



Great Lakes Economic
Consulting, LLC

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A COST BENEFIT COMPARISON OF DEFINED BENEFIT AND DEFINED CONTRIBUTION RETIREMENT PLANS

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The Potential Impact of Closing a Defined Benefit Plan

Executive Summary:

A transition from a traditional defined benefit plan to a privatized defined contribution plan often includes unforeseen costs to taxpayers, and are far more expensive to administer when providing the same level of benefits to employees. The following report analyzes how a shift to a defined contribution plan may impact the state of Michigan's bottom line.

Proponents of DC plans often fail to recognize that any cost/benefit comparison of switching from a DB to a DC plan must compare a DC plan with the same level of benefits to the current DB plan because a cost comparison can only be made for goods or services that are essentially identical.

Additional costs can include the following:

- Depending on the level of unfunded accrued liability a closed plan has, and rates of return on investment, expenses will increase for about 10 to 15 years and net savings from closing a DB plan and converting to DC may take as long as 30 years.
- Switching from a DB plan to a DC plan almost always means, particularly in the public sector, that the DB plan will be maintained for current employees, adding additional costs to administer two plans.
- Administrative costs tend to be higher for DC plans, and it must be kept in mind that, in general the employer pays the administrative costs in a DB plan and the employee pays the administrative costs in a DC plan. A 2011 study by Deloitte for the Investment Company Institute found that the average cost of managing a DC plan was 0.72% of assets, or \$346 per participant. Costs ranged from 1.89% to 0.27% depending on the size of the plan and other factors.
- Investment returns are higher for DB plans than for DC plans. DB plans return on average 1% more annually than DC plans, and substantially more in many cases, and expenses are about 0.5% more for DC plans than for DB plans.
- The combined effect of the differences in return over a 25 year career, will result in asset accumulations of 20 percent less for DC plans than for DB plans for the same contribution amount.
- According to a study by the National Institute on Retirement Security the cost to fund a target retirement benefit under a DB plan is 12.5% of payroll. The cost to provide the same benefit under a DC plan is 22.2% of payroll.
- Employers are required to participate in Social Security – unless they provide an alternate minimum level of retirement benefits. The cost of Social Security is 12.4 percent shared equally by the employee and employer. As a result, freezing the DB plan could increase costs by 6.2 percent. The cost per 1,000 employees, assuming an annual wage of \$50,000, would be \$3.1 million.

Defined Benefit plans help the middle class:

- A 2012 study by the National Institute on Retirement Security found that in 2009 that state/local DB pensions in Michigan supported 71,894 jobs and \$9.22 billion of economic output in the state, and yielded over \$519 million in state/local taxes. The economic benefit of DC plans would be about 20 percent less. 3
- DC plans tend to favor the wealthy who are able to accumulate large balances over the working career. The Center for Retirement Research data shows that for those aged 30-39, for example, only 57% of those with incomes below \$20,000 participate while 82% of those with incomes over \$60,000 participate in an available DC plan. According to the Center for Retirement Research, the average balance in a 401K or IRA for those aged 55 to 64 ranges from \$18,000 for those earning less than \$38,000 to \$172,000 for those earning \$91,000- \$150,000.

Introduction:

A defined benefit (DB) plan typically guarantees a lifetime pension benefit to retirees. In recent years, questions regarding the impact of closing the DB plan and replacing it with a defined contribution (DC) plan or a hybrid plan have become more widespread.

There are two options to close a DB plan: a hard freeze and a soft freeze. A hard freeze stops future service accruals for all (current and future) employees. A soft freeze closes the DB plan to new hires. In the event of a soft freeze, another retirement plan, such as a DC or hybrid plan, would likely be established and offered to future employees. The DB plan would continue to operate for current employees.



For most public sector pension plans, there is strong legal protection for accrued benefits. Typical soft freeze plan alternatives are a DC plan (a deferred compensation plan such as a 401(k) or 403(b) plan), or a hybrid plan (a DC component and a more modest DB plan than the existing pension plan).

DC proponents prefer these plans because of their perceived portability, predictable employer costs, employee control over their investments, and the shift of the investment risk from the employer to the employee. Some DC proponents also say that DC plans offer greater transparency because the employee selects their own investments, eliminating potential conflicts of interest in investment decisions by public retirement boards.

However, DC proponents often fail to adequately evaluate the costs and risks of closing a DB plan. There are both direct costs and risks, and indirect costs and risks of closing a DB plan. Some risks are predominately borne by the employer and some are predominately borne by the employee.

Direct risks include:

- The cost of administering two plans for both current and future employees and higher DC plan administrative costs
- Asset Allocation and Investment Return advantages of a DB plan
- Liquidity requirements of a DB plan
- Accounting Impact - frozen DB plan expenses must be amortized over a decreasing payroll which will lead to front-loaded expenses
- Social Security - would have to add employees that currently do not participate
- The economic impact on the state/local economy of a DB plan versus a DC plan

Indirect Risks include:

- Impact on individuals' retirement decision making
- Loss of a recruitment and retention tool
- Disability and survivor benefits not offered in a DC plan
- Longevity risk and leakage in DC plans
- Cost of Living Adjustments are a DB plan benefit, not a DC plan feature

Providing employee benefits through any retirement plan is a complex policy decision. Before making policy decisions regarding the choice of using a DB plan, a DC plan or a hybrid plan to provide retirement benefits, a thorough cost-benefit analysis should be conducted including both potential short and long term cost savings.

A comparative analysis should consider the goals the employer is attempting to reach, the level of benefits that are desired, and provide an understanding of the risks inherent in various pension plan designs, and who should bear them. Any analysis should also include the need for a rebalancing of the portfolio to reflect the greater need for liquidity once all active members have retired.

Proponents of DC plans often fail to recognize that any cost/benefit comparison of switching from a DB to a DC plan must compare a DC plan with the same level of benefits to the current DB plan because a cost comparison can only be made for goods or services that are essentially identical.

For example, if two luxury sedans made by different auto companies are essentially the same with respect to quality and have the same options, it makes sense to compare price and ask; which is the better deal? It makes no sense however to compare the price of a new Cadillac to the price of a Yugo and ask which is the better deal. The Cadillac and the Yugo are so different with respect to quality and options that they are different products for all practical purposes.

If an analysis only looks at the cost/savings of a DB to DC conversion to the bottom line of a state/municipality – and ignores the fact that if the DC plan does not offer the same level of benefits to the employee, it's merely a cost shift and benefit reduction to the employee – and not a true cost/benefit analysis.

Findings

- Investment returns are higher for DB plans than for DC plans. DB plans return on average 1% more annually than DC plans, and substantially more in many cases, and expenses are about 0.5% more for DC plans than for DB plans.

There are several reasons for this difference; professional management of DB plans; professional managers' access to alternative investments; ability to diversify the portfolio over a broader investment horizon; and greater liquidity needs of a closed DB plan requiring shift to more fixed income assets.

- Proponents of DC plans often fail to recognize that any cost/benefit comparison of switching from a DB to a DC plan must compare a DC plan with the same level of benefits to the current DB plan because a cost comparison can only be made for goods or services that are essentially identical. According to a study by the National Institute on Retirement Security the cost to fund a target retirement benefit under a DB plan is 12.5% of payroll. The cost to provide the same benefit under a DC plan is 22.2% of payroll.
- Depending on the level of unfunded accrued liability a closed plan has, and rates of return on investment, expenses will increase for about 10 to 15 years and net savings from closing a DB plan and converting to DC may take as long as 30 years.

