



Barriers to Fully Funding Public Pensions

Largely, a Problem of Asymmetric Information

Public Pension Funding Questions and Answers

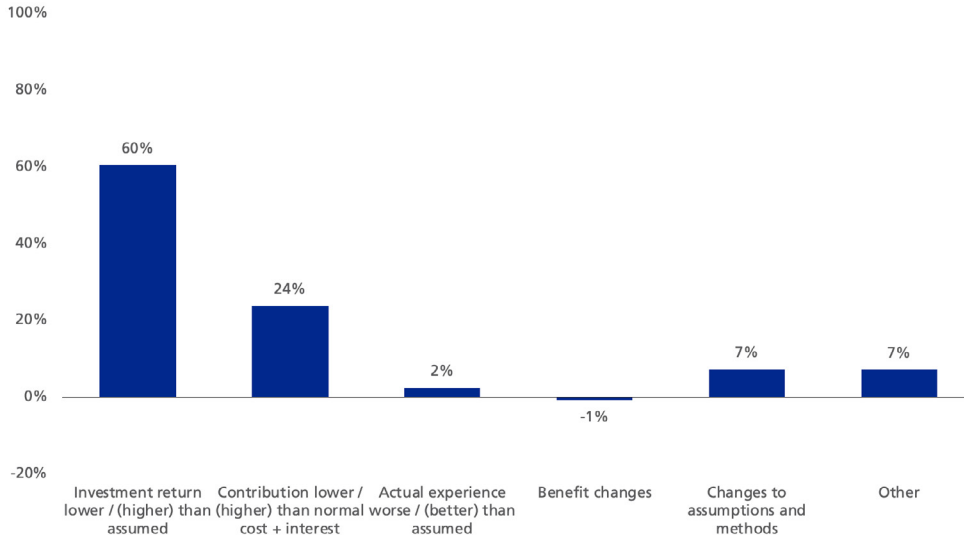
Why are Public Pensions Still Underfunded?

We were asked recently why, after so many years, public sector pensions are still underfunded.¹ In this commentary, we'll go into some detail to better answer the "why" question, while also answering a few other public pension-related inquiries in the process.

Optimistic Actuarial Assumptions is Number One

In many cases, the leading reason public sector pension plans' unfunded actuarial accrued liabilities (UAAL)² have increased has to do with optimistic investment assumptions. The Center for Retirement Research at Boston College (CRRBC) analyzed the results from their Public Plans Database and showed that 60% of the time unfunded liabilities rose because investment returns were lower than assumed rates of return used by plan sponsors.

Reasons for Change in the UAAL for All Database Plans, 2001-2013



Source: Center for Retirement Research at Boston College and HilltopSecurities.

Higher discount rates understate the costs of pension benefits. The order of magnitude differs plan to plan and assumption by assumption for sure. But, the value of pension benefits are, and will likely continue to be, decoupled from the eventual final expense until the true cost of that final expense is completely understood and acknowledged by stakeholders.

Largely, the use of optimistic assumptions occurs because a problem of asymmetric information about key pension funding concepts and benefit costs. The pension funding dilemma will remain unresolved unless this gap is bridged.

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What is meant by: “Underfunding occurred because investment returns were lower than assumed rates of return used by plan sponsors?”

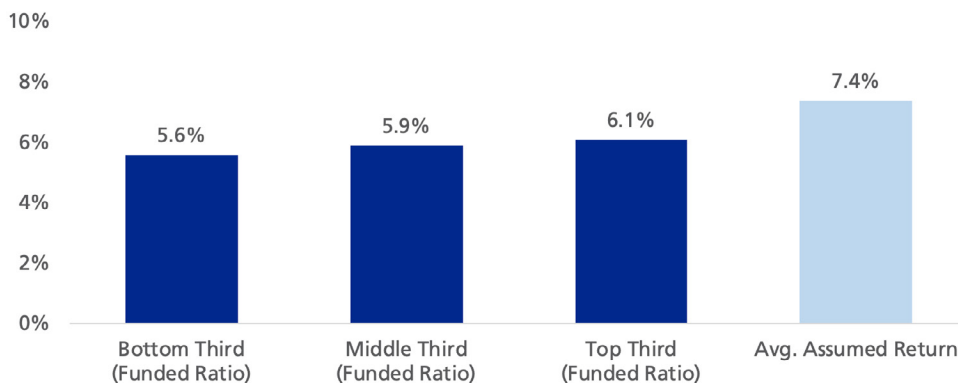
It means public sector sponsors are using overly optimistic actuarial assumptions. It also means, more specifically, the investment return assumptions state and local governments are using to calculate the amount they must contribute to their pension plans are too high. The practice of using discount rates that are too high is impacting plan-funded levels in two primary ways:

