

THE PENNSYLVANIA STATE UNIVERSITY
SCHREYER HONORS COLLEGE

DEPARTMENT OF INSURANCE AND REAL ESTATE

WHY ARE FINANCIALLY HEALTHY EMPLOYERS FREEZING
THEIR DEFINED BENEFIT PENSION PLANS?

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Spring 2010

A thesis
submitted in partial fulfillment
of the requirements
for a baccalaureate degree
in Actuarial Science
with honors in Actuarial Science

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ABSTRACT

Employer-sponsored pension plans are one of the most important ways that Americans save for retirement. Over the past 30 years, the landscape of employer-sponsored pension plans has drastically changed. Prior to 1980, most workers were covered by defined benefit plans that guarantee participants a certain benefit for the life of the employee. In the mid-1980's however defined contribution plans became more prevalent. In a defined contribution plan, contributions are made to individual funds for participants; the assets in the fund are invested and the total amount in the fund upon retirement is the employee's retirement benefit. One of the most influential factors driving this change is the trend for plan sponsors to freeze defined benefit plans. While cost is the most common factor stated for such a change, recently financially healthy employers - those who can afford to continue offering defined benefit plans - have also frozen these plans.

During the past decade, two weak economies resulting in poor investment returns has fueled the debate over the validity and benefits of freezing defined benefit plans in favor of defined contribution plans. This paper examines economic and industry factors that have influenced this trend and the impact such a decision has on plan sponsors and individuals. The issue is examined from the perspective of each party in order to fully examine the benefits and weaknesses of each retirement plan structure.

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ACKNOWLEDGEMENTS

It would not have been possible for me to write the undergraduate thesis without the assistance and support of the people around me.

First, I must offer the greatest thanks to Dr. David Cather, my honors adviser and thesis supervisor. Without his assistance, guidance, and support this paper would have never taken shape. He was instrumental in directing me on how to undertake this process from beginning to end. The advice and direction provided by my second reader Ron Gebhardtsbauer has been invaluable.

Above all, I would like to thank my parents, brother, and sister for their support not only through the process of writing this thesis but more importantly through my four years at Penn State.

Chapter 1

Introduction to Employer Sponsored Retirement Savings Plans

With life expectancy and the cost of living continuing to rise in the United States, adequately planning and saving for retirement is more important than ever. Employer sponsored retirement savings plans are one of the most significant ways Americans prepare for retirement. These plans provide employees with an automatic savings device and offer tax advantages for plan sponsors and employees. A recent study by the Investment Company Institute found that in the wake of the current economic meltdown, just over 40% of households surveyed stated that if not for their employer sponsored retirement plan, they probably would not be saving for retirement at all. (Reid & Holden, 2008)

Employee Benefit Packages

Employers offer retirement savings plans as part of their non-wage employee benefit packages. Compensation for employees has two components, wage and non-wage. Non-wage compensation includes retirement savings, health benefits, paid time off, and any other perks such as contributions towards health club membership fees combine to create the complete package. Competitive packages can assist in attracting and retaining top talent to a company.

When developing a compensation package, employers must balance cost concerns with the needs of their desired employee population. The chart in Appendix A outlines the breakdown of employee compensation per hours worked as a percentage of total compensation for occupational groups and union status in private industries for December 2009. As seen in the

bolded area, retirement and savings compensation generally accounted for between 3 to 4.8 percent of employees' total compensation. (United States Department of Labor, *Employer Costs for Employee Compensation*)

Contributions to retirement funds are normally made on a pre-tax basis. Similarly, any investment growth in these funds is not charged income tax until the money is withdrawn. Thus, employers can use retirement benefits to increase an employee's total compensation without increasing the amount of income tax that the individual must pay. As incentive for employers to offer retirement savings, contributions that they make on behalf of their employees are tax deductible. Businesses may also receive additional incentives and tax credits for developing a retirement plan. ("Tax Information for Retirement Plans Community")

There are two basic types of employer sponsored retirement plans: defined benefit and defined contribution. Each plan offers unique benefits and challenges for employers and employees. This paper provides an overview of the changing pension landscape in the United States, focusing mainly on the trend to freeze defined benefit pension plans among private companies.

Overview of Defined Benefit and Defined Contribution Plans

All forms of retirement plans are subject to two main forms of risk: investment risk and longevity risk. Investment risk is the risk associated with the variability of investment returns. It stems from the decisions on asset allocation and portfolio decisions. Poor investment returns negatively impact a plan's ability to provide adequate retirement benefits.

Longevity risk is the risk that an individual will live longer than expected. In 1980, males age 65 were expected to live another 14 years; by 2005 the life expectancy rose to 16.1 years and by 2050 it is projected to increase to 18.9 years. Similarly, in 1980 the life expectancy for females age 65 was 18.4 years; by 2005 this rose to 19.1 years and by 2050 is projected to be 21.4 years. This means that individuals are living well beyond the normal retirement age of 65 in the United States. Thus, individuals must save more during their careers to provide for longer retirement periods. (*Longevity: The Underlying Driver of Retirement Risk 2005 Risks and Process of Retirement Survey Report, 2006*) When preparing for retirement, underestimating the impact of longevity risk results in poor planning of an individual's financial needs.

Defined benefit (DB) pension plans were once the most common employer sponsored retirement plans. These plans offer participants guaranteed retirement benefits. Benefits accumulate using a formula. While this formula varies for each employer, it usually is based on an employee's years of service and salary. For the salary portion, the formula will use the final average pay or career average earnings.¹ Most commonly, employees receive their benefit as an annuity. An annuity is a series of payments made at stated intervals until a predetermined event--either death or after a pre-determined number of payments--are made. However, some plans do offer employees the option to receive their benefit as a lump-sum.

Under a defined benefit plan, the investment risk is retained by the employer. The plan sponsor must contribute enough to ensure that plan assets are sufficient to fulfill all plan obligations. The employer contributes money to a pension trust that is invested in stocks, bonds, real estate, or other assets. Retirement benefits are paid from this trust fund. The employer is liable for the amount of the retirement benefits that have been promised to employees and their

¹ Final average pay uses the average salary of a predetermined period of time prior to retirement to calculate the pension benefit. Career average plans utilize an employee's average pay for their entire time of employment.

survivors. Thus, they must maintain a set level of funds within the retirement fund to ensure that they can pay for their employees' accrued benefits. If the amount in the fund is too low, the employer is legally obligated to contribute additional money into the pension fund. (Purcell, 2009) An indicator known as the funding status is utilized to determine how much of this liability the assets in the fund can cover. A plan that has a funding status of 100% has exactly enough assets in the fund to cover all current pension liabilities. A lower funding status indicates the possibility that an employer will not be able to pay out pension benefits when they come due.

Employers also retain the longevity risk in a defined benefit plan. In this case, longevity risk specifically refers to the risk that the employer will have to pay out a greater amount to an employee than expected because he or she lives longer than anticipated.

