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DEFINED CONTRIBUTION PENSION PLANS IN THE PUBLIC SECTOR: A BEST PRACTICE BENCHMARK ANALYSIS

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ABSTRACT

This paper addresses best practice benchmarks for the design of public sector primary (core) defined contribution pension plans. It includes an examination of the environmental conditions and factors affecting these plans as well as general principles for the design of effective defined contribution plans. Selected public sector core defined contribution plans are reviewed against identified best practices.

The views expressed in this paper reflect those of the authors alone and do not necessarily represent those of TIAA-CREF and the TIAA-CREF Institute.

SCOPE AND METHODOLOGY

The purpose of this paper is to examine best practices for the design of public sector defined contribution pension plans that are intended to be the primary or core source of retirement benefits. The best practices are established from the perspective of providing adequate and secure retirement income as the appropriate primary objective of these plans. Adequate and secure retirement is considered for this purpose to mean providing retirement income for life that is sufficient to replace a targeted level (defined later in this document) of an individual's pre-retirement wages.

As a preliminary note, the identification of best practices for the design of core defined contribution pension plans is not intended to define an "ideal" plan design. No single plan design is best for all situations. Rather, the purpose of identifying best practices is to provide a basis for identifying potential strengths and weaknesses of design that may affect the ability of a plan to achieve its primary objective.

The specific elements of the approach for the study include:

- Identifying basic design principles that support the effectiveness of core defined contribution pension plans.
- Identifying best practices of plan design that support meeting the basic principles for effective core defined contribution pension plans.
- Providing a comparative analysis of the plan designs of some of the major existing core defined contribution pension plans in the public sector.
- Providing a general discussion on how existing public sector core defined contribution pension plans compare to the best practice standards identified and considerations for future plan designs.

This paper does not examine a number of areas that affect the potential success of defined contribution pension plans:

- Our analysis does not directly address the special circumstances surrounding public safety employee retirement design. Some of the broad principles and practices discussed herein, however, may be helpful for studies in that arena.
- We recognize that a comprehensive retirement program should incorporate death and disability benefits; however, the design and delivery of those benefits in conjunction with a core defined contribution plan is not further addressed in this paper.
- We acknowledge but do not examine here the importance of having competent governance and fiduciary mechanisms in place as a best practice.

The paper does not include an actual outcome based analysis for the public sector core defined contribution pension plans reviewed; although that would be truest test of the effectiveness of these plans, as many of these plans have not been available for a sufficiently long period of time to allow such an analysis to yield meaningful results.

BACKGROUND

The primary vehicle for providing core retirement benefits in the public sector is the defined benefit[1] (DB) pension plan. Over 90 percent of full-time public employees participate in defined benefit pension plans for the major source of employer provided retirement benefits.[2]

By comparison, about 14 percent of full-time public employees participate in defined contribution (DC) retirement plans[3] for their employer provided retirement benefit.[4] The 14 percent includes individuals who participate in combination DB/DC plans. This translates into over 2 million public employees who rely in whole or in part on defined contribution arrangements for their employer based core retirement benefit.

The importance of these "core" DC plans should not be undervalued even though far fewer public employees participate in them compared to DB plans. The design and funding of these core DC retirement benefit programs is far too important to be left unexamined. In the same fashion as the DB plans that cover most public employees, core DC plans are vital to the economic security of thousands of existing retirees and beneficiaries and are an important component of the compensation structure of state and local governments that offer them.

The Primary Purpose of a Defined Contribution Pension Plan. Public employers and employees have a variety of sometimes competing objectives for retirement benefits. Public employers certainly need their retirement plans, in part, to help them manage workforce objectives – to attract and retain quality employees and to facilitate the orderly and timely movement of employees out of the workforce at the end of their careers. Retirement designs can be and usually are used to benefit targeted workers. Vesting schedules and benefit/contribution formulas, for example, can be used to benefit longer or shorter service employees as the employer may desire.

Public sector entities, however, do not look at retirement benefits for their employees as just related to their role as an employer. A principal function of government is to ensure the general welfare of our society. This makes the public sector uniquely concerned with the adequacy and security of public employee retirement benefits. If the core defined contribution retirement plans they sponsor fail to provide adequate and secure income during retirement, a consequence may be an increased burden on social welfare programs in the future.

Participating employees need retirement plans that allow them to meet their financial objectives both during their active years in the workforce and during retirement.

How these objectives are prioritized will impact decisions on how public employee retirement plans should be designed. It is the view of the authors that the interest of public sector entities as employers managing their workforce issues, while important, should be secondary to the other stated objectives. Helping workers achieve financial security is the larger concern leading to the proposition that public employee retirement plans should be designed with the primary objective of providing adequate and secure retirement income. It is, therefore, important that when public policymakers use defined contribution approaches as the primary vehicle for delivering core retirement plans, they should be designed to be "defined contribution pension plans" with this purpose in mind.

Standard Defined Contribution Retirement Designs Have Not Met Objectives. Core defined contribution retirement plans during the past twenty to thirty years have drifted away from their origins. The early designs of money purchase plans and the traditional designs used in the higher education arena focused first on providing income during retirement. However, with the advent of the 401(k) plan about 30 years ago, the focus began to shift away from retirement income as a primary purpose toward structures that, instead, emphasize wealth accumulation and maximizing investment returns as the main objective.

The result has been clear. While the growth of the 401(k) market has been phenomenal, for too many people the standard 401(k) model has failed to deliver the financial promises that were expected and needed.[5]

The reasons for this failure are multiple and include:

- The largely voluntary nature of participation
- Insufficient employer and employee contribution rates
- The prevalence of participant directed investments and the failure or inability of many participants to adopt appropriate asset allocation strategies
- The failure to preserve retirement assets for retirement – the so-called "pension leakage" phenomenon that occurs when DC plan assets are distributed and used for pre-retirement consumption
- High administrative, investment, sales and other fees and expenses in some arenas that significantly reduce the savings that should be kept for the benefit of participants

The list of the weaknesses of the standard 401(k) model just described could go on, but it is also important to realize that these interact in ways that often compound the risks faced by participants.

THE PUBLIC SECTOR CORE DC RETIREMENT ENVIRONMENT

A number of environmental factors are influencing the public sector core DC world and the broader retirement market in general. These environmental influences are wide ranging in scope and it is not the intent of the authors to fully discuss them in depth here. However, it is helpful for purposes of this discussion of best practices to at least list some of the major categories involved:

- Demographics - population growth; birth rates; aging patterns; ethnic population growth; education level trends; labor force trends and wage levels; regional growth; and, significant health-related trends
- Economics – Funding issues for Social Security and Medicare; rising Medicaid and welfare costs, rising healthcare costs, healthcare for the uninsured; investment market volatility; inflation and general economic growth and stability
- Legal and Regulatory – 403(b) regulations; Pension Protection Act; qualified default investments (QDIA); increasing fiduciary prudence standards; provider fee disclosure and transparency

- Financial Accounting Standards – GASB Other Post Employment Benefit (OPEB) standards
- Technology – internet, web casts, e-delivery, etc.

In some cases, the impact of these environmental factors on retirement plan design trends is clear. Yet, in other cases, there will be multiple orders of effects and the impact on the retirement plan market is more difficult to predict and will unfold only over time.

Cost and Risks Are Shifting to Individuals. The environmental factors presented above continue to interact in a way that makes it unlikely that either employers or governments (through entitlement programs) will be assuming new risks and liabilities for funding retirement benefits for at least the near future and possibly much longer. The shift away from DB plans to DC plans in the private sector will not likely reverse itself. In addition, absent some fundamental change in national policy, both public and private employers will likely continue to move away from unlimited retiree health benefits.

Individuals will increasingly be expected to share more of the risk and responsibility for funding and managing their own financial strategy for both retirement income and retiree health care costs. In particular, individuals will need to find ways to effectively manage these financial risks, including investment volatility, longevity (i.e., outliving their retirement assets), inflation and health care costs during retirement. Many employees will be challenged to make up the gap in retirement funding as employers back away from future retirement and retiree health care benefit promises.

Environmental Factors Will Affect Core DC Retirement Design. Public employers will be increasingly challenged to manage their workforce objectives, which are strongly influenced by the demographic environmental factors noted previously. Public employers may be looking for a more flexible retirement benefit offering to attract and retain employees at all ages and in an environment in which the traditional definition of retirement (i.e., full withdrawal from the workforce at age 65) is replaced by concepts such as phased and partial retirement. They also will require new strategies and retirement designs to promote the retirement of certain employees.

A number of fiduciary and regulatory demands are impacting the delivery of core defined contribution plans and services.

- Federal regulators and legislative initiatives are likely to ask service providers for greater revenue and fee transparency. Many public sector defined contribution plan sponsors are not waiting for federal action on this topic and are asking for this disclosure now.
- The final 403(b) regulations issued in 2006 are also precipitating a trend to reduce the number of providers serving a plan in order to meet the plan-based compliance regime for that market.
- The Pension Protection Act of 2006 (PPA) also is adding complexity in the name of improving the performance of defined contribution plans in this country with its provisions relating to auto-enrollment and qualified default investment alternatives (QDIA).

The trend toward plan consolidation will continue. In the wake of the final 403(b) regulations issued in 2007, plan administrators will look for sole recordkeeping and vendor consolidation opportunities. That trend will result in a demand for the greater integration and delivery of all retirement plans offered by an employer, including: DB plans; 401(a) money purchase and profit sharing plans; 401(k) plans; 403(b) plans; 457(b) plans; 457(f) plans; and retiree health savings plans.

PRINCIPLES FOR EFFECTIVE CORE DEFINED CONTRIBUTION PLANS

Due to legislative, regulatory and other environmental factors discussed previously in this document, there is a need to have the retirement plan design pendulum swing back toward a greater emphasis on providing retirement income. The retirement security of many individuals is less than it should be and plan sponsors and individuals need retirement solutions that provide adequate security and income replacement upon retirement.

In order to assess the effectiveness of core defined contribution plans in the public sector, it is helpful to set out some of the major principles for their design, funding and administration:

Principle #1: Retirement plans should focus on providing adequate and secure income throughout retirement. Retirement programs should focus on providing retirement income as a primary objective. By doing so, a successful plan will be able to:

- Meet public plan sponsors' workforce management and social welfare objectives, including attracting and retaining quality employees and facilitating an orderly transition into retirement
- Assist retirees in meeting financial security needs

Secondary purposes such as wealth accumulation, providing survivor income and other death and disability benefits also are appropriate components of a comprehensive retirement benefit policy.

Rationale: Financial security during retirement is an essential objective for any retirement program. Plan sponsors are more likely to meet this objective by designing retirement programs that focus on providing adequate and secure retirement income.

From an employer perspective, plans that provide for a smooth and timely transition between active employment and retirement will be valuable in managing an older work force that is living longer. For example, without adequate retirement income, older, and often less productive, employees remain on the employer's payroll, resulting in higher labor costs and health care costs.

