Task 1 – Agenda

Review and Present Information on Plan Design Policy Goals
March 19, 2010

I. Introduction

II. Defined Benefit (DB) and Defined Contribution (DC) Discussion

III. Hybrid Plan Design
- Cash Balance Plan
- Pension Equity Plan
- Floor Plan (DB Primary)
- "Inverse" Floor Plan (DC Primary)

IV. Survey of State Retirement Systems

V. What Other States are Doing

VI. Possible Alternative Plan Designs
- DB or DC Plans
- Hybrid Plans
- Combination Plans with DB, DC or Hybrid
- SAVA Proposal
- Implementation Issues

VII. SAVA Survey Results

VIII. Develop SAVA Retirement Plan Design Policy Goals

Section II

Defined Benefit (DB) and Defined Contribution (DC) Discussion

Advantages and Disadvantages of Defined Benefit and Defined Contribution Plans

Defined Benefit Plan

Advantages

- Provides a benefit that bears an easily understandable relationship to working pay just before retirement.
- Provides more income for career employees. Motivates employees to continue in service.
- Provides guaranteed lifetime income to retirees. No retirees outlive a defined benefit retirement annuity.
- Automatically provides inflation protection during the working career.
- Per dollar of benefit paid, it is less expensive to provide benefits through a defined benefit plan than through a defined contribution plan.
- Outside service credit may be recognized (out-of-system service, service before plan inception, military service, etc.).
- Cost-of-living protection after retirement may be provided through automatic percentage increases, ad hoc increases, etc.
- Employer bears the financial risk.
- Total investment management fees are typically lower than in defined contribution plans.
- Some governmental employees are not covered by Social Security. In these cases, a defined benefit plan offers irreplaceable financial security.
- Early retirement windows can be used to downsize an older workforce.

Disadvantages

- Difficult for employees to understand how much the employer is contributing on their behalf.
- Most DB plans were not designed with portability in mind. Hence, benefits are often not as portable as defined contribution benefits, although recent changes in federal laws have improved defined benefit plan portability somewhat.
- Usually more complicated to administer.
- Cost of the plan will fluctuate from year to year as a result of plan experience being different from actuarial projections.
- Provides less income for non-career employees.

Defined Contribution Plan

Advantages

- Opportunity for higher benefits if financial experience is superior.
- Pension costs for service rendered to date are always fully funded.
- Contributions are allocated to individual accounts. Employees can easily identify a specific dollar amount that is earmarked just for them.
- Contribution amount is easily determined, easy to understand and usually constant from year to year, in the absence of benefit changes.
- Account balances may be transferred to a terminating employee's next retirement plan, and hence the plans are usually more portable.
- Cost of administration is generally less than for a defined benefit plan.
- Provides more income for non-career employees.

Disadvantages

- While generally alleged as having the advantage of portability, evidence suggests that short-term employees who terminate prior to retirement eligibility will take a lump sum distribution and use the money for other than savings toward retirement.
- Outside service credit is not easily recognized.
- Lower overall benefits may be available, if individual account balances are invested too "conservatively."
- Employee bears the financial risk of outliving accumulated assets. Half of all retirees will outlive the average life expectancy, in many cases by decades. DC plan retirees rarely convert any of their assets to guaranteed lifetime income.
- Retirees are more likely to take a lump-sum benefit than a periodic payment for life.
- Provides less income for career employees.
- Does not motivate employees to continue in service to the extent that a defined benefit plan provides that motivation.
- Benefits may not bear any relationship to pre-retirement working pay.
- Loss of the financial security that accompanies regular monthly retirement income, particularly for employees who are not covered by Social Security.

- Employee bears the financial risk of poor investment return. In particular a series of poor investment returns during the first few years of retirement can devastate the retiree's accumulated assets.
- During periods of extended inflation, individual account accumulations do not tend to produce benefits that have kept pace with increases in the cost of living. Even though salaries, related contributions and investment income would be increasing, the increase would generally not be adequate to offset the disproportionately lower salaries, contributions and investment earnings of earlier years.

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Public Pension Basics

Just the Facts

State and local pension plans in the United States are an economic force. These plans hold $2.6 trillion in assets and serve 14.4 million active employees. They pay out some $162.7 billion in pension benefits each year to some 7.5 million retirees.

The data in this fact sheet were taken from a larger "Public Pension Resource Guide." This guide was developed to provide readers with facts and data on the important role that public pensions play in our economy—for employee and retirees, public employers, and taxpayers alike.

"Public Pension Basics" presents key facts about how pensions work—how benefits are earned, how pensions are funded, and how investment decisions are made. It also provides data on the number of Americans who rely on pensions for their retirement security.

"Why Pensions Matter" discusses the characteristics of pension plans that make them attractive to employees, employers, taxpayers, and the broader economy.

"Strong Public Pensions for Today and Tomorrow" identifies practices that can enhance the long-term sustainability of public pension plans, specifically through the integration of funding, investment, and benefit policies.

The full guide is available at **www.nirsonline.org**.

A traditional pension plan, also called a defined benefit (DB) pension plan, is a pooled retirement plan that offers a predictable defined monthly benefit in retirement. A DB pension provides retired workers with a steady income stream that is guaranteed for the remainder of the retiree's life.

How Are Benefits Earned?

Coverage in DB pension plans is universal—eligible employees are automatically enrolled in the pension plan.

The amount of monthly income each employee receives is ordinarily a function of the years of service with the employer, the worker's pay at the end of his/her career, and a fixed multiplier that is determined by the plan. This is called a "final average pay" design.

What Do These Benefits Mean for Employees?

Social Security and DB pension income remain the largest and most significant sources of retirement income for the current elderly population. Among all Americans aged 65 and older, DB pensions make up 17.7% of their current income, and Social Security makes up 36.7%.

Especially for middle-income retirees, DB pension income remains an extremely significant source of retirement income. Retirees in the third and fourth income quintiles rely on DB pensions to provide 15.7% and 24.0% of their total retirement income, respectively.

For middle and higher income earners, then, the combination of a DB plan, Social Security, and supplemental savings—the so-called "three-legged stool"—still offers the best opportunity to maintain a middle class standard of living in retirement.

It is important to note that as many as 30% of all state and local workers are not covered by Social Security system. For those public employees not covered by Social Security, the DB pension is all the more important, as it is the only source of steady, monthly income that these workers will receive in retirement.

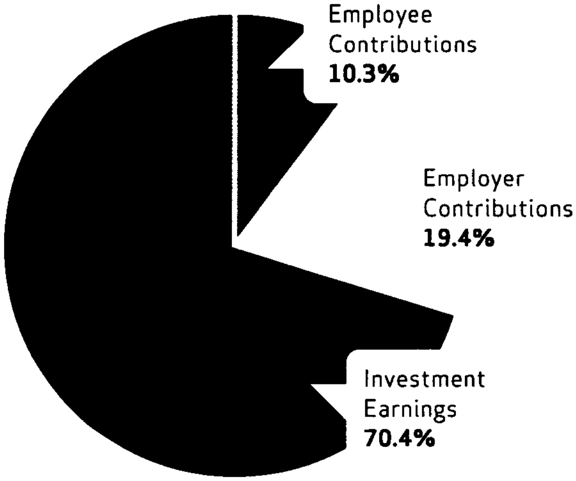
How Are Pensions Funded?

Pension plans are pre-funded, which means that regular contributions for each worker are made into a retirement fund during the course of that worker's career. State and local DB pension plans are usually funded by employer contributions and contributions from employees themselves, while private sector pension plans are almost always funded solely by employer contributions.

All DB pensions have the advantage that investment earnings can do much of the work of paying for benefits, because the contributions made on behalf of current workers are invested and these investment earnings compound over time.

Earnings on investments have historically made up the bulk of public pension fund receipts. Between 1993 and 2007, 10.3% of total state and local pension fund receipts came from employee contributions, 19.4% from employer contributions, and 70.4% from investment earnings.

Aggregate State and Local Pension Contributions by Source, 1993-2007



How Are Contribution Rates Determined?

The amount needed to contribute each year can be determined through an actuarial analysis. The plan actuary determines the cost associated with new benefits earned in that year (normal cost) plus any additional amount that might be required to make up for shortfalls that have developed in the past.

It is important that the actuarially required contribution (ARC) be contributed to the pension trust each year. Public pension plans as a group have been diligent about pre-funding, especially in recent years.

How Are Investment Decisions Made?

DB pension plans are overseen by trustees who have a fiduciary duty to ensure that the retirement fund is operating in the best interest of workers and retirees. These trustees hire professional asset managers to steer the investment of these funds.

Both public and private sector pension plans maintain a balanced portfolio of equities, bonds, alternative investments, and cash. In doing so, plans follow the general tenets of modern portfolio theory, which holds that an investor can reduce risk and enhance return by diversifying assets across the entire portfolio. Public pension plans tend to invest in a similar mix of assets, as compared with plans in the private sector.

A plan's asset allocation at any one time is not permanent—plans regularly review their portfolio mix, and make revisions when appropriate. A recent study has found that DB pension plans tend to invest pragmatically, looking to the long-term and engaging in prudent investment practices.

Center for State & Local Government Excellence

Issue Brief

Why Have Defined Benefit Plans Survived In The Public Sector?

December 2007

There are many reasons that state and local workers have retained a defined benefit plan, in contrast with the percentage of private firms that provide for pensions. For example, state and local workers stay in their jobs for an average of 7.7 years compared with the 5.0 years for private sector workers. And because government workers are older than those working in the private sector, they are more likely to value the security of these retirement benefits.

The competitive pressures on state and local governments are different than those in the private sector. Elected officials must answer to voters if they take unpopular stands. They also must compete with other jurisdictions for talent, and the norm in the public sector is to offer a good pension plan. Some governments offer employees the option of contributing to a defined contribution plan to boost retirement savings.

This brief points out that the private sector faces more volatility and global economic pressures. In addition, the private sector must follow the regulations set out in the Employee Retirement Income Security Act of 1974 (ERISA). Because the public sector is not covered by ERISA, it has lower administrative costs associated with their pensions.

With heightened emphasis on the economic security of future retirees, the Center for State and Local Government Excellence has undertaken research studies to learn more about state and local retirement plans, retiree health care, and financial planning. The Center gratefully acknowledges the financial support from the ICMA Retirement Corporation to undertake these research studies.

Elizabeth K Kellar

Elizabeth K. Kellar
Executive Director
Center for State and Local Government Excellence

Why Have Defined Benefit Plans Survived In The Public Sector?

By Alicia H. Munnell, Kelly Haverstick, and Mauricio Soto*

Introduction

While 401(k) plans now dominate the private sector, defined benefit plans remain the norm among state and local governments. Why have public sector employers not shifted from defined benefit plans to 401(k)s like their private sector counterparts?

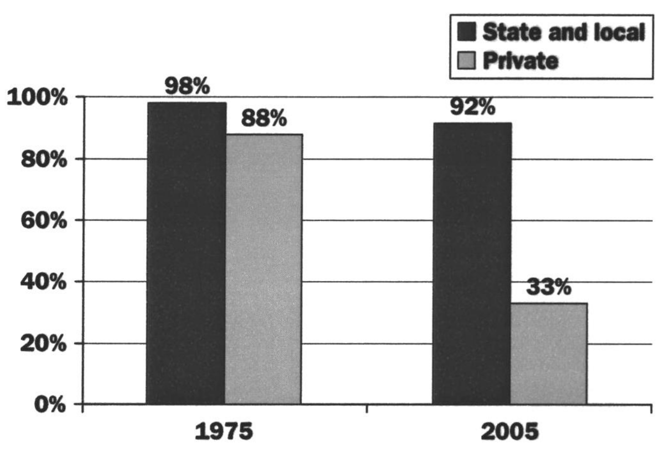
This *brief* examines the unique factors affecting the two sectors that may explain their very different patterns of pension coverage. State and local governments have an older, less mobile and more risk-averse workforce, with a higher degree of unionization to press for benefits that satisfy the needs of these workers. The nature of the employer is also fundamentally different. Unlike private sector firms, state and local governments are perpetual entities. They do not disappear—like many of the large manufacturing firms—taking their plans with them, and they are much less concerned about the financial volatility associated with defined benefit plans. States and localities can also increase required employee contributions to keep the plan's finances under control. Finally, the public sector has not had comprehensive pension regulation like the Employee Retirement Income Security Act of 1974; the absence of such regulation lowers administrative costs and enables later vesting.

A Very Different Pattern

In the old days, the nature of pension coverage in the public and private sectors was quite similar. In both sectors, the overwhelming majority of those with pensions were covered by a defined benefit plan. By 2005, however, the picture was quite different (see Figure 1). While the vast majority of public sector workers remained in defined benefit plans, only one third of private sector employees had such coverage.[1]

The difference in the nature of pension coverage produces a significant difference in the risks facing workers and employers. A traditional defined benefit plan pays a lifetime annuity at retirement that is generally a percentage of final salary for each year of service. The employer bears the investment risk during the worker's employment and longevity risk after retirement. In the public sector, the employer also adjusts benefits for inflation, thereby absorbing the inflation risk as well.[2] In both sectors, however, employees bear "mobility risk" in that they forfeit benefits when they move from one employer to another.

Figure 1. *Percent of Workers with Pension Coverage with Defined Benefit Plans, by Sector, 1975 and 2005*



Sources: U.S. Congress (1978); Authors' calculations from U.S. Department of Labor (1998); U.S. Department of Labor (2000); U.S. Department of Labor (1990-2006); and Standard & Poor's (2005).

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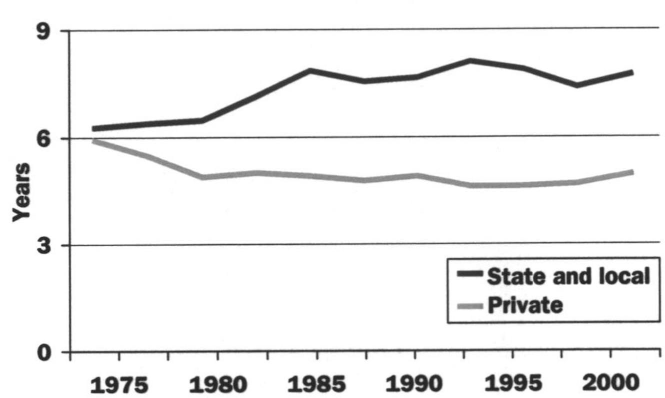
In contrast, defined contribution plans—most often 401(k)s—are like savings accounts. Generally the employee, and often the employer, contributes a specified percentage of earnings into the account. These contributions are invested, usually at the direction of the employee, mostly in mutual funds consisting of stocks and bonds. Upon retirement, the worker generally receives the balance in the account as a lump sum, albeit with the option to roll it over to an IRA. One important advantage of 401(k) plans is that mobile employees do not forfeit benefits when they shift jobs as their assets can move with them. On the other hand, the employee bears all the investment risk during the accumulation phase as well as longevity and inflation risk after retirement.

The question is why the pattern of pension coverage and risk differs so sharply between the two sectors. The three areas for investigation are the nature of the workforce, the nature of the employer, and the regulatory environment.

The Workforce

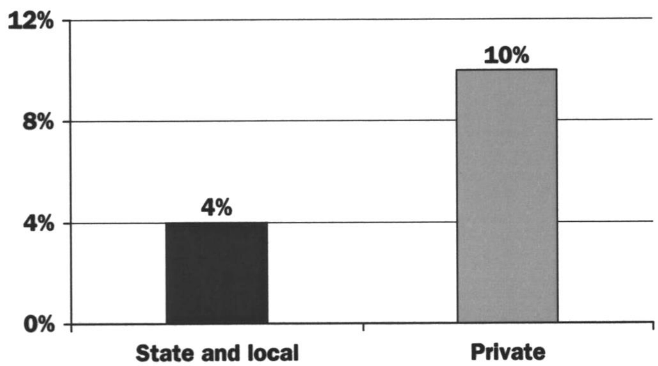
One reason that pensions could differ between the two sectors is that the workforce has different characteristics. State and local workers tend to remain with their employer longer than workers in the private sector. While private sector workers have become more mobile over time, the median years of tenure of the public sector workforce have actually increased over the past 30 years (see Figure 2). In 2004, the median tenure for state and local employees was 7.7 years, compared to 5.0 years in the private sector.

Figure 2. *Median Years of Tenure of Wage and Salary Workers Ages 25–64, by Sector, 1973–2004*



Note: The median tenure shown for state and local workers prior to 1983 is all government workers.
Source: Authors' calculations from the U.S. Census Bureau, *Current Population Survey* (CPS), 1973–2004.

Figure 3. *Average Job Loss Rate, by Sector, 1986–2004*

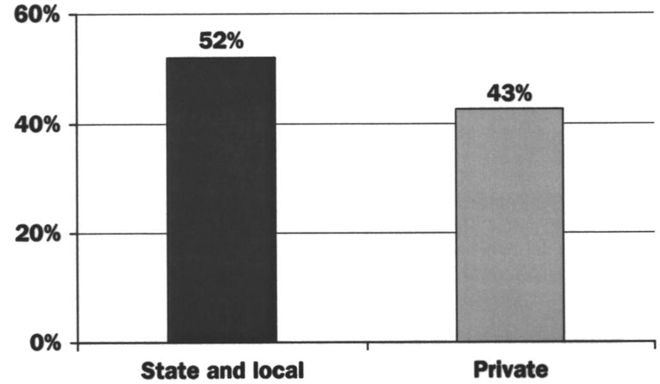


Note: State and local average is for all public sector workers.
Source: Farber (2005).

Part of the longer tenure may reflect the fact that public sector employment is more secure than private sector employment. The *Displaced Worker Surveys* show that the job loss rate in the private sector has been 2.5 times higher than in the public sector (see Figure 3). The lower displacement rate and the longer tenures of public sector workers would lead to a preference for defined benefit plans over defined contribution plans, since defined benefit plans disproportionately favor long-service workers.

