MOODY'S
INVESTORS SERVICE

CREDIT OPINION
18 April 2019

Rate this Research

Contacts

Genevieve Nolan +1.212.553.3912
VP-Senior Analyst
genevieve.nolan@moodys.com

Robert Canfield +1.212.553.3801
Associate Analyst
robert.canfield@moodys.com

Nicholas Samuels +1.212.553.7121
VP-Sr Credit Officer
nicholas.samuels@moodys.com

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

Massachusetts (Commonwealth of)

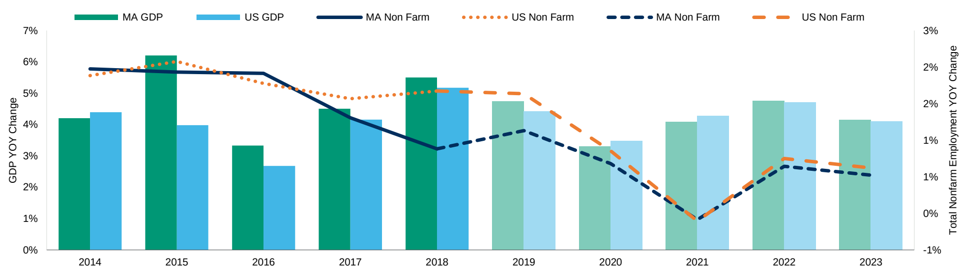
Update to credit analysis

Summary

Massachusetts (Aa1 stable) benefits from a strong economy underpinned by a diversified employment base focused on the health care, education and technology sectors. The commonwealth has taken advantage of ongoing economic expansion, using increasing tax revenues to rebuild reserves drawn down during the prior recession. For the upcoming fiscal year the state is focused on changes to education funding while also maintaining its focus on capital funding for existing assets. Debt and pension liabilities remain among the highest in the nation, driven upwards by borrowing that in many other states would be done by local governments, as well as debt issued for mass transit paid with statewide taxes.

Population growth is slowing and Massachusetts' residents are aging, which will dampen future economic expansion somewhat. Job growth has slowed in recent years, as well, with annual non-farm employment growth falling below the national rate since 2017. This trend is expected to continue as the labor market tightens.

Exhibit 1
Strong annual GDP growth
Year-over-year change in GDP and Non-Farm Employment for MA and US



*2019-2023 data are projections
Source: US Bureau Economic Analysis; US Bureau of Labor Statistics; Moody's Analytics

Credit strengths

» A strong economy focused on important knowledge sectors such as health care, education and technology

» 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 growth 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)	2014	2015	2016	2017	2018	50-State Median (2017)
Operating Fund Revenues (000s)	$30,863,081	$32,946,934	$33,414,744	$33,910,836	$36,483,673	$10,869,281
Available Balances as % of Operating Fund Revenues	8.7%	7.7%	7.4%	6.6%	8.7%	4.6%
Nominal GDP (billions)	$473.5	$502.8	$519.6	$543.0	NA	$224.4
Nominal GDP Growth	4.2%	6.2%	3.3%	4.5%	NA	3.9%
Total Non-Farm Employment Growth	2.0%	1.9%	1.9%	1.3%	0.9%	1.1%
Fixed Costs as % of Own-Source Revenue	21.9%	20.6%	23.1%	22.8%	NA	8.9%
Adjusted Net Pension Liabilities (000s)	$61,059,039	$56,677,393	$65,193,204	$80,449,143	NA	$12,033,341
Net Tax-Supported Debt (000s)	$37,439,708	$39,008,274	$40,753,424	$41,744,847	NA	$4,450,975
(Adjusted Net Pension Liability + Net Tax-Supported Debt) / GDP	20.8%	19.0%	20.4%	22.5%	NA	8.2%

Source: US Bureau of Economic Analysis; US Bureau of Labor Statistics;Commonwealth of Massachusetts FY14-18 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% of the national average in 2017, the 2nd highest.

