Issue Paper

PAPERS EXAMINING CRITICAL ISSUES
FACING THE MICHIGAN LEGISLATURE

Senate Fiscal Agency

THE STRUCTURE OF PUBLIC PENSIONS

A Look At Defined Benefit and Defined Contribution Plans

by

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July 1993

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PREFACE

The intention of this paper is to detail the structures of the two most common types of retirement systems -- defined benefit plans and defined contribution plans. The State of Michigan currently administers defined benefit plans for its public retirement systems. Governor John Engler has proposed changing the State's public pension systems to a single defined contribution plan for all new State employees and public school employees hired on or after January 1, 1994. The paper is divided into five main areas. First, a background of Michigan's current public pension systems is provided. The second section describes the structure of a defined contribution plan and how it works. The third section looks at recent trends in the private sector, which indicate that private companies are moving heavily towards defined contribution plans. The fourth section looks at retirement systems in the public sector, which overwhelmingly provide defined benefit plans for their employees. Finally the fifth section compares the two plans side by side by looking at two similar employees, one with a defined benefit plan and the other with a defined contribution plan.

The author wishes to acknowledge Senate Fiscal Agency staff members Fred Cremeans for his assistance with tables and figures, and Gayle Elder for preparing the document.

I. BACKGROUND ON MICHIGAN'S PUBLIC PENSION PLANS

The two largest public pension plans administered by the State of Michigan are the Public School Employees Retirement System (PSERS) and the State Employees Retirement System (SERS). Members of PSERS currently are covered by two different retirement plans. In 1990, the Public School Employees Retirement Act was amended to make contributions to the Member Investment Plan (MIP) mandatory for all public school employees beginning service for the first time after January 1, 1990. Prior to this amendment (from January 1, 1987 to January 1, 1990), employees had a choice between the Basic Plan or MIP under PSERS. All public school employees participating in MIP are required to contribute roughly 4% of their gross salary to MIP; under the Basic Plan no employee contribution is necessary. Members of SERS participate in a noncontributory retirement plan, which means that the State pays all of the costs associated with retirement for State employees.

Currently, the State administers what is known as a defined benefit (DB) retirement plan for its two largest public pension plans, PSERS and SERS. A defined benefit plan means that contributions are made to the retirement system by the employer (and in many cases by the employee as well) on the employee's behalf and in return the employee is guaranteed a monthly retirement benefit based on a specified formula. The State's formula is defined as:

1.5% X Final Average Salary (final 3 or 5 years) X Years of Credited Service

The amount derived from this formula determines the yearly amount of benefit, which is then distributed to the retiree in monthly payments. Under a DB plan, the benefits received by retirees are paid by the contributions into the retirement system plus the return on investments. The amount of contributions needed each year is a percentage of payroll based on actuarial calculations. The contribution rate is calculated to be a level percentage of payroll over time; however, periodic adjustments are required as actual experiences do not meet the assumptions used to make the calculations.

Governor John Engler, in his FY 1993-94 State Budget Message, has proposed to change from the defined benefit retirement plan to a defined contribution plan for both PSERS and SERS. The defined contribution (DC) plan, proposed by Governor Engler, would provide for an employer contribution of 5% of salary without requiring an employee contribution. The proposal would apply only to all new employees hired after January 1, 1994. Under a DC plan, the employer (and in most cases the employee as well) makes a contribution on the employee's behalf into the employee's account. This account is the sole property of the employee and can be taken with him or her upon separation of employment. In a typical DC plan, the employee chooses the manner in which his or her contributions are to be invested, with choices ranging from low to relatively high risk. The investments often are handled by what is known as a Third Party Administrator (TPA). TPAs are usually retained under contract by the employer. It is argued that a DC plan is more beneficial to an employee who does not plan to become a "career" employee; however, the opposite is true for more stable employees. Data indicate that on average, a DB plan provides a higher retirement allowance for career employees than does a DC plan.

The remainder of this paper deals with the basic structures of both defined benefit and defined contribution plans as well as a comparison of these plans in the private and public sectors.