From an individual perspective, individuals are living longer and will need adequate lifelong resources. Longer life expectancies also require retirement plan designs and products that not only ensure lifetime income, but also help individuals manage the erosion of retirement income due to inflation, rising health care costs and investment volatility.

Best Practices Implications: In order to achieve appropriate levels of retirement income for participants a core defined contribution plan must:

- Provide for an adequate total contribution level that is expected together with investment income to accumulate sufficient assets to fund the retirement income target.
- Provide an investment structure that is designed to provide an adequate expected rate of return for each participant given their risk situation at all stages of their working and retirement years.
- Include a payout design that provides an income for life with features that serve to at least partially offset the impact of inflation.
- Address pre-retirement risks, including death and disability, which can affect the ability of individuals to meet their retirement income security objectives and their desire to provide security for a spouse or their dependents.

Principle #2: Retirement income adequacy and security is a shared employer/employee/government responsibility. Employers, employees and governments have a common interest in developing retirement programs that focus on securing as much as possible financial security during retirement for individuals. This mutual goal is best achieved when all parties recognize that each shares the responsibility for meeting this objective.

Rationale: The costs and risks of providing a financially secure retirement are increasingly being shifted to individuals due to the convergence of a number of environmental factors. There continues to be a dramatic shift away from DB retirement plans and greater interest in DC plan approaches. Employers and governments are becoming less willing to bear all of these increasing financial risk burdens. Retiree health care is one financial risk burden, in particular, that will likely be increasingly shifted to individuals.

Many individuals are unprepared to handle this shifting burden without assistance from employers and a supporting government retirement policy. It is, therefore, imperative that employers, employees and governments act together as partners in order to meet the retirement income needs of individuals during retirement.

Best Practices Implications: It is important that *employers* act to provide appropriate retirement plans and policies that promote secure financially secure retirement for employees. Plans should be designed to manage the various risks that threaten retirement objectives, including investment volatility, longevity, morbidity and inflation.

Employees should recognize and act on their responsibility for funding and managing retirement objectives. *Government* social welfare, tax and workplace laws and policies should be designed to support this objective.

Principle #3: It is important for all individuals to have access to a well-designed employer-sponsored retirement program. All employees, including full- and part-time staff, should have access to employer-sponsored retirement plans, whether they are plans with an employer contribution or voluntary, supplemental plans. In the face of costs and risks shifting to individuals, it is even more critical that all employees, regardless of full- or part-time status, have access to lower cost, high-quality retirement plans.

Rationale: Employer-sponsored plans are a more cost-effective and efficient way to deliver retirement benefits and services to employees than individually focused retirement arrangements. Institutionally based retirement plans offer unique benefits (such as the plan sponsor taking on fiduciary oversight), opportunities (pretax contributions, employer contributions, etc.) and economies of scale that are not available in individual retail products. And, they may have the very positive effect of increasing savings rates, even for those individuals who may only be eligible for a voluntary plan. Employers will need to devote time and resources to encouraging all employees to participate in the plan in ways that do not just shift the location of retirement savings, but actually increase retirement savings.

Best Practices Implications: Employer-based retirement plans create economies of scale opportunities to deliver higher quality retirement plans at lower cost. Plan structures that include multiple vendors offering independent administration and investment services may be more expensive than single vendor approaches. These higher costs can have a direct impact on participants' accumulations, particularly over the long-run.

Some public employers may also consider expanding the eligibility for employer retirement plans to less than full-time employees as a way to attract and retain a more diverse workforce — particularly older workers. There are also social policy objectives that may be served by an expanded eligibility approach including improving the overall strength of the retirement savings posture for the country by enhancing the ability of lower paid and part-time employees to accumulate retirement savings.

Employer-sponsored plans also have a greater ability to use design options, including automatic enrollment and savings features that can enhance the retirement security of employees by increasing savings rates. The employer also may assist in achieving better retirement outcomes by providing simplified retirement investment opportunities, such as lifecycle funds, and ensuring access to independent, expert and personalized education, planning and investment advice services for employees who may be overwhelmed by the choices available in a retail environment.

Principle #4: Effective retirement programs require an appropriate investment offering that is designed to achieve the objectives of the plan. Having a menu of investment choices that matches the desired benefits objectives is a critical component of an effective core defined contribution retirement plan. If the primary purpose of the plan is to provide retirement income, then the investment structure should be carefully constructed using high-quality funds to maximize the chance that this objective will be met.

Rationale: Traditional DC plan designs allow participants to make poor investment decisions. Participants often are overly conservative or too aggressive in their asset allocations and fail to rebalance on a timely basis. In addition, plan sponsors often make the mistake of offering too many investment choices, which may only increase complexity and confusion for participants in the investment decision making process. Academic studies indicate that too many choices may result in poor outcomes. This gives support to the proposition that a smaller, well-constructed and rational investment menu is necessary when participants are permitted to direct their own retirement investments.

Even with good investment decision making, individuals in DC plans are still subject to investment volatility. Large downward swings in the capital markets, such as those that occurred in 2000–2002, can cause deep losses in DC plan accounts, resulting in employees delaying retirement or accepting a lower standard of living during retirement. Inflation can also erode retirement income adequacy over time.

Best Practices Implications: Plan sponsors may be able to manage these risks and failings by taking a more proactive approach to DC plan design that incorporate features that minimize the risk of investment and inflation loss. A variety of existing and developing solutions exist, including:

- One decision investment strategies such as mandatory or default use of target date lifecycle funds or qualified managed accounts
- Accumulation period fixed annuities should be considered as an asset class to address investment volatility and annuitization rate risk at the time of retirement.
- Retirement planning services and plan designs that address the importance of lifetime income, such as having an appropriate portion of the employee's account balance taken in the form of a guaranteed lifetime retirement income (taking into account other factors, such as the health of the individual and the availability of Social Security benefits)
- Investment advice during both the accumulation phase and through retirement to further address investment and inflation risks

Principle #5: Effective retirement programs require a broad range of integrated participant services. Personalized service will be more important than ever since individuals will be increasingly responsible for their own financial security during retirement.

Rationale: Behavioral and outcome studies have consistently shown that many individuals are either unable or unwilling to meet this challenge. Without integrated participant services many individuals will not adequately address the following risks that are placed on their shoulders:

- Savings shortfall risk
- Longevity risk
- Investment risk
- Inflation risk
- Annuitization rate risk
- Life event risk (e.g., termination, disability, pre-retirement death, long-term care)
- Medical cost shifting and inflation

Best Practices Implications: Core DC retirement programs should be designed to address the varying needs of individuals through the delivery of multi-channel retirement and investment education and advice services, e.g., by phone, through the Web and in person. Being able to establish a personal connection at various life stages of the financial advising and advice process, particularly leading up to and at the point of transition from active employment to retirement, is an essential service of a good retirement plan.

The mode for delivering personalized retirement services will need to reflect the multiple and evolving ways that individuals access information and services. The service delivery model will continue to evolve as a result of the influx of younger individuals into the workforce and their preference for services delivered by way of technical tools such as Web-based services and personal electronic devices. The need for more cost-effective delivery of personalized services also will increase the demand for technology-based solutions.

While technology can enable more effective communication, it will not replace the need for one-on-one, especially in-person, consultation, an essential component for effective financial planning, particularly as individuals approach their retirement. The expected integration of institutional retirement plans and services with individually customized financial services will also increase demand for personalized services.

Principle #6: Retirement programs are more effective with competent fiduciary mechanisms. The retirement goals and objectives of both the employer and employee are more likely to be met if an employer is actively engaged in the ongoing management of the retirement program. Active engagement and oversight allows an employer to better align the design and administration of the plan to continually meet the benefit plan's objectives. It also helps ensure that investment, administrative and other professional service providers are meeting performance and service standards and that their fees are reasonable and competitive.

Rationale: An unmanaged plan is less likely to meet its objectives. Over time, the needs of employers and employees change. Environmental factors, including changing demographics, the economy, evolving technology and legal and political influences can cause a retirement plan to be less effective in meeting the needs of employers and employees. Unmanaged retirement plans are susceptible to external and internal risks that threaten the financial security of both employers and employees, with the retirement plans of WorldCom and Enron serving as notable examples.

Best Practices Implications: Since employers sponsor and oversee the design of retirement plans, they have the responsibility of ensuring that plans are amended to reflect changing environments. It is becoming increasingly clear that plan participants, the courts and regulators expect employers to take a more active role in managing their plan. Employees need and expect this proactive oversight from their employer to help ensure that retirement plans are designed to be effective and efficient and meet their objectives. In addition, courts and regulators are pushing employers to take on active management roles, spurred by a desire to strengthen fiduciary and compliance mechanisms. The days of minimal involvement of plan sponsors are limited and should increasingly be viewed as inconsistent with the objectives of both employers and employees.

Active management of retirement plans will result in employers striving for administrative simplicity, which likely will move the market toward single vendor, sole recordkeeping solutions over time.

It should be noted that service providers are in a unique position to help fiduciaries manage their plans through expert consultation, reporting and analysis of plan data, participant data and investment performance information.

BEST PRACTICE BENCHMARKS FOR CORE DEFINED CONTRIBUTION PENSION PLANS

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

Unlike these other plans, which tend to focus on wealth accumulation as a primary objective, a core defined contribution plan can and should focus on providing retirement income and security. From a best practices benchmark perspective, therefore, the design for a core DC plan must include features that increase the likelihood that this primary objective is met.

Managing Core Defined Contribution Risks Through Plan Design. Some of the major risk areas for participants in DC plans include:

- Failure to participate
- Failure to vest
- Inadequate funding
- Inadequate investment return
- Inappropriate asset allocation
- Outliving retirement assets
- Inflation
- Retirement asset leakage
- Death and disability
- Excessive administration costs and fees

A core defined contribution plan should have features and elements that address these risk areas. The following is a discussion on best practices for DC plan design with regard to most of these factors.

Eligibility and Participation. The length of time an individual is an actual participant in any retirement plan has a direct impact on the ability to accrue sufficient retirement assets. Longer periods of participation mean there is more time to receive employer contributions, make employee contributions and accumulate investment earnings. While plan sponsors have a reasonable interest in managing retirement benefit costs, early participation in the retirement plan after an employee is hired improves the likelihood of achieving benefit objectives.

Certain eligibility and participation plan design features contribute to better retirement outcomes and should be considered best practices:

- Mandatory enrollment/participation
- Lower or no age restrictions
- No more than 1-year waiting periods before participation begins

An argument can be made that expanding core retirement plan eligibility for part-time employees may be viewed as desirable. The authors are not prepared to endorse part-time eligibility as a best practice because the workforce needs of and financial implications for plan sponsors are still evolving around this proposition; however, voluntary participation opportunities should be something that is considered as an alternative.

