Determining the Aggregate Per Capita Pension Liability

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Rachel Barkley
Municipal Credit Analyst
rachel.barkley@morningstar.com
+1 312 696-6256

Overview

Long-term liabilities is a core analytic when analyzing the creditworthiness of any entity. For municipal bond analysts this has traditionally emphasized the amount of outstanding debt that an issuer or obligor supported. Debt liability represents a quantifiable, direct obligation that can be precisely analyzed within the construct of weighing the ability to pay against the size of the liability.

However, debt liability, while quantifiable, represents one of the primary components of liability for municipal governments. The other component that has become much more significant in recent years is retirement liabilities. Pensions are the most visible part of these other long-term liabilities, often representing a significant financial challenge to governments. According to the Census of Governments, pension liabilities now constitute the largest type of liability of state and local governments, exceeding the value of debt outstanding.

Pension analysis differs from debt analysis in that the liabilities are estimated rather than precisely quantified. This uncertainty and the differing views on how to make the estimates more definite have dominated much of the recent debate. In our view, these various opinions do not provide investors with better answers, but just add to the confusion. We believe investors need better tools that add context to the analysis of pension liabilities so that they can make more informed decisions. To this end, Morningstar's municipal research group is engaged in a dedicated effort to shed some light on pensions and their potential impact on state and local governments.

We previously have concentrated on the direct pension liability for city and state pension plans with our annual State of the State Pensions and State of the City Pensions reports, as well as our report on pension systems for high-impact states and cities. To continue our efforts, we have now analyzed unfunded pension liabilities on an aggregate basis.

For the purpose of this report, we have focused on the most populous 25 cities in the nation as well as the Commonwealth of Puerto Rico. When we look at the total aggregate pension burden, we include the direct pension liability, as discussed in our past reports, as well as that of overlapping jurisdictions.

We think the aggregate pension burden is important and individual city and state pension data should not be examined in a vacuum. Areas have various degrees of overlapping governments and pension plans. Residents of a city will also be responsible for funding their share of the pension liability for the overlapping county, school district, state, and any relevant special districts. By

Key Takeaways

► UAAL per capita is a major indicator, as it represents how much each resident would need to pay to fund the liability and can vary compared with funded ratio.

► UAAL per capita should be analyzed on both a direct and overlapping basis.

► The median aggregate UAAL per capita is $3,550.

► Three cities have aggregate UAALs per capita of less than $1,000.

► Eight cities and Puerto Rico have total unfunded liabilities exceeding $6,000.

► Actuarial assumptions can have a significant impact on estimated liabilities.

► Current municipal bankruptcies could have a significant impact on the sanctity of pension benefit protections.

including overlapping jurisdictions, we gain a firmer grasp of the feasibility for governments to collect this amount of revenue over a period of time from residents.

We find the unfunded actuarial accrued liability, or UAAL, per capita to be the most useful measurement to analyze this aggregate liability, as it represents the amount each person in the respective entity would need to pay to fully fund the liability for all relevant pension plans. It also accounts for the fact that pension plans from various levels of government (ex. city and state) draw from overlapping, although noncoterminous population bases. This is important because, ultimately, this unfunded liability will be paid for through governmental revenue, namely taxes. This is a similar method to how overlapping debt for entities is commonly examined in credit analysis. Measuring the UAAL per capita allows us to see the true magnitude of the burden faced by residents.

Findings

The median aggregate UAAL per capita is $3,550 for the 26 entities included in this analysis, which is a significant but manageable burden over a long-term period. However, the aggregate pension burden varies drastically among the entities. Three cities, Washington, D.C., Charlotte, N.C., and Memphis, Tenn., have aggregate UAALs per capita of less than $1,000. Washington is the strongest, having a negative $409 per capita liability. We point out that Washington is rare in that it does not have overlapping jurisdictions contributing to its aggregate pension liability. Additionally, it was the only city to have an overfunded pension system with a funded ratio of 104.9%, leading to its negative unfunded liability.

Charlotte and Memphis benefit from having strong state pension systems. Memphis also has a strong city-administered single-employer pension system, while Charlotte's main pension plan is a statewide, cost-sharing, multiemployer plan.

