CENTER FOR MUNICIPAL FINANCE

From High to Low:

Understanding How the Pennsylvania Public School Employees' Retirement System Became Underfunded

THE UNIVERSITY OF CHICAGO
Harris Public Policy

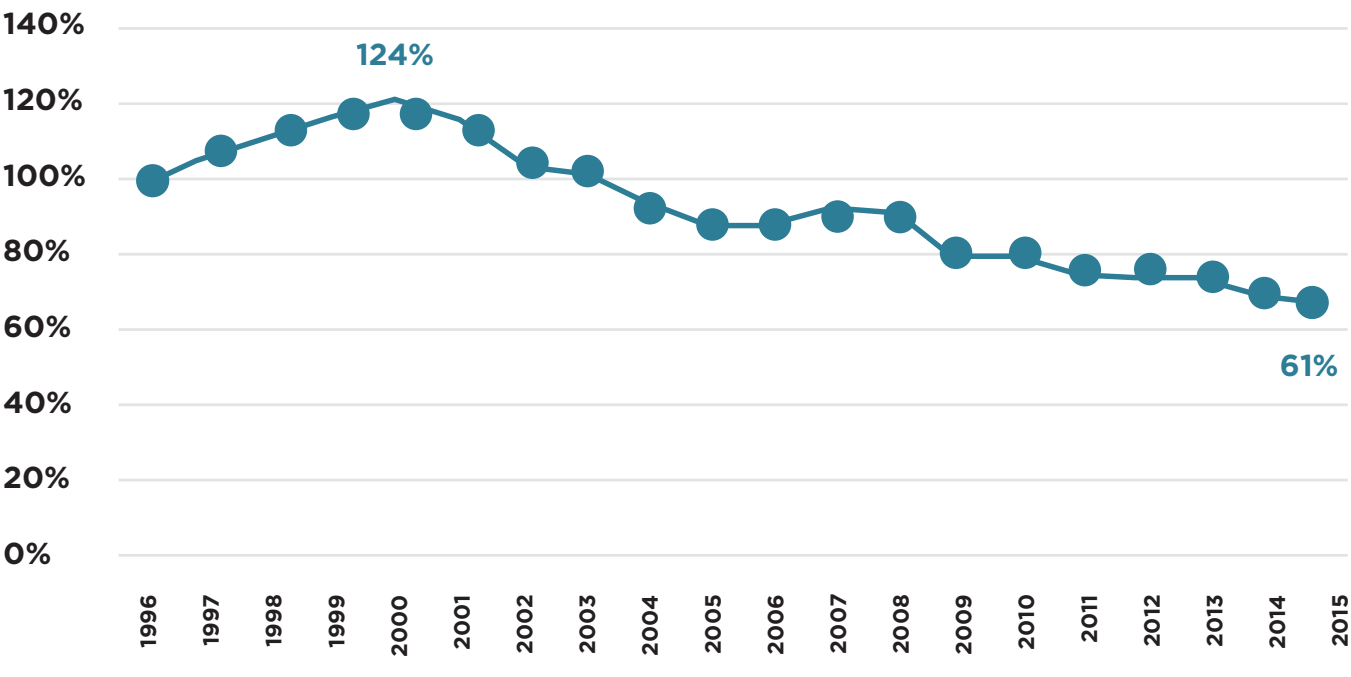
From High to Low: Understanding How the Pennsylvania Public School Employees' Retirement System Became Underfunded

INTRODUCTION

In 2000, the Pennsylvania Public School Employees' Retirement System (PA-PSERS) was a well-funded public pension system. In fact, PA-PSERS was so well-funded in 2000 that it had nearly $10 billion in excess assets. Fast-forward to 2015 and the Pennsylvania Public School Employees' Retirement System's finances had deteriorated significantly. As Figure 1 highlights, PA-PSERS' funded ratio, a measure of its financial health, declined throughout the 2000s from a high of 124% in 2000 to 61% by 2015.

FIGURE 1

PA-PSERS Funded Ratio History



As PA-PSERS' funded ratio declined its unfunded liabilities grew by $46.8 billion. We sought to understand the factors that contributed to that growth by analyzing data in PA-PSERS' annual Actuarial Valuation reports (see Appendix A for methodology details). From our analysis, we found that PA-PSERS' issues began in the early 2000s when lawmakers increased pension benefits and reduced employer contributions. However, the cost of the benefit increases could initially be absorbed because PA-PSERS' assets exceeded its liabilities. While benefit increases were responsible for growth in unfunded liabilities in 2001 and 2002 they were not the primary cause of the total growth between 2000 and 2015. Instead, the two major factors that resulted in the decline of PA-PSERS' finances were lower than assumed investment returns and insufficient employer contributions.

OVERVIEW OF PA-PSERS AND FACTORS AFFECTING GROWTH IN UNFUNDED LIABILITIES:

The Pennsylvania Public School Employees' Retirement System was created in 1917 and provides retirement benefits to public school teachers and employees. State law sets contribution requirements, and employees, school districts, and the Commonwealth of Pennsylvania all make contributions to PA-PSERS. In 2015, the system was the 20th largest public pension fund in the country, serving nearly 220,000 retirees and beneficiaries, and paid an average annual benefit of $25,119.[1] Table 1 highlights the demographics and finances of the Pennsylvania Public School Employees' Retirement System as of fiscal year 2015.

At the end of 2000, PA-PSERS had $49.29 billion in assets and $39.82 billion in liabilities, meaning the plan was overfunded. Over the course of our 15-year analysis (2000-2015) PA-PSERS' assets grew by $8 billion, while its liabilities increased by nearly $55 billion.[2] As Table 1 demonstrates, at the end of our analysis, in 2015, PA-PSERS had $57.36 billion in assets and $94.7 billion in liabilities, meaning that the plan was underfunded, with a funded ratio of 60.6%.

