Ten Ways to Close Public Pension Funding Gaps

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Acknowledgement

The National Conference on Public Employee Retirement Systems and the author, Michael Kahn, Ph. D., NCPERS Director of Research, want to thank all those experts who presented ideas and information on various ways to close pension funding gap at our annual Public Pension Funding Forums over the last six years. These ideas are captured in the current publication with additional analysis done by the author and NCPERS team.

Ten Ways to Close Public Pension Funding Gaps

EXECUTIVE SUMMARY

What are the options when a public pension funding gap develops? Financial shortfalls can and do occur for a number of reasons. Employers may withhold their required contributions; economic and market upheaval may deal setbacks; fiscal priorities may shift; investments may sour.

Closing the gap is always an imperative. Unfortunately, when financial issues are urgent, simplistic solutions such as shutting down defined-benefit plans in favor of 401(k)-like plans tend to receive excessive focus. The National Conference on Public Employee Retirement Systems (NCPERS) is committed to shedding light on solutions that are not only less drastic but that contribute in the long run to retirement security for dedicated public servants and more prosperous communities for all.

It is not surprising, at one level, that state and local governments, with their focus on fiscal year budgeting, tend to favor short-term solutions over more nuanced and demanding approaches. However, there are better approaches than the quick-fix mentality that dominates public debate. Solutions can have more staying power and impact if they address underlying, structural fiscal issues and tackle imprudent approaches to allocate state and local government revenues, including pension contributions. This paper describes alternative approaches that public pension systems and their government relations teams should consider, understand, and bring up in discussions, debates, and negotiations.

Several key principles, which NCPERS research has validated, lie at the heart of this study. We believe long-term pension funding should reflect the long-term economic capacity of state and local governments, and we reject the idea that long-term pension policy should be aligned to short-term fiscal tactics. We also believe that fiscal policy should encourage behaviors that are ultimately in the best interest of our states and localities, including having the right incentives in place to support the delivery of critical public services – and removing disincentives.

The ultimate way to close public pension funding gaps is to reform revenue systems and close tax loopholes – but that is a long road, and it is beyond the scope of responsibilities of pension trustees and administrators. However, we can help ensure that state and local governments are looking at the appropriate data when determining how to fund public services and programs, including pensions, and we can help them pinpoint their economic capacity as measured by GDP or personal income.

Pension plans and their lobbyists and advocates regularly present the case for protecting and preserving public pensions. They are present in budget committee hearings where everyone is fighting for a piece of the pie, while the revenue committee hearing room is full of lobbyists from chambers of commerce and business leaders trying to reduce the size of the pie and seeking tax cuts, tax subsidies, and tax loopholes. To assist pension fund stewards and advocates, NCPERS has recently published a practical guide to raising revenues and closing loopholes.[1] Apart from being in the right room at the legislature, the NCPERS guide outlines a simple way to tell whether a state and local tax system is heading in the right direction (more on this subject under Policy Option 10).

Since tax reform can't happen overnight, we present nine other policy options. These options include using proposed new limited pension obligation bonds, exploring ways to meet liquidity needs through actions of the Federal Reserve System, making employer contributions part of payroll, securitizing public assets, and directing existing revenue streams such as lotteries and casinos to close pension funding gaps.

We have not included investment and risk management policy options in this study. These options are usually discussed through other NCPERS venues, such as various trustee education programs. The 10 policy options presented in this study are generic and are based on secondary research. They also are not recommendations. Instead they are ideas for consideration and further exploration that can be adapted to a pension plan's specific circumstances. Each pension system is unique and must explore, in consultation with experts and through a robust due diligence process, policy options that best fit its needs.

1 www.ncpers.org/files/Tax%20Loopholes%20Final.pdf.

Ten Ways to Close Public Pension Funding Gaps

INTRODUCTION

When they are looking for ways to meet their pension funding obligations, many state and local governments have taken the default position of lightening their own burdens by fiddling with benefits and contribution formulas, sometimes to a punishing degree. Pension trustees and administrators have been fighting for years against knee-jerk "solutions" that can bring about serious unintended consequences.

For more than a decade, policy makers in almost all 50 states have taken actions that include increasing employee contributions, cutting benefits, and discarding the security of lifetime guarantee of defined-benefit (DB) pension plans for the uncertainty of do-it-yourself defined-contribution (DC) plans. These actions hurt not only workers who were promised pension benefits but also our economy as a whole. In the end everyone suffers, not just public employees.

Earlier analyses show that prevailing approaches to "reforming" public pensions exacerbate income inequality, slow down the economy, and increase the tax burden on everyone. For example, one NCPERS study suggests that even after controlling for other variables that affect income inequality, a single negative change to pensions increases income inequality by 15 percent.[2] One might say, So what? Why should we care? The reason is that rising income inequality makes the economy inefficient and drags it down. The NCPERS study shows that when inequality (the ratio between incomes of top and bottom quintiles) in a state increases by one, the state's economic growth decreases by a staggering 18 percent. In other words, big gaps between the haves and the have-nots are costly to communities.

Another study by NCPERS examines the contribution of state and local pension plans to economy and tax revenues.[3] This study shows that investment of public pension assets and spending of pension checks by retirees adds $1.7 trillion to state and local economies, which in turn generates $341 billion in state and local tax revenues. In fact, the study shows public pensions are net revenue generators. For example, in 2018 pensions generated $341 billion in tax revenues; the taxpayer contribution to pensions was only about $162 billion. In other words, public pensions generated $179 billion more than the taxpayer contribution. If there were no public pensions, the burden on taxpayers would need to increase by $179 billion to receive the prevailing level of public services.

2 National Conference on Public Employee Retirement Systems, *Income Inequality: Hidden Economic Cost of Prevailing Approaches to Pension Reforms* (Washington, DC: NCPERS, 2015).

3 National Conference on Public Employee Retirement Systems, *Unintended Consequences: How Scaling Back Public Pensions Puts Government Revenues at Risk – 2020 Update* (Washington, DC: NCPERS, 2020).

Can we explore policy options to close public pension funding gaps that do not undermine public pensions and cause harmful economic consequences? The purpose of this study is to explore these options. We have identified 10 policy options from discussions at annual Public Pension Funding Forums[4] during the past six years. We have excluded discussion of policy options related to the role of investment strategies and risk management in this study because those strategies are regularly addressed at various other NCPERS venues, including the NCPERS Accredited Fiduciary (NAF), Program for Advance Trustee Studies (PATS), and Annual Conference and Exhibition (ACE), to name just a few.

The policy options discussed in this study follow.

Policy Option 1	Exploring a New Approach to Limited Pension Obligation Bonds
Policy Option 2	Exploring Actions of the Federal Reserve System
Policy Option 3	Exploring Bridge Loans to Increase Liquidity
Policy Option 4	Securitizing Public Assets
Policy Option 5	Exploring Dedicated Revenue Stream
Policy Option 6	Establishing a Stabilization Fund
Policy Option 7	Exploring Monthly Employer Contributions
Policy Option 8	Exploring Consolidation
Policy Option 9	Exploring Auto-triggers
Policy Option 10	Reforming Revenue Systems and Closing Tax Loopholes

In the grand scheme of things, any one of these options may seem a small step, but in the long term they may make a difference. They are more rational responses than is dismantling public pensions, which have been a model of how to provide a secure retirement for more than a century. Also, they may be a way to buy some time as states and localities wrestle with the admittedly challenging work of making fundamental changes such as reforming revenue systems and closing tax loopholes.