Vesting. Shorter vesting periods increase the likelihood that employees will acquire meaningful accruals of retirement benefits. Longer vesting periods increase the chance that employees will forfeit accrued benefits.

Federal standards for for-profit retirement plan sponsors have been decreasing over time. ERISA originally established a 10 year cliff vesting standard for employer funded retirement benefits. The Tax Reform Act of 1986 reduced the maximum vesting period to five years of service or a seven-year graded-vesting schedule (20 percent a year for each year of service beginning with the third year of service and ending with 100 percent after seven years). The Pension Protection Act of 2006 (PPA), further reduced vesting requirements for employer contributions made after 2006 to a defined contribution plan to 100 percent after three years or under a six-year graded-vesting schedule (20 percent a year for each year of service beginning with the second year of service and ending with 100 percent after six years). Although these federal vesting standards do not apply to public sector retirement plans, they do provide a benchmark discussing best practice standards.

For purposes of this study, best practices for vesting for core retirement benefits are linked to when participation begins under the plan. If immediate participation is adopted by a plan sponsor, then it is reasonable for the imposition of some vesting period. We have adopted the view that a participant should be 100 percent vested no later than after one-year of service. If participation is delayed (with participation beginning no later than 1-year after the hire date), the employee should be 100 percent vested from the date participation begins. It allows plan sponsors to not invest fully in short-term employees while still allowing a reasonable opportunity for participants to earn non-forfeitable retirement benefits. Graded vesting schedules are often confusing and more difficult to administer and, while acceptable, are not considered a best practice.

Contributions. Higher contribution levels are more likely to result in the desired retirement benefit outcomes. However, a preliminary question must be asked. What is the target level of retirement income that should be the desired retirement outcome? Retirement income adequacy is typically measured in terms of how much of a participant's ending wage is replaced during retirement. This "wage replacement ratio" is measured first at the time of retirement and then continuously throughout retirement to see how it has been affected by inflation.

Public policy makers need to set desired retirement income replacement objectives for career employees at the desired normal retirement date. Wage replacement objectives can vary by class of employee (e.g., regular employee vs. public safety) and may reflect differences in pay levels and Social Security benefits (when provided).

Table 1 provides an example of possible target wage replacement ratios designed to maintain standards of living after retirement under a respected benefit adequacy research study.

TABLE 1. REPLACEMENT INCOME TARGETS

Pre-Retirement Salary	Gross Income Replace Income Target (% of Final Pay)
$20,000	89%
$30,000	84%
$40,000	80%
$50,000	77%
$60,000	75%
$70,000	76%*
$80,000	77%*
$90,000	78%*

Source: 2004 Georgia State University/Aon RETIRE Project Report

* Higher target replacement rates are the result of higher marginal income tax rates for these salary levels

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

<u>What Total Contribution Rate is Needed?</u> If a 75 -89 percent wage replacement target is adopted, what contribution rate (assuming reasonable investment returns) is required to achieve that objective? For purposes of this study we are assuming a definition of a career as 35 years of full-time employment. The following tables provide illustrations of wage replacement outcomes assuming various contribution rates at various salary levels compared to the 2004 Georgia State University/Aon RETIRE Project replacement targets for those salary levels assuming the following:

- Hire at age 30, Retirement at Age 65 – a 35 working career
- Salary Increase Rate: 4.5%
- Pre-retirement investment rate of return: 7% per year
- 3.5% annual growth rate in average national wages for Social Security indexing purposes
- Annuity option: Single Life Annuity
- Annuity payout rate: 5% interest and the Annuity 2000 mortality table (with ages set back 2.5 Years)

In Table 2, the DC Plan benefits replace the same percentage at all wage levels. Social Security provides a decreasing level of replacement income for higher salary levels because of its progressive nature.

TABLE 2. DC PLAN INCOME REPLACEMENT PROJECTION
FULL CAREER PARTICIPATION - ENTRY AGE 30, RETIREMENT AGE: 65
SINGLE LIFE ANNUITY FROM DC PLAN

Initial Salary	DC Plan	Replacement from Social Security	Total DC Plan and Social Security	Income Replacement Target	(Gap)/ Surplus
10% of Pay Total Contribution Rate					
$30,000	41.8%	33.8%	75.6%	84.0%	(8.4%)
$50,000	41.8%	28.6%	70.4%	77.0%	(6.6%)
$70,000	41.8%	23.5%	65.3%	76.0%	(10.7%)
12% of Pay Total Contribution Rate					
$30,000	50.2%	33.8%	84.0%	84.0%	(0.0%)
$50,000	50.2%	28.6%	78.8%	77.0%	1.8%
$70,000	50.2%	23.5%	73.7%	76.0%	(2.3%)
14% of Pay Total Contribution Rate					
$30,000	58.5%	33.8%	92.3%	84.0%	8.3%
$50,000	58.5%	28.6%	87.1%	77.0%	10.1%
$70,000	58.5%	23.5%	82.0%	76.0%	6.0%

Based on the above analysis, the core DC plan total contribution rate would need to be around 12 percent of pay or more to exceed the wage replacement targets for the salary levels shown. The authors make no recommendation regarding an ideal level of employer vs. employee share of this total contribution. However, because of the principle that retirement income security is a shared employer and employee objective an appropriate benchmark would be a 50%/50% split. The authors are mindful that, employers and employees may have alternative financial and benefit priorities that justify departure from this benchmark. Workforce attraction and retention issues vary widely so as to make it difficult to identify a best practice on this point. To the extent employee contributions are required such should be mandatory and designed to be paid pre-tax.

Public employees who are not covered by Social Security will need higher contribution rates to meet income replacement objectives. These contribution rates would need to be around 18-20 percent of pay depending on salary levels. Public safety employees would need to have significantly higher contribution rates in order support earlier retirement ages common to those job classifications.

It should also be noted that all projections of income replacement percentages are very sensitive to changes in the underlying economic assumptions, including: salary growth rate; pre-retirement investment return; and the assumed annuity payout rate.

But What About Retiree Health Costs? The Georgia State University/Aon RETIRE Project did take into account the cost of health care during retirement when establishing its revised replacement income targets. However, it is possible to argue that the income replacement rates may actually need to be even higher because of the cost of paying for health care during retirement. A 2006 study by EBRI[7] estimates that an individual who retires currently at age 65 in that year and lives to age 90 will need $143,000 in savings to pay for Medicare Part B premiums and employment-based health insurance to supplement Medicare. If he or she also wants to cover about $1,800 in out-of-pocket expenses each year, the savings required increases to $210,000. These amounts do not include any additional cost for long-term health care. Table 3, shows how such figures could easily be higher for future retirees because of the high rate of health care inflation.

TABLE 3. PROJECTED COSTS FOR POST-RETIREMENT MEDICAL CARE (7% MEDICAL INFLATION)

Current Age	Present Value Needed At Age 65
65	$210,000
55	$413,102
45	$812,634
35	$1,598,574
25	$3,144,636

It is important to keep in mind that the noted required savings levels exist regardless of compensation level of an individual. This means that, as a percentage pay, contribution rates will need to be much higher for lower paid individuals.

The implications of retiree health care costs on retirement plan design are important regardless of whether the plan is defined benefit, defined contribution, or hybrid in nature. For purposes of this study, we used the Georgia State University/Aon RETIRE Project income replacement targets as a benchmark for retirement income adequacy because they do take into account retiree health care costs. However, it is clear that much more needs to be done to develop best practice standards for retirement programs that more fully addresses this important and expensive need.

Investments. It may be axiomatic that the investment structure for a core DC plan should be established consistent with the stated benefit objectives for the plan. However, this particular principle has been more often observed in the breach than in practice in the standard participant directed 401(k) model, which historically leaves participants largely to fend for themselves in managing their defined contribution plan investments among line-ups that typically include 10 to 30 or more choices depending on the market.

One of the major reasons why traditional DC plans with participant managed investments are less able to ensure adequate and secure retirement income is because too many participants make poor investment decisions.[8] Participants often are overly conservative or too aggressive in their asset allocations and fail to rebalance on a timely basis. In addition, plan sponsors often make the mistake of offering too many investment choices, which may only increase complexity and confusion for participants in the investment decision making process. A variety of recent research on participant investment behaviors in defined contribution plans shows troubling evidence that standard participant directed defined contribution plans are not being used wisely by participants. A 2006 summary of this research by the TIAA-CREF Institute[9] states:" ... the findings indicate that too many investment options can cause information overload, resulting in greater use of the default option and even declines in participation rates." This gives support to the proposition that a smaller, well-constructed and rational investment menu is necessary when participants are permitted to direct their own retirement investments

Managing Investment Risks Even with good investment decision making, individuals in DC plans are still subject to investment volatility. Large downward swings in the capital markets, such as those that occurred in 2000–2002, can cause deep losses in DC plan accounts, resulting in employees delaying or accepting a lower standard of living during retirement.

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

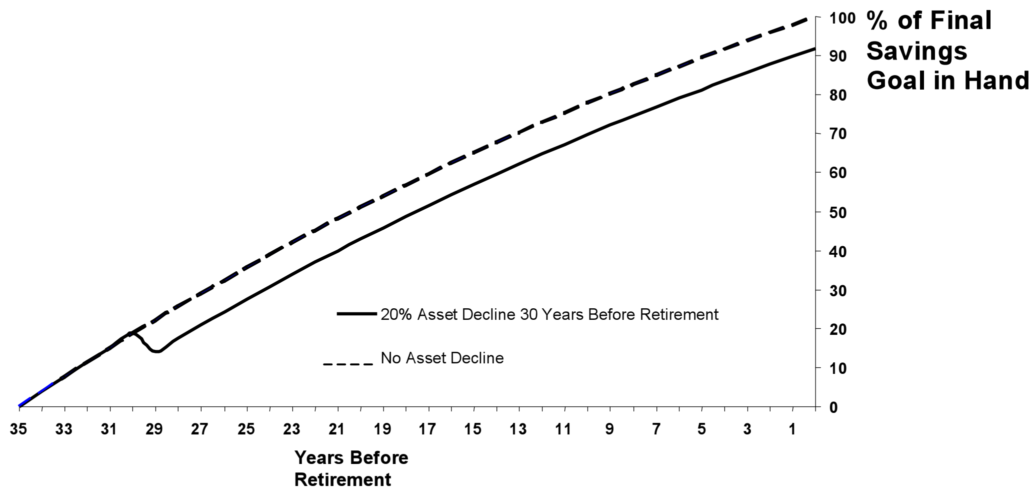
Defined contribution participants are also particularly susceptible to investment losses occurring in the years right before retirement. DC plans are subject to short-term investment risk from coming from global political events such as the 2001 terrorist attack on the U.S. Just as for DB plans, these less predictable risks need to be taken into account by public sector policymakers in determining the most appropriate benefit design.