To understand what factors contributed to growth in PA-PSERS' unfunded liabilities, we analyzed data from its annual Actuarial

TABLE 1

Demographics and Finances of PA-PSERS as of Fiscal Year 2015

# Current Employees	# Retirees and Beneficiaries	Average Benefit	Assets ($ Billions)	Liabilities ($ Billions)	Unfunded Liabilities ($ Billions)	Funded Ratio
259,868	219,775	$25,119	$57.36	$94.70	$37.34	60.6%

Note: numbers do not add due to rounding

[1] 2015 CAFR, p. 6.
[2] 2015 and 2001 actuarial valuations. In 2000, liabilities were $39.82 billion and assets were $49.3 billion.

Valuation reports. We grouped data that accounted for year-to-year changes in unfunded liabilities into the following six categories:

Actuarial Assumptions
This category accounts for changes to actuarial assumptions, including changes to the investment rate assumption and mortality projections.

Actuarial Experience
This category accounts for differences between actuarial assumptions and actual experience concerning salary changes, termination rates, mortality rates, and other actuarial assumptions.

Benefit Changes
This category accounts for changes to the formula used to determine pension benefits and the cost-of-living adjustment; a positive number indicates benefit enhancements while a negative number indicates a benefit reduction.

Insufficient/(Excess) Contributions
This category accounts for differences between actual contributions and an amount that equals the employer normal cost plus interest on unfunded liabilities;[3] a positive number indicates the actual employer contribution was below what was needed to prevent growth in unfunded liabilities. This category also includes changes to unfunded liabilities caused by legislation that imposed restrictions on employer contributions, and further caused contributions to be less than what was needed to prevent growth in unfunded liabilities.

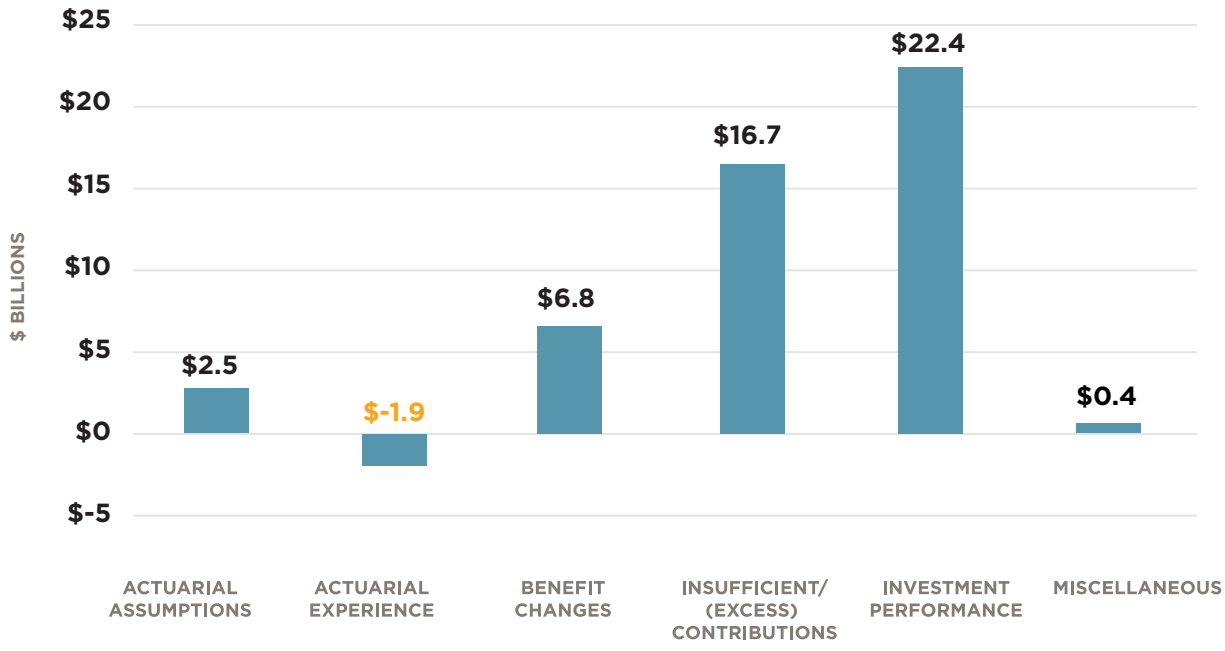
Investment Performance
This category accounts for differences between actual investment returns and actuarial projections; a positive number indicates that the actual investment performance was less than actuarial projections. Growth in unfunded liabilities due to poor investment performance can occur for two reasons: (a) investment losses, and (b) the actuarial return being less than the investment rate assumption. Due to data limitations, it was not possible to differentiate between underperformance and actual investment market losses.

Miscellaneous
This category accounts for factors that are not part of the other five categories.

The specific factors and their corresponding categories are detailed in Table 5 in Appendix A.

FIGURE 2

Factors Contributing to Changes in Unfunded Liabilities between 2000 and 2015 ($46.85 Billion)



[3]Note: this does not compare the actual contribution to the Actuarially Required Contribution (or Actuarially Determined Contribution, which has replaced the ARC). The actuarial contribution in determining the changes to unfunded liabilities is interest on the unfunded liabilities plus normal cost ("normal cost + interest"). An employer can pay the ARC, but unfunded liabilities can still grow because the ARC is less than the normal cost + interest contribution; for example, actual employer contributions equaled the ARC in 2003, but insufficient employer contributions still increased PA-PSERS' unfunded liabilities by $813 million that year.

Figure 2 shows the six factors that contributed to PA-PSERS' growth in unfunded pension liabilities between 2000 and 2015. As previously mentioned, over the course of that 15-year period, investment underperformance and insufficient contributions were the two largest factors. Out of the $46.85 billion increase in unfunded liabilities between 2000 and 2015, insufficient employer contributions accounted for 35.6% of the total growth while poor investment returns[4] accounted for 47.9% of the total.

