Treasury Notes

June 23, 2015

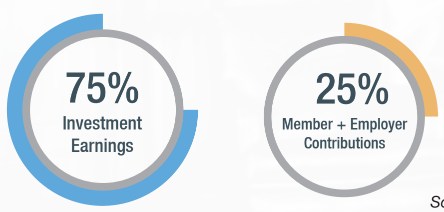
In This Edition of Treasury Notes

Perhaps more than any other, the pension problem is defined by numbers. This initial group of figures introduces several concepts central to concerns and proposals about the pension issue, and provides a foundation for other illustrations in this edition.

Glossary of Terms

- *Annual Required Contribution (ARC)*: the employer contribution necessary under current actuarial assumptions to meet current liabilities and to ensure full funding in the long term. The ARC is the sum of the Employer Normal Cost and the Unfunded Liability Contribution.
- *Collars*: a numerical limit on the annual increase in employer contributions and on the amount of those contributions. Collars often have the effect of allowing employers to contribute less than what would otherwise be their Annual Required Contribution.
- *Employer Normal Cost*: the cost of future benefits allocated to the current year.
- *Funded Ratio*: the ratio (expressed as a percentage) of a fund's actuarially determined assets against actuarial liabilities.
- *Superannuation Annuity*: the standard single-life annuity (pension) made to a retiree.
- *Total Unfunded Liability*: the value of actuarial liabilities in excess of actuarially determined assets based on current actuarial assumptions.
- *Unfunded Liability Contribution:* the amount needed in a given period under current assumptions to address the unfunded liability.
- *Vesting Period*: the minimum period of time required for an employee to obtain rights to collect annuity payments after meeting age and service requirements.

SERS Funding Sources (2004-13)



Source: SERS

	SERS	PSERS
Members	233,734	609,776
Working (average)	104,431	263,312
Male		
Age	46.6	44.4
Service	12.2	11.1
Salary	$57,416	$52,413
Female		
Age	46.9	44.9
Service	11.6	10.7
Salary	$47,583	$45,005
Retired / Receiving Benefits	122,249	213,900
Separated / Vested / Not Receiving Benefits	7,054	132,564
Key Assumptions		
Investment Return	7.50%	7.50%
Salary Growth	6.10%	5.50%
Inflation	2.75%	3.00%
Pension Funding (thousands)		
Annual Required Contribution	$1,852,445	$3,268,104
Employer Normal Cost	$294,881	$1,175,804
Unfunded Liability Contribution	$1,557,563	$2,092,300
Total Unfunded Liability	$17,900,000	$32,598,554

Sources: SERS, PSERS, Pennsylvania Treasury

In comparison to contributions from members and employers, investment earnings provide much greater capital to a pension plan's assets. The chart above shows sources that added to SERS' assets over the ten-year period from 2004 through 2013. Since investment earnings represent such a large proportion of the additions to the fund's asset base, depriving the fund of assets to be used for investing has a dramatic effect on its ability to generate revenue to make future annuity payments.

Act 120: Recent Reforms Already Forgotten?

- Increased the employee vesting period from 5 years to 10 years
- Reduced the benefit multiplier from 2.5% to 2.0% for each year of service
- Lengthened the superannuation requirements
- Eliminated the option for retiring employees to withdraw contributions in a lump sum

- Increased the cost for employees to purchase most types of external service
- Capped maximum retirement benefits
- Shared the risks/benefits of investment performance with employee contribution rates
- Placed collars on increases in employer contributions

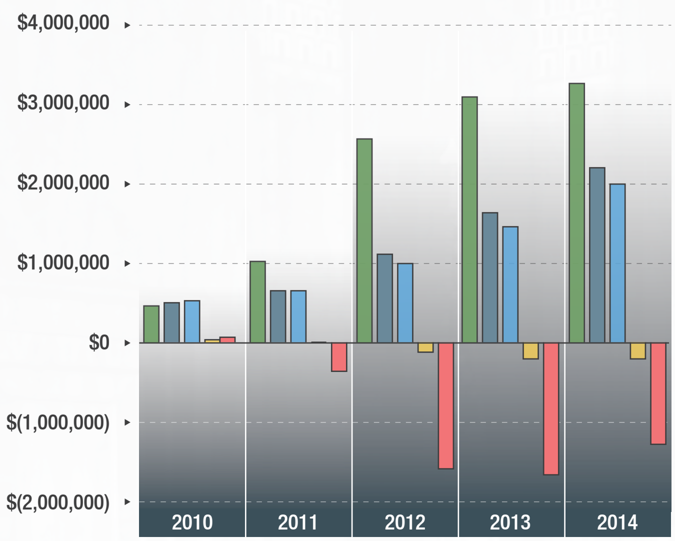
Sources: SERS, PSERS, Pennsylvania Treasury

Designed to reform the Pennsylvania pension system and provide a path to prudently address existing actuarial shortfalls, Act 120 was signed into law by Governor Rendell on November 23, 2010. Despite diminished new employee benefits and additional limits on the state's financial obligations, the Commonwealth has failed to make its required contribution to SERS each year since Act 120's enactment and made the required PSERS contribution only in the first two years since enactment.