Under GASB, the DB plan unfunded liability must be amortized over a period no greater than 30 years. For an open DB plan, projected payroll can be expected to grow as new hires are expected to replace retiring employees, and average pay generally increases each year. Once a DB plan is frozen and closed to new entrants, payroll will decline over time. And under governmental accounting standards, a frozen plan must be amortized over a decreasing payroll or as a level dollar amount.

The expense of a frozen plan will tend to be front-loaded, as compared to an open plan that can spread these costs over a growing payroll base and the accounting costs will increase in the short term due to this front-loading.

GASB requires amortization of unfunded liability be converted from a percent of payroll to a level dollar amortization, the percentage increase in short term amortization of the unfunded liability will be about 30 to 40 percent, increasing the pension expense in the short term.

- Administrative costs tend to be higher for DC plans, and it must be kept in mind that, in general the employer pays the administrative costs in a DB plan and the employee pays the administrative costs in a DC plan. A 2011 study by Deloitte for the Investment Company Institute found that the average cost of managing a DC plan was 0.72% of assets, or \$346 per participant.

The costs include recordkeeping, administration, and investment management. Costs ranged from 1.89% to 0.27% depending on the size of the plan and other factors. Most mature public sector DC plans would likely be in the \$100 - \$500 million range; therefore for purposes of this analysis we are assuming that the DC fees would average .61% of assets, or about \$290 per participant. As mentioned above the cost of administering a DC plan is about 0.5% higher than the costs of managing a DB plan although the costs for the smallest DB plans could be higher than for DC plans.

- Switching from a DB plan to a DC plan almost always means, particularly in the public sector, that the DB plan will be maintained for current employees, adding additional costs to administer two plans.

- A 2012 study by the National Institute on Retirement Security found that in 2009 that state/local DB pensions in Michigan supported 71,894 jobs and \$9.22 billion of economic output in the state. In addition, DB pensions in Michigan had an income impact of \$2.99 billion and increased state value-added (GDP) \$5.34 billion, and yielded over \$519 million in state/local taxes. The economic impact of a DC plan will be less as the combined effect of the differences in return and expenses (about 1.5%) when compounded over a 25 year career, will result in asset accumulations of 20 percent less for DC plans than for DB plans for the same contribution amount.

- Employers are required to participate in Social Security – unless they provide an alternate minimum level of retirement benefits. Many public employees — most notably most municipal public safety members, do not participate in Social Security. Closing the DB plan for employees who do not participate in Social Security would force their employers into Social Security unless a mandatory DC plan was established to provide a minimum allocation of 7.5 percent of salary.

The cost of Social Security is 12.4 percent shared equally by the employee and employer. As a result, freezing the DB plan could increase costs by 6.2 percent for many employers in addition to their current obligations. The cost per 1,000 employees, assuming an annual wage of \$50,000, would be \$3.1 million.

- DC plans tend to favor the wealthy that are able to accumulate large balances over the working career. For example a person earning \$60,000 at retirement would need a \$600,000 portfolio to replace 40% of income assuming a 4 percent rate of withdrawal. According to the Center for Retirement Research, the average balance in a 401K or IRA for those aged 55 to 64 ranges from \$18,000 for those earning less than \$38,000 to \$172,000 for those earning \$91,000- \$150,000.

The average balance for those earning over \$150,000 is \$450,000, which points up how DC plans are much more beneficial to the wealthy relative to DB plans. Another problem is that the participation rate in DC plans increases as income increases. Center for Retirement Research data shows that for those aged 30-39, for example, only 57% of those with incomes below \$20,000 participate while 82% of those with incomes over \$60,000 participate.

Issue Brief:

The purpose of a tax-qualified defined benefit (DB) plan is to provide secure retirement income to qualified members employed by a participating public (or private) employer, and whose earnings capacity is diminished by age or disability. The DB plan is intended to advance the financial security for all who participate in the System.

Benefits of the DB plan for employers include the ability to attract and retain qualified employees for government employment, and reasonably estimate costs from year to year as they develop their annual budgets.

In recent years, questions regarding the impact of closing a DB plan and replacing it with a defined contribution (DC) plan or a hybrid plan have become more widespread. There are a number of reasons for this including increased government regulations but a major contributor has been the weak performance of the economy and the below average market returns over the past decade that have significantly increased the unfunded liability of most DB pension plans.

DB plans have become rare in the private sector but less so in the public sector. According to the Center for Retirement Research, in 1983 62% of private and public employers offered DB plans, in 2010 only 19% offered DB plans and 68% offered DC plans; 13% offered both. More than 90% of public sector workers are still covered by DB plans.

This report is mainly concerned with analyzing the costs of closing a DB plan and replacing it with a DC plan. However, the concepts related to the additional cost of administering two plans and the type of freeze a plan administrator may consider, outlined here, would also likely apply to various hybrid plan designs.

A 2004 study by Watson Wyatt, benefit consultants, shows that “retirement plan costs typically rise after a conversion from a traditional pension to a hybrid plan.”ⁱ And, a November 2010 study by Towers Watson, a benefits consulting firm, found that “...hybrids are more volatile than DC plans. Conversely, as there is a natural tradeoff between cost and volatility, hybrid plans are somewhat more cost-efficient than DC plans, although somewhat less so than traditional DB plans.”ⁱⁱ

What are DB and DC Plans?

A defined benefit (DB) retirement plan is often referred to as a traditional pension plan. Under a DB plan a retiree receives a retirement benefit that is guaranteed by law. Typically, the amount of the retirement benefit is determined by the benefit formula, a participant's years of service, age at retirement, and the highest salary over a specified number of years.

Public pension benefits are typically funded by employee and employer contributions, and investment earnings. A plan administrator is responsible for managing the DB plan on behalf of participating employers. Employers ensure adequate funding is available for benefits for their employees.

A defined contribution (DC) retirement plan is a deferred compensation retirement savings account such as a 401(k) or 403(b) plan. DC plans do not have any guaranteed benefits. Retirement benefits are determined by contributions made to an individual account by the participant, the employer, and investment earnings.

The employee is typically responsible for managing their own retirement account and making decisions about where to invest their retirement savings, and how much to contribute and how often. The maximum employer contribution amount is usually set by law or by the employer.

DB Plan Freeze Options:

If a DB plan administrator is considering a change in benefits, the plan can offer participating employers two pension plan freeze options. An administrator can terminate future service accruals for all (current and future) employees, known as a “hard freeze”, or close the plan to new entrants (new hires) only, known as a “soft freeze.”

Depending on how strong legal protections for benefits are, public pension plans may be limited to soft freezes. Key areas that have an impact on costs to the plan for both the short and long term are identified below as well as who bears the risk, the employer or the employee. All of the issues outlined below are applicable under both the hard and soft freeze options.

Typical soft freeze plan alternatives are a DC plan (a deferred compensation plan such as a 401(k) or 403(b) plan) or a hybrid plan (a DC component and a more modest DB plan than the pension plan for current employees). DC proponents prefer DC plans because of their perceived portability, predictable employer costs, employee control over their investments, and the shift of the investment risk from the employer to the employee. Some DC proponents also say that DC plans offer greater transparency because the employee selects their own investments, eliminating potential conflicts of interest in investment decisions by public retirement boards.