The remainder of this report analyzes the main drivers that led to PA-PSERS' decline in financial condition between 2000 and 2015.

GROWTH IN UNFUNDED LIABILITIES DUE TO INVESTMENT UNDERPERFORMANCE

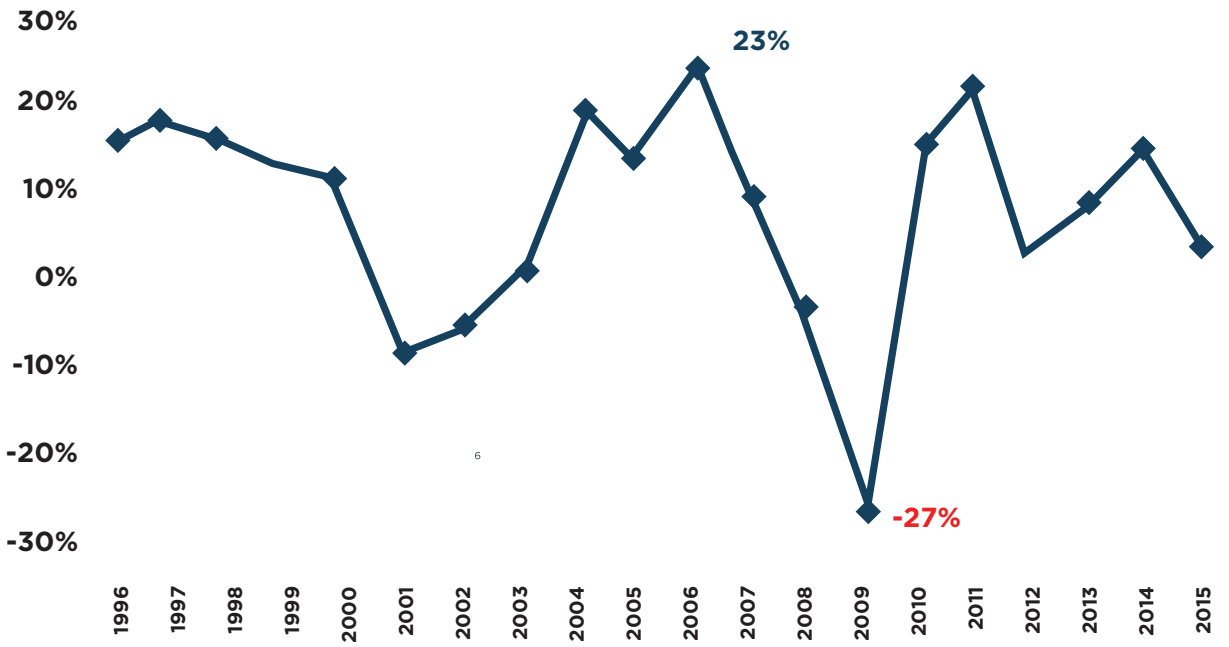
During the 15-year period of analysis, PA-PSERS' actuarial investment returns were significantly lower than its investment rate assumption, and this investment underperformance was the most significant factor in PA-PSERS' growth in unfunded liabilities.

Figure 3 shows PA-PSERS' market rate of return between 1996 and 2015. PA-PSERS only suffered from market losses in four years: 2001, 2002, 2008, and 2009.

Although actual market returns provide directional information about the investment performance of the fund, pension funds generally do not use these figures to determine

FIGURE 3

Annual Market Rate of Return on Investments



[4]In this report, we use the phrases "actual investment return" and actuarial rate of return interchangeably. It is important to note, however, that the actuarial rate of return is different than the market rate of return. PA-PSERS' uses the actuarial rate of return to determine employer contributions and its financial condition.

unfunded liabilities. Instead, an "actuarial value of assets" is typically determined. Pension systems use an investment rate assumption to estimate the present value of assets and liabilities, and the difference between assets and liabilities is used to calculate the funded status. In a given year, if the actuarial rate of return is below the investment rate assumption, even if the return is positive, unfunded pension liabilities will still grow. For example, if the investment rate assumption is 8%, but the actual investment return that year is 6% the unfunded liability will increase. Thus, while PA-PSERS had positive market returns for the majority of years in our analysis, its overall investment performance was less than its investment rate assumption,[5] and that underperformance led to increases in unfunded liabilities.

Smoothed Actuarial Returns

PA-PSERS uses an actuarial method called smoothing to determine its investment performance and calculate its assets. With smoothing, market returns and losses that differ from the investment rate assumption are smoothed over a specified period of time rather than being recognized in one year. Asset smoothing is used to mitigate volatility in the year-to-year change of assets. Since employer contributions are tied to a pension fund's unfunded liabilities smoothing is also meant to lessen significant year-to-year changes in employer contributions. Between 2000 and 2015, lawmakers passed legislation twice (Act 38 of 2002 and Act 120 of 2010) that changed PA-PSERS' smoothing period. Table 2 shows the smoothing periods used between 2000 and 2015.

If there are significant market rate losses in a given year, increasing the smoothing period has the impact of reducing unfunded liabilities that year because those market losses are recognized over a longer time period. In 2009, PA-PSERS' market rate investment performance resulted

TABLE 2

PA-PSERS' Smoothing Periods: 2000–2015

Years	Smoothing Period
2000	3 years
2001–2009	5 years[6]
2010–2015	10 years

[5]PA-PSERS' changed its investment rate assumption three times between 2000 and 2015. The investment rate assumptions were the following: 8.5% for 2000-2007, 8.25% for 2008, 8% for 2009-2010, and 7.5% for 2011-2015.
[6]PA-PSERS' 2001 actuarial report was revised to reflect the changes implemented by Act 38.
[7]The expected return was $4.9 billion, and thus the actuarial loss is the difference between the expected return ($4.9 billion) and actual return (-$16.2 billion). Figures for Market Return, Expected Return, and Difference are from p. 15 of the 2009 Actuarial Valuation.

in a loss of $16.2 billion, but since unfunded liabilities are based on the actuarial return (and not market return) the impact of that loss was a $21.1 billion decrease in assets[7]—this meant that holding everything else constant and without smoothing, PA-PSERS' unfunded liabilities would have increased by $21.1 billion. However, since PA-PSERS' uses smoothing that $21.1 billion loss in actuarial assets was spread over time, and Table 3 highlights how using smoothing impacts unfunded liabilities. Rather than absorb that entire $21.1 billion loss in actuarial assets in one year, PA-PSERS only recognized a $4.2 billion asset loss in 2009 because it used 5-year smoothing at the time.

