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SECTOR IN-DEPTH
11 April 2019

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Contacts

Thomas Aaron +1.312.706.9967
VP-Senior Analyst
thomas.aaron@moodys.com

Timothy Blake +1.212.553.4524
MD-Public Finance
timothy.blake@moodys.com

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Mass transit - US

Pensions and retiree healthcare challenge some of the largest mass transit enterprises

Pension and other post-employment benefits (OPEBs) — primarily retiree healthcare — pose a credit risk for some of the largest US mass transit enterprises. For mass transit bonds secured by special taxes, however, pension and OPEBs are often not a significant credit factor. In addition, debt service for the 10 largest mass transit systems, ranked by ridership[1] tends to exceed retirement benefit contributions, and the mass transit entities have less exposure to steep pension investment losses than many large local governments. Still, transit enterprises with material unfunded liabilities face budget challenges stemming from rapidly rising employee benefit costs that can limit capital reinvestment, contribute to rising debt loads and/or, ultimately, lower service levels.

» **Unfunded pension and OPEBs are a significant contributor to balance sheet leverage for the 10 largest US mass transits.** As of their most recent financial statements, these enterprises in aggregate had $62 billion of debt, compared to $38 billion of adjusted net pension liabilities (ANPLs) and $29 billion of adjusted net OPEB liabilities (NOLs).[2] Combined ANPLs and adjusted NOLs range from 76% of revenues for the Metropolitan Atlanta Rapid Transit Authority (MARTA, Aa2 stable) to 305% of revenues for the Washington Metropolitan Area Transit Authority (WMATA, A2 positive).

» **Retirement benefits are less than 15% of operating and maintenance (O&M) for nine of the 10 largest mass transit enterprises, but rising rapidly for some.** Rising pension costs are contributing to a projected operating deficit by the Massachusetts Bay Transportation Authority (MBTA, Aa2 stable). Despite roughly doubling over the past 10 years, the Chicago Transit Authority's (CTA, A3 stable) pension contributions remain below our "tread water" indicator, a signal that its contributions will rise further. Costs to directly fund OPEBs for Oregon's Tri-County Metropolitan Transportation District (Tri Met, Aaa stable) will grow nearly 8% annually for the next decade.

» **Most mass transits have a low risk of material pension asset losses, but investment return volatility will constrain asset accumulation and increase costs.** Of the 10 largest mass transit enterprises, only WMATA has greater than a 10% one-year probability of experiencing pension investment losses that amount to 25% or more of its revenues, a threshold known as our "pension asset shock indicator." However, several of the largest transits have pension systems with significantly negative non-investment cash flow (NICF) relative to assets, suggesting that investment return volatility will constrain pension asset accumulation without higher contributions.

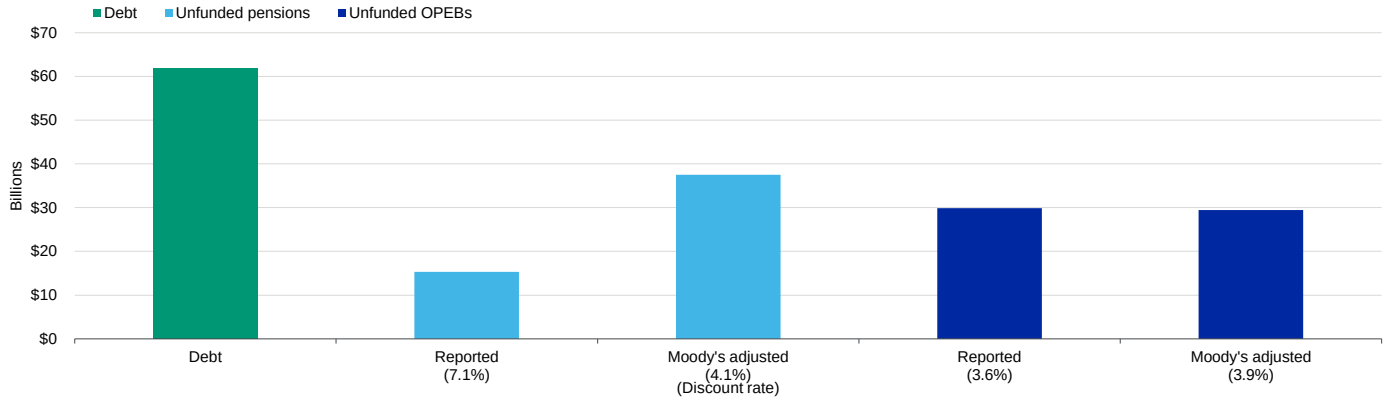
Unfunded pension and OPEBs are a significant contributor to balance sheet leverage for the 10 largest US mass transits