The timing of significant investment losses occurring during the years leading up to retirement could affect the amount of retirement income for DC participants. The following simplified example illustrates what could happen with a hypothetical person who starts saving 35 years from retirement. The individual decides the amount needed at the end of that time will require setting aside 10 percent of income each year in tax-deferred savings assuming the earnings on that money were 6 percent each year. If the investment return perfectly matched the 6 percent return rate, then the resulting amount of assets at retirement would equal 100 percent of the amount needed.

But the investment world is far from perfect. Figure 1 shows the impact of a 20 percent market decline 30-years from retirement (e.g., a negative market return could produce such a decline). It demonstrates that a 20 percent market downturn at an early age has a relatively small impact on the final benefit, reducing the ultimate retirement income by about 8 percent.

FIGURE 1

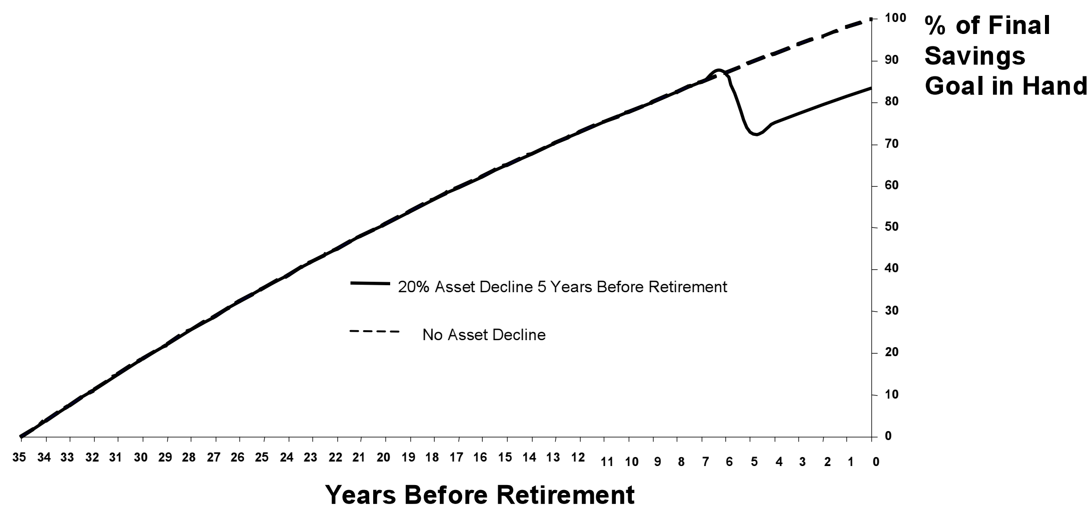
A 20% asset deline 30 years before retirement reduces the final nest egg by 8%



In contrast, Figure 2 illustrates that the impact of a 20 percent market decline 5-years from retirement can reduce retirement assets by more than 16 percent. A DC plan participant with this kind of loss may have to delay retirement or decide to accept a lower standard of living. This is a critical risk area that DC plan designs must take into account and manage properly.

FIGURE 2

A 20% asset decline 5 years before retirement reduces the final nest egg by more than 16%



While a defined contribution plan participant usually is allowed to decide how his or her retirement funds are invested across available asset classes, the plan sponsor can help manage the investment risk by limiting the options offered under the plan to a number and type of funds suitable for the objective of providing retirement income.

A core defined contribution plan could further recognize these risks and failings by incorporating features that minimize the risk of investment and inflation loss. A variety of existing and developing solutions exist, including:

- One- or No-decision investment strategies such as default or mandatory use of target date lifecycle funds. Custom designed lifecycle funds should be considered because they develop investment allocation glide paths and strategies that take into account specialized circumstances including when the core defined contribution plan is part of a combination DB/DC arrangement and when the participant does not participant in Social Security. Using a qualified managed account (QMA) service is another strategy for addressing participant asset allocation needs. A QMA, however, can be an expensive service with some products adding 50-100 bps additional charges to the underlying administrative and investment fees. The actual effectiveness of QMAs has yet to be fully assessed and is, therefore, not included as a best practice. Money market, stable value funds and balanced funds as a primary default investment option are not considered a best practice by the authors because such do not automatically adjust investment allocation to meet the unique and changing risk positions of participants with regard to the retirement income objective.
- For participant directed investments, the investment line-up should include non-overlapping asset classes that allow participants a reasonable opportunity to implement asset allocation strategies that help manage their own risk and return needs. Plan sponsors should limit the number of options so as to avoid participant confusion and paralysis. Basic asset classes that should be considered include: short-term (money market, stable value), bond, large cap value, large cap growth, mid-cap value, mid-cap growth, small cap value, small cap growth, foreign equity and real estate.
- Retirement planning services and plan designs that address the importance of lifetime income, such as having an appropriate portion of the employer plan taken in the form of a guaranteed lifetime retirement income (taking into account other factors, such as the health of the individual and Social Security benefit)
- Independent and objective investment advice during both the accumulation phase and through retirement to further address investment and inflation risks

<u>Using Target Date Lifecycle Funds to Manage Investment Risk</u> Target date lifecycle funds rebalance automatically and regularly adjust investment allocations to limit risk based on number of years until planned retirement. They have the advantage of eliminating the need for investment decision-making by workers and make a sound default option. They further have the potential for improving diversification for participants by including asset classes (e.g., alternative investments, real estate) not typically found in traditional participant directed fund menus.

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

Investment, Financial and Retirement Planning Services Investment and financial education also can have a positive impact on plan participant investment decisions. For example, a recent study[10] found that participants with a relatively high degree of risk aversion invest a larger share (an additional 20 percentage points more) of their assets in equities after attending a retirement class on asset allocation in self directed defined contribution plans. Furthermore, individuals who are the furthest from retirement make the largest reallocations to equity.

Distributions.

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

Inflation and longevity risk protection is a function of life income and annuitization design. The degree to which this issue is a concern in defined contribution plans is a function of the payout options offered under the plan and the decisions made by a participant in the years approaching and immediately following retirement.

The fear of running out of retirement assets can also cause some individuals to under-consume throughout retirement and forego a standard of living that they otherwise could enjoy.

Longevity risk can be managed in a core defined contribution plan by requiring participants to receive retirement benefits in the form of guaranteed annuity income payable for life. There is likely to be a great deal of disagreement over how much of a participant's account balance must be annuitized; however, if the primary purpose of the plan is to provide retirement income, then a best practice would be to require a high percentage of the account to be annuitized. This would be consistent with the general practice among public sector defined benefit plans which typically require the bulk of accrued benefits to be taken as an annuity. Social Security retirement income benefits should be considered when determining the desired level of guaranteed annuity income from a core DC pension plan.

Plan sponsors have a great deal of discretion in designing the annuity distribution options for participants to manage longevity risk. The level of required guaranteed lifetime income required by a public sector plan sponsor may vary depending on the desired level of longevity protection. For example, there may be more interest in requiring higher levels of guaranteed income for public safety employees and for employees not covered by Social Security. Another advantage of requiring some level of mandatory annuitization is that it is likely to result in more favorable annuitization rates from third party insurers (i.e., higher benefits per $1,000 annuitized).

A degree of inflation protection can be achieved with a payout annuity via the use of participating guaranteed annuities, a variable payout annuity, or specialized inflation-protection annuities. All of these come with a price and a greater or lesser degree of protection against inflation.

Managing Pension Benefit Leakage: Lump-Sum Cash-Outs Another threat to adequate retirement income from core DC plans is the risk that participants will cash-out all or large portions of their account balances when workers change jobs. This concern is justified, as many individuals, particularly younger individuals and those with smaller accumulations, do not preserve their retirement funds at job change. In 2003, 25 percent of those who had received a lump-sum distribution reported that they had used at least some of their most recent distribution for consumption; 15 percent used the entire distribution for consumption.[11] Pension asset leakage also occurs when participants are permitted to take hardship or loans from their retirement plan. The fraction of dollars preserved might be improved through plan design by 1) not allowing distributions until normal or early retirement age and 2) eliminating or limiting lump-sums, hardships and loans as a distribution option from core defined contributions. A limited exception can be made for small benefit accruals that do not exceed thresholds established by the plan sponsor to control the cost of administering numerous small value accounts (e.g., $5,000). These features could still be made available for voluntary savings to 457(b), 403(b), and 401(k) plans. Some may argue that this approach is too paternalistic; however, it is not materially different than the current distribution limitations under core defined benefit plans.

Managing Annuitization Rate Risk Annuitization rate risk principally applies to DC plans. In the standard corporate DC plan, participants accumulate retirement money in their accounts and at the time of retirement can choose to purchase a fixed annuity if they desire. The amount of annual retirement income that can be purchased under a fixed annuity, however, can vary depending on the annuity purchase rates available at the time in the open market. For example, in one year participant Jane Jones wants to retire and buy an annuity with her $100,000 account balance and is able to get one that pays $700 per month. However, if she had bought it a year earlier when economic conditions were more favorable, she could have gotten $800 per month.

DB plan participants are not subject to annuitization rate risk. The plan sponsor carries this risk as part of the DB plan's overall funding rate risk. Variable annuities do not subject participants to annuitization rate risk. Annuitization rate risk can be managed in a number of ways, including 1) providing financial planning and advice services that could help participants choose an appropriate mix of fixed annuity, variable annuity and periodic payment strategies to minimize this concern and 2) through the staging of fixed annuity purchases during the retirement years in order to avoid too great a purchase at a time of historically low interest rates.

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

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

Planning for such disability and pre-retirement death risks is again a plan design issue. Combining a defined contribution plan with a disability income insurance plan and a life insurance plan can achieve the same type of protection for workers and their families as incorporating the disability and death benefits into a defined benefit plan. Given the complexity of this issue, the authors acknowledge the importance of incorporating death and disability benefits into an overall comprehensive retirement benefit strategy, but do not here attempt to establish a single best practice benchmark.

Administration Structure and Fees. High administration and investment fees reduce the ultimate level of retirement savings available to participants of defined contribution plans. Multiple vendor structures and agent-broker delivery models are generally more expensive than single recordkeeper administrative platforms. While investment choices may be supplied by several fund companies, there should be only one point of contact for employees for all aspects of the plan.

Plan design, plan size (participants and assets), asset allocation levels, geographic service area, administrative and participant service levels are just some of the variables affecting a plan's administration costs and fees making it difficult to establish a "best practice" standard. Larger plans should be able to take advantage of available economies of scale to deliver plan services at lower cost. It is possible, however, to establish benchmarks that would help public core DC plan sponsors evaluate whether costs and fees bear further examination. Total costs (administrative and investment fees) for a quality, state-of-the-art core defined contribution plan should be available for 100 basis points or less for larger plans.

A Reemerging Issue – The Use of Fixed Annuities During the Accumulation Phase.

The use of fixed annuities in core defined contribution plans during the accumulation phase is reemerging as a "new" issue for the design of core defined contribution plans. This new interest in annuity investment vehicles is largely being driven by the decrease in defined benefit pension plans in the private sector and guaranteeing investment returns in light of recent investment volatility and managing annuity purchase rate volatility.

