

DESIGNING PUBLIC-SECTOR PENSIONS FOR THE 21ST CENTURY

A RISK-MANAGED APPROACH



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TABLE OF CONTENTS

- 6** Forward – Getting Past “DB vs. DC”
- Forward - Getting Past “DB vs. DC”
 - Heated Rhetoric - But Little Light!
 - Anti-Defined Benefit Rhetoric
 - Anti-Defined Contribution Rhetoric
 - Short-Term Issues and Long Term Goals Must Both Be Met
- 8** Executive Summary
- Public Sector Defined Benefit Pensions Have a History of Success...
 - ...But Fiscal Constraints Pose Tough Choices for Public Policymakers
 - The Discussion Is Not as Black and White as “DB vs. DC”
 - Public Finances Took a Big Hit in the Recent Recession and Bear Market
 - Public Sector Defined Benefit Plan Costs Are Increasing
 - Changing GASB Accounting Rules Could Threaten Government Credit Ratings
 - The Funding of Pension Costs is Less Predictable than Ever
 - Retiree Health Costs Are Adding to the Pain
 - Economic and Global Uncertainty Adds to Fiscal Risks
 - Budget-Constrained Policy Makers Have to Take a New Look at Pension Plan Design
 - An Alternative Approach: Risk-Managed Pension Policy and Hybrid Plans
 - The Goal Is to Reach the Best Achievable Solution with Available Resources
 - Risk Management Filters Can Help Reduce Political Wrangling
 - Public-Sector Pension Stakeholders Need to Forge a New Consensus
- 15** Rethinking Retirement Plan Design: A Risk Managed Approach
Who Should Bear the Risk?
- How Financial Risk Is Apportioned Under Traditional DB and DC Plans
 - How Risks Can Be Shared Under Hybrid/Combination Plans
 - Hybrid Design Features Already Appear in Public Sector DB Plans
 - The Redesign Process: Finding the Best Achievable Solution
- 19** Step 1: The Sponsor Must Set Benefits Objectives
- Is the Primary Purpose Providing Retirement Income or Wealth Accumulation?
 - Who Should Get Benefits, How Much, and Who Should Pay?
 - What Is the Right Level of Income Replacement for Retirement?
 - How Much Income Should Be Replaced for Disability?
 - What Benefits Should Survivors Get?
 - Soaring Retiree Health Benefit Costs in the Public Sector Will Force Changes
 - New GASB Accounting Rules Threaten Municipal Credit Ratings
 - Neither DB nor DC Plans Are Better at Attracting and Retaining Workers
 - Benefit Portability Is Attractive to New Workers
 - Bad Pension Design Could End Up Burdening the Social Welfare Safety Net
 - All Plans Can Be Structured to Be More Generous to Favored Workers

27 Step 2: Applying Financial Risk Management Filters

- Sponsors Need Filters for Four Primary Risk Areas in Retirement Plans
- Secondary Risk Areas Should Also Be Examined
- Filter A: Investment and Funding Rate Risk - For DB Plans
- Filter A: Investment and Funding Rate Risk - For DC Plans
- Filter B: Managing Inflation and Longevity Risk
- Filter C: Mortality and Disability Risk
- Filter D: Termination Risk: The Impact of Work History on Retirement Benefits Adequacy
- Other Risk Filters
- Pension Benefit Leakage: Lump-Sum Cash-Outs
- Defined Benefit Investment Efficiency
- Annuitization Rate Risk

40 The Result: A Risk Managed Retirement Plan

- Filters Help Policy Makers Achieve the Best Results Possible
- Some Clear Conclusions Can Be Reached:
- Neither DB nor DC plans are inherently superior to the other
- Neither DB nor DC plans have managed investment risk well
- DC plan sponsors should not shy away from becoming more paternalistic
- Other risk areas can also be managed in DB or DC plans
- DB cost efficiencies are real, but...

42 Facing Reality: What Can Be Done if the Existing Plan Is Not Affordable

- Five Options for Budget-Constrained Policy Makers
- Reducing benefits
- Increasing contributions
- Seeking greater returns on investments
- Reducing funding/investment volatility
- Refinancing existing liabilities
- DB-to-DC Conversions Can Take Years to Produce Cost Savings
- DB Plans Are Generally Cheaper to Run, but Not Always
- Setting Up a New DC Won't Help Amortize Old Unfunded DB Liabilities
- DB Plan Funding Could Improve if Participants Chose to Move to a New DC Plan
- DC Benefits Are Always Fully Funded, Eliminating Any New Unfunded Liabilities

48 Best Practices for Defined Contribution Plan Design

- Issues to Review When Considering a Defined Contribution Plan
- Features for a "Core" DC Plan

50 The Higher Education Model

- DC Plans Have Proven Successful in the Academic Community

52 Appendix

- Background: A Review of Public Sector Pensions in the U.S.

Forward – Getting Past “DB vs. DC”

Heated Rhetoric – But Little Light!

Public policy makers are often bombarded with emotion-laden arguments as to the relative merits of defined benefit (DB) and defined contribution (DC) plan designs. The “DB vs. DC” debate often includes strong and heated rhetoric from both sides.

Just to be clear, let’s define our terms:

- **Defined benefit plans** define clearly how much monthly benefit a participant will receive from his employer when he retires. The benefit may even be stated as an exact dollar amount. In the private sector, a participant is generally not required to make contributions to a DB plan, but most public sector funds require employee contributions. Defined benefit plans do not require the participant to make investment decisions. Typically, the risks of meeting the promised benefits falls to the plan sponsor who is responsible for adequately funding the program and managing money invested to support the plan.
- **Defined contribution plans**, on the other hand, define clearly how much the sponsor and the participant can or must contribute to an individual account created for each participant. When the employee retires, retirement benefits are based on the total amount contributed plus investment gains, minus expenses and losses. Typically, the employee makes choices about how the money should be invested and takes the risk of poor investment performance if his or her choices do not perform well. Some examples of public sector defined contribution plans include 401(a) money purchase plans, 401(k) plans, 403(b) tax-deferred annuity plans, and 457(b) deferred compensation plans.

Those who favor defined benefit plans have sometimes characterized defined contribution alternatives as “risky 401(k) plans” while those who favor defined contribution plans have, in turn, sometimes characterized DB plans as akin to welfare for public employees. The following are further examples of the rhetoric commonly heard from the antagonists in the various camps.

Anti-Defined Benefit Rhetoric

- Defined benefit plans are the “dinosaurs” of retirement plans on the verge of extinction.
- Public sector DB benefits are “excessive” or “extravagant”.
- If private sector employees do not have DB plans why should public employees?
- Public sector DB plans are inherently subject to abuse by politicians and trustees.
- DB plans are less moral than DC plans because they do not encourage personal wealth building.

Anti-Defined Contribution Rhetoric

- Risky defined contribution plans will increase poverty rates during retirement.
- Defined contribution plans will make destitute the surviving children and spouses of police and firefighters who gave their lives on the job.
- Defined contribution plans will destitute police and firefighters who are disabled on the job.
- DC plans will line the pockets of greedy investment providers.
- State and local economies will suffer if DC plans replace DB plans.
- DC plans will undermine the actuarial funding of the existing DB plan.

Unfortunately, these kinds of statements add a great deal of heat but little light to the subject. As a result, public sector leaders are often left with little that helps them determine the most appropriate choices to take for future design of public retirement plans.

Public officials must look past the standard “DB vs. DC” rhetoric and assess public retirement design in a more considered and objective fashion. The design and funding of these retirement benefit programs are far too important to be based on the arguments noted above. They are vital to the economic security of hundreds of thousands of existing retirees and beneficiaries and are an important component of the compensation structure of state and local governments.

Short-Term Issues and Long Term Goals Must Both Be Met

Short-term benefit and funding issues are important but should be placed in the context of long-term objectives and should not, alone, determine pension benefit policy. On the other hand, short-term concerns are real and should be given appropriate weight as well. Changes being considered in light of current and looming public sector financial stresses, if any, should be consistent with the overall financial position, workforce attraction and retention needs, and social safety net policy priorities of the plan sponsor.

This paper examines many of the sometimes-controversial issues raised in discussions regarding the design and funding of retirement plans for public employees. However, it does so in a different way. By focusing on development of appropriate benefits and funding policies and the use of risk management principles, we hope to provide public sector policy makers a better way to develop sound and sustainable retirement benefit policies for state and local governments and their employees based on our organization’s nearly 90 years of experience providing retirement security to individuals working in the non-profit sector.

Executive Summary

Public Sector Defined Benefit Pensions Have a History of Success...

The history of public employee defined benefit pension systems in this country can and should be viewed as a tale of long-term success. Since their beginnings in the early part of the last century, these plans have served plan sponsors, participants, beneficiaries and taxpayers very well as an effective vehicle for delivering cost-efficient, adequate and secure retirement benefits for employees of state and local governments.¹

Through their long history and with only a few exceptions, state and local government defined benefit pension plans have met the benefits and financial objectives for which they were originally established. The retirement income security provided for many covered employees could not have been achieved without the successful establishment and operation of the public employee defined benefit retirement systems that serve nine out of ten state and local government full-time employees.

...But Fiscal Constraints Pose Tough Choices for Public Policymakers

Most public employee defined benefit retirement systems remain well funded and financially sound. But an increasing number are not. Many of the state and local governments that sponsor plans, even those that are well funded, are watching their budgets become strained to the breaking point, partially because of the increasing cost of supporting growing numbers of workers in retirement.

Now, at a time of uncertain future economic growth, record federal deficits, and burgeoning costs of entitlement programs, some public sector executives and legislators are asking the question:

Are our public sector defined benefit plans sustainable going forward?

They are not alone. Many private sector companies, too, are making wrenching decisions to cut back on pension and retiree health promises just to survive.

The concerns and purposes of governments are not the same as the private sector. It would be a mistake for public policy makers to assume that the trend in the private sector to move swiftly to offload defined benefit pension risk to workers is the right decision for the public sector. However, it would also be a mistake for public sector policy makers not to reassess just how much pension funding risk they can realistically accept going forward. Taxpayers will hold their feet to the fire to at least consider plan designs that share that risk for the future.

The Discussion Is Not as Black and White as “DB vs. DC”

We seek in this paper to show how new risk-managed retirement designs can protect public sector workers at the same time as they help apportion risk more evenly

between sponsors and participants to avoid the fiscal disconnects that, in some cases, threaten fiscal stability for a growing number of government bodies.

In some instances, public sector entities may wish to consider providing new defined contribution plans as replacements or alternatives. If that step is taken, care needs to be taken that the risk-sharing pendulum does not swing too far. A defined contribution plan that is intended to be the primary or core source of retirement benefits should be designed differently than the traditional private sector 401(k) plan or the standard 457(b) or 403(b) supplemental tax deferred compensation arrangements common in the public sector.

Unlike these other plans, which focus on wealth accumulation as a primary objective, a core defined contribution plan can and should focus on providing retirement income and security. The plan design must, therefore, include features that mitigate investment risks to employees and the risk of outliving their account balance after retirement. Traditional 401(k), 457(b) and 403(b) plans are rarely designed with these objectives in mind and subject participants to an unreasonable level of risk that their retirement income needs will not be met.

Public Finances Took a Big Hit in the Recent Recession and Bear Market

Currently many state and local governments, like many corporations in the auto and aviation industries, find themselves struggling to financially maintain their long-standing defined benefit pension arrangements.² The reasons for this financial stress are several and vary from state to state. A major factor lies with the 2000-2002 recession and bear market. During the recession almost every state and local government experienced dramatic decreases in tax revenues. This, coupled with budget expenditures that did not drop proportionately, caused many entities to dive deeply into the financial reserve cushions that many had previously established. Ultimately, these “rainy day” and other reserve funds were dramatically diminished by investment losses and as governments drew on them to prop up beleaguered budgets.

Public Sector Defined Benefit Plan Costs Are Increasing

The bear market investment losses experienced by public employee defined benefit pension plans have added to the financial burdens of state and local governments. The investment losses were severe enough in many cases to completely eliminate the surplus positions many public pension systems had enjoyed. It was not unusual for funding levels to drop from over 110% to 60-75% during this period and sometimes even lower.³ Significantly higher pension contribution requirements have resulted at a time when public sector budgets are already highly stressed.

Other factors have also acted to increase the costs of defined benefit plans. In some cases, large benefit improvements were adopted shortly before the market downturn, adding liabilities just at the wrong time. In other cases, the plan had not been funded adequately, and investment losses compounded the situation by putting these plans even further into the red.

The magnitude of the increased pension contribution requirements was surprising to many. During the “easy” years of the 1990s, public defined benefit plans often enjoyed funding surpluses. Yet, (with the benefit of hindsight), we have learned that few fully understood that these favorable funding levels masked an important fact – that, over time and as the plans had matured, their financial underpinnings had become increasingly less stable than before.

As these plans have matured, certain destabilizing trends occurred. The numbers of retirees naturally increased over the years. Benefit payments from the plans increased as well. With higher benefit payments, the plans became more reliant on investment income to cover these outflows. Plan liabilities became larger as a percentage of covered compensation and as a percentage of entity tax bases and revenues.