Furthermore, these policy options are generic in nature and are not blanket recommendations. Each pension plan and pension system is unique, and trustees and administrators must explore policy options that best fit their particular needs and circumstances, in careful consultation with experts.

4 www.ncpers.org/fundingforum.

Policy Option 1

EXPLORING A NEW APPROACH TO LIMITED PENSION OBLIGATION BONDS

Pension obligation bonds (POBs) have been used by state and local governments to improve funding levels of their pension plans with mixed results. POBs are taxable bonds, the proceeds of which can be invested to achieve returns that are higher than the cost of such bonds. Organizations such as the Government Finance Officers Associations (GFOA) raise the following five concerns about POBs.[5]

1. The invested POB proceeds might fail to earn more than the interest rate owed over the term of the bond, leading to increased overall liabilities for the issuer.
2. POBs are complex instruments that carry considerable risk. POB structures may incorporate the use of guaranteed investment contracts, swaps, or derivatives, which must be intensively scrutinized as these embedded products can introduce various risks, including credit risk and interest rate risk.
3. Issuing taxable debt to fund the pension liability increases the issuer's bonded debt burden and potentially uses up debt capacity that could be used for other purposes. In addition, taxable debt is typically issued without call options or with "make-whole" calls, which can make these instruments more difficult and costly to refund or restructure than is traditional tax-exempt debt.
4. POBs are frequently structured in a manner that defers the principal payments or extends repayment over a period longer than the actuarial amortization period, thereby increasing the sponsor's overall costs.
5. Rating agencies may not view the proposed issuance of POBs as credit positive, particularly if the issuance is not part of a more comprehensive plan to address pension funding shortfalls.

Other experts believe that POBs issued at the bottom of a recession (or beginning of a recovery) are usually successful. For example, in the context of the current economic downturn due to the COVID-19 pandemic, a recent article in *Pensions and Investments* argues that the time is ripe for POBs.[6]

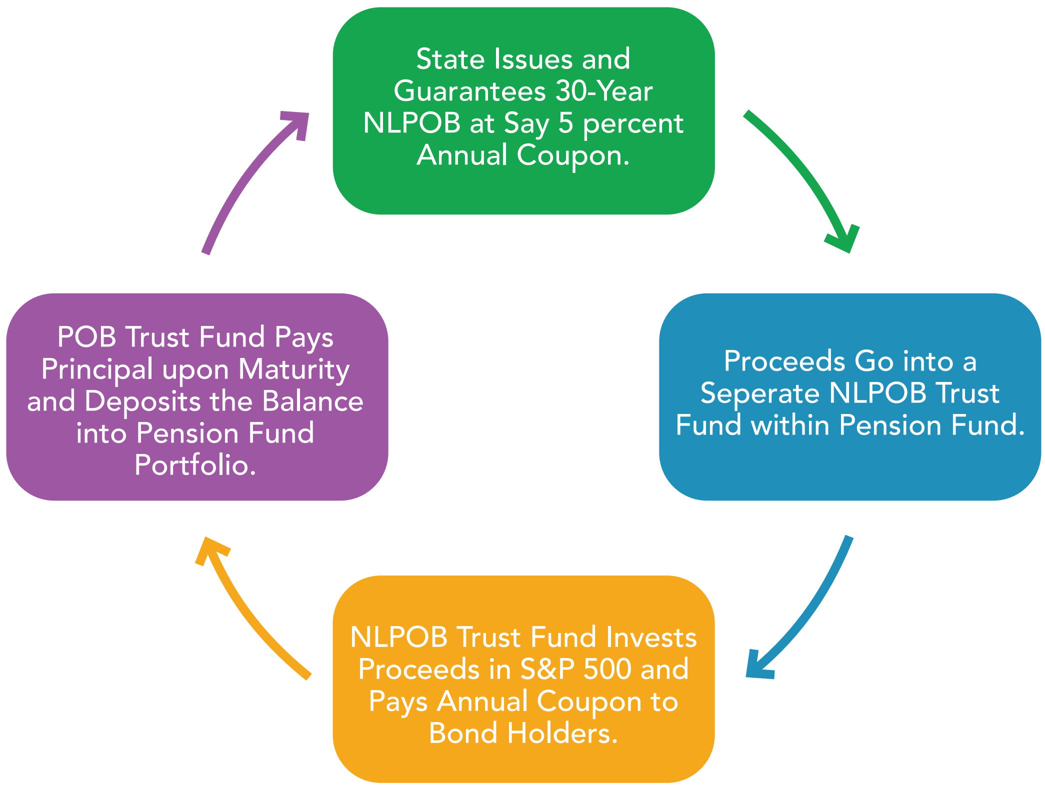
We propose considering a new approach to POBs, which we call *new limited pension obligation bonds* (NLPOBs), for lack of a better term. A limited bond is one that is paid off from a designated revenue stream. How will NLPOBs work? This is depicted in Figure 1 and described below.

5 www.gfoa.org/pension-obligation-bonds.

6 www.pionline.com/industry-voices/commentary-time-ripe-public-pension-obligation-bonds.

Figure 1

Simplified Flowchart Showing How New Limited Pension obligation Bond (NLPOB) Would Work



States would issue and guarantee 30-year NLPOBs. Although we have backtested the bond at the prevailing rate at the time the NLPOB was issued, we believe that a 5 percent annual coupon would be plausible in the current economic environment. Why state guarantee? Again the analysis shows that a state guarantee would be a safe bet for the state instead of incurring additional cost to buy a hedge or insurance.

Next, the NLPOB proceeds would be deposited in a separate NLPOB Trust established within the pension plan. The NLPOB Trust would invest the proceeds in the S&P 500 Index and pay an annual coupon rate to bondholders. The principal would be paid by the NLPOB Trust to bondholders upon maturity. The balance after paying off the bonds would be deposited in the pension fund portfolio, and the NLPOB Trust would be dissolved.

Why a 30-year bond? Since we are proposing that proceeds are invested in the S&P 500 Index, the shorter-term bonds are likely to have mixed results. However, our analysis shows that 30-year bond yields would tend to be reliable. For example, Table 1 shows that returns on investment of proceeds of a $100 million 30-year NLPOB issued on January 1 in any year from 1977 to 1990, and maturing on December 31 in any year from 2006 to 2019, were higher than the cost of the bonds. This was true even when annual coupon rates in some years were in double digits. A sample calculation algorithm of the 30-year $100 million NLPOB issued on January 1, 1990, and maturing on December 31, 2019, at an 8 percent coupon is shown in the appendix. The year-end balance of this hypothetical bond after paying off the principal and annual coupon is $371.4 million.

Table 1

Balance after payment of principal and annual coupon on a 30-year $100 million new limited pension obligation bond maturing in each year from 2006 to 2019.

Issuance January 1	Maturity December 31	Annual Coupon (%)	Balance ($)
1977	2006	7.8	1,139,167,127
1978	2007	8.19	1,678,900,331
1979	2008	8.97	937,546,114
1980	2009	10.61	728,465,762
1981	2010	12.13	145,652,769
1982	2011	14.41	216,492,047
1983	2012	10.5	633,305,011
1984	2013	11.72	383,536,895
1985	2014	11.64	587,318,298
1986	2015	9.34	520,068,334
1987	2016	7.29	701,828,579
1988	2017	9.12	637,295,516
1989	2018	8.76	512,251,319
1990	2019	8.29	371,464,656

If the proposed NLPOBs were issued in the late 1970s at coupon rates of 7 percent and 8 percent, respectively, the returns were about 10 times more than the cost of the bond. For example, the NLPOBs issued in 1977 and 1978 and matured in 2006 and 2007 yielded the highest returns – $1.1 billion and $1.6 billion, respectively, after paying off the bond.