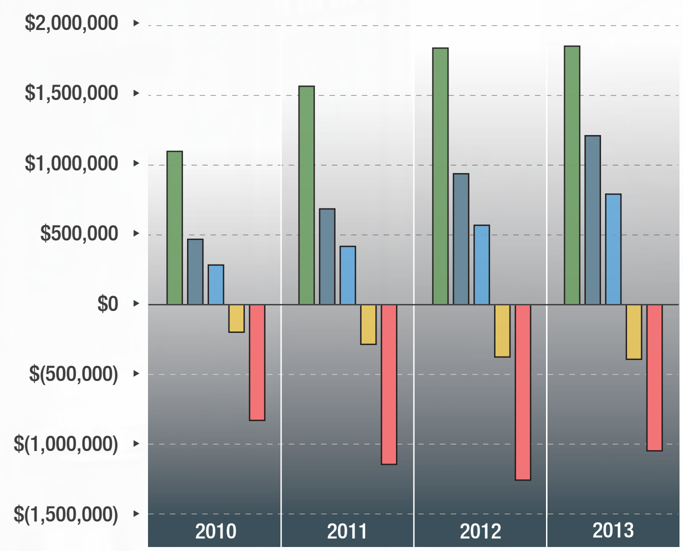
Employer Contributions Post-Act 120

Act 120 purposely increased the unfunded liability of the pension systems by spacing out the state's employer contributions over a longer period to make the yearly amounts more manageable. Unfortunately, the state has continually failed to meet even the reduced payments to which it agreed. While PSERS has nearly met its reduced funding schedule, state contributions to SERS have cumulatively fallen $1.5 billion short of the schedule agreed to under Act 120 less than five years ago. The charts below show how employer contributions to the pension funds have measured up relative to both the pre- and post-Act 120 funding schedules. The yellow bars highlight funding deficiencies compared to the reduced Act 120 requirements and the red bars show the much larger amounts the state would have been required to make (the Annual Required Contribution, or ARC) but for the Act 120 limits. (All values in thousands)

PSERS Employer Contributions



SERS Employer Contributions



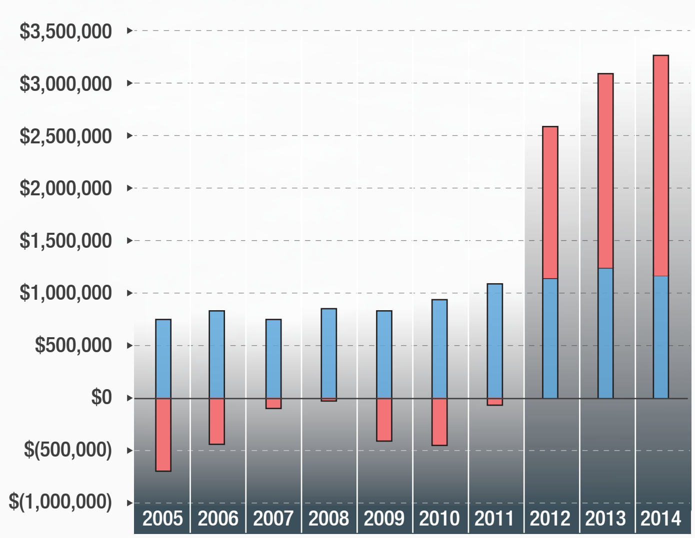
Annual Required Contribution (ARC) | Collared Employer Contribution (Act 120) | Actual Employer Contribution | Difference From Act 120 | Difference From ARC

Sources: SERS, PSERS, Pennsylvania Treasury

Allocation of Employer Contributions

A large portion of employer contributions goes to pay existing unfunded liabilities of the pension systems rather than making contributions on behalf of current state workers. These unfunded liabilities are primarily attributable to the state's past failures to make its scheduled contributions, exacerbated by investment losses during the recent financial crisis. In the graphs below, the red portion of the bars above the axis reveals that more than 80% of SERS' employer contributions and more than half of PSERS' employer contributions go to address unfunded liabilities accrued to annuitants as a consequence of inadequate payments in prior years. Only the blue portion of the bars depicts contributions that actually provide for obligations incurred in the current year for existing employees. The bars below the axis show the shortfalls in required unfunded liability contributions by the Commonwealth for those years. (All values in thousands)

