THE HYBRID HANDBOOK

NOT ALL HYBRIDS ARE CREATED EQUAL

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I. EXECUTIVE SUMMARY

Hybrid retirement plans for state and local government employees are not new, but have received increased attention in recent years as jurisdictions have sought to modify retirement benefits, whether for cost concerns or other objectives.

A hybrid is not one particular plan design, but instead is an umbrella term capturing a wide range of different plan designs. Some hybrids are defined benefit (DB) pensions with risk-sharing provisions, while others blend attributes of DB and defined contribution (DC) plans. There is a wide range of hybrid plan designs, each offering tradeoffs in terms of retirement benefits, risks, and costs.

This report provides an overview of the many aspects of hybrid plan design so that state and local officials can make informed decisions if seeking to modify public employee retirement benefits to some type of hybrid model, either as a new plan or as a new tier in an existing plan. This report also offers insight on jurisdictions that have implemented various forms of hybrid plans.

The report finds that in some cases, shifts to hybrid designs were made without a proper evaluation of the long-term implications of the plan changes. In contrast, other hybrids are well-thought-out and more likely to provide retirement security to employees while also enabling public employers to recruit and retain a qualified workforce. The bottom line is that all hybrid plans are not created equal.

II. INTRODUCTION

There are a wide range of retirement plan structures that are in use among state and local government retirement systems. This research focuses on a subset of the plan structures commonly referred to as hybrid plans, and considers the benefits and risks of various hybrid forms. While the term hybrid frequently is used in relation to public retirement systems as though it represents a singular strategy, hybrid plans are extremely heterogeneous and differ significantly in terms of implications for workforce management, retirement security, and cost objectives.

This research provides a detailed analysis of the range of options present within hybrid plans and examines the relative effectiveness of each hybrid option.

In evaluating or designing any retirement system, whether a hybrid or not, one must start by considering two key questions:

1. What is the purpose of the retirement system?
2. What are the main risks of offering the plan?

The first question has two typical answers: serving as a workforce management tool and providing for retirement security. These two answers are intertwined. Retirement systems, such as pensions, serve as tools for employers to recruit, retain, and retire the workforce effectively and efficiently. This is because employees perceive and value the benefits of the plan, primarily for its ability to support retirement security.

The second question has many more answers, but two answers often are the most significant: the contribution levels will be unsustainable because they are too high or too variable; and the structure does not support the workforce goals of the sponsoring employer.

This research refers to the answers to the first question as the benefits of the plan, while the answers to the second question as the risks of the plan.

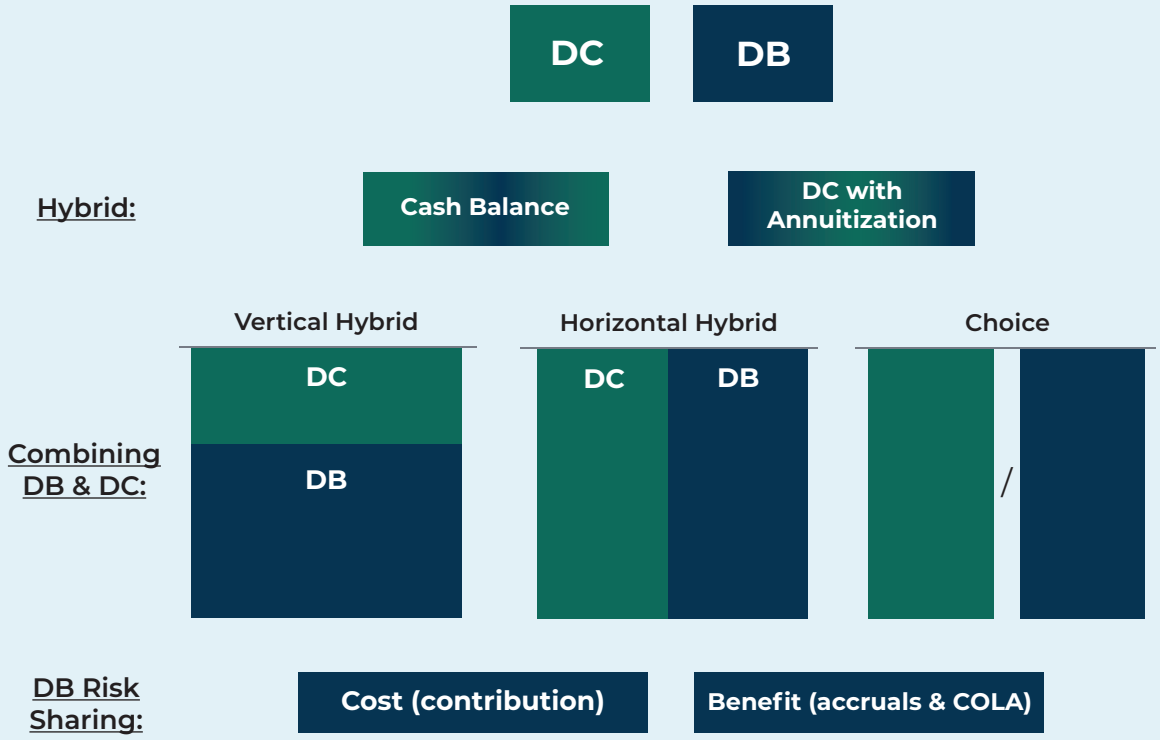
Hybrid Overview

The term hybrid retirement plan was originally used to indicate that a plan had elements of both a traditional DB pension plan and elements of a traditional defined

contribution (DC) plan. A traditional DB pension plan principally is defined by providing a determinable monthly retirement benefit throughout a person's entire retirement. In contrast, a traditional DC plan is primarily defined by the feature of being individually managed during a person's career as well as retirement, with the amounts paid into an individual's account being determinable. With a DB plan, the amount that is received in retirement is what is defined whereas in a DC plan, it is the amount that is paid to fund retirement that is known. The term hybrid in reference to retirement systems has expanded over time, and now often refers to any retirement plan that has elements that aren't included in either a traditional DB or traditional DC plan, even if the plan does not have aspects of both DB and DC plans.

While hybrids have existed for decades, including Texas Municipal Retirement System going back to 1947, these plans have been increasingly discussed and implemented in recent years. In particular, hybrids are proposed frequently as possible structures to replace existing DB pension plans for state and local governments.

Figure 1: Overview of Hybrid Retirement Systems



Given the loose usage of the term hybrid today, it is important to focus on key features that balance retirement security, economic efficiency and workforce management, as NASRA notes: "A vital factor in evaluating a retirement plan is the extent to which it contains the core elements known to best meet human resource and retirement policy objectives of state and local governments: mandatory participation, shared financing, pooled investments managed by professionals, targeted income replacement with disability and survivor protections, and lifetime benefit payouts. These features are a proven means of delivering income security in retirement, retaining qualified workers who perform essential public services, and providing an important source of economic stability to every city, town, and state across the country."[1]

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Evaluation Framework

There is no universal answer as to what is considered an optimal retirement plan structure, as this will vary based on the specific objectives of the plan sponsor, the characteristics of the population covered, the environment in which the sponsor operates, and legal and regulatory limitations. However, there is a general framework for designing and evaluating a retirement program. While this approach could be used to create a new plan for a sponsor without an existing program, it is presented in this report in the context of developing a structure for new hires within an existing system because this situation is more common than creating a new retirement system. This process is typically driven by the sponsor - the state or local government that is offering the plan - but should engage and consider all stakeholders, including taxpayers and employees. The steps of this framework are as follows:

- Identify the goals of the system
- Consider the structural, political, legal, and regulatory limitations
- Determine desired allocation of the risks of the system among the sponsor, active members, and retired members
- Select structure and implement
- Monitor and revise

The first step of the framework is to identify the goals of the system, which typically relate to the benefits and the risks of the plan. The benefits of the plan pertain to workforce management and retirement security, while the risks relate to the contributions necessary to fund the system along with workforce management and retirement security. While not exhaustive, this research identifies a number of items commonly considered for each of these categories.

Workforce management objectives relate to recruiting, retaining, and retiring workers as desired, and the effectiveness is determined by the level, pattern, transparency, and predictability of benefits offered. Retirement security objectives include the adequacy of benefits, the accrual of benefits during a career, and the provision of ancillary death and disability benefits.

Offering a plan that is perceived as valuable by the members can help the sponsor to recruit and retain the workforce needed to meet service objectives. Conversely, if a sponsor offers a plan that is not competitive, recruiting and retaining their workforce may be challenging.[2]

The structure of the plan, in particular the pattern of accruals, can impact the sponsor's ability to retain employees. As such, it is important to consider how the pattern that benefits are earned or accrued by members aligns with workforce goals. This concept is explored in detail later in the report.

An additional workforce management objective pertains to retirement of members. A plan that provides retirement security can be a vital tool to ensure the appropriate and predictable retirement of members, which is an important workforce management goal for sponsors.

While retirement security is a second overarching category of benefit objectives in offering retirement plans, it is clear from the discussion of how the features of a retirement plan impact workforce management that the two concepts are intertwined. Achieving retirement security objectives allows the plan to be a valuable tool for workforce management.

The most fundamental objective related to retirement security that must be considered in designing or evaluating any plan is the adequacy of the benefits received by members. This often is presented as a replacement ratio, which quantifies the level of retirement income for members in terms of the income received while working immediately prior to their retirement.

In addition to this initial level of retirement security, it is important to also consider changes in benefits during the course of retirement. For plans that are more DB in nature, this generally is evaluated in terms of cost-of-living adjustments (COLAs) that are designed to preserve purchasing power that would otherwise be eroded due to inflation during retirement. For plans that are more DC in nature, this typically is evaluated in terms of management of the retirement income throughout a member's retirement. Finally, in the case of all plans, the risk that anticipated benefits will change while a member is working or in retirement must be considered.

"Achieving retirement security objectives allows the plan to be a valuable tool for workforce management."

While the primary focus for retirement security objectives is typically the benefits received by career employees who retire from the plan, it is also necessary to consider the objectives related to benefits for employees who terminate before reaching retirement age. If these are insufficient, it may be difficult to recruit new employees. But if the benefits are overly generous relative to the benefits received by career employees, the sponsor may face difficulties retaining employees.

The final objective that must be considered in designing a retirement system relates to ancillary benefits that are desired in the structure, such as death and disability benefits. The effectiveness of these for workforce management purposes and the adequacy of retirement security for the members and their families should be considered.

The discussion regarding hybrids thus far has focused on the goals of creating the system in terms of the benefits. But it is imperative that discussion also consider the risks, or costs, in offering a hybrid plan. These risks should be considered from both a plan sponsor's perspective and that of the members.

In identifying goals for the plan, the primary sponsor risk that must be considered relates to plan funding. Objectives should be considered related to: the level of funding expected to be required to provide the promised benefits in terms of its sustainability to the sponsor; and the risk of variability in this required funding. Similarly, the contribution level, both in absolute terms and relative to the value of the benefits provided by the plan, and the variability of employee contributions must be considered.

While the focus on risks largely is on plan funding, it is also important to consider the risks of any potential variability in the benefits paid by the plan to members in terms of retirement security. The degree of variability, and thus predictability to members, will impact perceptions of the value of the plan and the effectiveness of the plan as a workforce management tool.

While the above objectives are not exhaustive, each represents the typical considerations related to workforce management, retirement security, and funding. Any additional objectives for a specific sponsor and plan should also be considered. As such, explicit goals for the retirement system in terms of both benefits and risks should thus be identified at the completion of this first step.

The next step of the process is to consider the structural, political, legal, regulatory, and other limitations in developing the structure of the system. These will vary by sponsor and location, but will include: pension benefits protections, both accrued and future; any statutory and regulatory limitations for the particular state; and political considerations. While many of these issues are outside the scope of this report, one relevant example is whether or not the covered employees participate in Social Security.[3] Approximately one in four state and local government workers are not covered by Social Security.[4] In these cases, it is necessary that the benefits meet certain thresholds if the employees are going to continue to not be covered by Social Security.