In order to protect employee benefits in the event an employer cannot meet their financial obligations, companies offering defined benefit plans are required to pay premiums to the Pension Benefit Guaranty Corporation (PBGC). Created by the Employee Retirement Income Security Act of 1974, the PBGC is an independent agent of the federal government that uses the income from insurance premiums to protect defined benefit plans. ("General FAQs About PBGC", 2010)

Today, however, the number of defined benefit plans offered in the United States has drastically declined. Instead, defined contribution (DC) plans have become the most prevalent employer sponsored retirement plans. In part due to regulatory changes and a changing workforce demographic, the popularity of defined contribution plans began to grow rapidly in the 1980's. (McCourt, 2006) Defined contribution plans do not guarantee a set benefit upon retirement; instead contributions are made to an account during the period an individual is employed. Contributions can be made by the employee and the employer and can be a set

amount or a percentage of the employee's salary. These contributions are invested, and the investment income is credited to the employees account. Upon retirement, the net amount in the account is the retirement benefit. An individual receives the lump sum of the assets in the account and can choose how to allocate this money through methods including buying an annuity.

Under a defined contribution plan, the employee retains the investment and longevity risk. The employee hopes that contributions to the fund are sufficient to provide for retirement. Since they control how the fund is invested, they retain the risk that their investments will not grow to an adequate level to provide for a retirement that maintains his/her standard of living. Because a defined benefit plan guarantees an individual a set payment, there is little longevity risk with these plans for the employee. However, employers retain the risk that an individual will live longer than predicted so that they will have to pay out a higher-than-expected cumulative retirement benefit.

The table in Appendix B summarizes the comparison between the two plans.

Plan Freezes

A pension plan freeze occurs when a plan sponsor limits the ability of its employees to earn benefits under the pension plan. There are three forms of pension freezes that employers may choose to implement: hard freeze, soft freeze, and partial freeze.

A hard freeze ends benefit accrual for all employees. In contrast, in a soft freeze the pension formula for current employees may be modified to freeze the number of years of service, but not the salary average. Soft freezes can also be used to describe situations when employers

eliminate new employees from participating in the plan. In a partial pension freeze some, but not all, employees continue to accrue benefits in the plan. Usually a cut-off based on age and years of service is utilized to determine which employees continue to accrue benefits in the plan. Each type of pension freeze has differing implications financially for employers and employees. (VanDerhei, 2006)

Often, when a company freezes their defined benefit plan they enhance an existing defined contribution plan or establish a new defined contribution plan to compensate for lost retirement benefit accruals. This is particularly true for financially healthy employers. According to data collected by PBGC in 2004, 83% of plan sponsors who froze their defined benefit pension plan offered affected participants a new or enhanced alternate retirement plan. Of these alternative plans, about 83% were new or existing defined contribution plans. (United States. Government Accountability Office. *Defined Benefit Pensions Plan Freezes Affect Millions of Participants and May Pose Retirement Income Challenges*, 2008)

The other alternative to end benefit accruals in a pension plan is to terminate the plan. Plan terminations, unlike plan freezes, completely shut down the plan. In order to do this, the employer must pay all benefits owed to participants at the time of the plan freeze either by purchasing annuities from an insurance company or by issuing lump-sum payments. Thus, it is expensive to completely terminate a plan. Termination is a permanent measure while frozen pension plans can be “thawed” and thus easily reactivated. This in part explains why from 2001 to 2006, the number of plan terminations declined by two-thirds while the number of freezes grew drastically. (United States. Government Accountability Office. *Defined Benefit Pensions Plan Freezes Affect Millions of Participants and May Pose Retirement Income Challenges*,

2008) Thus, pension freezes have become significantly important and a topic of growing controversy within the United States.

In the wake of the most recent economic recession, the debate over the best way for employers to help their employees provide for retirement has once again become a public issue. This was quite clear when in October 2009 *Time* magazine ran a cover story entitled “Why It’s Time to Retire the 401(k)”.² The article points out the discrepancy between what the retirement income 401(k)s should provide in theory as compared to the actual returns seen by participants. “The average 55-to-64-year-old should have a 401(k) balance of \$320,000. In fact, at the end of 2007, the average 401(k) of a near retiree held just \$78,000 — and that was before the market meltdown.” (Gandel, 2009) Such staggering statistics have led to discussions on the merits of defined benefit and defined contribution plans in relation to their impact of employers and employees.

Scope

Historically, only companies facing financial difficulties froze their defined benefit pension plan. Today, financially healthy companies are freezing their defined benefit pension plans as well, even though they have enough assets to fund their pension plans and cover their pension liabilities

This paper will study reasons why companies freeze their defined benefit pension plan. It explains why this reasoning is applicable for financially healthy employers who could afford to maintain their defined benefit plan. After exploring the reasons employers state for freezing

² A 401(k) is a defined contribution plan offered by a plan sponsor to employees. It allows employees to contribute a percentage of their income to tax-deferred investment account.

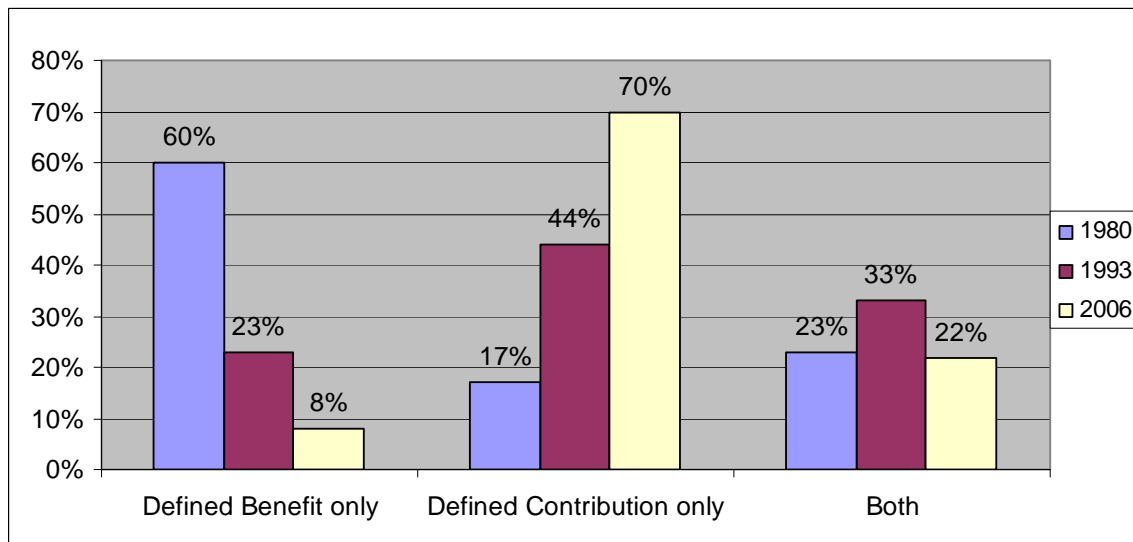
define benefit plans, the actual impact such a decision has on a firm is discussed. The implications plan freezes have for employees are discussed. Finally, this information is utilized to identify key areas financially healthy employers should consider when contemplating a pension plan freeze.

Chapter 2

Changing Landscape of Employer Sponsored Pension Plans

The pension landscape began to shift drastically in the 1980's. Prior to this time, the most common employer sponsored retirement benefit was defined benefit plans. During the 1980's regulatory changes, a changing workforce, and economic factors caused defined contribution plans to grow in popularity. Figure 1 shows the changing distribution of retirement plans from 1980 to 2006 in the private sector. While the percentage of workers covered by defined benefit plans has significantly decreased, the percentage covered by defined contribution plans increased drastically. (Munnell, Aubry, & Muldoon, 2008)

Figure 1: Private Sector Workers with Pension Coverage, by Pension Type, 1980-2006



Source: Munnell, Aubry, & Muldoon, 2008

Between 1998 and 2007, assets in private defined benefit pension plans grew from \$1.9 trillion to \$2.7 trillion. During the same time period however, defined contribution assets grew more significantly from \$2.6 trillion to \$4.5 million. (Brady, Holden, & Short, 2009) Table 1

below outlines the distribution of retirement plan assets in the United States as of 2007. A total of \$15.3 trillion assets are in retirement plans, with 40.6% financed by private employers.