On the other side of the equation, eight cities and Puerto Rico have total unfunded liabilities exceeding $6,000. Chicago, Puerto Rico, New York, Boston, and Philadelphia lead the pack with per capita burdens of at least twice the median. Boston and Philadelphia both have poorly funded local and state pension plans, leading to aggregate per capita burdens that are well above average. Chicago, Puerto Rico, and New York are discussed in more detail below.

Chicago

Chicago has the highest aggregate per capita unfunded pension burden at more than $18,000, which is greater than 5 times the median. The city itself has been battling a high unfunded pension liability for many years, which currently stands at $19.4 billion or $7,149 per capita. Layering in the state's $94.6 billion unfunded liability, the aggregate unfunded liability for city residents increases to $14,570.

Further complicating the issue are multiple overlapping jurisdictions. In addition to the state pension system, Chicago residents also contribute to the unfunded liability of Chicago Public Schools, or CPS, and Cook County. School systems are typically covered by a state pension plan, or in some cases, under local city or county plans, but CPS is unique in that the majority of its pension benefits stem

from a single-employer plan. CPS adds $2,959 per capita to residents' aggregate pension burden. Cook County accounts for the remaining overlapping unfunded pension liabilities at $1,068 per capita.

We note that the state passed a sizable pension reform package in December, which should help ease the state's portion of this burden going forward. However, the magnitude of the per capita liability facing Chicago residents is expected to remain immense going forward, barring additional pension reforms on the local level.

Puerto Rico

Puerto Rico has garnered significant headlines of late as the beleaguered state of its pension plans has drawn increased scrutiny, and rightfully so. As Morningstar pointed out in its State of State Pensions report, released in September, the commonwealth's pension system is abysmally funded, having by far the lowest funded ratio and highest UAAL per capita of any single state or city included in our analysis. According to the 2012 actuarial valuations, Puerto Rico pension plans have an aggregate funded ratio of 8.4% and a UAAL of $9,987 per capita. For a single entity, whether state or city, this is the highest UAAL per capita and the lowest funded ratio. However, due to the lack of overlapping jurisdictions, the aggregate per capita burden remains below that of Chicago and comparable to New York City.

Puerto Rico also passed substantial pension reform in April 2013 (Act 3), switching new members of its largest pension plan (the Employees' Retirement System, or ERS) from a defined benefit plan structure to a defined contribution. The reforms also raise the retirement age, increase employer contributions, and lower benefits for some public workers for ERS members. Though we view the recent reform package as a significant and necessary first step to prevent the system from running out of assets within the next 10 years, we believe that Puerto Rico's large pension liability will remain a large fiscal burden for the foreseeable future.

New York City

At more than $8,400, New York City's UAAL per capita for its own pension plan was the highest among all cities surveyed in Morningstar's State of City Pensions report. Since the release of the report, the pension burden has increased slightly with the release of the most recent actuarial report to $8,726. However, the state plan is well funded, adding only slightly more than $1,110 to the aggregate per capita liability. Although the combined unfunded liability of $9,482 per capita is still quite high, it lies well below that of Chicago primarily because of the well-funded state plan.

Importance of Actuarial Assumptions

When addressing the aggregate liability, we think it is necessary to mention the importance of actuarial assumptions and methods, which can have a substantial impact on the perceived liability for pension plans. Pension accounting is complex and relies heavily on actuarial modeling. Assumptions and results, however, vary across plans, including the interest rate assumptions, amortization period, and so on. Even experts often can't agree on some ''best practices,'' which makes pension analysis difficult.

To illustrate the importance of these assumptions, we will discuss two examples of cities included in our analysis: New York City and Detroit.

New York City

For the actuarial valuation released in 2011 (2009 lag year), New York City's pension system on was looking quite strong with an aggregate funded ratio of roughly 92% and an unfunded liability per capita just north of $1,100.

However, the outlook changed drastically with the release of the actuarial valuation in 2012. The unfunded liability jumped from $9 billion to almost $70 billion. The funded level dipped to a low 60% and the unfunded liability increased to over $8,000. The just released 2013 valuation shows similar figures.