Figure 4 demonstrates that PA-PSERS actuarial return (which is based on smoothing and comparing the market rate of return to the expected return) was consistently below its investment rate assumption for the majority of our analysis. In fact, out of 15 years, the actuarial rate of return only exceeded the investment rate assumption in three years.

The average actuarial return for the 15 years we examined was 6.05%, well below PA-PSERS' average investment rate assumption (8.08%). The mismatch between the investment rate assumption and actuarial returns resulted in significant growth in PA-PSERS' unfunded liabilities.

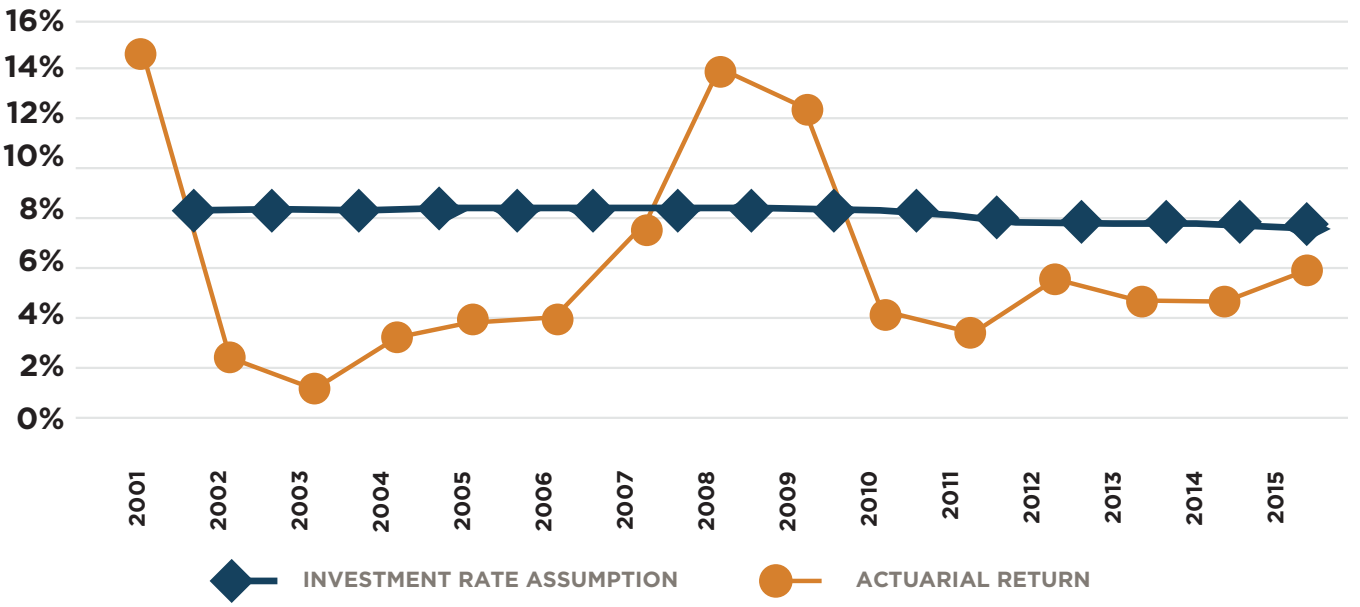
TABLE 3

Example of Impact of Actuarial Smoothing using 2009 Investment Performance ($ Billions)

	Actuarial Liabilities	Actuarial Assets	Unfunded Liabilities	Funded Ratio
No Smoothing (Entire $21.1 Billion Loss Recognized)	$75.6	$40.0	$35.6	53%
3-Year Smoothing (1/3 of $21.1 Billion Loss Recognized)	$75.6	$54.0	$21.6	71%
5-Year Smoothing (1/5 of $21.1 Billion Loss Recognized)	$75.6	$56.8	$18.8	75%
10-Year Smoothing (1/10 of $21.1 Billion Loss Recognized)	$75.6	$58.9	$16.7	78%

FIGURE 4

Annual Actuarial Return and Investment Rate Assumptions[8]



INSUFFICIENT EMPLOYER CONTRIBUTIONS:[9]

In addition to investment underperformance, PA-PSERS' financial condition was further exacerbated by insufficient employer contributions (contributions made by school districts and the Commonwealth of Pennsylvania). Employee contributions are typically fixed rates of pay, while employer contributions are determined each year by actuaries and are tied to the pension fund's finances. In general, employer contributions increase as unfunded liabilities increase.

For PA-PSERS, employee contributions currently range between 7.5% and 12.3% of salary and differ depending on employee classification[10] and investment returns.[11] The average employee contribution for the 15-years of our study period was 7.12%. In contrast, the employer contribution is the sum of the annual employer normal cost[12] and amortization contribution. The employer contribution averaged 6.26% over our study period.

