

# **Recent Transitions Affecting Private Pension Plans in the United States and the Effectiveness of the Employee Retirement Income Security Act (ERISA)**

Senior Honors Thesis

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Abstract:

Money from pension accounts is an integral source of retirement income. Furthermore, as peoples' confidence in the Social Security System wavers, private pensions are increasing in importance. This paper will discuss the history of pensions and the shift from traditional Defined Benefit (DB) plans to Defined Contribution (DC) plans. Specifically, who remains most unharmed by this shift, and how the United States is making sure that workers' privately run pension funds are protected.

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# 1. Introduction and Motivation

As the United States experiences the worst decline in the stock market since the Great Depression, there are many concerns that face the American, and subsequently, the global population. Currently there exists more dependence on the stock market than ever before. As the financial sector takes a hit, stocks prices are falling and jobs, both current and prospective, are being lost. Another equally important topic, that is easy to ignore if not directly applicable, is the fear of what will happen to future, namely retirement, financial security. The topic of this paper is important to anyone who is in the labor force, but will be the most pertinent to those who have reached or are about to reach retirement. These people will depend on the liquidity of the retirement funds promised by their employers.

There exist three sources of retirement income. First, there are personal funds, such as Roth IRAs. These accounts are personally managed by the individual. The worker is allowed to contribute a certain pay amount to the accounts every year, and may not remove any money until a certain age or otherwise under a financial penalty. The amount they are allowed to contribute is subject to rules and regulations based on their income level. Secondly, there exist public pension accounts, which are benefits provided by the government. Social Security, which produces an inflation indexed lifetime annuity for the recipient, falls into this category because it is a federally run program. The last source of retirement income, and the one most pertinent to this paper, is privately run pension accounts. These are pension funds set up for workers of private firms by their employers. There are three main types of private pension plans.

The traditional Defined Benefit (DB) plan determines the amount that the worker will be paid periodically based on a formula. Many DB payouts are not indexed for inflation.

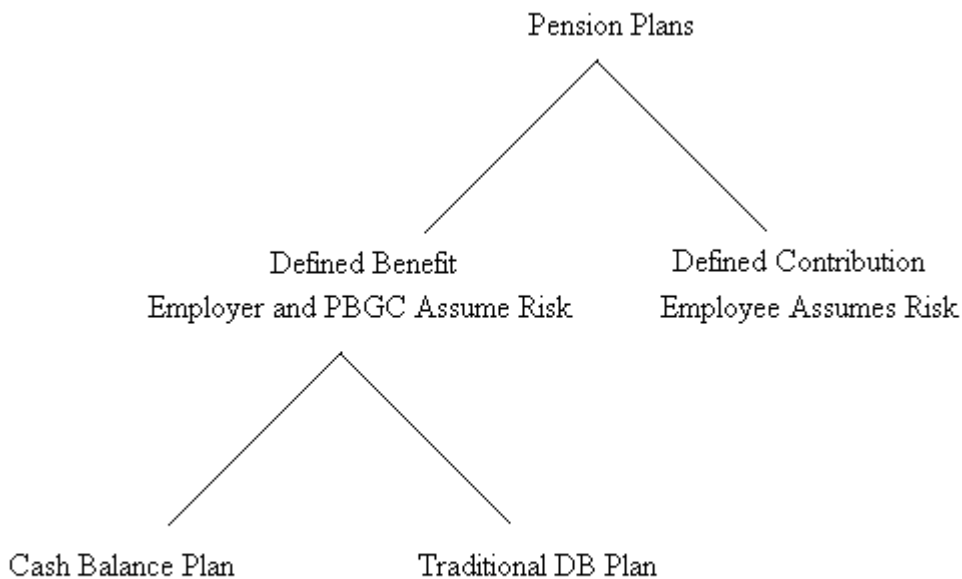
Arguments of the formula are most commonly years of service and the average final salary achieved by the worker. The longer one stays with a firm, up to a possible maximum tenure in years of service, the more money they will receive when they retire. Years of service past some service duration, commonly the thirtieth year, often make no difference to the DB payout amount. Some DB plans have an employee contribution requirement. The Defined Contribution (DC) plan sets up an individual account for a worker. During working years an employee can contribute to an account up to a certain percentage of salary. Then the employer can match what the employee contributed up to a certain percentage. This plan can be either generous or not depending on the firm's matching rate and percent of salary limits. Every year, money, both from the firm and the employee, is put aside so there is not a question of fund solvency. That is one does not have to hope that their employer will remain solvent by the time they retire, as they do with the DB plan. The main difference between a DB plan and a DC plan is that in the former the employer assumes the most risk. If the firm goes bankrupt they, upon qualifying, may transfer their DB pension liabilities to the Pension Benefit Guarantee Corporation (PBGC) who will pay out a share of the payment owed. Under a DC plan, it is the worker who assumes the most risk.