An in-depth examination of the use of fixed annuities during the accumulation phase is made difficult by the complexity of the annuity market place. There seems to be a constant stream of new and sometimes repackaged old annuity products being brought to the retirement plan market in recent months. Some examples of the variations in these annuity offerings include the following:

- Minimum guarantee rates
- Actual interest crediting potential (e.g., the value of dividends above minimum guaranteed rates)
- Participating or non-participating contracts
- Death benefits (included or not included),
- Interest crediting methodology (e.g., new vs. old money rates)
- Annuity value purchase methods (e.g., periodically during accumulation, at the time of retirement),

- Flexible or irrevocable payout choices (e.g., ability of participant to reallocate between fixed and variable after retirement)
- Plan sponsor liquidity (ability of plan sponsor to move contract assets to a new provider)
- Participant liquidity (ability of participant to move contract assets to new investment option)

A best practice standard for the use of fixed annuity products for the accumulation stage investment offering of a core defined contribution plan is made particularly difficult because other plan objectives may have higher priority. For example, annuity products have generally been less favored by plan sponsors because of 1) liquidity constraints, 2) the sometimes very high mortality and other expenses associated with some annuity products and more recently, 3) because of demands for greater fee transparency from plan fiduciaries.

Still, plan sponsors may want to consider the use of a fixed annuity in the accumulation stage that would essentially serve as a substitute for the guaranteed defined benefit normally found in the public sector. For example, a plan might set its default investment to include two components: a fixed accumulating annuity plus a life-cycle target date fund. The allocation percentage to the fixed annuity would increase over the working years and be set to reach a target fixed annuity percentage at retirement. The life-cycle fund would accordingly reflect relatively high allocations to equities and other asset classes (other than fixed-income) during most of the accumulation years. In this manner, participants would receive a reasonable percentage of their retirement income in the form of a guaranteed life annuity, comparable to some hybrid DB/DC plans currently found in the public sector.

TABLE 4. SUMMARY OF BEST PRACTICES FOR A CORE DEFINED CONTRIBUTION PLAN DESIGN

Plan Design Feature	Best Practice Benchmarks
Eligibility and Participation	■ Mandatory enrollment/participation ■ No age restrictions ■ No more than 1-year waiting period before participation begins
Vesting	■ 100% after 1-year
Total Contributions (Employer and Employee)	■ At least 12% of pay if covered by Social Security; 18-20% of pay if not covered by Social Security
Investments	■ Mandatory or default into lifecycle/target date ■ Limited array of 15-20 participant directed investments covering the major asset classes ■ Individual investment advice for participant directed investments ■ Broad-based employee investment education
Distributions .	Pre-retirement: ■ Limited or no hardship or loan features ■ No pre-retirement age distributions other than small benefit cash-outs Retirement: ■ Distributions limited to normal or early retirement age; exception for small benefit accumulations ■ Some level of mandatory guaranteed annuity providing life income ■ Limited lump-sum distributions ■ Provide inflation protected options including continued exposure to equity investments during retirement – e.g., post-retirement lifecycle/target date funds, inflation protected annuities, variable annuities
Administrative Structure and Fees	■ Avoid multiple vendor recordkeeping structures where possible ■ Single point of contact for participants ■ Larger plans benchmark: Total administrative and investment costs not to exceed 100 basis points
Other participant services	■ Employee and retiree retirement and financial planning services delivered through multiple modes: call center, internet and in person

CORE DEFINED CONTRIBUTION PLANS IN THE PUBLIC SECTOR

This section examines, relative to the best practice benchmarks, the "typical" features and provisions of public sector core defined contribution plans, i.e. plans that are the primary source of retirement income for the employee, as opposed to a supplemental plan. As will be shown, typical core defined contribution plans in the public sector do not resemble the typical 401(k) plan in the private sector along multiple dimensions, including the mandatory nature of participation, contribution provisions for employer and employee and benefit payment options. These differences in many instances mean public plans satisfy best practice benchmarks whereas private sector 401(k) plans frequently do not. However, while many features of a "best practice" defined contribution plan are met by many public sector plans, there is variance in this regard as well.

Two sets of plans are examined here; those covering general public sector employees under "state" plans and those covering public higher education employees. Plans in the state plan group include:

- Alaska Defined Contribution Retirement Plan
- Colorado Public Employees' Retirement Association (PERA) Defined Contribution Plan
- District of Columbia Defined Contribution Plan
- Florida Retirement System Investment Plan
- Michigan 401(k) Plan
- Montana Public Employee Retirement System Defined Contribution Retirement Plan
- Nebraska Defined Contribution Plan (which closed to employees hired on or after 1/1/2003)
- North Dakota Public Employee Retirement System Defined Contribution Plan
- Ohio Public Employee Retirement System Member-Directed Plan
- South Carolina Optional Retirement Plan
- West Virginia Teachers Defined Contribution Plan

The public higher education plans examined are those of

- Indiana University
- Michigan State University
- Purdue University
- State University of New York
- University of Iowa
- University of Michigan
- University of Washington

This is obviously not an exhaustive list of public defined contribution plans. Rather these plans were chosen to be illustrative of what is common practice in the public sector, which is still dominated by primary defined benefit plans.

The following discussion is based on a review of the major provisions of the plans examined compared to the best practice benchmarks previously identified. A summary of this comparison is provided in the Appendix.

General Findings. Among our sample public sector plans, there is a high degree of uniformity along certain dimensions, e.g., the mandatory nature of participation and the presence of sponsor and participant contribution rates that are specifically stipulated by the plan. On the other hand, there is notable variance in the levels of these set contribution rates. Differences with private sector 401(k) plans are stark; e.g., the voluntary nature of plan participation and the relative absence of an annuitization payout option in the private sector.

Participation Mandatory participation is the best practice benchmark for a core defined contribution plan and in the public sector plans examined here participation by the employee is mandatory in all cases, a striking difference from most private sector 401(k) plans. The only caveat is in the case of an optional retirement plan, as in Colorado, Florida, Montana, North Dakota, Ohio and South Carolina. In these situations, participation in a retirement plan is mandatory, but the individual chooses whether to participate in the primary defined benefit plan or the primary defined contribution plan. In cases where the individual fails to make such an election, he or she is typically defaulted into the defined benefit plan. In Montana and North Dakota, all new hires are automatically enrolled in the defined benefit plan, but then have a limited period of time (1 year in Montana and 6 months in North Dakota) to switch to the defined contribution plan if they so choose.

Participation is also mandatory in all of the public higher education plans examined. In the State University of New York and University of Iowa programs, the individual must choose between participation in the defined benefit plan or the defined contribution plan.

Another key issue regarding participation is whether there is any type of service requirement that must be fulfilled before the individual is eligible to participate in the plan. Among private sector 401(k) plans, 49 percent allow employees to participate immediately upon hire, but not all of these make employer matching contributions available immediately. The most common service requirements for participation are 3 months or less of service.[12]

Best practice plan design not only involves mandatory participation, but also dictates eligibility for participation within one year, if not immediately. Among the public plans examined here, not only is plan participation mandatory, but it is also typically immediate. The District of Columbia plan where individuals must be employed for one year before becoming eligible is an exception. Purdue also has a waiting period of up to three years for certain positions. At Michigan State University, the University of Michigan and the University of Washington, retirement plan participation is mandatory, but only after a two-year period of service, plus in the Michigan schools the service requirement is combined with an age requirement of 35. Individuals may participate in the plans prior to it becoming mandatory.

Contribution Levels   Best practice calls for non-elective contributions by both the employer and employee, i.e. contribution levels that are mandated by the plan, which will result in an adequate retirement income assuming typical investment returns. In the private sector 401(k) model, the employee chooses their contribution level within limits specified by the plan (and federal law) and any employer contributions are typically in the form of a matching contribution specified by the plan. All of the state DC plans in our sample satisfy this benchmark to the extent that employers contribute to workers' accounts a specified percentage of pay and the employee's contribution rate is also specified by the plan. Depending on the plan, there may or may not be the opportunity for additional discretionary contributions by the participants, which may or may not be matched by the plan sponsor.

The best practice also implies that the mandated contribution levels total at least 12 percent of pay if covered by Social Security and 18-20 percent of pay if not covered by Social Security. In the state plans examined here, non-elective employer contribution rates range from 4 percent of salary in the Michigan 401(k) plan to 10.15 percent in the Colorado PERA defined contribution plan. In some plans (Colorado, the District of Columbia, Florida and Ohio), the employer contribution rates vary for different types of positions   The non-elective employee contribution rate ranges from 0 percent (District of Columbia, Florida and Michigan) to 9.4 percent (Ohio.) Some plans afford the participant the opportunity to make additional elective contributions; Michigan's public sector plan is a 401(k) and does have employee elective contributions with an employer match   Combining the non-elective employer and employee contribution rates results in total non-elective contribution levels ranging from 4 percent (the Michigan 401(k) plan) to over 18 percent (Colorado and Ohio.)

In the public higher education plans examined here, employer non-elective contribution rates range from 5 percent to 15 percent of salary. In addition, employer non-elective contribution rates can vary within the plan based on salary, years of participation or age. The employee non-elective contribution rate ranges from 0 percent (Indiana University, Purdue University and the University of Michigan) to 10 percent (University of Washington participants that are age 50 or older.) As with employer contribution rates, required employee contributions sometimes vary within a given plan based on years of participation, age or salary (University of Iowa and the University of Washington.) Among the institutions examined here, five of the seven allowed additional elective employee contributions and two of those matched employee contributions to a limit. Across the public higher education plans examined, combined employer and employee non-elective contribution rates were a minimum of 10 percent, typically in the range of 15 percent, and as high as 20 percent (for older participants at the University of Washington.)

Projected Income Replacement Percentages   Looking at the plans listed in this next table, we see that the majority provide a total (employer plus employee) contribution rate in the range of 10 percent to 15 percent of pay. Plans that include employees not covered by Social Security generally provide for a higher total contribution rate than other plans. Table 7 shows projected income replacement rates at retirement for the plans examined here; replacement rates are presented based both on the defined contribution benefit only and the defined contribution benefit combined with Social Security.