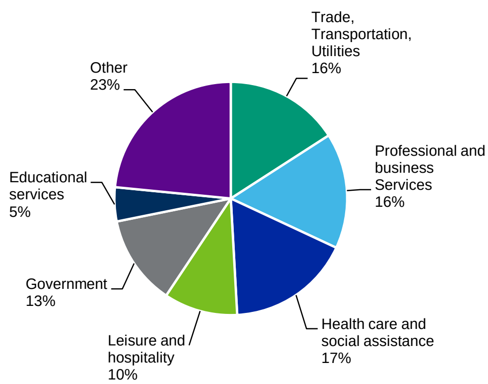
Detailed credit considerations

Economy

The commonwealth's overall economy continues to benefit from strong healthcare, education and technology sectors, with GDP growing by 5.5% in 2018, ranking it 19th for annual growth and outpacing the US growth rate of 5.2%. 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 2017 nearly half the commonwealth's people of working age, 25 years and older, had at least a bachelor's degree, significantly exceeding the national rate of 34.2%. This well trained workforce has been one reason for the commonwealth's employment gains in education and health care sectors (see Exhibits 3 and 4).

Exhibit 3

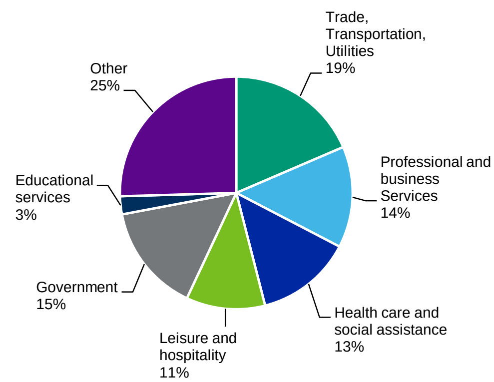
Massachusetts' employment base benefits from strong education and health care employment...



Source: US Bureau of Labor Statistics

Exhibit 4

...while the US is more concentrated in trade and government sectors.



Source: US Bureau of Labor Statistics

But there are signs of weakness on the horizon. Employment growth has tapered off in recent months, growing at 0.9% year-over-year in 2018, compared to the more robust growth rate of 1.7% nationally. Non-farm employment growth is expected to continue to lag the US over the next two years. This is in part due to a nearly fully tapped workforce, with February 2019 unemployment falling to 3.0%, compared to 3.8% nationally.

Population growth will continue its trend of lagging the US, as well, with 2.6% total growth projected in 2019, compared to 3.3% for the US. Massachusetts' population increased by nearly 8% between 2000 and 2016 but that was almost half the US rate of 15%. 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. When looking at senior residents commonwealth aligns with the national average, with 16.2% of its residents at age 65 or older, in line with the US median of 16%. 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.

Environmental considerations

The vast majority of Massachusetts' economic activity is along its coastline, resulting in elevated exposure to climate change. Nearly 83% of the commonwealth's GDP was located in coastal counties in 2016, significantly higher than the 50 state coastal county median of 38.6% and ranking its economy more at risk than Florida (Aaa stable) and California (Aa3 positive). Recognizing that it has above-average climate risks, the commonwealth is leading climate change preparedness, resiliency and mitigation efforts for itself and its local governments. The state is conducting vulnerability preparedness planning with its municipalities, while pending legislation would fund investment in resiliency infrastructure with approximately $100 million in new, annual revenues from a deeds excise tax. The funds would be used for multiple resiliency projects across the commonwealth, such as culvert replacement and strategic land acquisition.

Finances and liquidity

A diverse revenue structure is insulating the commonwealth from income tax revenue losses in the current fiscal year. Total tax revenue growth was strong in fiscal 2018, at 8.1% year-over-year, with income tax gains offset somewhat by losses in cigarette and deed recordation tax receipts. Strong tax revenue growth continues in fiscal 2019, increasing by 4.1% over fiscal 2018 collections, largely due to gains in sales and use tax collections. Favorably, and after lagging projections due to softening income tax collections, total tax revenues are tracking close to budgeted expectations through March 2019.