The third type of pension plan is relatively new. It is called the cash balance plan. The cash balance plan is a mixture of the DB and DC plan but legally considered to be a DB plan. From the perspective of the worker, the cash balance plan resembles a DC plan (Munnell and Perun 2006, 5). Recently some cash balance plans have resulted from conversions from DB plans. The employer guarantees that the workers' pension accounts earn a fixed rate of return that can change over a period of time from year to year. This plan is the center of controversy because employees are seeing their DB plans be switched to

cash balance plans. It has been argued that the cash balance plans provide less benefit than if the pensions had been left as DB plans.

Over the years categorizing pension plans has become more complicated. DB, DC and cash balance plans can be further distinguished by whether or not they are qualified. A qualified pension plan is one which allows for tax deferral given that certain criteria are met. If these criteria are not met, the pension is deemed to be nonqualified (Wiedenbeck and Zumbalen 2008, 6). Classifying, decoding and deciphering all the terms and classifications of pension plans would be task in itself, thus for this paper it suffices to understand the difference between a DB and DC plan, as defined above. Figure 1. depicts the basic categorization of private pension plans.

Figure 1.



Lately we have been hearing about the decline of the Social Security System, so the other forms of retirement income are increasingly important. Traditional DB plans in the private pension plan branch of retirement income are considered to be the good type of plan. This is because it often does not require any contribution of one's income to an account that cannot be touched for years, and is essentially life annuities. Over the past few years, we have seen a shift away from the DB plans towards the DC plans. As we will see, the DC plans are starting to become less attractive, and over the same time frame there has been a shift away from pension plans altogether.

What is causing both of these shifts? In 2009, there have been many panic cash outs as the economy declined. These are taken at tax penalties and are seen as a necessary move for families with liquidity and cash flow problems, partly from increasing job loss. The retirement age might be increasing as well, since people have to work longer to make up for lost retirement income. This paper will discuss the history of private pension plans, verify and draw conclusions about the status of pension plans, and finally, make inferences about where we are headed. It will also address regulatory acts put in place to protect employees from perceived pension plan abuse.

The data source for all the analysis in this paper is the Panel Study of Income Dynamics (PSID) which is run and managed by the University of Michigan. This database has followed about 8000 families since 1968. The PSID biennially collects data on economic, health and social behavior ([www.psidonline.org](http://www.psidonline.org)).

## **2. The History of Pension Plans in the United States**

“Retirement wealth is often viewed as the great equalizer, offsetting the inequality in standard household net worth” (Wolff 2006, 141). Employees depend on pension plans for

retirement security. In the text from 1983, Pensions in the American Economy, the first page includes many interesting facts that support reasons for why pensions have become increasingly important since their inception. Average life expectancy for males at age 25 rose from 44.6 years to 46.9 between 1950 and 1983, while at the same time the average number of years worked by 25 year old males has declined by 3.13 years. Together these changes increased the expected duration of retirement and other nonworking periods for males from 5.93 to 11.47 years over the same time period. Perhaps the most interesting facts on the first page of the text are those referring to the aid that the retired receive from their children. Between 1950 and 1970 the percentage of the aged living with their children fell from 31% to 9%. By 1983, less than 3% of the elderly households received income from their children (Kotlikoff and Smith 1983, 1). Given the current economic climate, especially as elderly workers lose their pension benefits, rising support to elderly family members may grow. Unemployment affects not only the unemployed, but their parents, as in this case.

The previous statistics demonstrate why retirement income has become important, but to understand the current state of private pension plans in the United States, it is imperative to understand the history of why and how they came to be. When looking into the history of pension plans in the United States, one of the earliest forms of pensions was money and benefits handed out by the government to people who had served in the military or had performed other civil tasks (Aaron 1961, 5). Veterans of the Civil War and, over time, their dependents were paid pension plans. These went to about one third of all mainly white men over the age of 65 by 1900 (Thane 2006, 36). Early pensions of the United States were distinguished from those of Europe in that they were more common for blue collar workers, while in Europe they were mostly reserved for high skilled railway workers and the

like. It became evident that there existed a significant percent of the white population, about 6.4%, above the age of 60 by 1900 that needed help with retirement income (Thane 2006, 36).