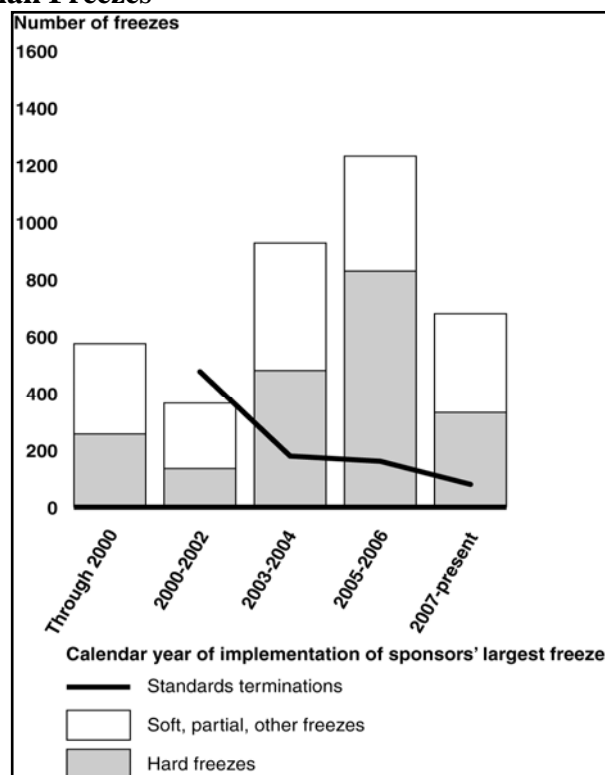
Table 1: Retirement Plan Assets

Pension Sponsor	Assets (trillions)	Percent of total
Defined benefit plans		
Private employer	\$2.7	17.7%
State and local governments	3.2	20.9
Defined contribution plans		
Private employer	3.5	22.9
IRAs	4.7	30.7
Federal government	1.2	7.8
Total	15.3	100

Source: Munnell, Aubry, & Muldoon, 2008

A large factor driving this change has been the increasing trend over the past decade of employers freezing their defined benefit plans. In 2004, 59% of Fortune 1000 companies maintained a defined benefit plan that was not frozen. In 2009 that number dropped to 42%. While some of this change can be attributed to turnover in the companies on the Fortune 1000 list, a significant portion of this change comes from companies freezing their plans during this time. ("Pension Freezes Continue Among Fortune 1000 Companies in 2009.")

Figure 2 below from a study completed by the Government Accountability Office (GAO) shows the increasing number of defined benefit plan freezes. The rate of pension plan freezes peaked in 2006, as seen below. However, during the second half of 2007 into 2008, the rate of plan freezes began to slow.

Figure 2: Defined Benefit Plan Freezes

Source: United States. Government Accountability Office. *Defined Benefit Pensions Plan Freezes Affect Millions of Participants and May Pose Retirement Income Challenges*, 2008

Regulatory Environment Changes

Changing pension regulation made defined contribution plans easier for employers to develop and beneficial for them to maintain. For these reasons, the regulatory evolutions for pensions have played a large role in the decision of financially healthy employers to freeze defined benefit plans in favor of defined contribution ones.

The legislative evolution began in the 1970's. In 1974, the Employee Retirement Income Securities Act (ERISA) was enacted. Under ERISA, minimum standards for participation, vesting, and funding were imposed. Minimum funding requirements ensured the security of employee benefits and maximum limits on tax-deductible contributions protect tax revenue.

Vesting requirements ensured that employers who left a job before reaching retirement age could receive some benefit as long as they worked a minimum number of years for the employer.

ERISA also required employers to insure their defined benefit pension obligations by paying premiums to the Pension Benefit Guarantee Corporation. Thus, this legislation made it much more expensive than before for some employers to administer defined benefit plans. (Munnell & Soto, 2007)

Subsequent regulatory changes that affected financially employers' decision to freeze their defined benefit plans related to two major areas: funding and reporting requirements.

Funding Requirements

In 1987, the Omnibus Budget Reconciliation Act (OBRA) changed the funding limits set in ERISA. The act lowered the maximum funding limit to the lower of 100 percent of actuarial liability or 150 percent of current liability. Since actuarial liability includes the effect of future salary increases on the value of pension rights already earned and current liability does not, current liability is generally less than actuarial liability. When OBRA 1987 was enacted, many defined benefit plans had assets that exceed 150 percent of the plan sponsors liabilities and increases in stock prices through the following few years caused assets to continue to grow. Thus, many plan sponsors made no contributions to their plans because they were prohibited from making any tax-deductible contributions (Munnell & Soto, 2007)

The Pension Protection Act of 2006 significantly influenced a number of pension freezes. In some situations, the act shortened the period that plan sponsors have to eliminate defined benefit plan funding shortfalls from 30 years to 7 years. (Munnell & Soto, 2007) While it put the most strain on poorly funded plans, this act caused financially healthy employers to examine

their policy for recovering from pension shortfalls. Employers who saw the seven-year funding window as being a potential issue in the future considered freezing their plans.

In the late 1990's and 2000's, legislation was enacted affecting the current liability full funding limit. Initial changes under the Taxpayer Relief Act of 1997 increased this limit to 160 percent by 2002. The Economic Growth and Tax Relief Reconciliation Act of 2001 initiated the phase-out of current liability funding limit. Finally in 2006, the Pension Protection Act (PPA) set the full funding limit as the funding target plus a cushion and the amount the funding target would increase for compensation increases. (Munnell & Soto, 2007)

Reporting Requirements

Pension reporting was overhauled in 1985 when the Financial Accounting Standards Board (FASB) issued FAS 87, *Employer's Accounting for Pensions*. This rule required employers account for pension liabilities using the projected unit credit actuarial cost method for reporting purposes.³ (Munnell & Soto, 2007) This switch in accounting methods meant that the liability costs for an employee's retirement benefits would be lower early in the employee's career and would grow with the age of the employee. This switch in accounting methods came at a critical time when the baby boomers were new to the workforce. Since smaller liabilities needed to be reported early in an employee's career, employers decreased contribution levels as this population entered the workforce but, as they aged, contributions became higher than they would have been otherwise. Thus, as an employers' workforce aged the employer was forced to make significantly greater contributions to their defined benefit plan. By implementing a hard freeze for their defined benefit plan, all benefit accruals for employees are stopped. Thus,

³ Under the projected unit credit actuarial cost method, the actuarial present value of future benefits uses future pay increases in the calculation of the liability and normal cost. (*Fundamentals of Current Pension Funding and Accounting For Private Sector Pension Plans*)

employers could avoid making some of the increasing contributions as their workforce aged.

(Fundamentals of Current Pension Funding and Accounting For Private Sector Pension Plans)

IBM Pension Freeze

In January 2006, IBM announced they were implementing a pension freeze starting in 2008. As the sponsor of one of the largest pension plans in the United States, IBM is considered a leader on benefit issues and as a result many companies follow their lead. (Armour, 2006) Thus, their decision to freeze their defined benefit pension plan was a milestone in the transition away from defined benefit plans.