PSERS Annual Required Contributions



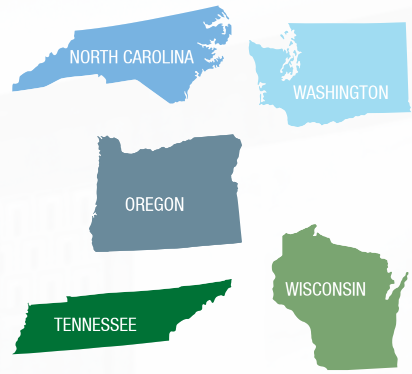
SERS Annual Required Contributions

Employer Normal Cost | Unfunded Liability Contribution

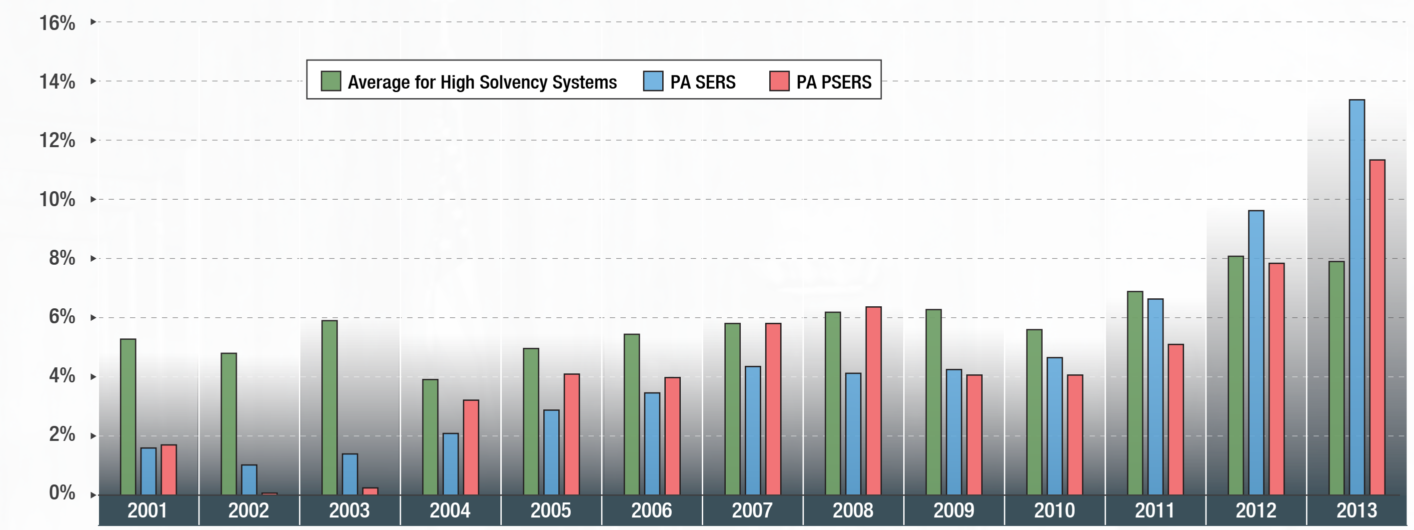
Sources: SERS, PSERS, Pennsylvania Treasury