TABLE 5. PROJECTED INCOME REPLACEMENT PERCENTAGES AT RETIREMENT FOR SELECTED PUBLIC CORE DC PLANS

Plan	Total Contribution Rate	DC Retirement Plan (only)			Total Income Replacement (including Social Security)			Notes
		$30,000	$50,000	$70,000	$30,000	$50,000	$70,000	
Alaska DC Retirement Plan PERS	13.00%	54.3%	54.3%	54.3%	54.3%	54.3%	54.3%	*Note 1*
Alaska DC Retirement Plan TRS	15.00%	62.7%	62.7%	62.7%	62.7%	62.7%	62.7%	*Note 1*
Colorado PERA DC Plan	18.15%	75.9%	75.9%	75.9%	75.9%	75.9%	75.9%	*Note 1*
District of Columbia DC Plan	5.00%	20.1%	20.1%	20.1%	53.9%	48.7%	43.6%	
Florida (FRS) Investment Plan	9.00%	37.6%	37.6%	37.6%	71.4%	66.2%	61.1%	
Michigan 401(k) Plan	10.00%	41.8%	41.8%	41.8%	75.6%	70.4%	65.3%	
Montana DC Plan	11.09%	46.4%	46.4%	46.4%	80.2%	75.0%	69.9%	
Nebraska DC Plan	12.30%	51.4%	51.4%	51.4%	85.2%	80.0%	74.9%	
North Dakota PERS DC Plan	8.14%	34.0%	34.0%	34.0%	67.8%	62.6%	57.5%	
Ohio PERS Member-Directed Plan	18.13%	75.8%	75.8%	75.8%	75.8%	75.8%	75.8%	*Note 1*
South Carolina Optional Ret. Plan	11.50%	48.1%	48.1%	48.1%	81.9%	76.7%	71.6%	
West Virginia Teachers DC Plan	12.00%	50.2%	50.2%	50.2%	84.0%	78.8%	73.7%	
Indiana University - New Hire (after 1999)	10.00%	41.8%	41.8%	41.8%	75.6%	70.4	65.3%	
Indiana University - Old Hire	15.00%	62.7%	62.7%	62.7%	96.5%	91.3%	86.2%	
Michigan State University	15.00%	62.7%	62.7%	62.7%	96.5%	91.3%	86.2%	
University of Michigan	15.00%	62.7%	62.7%	62.7%	96.5%	91.3%	86.2%	
Purdue University	11%/15% on $9k	59.9%	61.0%	61.5%	93.7%	89.6%	85.0%	

TABLE 5 CONTINUED

Plan	Total Contribution Rate	DC Retirement Plan (only)			Total Income (including Social Security)			Notes
		$30,000	$50,000	$70,000	$30,000	$50,000	$70,000	
State University of New York	11% then 13% after 7 years	50.2%	50.2%	50.2%	84.0%	78.8%	73.7%	
University of Iowa	15%, except 10% for first 5 years under $4800	62.2%	62.4%	62.5%	96.0%	91.0%	86.0%	
University of Washington	10% then 15% & 20% at ages 35 and 50	65.5%	65.5%	65.5%	99.3%	94.1%	89.0%	

Assumptions:

Hire at Age 30, Retirement at Age 65

Salary increase rate: 4.5% per year

Pre-retirement investment rate of return: 7% per year

3.5% annual growth rate in average national wages for Social Security indexing purposes

Annuity option: Single Life Annuity

Annuity payout rate: 5% interest and the Annuity 2000 mortality table (with ages set back 2.5 years)

Income replacement shown as a percentage of final pay

Note 1: Participants under this plan are generally not covered under Social Security

If the contribution rate is a level percentage of pay (or one varying by age or years of service), the projected income replacement percentage arising from the defined contribution plan will be independent of the individual's starting salary. A contribution schedule that varies depending on the level of annual salary (above and below certain dollar amounts – i.e., integrated with Social Security) will result in replacement percentages that vary by the level of initial salary. Social Security replacement percentages will vary considerably by salary, with higher replacement percentages associated with lower-paid individuals.

As discussed previously, an individual needs to retire with a total wage replacement percentage (including Social Security) that falls in the range of 75 percent to 89 percent of final wage targets.. While a 10 percent contribution rate may come close to achieving this goal for lower-paid individuals (due to relatively higher Social Security replacement ratios), a higher contribution rate of at least 12 percent of salary is more likely to achieve this goal for the majority of employees.

Vesting Individuals are always immediately fully vested in their employee contributions as well as the earnings on their contributions. Best practice calls for them to also be immediately vested in employer contributions after no more than one-year of service. In our sample of state plans, the vesting norm regarding employer contributions is fulfilling a service requirement as a plan participant. The exception among the state plans examined here is the South Carolina where individuals are immediately vested in employer contributions. The vesting schedule may be graded or cliff. The norm is graded vesting over a period of 5 years, though there is variation in the period of service required; full vesting occurs after 1 year in Florida, but takes 12 years in the West Virginia teachers plan.

Immediate vesting is the near universal norm in the public higher education plans examined here. The exception is the SUNY plan which has 100 percent cliff vesting after 1 year of service.

Forty-four percent of private sector 401(k) plans immediately vest employees in employer contributions; otherwise the most common vesting requirements are 5-year graded vesting (24 percent of plans) and 3-year cliff vesting (15 percent of plans).[13]

Investment Options In every plan examined here, including the higher education plans, the employee has complete control of how the account funds are invested across the options offered by the plan. This is also the norm with private sector 401(k) plans. Best practice calls for a limited non-overlapping array (about 15-20) of investment options covering the major asset classes. In private sector 401(k) plans, the typical (i.e., median) number of investment options offered is 15 and the average number is 17.[14]

The number of options offered in the state plans examined here ranges from 9 in Ohio to 70 in South Carolina. South Carolina has four providers offering between 15 - 22 options and, while participants may only have one provider (at a time) receiving contributions, they can keep assets with more than one of the providers. The number of investment options offered in public higher education is typically greater than the number offered elsewhere in the public sector. With the exception of the University of Washington, which offers 10 options, all other higher education plans examined here offer anywhere from 31 options to over 150 at the University of Michigan. The larger number of funds offered by these public universities is usually related to the existence of multiple service providers offering stand alone bundled arrangements.

Investment options that take specific asset allocation decisions out of the hands of the participant are a common offering in the state plans. Examples include a managed account in Alaska, target retirement date options in Colorado, North Dakota and South Carolina, and lifecycle funds for Purdue University. All plans specify a default option for when a participant does not specify investment elections. In some cases, the default is a managed account or a target-date fund; in other cases, it is a relatively conservative investment, like a short term bond fund, or a balanced investment fund. Best practice calls for default into a lifecycle target-date fund.

Pre-Retirement Distributions Best practice plan design would seek to minimize leakage from participant account prior to retirement. Such leakage can occur at job change if individuals receive a lump sum distribution of their vested account balance and fail to preserve it for retirement via a rollover. Account leakage could be prevented if participants were not allowed a lump sum at job change when their account balance exceeded a specified level specified by the plan sponsor (e.g., $5,000). Distributions of these smaller balances at termination would be permitted so plans are not required to continue to pay for the administration of numerous small accounts. Controlling pension asset leakage in this way is not done in private sector 401(k) plans, nor is it done in the state or public university segments. All public plans examined here provide full lump sum distributions at job change.

Leakage can also occur through hardship distributions and plan loans. With a hardship distribution, the funds leave the retirement system. With loans the funds are paid back with interest by the participant. However, there is the danger of default by the participant, plus the interest payments on the loan may be less than what the borrowed funds would have otherwise earned had they remained invested in the plan. In the private sector, 98% of 401(k) plans have a loan provision and 94% allow participants to make withdrawals due to financial hardship.[15] In the state plans examined here, hardship withdrawals and plan loans are generally not available (the Michigan 401(k) plan is an exception.) Likewise in the public university plans, hardship withdrawals and loans are not available (the exception being the Michigan State University plan.)

Retirement Distributions As discussed initially, the purpose of a core defined contribution plan is to generate adequate retirement income for the lifetime of an individual (and his or her spouse.) Thus the best practice plan design regarding retirement distributions is to 1) limit ability to withdraw funds as a lump sum combined with 2) require that a minimum amount of the account be annuitized through a vehicle providing some degree of inflation protection. Annuitization of an account balance is the only means for an individual to guarantee a steady stream of income in retirement for life (and the lifetime of a spouse.) In addition, the value of these annuitized payments should be protected (at least partially) against erosion by inflation overtime else payment levels that were adequate at the beginning of retirement may no longer be so after a number of years in retirement.

In the private sector, all 401(k) plans offer a lump sum distribution option, but very few offer an annuitization option. Fifteen percent offer an annuitization option, 41 percent offer partial distributions and 52 percent offer installment payments.[16]

In the state plans examined here, full lump sums are always a distribution option. On the other hand, most of the state plans have annuitization as a distribution option (Colorado, Michigan and Montana do not), but none require any degree of annuitization by the participant. The Ohio PERS Plan offers a special form of distribution where individuals can select a partial life annuity and a partial lump sum payment. The Florida Retirement System Investment Plan, the Nebraska Defined Contribution Plan and the South Carolina Optional Retirement Plan also provide an inflation hedged annuitization option. Florida offers a life annuity with a 3 percent annual increase in benefit payments and Nebraska offers a life annuity with a 2.5% annual increase. South Carolina offers a variable life annuity as well as a fixed annuity with increasing benefits. While not a perfect hedge against inflation, such vehicles do provide a means to at least partially protect benefit payments that are guaranteed to last a lifetime. All other state plans examined here provide no inflation hedge other than the ability to invest in equities after retirement.

Among the DC plans in higher education examined here, all have an annuitization option providing features that at least partially address inflation risk, including the use of variable life annuities and fixed life annuities with a feature for annual benefit increases. These plans, however, also offer full lump sums as a distribution option and do not require any degree of annuitization at retirement..

Administrative Structure   Best practice is a single recordkeeper structure. This has the primary benefit of providing a single point of contact for participants and may also help to control plan costs by taking advantages of the resulting economies of scale. In private sector 401(k) plans, single recordkeeper structures are the norm. Among the state plans examined here, almost all use a single recordkeeper structure; the exception being the South Carolina Optional Retirement Plan. Among public university plans however, multiple recordkeeper structures are the norm; all plans examined here have multiple recordkeepers. The new 403(b) regulations, however, may cause some of these to consider moving toward single recordkeeper arrangements.

Education and Advice   Participants in defined contribution plans are usually faced with the responsibility of managing their own retirement assets regardless of their financial prowess. Best practice would, therefore, require core defined contribution plans to provide broad-based retirement and investment education services to participants.

All of the plans reviewed provide their participants with basic information regarding the plan, such as how it works, the benefits of participation, its features, and the options that participants have, as well as the decisions that they need to make. In addition, plans also provide basic education about saving for retirement, such as understanding the different types of investment vehicles in the plan and how to construct an appropriately diversified portfolio. Education services typically also cover such issues as the benefits of dollar cost averaging through regular contributions, the benefits of compounding, and the value of benefit preservation (i.e., rollovers) at job change.