Overview of Key Issues:

If an employer desires to reduce the cost of providing a retirement benefit; it is recommended that all avenues to reduce costs be analyzed, and a thorough cost-benefit analysis be conducted.

A comparative analysis should consider the goals the employer is attempting to reach, the level of benefits that are desired, and provide an understanding of the risks inherent in various pension plan designs, and who should bear them.

Any analysis of the impact of closing a DB plan should also consider the short term costs, and weigh them against the long term cost savings of the proposed replacement plan. Finally, any analysis should also consider the need for a rebalancing of the portfolio to reflect the greater need for liquidity once all active members have retired.

There are a number of issues involved in switching from a DB to a DC pension plan beyond transition costs and long-term savings.

DC plans are always fully funded. On the other hand, DB plans are often underfunded. Nowhere is this distinction more obvious than in the public sector. According to the latest Pew foundation study (June, 2012), in 2000, more than half of the states were 100 percent funded, but by 2010 only Wisconsin was fully funded, and 34 were below the 80 percent threshold generally recommended—up from 31 in 2009, and just 22 in 2008. Connecticut, Illinois, Kentucky, and Rhode Island ranked the worst; all were under 55 percent funded in 2010. At the other end of the spectrum, four states were funded at 95 percent or better: North Carolina, South Dakota, Washington, and Wisconsin.

DB plans accumulate significant funding obligations as a result of employee service over time. The employees earn the right to future benefits as they work, but the employer does not always fully fund its accruing pension liabilities. Moreover, a defined benefit plan can easily become underfunded because of a decline in value of the pension fund's investment portfolio or even because of changes in the employer's work force (such as increasing life expectancies). Most DB plans assume an annual return of 8%, which has not been achieved in recent years and appears unlikely in the future. A return of 6.5% would be more reasonable, but would require much larger employer or employee contributions.

Pension benefits accrue differently under traditional DB plans and traditional DC plans. In particular, under a DB plan, benefit accruals increase significantly the closer a worker gets to retirement. On the other hand, under a DC plan, benefits accrue at a constant rate (e.g., 10% of annual compensation). Consequently, DC and DB plans result in different incentives that can affect employee decisions about work and retirement. In particular, DB plans typically penalize workers who change jobs frequently, create large financial incentives for workers to stay on the job at least until they are eligible for early retirement, and push workers out of the work force once they reach the plan's normal retirement age.

These issues are discussed in more detail below.

Direct Costs:

The cost of administering two plans for both current and future employees is higher and DC plan administrative costs are higher:

When a plan administrator closes a DB plan, often the administrator opens a fixed-rate DC plan. Closing a DB plan does not eliminate the administrative costs of the DB plan. The DB plan must be administered until the last participant quits working, retires and dies.

In the first year of a DC plan, there are significant start-up costs. Individual accounts need to be created for new participants and those accounts must be maintained. Until the final DB plan participant dies, two plans must be maintained and two plans cost more than one.ⁱⁱⁱ

In addition, for large pension plans, the cost of managing a DB plan is lower than the cost of managing a DC plan because administrative costs are driven by scale.^{iv}

For example: The average annual cost of managing the California Public Employees Retirement System (CalPERS) DB plan from 1997 to 2004 was 0.25 percent of assets. The annual management cost of a DC plan can be as high as 2 percent of assets.

When the Illinois Municipal Retirement Fund (IMRF) looked into switching from a DB to DC plan, it found that its total cost—administrative and investment expenses—could rise from 0.44 percent of assets to as much as 2.25 percent of assets, a difference that approached \$315 million a year.^v

A 2011 study by Deloitte for the Investment Company Institute found that the average cost of managing a DC plan was 0.72% of assets, or \$346 per participant. The costs include recordkeeping, administration, and investment management, and were evaluated primarily as a percentage of total plan assets.

The most significant driver of fees was the size of the plan. Median fee by size is shown below.

<\$1m- 1.89%

\$1m-\$10m- 1.27%

\$10m-\$100m- .78%

\$100-\$500M- .61%

>\$500m- .41%

In addition to size a number of other factors influenced costs. Across all plans in the Survey the fees varied from 0.28% of assets (10th percentile participant) to 1.38% of assets (90th percentile participant).

The higher a plan's allocation to equity investment options, the higher the 'all-in' fee tended to be. This reflects the higher investment expense ratios typically associated with equity investing. The expense ratio for the average stock mutual fund is 1.1 percent of assets.^{vi} Three other factors appeared to help explain the variability in plan fees; higher participant contribution rates; lower total number of investment options; and use of automatic enrollment.

Most mature public sector DC plans would likely be in the \$100 - \$500 million range; therefore for purposes of this analysis we are assuming that the DC fees would average .61% of assets, or about \$290 per participant.

In general, the employer pays the administrative costs in a DB plan and the employee pays the administrative costs in a DC plan.

Asset Allocation and Investment Return Advantages of a DB Plan:

The economic efficiencies embedded in DB plans are substantial. The biggest drivers of the cost advantages in DB plans are longevity pooling and enhanced investment returns that derive from reduced expenses and professional management of assets.^{vii}

When mature, a DB plan has a balanced mixture of young, middle-age, and retired members. This balance give DB plans the ability to diversify their portfolio over a broader investment horizon. For example, investments in private equity are rarely an option for DC plans. As DC plan participants approach retirement age, they are advised to shift their assets from higher return/higher risk assets like equities to lower return/lower risk assets such as bonds. While there are good reasons for doing this, to protect against market shocks later in life, the result comes at the price of lower expected investment returns.

DB plans on average return 1 percent more than DC plans. In addition, investment expenses can be expected to be 0.5 percent higher for DC plans than for DB plans. The combined effect of the differences in return and expenses is 1.5 percent which, when compounded over a 25 year career, will result in asset accumulations of 20 percent less for DC plans than for DB plans for the same contribution amount.^{viii}

In some cases the difference can be much greater than 1%. A 2009 paper published by Milliman, an independent actuarial consulting firm, cited lower investment returns from DC plans in Nebraska and West Virginia public pension systems. Over a 20 year period, Nebraska's state and county employees earned an average return between 6 and 7 percent in the DC plan. During this same time period, the DB plan for Nebraska's school employees, state judges and state patrol earned an average investment return of 11 percent. Similarly, the average return rate for West Virginia teachers in the DC plan was 3.15 percent lower than that for the DB plan members from 2001 through 2007.^{ix}

The benefit provided to the employee at retirement depends heavily on the investment returns of the employee's account. The higher the returns during the employee's career, the higher the benefit will be at retirement. Conversely, lower returns lead to lower benefits at retirement.

Individual investors do not always make the best decisions, often letting their emotions interfere with their investment choices. For example, from 1992 to 2012 the S&P 500 increased 8.21% per year but the average individual equity investor earned only 4.25%.^x Professional investors do a much better job of keeping their emotions out of investment decisions and generally earn higher rates of return.

Participants in a DC plan also face the risk of experiencing significant market losses just prior to retirement or even after retiring, which could impact their decision to retire, their standard of living after retirement and may force current retirees to seek employment after retirement.



Liquidity Requirements of a DB Plan:

As a closed DB plan ages, fewer contributions due to fewer active members, relative to retiree benefit payments, increases the need for more liquid assets. This creates a need to shift assets to investments that have a more predictable cash flow such as bonds.

