of fiscal 2017 as reported by Moody's; State ANPL data as of fiscal 2016 as reported by Moody's; GDP data as of 2016

Source: Moody's Investors Service; US Bureau of Economic Analysis

Credit strengths

» Long term economic growth, with stronger job, wage and income gains relative to the nation as a whole

» Strong financial management practices, particularly willingness to close budget gaps quickly through spending cuts, revenue increases and use of reserves

» Adequate reserves and commitment to maintain at a healthy level

Credit challenges

» Combined debt and pension liabilities, relative to GDP, are sixth highest in the nation

» Elevated fixed costs that limit budget flexibility

» Aging demographic profile with overall population growth that lags the nation

Rating outlook

The stable outlook reflects our expectation that the commonwealth will continue its trend of strong financial management, taking proactive measures to close budget gaps as they emerge. Reliance on one-time budget solutions or decreased liquidity would be indications of deviating from these practices.

Factors that could lead to an upgrade

» Continued rebuilding of reserves and establishment of stronger constraints on their use

» Established trend of structural budget balance

» Moderated debt and pension burdens, especially relative to peers

Factors that could lead to a downgrade

» Protracted structural budget imbalance

» Reserves or liquidity that falls below adequate levels

» Growth in leverage relative to state GDP or rising fixed costs relative to state revenue

Key indicators

Exhibit 2

Massachusetts (Commonwealth of)	2013	2014	2015	2016	2017	50-State Median (2016)
Operating Fund Revenues (000s)	29,133,206	30,863,081	32,946,934	33,414,744	33,910,836	
Available Balances as % of Operating Fund Revenues	10.1%	8.7%	7.7%	7.4%	6.6%	6.1%
Nominal GDP (billions)	442.1	459.8	490.4	505.7	527.5	
Nominal GDP Growth	1.8%	4.0%	6.7%	3.1%	4.3%	2.5%
Total Non-Farm Employment Growth	1.6%	2.0%	1.9%	1.9%	1.3%	1.3%
Fixed Costs as % of Own-Source Revenue	NA	22.5%	20.6%	23.1%	NA	9.1%
Adjusted Net Pension Liabilities (000s)	70,948,335	61,059,039	56,677,393	65,193,204	NA	
Net Tax-Supported Debt (000s)	33,455,411	36,328,772	37,997,157	40,756,031	41,744,847	
(Adjusted Net Pension Liability + Net Tax-Supported Debt) / GDP	23.6%	21.2%	19.3%	21.0%	NA	6.8%

Source: US Bureau of Economic Analysis; US Bureau of Labor Statistics; Commonwealth of Massachusetts FY13-FY17 CAFRs; Moody's Investors Service

Profile

The Commonwealth of Massachusetts is the 15th largest state by population, boasting nearly 6.9 million residents in 2017. Its gross domestic product, reaching $505.8 billion, ranks 11th among the states. Per capita income was 131.4% of the national average in 2016, the 2nd highest.

Detailed credit considerations

Economy

Massachusetts' continued economic growth is continues to outpace the nation and is vital to maintaining its ability to keep pace with long-term liabilities. Economic output, jobs and wages continue to grow at a healthy clip, but an aging demographic profile and slower population growth may portend a slowdown on the horizon.

The economy has been growing for years, benefiting from its strong healthcare, education and technology sectors. Employment increased at an average annual rate of 0.6% since 2000, a period that includes two economic declines. During this time the state has seen a shift away from manufacturing jobs to jobs in healthcare, education and professional services, which now comprise nearly 40% of non-farm employment, up from 31% in 2000.

Average annual earnings in the commonwealth grew, on average, 1.7% annually over the last ten years, outpacing the US rate of 1.2%. Reflecting these gains, per capita income reached 131% of the US average in 2017. The commonwealth's labor pool is well-trained. By 2016 nearly half the commonwealth's people of working age, 25 years and older, had a bachelor's degree, significantly exceeding the national rate of 31.3%.

Exhibit 3
Massachusetts economy outperforms the nation across multiple metrics

Massachusetts' wealth and growth have outpaced the US

	MA	US
GDP Average Annual Growth (2013-2017)	4.5%	3.0%
Employment Average Annual Growth (2013-2017)	1.6%	1.5%
Avg Annual Salary and Wage Growth (2007-2016)	1.7%	1.2%
Population change 2000-2016	8.0%	15.0%
GDP Per Capita (2016)	$ 65,281	$ 57,542
Per Capita Income (2017)	$ 65,890	$ 50,392