Exhibit 1: Impact of Actuarial Changes in New York City

Fiscal Year	2011	2012	2013
Actuarial Year	2009	2010	2011
Actuarial Cost Method	Frozen Initial Liability	Entry Age	Entry Age
Assumed Interest Rate (%)	8%	7%	7%
Aggregate AAV ($000s)	104,429,788	105,268,711	111,038,800
Aggregate AAL ($000s)	113,598,462	175,115,912	182,987,200
Aggregate UAAL ($000s)	9,168,674	69,847,201	71,948,400
Funded Ratio (%)	91.9	60.1	60.7
UAAL Per Capita	1,112	8,472	8,726

So what changed? Assets for the plans, or AAV, actually increased in each of the years, which would not normally lead to a significant decrease in the funded level. The negative impact was with the actuarial accrued liability, or AAL. Two changes in actuarial methods and assumptions drove this: the actuarial cost method and the assumed interest rate. The interest rate is the most straightforward. This was decreased in 2012 from 8% to 7% because of recent market trends. We've seen this in many cases in recent years as plans are getting a handle on the impact from the recent recession.

The actuarial cost method shifted from a frozen initial liability to the entry age method, which is the most commonly used among state and local plans. With the implementation of the new GASB legislation on pensions (67 and 68) in the coming years, only the entry age normal method will be allowed if entities wish to comply with GASB standards.

Detroit

For Detroit, one of the most hotly debated portions of the city's bankruptcy proceedings has been the city's pension liability. As discussed in earlier Morningstar reports, the emergency manager has included an estimated $3.5 billion of unfunded pension obligations as part of the city's outstanding liabilities in its bankruptcy filing. However, the city's actual unfunded pension liability is highly contested. When attempting to determine the city's true pension liability, there are three significantly different numbers being presented:

▶ Combined UAAL as of last actuarial valuation: $643.8 million
▶ The city's total estimated actuarial UAAL for fiscal year 2012: $977 million
▶ The emergency manager's UAAL estimate: $3.5 billion

The main differences in the reports commissioned by the emergency manager and the city's current actuarial valuation are with the actuarial assumptions and methods included in the analysis. Three variables in particular differ among the reports: the amortization period, the asset valuation method, and the assumed rate of return.

Amortization period was shortened from 30 years, which is typically seen, to 15 and 18 years for the two plans. The investment rate assumption was decreased from 8% to 7%. Additionally, the valuation method used for determining actuarial assets was altered. The actuarial value of the plan recognizes gains and losses in the market value of plan assets dependent on the asset valuation method. There are two types of methods: market value and smoothing, with smoothing being the most common of the two.

Under the market value method, plans recognize the full amount of actual gains or losses at the end of each fiscal year. Smoothing incorporates any deviation between expected returns and actual results over a period of years. Assuming a five-year smoothing period, which is common for public pension plans, 20% of any variation between expected and actual results for a given year would be incorporated into the actuarial valuation of assets, or AVA, for each of the next five years.

In the long run, actual assets and liabilities for a plan remain unchanged no matter which method is used. However, the choice of the asset valuation method and length of smoothing period can have a major impact on how pensions are presented from year to year. A plan would appear stronger during a time of market growth using the market value method compared with the smoothing method and weaker during a time of investment losses.

Even though the industry norm is to use a five-year smoothing period, Detroit has traditionally used a seven-year smoothing cycle. For the city, this currently means that it will be absorbing the large investment losses from 2009 through 2016. However, the plan's investments also outperformed their assumed returns significantly in 2007 and 2011, which will help offset that loss. These gains are also subject to smoothing.

The emergency manager has chosen to use the market value of assets, or MVA, for determining the city's liability for the purpose of the bankruptcy filing. While using the market value for assets is a fundamentally correct method for identifying the city's current liabilities for a point in time, it does magnify fluctuations in the stock or bond markets, which can cause significant swings in asset values over time.

The impact of the city's bankruptcy on its pension liabilities is discussed further in the Municipal Bankruptcies section of this report.

In short, actuarial valuations and our analysis based on these valuations remain the best method available for determining the health of pension plans, including the UAAL per capita. However, there are limitations to this analysis due to the lack of industry consensus on major assumptions used for determining pension liabilities. Analysts should note these assumptions when examining pensions and realize the impact they have on estimated liabilities.