The longer tenure and greater employment security in the public sector result in an older workforce (see Figure 4), and older workers are more likely to care about their retirement than younger workers. Not surprisingly, older workers favor defined benefit plans since they ensure a secure stream of income at retirement. The value of benefits accrued in such plans also rises sharply as workers age. Younger workers tend to prefer the immediate gratification of contributions to an account they can take with them when they move from

Figure 4. *Percent of Workers Age 45 and Over, by Sector, 2005*

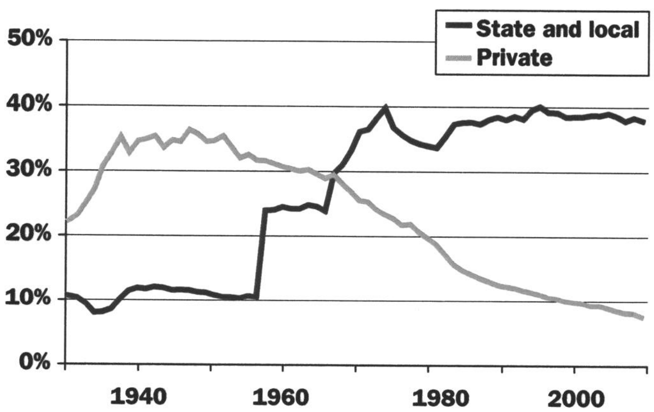


Source: Authors' calculations from the 2005 CPS.

job to job, rather than the promise of a lifetime benefit at the end of a long career—especially when they are not sure they will be with the same employer five, ten, or twenty years in the future.

The longer tenures, older ages, and a preference for defined benefit plans are also likely to make unions more attractive to employees in the public sector. And indeed, the union picture for the two sectors has diverged dramatically (see Figure 5). While union membership in the private sector fell from 35 percent in the 1950s to 8 percent in 2006, the rate in the public sector increased from relatively low levels in the 1950s to over 35 percent today.[3]

Figure 5. *Percent in Unions, Wage and Salary Workers Ages 25-64, by Sector, 1939-2006*



Note: The percent in unions shown for state and local workers prior to 1962 includes federal workers. The jump in union membership between 1961 and 1962 is due to the inclusion of associations, such as the National Education Association, which were previously excluded. *Sources*: Troy and Sheflin (1985); U.S. Department of Labor (1939–1983); and Hirsch and Macpherson (2007).

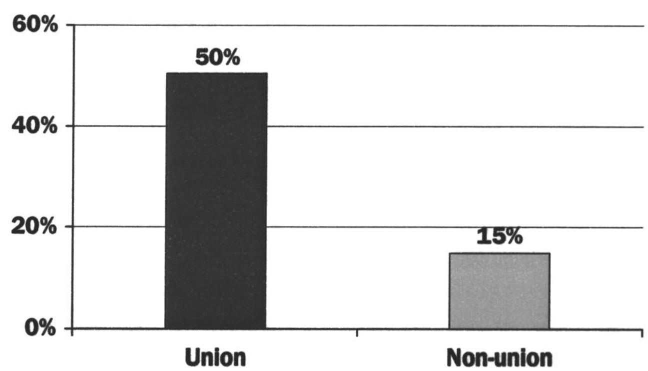
A recent study attributed the sharply divergent patterns to several factors.[4] First, while employment has grown at about the same pace in the two sectors, the nature of that growth is very different. In the public sector, employment tends to grow steadily in line with population. When the growth occurs in jurisdictions already unionized, the number of unionized workers increases automatically. In the private sector, a portion of the growth involves the demise of old firms and creation of new firms. Since all new firms are created union free, unionization will decline without new organization. Second, the products produced by the two sectors differ. The private sector produces tradable goods, where competition can limit the ability of unions to increase compensation. The public sector generally produces non-tradable goods, such as police and fire protection and education, which makes it easier for public sector unions to raise compensation without the loss of jobs.[5] Finally, public sector unions can produce more membership benefits than their private sector counterparts. In addition to bargaining directly for compensation and workplace administration, union members can work for the election of union-friendly candidates, who can be helpful in contract negotiations. These greater potential membership benefits make unions relatively more attractive in the public sector.

With respect to pensions, the significantly greater level of unionization in the public sector has surely contributed to support for defined benefit plans. Some measure of union preference for defined benefit plans can be gleaned from the relationship between type of pension coverage and union membership in the private sector. Here, half of union members were covered by a defined benefit plan in 2005, compared to only 15 percent of non-union workers (see Figure 6).

All these factors—longer tenure, more secure jobs, older workforce, and greater unionization—may also reflect the fact that public sector workers are more risk averse than their private sector counterparts. And risk-averse employees in relatively secure jobs would surely want a defined benefit pension where the employer absorbs investment, longevity, and inflation risk.

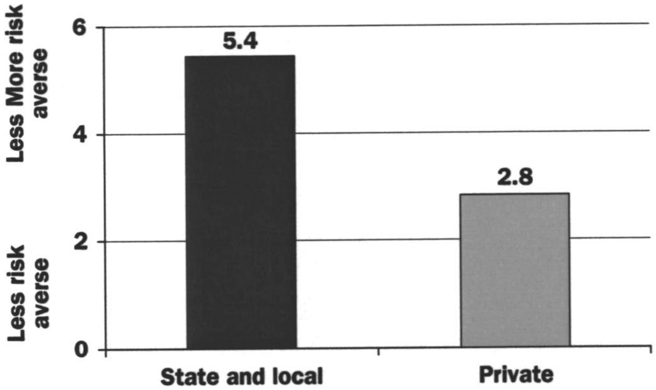
To evaluate risk preferences of individuals, economists generally use the Coefficient of Relative Risk Aversion (CRRA). Higher values of the coefficient indicate higher aversion towards risk. Figure 7 shows that public employees are less comfortable with uncertainty than their private counterparts.[6] A regression equation that estimated the probability of being employed in the public sector suggests that—even after controlling for

Figure 6. *Percent of Private Sector Workers Ages 25–64 with Defined Benefit Pensions, by Union Membership, 2005*



Source: Authors' calculations from the University of Michigan, *Panel Study of Income Dynamics* (PSID), 2005.

Figure 7. *Median Coefficient of Risk Aversion, by Sector, 1996*



Source: Authors' calculations from the 1996 PSID.

gender, race and family status—the measure of relative risk aversion increases the probability of being a public employee by about 8 percentage points (see Appendix).[7]

The Employer

Employers in the public sector are also different from those in the private sector for two reasons mentioned above—they are perpetual entities and they do not face the same degree of market discipline. Each of these characteristics has both a direct and an indirect effect on the likelihood of having a defined benefit plan.

Perpetual Entities

In the private sector, the shift from defined benefit plans to 401(k)s primarily occurred through the decline of companies with defined benefit plans and the establishment of 401(k) plans at new companies. Thus, the demise of old firms in manufacturing and other industries and the rise of new firms in services and high tech provided an automatic mechanism for pension change in the private sector. Not until the recent round of "pension freezes" was there a significant movement of employers shutting down a defined benefit plan and opening a successor 401(k).[8]

No such "organizational churn" exists in the public sector, as most governmental units exist in perpetuity, so conversions from a defined benefit to a defined contribution plan are more difficult. The only way to shift plan type is through the political process, which involves considerable negotiations. Public employees and employee unions generally resist such change. In addition to this direct effect, the perpetual nature of state and local governments also leads to higher levels of unionization, further strengthening support for defined benefit plans.

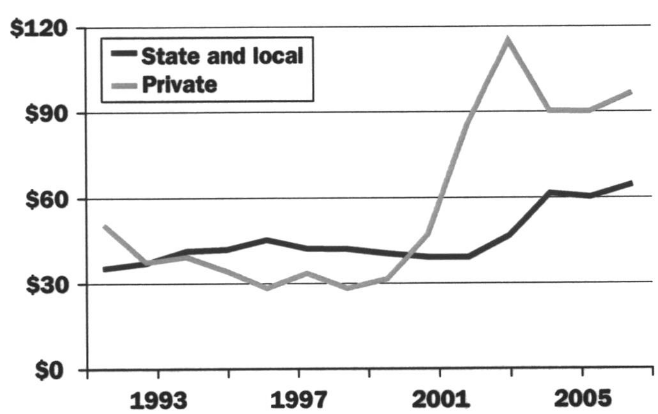
Public sector employers also have an organizational interest in maintaining defined benefit plans. State and local governments are perpetual entities that deliver stable services. Public sector jobs may be quite specialized, resulting in both employees and employers benefiting from long job tenure. Defined benefit plans serve to attract and retain a high-skilled workforce needed to provide these specialized and stable services.

Less Market Discipline

The indirect effect of less market discipline is that state and local governments have less reason than private firms, which have to compete in the global marketplace, to resist union organizing efforts. And unions support defined benefit plans. More directly, less market discipline means that public employers do not have to worry nearly as much about how the financial volatility of defined benefit plans affects their income statements or balance sheets.

Volatility is a major concern in the private sector and in recent years has accelerated the pace of decline of private sector defined benefit plans. Private sector employers have had to respond to the financially devastating impact of the "perfect storm" of stock market decline and low interest rates at the turn of the century, legislation that will require underfunded plans to dramatically increase their contributions, and accounting changes that will force fluctuations in pension finance onto the earnings statement.[9] This volatility generates substantial movements in the company's cash flow and

Figure 8. *Employer Contributions to Defined Benefit Plans, by Sector, Billions, 1993–2006*



Sources: U.S. Department of Labor (1990–2006); and U.S. Census Bureau (1993–2006).

stock price, with the latter benchmark often directly affecting executive compensation.

Fluctuations in pension assets and liabilities also occur in the public sector. This volatility might affect debt ratings and increase the cost of borrowing. Elected officials may also face the unpopular prospect of having to raise taxes to cover pension contributions. States and localities, however, are better able to "manage" the ups and downs in the financial health of their defined benefit pension plans. The reason is that public plans have retained traditional actuarial methods to smooth their contributions over time. Underfunded public plans do not have to comply with the legislated funding requirements that apply to private plans, so a severe drop in the stock market and/or interest rates will have less of an impact on public sector pension contributions. During the "perfect storm," for example, employer contributions to private defined benefit plans tripled while those to public plans increased far less (see Figure 8).

In short, the different characteristics of private and public sector employers also help explain the prominence of defined benefit plans in the public sector.

The Regulatory Environment

The final factor contributing to the different pension profile between the public and private sectors is the regulatory environment. In the private sector, the Employee Retirement Income Security Act of 1974 (ERISA) imposes minimum standards for participation, vesting, and funding; state and local plans are not covered by this legislation. ERISA also established the Pension Benefit Guaranty Corporation (PBGC), which collects premiums from plan sponsors and pays benefits (within limits and subject to certain restrictions) in the event of plan termination. Public plans are not covered by ERISA or the PBGC.[10] The absence of these regulations could increase the desirability of defined benefit plans by lowering administrative costs and allowing later vesting.

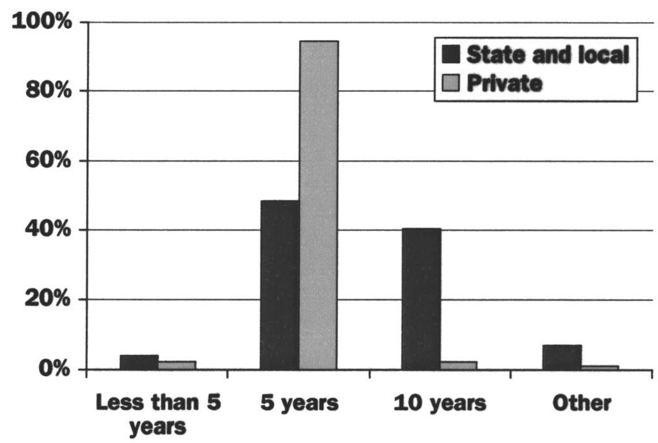
Administrative Costs

The enactment of ERISA raised the costs of running a private defined benefit plan. It was not just the effect of the original legislation, but during the 1980s Congress passed significant pension legislation every few years.[11] Congress also repeatedly raised PBGC premiums and imposed an excise tax on employers who claim the excess assets of terminated defined benefit plans. The cumulative impact of the legislative changes increased the costs of defined benefit plans relative to those for defined contribution plans.[12] A number of studies have identified regulatory costs as a factor in the decline of defined benefit plans.[13]

Vesting

In addition to the administrative costs, critics have charged that forcing plan sponsors to pay benefits to departing employees through accelerated vesting contributed to the demise of defined benefit plans in the private sector.[14] They say that paying small lump-sum distributions to short-tenure workers dramatically increased costs and reduced the ability of sponsors to pay benefits to long-service employees—thereby undermining the basic purpose of a defined benefit pension. To the extent that this view is accurate—studies in the 1970s suggested that these payments to short-service employees would not be a significant burden[15]—the later vesting in the public sector would make defined benefit plans more attractive to employers (see Figure 9).

Figure 9. *Vesting Requirements for Defined Benefit Plans, by Sector*



Note: These numbers are for employees with cliff vesting. The state and local data are for 1998 and the private data are for 2005.
Sources: U.S. Department of Labor (2007); and U.S. Department of Labor (2000).

Employee Contributions

As a rule, private sector employees do not contribute to defined benefit plans, while nearly all state and local employees do. One implication of these contributions is that state and local governments are unlikely to save much by converting to a defined contribution plan.[16] Moreover, public plan sponsors can raise contribution rates on employees to manage costs.[17] As shown in Table 1, contributions for Massachusetts public employees have gone from 0 to 9 percent plus a 2 percent surcharge on earnings over $30,000. The Massachusetts rates are higher than general because public sector workers are not covered by Social Security, but the pattern of increasing employee contribution rates has helped hold state and local government costs in check.

Table 1. *Contribution Rates in Massachusetts Public Employee Retirement System*

Date of hire	Contribution rate
Pre-1945	0%
1945–74	5%
1975–78	7%
1979–83	7% + 2% over $30,000
1984–96	8% + 2% over $30,000
1996– present	9% + 2% over $30,000

Source: Public Employee Retirement Administration Commission (2005).

Conclusion

Defined benefit plans dominated both the private and state and local sectors in the 1970s. Today they are disappearing in the private sector, but are alive and well in the state and local sector. The reasons for these divergent trajectories reflect the different nature of the public sector workforce—older, more risk averse, less mobile, and more unionized; the different nature of the public employer—a perpetual entity facing fewer market pressures; and a different regulatory environment—free from the administrative costs and vesting requirements of ERISA, with the ability to adjust employee contributions to control the employer's costs.

All is not quiet in the public sector, however. In the last ten years, states have explored defined contribution plans. A couple of states now have a defined contribution plan as their basic pension, and a number of others offer employees the option of a defined contribution plan. A future *brief* will explore where and why this activity is occurring.

Endnotes

1 State and local governments generally offer defined contribution plans as a supplement to their defined benefit plans. Two states (Alaska and Michigan) and the District of Columbia offer a defined contribution plan as a primary plan and do not have a defined benefit component; two states (Indiana and Oregon) offer a combined plan—with defined benefit and defined contribution components—in their primary plan; eight other states (Colorado, Florida, Montana, North Dakota, Ohio, South Carolina, Vermont, and Washington) offer the option to choose a primary plan with a defined contribution component.

2 In addition to the treatment of inflation risk, defined benefit pensions in the public and private sectors are different in other ways. First, public sector plans usually have somewhat higher accrual rates. Second, the financing differs between the two sectors. In the private sector, typically only the employer makes contributions to defined benefit plans, whereas in the public sector the employee typically contributes as well. Finally, with respect to mobility risk, government employees have somewhat more flexibility than their private sector counterparts as many states allow employees to change jobs within the state while remaining in the same municipal retirement plan. For additional details on the characteristics of public and private sector defined benefit plans, see Munnell and Soto (2007).

3 Union membership, of course, varies by region and type of job. For example, public safety employees and teachers tend to be more unionized than others.

4 Farber (2005). Also, see Freeman (1988).

5 Increases in compensation in the public sector, however, have some risks. Public employers can outsource some of the services to private firms, increasing the risk of layoffs for public employees. Public officials also face political risks in that higher compensation might require tax increases. See Farber (2005).

6 The calculation of the Coefficient of Relative Risk Aversion (CRRA) is based on the responses to five questions in the 1996 *Panel Study of Income Dynamics* asking whether individuals would give up their current job for one with a 50-50 chance of doubling their income but also a 50-50 chance of cutting it by some percent. The five questions were asked in a sequence so that individuals could be categorized into six risk aversion groups. They were then assigned the mean coefficient for that risk aversion group following the methodology described by Barsky, et al. (1997) and Hryshko, Luengo-Prado and Sorensen (2007).

7 This magnitude is consistent with Bellante and Link (1981), who found an effect of 7.5 percentage points.

8 For a discussion of the factors underlying recent pension freezes, see Munnell and Soto (2007).

9 The Pension Protection Act of 2006 represents the most significant change in pension regulation since the Employee Retirement Income Security Act of 1974 (ERISA). The new funding rules, which take effect in 2008, significantly reduce the leeway that companies have in making contributions to their plans. Plans must now be 100 percent funded, and most sponsors of underfunded plans have only seven years to pay

off any existing shortfall. Moreover, sponsors will have less ability to smooth the value of assets or liabilities, making cash contributions significantly more volatile. At the same time, the Financial Accounting Standards Board (FASB) has instituted the first step of a two-step pension reform project by requiring sponsors to show pension surpluses or deficits directly on the balance sheet. This change could introduce volatility to the balance sheet, which could seriously cut into shareholder equity. In the second step, expected in the next three years, FASB is expected to require companies to mark-to-market the value of pension assets and liabilities, eliminating the smoothing available under current rules. Given the enormous volatility in the stock and bond markets in recent years, marking-to-market could introduce significant additional volatility in reported earnings. Such volatility is not acceptable to corporate managers, and may in large part explain why large healthy companies have taken steps to end their defined benefit plans.

10 Plans in both the public and private sector operate under a common set of rules spelled out in the Internal Revenue Code. On the accounting side, standards governing public sector pensions were established by the Governmental Accounting Standards Board (GASB) in 1994. As with the Financial Accounting Standards Board (FASB) in the private sector, GASB acts as a standard-setter but does not actually enforce compliance. However, compliance with GASB standards is necessary for the plan to receive a statement that its financial statement is in accordance with generally accepted accounting principles (GAAP).