This generally has a negative impact on the fund and results in lower investment income. This lost investment income needs to be covered by additional contributions. These contributions may come from the employer, the employee or a combination of both. The actual amount of investment

income lost is determined by how quickly the closed DB plan shifts its asset allocation toward a more conservative allocation involving a higher proportion in fixed income, and the share of the assets are invested in fixed income.

For example, the newly adopted asset allocation of California's Public Employees' Retirement Fund (PERF) calls for 15.9 percent of the assets to be invested in fixed income. Once all members are retired, it is reasonable for a closed DB plan to invest a much higher portion of its assets in fixed income.

The pension plan may shift the asset allocation to as much as 60 percent in fixed income once all members have retired. For CalPERS, most of the current active members will likely retire in about 30 years. At that point, more assets would be allocated to fixed income. If the asset allocation were gradually shifted each year over the next 30 years toward more fixed income assets to achieve a 60 percent fixed income goal, the expected investment income for the entire portfolio would be lower.

Accounting Impact- frozen DB plan expenses must be amortized over a decreasing payroll which will lead to front-loaded expenses:

For an employer's financial statement to be compliant with accounting standards set by the Governmental Accounting Standards Board (GASB), certain rules must be followed. In particular, GASB Statements 25 and 27 set guidelines for DB plans. GASB defines the "expense" that must be disclosed by public agencies in financial statements for their DB plans. In contrast, the actual employer required contributions are determined on a funding basis which may differ from the accounting basis prescribed by GASB.^{xi}

Under GASB, the DB plan unfunded liability must be amortized over a period no greater than 30 years. In addition, the unfunded liability must be amortized in level dollar amounts, or as a level percent of the projected payroll. For an open DB plan, projected payroll can be expected to grow as new hires are expected to replace retiring employees, and average pay generally increases each year.

As a result, payment schedules can see dollar amounts increase at the same rate as the payroll. However, once a plan is frozen and closed to new entrants, payroll will decline over time. Therefore, under governmental accounting standards, a frozen plan must be amortized over a decreasing payroll or as a level dollar amount.

In practice, the pension expense of a frozen plan will tend to be front-loaded, as compared to an open plan that can spread these costs over a growing payroll base and the accounting costs will increase in the short term due to this front-loading.

By converting to a level dollar amortization, the percentage increase in short term amortization of the unfunded liability will be about 30 to 40 percent, increasing the pension expense in the short term.

As an example of the short term impact on expensing requirements of changing the amortization method, the table below provides a comparison of the portion of the pension expense attributable to the unfunded liability for the next ten years for the California State plans calculated by CalPERS. The estimates assume the DB plan is closed to new hires.

As shown below, if the DB plan is closed to new hires, the State would be required to front load the pension expense to pay off the unfunded liability. Expenses would be greater for the first 10 years and be lower afterward.

Impact on Pension Expense (Accounting Impact), Fiscal Years 2010-2011 through 2019-2020.			
Fiscal Year	Current Amortization of Unfunded Liability	Amortization of Current Unfunded Liability if Current DB Plan Closed (in millions)	Difference (in millions)
2010-2011	\$1,663.8	\$2,192.8	\$529.0
2011-2012	\$1,712.6	\$2,192.8	\$480.2
2012-2013	\$1,763.0	\$2,192.8	\$429.8
2013-2014	\$1,814.9	\$2,192.8	\$377.9
2014-2015	\$1,868.4	\$2,192.8	\$324.4
2015-2016	\$1,923.6	\$2,192.8	\$269.2
2016-2017	\$1,980.5	\$2,192.8	\$212.3
2017-2018	\$2,039.1	\$2,192.8	\$153.7
2018-2019	\$2,099.6	\$2,192.8	\$93.2
2019-2020	\$2,161.9	\$2,192.8	\$30.9

Note that the amortizations of unfunded liability from the June 30, 2009 actuarial valuation of the State plans. It assumes all actuarial assumptions will be met including the assumption that the investment return earned by CalPERS will be 7.75 percent each year into the future. To the extent the actual experience of the plan is different than expected, these amounts will differ.

The Michigan Legislature was interested in converting the Michigan Public School Employees' Retirement System (MPSERS) from a DB plan to a DC plan. A 2010 analysis by the Michigan House Fiscal using data provided by the Michigan Office of Retirement Services (ORS) found that making the switch would create significant cost increases in the near term. These costs would decrease annually but continue for at least 14 years.^{xii}

Under the DB plan in effect at the time (which was eventually changed to a hybrid plan), the employer contribution rate for the DB pension was a percent of payroll determined annually by the Office of Retirement Services (ORS); and it was 9.6 Percent at the time. The 9.6 percent was composed of a normal cost of 4.21 percent of payroll and 5.39 percent for the Annual Required Contribution (ARC) to pay for unfunded accrued actuarial liability (UAAL) of \$8.9 billion over 28 years.

When a DB system is closed, the Government Accounting Standards Board (GASB) requires that the ARC be paid as a fixed dollar amount instead of a percentage of payroll. Cost would increase initially because the annual fixed-dollar contribution the state would be required to pay (the ARC) would be higher than the ARC paid as a percent of payroll under the DB plan.

ORS estimated that if employee participation DC rates for school employees were equal to the DC participation rates in the DC plan available to other state employees the district's contribution rate would increase by 2.34 percent of payroll and if the employee participation the unfunded liability in the table above are based on the rate was 100 percent the cost would increase by 2.79 percent of payroll. This equates to annual cost increases of \$234 million to \$279 million per year.

The analysis showed converting from DC to DB would have three significant fiscal implications:

- Accounting changes required from closing the DB system would create **substantial up-front costs** estimated to be \$250 million in the first year that phased out over a period of 30 years.
- If a DC plan with comparable benefits were offered, **additional normal costs** between \$234 million and \$279 million annually would result.
- While there would eventually be substantial savings to the state if state responsibility for unfunded liabilities were eliminated – it would take 30 years for full implementation and to realize those savings.

Social Security – Employer Would Need to Add Employees Who Do Not Currently Participate:

Employers are required to participate in Social Security – unless they provide an alternate minimum level of retirement benefits. Many public employees — most notably most municipal public safety members, do not participate in Social Security.

Closing the DB plan for employees who do not participate in Social Security would force their employers into Social Security unless a mandatory DC plan was established to provide a minimum allocation of 7.5 percent of salary.

The cost of Social Security is 12.4 percent shared equally by the employee and employer. As a result, freezing the DB plan could increase costs by 6.2 percent for many employers in addition to their current obligations. The cost per 1,000 employees, assuming an annual wage of \$50,000, would be \$3.1 million.

Another important consideration is that members in a DC plan face investment risk, longevity risk, and post-retirement cost-of-living adjustment risk. DB plans are able to address these risks in their plan design. Social Security provides some protection against these risks.

For employers who do not participate in Social Security, a switch to a DC plan provides no protection from these kinds of risk. Therefore, if these risks are an issue for an employer, then participation in Social Security should be considered if their employees are currently not covered.

The Economic Impact on the State/Local Economy of a DB plan versus a DC plan:

As noted above, the combined effect of the differences in return and expenses when compounded over a 25 year career, will result in asset accumulations of 20 percent less for DC plans than for DB plans for the same contribution amount.