A higher best practice hurdle is the provision of individual-specific investment advice where a participant is provided with specific recommendations regarding the investment allocation of their contributions and account balances across the options available in the plan. Such guidance will factor in their age, planned retirement age, current retirement accumulations, saving rates, tolerance for risk, and other factors. The defined contribution market has been moving to providing participant investment advice in recent years based on demand by participants. In the private sector, the percentage of 401(k) plans offering investment advisory services has increased from 28% in 2003 to 40% in 2007; an additional 16% of plans in 2007 expect to provide such services in the next 12 months. Among the state plans examined here, the Colorado PERA, the Ohio PERS and the West Virginia Teachers Plan do not provide investment advice.[17] Participant investment advice is provided by all the public university plans examined here, with the exception of the University of Washington which will likely be offering it by year-end 2008.

CONCLUSION

Public sector employers and employees need and will be seeking better results and flexibility from their core defined contribution retirement plans. While it is not expected that public employers will move away from their core defined benefit plans as a primary method of delivering retirement benefits, interest in defined contribution solutions will continue as public policy makers engage in the continuing efforts to make sure retirement benefits designs remain a good fit in these changing environmental conditions.

As public policy makers examine defined contribution retirement plan designs one message should become clear - - the traditional 401(k) model of the for-profit corporate world is an inadequate and inefficient way to meet the needs of public employers and employees. The traditional 401(k) model, with its focus on voluntary retirement savings and participant direction of investments has major deficits: 1) it is too expensive in terms of investment administrative fees, 2) it too often fails to meet retirement benefit objectives because it lacks what is necessary to generate sufficient retirement savings and 3) it does not adequately manage the risks of the participants.

Defined Contribution Pension Plans: A Focus on Retirement Security. Public employers and employees also will need more effective retirement savings and income solutions to address the trend of cost and risk shifting to employees. Public employers may be looking for more "defined contribution pension" plan designs that incorporate aspects of the most attractive features of DB plan (e.g., guaranteed lifetime benefits and limited participant investment risk) while still reducing or eliminating funding risks. This next-generation "defined contribution pension plan" will likely focus on:

- *Increasing retirement savings* by adding such plan design features as mandatory participation, automatic enrollment and auto-save arrangements.
- *Decreasing investment risk* by adopting investment structures that help to avoid some of the major sources of investment risk for participants and that are more appropriate to providing adequate retirement income as the primary objective. Some of these may include:
  - Reducing the number of investment funds available to a more rational set of high-quality, reasonable-cost funds that can be more readily be understood and used by participants and their advisors.
  - Providing participants with simplified "one- or no-decision" investment services such as target-date lifestyle funds, target allocation funds and qualified managed accounts that can help to decrease the risk of participants making poor investment allocation decisions.
  - Providing participants investment advice to and through retirement that incorporates a broader range of financial inputs for sound retirement financial planning.
- *Addressing longevity, inflation, and annuitization rate risk* by incorporating retirement income products, features and services that manage these risks more effectively, including:
  - Mandatory annuitization of at least a portion of one's retirement account balance
  - Availability of variable life annuities and inflation-adjusted fixed annuities
- Rethinking the use of accumulation period guaranteed fixed annuities as a means of replacing a portion of the benefit now typically secured by defined benefit arrangements

APPENDIX

COMPARISON OF BEST PRACTICE BENCHMARKS TO MAJOR PUBLIC SECTOR CORE DC PLANS

	PLAN NAME			
Best Practice Benchmark	**Alaska Defined Contribution Plan**	**Colorado PERA Defined Contribution Plan**	**District of Columbia Defined Contribution Plan**	**Florida Retirement System Investment Plan**
ELIGIBILITY AND PARTICIPATION				
Mandatory participation; no age restriction; no more than 1-year wait	Mandatory participation; no age restriction or waiting period	Mandatory participation; no age restriction or waiting period; optional to DB plan	Mandatory participation; no age restriction; 1-year waiting period	Mandatory participation; no age restriction or waiting period; optional to DB plan
VESTING				
100% no later than after 1-year of service	Graded: 25% after 2 years 50% after 3 years 75% after 4 years 100% after 5 years	50% immediate, graded to 100% after 5-years	Cliff: 100% after 5 years	Cliff: 100% after 1- year
TOTAL EMPLOYER AND EMPLOYEE CONTRIBUTIONS				
12%+ of pay if covered by Social Security; 18-20% of pay if not covered by Social Security	<u>Non-Social Security</u> Teachers— ER: 7% EE: 8% PERS— ER: 5% EE: 8%	<u>Non-Social Security</u> ER: 10.15% EE: 8% for state troopers— ER: 12.85% EE: 10%	ER: 5% EE: 0% for detention officers—ER: 5.5% EE: 0%	Regular employees— ER: 9% EE: 0% for other employees—ER contribution ranges from 10.95% to 20% and EE is 0%
INVESTMENTS				
Mandatory or default into target-date lifecycle funds	Default to qualified managed account	Default to balanced fund	Default to target date fund	Default to moderate risk balanced fund

COMPARISON OF BEST PRACTICE BENCHMARKS TO MAJOR PUBLIC SECTOR CORE DC PLANS

	PLAN NAME			
Best Practice Benchmark	**Alaska Defined Contribution Plan**	**Colorado PERA Defined Contribution Plan**	**District of Columbia Defined Contribution Plan**	**Florida Retirement System Investment Plan**
INVESTMENTS continued				
Limited array of no more than 15-20 funds covering the major asset classes	12	13	13	20
Individual investment advice through one or more providers	Yes	No	Yes	Yes
PRE-RETIREMENT DISTRIBUTIONS				
Small benefit distributions only before retirement age	Full lump-sum available on termination	Full lump-sum available on termination	Full lump-sum available on termination	Full lump-sum available on termination
No hardship or loan distributions	Not available	Not available	Not available	Not available
RETIREMENT DISTRIBUTIONS				
Minimum level of annuitization required	Annuity available, but not required	No annuitization option	Annuity available, but not required	Annuity available, but not required
Limited lump sum distribution	Full lump sum available	Full lump sum available	Full lump sum available	Full lump sum available
Provide inflation protected features	Nothing other than the ability to invest in equities after retirement	Nothing other than the ability to invest in equities after retirement	Nothing other than the ability to invest in equities after retirement	Life annuity with a 3% annual increase in benefit payments

COMPARISON OF BEST PRACTICE BENCHMARKS TO MAJOR PUBLIC SECTOR CORE DC PLANS

	PLAN NAME			
Best Practice Benchmark	**Alaska Defined Contribution Plan**	**Colorado PERA Defined Contribution Plan**	**District of Columbia Defined Contribution Plan**	**Florida Retirement System Investment Plan**
ADMINISTRATIVE STRUCTURE				
Avoid multiple vendor record-keeping structures	Single record-keeper	Single record-keeper	Single record-keeper	Single record-keeper
OTHER PARTICIPANT SERVICES				
Investment education, retirement and financial planning services	Yes	Yes	Yes	Yes

COMPARISON OF BEST PRACTICE BENCHMARKS TO MAJOR PUBLIC SECTOR CORE DC PLANS

	PLAN NAME				
Best Practice Benchmark	**Michigan 401(k) Plan**	**Montana PERS Defined Contribution Retirement Plan**	**Nebraska DC Plan (closed to employees hired on or after 1/1/2003)**	**North Dakota PERS Defined Contribution Plan**	**Ohio PERS Member-Directed Plan**
ELIGIBILITY AND PARTICIPATION					
Mandatory participation; no age restriction; no more than 1-year wait	Mandatory participation; no age restriction or waiting period	Mandatory participation ; no age restriction or waiting period (automatically enrolled in DB plan, but have one year to switch to DC plan)	Mandatory participation; no age restriction or waiting period	Mandatory participation; no age restriction or waiting period (automatically enrolled in DB plan; have six months to switch to DC plan)	Mandatory participation; no age restriction or waiting period (worker must choose participation in the DB, DC plan or combined plan within 180 days of hire)
VESTING					
100% after 1-year service	Graded: 50% after 2 years 75% after 3 years 100% after 4 years	Cliff: 100% after 5 years	Cliff: 100% after 3 years	Graded: 50% after 2 years 75% after 3 years 100% after 4 years	Graded over 5 years at 20% per year
TOTAL EMPLOYER AND EMPLOYEE CONTRIBUTIONS					
12%+ of pay if covered by Social Security; 18-20% of pay if not covered by Social Security	ER: 4.0% EE: 0.0% (plus 100% ER match on elective EE contributions up to 3% of pay)	ER: 4.19% EE: 6.9%	ER: 7.5% EE: 4.8%	ER: 4.12% EE: 4.0%	Non-Social Security ER: 8.73% for state employees and 8.65% for local employees EE: 9.4%

COMPARISON OF BEST PRACTICE BENCHMARKS TO MAJOR PUBLIC SECTOR CORE DC PLANS

	PLAN NAME				
Best Practice Benchmark	**Michigan 401(k) Plan**	**Montana PERS Defined Contribution Retirement Plan**	**Nebraska DC Plan (closed to employees hired on or after 1/1/2003)**	**North Dakota PERS Defined Contribution Plan**	**Ohio PERS Member-Directed Plan**
INVESTMENTS					
Mandatory or default into target-date lifecycle funds	Default to short term fund	Default to balanced fund	Default to moderate pre-mixed fund for employer contributions and stable value fund for employee contributions	Default to target date fund	Default to moderate balanced fund (60% equity, 40% fixed-income)
Limited array of no more than 20 participant directed investments covering the major asset classes	21	15	13	28	9
Individual investment advice through one or more providers	Yes	Yes	Yes	?	No
PRE-RETIREMENT DISTRIBUTIONS					
Small benefit distributions only before normal retirement age	Full lump-sum available on termination	Full lump-sum available on termination	Full lump-sum available on termination	Full lump-sum available on termination	Full lump-sum available on termination
No hardship or loan distributions	Both available	Not available	Not available	Not available	Not available

COMPARISON OF BEST PRACTICE BENCHMARKS TO MAJOR PUBLIC SECTOR CORE DC PLANS

	PLAN NAME				
Best Practice Benchmark	**Michigan 401(k) Plan**	**Montana PERS Defined Contribution Retirement Plan**	**Nebraska DC Plan (closed to employees hired on or after 1/1/2003)**	**North Dakota PERS Defined Contribution Plan**	**Ohio PERS Member-Directed Plan**
RETIREMENT DISTRIBUTIONS					
Minimum level of annuitization required	No annuitization option	No annuitization option	Annuitization option available; not required	Annuitization option available; not required	Annuitization option available; not required
Limited lump sum distribution	Full lump sum available	Full lump sum available	Full lump sum available	Full lump sum available	Full lump sum available
Provide inflation protected features	Nothing other than the ability to invest in equities after retirement	Nothing other than the ability to invest in equities after retirement	Life annuity with a 2.5% annual increase in benefit payments	Nothing other than the ability to invest in equities after retirement	Nothing other than the ability to invest in equities after retirement
ADMINISTRATIVE STRUCTURE					
Avoid multiple vendor recordkeeping structures	Single record-keeper	Single record-keeper	Single record-keeper	Single record-keeper	Single record-keeper
OTHER PARTICIPANT SERVICES					
Investment education, retirement and financial planning services	Yes	Yes	Yes	Yes	Yes