Having identified the objectives in designing the plan as well as the limitations, the next step in the process is to consider the likely drivers of variability in the performance of a retirement system and determine the desired allocation of these risks among the stakeholders of the system. Again, while not exhaustive, the following risks are commonly considered during this process:

- *Investment risk* – This is the risk that earnings on the assets will deviate from expectation, including both the risk that earnings fall short of expectations and the risk that earnings exceed expectations. The allocation of this risk may be all to the sponsor, as in the case of a traditional DB plan, all to the employees as in the case of a traditional DC plan, or divided between the two, as is commonly the case with hybrid plans. Further, this allocation may vary over salary levels.

- *Longevity risk* – This is the risk that members will have retirement periods different than expected. This should again include both the risk that members live longer than expected as well as the risk that members live shorter than expected. In the case of structures that are largely DB in design, this is the risk that the covered population in total has mortality different than expected, and is most commonly borne by the sponsor. In the case of structures that are largely DC in design, this risk includes not just the mortality of the member, but also the rate at which they spend, or drawdown, their retirement income, and is most commonly borne by the members.

- *Inflation risk* – This is the risk that price changes during retirement result in changes in the purchasing power of the benefit. The degree to which this is borne by sponsors versus employees varies based on the specific design of traditional DB plans and hybrids. For traditional DC plans, this is borne by the members.

- *Workforce risk* – This is the risk that the structure of the retirement plan results in recruitment, retention, and retirement being different than was desired. A key aspect of this is considering the degree to which employees are likely to understand and appreciate the benefits offered. An additional important consideration related to this item is specific to cases where a new structure, or tier, is being developed for a sponsor that has an existing plan. In this case, risks arise from differences in the benefits being offered to the two groups. Finally, the relative value and accrual patterns of benefits received by career employees and those with other tenures will impact this risk.
- *Agency/political risk* – This is the risk that political decisions impact the plan in ways that impact costs or cost sharing, including plan demographics and funding levels.

Once the key risks are identified, decisions should be made about whether each risk will be borne by only one party or shared. If risk will be shared, how the risk is allocated should be determined. A key consideration is the benefits of pooling risk. By combining risks across a group, risk can often be less variable. For example, by pooling longevity risk, a plan can fund to the average life expectancy within a pool. In contrast, funding must be done based on maximum life expectancy if each individual is bearing this risk on their own. Similarly, by combining disability and death risk with pooling, a retirement plan can provide enhanced benefits for the small subset of the pool that will become disabled or die before retirement by spreading the cost of these benefits across the entire pool. Without pooling, a plan can only provide the benefits accrued for an individual. Finally, investment pooling allows multiple efficiencies for a retirement system through blending timeframes, economies of scale, asset class and expertise access, and other methods.

The next step of the process is to select the desired structure of a plan based on the identified objectives, limitations, and risk allocations, and then implement the selected plan. This includes decisions related to how to transition to the new design if there is already an existing plan. The next section of this research discusses the range of plan types in use for public plans, both in general, theoretical terms and with specific examples. This discussion highlights how the design of these plans interacts with common objectives for retirement systems.

The final step of the process is to monitor the performance of the plan and consider whether any future plan design changes are warranted.

Assessing Key Goals of Various Types of Plans

To provide a general assessment of the various types of hybrid plans, the criteria listed below are used:

1. Adequacy and provision of lifetime income to those who retire from the plan
2. Purchasing power preservation in retirement
3. Adequacy of retirement income for those terminating before retirement
4. Funding predictability
5. Funding flexibility
6. Benefit predictability and transparency
7. Workforce management effectiveness

This table was developed to provide general insights and comparisons between various hybrid types. But in evaluating a specific structure, the characteristics may vary from the typical plan of that type based on its specific provisions.

Retirement Plan Benefit Structures

Having developed a general framework to use in developing or evaluating a plan structure, this section reviews the general types of retirement plan structures that currently exist, including traditional DB and DC plans and various hybrid plans.

Traditional DB plans pool members for both investment and demographic risk, providing benefits determined by a formula. For state and local government plans, these formulas typically take the form of a multiplier earned per year of service times the number of years of service times a final average salary amount. With these plans, the employers typically bear the investment and longevity risk, with who bears inflation risk varying by plan. DB plans also tend to include ancillary benefits for death and disability.

Traditional DC plans develop individual accounts of assets for each member that are individually managed by the members. For state and local governments, these plans typically have contributions paid by both members and the employer as a percentage of salary. In this design, the employees bear investment, longevity, and inflation risk. There also typically are no benefits for death or disability other than the accumulated account balance.

Table 1: Evaluating Key Features of Various Retirement Benefits

Key Features and Goals	Final Pay Pension	Cash Balance	Parallel DB/DC	Stacked DB/DC	Contribution Rate Risk Sharing DB	Variable Benefit DB	DC
Adequacy and provision of lifetime income to those who:							
• Worked a full career and retire from the plan							
• Mid-career hire, retire from plan							
• Hired young, but terminated before retirement							
Purchasing power preservation in retirement							
Funding predictability							
Funding flexibility							
Benefit predictability and transparency							
Workforce management effectiveness							

While the original definition of hybrids was based on a plan that had elements of both traditional DB and DC plans, currently the term generally is used to describe any plan that is neither a traditional DB nor a traditional DC plan. Who bears investment, longevity, inflation, disability, and death risk varies amongst these plans. There is great variability in these plans, both actual and theoretical, but for the purposes of this research, these plans are classified into five types of hybrids:

- Cash balance plans
- Horizontal DB/DC plans
- Vertical DB/DC plans
- DB/DC choice structures
- DB plans with risk-sharing provisions

Within each of these sections, information is provided about existing examples of each type of hybrid and a discussion of the general theoretical structure.

Policy Objectives and Transition Costs: New Plans versus New Tiers

There are factors to consider when considering a new plan or new tier. Important distinctions also emerge when considering a new tier.

To achieve key objectives, it is necessary to be clear about the workforce goals of a new plan or tier. At times following the Great Recession, it often seemed as though these issues have taken a back seat to short-term cost concerns as public employers experienced large revenue drops that did not recover quickly. As a result, in many instances, structures for new tiers significantly reduced the value of the benefits from those of prior tiers. In some cases, these reforms were so extensive as to result in employees paying more in

contributions than the value of their benefits. This raises a moral question, and it also impacts the effectiveness of the retirement benefits as a tool to recruit and retain workers. If one of the objectives of offering the plan is to support workforce management, the value of the benefits, including what portion is financed by the member's contributions must be considered.

It is also important to delineate between the existing liabilities of the plan, which the vast majority of state and local systems currently have, and the risk of future liabilities exceeding expectations. Based on legal protections of benefits, changes to a system seldom impact accrued benefits, and in fact often do not impact liabilities for current members related to future periods. In these cases, reduction in the risk of new unfunded liabilities from a new tier is only gradually recognized as members under the new tier replace those under the current tier. While this gradual impact is sometimes given as a reason to not make changes since the short-term impact is limited, by thinking about the emerging liabilities separate from the existing, it is clear that this argument is not valid for the long-term condition of the system.

By separating these two concepts, decision makers can effectively evaluate a proposed redesign of a system relative to the desired objectives of the system.

Finally, in a new plan, there is a "fresh start." But this is not true when adding a new tier. Decisions made about future workers can have an impact on managing existing plan liabilities, which often is referred to as ***Transition Costs***. Numerous studies have found that closing a DB plan to new hires will impact the management in the closed tier(s) over time. This issue is particularly pertinent if transitioning fully from a DB plan to a DC plan, in which case the transition costs are more likely to impact past service costs. These transition costs arise from the changes in investments that are necessitated when a DB plan is fully or partially closed.

DB plans derive a significant portion of their cost advantages from the pooling and infinite time horizon inherent in the plan design.[5] Because DB plans are not tied to the lifespan of any one individual, these plans can invest with a diverse portfolio that mixes low- and high-risk assets. If a DB plan is closed to new participants, then it does have an end-point: the death of the last remaining plan participant. That endpoint may come decades in the future, but during the time between plan closure and the exit of the final member, the plan will gradually have to shift its investment portfolio to a more conservative and more liquid set of investments (to avoid a greater level of risk as the investment time horizon shortens), which will lower total investment returns. This will increase costs for the plan sponsor, who can no longer rely on the same level of investment returns to generate revenue for the plan. This exact scenario has occurred in the real world, with a prominent example being the closure of the Michigan SERS over 23 years ago. This was a plan that was overfunded when it was closed, but is now 65 percent funded and has seen contributions steadily increase since its closure.

A related issue is whether closed DB plans are less resilient in rebounding from market crashes, particularly once they face a large negative cashflow (or liquidation of the fund). For instance, Michigan SERS made benefit payments equal to 11.7 percent of its portfolio for 2020. With contributions of about five percent of its portfolio, it would not take a massive crash to make losses permanent.

Similarly, in the private sector, many employers have been addressing this risk by buying expensive annuities to close out their closed plans years after the plan is closed.

These transition costs may be lower (or negligible) if the full DB plan is converted to a combination DB/DC plan, as new participants still would participate partially in the DB plan. This will allow some new revenue to enter the plan via employee and employer contributions and the investment managers will not feel the need to shift to a more conservative investment strategy to the same degree. However, there will still be a loss of efficiency because the individually directed DC accounts cannot match the DB plan in terms of risk pooling, economies of scale, or access to certain classes of investment assets. One should expect the cost of equivalent benefits to generally be higher in a hybrid plan than in a traditional DB plan due to this loss of efficiency.

Finally, if a plan is currently being funded based on a percentage of the salaries of the members and is closed, it may be necessary to consider changing the funding basis as this group declines in size.

III. DEFINED BENEFIT VS. DEFINED CONTRIBUTION PLANS

Key Takeaways:

1. Defined benefit pensions are more economically efficient than defined contribution plans and can deliver the same level of retirement benefit at approximately half the cost.
2. Defined contribution plans may offer more to workers who start young but do not retire from the plan because so much of the accrual in DC plans is based on returns generated from those early contributions.
3. The accrual patterns for these two plans look very different.
4. Mid-career hires earn a much greater benefit through a DB pension plan than through a DC plan.

Because many of the hybrid approaches involve combining elements of traditional DB, often referred to as pension, and DC plans, this report lays out a few key observations about these two traditional plan types in terms of economic efficiency and accrual patterns before considering hybrid plans.

Economic Efficiency: Pensions vs DC

Pensions are able to deliver more retirement benefit dollars per dollar invested than DC plans through pooling of investment and longevity risks as well as economies of scale.

As prior NIRS research has found, DB plans deliver benefits more efficiently due to longevity risk pooling, the ability to maintain a diverse portfolio over time rather than having to follow a single individual's life cycle, and lower expenses and fees.[6] The sum of these three advantages mean a DB plan can deliver the same benefits at about half the cost as a traditional DC plan. Therefore, a DC plan must either offer less valuable retirement benefits or require greater contributions or funding. This cost advantage will impact the economic efficiency of blended plans to varying degrees. For instance, if 20 percent of contributions are diverted to a DC plan in a new tier, you should expect a roughly 10 percent reduction in economic efficiency for the entire program, reflected as either reduced benefit levels or increased cost levels.

Observations on Accrual Patterns: Traditional DB vs DC

As the pattern of accruals of benefits over a career is a key consideration in any plan structure, it is useful to examine the differences in this pattern between traditional DB and traditional DC plans before exploring various hybrid structures, as hybrids typically employ components of DB, DC, or both. Understanding how these differences can impact worker retention and other facets of workforce management is important to assessing how appropriate and effective a structure is for meeting the established objectives in offering the program.

