

Defined Benefit Pension versus Defined Contribution Pension

Submitted By

Jian Li

As part of a Tutorial in Accounting

Nov 18, 2003

**Chatham College
Pittsburgh, Pennsylvania**

TABLE OF CONTENTS

Chapter 1. Introduction	3
Chapter 2. Employee Benefit	11
Chapter 3. Employer Perspective	21
Chapter 4. Cash Balance Plan	27
Chapter 5. Conclusion	35

1. Introduction

There are two basic types of pension plans in the United States. One is a defined-benefit pension, and the other is a defined-contribution pension. Two decades ago, most of the workers with pensions had a defined benefit plan (Samwich, 2001). By 1993, the tide had turned; more than half of covered employees participated primarily in defined contribution pensions such as 401(k) plans (EBRI, 1997). Under the defined-benefit (DB) pension plans, the employer promises to pay retirees a certain amount of money in the future, based on annual salary and years of service. Under the defined-contribution (DC) pension plans, employee and employer make regular payments into investment accounts that accumulate tax-free retirement funds(Samwich).

Defined benefit (DB) plans.

These plans provide guaranteed income security to workers for their retirement. Normal retirement age is 65. There are no early retirement options, death or disability benefits and no Social Security offset provisions. The actuarially expected life span at retirement is 80 years (Bodie). After a worker is fully vested, his claim is a deferred nominal life annuity, insured up to certain limits by the Pension Benefit Guarantee Corporation. Since the employee cannot start receiving benefits until he reaches age 65, his claim is a deferred annuity. Because the employer is bound to pay the retirement benefit to the employee, the retirement benefit is fixed in dollar amount at any point in time up to and including retirement age (Bodie).

Employee Advantages of Defined-Benefit Plans:

1. Defined benefit pension plans provide guaranteed income security to workers for their retirement; no matter what happens in the stock market, how long an employee lives after retirement, or whether he or she becomes disabled.
2. Employees don't carry investment risk.
3. Retirement benefits are not dependent on employees' ability to save. The retirement benefits only depend on employer's contribution.
4. Defined benefit plans provide cost of living adjustments and pension formulas that are tied to the highest-paid years, which protect employees from inflation while they save throughout their working lives.
5. Death and disability insurance, which are typically provided under defined benefit plans, provide income security for participants.
6. Defined benefit plans provisions can allow for portability with shorter vesting periods, reciprocity agreements, and buybacks for prior or related service. Defined benefit plans may also allow employee borrowing. (American 1997)

Defined contribution (DC) plans.

Under a DC plan, no specific pension is promised. Both employer and employee need to contribute. These plans require employees to fund most of their retirement themselves. Contributions from both parties are tax-deductible, and investment income accrues tax-free. Often the employee decides how his account is to be invested. Even though most plans limit investment options to various bonds, stock and money market funds in

practice, contribution may be invested in any security in general. The employee either receives a lump sum or an annuity, the size of which depends on the accumulated value of the funds in the retirement account at retirement. The employee has to bear all of the investment risk; the retirement account is by definition fully funded, and the employer has no obligation further than making its periodic contribution (Bodie, 1985). The evaluation of DC plan is simply by measuring the market value of the assets held in the retirement account. The DC plan sponsor often provides workers with advice on how to invest. And, the actual size of the retirement annuity will depend on the actual investment performance of the retirement fund (Bodie).

Employee Advantages of Defined-Contribution Plans:

1. Defined Contribution offer potentially greater benefits. Contributions made at younger ages will have a longer investment horizon, potentially growing over many years. This is true even if employees terminate service after a few years, since accumulations continue to participate in the accounts' investment experience.
2. Portability. Under a defined-contribution plan employees can usually move their accumulations to other institutions that have like plans. Employees who don't move their accumulations can generally leave them in their current plan, even though they no longer work at the institution, unless the account balance is \$5,000 or less, in which case the institution can force a distribution.
3. More involvement and control. Employees own their retirement accounts individually and like the control that comes with being able to select and move among several investment options available for their retirement savings.

4. More flexible payout options. Defined-contribution plans generally offer a much wider variety of annuities, withdrawal plans, and other ways of taking payments from their accumulations. Employees who prefer can also spread their benefits over multiple settlement dates, rather than begin to take all of their benefits on one date. (Defined)

Pension Trends

According to the U.S. Department of Labor, out of the 730,031 organizations in the U.S. with pension plans in 1998, eight percent offered defined benefit plans and 92 percent offered defined contribution plans. Industry break-outs reveal that 22,850 tax-exempt organizations offered pension plans in 1998, 26 percent of which sponsored defined benefit plans and 74 percent sponsored defined contribution plans. In contrast, 32 percent of tax-exempt organizations provided defined benefit plans in 1993 and 68 percent provided defined contribution pension plans. (Flynn 2003)

The first trend is the decline in traditional pension plan coverage among tax-exempt organizations. Indeed, a snap-shot of coverage among subscribers to *The Nonprofit Times* indicates a further shift away from defined benefit plans into defined contribution plans. In 2002, 18 percent of respondents offered traditional employer-sponsored retirement plans and 94 percent offered individual defined contribution plans (Table 8). (Flynn)

Table 8			
Trends in Pension Plans Offered			
by Tax-Exempt Organizations:			
1993-2002			
	U.S. Department of Labor		NPT Pension Survey
	1993	1998	2002
Defined benefit plan	32 %	26 %	18 %
Defined contribution plan	68 %	74 %	94 %
Both	--	--	13 %
Source: U.S. Department of Labor, Private Pension Plan Bulletin (Winter 2001/2002) and NPT 2002 Pension Survey. Dash indicates data not available.			