II. HOW DO DEFINED CONTRIBUTION PLANS WORK?

Defined contribution plans are designed to provide employees with a retirement benefit that is the sole property of the employee and gives the employee various investment options. A DC plan differs from a DB plan in that there will be no guaranteed annual benefit amount at retirement under a DC plan. DC plan contributions generally are paid into an account that earns interest over time. The larger the contributions into the account and the longer the period of time during which it is invested, the larger the account balance will be at retirement. At retirement, the individual may take the payments from the account in annual annuity payments or as a lump-sum distribution. Most retirees tend to choose a lump-sum payment in order to pay off pending debts, which results in a much smaller amount of money left over to provide income throughout retirement. Studies have shown that lump-sum payments are often spent rather than saved.[1]

The balance in a DC account at retirement is largely dependent on the rate of return on the investments, which as mentioned earlier, is the result of the employee's choice of risk levels. Studies indicate that when an individual is given investment choices, he or she will invest conservatively, resulting in slow growth of the investment. Individuals generally will invest in fixed return investments such as money market accounts and mutual funds, even when given the option to invest in stocks and bonds that tend to have much higher rates of return.

DC plans are becoming increasingly popular because the employee has direct access to the account. Because of the accessibility to the account, the employee can find out at any given time the balance of his or her account. Another reason for the growing popularity is that a DC plan is much more portable than a DB plan. This means that should the employee change jobs, the account balance may go with him or her. This portability feature is most desirable among younger workers because chances are they will change jobs repeatedly during their working lives. Unlike DB plans, most DC plans allow immediate vesting; therefore, the account becomes the employee's property from the start and is completely portable.

III. RECENT TRENDS IN THE PRIVATE SECTOR

In recent years, more and more companies in the private sector have adopted DC plans. Traditionally, large corporations have offered DB plans that promise a specific benefit level, and though most of these large corporations still offer such plans, many complement a DB plan with a DC plan. The DB plans offer a basic retirement benefit while the DC plans allow employees to contribute portions of their own salary into a DC account so as to complement their basic

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[1] Rappaport, Anna M., "Retirement Benefit Structures in the 1990s -- Defined Benefit vs. Defined Contributions Plan Structure," *William M. Mercer Corporation*, p. 5.

guarantee under the DB plan with a more flexible and portable DC plan. According to a 1990 study published by the Pension Benefit Guarantee Corporation (PBGC), which guarantees private pension plans, the 1980s witnessed a dramatic shift from DB to DC plans. The primary reason for this change is the change in the economy. During the 1980s, small businesses created most of the 20 million new jobs. Because most of these firms employ less than 100 persons, DC plans are the only affordable plans they can offer.

Another reason for the shift to DC plans in the private sector is the increase in administrative costs. Changes in both legislative and accounting rules in the 1980s made the administration of DB plans both more costly and more complex. Experts agree that these changes virtually "forced out" small businesses that offered DB plans. The PBGC commissioned a study of administrative costs by plan size and found the following results[2], outlined in **Table 1**:

Table 1. Changes In Administrative Costs for Defined Benefit Plans from 1981 to 1991.

# of Participants	Cost of administering DB plan per employee 1981	Cost of administering DB plan per employee 1991
15	$161	$455
75	115	259
500	56	133
10,000	19	53

Source: *Retirement Benefit Structure in the 1990s*, William M. Mercer Corporation, 1992.

It also was shown in this study that smaller employers with DC plans had much lower administrative costs.

The most common DC plans in the private sector are 401(k) plans. Under these plans, the employee contributes a specified amount into a 401(k) retirement account. In many instances, employers match the employees' contributions. Although employees under these plans will not be guaranteed a specific amount of pension money at retirement, the employee does receive 100% of the amount that has built up in the account, provided the age requirements (usually 59 1/2 years) have been met.

The downside of 401(k) plans is that young workers are not necessarily building retirement savings. "Young workers, who typically change jobs frequently, often choose to cash out of voluntary retirement savings plans, according to a study by Emily S. Andrews, a senior researcher at Mathematica Policy Research of Washington.[3] Usually any money that is

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[2] *Ibid.*, pp. 6-7.

[3] Nasar, Sylvia, "Pensions Covering Lower Percentage of U.S. Work Force," *New York Times* (April 13, 1992), Financial Section p. 1.

withdrawn from a 401(k) plan before retirement is never replaced because the money is used to purchase personal items or repay debts. On the other hand, if the money is used to purchase a home, retirement income may not be affected because of the equity the home is likely to generate.