Unfunded liabilities for retirement benefits are a significant source of balance sheet leverage for many US mass transit enterprises. Based on their most recently available financial reporting, debt of the largest US mass transit enterprises (ranked by ridership) amounted to about $62 billion, compared to $15 billion in net pension liabilities (NPLs) reported under Governmental Accounting Standards Board (GASB) rules and $30 billion in GASB NOLs. Under our standard discount rate adjustments, the mass transits' $38 billion in ANPLs and $29 billion of adjusted NOLs combined to slightly exceed debt (see Exhibit 1).

Exhibit 1

Debt of the 10 largest mass transit enterprises is roughly equal to adjusted net liabilities for pensions and OPEBs combined

Data as of most recently available financial statements



Source: Moody's Investors Service, based on transit enterprises' comprehensive annual financial reports

Special tax bonds comprise most Moody's-rated debt of large US mass transits

The majority of our ratings for the largest US mass transit enterprises pertain to special tax securities, in which case pensions and OPEBs are often not a significant credit factor unless they are driving operating risks (see Exhibit 2). For the purpose of this report, however, we examine leverage and fixed costs relative to enterprise operations, regardless of whether our ratings pertain solely to special tax bonds.

Exhibit 2

Moody's ratings for the largest US mass transit enterprises

Name	State	Abbreviation	Rating	Security Description
Chicago Transit Authority	IL	CTA	A3 stable	Special tax bonds
Los Angeles County Metro. Transportation Authority	CA	LAC MTA	Aa1 stable	Special tax bonds
Massachusetts Bay Transportation Authority	MA	MBTA	Aa2 stable	Special tax bonds
Metropolitan Atlanta Rapid Transit Authority	GA	MARTA	Aa2 stable	Special tax bonds
Metropolitan Transportation Authority	NY	NY MTA	A1 negative	Revenue bonds
New Jersey Transit Corporation	NJ	NJTC	A3 stable	GARVEE bonds
San Francisco Bay Area Rapid Transit District	CA	SF BART	Aaa stable	General obligation bonds
Southeastern Pennsylvania Transportation Authority	PA	SEPTA	A1 stable	Special tax bonds
Tri-County Metro. Transportation District	OR	TRI MET	Aaa stable	Special tax bonds
Washington Metropolitan Area Transit Authority	DC	WMATA	A2 positive	Revenue bonds

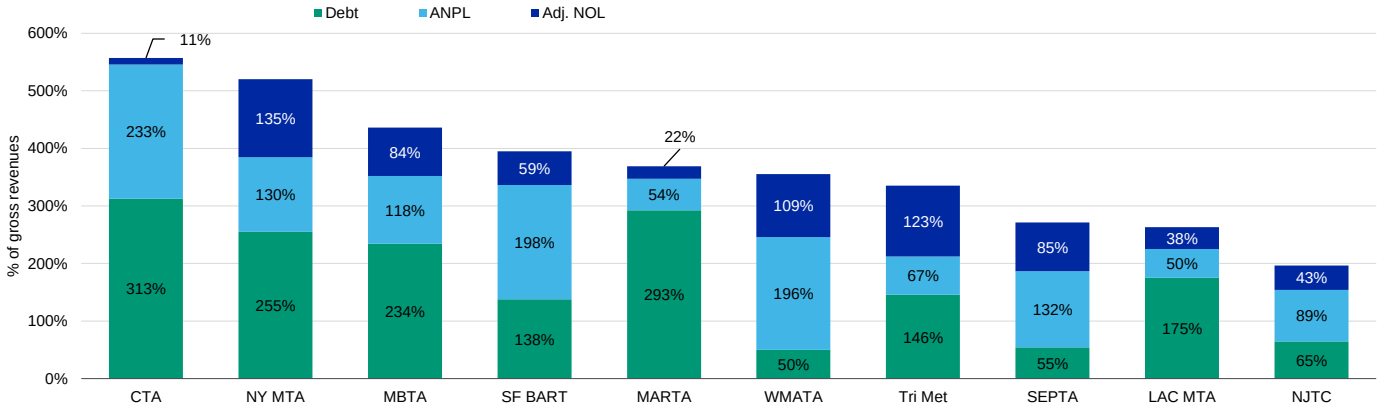
New Jersey Transit Corporation's grant anticipation revenue vehicles (GARVEE) bonds are secured by federal reimbursements for capital projects.
Source: Moody's Investors Service