COMPARISON OF BEST PRACTICE BENCHMARKS TO MAJOR PUBLIC SECTOR CORE DC PLANS

	PLAN NAME				
Best Practice Benchmark	**South Carolina Optional Retirement Plan**	**West Virginia Teachers DC Plan**	**Indiana University Plan**	**Michigan State University Plan**	**Purdue University Plan**
ELIGIBILITY AND PARTICIPATION					
Mandatory participation; no age restriction; no more than 1-year wait	Mandatory participation; no age restriction or waiting period (must choose participation in either the DB or DC plan within 30 days of hire; DB is the default)	Mandatory participation; no age restriction or waiting period	Mandatory participation; no age restriction or waiting period	Immediate eligibility; mandatory participation after age 35 and two years of service	Mandatory participation; eligibility varies from immediate to three years of service depending upon position
VESTING					
100% after 1-year service	Immediate	Graded: 1/3 after 6 years 2/3 after 9 years 100% after 12 years	Immediate	Immediate	Immediate
TOTAL EMPLOYER AND EMPLOYEE CONTRIBUTIONS					
12%+ of pay if covered by Social Security; 18-20% of pay if not covered by Social Security	ER: 5.0% EE: 6.5%	ER: 7.5% EE: 4.5%	ER: varies from 10% to 12% depending on position (varies from 11% to 15% for those hired before 1989) EE: 0%	ER: 10% EE: 5%	ER: 11% on first $9,000 of pay and 15% thereafter EE: 0%

COMPARISON OF BEST PRACTICE BENCHMARKS TO MAJOR PUBLIC SECTOR CORE DC PLANS

	PLAN NAME				
Best Practice Benchmark	**South Carolina Optional Retirement Plan**	**West Virginia Teachers DC Plan**	**Indiana University Plan**	**Michigan State University Plan**	**Purdue University Plan**
INVESTMENTS					
Mandatory or default into target-date lifecycle funds	Default into DB if do not specify investment choices	Default to balanced fund	Default to age-based life-cycle funds	Default to money market fund	Default to age-based life-cycle funds
Limited array of no more than 20 participant directed investments covering the major asset classes	70	13	38	31	34
Individual investment advice through one or more providers	Yes	No	Yes	Yes	Yes
PRE-RETIREMENT DISTRIBUTIONS					
Small benefit distributions only before normal retirement age	Full lump-sum available on termination	Full lump-sum available on termination	Full lump-sum available on termination	Full lump-sum available on termination	Full lump-sum available on termination
No hardship or loan distributions	Not available	Not available	Not available	Both available	Not available

COMPARISON OF BEST PRACTICE BENCHMARKS TO MAJOR PUBLIC SECTOR CORE DC PLANS

	PLAN NAME				
Best Practice Benchmark	**South Carolina Optional Retirement Plan**	**West Virginia Teachers DC Plan**	**Indiana University Plan**	**Michigan State University Plan**	**Purdue University Plan**
RETIREMENT DISTRIBUTIONS					
Minimum level of annuitization required	Annuitization option available; not required	Annuitization option available; not required	Annuitization option available; not required	Annuitization option available; not required	Annuitization option available; not required
Limited lump sum distribution	Full lump sum available	Full lump sum available	Full lump sum available	Full lump sum available	Full lump sum available
Provide inflation protected features	Variable life annuity and fixed life annuity with increasing benefits both available	Nothing other than the ability to invest in equities after retirement	Variable life annuity and fixed life annuity with increasing benefits both available	Variable life annuity and fixed life annuity with increasing benefits both available	Variable life annuity and fixed life annuity with increasing benefits both available
ADMINISTRATIVE STRUCTURE					
Avoid multiple vendor recordkeeping structures	Multiple record-keepers	Single record-keeper	Multiple record-keepers	Multiple record-keepers	Multiple record-keepers
OTHER PARTICIPANT SERVICES					
Investment education, retirement and financial planning services	Yes	Yes	Yes	Yes	Yes

COMPARISON OF BEST PRACTICE BENCHMARKS TO MAJOR PUBLIC SECTOR CORE DC PLANS

	PLAN NAME			
Best Practice Benchmark	**State University of New York**	**University of Iowa**	**University of Michigan**	**University of Washington**
ELIGIBILITY AND PARTICIPATION				
Mandatory participation; no age restriction; no more than 1-year wait	Mandatory participation; optional to DB plan	Mandatory participation; optional to DB plan	Immediate eligibility; mandatory participation after age 35 and two years of service	Immediate eligibility; mandatory participation after two years of service
VESTING				
100% after 1-year service	Cliff: 1 year	Immediate	Immediate	Immediate
TOTAL EMPLOYER AND EMPLOYEE CONTRIBUTIONS				
12%+ of pay if covered by Social Security; 18-20% of pay if not covered by Social Security	ER: 8% during first 7 years of participation and 10% thereafter (Note: higher rates apply to members who joined plan prior to July, 1992) EE: 3%	ER: First 5 years: 6.67% on first $4,800 and 10% thereafter; 10% after 5 years EE: First 5 years: 3.33% on first $4,800 and 5% thereafter; 5% after 5 years	ER: 5% EE: 0% (100% ER match of EE elective contributions up to an additional 5%)	Both ER and EE: 5% if under age 35; 7.5% between ages 35 and 50; 10% if age 50 and older
INVESTMENTS				
Mandatory or default into target-date lifecycle funds	Default to money market fund	Default to age-based life-cycle fund	Default to age-based life-cycle fund	Default to money market fund
Limited array of no more than 20 participant directed investments covering the major asset classes	32	39	150+	10
Individual investment advice through one or more providers	Yes	Yes	Yes	No (but likely in 2008)

COMPARISON OF BEST PRACTICE BENCHMARKS TO MAJOR PUBLIC SECTOR CORE DC PLANS

	PLAN NAME			
Best Practice Benchmark	**State University of New York**	**University of Iowa**	**University of Michigan**	**University of Washington**
PRE-RETIREMENT DISTRIBUTIONS				
Small benefit distributions only before normal retirement age	Full lump-sum available on termination	Full lump-sum available on termination	Full lump-sum available on termination	Full lump-sum available on termination
No hardship or loan distributions	Not available	Not available	Not available	Not available
RETIREMENT DISTRIBUTIONS				
Minimum level of annuitization required	Annuitization option available; not required	Annuitization option available; not required	Annuitization option available; not required	Annuitization option available; not required
Limited lump sum distribution	Full lump sum available	Full lump sum available	Full lump sum available	Full lump sum available
Provide inflation protected features	Variable life annuity and fixed life annuity with increasing benefits both available	Variable life annuity and fixed life annuity with increasing benefits both available	Variable life annuity and fixed life annuity with increasing benefits both available	Variable life annuity and fixed life annuity with increasing benefits both available
ADMINISTRATIVE STRUCTURE				
Avoid multiple vendor record-keeping structures	Multiple record-keepers	Multiple record-keepers	Multiple record-keepers	Multiple record-keepers
OTHER PARTICIPANT SERVICES				
Investment education, retirement and financial planning services	Yes	Yes	Yes	Yes

ENDNOTES

1 **Defined benefit plans** define how much monthly benefit a participant will receive from his employer when he retires. The benefit may even be stated as an exact dollar amount. In the private sector, a participant is generally not required to make contributions to a DB plan, but most public sector funds require employee contributions. Defined benefit plans do not require the participant to make investment decisions. Typically, the risks of meeting the promised benefits falls to the plan sponsor who is responsible for adequately funding the program and managing money invested to support the plan.

2 "Benefit Cost Comparisons Between State and Local Governments and Private-Sector Employers," by **Ken McDonnell, EBRI** Notes, Vol. 23 Number 10, October 2002, pp. 6-9, http://www.ebri.org/pdf/notespdf/1002notes.pdf

3 **Defined contribution plans** define how much the sponsor and the participant can or must contribute to an individual account created for each participant. When the employee retires, retirement benefits are based on the total amount contributed plus investment gains, minus expenses and losses. Typically, the employee makes choices about how the money should be invested and takes the risk of poor investment performance if his or her choices do not perform well. Some examples of public sector defined contribution plans include 401(a) money purchase plans, 401(k) plans, 403(b) tax-deferred annuity plans, and 457(b) deferred compensation plans.

4 Id. at 2

5 Appendix B: Excerpt from EBRI Issues Brief #304, April 2007.

6 TIAA-CREF Institute – Research Summary, *Plan Investment Options and Participant Behavior*, June 2006, citing:

- Gur Huberman and Wei Jiang, April 2006, The Journal of Finance, "Offering versus Choice in 401(k) Plans: Equity Exposure and Number of Funds," http://www0.gsb.columbia.edu/faculty/ghuberman/offering%20versus%20choice.pdf
- Sheena S. Iyengar, Wei Jiang and Gur Huberman, "How Much Choice is Too Much? Contributions to 401(k) Retirement Plans," in Pension Design and Structure, edited by Olivia Mitchell and Stephen Utkus, Oxford University Press, 2004, http://www.columbia.edu/-ss957/articles/How_Much_Choice_Is_Too_Much.pdf.
- Olivia Mitchell, Stephen Utkus and Tongxuan Yang, October 2005, NBER Working Paper Series, "Turning Workers Into Savers? Incentives, Liquidity, and Choice in 401(k) Plan Design," http://www.nber.org/papers/w11726.
- Julie R. Agnew and Lisa R. Szykman, May 2004, Center for Retirement Research at Boston College, Working Paper 2004-15, "Asset Allocation and Information Overload: The Influence of Information Display, Asset Choice and Investor Experience," http://www.bc.edu/centers/crr/papers/wp_2004-15.pdf

[7] *Savings Needed to Fund Health Insurance and Health Care Expenses in Retirement, July 2006*, EBRI Issue Brief #295

[8] "Heuristics and Biases in Retirement Savings Behavior" Benartzi, Shlomo, Thaler, H Richard *The Journal of Economic Perspectives*, Vol. 21, No. 3. (2007), pp. 81-104.

[9] Id. at 5

[10] Muller, Leslie A. "Investment Choice in Defined Contribution Plans: The Effects of Retirement Education on Asset Allocation." *Benefits Quarterly:* Vol. 19, No. 2, Second Quarter 2003.

[11] Copeland, Craig. "Lump-Sum Distributions." EBRI *Notes*, Vol. 26, No. 12 (December 2005).

[12] Hewitt Associates, *Survey Findings: Trends and Experiences in 401(k) Plans 2007* (Hewitt Associates: Lincolnshire, IL, 2007)

[13] Id. at 11

[14] Id. at 11

[15] Id. at 11

[16] Id. at 11

[17] The authors were not able to ascertain whether investment advice is provided in the North Dakota PERS Defined Contribution Plan.