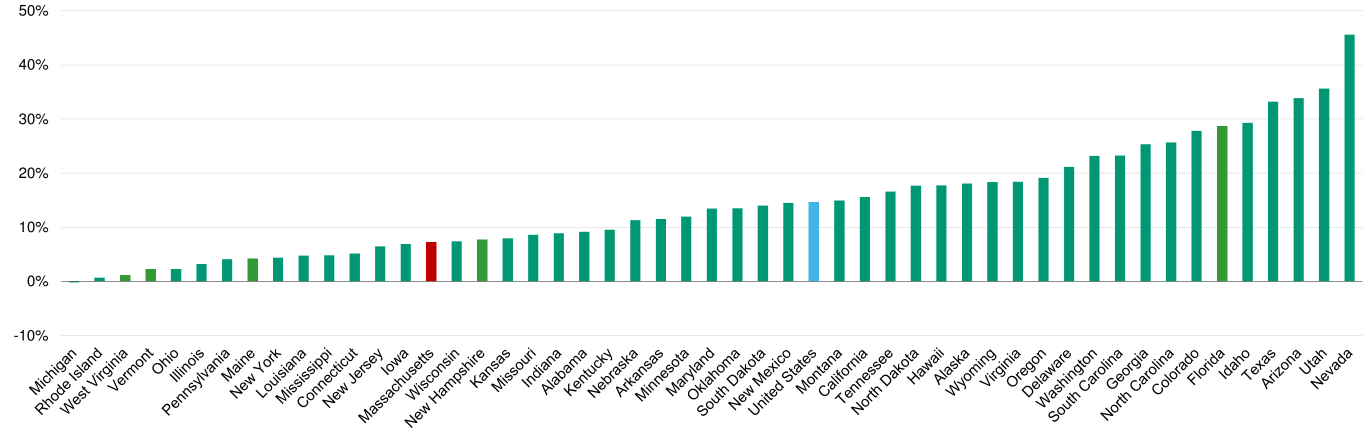
Source: : Moody's Analytics; US Census Bureau; US Bureau of Labor Statistics; US Bureau of Economic Analysis

A slowdown may be on the horizon, however, as population growth is below national rates and residents age. Currently the 15th largest state by population, the number of commonwealth residents grew to 6.8 million from 6.3 million between 2000 and 2016, a nearly 8.0% growth rate, but almost half the US rate of 15.0%.

Exhibit 4

Massachusetts' population growth since 2000 has lagged the nation

% change in total population, 2000 to 2016



Source: US Census

The state population grayed over this period, too. The median age in the commonwealth is now 39.4 years or 13th highest in the nation, exceeding the national median age of 37.9 years. While the state's percentage of working age residents is 40%, approximating the rate of the US, this portion of the population has been shrinking. The number of prime working age residents, or people 25 to 54 years old, declined by 4.5% since 2000. This is a striking contrast to the US 4.0% growth rate of working age residents over the same period.

Finances and liquidity

Strong revenue growth in fiscal 2018 is giving way to higher spending in fiscal 2019, though the commonwealth is prudently holding year-over-year revenue growth flat. Income taxes, which account for nearly 60% of total tax revenue, grew by 10.6% between fiscals 2017 and 2018. Total tax revenue growth was nearly as strong, at 8.1% year-over-year, with some of the income tax gains offset by losses in cigarette and deed recordation tax receipts.

For fiscal 2019, the state is holding revenue projections essentially flat over fiscal 2018, but the revenue gains realized in fiscal 2018 will fuel spending increases across nearly all policy areas. Total state spending is projected to increase by 3.2%, excluding the Medical Assistance Trust Fund and other certain transfers. Local aid, flowing to municipalities and schools, is budgeted to increase by $192.8 million or 3.3%, to $6.1 billion. A majority of this appropriation will fund foundational aid for schools. After declining or stagnating appropriations over the last two years, higher education appropriations are projected by grown by 5.1% in 2019.

Fixed costs continue to be a significant budget driver for the commonwealth. In 2016, combined debt service, pension and other post employment benefits (OPEB) employer contribution costs were 20.0% of revenue, well above the 8.9% sector median. The high fixed costs are partly attributable to the Commonwealth's absorption of certain costs covered by local governments in most other states. Regardless of the reason for the elevated cost, steep fixed costs reduce the commonwealth's budgetary flexibility, exposing the state to more difficult budgetary decisions when revenues decline. Favorably, the commonwealth is moderately prepared to handle a recession, with its diversified revenue structure, as well as moderate expenditure flexibility and reserves, balancing out the aforementioned high costs.

LIQUIDITY

Massachusetts' liquidity has improved significantly in the current year as strong revenue growth and prudent reserve policies have afforded the commonwealth the opportunity to rebuild previously drawn upon balances.

The commonwealth is required to deposit the entire year-end surplus and any tax revenue from excess capital gains into the Stabilization Fund, with 5% of the excess capital gains taxes deposited then transferred to the State Retiree Benefits Trust Fund and 5% transferred to the commonwealth's Pension Liability Fund. The commonwealth is also required to deposit certain one-time settlements and judgments into the Stabilization Fund.