Secondly, a trend in national pension plan coverage is the growth in the number of firms reporting under-funded defined benefit plans. Steven Kandarin, the executive director of the Pension Benefit Guaranty Corporation (PBGC) reported to Congress on February 27, 2002, that the federal agency responsible for insuring traditional defined benefit pension plans could be forced to make up a shortfall of “at least \$125 million” in the Enron Corporation’s plan covering 20,000 people if Enron fails to survive (Kandarian 2002 in Flynn 2003). PBGC officials warned that this figure may be the tip of the iceberg if other troubled firms declare bankruptcy without sufficient funds to pay their pensioners. (Flynn)

In October of 2002, Delta Air Lines, the third-largest U.S. airline released a pension fund deficit of between \$700 million and \$800 million. General Motors wrote off about \$9.6 billion in assets in 2001 to cover a pension fund deficit. (Flynn)

Third, recent events in the marketplace have raised a red flag about the amount of retirement income investors will derive from their defined contribution plans. Investors

have learned—experientially—the personal risks associated with defined contribution pension plans because of the bursting of the dotcom bubble on Wall Street in 2000, the start of the recession in March of 2001, and the corporate accounting scandals of 2002, Information on the perceptions and experiences of nonprofit sector workers regarding the risks associated with their pension plans may be a potential focus of subsequent nonprofit sector research, especially if the U.S. government decides to privatize the Social Security program. (Flynn)

According to NPT 2002 Pension Survey (The Nonprofit Times 2002 Survey), the percent of nonprofit organizations offering traditional defined benefit plans was 18 percent. Ninety-four percent of respondents offered defined contribution plans. Thirteen percent offered both defined benefit and contribution plans. (Flynn)

This shift from DB to DC plans has concerned observers in the popular press and in academia. Some believe that individuals with defined-contribution pensions as the major source of pension income are more likely to have inadequate expected retirement income than individuals with defined-benefit plans (Blank, 1999). Some studies suggests that if DC plan, such as 401(k) do not adequately cover retirement, then neither did many DB plans (Samwich).

Lagging market

With stocks in the dumps, it could take years for battered 401(k)s to recover -- a rotten deal for those who've suffered heavy losses and are about to retire. Had they been in DB pension plans instead, in which their employer took on all the risk, they would have received their annual benefit no matter what's happening on Wall Street. 401(k)s

grew so fast that they overtook pensions in both the number of plans and participants starting in 1992. Now, the majority of American workers -- 58 million people -- have a 401(k). About 42 million have pensions. According to one typical DB plan formula, one person take his average salary in his last five years of service, multiply it by 1.5 percent; then multiply that figure by his number of years on the job to come up with his annual pension. For example, if a person earned \$100,000 at a job and retired after 25 years of service, he'd have a pension of \$37,500 a year. If he wants that same \$37,500 in retirement, he'd need to save \$400,000 in his 401(k). That's easier said than done when the market isn't cooperating. Assets in the average 401(k) account dipped \$4,528 to \$36,390 in 2001, according to the review by Boston consultant Cerulli Associates. Based on 2002's stock market losses, they'll probably lose money again this year.

The 401(k) wasn't the only retirement plan to suffer. Total retirement assets which include profit-sharing plans, traditional pensions, and IRAs, lost a combined \$410 billion in 2001, falling to \$6.6 trillion from \$7 trillion in 2000. In 1999, the figure stood at \$7.3 trillion. (Costell* 2002)

Of course, the best scenario of all is if a person is lucky enough to have a DB pension as well as a 401(k). About 78 percent of the largest companies offer both, covering about 52 million workers. (Costell 2002)

This tutorial will examine the growing controversies surrounding defined benefit and defined contribution pensions. Chapter 2 reviews the literature on the rates of return associated with DB versus DC plans. Chapter 3 analyzes pension plans from the

perspective of the employer. Chapter 4 presents cash balance plans. Conclusions are presented in Chapter 5.

2. Rates Of Return

There are two key dimensions that describe the difference between DB and DC plan.

	DB	DC
Contribution	Employer	Both employer and employee
Investment Allocation	Funds with average return	Varies stocks and bonds

Bodie Zvi, Alan J. Marcus and Robert C. Meton, examined some of the main tradeoffs involved in the choice between DB and DC plans. Their conclusion is that neither plan type can be said to wholly dominate the other from the perspective of employee welfare. They found that the major advantage of DB plan is the potential they offer to provide a stable replacement rate of final income to workers. The advantages of DC plans are the predictability of the value of pension wealth, the ability to invest in inflation – hedged portfolios rather than nominal DB annuities, and the fully-funded nature of the DC plan. (Bodie 1985)

Samwich and Jonathan Skinner, estimate pension benefits based on the household data in the Survey of Consumer Finances (SCF) and the companion Pension Provider Surveys (PPS). (Samwich) Samwich and Skinner used two different approaches to comparing pension distributions. The first approach was a counterfactual experience. In the counterfactual, they estimate benefits for the sample of workers covered by their actual pension plans in the PPS 1983 or 1989. They then assign each worker a randomly chosen 401(k) plan from an SCF in a year between 1989 and 1998, depending on the

experiment. They found that the realizations of earnings and asset returns are identical for each worker in both scenarios, and workers are assumed to have worked at the firm from their date of hire until age 62. Their second approach to comparing pension plans is to use a hypothetical benchmark worker. They gave the benchmark worker with the average characteristics (age, date of hire, and earnings) of PPS. And they calculated the benefits for the benchmark worker in each pension plan from the PPS assuming the worker is covered by the plan from age 31 to age 62. Then they compared the distribution of benefits under the PPS plans and randomly assigned 401(k) plans. The benchmark approach separated the characteristics of worker from the characteristics of the plan. (Samwich)

Their results suggest that 401(k) plans do at least as well, or in most cases do a better job, of providing for pension benefits at retirement. These results showed a wide range of assumptions regarding equity returns, turnover patterns, and other parameters. The instinct behind this result is that stock market returns are largely uncorrelated, so that over the worker's employment career, low rates of return tend to be balanced by higher rates of return. By contrast, defined benefit plans that are dependent on the final few years of earnings expose the workers to considerable earning risks. The main reason why DC plans can fail to provide an equivalent retirement income to a DB plan is because of inadequate contribution rates. After all, their studies show that the workers with combination DB and DC plan can expect greater pension benefits than workers with just DB or DC plans (Samwich).