Below is an examination of accrual patterns in three ways:

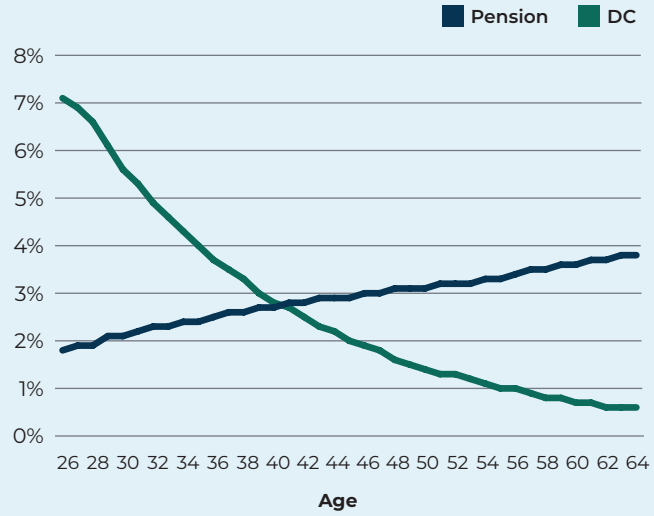
- The dollar increase in accrued retirement income that is produced by working an additional year (Charts A1, B1 and C1)
- The dollar increase in accrued retirement income from an additional year of work relative to that year's pay (Charts A2, B2 and C2)
- The increase in the present value of DB benefits and DC account balance over the course of a career when working an additional year (Charts A3, B3 and C3).

This is demonstrated using three examples of employment patterns, a career employee (Charts A1, A2, and A3), a late-hire employee (B1, B2, and B3), and an employee who starts with the employer, but then leaves mid-career (C1, C2, and C3). All three are assumed to retire at age 65 with the first example entering service at age 25 and the second entering service at age 45. The third example enters service at age 25, similar to the first example, but is assumed to leave the employer after 20 years, at age 45, prior to their retirement at age 65.

These examples are based on simplistic models of both a DB and DC plan and reflect assumptions made about the provisions and performance of these plans. The relative results will vary if these assumptions are changed, but the overall patterns are generally applicable. The specific DB assumptions shown here are a 1.8 percent multiplier, a three-year final average salary, and a 1.5 percent COLA while in retirement. The DC plan is based on a 10 percent

Figure A1: Dollars of Life Income Earned from Additional Year of Service - Full Career

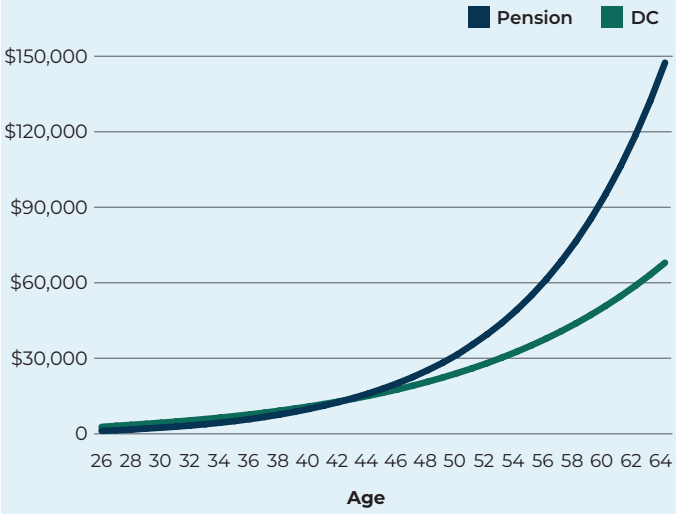
Figure A2: Dollars of Life Income Earned from Additional Year of Service as Percentage of Current Pay - Full Career



total contribution and seven percent interest earned annually before retirement (We did not assume the investment strategy changed as you approach retirement). A salary scale of assumed increases in pay over the modeled employees career based on typical rates seen in public pension plans is used for both models. In converting between lump sum and annuity amounts for comparisons, a seven percent discount rate prior to retirement and a three percent discount rate after retirement are used, along with the 1.5 percent COLA. In developing these factors, mortality is based on the Society of Actuary's Pub-2010 tables for general employees generationally projected for future mortality improvement using their MP-2020 projection scale based on a 50 percent blending of male and female rates. The same basis is used for both the DB and the DC examples to provide comparability, which is limited if a different basis is used. While this is necessary for comparability, different bases may be appropriate for other purposes.

Generally, the traditional DB pension has increasing benefit accruals, in terms of both the dollar amount and the dollar amount as a percentage of income (Charts A1 and A2). Further, the dollar value of annual accruals relative to pay (Chart A2) increases slowly over time, from 1.8 percent to 3.9 percent between ages 25 and 65. The line representing nominal dollar increases (Chart A1) is steeper than when looking at those dollars as a percentage of pay (Chart A2) because payroll is assumed to grow over time. However, when looking at the value of these accruals, there is a much steeper line due to the way the present value is calculated.

Figure A3: Annual Change in DC Account Balance and Present Value of Pension Benefits - Full Career



In other words, earning an annual benefit of $100 dollars is far less valuable for someone at age 25 than for someone aged 65 because the benefits are discounted (at seven percent each year in these examples) for 40 years, despite the fact in each case the individual would receive that additional $100 dollars from age 65 until they pass away. It is noteworthy that a seven percent discount rate makes sense for a pension fund as that is roughly the typical current earnings expectations, but it might make sense to think about discounting this value less in a DC plan when

thinking of the value to an employee who may not have the same return expectations on money they manage.

A pension benefit that is determined as a percent of final pay grows in two ways. First, each additional year of services impacts the benefit formula, Service times Multiplier (1.8 percent in this example) times Final Pay (FAS3). Second, final pay grows as pay is assumed to increase throughout a career. In the first year, the accrual is a simple 1.8 percent of pay. During the following years, an additional year of service is credited, but the benefit also increases as the final pay value grows.

DC plan benefit accruals look different, with declining dollar accruals throughout a career and sharper declines of accruals relative to pay levels. In fact, in the full career example, two-thirds of annual retirement income is accrued during the first half of one's career despite only 34 percent of career wages being received during those same first 20 years. This occurs because the investment earnings on early contributions grow more quickly than payroll itself. A key point in calculating these values is the assumption that investment returns will continue to be credited to the individual whether or not an individual continues working. Thus, the growth in DC balances has been attributed to the year in which the contribution was made, not the year the returns were recognized. (In practice, some DC funds are not used toward retirement after separation, as assumed here.) Because the dollars contributed at age 25 have 40 years to grow before the member reaches age 65, those early dollars have a larger impact on projected life income as compared to contributions made later in a career. In contrast, late contributions simply do not have much time to grow.

The increase in the DC account balance throughout a career does have a positive slope (though less pronounced than the pension comparison) when investment returns on earlier contributions are realized in, or credited to, later years (Charts A3, B3 and C3). This obscures the fact that 85 percent of the increase in account balance during the final year of work is due to returns on earlier contributions—not contributions tied to working that year.

It is noteworthy that the steep line representing the present value of pension benefits owes most of its large, late gains in value to the prior service being deferred fewer years until receipt—not benefit amounts increasing dramatically. In fact, the largest increase in annual benefits is equal to 3.9 percent of pay in the last year of work, which is far lower than the early accruals in the DC plan. In the mid-career example, the value of frozen benefits (after age 45) increases in value as an individual moves closer to their retirement age.

In addition to the full career examples, there are similar examples for a mid-career hire starting at age 45 and working until age 65 (Charts B1, B2 and B3), and an individual who works from age 25 to age 45 before leaving their job (Charts C1, C2 and C3).

The implication of the different accrual patterns for mid-career hires is clear: the pension provides significantly more income in terms of all three metrics: dollars, dollars relative to income, and the present value of accruals. The mid-career hire's DC account balance never grows large

Figure B1: Dollars of Life Income Earned from Additional Year of Service - Hired at 45

Figure B2: Dollars of Life Income Earned from Additional Year of Service as Percentage of Current Pay - Hired at 45

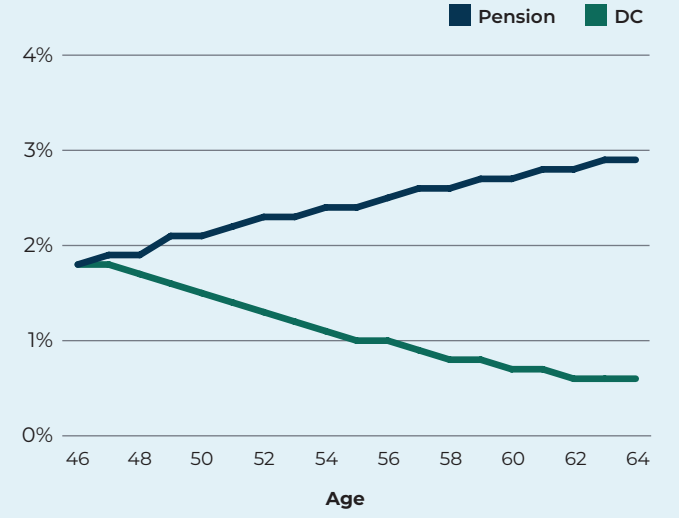
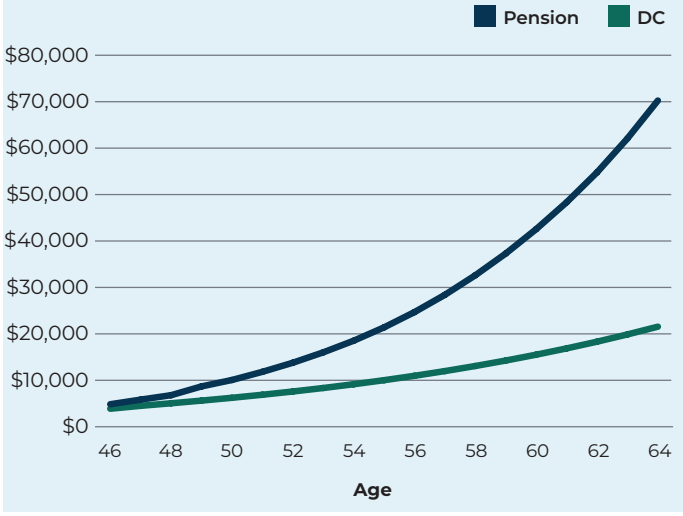


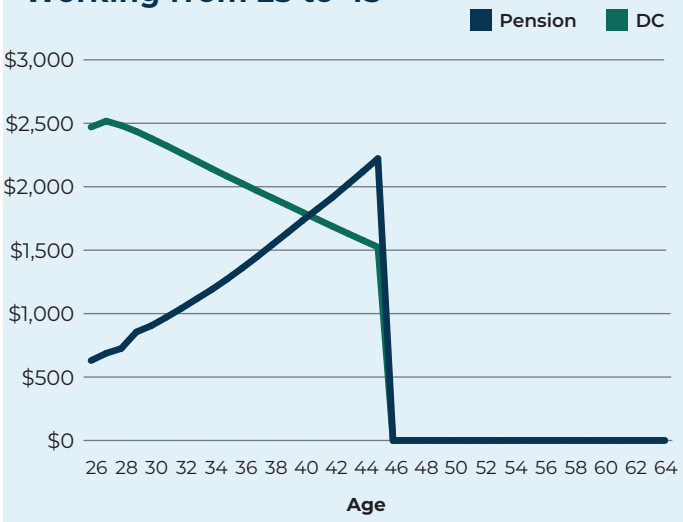
Figure B3: Annual Change in DC Account Balance and Present Value of Pension Benefits - Hired at 45



enough to produce investment gains on the same scale as is projected in the full career example.[7] In fact, the DC investment gains during the last year of the full career example are three times larger than the corresponding returns for the mid-career hire.

