Update on the Funded Status of State and Local Pension Plans – FY 2018

By Jean-Pierre Aubry and Caroline V. Crawford*

Public pension plans are a key component of the fiscal health of state and local governments, holding just over $4 trillion in assets for 20 million active and retired public sector employees.[1] Given their significance, monitoring the status of these systems' finances is important for government officials, employees, and taxpayers. This annual update and the accompanying appendices rely on the Public Plans Database (PPD) to report on the funded status of public pensions.[2]

The update is organized as follows. The first section reviews the change in the ratio of public pension assets to liabilities – the funded ratio – from 1990 to 2018 (the most recent year of data) and separately describes the factors driving changes to assets and liabilities since 2001. The second section briefly explores how to improve the trajectory of public plan funded ratios – highlighting the role of the assumed return. The final section concludes that liability growth slowed dramatically from 2001 to 2018, but still exceeded asset growth over the period – driving down the funded ratio. While more stringent funding methods would have modestly improved the trajectory of plan assets, significant change requires lowering the assumed return.

Dissecting the Change in Funded Ratio

The aggregate funded ratio for state and local pension plans – i.e., the ratio of assets to liabilities – increased sharply in the 1990s on the back of a booming stock market, declined steadily from 2001 to 2011 as plans struggled through two financial downturns, and has remained relatively steady since 2012 (see Figure 1, page 2).[3]

Fundamentally, changes to the funded ratio are determined by the growth in assets relative to the growth in liabilities. For example, from 2017 to 2018, actuarial assets grew by 4.7 percent (from $3.65 trillion to $3.82 trillion), while liabilities grew by 3.8 percent (from $5.05 trillion to $5.25 trillion). The larger percentage change in assets increased the funded ratio slightly from 72 percent to 73 percent.[4] The following sub-sections break down changes in assets and liabilities in 2002 and 2018 to highlight key components underlying their long-term trends.

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Figure 1. *Aggregate State and Local Pension Funded Ratios, FY 1990-2018*
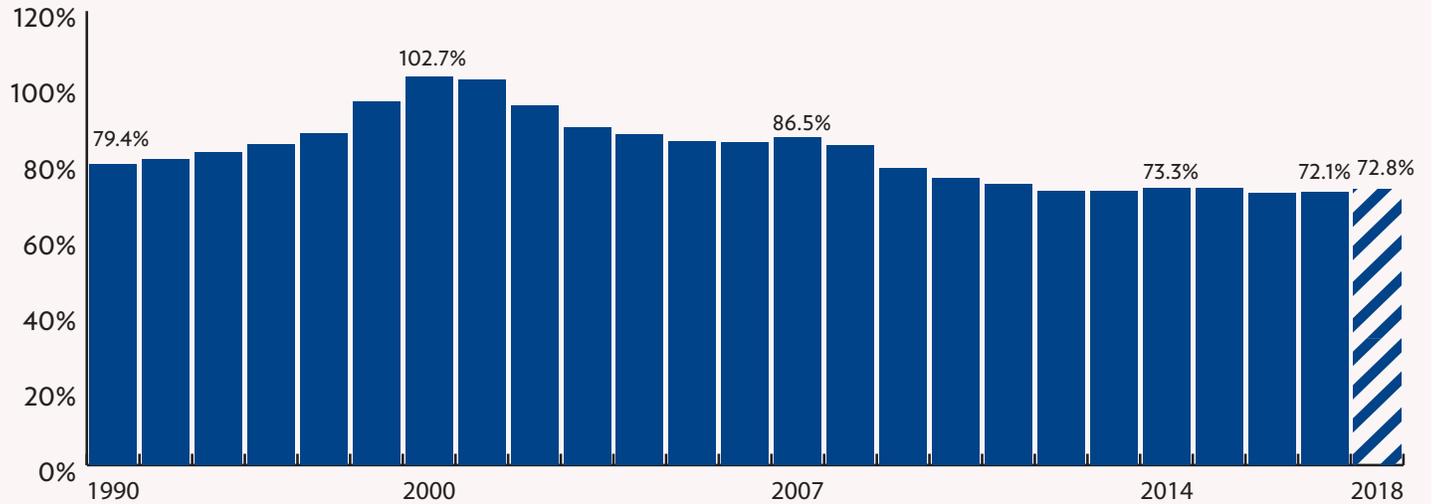
Sources: Public Plans Database (PPD) (2001-2018); and Zorn (1990-2000).