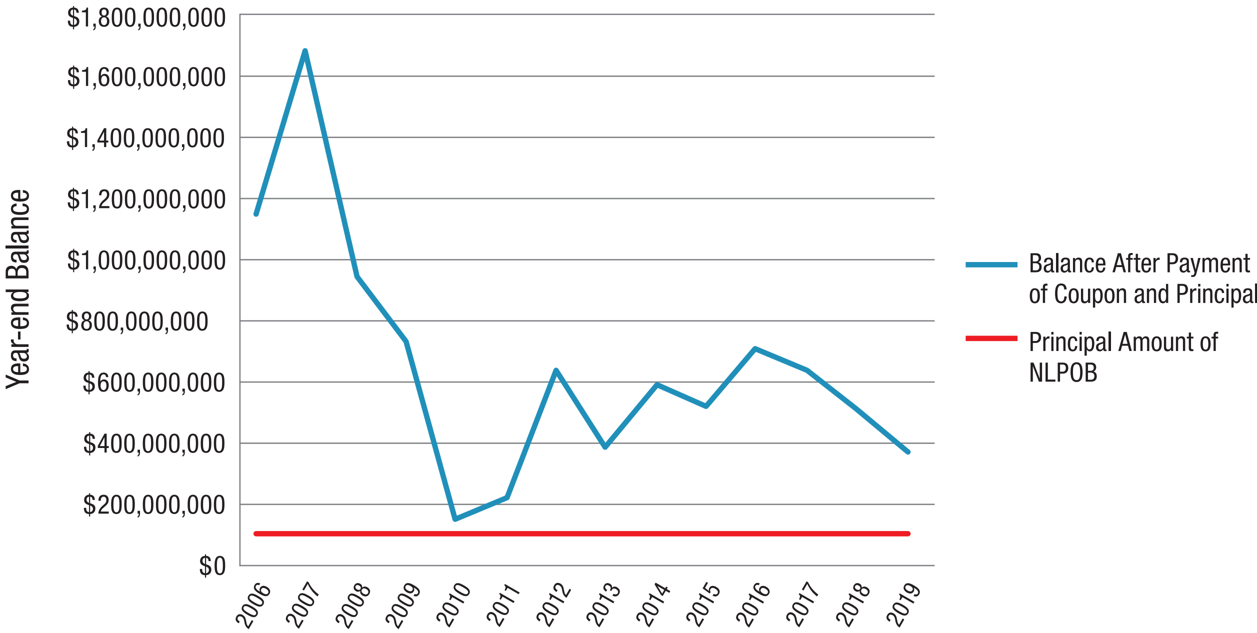
On the other end, NLPOBs issued in 1981 and 1982 yielded the lowest returns, mainly because the annual coupons in those years were 12.3 percent and 14.41 percent, respectively. Still the returns were about 1.5 to 2.0 times more than the cost of the bond. The results in Table 1 are shown in graphic form in Figure 2. The figure shows that the balance after paying off the bond is never less than the principal of the NLPOB.

The coupon rate and duration of the NLPOB are key factors in our analysis, functioning as a sort of backward-looking stress test. We found that a 30-year NLPOB at an annual coupon rate of as high as 14 percent may be a safe investment. The ups and downs in the S&P 500 rate of return are another important factor in backtesting. But our analysis shows that over a longer duration, it is a relatively safe bet that one would come out ahead.

Of course, pension funds may have better tools and strategies to manage the risks and returns. Regardless of how bond proceeds are invested, the ultimate goal is to pay off the bond and reduce the funding gap.

Figure 2

Year-end Balance after Payment of Principal and Annual Coupon on a 30-Year $100 Million New Limited Pension Obligation Bond Maturing in Each Year from 2006-2019



One last factor that might affect the final outcome of NLPOB is issuance cost. According to GFOA, these costs include payments to financial and legal advisors; trustees, if any; underwriters; paying agents; auditors; rating agencies; and other providers of services. Some of these costs, for example, those for underwriters, may be deducted from the proceeds of the bonds at closing, and therefore issuers typically do not "write a check" for these services.[7] These costs usually amount to about 0.75 percent of the issue amount and may be as high as 1.50 percent. We tested the impact of payment of issuance cost from proceeds using the highest annual coupon rate in our analysis, that is, NLPOB issued in 1982 at a 14.4 percent coupon. The year-end balance on NLPOB after paying off the bond, without taking into account the issuance cost, was $216,492,047. After we take into account a 0.75 percent issuance cost from proceeds, the balance was $202,450,610 – about a $13 million difference. It may be prudent not to pay issuance costs from bond proceeds. If paid by the issuer, the cost for a $100 million bond will be only about $750,000 (not $13 million).

7 www.gfoa.org/debt-issuance-transaction-costs.

Policy Option 2

EXPLORING ACTIONS OF THE FEDERAL RESERVE BANK

Dealing with the Federal Reserve System is not something trustees and managers of public pensions do on a day-to-day basis. But they do monitor Federal Reserve actions as they affect their investment decisions. Could they influence Federal Reserve actions through advocacy, as they do in state legislatures through testimonies?

A recent article by Robert Kuttner, co-founder of *American Prospect* and a speaker at NCPERS Forum, addresses why the Federal Reserve doesn't buy student loan portfolios.[8] Kuttner notes,

> The Federal Reserve is buying about $9 trillion worth of all manner of corporate and Wall Street securities in order to pump up the financial part of the corona economy. In the course of doing this, our central bank has bailed out trillions of dollars of bad financial bets.… A major category of debt not included is the $1.65 trillion in student debt, which was destroying the prospects of two generations of young adults even before the virus struck. A lot of this debt has been securitized, in the same manner that subprime loans were securitized in the run-up to the collapse of 2008.

By the same token, one might say, why doesn't the Federal Reserve buy underperforming or toxic assets of pension funds or even buy the entire unfunded liability of public pensions through plan sponsors' municipal bonds? After all, the Federal Reserve seems to have unlimited capacity and has been creating money out of thin air without causing inflation.

We had explored the role the Federal Reserve can play to address pension funding issues with Dennis Lockhart (former president and CEO of the Federal Reserve Bank of Atlanta) at the 2015 Public Pension Funding Forum. During his speech[9] at the forum, he said the funding status of public pensions does not pose any threat to the US economy or financial markets. Yet there are some actions that the Federal Reserve is now planning to take that pension funds may consider as they address funding issues. For example, in light of the COVID-19 economic downturn, the Federal Reserve has opened a new municipal discount window and is willing to buy municipal assets as well as exchange-traded funds.

5 Robert Kuttner, Kuttner on TAP: E-mail Blast, Student Debt and the Fed (May 1, 2020).

6 Dennis Lockhart, The Interplay of Public Pensions and the Board Economy, Public Pension Funding Forum speech (August 24, 2015), www.frbatlanta.org/news/speeches/2015/0824-lockhart.