When IBM announced their pension freeze in January 2006⁴, much of their reasoning for the decision reflected the reasons most employers state for freezing their defined benefit plans. The senior vice president of human resources Randy MacDonald stated:

“These changes are consistent with this direction (towards defined contribution plans for existing employees and new hires) and will give us more predictable retirement plan costs, along with benefits that remain ahead of- but more in line with- our competitors. We're taking these actions to better control retirement plan expenses, position the company for business growth and competitive strength, and preserve employees' earned retirement benefits... We also believe these are prudent and balanced steps at a time of uncertainty and conflicting legislative and regulatory directions about defined benefit retirement plans in the United States.”

⁴ While IBM announced their pension plan freeze on January 5, 2006, the change did not take effect until January 2008. As part of their plan redesign, IBM stopped all accruals in their defined benefit plan, redesigned their 401(k) savings plan to match up to 10% of participants pay, and ensuring 100% participation in the 401(k).

Thus, MacDonald highlighted the concepts that made this decision beneficial for IBM: improved financial control and bringing the pension plan in line with their business structure and industry norms. At the time of this announcement, the funding status for IBM's defined benefit plan stood at 104.6%, more than enough to cover all pension liabilities. According to IBM, they expected to realize savings of \$450 million to \$500 million in 2006 and \$2.5 billion to \$3 billion for 2006 to 2010.

What sets companies like IBM apart from those freezing their pension plans due to poor financial performance is that they significantly enhance their defined contribution plans. The enhancements to IBM's 401(k) plan appear to make it in the top 5 percent of all 401(k)s offered in the United States in terms of generosity according to Dallas Salisbury, president of the Employee Benefit Research institute. (Walsh, 2006)

Chapter 3

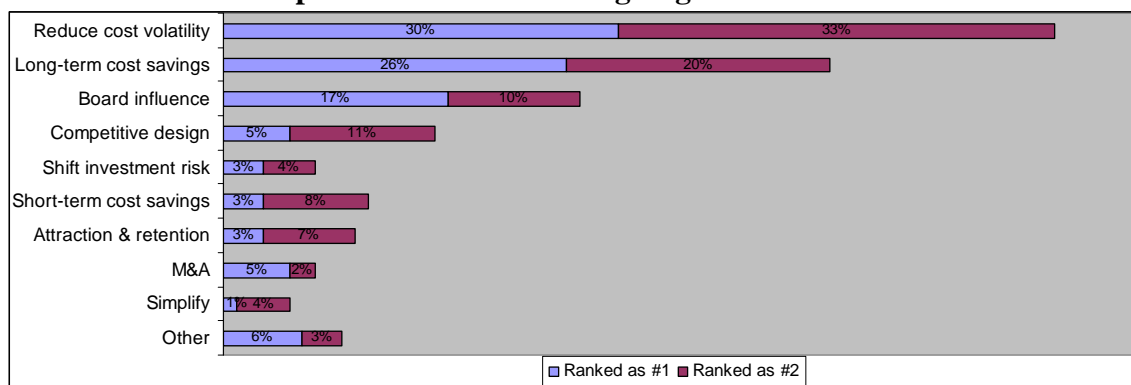
Employer Perspective on Pension Freezes

A company's decision to freeze their defined benefit is influenced by a range of factors. Ultimately though, each firm must evaluate if such a decision fits with their corporate values and business structure.

Stated Reasons for Freezing Pension Plan

Figure 3 summarizes the results of a 2006 study conducted by the Mercer consulting firm. The firm asked financially healthy employers to rank different characteristics that might affect their decision to freeze their pension plan.

Figure 3: Reasons Plan Sponsors Cite for Redesigning Pension Plans



Source: Nordstrom, 2006

The results from this survey can be broken into three categories of consideration: financial concerns, industry competitiveness, and talent management. While all firms are concerned with cost implications, the other two categories are more unique to financially healthy

companies. Since these companies have enough assets to cover their liabilities they are more likely to consider the implications a freeze will have on other aspects of the company.

Financial considerations were by far the most influential factor firms considered when making the decision. Specifically, the top financial concern was reducing the volatility associated with funding requirements. This reason became more influential starting in 2001 after the first bear market stemming from the burst of the internet bubble. The 2008-2010 economic crises served to only further this sentiment. Since employers retain the investment risk, decreases in investment returns can require firms to provide additional contributions to their plan.

Industry competitiveness was the second most influential factor. Industry competition can drive the decision to freeze a pension plan in order to reduce operating expense and compete for talent. Table 2 below shows defined benefit sponsorship for Fortune 1000 companies by industry.

Table 2: Fortune 1000 DB Plans by Industry

Industry	Fortune 1000	Percentage DB sponsorship	DB Sponsors	
			Percentage Frozen	Percentage Active
Nondurable Manufacturing	180	88%	15%	85%
Transportation, communication, utilities	134	75%	18%	82%
Durable manufacturing	208	77%	23%	77%
Finance	157	62%	20%	80%
Agriculture, mining, construction	55	42%	26%	74%
Wholesale and retail trade	171	38%	35%	65%
Services	95	28%	44%	56%
Total	1000	63%	22%	78%

Source: "Pension Freezes: Has the Worst Passed?", 2007

Industries with high defined benefit sponsorship rates such as nondurable and durable manufacturing had a lower percentage of frozen plans. Thus, it appears that for industries where offering defined benefit plans are the norm, employers are less likely to freeze their plan in order to stay in line with their competitors compensation offerings.

Finally, workforce management involves attracting and retaining the best individuals for a position. Defined benefit plans are most beneficial to firms that profit from long-time employees who develop specialized knowledge of the company and its services. Such businesses include hospitals, utilities, and technology-based manufacturing industries. Since defined benefit plans reward employees for longer service in their benefit calculation they create a “pay to stay” mentality. Conversely, alternative retirement programs create a “pay for performance” mentality. These plans are most beneficial in industries that are more service oriented such as consulting where “employee mobility has become a way of doing business and is consistent with good financial performance.” (Aglira, 2006) Analysis of factors driving pension plan freezes through the 1990’s found that labor force considerations more so than financial ones were the main motivation for an employer to move away from a defined benefit plan. (Munnell & Soto, 2007)

Financial Effectiveness and Efficiency of Defined Benefit Freezes

Effectiveness refers to succeeding in reaching desired goals and outcomes. Efficiency measures the result relative to the cost to obtain the result. When discussing pension plans, effectiveness looks at the ability of a retirement plan to align with a firm’s business structure,

corporate values, and outlined goals. Efficiency on the other hand looks at a firm's ability to provide a given benefit level in the most cost effective manner.

Effectiveness

Because risk is transferred to employees, defined contribution plans are more effective for employers in reducing volatility and contribution costs associated with retirement plans. These savings can then be utilized for profit-generating business or allocated to a less-risky form of compensation. However, because very few firms terminate their defined benefit plans, they do not rid themselves of all risks and costs associated with such a plan.