Balance sheet leverage from debt, pensions and OPEBs for the 10 largest transit enterprises ranges from a high of 557% of revenues for CTA to a low of 197% for the New Jersey Transit Corporation (NJTC, A3 stable).[3] In some cases, such as the Los Angeles County Metropolitan Transportation Authority (LACMTA, Aa1 stable) and MARTA, debt far exceeds pension and OPEB liabilities. But in other examples, such as the San Francisco Bay Area Rapid Transit District (SF BART, Aaa stable) and WMATA, unfunded pension and OPEB liabilities are the main drivers of balance sheet leverage rather than debt. SF BART's debt amounted to 138% of revenues as of fiscal 2018 financial reporting, compared to an ANPL of 198% of revenues and an adjusted NOL of 59%. WMATA's debt amounted to just 50% of its revenues, less than both its ANPL (196%) and its adjusted NOL of 109% of revenues (see Exhibit 3).

Exhibit 3

Unfunded retirement liabilities drive heavy balance sheet leverage for some mass transit enterprises

Sources of balance sheet leverage as % of revenues, as of most recently audited financial statements



Source: Moody's Investors Service, based on audited financial statements of the mass transit enterprises and their respective retirement benefit systems.

Retirement benefit costs are less than 15% of operating and maintenance expenses (O&M) for almost all of the largest mass transit enterprises, but are rising rapidly for some

While pension costs do not currently represent very high portions of mass transit enterprises' O&M expenses, the obligations are rising rapidly for some issuers. Among the 10 largest mass transits, fixed costs for debt service, OPEB contributions and our "tread water" indicator for pension costs range from just 8% of O&M in the case of NJTC to a heavy 44% of O&M for CTA. Debt service is the most significant fixed cost for a majority of the 10 largest transit enterprises, exceeding pension and OPEB costs in six out of 10 cases.

New York's Metropolitan Transportation Authority (NY MTA) shows the highest pension contributions as a percent of O&M among the 10 largest mass transits at 12% for the fiscal year ended December 31, 2017. NY MTA's OPEB contributions were also the highest among the largest transits at 5% of O&M.

Our pension tread water indicator represents the annual contribution necessary to prevent unfunded liabilities from growing under reported assumptions, and many of the 10 largest transits exhibit pension contributions exceeding this threshold: only CTA, MBTA and SF BART contributed below the benchmark as of their most recently available reporting (see Exhibit 4). The NJTC has five of its own pension systems, and also participates in the local segment of two statewide pension systems. While the State of New Jersey (A3 stable) exhibits a multiyear trend of pension contribution shortfalls, the local segments of New Jersey's statewide pension systems have historically received stronger contributions than those of the state .

Exhibit 4

Largest US mass transit enterprises exhibit a dramatic range of fixed costs for debt service, pensions and OPEBs, % of O&M, negative tread water gaps signal contributions in excess of the tread water indicator