11 The Omnibus Budget Reconciliation Act of 1987 reduced the full funding limits for defined benefit plans from 100 percent of projected plan liability to the lesser of that value or 150 percent of benefits accrued to date. Basing funding limits on benefits already accrued means that funding contributions no longer include any provision for anticipated pay increases (McGill et al., 2005). The funding restriction exposes the sponsor to higher costs in the future.

12 The biggest increase in both absolute and relative costs of defined benefit versus defined contribution plans occurred in the late 1980s as plans adjusted to the Retirement Equity Act of 1984 and the Tax Reform Act of 1986 (Hustead, 1998).

13 Kruse (1995) found that rising administrative costs contributed to the decline in defined benefit pension coverage over the period 1980–86.

14 See interview with Dallas Salisbury by David Macchia (2007). Before ERISA, it was not unusual for plans to lack vesting provisions. ERISA incorporated minimum vesting rules. Originally, ERISA set a maximum of 10 years (cliff vesting) or 15 years (graded vesting). The Tax Reform Act of 1986 reduced the limits to 5 and 7 years respectively. See Graham (1988).

15 Sass (1997).

16 An upcoming *brief* will explore in depth the financial implications of introducing a defined contribution plan.

17 Employee contributions for defined benefit plans in the public sector—unlike in the private sector—are not subject to federal income tax.

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Appendix

Table A1. *Regression Results for the Probability of Being Employed in the Public Sector*

Dependent variable: 1 = Public employee, 0 = Private employee		
Variable	Marginal effect	Std. error
Education	2.48*	0.29
Age	0.51	0.34
Age squared	0.00*	0.00
Married	–3.36	1.84
Number of children	0.24	0.66
Nonwhite	8.49*	1.57
Female	3.03	1.77
High risk aversion	8.01*	1.35

* Variable is statistically significant.
Source: Authors' calculations from the 1996 PSID.

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Center for State & Local Government Excellence

Issue Brief

Why Have Some States Introduced Defined Contribution Plans?

January 2008

States are often described as laboratories of democracy. In this issue brief, we learn more about the factors that have led 12 states to introduce some form of defined contribution plan and how they are structuring those plans.

In Michigan and Alaska, for example, all new hires are required to join the defined contribution plan. Oregon and Indiana have "combined" plans that require employees to participate in both a defined benefit and a defined contribution plan. The other eight states have retained their traditional defined benefit plan while offering their employees the option to also contribute to a defined contribution plan.

This Issue Brief explores questions about whether defined contribution plans save money for state governments and whether new employees prefer such plans because of their portability. It also examines the role of unions, Social Security coverage, and fiscal pressures in states' decisions to introduce defined contribution plans.

With heightened emphasis on the economic security of future retirees, the Center for State and Local Government Excellence has undertaken research studies to learn more about state and local government retirement plans, retiree health care, and financial planning. The Center gratefully acknowledges the financial support from the ICMA Retirement Corporation to undertake these research studies.

Elizabeth K Kellar

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Executive Director
Center for State and Local Government Excellence

Why Have Some States Introduced Defined Contribution Plans?

By Alicia H. Munnell, Alex Golub-Sass, Kelly Haverstick, Mauricio Soto, and Gregory Wiles*

Introduction

Although defined benefit plans dominate the state and local sector, in the last decade twelve states have introduced some form of defined contribution plan. The degree of compulsion varies among these states from mandatory participation in a defined contribution plan for new employees, to mandatory participation in both a defined benefit and defined contribution plan, to having the defined contribution plan only as an option.

This *brief* describes this flurry of defined contribution activity, presents data on participation and assets to put the flurry into perspective, and identifies the factors that led to the changes occurring in the states where they did.

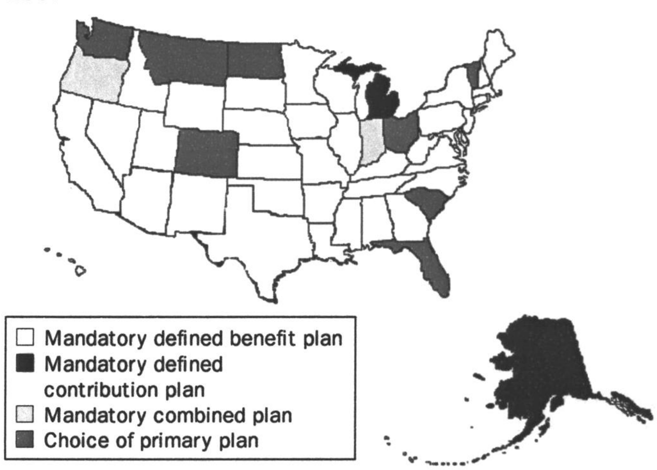
The most important explanation turns out to be political rather than economic. States where the same political party controlled the legislature and the governorship and that party was Republican were the most likely to introduce a defined contribution plan. The results also suggest that plans with a high percentage of union members and those with sizeable employee contributions are less likely to add a defined contribution plan component. Interestingly, states without Social Security coverage, which provides a basic level of defined benefit protection, are not deterred from shifting to a mandatory defined contribution plan.

Defined Contribution Activity

Most state and local workers are covered by a traditional defined benefit plan. These workers often have a supplementary 457 defined contribution plan that allows them to put aside a portion of their pay on a tax-deferred basis. These supplementary plans are not the topic of this *brief*.[1] Rather the focus is on states where the nature of the primary plan has changed.

Each change is unique, with its own history and special provisions, but one useful way to classify them is by the extent to which they move employees away from a defined benefit plan. Only two states—Michigan and Alaska—have plans that require all new hires to join the defined contribution plan (see Figure 1).[2] Two states—Oregon and Indiana—have adopted "combined" plans, where employees are required to participate in both a defined benefit and a defined contribution plan. Another eight states have retained their defined benefit plan and simply offer the defined contribution plan as an option to their employees.[3]

Figure 1. *Adoption of Defined Contribution Plans, by State, 2007*



Note: For specific definitions of the classifications used in this figure, see endnote 4.
Sources: Various retirement system's annual reports and websites of state legislatures.

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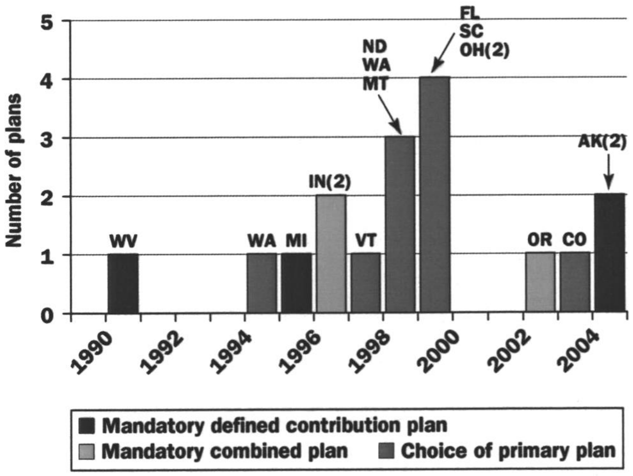
The timeline of the introduction of these defined contribution plans is also interesting (see Figure 2). Some of the changes may be a response to economics or politics, but the activity at the end of the nineties was likely also a response to the fantastic performance of the stock market.[5]

Figure 2. *Introduction of State Defined Contribution Plans, by Year*



Note: For specific definitions of the classifications used in this figure, see endnote 4. The West Virginia Teachers plan, which became a primary defined contribution plan in 1991, switched back to a primary defined benefit plan in 2005.
Sources: Various retirement system's annual reports and websites of state legislatures.

Since the plans are relatively new, the compulsory plans apply only to new hires, and the others are optional, the number of participants and amount of assets in defined contribution plans are modest.[6] To date, participants account for less than 4 percent of all state and local workers and assets amount to less than 1 percent of total state and local pension assets (see Appendix Table A-1).[7]

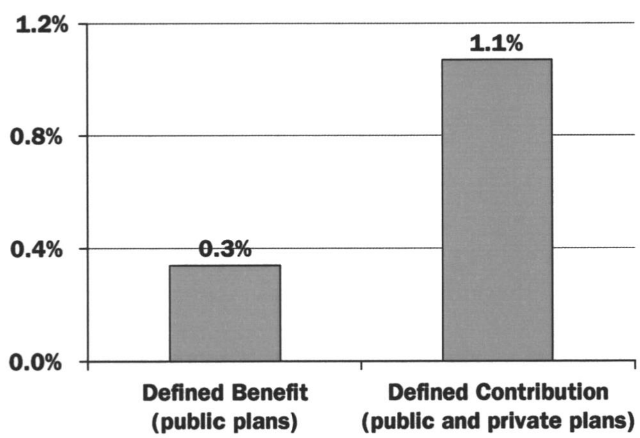
Is Switching Likely to Save Money?

For any given level of benefits, defined contribution plans generally have higher investment and administrative expenses than defined benefit plans. So introducing a defined contribution plan is unlikely to reduce plan costs. And given the already high level of contributions by employees, states would find it difficult to shift more of the cost from the government to the participant.

Administrative Costs

Public plans are relatively free from regulatory costs. The administrative expenses associated with the Employee Retirement Income Security Act (ERISA) of 1974 do not apply in the public sector. And since public sector plans are not insured by the Pension Benefit Guaranty Corporation, governments are not responsible for premium payments. The freedom from regulatory costs combined with the economies of scale achieved by large state pension funds has kept the cost of administering public sector defined benefit plans very low. According to the Census of Governments, the weighted average administrative cost (including cost of administration and investment management) for the nation's public defined benefit plans is 0.34 percent of assets (see Figure 3).

Figure 3. *Administrative Expenses by Type of Plan, 2006*



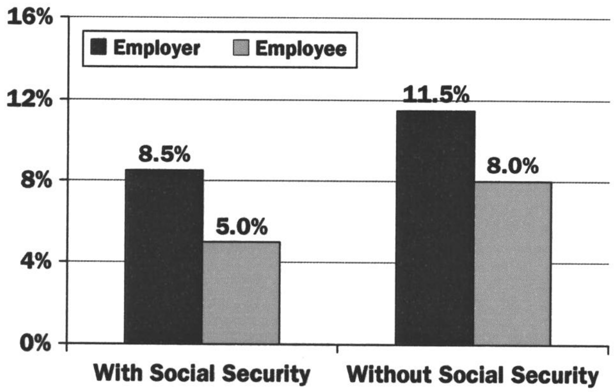
Sources: U.S. Census Bureau (2006), and HR Investment Consultants (2007).

The costs of administering defined contribution plans are considerably higher. Defined contribution plans maintain individual accounts and typically update these accounts daily. In addition, most defined contribution plans use mutual funds or similar instruments as investment options—with an average expense ratio that ranges from about 0.60 percent for bond mutual funds to about 0.75 percent for a stock fund.[8] As a result, the annual cost of a defined contribution plan generally exceeds one percent of assets. Some studies estimate considerably higher costs for public defined contribution plans. For example, the Illinois Municipal Retirement Fund (1999) estimated that replacing the defined benefit plan with a defined contribution plan would increase the administrative costs from 0.44 percent of assets per year to about 2.25 percent.

Employee Contributions

Even if aggregate costs increased, taxpayers could hope for relief if by switching to a defined contribution plan they could transfer the burden from the government employer to the individual employee. (Transferring the contribution burden to the employee provided a major economic incentive to move from defined benefit to 401(k) plans in the private sector.[9]) But such an outcome is difficult to achieve in the public sector where employee contributions to defined benefit pensions are already high. In states where employees are covered by Social Security, the median contribution rate is 5 percent (see Figure 4). In states without Social Security, the median employee contribution rate is 8 percent of payroll. Therefore, state and local governments might find it challenging to shift more of the cost from the government to the participant.

Figure 4. *State and Local Employer and Employee Median Contribution Rates, 2006*



Source: Brainard (2007).

Other Arguments for Defined Contribution Plans

Some of the other arguments offered for defined contribution plans in the public sector are that they are more attractive to new employees, they offer employees the potential to earn higher returns, they solve the funding problem, and they avoid the "moral hazard" associated with state governments not funding benefit promises.

More Attractive to New Employees

Some proponents of defined contribution plans in the public sector contend that they will be more attractive to new and younger workers, who might value the portability of benefits provided by a defined contribution plan.[10] The data to date, however, do not show a groundswell of enthusiasm. As shown in Table 1, the percent of new employees electing a defined contribution plan ranges from 6 percent in Ohio to 21 percent in Florida. The outcome is affected by the fact that the majority of the plans cited automatically default employees into the defined benefit plan if they do not make a choice. Nevertheless, at this stage it would be difficult to argue that the presence of a defined contribution plan was a deciding factor for most people entering public sector employment. However, if even a small portion of workers prefer the features of defined contribution plans, such as portability, offering the plans as an option could serve as a useful recruitment tool.[11]

Table 1. *Percent of New Employees Electing a Defined Contribution Plan*

Plan	Percent	Does plan have default into defined benefit?
Colorado PERA	12%	Yes
Florida RS	21	Yes
Montana PERS	10	No
Ohio STRS	19	Yes
Ohio PERS	6	Yes
South Carolina	18	No

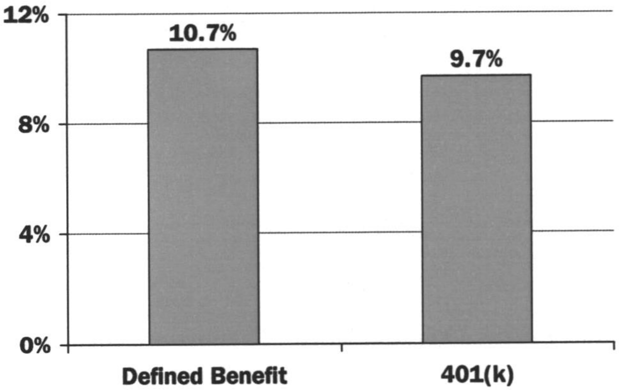
Source: Olleman (2007).

Offer Employees Potential to Earn Higher Returns

Another argument in favor of defined contribution plans is that people will be able to control their own investments. Thus, defined contribution plan participants will be able to match their portfolio to their preference for risk and perhaps earn higher returns. With respect to higher returns, however, such an outcome would contradict the experience in the private sector. Over the period 1988-2004, the return on 401(k) assets has averaged about one percent less than the return on private sector defined benefit assets, even though a greater percentage of 401(k) assets were invested in equities during the stock market boom of the 1990s (see Figure 5).[12]

The expectation of higher returns also flies in the face of the experience of Nebraska. In the 1960s, the Nebraska legislature wanted to provide pensions for its state and county workers. But instead of instituting a defined benefit plan similar to that covering teach-

Figure 5. *Median Rates of Return for Private Sector Defined Benefit and 401(k) Plans, 1988–2004*



Source: Munnell et al. (2006) based on the Department of Labor's Form 5500.

ers and judges, it created a defined contribution plan. In recent years, however, Nebraska officials became concerned that the defined contribution plan was producing lower returns than the defined benefit plans. The Nebraska Public Employees Retirement Systems reported in a 2002 newsletter that "On average, the investment returns in the School Employees, State Judges and State Patrol defined benefit plans were 11 percent for the past 20 years while state and county employees returned between 6% and 7% on average."[13] Faced with such an enormous disparity, the state legislature replaced the defined contribution plan with a cash balance plan—a defined benefit plan where assets are managed by the employer but participants have separate accounts.

The Nebraska experience confirms what has been learned through the 401(k) experience in the private sector: individuals find investing very difficult and generally do not do a very good job.

Solve the Funding Problem

In the debate over retirement plans, supporters of defined contribution plans often use the magnitude of the unfunded liabilities to highlight the need for reform. The reality, however, is that, even with a new defined contribution plan, state governments are still left to deal with past underfunding problems. Although new employees will not accrue any benefits under the old plan, the state must still cover the cost of accrued benefits from past service. Thus, even if the introduction of a new plan—either defined benefit or defined contribution—reduces pension costs going forward, such a step does nothing to solve the current funding problem.

Avoid "Moral Hazard" of Not Funding Benefit Promises

Experts contend that states face incentives to not fully fund their defined benefit plans.[14] Participants, who believe that they will be paid regardless of funding, do not push for government contributions. And politicians are all too happy to address short-term priorities rather than put money aside for long-term funding needs. Similarly, legislatures sometimes make unfunded benefit improvements in good times that further aggravate the funding situation. A defined contribution plan avoids this type of "moral hazard," as the plans are fully funded by design.

The question is the seriousness of this "moral hazard" problem. Without the funding requirements of ERISA and with the incentives not to fund, one might think that states have not put aside any money to fund future benefits. But, in fact, state plans in the aggregate in 2006 were about 90 percent funded—about as well funded as their private sector counterparts.[15]

Impact on Public Employees

Defined benefit and defined contribution plans subject the employee to very different types of risk. A traditional defined benefit plan pays a lifetime annuity at retirement that is generally a percentage of final salary for each year of service. For example, an employee with 20 years of service who accrues 2 percent per year would be entitled to a benefit equal to 40 percent (20 years at 2 percent) of final salary for as long as they live. Most defined benefit pensions in the public sector are also adjusted, at least partially, for inflation after retirement, which substantially increases the value of the stream of payments. The employer bears the investment risk during the worker's employment and the inflation and longevity risk after retirement. But employees face 'mobility risk.' That is, under final earnings plans and plans with delayed vesting, workers who leave public service lose substantial benefits.

Defined contribution plans are like savings accounts. Generally the employee, and often the employer, contributes a specified percentage of earnings into the account. These contributions are invested, usually at the direction of the employee, mostly in mutual funds consisting of stocks and bonds. Upon retirement, the worker generally receives the balance in the account as a lump sum. One important advantage of these plans is that mobile employees do not lose benefits when they shift jobs as their assets can move with them. On the other hand, the employee bears all the investment risk during the accumulation phase as well as longevity and inflation risk after retirement.