The deposit of excess capital gains revenues into the Stabilization Fund was suspended in fiscal 2015 and fiscal 2016 to help close operating deficits. There were no transfers in 2017 as collections did not exceed the statutory threshold as adjusted by the fiscal 2018 budget, but $514 million was transferred in 2018 following strong capital gains revenues. The commonwealth ended fiscal 2018 with a balance of nearly $1.8 billion. The budget projects a deposit of $368 million in fiscal 2019, which is projected to bring the balance back to pre-recession levels.

Debt and pensions

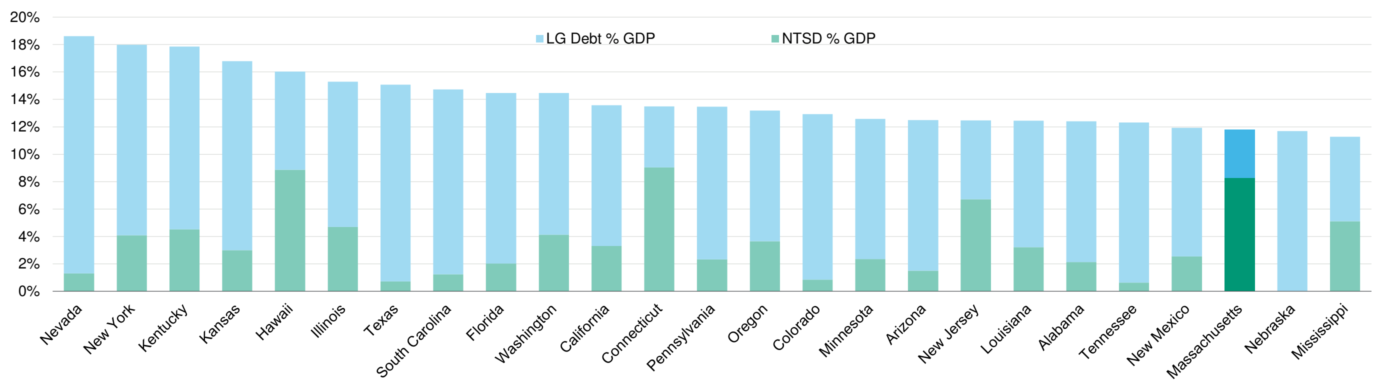
The commonwealth's high but well-managed debt burden reflects its focus on funding necessary maintenance, modernization and growth capital plans at both the state and local level. Given recent capital plans, we expect the commonwealth to continue issuing debt for key priorities, but the overall economy is expected to continue to provide a solid foundation for paying the long-term costs.

Net tax-supported debt reached $41.7 billion as of Moody's 2018 state debt medians report, comprised primarily of general obligation bonds (54%) but also includes sales tax backed debt for other underlying entities (25%). The state's debt levels ranked second-highest among the 50 states on a per-capita basis, exceeded only by Connecticut (A1 stable). Debt is elevated in part due to the Commonwealth's practice of financing projects for local governments, including a robust school district capital bonding program ($6.0 billion) and debt for the Massachusetts Bay Transportation Authority ($4.2 billion).

Exhibit 5

Massachusetts' total state and local government debt burden more in line with peers

State NTSD + local government debt as a % of GDP



*State NTSD debt data as of fiscal 2017 as reported by Moody's; Local Government debt data as of fiscal 2016 as reported by US Census; GDP data as of 2016

Source: State NTSD data from Moody's Investors Service; Local Government debt data from US Census; GDP from US Bureau of Economic Analysis

Per the governor's fiscal 2019 five-year capital investment plan, the state expects to issue nearly $2.3 billion of general obligation bonds, including the current issuance. The commonwealth already issued $225 million of Commonwealth Transportation Fund debt as part of the plan.

DEBT STRUCTURE

As of June 2018, Massachusetts has $3.2 billion of general obligation variable rate debt outstanding, or 8.4% of fiscal 2017 net tax supported debt, with $1.6 billion of this amount unhedged. Liquidity facilities contain a mix of three- and five-year term-out provisions that, considering the strength of Massachusetts' market access, should provide ample time to refinance, if necessary.

DEBT-RELATED DERIVATIVES

The commonwealth's closely managed derivatives portfolio is manageable due to liquidity that is sufficient to handle unforeseen circumstances related to its swap agreements. The agreements are floating-to-fixed hedges with a total notional amount of $1.6 billion across general and special obligation debt. The mark-to-market value was -$139.7 million as of June 30, 2018. Agreements contain provisions favorable to the commonwealth and do not reflect collateral posting requirements, which somewhat limits the commonwealth's ability to refinance the transactions those swaps are associated with. The commonwealth plans to continue to increase the amount of its unhedged floating rate debt portfolio over the next several years in an effort to better align asset and liability interest rate risks.