It is important to consider the impact of mid-career hires, as it is not uncommon for a significant portion of new hires to be age 40 or older in public plans. For example, 45 percent of the Florida FRS regular members with less than five years of service are age 40 or older. In Texas ERS, it is 40 percent. And, the Indiana PERF plan has 46 percent of recent hires aged 40 or older.[8, 9, 10]

Figure C1: Dollars of Life Income Earned from Additional Year of Service - Working from 25 to 45



A different story emerges when looking at the example where an individual participates in the plan during the first half of his/her career (age 25 to 45). Pension accruals stop after termination at age 45, leaving the accrued benefit to erode from inflation. However, the overall value rises because each year a member is closer to receiving benefits—making the benefits score as having a higher value. Meanwhile, the early DC plan funding has a long

Figure C2: Dollars of Life Income Earned from Additional Year of Service as Percentage of Current Pay - Working from 25 to 45

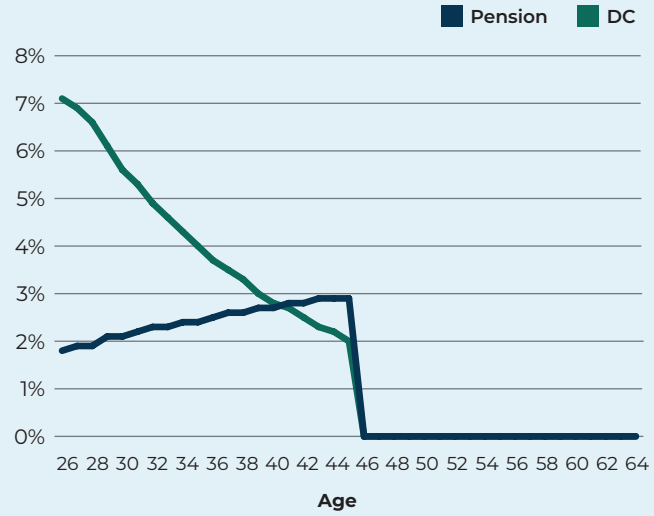


Figure C3: Annual Change in DC Account Balance and Present Value of Pension Benefits - Working from 25 to 45

period for the value to increase more rapidly than pay. When looking at the present value of benefits after leaving at age 45, both continue to increase, but termination comes before the value of the pension benefit catches up.

What is noteworthy is that the increase in DC account balances during the last year of the full career in the example is $97,395 (in 2061 dollars). However, by looking at the late start scenario, it is evident that more than $55,000 of that increase is due to contributions made during the first 20 years of work. In the years preceding the last year or work, an even greater share of the increase in account balances is due to the early contributions. Therefore, without savings from the early years, it is very expensive to catch up on savings with accruals in a DC plan.

There are strengths and weaknesses of both the DB and the DC approaches in terms of accruals to consider. Many of the differences in accrual patterns stem from the fact that the value of pension accruals increases as you approach retirement. In contrast, DC contributions are much more efficient at younger ages. Pensions, beyond presenting less risk and requiring less decision-making from individuals, clearly serve as a lifeline to a mid-career hire without substantial savings. However, pension benefit accruals can erode due to inflation when terminating many years before drawing a benefit. This issue could be addressed by indexing frozen benefits to inflation (without increasing the benefits of career workers), which would flatten benefit accruals for non-career employees somewhat. However, that priority is balanced against workforce management goals.

There are limitations to these examples, as well. First, some DB plans use different multipliers based upon service, allowing an adjustment of the slopes of these accrual lines—with some frontloading benefits by design, and others choosing to backload accruals. Also, these specific examples do not necessarily have the same cost under different sets of assumptions and with different workforce demographics. The illustrations are meant to show the shape of these various values through a career, not specific levels. And, of course, both DB pensions and DC plans can be designed to be either more or less generous than these examples.

“Pensions, beyond presenting less risk and requiring less of individuals, clearly serve as a lifeline to a mid-career hire without substantial savings.”

IV. CASH BALANCE PLANS

Key Takeaways:

1. The accrual pattern in cash balance plans is generally more similar to that of a DC plan, with specific provisions in the design of the cash balance plan having a major impact.

2. The retirement security delivered via a cash balance plan depends greatly upon decisions made when establishing the plan, especially decisions related to interest crediting and annuitization.

3. Cash balance plans generally provide less retirement income to mid-career hires than traditional DB plans, even with strong annuitization policies.

Cash balance plans are the oldest existing type of public pension hybrid, with the Texas Municipal Retirement System established in 1947. These plans are a traditional hybrid in that they blend features of both DB and DC plans. Typically, these hybrids provides annual accruals to notional individual accounts for each member within the plan. For public plans, these annual accruals normally are a percentage of salary and are paid by both employees and employers. These accruals are credited with interest, so the individual employee accounts grow over a career with both additional accruals and interest. At retirement, employees either receive a lump sum payment equal to their individual account or have this balance converted to an annuity received throughout retirement.

The individual accounts being notional means these accounts are tracked for benefit calculation purposes, but do not actually exist as separate investments. The total assets of the plan for all members are pooled and invested by the plan. The individual members do not control their account balances in any way, such as making the investment decisions that are necessary in traditional DC plans.

The factor most significant for determining the level of the benefits at retirement in cash balance plans is how interest is credited. This can be accomplished as either a fixed percentage or as a percentage that varies based on market conditions and/or the performance of the plan. In cases where the interest varies, there is typically a guaranteed minimum level, which results in limiting the portion of the investment risk borne by members. In designing a cash balance plan, the tradeoff that must be considered in setting this provision is certainty for benefit recipients and the anticipated level of the retirement benefits versus the level and variability of the cost of providing these benefits for the sponsor. The degree to which the accounts change with actual investment experience, which shifts investment risk to members, versus the degree to which changes are limited by minimum and maximum amounts, which retains part of the risk with sponsor, ultimately determines who bears investment risk. The magnitude of this risk is dependent on the expected investment return on the assets relative to this interest credit.

One other aspect of these plans central to plan design is whether or not benefits are annuitized at retirement, and on what basis any benefits are annuitized. If benefits are not annuitized, members will bear all the investment, longevity and inflation risk in retirement similar to a traditional DC plan. If benefits are annuitized, portions of these risks will be borne by the plan sponsor. However, in practice, many cash balance plans moderate this sponsor risk by annuitizing the benefits at rates that are below their expected returns allowing for a risk margin. The efficiency of public plans, with diversified investments and low overhead, allows these plans to offer annuities that are more favorable than what a member could get purchasing an annuity themselves, but still on a basis that is expected to produce safety margins for the retirement system. In addition, plans can offer payment form options that include cost-of-living adjustments in retirement. If and how benefits are protected from inflation -- whether with a fixed percentage or based on a market variable such as CPI -- along with the basis on which the account balance is converted to an annuity determines who bears inflation risk.

Similarly, the structure of the plan will determine who bears longevity risk. If the plan does not offer annuitization, then longevity risk is borne by the members, similar to a traditional DC plan. If the plan does offer annuitization, then the longevity risk is largely transferred to the employer at retirement. But because annuitization considers the age of the retiree at retirement, the members do bear more longevity risk than with a traditional DB plan. When cash balance plans offer a choice of a lump sum or annuity, longevity risk is not spread evenly. Instead, participants

Figure 2: Annual Increase in Account Balance, with Contributions and Interest Defined - Full Career

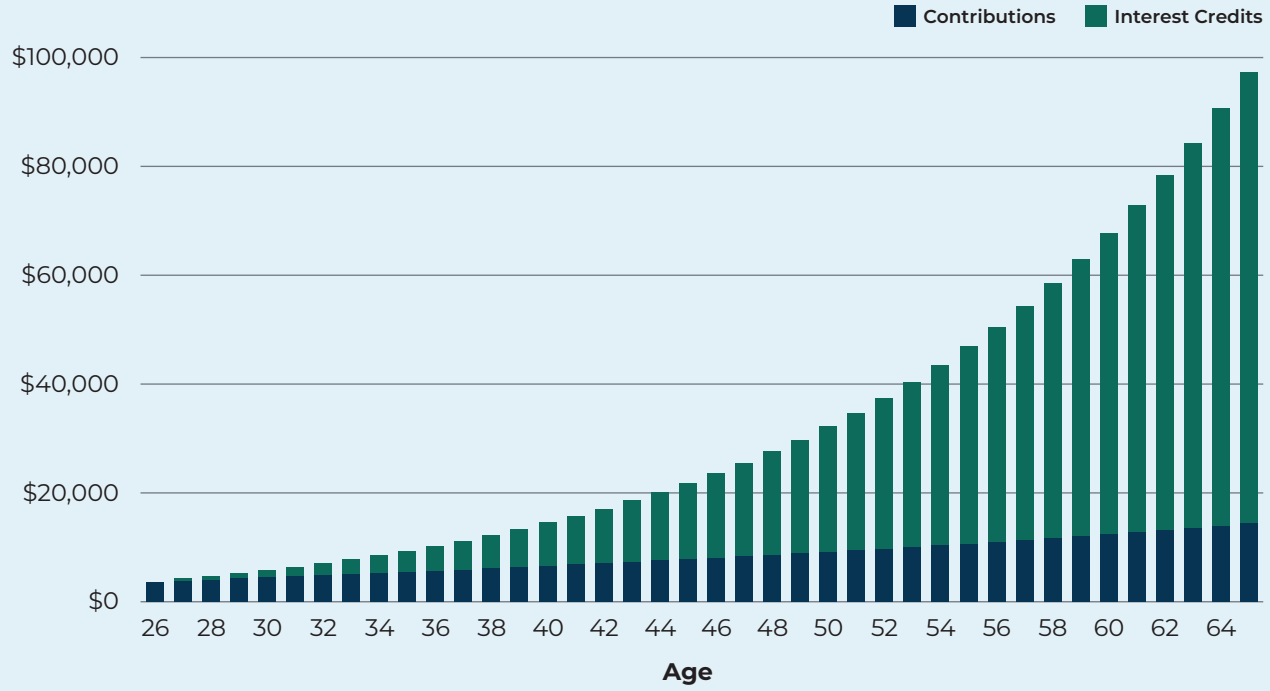
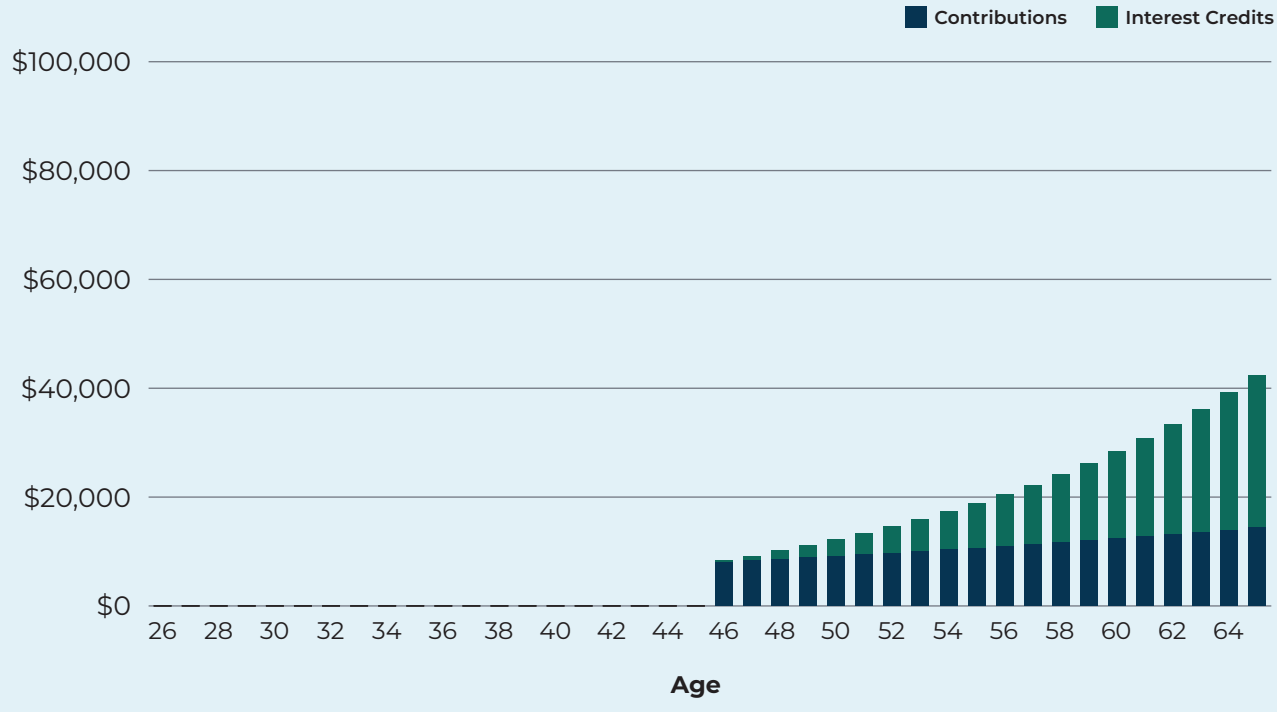


Figure 3: Annual Increase in Account Balance, with Contributions and Interest Defined - Mid-Career Hire



bear no longevity risk on the portion of their benefit that is annuitized, while bearing all of the longevity risk on benefits they take as a lump sum.