For long-service employees, defined benefit plans provide a more secure retirement than defined contribution plans. And state and local employees tend to have longer tenures than their private sector counterparts. Partly for this reason, public sector unions have repeatedly resisted efforts to introduce a defined contribution plan.[16]

Why Did Some States Introduce Defined Contribution Plans?

In order to assess why some states adopted defined contribution plans, we undertook an empirical analysis to identify the factors that might affect their decisions. The following discussion first describes the factors considered and then presents the regression results.

Possible Explanations

Possible factors that may either encourage or discourage states from introducing a defined contribution plan include the funded status of the plan, the cost of the plan, the current level of employee contributions, the extent to which participants are unionized, whether government employees are covered by Social Security, and the political climate.

Funding ratio. A low funding ratio in a defined benefit plan could either encourage or discourage the introduction of a defined contribution plan. On the one hand, persistently low levels of funding might highlight the need for action and enhance the probability of introducing a defined contribution plan.[17]

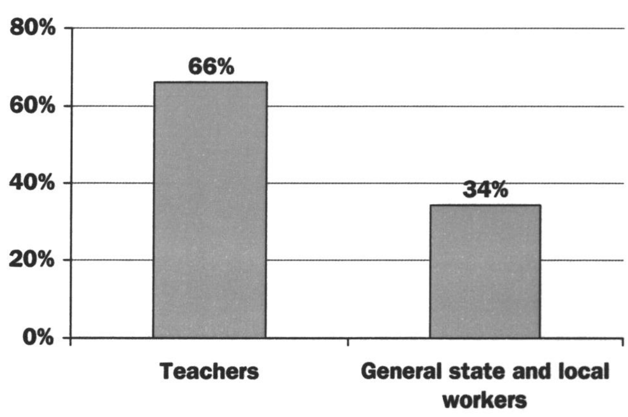
On the other hand, some experts contend that it is harder to switch from a defined benefit to a defined contribution plan when the plan is underfunded.[18] The argument is that the closer the system is to pay-as-you-go, the more expensive the transition. The government would have to contribute both to the defined benefit plan to cover annual benefit costs for current retirees as well as to the new defined contribution plan. This issue arose explicitly in Michigan. When the new defined contribution plan was introduced, the legislation explicitly stated that school employees could not make the transition until the $3 billion unfunded liability was erased.[19]

High cost. States with generous plans might be more likely to introduce a defined contribution plan in an effort to get their costs under control. One measure of generosity of the benefits is the annual accrual rate. That is, typically, an annual benefit in a defined benefit plan is the product of an employee's final average salary, the years of service, and the benefit rate per year—a rate that ranges from about 1.5 percent to 2.5 percent. The hypothesis is that the higher the rate and therefore the greater the cost, the more likely the state is to introduce a defined contribution plan.

Employee contributions. The notion is that the higher the existing level of employee contributions, the less likely the state will be able to shift more of its contributions to the employee. The inability to shift contributions to the employee would reduce the likelihood that a state would introduce a defined contribution plan.

Unionization (Teachers). Public sector unions generally support the retention of defined benefit plans.[20] Therefore, the hypothesis is that the greater the degree of unionization, the less likely the state is to switch a plan from defined benefit to defined contribution. The problem is that the only readily available data are the percent of public sector employees who are unionized by state. Unionization, however, varies significantly by type of plan. For example, a far greater percent of teachers are unionized than are general employees (see Figure 6). Therefore, a proxy for the role of unions is whether the plan covers teachers. The hypothesis is that when a plan includes teachers, the state is less likely to introduce a defined contribution plan.

Figure 6. *Percent of Public Sector Workers Covered by Unions, by Worker Type, 2004*



Sources: Farber (2005); and Hirsch and Macpherson (2007).

Table 2. *Percent of State and Local Workers Not Covered by Social Security, 2000*

State	Percent not covered
Massachusetts	100%
Nevada	100
Ohio	100
Louisiana	98
Colorado	95
Maine	80
Alaska	73
Illinois	62
Texas	55
Connecticut	52
California	49
Missouri	45

Source: Munnell (2000).

Social Security Coverage. Roughly 30 percent of public sector workers are not covered by Social Security. The bulk of uncovered workers are concentrated in twelve states (see Table 2 on the next page). Social Security is a defined benefit plan. Benefits are based on contributions, paid in the form of an annuity, and indexed for inflation after retirement. Social Security is designed to serve as a base to which workers can add through employer-sponsored pensions or individual saving. Our hypothesis is that states where workers do not have this basic level of protection would be less likely to introduce a defined contribution plan, because employees would then be exposed to all the risks associated with retirement planning.

Republican Control. The final consideration is political. Republicans generally espouse the advantages of defined contribution plans in terms of employees' ability to control their own investments and match their assets to their tolerance for risk. Introducing a defined contribution plan when Republicans control the state governorship and legislature is consistent with their political philosophy of individual responsibility for retirement savings.

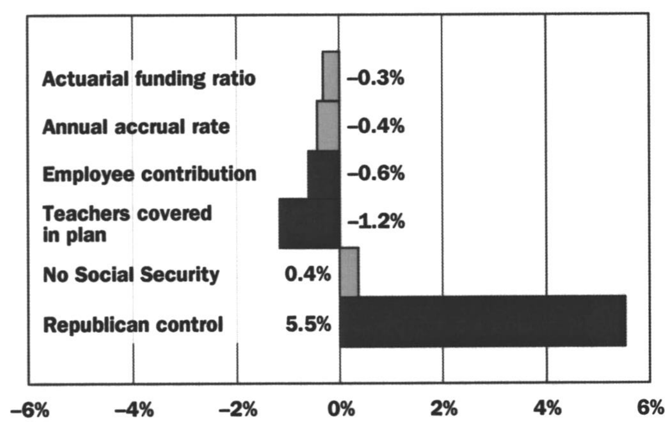
The Results

The analysis included data on each state-administered plan from 1992 through 2006. The dependent variable was set equal to zero if no action was taken; 1 if the state introduced a defined contribution plan as an option; 2 if the state replaced the defined benefit plan with a "combined" defined benefit/defined contribution plan; and 3 if the state replaced the defined benefit plan with a mandatory defined contribution plan.[21] The exercise included 76 plans; once a state introduced a defined contribution plan, the observation was removed from the sample.[22] Complete details are presented in Appendix B; summary results are displayed in Figure 7. The bars show the effect on the probability of introducing a defined contribution plan in a single year. The effects are quite large given that only about 20 percent of sponsors introduced some form of defined contribution plan over the 15-year period.

The results generally—but not universally—confirm the hypotheses put forth above. The funding ratio and the accrual rate do not seem to be important factors for the introduction of a defined contribution plan. On the other hand, as predicted, if the plan includes teachers—that is, it is a highly unionized plan—or if employee contributions are high, the state is less likely to introduce a defined contribution plan.

Two aspects of these results are surprising. First, the fact that states with a large percentage of workers not covered by Social Security had a higher probability of introducing a defined contribution plan is unexpected. The results are clearly driven by events in Colorado, Ohio, and Alaska, three states with a very high proportion of non-covered workers. In Colorado and Ohio, the defined contribution plans are optional and the take-

Figure 7. *Effect on the Probability of Introducing a Defined Contribution Plan*



Note: For the binary variables, teachers covered in plan and Republican control, the bars represent the change in the probability derived from a 0 to 1 change (no teachers in the plan to teachers in the plan, no Republican control to Republican control). For the other variables, the bars represent the change in probability derived from going from the 25th percentile to the 75th percentile in each variable. For each variable, these calculations hold all other variables constant at their means.
Sources: See Appendix B.

up has been modest. Thus, most of these workers will continue to have the protection against investment risk and the promise of annuity that comes with a defined benefit plan. In Alaska, however, the story is quite different. Despite the fact that nearly three quarters of Alaska's public employees are not covered by Social Security, all new hires are required to join a defined contribution plan. Therefore, state workers and teachers in Alaska will not have any form of defined benefit protection.

The second interesting aspect of the results is the importance of Republican control.[23] Its impact is larger and more robust than any of the other factors. Having a Republican governor and a Republican legislature increases the probability of introducing some type of defined contribution plan by 6 percentage points.

Conclusion

Although the introduction of defined contribution plans by some states has received a lot of press attention, activity to date has been modest. Excluding the eight states that have simply added a defined contribution option, only four have introduced any form of mandatory defined contribution plan. Given the recentness of the changes and the limited amount of compulsion, assets and participants in defined contribution plans are only a tiny fraction of state and local totals.

For any given level of benefits, defined contribution plans cost more than defined benefit plans for state retirement systems. Even so, sometimes debates about introducing a defined contribution plan suggest the state could save money. Other arguments for defined contribution plans have rested more on the ability of people to control their investments and take their accumulations with them when they move from job to job — aspects that might appeal to younger workers. Of course, moving away from defined benefit plans means that individuals must face the risk of poor investment returns, the risk that they might outlive their assets, and the risk that inflation will erode the value of their income in retirement.

The question is why twelve states introduced a defined contribution plan in some form or another. The answer appears to be, in large part, political philosophy. Republicans value the control over investments and portability offered by defined contribution plans and when they have dominated the political scene they have often changed the nature of public pensions.

Appendices

Appendix A. Primary Defined Contribution Plans

Table A1. *Characteristics of Primary Defined Contribution Plans*

State	Plan name	Legislative date	Plan type(s)	Total participants	Assets ($ in millions)
AK	Alaska PERS	2005	Mandatory DC	N/A	N/A
AK	Alaska TRS	2005	Mandatory DC	N/A	N/A
CO	Colorado PERA	2004	Choice: DB, DC	225	0.60
FL	Florida RS	2000	Choice: DB, DC	75,377	2,306
IN	Indiana PERF	1997	Mandatory combined	151,959	2,516
IN	Indiana TRF	1997	Mandatory combined	111,565	3,231
MI	Michigan SERS	1996	Mandatory DC	29,914	2,547
MT	Montana PERS	1999	Choice: DB, DC	1,639	31
ND	North Dakota RS	1999	Choice: DB, DC	291	15
OH	Ohio PERS	2000	Choice: DB, DC or combined	13,363	140
OH	Ohio STRS	2000	Choice: DB, DC or combined	9,631	224
OR	Oregon PERS	2003	Mandatory combined	187,704	1,172
SC	South Carolina RS	2000	Choice: DB, DC	27,622	477
VT	Vermont PERS	1998	Choice: DB, DC	592	36
WA	Washington PERS	1999	Choice: DB, combined	23,009	1,102
WA	Washington SERS	1998	Choice: DB, combined	33,454	860
WA	Washington TRS	1998	Choice: DB, combined	54,631	3,189
Total				**720,976**	**17,845**

Source: 2006 Annual Reports of each state system.

Appendix B. Data and Methodology

The sample includes annual data for plans for state employees (PERS or SERS) and teachers (TRS) between 1992 and 2006.[24] The factors affecting the change from a traditional defined benefit plan are the employee contribution rate, party control of the state legislature and governor, the percentage of public workers not covered by Social Security in the state, the funding ratio of the plan, the annual benefit accrual rate, and whether teachers are included in the plan. Specifically, the employee contribution rate variable is the ratio of the level of employee contributions to the sum of the level of employee contributions and the level of employer contributions. The funding ratio is the actuarial value of assets divided by the actuarial value of liabilities. The annual accrual rate is the benefit earned as a percent of salary per year of service. The teacher's variable is a dummy variable that equals one if teachers are covered by the plan and zero otherwise.

The data used in the regression come from different sources:

- Actuarial funding ratios, employee contribution rates, annual accrual rate, and the presence of teachers in the plan come from PENDAT (Zorn 1992–2000) and the Public Fund Survey (PFS) (National Association of State Retirement Administrators 2001-2006). For Indiana PERF, Vermont PERS and TRS, and Ohio STRS—which have incomplete information from PENDAT and PFS,—the data come from Wisconsin Legislative Council (1992–2000).[25]
- The percent of public workers not covered by Social Security in a state is taken from Munnell (2000). This percent is assumed to remain constant over time.
- For each year of data, the Republican control variable takes the value of 1 for states with Republican governors in which Republicans also have more than 50 percent of both houses of the legislature. These data come from the Statistical Abstract of the Census Bureau (U.S. Census Bureau 2007).

The regression is an ordered probit. The dependent variable takes values of 0, 1, 2, or 3.[26] A value of 0 indicates the plan did not change from a traditional defined benefit plan in a given year. A value of 1 indicates that the plan offered an optional defined contribution plan in that year. A value of 2 designates a change to a combination plan, with both defined benefit and defined contribution elements. Finally, the dependent variable takes on a value of 3 when a plan switched to a primary defined contribution plan only. Data on the date of the change comes from various retirement systems' annual reports and the websites of state legislatures.[27]

The introduction of a defined contribution plan is coded to the year in which the change was enacted by the legislature. Three plans switched to a defined contribution plan only in this time period (Michigan SERS (1996), Alaska PERS (2005), and Alaska TRS (2005)). Two plans introduced a combination plan (Indiana PERF (1997) and Oregon PERS (2003)). Finally, ten plans added a defined contribution option to their primary plan (Colorado PERA (2004), Florida RS (2000), Montana PERS (1999), North Dakota DCRP (1999), Ohio PERS (2000), Ohio STRS (2000), South Carolina PERS (2000), Vermont PERS (1998), Washington PERS (1999), and Washington TRS (1995)).

The results displayed in the text are the difference in the probability of being in category 0 (no change) for a base value of one of the explanatory variables and a comparison value of that variable. For example, the probability of "no change" for a state without Republican control is 99.4 percent. The same probability, "no change," with Republican control is 93.9 percent. The difference, 5.5 percent, can be interpreted as the effect of Republican control on the likelihood of changing the nature of the plan from a defined benefit to some type of defined contribution. For continuous variables (employee contribution rate, percent not covered by Social Security, accrual rate, and actuarial funding ratio), the values used to estimate the change in the likelihood are the 25th and the 75th percentiles of these variables. In each of these calculations, all other explanatory variables are held at their means.

Endnotes

1 48 states provide access to a supplementary defined contribution plan. See Ferrara (2002).

2 The District of Columbia also requires its general government employees to join a primary defined contribution plan, but our analysis is limited to states. Other states have considered moving to a primary defined contribution plan. For example, California's governor proposed such a switch in 2004, but this plan generated substantial opposition from public employee unions and the proposal was dropped in 2005. For more details on other attempts to move into defined contribution plans, see AFSCME (2007).

3 A combined plan is made up of a defined benefit plan funded by the employer and a defined contribution plan funded by the employee. In every choice state except Washington and Ohio, the options are either a traditional defined benefit plan or an alternative defined contribution plan. Washington offers a choice of a defined benefit plan or a combined plan. Ohio employees can choose from a defined benefit plan, a defined contribution plan, or a combined plan.

4 Mandatory combined plans require employees to join a plan with both a defined benefit and defined contribution component. Mandatory defined contribution plans are primary plans that require employees to join. "Choice" plans typically allow employees to pick either a primary defined contribution plan or a primary defined benefit plan. Mandatory defined benefit plans are primary plans that require employees to join.

5 For example, from January 1, 1995 to December 31, 1999, the S&P 500 had an average annual return of nearly 30 percent.

6 In the private sector, when a new plan is adopted the existing defined benefit plan is generally frozen. Existing employees can retain the benefits earned but are not permitted to accrue any further service credits. In the public sector, when a new plan is adopted, existing employees generally have a legal right to continue to participate in the previous plan and only employees hired after the date the plan is adopted are required to participate in the new plan.

7 Authors' calculations from the U.S. Census Bureau (2007), U.S. Board of Governors of the Federal Reserve System (2007), and 2006 Annual Reports of each state system.

8 These expenses are weighted by assets; see Investment Company Institute (2007). Index funds generally have considerably lower expense ratios—on the order of 0.10 to 0.20 percent. These funds, however, are not used widely by primary defined contribution plans in the public sector. In the Colorado PERA, Montana PERS-DCRP, Michigan SERS, and Ohio PERS, index funds hold less than 20 percent of the assets.

9 Private sector defined benefit plans are non-contributory so the cost to the employer was about eight percent of payrolls. Shifting to a 401(k) reduced the employer's contribution—in the case of a 50 percent match—to about three percent.

10 For example, in both Florida and Michigan the defined contribution initiative arose partly from public sector employer concerns over their ability to attract and retain workers (Huntley, 2001; and Rehfeld, 1998).

11 While optional plans provide the potential for attracting a broad group of workers, they do come at a cost to the employer. Under a traditional defined benefit plan, short-tenured workers often forfeit pension benefits when they leave, and these forfeitures subsidize higher benefits for career workers. Under optional plans, these short-tenure workers are likely to choose the defined contribution plan, which would end the cross subsidy to long-tenure workers. This adverse selection cost is estimated to be about 1.5 percent of payroll. See Trager, Francis, and SigRist (2001).

12 See Munnell et al. (2006).

13 Nebraska Public Employees Retirement Systems (2002).

14 See Giertz and Papke (2007).

15 See Munnell and Soto (2007). Another recent study, using a somewhat different sample, found that state pension plans were about 85 percent funded in 2006 (The Pew Center on the States, 2007).

16 For more details on public sector employee tenure and union support of defined benefit plans, see Munnell, Haverstick, and Soto (2007).

17 Proponents might also argue—albeit incorrectly—that switching to a defined contribution plan could get the state out of a serious underfunding problem.

18 See Fore (2001).

19 See Fore (2001).

20 See Ferlauto (2002); and American Federation of Teachers (2007).

21 The ordered probit specification assumes that there is an inherent order in the outcomes depending on the degree of compulsion—optional involves less compulsion than combined, and combined less compulsion than mandatory. See Appendix B for the detailed ordered probit results. An alternative formulation ignores the ranking and assumes each type of defined contribution plan is an option without regard to the degree of compulsion. Nevertheless, this formulation does combine changes that require mandatory participation in the defined contribution plan with those where participation is optional. Running two separate binary probit equations, however, in which the first equation estimates the effects on the probability of introducing a mandatory defined contribution plan and the second equation estimates the effects on the probability of introducing an optional defined contribution plan, produces equivalent results to the ordered probit.