There are some analyses by Watson Wyatt based on summary results of Form 5500 filing published by the Department of Labor showed that employee-directed plans achieved lower returns than professionally managed defined benefit plans by about 1 percent per year. They applied the following formula:

$$\text{Rate of Return} = \frac{2 \times \text{Income}}{(\text{Beginning Balance} + \text{Ending Balance}) - \text{Income}}$$

Watson Wyatt included companies that sponsored one defined benefit plan and one 401(k) plan. By restricting their analysis to these firms, they were able to create a sample of defined benefit firms that exactly matched the sample of 401(k) firms. This eliminated any potential effects on the results from firm or employee characteristics, allowing them to isolate the impact of type of pension on rate of returns. Table 1 shows a year-by-year rate of return comparison for 1990 to 1998. (see Table 1) (Watson Wyatt)

They found that larger plans have always realized higher returns than smaller plans, because plans with more assets have access to broader investment opportunities and more investment expertise. As in the previous study, they compared rates of return for the largest one-sixth and largest one-half of the plans (based on asset size of the defined benefit plan) with results for all plans, from 1995 through 1998 (see Table 2). (Watson)

Watson Wyatt identified 1,717 plan sponsors that appeared in all four years of data and studied year-by-year results for both their defined benefit and 401(k) plans. (see Table 3)

These results are similar to those in Table 2. For both defined benefit and 401(k) plans, larger plans earned higher returns than smaller plans. The only difference is that

Table 1 Median Rates for Defined Benefit and 401(k) Plans

Year	Number of Sponsors	Median Return Defined Benefit	Median Return 401(k)	Difference in Median Returns: Defined Benefit Minus 401(k)
1998	2,958	12.31	14.27	-1.96
1997	2,931	16.47	17.32	-0.85
1996	3,034	12.88	12.69	0.19
1995	3,063	19.53	17.45	2.08
1994	3,181	0.00	1.60	-1.60
1993	3,303	8.10	7.90	0.20
1992	2,543	7.60	7.60	0.00
1991	3,448	15.00	12.30	2.70
1990	3,598	5.70	5.80	-0.10
Average	3,118	10.84	10.77	0.07

Source: Watson Wyatt Worldwide calculations from Form 5500 data.

Table 2
Comparison of Median Returns by Plan Size, 1995-1998

Group	Number of Plans	Approximate 1998 Assets*	Average Median Return Defined Benefit	Average Median Return 401(k)	Difference in Median Return: DB Minus 401(k)
Largest 1/6	499	≥\$53,000,000	17.46	16.075	1.385
Largest 1/2	1,499	≥\$9,500,000	16.67	15.76	0.91
All plans	2,997	Not available	15.30	15.43	-0.135

Source: Watson Wyatt Worldwide calculations from Form 5500 data.

* Assets are determined by defined benefit asset size as of the beginning of 1998.

Table 3

Median Return Comparison for Plan Sponsor Included in All Four Years

Group	Average Median Return (1995-1998) DB	Average Median Return (1995-1998) 401(k)	Difference
Largest 1/6	17.56	15.91	1.65
Largest 1/2	16.77	15.72	1.05
All plans	15.57	15.35	0.22

Table 4

Distribution of Rate of Return Difference for Combined Years

Percentile Rank	1990 –1995 Average DB Return Minus 401(k) Return	1995 –1998 Average DB Return Minus 401(k) Return
90TH	5.1	6.59
75TH	3.5	2.93
50TH	2	-0.09
25TH	0.3	-3.97
10TH	-1.8	-7.73

Source: Watson Wyatt Worldwide calculations from Form 5500 data.

the rate of return for all plans is higher for defined benefit plans than for 401(k) plans over all four years. The difference in the median return rates shrunk from 1995 to 1998 for all asset levels. This narrowing gap suggests that rates of return for 401(k) plans are approaching those for defined benefit plans. (Watson)

Watson Wyatt compared the distribution of the difference in median returns, showing results from 1990 through 1995 and from 1995 through 1998 separately. (see Table 4)

From 1995 to 1998, the median difference between defined benefit plan returns and 401(k) plan returns was close to zero. This is in complete contrast to the median difference in the period from 1990 to 1995, when at least 75 percent of sponsors of defined benefit and 401(k) plans experienced higher returns on their defined benefit plans. Over the four-year period of 1995 to 1998, for 10 percent of plan sponsors, their defined benefit plan out-earned their 401(k) plan by 6.59 or more. At the other end of the spectrum, 10 percent of plan sponsors earned at least 7.73 percent less on their defined benefit plans than on their 401(k) plans. For 10 percent of plan sponsors from 1990 to 1995, the average return was higher for their defined benefit plan than for their 401(k) plans by 5.1 percent or more. Over the same period, another 10 percent of plan sponsors realized average returns on their defined benefit plans that were at least 1.8 percent below those for their 401(k) plans. (Watson)