A 2012 study by the National Institute on Retirement Security found that in 2009:^{xiii}

- Over \$426 billion in pension benefits were paid to nearly 19 million retired Americans. Of that: \$187 billion was paid to some 8 million retired employees of state and local government and their beneficiaries (typically surviving spouses); \$67.6 billion was paid to some 2.5 million federal

government beneficiaries; \$171.5 billion was paid to some 8.4 million private sector beneficiaries.

- Expenditures made out of those payments collectively supported: 6.5 million American jobs that paid nearly \$315 billion in labor income; \$1 trillion in total economic output nationwide; \$553 billion in value added (GDP); \$134 billion in federal, state, and local tax revenue.
- DB pension expenditures have large multiplier effects: For each dollar paid out in pension benefits, \$2.37 in total economic output was supported; and for every taxpayer dollar contributed to state and local pensions, \$8.72 in total output was supported nationally.

In a state-by-state analysis, the study found that state/local DB pensions in Michigan supported 71,894 jobs and \$9.22 billion of economic output in the state in 2009. In addition, DB pensions in Michigan had an income impact of \$2.99 billion and increased state value-added (GDP) by \$5.34 billion, and yielded over \$519 million in state/local taxes.^{xiv}

If the reduction in retirement assets from switching from DB to DC is 20 percent as has been suggested the long-run negative economic impact of such a switch would be in the billions of dollars.

Indirect Costs and Key Risk Areas:

Switching from DB to DC Can Impact Retirement Decision Making and May lead to Higher Costs:

Employees whose primary retirement plan is a DC plan tend to retire one to two years later, on average, than employees covered by a DB plan.^{xv} Academic research has also found that, controlling for other factors such as age, individuals covered only by a DB plan are 87% more likely to retire in any given year than individuals only covered by a DC plan.^{xvi} These findings are consistent with the observation that, due to the safe withdrawal rate strategy, DC participants must save a significantly greater amount to generate a desired level of retirement income.

For example a person earning \$60,000 at retirement would need a \$600,000 portfolio to replace 40% of income assuming a 4 percent rate of withdrawal. According to the Center for Retirement Research, the average balance in a 401K or IRA for those aged 55 to 64 ranges from \$18,000 for those earning less than \$38,000, to \$172,000 for those earning \$91,000- \$150,000. The average balance for those earning over \$150,000 is \$450,000, which points up how DC plans are much more beneficial to the wealthy relative to DB plans. Another problem is that the participation rate goes in DC plans increase as income increases. The Center for Retirement

Research data shows that for those aged 30-39, for example, only 57% of those with incomes below \$20,000 participate while 82% of those with incomes over \$60,000 participate.

In addition, since DC plan participants are exposed to investment risk, their retirement decisions tend to be sensitive to business cycles.^{xvii} For example, 35% of employees age 62 and older say that they have delayed retirement because of the recent recession. In contrast, DB plan participants, who typically can project what their retirement income will be, tend to forecast their retirement date more accurately than employees not covered by a DB plan.

These trends indicate that despite employers' substantial investments in DC plans, including matching contributions and participant education, many DC participants will not be able to retire when desired. In addition to the negative impact on participants, these trends have the potential to result in several workforce management challenges for employers.

Loss of a Recruitment and Retention Tool and Increased Volatility in Staffing Needs:

The retirement security offered by DB plans is highly valued by public employees and employers as a recruitment and retention tool. A recent study by the Alaskan Public Pension Coalition found that Alaska is investing significant resources in hiring and training young public employees only to have them leave the state with their training and experience and with their DC account balances, and go to work for employers with DB plans.^{xviii}

The National Institute on Retirement Security (NIRS) published the issue brief "*Look Before You Leap: The Unintended Consequences of Pension Freezes*" in October 2008. One key finding was a DB to DC switch can worsen retirement insecurity, potentially damaging recruitment and retention efforts.^{xix}

The effects are more severe under a DB to DC switch than if benefits in the existing DB plan are reduced. Some state retirement systems, such as West Virginia, who made the DB to DC switch, have gone back to the DB plan. This action was largely because the DC plan did not provide adequate retirement security for its members.

In addition, employers may face increased volatility in their staffing needs because DC participants' retirement decisions will be heavily impacted by fluctuations in the financial markets. In fact, research has found that a 1% increase in the S&P 500 index in any given year increases the probability that a pre-retiree will retire by 2.5%.^{xx} It follows that DC participants are more likely to delay retirement when financial markets decline; this decline is likely to occur when employers are facing headwinds in their businesses and would therefore prefer that forecasted employee retirements take place.

Delayed retirements have the potential to increase workforce costs for employers. According to a recent survey, employers expect that half their employees will lack the resources needed to retire at their organization's traditional retirement age. The surveyed employers are lukewarm about creating opportunities for even half of these employees to work longer, particularly if the employer views older employees as costly.^{xxi} Delayed retirements may also increase employers' healthcare costs, because annual healthcare costs for a 65-year-old or older worker are twice those of a worker between the ages of 45 and 54. However, the relationship between the age of a workforce and its cost is complex, with factors such as productivity also playing a role.

Delayed retirements may impact employee engagement and morale. For example, younger employees may become discouraged by a lack of advancement opportunities as fewer employees retire. A survey of finance executives found that more than 60% of the executives have become more concerned about employees who are unable to retire, and a resulting shortage of growth opportunities for younger staff.^{xxii} Delayed retirements may also reduce employers' ability to hire new employees, reducing the flow of new ideas and talent into their firms.

These workforce management challenges are likely to become more pronounced over the next

several years because the number of employees over age 55 is expected to grow by more than 40% by 2018.^{xxiii}

Disability and Survivor Benefits are not offered in a DC Plan:

DB pension plans generally provide income and benefit security in the event of regular service retirement, but also in the unforeseen event that a member becomes disabled or dies prior to retirement. Disability and death benefits are pre-funded within the pension plan. If the DB plan is closed, disability and death benefits need to be provided by a third-party in addition to the DC plan.

DC plans are not designed to provide adequate benefits in the event of disability or death prior to retirement, especially when these events occur early in an individual's career. Members with short service tenure do not have time to accumulate sufficient assets in their DC account to provide for an adequate benefit for themselves or their survivors.

To provide similar disability and survivor benefits, these benefits would have to be purchased from an insurance company. The cost to purchase similar benefits from an insurance company is greater than the cost of providing these benefits within the DB plan because an insurance company uses a lower discount rate because it is required to invest in less risky assets, will add a premium due to accepting the risk, and will generally add a profit margin.

Cost of Living Adjustments – COLA and Inflation:

A problem with both DB and DC plans is that inflation after retirement can erode the value of accrued pension benefits. Post retirement inflation is always a problem for DC plans. On the other hand, many public sector DB plans provide for automatic or periodic increases in benefits paid to retirees.

DB plans generally have COLAs included in their design and are able to mitigate the impact of inflation. For example, most CalPERS members receive a 2 percent COLA after retirement, and are protected from some of the effects of inflation by the Purchasing Power Protection Allowance (PPPA) benefit. The PPPA benefit maintains a 75 percent or 80 percent purchasing power benefit level after retirement.

DC plans do not have COLAs. The effect of inflation is likely to erode the value of the account balance over time, especially in the event of a high inflation period. To mitigate this risk, in some cases members of a DC plan may be able to invest in securities with inflation protection. However, as with any investment decision, there is a trade-off. Generally, in order to guarantee inflation protection, the participant will have to give up a portion of the investment return elsewhere leading to lower benefits in retirement.