The Annual Change in Liabilities

The annual change in liabilities is primarily due to interest on the existing liability (based on the prior year's discount rate) and liability flows (the normal cost minus benefits paid). Occasionally, other factors such as assumption changes, actuarial experience, and changes to accrued benefits can significantly affect the annual change in liabilities.

Annual liability growth has steadily declined each year from 7.7 percent in 2002 to 3.8 percent in 2018. Figure 2 highlights the role that a declining discount rate and increasingly negative liability flows have played in declining liability growth by showing how interest growth, net liability flows, and other factors contributed to liability growth in 2002 and 2018.[5]

Figure 2. *Percentage Change in Total Accrued Liabilities in 2002 and 2018, by Source*
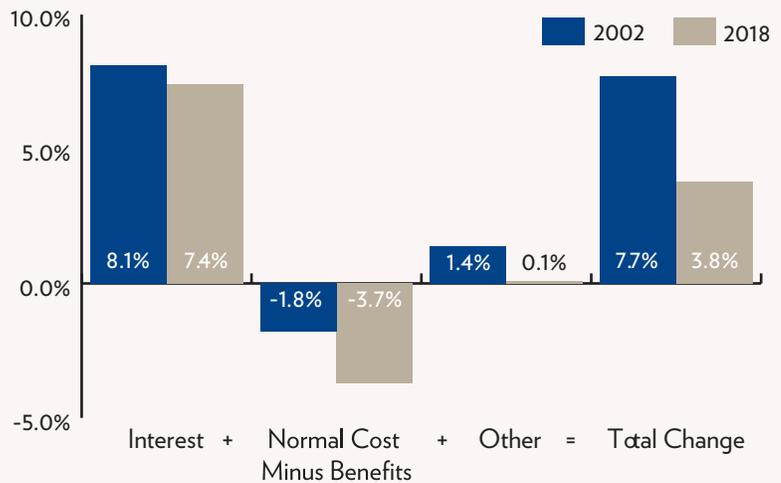
Note: Interest growth on liability is based on the prior year's discount rate. Normal cost accruals are estimated by multiplying the prior year's normal cost rate by the current year's payroll. Benefits are taken from the pension plan statement of changes in assets. Any remaining difference between the actual change in liabilities and the estimated change due to interest, normal cost and benefits is attributed to "other," which conceptually includes the net impact of assumption changes, actuarial experience, and benefit changes.

Source: Authors' calculations based on PPD (2018).

The Annual Change in Assets

The change in assets is primarily attributable to investment returns and cash flows (contributions minus benefits). To illustrate this point, Figure 3 displays how investment returns and cash flows contributed to the change in actuarial assets in fiscal years 2002 and 2018 (the percentage change in actuarial assets will differ significantly from that of market assets during periods of extreme market volatility because actuarial assets smooth investment performance, typically over a five-year period).

Change in the Funded Ratio Since 2001

To assess the trajectory of the funded ratio since 2001, the analysis switches from year-to-year changes to long-term averages. For liabilities, interest growth (based on the discount rate, which is also the assumed return) averaged 7.8 percent per year and liability flows averaged -2.8 percent. Combined with other relatively minor factors such as assumption changes, actuarial experience, and changes to accrued benefits, actuarial liabilities have grown 5.6 percent per year since 2001.

In terms of asset growth, the average annualized investment return for public plans was 5.9 percent (much lower than the assumed return mentioned above) and cash flows averaged about -2.7 percent. Combined with the relatively small impact of actuarial smoothing, actuarial assets have grown by only 3.5 percent per year since 2001.

Because actuarial assets and liabilities grew by 3.5 percent and 5.6 percent respectively,

the aggregate state and local funded ratio declined from 103 percent in 2001 to 73 percent in 2018.[6]

Improving the Trajectory of Actuarial Assets

As mentioned above, asset growth is driven by two factors: investment returns and cash flows. Within these two components, plans have the most control over the contributions that go into cash flows. Analysts often highlight the importance of paying contributions that are determined using best practices for funding, such as level-dollar amortization (which does not back-load costs in the way a level-percent-of-pay method does) and shortened amortization periods. While these best practices do make plans better off, the adequacy of pension contributions ultimately depends on

If returns fall short, the contributions will be inadequate – no matter how stringent the funding method.