PA-PSERS uses layered amortization for determining this part of the employer contribution. 'Layered amortization' means that each portion of PA-PSERS' unfunded liabilities are amortized over a fixed period of time as they emerge. Currently, the amortization method used is level percent of pay and the amortization periods are as follows:

- **All unfunded liabilities as of June 30, 2010 amortized over 24 years;**
- **Unfunded liabilities from legislative changes amortized over 10 years; and**
- **All other unfunded liabilities amortized over 24 years.[13]**

[8]Actuarial liabilities from p. 3 of the 2009 Actuarial Valuation. Actuarial assets for the three different scenarios estimated by the Center for Municipal Finance using the 2008 actuarial value of assets as the starting point—the estimates are a simplified version of how actuarial assets are determined and were done only using the investment losses of 2009. These examples were done to provide an example of the impact of smoothing.
[9]Our analysis examines employer contributions for pensions only and does not include contributions for retiree healthcare or other post-employment benefits.
[10]2015 Actuarial Valuation pages 30-31.
[11]2010 Actuarial Valuation page 2. Act 120 (2010) implemented a shared risk contribution rate for members. This put a floor and ceiling on member contribution rates depending on class. If the investment rate of return is equal to or exceeds the assumed rate of return based on prior ten-year period, the member contribution will decrease .5%. The member contribution rate increases .5% if actual returns are 1% or more less than assumed returns over a ten-year period. If the plan is fully funded than the contribution rate is the base rate. The earliest this adjustment can occur is 2021. [1]
[2]The "normal cost" is the cost of projected employee benefits for that year, and the employer normal cost is the total normal cost minus employee contributions.
[13]This amortization schedule was implemented by Act 120 of 2010.

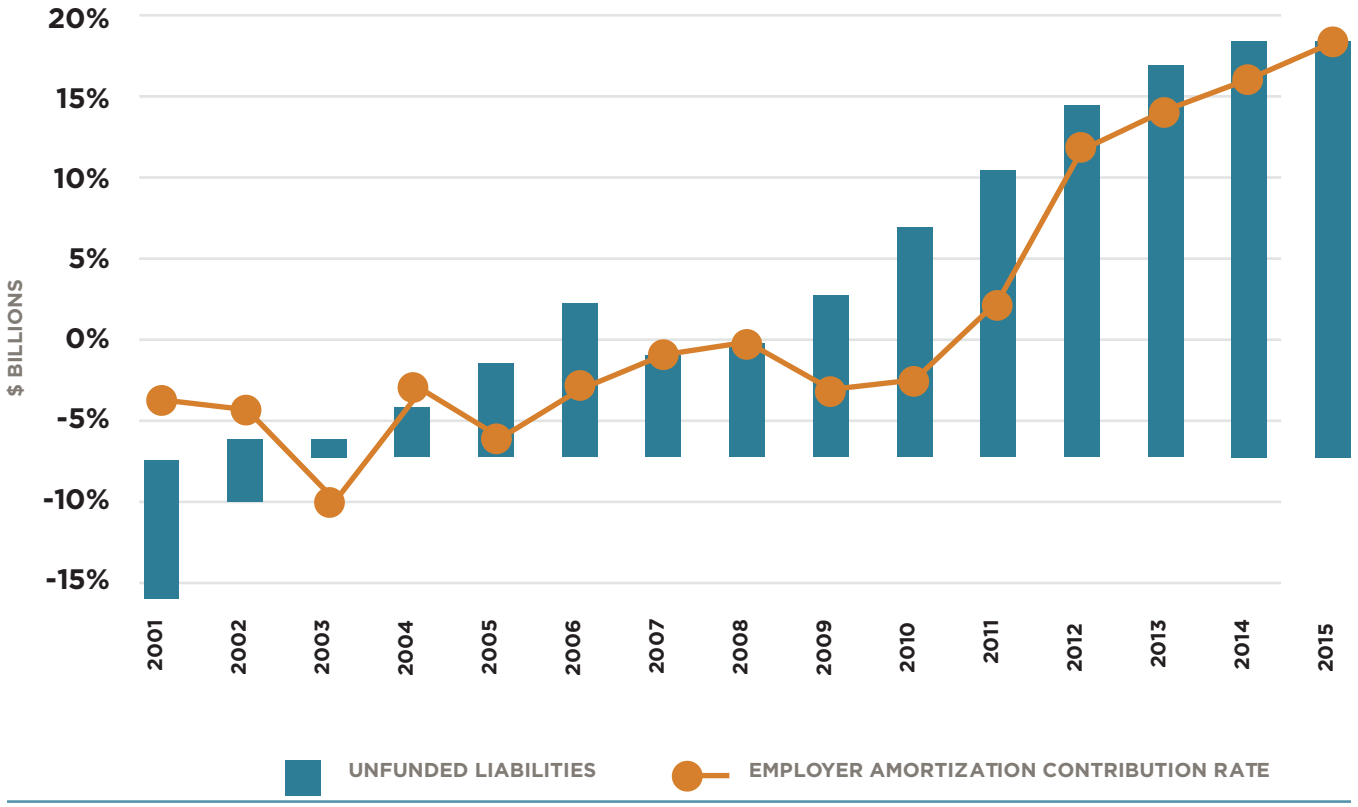
Lawmakers re-set the amortization schedule several times between 2000 and 2015, and these changes were an important factor in the growth of PA-PSERS' unfunded liabilities. An example of the changes lawmakers made happened in 2003 as part of Act 40. A few years prior lawmakers increased benefits[14] and the unfunded liabilities associated with those benefit changes were supposed to be amortized over 10 years. Act 40 of 2003 increased the amortization of unfunded liabilities associated with benefit increases from 10 to 30 years. Without Act 40, the total employer contribution for fiscal year 2005 would have been an estimated $995.9 million,[15] but with Act 40 the actual employer contribution was just $421.1 million.

As shown in Figure 5, because of the way it was determined, the amortization contribution rates (as a percentage of payroll) were negative between 2001 and 2011, even as PA-PSERS' unfunded liabilities grew. The negative amortization rates essentially meant that no money was being contributed to pay down unfunded liabilities.

In general, the core issue is that the employer contributions required by Pennsylvanian law were not enough to prevent the unfunded liabilities from increasing from year-to-year.

FIGURE 5

Comparison of Unfunded Liabilities and Amortization Contribution Rate



[14]This was done as part of Act 9 of 2001.