DB plan participants are protected against investment and longevity risk (or the risk of outliving one's assets) – DC plan participants are not:

One of the biggest problems with DC plans is that individuals, rather than professional money managers, control investments. Unfortunately, individuals tend to invest too conservatively, certainly toward the end of their working careers. Additionally, many individual investors are

unsophisticated, and some may even end up being bilked by con artists.

Another problem with DC plans is uncertainty. Financial planning is difficult because the value of the ultimate benefit is unknown, and the employee bears all of the investment risks. In particular, unlike DB plan benefits, retirement income bears no specific relationship to preretirement pay, so it is possible for there to be a significant change in living standards at retirement. And, because of stock market volatility, workers who retire when the market is up will have higher pensions than those who retire when it is down.

DB plans with professional investment managers assume these risks because they promise to provide participants with a guaranteed retirement paycheck. In contrast, DC plan participants bear the risks of investment losses and outliving their assets. Some DC plans do offer participants access to products, such as fixed annuities, to protect against market and longevity risk. However, when fixed annuities are offered, only 1% of participants elect to use them.^{xxiv} Retiring DC participants have made it clear that they do not wish to give up control of their retirement assets by annuitizing their balances.

DB plans efficiently pool longevity and investment risk across large numbers of participants. Longevity risk is pooled because participants who only live a few years after retiring “subsidize” the participants who live for decades. This concept applies to investment risk as well. DB plan participants who retire after periods of very strong market performance do not receive a larger pension. These market gains are absorbed by the plan to support payouts to future participants, some of whom may retire after periods of weak market performance. In contrast, there is no concept of pooling longevity or investment risk across participants in a DC plan.

The loss of these design features has significant implications for the performance of DC plans. A recent study found that the cost to deliver the same level of retirement income to a group of employees is 46% lower in a DB plan than it is in a DC plan (see below).^{xxv} The lack of risk pooling in a DC plan is a key reason for this.

DB plan sponsors are able to fund their plans based on the average life expectancy of their participant populations, because the average life expectancy of a large number of participants can be reliably predicted. In contrast, an individual DC participant cannot reliably predict how long he or she will live. As a result, financial experts recommend that individuals fund their retirements assuming that they will live to age 95.^{xxvi}

DC participants can “safely” withdraw only a small portion of their savings each year in retirement. DC participants need to be sure that their savings will last through any ups and downs in the financial markets, and for as long as they live. As a result, studies recommend that individuals withdraw no more than 4% of their retirement accounts in their first year of retirement, and adjust that amount by inflation every year thereafter. This draw-down strategy is known as the “safe withdrawal rate” strategy.^{xxvii}

However, the 4% safe withdrawal rate does not account for investment expenses.^{xxviii} The probability the retirement portfolio will last to age 95 using a 4% withdrawal rate with 60 basis points of expenses is 75%. This success rate is likely too low for most employees who wish to have a secure retirement.^{xxix} After accounting for investment expenses, the safe withdrawal rate drops to 3.2%; this withdrawal rate provides a DC participant with a 95% probability that his or her

retirement assets will last until the age of 95.^{xxx} In the absence of further innovation in retirement solutions, participants can only spend a small portion of their DC savings if they wish to achieve a financially secure retirement.

DC participants planning to utilize the safe withdrawal rate strategy will need to save more for retirement than if they had originally planned to utilize a higher withdrawal rate. Moreover, no matter how much DC participants save for retirement, those with a diversified portfolio remain exposed to the risk of a significant decline in their DC assets at critical times, such as just before or after retirement. Not surprisingly, these aspects of today's DC plans have a significant impact on DC participants' retirement decision-making, which in turn has workforce management implications for employers. The next section of this white paper explores these issues.

At the same time, however, there may be problems of political pressure on public defined benefit plans. For example, there is a danger that public pension funds may undertake imprudent investments for political reasons. Absent strong legal protections, there is also some risk that politicians will manipulate or "raid" public pensions to balance government budgets.

Leakage and Distributions:

Another major problem with DC plans is that they are leaky. While DB plans typically provide lifetime annuities for retirees and their spouses, DC plans typically make lump sum distributions to departing workers. Unfortunately, a significant portion of these distributions end up being dissipated long before retirement.^{xxxii}

For example, a recent study suggests that 60% of lump sum distributions made to job changers from large plans are not rolled over into Individual Retirement Accounts (IRAs) or other retirement savings plans.

In 2011 Americans withdrew \$57 billion from retirement accounts before they were supposed to, paying \$5.7 billion in penalties. Adjusted for inflation the government collects 37% more money from early withdrawal penalties than in 2003.

The median size of a 401K is \$24,400- \$65,300 for those age 55 or older. Fidelity Investments estimates that retirees will need 8 times their annual salary (last year of work) to live comfortably in retirement. One reason retirement balances are so low is that many younger workers who switch jobs don't bother to roll over their accounts. Workers aged 20 to 39 have the highest cash-out rates, with about 40% taking money out when they switch jobs. A 30-year old who cashes out \$16,000 could lose \$471 a month in retirement income by not leaving it invested in a retirement account, according to a Fidelity analysis.^{xxxii}

DC plans also often allow individuals to borrow against their accounts. Under a DC plan, the responsibility for purchasing an annuity is borne by the individual worker. Unfortunately, there is just not much of a market for private annuities, and the costs are often prohibitive.

Another problem with DC plans is the longer life span of women. Because women tend to live longer than men, they are more likely to outlive their retirement savings. That is not as much of a problem with DB plans because distributions usually take the form of an annuity.

Cost/benefit comparison of switching from a DB to a DC plan must compare a DC plan with the same level of benefits to the current DB plan:

In a 2008 study the National Institute on Retirement Security developed a model to compare the costs of defined benefit and defined contribution pension plans.

The model is based on a group of 1,000 newly-hired employees. For the purposes of simplicity, all individuals were given a common set of features. All newly hired employees are female teachers aged 30 on the starting date of their employment.

They work for three years and then take a two-year break from their careers to have and raise children. They return to work at age 35 and continue working until age 62. Thus, the length of the career is 30 years.

By their final year of work, their salary has reached \$50,000, having grown by about 4 percent each year.

Next, the model defined a target retirement benefit that, combined with Social Security benefits, will allow the teachers to achieve generally accepted standards of retirement income adequacy. The plan provides a benefit in retirement equal to \$26,684 per year or \$2,224 per month.

A cost of living adjustment is provided to ensure the benefit maintains its purchasing power during retirement. Thus, each teacher will receive a benefit equal to 53% of her final year's salary that adjusts with inflation, which is estimated at 2.8% per year.

With this benefit and Social Security benefits, each teacher can expect to receive roughly 83% of her pre-retirement income – a level of retirement income that can be considered adequate, but not extravagant.

The model defines certain parameters for life expectancy and investment returns. Then, on the basis of all these inputs, the model calculates the contribution that will be required to fund the target retirement benefit through the DB plan over the course of a career. The same is done for the DC plan.

The study found that the cost to fund the target retirement benefit under the DB plan is 12.5% of payroll each year. By comparison, the cost to provide the same target retirement benefit under the DC plan is 22.9% of payroll each year. In other words, the DB plan can provide the same benefit at a cost that is 46% lower than the DC plan. ^{xxxiii}

As discussed above, DB plans are more cost effective because of longevity risk pooling, portfolio diversification, and superior investment returns.