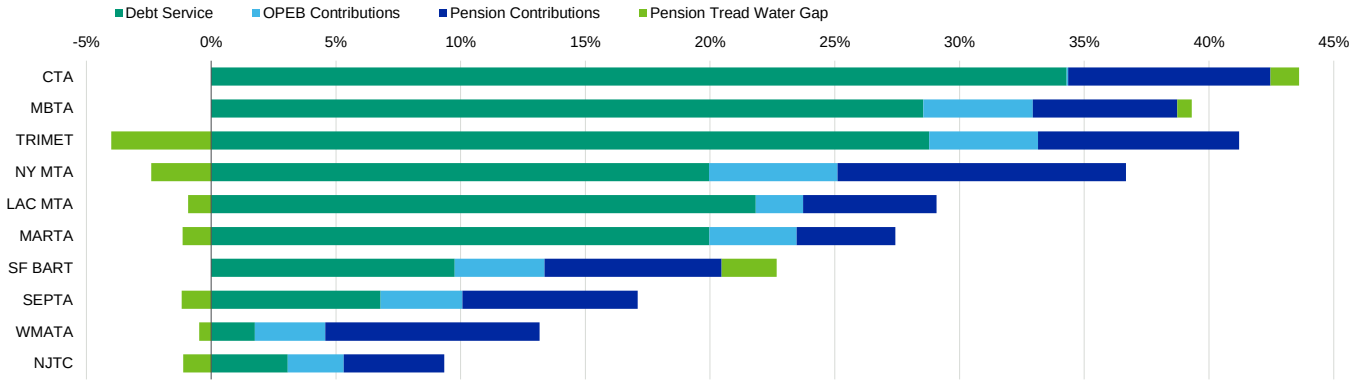


Exhibit reflects fiscal 2018 for MBTA and Tri Met. Due to pension and/or transit enterprise reporting lags, data reflects fiscal 2017 reporting for CTA, NY MTA, LAC MTA, MARTA, SF BART, SEPTA and WMATA, and fiscal 2016 reporting for NJTC.
Source: Moody's Investors Service

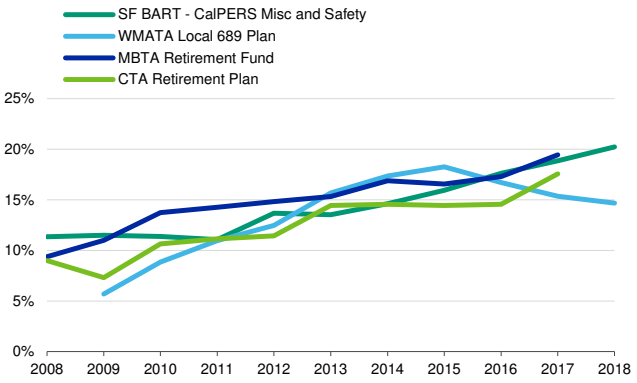
Pension costs are rising rapidly for some of the largest mass transit enterprises. For example, contributions relative to payroll by MBTA and WMATA to their largest retirement systems have more than doubled since 2008. Rising pension costs are also a significant contributor to the structural deficit currently projected by MBTA in its preliminary fiscal 2020 operating budget. MBTA currently estimates that its pension contributions will exceed $116 million in fiscal 2020, 24% higher than in fiscal 2018 and up 13% from the current fiscal 2019. SF BART's contributions to its two pension systems administered by the California Public Employees' Retirement System (CalPERS) reached $68 million in 2018, just over 20% of combined payroll and the result of a compound average annual growth rate of nearly 10% from 2008 to 2018 (see Exhibit 5).

The CTA exhibits a similar rate of growth in its annual pension contributions, which — like those of MBTA and SF BART — continue to fall below our tread water indicator. For the year ended December 31, 2017, CTA contributed roughly 18% of payroll to its retirement system, compared to a tread water indicator of 21% of payroll. In addition, CTA's Retirement Plan had a higher reported discount rate (8.25% as of December 2017) than any other pension system of the largest transit enterprises. All else being equal, higher discount rates tend to produce lower actuarial contribution requirements and lower tread water indicators. For example, if CTA's Retirement Plan had used the same 7.0% discount rate that CalPERS currently uses, we estimate the tread water indicator would have been 24% of payroll in fiscal 2017 and its contribution shortfall would have been 6% of payroll (see Exhibit 6).