[15]Estimated using employee payroll ($10.527 million, from p. 17 of the 2009 Actuarial Valuation). The 2003 Actuarial Valuation report cites that Act 40 reduced the employer contribution rate by 5.46 percentage points (p. 3). The estimate for what the employer contribution would have been without Act 40 was calculated using the actual contribution rate (4%) and adding back the 5.46 percentage points (for a total rate of 9.46%).

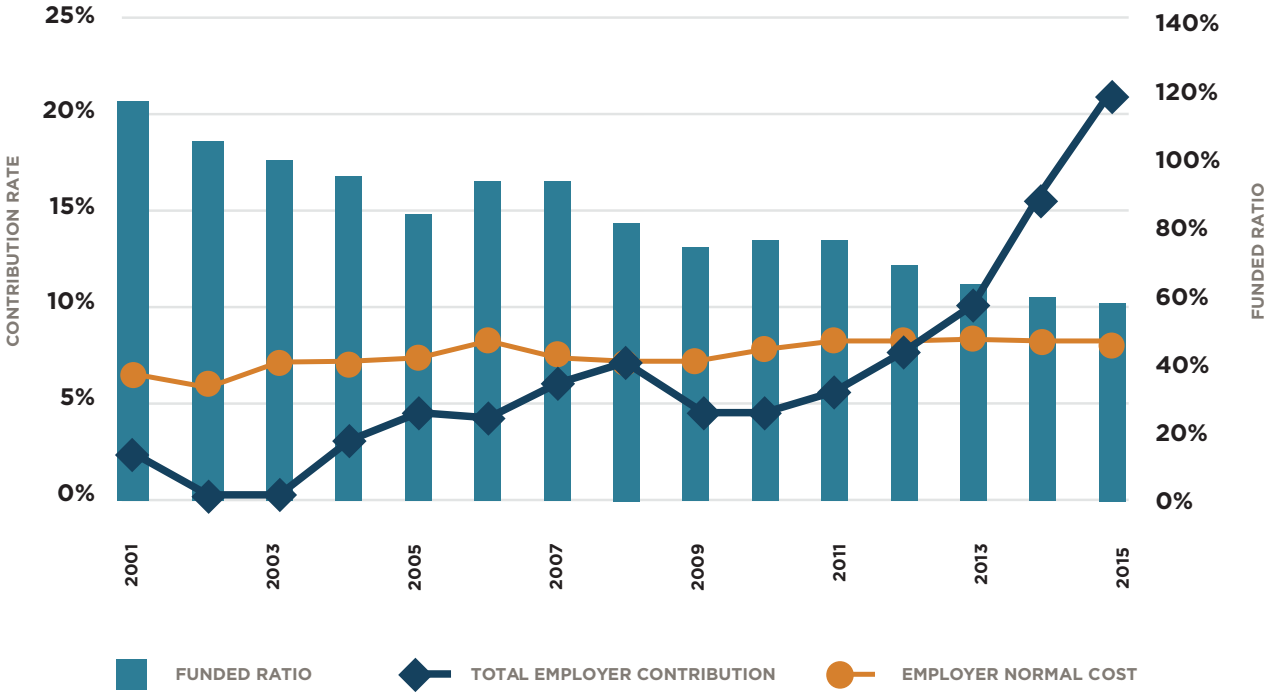
Contributions Often Less than Normal Cost

One way to examine employer contributions is by comparing them to the employer normal cost. Figure 6 shows that PA-PSERS' employer normal cost remained relatively stable throughout our analysis, increasing only slightly, while the actual employer contribution increased from 1.6% of payroll in 2001 to 20.5% in 2015.

An issue that is highlighted in Figure 6 is that for most years between 2001 and 2015, the actual employer contribution was less than the normal cost of benefits. In other words, current employees were accruing pension benefits but school districts and the Commonwealth were not contributing an amount of money sufficient to cover the cost of the benefits being earned. The first year that contributions were enough to cover the normal cost was 2013, at which point PA-PSERS' funded ratio had declined to 63.8% funded and its unfunded liabilities totaled $32.6 billion.

FIGURE 6

Employer Contribution and Normal Cost as a % of Payroll



Deficit between ARC and Actual Contributions

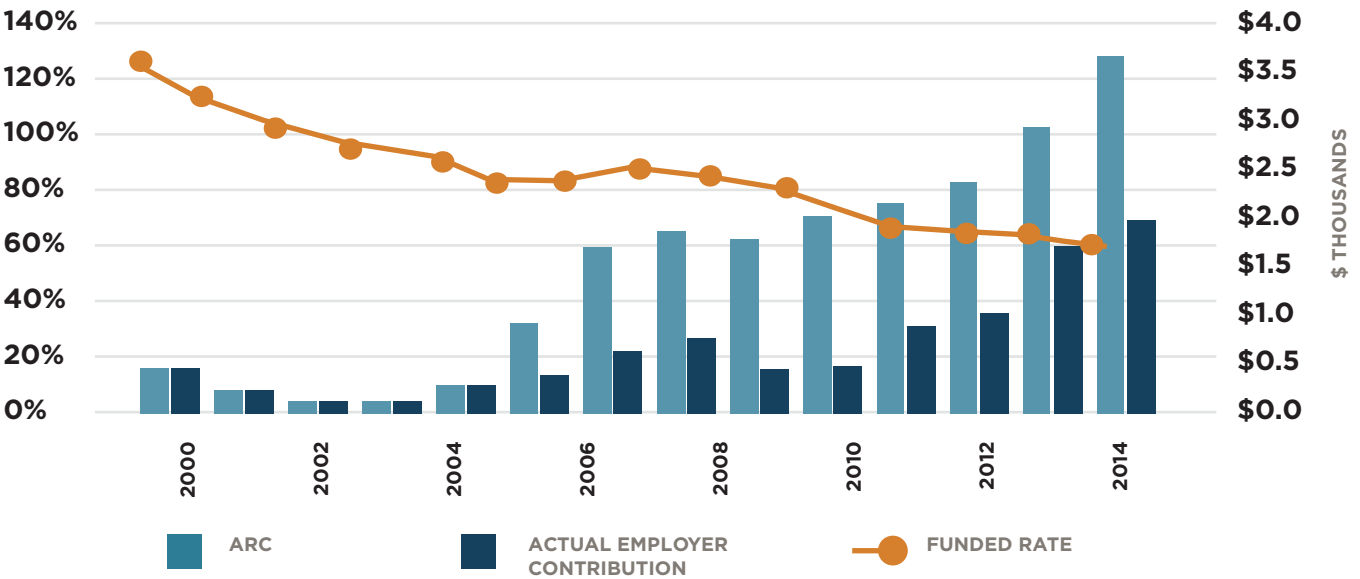
Another way to evaluate employer contributions is to compare them with the Actuarially Required Contribution (ARC). The ARC is a financial reporting figure required by the Governmental Accounting Standards Board (GASB) and is the amount of money needed to