Before these recent emergency measures, Federal Reserve actions affected pension funds indirectly. For example, when the Federal Reserve takes actions to stabilize financial markets and stimulate the economy, it affects pension fund investment decisions and returns. Let us examine the actions that indirectly affect public pensions, for example, changes in the federal funds rate target,[10] and then discuss some of the recent actions in response to COVID-19, for example, the municipal discount window and purchase of municipal bonds, toxic assets, and underperforming assets such as exchange-traded funds that may have direct implications for public pension funds.

Federal Reserve Actions That Have Indirect Impact on Public Pensions

The Federal Reserve plays a key role in the economy through various tools, of which the federal funds rate is the best known. It's the rate banks use to borrow funds from each other overnight without collateral. When the Fed lowers the rate, it is conducting expansionary monetary policy. When the funds rate is low, bank lending is cheaper, businesses expand, mortgage rates drop, and housing and stock markets improve. Lowering the funds rate is generally undertaken to stimulate the economy.

By contrast, when the Federal Reserve raises its federal funds rate target, it is putting the brakes on an overheated economy or conducting contractionary monetary policy. A higher federal funds rate makes banks less inclined to borrow money from one another to keep their reserves at the mandated levels. Instead they borrow directly from the Federal Reserve discount window, which requires collateral. Hence, the money that is lent by banks will be lent at a higher rate, which results in a reduction in business borrowing and higher mortgage interest rates. By tempering the economy through federal funds rate hikes, the Federal Reserve is attempting to keep inflation in check.

Federal Reserve Actions That May Directly Affect Public Pensions

When raising or lowering the funds rate does not produce the desired results, the Federal Reserve deploys other tools that are less commonly known. These include quantitative easing and helicopter money. Use of some of these tools by the Federal Reserve can have direct implications for public pensions. For example, in light of the shutdown of the economy due to the COVID-19 pandemic, state and local revenues are likely to fall short. The Federal Reserve, on April 9, 2020, announced it was establishing a Municipal Liquidity Facility,[11,12] to support state and local liquidity needs. Similarly, the Federal Reserve has expanded the asset purchasing program (quantitative easing) to the municipal sector. This program was previously limited to the corporate and banking sectors.

10 The federal funds rate is the interest rate at which depository institutions lend reserve balances to one another on an overnight basis. The Federal Open Market Committee of the Federal Reserve System establishes a target interest rate and influences it by conducting open market operations such as buying and selling government securities.

11 Federal Reserve Board of Governors, "Federal Reserve Takes Additional Actions to Provide up to $2.3 Trillion in Loans to Support the Economy," press release (April 9, 2020).

12 Federal Reserve Board, "Municipal Liquidity Facility," www.federalreserve.gov/monetarypolicy/muni.htm.

Discount windows. The Federal Reserve requires financial institutions to maintain a certain level of reserves for the purpose of liquidity. When banks cannot borrow from each other to maintain the required level of reserves, they turn to the Federal Reserve's discount windows. These loans are usually short term (48 hours to one month), and the borrowers have to offer collateral.

Prior to the COVID-19 pandemic, there were three discount windows: primary, secondary, and seasonal. They have different interest rates depending on the borrower's credit rating – primary being for those institutions with solid credit. The rate for the primary window is 50 basis points higher than the federal funds rate. For the secondary window, the rate is 100 basis points above the prevailing funds rate. During financial emergencies, however, the rate can be lowered or adjusted at the Federal Reserve's discretion. The length of each loan also can be extended. The seasonal window is designed for smaller banks, such as farm banks, with deposits less than $500 million, to help them meet liquidity needs that fluctuate. These banks can borrow money for up to nine months. The interest rate is driven mainly by market conditions.

After the shutdown of the economy due to COVID-19 and the expected drop in state and local revenues, the Federal Reserve has opened the Municipal Liquidity Facility. The purpose of this window is to meet the liquidity needs of state and local governments. A recent article in *Pensions and Investments* underscores that pension funds will increasingly need liquidity to pay benefits as a result of COVID-19.[13] The Municipal Liquidity Facility will come in handy for this purpose. Details may have to be worked out, but pension funds, especially mature plans, might be able to obtain short-term loans to meet their liquidity needs. At this time we do not know details of how this is working and who is using it.

Quantitative easing. Quantitative easing, or the asset purchasing program, is another tool that the Federal Reserve uses to increase the money supply. Quantitative easing is an important tool when traditional tools such as lowering interest rates and adjusting the money supply through the purchase and sale of US treasuries do not work.[14] Quantitative easing expands asset purchasing beyond treasuries to include corporate securities. By purchasing corporate securities, such as troubled or toxic assets (such as subprime-mortgage-backed securities) from the market, the Federal Reserve increases the money supply, which in turn stabilizes financial markets and the economy.

In the wake of the COVID-19 economic downturn, the Federal Reserve plans to extend the asset purchase program to state and local government securities.[15] This approach could provide the added liquidity that state and local governments need when tax revenues fall short. Pension funds can benefit from this new program as it can provide state and local governments an avenue to address the funding needs of public programs, including pensions.

The Federal Reserve potentially could buy toxic and underperforming assets. Pension funds often have resorted to courts to seek settlements on these matters, with mixed results. The following two examples illustrate the mixed results:

- A mortgage-backed security (MBS) class-action suit, led by the Iowa Public Employees Retirement System, resulted in a decision by the US District Court for the Central District of California that granted a $500 million settlement between investors and Countrywide Financial Corporation. The case involved allegations that the plaintiffs and

13 www.pionline.com/investing/after-extinguishing-fires-asset-owners-turning-liquidity.

14 www.investopedia.com/articles/personal-finance/082216/what-difference-between-helicopter-money-and-qe.asp..

15 www.marketwatch.com/story/fed-likely-to-support-municipal-debt-says-former-new-york-fed-president-2020-04-02.

other investors were sold billions of dollars worth of MBS certificates backed primarily with defective Countrywide-originated loans. By late 2008, virtually all of those certificates were downgraded to junk bond status. In addition to Iowa Public Employees Retirement System, which was appointed lead plaintiff, the class included the Maine State Retirement System, Oregon Public Employee Retirement Fund, Orange County Employees' Retirement System, and General Board of Pension and Health Benefits of the United Methodist Church.[16]

- The Oklahoma Police Pension & Retirement System MBS class-action suit against U.S. Bank was not so successful. A federal judge in the US District Court for the Southern District of New York in 2013 dismissed the claim by the Oklahoma pension fund that the bank took shortcuts, including a failure to actually take possession of loan documents underlying MBSs.[17]

The Federal Reserve's action to purchase municipal assets will go a long way and potentially provide a new model for how public pension systems can be assisted when under pressure. No one knows precisely what percentage of the public pension portfolio consists of toxic assets, but an examination of Wilshire data suggests that about 7 percent of pension fund assets consist of investment in real estate or real estate products. Even if 3.5 percent is invested in MBS or other similarly structured products, it amounts to about $100 billion. Such action by the Federal Reserve will relieve some funding pressure on public pensions, as it already has done for private companies.[18]

Helicopter money. Helicopter money is a monetary policy tool that the Federal Reserve may use to stimulate the economy. Economist Milton Friedman introduced the framework for helicopter money in 1969, but former Federal Reserve Chairman Ben Bernanke popularized it in 2002. This policy theoretically should be used in a low-interest-rate environment when an economy's growth remains weak. Helicopter money involves the central bank's or central government's supplying large amounts of money to the public, as if the money were being scattered from a helicopter.