Exhibit 5

Mass transits' pension contribution rates relative to payroll have materially increased over the past 10 years

Pension contributions as % of payroll

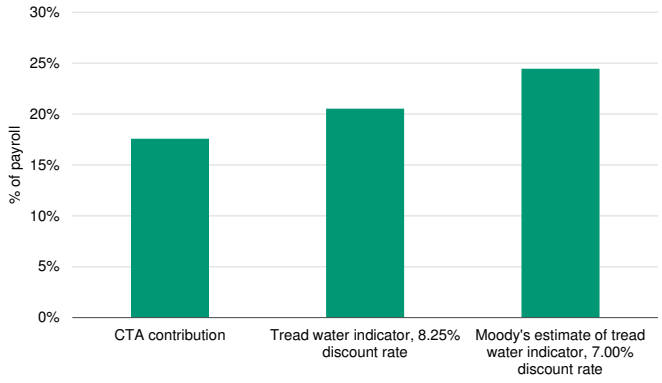


Sources: Mass transit enterprise and pension system comprehensive annual financial reports

Exhibit 6

Contributions below our tread water indicator suggest that CTA's pension contributions will likely increase further, particularly if its optimistic discount rate assumption is reduced

Year ended December 31, 2017



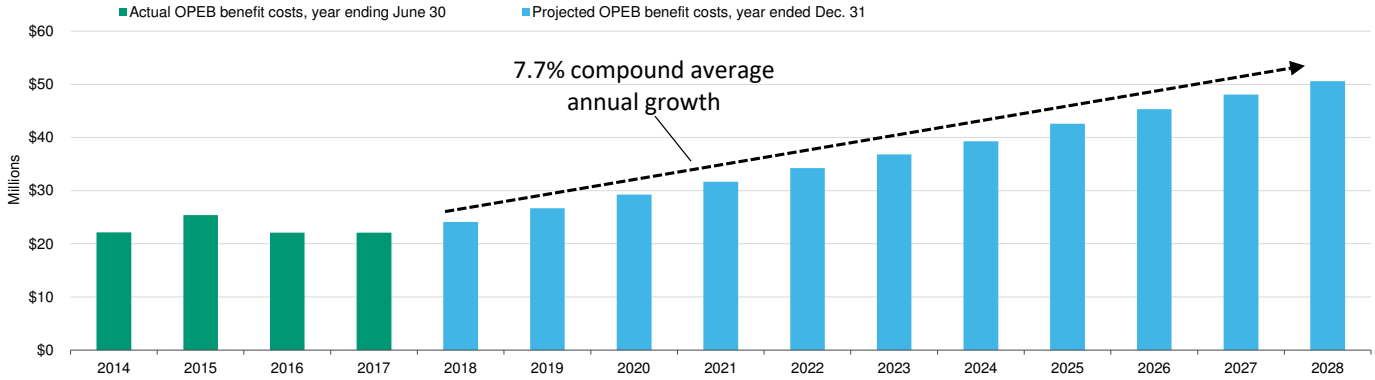
Sources: Moody's Investors Service, based on plan actuarial reports

OPEB costs are also slated to rise materially for some of the largest US mass transit enterprises. Similar to many states and local governments, the largest mass transit enterprises tend to fund OPEB benefits directly as part of their operating budgets as they come due — an approach called "pay-as-you-go," or pay-go — as opposed to setting aside assets to pre-fund liabilities as they are accrued. Funding OPEBs on a pay-go basis currently tends to be less expensive than pre-funding, but can also expose sponsoring governments or mass transit enterprises to rapidly rising costs as more workers retire and healthcare costs rise. For example, rising benefit costs have directly contributed to NY MTA's narrow financial flexibility.

Among the 10 largest transits, Tri Met exhibits the second-highest adjusted NOL relative to its revenues at 123%. While Tri Met significantly reduced OPEB benefits for employees hired after October 2014, its costs to service its OPEB liabilities are nonetheless projected by the system's actuaries to increase substantially over the next decade. According to the Tri Met's most recent actuarial valuation, OPEB pay-go costs will grow nearly 8% annually for the next decade, and will exceed $50 million by 2028, compared to $24 million in 2018 (see Exhibit 7).