Cash balance plan accruals tend to be more similar to the DC examples shown above, given that the accrual pattern is also similar in nature (using a notational account instead of an actual account). Thus, early accruals and participation will impact outcomes more than years of work that are closer to an individual's retirement age. However, the shape of those accruals may differ based upon the crediting rate and other design factors. Generally, a mid-career hire will fare much worse in a cash balance plan compared to a traditional DB plan.

Further, because the individual accounts are notional rather than legally separate pools of assets, these plans can include benefits related to disability and death prior to retirement. Doing so increases the costs and risks borne by the employer, but these risks are moderated through the pooling of the members. In addition, ancillary benefit costs are subsidized by the prefunding in pooled retirement funds, just as the core pension benefits are less expensive when prefunded compared to pay-go funding costs.

A final aspect when considering a cash balance structure for a new plan or a plan redesign is political risk related to the conversion factors used to annuitize the individual accounts in plans that offer this feature. While pension protections have been litigated and there is clear case law in all states, conversion factors are not clear. Because there are not precedent cases in most states related to changing conversion factors to reduce cost, employees under these types of plans face the possibility that their benefit could be reduced dramatically due to this political and legal risk that is generally not present with traditional DB plans.

Cash Balance Examples

The oldest public cash balance plan is the Texas Municipal Retirement System, which was established in 1947, and currently administers the retirement programs for 888 cities in Texas. One relatively unique feature of this plan is that it provides a range of plan options that each city can choose from as a sort of menu. The annual accruals are based on employee deposit rates, which are either five, six or seven percent of compensation based on the employer's election, as well as matching employer contribution at a rate of 1:1, 1.5:1, or 2:1, again based on the employer's election. These accruals then are credited with interest at a minimum rate of five percent annually. While this five percent interest credit is a minimum rate and the board could grant a higher rate, the five percent rate has been what has been paid each year since 2007. The same interest crediting rate is applied to accounts related for each employer for a given year.[11, 12, 13, 14, 15]

Another feature of this plan is that individual cities can elect to offer updated service credit (USC), which essentially calculates what each member's notional account balance would be if their 36-month average salary ending 13 months before the calculation had always been their salary. In developing this alternative account balance, a three percent interest rate is used (lower than the minimum five percent). Further, the current employee deposit rate and current city match are applied to all years in developing this alternative amount. If the alternative account balance is greater than the member's current account balance, the member's account balance is credited with the amount of this difference. Cities can elect to either grant USC on an automatic or an ad hoc basis. Granting these credits results in accrual patterns more similar to those seen in traditional DB plans than is seen in cases where they are not granted.

Members who terminate before retirement receive their account balance based on the member-only accruals. These members can also elect to leave their accumulated deposits in TMRS instead of receiving a refund, in which case they will continue to receive interest credits until such time as they withdraw the funds. For members with less than five years of service, they can only leave the deposits in TMRS, and thus receive additional interest credits, for five years after termination and only receive the member-funded portion of their account. For members who terminate with more than five years, they can leave the funds in indefinitely, and if they wait until retirement eligibility, will receive a benefit based on both member and employer deposits. At retirement eligibility, members can elect to take up to 75 percent of the member portion of their account balance as a lump sum with the remainder of the member portion and all of the city portion annuitized. The current basis for annuitization for this plan is five percent interest and a gender-neutral mortality table that is updated intermittently.

"Based on these provisions, the degree of investment, longevity, and inflation risk that is borne by the members will vary according to the provisions elected by the city."

Whether or not annuities receive cost-of-living adjustments in this plan is dependent on the elections made by each individual city. Employers can elect either automatic or ad hoc COLAs and can elect to adjust benefits for 50 percent, 75 percent or 100 percent of the change in the cost of living. Note that TMRS requires a city electing to offer a COLA must also adopt a USC.

Based on these provisions, the degree of investment, longevity, and inflation risk that is borne by the members will vary according to the provisions elected by the city.

While much more recent than TMRS, Nebraska has had a cash balance for the members of their State Retirement Plan since January 1, 2003. They also offer a similar plan for county employees, but here the focus is on the plan for state employees. The annual accruals are based on employee contributions of 4.8 percent as well as employer contributions equal to 156 percent of the employee contributions, or 7.49 percent. These accruals are annually credited based on an interest credit rate of the federal mid-term rate plus 1.5 percent with a minimum of five percent. Since establishment, the minimum five percent is the rate that has been paid. However, the actuarial valuations currently assume a long-term rate of six percent in developing the liabilities.[16, 17, 18]

In addition to the interest credit, this plan also provides cash balance dividends based on the condition of the system. Each year, the board determines if a dividend will be offered and the amount of such dividend if it is to be offered. Based on the statutes governing the system as well as board policy, the amount of these dividends reflects the funding status of the plan as well as the investment returns. Generally, dividends are limited such that the dividend plus the annual interest credit for the year cannot exceed the assumed rate of return, but this amount can be exceeded by a vote of the majority of the board. Through 2019, dividends were granted in eight of the 16 years the plan has been in existence.

Members who retire from this plan can elect to annuitize from between zero and 100 percent of their account balance at retirement. They can also elect an annuity form that includes a 2.5 percent COLA as an option to forms with no COLA. There are two tiers in this plan with the most recent being Tier 2 for new state employees who began on or after January 1, 2018. For Tier 2, the account balances are annuitized on an actuarially equivalent basis using 7.5 percent and the unisex mortality table adopted by the board following recommendation by the actuary.

A relatively unique feature of this system is that members elect to participate in this cash balance plan or in a DC plan. Members electing the DC plan can select annuitization of their balance at retirement into the cash balance plan following similar annuitization procedures.

A final cash balance example is the Kansas Public Employees Retirement System, where Tier 3 members, those who were hired on or after January 1, 2015, participate in a cash balance plan. The annual accruals from employees are six percent each year, but the accruals from employers vary with the tenure of the employee, increasing over the course of a career. For members with less than five years of service, the employer accrual is thus three percent. This increases to four percent for members with five to 11 years of service, to five percent for members with 12 to 23 years of service, and to six percent for members with 24 or more years of service. The interest credit for this plan is a fixed rate of four percent annually. In addition, similar to Nebraska, this plan also offers the possibility of additional interest credits in the form of dividends. However, unlike Nebraska where the amount of these is adopted by the board, in Kansas these are set by the plan provisions, equal to 75 percent of the five-year average net compound rate of return on the market value of assets that is above six percent. Through 2018, only one such dividend has been paid in the initial four years of this plan.[19, 20]

Similar to the other two cash balance examples, the balances at retirement are converted to an annuity, with members able to take up to 30 percent as a lump sum if they retire at or beyond their normal retirement eligibility. For early retirements, the entire balance is annuitized. Similar to the ability to elect a 2.5 percent COLA in the case of Nebraska, members in this plan can elect either a one or two percent annual COLA. They do not have the option of electing a payment form without a COLA. Account balances are annuitized currently on the basis of a 5.75 percent interest rate, this is determined as the assumed investment return for the plan minus two percent.

This plan also includes provisions related to death and disability, offering a disability benefit equal to 60 percent of annual salary as well as a lump sum death benefit equal to 150 percent of salary in addition to either a refund of account balance or if eligible, a spousal monthly benefit.

Key Considerations on Cash Balance Plans:

Cash balance plans have accrual patterns that are similar to the DC examples above, with service at younger ages being more valuable in growing retirement income. It is

reasonable to expect this to have an impact on workforce management, especially if the goal is to maintain a career-employment model as commonly seen in the public sector. However, if there are updates to reflect the growth in salary over a career, such as when USCs are offered in TMRS, the accrual pattern will be closer to that of a traditional DB plan.

As lifetime income is vital for retirees, plan provisions that impact how benefits are provided when workers retire are a key design aspect. If the choice is a simple lump sum or annuity, the risk sharing will be very uneven—with some retirees bearing most or all of the post-retirement risks while those choosing the annuity may be completely insulated from post-retirement risks. It is also important to keep in mind that the annuitization terms can push members to take the lump sum, especially if someone retiring either does not understand or appreciate the protection of lifetime income or does not have an understanding of the cost of obtaining similar protection via annuitization with private products.

For risks to be spread more evenly, limits on cashing out benefits should be effective, such as the 30 percent limit on cashing out one's account balance that is found in the KPERS cash balance plan.

Another important benefit design consideration is how interest crediting is handled. While variable interest credits may make the plan less clear to workers—impacting their view of the benefits—variable interest crediting is a way to mitigate risk.

As discussed, the legal protections that are often well-defined for traditional DB plans are less clear in cash balance plans. Without established precedents on unique cash balance features, some state courts could rule that the value of cash balance accruals can be cut through changes to annuitization provisions—including cuts that are made mid-career or even as workers approach retirement.

Cash balance plans will generally provide less retirement income to those hired mid-career or at older ages compared to traditional pension plans. For instance, without adequate time to grow account balances, a cash balance plan may not serve as the lifeline that traditional pensions provide to someone hired at age 50 (without significant savings) who works for 15 years before retiring.

Finally, cash balance plans offer the opportunity to have the retirement system serve as a vehicle for prefunding death and disability benefits, as a traditional pension system typically does—but a traditional DC system does not.

V. COMBINATION DB AND DC ARRANGEMENTS: VERTICAL AND HORIZONTAL HYBRIDS AND PLAN CHOICE

Key Takeaways:

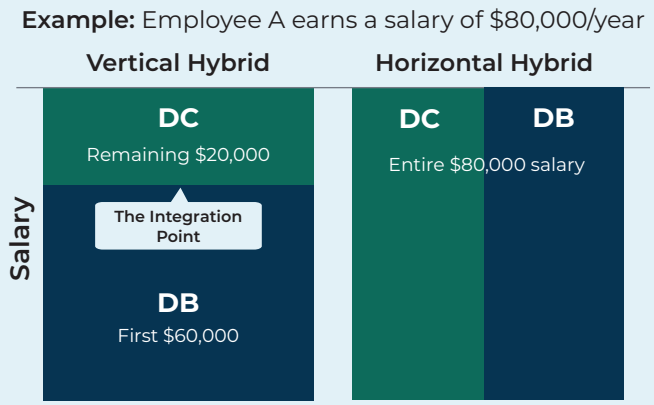
1. In a vertical hybrid plan, the first portion of salary is subject to the contribution rate for the DB component, and any remaining portion of salary is subject to the contribution rate for the DC component.
2. For vertical hybrids, the integration point and any indexing of this point is significant.
3. For horizontal hybrids, the entire salary is subject to the respective contribution rates for the DB and DC components of the plan.
4. Horizontal hybrid plans vary greatly in the relative importance of the DB and DC components of the plan. In some they are roughly equal; in others, one component is favored.
5. On Plan Choice: does the plan encourage people to choose one plan design over another? What is the default for workers that don't make a choice?

The next two types of hybrids, vertical hybrids and horizontal hybrids, both consist of a DB and a DC plan, which are administered and provide benefits separately, so also meet the original definition of a hybrid. The difference in whether a plan is referred to as vertical or horizontal hybrid relates to what portions of the employees' salaries each plan is applied to. In addition to the vertical/horizontal names, these two types are sometimes referred to as stacked/parallel. These other names are helpful in

understanding the distinction between the two types. With vertical or stacked plans, the plans operate "stacked" on top of each other with the DB plan applying to the lower section of income (as chosen in the design) and the DC plan beginning applying to income where the DB plan stops. The point at which the coverage switches from DB to DC is sometimes referred to as the integration point and will be discussed later. Which plan is in effect at a given income level for a vertical hybrid affects both the contributions required and the benefits paid. In contrast, in horizontal or parallel hybrids, both plans apply simultaneously to the same income, providing DB and DC benefits separately.

This research covers each of these plans separately, but it is beneficial to consider the relative benefits of these two types compared to each other before getting into the details of each.