Obviously, helicopter money is targeted at providing the economy a stimulus through consumer spending. It's the equivalent of the $1,200 check for each eligible American recently approved by Congress as part of the 2020 Coronavirus Aid, Relief, and Economic Security Act. Helicopter money has semidirect implications for public pensions. For example, sales tax is the main source of revenue for most states. Helicopter money will have a direct impact on state and local sales tax revenues and hence their capacity to fund public pensions during the COVID-19 economy.

16 For more information about the case, visit www.cohenmilstein.com/cases/224/countrywide-mortgage-backed-securities-mbs-litigation. Editor's note: A copy of the court order is available from Cohen Milstein Sellers & Toll PLLC, Pamela Avery, 402-305-0799, pam@turnerstrategies.com. Published Friday, December 6, 2013, 7:06 PM ET, www.cnbc.com/id/101254492.

17 The case is *Oklahoma Police Pension & Retirement System v. U.S. Bank NA*, case number 1:11-cv-08066, in the US District Court for the Southern District of New York. www.law360.com/articles/446941/us-bank-gets-pension-fund-s-mbs-trustee-suit-pared-down.

18 www.insurancejournal.com/news/national/2010/04/02/108690.htm.

Policy Option 3

EXPLORING BRIDGE LOANS TO INCREASE LIQUIDITY

Prior to the Federal Reserve's opening of the Municipal Liquidity Facility, pension funds used short-term bridge loans to meet their liquidity needs. For example, Bank of America has a municipal credit facility that large and small pension plans have used under various arrangements. These arrangements include revolving lines of credit, unsecured general recourse or asset-based recourse pledges, fixed- or floating-rate term loans, and letters of credit. Uses of bank municipal credit facilities include covering benefit payments, meeting capital calls associated with alternative investments, and rebalancing portfolios, to name a few.[19]

Now that the Federal Reserve Municipal Liquidity Facility and existing commercial bank municipal credit facility are available, pension funds may have more options to meet their liquidity needs. They can compare and assess what best fits their needs.

19 Chris Straub, *Bank Credit Facilities*, Public Pension Funding Forum presentation (September, 11, 2018).

Policy Option 4

SECURITIZING PUBLIC ASSETS

In most cases, public pensions are funded through own-source general fund revenues. But in case of urgent needs, instead of dismantling pensions, governments can use securitization of public assets. Securitization means taking a state and local asset that generates cash flow and turning it into a marketable security. A typical example is MBS issued by Fannie Mae and Freddie Mac. These types of securities are underwritten by investment banks and traded on the stock exchange. They are backed by cash flow generated by underlying assets. In case of MBS, the security is backed by mortgages paid by homeowners. Cash flows from various assets are often pooled to minimize risk to investors.

In the public sector, municipal governments usually have significant assets that could provide extra cash to meet urgent pension funding needs. Governments may lease these assets, which in turn can be securitized by the underwriter. In theory, cash flow from an asset may be dedicated directly to a pension fund without securitization. A few examples may help.

- Chicago securitized its on-street parking enterprise for $1 billion and used the proceeds to fund a current operating deficit.
- Pittsburgh rejected a bid of $453 million for a 50-year lease on parking revenues to fund its pension deficit. Instead, it sought to accomplish the same purpose by transferring the yearly parking revenue directly to the pension system.
- Allentown, Pennsylvania, leased its water utility for 50 years in return for $211.3 million, of which $160.0 million was used to reduce the unfunded pension liability.

Policy Option 5

EXPLORING DEDICATED REVENUE STREAM

In some cases a state or local government can create or dedicate an existing revenue stream to address pension funding needs. A few examples of this approach follow.

The Pennsylvania State legislature authorized Philadelphia to collect an additional 1 percent sales tax for five years to offset increased pension contributions. Later, the legislature made the sales tax permanent. A fixed amount was dedicated to school funding, with the remainder dedicated to pension funding.

The city charter of Portland, Oregon, authorizes a special property tax levy to generate the amount of revenue required to pay all estimated expenses for its Fire & Police Disability, Retirement & Death Benefit Plan.

The Kansas legislature passed a law in 2012 that allows gaming revenues from state-owned casinos (approximately $30 million a year) to be directed to the Kansas Public Employee Retirement System, along with 80 percent of revenue from the sale of any surplus public real estate.

The Montana legislature approved a bill in 2013 that dedicates a portion of the coal extraction tax to the state's unfunded pension liabilities.

The New Jersey legislature passed a law in 2017 that directed that a portion of lottery proceeds go into pension funds. In 2018, for example, of the $2.5 billion contribution, $1 billion came from the proceeds of the state lottery.

Some states supplement funding of their pension plans through a revenue stream generated by tax on insurance premiums. For example, in Oklahoma, police and fire pension funds are funded by 41 percent of total insurance premium tax revenues. In Florida, there is a 1.85 percent excise tax on property insurance and a 0.85 percent excise tax on casualty insurance – proceeds of these taxes are used to pay for police and fire pensions. Similarly, in Arizona, Colorado, Florida, Idaho, Pennsylvania, and Washington, police and fire pension systems are funded by a portion of the insurance premium tax.

Policy Option 6

ESTABLISHING A STABILIZATION FUND

A public pension stabilization fund can serve as a cushion for economic ups and downs. Such funds are in effect rainy day funds that can be tapped to correct imbalances in a pension system. When there is a shortfall, a stabilization fund provides a clear and legally mandated mechanism to cover it. Stabilization funds also can be used to prevent unfunded liabilities from growing beyond a certain level. We are aware of only a couple of states that have established stabilization funds.

In 2013, Oklahoma created the pension stabilization fund. This fund can be used only when funding levels drop below 90 percent. Stabilization is funded by sin taxes such as cigarette and alcohol taxes and lottery proceeds.

Voters approved a stabilization fund in Louisiana in 2016. The Louisiana stabilization trust fund is funded by recurring mineral and corporate tax revenues. Although it is not specifically designed for pensions, the legislature can appropriate money from this fund to address pension funding issues if certain conditions are met. These conditions include a two-thirds vote and the minimum balance in the fund not falling below $5 billion. To the best of our knowledge, neither of these pension stabilization funds yet has been tapped, so in that respect the concept is new and untested. However, these mechanisms bear watching, and the pension systems may wish to learn more about how they have been designed and received.

Policy Option 7

EXPLORING MONTHLY EMPLOYER CONTRIBUTIONS

The Wisconsin Retirement System (WRS) is known to be one of the best-funded systems in the country. One of the characteristics of WRS is that employer contributions are part of payroll, just as employee contributions are. This has at least two advantages. First, it takes employer contributions out of the political realm where lump sum payments may be made in full or in part through an appropriation process. Second, the money is available to pension funds for investment sooner and on a regular basis along with employee contributions.

We do not have state-by-state data showing in which states employer contributions are made through payroll. Conversations with the former executive director of Nevada System indicated that employer contributions for the regular and public safety plan in Nevada are made on a monthly basis in sync with payroll deductions of employee contributions. But for some plans, for example, North Carolina's, Indiana's, California's, and Pennsylvania's, employers make contributions on a quarterly basis.