State Comparisons

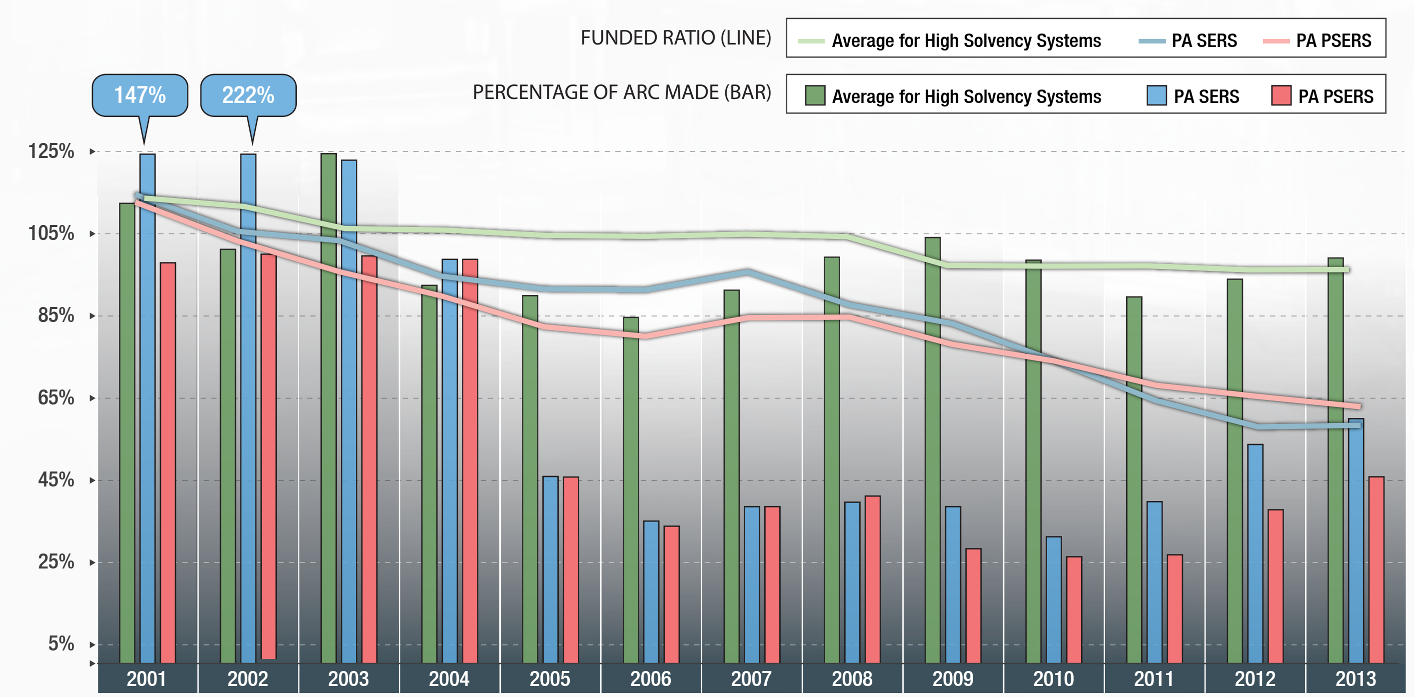
When evaluating factors that led to Pennsylvania's pension funding situation, it may be helpful to compare what pension systems with high levels of solvency in other states have done to reach or maintain their funding levels. The following charts compare Pennsylvania with six similar local, state and teachers' pension funds* that were over 90% funded in 2013 and with assets exceeding $20 billion. The charts confirm that consistently making actuarially required contributions is associated with high levels of solvency. Perhaps more telling is that the annual average for the employer contributions from these funds ranges between about 4% and 8% of payroll. This is in sharp contrast to the volatility exhibited by Pennsylvania's funds: SERS' ratio for highest to lowest contributions during this period is 8.55:1 and PSERS' ratio (discounting two anomalous years that would further exacerbate the volatility measurement) is 6.77:1. Roller coaster fluctuations in contribution rates are at odds with strategic planning, and can introduce significant stress to the systems.



Contributions as Percentage of Payroll



Percentage of Annual Required Contributions Made and Funded Ratios



Source: Pennsylvania Treasury's analysis of the Public Plans Database offered by the Center for Retirement Research at Boston College, the Center for State and Local Government Excellence, and the National Association of State Retirement Administrators.

* Note: North Carolina Local Government, North Carolina Teachers and State Employees, Oregon PERS, Tennessee State and Teachers, Washington PERS, Wisconsin Retirement System

State Comparisons (continued)

The following compares Pennsylvania's unfunded liability as a percentage of GDP and total state government revenue with the unfunded liabilities of several of our neighboring states and those states with the well-funded plans described on page 3.