Changing GASB Accounting Rules Could Threaten Government Credit Ratings

Government Accounting Standards Board (GASB) rules issued in 1994 imposed a higher level of reporting and disclosure of public sector pension plan funding status. This additional transparency was useful to plan sponsors in evaluating the financial health of their defined benefit plans. However, hindsight shows that few entities conducted the kinds of studies that would have shown that the maturation of these plans had increased the potential volatility of pension funding requirements, especially in the face of economic downturns.

Thus, the impact of the recession on pension costs was largely unanticipated and shocked the budgets of state and local governments across the country. State and local governments that had grown used to relatively low contribution levels during the 1990s (and spent the savings elsewhere in their budgets or made benefit improvements when investment returns were high) have most acutely felt the fiscal pain.

The Funding of Pension Costs is Less Predictable than Ever

In the years following the recession, most state and local governments have started on a slow path to recovery.⁴ Improvements in revenue flows and financial positions have been following a generally improving economy. Despite this improving fiscal environment, state and local governments continue to experience a high level of financial stress and instability. Public coffers are improving, but continue to be tight as expenditures keep pace with rising revenues.

Increasing and pent-up demands for Medicaid, public education, law enforcement, transportation and infrastructure funding continue to draw heavily on limited financial resources. The higher investment return funding assumptions of public pension plans in the past are also in question for the future leaving the funding of pension costs less predictable than ever.⁵

Retiree Health Costs Are Adding to the Pain

New financial concerns are being added to the equation because of an emerging awareness of very large liabilities for retiree health benefits. Although full accurate data are not readily available nationally, partial and anecdotal evidence suggests that the liability for the promised health benefits to retirees by state and local governments is mostly unfunded. *The Wall Street Journal* has estimated that retiree health obligations for some states range from \$500 million to as much as \$40 billion. Some estimate the retiree health liabilities of state and local governments may exceed \$1 trillion.

Under new GASB rules set to go into effect for most large entities for fiscal years beginning after 2006, state and local governments will need to begin reporting and disclosing (but not expensing) their level of retiree health liabilities and the cost each year to fund the liability. The new reporting and disclosure accounting requirements may negatively impact credit ratings of governmental entities that do not take remedial action.

Health care costs for active and retired employees are estimated to consume about 15 percent of state and local total compensation (with expectations that this will increase to 20 percent of wages by 2008). This, coupled with estimates that a 65 year old will need \$210,000 and probably more in savings to pay for Medicare part B premiums, Medicare supplement insurance and out-of-pocket health expenses, adds additional emphasis on the importance for state and local governments to find alternatives for designing, funding, refinancing, and reducing current retiree health benefits.

Alternatives will include cutting the level of benefit promises for current employees and retirees where possible, reduced insurance benefit designs, and issuing so-called “retiree health obligation bonds”. Related solutions will also include changing the nature of the retiree health benefit promise from one that is a *promise* of continued insurance coverage to one that only provides *access* to insurance coverage with a fixed DB or DC based health care cost subsidy.

Economic and Global Uncertainty Adds to Fiscal Risks

The prospect for higher costs to fund federal Social Security and Medicare entitlements also loom on the budget horizons of state and local governments. The ballooning federal deficit will limit the ability of state and local governments to find new sources of revenues to deal with these financial demands.

The world’s political situation, including the global war on terrorism, creates additional uncertainty for the economic stability that is necessary for predictable funding of retirement benefits.

Budget-Constrained Policy Makers Are Taking a New Look at Pension Design

All of these factors have created an environment in which state and local governments (like their private sector corporate counterparts) have begun to take a new look at the

design, funding, administration and governance of public sector retirement benefit plans. This process will not be an easy one. The tone of the discussion so far has rarely been collegial. The relative merits of defined benefit versus defined contribution plan designs have been debated using strong rhetoric with predictions of disaster or calamity if one side or the other side should prevail.

In this heated environment, the opportunity for effective and sound policymaking can easily be lost. Yet it is essential that public policymakers pause and engage in a thoughtful and considered reexamination of the basic tenets of these plans. This reexamination should focus on the benefits and risk management objectives surrounding public retirement benefit design and funding: 1) workforce attraction and retention, 2) benefit adequacy and security, and 3) funding affordability and volatility.

An Alternative Approach: Risk-Managed Pension Policy And Hybrid Plans

Recent experience has shown clearly that there is no such thing as a riskless pension plan. The standard approach to public pension design and funding has, however, failed to identify and measure the risks that do exist. Historically, the approach has principally been to: 1) establish benefits objectives, 2) determine the cost and 3) budget as much toward achieving the objective as could be afforded.

Largely missing from this process is an assessment of the risks associated with any particular plan design. Key questions about 1) what risks exist, 2) the magnitude of each risk, 3) who bears any particular risk and 4) how that risk can be mitigated have often been inadequately addressed. The failure to assess these risks can be serious for both public sector plan sponsors and their employees in terms of failed pension financing schemes and/or inadequate and insecure retirement benefits.

One of the likely advantages of identifying and managing retirement plan risk areas is that there will be a greater tendency to adopt plan designs that are more appropriately balanced or which share the financial risks between employers and employees. Going forward, using this approach will mean the increasing use of “hybrid” and “combination” approaches that include elements of both traditional DB and DC plans.

This paper proposes that public sector policy makers add financial risk management processes when reconsidering the future of public retirement design and funding. The principal risk areas to be assessed include the following:

- **Defined benefit plan risks**
 - Long-term funding risk – the risk that investment and other actuarial experience may be worse than expected, forcing contribution rates to increase above acceptable levels over the long-term
 - Short-term funding volatility risk – the risk that investment return volatility will cause contribution rates to increase above acceptable levels over the short-term
 - Inflation risks – the risk that the value of accrued benefits will be eroded by inflation

- **Defined contribution plan risks**

- Longevity risk – the risk of participants outliving their retirement assets
- Inflation risk – the risk that the value of accrued benefits will be eroded by inflation
- Investment risk – the risk that by the end of the investment period not enough has been accumulated to fund an adequate and secure retirement benefit

In many cases the level of risk for both DB and DC plans can be managed to a significant extent through more appropriate plan design and funding policies. This will increase the chance of meeting the benefits and financial objectives of both the plan sponsor and the participant, regardless of whether the plan is defined benefit or defined contribution in design.

The Goal Is to Reach the Best Achievable Solution with the Available Resources

The current challenge to public sector policymakers is finding a process that clearly identifies the issues and the basis for deciding the best achievable solution under the circumstances.

One way to meet this challenge is to approach retirement plan design as follows:

- ***First, develop a basic retirement benefits policy.*** Define the goals and objectives the sponsor wants the retirement benefit program to achieve.
- ***Second, apply a financial risk management filter.*** Identify the plan design elements that are most and least likely to achieve the benefit goals and objectives in light of available financial resources and potential market fluctuations.

The advantage of using this approach is that it does not prejudge what plan design is better. It does not assume that either defined benefit or defined contribution plans are inherently superior to the other. Instead, it identifies the most appropriate design as the one that is most likely to meet both the financial and benefits objectives of the plan sponsor.

Using a financial risk management filter will also help reduce the political aspects of the discussion that often impede the ability to move toward sound solutions. It allows policymakers the opportunity to prudently strike the right balance between meeting 100% of all the benefits goals and objectives and dealing with the long and short term financial realities faced by governments.

Public Pension Stakeholders Will Need to Forge a New Consensus

A consensus on workable solutions will not be easy to come by. Emerging demands on budgets to address and fund health benefits for retirees, baby boomer demographic trends, investment market volatility, and increasing longevity, among many other factors, will complicate the process. Legal constraints on changing benefits for existing employees will be a major barrier to short-term fixes. Public sector policy makers will also often need to balance the needs of existing employees and taxpayers against future

employees and taxpayers. The equity of shifting current pension liability burdens to future generations of taxpayers and employees should be a central part of the discussion.

The stakeholders involved in forging a new public sector retirement benefit policy are myriad, but must be taken into account. They include governors and other executive level officials, legislative bodies, public employees and their representatives and unions, public pension trustees and staff, taxpayer advocacy groups, investment managers, actuaries, lawyers and the media. The process is inherently political in nature because that is the nature of government. In this context, creative approaches to moving forward on the reassessment of public pension policy will need to be developed. If a new basis for the design and funding of public pension plans is not established, it will not matter which side of the DB vs. DC debate wins – because the number of winners will be far outnumbered by the losers.

Rethinking Retirement Plan Design: A Risk Managed Approach

Much of the current DB vs. DC debate centers on the very important question of who should bear the financial risks associated with providing an adequate and secure retirement benefit. DB proponents correctly point out that DC plans can fail to meet benefits objectives because investment risk is solely on the shoulders of participants. On the other hand, some critics of DB plans point out that the times have changed and state and local governments can no longer afford the financial burden of fully guaranteeing retirement benefits.

Who Should Bear the Risk?

Financial risks are inherent to all retirement plans, regardless of plan type. The real questions from a policy perspective are 1) who should bear the risk and 2) how can the risk be managed?

It is critical that both these questions be addressed. Many of the well-known retirement plan train wrecks involving DB funding problems and DC investment losses for participants can be attributed to the failure to adequately recognize financial risks and take steps to mitigate those risks.

Identifying and managing retirement plan risk areas will in all likelihood lead to plan designs that are more appropriately balanced and share the financial risks between employers and employees. This will mean the increasing use of “hybrid” and “combination” approaches that include elements of both traditional DB and DC plans.

How Financial Risk Is Apportioned Under Traditional DB and DC Plans

The following table summarizes how various risks have been allocated between plan sponsors and plan participants in traditional defined benefit and defined contribution plans.

Table 1: Retirement Plan Risk Allocation		
Risk Area	Who Bears the Risk	
	DB	DC
Investment	Plan Sponsor	Participant
Funding Rate	Plan Sponsor	Participant
Mortality	Plan Sponsor	Participant
Longevity	Plan Sponsor	Participant
Inflation	Participant*	Participant
Termination	Participant*	Participant
Annuitization	Plan Sponsor	Participant
Disability	Plan Sponsor	Participant

** Many public defined benefit plans provide some level of inflation protection benefit for retirees, but rarely do so for participants who leave covered employment with deferred vested benefits to be paid in the future.*

How Risks Can Be Shared Under Hybrid/Combination Plans

This table shows how hybrid and combination plan approaches can move the placement of risk from “all-or-nothing” to a shared-risk concept.

TABLE 2: Retirement Plan Risk Allocation for Hybrid / Combination Plans	
Risk Area	Who Bears the Risk
	Hybrid/Combination Plans
Investment	Shared
Funding Rate	Shared
Mortality	Shared
Longevity	Shared
Inflation	Shared
Termination	Shared
Annuitization	Shared
Disability	Shared

Hybrid Design Features Already Appear in Public Sector DB Plans

It must be noted that most public sector DB plans already have many hybrid design features. Some of the most common hybrid features that create a sharing of risk among both the employer and the employee include:

- **Shared funding rate risk** – public employees frequently contribute a significant portion of the funding for their DB plans. (Note, however, that some states have laws that prohibit increasing contributions for existing employees without some corresponding benefit increase.)
- **Shared investment risk** – Some combination DB and DC plans provide a smaller core DB benefit funded by the employer and a companion DC component funded by participant contributions.
- **Shared inflation risk** – Some DB plans have partial cash-out features similar to that available to DC participants, which allows terminated participants to move a portion of the otherwise frozen value of their DB retirement benefit into defined contribution accounts (e.g., IRAs or a new employer's DC plan). This portion then can be invested in a manner to protect it from the impact of inflation until retirement.

The Redesign Process: Finding the Best Achievable Solution

It goes without saying that retirement plan design should be based on sound benefits and funding policies aimed at achieving the plan sponsor's goals and objectives for the plan. The current challenge to public sector policymakers is finding a process that clearly identifies the issues and the basis for deciding the best achievable solution under the circumstances.

Here is one way to go about meeting this challenge:

- **First, set a basic retirement benefits policy.** It should include the goals and objectives the sponsor wants the retirement benefit program to achieve.
- **Second, apply a financial risk management filter.** Identify the plan design elements that are most likely and least likely to achieve the benefits goals and objectives in light of available financial resources.

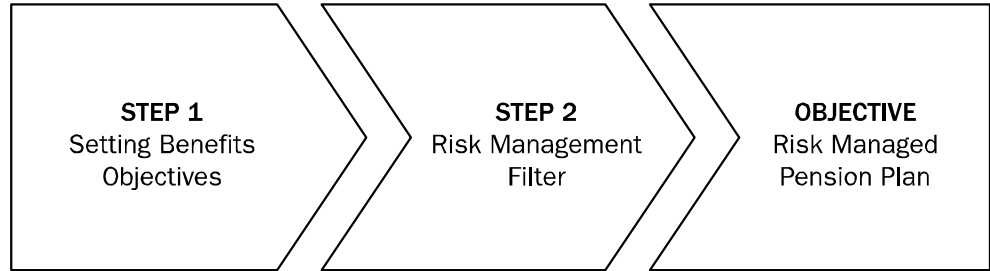
The advantage of using this approach is that it does not prejudge what plan design is better. It does not assume that either defined benefit or defined contribution plans are inherently superior to the other. Instead, it identifies the most appropriate design as the one that is most likely to meet both the benefits and financial objectives of the plan sponsor.