The main benefit of making employer contributions more frequently is that doing so tends to increase investment returns. This is because earnings are accruing against the funds over a longer period – and as we all learn in Economics 101 or personal finance classes, the power of compound interest multiplies money at an accelerated rate. For this reason, the New Jersey legislature unanimously passed legislation mandating that employer contributions be made on a quarterly basis. An analysis of the impact of this change shows that New Jersey's system would have earned $145 million more if quarterly payments had been in effect a year earlier.[20]

Table 2 shows the additional amounts state and local pensions would have earned if all employer contributions in the United States were made on a monthly basis. To estimate the impact of monthly employer contributions on returns, we have used 2018 US Census Bureau data (the latest data available). These data show that in 2018 state and local governments contributed $162.3 billion. Some states made these contributions on a monthly or quarterly basis and others on

20 reason.org/commentary/new-jersey-shifting-to-quarterly-pe/.

an annual basis or some other basis. If everyone made the contributions on a monthly basis, it would amount to about $13.5 billion per month ($162.3 / 12 = $13.5), as shown in column 2 of Table 2. During the same year, investment of $4.3 trillion of pension fund assets yielded $436.2 billion in returns. This return is approximately 10.05 percent ($436.2 billion / $4.3 trillion = 10.05). For our analysis, we have changed the 10.05 percent rate into a monthly rate of 0.8375 percent (10.05 / 12 = 0.8375).

The results in Table 2 show that if all plan sponsors made monthly contributions, state and local pension funds would have $9.96 billion more than what they had received under the prevailing employer contribution practices. This would be a relatively small yet significant contribution toward improving pension funding. Every dollar counts.

Table 2

If all state and local pension funds got employer contributions on a monthly basis in 2018, they would have earned $9.96 billion more ($1,000).

Month	Monthly Investments ($)	Monthly Interest ($)	Monthly Balance ($)
1	13,527,056	113,289	13,640,345
2	27,167,401	227,527	27,394,928
3	40,921,984	342,722	41,264,706
4	54,791,762	458,881	55,250,643
5	68,777,699	576,013	69,353,712
6	82,880,768	694,126	83,574,894
7	97,101,950	813,229	97,915,179
8	111,442,235	933,329	112,375,564
9	125,902,620	1,054,434	126,957,054
10	140,484,110	1,176,554	141,660,665
11	155,187,721	1,299,697	156,487,418
12	170,014,474	1,423,871	171,438,345
Estimated total annual contributions			171,438,345
Actual annual contributions			162,324,674
Additional money to invest in portfolio			9,113,671
Impact on return of total portfolio			847,363
Total impact of monthly contributions			**9,961,034**

Policy Option 8

EXPLORING PLAN CONSOLIDATION

Consolidation can provide economies of scale. For example, in 1975, Wisconsin lawmakers passed legislation that asked the state's Department of Employee Trust Funds (ETF) to consolidate most state and local retirement systems into a single organization. These systems had a number of benefit formulae, with some closer to DC than DB. The challenge was to figure out how to make them all fit together. More recently, Illinois has consolidated its police and fire plans into statewide plans. A few years ago, Nebraska consolidated the investment function of various local plans at the state level. Consolidation has the benefit of creating economies of scale, but the downside is that it may take away local control of well-functioning, successful plans. Therefore, consolidation should be carefully assessed, weighing the particular circumstances and needs of all stakeholders.

For successful plans such as Wisconsin's, which has been well funded, consolidation may be one of many factors that are in play, including auto-triggers.

Policy Option 9

EXPLORING AUTO-TRIGGERS

In Wisconsin, the coordinated efforts of the Employee Trust Fund and the Wisconsin legislature (through the later Retirement Research Committee) resulted in a design that will provide a relatively modest pension with no cost-of-living adjustments (COLAs) but will supplement it with postretirement annuity adjustments that are increased or decreased depending on investment performance. Similarly, employer and employee contributions to the plan are adjusted based on investment returns and changes in life expectancy. This is known as an auto-triggers approach.

Auto-triggers by themselves may not be the reason that Wisconsin Retirement System WRS continues to be well funded. Following are a few other characteristics of the Wisconsin system:

- Retiree liabilities are discounted at a conservative 5 percent; compare this to the plan's active liabilities of 7 percent.
- The board has the authority to set contribution rates and annuity adjustments "based upon recommendations of the actuary." These are actuarial decisions, not political ones.
- Contributions are treated as fringe benefit costs and not as a separate expenditure requiring annual appropriations.
- WRS can intercept state aid to capture any contributions not paid by a participating unit of government (though the plan has never had to use this tool).
- Contribution rates are set annually to ensure full funding of future benefits.
- Contribution rates are generally split evenly between employees and employers.
- Amounts due from employers and employees are paid in full.
- To keep costs low, the State of Wisconsin Investment Board invests assets professionally, prudently, and efficiently. The majority of WRS benefits paid (approximately 75 percent, according to some estimates) come from investment earnings.
- Unlike most other public pension systems, employees and retirees bear most of the investment risk.
- COLAs depend on investment performance and can be reduced or increased based on investment returns, but annuities cannot be reduced below the original amount set at retirement.

Thus, in addition to consolidation and auto-triggers, Wisconsin has noteworthy features. Wisconsin uses auto-triggers to determine COLAs. Employer and employee contributions in Wisconsin are part of monthly payroll deductions and not annual appropriations. Although it has never been invoked, Wisconsin has a recapture provision through which the system can recapture money from state aid to local jurisdictions if the local does not make pension contributions.

Many plans in the United States use auto-triggers to determine COLAs. Some have started using them to determine employer and employee contributions as well. One of the plans that uses auto-triggers to determine contribution rates is the Maine Public Employees Retirement System (MainePERS).

According to Sandy Matheson, executive director of MainePERS, the system has a multiple-employer cost-sharing arrangement with local jurisdictions. Matheson outlines the problem as follows:

The economic projections MainePERS looked at in early 2016, following two years of 1.5 percent returns, showed that returns could hover at 4 percent for the next four years before climbing slowly back up to 8 percent. Stress-testing this scenario showed that employer contribution rates would have to be increased, benefits curtailed, or both to maintain the plan's funding level. Above all, participating jurisdictions could and likely would drop out of the plan if employer rates became too high. These actions would create a last-man-standing situation, leading to the probable demise of the pension plan.

To address the problem and avoid a cycle of raising rates and reducing benefits following difficult financial markets, MainePERS created a new framework within the existing DB plan that has the following features:

- Both employer and employee contribution rates are variable.
- These rates are determined annually based on market returns.
- Rate caps and minimums for both employers and employees reduce volatility in contribution rates and provide cost predictability.
- Excess required contributions are amortized into the COLA, essentially eliminating COLA freezes or cap reductions.
- Subsequent market gains are amortized first into the COLA and then into employer and employee rates.

Employers pay for their liabilities upon withdrawal.

Due to these and related changes to discretionary benefits, the plan moved from an 86 percent funding level to an 89 percent level and is expected to continue to increase, ultimately to 100 percent or more. Employers know how to budget in bad times because they know the maximum their contribution rates can be. Employees get to share in the good times rather than continue to pay fixed rates, but they may still see their benefits reduced in bad times.

The successful implementation of the new framework at MainePERS, according to Matheson, is a result of intensive communication and discussions with stakeholders. She says future success will depend on continued communication. The foregoing suggests that auto-triggers by themselves may not be a magic bullet. Plans like Wisconsin's and Maine's have incorporated auto-triggers in their plan designs, but they have other features that in combination with auto-triggers contribute to their overall funding status.