Municipal Bankruptcies

While municipal bankruptcies remain rare, two ongoing Chapter 9 filings are of particular importance to pension analysis and should be considered when looking at the aggregate pension liability.

Detroit

In December, Federal Bankruptcy Court Judge Steven Rhodes ruled that Detroit is eligible for Chapter 9 bankruptcy. The city had filed for bankruptcy protection earlier in the year, arguing that it was not able to continue to deliver services while repaying its estimated $18 billion of liabilities. Included in this estimated $18 billion of liabilities is the estimated $3.5 billion pension UAAL put forth by the emergency manager, discussed above.

Although it was expected that the city would be deemed eligible for Chapter 9, Rhodes surprised many by ruling that he will allow pension benefits to be impaired as a part of Detroit's bankruptcy process. The Michigan Constitution protects pension benefits as a "contractual right." One of the most controversial questions in Detroit's case has remained whether the city's pension benefits could be impaired in bankruptcy or whether the state's constitution fully protects them. Rhodes clearly ruled that the state's protections do not apply to the federal bankruptcy court. Federal bankruptcy law allows debtors to impair contracts, and pensions are not entitled to "any extraordinary attention" compared with other debts. This does not necessarily mean that the judge will confirm a plan that severely impairs pension benefits, but it does provide an answer to this fundamental question for now.

The ruling is a watershed event for pensions going forward as it answers the prominent question of how much protection a state's constitution provides in a federal bankruptcy case. The ruling that pension benefits do not warrant additional protection above that of other debts and contracts is significant.

San Bernardino

For employees of San Bernardino, pension benefits are provided through California Public Employees' Retirement System, or CalPERS, a cost-sharing multiple-employer plan. San Bernardino has missed approximately $13 million of its required contributions to the plan since it declared bankruptcy, which it may not make up and would therefore be considered an impairment to CalPERS. Similar to Detroit, California pensions are also protected by the state constitution and statute. According to the National Conference on Public Employee Retirement Systems, California case law has found that "a public employee's pension constitutes an element of compensation, and a vested contractual right to pension benefits accrues upon acceptance of employment. Such a pension right may not be destroyed, once vested, without impairing a contractual obligation of the employing public entity[1]." San Bernardino is the only city to have ever halted payments to the fund. Stockton, which is also undergoing bankruptcy proceedings, has continued to make timely and full payments to CalPERS during the process. CalPERS has filed an objection to San Bernardino's bankruptcy filing, which is currently being litigated.

The bankruptcies of Detroit and San Bernardino have potentially far-reaching implications on how pension liabilities and state protection of benefits are viewed in bankruptcy proceedings. To the extent they are successful in trimming these liabilities, other entities that cannot afford to support operations, debt payments, and retiree costs at the same time may look to emulate their actions. However, we note that not all local entities are able to file for bankruptcy while state protection of pension benefits also varies on a state-to-state basis.

Parting Thoughts

Morningstar believes pensions will play an integral role in determining an entity's fiscal health and overall credit quality. The UAAL per capita is a significant indicator as unfunded pension liabilities will be funded by residents. The aggregate liability further illuminates the issues as it shows the full burden for taxpayers in a particular entity. M

Footnotes
1. National Conference on Public Employee Retirement Systems, "State Constitutional Protections for Public Sector Retirement Benefits," 2007.

Appendix I: Aggregate Pension UAAL Per Capita by City

City	State	Direct	Total
Washington	DC	−409	−409
Charlotte	NC	n/a	585
Memphis	TN	317	893
Nashville	TN	876	1,291
San Antonio	TX	251	1,623
Seattle	WA	1,837	1,997
El Paso	TX	736	2,149
Fort Worth	TX	986	2,377
Houston	TX	1,196	2,622
Dallas	TX	1,373	2,733
Austin	TX	1,571	3,009
Phoenix	AZ	1,649	3,351
Indianapolis	IN	1,011	3,426
Jacksonville	FL	2,586	3,675
Detroit	MI	911	3,758
Denver	CO	709	5,356
San Diego	CA	1,642	5,973
San Jose	CA	1,542	6,014
Los Angeles	CA	1,895	6,426
San Francisco	CA	2,866	6,453
Columbus	OH	n/a	6,814
Philadelphia	PA	3,308	7,057
Boston	MA	4,465	7,802
New York	NY	8,726	9,842
Puerto Rico	PR	9,987	9,987
Chicago	IL	7,149	18,596
Median			**3,550**

Appendix II: Methodology

The cities included in this analysis were determined by using the U.S. Census population statistics. The 25 most populous cities, as well as the Commonwealth of Puerto Rico, were selected.