When the 401(k) Is the Only Plan

All the above comparisons included employers that sponsored both defined benefit and 401(k) plans. Watson Wyatt were concerned that results could be skewed, because

employees who have both a 401(k) plan and a defined benefit plan might make different, more aggressive investment decisions than those with only a 401(k). So they identified employers that sponsored only 401(k) plans, and calculated year-by-year rates of return comparisons for these employers from 1990 through 1998 (see Table 5). The table also shows 401(k) median rates of return for employers that sponsor both defined benefit and 401(k) plans. (Watson)

They found that employees with both types of plans tend to invest their 401(k) plans more aggressively, knowing they can fall back on their defined benefit plan if their 401(k) investments don't pan out. Employees with only a 401(k) plan tend to be more risk averse. (Watson)

Education and Communications Are Key

Considerable attention has been focused on the shift from defined benefit plans to 401(k) plans as the primary retirement vehicle for many workers. Watson Wyatt's study shows 401(k) plans out-earned defined benefit plans in 1997 and 1998. Before then, 401(k) plan returns approached those for defined benefit plans only when returns were relatively low; for example, in 1990 and from 1992 to 1994. (Watson)

Higher 401(k) rates in more recent years may result from increased education efforts targeted towards employee participants. Better education might have helped participants gain a clearer understanding of the financial risks associated with the stock market, which could explain why 401(k) rates are higher for employers that sponsor both a defined

benefit and a 401(k) plan. These employees may have been investing more heavily in the stock market, despite its higher risk, knowing they could fall back on their defined benefit

Table 5

Median Returns for 401(k) Plans Only

Year	Number of Sponsors	Median Rate of Return All Sponsors	Median Rate of Return Largest 1/2 of Sponsors	Median Rate of Return Largest 1/6 of Sponsors	Median Return 401(k): for Employers Offering Both DB Plan and 401(k) Plan
1998	27,053	13.84	14.01	14.37	14.27
1997	24,281	16.41	16.89	17.47	17.32
1996	21,720	12.63	12.75	13.04	12.69
1995	19,016	17.21	17.22	18.05	17.45
1994	15,912	1.2	1.5	1.4	1.60
1993	15,892	7.2	7.6	8.1	7.90
1992	12,248	7.1	7.3	7.6	7.60
1991	18,093	11	11.5	12.1	12.30
1990	16,697	6.4	6.7	6.3	5.80
Average	18,990	10.33	10.61	10.94	10.77

Source: Watson Wyatt Worldwide calculations from Form 5500 data.

plan if necessary. The differences in returns for defined benefit vs. 401(k) plans could also be explained by employees failing to rebalance their portfolios, and simply "riding the wave" of a booming market. Investment advisers for defined benefit plans may have recommended rebalancing portfolios during the period of rapid appreciation of equities. (Watson)

Watson Wyatt also suggested it could be that as the S&P 500 index returned 20-plus percent for the third, fourth, even fifth year in a row, participant expectations soared as well, prompting many participants to shift their assets or at least future contributions into equity funds. If 401(k) returns are simply the result of our previously booming market, 401(k) participants need to learn the importance of maintaining a well-diversified portfolio that meets their risk tolerance and investment horizon. To this end, effective communication and education programs are essential. It will be interesting to see whether the relative returns of 1997 and 1998 persist into 1999 and 2000, or whether 401(k) rates declined right along with the market. (Watson)

DB Plan has its limit

DB pensions aren't perfect. They should not be seen as remnants of the lost and ideal world of industrial harmony. DC plan participants have worries. DB plan participants have worries. DC participants worry about how much to save, what to invest in and their return on investment. DB pension participants have to worry about how many years of service they will accumulate, whether they will work until their full retirement age, and whether their corporation will fully fund the plan. (Burns 2002)

ERISA, the Employee Retirement Income Security Act, was passed in 1974 precisely because DB pensions weren't working as hoped to provide retirement security for millions of plan participants. (Burns 2002)

Older employees with long records at the same company should continue with the DB pension plan. It will provide a lifetime income and will allow them to take more risk in other qualified accounts such as IRAs and Roth IRAs. Younger employees with shorter records should take the option of joining the DC plan. (Burns 2002)

3. Employer Perspective

Accounting

Under a defined benefit pension plan, the employer has the obligation to pay retirement benefits in the future. It needs to set aside plan assets to pay the retirement benefits in the future, and it has the periodic expense of having a pension plan. Defined benefit plans require considerably more complex accounting treatment than defined contribution plans. The pension expense under defined benefit plans consists of service cost, interest cost, return on plan assets, amortization of prior service cost, and amortization of deferred net loss or net gain. Under a defined contribution pension plan, employer promises fixed periodic contributions to a pension fund, no further commitment is made by the employer regarding benefit amount at retirement. (Spiceland 2001)

Today, many companies are terminating long-standing defined benefit plans and substituting defined contribution plans. They are two main reasons:

- 1) Government regulations make defined benefit plans cumbersome and costly to administer. (Spiceland 2002) For example, legislation requires the benefits of a former employee to be protected against inflation and provides for a minimum level to which a DB scheme must at least be funded. Breaches of legislation can lead to fines and other penalties. (Wilkinson 2002) It generally costs 6% to 7% of payroll to fund a defined-benefit pension. A defined-contribution plan with a typical 50% match of the first 6% of payroll will cost no more than 3% of payroll even if 100% of employees participate. (Burns 2002)

- 2) Employers are increasingly unwilling to bear the risk of defined benefit plans; with defined contribution plans, the company's obligation ends when contributions are made. (Spiceland) The employer takes the investment risk under a DB plan and the cost of providing an employee's pension is not certain until an annuity is purchased at retirement. The employee has been promised a specified level of pension and it is the employer's responsibility to ensure there is enough money in the plan to keep that promise. Falling stock markets have meant that the value of pension plan funds has been beaten, and many employers have had to pay large sums into their plans in order to compensate for this. To compound the problem, the price of securing annuities for members at retirement has also increased, due to low interest rates and longer life expectancy. (Wilkinson)

The defined contribution arrangement leaves investment risk and responsibility for choice of investments with the member although of course a variety of balanced, lifestyle, guaranteed and other approaches have been designed to limit and manage risk levels.