Fiscal 2019 mid-year appropriations were enacted in March, totaling $143.9 million, for additional funding for low-income heating assistance and to fund agreements reached during collective bargaining, in addition to other miscellaneous expenditures. A small negative budget variance is currently projected for the fiscal year, but we expect the commonwealth to end the year in substantial balance given its proven track record of adjusting revenues and expenditures throughout the fiscal year. The legislature continues budget discussions for fiscal 2020, focusing on new education funding formula for its K-12 system.

Fixed costs continue to be a significant budget driver for the commonwealth. In 2017 combined debt service, pension and other post employment benefits (OPEB) employer contribution costs were 19.9% of revenue, well above the 8.5% 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 since the recession as the state takes advantage of strong revenue growth.

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 $2.0 billion. The current year budget projects the balance to grow to nearly $2.5 billion. n in fiscal 2019, bringing 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 $41.5 billion as of Moody's 2018 state debt medians report (see Exhibit 5), 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

Nearly 25% of Massachusetts' net tax supported debt issued for local government purpose

Security		Fiscal 2018 Debt (in $ 000)	Pledge	Rating
Genearl Obligation and GO related				
GO	$	23,143,374	CW full faith and credit	Aa1/STA
Contract Assistance	$	2,900,000	CW full faith and credit	Aa1/STA
Massachusetts Clean Water	$	306,636	CW full faith and credit	NR
Social Innovation Financing Trust Fund	$	38,185	CW full faith and credit	NR
MBTA Prior Obligations	$	179,520	CW full faith and credit	Aa1/STA
Commercial Paper	$	-	CW full faith and credit	P-1
Special Tax				
MSBA (Senior and Sub)	$	6,112,985	Dedicated statewide sales tax	Aa2/Aa3/STA
CTF	$	2,811,660	Gas taxes and registry fees	Aa1/STA
CTF Prior Obligations	$	105,230	Portion of statewide gas tax	Aa1/STA
GANs	$	748,445	Federal highway funds and sub lien on gas taxes and registry fees	Aa2/STA
Convention Center	$	552,110	Hotel Occupancy Tax; Rental Car Surcharge; Sales Tax and Sightseeing Surcharge	A1/STA
MBTA Sales Tax (Senior and Sub)	$	4,235,840	Dedicated statewide sales tax	Aa2/Aa3/STA
MBTA Parking	$	304,858	Parking related revenues	A1/STA
MBTA Commercial Paper	$	-	Dedicated statewide sales tax	P-1
Total Net Tax Supported Debt	**$**	**41,438,843**		

Source: Commonwealth of Massachusetts Information Statement; MBTA FY18 Audit; Moody's Investors Service

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 March 2019, Massachusetts has $2.6 billion of general obligation variable rate debt outstanding, or 6.2% of fiscal 2018 net tax supported debt, with $1.5 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 $1.1 billion across general and special obligation debt. The mark-to-market value was -$104.9 million as of February 28, 2019. 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 2017 pension data, Massachusetts' adjusted net pension liability (ANPL) was $80.4 billion, or 247% of revenues. The 50-state median ANPL to revenues is 107%, 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 June 30, 2018 the plan had $1.2 billion in assets, resulting in an unfunded liability of $14.9 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 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.

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.

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 economicgrowth that has provided the commonwealth with a strong base for paying its outsized liabilities, as discussed in this credit opinion.

Exhibit 6

Rating Factors	Measure	Score
Factor 1: Economy (25%)		
a) Per Capita Income Relative to US Average [1]	130.5%	Aaa
b) Nominal Gross Domestic Product ($ billions) [1]	$543.0	Aaa
Factor 2: Finances (30%)		
a) Structural Balance	Aa	Aa
b) Fixed Costs / State Own-Source Revenue [2]	22.8%	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]	22.5%	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

Source: Moody's Investors Service

REPORT NUMBER 1170864

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

Moody's INVESTORS SERVICE