Risk Management Filters Can Help Reduce Political Wrangling

Using a financial risk management filter will also help reduce the political aspects of the discussion that often impede the ability to move toward sound solutions. It allows policymakers the opportunity to prudently strike the right balance between meeting

100% of all the benefits goals and objectives and dealing with the long and short term financial realities faced by governments.

The following graphic illustrates this risk management-based approach. It will be the subject of much of the remainder of this document.



Step 1: The Sponsor Must Set Benefits Objectives



The first step in developing a sound pension policy is to identify the retirement benefit objectives of the plan sponsor for each of the following areas:

- Retirement Income
- Disability
- Survivor benefits
- Retiree health
- Workforce attraction and retention factors
- Social safety net concerns

Is the Primary Purpose Providing Retirement Income or Wealth Accumulation?

The plan sponsor needs to decide whether the primary purpose for the plan should be to 1) provide retirement income, or 2) provide wealth accumulation. Both purposes can serve to enhance a person's economic security during retirement. However, each reflects different philosophies that will affect the ultimate plan design and the range of benefit outcomes that could occur.

The public sector has tended to give higher priority to providing secure retirement income than accumulating wealth. This is understandable because of the general welfare function of government and the related desire to mitigate the negative impacts on society associated with excessive economic risk-taking. It is also understandable because, unlike the private sector, governments (which are non-profit in nature), cannot easily provide extraordinary compensation such as bonuses and profit sharing. It is likely, therefore, that public policy makers will continue to emphasize providing a safe and secure retirement income as the primary objective for core retirement benefits plans.

The objectives are not established in a vacuum. They should be guided by the workforce attraction and retention needs of the plan sponsor, the available financial resources and any social safety net (welfare/government assistance) priorities that may exist as well.

Who Should Get Benefits, How Much, and Who Should Pay?

For each benefit type, basic questions should be asked:

- Who do we want to benefit? This is an eligibility issue.
- How much should be provided? This is a generosity and adequacy issue.
- Who should pay for the benefit? This is a cost-sharing/allocation issue.

Examples of possible criteria for eligibility for benefits include:

- Full-time vs. part-time
- Minimum age
- Minimum period of service
- Minimum age and service (e.g., Age 65 and 5 years of service for a normal pension; age 55 and 10 years for early retirement pension)

In some cases, the plan sponsor may also want to establish different benefit priorities for certain categories of employees. A few examples include:

- Long-term employees should be rewarded more than short-term employees
Rationale: To help retain valuable experienced employees
- Public safety employees should be encouraged to retire earlier
Rationale: To enhance public safety by moving less physically able employees out of the workforce
- Competitive job classifications (e.g., engineers, IT workers) should be provided with more than other classifications
Rationale: To help attract and retain these types of skilled workers in a competitive workforce environment.
- Elected, appointed officials, and judges should be provided a different benefit
Rationale: To attract them into public service, where low pay and term limits might otherwise discourage them from serving.

What Is the Right Level of Income Replacement for Retirement?

Benefit policy should also address the desired level of retirement income that will be paid and when it should be paid. Retirement income adequacy is typically measured in terms of how much of a participant's ending salary is replaced during retirement. This "income replacement ratio" is measured first at the time of retirement and then continuously throughout retirement to see how it has been affected by inflation.

Public policy makers need to set desired retirement income replacement objectives, which usually come in a range of targeted ratios that reflect differences in pay levels and Social Security benefits (when provided).

The following table provides an example of possible target income replacement ratios designed to maintain standards of living after retirement under a respected benefit adequacy research study.

Pre-Retirement Salary	Gross Income Replacement Ratios
\$20,000	89%
\$30,000	84%
\$40,000	80%
\$50,000	77%
\$60,000	75%
\$70,000	76%
\$80,000	77%*
\$90,000	78%*

Source: 2004 Georgia State University/Aon RETIRE Project Report

* Replacement ratios for these higher salary levels are affected by higher marginal tax rates

The above income replacement targets are higher than the traditional 70% target often established in the past. The 75% – 89% numbers reflect, in part, the higher costs of retiree health care that current and future retirees are likely to experience.

How Much Income Should Be Replaced for Disability?

Disability income adequacy is also measured by income replacement ratios. Short-term disability benefit objectives are usually addressed in other contexts, such as sick leave and paid-time off policies, and are not further addressed here. Long-term disability benefits objectives (work related and non-work related) are addressed through a variety of benefit programs including: long-term disability insurance, workers' compensation benefits, Social Security, and disability pensions. Each of these sources should be taken into account and coordinated to ensure that benefits provided are appropriate in total.

Disability income replacement adequacy is established using criteria similar to that for retirement income adequacy and may range from 60 - 80% of pre-disability pay. The lower target levels are the result of an employer objective for the benefit to function as a limited safety net and not to have benefits so generous that it discourages recovery and return to work. It also reflects the ability of public sector entities to design their disability benefits to be non-taxable.

What Benefits Should Survivors Get?

Survivor benefit objectives are defined separately for pre-retirement death and post-retirement death of the participant.

The objectives may include:

- Maintaining standard of living for the participant's dependants
- Protecting future pension income that the participant's survivors would have shared had the participant lived
- Protecting post-retirement income for dependents
- Meeting immediate financial needs of survivors (e.g., lump-sum payments to help with funeral costs)

Survivor benefit objectives are addressed through a combination of employer provided and voluntary employee funded life insurance and pre-and post-retirement survivor benefits provided through the retirement plan. Each of these should be coordinated to ensure benefit objectives are met.

Soaring Retiree Health Benefit Costs Will Force Changes

U.S. health care spending has grown twice as fast as the economy as a whole, TIAA-CREF Institute research indicates. It is now taking an ever-increasing share of total GDP: 12 percent in 1990, 15 percent in 2003. Health care costs for most states now consume about 15 percent of total compensation but are expected to increase to 20 percent of wages by 2008.⁶

It is estimated that assuming medical inflation at 7 percent per year, a 65-year-old who expects to live to age 90 will need \$210,000 or more in savings to pay for Medicare part B premiums, Medicare supplement insurance and out-of-pocket health expenses.⁷

Public sector entities commonly provide subsidized access to health insurance programs to their retirees. This access is also commonly accompanied by large-scale premium cost subsidies. According to the 2003 Segal State Health Benefits Survey of 39 states that responded in whole or in part, state employers subsidize over 50 percent of the total retiree monthly premium rates for single retirees under and over age 65. About 20 percent of the respondents said that they pay 100 percent of the premium rates for single retirees under 65. Almost 30 percent paid 100 percent of the cost for retirees age 65 and over.

Although full accurate data is not readily available nationally, anecdotal evidence suggests that the size of the liability for the promised health benefits to retirees by state and local governments is large and mostly unfunded. *The Wall Street Journal* has estimated that retiree health obligations for some states range from \$500 million to as much as \$40 billion. The State of California recently estimated its retiree health liabilities may approach \$70 billion. Mercer Human Resource Consulting, Inc. recently estimated that state and local government obligations for retiree health benefits amount to \$1.4 trillion nationwide.⁸

Public sector entities will undoubtedly be looking for alternative solutions to address these existing retiree health promises. The large scale of the retiree health funding issues will indirectly have an important impact on future pension design as well.

New GASB Accounting Rules Threaten Municipal Credit Ratings

Under new GASB rules for other post-employment benefits (OPEB) that go into effect in fiscal 2006, state and local governments will have to begin reporting and disclosing (but not expensing) their level of retiree health liabilities. GASB Standard Nos. 43 and 45 will also require disclosure of how much funding will be required on a going forward basis to pay for unfunded liabilities over a period not to exceed thirty years.

These new reporting and disclosure accounting requirements may hurt the credit ratings of governmental entities that do not take remedial action. They will certainly put pressure on state and local governments to seek alternatives for funding, refinancing, and reducing current retiree health liabilities.

Alternatives will include:

- Reducing or eliminating eligibility for retiree health benefits
 - Increasing age and/or service requirements
 - Cutting coverage for certain classes of employees
- Reducing insurance costs
 - Reducing benefits (e.g., increasing deductibles and co-payments)
 - Mandating Medicare Part B coverage
 - Providing catastrophic coverage only
- Reducing employer premium sharing levels
 - Providing access only with no employer subsidy
 - Increasing retiree contributions
- Issuing so-called “retiree health obligation bonds”

Related solutions will also include changing the nature of the retiree health benefit promise from one that is a promise of continued insurance coverage to one that only provides *access* to insurance coverage with a fixed DB- or DC-based health care cost subsidy that is no longer tied to underlying medical cost inflation.

Public sector employers are also exploring new options under federal law to restructure their retiree health benefit promises including the use of Health Savings Accounts (HSAs) and Health Reimbursement Arrangements (HRAs).

In addition to or in conjunction with some of the above-referenced federal plans, state and local governments, as tax-exempt entities, are largely free to establish a variety of vehicles for receiving and accumulating assets to pay for retiree health care costs. The most common vehicles include so-called IRC 115 integral governmental trusts, IRC 401(h) medical accounts held within tax-qualified pension plans, and 501(c)(9) VEBA trusts. Assets in these “trust” vehicles could be available to offset any GASB OPEB liabilities.

Neither DB nor DC Plans Are Better at Attracting and Retaining Workers

One of the purposes of providing retirement benefits is to enhance the ability of state and local governments to attract and retain workers. There is little evidence that shows definitively that either defined benefit plans or defined contribution plans are inherently better than the other in meeting this objective. Again, plan design has a significant role to play in determining what types of workers will benefit more under either plan type.

Public sector employees in the U.S. do tend to have longer tenure than private sector workers, according to data from the U.S. Bureau of Labor Statistics. Median tenure of a public sector wage and salary worker (age 20 and older) was 7.0 years in 2004; this compares with 3.9 years for a private sector employee. Ten percent of public sector workers (age 20 and older) had 25 years or more of tenure compared with 5% of private sector workers.⁹

Longer tenure levels cannot necessarily be attributed to the greater prevalence of either defined benefit or defined contribution plans in the public sector compared with the private sector, however. Salary levels tend to be higher in the public sector than the private sector. The median public sector worker earns 20% more than the median private sector worker. The median public sector salary in the U.S. is \$40,000 annually; the median private sector salary is \$33,000.¹⁰ This earnings differential is likely as great a factor, if not greater, in explaining the longer tenure levels in the public sector.

Benefit Portability Is Attractive to New Workers

Benefit portability at job change is a feature that workers would likely find attractive, no matter what their sector of employment. Such portability should therefore not harm an employer's ability to attract workers. It may, in fact, enhance it. Faculty mobility and the resulting need for retirement benefit portability were driving factors for TIAA's creation of a defined contribution system in 1918 to provide retirement benefits for the higher education sector.

Benefit accrual patterns under defined benefit plans tend to be back-loaded relative to defined contribution plans. This means that the present value of benefits earned by older (usually longer service) employees is greater than that earned by younger workers.

This also means that defined benefit plans tend to attract older workers while being less attractive to younger workers. In contrast, defined contribution plans tend to be designed to allow younger short-tenured workers to accrue total greater benefits than they would accrue under a defined benefit plan. This is another feature that workers are likely to find attractive with defined contribution plans and thus it is not likely to harm an employer's ability to attract workers.

Back-loaded benefit accruals inherent in traditional defined benefit plans do create an incentive for an employee to remain with the employer, but they may also result in workers remaining on a job when they would otherwise want to leave or when their employer might want them to leave. If worker turnover is a concern for an employer,

vesting schedules in a defined contribution system could be structured (within limits) to encourage workers to remain with their employer a certain minimum number of years.

Defined contribution plans can be designed to backload benefit accruals in a manner similar to that provided by defined benefit plans. Contribution rates could be structured to increase with an employee's age or years of service as can be found in so-called "age-weighted" or "service-weighted" plan designs.

Bad Retirement Designs Could End Up Burdening the Social Welfare Safety Net

Because governments serve the general welfare of our society, the public sector is uniquely concerned with the adequacy and security of public employee retirement benefits. If the retirement plans they sponsor fail to provide adequate and secure income during retirement, then there may be an increased burden on social welfare programs in the future.

These are very real concerns with very real cost consequences to our society. It is, therefore, important for public policymakers to design and fund public employee retirement plans with this in mind. A well-designed retirement plan has the major advantage of pre-funding retirement benefits before they are needed. This is true regardless of whether it is a defined benefit or defined contribution plan.