Figure 4: Vertical vs. Horizontal Hybrids



One benefit of vertical or stacked hybrids is that they give the full DB protections, in terms of outliving one's retirement income and investment risk in particular, to lower income levels, so protections tend to be strongest for the most vulnerable. And because vertical hybrids do not provide the same protections to higher income levels, these plans result in taxpayers only bearing DB-type risks on benefits up to the determined level. Another benefit of vertical plans is they do provide DB-style protections on at least part of the benefit for all members. The main advantage of horizontal or parallel hybrids is that these plans provide greater portability of benefits, and thus preservation of retirement security, for members who leave covered employment prior to retirement. However, the degree to which this is true will vary based on the specific provisions of the plans being compared.

While these comparative benefits of vertical versus horizontal hybrids apply generally, the degree of the risks borne by sponsors and members will vary with the relative levels of the DB and the DC benefits for both plans, the integration point in vertical hybrids, and whether annuitization is offered and the basis on which it is determined for the DC portions of both types of plans.

Vertical Hybrids

The key distinguishing feature of vertical hybrids is that these plans combine both a DB and a DC plan rather than being a single plan combining features of DB and DC. For vertical hybrids, the DB plan is applicable for salaries up to a set level, referred to as the integration point, with the DC plan applicable to salaries above that integration point. The integration point is determined in the plan design and can range from a relatively low value such as the Federal Poverty Level to a relatively high level such as the Social Security Wage Base.

This integration point can either be a fixed level, in which case the relative role of the DB benefit in the total benefits is expected to decline over time, or can be indexed such that the relative role of the DB and DC plans is expected to remain constant over time. If the intent is to capture a certain percentage of wages, or a certain level of wages, this is an important design aspect. For example, Social Security's wage base was intended to capture 90 percent of all US wages. However, the program only covered 83 percent of wages in 2018.[21] This is due to a combination of two factors: the wage base was indexed to average wage gains and the growing wage inequality in the US. If this indexing is set in a way that doesn't keep pace with employer wages, members will have more or less of their benefits based on each of the DB and DC plan than intended. One possible option is to have the retirement board set the cap each year based upon capturing a certain percentage of wages.

In addition to the considerations of this type included in the comparative discussion of vertical and horizontal hybrids, an additional potential concern for these plans is that the typical member will have a greater participation in the DC plan later in their career, when they are less able to take risk in their allocation and have less time to grow the account balance through compound interest.

"This integration point can either be a fixed level, in which case the relative role of the DB benefit in the total benefits is expected to decline over time, or can be indexed such that the relative role of the DB and DC plans is expected to remain constant over time."

The last point on vertical hybrids is that pensionable pay caps have been implemented in some jurisdictions, such as the compensation limits for members subject to the Public Employees' Pension Reform Act (PEPRA) in California. These plans are similar to the stacked hybrid, but do not include the DC plan for wages over the integration point.

Vertical Hybrid Example

The City of Philadelphia's Plan 16, for those hired on or after August 20, 2016, is currently one of very few vertical hybrid plans in operation among US public pension systems.[22] In this plan, the integration level is called the "stacked hybrid cap" and is currently $65,000, having been increased as of January 1, 2019 from the initial level of $50,000. Members of this plan receive a DB benefit on their salary up to the stacked hybrid cap equal to 2.2 percent for the first ten years and two percent for years beyond that up to a maximum of 100 percent. This DB accrual is applied to the member's average final compensation limited by the stacked hybrid cap. In addition, for salaries above the stacked hybrid cap, members pay three percent into a DC plan with a 50 percent city match of employee contributions (equivalent to 1.5 percent of pay).

Horizontal Hybrids

This is the second of the two types of plans that consist of a separate DB and DC plan for employees covered by the plan. In horizontal hybrids, the two plans apply to the same salary amounts in parallel, in contrast to the vertical hybrid where the DB plan applies to lower salary levels and the DC plan applies to higher salary levels. With horizontal hybrids, the level of the benefits offered by each of the plans is typically lower than in standalone plans that are just DB or just DC. The reduction in the magnitude of the DB benefits thus results in the DB-type risks for the plan sponsor, primarily investment and mortality risk, being reduced with the members bearing those risks in the DC portion of the hybrid. One key benefit of this design type is greater portability and perception of the value of benefits by members who terminate prior to their retirement age.

Horizontal Hybrid Examples

In contrast to the vertical hybrid where there is only one example, the horizontal hybrid is likely the most prevalent hybrid form currently in use in the public sector. Plans with this structure vary greatly in the relative importance of these two plan types, ranging from versions where the DC is minimal (even potentially nonexistent) to versions where the two plans are approximately equal in significance to versions where the DB plan has the potential to have no further accruals.

The first example is the Tennessee Consolidated Retirement System, which consists of a DB piece referred to as TCRA and a 401(k)-type deferred compensation plan, both of which apply to the full salary of members. By default, the employees pay five percent to the DB component and two percent to the DC, but members can opt out of the two percent to the DC at any point. The employers pay four percent to the DB and five percent to the DC. The accruals under the DB plan utilize a one percent multiplier, which is two-thirds of the 1.5 percent multiplier applicable for the previous legacy plan without the accompanying DC plan.[23, 24]

At retirement, members receive a DC benefit as a lump sum and cannot annuitize this amount. Members receive their DB benefit in an annuity based on their election within the available payment forms. The annuities from the DB plan have an automatic COLA that is equal to zero percent if the actual change in CPI is less than 0.5 percent, one percent if the actual change in the CPI is greater than or equal to 0.5 percent and less than one percent, and equal to the change in CPI if it is more than one percent, but with a maximum of three percent.

One feature of this plan that increases the risks that members bear is cost controls built into the structure if certain measures of sustainable cost are not achieved. This includes suspension or reduction of the COLA, suspension or reduction of the employer contributions to the DC plan, increasing the employee contribution to the DB plan by one percent, reduction in the one percent benefit accrual formula, or even complete suspension of future service accruals for the DB plan.

While the Tennessee plan has both the DB and DC elements as significant in terms of contributions and benefits, this is not the case for all horizontal hybrids. For example, the Utah Retirement System is a parallel or horizontal hybrid, but the role of the DC component is relatively limited. While there are multiple employee groups and tiers in this plan, this paper focuses on the public employees Tier 2 that is applicable to members hired on or after July 1, 2011. The DB part of this plan has a 1.5 percent multiplier, to the lower end, but within the range of multipliers for standalone DB plans, and then the DC plan is variable with the contributions based on the available portion of the statutory employer contribution not needed to fund the DB portion. Thus, for the public employees Tier 2 group, the contribution paid to the DC plan by the employer in each year is 10 percent minus the employer contribution to the DB component. For example, for the 2020-2021 year the employer contribution to the DB plan is 9.02 percent, resulting in the employer DC contribution for the year

being 0.98 percent. In addition, if the actuarially required contributions for the DB component grow to exceed 10 percent, not only will the employer not make contributions to the DC component, but the employees will be required to make contributions equal to the difference in the actuarially required contributions and the employer contribution of 10 percent. To date, the actuarially required contributions have been such that no employee contributions have been required for the state employers and some portion of the employer's 10 percent contribution has been available for the DC component.[25, 26, 27, 28, 29, 30]

Choice Schemes

The fourth type of hybrid considered also involves both a DB and a DC plan. However, instead of having members covered by both plans, each member must elect to participate in one of the two plans. This is an issue that explored in a report, *Decisions, Decisions: An Update on Retirement Plan Choices for Public Employees and Employers*, that found most new hires chose the DB option (or the option that included a DB pension).

Choice designs rely on the notion that participants can identify which offerings would be better for their situation. In practice, such knowledge requires understanding the value of different types of accruals in different situations. An accurate determination also requires an individual have a handle on how these benefit values are impacted by their age at hire, future pay trajectory and how long they will stay in their job.

South Carolina has offered a choice since the early 2000s for state and school district employees. The default plan, the South Carolina Retirement System (SCRS), is a traditional DB plan, but state and school district employees can elect to participate in an optional DC plan, the State Optional Retirement Program (SORP), at hire. Employees who enroll in the SORP may elect to switch to SCRS within their first five years of employment. The DB plan has a 1.82 percent multiplier with a five-year final average salary and a one percent COLA up to $500 for the most recent tier. The DC plan includes a five percent employer contribution and the employee contributes at the same rate as SCRS, currently fixed at nine percent.

The State Teachers Retirement System of Ohio offers three choices: a DB pension, a combination plan, and a pure DC plan. The default option is the DB plan. Members contribute 14 percent of pay of no matter which plan is selected.

Among the most recent tiers, the DB option has a 2.2 percent multiplier, five-year final average pay, and no COLA. The combination plan has a reduced one percent multiplier, but 12 percent of employees' contributions are contributed to the DC plan. The DC plan has employees contributing 14 percent, while employers also contribute 9.53 percent of pay to the DC. For employees who elect the DC plan, employers also contribute 4.47 percent of their pay towards the separate DB plan.

Members choosing the DC plan or the combination plan may change their election upon reaching five years of service, which allows someone who might have anticipated leaving soon—but did not—a chance to course correct.[31]

Florida's FRS currently also offers a choice between a horizontal DB/DC combination plan and a pure DC option. Changes made to FRS in recent years illustrate the fears that DB advocates have long held about such choice schemes, as the choice was modified so new hires would default into the DC plan. More recently, studies were requested to eliminate the DB option for future hires altogether.

Choice structures have made retirement plans complicated for workers to understand and for retirement systems to communicate. Given that most of these arrangements have only recently been implemented, it remains unclear how much these arrangements will impact workforce management, which is a key concern from the employer side of retirement plans.

Key Considerations of DB/DC Combination Plans:

Vertical Hybrid Structures: For many members covered by vertical hybrid plans, the plan will functionally serve as a traditional DB pension depending on the income level that is set as the integration point. And even members earning income that exceeds the integration point will still get a pension on all income under that amount, which provides a level of security to higher earners. The DC inefficiency issues and employee risks only apply to income over the integration point. Thus, a core benefit is delivered efficiently for all employees, including the provision of life income. Lower paid employees may only participate in the DB portion, while taxpayers are not supporting risks for large benefits. One drawback to note is that many people are likely to see pay surpass the integration point mid-career or later, meaning the DC contributions are more likely be earned during later years when they are less effective at generating retirement income. Given that early DC benefit accruals are more effective at younger ages, the percentage of benefits paid from investment earnings in the DC portion of stacked hybrid plans is likely to be less than a full career DC plan.

Horizontal Structures: Given that horizontal hybrids are utilizing both DB and DC plan types for all income, all benefits and drawbacks mentioned for those plan types are present, based upon the proportion of benefits earned between the two types of plans.

Choice Schemes: The impact on retirement security is largely tied to member making the right choice for their individual situation. However, there is evidence that members are not making the right choice. In Florida's FRS, 55 percent of members defaulted into the DB pension from July 2017 - June 2018. Once the default was changed to the Investment Plan, the following two years had 50 percent and 45 percent default into the DC plan.[32] It is not clear how much this change was impacted by administrative practices or guidance given to employees, but it does seem clear that new hires' optimal plan would not suddenly change.

Similarly, evidence from the Utah Retirement System shows that among workers hired into Tier 2 (since 2011), those choosing the hybrid plan with a DB component were more likely to have terminated than those choosing the DC option.[33] This also suggests that member decisions regarding plan type are not optimal.

Clear employer communications may help members make optimal decisions, along with a chance to re-evaluate after working past the first year (as limited by IRS code). This is particularly true given that many jobs have high turnover for new hires, while public employees that stay past those initial years routinely work long careers.

However, if members do make optimal choices, it will likely cause adverse selection problems for employers by increasing the DB normal cost. For instance, if short-term workers who were hired young and quit young all choose DC plans, but career and older workers knew to take the DB plan, that should drive up the normal cost of the pension system, without providing corresponding relief in DC plan costs. This would create a challenge in developing plan assumptions around pricing out the cost of a plan choice structure.

VI. RISK-SHARING DEFINED BENEFIT PLANS

Key Takeaways:

1. There are different types of contribution risk-sharing.
2. There are different types of risk-sharing of benefits/accruals.
3. Risk-sharing provisions can also share gains with members.