Figure 3. *Percentage Change in Actuarial Assets in 2002 and 2018, by Source*
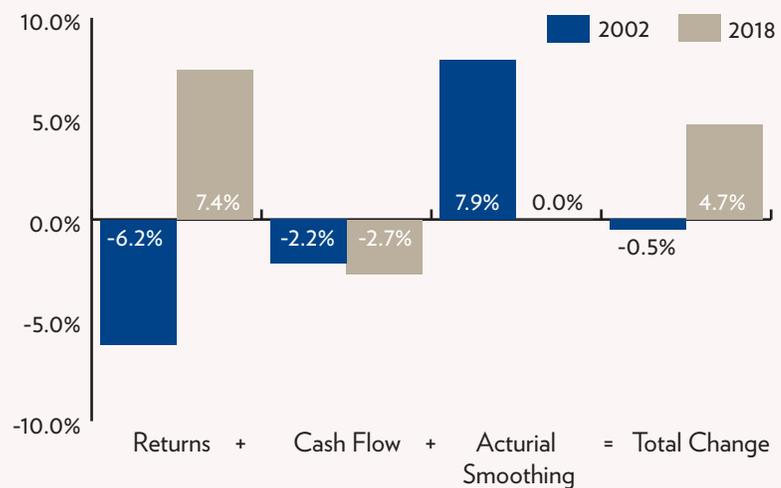
Note: Returns and Cash Flow represent the percentage change in market assets due to these factors. Any difference between the change in actuarial assets and the change in market assets from Returns and Cash Flow is attributed to Actuarial Smoothing.

Source: Authors' calculations based on PPD (2018).

achieving the assumed return. If returns fall short, the contributions will be inadequate – no matter how stringent the funding method.

Figure 4 compares actual contributions to: 1) required contributions using a stringent funding method (in this case, level-dollar amortization over 20 years); and 2) required contributions using a stringent funding method and a 5.9-percent assumed return. The stringent funding method increases contributions somewhat, but would only change the trajectory of assets modestly. But, also using a 5.9-percent assumed return results in contributions that are about 2.5 times greater than actual contributions in 2001 and 1.5 times greater than contributions in 2018. To relate this back to cash flows, the change in contributions would have increased cash flows by 4.4 percent of assets in 2002 (from -2.7 percent to 1.7 percent) and 3.4 percent of assets in 2018 (-2.7 percent to .7 percent) – material improvements to the trajectory of assets in those years.

Conclusion

Fundamentally, the path of the funded ratio for public plans depends upon the growth of actuarial assets relative to the growth of actuarial liabilities. Liability growth slowed dramatically from 2001 to 2018, but still exceeded asset growth over the period – driving down the funded ratio from 103 percent in 2001 to 73 percent in 2018. While more stringent funding methods would have modestly improved the trajectory of plan assets from 2001 to 2018, significant change requires also using a lower assumed return.

Figure 4. *Contributions as a Percentage of Payroll and Under Two More Stringent Funding Scenarios*
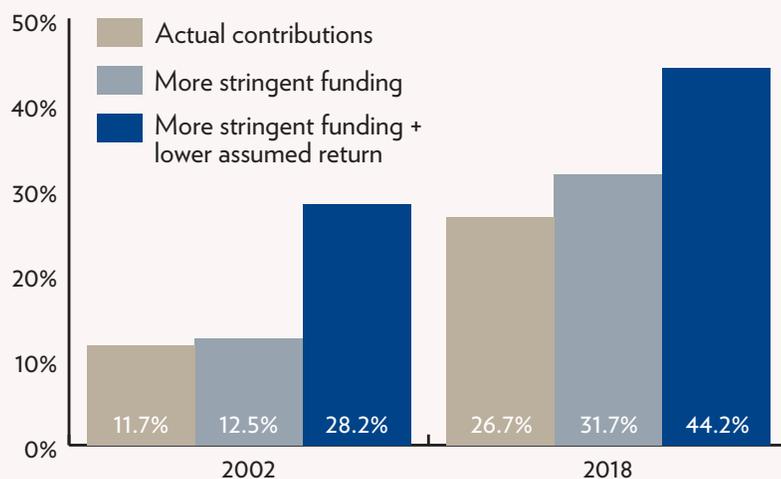
Source: Authors' calculations based on PPD (2018).