- Actual asset levels are not increasing as fast as the assumptions because the assumptions are too aggressive; and
- Plan sponsors are not contributing as much as they should because the higher discount rates (see previous bullet point) keep the contribution amount artificially lower.

The average assumed return in the CRRBC database is 7.4% while actual annualized returns ranged from 5.6% to 6.1% from 2001-2017.

As evidence to support our claim, we included the data in the below bar chart which shows the average assumed return in the CRRBC database is 7.4% while actual annualized returns ranged from 5.6% to 6.1% from 2001-2017.

Comparison of Average Annualized Returns to Assumed Return, 2001-2017



If a discount rate of 7.3% is used for the Dallas Police and Fire Pension System, we get a funded ratio of 49.4%. Lower that discount rate to 4.1% and the funded ratio drops to 25.5%.

Source: Center for Retirement Research at Boston College and HilltopSecurities.

Why do discount rates and investment return assumptions make such a difference in public sector pension funding levels?

When estimating pension liabilities, a public sector defined benefit pension plan uses a discount rate to convert projected future benefits into a present value dollar amount. If plan sponsors use a higher discount rate, it lowers the estimate of the plan's liability. If the plan sponsors use a lower discount rate, it raises the estimate of the plan liability.

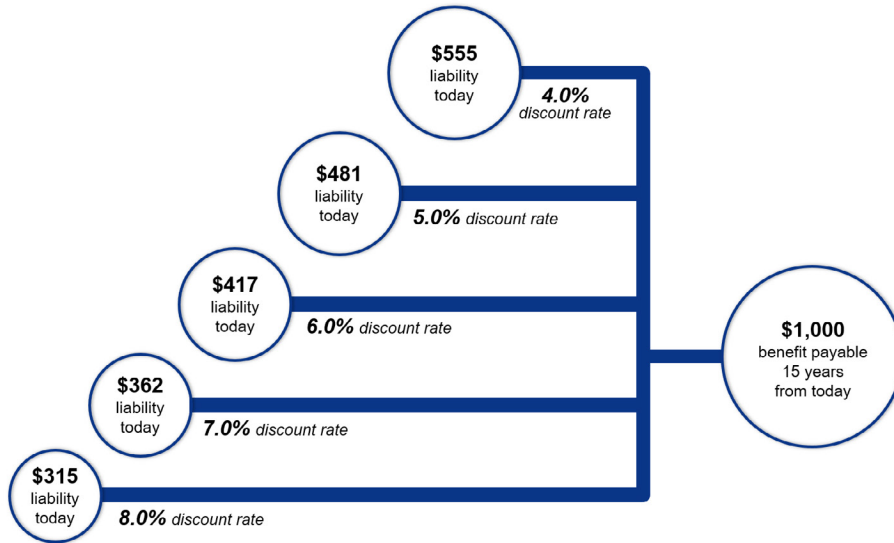
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Not only do discount rates drive the funding ratios, they—probably more importantly—help determine a plan sponsor's actuarial determined contribution, or ADC (formerly and more commonly known as the annual required contribution, or ARC).⁴

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If the plan sponsor chooses to use a higher discount rate, they would be required to contribute a lower amount into their pension plan on an annual basis than if they would use a lower discount rate. But, contributing less shortchanges the potential solvency of the plan in the long run. You can see how much of a difference the higher versus lower discount rates make in the below graphic.

Effect of Different Discount Rates on Measuring the Liability for a Future Payment



The exact time when the topic of pension funding became a top tier issue is often debated.