22 Prior to 2003, Nebraska was excluded from the analysis because it has always had a defined contribution plan and, therefore, was not in a position to switch. Recently, Nebraska switched to a cash balance plan. The West Virginia TRS plan was excluded from the analysis since it was switched to a defined contribution plan in 1991, which is outside the period of analysis. (It was later switched back to a defined benefit plan in 2005.)

23 The importance of political philosophy in the move to defined contribution plans in the public sector was first suggested by Wiles (2006).

24 West Virginia TRS plan was excluded since it was a defined contribution plan from 1992-2005. Nebraska PERS was a defined contribution plan from 1964–2003 and was also excluded from the sample.

25 Data before 2000 are available for even years only. Data for odd years are imputed using the midpoint between the two adjacent even years of data for actuarial funding ratios and employee contribution rates. Only plans with valid data for the previous and subsequent years had values imputed. These data comprise an unbalanced panel.

26 The standard errors are adjusted for the repeated observations for each state.

27 For quick access to state annual reports, visit: http://www.npers.ne.gov/public/aboutus/otherRetirement.jsp.

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White Paper

National Association of State Retirement Administrators

Myths and Misperceptions of Defined Benefit and Defined Contribution Plans

November 2002
Updated February 2005

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NASRA White Paper

Introduction

Policymakers, public pension plan administrators and others with a political or financial interest are engaged in a debate about the retirement benefits that are provided to public employees. Considering that state and local government pension plans provide benefits for 14 million active employees and hold assets of $2 trillion, the consequences of this discussion are far-reaching.

Ninety percent of state and local government employees participate in a defined benefit (DB) pension plan. A movement has unfolded in recent years calling for defined contribution (DC) plans to replace DB plans as the primary retirement benefit for public employees. A number of myths and misperceptions surround this movement; through this paper, NASRA seeks to address and clarify some of the more popular misunderstandings and misrepresentations about these plan types.

Financial planners have long referred to an ideal mix of retirement income sources as a "three-legged stool," with one leg each representing Social Security, personal savings, and an employer pension. Although not every worker attains it, a well-balanced three-legged stool is a sensible personal financial planning strategy; an important component of an employer's benefits package; and a sound public policy objective. Without an employer pension, there can be no three-legged stool. (In states that do not participate in Social Security, pension benefits for public employees typically are adjusted upward to compensate for the absence of Social Security benefits.)

Most public employers offer a voluntary DC plan, such as a 457 or 403(b) that supplements the DB plan. These types of DC plans, which function like a 401(k) plan, are tax-deferred and can fulfill the personal savings piece of the three-legged stool.

NASRA believes that a DB plan should constitute an employee's basic retirement plan, and should be supplemented by a voluntary DC plan. A 1998 NASRA resolution said, in part:

> " ... NASRA supports the prevailing system of retirement benefits in the public sector, namely, a defined benefit program to provide a guaranteed benefit and a voluntary defined contribution plan to serve as a means for employees to supplement their retirement savings; ... NASRA supports progressive changes within this prevailing system of retirement benefits in the public sector, either within the defined benefit plan or through supplementary plans, that accommodate a changing workforce and better provide many of the features sought by advocates of wholesale conversion.

Policymakers, taxpayers, and others with an interest in public employee benefits are well-served when the discussion about DB and DC plans is based on facts and a clear understanding of these plan types and the way they function.

The Myth: "The public sector should convert from defined benefit to defined contribution plans, as the private sector has."

Summary
Defined benefit (DB) and defined contribution (DC) plans each offer their own advantages and disadvantages. NASRA believes that employers should take advantage of both plan types by offering a DB plan as the primary retirement benefit, supplemented by an optional DC plan.

The implication that government should follow the lead of the private sector in adopting DC plans overlooks important differences between private and public DB plans and the reasons that some private sector plan sponsors have adopted DC plans. This implication also ignores the resilience DB plans have exhibited among many private sector employers.

Analysis
A closer examination of the private sector trend toward DC plans reveals not only that the extent of this trend is not as great as implied by many advocates of DC plans, but also that many of the factors driving the change toward DC plans are largely irrelevant to the public sector. For example:

- State and local government pension plans are exempt from most of the laws and regulations, known as ERISA, that govern private sector DB plans. ERISA imposes a substantial cost and administrative burden on employers that sponsor a DB plan, and accounts for much of the private sector movement toward DC plans.
- Virtually all the decline in the number of private sector DB plans has occurred among small employers – those with fewer than 250 employees. A majority of large private sector employers continues to offer a DB plan. This is likely attributable to the economy of scale large employers enjoy, enabling them to incur the cost and burden of providing a DB plan; and to the relative ease and low cost of establishing a DC plan.

There are good reasons for employers to retain a DB plan as the primary retirement benefit for public employees:

- A DB plan is an effective tool for recruiting and retaining quality employees. Government's exemption from most federal pension laws creates a rare competitive advantage for state and local government employers.
- Providing a DB plan helps assure a secure source of income for retired employees, reducing the likelihood of these employees relying on public assistance during retirement.
- By creating an incentive to retire, DB plans can facilitate an orderly transition of employees whose effectiveness or productivity may have waned. DC plans provide no such incentive, and may, in fact, serve as a disincentive.

Legal and Regulatory Changes
Analysts attribute much of the increase in the number of DC plans in private industry to ERISA, the Employee Retirement Income Security Act, which became effective in 1975. ERISA established standards for DB plan participation, vesting, retirement, and reporting; and imposed a tax on DB plans to fund the Pension Benefit Guaranty Corporation (PBGC). State and local government pension plans are not subject to

most ERISA regulations, and public plans are not required to make payments to the PBGC. As a result, the primary factor—ERISA—driving the private sector toward DC plans does not apply to state and local government plans. In lieu of ERISA, public pension plan sponsors (state and local governments) establish their own governing standards and rules. One beneficial outcome of this arrangement has been a wide range of policies and benefit structures, each suited to the unique needs of their plan sponsors.

ERISA amendments, particularly the Multiemployer Pension Plan Amendments Act of 1980, the Tax Equity and Fiscal Responsibility Act of 1982 and the Tax Reform Act of 1986 – reduced or eliminated incentives to private sector employers offering DB plans, and increased the liability, expense, or regulatory requirements of maintaining a private sector DB plan. The rate of decline in the number of private sector DB plans was considerably more pronounced in the years immediately following these tax law changes, than it has been since.

Evidence suggests that recent legislative changes are encouraging a return of DB plans to smaller private sector businesses. According to *Plan Sponsor*, starting in the late 1990's, Congress relaxed some restrictions on DB plans. For example, in 1999, Congress eliminated contribution limits under section 415(e) of the tax code, which had restricted tax-deferred contributions and pension accruals for pension participants when a plan sponsor offers both a DB and a DC plan.

Large vs. Small Employers
Enactment of ERISA and subsequent amendments have especially affected smaller employers, which is where the vast majority of the reduction in DB plans has taken place. But most large employers continue to use DB plans. 346 of the S&P 500 offer DB plans as their primary retirement plan. A recent Watson Wyatt analysis[1] of Fortune 100 companies, which are many of the nation's largest employers, found:

- 50 percent provide a DB plan as their primary retirement plan option; of these, most offer a supplementary 401(k) plan.
- One-third offer a "hybrid" plan, which combines elements of DB and DC plans.
- Only 17% offer a DC plan as their primary retirement benefit.

This survey also found that during the two-year period 2000-2001, the trend away from DB plans virtually stopped, and the number of companies offering a DC plan as the primary retirement benefit held steady. This trend is consistent with other studies indicating that most of the reduction in private sector DC plans during the past 25 years took place among smaller employers, and in the wake of the enactment of ERISA and subsequent amendments.

The Watson Wyatt survey also is consistent with the findings of an EBRI study that found that since 1985, the number of employers with 10,000 or more employees offering a DB as their primary retirement plan has actually *increased.*[2] That this increase has taken place during a period of many corporate mergers of large firms (which reduces the total number of employers in this category) makes it even more notable.

Most public sector employees work for governmental entities that are large

[1] "Trend Toward Hybrid Pensions Among Largest U.S. Companies Slows Considerably," Watson Wyatt, May 3, 2002

[2] David Rajnes, Employee Benefit Research Institute tabulations of 1985, 1993, and 1998 Form 5500 annual reports filed with the Internal Revenue Service, "An Evolving Pension System: Trends in Defined Benefit and Defined Contribution Plans," September 2002

employers, and government as an employer should be compared with large private employers. A majority of these employers continue to offer DB plans to their employees. While many factors determine the type of retirement benefit an employer provides, these large private employers recognize the important role a DB plan plays in attracting and retaining quality employees.

As an employer, government has an opportunity to directly affect the retirement income security of its employees and to exploit one of the few competitive advantages government enjoys over private sector employers. Providing a benefit that assures workers a level of retirement income that is consistent with their tenure and salary is an effective way to exploit this advantage.

The Myth: "DC plans are better because they offer greater portability than DB plans."

Summary
DC plans do offer greater portability than DB plans. Unfortunately, this often leads to less retirement income security, not more.

Studies and experience show that a majority of terminating employees with a DC plan as their primary retirement benefit, cash out their assets rather than rolling them to another retirement plan. Retirement assets that are cashed out usually are subject to federal and state taxes and sometimes a penalty. Cashing out retirement assets defeats the purpose of having a retirement plan, yet DC plans provide little defense against such "leakage" of retirement assets.

An important objective of providing a retirement benefit is to retain quality employees. DC plans do not support this objective because they do not reward or encourage longevity. Because DB plans do reward longevity, they are an important element in retaining quality employees.

Analysis
Rather than make a wholesale conversion from a DB to a DC plan, many DB plan sponsors have responded to the needs of short-term, mobile, and other employees seeking portability, by providing a voluntary, supplemental DC plan option and by increasing the portability features of their DB plan. In fact, DB plan sponsors have incorporated a remarkable range and variety of innovative portability features, while preserving the core features of a DB plan. In doing so, DB plan sponsors provide a retirement benefit that offers the best features of both plan types.

Following are some examples of the flexibility and portability that state and local pension plans have added to DB plans during the past decade:

- Reduced vesting periods
- Paying to terminating or retiring employees all or part of the employer's contributions
- Paying interest on distributed employee and employer contributions
- Sharing investment gains with participants
- Matching employees' contributions to a supplemental DC plan
- Adding alternatives to the traditional life annuity payment options made to terminating and retiring employees
- Allowing hardship withdrawals
- Allowing members receiving a pension to continue working or to return to work
- Service purchase options that feature:
    - a variety of types of service for which credit may be purchased (e.g., other public service, service only in the same state, non-public service, etc.)
    - purchase of service using pre-tax dollars
    - availability of installment payments and automatic payroll deduction to purchase service
    - direct transfers of service credit from one retirement plan to another, in lieu of payments
    - allowing other retirement assets, such as those in 457 and 403(b) plans, to purchase service on a pre-tax basis
- Establishing and expanding deferred retirement option plans (DROP), that

allow members who qualify for retirement to continue working while accumulating assets in a separate retirement account
- Incorporating a "deferred augmentation" feature, which grows pension benefits for participants who terminate prior to reaching retirement eligibility.

Reduced vesting periods
One concern DC advocates have cited about the lack of portability in DB plans is their long vesting period. Ten years ago, a majority of public pension plans had a vesting period of ten years. This has changed: one of the more notable trends among public DB plans during the last decade has been the reduction in vesting periods.

According to the Wisconsin Retirement Research Committee's *2000 Comparative Study of Public Retirement Systems*, a biannual survey that compares features of 85 of the largest public pension plans in the United States, "[t]he trend appears to be toward five-year vesting or shorter, perhaps reflecting federal [ERISA] vesting requirements that apply to private pension plans." Including changes made since publication of the Wisconsin report, 58 of the study's 85 plans (68%) have vesting periods of five years or less.

Service purchase options
Service purchase provisions accommodate workers who move from one employer to another, or who terminate and "cash out" their assets, then return to work with the same employer or one with the same retirement plan. A service purchase plan allows these employees to purchase retirement service credits in their DB plan.

The expansion of service purchase provisions has been a leading legislative trend affecting public pension plans during the past decade. More than two-thirds of the plans participating in the 2001 Public Pension Coordinating Council (PPCC) *Survey of State and Local Government Employee Retirement Systems* offer some type of service purchase option, and of the plans that do not offer service purchase, nearly half are dedicated to firefighters, police officers, or judges, whose members are predominantly career employees or who are less likely than other employee groups to terminate prior to retirement.

Other examples of DB plan flexibility and portability
During the past decade many large public DB plans have incorporated a variety of features increasing flexibility and portability, while retaining DB plan features. For example:

- Most new public employees in Washington state now participate in a hybrid plan, in which the employer funds a DB benefit more modest than that provided to longer-tenured employees, and the employee contributes to a DC plan.
- The Arizona State Retirement System offers participants with five or more years of service a portion, up to 100%, of the matching contributions made by their employer. Terminating employees with five years of service are entitled to 25% of the employer contributions made on their behalf, rising to 100% for terminating employees with ten or more years of service. Participants terminating with less than five years of service receive their contributions plus accrued interest.
- The Colorado Public Employee Retirement Association matches fifty percent of employee contributions withdrawn by non-vested employees who terminate.
- Many states provide an employer match to employee contributions made to a supplemental DC plan, such as a 457 or 403(b).
- Participants in the Public Employee Retirement System of Idaho share a portion of the system's investment gains, which are deposited into individual DC accounts. Participants may make also

elect to make contributions to these DC accounts.

- The Wisconsin Retirement System and Ohio PERS provide a hybrid retirement benefit, basing participants' pension on a combination of DB and DC plans.

These are just a few of many examples of public DB plans offering flexibility and portability while retaining the central feature of a DB plan: a guaranteed source of retirement income that reflects the worker's salary and length of service.

Portability caveat

An important concern about retirement plan portability is that many terminating employees do not transfer their retirement plan assets to another plan, such as an Individual Retirement Account or a future employer's plan. Studies indicate that a majority of terminating DC participants spend their retirement savings rather than rolling them into other retirement accounts.

A good example of terminating participants spending, rather than saving, their retirement assets is in Nebraska, where state and county government employees historically have participated in a DC plan. A recent study of the Nebraska Public Employees Retirement System, conducted by a national actuarial consultant, found that 68% of terminating participants cashed out their assets rather than rolling them over to another retirement plan. This finding is consistent with a Hewitt Associates study which found that more than two-thirds of participants terminating from DC plans cash out their lump sum distributions rather than rolling them to other retirement accounts.

Such "leakage" of retirement assets from individuals' retirement accounts increases future costs of providing retirement. This is because the assets that are spent, rather than saved and invested, must be restored eventually, either by the employee or the employer, or both.

In testimony before Congress, the president of the Employee Benefits Research Institute, said: "Preservation (of retirement assets) in the presence of portability is, in my mind, the largest single issue in the system today in terms of determining how much money will actually be available to provide retirement income in the 21st century. ... Policymakers cannot fairly assess the portability issue unless they fully consider the consequences of money leaving the system versus money staying within the system."[3]

[3] "The Future Role of Pensions in the Nation's Retirement System," Tuesday, July 15, 1997 - Panel Discussion General Accounting Office Conference Retirement Income Security in the 21st Century

The Myth: "DC Plans are better because they allow employees to manage retirement assets themselves"

Summary
Some employees do wish to manage their own retirement assets, and most DC plans not only allow, but require participants to manage their retirement assets. DC plans also shift the risk of managing retirement assets from the plan sponsor to individual participants. Unfortunately, most employees are at best mediocre investors, unlikely to generate an investment return that will ensure an adequate level of retirement income.

DB assets have a longer time horizon, enabling them to withstand market volatility better than individuals. DC investors have a shorter investment horizon, requiring them to hold a more conservative portfolio, which leads to lower returns and less retirement income.

NASRA believes that a DB plan should constitute an employee's basic retirement benefit, and should be supplemented by a voluntary DC plan. This arrangement satisfies the objective of providing a guaranteed pension benefit, while giving employees, especially those wishing to manage their own assets, the opportunity to save and invest in accounts they manage and direct.

Analysis
A key difference between DC and DB plans is that DC plans provide the opportunity to create retirement wealth, while DB plans provide income security. The purpose of a retirement plan is not to empower employees, or to create sophisticated investors, or to make participants wealthy. The chief purpose of a retirement plan should be to promote financial security in retirement.

Requiring individual employees to bear the entire risk of assuring an adequate level of retirement income ignores the fact that most employees lack the knowledge of investment concepts and practices needed to succeed. When employees fail to save enough for retirement, they and their dependents may face indigence in their elder years and may be required to work in retirement. Some will become dependent on the state for public assistance.

The eighth annual John Hancock Financial Services Retirement Survey[4] of DC plan participants, published in May 2002, stated "many have a cockeyed view of how investments work across the board." John Hancock researchers said most DC plan participants will fall well shy of the estimated 75% of pre-retirement income needed to maintain the same lifestyle in retirement. The survey also documented numerous examples of ignorance of basic investment principles among DC plan participants.

The Nebraska Public Employee Retirement System had a similar experience. Despite considerable, sustained efforts to educate participants, public employees in Nebraska were directing 90% of all contributions to just three of the eleven available fund choices, and more than 50% of the DC plan assets were invested in the stable value fund.

[4] "Eighth Annual John Hancock Financial Services Retirement Survey," January 2002

A 2003 Pension Research Council Working Paper found that "a significant group of workers lacks the psychological attitudes or interests needed to maximize retirement security."[5]

The Investment Company Institute reported in 2004 that one-half of all 403b plan assets (owned primarily by public employees) were held as annuity reserves in life insurance companies. Another 30 percent was held as variable annuities with mutual fund companies.

DB assets are invested on the basis of a long time horizon, enabling them to be invested more aggressively than DC assets, resulting in higher long-term returns. By contrast, DC participants, who are not professional investors and as a group tend to be risk-averse, must assume increasingly conservative allocations as they near retirement, resulting in lower returns during both their working years and in retirement. The long investment horizon and professional investment of DB assets generate higher returns that compound, creating substantially greater returns over the long-term.