The real issue is whether the plan is adequately designed to address the factors that can make a plan fail to meet its benefits objectives. Regardless of whether the plan is defined benefit or defined contribution, if it fails it will impact government social safety welfare programs (which are not pre-funded) and taxpayers will bear the burden in the future.

All Plans Can Be Structured to Be More Generous to Favored Workers

Plan generosity is a function of plan design, which is at the discretion of the plan sponsor. As noted previously, plan generosity also involves a policy decision by the plan sponsor regarding how much to benefit longer career employees relative to shorter career employees and older employees relative to younger employees.

A "generous" plan can be structured under either a defined benefit or a defined contribution arrangement. Comparing the relative generosity of existing or proposed retirement plans is challenging. There are numerous reasons why different retirement plan types can generate differing levels of retirement income for a worker.

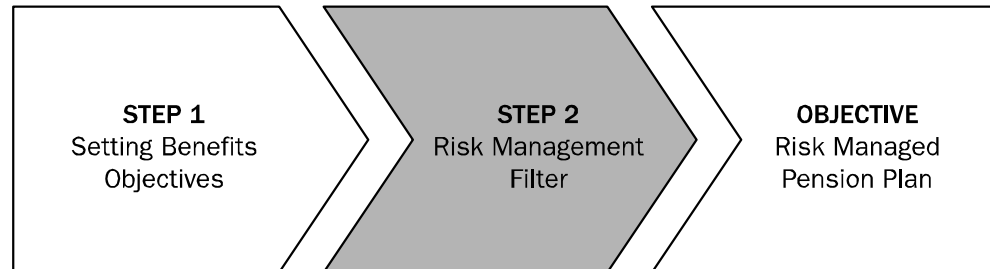
In comparing plans, sponsors should account for all of the following:

- *Differences in the basic benefit accrual or contribution formula.*
- *Vesting periods:* Shorter vesting periods preserve benefit accruals
- *Differences in the number of years worked under the plan:* All else being equal, longer-tenured workers will receive greater benefits in retirement.

- *Differences in the age of workers:* Depending on plan design, defined benefit plans usually favor older workers in terms of the value of benefits accrued each year. Defined contribution plans typically provide equivalent benefit accruals regardless of age, but plan contribution levels can be age- or service-weighted in design if a plan sponsor wants to mimic defined benefit accrual patterns.
- *Differences in earnings at end of career:* Benefits under a defined benefit plan are typically tied to final earnings, so all else being equal, a worker with greater final earnings will receive a greater retirement benefit.
- *Presence or absence of Social Security coverage:* Some public sector workers are not covered by Social Security, so their pension benefits may be higher to compensate.

Regardless of plan type, more generous designs are more costly to fund – higher benefits cost more regardless of whether the plan is defined benefit or defined contribution in design.

Step 2: Applying Financial Risk Management Filters



Sponsors Need Filters for Four Primary Risk Areas in Retirement Plans

The four primary risk areas in a retirement plan include the following:

- Filter A: Investment and Funding Rate Risk
 - Investment risk – the risk that investment returns will be less than necessary to provide the desired benefit levels.
 - Funding rate risk – the risk that plan investment or benefits experience is worse than expected requiring higher contributions to properly pay for the promised or desired benefits
- Filter B: Longevity and Inflation Risk
 - Longevity risk – the risk that the participant will live longer than expected.
 - Inflation risk – the risk that inflation will decrease the value of the earned benefit.
- Filter C: Mortality and Disability Risk
 - Mortality risk – the risk that the participant will die before expected
 - Disability risk – the risk that the participant will become disabled before becoming eligible for regular retirement benefits
- Filter D: Termination Risk – the risk that the participant will end employment before vesting and forfeit accrued benefits

Secondary Risk Areas Should Also Be Examined

The traditional view of the allocation of retirement plan risks shown earlier in Table 1 on page 16 is accurate, but tends to overlook some secondary risk implications that should also be considered:

- **What will happen if DC plan participants experience poor investment returns?**
 - Plan sponsor workforce efficiency and retention may be negatively impacted, if employees cannot afford to retire and become “retired on the job”.
 - Employees may retire at a lower standard of living and state and local government welfare and government assistance programs experience higher current costs that cannot be spread and funded over time like pension benefits.

In other words, taxpayers may bear some of the price for poor defined contribution investment performance as well as the participants themselves.

- **What if a DB plan sponsor cannot afford to make up for poor investment returns?**
 - The current higher costs may be pushed into future years and onto future generations of taxpayers.
 - Participants may be made to share in the higher plan costs through increases in their own required contributions going forward.
 - Participants may be provided lower benefit levels for future service to help mitigate current plan costs. (Note: In many states, there are legal restrictions on decreasing public pension benefits even for future service for existing employees.)
 - Future employees may receive lower benefits to help mitigate current plan costs.

In other words, defined benefit plans are not riskless to current and future taxpayers and employees who often bear some of the risk of poor defined benefit plan investment performance.

- **What happens if DC participants quit, take their benefits, and spend them instead of saving for retirement?** This is known as retirement benefit “leakage”:
 - Again, employees may retire at a lower standard of living and state and local government welfare and government assistance programs could experience higher current costs that cannot be spread and funded over time like pension benefits.

Filter A: Investment and Funding Rate Risk – For DB Plans

The funding of defined benefit plans is complex and involves the use of sophisticated actuarial and economic predictions about the future. It also involves the use of complicated actuarial funding methods that allocate the cost of funding plan liabilities over current and future payrolls of participating employees. The basic objective is to ensure that the benefits earned by employees each year are properly funded each year.

Because investment performance, mortality, turnover, average retirement age and other factors can vary over time, there is a risk that this objective may not be achieved. If expected experience does not come to pass, then future generations of taxpayers and employees may need to bear the cost of any funding shortfall. This is why it is important for public policy makers to establish benefit funding policies that adequately manage the investment and funding rate risk for defined benefit pension plans.

The size and sometimes irreversible nature of public DB pension commitments make it essential that public sector policy makers understand the financial positions of their defined benefit plans. Sufficient financial information must be provided so that the plan sponsors can reasonably assess whether both the long-term predicted cost of the plan and the shorter-term funding volatility are acceptable.

The following provides an outline of a process that public policy makers could use to help them assess the financial position of their defined benefit plans.

Table 4: Defined Benefit Plan Financial Position Assessment Process		
Action	Description	Issues
Step 1: Identify existing retirement benefit programs currently being provided to all employee groups	<ul style="list-style-type: none"> ▪ Primary or core retirement plans – including defined benefit pension plans and defined contribution plans ▪ Supplemental retirement/deferred compensation plans – including 457(b), 403(b), and 401(k) deferred compensation plans ▪ Retiree health benefits 	Identify employee groups, if any, that are and are not covered by Social Security
Step 2: Determine actuarial funding position of each defined benefit plan	<p>Measurement yardsticks include:</p> <ul style="list-style-type: none"> ▪ <i>Asset/Liability Ratio</i> - the ratio of assets to liabilities (both market value of assets and actuarial value of assets) ▪ <i>Contribution Rate/Actuarial Required Contribution Ratio</i> - the history of ratio of the actual contribution rate to the actuarially required contribution rate 	Most of this information is usually readily available from the expert administrative staff of the retirement plan and in annually published comprehensive annual financial reports (CAFRs). In some instances it may be helpful to hire an independent actuarial firm to help judge the reasonableness of these funding assumptions and methods.
Step 3: Test the reasonableness of actuarial funding methods and assumptions	<p>For each defined benefit plan, These tests should include a look at:</p> <ul style="list-style-type: none"> ▪ Investment return ▪ Salary increases ▪ Inflation ▪ Mortality ▪ Actuarial value of assets (smoothing) methodology ▪ Actuarial cost method, including methodology for amortizing unfunded liability ▪ Funding reserve requirements 	<p>Appropriate changes to these assumptions and methods should be made and the actuarial funding status and contribution requirements of each defined benefit plan should be redetermined as necessary.</p> <p>One of the most difficult funding assumptions for defined benefit plans is the long-term investment rate of return on plan assets. Actuaries tend to take a much longer perspective when establishing investment return expectations. They look at 30 to 60 year time horizons that reflect the length of working careers and the length of retirement. In contrast investment professionals rarely will look past the existing capital market forecasts, which can be either higher or lower than the actuarial return levels. It is important to note that actuarial investment return assumptions need not be the same as shorter-term capital market forecasts. However, when the two are substantially different, then there is a potential for shorter-term concerns about funding volatility.</p> <p>An area that has not been given much attention in the area of managing defined benefit plan funding risk is how establishing funding reserves can help mitigate the effects of economic downturns and investment losses. Historically, public sector defined benefit plans have rarely established formal funding volatility control reserves. Instead they relied on the long-term capacity of governments to pass costs into the future.</p>
Step 4: Test the affordability and funding volatility of each plan	<ul style="list-style-type: none"> ▪ Conduct stress testing and probability studies ▪ Is the required contribution amount affordable taking into account other budget priorities? ▪ What is the potential volatility of the funding rates for these plans? 	<p>What will the costs be if the credit rating of the entity is lowered due to the unfunded liability status of the plan? Lower credit ratings will mean higher debt service costs that also directly affect the budget of the employer going forward.</p> <p>What will be the cost of servicing any pension obligation bonds that have been issued?</p> <p>These costs must be included when determining affordability of the plans.</p>

Long-term affordability of a retirement program is important, but the program must also be affordable over the short-term. The issue here is volatility of contribution rates; short-term swings in investments could cause contribution levels to rise to unacceptable levels. To help evaluate this risk it may be appropriate to conduct *stress tests* to see what happens to contribution requirements if the long-term actuarial investment return assumption is not met for one or more years.

Another important way to examine short-term affordability is to conduct *probability studies* (sometimes called stochastic modeling). These studies will help determine the likelihood that short-term (1-5 years) investment losses will cause contribution requirements to increase to unacceptable levels.

Example: Assume State A has a defined benefit plan with an actuarial required contribution rate of 10% of compensation. The State conducts a probability study that shows there is a 50% chance that within the next 5 years poor investment experience could occur and the required contribution rate could increase to as high as 20% of pay. State A must decide whether it can or cannot afford to take the chance that it may have to pay the 20% contribution rate. If not, then alternative funding or plan designs may need to be considered.

The 2001 terrorist attack on the US and its affect on the markets is a stark reminder that economic modeling alone cannot adequately predict the level of retirement funding risk. Short-term economic upheavals coming from global political events need to be taken into account by public sector policymakers in assessing the ability to tolerate pension funding volatility.

Filter A: Investment and Funding Rate Risk – For DC Plans

Two major factors that impact benefit outcomes in defined contribution plans include: 1) market performance and volatility and 2) poor investment decisions made by individual participants. When defined contribution plans are being considered, public policy makers must consider appropriate means for controlling and managing these risks.

As noted previously, benefit adequacy for defined contribution plans is heavily affected by whether the individual has favorable or unfavorable investment results. Investment risk is inherent to all defined contribution plans and must be recognized by public policy makers.

Poor investment results can mean a worker cannot afford to retire, or will have to retire at a lower standard of living. Poor investment returns can also mean that employees may stay on the job longer than is desirable, which can affect job performance and make it harder for the sponsor to manage the workforce objectives.

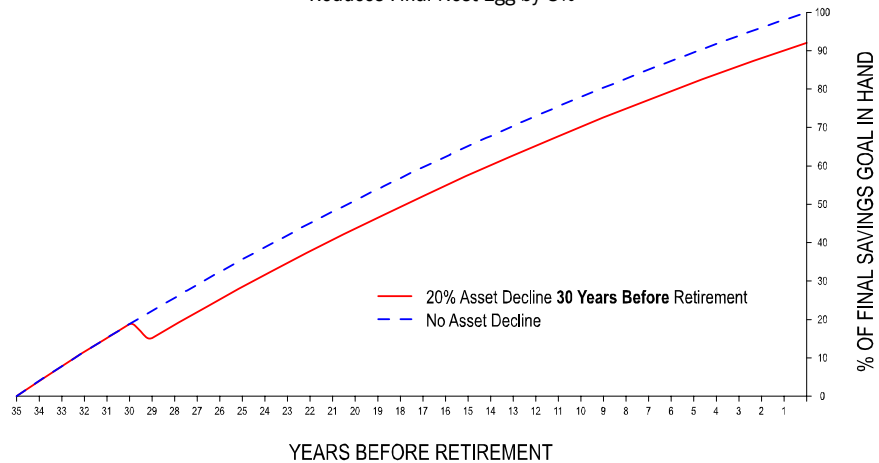
Defined contribution participants are also particularly susceptible to investment losses occurring in the years right before retirement. DC plans are particularly subject to short-term investment risk from short-term economic risks coming from global political events such as the 2001 terrorist attack on the U.S. Just as for DB plans, these

less predictable risks need to be taken into account by public sector policymakers in determining the most appropriate benefit design.

Recent TIAA-CREF research addressed how the timing of significant investment losses occurring during the years leading up to retirement could affect the amount of retirement income for DC participants. The following graphs illustrate what could happen with a hypothetical person who starts saving 40 years from retirement by setting aside 10% of his or her income each year in tax-deferred savings. If the earnings on that money were 6% each year, then the resulting amount of assets at retirement would equal 100%.