PENSIONS AND OPEB

The commonwealth's unfunded long-term liabilities are some of the highest in the nation and the state's contributions are well below the amount necessary to prevent the current liability from growing, posing a credit challenge over the longer term.

Based on the commonwealth's fiscal 2016 pension data, Massachusetts' adjusted net pension liability (ANPL) was $65.2 billion, or 201.5% of revenues. The 50-state median ANPL to revenues is 82.2%, with the commonwealth ranking sixth highest in the nation. The commonwealth participates in three pension plans, of which the most significant is the State Teachers Contributory Retirement System. Massachusetts is among the handful of states that take responsibility for directly funding teacher pensions.

The commonwealth contributes more than the full amount of its actuarially determined contribution, about $2.4 billion in fiscal 2018. However, the state's contributions were 65.7% of our “tread water” benchmark, which is the payment covering the year's newly accrued service costs and interest on the reported net pension liability (NPL). Massachusetts law requires that the schedule of pension contributions be updated every three years. Pursuant to a new triennial schedule adopted in January 2017, pension payments will increase by approximately 8.9% per year until the final amortization payment in fiscal 2036.

In 2008 the state created a trust fund to account for its other post-employment benefit (OPEB) plan. As of January 1, 2017 the plan had $817 million in assets, resulting in an unfunded liability of $19.4 billion. The state contributions are set by statute, though the trust fund also receives annual distributions, primarily from tobacco settlement proceeds.

Governance

The commonwealth's governance policies and practices are strong. The executive and legislative branches are required to develop consensus tax revenue forecasts for each fiscal year. The forecasts are used to formulate the upcoming budget and are updated if collections materially diverge from estimates. The commonwealth also follows strong reporting practices, conducting an annual debt affordability analysis and releases its audited financial results on a timely basis.

The commonwealth has financial flexibility, and uses it, to react to changing economic conditions in order to maintain balanced budgets. The governor has executive authority to cut expenses without legislative approval resulting from a revenue shortfall. This authority has been exercised in recent years as tax revenue collections fell below initial estimates. While there are no constitutional caps on revenue raising or spending increases, state statute limits annual tax revenue growth. The commonwealth is subject to ballot initiatives to make statutory changes, though per the state constitution, initiative petitions are subject to repeal or amendment by the legislature and initiative petitions that become statute can be amended like any other state law.

The state adopted its fiscal 2019 budget after the start of the fiscal year, which is not atypical to Massachusetts but we don't view the practice as a credit challenge. The state has a habit of adopting its budgets after the start of the fiscal year, enacting a one-month temporary budget to bridge the gap during the legislative and executive review period.

Rating methodology and scorecard factors

The US States and Territories Rating Methodology includes a scorecard, which summarizes the 10 rating factors generally most important to state and territory credit profiles. Because the scorecard is a summary, and may not include every consideration in the credit analysis for a specific issuer, a scorecard-indicated outcome may or may not map closely to the actual rating assigned.

Massachusetts' Aa1 rating is one notch higher than its scorecard-indicated outcome, because it incorporates the long-term economic growth that has provided the commonwealth with a strong base for paying its outsized liabilities, as discussed in this credit opinion.

Exhibit 6

US states and territories rating methodology scorecard

Commonwealth of Massachusetts

Rating Factors	Measure	Score
Factor 1: Economy (25%)		
a) Per Capita Income Relative to US Average [1]	130.8%	Aaa
b) Nominal Gross Domestic Product ($ billions) [1]	$527.5	Aaa
Factor 2: Finances (30%)		
a) Structural Balance	Aa	Aa
b) Fixed Costs / State Own-Source Revenue [2]	23.1%	Baa
c) Liquidity and Fund Balance	Aa	Aa
Factor 3: Governance (20%)		
a) Governance / Constitutional Framework	Aa	Aa
Factor 4: Debt and Pensions (25%)		
a) (Moody's ANPL + Net Tax-Supported Debt) / State GDP [2] [3]	20.9%	A
Factors 5 - 10: Notching Factors [4]		
Adjustments Up: None	0	
Adjustments Down: None	0	
Rating:		
a) Scorecard-Indicated Outcome		Aa2
b) Actual Rating Assigned		Aa1

[1] Economy measures are based on data from the most recent year available.
[2] Fixed costs and debt and pensions measures are based on data from the most recent debt and pensions medians report published by Moody's.
[3] ANPL stands for adjusted net pension liability.
[4] Notching factors 5-10 are specifically defined in the US States and Territories Rating Methodology.
Source: US Bureau of Economic Analysis, State CAFRs, Moody's Investors Service

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