While the plans within the first four groups of hybrids discussed include relatively similar structures, the types of plans included in this last grouping vary greatly. The plans in this group are generally defined benefit plans in terms of pooling membership and providing lifetime benefits, but they add in features resulting in risks that are typically borne by the sponsor in traditional DB plans being shared with members. There are three general areas where these risk-sharing provisions typically apply: contributions, cost-of-living adjustments in retirement, and benefit accruals while working. Many of the existing plans with risk-sharing provisions include more than one of these types. Note that while the focus is on cases where these provisions are incorporated into traditional defined benefit plans, many of these features can be considered within a hybrid plan consisting of both a DB and a DC plan.

Before discussing current examples of plans with these provisions, first is a discussion of each category of risk-sharing provisions in more depth.

The vast majority of state and local retirement systems require contributions from employees and employers, with the employee contribution typically set in statute as a percentage of pay that only changes through legislative action and the employer contribution either determined based on an actuarial valuation process or set in statute. Plans with contribution risk-sharing provisions differ as for these plans, both the employee and employer contribution rates vary automatically. This variability shifts some of the risk of bad plan experience from the sponsor and taxpayers to the active members by having them fund a portion of losses. Similarly, risk-sharing can also shift some of the benefits of potential positive plan experience to the members in the form of having to pay less employee contributions for a DB plan. Thus, these provisions also introduce variability into the expectations of members regarding what they will have to pay for their retirement benefits.

One common type of contribution risk-sharing provision is based on determining what the total contribution needs to be for a plan and then allocating it between active members and employers based on predetermined methodologies. These methodologies can be based on allocating the entire actuarially determined contribution, allocating the normal cost component of the contributions, and allocating based on factors related to investment performance or funded status.

The first contribution allocation methodology develops the employee and the employer contribution rates based on the actuarially determined contribution. There are a number of approaches used in practice to do this as can be seen by examining a number of example plans with risk-sharing contribution approaches using this type of methodology.

The first example is the Colorado Public Employees' Retirement Association (Colorado PERA), which includes an automatic adjustment provision (AAP) that triggers changes in contribution rates for both employers and members as well as post-retirement benefit adjustments when the systems are not projected to reach full funding within a 30-year period. This provision has been in use since 2019. Under this provision, PERA determines annually if changes in contributions are needed. When the current blended total contribution amount for a plan is less than 90 percent of the blended total required contribution, both employer and member contributions are increased by 0.5 percent. However, the cumulative amount of these increases cannot exceed two percent over the statutory rates without the AAP increases. Similarly, if the blended total contribution amount in effect is greater than 120 percent of the blended total required contribution, the contributions are reduced by 0.5 percent, but limited to minimum rates equal to the statutory contributions without any AAP increases.[34, 35, 36]

For PERA, there are adjustments in the post-retirement cost-of-living adjustments, referred to as the Annual Increase (AI) by this system when the difference in the contribution rates in effect and the required contribution rates meet

the triggers for adjustments. When the ratio is less than 98 percent, the cap for the AI rate is reduced by 0.25 percent, limited to a cumulative reduction of 0.5 percent, and when the ratio is greater than 120 percent, the AI cap is increased by 0.25 percent, not to exceed a total cumulative increase of two percent. These adjustments result in changes in the liabilities and thus reduce the amount of adjustments that must be borne by contribution rate adjustments to meet the funding target.

The AAP was first effective after the 2018 valuation and resulted in AAP adjustments as the rates were less than 98 percent of the required results leading to an increase of 0.5 percent for both employer and member contributions as well as a 0.25 percent reduction in the AI cap rate. As an example of the impact of this, the member rates for those in the State employee group increased from 9.5 to 10 percent and the employer contribution rate related to this group increased from 10.4 percent to 10.9 percent. The AI cap was also reduced from 1.50 percent to 1.25 percent.

The Maine Public Employees' Retirement System Participating Local District Consolidated Retirement Plan (Maine PLD) also allocates the actuarially determined amount for the plan in aggregate between employers and employees as 58 percent and 42 percent, respectively. This division is for both the initial allocation of the contribution on setting up the risk-sharing provision and for all future experience, positive and negative. This is a difference from the Colorado PERA model where the contribution adjustments are made in equal amounts for the employers and the members, thus changing their relative proportions of the total contribution. In addition, the methodology used by Maine PLD includes contribution caps of 12.5 percent for employers and nine percent for employees as well as contribution minimums related to the ongoing cost of the plan. This plan's methodology takes these aggregate rates and develops specific rates for each of the 11 sets of plan provisions offered within the plan, but these details are beyond the scope of this research.

Risk-sharing provisions related to contributions are not limited to only traditional DB plans, and also are utilized within hybrid plans. For example, the Michigan Public School Employees' Retirement System (MPSERS) has a horizontal DB/DC hybrid for their most recent hires, referred to as Pension Plus 2. This plan applies to hires on or after February 1, 2018 who elect the hybrid plan instead of the DC plan. Those who elect the hybrid pay 50 percent of the actuarially determined contribution. However, this 50 percent allocation could change if the cost of the actuarially determined contribution drops below 12.4 percent as the employers have a minimum contribution of 6.2 percent. This plan also has an additional provision to manage the risk for employers, and thus the taxpayers, by requiring the closure of the hybrid plan to new hires if the funded ratio of the hybrid drops below 85 percent for two years in a row without legislative action being taken to restore it to at least 85 percent. If the plan is thus closed, all new hires after that date would participate in the DC plan without the option to elect the hybrid plan. If this happened, the existing members in the Pension Plus 2 plan would thus pay 50 percent of the actuarially determined contribution for a closed plan, which often have both higher contribution rates and greater contribution variability. If this occurred, it could present significant challenges to both retirement security and workforce management objectives.[37, 38]

A final example of a plan with a contribution risk-sharing provision based on allocating the actuarially determined contribution is the City of Phoenix Employees' Retirement System (COPERS), which is particularly interesting as the history of its redesigns are illustrative of potential challenges of having variable employee contributions based on the actuarially determined contributions. The initial tier of this plan was a traditional DB plan, which was modified to create a Tier 2 where the employees paid half of the actuarially determined contribution. This resulted in Tier 2 contributions significantly above the Tier 1 five percent rate, growing to over 15.5 percent and being projected to reach over 17 percent. This high rate, combined with the plan's 3.75 percent interest rate on contributions, results in refund of contribution amounts that were very valuable relative to the pension benefits, even for longer-term employees. This combined with the challenges of recruiting and retaining members with such a high contribution rate led to sufficient challenges that this plan was further modified.[39, 40, 41]

These further modifications created a Tier 3 with reduced accrual rates from those of Tier 2, eliminated post-retirement benefits, and added a cap on the pensionable pay. Tier 3 retained the 50 percent split on the actuarially determined contributions, but added a maximum employee contribution of 11 percent with the employers paying any excess of the calculated employee contribution more than 11 percent. These modifications also extended the 11 percent employee contribution cap to Tier 2. Since the changes capping the Tier 2 employee contribution and creating Tier 3, the member contribution rates have been at the 11 percent rate each year.

While the Phoenix plan did not close to new hires as MPSERS could, it does provide an example of real, rather

than just hypothetical, challenges that can arise with an unlimited actuarially determined contribution risk sharing provision. Thus, it is imperative that unintended consequences be considered in developing designs of this nature.

The above examples all determine the allocation of contributions to employees based on the total actuarially determined contribution, which includes both the normal cost, the contribution needed to fund the benefits expected to be earned for the next year, and amortization of existing unfunded liabilities. In contrast, there are a number of systems with employee contribution risk-sharing provisions where the variability of the employee contribution is based on only the normal cost piece of this.

Members of newer tiers of California Public Employees' Retirement System (CalPERS) have this type of structure, with employee contributions equal to 50 percent of the normal cost of the plan. Thus, employee contributions for members in these tiers change with the determination of the normal cost in the actuarial valuations. California State Teachers' Retirement System (CalSTRS) develops employee contributions in a similar manner. Another example outside of California is the Connecticut State Employees' Retirement System, which increases the employee contributions for the newest hires by 50 percent of certain increases that occur in normal cost. For this system, these increases are capped at a maximum increase of two percent.[42]

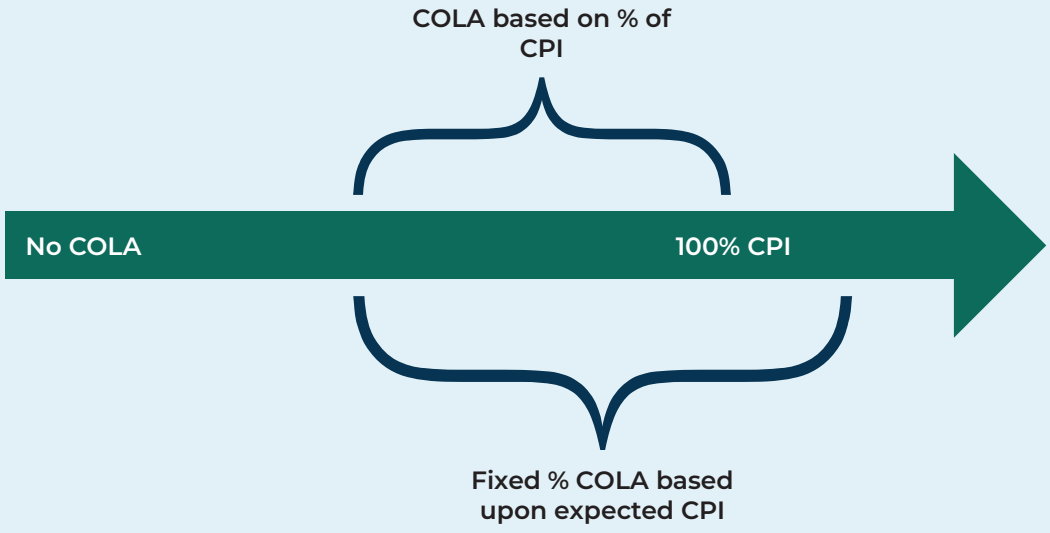
In addition to plans with risk-sharing provisions changing employee contributions on the basis of either the total actuarially determined contribution or the normal cost component of this, there are also systems with risk-sharing provisions where the employee contributions change based on the investment return experience of the system or the funded status of the system.

An example of this investment return driven type of contribution risk-sharing provision is Pennsylvania State Employees' (SERS). In this plan, the newer tiers have contributions that vary based on the investment return

Table 2: Contribution Risk-Sharing Provisions Present in Public Plans

Pre-determined Contribution Split between Employee and Employer
Actuarially Determined Employer Contribution (ADEC) Split
Dividing Only the Normal Cost between Employee and Employer
Risk-Sharing Based on Investment Returns of the Plan
Risk-Sharing Based on the Funded Status of the Plan

Figure 5: Inflation Protection of Benefits Under Various Plan Provisions



experience directly. This provision considers an average of the actual investment returns compared to the assumed returns each year and adjusts the employee rate by 0.5 percent of salary for each one percent that the actual return average deviates from the assumed reduced by one percent with a maximum increase of two percent and a minimum employee rate of 7.5 percent for the original tier subject to this provision. Since this provision was added for members joining the plan after January 1, 2011, it was altered for new hires after January 1, 2019 to make the change in the employee contribution rate equal to 0.75 percent of salary for each one percent deviation of the actual returns from the assumed for the three year average. Further, for this most recent tier, the maximum increase in the employee contribution was raised to 3.0 percent. The averaging period used for these calculations was designed to initially be a three-year period and then increase over time to an ultimate ten-year period.

A final class of methodologies for contribution risk-sharing provisions are those related to the funded status of the plan. In these plans, the employee contribution varies based on the condition of the plan. For example, the Montana Public Employees Retirement System requires an additional one percent of contributions from employees over the normal employee contribution rate until such time as the plan's amortization period, the measure of funded status used by this plan, is under 25 years. Similarly, the employee contribution rate for the North Dakota Teachers' Fund for Retirement was increased by four percent of salary from the normal statutory rate of 7.75 percent and this increased employee contribution will stay in place until the plan reaches 100 percent funded status, meaning that the assets of the plan must be at least equal to the plan's liabilities before this supplemental employee contribution ends.