By contrast, the defined benefit plan largely insulates members from risk of underperformance of the plan investments, with the entire risk being absorbed by shareholders of the sponsoring employers. (Bezooyen)

At first sight it appears that defined contribution arrangements are 'worse' for employees and 'better' for employers because of the difference in who bears investment risk. In practice this may not be true. Associated with higher risk is an expectation of higher returns and the defined contribution mechanism leads to the possibility of high benefit levels, to offset the risk taken. (Bezooyen)

Alike, the employer may benefit from lower contributions (relative to benefits promised) in a defined benefit scheme, corresponding to the risks taken. There is another aspect, too. The defined benefit granted to members under a defined benefit arrangement is an asset and incorporates investment risk to the members. For example, their future salaries may not match expectations and lag behind national average earnings growth, the amount needed to maintain a constant real standard of living, or wealth levels in the economy. Both types of benefit structure therefore contain investment risk for employees and it is not immediately clear which type of risk employees will prefer. (Bezooyen)

Taxation

Under both DC and DB plans, companies must meet the minimum funding standards that may require contributions even in years when there are operating losses.

The two most common defined contribution plans are the money purchase plan and the profit sharing plan. In money purchase plan, the company contributes a fixed percentage of the employee's salary to the plan. In profit sharing plan, the company contributes a percentage of the profits to an employee trust account during profitable years, no contribution required during unprofitable years. Employer should consider the demographics and incomes of their workforce when selecting a particular type of pension plan. If most workers earn at or near minimum wage, it is highly unlikely that they would make contributions to any type of contributory plan. The more highly educated and older the workforce, the more likely they are to welcome a contributory plan that allows them to make significant contributions to their accounts in addition to the

employer's contributions. Employees can reduce their current taxable income by making contribution to their defined contribution plans. All qualified plans allow a certain amount of employee compensation that can be tax deferred through an employer-sponsored retirement plan. (Dennis, 2004)

Investment returns in a pension plan roll-up free of tax. Since this is true for both the defined benefit and defined contribution arrangements, at first sight neither type has an advantage. In practice, many defined benefit schemes are operated on an over-funded basis, with the surplus assets rolling up tax-free. Since these returns are better than the shareholders could achieve by direct investment, this is one area where defined benefit arrangements carry a potential advantage. Much depends here on whether trustees attempt to allocate surplus to improve members' benefits and whether such improvement is or is not reflected in adjustments to cash payment. (Bezooyen 1997)

Advantages to Employers of Defined-Contribution Plans

First, employers have more predictable funding obligations. The employer is responsible for contributing to the plan -- usually a percentage of each employee's annual compensation -- but not for providing any specified future benefit. That means costs are fixed and predictable. In a defined-benefit plan, employer contributions fluctuate according to the current funding status of the plan -- that is, according to its ability to generate the future benefits promised to employees. As a result, defined-benefit plan costs may increase substantially if inflation and salaries increase faster than expected, if

turnover is less than expected, or if plan investments produce lower returns than assumed. (Defined)

Secondly, employers have fewer management headaches and lower administrative expenses. Defined-contribution plans are administratively less complex than defined-benefit plans, resulting in lower costs for the employer. In particular, employers with defined-benefit plans must hire actuarial advisors to determine minimum funding requirements and to prepare financial statements reflecting Financial Accounting Standard Board requirements. The defined-benefit plan administrator is responsible for tracking accrued benefits, which can be a tedious record-keeping task. Completing form 5500 is also more complicated for defined-benefit plans than for defined-contribution plans, especially compared with 403(b) plans¹. (Defined)

Third, employers are not required to pay PBGC premiums. Because defined-contribution plans don't provide specified benefits, they're not threatened with unfunded liabilities and therefore not required to pay premiums to the Pension Benefit Guaranty Corporation (PBGC). Unfunded liabilities occur when a defined-benefit plan does not have sufficient money to pay promised benefits. Annual PBGC premiums for defined-benefit plans currently start at \$19 per participant but can run much higher, depending on how well funded the plan is and how large a workforce is covered. (Defined)

Finally, under DC plans, the employer has more control over the cost of providing pensions, as its promise is to pay specified contributions to the plan, not the level of

¹ The 403(b) is a tax deferred retirement plan available to employees of educational institutions and certain non-profit organizations as determined by section 501(c)(3) of the Internal Revenue Code. Contributions and investment earnings in a 403(b) grow tax deferred until withdrawal (assumed to be retirement), at which time they are taxed as ordinary income.

pension at retirement. The investment risk is bear by the employee, and although this may mean that employees receive less pension benefit, it could, if investments perform well, employees receiving more. (Wilkinson)

Advantages to Employers of Defined-Benefit Plans

First, employer has the greater control they permit over employee retirement behavior and wage-service profiles than DC plans.