IV. THE PUBLIC SECTOR AND PUBLIC PENSIONS

With the exception of the state plan in Nebraska, all state employee retirement systems are defined benefit plans. Nebraska operates a defined contribution plan and has done so since the beginning of its state employee retirement system in 1964. The current contribution rate for Nebraska's state employee plan is 8.0% (4.8% employer, 3.2% employee). In addition, there is currently only one state public school teacher retirement system that has changed from a DB to a DC retirement plan. That system is the West Virginia Teacher's Defined Contribution Retirement Plan. In 1991, West Virginia changed from a DB plan to a DC plan in large part because the system was on the verge of bankruptcy. The current contribution rate for the West Virginia Teacher's Defined Contribution Retirement Plan is 12.0% (7.5% employer, 4.5% employee).

In looking at the funding ratio of liabilities to assets, the West Virginia Teacher's system was less than 1% funded in 1991. In comparison, Michigan's PSERS is currently 62% funded. It is commonly accepted that any system that is more than 50% funded is considered to be financially sound. Also, the Texas public school teachers retirement system contemplated changing its system from a DB to a DC plan in 1990. After studying the facts of the two plans, the Texas legislators voted down the change because they saw the defined contribution plan as detrimental to the State's obligation of providing a secure retirement for its public school employees.

Perhaps one reason that all but one state employee retirement system and one public school employee retirement system are DB plans is that states tend to be of the philosophy that they have an obligation to provide retirement benefits to career employees. The responsibility for retirement security largely falls on the states. A 1991 survey conducted by the Public Pension Coordinating Council (PPCC) found that of the 269 public retirement plans surveyed, 239 or 89% were defined benefit plans. Only nine retirement systems were defined contribution plans only, and 21 systems were a combination of both DB and DC plans. (Although the PPCC study surveyed 201 diverse state and local government employee retirement systems (including Michigan's PSERS and SERS), some systems had more than one plan; therefore, a total of 269 plans were studied.)

The benefits paid under the plans in the PPCC survey followed the traditional DB and DC formulas. For DC plans, the employee receives an annuity based on the amount that accumulates in his or her account at the time of retirement. This amount is the sum of all contributions made by either the employer or the employee, or by both, plus investment earnings.[4]

Most DB plan retirement benefits in the PPCC survey used a single-rate unit benefit formula, which means that the benefit rate is fixed over the service life of the employee. As stated earlier, for State of Michigan employees and public school employees the benefit is 1.5% times final average salary times years of service. According to the PPCC survey, the unit benefit earned for each year of service ranged from less than 1.0% to 4.16%. The average unit benefit percentage was 2.05. Also, most plans use the final three or five years of employment to compute final average salary.[5]

According to the PPCC survey, the average annual contribution rate to a DB plan (with most including some form of health care benefits) in public pension systems is 12.0% of payroll. Over the last few years, the annual contribution rates for Michigan public school employees have remained relatively constant between 11% and 13% of payroll, while the contribution rates for State employees have increased from a contribution rate of 8.4% of payroll in fiscal year (FY) 1987-88 to a rate of 13.71% in FY 1991-92. Most public pension plans require some form of employee contribution. According to the PPCC survey, both DB and DC plans require an average of 6.16% of salary contribution from their members. Currently, Michigan public school employees who participate in MIP are required to contribute 4% of salary while State employees are not required to make any contributions into SERS.

Finally, according to the PPCC survey, 74% of the public employee retirement systems surveyed provided some form of annual cost-of-living adjustments (COLA) to retirees' pensions in order to keep up with the pace of inflation. The average COLA according to PPCC is 3.63% per year. Michigan public school employees who participate in MIP are guaranteed a COLA of 3% per year, while State employees are granted 3% per year up to a maximum of $25 per month.

V. DEFINED BENEFIT OR DEFINED CONTRIBUTION – WHICH PLAN IS BEST?

There are different reasons for choosing either a defined benefit or a defined contribution retirement plan. Choosing the plan that is best for a particular corporation or agency depends on the number of employees, the company's goals for retirement, and whether the company providing the retirement plan is a private or public agency. It appears that DB plans in the U.S. are becoming something of the past in the private sector, particularly among companies with

[4] Zorn, Paul, *Survey of State and Local Government Employee Retirement Systems* (Chicago, IL,: Public Pension Coordinating Council, November 1991) p. 25.

[5] *Ibid.*, p. xiii.

fewer than 100 employees. The move to DC plans has occurred because more and more private firms that provide retirement benefits must "... do so within the context of a very complex environment including an aging population, a relatively mobile workforce, difficult business conditions and ever-increasing regulatory complexity."[6] The opposite is true in the public sector, however. As previously indicated, 89% of public pension plans are DB plans. The State of Michigan is currently contemplating changing its two largest systems (SERS and PSERS) from DB plans to DC plans. Before that decision is made, the differences between both plans should be analyzed. **Table 2** below outlines the differences between defined benefit and defined contribution plans.