Source: U.S. Government Accountability Office (GAO) report⁵ and HilltopSecurities.

Municipal Commentary continues on page 5.

Public Pensions, A Complicated Background

Much has been written about public pensions—not only whether or not they are appropriately funded but also how funded levels evolved. The exact time when the topic of pension funding became a top tier issue is often debated. But to most it seems it has really just been over the last 10 years that the topic of pension funding has become more commonly considered.

One of the first times we remember seeing the issue highlighted was in an academic journal article published in 1982 by the University of Pennsylvania Wharton School's Dr. Robert Inman, a public policy and finance professor, who wrote:

That public employee pension plans are underfunded is now an established fact.⁶

Dr. Inman is an urban and public finance expert and an academic; therefore, there is a limited readership, unfortunately, of his published work. However, there were signs of deterioration even a few years before the 2008 financial crisis and before the first Pew Center on the States study, *The Trillion Dollar Gap*, brought pension underfunding into the day-to-day conversation of investors, analysts, and market observers.

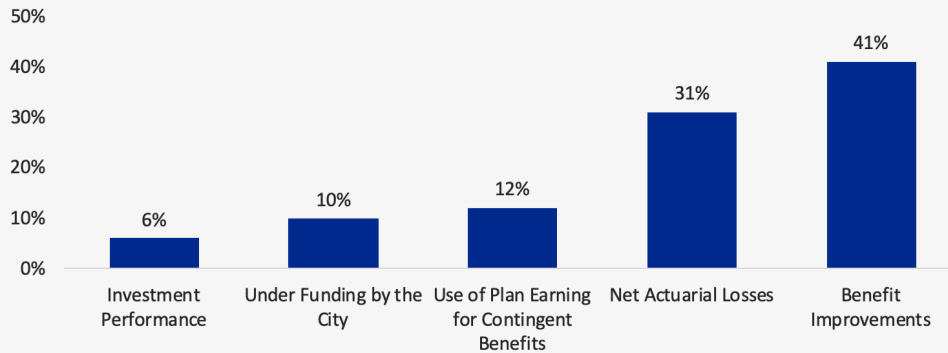
A Pension Case Study – San Diego, CA

Investment performance, and especially equity market returns, were not only solid but also well above historical levels to close out the late 1990s. Five straight years of near or over 20% or better S&P 500 returns from 1994-1999 created some unrealistic expectations for pension planners.⁷ Then, investment results turned sour. The technology bubble crashed. The S&P 500 returns from 2000 to 2003 ranged from -10% to -23%.

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Major Reasons For San Diego's Underfunded Pension Problem, 2004



Source: Final Report; City of San Diego Pension Reform Committee and HilltopSecurities.

At the end of 2003, the city of San Diego's pension plan was determined to be 67% funded. But the city, representatives from area business, and labor took action to right the fiscal ship.⁸ At the end of 2004, the City of San Diego Pension Reform⁹ Committee published a Final Report of findings and recommendations. And in FY17, the city's pension contribution was a hefty 72% of payroll. The funded level was recently reported as 73% (assuming a 7.00% discount rate) as of FY17, which was better than what would have occurred without the significant reforms from the early to mid-2000s.¹⁰

A Little More Public Pension History

In 2008, the U.S. economy was in recession and the credit-crunch was severe. Federal policymakers were called in to minimize a painful landing. The federal government brokered the acquisition of Bear Stearns by J.P. Morgan in March of 2008. Later that year, mortgage giants Fannie and Freddie were effectively taken over by the U.S. federal government. Then, some of the most historically significant and market moving events that have ever occurred unraveled investor confidence. Lehman Brothers, a U.S. investment bank, filed for bankruptcy protection, and other financial institutions, including American International Group (AIG), received what amounted to federal government lifelines. Warren Buffett, the Chief Executive Officer and Chairman of Berkshire Hathaway, even before U.S. public pension valuations were significantly hit as a result of this market turmoil, wrote in his 2008 letter to shareholders what he expected to happen to U.S. public pensions:

Public pension promises are huge and, in many cases, funding is woefully inadequate. Because the fuse on this time bomb is long, politicians flinch from inflicting tax pain, given that problems will only become apparent long after these officials have departed.¹¹

Buffett again addressed the topic of public pensions in the spring of 2009, the year after the events of 2008 had a chance to roil investment performance. But, his more astute observation was that cities and states were not correctly assessing their actual liability. Buffet wrote:

The gap between assets and a realistic actuarial valuation or present liabilities is simply staggering.¹²

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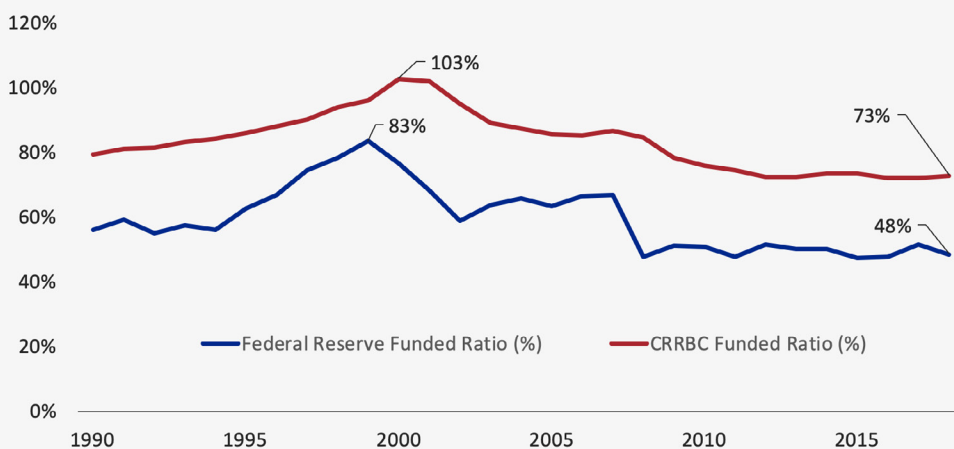
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Pew Center – The Trillion Dollar Public Pension Gap

Public policy and market thought about this topic was jumpstarted at the beginning of 2010 by the Pew Center on the States with *The Trillion Dollar Gap*, the first of what has become an annual look at U.S. state pension liabilities.¹³ Each year the examination stresses that the amount of assets states possess is significantly less than what is required. General market attention by other market observers¹⁴, the rating agencies, pundits, reporters, and financial analysts on the topic of pension underfunding have remained steady since 2010. But, the increased attention has not helped to move the needle on pension funding levels.

Almost 10 years after Pew's first state pension report, the public pension funding landscape has not improved. More importantly, this is still the case after an increased amount of attention has been brought to investors, voters, policymakers, and pensioners. In fact, funded levels are close to—if not the weakest—they have ever been. This is a troubling fact considering the U.S. economy is in the middle of its 11th consecutive year of the current economic expansion. The big picture reason this seems to be the case is because pension expenses are becoming too large a part of individual plan sponsors' budgets. This observation is a troubling development.

Comparison of State and Local Government Public Pension Funding Levels



Source: Federal Reserve, Center for Retirement Research at Boston College and HilltopSecurities.

How is it that state and local government plans are able to pick and choose the discount rates they use to drive their pension funding process?

There are no strict regulations governing how state and local government public pensions should select the discount rates they employ. Plan sponsors create and try to follow their funding policies,¹⁵ but there is no significant influence that helps keep their assumptions realistic.¹⁶

State and local government plan sponsors are subject to measurement and reporting requirements set forth by the Governmental Accounting Standards Board (GASB). Conversely, private employers are subject to reporting requirements under the Employee Retirement Income Security Act of 1974 (or ERISA) and Financial Accounting Standards Board (FASB) accounting requirements. The discount rates utilized by single employer private pension plans are governed and reviewed by regulators per ERISA. Private plan discount rates are based on corporate bond rates that reflect better the risk of fixed income cash flow streams more similar to pension benefits.

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Analysis of Risks Inherent in Defined Benefit Pension Plans

Who bears the risks inherent in a PRIVATE sector defined benefit pension plan?