Second, employers have more flexibility in funding defined benefit plans than they do in funding defined contribution plans. (McCarthy 2002)

4. Cash Balance Plan

Cash balance plans represent a relatively new and growing portion of the pension plan system in the United States. Employers establish an account containing a percentage of a worker's salary plus interest each year. Upon separation with the firm, an employee receives either a lump sum or annuity payouts. The employer carries the investment risk. (Flynn)

Many companies have converted their traditional pension plans to cash balance plans over the past fifteen years. Cash balance plans were developed in an attempt to achieve the advantages of both defined contribution and defined benefit plans. Under a cash balance plan, a hypothetical account is created for each employee. This account consists of hypothetical contribution credits that are based on some objective criteria the plan sets (such as a percentage of the employee's salary), and a hypothetical interest credit (either a fixed or variable rate). The individual account is hypothetical because the employer does not actually set money aside in individual accounts, but rather pools the funds with those of the other participants. Cash balance plans incorporate certain advantages of defined contribution plans that include the participant's receipt of periodic statements showing his or her account balance, and the portability of benefits from the account. However, because these plans are defined benefit plans, the employer guarantees each participant's benefits, thereby adopting that critical aspect of defined benefit plans. Under the Employment Retirement Income Security Act ("ERISA"), a defined benefit plan "must provide for a definitely determinable, non-forfeitable, *'accrued benefit.'*" In addition, a plan violates ERISA if *"an employee's benefit accrual is ceased, or the rate of an*

employee's benefit accrual is reduced, because of the attainment of any age." Just this past July, a federal court, in applying these ERISA requirements, found that the cash balance plan IBM instituted discriminated against participants based on their age. (Hansen 2003) IBM Corp. illegally discriminated against older workers when it altered its pension plans in the 1990s, a federal judge ruled Thursday (July 31st, 2003) in a case that affects 140,000 employees at Big Blue and could ripple across American industry. IBM and other companies say cash balance plans are more attractive to a younger generation of workers who are more likely to change jobs during their careers. But older workers contend the plans cut their expected benefits by as much as half. The lead plaintiff, Kathi Cooper, 53, of Bethalto, Ill., a 24-year IBM veteran who filed the case in 1999, said that when IBM converted to a cash balance plan, it hurt almost every single one of them over the age of 40, 45, because it reduced their accrued benefits. The law says company cannot reduce benefit accruals on account of age. . . . But IBM spokesman said that IBM's pension plan does not discriminate on the basis of age. To call such a plan discriminatory makes no sense and ignores the fundamental principle of the time value of money. Under the court's interpretation of the law, every cash balance plan in the country is illegal. Cash balance plans mushroomed in popularity in the 1990s, as companies including IBM, Delta and AT&T instituted them. A federal government report said that about 19 percent of the largest 1,000 U.S. companies had such plans in 1999. A report last year by consultant Watson Wyatt Worldwide found 33 of the largest 100 firms have instituted the plans. (Bergstein 2003)

Industry and legal experts don't expect the estimated 600 existing plans to become unlawful anytime soon, but neither do they suggest companies rush to convert existing

defined benefit plans to cash balance plans. The IBM decision will create a chilling effect for cash balance plan conversions until the age discrimination cloud is cleared up either by congressional action or by regulatory mandate. Since cash balance plans are defined benefit plans, redesigning the cash balance plan to avoid age discrimination issues would not be easily accomplished, according to cash balance experts. Industry experts predict many plan sponsors would freeze their defined benefit plans and shift toward defined contribution plans if the IBM case is upheld. Watson Wyatt's Mr. Lofgren said one of two things will now occur: either the IBM decision is reversed on appeal, or many plan sponsors will freeze their defined benefit plans and offer only a 401(k) plan. That would shift all investment risk to employees. (Williams 2003)

The benefits of employers generally drive the decision to use a cash balance plan, but employees receive benefits as well.

First of all, the employer pension expense in a cash balance plan is reduced over a period of years as compared to a regular defined benefit or defined contribution plans. The regular defined benefit plan expense is generally greater because the annual contribution is projected using estimates of payments that would be required at an employee's retirement. In a defined contribution plan, the pension expense is the amount contributed each year by the employer, which usually must contribute at a higher rate annually than for a cash balance plan.

Secondly, employer benefit of a cash balance plan is that the funding requirements may be lower because of the reduced overall pension liability of the plan. The cash balance plan payout is based on a constant formula, while a regular defined benefit plan payout is

based on a percentage of the employee's salary for the most recent years before retirement. Therefore, the funding requirement over a period of years for a cash balance plan would usually be less than the regular defined benefit plans.

Third, when companies that already have a regular defined benefit plan convert to a cash balance plan, the funding need is generally reduced, resulting in a reduction of the pension liability. The difference between the projected benefit obligation of the old plan and the new projected benefit obligation liability is applied to reducing amortized prior service costs and incurred pension expenses. This benefit obligation reduction accrues to the employer's benefit when a regular defined benefit plan is amended to become a cash balance plan.

Fourth, another potential cost reduction for the employee is how early retirement incentives operate. While a regular defined benefit plan incurs additional cost for early retirement incentives, the individual fund balance will grow enough to attract early retirement if the employee remains with the employer.

Finally, cash balance plans also benefit employees. One example is the possible early retirement incentives that accrue through annual contributions and compound interest over a long period of time, which can result in a large employee fund balance. Another employee benefit is that the employee is usually fully vested after a short period. If the employee leaves the company and is fully vested, the employee is entitled to the value of fund. The employee is not taxed until the funds are withdrawn. In addition, cash balance plans resemble 401(k)-type plans. The employee can see the growth in the plan account but does not face the investment risks of 401 (k) plans. (Briner 2003)

Cash balance plans have suffered from negative publicity. Cash balance plans discriminate against older employees have raised many possible concerns, but may not be accurate in all cases.

First, in a cash balance plan conversion, the accrued benefits to the employee already existing in any plan cannot be taken away. And, the employee is still credited in the new cash balance plan with those benefits.

The key concern is that some employees who work for the same company for a longer period may have to wait several years before the cash balance plan credits any new contributions to their account. This situation occurs because the cash balance plan formula creates an initial balance that is below the employee's accrued benefit. Therefore, the employer is not required to make any new contributions to the employee's cash balance plan account until the individual cash balance catches up to the accrued benefit. The period required to catch up to the accrued benefit is called the "wear-away" period.