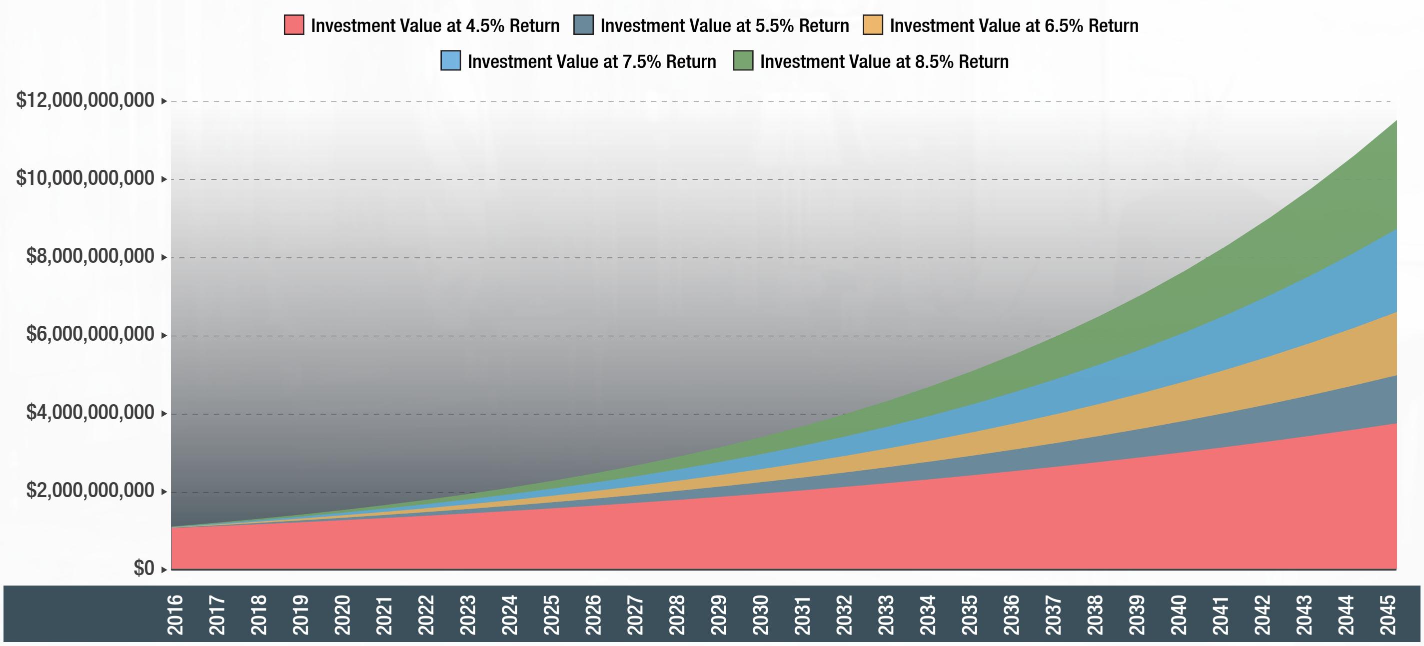
PA vs. neighboring states and states with well-funded plans as % of GDP	NC	NJ	NY	OH	OR	PA	TN	WA	WI
Unfunded Liability (thousands)	3,761,991	40,872,220	30,215,300	53,636,908	5,621,100	50,497,950	2,272,527	(537,000)	52,600
as % of GDP	0.79%	7.53%	2.31%	9.49%	2.56%	7.83%	0.79%	-0.24%	0.02%
as % of Total State Revenue	6.20%	60.18%	14.19%	59.37%	17.08%	57.44%	7.02%	-2.07%	0.11%

Source: U.S. Census Bureau, Bureau of Economic Analysis, and Pennsylvania Treasury's analysis of the Public Plans Database offered by the Center for Retirement Research at Boston College, the Center for State and Local Government Excellence, and the National Association of State Retirement Administrators.

Revenue Securitization

One tool for addressing the unfunded liabilities of the pension systems is a pension obligation bond. Pension obligation bonds take advantage of a state's ability to borrow money at a relatively low rate and invest it in assets with much higher returns. The difference between the debt service costs and the investment gains can then be used to reduce the unfunded liabilities of the pension system at no net cost to the state. In Pennsylvania, Governor Wolf has recently proposed something different: making several billion dollars available to the pension funds to use to help address their shortfalls, but retiring the debt from revenues independent of investment returns. The graph below shows what $1 billion would return if that amount were invested at the described rates of return, with the obligation to repay the original $1 billion falling on other revenue streams rather than the pension funds.

Total Return



Source: Pennsylvania Treasury

A Message from the Executive Deputy State Treasurer

Pennsylvania's pension challenges are currently the focus of much debate as the Legislature works to enact a new General Fund budget. In this edition of *Treasury Notes*, we provide some perspective and context – the relative amounts of money necessary to remedy past funding shortfalls; the sources and applications of a pension fund's revenues; a summary of the reform changes included in Act 120 of 2010; and an update on the implementation of Act 120 reforms. In addition to our customary comparison of Pennsylvania with neighboring states, we offer a comparison of characteristics exhibited by pension systems of states whose plans are well funded. Finally, the power of investment returns over a long period of time is examined using a hypothetical infusion of funds to the pension systems.

It is sincerely hoped that this information will assist policy makers in understanding the hard numbers behind the current pension debate.

Policy topic suggestions for future *Treasury Notes* are welcome and should be sent to TreasuryNotes@patreasury.gov.