Ninety percent of public employees participate in a DB plan, and a supplemental, voluntary DC plan is available to nearly all public employees. NASRA believes this arrangement accommodates those employees who wish to manage their own assets, while still assuring a pension benefit for all participants.

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[5] ""Money Attitudes' and Retirement Plan Design: One Size Does Not Fit All, MacFarland, Marconi and Utkus, Pension Research Council Working Paper 2003-11

The Myth: "An employee must spend his entire career with the same employer to benefit from a defined benefit plan."

Summary

DB plans reward workers who remain with their employer long enough to become vested members. DB plans are intended to reward long-term employees: encouraging longevity among quality employees is a primary retirement plan objective—one that DB plans help promote, and that DC plans do not.

However, an employee does not need to spend his or her entire career with the same employer to benefit from a DB plan. A DB plan provides a guaranteed retirement payment for vested participants; in most public retirement plans, vesting takes five years or less. Many public retirement plans allow participants to transfer or purchase service credit from other plans. Most public plans pay interest on participant contributions, and some entitle terminating participants to their employer contributions.

Depending on the age of the participant when beginning and terminating employment, a DB plan can provide a retirement benefit that is greater than the benefit from even a well-invested DC plan, even for employees who work only for a short period of time.

Analysis

By rewarding longevity, DB plans assist employers in retaining quality employees and encouraging longevity. This feature is especially helpful in the public sector, where salaries often lag behind the private sector, requiring employers to compensate in other ways. One of the chief arguments in favor of DC plans—their portability—can work against employers seeking to retain quality employees.

Yet it is misguided to believe that a DB plan benefits only those who spend many years or an entire career with the same employer. A chief strength of DB plans is that they offer participants a guaranteed retirement benefit funded with assets that are professionally invested.

By contrast, the benefit created by a DC plan is uncertain, determined largely by the participant's investment decisions and ability to resist cashing out retirement assets prematurely. These are uncertain factors on which to base a worker's retirement income security. When a DC plan is an employee's primary retirement benefit, such uncertainty may fail to fulfill the purpose of a retirement plan for both the employee and the employer.

Even for long-term employees, a DC plan provides no assurance of a retirement benefit that exceeds or even meets the benefit provided by a DB plan. This is because DC plans place the investment risk on the employee, and employees whose investment returns are sub-par over the course of a working life are likely to experience a lower retirement benefit than under a DB plan. The chapter *Employees want to manage their own retirement assets* addresses the likelihood of the typical DC participant achieving an investment return high enough to generate sufficient retirement savings.

Differences in benefit levels provided by DB and DC plans vary, and are determined by many factors, including the age of the employee when entering service. For example, assuming typical contribution rates and rates of investment return, an employee beginning a job at age 50 is better off in a typical DB plan regardless of how long he or she works. An employee entering service at age 45 will be better off in the DB plan after five years of service. This trend continues down the age scale—the younger the employee, the more time a DB plan needs to be relatively advantageous.[6] This analysis is based on the attainment of investment return assumptions and the use of lump-sum distributions, two factors that endanger long-term retirement income security.

The chapter on portability addresses the growing use of service purchase provisions, which allow employees who move from one state to another to transfer their DB service credit with them. Similar provisions permit employees who terminated and cashed out their DB assets in previous years, to purchase those back when they re-enter employment. These and other public plan provisions accommodate employees who relocate or who move in and out of public employment.

Today's workforce is older than it was twenty years ago, and older workers are more aware of their retirement income needs. This awareness promotes an understanding of and appreciation for DB plans. A DB plan helps employers, including government, to recruit and retain quality employees in today's competitive labor market.

[6]ORP Alternatives, Gary Findlay, presented to The Southern Conference on Teacher Retirement, 5/24/00

The Myth: "Public employees in defined benefit plans need to worry about politicians mishandling their funds, creating unfunded liabilities, and cutting benefits."

Summary
Defined benefit public pension funds are trusts, typically administered by a governing board whose members are fiduciaries, or by a sole trustee who serves as a fiduciary. Every state has established prudence standards to govern the investment and management of assets, and most public pension plan administrative officials typically prepare financial statements in accordance with generally accepted accounting principles that are subjected to independent audits in accordance with generally accepted auditing standards.

Federal constitutional provisions governing contracts and property rights are generally perceived to protect pension benefits from diminution. In addition, some state constitutions explicitly prohibit reductions in pension benefits; most other states employ statutes or case law to prohibit or limit efforts to reduce public employee pension benefits.

A legislature wishing to reduce retirement benefits can do so more easily under a DC plan than with a DB plan. DB plans have liabilities for which plan sponsors are responsible; DC plans do not.

Further, the idea that public employees must worry about elected officials creating and then ignoring unfunded liabilities is not realistic. Typically, political jurisdictions are legally obligated to pay off any unfunded the liabilities of the DB plans within their purview. Any jurisdiction not responsibly financing its DB plan ends up with a net-pension obligation that must be disclosed in the plan sponsor's financial statements. Accordingly, plan sponsors are motivated to ensure that plans are properly financed, because disclosure of a net pension obligation can negatively impact a jurisdiction's credit rating.

Analysis

Mishandling Public Funds

First, once contributed to the pension trust, they are no longer "public funds." The ability of elected officials to "handle" public pension funds is very limited. Most members of pension plan governing boards are appointed, not elected officials, and many are also members of the plan. All pension plan trustees are fiduciaries, including those who are elected officials, and are subject to fiduciary standards. An overarching theme of fiduciary standards is that the fiduciary must carry out his or her duties in the sole interest of plan participants, consistent with applicable laws, regulations, and policies.

In every state, fiduciary standards that govern the investment of assets include either a prudent person rule, a prudent investor expert rule, or a blend, or a variation of one or both.

The prudent person rule states that the fiduciary "is under a duty to the beneficiary to make such investments and only such investments as a prudent man would make of his own property having in view the preservation of the estate and the amount and regularity of the income to be derived..."[7]

The prudent expert rule, prescribed in ERISA as the standard for private sector pensions, requires that the pension plan fiduciary discharge the duties of that position "with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent man acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character and with like aims."

None of the standards permit elected officials to "mishandle" public trust funds.

Creating Unfunded Liabilities

Simply expressed, states are responsible for covering the liabilities of the pension plans they sponsor. An unfunded liability is the result of the actuarial cost of benefits (liabilities) exceeding the actuarial value of assets. Elected officials can create an unfunded liability by authorizing benefits without providing immediate assets sufficient to pay for them; by not making adequate contributions to the retirement plan; or by managing or directing investments that result in returns lower than the actuarially assumed return rate. If a legislature creates pension liabilities, the state is still legally required to meet its pension obligations.

Contradicting the assertion that public employees need to worry about elected officials creating unfunded liabilities, the overwhelming majority of state and local pension plan sponsors traditionally have made all required contributions to their pension plans. One result of this has been that public pension plans as a group have amortized their pension liabilities in a manner similar to how a homeowner pays off a mortgage. Public plans covering a large percentage of public employees are now fully funded, and plans covering most other employees are nearly fully funded.

Cutting Benefits

Most states protect public employees pension benefits through their constitution, statutes, or case law. Public pensions also enjoy protections provided through property rights law: "Under federal and state constitutional law notions of due process, property or a property right cannot be adversely impacted or taken by a governmental entity without observing procedural considerations. Pension benefit coverage and entitlement will

[7] Calhoun and Moore, "Governmental Plans Answer Book," Panel Publishers

generally be considered to be property bringing due process protections."[8]

A DB plan actually is an effective vehicle for reducing the possibility of arbitrary benefit reductions, because inherent in a DB plan are liabilities for which the plan sponsor is responsible. If a legislature wished to reduce future benefits for current or future employees, it would be easier to do so with a DC plan, as there are no employer liabilities associated with that type of plan. If "politicians cutting benefits" is a concern, a DB plan is a more effective means of preventing such actions.

[8] Lawrence A. Martin, "Legal Obligations of Public Pension Plan Governing Boards and Administrators," published by the Government Finance Officers Association

The Myth: "DC Plans Cost Less than DB Plans"

Summary
Retirement plan expenses fall into one of two categories: administrative expenses, which include recordkeeping and investment management; and the cost of the benefit itself, reflected in the form of employer contributions. In almost every instance, the administrative cost of a DC plan is higher—often much higher—than that of a DB plan. The difference between these plan types is in who pays the administrative cost: the employer usually incurs most of the cost of a DB plan; the participating employee normally pays all or most of the administrative cost of a DC plan.

If an employer seeks to reduce the costs of its retirement plan by lowering contributions, the result will be a lower level of assets available for benefits. In addition, by diverting participants from an existing DB plan to a DC plan, DB plan costs in many cases will rise, and the employer will likely be required to continue to maintain its DB plan, mitigating or nullifying any expected budget savings.

Analysis
Administrative Costs
Although the administrative cost of each retirement plan varies, in almost every instance, DC plans cost more—usually much more—than DB plans. Two factors account for most of the difference in DC and DB plan expenses. First, unlike DB plans, DC plans maintain individual accounts that are typically updated daily with information that is made accessible to the participant. Secondly, the size of DB plans covering most public employees creates an economy of scale, lowering the cost of administration and investment management.

Most DC plans use mutual funds or similar instruments as investment options. The average expense ratio for a stock mutual fund is around 1.5% of assets; the typical bond fund expense ratio is approximately 1.1% of assets. When costs for recordkeeping, participant education, and other administrative expenses are added, the annual cost of a DC plan can rise to as much as 2% of assets. This rate does not include the start-up costs needed to create a new DC plan; start-up costs generally are borne by the employer, either through expenses from the general operating fund or by drawing on assets from an existing retirement plan.

By contrast, a review of 12 of the nation's largest public DB plans, which provide pension coverage for more than one-third of all active state and local government employees, found an average annual expense ratio of 0.25%, including costs for administration and investment management. Corroborating this finding is a California state law that places a limit of 0.18% on the administrative expenses of county pension plans. When expenses are included for investment management and other activities outside the allowed limit, the total cost of these California county plans is well under one percent. Although smaller public pension plans are likely to have higher relative costs than larger ones, we can safely conclude that a substantial majority of public DB plans have an expense ratio that is considerably less than that of a typical DC plan.

Public DB plans are able to reduce their costs through economies of scale attained by their size, by negotiating favorable investment management fees, and in some cases by investing some assets using internal staff rather than external managers. Also, DB plans do not provide some services that drive DC plan costs higher, such as updating participant accounts on a daily basis and distributing quarterly statements.

Lower expenses have the same end result as higher investment returns. Higher returns increase the pool of assets available for pension benefits, and reduce required contribution rates. Higher investment costs have the opposite effect. Lower returns reduce the assets available for retirement benefits. For example, a DC plan with an expense ratio of 1.5% will reduce a participant's 8% investment return to 6.5%. Compounded over time, this difference will have a substantial negative effect on the value of a retirement account.

In his essay, *In Defense of the Defined Benefit Plan*, Gary Findlay presents the basic retirement benefit equation:

> Reduced to its simplest form, the financial mechanism behind the operation of both types of plans may be described by the formula:
>
> $$C + I = B + E$$
>
> Where:
>
> **C** = Contributions (employer, employee, or both)
> **I** = Income from investments
> **B** = Benefits paid
> **E** = Expenses for plan administration

Findlay then explains the effects of expenses on each plan type:

> In a conventional DB plan, the amount of 'E' will usually be a small fraction of a percent of the assets under management. The amount of 'E' will increase the amount of the employer's 'C', but will not have an impact on 'B'.
>
> In a DC plan, with investment vehicles being individually selected by employees, it is not unusual for 'E' to be in the range of 1% to 2% of assets under management. The amount of 'E' will not affect the employer's 'C', but will have an impact on 'B'. (The greater the expenses, the less there is available for benefits.)

Findlay's formula is illustrated by the following example:

An employee begins working at age 25, and leaves his employer at age 35 with a retirement account balance of $50,000. If this balance earns 8% (8.5% minus 0.5% for expenses) the account value will be $437,000 when the employee reaches age 65. The same starting balance earning 7% (8.5% minus 1.5% for expenses) will have a value at age 65 of $330,000, a difference of $107,000, or 25% less.

A DB plan typically does not pay benefits on the basis of individual participants' account balance. However, the effect of higher fees is fundamental: they reduce the amount available for pensions and other benefits; or they increase required contributions.

Costs and consequences of switching from a DB to a DC plan
Attempts to reduce costs by replacing a DB plan with a DC plan are unlikely to produce the anticipated level of budget savings. As described by Cynthia Moore in *The Preservation of Defined Benefit Plans*, laws governing public pension plans generally protect pension benefits from diminution. This prohibition against reducing benefits requires a public employer to continue administering its DB plan at least for existing plan participants. If a DC plan also is established, the employer will need to administer both plans, limiting any budget savings.

Also, some methods used to value public pension plan liabilities rely on continuous flow of new, younger members to help fund the cost of the plan's liabilities. For plans that use such valuation methods, diverting future employees from a DB to a DC plan can increase the cost of the DB plan.

One predictable consequence of a DC plan whose benefits prove inadequate is political pressure to create or revert to a DB plan. This situation recently occurred in Nebraska, where the DC plan failed to create a sufficient level of retirement income security for plan participants. Nebraska switched to a cash balance plan. Switching from a DC to a DB plan can result in shifting pension plan costs to future taxpayers, as insufficient pension accruals under the DC plan are funded.

DC plans offer certain advantages, including greater portability, the opportunity for participants to manage their own investments, greater access to account information, and a chance to directly benefit from investment returns that exceed market averages. But these advantages come with risks: investment risk that is borne entirely by the participant; the risk of leakage, when assets are cashed out and spent before retirement; longevity risk, when participants outlive their retirement assets; and the risk of diminished retirement savings as a result of high administrative expenses.

The Myth: "Workers want a defined contribution plan as their primary retirement benefit."

Summary

The reality is that most workers are unfamiliar with the differences between defined contribution and defined benefit plans. To the extent that employees have preferences for a retirement benefit, they are more likely to be for the *features* of the benefit rather than for a particular plan *type*; workers understand features like value, portability and flexibility, investment risk, and retirement income security.

A DB plan offers considerably more opportunity than does a DC to design a retirement benefit with features that are attractive to employees. In doing so, the DB plan facilitates a key objective for offering a retirement benefit: assisting employers in attracting and retaining quality workers.

As evidence of employee preferences for their retirement benefit, in recent years, when given the opportunity to choose between a DB and a DC plan, preponderant majorities of public employees have chosen the DB plan.

Analysis

Over the past two decades, many Americans have become familiar with the term *401(k) plan.* In the wake of more than three years of equity market declines and corporate accounting scandals, the 401(k) plan also is perceived as a risky and unreliable retirement benefit arrangement.

401(k) plans are only the most popular and recognized of several forms of defined contribution plans. Among public employees, 403(b) and 457 plans are common. Regardless of which plan type is available, recent equity market declines have heightened participant sensitivities about some plan features when a DC plan is an employee's primary potential source of retirement income. These pitfalls include:

- retirement plan account balances can decline, and sometimes they decline significantly
- these plans offer no assured retirement benefit
- plan assets can be exhausted well before death
- requiring amateur investors to make their own investment decisions can result in poor returns, even in a rising market
- market conditions at the date of retirement can significantly affect the level of retirement income available

The abstract notion, which may have peaked during the late 1990's, that a DC plan can generate considerable wealth, has given way to a more sober and realistic perception that a DC plan by itself is an unreliable and precarious method for attaining retirement income security. Although DC plans have many positive attributes, this plan type is limited in its ability to include features that meet important employer objectives and that are attractive to employees.

By contrast, a DB plan design lends itself to extensive creativity to accommodate employer needs, including attracting and retaining quality employees. Some features that are attractive to employees and that can be designed into a DB plan include value, portability and flexibility, reducing investment risk, and increasing retirement income security.

Value

As with any other form of compensation, value is a primary consideration when assessing a retirement benefit. A worker's perception of value in a retirement benefit may take several forms, perhaps most notably the presence and size of an employer contribution, and some protection against loss of principal.

Nearly all DB plans offered to public employees provide an employer contribution; in some cases, public employers fund the entire cost of the DB plan. This increases the ability of employees to contribute to a supplemental DC plan account or other savings plan.

By definition, a DB plan protects participants' principal. Vested DB plan participants qualify for a retirement benefit that is assured regardless of market performance. By contrast, DC plans typically provide no protection against market losses: even the most generous employer contribution to a DC account can be eroded through poor investment returns.

Portability and Flexibility

This paper's chapter on portability highlights the progress DB plans have made toward providing portability to plan participants, including reduced vesting periods, distributing employer contributions to terminating participants, and paying interest on participant accounts.

DB plans also offer flexibility. For example, a growing number of DB plans feature PLOP's—partial lump sum option plans. A PLOP allows retiring participants to take a portion of their retirement annuity as a lump sum. DROP's – deferred retirement option plans—also make DB plans more flexible and portable by allowing employees to postpone retirement and accumulate a cash balance that supplements their retirement annuity.

Most DC plans offer more portability than DB plans. Yet as discussed in the chapter on portability, too much portability can damage long-term retirement income security. Evidence shows that a majority of terminating participants cash out their DC plan assets, rather than rolling them into another retirement account. This defeats a fundamental retirement benefit objective—providing a source of retirement income.

Similarly, portability challenges retiring DC plan participants, as retirees have no assurance their assets will last the remainder of their lives. Retirees may spend all their assets at once, or at a rate that exhausts the assets well before their death.

In theory, *portability* and *flexibility* are salutary features of a retirement benefit, and to some extent, these features add value. Prudent retirement plan design, however, which considers the long-term retirement income security of plan participants, suggests there should be some limit on the extent of the plan's portability and flexibility.

A DB plan enables employers to balance the plan's portability and flexibility while protecting participants' long-term retirement income security needs. There are restrictions to offering such balance through a DC plan.