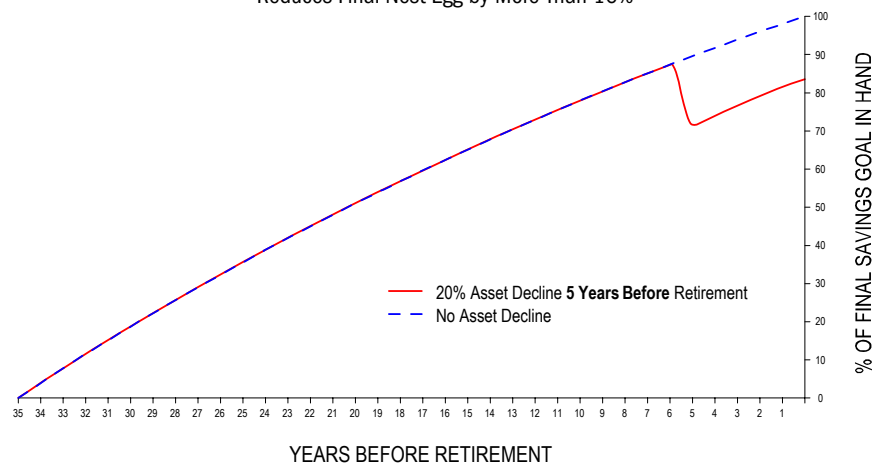
The first graph (Example A) shows the impact of a 20% market decline at age 30 (e.g., a negative market return could produce such a decline). It demonstrates that a 20% market downturn at an early age has a relatively small impact on the final benefit – reducing the ultimate retirement income by about eight percent.

Example A: 20% Asset Decline 30 Years Before Retirement
 Reduces Final Nest Egg by 8%



In contrast, our research shows in the second graph (Example B) that the impact of a 20% market decline at age 60 can reduce retirement income by more than 16%. A DC plan participant with this kind of loss may have to delay retirement or decide to accept a lower standard of living. This is a critical risk area that DC plan designs must take into account and manage properly.

Example B: 20% Asset Decline 5 Years Before Retirement
Reduces Final Nest Egg by More Than 16%

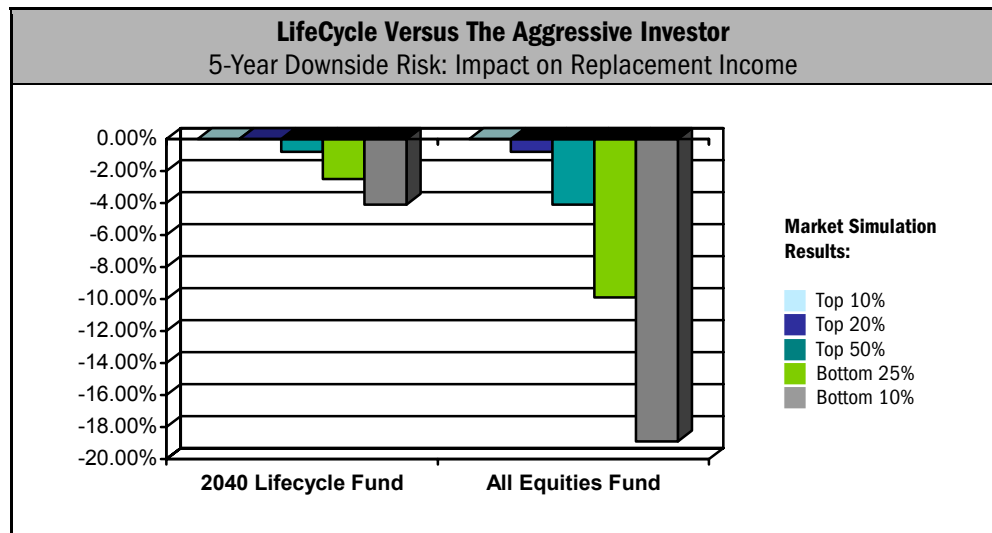


While a defined contribution plan participant usually is allowed to decide how his or her retirement funds are invested across available asset classes, the plan sponsor can help manage the investment risk by limiting the options offered under the plan to a number and type of funds suitable for the objective of providing retirement income. For this purpose, a distinct, diversified set of investment funds ranging from equity funds to bond funds to money market instruments is appropriate.

Where participants are provided investment discretion, sound plan design procedure for a core or primary retirement plan considers the inclusion of investment options that also guarantee income, such as annuities. In addition, lifecycle funds, which rebalance regularly and adjust investment allocations to limit risk based on number of years until planned retirement, eliminate the need for investment decision-making by workers and make a sound default option.

A plan sponsor interested in limiting the chance for poor investment choices and investment risk, including the risk of late career investment losses, can even eliminate participant discretion completely by, for example, requiring investment in risk-managed investments such as life-cycle funds, which become more conservative as the employee nears retirement.

The following chart illustrates how using a life-cycle only approach can effectively limit the loss of retirement income caused by late career investment market downturns compared to the performance of an aggressive investor. The chart shows the impact on replacement income of market losses within five years of retirement using stochastic market simulations. Market simulations were run for a 100% equity portfolio compared to a life-cycle fund with a target retirement date of 2040. The table shows that for 90% of the market scenarios, the life-cycle fund would dramatically limit the risk of loss of retirement income during a market downturn compared to an all equities investor.



Stocks represented by the S&P 500, Bonds by Ibbotson LT Government Bonds. Historical time period covered January 1926 through March 2006. 25,000 random simulations were conducted for hypothetical future 35 year periods. Assumed contributions equal ten percent of salary each year for 35 years with an annual salary increase rate of five percent per year.

This exhibit is based on comparing the results of two monte carlo simulation cases, one with all equities and one with a lifecycle allocation. It started with actual asset class returns (long-term index returns) to obtain a statistical distribution of "expected" returns, standard deviations of those returns, and covariances for all asset classes used in the analysis. A covariance measures the degree of similarity between the series of returns for two asset classes - a measure closer to 1 means that the returns tend to rise and fall at the same time, a measure close to -1 means that the returns tend to move in opposite directions, while a measure close to zero means that there is little relationship between the return series). Using these inputs, monte carlo analysis involves sampling the asset class return distributions to build 5000 35-year simulated return pathways. The exhibit then uses these simulated return histories to evaluate the chances of the portfolios losing value over the five-year period before retirement.

Of course, actual experience may differ from these simulations due to the following: the lack of long-term experience running "lifecycle" portfolios; the possibility that transactions costs may be significant for investors using the lifecycle approach; possible errors in the volatility assumptions of the underlying asset classes; and correlation breakdown, where asset classes tend to move together during severe downturns. These limitations mean that an investor may not attain the positive results of a Lifecycle approach, as shown above.

Please note that results may vary with each use and over time. IMPORTANT: The projections or other information generated by the monte carlo simulations regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results.

Investment and financial education also can have a positive impact on plan participant investment decisions. A recent study ¹¹ found that participants with a relatively high degree of risk aversion invest a larger share (an additional 20 percentage points more) of their assets in equities after attending a retirement class on asset allocation in self-directed defined contribution plans. Furthermore, individuals who are the furthest from retirement make the largest reallocations to equity.

A well-designed defined contribution plan will provide appropriate education about investment basics and available options under the plan. Specific investment advice regarding options under the plan can also be provided through the plan. This typically happens through independent third-party vendors.

Filter B: Managing Inflation and Longevity Risk

Another retirement income concern is that retirees could be worse off due to a lack of inflation protection for their benefits. For defined contribution plans, there is also the possibility of retirees outliving their savings.

Regardless of whether the plan is DB or DC, longevity and inflation risk protection is a function of annuitization design. DB plans that have automatic cost of living adjustments cost more than those that do not. Inflation protected DC annuity options are likewise more costly. Neither DB nor DC is inherently better or more cost effective for this purpose.

While almost non-existent in private sector defined benefit plans,¹² automatic cost-of-living adjustments (COLAs) are fairly common in public sector defined benefit plans. Also, benefit payments last for a lifetime with a defined benefit plan (unless a retiree has a lump-sum option and chooses that option.)

The degree to which this issue is a concern in defined contribution plans is a function of the payout options offered under the plan and the decisions made by a participant once he or she reaches payout. An annuitization payout option in the plan fully addresses the risk of a participant outliving his or her assets. An annuitization payout could be made mandatory, or it could be one of several payout options available under the plan. In the latter case, it could be made the default choice. A degree of inflation protection can be achieved with a payout annuity via a graded benefit schedule, with a variable payout annuity, or specialized inflation-protection annuities.

Filter C: Mortality and Disability Risk

Almost all public sector defined benefit plans offer disability retirement benefits and pre-retirement survivor benefits in the event the plan participant becomes disabled or dies prior to retirement. The levels of disability and pre-retirement death protection from public sector defined benefit plans varies widely from plan to plan with most providing a base level of coverage after a period of service. Disability benefits are frequently also coordinated with other payments from workers' compensation programs and Social Security. The costs of disability and death benefits are usually embedded in and are an addition to the cost of the total defined benefit program.

With a defined contribution plan, the disability benefit or survivor benefit is usually the account balance. Depending on contribution levels, returns, and tenure in the plan, the account balance may or may not be adequate in such instances.

Planning for such disability and pre-retirement death risks is again a plan design issue. Both defined benefit and defined contribution plans can be designed to cover these contingencies. Combining a defined contribution plan with a disability income insurance plan and a life insurance plan can achieve the same type of protection for workers and their families as incorporating the disability and life insurance into a defined benefit plan.

Filter D: Termination Risk: The Impact of Work History on Retirement Benefits Adequacy

For defined contribution plans, the amount of retirement income benefits are determined by 1) the total contributions made to the participant's account during employment and 2) the related investment gains or losses.

For defined benefit plans, the retirement income outcomes are determined by 1) the benefit formula (e.g., 1.5% x years of service x final average salary) and 2) the work history of the individual.

The work history of individuals can have a substantial impact on the amount of retirement benefits earned. Generally, when one looks at the value of benefits earned each year, defined benefit plans tend to favor longer-term and older workers and disfavor shorter-term and younger workers.

The following table provides an illustration on how work history can affect income replacement outcomes from the core DB or DC retirement plan alone without taking into account Social Security or personal savings.

Table 5: Retirement Income Replacement Rates for DB and DC Plans for Different Entry Ages and Termination Dates					
Entry Age	Plan	Benefits Payable at Age 65 if Employment Terminates after:			
		10 Years	15 Years	20 Years	Continues to Age 65
25	DC	19.6%	27.5%	34.3%	53.7%
	DB	4.6%	8.4%	13.7%	60.0%
30	DC	17.0%	23.8%	29.7%	43.2%
	DB	5.6%	10.3%	16.7%	52.5%
35	DC	14.7%	20.7%	25.8%	34.1%
	DB	6.8%	12.5%	20.3%	45.0%
40	DC	12.8%	17.9%	22.4%	26.3%
	DB	8.3%	15.2%	24.7%	37.5%
45	DC	11.1%	15.5%	--	19.4%
	DB	10.1%	18.5%	--	30.0%
50	DC	9.6%	--	--	13.5%
	DB	12.3%	--	--	22.5%

Assumptions: Annual salary increase rate of 4%; The DB formula is 1.5% of final 3-year average salary times years of service; DC benefits are based on a contribution rate of 10.0% of salary and an interest rate of 7% before retirement and 4% after retirement; The mortality table used is the A2000 Merged Gender table set back two and a half years; Benefits are based on a Single Life Annuity.

In this example, individuals (shaded in yellow) who terminate before age 65 and at younger ages tend to earn better benefits under DC plans, while full-career and older hire workers tend to fare better under traditional DB plans.

This latter tendency, however, becomes less pronounced for individuals who have several employers during their working careers. For example, using data from Table 5, assume a person worked until age 65. Working from 30 to 40 in a DB plan replaces 5.6% of Age 65 income. Working from 40 to 50 replaces 8.3% of Age 65 income. Working from 50 to 65 replaces 22.5% of Age 65 income. Add the three amounts and you get a 36.4% replacement ratio. A DC plan with a 10% contribution rate replaces 43.2% of income at age 65. Again, the point is not to show that DC plans are always better for persons with multiple employer careers, but that DC plans tend to benefit those who change jobs more than DB plans do.

The table above is also not meant to provide an accurate comparison of retirement income outcomes for each plan type. Rather, it is meant to show how work history can significantly affect the outcomes between the two basic plan types. It is important to acknowledge as well that the above outcomes for individuals who change employers

assume that the individuals preserve their DC assets at job change instead of cashing them out.

These types of comparisons, while instructive, can be very misleading because they ignore the fact that benefit outcome differences can be almost eliminated between defined benefit and defined contribution plans by altering the design of the plans.