The biggest difference between a DB plan and a DC plan is in the amount of investment return that each plan is likely to generate over time. In a DB plan the contributions for all employees are lumped together and invested as one account. For example, according to the 1992 Mercer Corporation report on retirement benefit structures, a retirement system such as Michigan's SERS may have a $100 million fund. If that fund earns an extra 2% per year or $2 million, that investment return can be used to offset costs in future years, which in turn frees up more money that can be invested. It is important to remember that the risks from investments in DB plans are borne by the employer. Another difference is that most DB plans also provide health care benefits during retirement while many DC plans make health care the sole responsibility of the employee.

[6] Rappaport, "Pension Benefit Structure in the 1990s," p. 1.

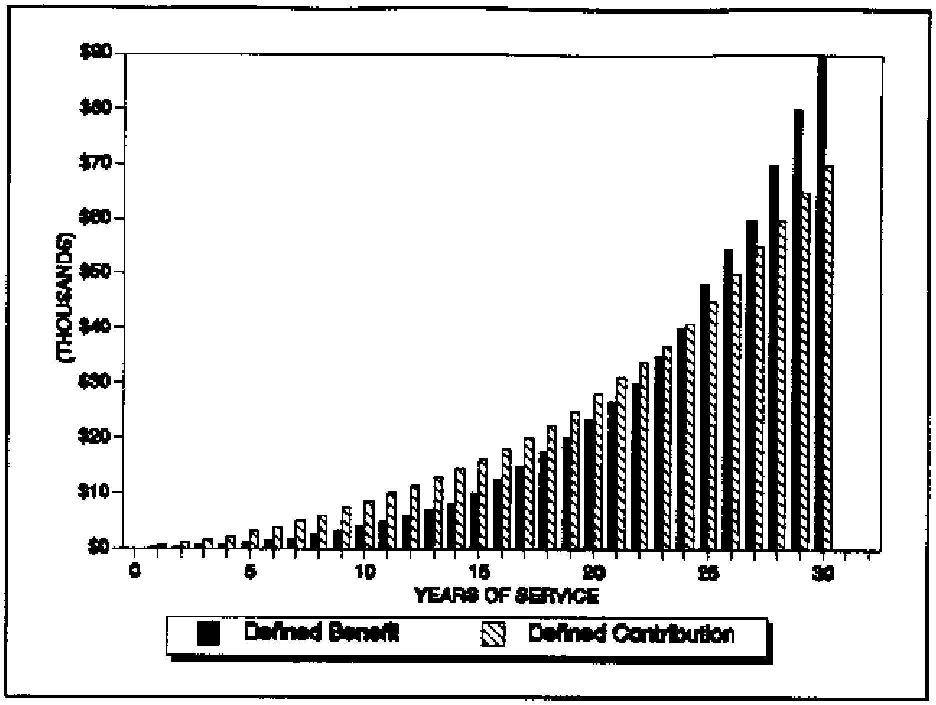
Table 2. Key Differences Between Defined Benefit and Defined Contribution Plans.

Features	Defined Benefit	Defined Contribution
Typical pattern of benefit accrual	Heavy in later years	Heavy in earlier years
Benefit paid to early leavers	Relatively low	Relatively high
Investment risk	Borne by employer	Borne by employee
Usual form of benefit payment	Monthly income	Lump-sum payment
Benefits designed as income replacement	Yes	Not usually
Benefits fully funded	No	Yes
Offers PBGC Insurance to cover benefits	Private plans only	No, but not necessary
Requires actuarial valuation	Yes	No
Offers post-retirement benefit increases	Most plans	No
Permits subsidized early retirement	Most plans	No

Source: *Retirement Benefit Structure in the 1990s*, William M. Mercer Corporation, 1992.

Defined contribution plan investment options are the employee's choice. As mentioned earlier, individuals tend to choose fixed-income investments, therefore earning a smaller rate of return. **Figure 1** below illustrates the accrued values of a DB and a DC plan with identical contributions. The values in each fund accrue over a 30-year period.

Figure 1. Accrued Values of a Defined Benefit and a Defined Contribution Retirement Plan with Equal Contributions.



Source: Bleakney, Thomas P., *Cost and Implementation of Defined Contribution Systems for Texas Teachers and State Employees*, 1991, p. 2.