Investment Risk

The opportunity to manage their own retirement assets appeals to some employees. Most public employees have access to a voluntary DC plan that supplements their DB plan, enabling those who wish to manage a portion of their own retirement assets to do so.

As discussed in a previous chapter, most employees do not consider themselves to be knowledgeable about investments. Experience demonstrates that employees engage in a variety of practices resulting in investment returns that often fall well short of both market returns and returns of professional investment managers. This is a primary reason for NASRA's support of a DB plan as an employee's primary retirement benefit arrangement, supplemented by a voluntary DC option.

The Experience of Employee Choice
Since 1997, large numbers of public employees in Michigan, Florida, Ohio, and South Carolina have been given an opportunity to participate in a DC plan as their primary retirement benefit. The experience in these states creates a persuasive case study of employee retirement benefit preferences.

In each case except Michigan, the employer contribution equaled or exceeded the contribution to the DB plan; in Michigan, the employer contributes four percent of salary plus a matching amount of up to an additional three percent.

In each state, an overwhelming majority—more than 90%—of those eligible to switch elected to stay with the DB plan.

This experience is consistent with a survey conducted by the Ohio Public Employees Retirement System of its members with less than five years of service credit. The purpose of the survey was to determine these employees' attitudes and preferences for a retirement benefit. The findings of Ohio survey included the following:

- When members were asked to rank the importance of 17 plan design features, the ability to direct money to a private investment company ranked 16 out of 17. Among the highest ranked features overall were portability, guaranteed monthly benefit after retirement, and health care coverage.
- A majority of members did not consider themselves to be knowledgeable about investments.
- More than half of the members surveyed (56%) expressed a preference for the DB plan, and an additional 32% said they would select the Combined Plan, which combines features of a DB and a DC plan. 6.4% said they would select the DC plan.

The Myth: "Workers in defined contribution plans will receive substantially higher benefits than those offered by defined benefit plans."

Summary

Although accumulating wealth is an admirable objective, the chief purpose of an employer-sponsored retirement plan is not to make workers rich. Rather, the central purpose of an employer-sponsored retirement plan is to promote workers' retirement security.

Among participants whose primary retirement benefit is a defined contribution plan, some will, in fact, receive substantially higher benefits than they would under a defined benefit plan. However, many workers will fare worse under a DC plan, and some DC plan participants will have no retirement assets at all.

By providing an assured benefit whose value is known in advance of retirement, a DB plan meets the fundamental and imperative objective of a retirement benefit: to promote retirement security.

Analysis

Proponents of establishing a DC plan as workers' primary retirement benefit contend that simple math illustrates a compelling argument in their favor: by calculating the contributions an employee and his employer will make during the employee's working life, and factoring in projected investment returns, a DC plan will generate a larger annual benefit than would be available through a DB plan.

The problem with this argument is that it ignores decisions made by plan participants that can reduce and even eliminate the value of a DC plan. Some of these decisions are discussed in greater detail previously in this paper, and are summarized briefly below.

Factors Limiting the Value of a DC Benefit

- Many DC plan participants "cash out" their retirement savings when changing jobs, instead of transferring those assets to another retirement savings plan. A recent study by Hewitt Associates found that 42% of 160,000 401(k) plan participants who terminated employment cashed out their assets, rather than rolling them to an IRA or to a future employer's retirement plan. This paper's chapter on portability presents substantial empirical evidence of pervasive "leakage" from retirement savings accounts.

- Most workers make poor investors, resulting in investment returns well below the level needed to ensure retirement security. The chapter on DC plan participants managing retirement assets themselves describes workers' lack of knowledge and financial acumen necessary to generate investment returns anywhere near those assumed by DC plan advocates. The studies cited in this chapter describe a litany of harmful investment strategies engaged in by DC plan participants, such as taking on excessive or inadequate investment risk, market timing, borrowing from their retirement savings, and following trends, rather than establishing and staying with an appropriate asset allocation.

- Contrary to the theoretical models presented by DC proponents, every worker does not promptly enter the workforce in a full-time job after completing high school or college, and continue working until reaching retirement age. A substantial body of research has described the growth in so-called non-standard work arrangements, in which many jobs are seasonal, part-time, temporary, contract, or otherwise not permanent and full-time. The *2002 Census of State and Local Government and Payroll* found that state and local governments employed 13.8 million full-time employees and 4.5 million part-time workers. Whatever pension arrangements are in place for these part-time workers, their contributions are undoubtedly less than those implied in the models used by DC plan proponents.

  Non-standard work arrangements are especially prevalent among workers under the age of 35, a time when making contributions and taking advantage of compound interest is critical to accumulating sufficient assets to ensure retirement security.

  Similarly, many employees move into and out of the workforce for a variety of reasons, such as to have and raise children, for other family reasons, and for retraining or to increase their education. Some workers stop working before reaching normal retirement due to health reasons. In each of these instances, contrary to the assumptions of DC plan advocates, DC plan contributions are not being made.

Each of the factors listed above results in fewer assets available to plan participants at retirement. A worker who experiences one or more of these factors is likely either to have lower benefits in retirement than those offered by a DB plan, or to be required to work longer than they would if a DB plan were their primary retirement benefit. The idea that DC plan participants will retire with higher benefits is simply untrue for many workers.

Effects of Longevity and COLA's

Even for a DC plan account with an initial retirement benefit that is greater than the benefit the worker would receive under a DB plan, there is good chance that the real purchasing power of the benefit will fall below that of a DB plan during the worker's remaining life. There is also a chance that the worker will outlive his or her assets.

The median life expectancy of a 65 year-old American is 85. One-fourth of all women in America age 65 will reach 93; one-fourth of American men who are 65 will live to be 88. Most DC plans contain no cost-of-living provision. Yet, an annual inflation rate of 2.5 percent from age 65 to 93 will reduce the purchasing power of a retirement benefit by more than half.

Even worse than a benefit that is deteriorating due to inflation is a benefit that is exhausted before death. Yet this is a very real possibility for retirees with a DC benefit who live long enough, or who spend their assets quickly enough.

Thus, even in cases where a DC benefit initially exceeds the amount that would be provided by a DB benefit, that advantage is likely to disappear during a worker's retired life. For these reasons and others described throughout this paper, NASRA supports a defined benefit plan as a worker's primary retirement benefit, supplemented by a voluntary defined contribution benefit.

Arizona State Retirement System

A Comparative Analysis
of
Defined Benefit and Defined Contribution Retirement Plans

September 22, 2006

By:
Paul Matson, Executive Director
Susanne Dobel, Manager External Affairs

Table of Contents

Executive Summary

In very broad terms, there are two types of retirement plans that employers may offer to their employees: defined benefit plans and defined contribution plans. Defined benefit plans typically provide a stable lifetime retirement income stream to a retiree, whereas defined contribution plans typically provide a lump-sum value to a retiree, with the retiree determining how to create an appropriate retirement income stream.

Both types of retirement plans are under examination today, both across the United States, as well as in other countries. This examination is occurring in the private sector as well as the public sector, and is occurring among public and private executives, legislators, pension administrators, and citizen groups. While there is much discussion on both sides regarding which is the "better" plan structure – defined benefit or defined contribution – a more detailed analysis of the advantages and disadvantages of the two plan structures will provide decision makers with better information from which to make decisions. Our research suggests that the various characteristics of defined benefit and defined contribution plans can be grouped into five broad categories:

1) Plan Costs
2) Risks
3) Investment Returns
4) Plan Management
5) Specific Government Plan Considerations

Each of these five categories as well as the relevant sub-categories is discussed in the subsequent sections of this paper.

Contextual Preamble

We believe that it is important to understand the context within which this paper was developed. Such contextualization is important to any reader, because if the contextual description is accurate, it allows the reader to focus on the document's statements and conclusions, rather than trying to determine the author's objectives. Specifically, this paper was developed with the following five objectives and constraints:

- Informative

The paper is not designed to advocate. Rather the purpose is to inform. Each reader should be able to obtain factual information from the paper that will assist them in determining what retirement program structure is optimal for their particular circumstance.

- Unbiased

The paper is designed to be unbiased. No ideology or ideological values are expressed nor are the logic or fact statements intended to be supportive of any ideological perspective. Both the advantages and disadvantages of various plan designs are discussed.

- Rational

The paper is designed to be rational in its structure, presentation, and conclusions. The rational paradigm is fundamentally economic, but also includes sociological and psychological references. Value inferences are not made.

- Substantially Exhaustive

The paper is designed to be substantially exhaustive so that a detailed literature review is not required. Substantiality in this context refers to the magnitude and relevance of the various decision factors for plan design.

- Useable

The paper is designed to be a useable document. It combines theoretical arguments with pragmatic considerations. It is designed to be a practitioner's and policy-maker's guide to decision-making for retirement plan design.

We believe that the above five objectives and constraints are appropriate, as it is illogical to attempt to force a particular plan design in a situation for which it is ill-suited. Rather, rational decision-makers and participants should come to conclusions with respect to which type of plan design is likely to meet the desired outcomes, based upon facts and logic that are not ideological driven or constructed.

Issue

Recent increases to the aggregate contribution rate levels paid by both employees and employers to their defined benefit plans has been a significant factor leading to numerous discussions concerning the various advantages and disadvantages of defined benefit and defined contribution plans. The increases in contribution rates, have generally resulted from the following five factors:

1) significant improvements to the retirement benefits that occurred prior to 2002;
2) low contribution rates during the 1990s;
3) lower investment returns during fiscal years 2001, 2002 and 2003;
4) improving life expectancies of retirees; and
5) expensive and ineffective plan design features[1].

Numerous publications have discussed the merits of both defined benefit plans and defined contribution plans. Discussions have lead to divergent and often inconsistent approaches, including both defined benefit and defined contribution plan terminations; creating tiered defined benefit plans that allow existing *participants* and retirees to remain in the plan that they are currently in while offering new employees a defined benefit plan with reduced benefits; and creating hybrid plans. Each of these approaches has advantages and disadvantages.

This paper provides an analysis of the costs, risks, returns, plan management, and specific government plan considerations of defined benefit and defined contribution plans, and considers both the advantages and disadvantages of the two types of plans with respect to each attribute.

[1] These include such features as allowing service purchases to occur at below market rates, enhancing refund options for non-retiring employees, allowing options that were not fully priced, allowing options in which selection bias could occur, as well as numerous other features.

Analysis of Defined Benefit & Defined Contribution Plan Characteristics

1. Plan Costs

Plan costs refer to the various fees, expenses, and other negative cash flows that either increase the costs of managing the plan, or decrease the rates of return that can be achieved by the plan. There are two broad groups of plan costs: Investment Costs and Administrative Costs. From the perspective of both the plan sponsor as well as the members, costs are a negative attribute only.

Investment Related Costs

Investment related costs refer to the overall costs involved in managing a portfolio of securities. With respect to defined benefit plans, these costs typically consist of segregated and commingled fees and expenses that are negotiated by the plan sponsor, and typically vary according to the asset class involved, the management style utilized, and the size of assets under management. With respect to defined contribution plans, these costs typically consist of mutual funds management expenses (and in smaller plans possible front and rear loads or sales charges) and also typically vary according to the asset class involved, the management style utilized, and the size of assets under management. Mutual fund investment fees depend on the fund selected, with typical investment expense ratios for a retail active stock mutual fund of approximately 1.25% of assets, and typical retail active bond fund investment expense ratios of approximately 0.75% of assets. Institutional mutual fund fees for defined contribution funds can be significantly lower, but are still typically higher than investment fees paid by large defined benefit plans. As a result, defined benefit plans generally have lower costs per unit of benefit than defined contribution plans. This is primarily due to the fact that defined benefit plans aggregate the funds of hundreds of thousands of employees and are therefore able to receive significant reductions in their investment costs through economies of scale. For small plans, defined benefit costs can be higher than those of defined contribution plans as costs of defined contribution plans tend to increase almost linearly with the number of participants, while defined benefit plan costs, beyond a certain size, increase much more slowly because of pooling.

Administrative Related Costs

Administrative related costs refer to the overall costs involved in administering the accounts of the member. With respect to defined benefit plans, these costs typically consist of the various salaries, rent and overhead related to the administration, accounting, recordkeeping, custody services, information processing, education and information dissemination that is required to collect, account and pay the various benefits. These costs can be paid for either from the investment assets or from a separate appropriation. For the ASRS, these costs are paid from the assets. For public defined benefit plans, the services related to these costs are typically performed by a combination of public and private employees.

With respect to defined contribution plans, these costs also typically consist of the various salaries, rent and overhead related to the administration, accounting, record keeping, custody services, information processing, education and information dissemination that is required to collect, account for and pay the various benefits. These costs can be paid either from the assets or from a separate appropriation. For defined contribution plans, the services related to these costs are typically outsourced and performed by private employees. Offering individual investment choices necessitates the maintenance of individual accounts that are usually updated daily and made accessible to the participant.

In a review of 12 of the nation's largest defined benefit plans, which provide coverage for more than one-third of all active state and local government employees, the average annual expense ratio was .25%, which includes both investment and administrative costs.[2] These fees are part of the contribution rate and are not charged separately to participants' accounts. Further data on these costs can be found in a research memorandum published by Gabriel, Roeder, Smith & Co., which states, "Per dollar of benefit paid, it is less expensive to provide benefits through a defined benefit plan than through a defined contribution plan."[3]

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[2] Anderson, Gary W. and Brainard, Keith, (November 2002, updated February 2005), Myths and Misperceptions of Defined Benefit and Defined Contribution Plans, *National Association of Retirement Administrators*, pg. 15.

[3] Murphy, Brian, Sonnanstine, Alan, and Zorn, Paul, (November 17, 2003) List of Advantages and Disadvantages for DB and DC Plans, *Gabriel, Roeder, Smith & Company (GRS) Research Memorandum.*

Combined investment and administrative fees paid by participants in smaller defined contribution plans can exceed 2% and have a direct and substantial impact on the assets available to the participant.[4] Table I below demonstrates the lower assets available to pay benefits based upon six different fees levels ranging from 0.25% - 1.50% based upon a lump-sum investment held for a 15-year period. It demonstrates that a plan cost structure of 1.00% would reduce a participant's 8.25% expected investment return to 7.25%, which when compounded over 15 years would reduce the accumulation of assets by approximately 10% versus a defined benefit cost structure, and therefore significantly reduce the benefits that can be paid from the account. This difference is magnified for longer periods of time and for greater cost differentials, and lessened for shorter time periods or if costs differentials can be reduced.

Table I

Combined Investment and Administrative Fees Analysis:
Effect on Net Returns and Final Asset Base Available for Retirement

Combined Fees - %	Net Returns - %	Reduced Asset Base - %
0.25	8.00	0
0.50	7.75	3
0.75	7.50	7
1.00	7.25	10
1.25	7.00	13
1.50	6.75	16

Assumptions:
Gross-of-Fee Returns: 8.25%
Benchmark Defined Benefit Fee Structure: 0.25%

In general, it is reasonable to estimate that large defined benefit plans have aggregate costs which are approximately 0.5% of assets per year lower per unit of benefit than defined contribution plans, resulting in an asset base available for retirement that, assuming similar returns would be approximately 7% smaller for defined contribution plans than for defined benefit plans. This 7% reduction estimate only takes into consideration the typically higher investment and administrative cost structures of defined contribution plans, and does not take into account the lower investment returns typically achieved by defined contribution plans.

[4] Anderson, Gary W. and Brainard, Keith, Myths and Misperceptions of Defined Benefit and Defined

The combined higher costs structure and lower investment returns of typical defined contribution plans would result in a significantly greater reduction in asset base available for retirement than the 7% described above.

2. Risks

Investment Risk Transfer

Defined benefit plans are structured in such a manner that the employer assumes a portion (or all) of the investment risk, whereas defined contribution plans are constructed in such a manner that the employee assumes virtually all of the investment risk. As a result, defined benefit plans result in contribution rates that fluctuate through time in order to offset investment gains and losses, while maintaining a static post-retirement benefit structure. This is different in a defined contribution plan, where the participant has the option of either forcing their personal contribution rate to fluctuate or changing their expected post-retirement benefit structure to offset investment gains and losses.

Assuming that both employees and employers are on average *risk averse*, defined benefit plans tend to split investment risk between employers and employees,[5] while defined contribution plans tend to place the entire investment risk with employees.

Although it appears that the investment risk issue is related purely to incidence, it is actually related to both incidence as well as magnitude. This risk magnitude issue is discussed in the next section, "Investment Diversification."

Investment Diversification

Investment risk is related not only to incidence, but is also related to magnitude. Specifically, the magnitude of the investment risk issue is significantly determined by the diversification strategies available to the plan members or participants. These diversification strategies are in turn related the investment universe available to defined benefit plans versus defined contribution plans. Although it may appear *a priori* that the investment universe is identical for both types of plans, this is not the case. Due to numerous factors including:

Contribution Plans, pg. 15.

[5] Private sector defined benefit plans typically absorb the investment risk entirely, whereas public sector plans tend to split the investment risk between the employee and the employer.

regulatory requirements, management requirements, infrastructure requirements, dollar size requirements and cash flow '*lumpiness,*' the defined benefit investment universe is notably more expansive than the defined contribution investment universe. In particular, defined benefit plans are able to invest in the following investment areas that are generally not open to defined contribution participation: private real estate; private equities; commodities; and venture capital, as well as other alternative investments. As a result, the *efficient frontier* for a defined benefit plan is expanded beyond that available for defined contribution plans.

As a result of the above investment universe differential, defined benefit plans should be able to achieve similar returns to defined contribution plans with less risk.

Demographic Risk Transfer

Defined benefit plans are structured in such a manner that the employer and the aggregate body of employees share the demographic risk, whereas defined contribution plans are constructed in such a manner that the employee assumes the demographic risk.[6] As a result, defined benefit plans result in contribution rates that fluctuate through time in order to offset changes in demographic experience, while maintaining a static post-retirement benefit structure. This is different in a defined contribution plan, where the participant has the option of either forcing their personal contribution rates to fluctuate or changing their expected post-retirement benefit structure in order to offset personal demographic experience.