For example, a defined contribution plan that provides higher contributions for older workers or those with longer service (i.e., age-weighted or service-weighted designs) can generate benefit levels that closely mimic that of a traditional defined benefit plan. The reverse is also true. A so-called “cash balance” plan (a type of defined benefit arrangement) can generate benefit levels that closely mimic that of a traditional defined contribution plan.

Pension Benefit Leakage: Lump-Sum Cash-Outs

Another threat to adequate retirement income is the country’s overall cash-out of lump-sum distributions of account balances when workers change jobs. This is an issue that applies to both defined benefit and defined contribution plans, since a growing share of defined benefit plans are offering a lump-sum option at job change. This concern is justified, as many individuals, particularly younger individuals and those with smaller accumulations, do not preserve their retirement funds at job change. In 2003, 25% of those who had received a lump-sum distribution reported that they had used at least some of their most recent distribution for consumption; 15% used the entire distribution for consumption.¹³

However, it is also true that most dollars remain in the retirement system when workers change jobs. Workers tend to preserve their savings by rolling them over or leaving them in their former employer’s plan. According to tabulations of Internal Revenue Service data, 75 percent of the dollars distributed to workers under the age of 60 were rolled over into an IRA.¹⁴ The fraction of dollars preserved might be even higher if one factored in workers leaving their account balances in their former employers’ plans when they changed jobs.

A state or local government sponsoring either a defined benefit or a defined contribution plan could address this issue through plan design; a plan could be structured in such a way that lump-sum distributions as a result of a job change were not an option.

Defined Benefit Investment Efficiency

Professionally managed defined benefit plans often enjoy higher investment returns than defined contribution plans.¹⁵ This often spurs concerns about potentially lower retirement income levels from defined contribution plans. The logic is that individuals will earn lower rates of return than those earned by professional defined benefit money managers and this will translate into lower benefits under defined contribution plans.

Inappropriate investment selections by defined contribution participants are just one piece of the puzzle. Higher investment returns for defined benefit plans may result from economies of scale and the ability of such plans to take additional risk in investments because of a longer investment time horizon. Higher returns can also occur because of the ability of defined benefit plans to use specialized asset classes (e.g., private equity or alternative investments) not available to traditionally designed defined contribution plans.

Under the standard pension funding equation below, these higher investment returns can have several impacts:

$\text{CONTRIBUTIONS} + \text{INVESTMENT RETURN} = \text{BENEFITS} + \text{EXPENSES}$

- The plan sponsor could lower its contribution requirements and maintain benefit and expense levels.
- The plan sponsor could increase benefits or expenses.
- The plan sponsor could add to funding reserves to reduce the impact of potential future funding volatility.

It is not a given, therefore, that higher investment returns in a defined benefit system would or should automatically translate into higher benefits than those earned by individuals in a defined contribution system. While rates of return impact affect benefits under a defined contribution plan, benefits are determined by formula under a defined benefit plan and rates of investment return are not elements in such formulas. As noted “excess” investment returns in a defined benefit system could be used to increase benefits, decrease contributions, or simply to increase funding levels by adding to reserves against future market downturns. The ability of a defined benefit or defined contribution plan to provide adequate retirement income levels would, therefore, seem to be a more appropriate evaluation criteria as opposed to focusing only on rates of return.¹⁶

Notwithstanding this point, higher investment efficiency is a desirable objective and should be a concern when designing DC plans. Many of the investment inefficiencies of DC plans can be mitigated by the use of more appropriate investment structures including life-cycle funds, which can be structured to include many of the same asset classes and tighter management used by defined benefit plans and, thus, realize a significant portion of the available higher-risk managed returns.

Annuitization Rate Risk

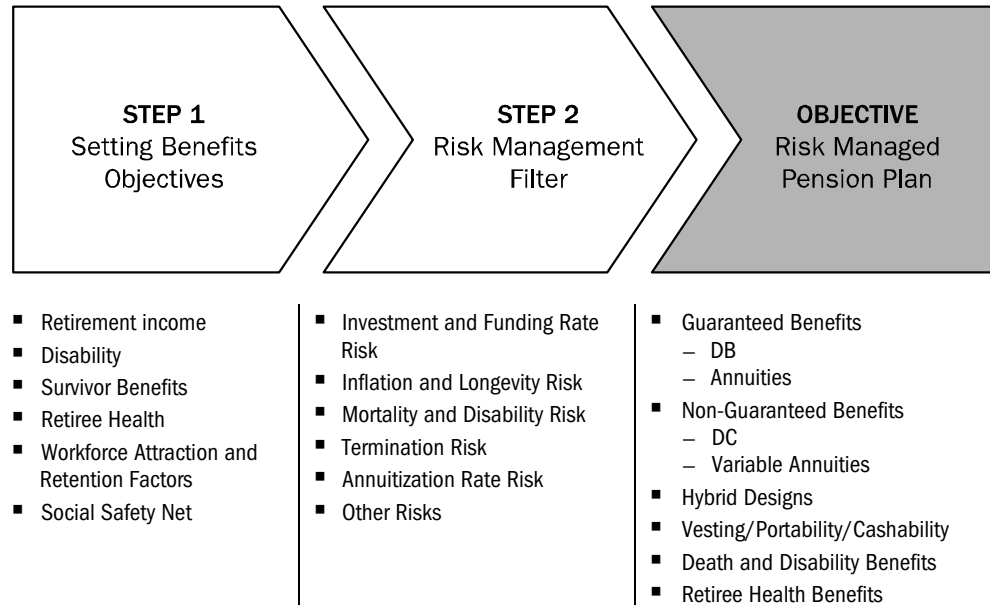
Annuitization rate risk principally applies to DC plans. In the standard corporate DC plan, participants accumulate retirement money in their accounts and at the time of retirement can choose to purchase a fixed annuity if they desire. The amount of annual retirement income that can be purchased under a fixed annuity, however, can vary depending on the annuity purchase rates available at the time in the open market. For example, in one year Participant Jones wants to retire and buy an annuity with her \$100,000 account balance and is able to get one that pays \$900 per month. However, if

she had bought it a year earlier when economic conditions were more favorable, she could have gotten \$1,000 per month.

DB plan participants are not subject to annuitization rate risk. The plan sponsor carries this risk as part of the DB plan's overall funding rate risk. Variable annuities do not subject participants to annuitization rate risk.

Annuitization rate risk can be managed in a number of ways, including 1) using accumulation period annuities as a funding vehicle and 2) providing financial planning and advice services that could help participants stage annuity purchases and choose an appropriate mix of fixed annuity, variable annuity and periodic payment strategies to minimize this concern.

The Result: A Risk Managed Retirement Plan



Filters Help Policy Makers Achieve the Best Results with Available Resources

The use of the risk management filter process can give public sector policy makers a clearer understanding of the retirement design elements that can best achieve the benefits policy goals and objectives with the financial resources that are available.

Some Clear Conclusions Can Be Reached:

- **Neither DB nor DC plans are inherently superior to the other.** Each has features that can be the best choice depending on the circumstances.
- **Investment risk is the largest risk to manage for both DB and DC plans.** However, both plans have the ability to manage this risk to an acceptable level if the right plan design and investment structures are used.
- **Neither DB nor DC plans have adequately managed investment risk.** This has effectively understated the true cost of these plans, and new approaches should be considered going forward, including 1) Requiring additional volatility reserve funding for DB plans and 2) Limiting participant choice for core DC plans and requiring use of trustee-managed investments, such as life-cycle funds.
- **DC plan sponsors should not shy away from becoming more paternalistic.** In particular, longevity risk of traditionally designed DC plans is an unaccounted-for cost for public sector social welfare programs and should be managed by requiring some form of annuitization at retirement.

- **Other risk areas can also be managed in DB or DC plans.** Disability, death, workforce attraction and retention can be managed through plan design and neither DB nor DC is inherently more effective than the other.
- **DB plan cost efficiencies are real, but...** They must be measured against the funding rate risk tolerances and other priorities of the plan sponsor and should not be the sole basis for choice of plan design. DC plans administrative and investment costs tend to be higher than DB plans, but DC plans often provide a much broader array of financial planning and investment education services that make direct cost comparisons an “apples and oranges” comparison at best. Regardless, DC costs can be significantly lowered through proper design.

Facing Reality: Options if the Existing DB Plan is Not Affordable

Public sector plan sponsors have a number of possible choices when faced with defined benefit retirement plans that are no longer affordable in their current form. Each action has its advantages and disadvantages.

The basic remedial actions include:

- Reducing benefits
- Increasing contributions
- Seeking greater returns on investments
- Reducing funding/investment volatility
- Refinancing existing liabilities

Reducing Benefits

Reducing DB benefits can lower the cost of a plan that is too expensive. Examples include:

- Increasing normal and early retirement ages
- Reducing benefit formulas for defined benefit plans
- Eliminating subsidies for defined benefit service credit purchases

Many states have constitutional or other legal restrictions on reducing retirement benefits for existing employees, often even for future years of service. This usually means that when new or optional core DC plans are being considered, they are offered to new hires only. Existing employees are either required to stay in the current DB plan or, in some cases, provided an option to stay or switch. Mandatory conversion to DC plans for existing employees is rarely possible in the public sector. Legal counsel should be consulted on this issue.

Note: One way to start weaning away from this “rock and hard place” situation where legal restrictions prohibit reducing benefits even for future services is to change the nature of the plan for new hires. The new promise could guarantee that benefit structures would not be reduced for all accrued service, but could change for future service.

Increasing Contributions

A plan sponsor that finds the cost of a current plan to be too high may consider shifting a portion of the total cost to employees. Some public employers do this automatically as part of their existing cost-sharing policy. Others have elected to shift some portion of the costs directly onto employees by increasing contribution rates. In at least one example, this increased employee contribution was funded by reductions in future salary increases.

Seeking Greater Returns on Investments

Some public retirement systems have tried to mitigate the need for higher contribution rates by increasing their exposure to equity investments in the market. According to a study conducted by Wilshire Associates, the equity exposure of the major public pension plans surveyed is already at historical highs at about 67%. They conclude that there is little additional investment return that can be gained by increasing this exposure further without unduly affecting the level of investment risk taken.¹⁷

Reducing Funding/Investment Volatility

Most public retirement systems have active programs for reducing funding and investment volatility/risk as much as possible while maintaining return expectations. This process of seeking additional “alpha” in their investment portfolios does help mitigate potential impacts of market downturns. However, the level of investment risk taken by public retirement systems remains high. Wilshire Associates reports that there is a low degree of correlation between the investment asset allocation and risk strategies of public retirement systems to the level of liabilities carried.¹⁸

Most public retirement systems also use so-called “asset-smoothing” methods to try and reduce the swings of contribution rates caused by investment volatility. Many will be examining how these smoothing methods can be adjusted to help further in this area.

Some public retirement plan sponsors may also wish to consider reducing funding volatility by implementing new DC plans or combination plans that provide a smaller base defined benefit pension combined with a defined contribution component. Over time, the smaller contribution level for defined benefit component means a smaller proportion of the total retirement contribution rate that is subject to funding volatility. The amount by which total retirement funding volatility can be reduced by adding a new DC plan or component is highly dependent on the nature and funding position of the existing DB plan.

Refinancing Existing Liabilities

Public employers can also alleviate current funding stresses by refinancing the liabilities. This can be done in several ways:

- **Increasing amortization periods for unfunded liabilities**
 - Government accounting standards require reporting and disclosure of public pension levels to be based on amortization periods of not more than 30 years. Some public entities have chosen funding periods that are often higher than 30 years.
- **Issuing pension obligation bonds**
 - A number of state and local governments have tried to leverage their pension liabilities by issuing new debt in the form of so-called “pension obligation bonds” (POB). These bonds are basically an arbitrage play using the lower interest rates in the current market that are higher than the interest

assumptions used by the pension plan. POBs can be helpful in reducing the unfunded liability of the pension plan, and may reduce employer costs if the interest rate bet remains a good one.

- However, POBs do not eliminate the pension liability; it shifts it from the plan to the employer in a different form.

- **Increasing long-term actuarial investment return/interest rate assumptions**

- Increasing the actuarial investment return/interest rate assumptions can reduce current plan liabilities and therefore current contribution costs. Higher rates reduce the present value of the projected liabilities of the plan, thereby lowering current contribution requirements. Doing so, however, does not really change the long-term cost of the plan. It does change the prediction about how much of the cost of the plan will be paid by investment returns. Increasing these return assumptions may reduce current costs, but ultimately, it also means that the investment objectives of the plan have been increased. The median rate of return of most public sector retirement plans is about 8.0%.¹⁹ Public policy makers will need to make sure that interest rate assumptions are reasonable and do not unduly shift the risk of investment losses onto future generations.

DB Plans Are Generally Cheaper to Run, but Not Always

In general, defined benefit plans will operate with lower total administrative and investment costs than a defined contribution plan. However, a defined contribution plan may be more or less expensive to administer than a defined benefit plan; expenses in both cases are a function of plan features and options offered. For example, even though employees need financial planning and investment education services regardless of plan type, defined benefit plans rarely provide such services to their participants at the same level as defined contribution plans. Such options and features are the decisions of the plan sponsor and thus relative plan costs are, in this sense, under the control of the sponsor. A defined contribution plan can be structured and administered at low cost.