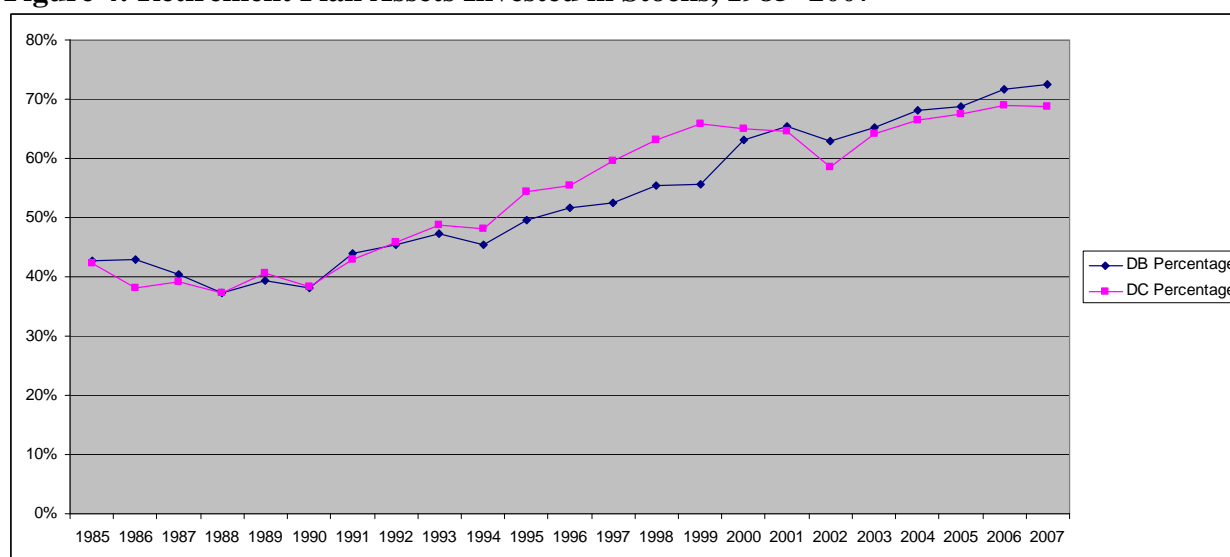
Most firms retain pension liabilities for benefits already accrued and enhance their defined contribution plan when freezing their pension plan. (McFarland, Pang, & Warshawsky, 2009) Thus, freezing defined benefit plans can often cause costs to increase significantly in the short-run. When the Employee's Retirement System of Rhode Island (ERSRI) reviewed its defined benefit pension plan in 2007 because of severe funding deficits, a study found that the state would need to significantly increase payments to ERSRI in the short-run if the plan was frozen. Any savings would not be realized for a number of years. (Boivie & Almeida, 2008) Simply put, a majority of plan sponsors who freeze their defined benefit pension plans will not realize any significant increase in savings immediately.

Freezing defined benefit plans will help phase out the economic risk associated with these plans in the long-run. As discussed earlier, a rapid decline in interest rates causes the amount of assets in pension funds to decrease. Firms then must inject cash into the pension fund.

The risk associated with interest rate volatility became very apparent in the last decade. Figure 4 below outlines the percentage of pension plan assets invested in stock from 1985 to the 2007. Over this time, defined benefit and defined contribution plans have had an increasing

dependence on stock investments. As of 2007, 73% of defined benefit plan assets and 69% of defined contribution plan assets were in stock investments. (United States. Federal Reserve Board. *Flow of Funds Accounts of the United States*.) This means that the plans were highly dependent on volatile stock returns to provide the investment return necessary to cover their pension liabilities. If the investment portfolio of a pension plan does not provide high enough returns, plan sponsors must make additional contributions into the pension plan.

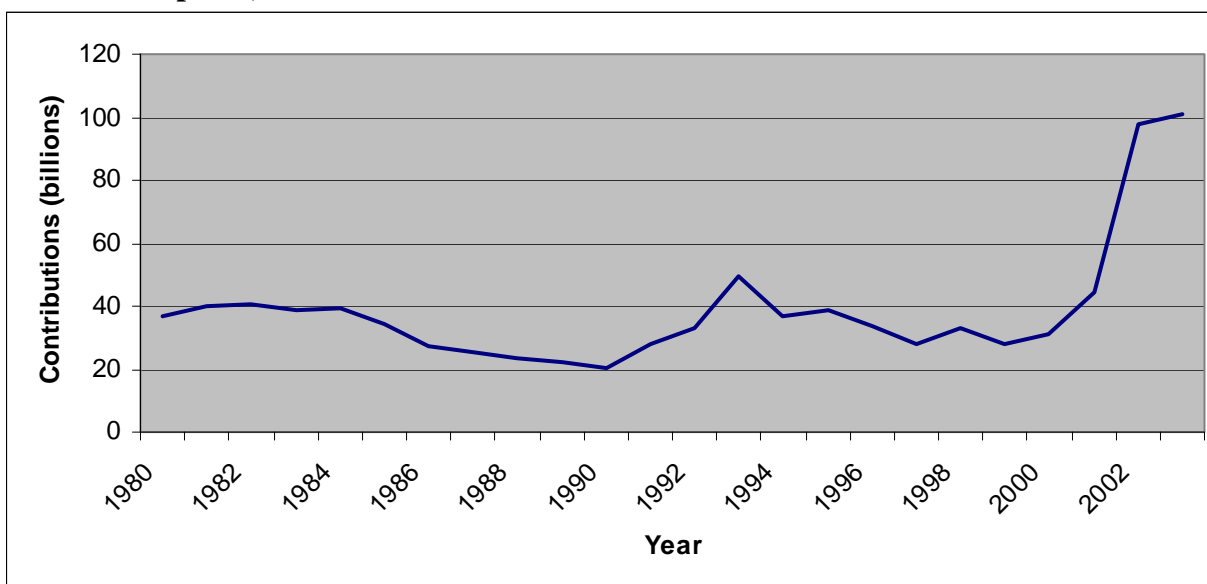
Figure 4: Retirement Plan Assets Invested in Stocks, 1985- 2007



Source: United States. Federal Reserve Board. *Flow of Funds Accounts of the United States*.

From 1980 until 2000, the average annual contributions to defined benefit plans totaled \$30 billion a year. During this time, extremely high interest returns meant that companies could afford to contribute minimal amounts to pension funds. However, when the bear market caused by the dot-com bubble burst, stock returns decreased significantly. To cover the increasing projected liabilities, firms had to contribute \$45 billion in 2001 and a staggering \$100 billion in 2002. (Munnell, Golub-Sass, Soto & Vitagliano, 2006) Similarly, the economic meltdown that peaked in 2006 caused firms to once again increase contributions into retirement funds as interest rates declined.

Figure 5: Defined Benefit Pension Plan Contributions to Plans with 100 or More Participants, 1980-2003



Source: Buessing & Soto, 2006

As illustrated in Figure 5 above, contributions to defined benefit plans significantly increased in 2003 and 2004. After the economic crash of 2001 resulting in very poor return on assets, plan sponsors needed to increase contributions. A report from the Federal Reserve Board stated that in the wake of the 2008 economic meltdown, contributions in 2008 would be lower than those in 2007. However, 2009 and 2010 contributions would increase significantly. The reason that contribution amounts are affected for two years after the start of a weak economy is because funding regulation allows plan sponsors to spread deficit reduction contributions over several years. (Love, Smith, & Wilcox, 2009)

Though financially healthy companies currently have enough assets for their liabilities, freezing their pension plans now may reduce the effect of potential “perfect storms” in the future. In this context, a “perfect storm” describes a time when low interest rates coupled with stock market crashes and weak sales require plan sponsors to make significant contributions to a

pension fund thus destroying the firm's financials. Thus, financially healthy employers see pension freezes as a long-term solution to potential future problems.