cover the employer normal cost and amortize unfunded liabilities over 30 or 40 years.[16] As unfunded liabilities increase so too does the ARC. It is important to note that the ARC is not what employers are required to contribute to their public pension fund—actual contributions are determined by state and local laws.

Figure 7 compares PA-PSERS' ARC and actual employer contributions between 2000 and 2015. Since the ARC is tied to the amount of unfunded liabilities a pension fund has PA-PSERS' ARC amounts between 2000 and 2004 (when its funded ratio was more than 90% each year) were low. As PA-PSERS' unfunded liabilities began to increase so too did its ARC; for example, unfunded liabilities increased from $5 billion in 2004 to $10 billion in 2005 and the ARC increased from $321 million in 2004 to $945 million in 2005. Despite the growth in unfunded liabilities, as shown in Figure 7, employer contributions remained fairly steady and even decreased in some years.

FIGURE 7

Comparison of ARC and Actual Contributions With Funded Ratio



Contribution Caps

In 2010, as PA-PSERS financial condition worsened the required employer contributions began to grow and legislation was passed to curb those increases. First, Act 46 imposed a one-time 5% ceiling on employer contributions in 2011. In 2010, the Pennsylvania legislature passed the more comprehensive Act 120, which implemented numerous changes to the pension plan. One of the main features was to limit the amount that employer contributions could increase from year-to-year. As Table 4 shows, while employer contributions increased between 2011 and 2015 they increased less than they would have without Acts 46 and 120.

[16]The ARC was a requirement per GASB Statements 25 and 27. GASB Statements 25 and 27 were replaced by Statements 67 and 68. Under Statements 67 and 68 the ARC has been replaced with the Actuarially Determined Contribution (ADC). PA-PSERS began reporting the ADC in fiscal year 2016. The ARC amortization period was 40 years for fiscal years 2000-2006 and 30 years thereafter.

Years of insufficient contributions and investment underperformance resulted in rapid employer contribution increases, placing a burden on both school districts and the state budget. In 2015, the employer contribution was $2.6 billion, 20.5% of payroll. While Act 120 provided budgetary relief for school districts and the Commonwealth by reducing pension contributions in the short-term it also meant that unfunded liabilities would continue to grow, in-turn increasing future required contributions.

TABLE 4

Comparison of Required and Actual Employer Contribution Rates

Year	Required Employer Contribution Rates without Caps	Actual Employer Contribution Rates Due to Act 46 and Act 120
2011	7.58%	5%
2012	18.27%	8%
2013	21.65%	11.5%
2014	23.82%	16%
2015	25.97%	20.5%

CONCLUSION

In 2001, after years of high investment returns and with a funded ratio over 100%, state legislators passed Act 9, which increased retirement benefits and resulted in a one-time increase in unfunded liabilities of $5.58 billion that year.[17] The following year, lawmakers created an additional benefit change. The unfunded liabilities created by benefit increases in the early 2000s were absorbed by PA-PSERS' excess assets. Unfortunately, shortly after increasing benefits lawmakers decreased required employer contributions. These changes occurred as investment returns decreased, beginning with the 2001 recession.

As PA-PSERS became underfunded, lawmakers took steps to delay increasing employer contributions to future years. In 2003, they changed the amortization period for new, unfunded liabilities from 10 to 30 years, while continuing to amortize past gains over a 10-year period. Next, as market investment returns suffered, they changed asset smoothing from a 3-year period, to a 5-year period, and finally to a 10-year period. Last, as PA-PSERS' funded ratio declined significantly, the legislature passed Act 120 in 2010, placing a cap on required contributions. While employer contributions have increased significantly in recent years, Act 120 has meant that the contributions have been much less than they otherwise would have been, which has further exacerbated PA-PSERS' unfunded status.

The above decisions deferred increasing employer contributions until today. After years of contributions that did not cover the employer normal cost, state and school district budgets are now taking a hit. In 2015, the employer contribution exceeded 20% of payroll and it is expected to pass 30% in the coming years. PA-PSERS offers a cautionary lesson to other plans around the country; contributions can only be delayed for so long.

[17] The total change in unfunded liabilities in 2001 was $2.56 billion. However, since assets exceeded liabilities PA-PSERS' unfunded liabilities went from -$9.47 billion in 2000 to -$6.91 billion in 2001.

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ABOUT THE CENTER

The Center for Municipal Finance bridges academia and the public sphere for enhanced transparency, tested strategies, and a rigorous approach to understanding public finance–an approach that's a hallmark of the University of Chicago Harris School of Public Policy.

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Appendix A: Research Methodology

All financial data used in this report is from PA-PSERS' annual Actuarial Valuations (AV) for the years 2001-2015. We collected all AVs from the Center for Retirement Research's Public Plans Data site. Our methodology analyzing PA-PSERS' change in unfunded liabilities is similar to that used by Alicia H. Munnell, Jean-Pierre Aubry, and Mark Cafarelli in their 2015 brief "How Did State/Local Plans Become Underfunded?"