Policy Option 10

REFORMING REVENUE SYSTEMS AND CLOSING TAX LOOPHOLES

The ultimate policy option is to reform revenue systems and close tax loopholes. The ability of state and local governments to adequately fund public services that citizens need depends on governments' economic capacity as measured by GDP or personal income. The amount of revenue that state and local governments need to fund services depends on how their revenue systems are structured and how many tax loopholes they countenance. To best utilize their economic capacity, the revenue system and economy must be in sync. Unfortunately, that is not the case.

Tax reform is not something trustees and administrators of public pensions do on a day-to-day basis. But many pension plans have government relations representatives and other advocates who can lobby policy makers to protect and preserve public pensions. It is important to understand what's going on in this area.

Tax reforms. During the past several decades, intentionally or unintentionally, state and local governments have made their revenue system more regressive by cutting progressive and stable taxes such as income and property tax and by filling the resulting revenue shortfalls with risky and regressive revenue schemes such as casinos, lotteries, and excise taxes. Furthermore, state and local revenue systems are laden with tax loopholes and economic development subsidies. If this trend continues, state and local governments won't be able to maintain funding for the current level of vital public services, let alone fund pensions adequately.

A good tax system should be in sync with the economy. Taxes shouldn't be too high. They shouldn't be too low. They should be broad based and progressive. A good tax system should provide stability during bad economic times and keep pace with the economy in good economic times. Currently state and local tax systems are regressive and inequitable. They are out of sync with the economy. When the economy grows, tax revenues lag. When it slows, revenue shortfalls exacerbate.

To assist pension fund stewards and advocates, NCPERS has recently published a practical guide to raising needed revenues and closing loopholes.[21] Advocates of public pensions usually go to the budget committee hearings room where everyone is fighting for a share of the pie, whereas the revenue committee hearings room is full of lobbyists from chambers of commerce and corporate lobbyists trying to reduce the size of the pie and seeking tax subsidies and tax loopholes.

21 www.ncpers.org/files/Tax%20Loopholes%20Final.pdf.

As advocates of public pensions, we need to monitor the revenue side of the equation as well. The NCPERS guide outlines a simple way, apart from being in the right room at the legislature to protect the revenues currently available to pension systems, to tell if a given state and local tax system are well conceived.

What are the hallmarks of a good, fair, and effective tax system? One way to determine a good tax system is to look at its elasticity. Elasticity measures whether revenues are in sync with the economy. An elasticity of 1 means the revenue system is in sync with the economy. For example, if the economy grows by 1 percent, revenues grow by 1 percent. On the contrary, an elasticity of less than 1, say 0.8, means that if the economy grows by 1 percent, revenues grow by 0.8 percent. When the economy grows, the need for public services and hence revenues grows. But an elasticity of less than 1 means that we'll never have enough revenues to maintain the current level of public services. Ideally, elasticity should be more than 1 so that during good economic times an adequate rainy day fund can be built to weather economic downturns.

A simple way to measure the elasticity of a tax system is provided below, and it also may be found on page 8 of the NCPERS guide. If 40 percent of state and local revenues come from income tax, 40 percent from sales tax, and 20 percent from all other sources, the elasticity of the revenue system is 1.14. On the contrary, if 80 percent come from sales taxes and 20 percent from all other taxes, the elasticity is 0.74. The elasticity of 0.74 means that if the economy grows by 1.00 percent, revenues grow by 0.74 percent. In other words, revenues are coming up 26.00 percent short. This can add up year after year to a point where state and local governments cannot adequately fund public services that citizens need.

Information about what percentage of revenues comes from which source is usually available from state revenue departments as well as from various public sources such as the Census of State and Local Government Finance.[22] Stakeholders can simply assess any state or local tax legislative proposal by asking how it would affect the tax system's overall elasticity.

Tax loopholes. Tax loopholes are provisions in the tax law that allow multinationals or multistate corporations to avoid taxes. More plainly, corporations may be following the letter of the law when they avoid taxes through loopholes, but they are not meeting their responsibility to pay their share of the public services that they use. Most people believe that corporations should pay their fair share because they are doing business in a given jurisdiction and using public services like police, fire, roads, and schools. For

Table 3

How the composition of taxes effects General Fund elasticity

	IF: 40%, 40%, 20%			IF: 20%, 60%, 20%			IF: 0%, 80%, 20%		
	a	b	a x b	a	b	a x b	a	b	a x b
	Tax Share	Tax Elasticity	General Fund	Tax Share	Tax Elasticity	General Fund	Tax Share	Tax Elasticity	General Fund
Personal Income	40%	1.8	0.72	20%	1.8	0.36	0%	1.8	0.00
General Sales	40%	0.8	0.32	60%	0.8	0.48	80%	0.8	0.64
Other	20%	0.5	0.10	20%	0.5	0.10	20%	0.5	0.10
TOTAL ELASTICITY			**1.14**			**0.94**			**0.74**

22 www.census.gov/programs-surveys/gov-finances/data/datasets.html.

example, General Electric paid no taxes from 2008 to 2015 (despite large US profits) yet used public infrastructure and other public services such as public safety services.[23] This is unfair to small businesses who pay their fair share of taxes.

There are several types of tax loopholes, but most relevant to advocates of public pensions are those that allow companies to avoid tax responsibility at the state level. These include the throwback rule loophole, passive investment company (PIC) loophole, and nonbusiness income loophole.

Throwback rule loophole. Some companies cannot be taxed in every state because the level of business they are conducting in that state does not rise to the level that can be taxed. As a result, those companies sometimes assign income to the states where activity does not reach threshold levels, thus creating "nowhere" income. In other words, this income cannot be taxed by any state because it was reportedly earned in a state that has no taxing authority over that company. Enacting the throwback rule ensures that profits earned in a state in which a corporation may not be subjected to an income tax are taxed instead by the company's home state.

PIC loophole. Many major corporations have implemented a corporate income tax avoidance strategy that is based on transferring ownership of the corporation's trademarks and patents to a subsidiary corporation located in a state that does not tax royalties, interest, or similar types of intangible income. Such companies are called PICs. PICs can escape taxation by making payments to themselves. For example, the state corporation makes a royalty payment to the Delaware PIC, and because there is no state income tax in Delaware, that payment escapes taxation. The Delaware PIC then makes a payment back to the parent company and finally all the way back to the state corporation. These payments are for the sole purpose of avoiding tax, and all of these payments escape taxes through the PIC loophole.

Nonbusiness income loophole. The definition of "business income" has provided aggressive corporations with an enormous loophole they have used to deny many states their fair share of tax on billions of dollars' worth of corporate profits. Business income is traditionally defined as income that is generated from a company's core business and is generally taxed where it is earned. This definition excludes mergers and acquisitions as well as sales of divisions, equipment, and so forth. As one might imagine, an enormous amount of income is generated by these activities. This income is defined as nonbusiness income and is generally taxed where a business is located or in its headquarters' state. This definition becomes a loophole because most businesses are located in nontax states, like Delaware, or even overseas, making their nonbusiness income tax free. Expanding the definition of business income to capture certain types of nonbusiness income would close this loophole.

How to close these loopholes. There is a comprehensive way to nullify artificial income-shifting strategies used by corporations by passing mandatory "combined reporting" legislation. If a state mandates combined reporting, all related corporations that are operated as a single business enterprise, any part of which is being conducted in the state, are essentially treated as one taxpayer for deciding which state receives the tax. If all businesses are included in one enterprise, then all the income is subject to tax in a state rather than escaping the tax through income shifting to PICs in nontax states. Appendix A of the NCPERS tax study shows which loopholes each state has and what can be done to close them.[24]

23 Most of the information in this section is summarized from the NCPERS publication *Reforming Taxes and Closing Loopholes*, www.ncpers.org/files/Tax%20Loopholes%20Final.pdf. I recommend that stakeholders use the full publication for details.