Efficiency

As noted, employers often compensate for plan freezes by enhancing or creating defined contribution pension plans. However, there are economic efficiencies that are lost when switching to a defined contribution plan. Simply, for an employee to receive the exact same level of benefit under a defined benefit and defined contribution plan, defined benefit plans are better able to take advantage of economic opportunities that make them more efficient.

One advantage of defined benefits plans is that they offer investment efficiency. Defined benefit plans can be viewed as a diversified portfolio of individuals. It is more efficient to collectively invest for the group. Typically, with a defined contribution plan an individual is supposed to change their investment portfolio as they age from riskier assets that offer the potential for higher returns, such as stock, to lower-risk assets, like bonds, that offer lower returns but less downside risk. Because a defined benefit plan contains a mixed group of employees of all ages and stages in their careers, the investment portfolio can remain fairly constant. If a firm prematurely freezes their defined benefit plan, they accelerate the age profile of the plan forcing a change in how the assets are invested and the returns they receive. (Boivie & Almeida, 2008)

Defined benefit plan investing has outperformed that for defined contribution plans in the past. A 2008 Watson Wyatt survey found that defined benefit plans had an average return that was one percent greater annually than defined contribution plans. (McFarland, Pang, & Warshawsky, 2009) This is in part influenced by the higher fees associated with defined

contribution plans to pay investment managers and a lack of diversification in the retirement accounts.

Empirical Evidence

In 2009, Brendan McFarland, Gaobo Pang, and Mark Warshawsky published a study in *Financial Analysis Journal* analyzing the actual effect freezing defined benefit pension plans has on a company's financial position. Utilizing a random sample of 82 publicly traded companies who announced a freeze to their defined benefit plan between 2003 and 2007, the study examines the hypothesis that "freezing or closing defined benefit pension plans increases sponsoring company's market value."⁵

When gathering the sample companies, the study found that there were 4, 10, 8, 43, and 17 announcements of pension plan freezes for years 2003 to 2007 respectively. This pattern is consistent with market trends which show that DB plan freezes peaked in 2006. (Dougas, 2009)

Table 3 below compares different median profitability and productivity measures for companies with frozen DB plans with those of industry peers that maintained a DB plan.

⁵ The study uses DB plan close to refer to companies who close benefits to new employees. This paper uses the term "soft freeze". In this paper, the term "plan freeze" refers to both hard and soft plan freezes unless otherwise specified.

Table 3: Financial Performance and Profitability of Companies with a DB Plan Freeze Compared with Industry Peers

Year	Market Value (Millions)		Shareholder's Equity (Millions)	
	Companies Freezing DB Plans	Companies Maintaining DB Plans	Companies Freezing DB Plans	Companies Maintaining DB Plans
	-5	\$2,085	\$1,927	\$935
-4	1,732	1,845	830	1,020
-3	1,893	1,970	946	1,164
-2	2,396	2,621	1,102	1,266
-1	2,363	2,572	1,021	1,350
Event Year	2,737	2,930	1,024	1,520
2-Yr % change	14	12	-7	20
5-Yr % change	31	52	9.5	38
Year	Net Sales per Employee (Thousands)		Net Cash Flow from Operating Activities/ Net Sales	
	Companies Freezing DB Plans	Companies Maintaining DB Plans	Companies Freezing DB Plans	Companies Maintaining DB Plans
	-5	\$194.4	\$199.9	9.00%
-4	204.3	214.9	8.32	9.60
-3	219.4	216.0	8.42	10.33
-2	240.8	239.8	7.79	9.71
-1	234.2	264.1	7.31	9.75
Event Year	246.8	277.3	7.87	9.08
2-Yr % change	3	16	0.08	-0.63
5-Yr % change	26	39	-1.13	0.09

Source: MacFarland, Pang, & Warshawsky, 2009

From the table above, it is clear that companies who maintained their defined benefit plans ultimately performed better over five years than those who froze their defined benefit plans. For all four measures, “unfrozen” companies outperformed their industry peers over five years. Over the two-year window of the year a plan was frozen and the previous year, however, the market value and the ratio of operating cash flow to net sales were lower for companies that froze their defined benefit plan.

While this study cannot be used to determine the causality of plan freezes, it allows us to comment on the effects of plan freezes. While in the short-run freezing their defined benefit pension plan can increase the profitability of a company, ultimately those companies that maintain their defined benefit plan have greater profitability and productivity.

This study includes financially healthy companies and those with poor financial performance. Thus, these results are influenced by the fact that many companies choosing to

freeze their pension plans were already performing at a lower level. This study however is relevant in showing that financially healthy companies are able to maintain high levels of profitability and performance in relation to the industry peers while maintaining a defined benefit pension plan.

Chapter 4

Employee Perspective

Pension plan freezes affect the level of compensation employees receive. The conditions outlined in a plan freeze affects each employee differently based on his or her age and point in career. Changing workforce demographics influenced the transition away from defined benefit plans, but this transition does not benefit all employees.

Changing Workforce Demographic

During 1970's and 1980's the demographics of the American workforce began to drastically shift. These changes brought different perspectives into the workforce. It also caused the needs and values of American workers to evolve.

Between 1970 and 1995 the number of women in the workforce grew drastically. Because women are more likely to transition in and out of the workforce as they raise children and families, they tend to value the portability of defined contribution plans. (Munnell & Soto, 2007) Evidence shows that the participation rate for women in defined contribution plans grew at a faster rate than their male counterparts. (Shuey & Rand, 2004) It can then be assumed that the needs of this new sector of the workforce influenced the transition to defined contribution plans.

As women became more involved in the workforce, the baby boomer generation also entered the workforce. They differed from previous generations in the fact they valued the ability to move from job to job throughout their career. Historically, individuals stayed with the

same company through most of their time in the workforce. However, a 2006 survey released by the Bureau of Labor Statistics found that individuals from age 18 to age 42 in 1978 to 2006 held an average of 10.8 jobs. (United States of America. Bureau of Labor Statistics. *Number of Jobs Held, Labor Market Activity, and Earnings Growth Among the Youngest Baby Boomers: Results from a Longitudinal Survey*) This meant that a portable retirement account would be more beneficial than a defined benefit plan that would only provide a great value if an individual stayed with the same employer for most of their career.

The way defined contribution plans are established, employees can bring the plans with them as they switch jobs and move in and out of the workforce. They can continue to accrue benefits in the same account. Thus, as the needs and values of the workforce changed, employees adapted the retirement benefits offered to meet these needs.

The increased popularity of defined contribution plans was enhanced by a booming stock market during most of 1980-2000. Between 1982 and 2000, stock prices rose at an annual rate almost double that of previous years. During this period, the stock prices rose an average of 16.9 percent annually compared to an average 8.7 percent in previous years. (Munnell & Soto, 2007) This meant that individuals with defined contribution plans saw unusually high returns on their retirement investments. It made it appear easy for individuals to control the investment of their own retirement funds successfully. If the stock market had not performed so well during these years, it is possible that defined contributions plans would not have become so popular.