Workplace Issues: Pros and Cons of DB versus DC

1. Back-loading

One of the most obvious features of DB plans is that they tend to disproportionately favor older workers. The primary reason for this back-loading is that the value of benefit accruals typically increases as a percentage of compensation as employees approach retirement age.

Unfortunately, this back-loading can discourage talented young workers from coming into public service, and it can leave millions of former workers without meaningful pensions.

DC plans do not necessarily solve the problem. They do not favor older workers over younger workers but they also do not guarantee that workers will accumulate enough for a secure retirement.

2. Lack of Portability

Because DB plans are back-loaded, they reward long-tenure employees and penalize more mobile employees. In short, the mobile worker covered by a DB plan will suffer large benefit losses each time she changes jobs. Moreover, even greater financial penalties can result if a worker changes jobs without vesting.

For example, under Michigan's historical defined benefit plan, 45% of the state employees did not vest in the program before leaving under that system. The 10 years it required to vest in the DB plan probably contributed to this. All in all, the typical defined benefit plan penalizes workers who change jobs frequently.

At the same time, however, the typical DB plan creates large financial incentives for workers to stay with a firm, at least, until they are eligible for early retirement. This is the so-called "golden handcuffs" phenomenon.

Few such benefit losses occur under DC plans. Instead, a mobile employee can typically roll over any DC plan accruals and accumulate a large account balance for retirement. Moreover, DC plans tend to have shorter vesting periods (or immediate vesting) and an easily defined transfer value (the value in the account). Indeed, portability is one of the most important advantages of DC plans.

Moreover, the lack of job security in today's workplace makes such portability and the resultant asset accumulation increasingly important, especially for women.

On the other hand, when workers with a DC plan change jobs they do not always rollover their retirement balances. For example a recent study found that 60 percent of lump sum distributions were made due to job changes from large plans are not rolled over into IRA's or retirement savings plans.

One way to reduce this penalty for frequent job changers would be to reduce the years required for vesting in a DB plan, or provide immediate vesting at a lower multiplier for the first few years. This would, however, increase the cost of the DB plan.

3. Retirement Timing

DB plans typically push older workers out of the work force at normal retirement age. Once a worker is eligible to receive full retirement benefits, delaying retirement can actually be quite costly. Those who delay retirement lose current benefits, and the increase in benefits that can result from an additional year of work rarely compensates for the benefits lost. All in all, DB plans create "windows" of retirement opportunity that typically range from the plan's early retirement age

through the plan's normal retirement age.

DC plans can also influence the timing of the decision to retire, but their effects are typically less dramatic. Their impact results largely from the "wealth effect" of enabling workers to accumulate enough money to be able to afford to retire.

This impact could be mitigated by increasing the minimum retirement age – which would also reduce the cost of a DB plan. The impact could also be mitigated by adopting the same type of scheme employed by Social Security that allows an earlier retirement at a reduced rate but requires working longer for a full retirement benefits.

4. *Work Force Management Issues*

As the preceding discussion has indicated, DB plans and DC plans can be designed to influence employee decisions about work and retirement. Just which type of plan is best for a given employer depends upon the human resources objectives of that employer and the demographics of its work force.

Some employers may value younger workers who will stay for short periods of time. Presumably, they would want to have DC plans. On the other hand, high training costs may cause some employers to make retention of staff a high priority, and DB plans are better at rewarding long-tenure employees. DB plans also provide much greater flexibility in providing early and normal retirement incentives.



Conclusion:

Providing employee benefits through any retirement plan is a complex policy decision. Before making policy decisions regarding the choice of using a DB plan, a DC plan or a hybrid plan to provide retirement benefits, a thorough analysis should be made of the benefits provided by each plan and the effects of these plans on employer costs, on recruitment and retention goals of the employer, and the ability of the employer to predict and anticipate costs over time.

For the reasons listed in this Brief, a DB plan that currently costs an employer 15 percent of payroll cannot be replaced by a DC plan that also costs the employer 15 percent of payroll and provide the same level of benefits. A DC plan that costs 15 percent of payroll will offer lower benefits than a DB plan that costs 15 percent of payroll.

It is also worth noting that it would not be easy to shift from a traditional DB plan to a new type of retirement plan. Converting a defined benefit plan into another type of plan can be an “arduous task,” and it can be expensive to do because it involves consultants, actuaries, lawyers and plan providers.

Moreover, it would be unlikely that any revenue would actually be saved in that process for several decades due to GASB accounting rules that require frozen DB plan expenses to be amortized over a decreasing payroll which will lead to front-loaded expenses, and the expenses associated with providing Social Security contributions or equivalent coverage to municipal employees not currently covered by social security – most notably public safety personnel.

In the past several years there has been a great deal of discussion about replacing the Defined Benefit plan (DB) that has traditionally formed one leg of the three-legged stool of economic security for municipal employees (the other two being Social Security and personal savings).

As its name suggests, in a DB plan the employer defines and guarantees a specific pension amount to the employee. The benefit is determined according to a formula or computation based on the employee’s salary and years of service. Under a DB plan, the employee is entitled to the promised specific benefit. Employees can feel secure about their pension benefits because employers with DB plans are required to set money aside to pay promised benefits.

Employers try to get the best and safest return on the money they set aside, to be able to pay benefits when the bill falls due. But the employer is on the hook for the benefits regardless of its investment success and the employee has a legal right to the benefits whether or not the employer invests well.

The defined contribution plan (DC) operates very differently. Under a DC plan, the employee, often aided by the employer, sets aside a specific amount of money—a “defined contribution”—at regular intervals. These are usually known as 401(k) plans, though there are other types as well.

At retirement, the employee has an account balance which is completely dependent on how much has been put into the fund and how these contributions have grown over time as they have been invested. Thus, in a DC plan, the employee is at risk if invested funds do badly. The account balance can be taken as a lump sum or used to receive a pension.

In recent years, interest in a type of hybrid plan, combining features of DB and DC plans, has also been increasing. Technically, hybrids are a type of DB plan. One type of hybrid is a cash balance plan. Like a DB plan, a cash balance plan has benefits determined by formula, pre-funded employer contributions, and assets managed by the employer.

But like a DC plan, the benefits formula is based on wages and interest earned, not length of service, and is reported as an individual account, which can be paid as a lump sum or annuity at retirement or cashed in or rolled over to an IRA when an employee leaves early.

An important question about all pension plans is whether they add to the retirement leg of the three-legged stool more than they subtract from the savings leg. Research suggests that pensions do add to savings but by less than the full amount. Although researchers' findings differ, DB plans probably add more to savings than DC plans, in part because they help lower and middle income workers who tend to save less.^{xxxiv} One study estimates that at most about one-third of 401(k) savings is additional to what would have been saved otherwise; two-thirds substitutes for other personal savings.^{xxxv}

Typically, unlike a DB plan, DC plans allow each individual plan member to pick how he or she invests, whereas professionals usually invest DB plan assets collectively. Data suggest that when individuals invest their own pension assets they tend to do so all over the risk spectrum. They are either way too risky (putting all their money in one or just a few stocks, selecting outlandish asset classes or constantly buying and selling to capture last year's good idea) or way too conservative (leaving all their money in the equivalent of a bank passbook account). Various studies have shown that it is more likely under DC plans than under DB plans for a significant number of plan participants to end up with a reduced pension because funds were invested poorly.^{xxxvi}

Another concern raised by DC plans is that it is much more expensive to manage millions of little accounts than one big one. For example, DC plan participants cannot cut as good a deal with fund managers as DB plan professionals can, so the cost for managing each dollar of an employer's pension assets goes way up. Therefore, under DC plans, too much of the money put into pension savings goes to pay administrative costs instead of pension benefits. Proponents of DC plans counter that although it might cost more to operate the investment side of a DC plan, the administrative costs of DB plans might be higher. DBs need an actuary to tell them how to plan for annuities, and more lawyers, administrators and record keepers to comply with accounting and regulatory expenses that DC plans don't have.