The funding method for private plans offers a degree of confidence to federal regulators that private plan sponsors should be able to pay out the benefits workers earn. This method tries to limit the risk of underfunding to the plans and further limit the risk to the workers (plan participants), the federal government, and the Pension Benefit Guaranty Corporation (PBGC).¹⁷

Private defined benefit pension plans generally transfer the risk of the investment performance from the plan participants to the plan sponsors. The plan sponsor bears the investment-related risks but workers face default risk if the private employer or sponsor becomes distressed. Workers may be able to draw on benefits from the PBGC and receive a certain percentage of their plan benefits in the event that a private employer becomes distressed. We should note that defined benefit plans are becoming less and less common with private employers.¹⁸

The defined benefit retirement plan construct contrasts with defined contribution retirement plans private employers offer (401(k) plans) that pass the investment risk onto the individual plan participants. 401(k) retirement plans are used more increasingly by private employers as opposed to defined benefit plans. 401(k) plan participants must not only fund the plan themselves (employers sometimes do provide a match incentive) but the workers must also bear the risk in deciding where to invest their contributions.

Who bears the risks inherent in a PUBLIC sector defined benefit pension plan?

A similarity exists between the public and private defined benefit pension plans in that generally defined benefit pension plans transfer the risk of the investment performance from the plan participant to the plan sponsors. But, the plan sponsors of state and local governments should not be considered just the institutions themselves. The primary sponsors of state and local government public pensions should also be considered the taxpayers (and other residents). Furthermore, pensioners, bondholders, and employees are also shouldering a hefty burden of pension funding risk.

Taxpayers are the first line of defense and should be considered at risk because they will be the ones who will (or have already been) required to pay more in order to make up for the underfunding that results from the overly optimistic actuarial assumptions used by most public sector plan sponsors. Pensioners, bondholders, and employees will be at risk if or when a distressed scenario occurs and there is not the ability to raise revenues.¹⁹ We should also note there is no federal government backstop, or PBGC equivalent, available for public plans that become distressed.

Inadequate Contributions - Second Largest Reason

What is the second-largest factor contributing to unfunded public sector pensions?

Getting back to our initial question of, "Why are public pensions still underfunded?" The second-largest reason state and local government plan sponsor's unfunded actuarial accrued liability (UAAL) increased was because they failed to contribute the required amount (normal cost plus interest according to CRRBC). In fact, the CRRBC analysis found that 24% of the change in liabilities was due to contributions that were less than the required amount.

What is also important to note about this reason is that it becomes a larger contributor as the plan type or status worsens. As you can see in the below table, for

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plans described as “top,” lower contribution levels only contribute to 13% of the change while plans described as “bottom,” it contributes 33%.

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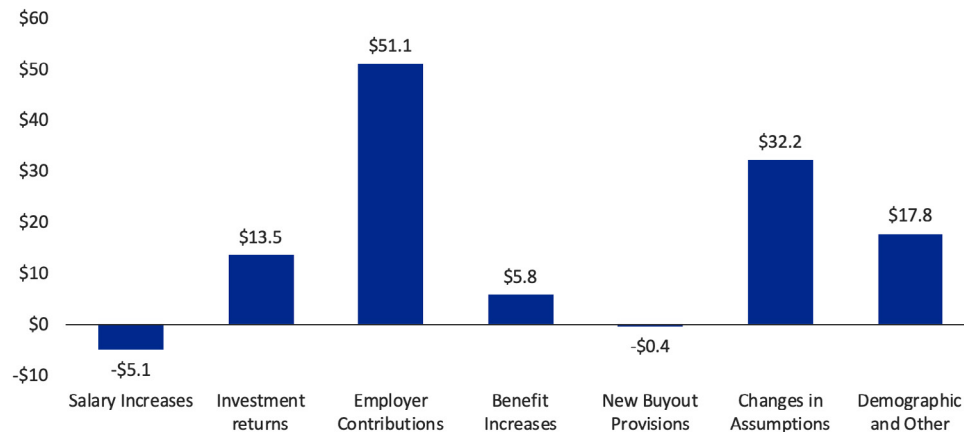
Reasons for Change in the UAAL for Plans in the Top, Middle, and Bottom Thirds, 2001-2013