Another factor affecting the decline of defined benefit plans was the decline in labor unions. Collective bargaining units seek to maintain labor stability and worker loyalty. Post-World War II labor union victories were very influential in spreading employer-sponsored pension plans. They then were an important force in encouraging employers to continue to offer

defined benefit pension plans. (Shuey & Rand, 2004) Since then the influence of labor unions has decreased drastically. In 1983 only 16.5% of private sector employees were union workers and in 2005 that number was only 7.8%. The decline of labor unions in recent years “weakened the voice of older workers and perhaps their support for a longer view towards work and retirement.” (Munnell & Soto, 2007)

Consequences of Plan Freezes on Retirement Income

There are a number of factors that influence how comparable a defined contribution plan will be in comparison to a defined benefit plan. First, the defined benefit plan that was initially offered must be examined. Defined benefit plans whose benefits are based off an employee’s final average pay grow faster than any other plan type at the end of an employee’s career. Thus, a replacement defined contribution plan would need to have a greater contribution rate for older employees to be somewhat equal.

The parameters utilized to calculate defined benefits also effect how a comparable plan can be created. The desirability of a defined benefit plan is directly related to the percentage of pay utilized to calculate the pension benefits. Thus, A defined benefit plan using a greater percentage of pay is more desirable and a comparable defined contribution plan would need to have greater contributions made by the employer. .

Finally, participant demographics influence retirement benefits and need to be considered when comparing a defined benefit and defined contribution plan. Older employees with longer tenure with a firm will have accrued greater benefits under defined benefit plans. In general,

mid-career and older workers will see the largest reduction in retirement income when a defined benefit plan is frozen and replaced with a defined contribution plan. (Boivie & Almeida, 2008)

The easiest way to see the impact of a plan freeze is through an example. In their 2007 paper “Why are Companies Freezing Their Pensions?”, Alicia Munnell and Mauricio Soto created an example to show the replacement rates for a defined benefit plan that is frozen and replaced with a 401(k). The defined benefit plan and 401(k) are roughly equivalent as shown by the fact that a new employee aged 35 who only receives the 401(k) would receive about the same as an employee who retires at age 62 with benefits only accruing in the defined benefit plan.⁶

Table 4: Wage Replacement Rates for Sample Frozen DB Plan Replaced with 401(k)

Source	Age at which defined benefit plan is frozen and replaced with a 401(k)					
	35	40	45	50	55	62
Defined benefit plan	0%	3%	7%	13%	20%	43%
401(k) plan	44	33	23	15	8	0
Total	44	36	30	28	28	43

Source: Munnell & Soto, 2007

Table 4 above shows that the wage replacement rate is lowest for employees in their 50s when the plan was frozen. Such a change can be detrimental because it does not afford older employees enough time to enhance personal retirement savings. This is why plan sponsors will sometimes choose to grandfather older employees into the defined benefit pension plan through a partial freeze.

⁶ “Defined benefit plan amounts are based on 1.5 percent of the average of the last five salaries for each year of service, with a 5-percent discount for each year of benefit receipt before age 62. Calculations are based on a pattern of wage growth over a worker’s career that is a composite of two factors. The first is the growth of nominal wages across the economy due to inflation and real wage growth. We use the projections of the Office of the Actuary of the Social Security Administration of 4.1 percent nominal wage growth, with inflation at 3 percent and thus real wage growth of 1.1 percent. The second factor is the rise and fall of earnings across a worker’s career. We use an age-earnings profile based on career earnings profiles for males and females born between 1926 and 1965. In this profile, relative earnings reach a peak at age 47. After adding the economy-wide factors, real wages peak at age 51 and nominal wages at age 61. To facilitate comparisons with data collected in the 2004 Survey of Consumer Finances (SCF), our simulation sets the salary at age 50 to \$50,000. This results in a salary of \$18,500 at age 30 and an ending salary of \$58,000 at age 62 – the median earnings for individuals age 62 who are covered by a 401(k), according to the SCF. The contribution rate for the 401(k) is 9 percent a year, with a 7.6 percent nominal rate of return on assets. We use inflation-adjusted values for pension wealth at age 55 to facilitate comparisons with pension wealth at age 62.” (Munnell & Soto, 2007)

Effects of Investment Responsibility

The greatest difference for employees when defined benefit plans are frozen and replaced with defined contribution plans is that they are now responsible for the investment risk of the retirement fund. Many plan participants are not experienced in investing and thus cannot make educated investment decisions. This, in part, is responsible for the lower returns experienced comparatively by defined contribution plans. One study found that more than half of all DC plan participants had either no funds invested in stocks—which exposes them to very low investment returns—or had almost all their assets allocated to stocks, resulting in a much more volatile portfolio. (Holden & VanDerhei, 2001) The lack of diversification increases the risk significantly that an employee will not be financially prepared to retire.

The result of poor investment decisions of the employee can negatively affect the employer. Increasing dependence on defined contribution plans could influence employees' decisions on when to retire. The decision could be heavily influenced by market booms and busts. This could not be in line with employers needs for human capital over the business cycle. Also, unstable financial readiness for retirement could lead to the “hidden pensioner” problem, a situation in which unproductive workers postpone retirement. (McFarland, Pang, & Warshawsky, 2009)

Chapter 5

Conclusions

The trend in employer sponsored pension plans has shifted from offering defined benefit to defined contribution plans over the last 30 years. The growth in defined contribution plans has been influenced not only by employers offering new retirement benefits but also by employers freezing legacy defined benefit plans and replacing retirement benefits with a defined contribution plan.

The benefits a financially healthy firm will recognize from freezing their defined benefit plan in favor of a defined contribution plan vary greatly. There are three areas affected by such action: financial management, workforce management, and industry competition. Employers with fully-funded plans have the unique opportunity to weigh all of these factors.

Financial considerations involve how freezing or maintaining a defined benefit plan will effect cash flow and profitability. A firm must examine the effects of market volatility not only on its retirement fund but also its primary business operations. When the markets drop, plan sponsors need to increase contributions into the defined benefit plan fund. If a company's business operations are also heavily linked to the market, it will be more difficult to make the required extra contributions. For example, the wholesale and retail trade industry is directly affected by the state of the economy. The more discretionary income people have, the better profits this industry sees. However, sales and profits decrease when the economy performs poorly, making it more difficult for them to make extra contributions to a retirement fund. This

is one of the reasons we see this industry as the Fortune 1000 industry with the highest percentage of defined benefit plans frozen.

Financially healthy employers are in the unique position to consider both the short-term and long-term implications of a plan freeze. Since they do not need an immediate decrease of liabilities they are able to review retirement benefits as a part of their employees' entire compensation package as well as in relation to industry norms. They can estimate future workforce needs in relation to their business cycle and industry trends. If the company depends on individuals knowing the unique processes and products of the company, defined benefit plans are useful because they encourage employees to stay with one company. If a firm benefits more from a general, industry wide knowledge base, then strong defined contribution plans can help attract top talent from competitors.

Finally, financially healthy employers can analyze industry competitiveness when considering a pension freeze. They can utilize a freeze to reduce operating expenses to be more in line with industry norms. Also, they can analyze retirement plan benefits in relation to employee compensation packages offered by other firms in their industry in order to develop a competitive package to attract top talent. Thus, adapting retirement benefits to align with industry standards assists businesses in better managing financial returns and employee recruitment and retention.

Ultimately, it appears that the trend will continue away from defined benefit plans and to defined contribution plans. In the wake of the 2008-2010 economic crises, firms were once again reminded that very quickly the assets in defined benefit plans can decrease due to a sudden drop in interest rates. Ultimately the uncertainty of such financial obligations outweighs many

other considerations. Financially healthy employers however will be more likely to create stronger replacement defined contribution plans such as the one created by IBM.