These costs depend considerably on the size of the fund. That explains why most of the conversions from DB to DC plans have been among small businesses. Large-scale enterprises, including public pension funds, show very little difference in cost between DB and DC plans. What's needed for rational decision making is a measure of the total combined operating and investment costs. The few studies that have attempted to add it all together favor DB plans.^{xxxvii}

Finally, proponents of DC plans say that it is much more cost effective for individuals who change jobs to take their DC plan assets with them when they go compared to DB plans, which tend to reward workers who work long careers with one company.

Regardless of the merits of job changing versus career building, the key questions are: What happens to the money when a person changes jobs? How much money will workers have when they reach retirement? Individuals can accumulate large balances in a DC plan over the course of their working lives – but do they?

The answers to these questions put DC plans in a very bad light. Because DC plan participants can cash out their pension assets when they change jobs and spend the money, they are much less likely to build up a sufficient account balance to pay for retirement. And many workers do not even participate in DC plans that are offered to them. DC plans tend to favor higher income workers who can take advantage of the tax subsidy—money put into a 401(k) plan is not taxed until withdrawn; lower-income workers have less incentive and ability to save to avoid taxes.

While DC plan members may feel that it benefits them to be able to cash out their pension plan to pay for other purchases such as houses or college tuitions or health bills, it means that these plan members may arrive at retirement lacking grocery money. Unfortunately, more than half of DB plans, cash balance hybrids in particular plus a rising percentage of traditional plans, have begun offering lump sum payments.^{xxxviii}

When an employee in a DB plan retires, the payout is usually made as a lifetime annuity with automatic protection of benefits for a surviving spouse. In other words the worker and the worker's spouse receive payments as long as either of them lives. DC plans, however, typically are paid out as a lump sum. That means that a retiree has to decide how to apportion payments over his or her lifetime. Although they could purchase an annuity, like a DB retiree, few actually do, and buying an annuity at retirement is more costly and more subject to market vagaries than DB annuities. Not taking an annuity means that the retiree can outlive his or her money.

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- ⁱ Watson Wyatt Insider. *Workforce Realities Not Cost, Drive Hybrid Plan Conversions*. February/ March 2004.
- ⁱⁱ Tomeka Hill, Gaobo Pang and Mark Warshawsky. *Hybrid Pension Plans: A Comprehensive Look at Their History, Economics and Features*. Towers Watson Perspectives. November 2010, page 27. California Public Employees' Retirement System Page 2 of 9 March 2011
- ⁱⁱⁱ National Institute on Retirement Security. *Look Before You Leap, The Unintended Consequences of Pension Freezes*. October 2008.
- ^{iv} Council of Institutional Investors. *Protecting the Nest Egg; A Primer on Defined Benefit and Define Contributions Plans*.
- ^v Protecting the Nest Egg: A Primer on Defined Benefit and Defined Contribution Retirement Plans; COUNCIL OF INSTITUTIONAL INVESTORS
- ^{vi} CalPERS. *Pension Debate: The Myths and Realities of Defined Benefit and Defined Contribution Plans*. July 2006.
- ^{vii} National Institute on Retirement Security. *A Better Bang for the Buck-The Economic Efficiencies of Defined Benefit Pension Plans*. August 2008.
- ^{viii} Alicia H. Munnell, Maurico Soto, Jerilyn Libby and John Prinzivalli. *Investment Returns: Defined Benefit vs. 401(k) Plans*. Issue in Brief 52, Center for Retirement Research at Boston College. September 2006.
- ^{ix} Mark Olleman. *Public Plan DB/DC Choices*. Milliman. January 2009. California Public Employees' Retirement System Page 5 of 9 March 2011
- ^x (American Funds, Investor News, March 31, 2014)
- ^{xi} The CalPERS Board would need to review its amortization policy for funding purposes to determine whether or not it should be consistent between accounting and funding. This Brief does not assume any changes to the Board's current amortization policy for *funding* purposes. If the Board were to adopt a funding policy similar to the change mandated by the accounting standards, actual contributions would change in a similar manner to the pension expense shown on the table, Impact on Pension Expense.
- ^{xii} An analysis by the Michigan House Fiscal using data provided by the Michigan Office of Retirement Services; "Converting MPERS from a Defined Benefit to a Defined Contribution System"; <http://www.house.mi.gov/hfa/PDF/SchoolAid/DBDCMemo2010.pdf>
- ^{xiii} Pensionomics 2012: Measuring the Economic Impact of DB Pension Expenditures; National Institute on Retirement Security
- ^{xiv} Ibid
- ^{xv} WHAT EMPLOYERS LOSE IN THE SHIFT; Prudential; Marcks and Kalamarides
- ^{xvi} Ibid

xvii Center for Retirement Research; Boston College

xviii Alaskan Public Pension Coalition. *Returning Alaska to a Defined Benefit System: A Benefit for Alaskans and a Savings for the State*. February 2010.

xix National Institute on Retirement Security. *Look Before You Leap: The Unintended Consequences of Pension Freezes*. October 2008.

xx Yao and Park, 2011; Journal of Personal Finance; Market Performance and the Timing of Retirement

xxi Center for Retirement Research; Boston College

xxii Yao and Park, 2011; Journal of Personal Finance; Market Performance and the Timing of Retirement

xxiii Monthly Labor Review, November, 2009

xxiv WHAT EMPLOYERS LOSE IN THE SHIFT; Prudential; Marcks and Kalamarides

xxv Ibid

xxvi Ibid

xxvii Ibid

xxviii Ibid

xxix Ibid

xxx Ibid

xxxi Forman, Jonathon Barry, *Public Pensions, Choosing Between Defined Benefit and Defined Contribution Plans*, Oklahoma University Law Review, 2000

xxxii Bloomberg BusinessWeek, May 19-May 25, 2014, Americans' New Piggybank: The 401(k).

xxxiii National Institute on Retirement Security; A Better band for the Buck, August 2008, Almeida and Forina

xxxiv Protecting the Nest Egg: A Primer on Defined Benefit and Defined Contribution Retirement Plans

xxxv Alicia H. Munnell and Annika Sunden, *Coming Up Short: The Challenge of 401(k) Plans*, Washington, DC: Brookings Institution Press, 2004, pp137-142; and William G. Gale, "The Effects of Pensions on Household Wealth: A Reevaluation of Theory and Evidence," *Journal of Political Economy*, 1998, vol. 106, no. 4, pp. 706-723.

xxxvi Ibid, p.11; 75-77.

xxxvii John P. Freeman and Stewart L. Brown, "Mutual Fund Advisory Fees: The Cost of Conflicts of Interest," *The Journal of Corporation Law*, Spring 2001, pp. 609-673.

xxxviii *Coming Up Short*