The second most common type of risk-sharing provision currently in use in public sector retirement plans are COLA risk-sharing provisions. These take many forms in public pension DB plans based on how they are enacted (whether automatic or ad hoc), the basis on which they are determined, and the benefits to which they are applied. One way to assess these provisions is based on who bears the risks arising from changes in price levels during retirement. For a DB plan with no COLA, this risk is borne entirely by members during retirement. If a plan had an automatic, compounding COLA that applied to all benefits and was perfectly matched to changes in price levels, this risk would be borne entirely by the sponsor.

Most plans lie in between with this risk shared between members and the sponsor. In fact, it can be argued that all DB plans that pay any COLAs, including those only on an ad hoc basis, have this as a risk-sharing provision. However, our focus here will be on the range of practice related to automatic COLA provisions in regards to risk-sharing.

As the types of COLA provisions vary greatly, this type of provision is best demonstrated through discussion of specific examples. These examples vary in terms of the maximum benefits that the COLAs apply to, the maximum amount of annual increases, how annual increases are determined, COLA eligibility and contingency requirements, and possible inclusion of employee funding.

The COLA provisions for the South Dakota Retirement System are based on actual inflation levels, but with a 0.5 percent minimum and a maximum of 3.5 percent that can be further limited based on funded status of the plan. Since this provision became effective in 2018, two of the four COLAs have been limited by this reduced maximum while the other two have been determined by the actual change in CPI as it was less than the restricted maximum for the year. One feature of this COLA is that they are able to make projections for future years (currently develop 1-, 2-, and 3-year projections) looking at what range of returns will result in various levels of COLA as well as the need for corrective action recommendations to make further changes to the plan to restore the funded status.[43, 44, 45]

The Minnesota General Employees Retirement Fund also had a COLA that varied with the funded ratio of the plan, but their COLA was based on fixed percentages rather than tied to changes in CPI. While this COLA form applied to both the General Plan and the Correctional Plan, we detail only the General Plan here. The COLA was a one percent annual COLA, but if the funded ratio is 90 percent or greater for two consecutive years, it would increase to 2.5 percent until such time as the funded ratio falls under 85 percent for two consecutive years or to 80 percent or lower for any given year. After such a drop, the COLA would again increase to 2.5 percent at such point as the funded ratio has exceeded 90 percent for two consecutive years.

However, in 2018, legislation was passed that both changed the basis from being fixed percentages to being inflation-linked COLA with minimum and maximum values and removing the potential for increased COLAs based on the funded status. Significantly, this change was made following a study of the COLA provisions performed by the state's Legislative Commission on Pensions and Retirement (LCPR) that recommended this change be made to more directly tie the increases that members receive in retirement to changes in the purchasing power of their benefits. The

new provisions provide for a COLA equal to 50% of the annual Social Security increase used by the Social Security Administration, but with a minimum of one percent and a maximum of 1.5 percent. Since this change was enacted, the COLA for 2019 was 1.4 percent and the COLA for both 2020 and 2021 was equal to the one percent minimum.

In addition to systems with COLAs that are variable based on the funded status, there are systems with risk-sharing COLA provisions where the COLA varies based on the investment returns. For example, similar to other systems in Maryland, the Maryland Employees' Retirement System has a COLA that is based on CPI, but with limitations that vary based on the investment returns. In years where the investment return is at or above the plan's assumed rate, the cap on the CPI-linked COLA for the next year is 2.5 percent. But in years where the actual investment returns were under the assumed rate, this cap for the next year is dropped to one percent.

Finally, similar to Maryland, the Connecticut Teachers' Retirement System has a COLA that is based on inflation levels, here tied to the Social Security COLA rather than CPI, but also with a maximum that varies with the investment return. The cap applied to the Social Security COLA to determine the plan COLA varies with investment experience. For more recent members of the plan, the cap varies with investment returns, such that is one percent when actual returns are under 8.5 percent, three percent when actual returns are between 8.5 percent and 11.5 percent, and five percent when returns are over 11.5 percent. For members with longer tenure in the plan, the cap is 1.5 percent when returns are under 8.5 percent and six percent when investment returns are 8.5 percent or greater.

The final type of risk-sharing provision considered in this research are those that vary the benefit accruals over a member's career. Pension plans in the public sector with risk-sharing benefit accruals are limited with Wisconsin being the only significant example. This type of plan is similar to a defined benefit plan, but adjusts the accruals of the plan based on the funded status or returns of the plan.

The Wisconsin Retirement System (WRS) utilizes a number of the concepts discussed above, as well as a few other unique features. Members will ultimately get the larger of two benefit formulas, one determined based upon a final average salary formula (currently 1.6 percent X average final pay over highest three years X service) and the other based upon a money purchase plan.

The money purchase plan is a defined contribution account during a member's working years. The money is invested in the Core fund, but participants can choose to put half of their money in a more aggressive Variable fund. This money is accrued until retirement, when it is converted to a life annuity using age-based factors. Since 1986, the more aggressive variable fund has had higher returns on average (10.9 percent compared to 9.6 percent in the Core fund), but it has also had larger losses during market downturns.

Beyond employing both a pension and DC benefit accrual, members can also elect to make additional contributions to increase their WRS benefit, which provides flexibility to workers who may feel like they are behind on saving for retirement.

The plan also utilizes two types of risk-sharing. First, the retirement benefits being paid out as annuities are adjusted annually. Unlike most pension benefits, this adjustment is not a flat percentage or a percentage of inflation (typically CPI). Instead, the benefit adjustments are based upon investment performance. These adjustments can mean a reduced benefit year-over-year. Again, there are different outcomes for the Core fund and the Variable fund. Since 1986, the core fund has averaged increases of 3.6 percent per year and members have only seen benefits reduced in five years (all of which followed the Great Recession). The variable fund has seen larger increases (5.3 percent on average), but those benefits have been reduced 10 times over the same time period.

The other risk-sharing feature impacts contributions to the plan, as the actuarially determined contribution amount is split evenly between workers and employers. Typically, this might make a member's take home pay volatile based on market changes. However, the variable benefit structure has helped keep contribution levels relatively stable. From 1985 through 2010, employee contributions were five percent of pay. Since 2010, employee contributions have been between 5 and 7 percent every year, with the most significant increases occurring in the aftermath of the Great Recession.

While variable or adjustable accruals are limited in the public sector, these types of plans are being used more in the private sector, including both multiemployer and single employer plans. These plans are often described as adjustable pension plans (APPs) or variable annuity plans (VAP). Similar structures could be used in the public sector, so while beyond the scope of this paper, these private plans could also be evaluated by a system wanting to consider this approach.

Key Considerations for Risk-Sharing Plans:

There are many examples of risk-sharing provisions in the public sector today. As economic stability is one of the key objectives of defined benefit pensions, it is advisable to think about how risks are shared, what metrics such provisions are based upon, and how those mechanisms might change over time as a tier or plan ages, as any new tier will eventually contain an increasing number of retirees that will impact the balance of financial risk relative to payroll.

It is also important to consider what risks are appropriate to share with workers covered in a plan. For instance, discussions often focus on investment risks. If assets do well, everyone would see some benefit. If not, additional costs would be split in some manner. However, other risks may be less obvious and less appropriate to share—such as political risks. For instance, should workers be forced to pay more for their benefit if employers fail to fund their share of costs? Workforce decisions can also impact cost sharing. For instance, if a city outsources a large portion of its workforce or closes the plan/tier to new hires, those types of decisions could have a detrimental impact on the demographics of a plan or tier over time, causing more contribution volatility than what would exist absent those political decisions. Such changes are unlikely to be anticipated when analyzing proposed cost sharing provisions at the outset. But, these dynamics may surface as the plan/tier ages.

Retirees also could be harmed by way of political decisions. If post-retirement inflation provisions are based upon overall funding levels, an employer's failure to maintain contribution discipline may negatively impact retirees. Again, this would be difficult to anticipate when analyzing proposed risk-sharing provisions. It also raises the question, when such provisions exist, if retirees should have a legal right to sound funding of the plan in exchange for bearing such risks.

Some of these complications can be avoided with policy choices. For instance, many California public employees pay half of the normal cost (the value of their benefit accruals), not the total pension contribution. In other plans, employee contribution risk-sharing provisions have established maximums that will protect against unintended consequences like political risk.

In addition to a perceived fairness issue, if employee contributions increase persistently due to political decisions, it could have significant workforce impacts making it harder to retain frustrated employees who are covered by the plan as well as to recruit new workforce.

VII. DEFINED BENEFIT PLANS CAN OFFER ATTRACTIVE PROVISIONS FOR NON-CAREER EMPLOYEES

As discussed above, DB plans typically are designed to reward career employees. However, DB plans operate in a broad regulatory structure that allows other objectives to be met via plan design. In the past, NIRS has highlighted how Colorado's PERA plan offers workers who terminate before reaching retirement age (vested or not) unique options that improve outcomes, incentive these dollars be used for retirement (not cashed out), and even allow annuitization of their contributions and a system match. These creative provisions are described below:

> *The Colorado Public Employees' Retirement Association (PERA) provides its members with a special benefit incentive to keep their contributions in the pension plan after they terminate employment. After termination, if the PERA member leaves his or her account with PERA until age 65, the individual can receive a higher benefit than just the amount of the refunded contributions.*
>
> *All terminated, vested members receive a 50 percent match of the refund of the employee's contributions compounded with credited interest. Should the employee keep his or her money in PERA until retirement age, however, the match provided by PERA increases to a 100 percent match. Interestingly, even non-vested employees can take advantage of this feature. In fact, while they also receive the 100 percent match on the value accumulated in the employee member account at retirement, they would otherwise receive no match at all, were they to request a refund instead.*
>
> *Under PERA, these amounts may be converted into an annuity at the PERA assumed rate of return, which is less costly than purchasing an annuity from an insurance company.*[46]

Given the range of design options as well as the benefits and risks of the plans, it is important in considering the design for a new plan or plan changes in an existing plan that these factors be carefully examined.

VIII. CONCLUSION

A hybrid retirement plan is not a term for one particular plan design in public sector retirement plans. Rather, hybrid is an umbrella term that captures a wide range of different plan designs, including some plans that are defined benefit pensions only, but with risk-sharing provisions. These various plan designs offer a number of tradeoffs to consider in terms of benefits, risks, and costs, and how those elements should be shared among different stakeholders. Using the term hybrid as if it represents one design can obscure the important discussions that must occur around these tradeoffs.

Hybrid plan designs are not new in the public sector, but the issue has received an increased focus in recent years as a number of public plans customized benefit structures following the Great Recession. Some of these moves to a hybrid design clearly were made without a proper evaluation of the long-term implications of the plan provisions. This report brings a greater focus to the many aspects of hybrid plan design and how important it is to weigh each of these elements when establishing a new plan or new tier in an existing plan.

A well-thought-out and properly designed hybrid plan can provide retirement security to employees and workforce management tools to employers, while minimizing risks for all stakeholders. However, not all hybrid plans are created equal, and some simply will shift more risk from one party to another. Risk-shifting is not the same as risk-sharing, and a well-designed plan can do the latter and avoid the former. This report serves as a starting point for those considering the merits of different hybrid plan designs.

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The National Institute on Retirement Security is a non-profit research and education organization established to contribute to informed policymaking by fostering a deep understanding of the value of retirement security to employees, employers, and the economy as a whole.

Our Vision

Through our activities, NIRS seeks to encourage the development of public policies that enhance retirement security in America. Our vision is one of a retirement system that simultaneously meets the needs of employers, employees, and the public interest. That is, one where:

- employers can offer affordable, high quality retirement benefits that help them achieve their human resources goals;

- employees can count on a secure source of retirement income that enables them to maintain a decent living standard after a lifetime of work; and

- the public interest is well-served by retirement systems that are managed in ways that promote fiscal responsibility, economic growth, and responsible stewardship of retirement assets.

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- High-quality research that informs the public debate on retirement policy. The research program focuses on the role and value of defined benefit pension plans for employers, employees, and the public at large. We also conduct research on policy approaches and other innovative strategies to expand broad based retirement security.

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