The biggest argument in favor of DB plans is that they provide a larger retirement benefit for the career employee, as evidenced by the above chart. Although DB plans are designed to reward the career employee, they also are beneficial to any employee who vests in the system. Once vested, an employee is guaranteed a retirement benefit even if the individual terminates employment prior to retirement. The longer the tenure of an employee in a DB plan, the more likely that the employee's benefit will outweigh the benefit of a like employee participating in a DC plan.

If one compares the retirement benefits of two different employees (one in a DB plan and the other in a DC plan) with the same salary, same age, and equal number of years of service, the retirement benefit for the employee in the DB plan will be larger than the benefit for the employee in the DC plan beginning in the 19th year of service. In looking at **Table 3** below, it is clear that before the 19th year of service the employee under the DC plan with an 11% contribution rate (6% employer, 5% employee) will have a larger retirement benefit than the employee with the DB plan. On the other hand, when comparing the employee under the DB plan against the employee under the DC plan that has only a 5% employer contribution rate, the annual benefits from that DC plan will be greater than the benefits from the DB plan in only the first 10 years. The assumption must be made that both employees work the same number of years; in other words, the comparison is valid only when looking at the same number of years of service for both employees.

Table 3. Comparison of Benefit Amounts for Defined Benefit and Defined Contribution Retirement Plans.

Years of Service	Annual Salary (Increasing @ 5%/year)	Annual Benefit at Retirement Based on Number of Years of Service Under a DB Plan	Annual Benefit at Retirement Based on Number of Years of Service Under a DC Plan w/ 11% Contribution	Annual Benefit at Retirement Based on Number of Years of Service Under a DC Plan w/ 5% Contribution
1	$ 30,000	$ 0	$ 1,214	$ 552
2	31,500	0	2,406	1,094
3	33,075	0	3,575	1,625
4	34,729	0	4,722	2,147
5	36,465	0	5,848	2,658
6	38,288	0	6,953	3,161
7	40,203	0	8,038	3,653
8	42,213	0	9,101	4,137
9	44,324	0	10,146	4,612
10	46,540	0	11,170	5,077
11	48,867	7,685	12,176	5,534
12	51,310	8,803	13,162	5,983
13	53,876	10,013	14,130	6,423
14	56,569	11,323	15,081	6,855
15	59,398	12,738	16,013	7,279
16	62,368	14,267	16,928	7,694
17	65,486	15,916	17,826	8,103
18	68,761	17,695	18,707	8,503
19	72,199	19,612	19,571	8,896
20	75,809	21,677	20,420	9,282
21	79,599	23,899	21,252	9,660
22	83,579	26,288	22,069	10,031
23	87,758	28,858	22,871	10,396
24	92,146	31,618	23,658	10,753
25	96,753	34,582	24,430	11,104
26	101,591	37,764	25,187	11,449
27	106,670	41,177	25,931	11,787
28	112,004	44,837	26,660	12,118
29	117,604	48,760	27,376	12,444
30	123,484	52,964	28,079	12,763

Source: Senate Fiscal Agency Calculations.

In Table 3, retirement life was assumed to average 20 years and investment rates of return were assumed at 7% annually. For the DB plan the benefit formula used was 1.5% times last three years' average salary times years of service. It is also important to remember that under Michigan's PSERS and SERS, most employees do not vest until 10 years of service have been completed, which leads to the arguments in favor of DC plans.

The two biggest arguments in favor of DC plans are the vesting requirements and portability. Most DC plans allow employees to become immediately vested, therefore giving full ownership of the retirement fund to the employee. As mentioned earlier, today's mobile workforce favors DC plans because employees do not lose their pensions even if they work for a company for only two to three years. The portability of DC plans complements the immediate vesting feature. Since these plans are portable, employees who participate in DC plans can continue to contribute to their retirement fund over the course of their careers, regardless of the number of jobs held or the duration of those jobs.

CONCLUSION:

The decision to change the State of Michigan's public retirement systems from DB plans to DC plans will have to be made by the State Legislature. While there are definite benefits that favor changes to a DC plan, the question that must be answered is what is the State's responsibility in providing retirement benefits to its retirees? While the benefits of portability and immediate vesting under the proposed DC plan favor new employees who are not likely to vest under the State's current DB plan, the proposed contribution rate of 5% is not likely to produce a greater benefit for those employees who would otherwise vest under the current DB plan.