Companies have the following alternatives to ease this wear-away period effect:

- Allow the employee to choose to continue under the regular defined benefit plan.
- Provide added incentives such as stock options or bonuses.
- Reduce the wear-away period through employer contributions to the employee plan.

Secondly, the tax deductibility of contributions to pension plans is always a prime concern to the management of a company. In September 1999, the IRS implemented a freeze on issuing determination letters on cash balance plan conversions. Accordingly,

applications to the IRS for a determination of the status of cash balance plans are on hold until the freeze is lifted. In December 2002, the Bush Administration proposed rules advising companies about how to avoid challenges based on age discrimination when they convert traditional pension plans to cash balance plans. Based upon the comments received by the Treasury Department and the IRS, the proposed regulations were withdrawn. New proposed regulations should address the potential for plan sponsors to avoid the requirements of the new compatibility regulations through cash balance plans.

Third, whether cash balance plans are equitable to employees depends upon an individual's interests. Because cash balance plans are a type of defined benefit plan, the plan should be recognized as a legitimate vehicle for retirement benefits. Because such plans are always subject to employer abuses, the employer should provide adequate safeguards, and the employee should keep informed about all aspects of the plan.

Finally, if an employee seeks portability in a pension plan, a cash balance plan provides that. If an employee seeks an identifiable accumulating account in a pension plan, the cash balance plan provides such visibility. Because the benefits that a cash balance plan provides may not be as large as those of a regular defined benefit plan or a defined contribution plan, however, the matter of equity is largely subjective. (Briner 2003)

Cash Balance plans Vs Defined Benefit plans

John and Uccello compared pension wealth in traditional defined benefit (DB) plans and cash balance plans for national sample of covered Americans aged 52 to 61. They found that if employers replace DB pension plans with cash balance plans that generate the

same level of aggregate benefits, those who change jobs frequently, especially those who held pension jobs early in their lives, would gain life-time pension wealth under cash balance plans, assuming that their earnings and turnover rates did not respond to the change in plan type. Though, those with pension wealth resulting from a single job that they held until their fifties or sixties would lose wealth in cash balance plans. This is because long term workers have high levels of DB pension wealth; replacing DB plans with cash balance plans would benefit individuals with limited DB wealth. The share of total pension wealth held by those in the bottom quartile would triple if they were to participate in cash balance plans. In addition, cash balance plans also would favor those with limited education over college graduates. (Johnson and Uccello)

Cash balance plans would distribute pension wealth more equally across the population than DB plans, increasing median lifetime pension wealth in the total covered population. In addition, more people would gain pension wealth in cash balance plans than would lose. Johnson and Uccello found that 53 percent of those ages 51 to 61 with coverage from past or current jobs would accumulate more lifetime wealth in cash balance plans than in their existing DB plans. Although cash balance plans supporters often claim that cash balance plans will benefit women, nearly two-thirds of women aged 51 to 61 in 1992 with DB coverage would lose pension wealth if they had instead participated in cash balance plans throughout their working lives. Johnson and Uccello also concluded that the relative merits of cash balance plans depend in large part on ongoing trends in the labor market. If worker turn over is increasing and few individuals in the future remain with their employers for many years, then cash balance plans are likely to prove especially beneficial to workers because they generate more pension wealth on short-term

jobs early in the work life than DB plans. The steady growth in DC coverage also has important implications for cash balance plans. As traditional DB coverage continues to wear away, the option for workers may not be to choose between cash balance plans and DB plans but rather between cash balance plans and DC plans. (Johnson)

5. Conclusion

There is no clear answer as to whether defined benefit contribution plans are to be preferred over defined benefit plans. In my paper I have examined many articles and each employer and employee will have their own perspective on where the balance of net advantage lies.

Comparing the advantages of DB and DC plans, the major advantage of DB plan is the potential they offer a stable retirement income to workers. The advantages of DC plans are the predictability of the value of pension wealth, the ability to invest in inflation – hedged portfolios, and the fully-funded nature of the DC plan.

By comparing the rate of return of both DB and DC plans, it showed that DC plan do at least as well as DB plans, or in most cases do a better job, of providing for pension benefits at retirement. Bigger plan generated better return than smaller plan because plans with more assets have access to broader investment opportunities and more investment expertise. But it will be more beneficial to employees if the company offers both the DB and DC plans. These employees may have been investing more heavily in the stock market, despite its higher risk, knowing they could fall back on their defined benefit plans. In addition, education might have helped participants gain understanding of the financial risks associated with the stock market. More educated employees are more wised about their investment, so they tend to have higher rate of return on their pensions. But the market down turn gave a big hit on pension plans. For example, total retirement assets which include profit-sharing plans, traditional pensions, and IRAs, lost a combined \$410 billion in 2001.

Funding DB plan is more costly to employer compare to DC plan. DB plans require considerably more complex accounting treatment than DC plans. Companies have more pension liabilities under DB plans than DC plans. Under DC plans, company has no further obligation after contribution is made. Under DB plans, company has periodic expense related to funding pensions.

Because of government regulation of DB pension plan and companies are unwilling to bear the risk of investment, many companies shift to DC plans. DC plans offer more advantages to employer, such as more predictable funding obligations, lower administrative expenses, no PBGC premiums, and more control over the cost of providing pensions.

The shifting to DC plans made employees to carry the investment risks. Cash balance plan adopted some characteristics of both DB and DC plan. It should reduce the companies' cost and not shift the investment risks to employee. Cash balance plans offers many benefits to employer, such as reduced pension expense, lower funding requirement, and reduction in pension liability. It also benefit employee, employee is usually fully vested after a short period. But the court is ruling that the cash balance plan violates federal age discrimination laws.