Appendix A: Distribution of Plan Funding under Traditional GASB Measures

While the aggregate funded ratio provides a useful measure of the public pension landscape at large, it can obscure variations in funding at the plan level. Figure A1 shows the distribution of 2018 funded ratios for the 190 plans in the PPD. This figure separates PPD plans into thirds based on their current funded status (under traditional GASB methods). The funded-ratio boundaries for the three groups were 16 to 67 percent for the bottom third, 68 to 80 percent for the middle third, and 81 to 111 percent for the top third. The average 2018 funded ratio for each group was 55 percent for the bottom third, 74 percent for the middle third, and 91 percent for the top third.

Figure A1. *Distribution of Plans by Funded Ratio, 2018*
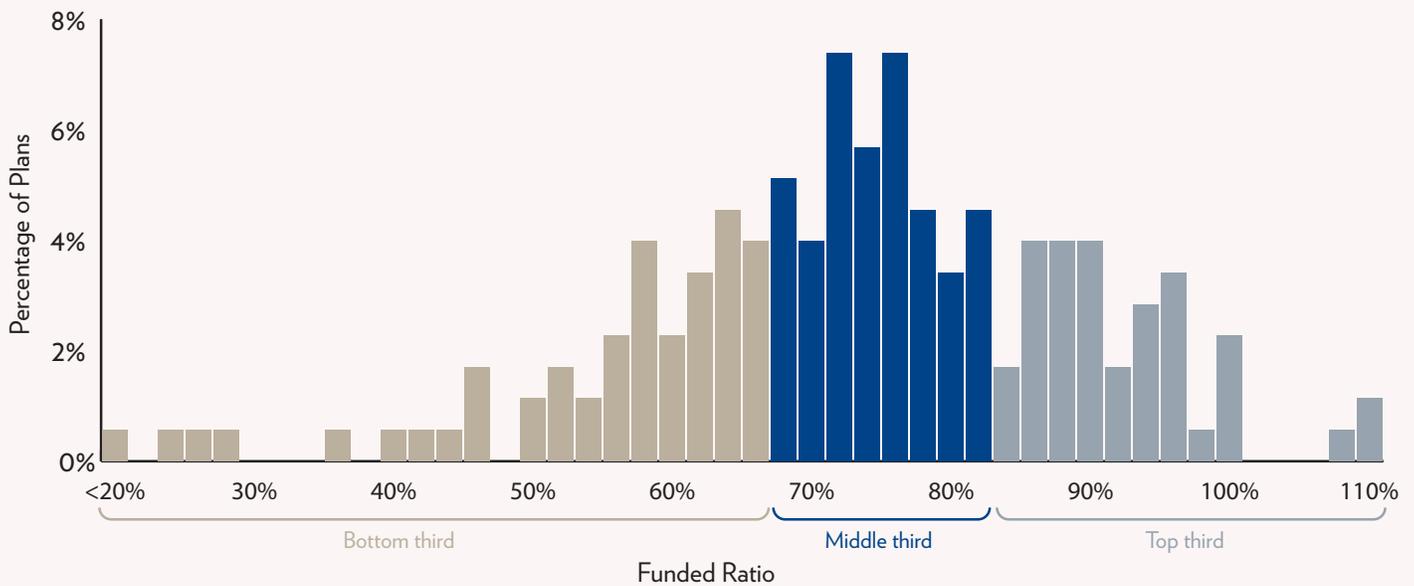
Source: PPD (2001-2018).

Figure A2. *Average Funded Ratios by 2018 Funded Status, 2001-2018*
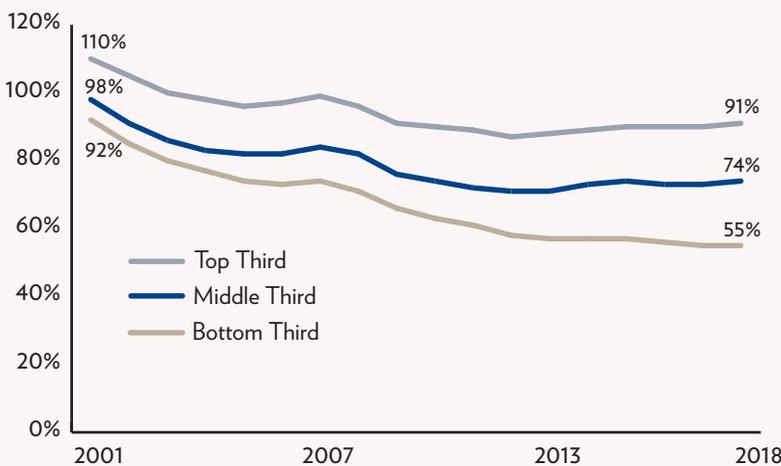
Source: PPD (2001-2018).