Plan Type (Avg. Funded Ratio)	Investment return lower / (higher) than assumed (%)	Contribution lower / (higher) than normal cost + Interest on UAAL (%)	Actual experience worse / (better) than assumed (%)	Benefit changes (%)	Changes to assumptions and methods (%)	Other (%)	Total (%)
Top (98.3%)	69.0	13.4	(0.1)	5.3	7.8	4.7	100.0
Average (82.5%)	59.0	23.0	(0.6)	(0.2)	6.6	12.1	100.0
Bottom (66.3%)	55.4	32.5	7.5	(6.3)	7.5	3.5	100.0
Total (82.4%)	60.4	23.7	2.4	(0.8)	7.2	7.1	100.0

Source: Center for Retirement Research at Boston College and HilltopSecurities.

An individual example of this, while extreme, can be seen in the case of the State of Illinois. Illinois’ unfunded pension liability increased from \$19 billion (1996) to \$134 billion (2018). The leading contributor was inadequate employer contributions, or what many refer to as pension funding holidays. Inadequate contributions made up \$51 billion (or 44%) of the increase in the unfunded liability of all five Illinois state pension plans per an April 2019 analysis by the Illinois Commission on Government Forecasting & Accountability. This 44% is well above the 33% the CRRBC analysis shows in the bottom third of plans.

Reasons for Change in Unfunded Liabilities All Five Illinois Pension Systems, \$134B from 1996-2018 (\$ in billions)



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Source: Illinois Commission on Government Forecasting & Accountability and HilltopSecurities.

Problem of Asymmetric Information in Chicago

It just so happened that the same day we were asked why, after so many years, public sector pensions are still underfunded, The Bond Buyer published an article, [Chicago’s New Administration Will Take Fiscal Message Directly to Investors](#). that included the two page Citizen’s Guide to the City of Chicago, which is being used in their communication with residents about the 2020 budget.

At first glance, this seemed to be a transparent way to raise awareness about the fiscal situation in one of the largest and most important cities in the United States, and it seems like such a guide could help inform the policymaking process. However, upon closer examination of the Citizen’s Guide, we found an example—albeit extreme—of the use of optimistic actuarial assumptions and inadequate contributions.

The problem is that all four of Chicago’s plans are significantly underfunded to the point that they are at risk of insolvency in a matter of a handful of years.

The Citizen’s Guide indicates that Chicago’s pension contribution is going to be

\$1.3 billion in 2020. The problem is that all four of Chicago's plans are significantly underfunded to the point that they are at risk of insolvency in a matter of a handful of years. The largest plan, the Municipal Employees plan, has about \$4 billion of assets and is required to pay about \$1 billion of benefit payments per year.²⁰

The core of the problem is that if Chicago came close to funding the actuarial-determined contribution they would need an additional \$1.3 billion.

How Chicago Presents Its Pension Payment Requirement- An Example of Asymmetric Information

Name of Plan	GASB	Chicago's FY19 Pension Contribution	Chicago's Expected FY20 Pension Contribution	Chicago's FY20 Actuarial Determined Contribution	Chicago's FY20 Benefit Payout	Chicago's FY30 Benefit Payout
Municipal Employees	7.00%	\$349,574	\$421,000	\$1,117,387	\$1,026,366	\$1,462,910
Laborers'	7.11%	47,844	60,000	148,410	172,043	238,699
Policemen's	7.18%	588,035	579,000	933,770	801,960	1,155,246
Firemen's	6.61%	249,684	245,000	442,000	351,556	507,216
TOTAL		\$1,235,137	\$1,305,000	\$2,641,567	\$2,351,925	\$3,364,071
% of city budget		14%	15%	31%	27%	39%

Source: Chicago CAFR, actuarial valuations and HilltopSecurities.

The core of the problem is that if Chicago came close to funding the actuarial-determined contribution they would need an additional \$1.3 billion. For that amount, they would need significant increases in revenues. That type of fiscal pain would be politically difficult. And, the ADC is calculated using overly optimistic discount rates. If the city used more conservative discount rates the required contributions would be even higher.