DB-to-DC Conversions Can Take Years to Produce Cost Savings

It is often debated whether the establishment of a public sector defined contribution plan would result in cost savings for the sponsoring government. While the answer will be dependent on the specific circumstances of any system and plan, in most cases, it may take many years for plan sponsors to realize cost savings from any conversion from a defined benefit plan to a defined contribution plan. That is because of the start-up costs, the need to continue paying for any existing unfunded liabilities of the defined benefit plan, and the ongoing administrative expenses.

The following table provides an illustration that demonstrates how implementing a new DC plan for new hires may not lower total retirement funding levels immediately.

Table 6: Simplified Illustration of Why Creating a New DC Plan for New Hires Only May Not Save Money Immediately

The following is intended to demonstrate that even after the freezing of a DB plan and creating a DC plan for new hires the legacy costs of the DB plan will continue for some time into the future. In this example, total pension costs do not decrease until 20 years after the DB plan is frozen to new entrants. It is important for plan sponsors to realize that total pension cost savings can be achieved only by 1) reducing DB accruals for existing employees for future service (not always possible in the public sector because of legal issues) and/or 2) lower contribution levels for the new hire DC participants. It is also important to note how DB plan promises can affect budgets far into the future in unanticipated ways.

Year	2006	2007	2008	2025	2026
	Current Plan	1 st year after DB is frozen to new hires	2 nd year after frozen to new hires	Last UAL payment	After last UAL payment is made
# of active in DB plan employees	1,000	900	810	135	121
Normal Cost	\$5 million	\$4.5 million	\$4.05 million	\$.67 million	\$.60 million
Amortization of Unfunded Accrued Liability	\$2.50 million	\$2.50 million	\$2.50 million	\$2.50 million	\$0.0 million
Total Annual DB Cost	\$7.50 million	\$7.00 million	\$6.55 million	\$3.17 million	\$.60 million
Cost of New DC Plan	N/A	\$.50 million	\$.95 million	\$4.33 million	\$4.40 million
Total DB and DC Plan Cost	\$7.50 million	\$7.50 million	\$7.50 million	\$7.50 million	\$5.00 million

Assumptions:

- 1) DB Accrued Actuarial Liabilities: \$100 million
- 2) Unfunded Accrued Liability (UAL): \$25 million (20 year level amortization)
- 3) Normal Cost for future service for participants who stay in DB plan: \$5,000/participant/year
- 4) Actuarial Funding Method: Entry Age Normal
- 5) 10% turnover/termination/retirement
- 6) Average pay stays the same
- 7) DC contribution rate is the same as DB plan's normal cost rate
- 8) Total number of active employees remains level at 1,000

Setting Up a New DC Won't Help Amortize Old Unfunded DB Liabilities

How will establishing a new defined contribution plan affect the funding and future financial status of an already existing defined benefit plan? A concern often raised is that a new defined contribution plan will drain funds that would otherwise be available to fund benefits in the defined benefit system. Some also worry a new DC plan would negatively impact the demographics of the defined benefit plan, causing the cost of providing benefits under the defined benefit plan to increase.

The current funding concerns of many state defined benefit systems stem from the presence of large unfunded actuarial liabilities, which in turn reflect investment losses, inadequate past employer funding and/or benefit enhancements. While some of these unfunded liabilities may eventually be reduced by investment gains, the cost of

amortizing them is independent of the benefits provided to future employees under either the existing defined benefit plan or any new defined contribution plan.

Thus, establishing a defined contribution plan for new employees cannot harm the financial condition of an existing defined benefit plan nor undermine its funding structure. The *funding rates* for a defined benefit plan may increase if new hires go to a new defined contribution plan, but the *funding dollar costs* should not be affected because those costs are solely based on the benefits and liabilities associated with the current defined benefit plan participants. If all new hires go into the defined contribution plan, the nominal dollar contributions to the defined benefit plan will go down, as the contributions associated with the new hires shift over time from the defined benefit to the defined contribution plan.

Depending on the particular actuarial cost method used by the defined benefit plan, the average normal cost (as a percentage of covered payroll under the defined benefit plan) may go up or stay the same. However, the current unfunded liabilities in the defined benefit system remain the same and must be funded irrespective of whether or not a defined contribution system is established.

DB Plan Funding Could Improve if Participants Chose to Move to a New DC Plan

If current defined benefit participants were given the option and chose to switch into the new defined contribution system and their accrued benefits were transferred over, the overall funding status of the defined benefit system might actually improve. This would result from the fact that the assets transferred to the defined contribution plan (in respect to employees switching out of the defined benefit plan) would be based on current salary, while the actuarial liabilities released from the defined benefit plan would be based on projected salary at retirement.

The resulting actuarial gains would serve to reduce any unfunded liabilities and thus reduce future defined benefit plan costs. Note that these cost savings would also accrue if the employees did not transfer funds to the defined contribution plan and simply retained a vested deferred benefit under the defined benefit plan.

Note: While the above is true, actual experience where DB to DC plan options have been provided to participants has shown that very few participants have chosen to make the switch. A variety of reasons may exist for this experience, including a strong DB preference in the public sector, insufficient incentives to make the switch, and the natural tendency for individuals to be reluctant to make changes without sufficient economic or other incentives.

DC Benefits Are Always Fully Funded, Eliminating Any New Unfunded Liabilities

One major benefit of a defined contribution system is that accrued benefits are always fully funded; moving forward in a defined contribution system, there would be no new unfunded liabilities. Stability and predictability of contributions for the plan sponsor is

a given with a defined contribution plan; financial market returns have no impact on required employer contribution levels and contributions are solely a function of current salary.

Defined contribution retirement plans have been made available to employees in higher education in most states for many years. Many state retirement systems were initially concerned about the potential financial impact these plans would have on their respective defined benefit plans, but none of these concerns ever materialized. In fact, in the few instances where independent actuarial studies were performed several years after the implementation to measure the financial impact on the state retirement system, the studies always concluded that the presence of the defined contribution plan did not have any negative impact on the state retirement system.²⁰

Best Practices for Defined Contribution Plan Design

Some public sector entities are considering defined contribution arrangements as an alternative or replacement to their primary defined benefit plans. Some entities have adopted combination plans that offer both defined benefit and defined contribution features.

Issues When Considering Defined Contribution Plans

A defined contribution plan that is intended to be the primary or core source of retirement benefits should be designed differently than the traditional private sector 401(k) plan or the standard 457(b) or 403(b) supplemental tax deferred compensation arrangements common in the public sector.

Unlike these other plans, which focus on wealth accumulation as a primary objective, a core defined contribution plan should focus on providing retirement income and security. The plan design must, therefore, include features that mitigate investment risks to employees and the risk of outliving their account balance after retirement. Traditional 401(k), 457(b) and 403(b) plans are rarely designed with these objectives in mind and subject participants to an unnecessary level of risk that their retirement income needs will not be met.

Features for a “Core” DC Plan

Public sector retirement policy makers should therefore consider the following best practices for a risk managed “core” defined contribution plan:

- **Participation**
 - Mandatory automatic enrollment
- **Contributions**
 - A minimum total contribution rate of 10% of salary with the employer portion making up at least half. For plans where participants do not participate in Social Security, the total contribution rate should be substantially higher.
 - Consider age- or service-based contribution schedules where contributions are higher for longer service or older workers. This has the advantage of mimicking the back-loaded accrual patterns of DB plans and assists with workforce attraction and retention objectives.
 - Elective additional employee contributions. (Consider automatic enrollment and automatic scheduled increases in participant elective contributions).
- **Investments**
 - Strong consideration should be given to having employer-directed investment of a portion of at least employer contributions into risk-managed age-based life-cycle investments/annuities to help control investment risk.
 - Mandatory and default investment into one-step simplified vehicles such as age-based lifecycle funds that automatically change investment allocations over the life of the participant to reflect the need to control investment risk closer to retirement.

- An array of investment choices should be provided if participants are permitted to invest their own accounts. Funds available for investment within the plan should be consistent with the primary objective of investing for basic retirement income needs. The investment fund array should allow for individual risk selection from conservative to aggressive, but risk must be considered within the context of pension plan objectives. Highly speculative investments such as commodities should not be available for selection.
- Available funds could be a mixture of mutual funds and fixed and variable annuities to help control investment risks.
- Excluding the series of Lifecycle funds, total funds available should not exceed 20. These funds should cover the asset classes of; Guaranteed Annuities, Equity, Fixed Income, Real Estate and Money Market. It is not advisable to have multiple funds with similar objectives within a plan. This will confuse plan participants and can add cost and administrative complexity to the plan itself.
- **Participant Investment Education and Advice**
 - Retirement plan services to participants should be integrated into the program. These should include: Investment advice to individuals, retirement and financial education, and retirement and financial planning services.
 - Independent objective investment advice services to participants are critical.
 - Individualized delivery of investment education and advice services is ideal. It should be supplemented by call center and/or web-based delivery as well.
- **Distributions**
 - Annuitization of all or a portion of the account at retirement should be mandatory. Ensuring the availability of adequate retirement income can be designed into defined contribution plans by limiting availability of lump sum distributions. While it has become fairly standard for plans to allow some degree of lump sum cashability or transferability upon separation from service, a plan sponsor is well within its rights to require that some plan assets be distributed as a lifetime annuity income. Doing so will help ensure that the plan's purpose--financial self-sufficiency in retirement--is met.
- **Ancillary Benefits**
 - Allocation of employer contributions for disability and pre-retirement death benefits should be mandatory.
 - An appropriate level of survivor and disability benefits should be provided if not otherwise provided by other plans.
- **Administration and Fees**
 - Investment products and administrative services should be provided on a single, consolidated administrative platform. While investment choices may be supplied by several fund companies, there should be only one point of contact for employees for all aspects of the plan. Careful selection of the platform provider is critical. Total administrative costs for the platform should not exceed 40 basis points of plan assets. Combined with investment expenses, total plan costs should never exceed 100 basis points. Quality, state-of-the-art platforms are available in this price range and large public sector entities should use their leverage to get the best deal possible from a reputable provider.

The Higher Education Model

DC Plans Have Proven Successful in the Academic Community

When considering the virtue of defined contribution plans in the public sector, it should be noted that the defined contribution model has proven successful in other non-corporate environments, particularly higher education. Defined contribution plans have operated effectively as a basic retirement savings platform in higher education for both private and public institutions. Beginning in the early 1900s, higher education institutions adopted the basic retirement defined contribution philosophy. There were many reasons for higher education to adopt the defined contribution model rather than the defined benefit one, not the least of which was—and still is—academic mobility. While defined benefit plans reward longevity with an employer, defined contribution plans allow for career mobility without penalty.

Defined contribution plans as primary plans in higher education are fundamentally different than 401(k) plans. Worker participation is often mandatory and both worker and institution contribution levels are set at pre-determined levels. In addition, most higher education faculty, whether their primary plan is defined benefit or defined contribution, are offered the opportunity to save additional funds for retirement through a supplemental plan that is either a 403(b) plan or a 401(k) plan.

In the following table using a 10% plan contribution rate (employer and employee, combined) and actual historical returns earned by TIAA and CREF, replacement ratios ²¹ were estimated for 30-year TIAA-CREF policyholders under three asset allocations (60% TIAA and 40% CREF, 50% TIAA and 50% CREF, and 40% TIAA and 60% CREF). The result is income replacement ratios under the three scenarios ranging from 43% to 49%; adding typical Social Security benefits ²² results in replacement ratios of 70% or more. ²³ Contribution rates of 5% and 15% result in replacement ratios (excluding Social Security) of approximately 23% and 70%, respectively.

TIAA/CREF Income Replacement Ratios				
10% DC Plan – Results as of 1/1/2006				
Initial Premium January 1	TIAA/CREF Stock Allocation			
	60% / 40%	50% / 50%	40% / 60%	Social Security
1971	57.1%	61.3%	65.5%	20% - 40%
1976	43.3%	46.1%	49.0%	20% - 40%
1981	29.4%	30.8%	32.2%	20% - 40%

Assumptions:

- 1) Monthly premiums on the first of each month
- 2) Salary increase rate of 5% per year occurring on each January 1
- 3) Last premium paid 12/1/2005
- 4) TIAA accumulations are settled using the Graded Benefit Payment Method & current TIAA mortality
- 5) CREF accumulation settled using current CREF mortality and 4% AIR
- 6) Retirement at Age 65, Single Life Annuity 10 years guaranteed
- 7) Social Security replacement varies inversely with salary

TIAA Traditional Account Retirement Annuity	Rates of Return Ending 01/31/2007
1- year	4.75%
3-year	4.51%
5-year	5.86%
10-year	6.63%

CREF Stock Inception Date: 08/01/1952	Average Annual Compound Return As of 12/31/2006
1- year	17.24%
3-year	12.50%
5-year	8.30%
10-year	8.28%
Since Inception	10.61%

The performance data quoted represents past performance and is no guarantee of future results. Your returns and the principal value of your investments will fluctuate so that your shares [accumulation units], when redeemed, may be worth more or less than their original cost. Current performance may be lower or higher than the performance quoted above. For performance current to the most recent month-end, visit the TIAA-CREF Website at www.tiaa-cref.org, or call 877 518-9161.