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Appendix A

Employer costs per hour worked for employee compensation and costs as a percent of total compensation: Private industry workers, goods-producing and service-providing industries, by occupational group, December 2009

Compensation Component	Occupational Group							
	All Workers		Management, professional, and related		Sales and office		Service	
	Cost	Percent	Cost	Percent	Cost	Percent	Cost	Percent
Total Compensation	\$27.42	100.0%	\$48.19	100.0%	\$21.60	100.0%	\$13.66	100.0%
Wages and Salaries	19.41	70.8	34.12	70.8	15.53	71.9	10.32	75.50
Total benefits	8.00	29.2	14.07	29.2	6.07	28.1	3.34	24.50
Paid leave	1.86	6.8	4.05	8.4	1.36	6.3	0.58	4.20
Supplemental Pay	0.82	3.0	1.64	3.4	0.50	2.3	0.24	1.80
Insurance	2.15	7.8	3.20	6.6	1.90	8.8	0.93	6.80
Life	0.04	0.2	0.08	0.2	0.03	0.2	<.01	<.05
Health	2.01	7.3	2.94	6.1	1.80	8.3	0.90	6.60
Short-term disability	0.05	0.2	0.09	0.2	0.04	0.2	0.02	0.10
Long-term disability	0.04	0.2	0.09	0.2	0.03	0.1	<.01	<.05
Retirement and savings	0.92	3.4	1.81	3.8	0.60	2.8	0.21	1.50
Defined benefit	0.38	1.4	0.60	1.2	0.18	0.9	0.08	0.60
Defined contribution	0.55	2.0	1.21	2.5	0.41	1.9	0.13	0.90
Legally required benefits	2.25	8.2	3.36	7.0	1.72	8.0	1.38	10.10

Compensation Component	Occupational Group							
	Natural resources,		Production,		Union		Nonunion	
	Cost	Percent	Cost	Percent	Cost	Percent	Cost	Percent
Total Compensation	\$30.77	100.0%	\$23.49	100.0%	\$36.62	100.0%	\$26.37	100.0%
Wages and Salaries	21.05	68.4	15.80	67.3	22.75	62.1	19.04	72.2
Total benefits	9.72	31.6	7.69	32.7	13.88	37.9	7.33	27.8
Paid leave	1.55	5.0	1.40	5.9	2.71	7.4	1.76	6.7
Supplemental Pay	0.99	3.2	0.82	3.5	1.13	3.1	0.78	0.3
Insurance	2.57	8.4	2.40	10.1	4.50	12.3	1.88	7.1
Life	0.06	0.2	0.04	0.2	0.08	0.2	0.04	0.2
Health	2.40	7.8	2.25	9.6	4.21	11.5	1.76	6.7
Short-term disability	0.08	0.3	0.06	0.2	0.13	0.4	0.04	0.2
Long-term disability	0.03	0.1	0.05	0.2	0.08	0.2	0.04	0.1
Retirement and savings	1.46	4.8	0.84	0.4	2.42	6.6	0.75	2.9
Defined benefit	0.95	0.3	0.46	0.2	1.70	4.7	0.23	0.9
Defined contribution	0.51	1.7	0.37	1.6	0.71	1.9	0.53	0.2
Legally required benefits	3.14	10.2	2.23	9.5	3.11	8.5	2.16	8.2

Source: United State Department of Labor, *Employer Costs for Employee Compensation*

Appendix B

Comparison of Defined Benefit and Defined Contribution Plans

Benefit Provision	Defined Benefit Plans	Defined Contribution Plans
Definition	Guarantees an individual a benefit derived from a formula that is usually based on years of service and final or average pay	Benefits are variable while contributions are usually guaranteed Benefit amount varies based on the amount accumulated in pension fund and are strongly influenced by investment decisions and the rate of return
Types of Plans	Defined benefit plan, cash balance plan.	Money purchase plan, thrift or profit sharing plan, 401(k), 403(b) or 457 plan, target benefit plan.
Percentage of Private Establishments Offering- 2007	10%	44%
Investment Risk	Employer assumes all of the investment risk in traditional DB plans because benefit is guaranteed. In cash balance plans, the cost of the annuity can vary with interest rates.	Employee usually assumes all of the investment risk because contribution is defined. Investment losses result in lower benefits. Employees usually select from a variety of investment options with the right to move assets among various options.
Longevity Risk	Employer assumes the longevity risk because benefit is guaranteed.	Employee assumes the longevity risk
Employer Contribution	Whatever is necessary to pay the benefits promised (defined) by the plan.	Fixed, as defined in the plan.

Glossary

401(k)

A defined contribution plan offered by a plan sponsor to employees. It allows employees to contribute a percentage of their income to tax-deferred investment account

Accrued Benefit:

The total benefit amount earned by an employee to date based on service or contributions to his or her retirement plan

Actuarial Liability:

The present value of future pension benefits attributed to past service by an employee. It can reflect future expected pay increases in order to allow employers to recognize the cost of a plan over participant's lifetime

Annuity:

A series of payments made at stated intervals until a predetermined event. For retirement plans this event is usually either death or after a pre-determined number of payments are made

Career Average Pay:

An employee's average salary for their entire career. It is utilized to calculate the benefit in some defined benefit plans

Current Liability:

The present value of future pension benefits accrued to date with no consideration for projected future pay increases

Defined Benefit (DB) Plan:

An employer sponsored pension plan that provides participants with a guaranteed benefit upon retirement

Defined Contribution (DC) Plan:

An employer sponsored pension plan that defines how much contributions can be made by employer and employee to each individual employee's account. Assets in the account grow as a result of contributions and investment returns. No guarantee on the amount of benefit upon retirement

Final Average Pay:

Average salary of a predetermined period of time prior to retirement. It is utilized to calculate the benefit in some defined benefit plans

Fully Funded:

A pension plan with enough assets to pay all current liabilities

Investment Risk:

Risk associated with the variability of investment returns.

Longevity Risk:

Risk associated with an individual living longer than expected

Lump Sum Payment:

A single payment of all retirement benefits an individual has accrued in a qualified pension plan

Normal Retirement Age:

For most retirement plans, this is age 65, the same age Social Security benefits are available for individuals born through 1937

Pension Benefit Guaranty Corporation (PBGC):

An agency of the federal government created by the Employee Retirement Income Security Act of 1974 that uses the income from insurance premiums to protect defined benefit plans. The PBGC utilizes premium income from defined benefit plan sponsors to insure private-sector defined benefit plans

Pension Plan Freeze:

Occurs when a plan sponsor limits the ability of some or all employees to earn benefits in the pension plan

Plan Sponsor:

An employer that establishes a pension plan for its employees

Projected Unit Credit Actuarial Cost Method:

Method to calculate the present value of future benefits that takes into account future pay increases in the calculation of the liability and normal cost

Termination:

When a pension plan ends

Vesting:

A guideline from the Employee Retirement Income Securities Act (ERISA) requiring that employees must be entitled to their pension benefit within a specified number of years

ACADEMIC VITA

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Education:

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Related Experience:

Summer Scholar- Total Rewards Retirement Actuarial, Summer 2009
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Teaching Assistant- Spring 2010
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Course: Property & Casualty Ratemaking

Awards and Honors:

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Academic Excellence Scholarship, Schreyer Honors College- September 2006- May 2010
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