Exhibit 7

Tri Met's actuaries project that pay-go costs for OPEBs will rise rapidly over the next decade



Sources: Tri Met comprehensive annual financial reports and January 1, 2018 OPEB actuarial valuation

Most mass transits have a low risk of material pension asset losses, but investment return volatility will constrain asset accumulation and increase costs

The scale of pension assets relative to the largest mass transit enterprises' revenues is small in many cases. As a result, these entities tend to exhibit relatively low risk of suffering pension investment losses that amount to 25%, or more, of their own revenues, a measure known as our "pension asset shock indicator."

Our pension asset shock indicator is a function of two key inputs: the scale of pension assets relative to a sponsoring government or enterprise's revenue, and the expected volatility, or standard deviation, of pension investment returns. We derive the expected volatility of returns based on each pension plan's investment return target, using a risk-return map that we develop annually using a standard set of capital markets assumptions. Under our risk-return map, the higher an entity's target investment return, the higher its expected volatility of returns, and vice versa.

Only two of the 10 largest mass transit enterprises, WMATA and SF BART, have pension assets that amount to more than 150% of their own revenues. These two entities also exhibited the highest pension asset shock indicators, at 14% and 8%, respectively, in fiscal 2018 (see Exhibit 8). With the exception of WMATA, the distribution of asset shock indicators for the largest mass transit enterprises tends to resemble the distribution of the same risk measure for the 50 US states, but is generally lower than for many of the largest local governments (see Exhibit 9).

Exhibit 8

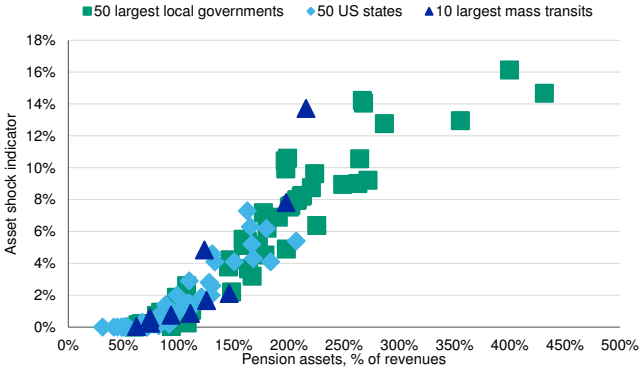
With pension assets amounting to more than 200% of its revenues and a relatively optimistic investment return target, WMATA's pension asset shock indicator is highest of the largest mass transits

	Risk-return map	Pension assets / revenue	Target return	"Shock" return rate	Expected volatility	Asset shock indicator
WMATA	2018	216%	7.70%	-12%	18%	**14%**
SF BART	2018	197%	7.00%	-13%	14%	**8%**
CTA	2017	124%	8.22%	-20%	17%	**5%**
NY MTA	2017	146%	7.00%	-17%	12%	**2%**
MARTA	2018	125%	6.72%	-20%	13%	**2%**
Tri Met	2018	111%	6.66%	-23%	12%	**1%**
SEPTA	2018	93%	7.00%	-27%	14%	**1%**
MBTA	2018	74%	7.47%	-34%	16%	**1%**
NJTC	2017	75%	7.67%	-34%	15%	**0%**
LAC MTA	2018	62%	7.00%	-40%	14%	**0%**

CTA has lower expected volatility than WMATA despite a higher target return because its data is aligned with our 2017 risk-return map, whereas WMATA is aligned with 2018. Compared to 2017, our 2018 risk-return map reflects higher expected volatility for a given target return.
Source: Moody's Investors Service

Exhibit 9

With a smaller scale of pension assets, the largest mass transit enterprises tend to have lower asset shock indicators than many of the largest local governments



Local government and state data all reflects fiscal 2017. Mass transit data is a mix of fiscal 2017 and 2018.
Source: Moody's Investors Service