Figure A2 tracks the average funded status for each third from 2001 to 2018. While the bottom third has been consistently less funded throughout the period, the average funded ratios for all groups were above 90 percent in 2001. However, over time, the funded status of the three groups has grown apart. Much of this divergence has occurred since the financial crisis as the worst-funded group has continued to deteriorate while the other two groups have stabilized. As a result, the gap between the top and bottom group in 2018 was 36 percentage points – twice as large as in 2001.

Appendix B: Funded Status under GASB 67 Standards

The 2014 GASB 67 standards introduced two significant changes to the reporting of pension assets and liabilities. First, they require plans to report assets at market value rather than actuarially smoothed. While plans must use market value for reporting under GASB 67, they continue to use the actuarially smoothed value for funding purposes because it exhibits less volatility (see Figure B1).[7]

Figure B1. *Market Assets vs Actuarial Assets FY 2001-2018, in Trillions of Dollars*
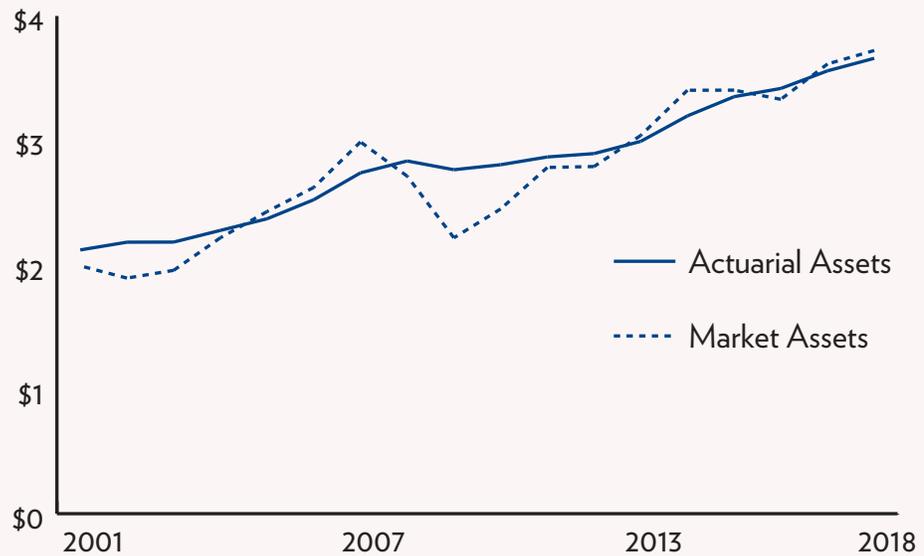
Source: PPD (2001-2018).

Second, the standards require plans to value liabilities using a blended rate that reflects: 1) the plan's assumed return for the portion of benefits projected to be covered by plan assets and contributions; and 2) the yield on high-grade municipal bonds for any portion of benefits that is to be covered by other resources. Table B1 lists the plans that currently use a blended discount rate that is 1 percentage point or more below their assumed return. Due to the lower discount rate, these plans (they make up less than 10 percent of total state and local pension membership) report significantly larger liabilities under the new GASB standards relative to traditional standards. However, the vast majority of plans use their assumed return to value liabilities under the GASB 67 standards (as they anticipate having sufficient assets and contributions to cover benefits) resulting in little difference between liability values reported under the new and traditional GASB standards.

Table B1. *Plans Adopting a Significantly Lower GASB 67 Blended Rate, FY 2019*

Plan	Total Membership	Rate		Funded Status	
		Actuarial	GASB 67	Actuarial	GASB 67
New Jersey PERS	431,955	7.5%	5.7%	55.1%	40.4%
Texas ERS	268,738	7.5%	5.7%	70.2%	57.9%
New Jersey Teachers	260,418	7.5%	4.9%	43.1%	26.5%
New Mexico Educational	119,898	7.3%	5.7%	63.5%	52.2%
New Jersey Police & Fire	86,904	7.5%	6.5%	69.5%	57.9%
Cook County ERS	53,171	7.3%	5.0%	60.8%	45.4%
Texas LECOS	50,351	7.5%	4.5%	65.6%	45.0%
North Dakota PERS	41,185	7.8%	6.3%	72.5%	63.5%
St. Louis School Employees	10,116	7.5%	4.8%	71.6%	49.4%
Dallas Police and Fire	9,300	7.3%	4.1%	49.4%	25.5%
Birmingham RRS	7,392	7.5%	5.4%	73.4%	59.5%
Charlotte Firefighters' RS	1,771	7.5%	6.2%	87.6%	75.9%

Notes: These plans currently use a blended discount rate that is ≥1 percentage point below their assumed return. Dallas Police and Fire and Birmingham RRS represent 2017 data.