24 www.ncpers.org/files/Tax%20Loopholes%20Final.pdf.

On a path to closing loopholes, the first step might be to find out who is not paying. Of course, revenue departments cannot disclose tax information about individual companies, but they can provide summary data. The NCPERS tax study includes a sample letter that can be used to request such data. A friendly legislator may be willing to sign such a letter. It has been used in several states, including Mississippi, Louisiana, and Alabama, to build momentum to close tax loopholes. The results have been dramatic. These results can get media attention as well as the attention of policy makers. For example, in Mississippi, of the 150 largest for-profit corporations, 103 (68 percent) paid zero taxes. The results are the same in other states where this approach has been used to date.

Economic development subsidies. In addition to closing loopholes, advocates and stewards of public pensions need to be cognizant of economic development subsidies. State and local governments give tax subsidies to businesses to locate in their jurisdictions in the hope that businesses will create jobs and local economies will grow. The outcomes of most of these arrangements have been economic disasters. State and local governments need to think twice before they engage in such risky ventures.

Advocates and stewards of public pensions need to be familiar with these subsidies and monitor them. Business subsidies are tax breaks, cash subsidies, and other benefits given by state and local governments to companies as incentives to open or expand new facilities. Subsidies take many forms, from tax abatements and tax credits to tax increment financing. The previously mentioned NCPERS study contains a complete list as of December 2019.[25]

Tax abatements reduce or eliminate the taxes a company pays to state and/or local governments. Commonly used abatements include property tax abatements, sales tax exemptions, and inventory tax abatements.

Tax credits reduce or eliminate state corporate income taxes by allowing a company to deduct a certain percentage of a specific kind of expense dollar for dollar from what it would normally owe.

Tax-increment financing uses the expected additional property tax collected on the increased property value of a new development (and in some places, the newly generated sales tax) to pay for infrastructure, land acquisition, or other costs of the development.

If subsidies cannot be prevented or ended, advocates of public pensions need to seek clawbacks in subsidy arrangements. A clawback means that if the company receiving state and local subsidies does not deliver on its promise to create a certain number and type of jobs, the company will pay back the cost of the subsidies. Pension advocates also should seek transparency and disclosure clauses as well as job standards in the subsidy arrangements.

How to find subsidies state by state. To see what kinds of subsidies are being given in a particular state, consult the Good Jobs First website, which tracks existing and emerging subsidies on a regular basis.[26]

25 www.ncpers.org/files/Tax%20Loopholes%20Final.pdf.

26 www.goodjobsfirst.org/subsidy-tracker.

Conclusions

To address pension funding issues, policy makers in almost all 50 states have taken actions that include increasing employee contributions, cutting benefits and COLAs for retirees, and changing the security of a lifetime guarantee of DB pension plans into do-it-yourself DC savings plans. These actions hurt not only those to whom pension promises are made but our economy and hence all of us. This study has explored 10 policy options that stewards and advocates of public pensions may want to consider as they face funding challenges.

The ultimate policy option to address pension funding issues is to reform revenue systems and close tax loopholes. The ability of state and local governments to adequately fund public services and programs that citizens need depends on governments' economic capacity (GDP). The revenues that state and local governments need to pay for these services depend on how their revenue systems are structured and how many tax loopholes they have. Unfortunately, state and local revenue structures are becoming regressive and out of sync with the economy. If this trend continues, state and local governments won't be able to afford adequate funding of the current level of vital public services. Budget pressures would continue even if there were no pensions.

Tax reform is not something trustees and administrators of public pensions do on a day-to-day basis. But it is important to understand what's going on this area. To assist stewards and advocates of public pensions, NCPERS has recently published a practical guide to raising revenues and closing loopholes.[27] The present study captures some of the key points from the NCPERS guide for further consideration.

We know reforming revenues and closing loopholes is a long-term process. For that reason, we have included nine other policy options that stakeholders may consider to address pension funding issues in the interim. These options include using NLPOBs and exploring the new municipal discount window and asset purchasing program of the Federal Reserve system to establish a stabilization fund and make employer contributions part of monthly payroll.

These policy options are generic in nature. They are not recommendations, but they are a starting point for developing alternatives that reflect the needs and circumstances of individual pension systems and the communities in which they reside. Each plan is unique and must explore, in consultation with experts, policy options that best fit its needs.

27 www.ncpers.org/files/Tax%20Loopholes%20Final.pdf.

Appendix.

Sample calculation of the year-end balance after the 30-year new limited pension obligation bond is paid off.

Year	Starting Balance ($)	S&P Returns	Interest Earnings ($)	Ending Balance After Coupon ($)	Coupon (%)	Balance After Paying off the Bond ($)
1990	100,000,000	–3.1	–3,100,000	88,610,000	8	
1991	88,610,000	30.47	26,999,467	107,319,467	8	
1992	107,319,467	7.62	8,177,743	107,207,210	8	
1993	107,207,210	10.08	10,806,487	109,723,697	8	
1994	109,723,697	1.32	1,448,353	102,882,050	8	
1995	102,882,050	37.58	38,663,074	133,255,124	8	
1996	133,255,124	22.96	30,595,377	155,560,501	8	
1997	155,560,501	33.36	51,894,983	199,165,484	8	
1998	199,165,484	28.58	56,921,495	247,796,979	8	
1999	247,796,979	21.04	52,136,484	291,643,464	8	
2000	291,643,464	–9.1	–26,539,555	256,813,909	8	
2001	256,813,909	–11.89	–30,535,174	217,988,735	8	
2002	217,988,735	–22.1	–48,175,510	161,523,224	8	
2003	161,523,224	28.68	46,324,861	199,558,085	8	
2004	199,558,085	10.88	21,711,920	212,980,005	8	
2005	212,980,005	4.91	10,457,318	215,147,323	8	
2006	215,147,323	15.79	33,971,762	240,829,086	8	
2007	240,829,086	5.49	13,221,517	245,760,602	8	
2008	245,760,602	–37	–90,931,423	146,539,179	8	
2009	146,539,179	26.46	38,774,267	177,023,446	8	
2010	177,023,446	15.06	26,659,731	195,393,177	8	
2011	195,393,177	2.11	4,122,796	191,225,973	8	
2012	191,225,973	16	30,596,156	213,532,129	8	
2013	213,532,129	32.39	69,163,057	274,405,186	8	
2014	274,405,186	13.69	37,566,070	303,681,256	8	
2015	303,681,256	1.38	4,190,801	299,582,057	8	
2016	299,582,057	11.96	35,830,014	327,122,071	8	
2017	327,122,071	21.83	71,410,748	390,242,819	8	
2018	390,242,819	–4.38	–17,092,635	364,860,184	8	
2019	364,860,184	31.49	114,894,472	471,464,656	8	371,464,656

Note. Red typeface indicates negative S&P returns.

The Voice for Public Pensions

National Conference on Public Employee Retirement Systems
1201 New York Avenue, NW, Ste 850
Washington, DC 20005
Phone: 202-601-2445 | Fax: 202 688 2387
E-mail: info@NCPERS.org | Website: www.NCPERS.org