Assuming that both employees and employers are on average risk averse, defined benefit plans tend to split demographic risk between employers and employees, while defined contribution plans tend to place demographic risk entirely with employees.

Post Retirement Income Stability Risk

Defined benefit plans are typically structured in such a manner that the post-retirement income stream is a fixed amount based on some combination of salary, years of service, and a multiplication factor, whereas defined contribution plans are structured such that the post-retirement income stream is unknown at least until retirement, and possibly also during retirement. As a result, the post-retirement income stream is essentially the same *(uni-*

[6] This is typically true of government defined benefit plans only. In most private sector defined benefit plans, the employee does not share such demographic risk as they do not make contributions to the plan.

modal) for similar individuals under a defined benefit plan, but is significantly more varied *(platykurtic)* for similar individuals in defined contribution plans. The result is a more even distribution of post-retirement income for defined benefit plans and a much less even distribution of post-retirement income for defined contribution plans. A social value metric would be needed in order to determine whether a large or small standard deviation of post-retirement income streams is preferred, and to therefore determine whether a defined benefit or defined contribution plan offers the appropriate distribution of financial results, but it is clear that post-retirement income is more stable among defined benefit plan members than it is among defined contribution plan participants.

Financial Planning Risk

Defined benefit plans are designed to provide a fixed, stable, and known post-retirement income level, whereas defined contribution plans do not allow for such stability unless a typically low-yielding fixed income investment is utilized. As a result, financial planning issues and concerns are typically easier to plan for and resolve for defined benefit plan members than for defined contribution plan participants. Greater emphasis on financial planning can mitigate the uncertainty around post-retirement income levels in defined contribution plans, but they can not eliminate the uncertainty. Also, the additional required focus on financial planning that defined contribution plans engender are costly to their participants in terms of both financial expenses as well as time allocation.

An additional financial planning risk that is typically absent from defined benefit plans but exists with defined contribution plans is the savings risk. This risk results from the fact that defined benefit plans require an employee, or employer in private sector plans, to save for the employee's retirement, whereas in defined contribution plans there are no such required savings. As a result, defined benefit members are more likely to accrue adequate retirement income than are defined contribution participants.

3. Investment Returns

Asset Allocation Expertise

Defined benefit plans require the sponsor or an engaged third party to make the most critical investment decisions – referred to as asset allocation decisions – whereas in a defined contribution plan the individual participant is typically required to make the asset allocation decisions. Specifically, in defined benefit plans, the sponsor will engage a series of experts to determine an appropriate asset allocation – utilizing a combination of quantitative, empirical, and theoretical analysis – that is expected to achieve the greatest unit of return per unit of risk. Defined contribution plans require participants to self direct an investment strategy, usually utilizing a variety of mutual funds or possibly individual securities through what is known as a brokerage window. In order to partially mitigate participant risks inherent in defined contribution plans in this area, many defined contribution plans now provide a series of specific investment options called lifestyle funds that are intended to make these critical asset allocation decisions for the participant. This mitigates the potential risk to the participant; however the participant must still actively choose to outsource the asset allocation decision to the particular vendor in order to achieve this risk mitigating benefit.

As a result of the asset allocation decision making process described above, the individual participant in a defined contribution plan assumes the largest and most critical risk for producing a return on his account sufficient to fund his retirement benefits, often utilizing a personal non-expert skill set. Participants who excel at investment management may directly benefit from returns that exceed market averages, whereas participants who do not excel at investment management and do not utilize a risk appropriate lifestyle fund may be directly harmed from returns below market averages.

Empirical evidence indicates that the professional investment management provided by defined benefit plans has consistently provided higher rates of return than those of defined contribution plans. Although participants with sophisticated knowledge of investments may produce gains in their individual accounts, studies have shown that the average participant is a passive investor and receives rates of return significantly below those of DB plans. A study by Buck Consultants on the Nebraska Retirement System in 2000 found a highly significant difference in the returns from 1983-1999: the defined benefit plan averaged an 11% return and the defined contribution plan averaged 6% return.[7]

[7] Slishinsky, David, EA, MAAA, Buck Consultant, (2000) Actuary for the Nebraska Retirement Systems who authorized the 2000 Study which supported the change from Defined Contribution Plans to Cash Balance Plans.

As a result of the greater asset allocation financial expertise that is typically utilized in defined benefit plans, defined benefit plans are able on average to obtain higher rates of return than defined contribution plans.

Age Dependency

Due to the *going-concern* nature of defined benefit plans, as well as their membership age diversity, the typical defined benefit plan is able to retain an investment *risk profile* that is relatively independent of individual aging, whereas the individual nature of a defined contribution plan requires the individual participant to modify their investment risk profile based upon age-specific characteristics. As a result, defined benefit plans typically allow for an investment structure that has a higher risk/return tradeoff and subsequently can reasonably be expected to obtain higher returns than a defined contribution plan.

4. Plan Management

Portability

Defined benefit plans enable members to transfer the full accumulated account balances when they move from employer to employer, but these account balances do not typically reflect the full value of employer contributions. Defined contribution plans enable participants to transfer the full accumulated account balances when they move from employer to employer, which includes the full value of both employee and employer contributions. As a result, defined contribution plans typically allow a larger percentage of the available money to move with employees as they move from employer to employer, potentially increasing the balances available to the more mobile employees upon retirement.

Administrative Complexities

Defined benefit plans rely on a combination of assumptions that include longevity, turnover, retirement ages and investment returns. As time passes, each of these assumptions will deviate from expectations, causing plan funded status and contribution rates to diverge from expectations. In addition, the intrinsic complexities of defined benefit plans lead to a greater possibility of plan design feature decisions being made without a full understanding of all the various implications. As a result, defined contribution plans tend to be easier to administer and have greater financial certainty for employers.

Member Empowerment

Defined benefit plans operate virtually independently of the employees financial decisions, whereas the success of defined contribution plans substantially depends on active participation and engagement of employees. Consequently, employees of defined contribution plans may feel a greater sense of empowerment with their ability to affect their future financial security. It should be noted, however, that this sense of financial empowerment has a significant risk for the employee, in that even if they properly plan, save, and invest, they may have an insecure retirement future.

Contribution Rate Volatility

Contribution rates to a defined benefit plan are based on actuarial valuations and as a result the rates will fluctuate from year to year as a result of such factors as investment returns and plan experience being different from actuarial projections. The periodic change in rates can reasonably be expected to be difficult for both employees as well as employers to plan and budget for. Defined benefit plans can mitigate contribution rate fluctuations by utilizing various approaches including: careful management of asset allocations, smoothing investment returns, utilizing forward looking actuarial assumptions, managing benefit administration and utilizing less period-sensitive actuarial methodologies.

Contribution rates to a defined contribution plan are determined in the plan document and once set are constant unless the document is changed. For this reason, many employers have established profit sharing defined contribution plans instead of a standard 401(k) plan. The mandatory employer contributions to a defined contribution plan must be made without regard to the financial condition of the employer, but are known in advance and not dependent upon investment returns or actuarial assumptions.

Contributions to defined contribution plans have the advantage of being both stable and known, whereas contributions to defined benefit plans will almost certainly fluctuate through time, often quite significantly.

Demographic Diversification

Defined benefit plans are designed in such a manner that they are diversified on two demographic axes on which defined contribution plans are not. First, defined benefit plans are cross-sectionally diversified in a fashion similar to life insurance companies. As a result, the particular mortality characteristics of an individual will not require modification of investment strategy as is the case with defined contribution plans. In addition, defined benefit plans have time series diversification, which allows for inter-generational member diversification. As a result, the particular demographic characteristics of an individual will not require the modification of investment strategy that would be required with a defined contribution plan.

Residual Plan Management

Residual plan management refers to the various issues and complexities that result from managing a retirement plan after it has been closed. Such legacy retirement plans have various issues that should be addressed prior to their closure. In general, defined benefit plans have a multitude of significant and complex issues that arise upon plan closure, whereas defined contribution plans have significantly fewer and less complex issues that must be addressed upon plan closure. As a result, defined benefit plans have a disadvantage compared to defined contribution plans when being implemented in that any future closure of the defined benefit plan will likely be significantly more problematic.

In particular, closing a defined benefit plan has consequences in each of the following areas: allocation of unfunded liabilities; volatility management of contribution rates; multi-plan administrative complexities; and human resource morale issue. With respect to the allocation of unfunded liabilities, the closed plan will be required to allocate this accrued deficit among a static or deceasing employee base because there will not be any new entrants into the plan. As a result, the remaining employees can reasonably be expected to have the same normal cost component, but an increasing amortization component to their retirement contribution rates, resulting in a higher overall level of future contributions for the remaining plan members. With respect to the volatility of contribution rates, the static or decreasing employee base in the closed plan will increase the volatility of contribution rates both for plans with an unfunded accrued liability as well as for plans with an accrued surplus. As a result, the remaining employees and/or employers can reasonably be expected to have significant increased volatility in their required contribution rates.

With respect to multi-plan administrative complexities, the various administrative and investment management functions would need to be performed for two plans, each utilizing very different infrastructures and platforms. As a result, the administrative and investment management cost burdens would reasonably be expected to increase.

Finally, providing a defined benefit plan to one set of employees and a defined contribution plan to another set of employees would reasonably be expected to result in potentially significant morale issues. The two different plans could be perceived as offering different levels of benefits to different employees. This could be perceived as an old versus new employee differential treatment issue, or it could be perceived as an inter-generational differential treatment issue. In either case, it could reasonably be expected that morale would be negatively affected. Organizations with average or above-average turnover rates should specifically consider any possible morale consequences of offering two different plans with perceived benefit differences.

Member Reception

Both defined benefit plans and defined contribution plans have a number of positive attributes for both employees and employers, and offer specific advantages under different circumstances and in different situations. Irrespective of the various positive and negative attributes of the two general types of retirement plans, there is a relatively strong body of knowledge that indicates that employees who have a defined benefit plan view a conversion from a defined benefit structure to a defined contribution as significantly negative. Empirical evidence in numerous states, counties, and municipalities across the country indicates that the support for defined benefit conversions or closures among employees is extremely low. When given a choice to migrate from a defined benefit plan to a defined contribution plan, very few public employees have chosen the defined contribution option. Specifically, when offered the choice between a defined benefit plan and a defined contribution plan, research data indicates that approximately 95% of the employees have chosen to stay with the defined benefit plan.[8]

Education

There is a significant differential in the level of education that is typically required for members of a defined benefit plan versus participants in a defined contribution plan. Specifically, since defined benefit members are not making investment decisions, they do not need significant financial planning skills to manage the defined benefit component of their retirement plan. Defined contribution plan participants do, however, require quite significant financial planning skills to manage the defined contribution component of their retirement plan. With respect to education, it is also important to note that studies indicate that employers and administrators have a difficult time in effectively educating and advising defined contribution participants. This is potentially a significantly negative aspect of defined contribution plans that requires ongoing attention.

5. Specific Government Plan Considerations: Defined Benefit Plans

There are a number of areas in which public sector defined benefit pension plans have both modest absolute advantages over private sector defined benefit pension plans, and significant comparative advantages over private sector defined benefit pension plans. It is important to appreciate these advantages, as appropriate application of the advantages they should result in more cost effective human resource management by government entities. There do not appear to be any significant areas in which private sector defined benefit plans have either absolute or comparative advantages over public sector pension plans. The four areas of absolute and comparative advantages are as follows.

Economic Alignment of Interests

Government sponsors of defined benefit plans typically have an alignment of economic interest that does not exist in most private sector plans. Specifically, private sector defined benefit plans, with the exception of grandfathered defined benefit plans which can

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[8]DB/DC Fact Sheet, *Overview of Plan Types and their use among Statewide Retirement Systems,* National Association of State Retirement Systems, pg. 2.

allow for employee contributions, are typically funded 100% by employer contributions, whereas public sector plans are typically funded both by the employee and employer. As a result, there is an automatic alignment between the employee and the employer with respect to the plan's cost structure, benefit structure, and risk profile in government defined benefit plans (especially those in which the employee contribution rates are variable) that is non-existent in most private sector plans.

Employer Going-Concern Status

The going-concern nature of most government sponsors significantly reduces, and possibly eliminates, the worst case default scenario that exists in the private sector. This is a significant differentiating issue for government sponsors, as it represents a major risk area for private sector defined benefit plan participants. Even with Federal Pension Benefit Guaranty Corporation (PBGC) guarantees discussed below, private sector defined benefit members have significant default risks that fundamentally do not exist for public defined benefit plans and their members. Attempts to reduce the default-risk in private sector funds, including those in the "2006 Pension Protection Act", typically increase both the volatility of contribution rates as well as the volatility of corporate cash flows.

Cross-Employer Liability Risk

Private sector defined benefit plans are legally bound to participate in a federal guaranty program, referred to as the Pension Benefit Guaranty Corporation, and as a result must make insurance premium payments to the PBGC based upon the number of participants in the plan as well as the risk classification of the plan. The results of this are three fold: first, it increases the cost structure of the defined benefit plan; second, it forces well managed private sector plans to pay insurance premiums based on the risks of other, possibly less well managed plans; three, it results in a mild form of moral hazard for the private sector defined benefit pension plan industry. Public sector plans do not participate in such guarantee plans, and therefore have both a modest cost advantage over private sector sponsors, in addition to not incurring cross employer liability risk that is mandated in the private sector.

Actuarial Flexibility

Public sector defined benefit plans have a number of advantages over their private sector counterparts in the area of actuarial flexibility. Specifically, private sector defined benefit plans are subject to what is known as liability valuation risk – forcing the plans to change their liabilities periodically based upon interest rate levels rather than any intrinsic plan factors or long-term rate of return assumptions. The result is significantly greater volatility in contribution rates in private sector defined benefit plans.

In addition, private sector defined benefit plans are subject to what is known as asset 'mark-to-market' risk – the process of forcing the plan to recognize the changing value of its assets over short periods of time based upon current market circumstances, rather than allowing the smoothing of gain and loss recognition. The result will again be significantly greater volatility in contribution rates in private sector defined benefit plans.

In general, public sector plans have significantly greater ability than private sector plans to modify the fluctuations in contribution rates.

Table 1
Plan Strength Summary Matrix

Plan Characteristics	Defined Benefit Plans	Defined Contribution Plans
Plan Costs		
1. Investment Related Costs	+	
2. Administrative Related Costs	+	
Risks		
3. Investment Risk Transfer	+ EE	+ ER
4. Investment Diversification	+	
5. Demographic Risk Transfer	+	
6. Post Retirement Income Stability Risk	+	
7. Financial Planning Risk	+	
Investment Returns		
8. Asset Allocation Expertise	+	
9. Age Dependency	+	
Plan Management		
10. Portability		+
11. Administrative Complexities		+
12. Member Empowerment		+
13. Contribution Rate Volatility		+
14. Demographic Diversification	+	
15. Residual Plan Management		+
16. Member Reception	+	
17. Education	+	
Plan Characteristic Totals = 17	12	6

Conclusion

There are both positive and negative attributes of defined benefit and defined contribution plans and there is no single best solution for all circumstances. Rather, each of these attributes should be considered in the context of the specific fiscal, operational, human resource, and social circumstances of the employees and employers.

What do appear to be generalized observations about medium and large defined benefit plans and defined contribution plans are:

1. Plan Costs: Defined benefit plans appear to be notably less expensive per unit of benefit than defined contribution plans.
2. Risks: Defined benefit plans appear to be able to provide less risk than defined contribution plans.[9]
3. Investment Return: Defined benefit plans appear to achieve notably greater returns than defined contribution plans.
4. Plan Management: Defined benefit plans and defined contribution plans each offer a unique set of management issues with defined contribution plans being more simple to administer, but without a clear advantage to either.
5. Government authorities have notably different structures, characteristics, environments, and flexibilities in a number of areas that provide them with both absolute as well as comparative advantages in offering defined benefit plans.

If the goal of a retirement plan is to provide the least expensive method of providing a basic guaranteed replacement income to the members, then the defined benefit plan appears to provide a significant advantage for the majority of participants if the plan choices are mutually exclusive. If the plan choices are not mutually exclusive (and they are not), then it appears that the most appropriate strategy may be to provide a balanced approach with a defined benefit plan as the primary income replacement vehicle and a defined contribution plan option such as 457, 403(b), or Supplemental Retirement Savings Plan, to provide an

[9] Although the level of risk is lower with defined benefit plans, this lower risk level resides partially (or wholly with most private defined benefit plans) with the employer, whereas in defined contribution plans virtually none of the higher risk resides with the employer.

additional but discretionary option for additional pre tax retirement savings with no additional cost requirements for the employer.

Definitions

Absolute Advantage: An advantage that accrues to an entity because it is able to produce an outcome with less resource requirements than another entity.

Administration Fee: A fee that is customarily paid for by employee as an annual deduction from their account. These fees may be high if it is a new plan and reduced or eliminated as the account balances increase.

A priori: An expectation based upon logic but made in the absence of research or statistical evidence.

Comparative Advantage: An advantage that accrues to an entity because it is able to produce an outcome with less relative resource requirements than another entity.

Diversification: Spreading of risk by putting assets in several categories of investments – stocks, bonds, money market instruments, and precious metals, for instance, or several industries, or a mutual fund, with its broad range of stocks in one portfolio.

Efficient Frontier: The set of portfolios on the minimum variance frontier, but with maximum expected return for each given level of standard deviation.

Going-Concern: The idea that a company will continue to operate indefinitely, and will not go out of business and liquidate its assets. For this to happen, the company must be able to generate and/or raise enough resources to stay operational.

Lumpiness: An uneven and typically unpredictable distribution of cash flows.

Member: An individual in a defined benefit plan.

Participant: An individual in a defined contribution plan.

Platykurtic: Describes the relatively flat condition for a distribution. This condition is evaluated against the normal distribution and its attendant bell-shaped curve.

Risk Averse: Term referring to the assumption that, given the same return and different risk alternatives, a rational investor will seek the security offering the least risk – or, put another way, the higher the degree of risk, the greater the return that a rational investor will demand.

Risk Profile: The degree to which various risks are important to a particular investor.

Uni-Modal: A distribution that has one most frequently occurring value.

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