From the AVs, we collected data for factors in growth on unfunded liabilities, which specifically came from the "Analysis of Changes in Unfunded Accrued Liability" tables. Once collected each factor was grouped into one of the six categories, Table 5 shows each factor, corresponding category, and any relevant details.

TABLE 5

Factors for Growth in PA-PSERS' Unfunded Liabilities and Corresponding Category

Factor from AV Report	Center for Municipal Finance Category	Explanation/Details
Act 120 Collar on Contribution	Insufficient/(Excess) Contributions	Act 120 (of 2010) implemented a collar on employer contribution rates beginning in 2012. This reduced employer contributions for years 2012–2016.
Act 120 Change in Asset Averaging Period	Change in Actuarial Assumption or Methodology	Act 120 changed the smoothing period of recognizing investment gains and losses from five to 10 years. As such, large investment losses due to the 2007–2009 recession were pushed into future years.
Act 38 Asset Smoothing Change	Change in Actuarial Assumption or Methodology	Act 38 (of 2002) changed smoothing of investment return gains and losses from three to five years.
Act 46 5% Cap on Pension Contribution	Insufficient/(Excess) Contributions	Act 46 (of 2010) imposed a one-time limit on employer contributions in 2011 (the contribution could not exceed 5% of payroll).
Act 9	Benefit Changes	

Change due to Effect of 4% Floor on FY 2010 and FY2006 Pension Contributions	Insufficient/(Excess) Contributions	Act 40 (of 2003) amended the retirement code to increase the minimum employer contribution from 1% of payroll to 4% of payroll.
Change due to 1.15% Floor on total employer rate for contribution due on 7/1/2003 under Act 38 to Contribution Floor	Insufficient/(Excess) Contributions	Act 38 imposed a minimum required employer contribution, which required the actual contribution be higher than the actuarially required contribution, resulting in a decrease to the unfunded liability.
Change due to Methodology used to value vestees	Change in Actuarial Assumption or Methodology	Under the prior actuarial method, liabilities were estimated based on the member contribution account balances. Under the new method, the liabilities are based on the deferred benefits payable, which were calculated using additional information provided for the first time in the 2003 Actuarial Valuation.
Change due to FY 2005 Over-Contribution Change due to FY 2005 Over-Contribution	Insufficient/(Excess) Contributions	As a result of the experience review new actuarial assumptions were determined and contribution requirements reviewed to reflect new assumptions.
Act 9 Normal Cost Not Covered by Contributions	Insufficient/(Excess) Contributions	
Change in Assumptions	Changes in Actuarial Assumptions	

Act 38 COLA	Benefit Changes	Change in COLA due to Act 38.
Data/ Miscellaneous	Miscellaneous	
Members didn't Elect TD Service	Actuarial Experience	Act 9 allowed individuals with prior education and military service to count those years towards their pension in exchange for paying higher contributions. The actual use of this provision of Act 9 was lower than what was assumed.
Expected Increase/(decrease) Due to Difference between contributions and interest	Insufficient/(Excess) Contributions	The Center for Municipal Finance created this factor and it is the difference between actual contributions and the normal cost + interest on unfunded liabilities figure.
Investment Return	Investment Performance	Change in unfunded liabilities due to the actuarial rate of return being different from the investment rate assumption. The investment rate assumption ranged from 7.5% to 8.5% from 2001-2015.
Mortality Experience	Actuarial Experience	
New entrants and pickups	Actuarial Experience	

Non-vested termination experience	Actuarial Experience	
Salary Increases	Actuarial Experience	
Vested termination experience (retirement/ termination/ disability	Actuarial Experience	

Once that data was collected for each year and grouped into the Center's six categories, we summarized it to get totals for each of category. We then determined which categories were the main drivers of growth in unfunded liabilities. We identified which categories were most significant by examining them as a percentage of total change in unfunded liabilities between 2000 and 2015.

In addition to factors in the growth of unfunded liabilities we also collected the following data from the AVs: liabilities, assets, investment return (both market and actuarial), ARC, actual contributions, assumptions (investment rate and inflation rate), funded ratio, and qualitative data (like descriptions of legislative changes and the method for determining the employer contribution). Last, we supplemented our understanding of legislative changes and rules for determining employer contributions by examining state laws, legislation, and Comprehensive Annual Financial Reports.

Appendix B: Major Legislation Between 2000 and 2015

TABLE 6

Pennsylvania State Pension Legislation (2001–2015)[18]

Act 120 (2010)	Reduced retirement benefits so that they are closer to pre-Act 9 levels; limited the amount the employer contribution could increase from year-to-year for 2012-2016; changed the asset-smoothing period from 5-years to 10-years; and changed amortization method from level dollar to level percent of pay.
Act 46 (2010)	Put a one-time 5% of payroll ceiling on the employer contribution rate.
Act 40 (2003)	Changed amortization periods as follows: amortized Act 38 changes over 10-years, Act 9 benefit changes over 30-years, future benefit changes over 10-years, and future actuarial gains and losses over 30-years. Also, required (starting in 2005) for the employer contribution to be at least 4% of payroll.
Act 38 (2002)	Implemented a minimum employer contribution (1% of payroll starting in 2003), COLAs, and changed the asset smoothing period from 3-years to 5-years.
Act 9 (2001)	Increased pension benefits; decreased vesting period; increased employee contributions; and changed amortization period.

[18]Legislation information was taken from 2010 Actuarial Valuations pages 1-2, 2003 Actuarial Valuation pages 2 and 23, 2002 Actuarial Valuation page 1, 2001 Actuarial Valuation page 1, and the State Employees' Retirement System website. The descriptions in Table 5 are not provide detail of all changes, but just mention the major changes that are relevant to this report.


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