We believe that the root cause is a problem of asymmetric information.

So how did the situation—in not only Chicago, but across the country—get to this point?

We believe that the root cause is a problem of asymmetric information.

What is asymmetric information?

It is the way an economist would describe a situation where one party to a transaction has more information than another. A good example of the problem of asymmetric information is the process of buying a used car since the buyer has nowhere near as much information about the car as the seller. We think this describes what is generally happening with public sector pensions. Whether it is the information flow and understanding of voters (or taxpayers/residents), pensioners (or current employees), investors, or political actors, we think there is a problem of asymmetric information where the details are concerned with what is influencing public sector pensions. More importantly, this is a key reason why they are not better funded.

The solution is to not only to provide the correct information, but to ensure that all stakeholders understand it.

What is the solution to the problem of asymmetric information?

The solution is to not only to provide the correct information, but to ensure that all stakeholders understand it.²¹

¹ Whether state and local government public pension plans are funded or underfunded is certainly an issue up for debate. The Oct. 2019 CRRBC report, [Update on the Funded Status of State and Local Pension Plans – FY2018](#), does a good job of helping readers visualize the distribution of plans by funded ratio by breaking down the plans into a top third, which are 91% funded; a middle third, which are 74% funded; and a bottom third, which are only 55% funded. Readers should remember CRRBC uses the plan sponsors discount rates, which are generally higher than recent annual returns. The average assumed return in the CRRBC's Oct 2018 report was 7.40%. The U.S. Federal Reserve uses a Aaa corporate bond rate to discount liabilities in their funded calculations. The Federal Reserve's funded ratio for state and local government public pensions was 48% in the Fed's Sept 2019 release compared to the CRRBC's 73% in the above mentioned Oct 2019 [Update on the Funded Status of State and Local Pension Plans – FY2018](#).

² The unfunded actuarial accrued liability (UAAL) is the difference between the actuarial value of a pension plan's assets and the actuarial accrued liability. More recent terminology also refers to this as the net pension liability.

³ Aubrey, Jean-Pierre and Caroline Crawford; [Update on the Funded Status of State and Local Pension Plans – FY2018](#); Center for Retirement Research at Boston College; Oct. 2019; p7.

⁴ The actuarially determined contribution or the actuarially determined employer contribution is often referred to as the "required amount" and made up of the normal cost plus any unfunded liability amortization payment. Although it is referred to as the "required" amount, it is not always paid. And, one of the big issues with this concept, or this number, is that it is often not high enough to pay down unfunded liabilities.

⁵ [Pension Plan Valuation – Views on Using Multiple Measures to Offer a More Complete Financial Picture](#); U.S. Government Accountability Office (GAO); September 2014, p. 13; GAO-14-264. Notes: The figure used in the commentary illustrates the effect of different discount rates on measuring the liability for a future payment independent of an actuarial cost method. Corresponding liabilities for a \$1,000 benefit payment 7 years from today are \$760 at a 4% discount rate and \$583 at an 8% discount rate. For a benefit payment 7 years from today, the liability measured at 4% is therefore 30% higher than the liability measured at 8%. In contrast, for the benefit payable 15 years from today, the liability measured at a 4% discount rate is 76% higher than the liability measured at an 8% discount rate.

⁶ Inman, Robert; [Public Employee Pensions and the Local Labor Budget](#); Journal of Public Economics; October 1982. Inman, in his conclusion, notes: “The funding status of local public employee pensions is destined to become an important policy issue in the 1980s. Examination of the current position of state and local pension plans reveals a significant degree of underfunding.” Inman’s analysis suggests that the concept of underfunding of public pensions is not at all a new concept.