Between 2016 and 2018, six plans using a significantly lower blended rate – Colorado State, Colorado School, Minnesota Teachers, Minnesota State, Kentucky Teachers, and Chicago Municipal – restored use of the long-term assumed return for discounting liabilities. Each of these six plans implemented contribution increases – either through one-time legislative appropriations or increases to the annual actuarial rate – to prevent the depletion of assets and ensure the full payment of benefits to current members in their projections.

Source: PPD (2001-2018).

For comparison purposes, Figure B2 shows the aggregate funded status for state and local plans under both traditional and new GASB standards from 2014 to 2018. While the funded status under both standards is relatively similar, the ratio under the new standards is slightly more volatile due to greater fluctuations in market assets relative to actuarial assets.[8]

Figure B2. *Aggregate State and Local Pension Funded Ratios under Traditional and New GASB Standards, FY 2014-2018*
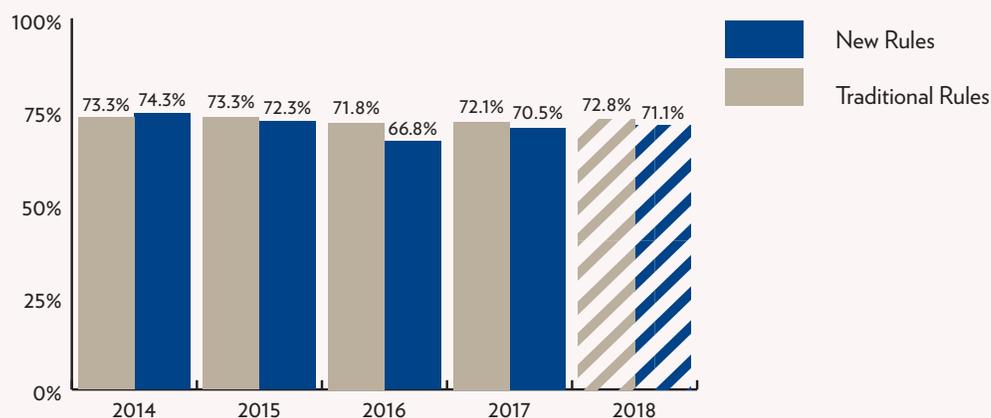
Source: PPD (2014-2018).

End Notes

1 U.S. Census Bureau (2018).

2 The PPD sample consists of 190 major pension plans (114 state and 76 local) that represent over 95 percent of total U.S. state and local pension assets and membership.

3 Aggregate data can obscure the heterogeneity among public plans. See Appendix A for data on the current distribution of plan funded status and how it has changed over time. For the funded ratios of individual plans, access the PPD's Interactive Data Browser, available at: https://publicplansdata.org/public-plans-database/browse-data.

4 Prior to 2014, public pension plans used the traditional Governmental Accounting Standards Board rules (GASB 25) to measure assets and liabilities for both accounting and funding purposes. New GASB rules introduced in 2014 (GASB 67) included significant changes to the measures of assets and liabilities for accounting purposes only. This report focuses on assets and liabilities measured under traditional GASB 25 standards because plans still use them for funding, and they allow for continuity with historical trends. For an update of the funded status based on new GASB 67 standards, see Appendix B.

5 The decline in the discount rate is because state and local plans generally discount promised benefits by the long-term expected return on assets held in the pension fund; and plans' expected returns have been incrementally declining due to lower inflation expectations (see Aubry et. al, 2019). The increasingly negative liability flows are because the ratio of actives (for whom normal costs are accrued) to retirees (to whom benefits are paid) is declining as plans mature. If these trends continue, liability growth will continue to decline.

6 103%*((1.035/1.056)^17) = 73%.

7 Specifically, smoothing techniques adjust market asset levels by incrementally accounting for actual investment gains and losses relative to the expected performance based on the actuarially assumed return.

8 For multiple employer agency plans that do not report a funded ratio under the new rules, the funded ratio is calculated by dividing the net market assets reported on the pension fund's balance sheet by the plan's actuarially accrued liability.

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