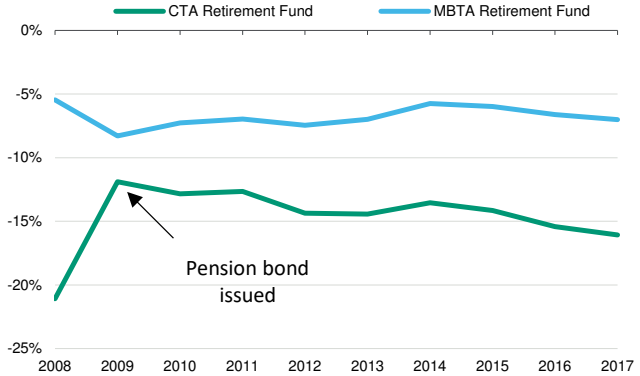
Despite relatively low pension asset shock indicators, some mass transits still face an uphill battle to accumulate assets because their pension systems exhibit significantly negative non-investment cash flow (NICF) and have asset allocations carrying high expected return volatility. Negative NICF means that a pension system's benefit outflows exceed its employee and employer contribution inflows; as this gap grows relative to assets in the system, a higher investment return is required just to prevent pension system assets from declining (much less growing) in a given year. When investment losses occur, they compound the negative NICF position, constraining the ability to accumulate assets in subsequent years. As a result, a pension system with negative NICF may achieve its long-term investment rate of return on average, yet still fall short of asset accumulation targets if returns are volatile. If pension asset accumulation falls short of targets, higher contributions by sponsoring employers are required.

Among the 10 largest transit enterprises, CTA and MBTA will be most challenged to accumulate pension assets in the event of investment return volatility, because each have pension systems that exhibit very negative NICF relative to plan assets (see Exhibit 10). For example, we project that if the CTA Retirement Fund hits its 8.25% investment return target every year, its assets would amount to roughly $2.9 billion at the end of 2029. Holding all else constant, in a hypothetical scenario where the system achieves a geometric (or compound) average return of 8.25% over the same period, but with annual return volatility, its assets would amount to a significantly lower $2.3 billion in 2029 (see Exhibit 11).

Exhibit 10

CTA and MBTA have pension systems with significantly negative NICF...

Non-investment cash flow (NICF) as % of beginning-of-year assets

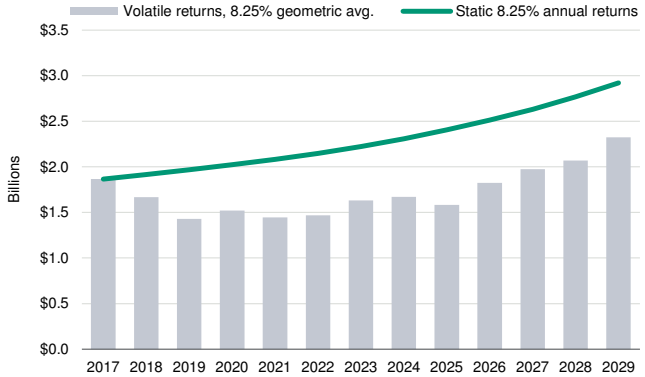


Sources: Pension system audited financial statements and actuarial valuations

Exhibit 11

...meaning investment return volatility will constrain pension asset accumulation without higher contributions

Projected market value of assets, CTA Retirement Fund



Source: Moody's Investors Service, based on CTA Retirement Fund actuarial valuation

Moody's related publications

Sector In-Depth

» Market volatility underscores risk of high pension investment return targets, February 2019

Sector Comment

» Negative cash flow, investment volatility hinder funding improvement by public pension systems, November 2018

Endnotes

1 Data for ridership is sourced from the American Public Transportation Association. We have excluded the San Francisco Municipal Transportation Agency (Aa2 stable) solely because the ridership report refers to the San Francisco Muni Rwy.

2 The primary difference between unfunded retirement liabilities reported under governmental accounting rules and our adjustments is the application of the discount rate assumption. Governmental accounting links the selection of a liability discount rate with the assumed rate of investment return on plan assets. We apply the FTSE Pension Liability Index, a high-grade corporate bond index, as a discount rate. For more detail on our discount rate adjustments, see: "Adjustments to US State and Local Government Reported Pension Data".

3 With the exception of NJTC, all data reflects financial reporting that ended on either June 30, 2018 or December 31, 2017. The NJTC's most recently available financial statements cover the fiscal year that ended on June 30, 2017. As a result, NJTC's OPEB reporting under GASB Statement 75 is not yet available. In this report, we've used NJTC's reported OPEB liability, which was based on a 4.3% discount rate, as a proxy for our adjusted NOL.

REPORT NUMBER 1165168

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