APPENDIX

Background: A Review of Public Sector Pensions in the U.S.

The Public Sector Employs More than 27 Million Workers

The public sector arena is large by almost any measure. Employers include the federal government, the 50 states and approximately 88,000 local governments. The local government segment includes:

- 3,000 counties
- 19,000 cities
- 16,000 townships
- 35,000 special districts
- 15,000 public school districts

There are approximately 2.7 million full- and part-time employees of the federal government, 18.3 million employees of state and local governments and 6.3 million school district employees.²⁴ The following summarizes the major occupational classes of the over 11 million full-time employees within federal, state and local government employment:

Occupational Class	Total Full-Time Employment
Higher Education	1,875,000
K-12 Education	6,288,000
Public welfare	534,000
Hospitals	1,057,000
Health	558,000
Police	995,000

Retirement Coverage in the Public Sector Is Widespread

Retirement plan coverage is almost universal in the public sector. Nearly 75 percent of all employees, and 98 percent of all full-time employees, receive some form of employer-sponsored retirement benefit.

More than 2,600 core retirement systems are sponsored, covering approximately 17.8 million active and inactive participants. The vast majority of these plans are defined benefit (DB) in design. These core retirement systems hold almost \$2.5 trillion in assets. Annual employer and employee contributions amount to approximately \$91 billion. Annual benefit payments are approximately \$145 billion.²⁵

Establishment and Governance of Plans Done by Legislation

Public sector plan sponsors establish retirement benefits and funding policy through the enactment of statutes, laws or ordinances that authorize the plan. Changing retirement benefits and creating new plans usually requires legislative action and, depending on the form of government, concurrence by the chief executive.

The plan sponsor typically delegates ongoing governance and administration responsibility to one or more named fiduciaries. The fiduciary bodies of public sector retirement plans vary in size, composition and authority, and may be a single individual or a board of trustees. Boards of trustees are common and typically include representatives of elected or appointed office, executive agency appointments and appointed or elected representatives of employee and retiree groups.

It is not uncommon for public sector retirement plans to have separate administrative boards and investment boards. Public sector retirement boards and staff have limited authority to make benefits changes. However, as fiduciaries and internal subject matter experts, they play a major role in helping shape benefit policies and establishing the critical actuarial funding and investment policies for the plan. They are also primarily responsible for the selection and monitoring of administration and investment providers for the plans under their control. Often, public employee retirement system board of trustees members and administrative staff are employees of the plan sponsor and are participants in the plans they govern.

Almost All Public Retirement Plans Are Defined Benefit

Public sector employers participate in retirement plans that are either locally administered, single-employer arrangements or multiple-employer, state-wide Public Employee Retirement System (PERS) arrangements. Almost all public retirement defined benefit systems are self-administered. In contrast, many of the administrative and investment management functions of public sector defined contribution plans are out-sourced to third-party service and product providers.

Many of the largest PERS plans are arrangements that cover participants of both state and local government employers. The 85 major state retirement systems included in the Wisconsin Legislative Council's 2004 comparative study²⁶ covered about 11.8 million active employees, retirees and beneficiaries in the following occupation categories:

Table 8	
Employee Coverage	Number of Systems
State employees only	11
Teachers only	27
Local employees only	8
State and local employees	16
State employees and teachers	3
State and local employees and teachers	20

Core Retirement Plans Cover about 17.8 Million People

As noted earlier, public sector entities at almost every level provide some form of retirement benefit to their employees, and nearly all full-time public employees participate in an employer-sponsored core retirement benefit plan. The public sector sponsors about 2,670 core retirement systems covering approximately 17.8 million active and retired participants and holding over \$2.1 trillion in assets. Most of these systems are small (2,147 systems hold less than \$50 million in assets each), but the remaining 523 hold over 99 percent of total plan assets.

The following tables provide additional statistical information regarding these core public sector retirement systems:

Table 9: Public Sector Core Retirement System Assets						
	All Systems	> \$1.5 B	<\$1.5 B to \$500 M	<\$500 to \$100 M	<\$100 to \$50 M	< \$50 M
# of Systems	2,670	137	97	174	115	2,147
Assets	\$2,157 B	\$1,995 B	\$89 B	\$48 B	\$9 B	\$16 B

Source: Author compiled from US Census Bureau Data

Table 10: Public Sector Core Retirement System Participation (Actives and Retirees)							
	All Public Systems	>25,000	10,000-24,999	5,000-9,999	1,000-4,999	500-999	<500
# of Systems	2,670	98	44	57	174	133	2,164
# Participants	17,246,537	15,564,834	659,851	403,754	401,305	95,334	121,459

Source: Author compiled from US Census Bureau Data

Table 11			
Level of Government Administered	Number of Systems (2,670 total)	Membership (17.8 million Active and Retired) check numbers this adds to 17.4 m	Assets (Total: \$2,157 B)
State	219	15,394,714	\$1,772 billion
County	164	532,235	\$95 billion
City	1,761	1,136,686	\$248 billion
Townships	404	38,208	\$3 billion
Special Districts	108	60,260	\$23 billion
School Districts	14	84,434	\$16 billion

Source: Author compiled from US Census Bureau Data

Basic Public Sector Retirement Designs Include DB and DC Plans

Two broad categories of retirement plans are offered to public employees: defined contribution (DC) plans and defined benefit (DB) plans. Under a DC plan, the benefit for a participant is based on the contributions made by the employer and the employee plus investment gains or losses. In the private sector, the most common DC plan is a 401(k) plan.²⁷ Under a defined benefit plan, the benefit is based on a formula (e.g., 1.5% of final average salary multiplied by years of service). The contribution necessary to fund the DB benefit is based on actuarial estimates and may change from year to year based on whether actual plan experience is met or not (e.g., investments are less than predicted).

DB Plan Designs Dominate the Public Sector

The vast majority of core public retirement plans of state and local governments are defined benefit arrangements. About 90 percent of all full-time employees participate in defined benefit pension plans. About 14 percent of employees are covered under defined contribution plans, with some participating in both types of plans.²⁸ At least 58 percent of public higher education employees are covered by DB plans, under either single employer or statewide PERS plans.²⁹

The public sector differs from the private sector in that it focuses on the traditional priorities of governments: defense, public safety, education and the general welfare.

Historically, these functional differences have been an important reason for the use of defined benefit plans as the primary vehicle for meeting certain benefits objectives for public employees. For example, DB plans have been used for police, firefighter and other public safety occupations to allow earlier retirement ages and to provide substantial disability and death benefits because of the physical demands and inherent danger of the professions. DB plans were also often established in order to provide significant benefits for individuals with years of service before the plan was established.

Only 70% of Public Service Workers Get Social Security Coverage

Only about 70 percent of public sector employees are covered by Social Security. As a category, public safety workers such as police and firefighters often do not participate in Social Security, reflective of a public policy that encourages earlier retirement for this class of employees than allowed by Social Security. Most of the remaining uncovered workers (roughly 5 million state and local workers) reside in seven states: California, Colorado, Illinois, Louisiana, Massachusetts, Ohio and Texas. The uncovered state and local workers in California, Illinois and Texas constitute 49, 62 and 55 percent of the total, respectively. In Colorado, Louisiana, Massachusetts and Ohio, virtually no government workers are covered by Social Security.³⁰

The absence of the Social Security “safety-net” in these states and workforce classifications encourages the use of core DB plans, which usually provide higher accrual rates for public employees not covered by Social Security, making up for the absent guaranteed federal benefit. Calls for mandatory Social Security coverage for all newly hired public sector employees are routinely part of ongoing discussions on Social Security reform.

Defined Benefit Funding Improving, but Leverage Is Growing Too

Unfunded liabilities for public sector defined benefit plans increased dramatically during the 2000-2002 recession, adding to the strain on public sector finances. Investment losses during the recession were a major contributor to the decrease in funded status. However, in many cases, this was compounded by the costs of large benefit improvements and the failure of plan sponsors to make necessary contributions.

Defined benefit pension funding levels have been improving over the last few years because of market gains and higher contribution levels. However, in many cases these plans are more highly leveraged than ever:

- Defined benefit pension unfunded liabilities remain high compared to years before the recession. There are \$333 billion in aggregate defined benefit unfunded liabilities among the public plans covered by recent public pension industry surveys³¹
- The ratio of active employees to retirees is decreasing. Baby Boomers are getting ready to retire. This creates a greater need to rely on investment income to pay for benefits that have been promised
- The compensation base supporting the plans is smaller relative to liabilities. This creates a lesser ability to absorb and spread the impact of any future investment losses citation
- Investment of plan assets is becoming increasingly exposed to the more volatile equity market as a way to earn greater returns

The relative size of public pension obligations is also increasing in comparison to the underlying tax base. State pension liabilities increased approximately threefold from 1990 to 2002, while state tax receipts increased less than twofold during the same period.³² Each of these factors creates higher funding risks for the plan sponsor and a decreased ability to weather economic downturns.

The irony of the situation is that the current funding levels for most public pension plans remain high on a historical basis with contribution rates that are often lower than they were in the 1990s. The real issue facing public pension policymakers and legislators is what to do in the face of large and sudden increases in pension costs at a time when there are many other demands on limited budgets.

Public Sector Also Offers Some Defined Contribution Retirement Plans

Over 70 percent of public sector entities offer supplemental DC or elective deferral retirement plans such as 457(b), 403(b) and 401(k) plans.³³

	403(b) ³⁴		457 (b) ³⁵	401(k) ³⁶
	Higher Education	K-12		
# of Plans	1,200	16,000	30,000 +	12
# Participants	913,000	5.2 million	5 million	
Assets	\$100 billion	\$478 billion	\$107 billion	\$9.5 billion

Because of federal tax law restrictions on formation of new plans after 1987, public sector 401(k) plans are less common than other plan types. There are 12 large public sector 401(k) plans: 8 statewide 401(k) plans holding a total of about \$8.2 billion in assets, and 4 local government 401(k) plans holding a total of about \$1.3 billion in assets.

A Unique Set of Public Sector Pension Stakeholders Influence Planning

An unusual mix of stakeholders influences the creation of retirement benefits policy for public employees. Each of the three major branches of government (the executive, legislative and judicial), public employee unions and representative groups, public employee retirement and investment boards of trustees and other fiduciaries, taxpayer groups and the media play a significant role in shaping retirement benefit policy. Understanding the role and influence of each of these stakeholders is critical to successful development of sound public policies going forward.

Public Sector Unions Are Traditionally Advocates of DB vs. DC

Through their normal representation activities, employee unions and representative groups are substantial stakeholders with regard to the design and administration of public retirement plans. The extent of this influence varies by geographical region, with the strongest impact being found in the northeastern, upper middle and west coast states.

Core retirement benefits are not usually the subject of direct collective bargaining efforts. However, bargaining efforts frequently influence public sector plan sponsor decisions regarding core benefits levels and the existence of supplemental retirement benefits. Union influence is also felt when their representatives serve as elected or appointed members of the boards of trustees that oversee and govern the management of public retirement trust funds.

Public employee unions and other representative groups have traditionally been strong advocates of DB plans over DC designs, primarily because of benefit security concerns.

Major public sector unions and their local affiliates include the National Education Association (NEA), American Federation of Teachers (AFT), American Federation of State, County and Municipal Employees (AFSCME), Service Employees International Union (SEIU), American Nurses Association (ANA), International Association of Firefighters (IAFF), International Brotherhood of Police Officers (IBPO), Fraternal Order of Police (FOP), Association of American Educators (AAE) and the American Association of University Professors (AAUP).

Other Influencers: Sector Industry Groups and Associations

Public policy for and administration of public sector retirement plans is strongly influenced by a wide variety of industry groups and associations, including, but not limited to the following:

- The National Governors Association (NGA)
- The National Council of State Legislatures (NCSL)
- The Council of State Governments (CSG)
- The Government Finance Officers Association (GFOA)
- The National Association of State Retirement Administrators (NASRA)
- The National Council on Teacher Retirement (NCTR)
- The National Conference of Public Employee Retirement Systems (NCPERS)
- The National Association of Governmental DC Administrators (NAGDCA)
- The National Association of Public Pension Attorneys (NAPPA)
- The National Association of College and University Business Officers (NACUBO)
- The College and Universities Personnel Association – Human Resources (CUPA-HR)
- The International Foundation of Employee Benefit Plans (IFEBP)
- The National Pre-retirement Education Association (NPEA)
- The American Association of Retired Persons (AARP)
- The American Legislative Exchange Council (ALEC)

These entities have proactively taken policy positions on a number of public retirement benefit and funding issues and supported their positions through various actions.

ENDNOTES

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²¹ Annual annuitized retirement benefits as a percentage of final annual salary earned.

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