⁷ In July 1999, before the technology bubble crashed, Warren Buffett gave a private speech at the Allen and Company sponsored conference in Sun Valley, Idaho. Details from his speech can be found in the Alice Schroeder book, *Snowball*, published in 2008. During the speech at Sun Valley, Buffet described his expectation of the type of investment performance the market was likely to create. In her book, Schroeder relayed Buffets comments: “Buffet said... ‘If I had to pick the most probable return over that period [the next 17 years]... it would probably be six percent.’ Yet a recent Paine-WebberGallup poll had shown that investors expected stocks to return thirteen to twenty-two percent.” [See an excerpt of Buffett’s speech here.](#)

⁸ Roger Lowenstein included an excellent account of what occurred in San Diego in [While America Aged](#); 2008; pages 155-219.

⁹ [Final Report: City of San Diego Pension Reform Committee](#); September 15, 2004.

¹⁰ [City of San Diego’s June 30, 2018 financials, pages 191-192.](#)

¹¹ Buffett, Warren, [Letter to Berkshire Hathaway Shareholders about 2007 performance](#), 2008; p. 20.

¹² Buffett, Warren, [Letter to Berkshire Hathaway Shareholders about 2008 performance](#), 2009; p. 14.

¹³ [The Trillion Dollar Gap – Underfunded State Retirement Systems and the Roads to Reform](#); Pew Center on States; Feb 2010. In this report, Pew calculated the gap was \$3.35 trillion in liabilities compared to \$2.35 trillion in assets. In June, 2019 Pew published their most recent installment, *The State Pension Gap: 2017*, which showed that the net liability has increased to \$1.28 trillion since 2010.

¹⁴ Mauldin, John; [The Pension Train Has No Seatbelts](#); June 15, 2018.

¹⁵ “For many pension plan sponsors, public sector pension funding policies (in the form of statutes, ordinances, board rules, legal rulings, etc.) prescribe how pension benefits will be funded. Funding policies for many plan sponsors require pension contributions to be made in a manner consistent with the ARC, i.e., an amount to fund benefits accrued in the current year (the normal cost) and an amount to eliminate the unfunded liability over the course of the funding period. Funding policies generally do not specifically mention GASB or the ARC,” as described by Keith Brainard and Alex Brown; [The Annual Required Contribution Experience of State Retirement Plans, FY01 to FY13](#); The National Association of State Retirement Administrators; March 2015; p. 2.

¹⁶ Not only is there almost no incentive to fully fund pensions, “The political economy of pension contributions in fact favors systemic underfunding,” as described in more detail by Amy Monahan in *The Law and Politics of Municipal Pensions*. Chapter can be found in *Public Pensions and City Solvency*; Edited by Susan M. Wachter; 2016; p. 42.

¹⁷ The Pension Benefit Guaranty Corporation (PBGC) is a federal agency created in 1974 under ERISA and exists to protect workers’ pension payments. However, the PBGC’s funding is currently inadequate and policy proposals are being considered to potentially revamp its structure. Please see more in [Pension Benefit Guaranty Corporation \(PBGC\): A Primer by the Congressional Research Service](#); March 21, 2019.

¹⁸ See this recent article: [4 Reasons Defined Benefit Plans are Nearly Dead](#); Nathan Bomey; USA Today; Oct 7, 2019.

¹⁹ In Detroit, pensioners recovered 82% (see *Detroit’s Final Bankruptcy Plan Impairs Unsecured Bondholders More Than Pensions*; Nov. 7, 2014) and unlimited tax GO bondholders recovered 73% (see *How Moody’s Calculates 25% Overall Recovery Rate*; Sept 9, 2015).

²⁰ [The Municipal Employees’ Annuity and Benefit Fund of Chicago – Actuarial Valuation and Review as of December 31, 2018](#) indicates, in bold font on page (i): **The risk of insolvency for MEABF has increased due to the 2018 investment return performance combined with fixed-dollar contributions through 2022, which do not change when the Fund experiences unfavorable investment performance.** The significant amount of adjustments to the plan provisions, from 1979 to 2018, are detailed on pages 68-92.

²¹ Also please see the Conclusion: *A Call for Transparency* by Robert P. Inman and Susan M. Wachter in *Public Pensions and City Solvency*; Edited by Susan M. Wachter; 2016; p. 85-92. As a solution to the problem of asymmetric information Inman and Wachter propose: “provide information.”

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