Data for this analysis was gathered from publicly available government comprehensive annual financial reports (CAFRs), pension plan CAFRs, and actuarial valuations. The most recent available data was used from the available sources. Since pension data reported in government CAFRs is often dated, current actuarial reports were used, when available. In certain instances, follow-up phone calls were made to specific entities and/or plans to clarify data.

Aggregate data for funded ratios, liability, and UAAL per capita was compiled for defined-benefit plans, or those that have a defined-benefit component, to which the entity contributes and/or is legally liable for benefits. While most plans have a new actuarial valuation on an annual basis, some plans are revalued every two years. For governments that had a combination of plans that were revalued annually and biannually, the biannual plan data points were held constant from the year prior in nonvaluation years.

Appendix III: Glossary

Actuarial Accrued Liability (AAL)
The present value of future benefits earned by employees to date.

Actuarial Cost Method
The actuarial cost method is the process used by the actuary to allocate the projected liabilities of the plan to prior years (the actuarial accrued liability), the current year (the normal cost), and future years.

Actuarial Value of Assets (AVA)
The actuarial value of the plan's assets. This amount incorporates investment gains and losses dependent upon the asset valuation method.

Agent Multiemployer Plan
In agent multiemployer plans, assets are pooled but legally restricted to pay pension obligations of their specific employer

Annual Required Contribution (ARC)
The ARC is determined by the actuary during the valuation of the plan and equals the amount that would need to be paid during the current fiscal year to fund benefits earned in that year (the normal cost) plus a portion of any unfunded liability from past years.

Asset Valuation Method
The actuarial value of the plan recognizes gains and losses in the market value of plan assets dependent on the asset valuation method.

Cost-sharing Multiemployer Plan (CSME)
In CSME plans, the participating employers pool their obligations and assets. Assets of the plan can be used to pay pension obligations of any participating employer.

Defined-benefit Plan (DB)
For defined-benefit (DB) plans, pension payments operate as an annuity, with each employee entitled to a specific annual payment based on a benefit formula. These formulas generally incorporate years of service, salary, and a multiplier variable. Specific benefit formulas vary among plans and often within plans, dependent on an employee's start date and/or employee classification (public safety, general, management, and so on). Defined-benefit payments can either be constant for the life of the payment, adjusted annually for cost of living, or adjusted occasionally for cost of living increases as seen fit by the overseeing party. The government is responsible for funding this liability no matter what return it achieves on its investments.

Defined-contribution Plan (DC)

Defined-contribution plans are similar to 401(k)s found in the private sector. The government is obligated to contribute a certain amount annually until retirement, while the actual benefit is subject to market returns. The government has no liability to make up for investment losses.

Entry-age Normal Actuarial Cost Method

This allocates the cost of benefits from the time an employee is hired (the entry age) to the date of expected retirement either as a level dollar amount or as a percentage of payroll.

Funded Ratio

The percentage of the AAL that is currently funded through the AVA. This is calculated by dividing AVA by the UAAL.

Market Value Method of Asset Valuation

Under the market value method, plans recognize the full amount of actual gains or losses at the end of each fiscal year.

Net Pension Liability (NPL)

The NPL is the total pension liability (actuarially determined present value of future benefits that are due to work already completed by plan participants) less the plan net position (plan assets set aside in a trust or restricted for benefit payments).

Smoothing Method of Asset Valuation

Smoothing incorporates any deviation between expected returns and actual results over a period of years. Assuming a five-year smoothing period, which is common, 20% of any variation between expected and actual results for a given year would be incorporated into the AVA for each of the next five years.

Unfunded Actuarial Accrued Liability

The difference between the AVA and the AAL.

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22 West Washington Street

Chicago, IL 60602 USA