DB plan might not be a better option for employees because most of DB plans are under funded, and it far exceeding the resources of the government's Pension Benefit Guarantee Corp. The number of firms reporting under-funded defined benefit plans is growing. When a DB plan is under funded, an employee is not going to get his or her retirement benefit.

Finally, researchers suggested that older employees should continue with the DB pension plan. Younger employees with shorter records should take the option of joining the DC plan or cash balance plan since they aren't likely to stay in the same job for so many years. As traditional DB coverage continues to wear away, the option for workers may not be to choose between cash balance plans and DB plans but rather between cash balance plans and DC plans.

Reference

American Federation of State, County and Municipal Employees, AFL-CIO, Department of Research and Collective Bargaining Service. 1997. *Defined Benefit vs. Defined Contribution Pension Plan*.

<http://www.afscme.org/wrkplace/pensfact.htm>

Bergstein, Brian and Geller, Adam, *Judge strikes down IBM's pension plan*, August 1st, 2003, Detroit Free Press Inc., http://www.freep.com/money/tech/ibm1_20030801.htm

Bezooyen, Jeroen van, *Provision of Pension Benefits for Employees: The Defined Benefit/Defined Contribution Debate*, Group for Economic and Market Value Based Studies, May 1997, www.gemstudy.com

Blank, Emily C.. 1999. *Pension Type and Retirement Wealth*.

Bodie, Zvi; Marcus, Alan J.; and Merton, Robert C. *Defined Benefit versus Defined Contribution Pension Plan: What are the Real Trade-offs?* 1985.

<http://papers.nber.org/papers/w1719.pdf>

Briner, Russell F., Pitman, Marshall K., *Disclosing Cash Balance Formulas*, CPA Journal, 07328435, Aug 2003, Vol.73, Issue 8

Bundled DB may be next big thing with smaller plans, Pensions & Investments; 8/18/2003, Vol. 31 Issue 17, p21, 1/2p

Burns, Scott, *Defined-benefit pension plans have limits*, Milwaukee Journal Sentinel on Sep. 20, 2002. <http://www.jsonline.com/by/your/sep02/81442.asp>

Costell, Martine, *What's better: A pension or a 401(k)?*, Money Magazine, **September 23, 2002**, http://money.cnn.com/2002/09/10/retirement/q_pension_401k/

Costell*, Martine, *401(k)s get slapped for a second year*, Money Magazine, **June 19, 2002**, http://money.cnn.com/2002/06/19/retirement/q_401k_balance/index.htm

Defined-Contribution Plans, TIAA-CRFF Plan Administrator, TIAA-CRFF.org, http://www.tiaa-cref.org/administrators/designing_a_plan/dp_1.html

Dennis-Escoffier, Shirley; Fortin, Karen A., *Taxation for Decision Makers*, 2004 Edition, Pearson Education, Inc., Upper Saddle River, New Jersey, 07458

Employee Benefit research Institute (EBRI). *Fundamentals of Employee Benefit Programs*. 1997

Engelhardt, Gary V.. *How Does Dipping into Your Pension Affect Your Retirement Wealth*. 2001.

Flynn, Patrice, *The NPT 2002 Pension Survey: Key Findings and Implications*, Prepared for The Nonprofit Times, February 2003

Frequently Asked Questions about Cash Balance Pension Plans, October 21, 2003, U.S. Department of Labor,
http://www.dol.gov/ebsa/faqs/faq_consumer_cashbalanceplans.html

Hansen, Mark, *Converting To A Cash Balance Plan Can Be Risky Business*, 2003 Wildman, Harrold, Allen & Dixon LLP,
<http://articles.corporate.findlaw.com/articles/file/00525/009172.html>

Johnson, Richard W., Uccello, Cori E., *Cash Balance Plans and the Distribution of Pension Wealth*, *Industrial Relations*, Oct 2003, Vol. 42 Issue 4, p745, 29p

Kuttner, Robert, *The Great American Pension-Fund Robbery*, Business Week; 9/8/2003 Issue 3848, p24, 1p, 1c

Samwich, Andrew A., and Skinner, Jonathan. 2001. *How will defined contribution pension plans affect retirement income?*
<http://www.dartmouth.edu/~samwick/dbdc200110.pdf>

Spiceland, J. David; Sepe, James F.; and Tomassini, Lawrence A.; *Intermediate Accounting*(updated 2rd edition) 2001, The McGraw Hill Companies, Inc.

U.S. Department of Labor. 2002. *Pension Welfare & Benefits Administration*. Abstract of 1998 Form 5500 Annual Reports, Winter 2001-2002.

McCarthy, David, *Defined Benefit Pension Plans: A Stochastic Dynamic Programming Approach*, 4th Annual Retirement Research Consortium, Washington, DC, May 2002

Watson Wyatt – Insider, January 2002, *Defined Benefit vs. 401(k) Returns: The Surprising Results*
<http://www.watsonwyatt.com/us/pubs/insider/printable.asp?ArticleID=9378&component=...>

Wilkinson, George, *Increasing Costs Force Shift To Dc Pensions*, PRESS RELEASE, July 2002

Williams, Fred, *Future of cash balance plans in question.*, Pensions & Investments; 8/18/2003, Vol. 31 Issue 17, p1, 3p, 2c

2002 Aviation Maintenance U.S. Salary Survey – Annual Wages By Employer,

<http://www.aviationtoday.com/>

<http://www.aviationtoday.com/reports/avmaintenance/previous/0702/figure03.jpg>

2002 Aviation Maintenance U.S. Salary Survey - Average Salary Comparison 1998 – 2002,

<http://www.aviationtoday.com/>

<http://www.aviationtoday.com/reports/avmaintenance/previous/0702/figure05.jpg>