Arza and Johnson in 2006, give a thoughtful explanation of the emergence of public pension plans. The US was one of the last developed countries to implement a public pension system, and it follows that the US was also one of the last to pass related pension legislation. Germany took the first legislative steps to introduce public pension plans in 1889, the UK in 1908, France in 1910, and Spain in 1919. The United States did not pass its first pension law until 1935, namely the Social Security Act, also referred to as Old-Age Insurance (OAI), and later, called OASDI with the inclusion of survivor and disability benefits (Arza and Johnson 2006, 54). The use of the word insurance is a little bit confusing when read in this context because old age, for most, is inevitable. Insurance is for protection from uncertain occurrences out of the control of the policy holder, otherwise known as risk. In this case the workers face the risk of outliving their personally accumulated retirement resources and disability prior to retirement. After the Great Depression the government decided that the risk of poverty, the state of the economy and the performance of privately owned accounts were at least partly out of the control of the individual, and thus the government's instatement of Old-Age Insurance was justifiable. At first OAI covered only workers in commerce and industry, but over the decades has extended to cover essentially the entire working population. Initially, workers could not opt out of their Social Security Benefits as they could in the United Kingdom, and the system in the United States was pay as you go. However, today Federal workers are exempt or receive less Social Security benefit because Social Security taxes are not withheld from their paychecks. This is to avoid



the “windfall” effect: workers who put nothing aside receive benefit from the taxes of others (Social Security Administration, January 2009).

Issues with funding for Social Security are not new. The ratio of reserves to expenditure for the Social Security System fell from 33:1 in 1940 to merely 2:1 in the 1960s (Arza and Johnson 2006, pg 68). Even with these staggering statistics, few adjustments have been made to the United States’ public pension system. Those updates which have been made were not made to the fundamentals of the program but mainly just to keep up with economics changes. In 1972 there was a cost of living update. In 1977 there was a change in the benefit structure, and by 1983 over time there had been a gradual change in the retirement age. There has been consideration for changing the Social Security System from a pay as you go program to privately administered individual accounts (Arza and Johnson 2006, pg 70). This is an interesting idea but has so far not been put into effect. Nevertheless, as we saw from the reserves to expenditure figures, the public pension system is suffering and now people are relying more on their private pension plans for retirement income. So we turn our focus now to the history of private pension plans in the United States.

A good description of the emergence of privately run pensions plans is set out in Sass (2006). In the 19<sup>th</sup> century very few employers had incentive to provide their workers with pension plans because most of these firms were modestly sized and their employees rarely stayed on for more than a couple of years. Employees of these mid-sized companies could not honestly rely on their employers to have the financial standing to be able to pay out pension benefits many years into the future. However, huge employers that emerged in the 19<sup>th</sup> century, such as governments, railroads, utilities, universities, hospitals etc., found it in their best interest to provide Old-Age pensions to their employees well before the

government found it necessary to provide pensions to mostly everyone in the workforce in 1935. These few long lived, stable and massive firms found themselves employing most of the nation's workforce and could make credible promises (Sass 2006, pg 79). We know that firms are profit maximizing, and they act in their own best interest. So it is counterintuitive to think that it was profitable, or in a firm's best interest, to provide old-age pensions to their employees. The initial incentive for providing a pension plan was to develop relationships with their workers that included loyalty and commitment to the firm, thus creating a stable workforce. Pensions were also a valuable way of attracting the higher quality blue-collar workers and to fend off unions. Before implementing pension plans for their employees, firms would offer higher wages to accomplish the formerly stated goals. It was decided that offering higher wages could only get so far and that providing "industrial wages" such as pensions, disability insurance, accidental death insurance, etc. was a better way to attain their goals. After World War II, there were wage controls so firms had to offer good benefits to maintain a competitive edge in the labor market (Chu and FitzPatrick 2007, 227). Another benefit that employers receive from offering pension plans to their workers is the quality of their workers increases (Aaron 1961, 6). By offering more non-wage benefits, such as pension plans, the jobs offered by the employer become more attractive to potential workers. So more skilled workers will apply, and the quality of the workers will increase. Pension plans are also thought to attract workers with a greater sense of responsibility and foresight (Sass 2006, 80). A more explicit incentive is employers receive tax benefits on their payments rather than the payments by the employees.

Unfortunately, without regulation the pensions plans offered began to include some of low quality and even arbitrary dismissals just prior to the eligibility or vesting point. The

benefit was usually about one percent of earnings times years of service (Sass 2006, 80). This was to prevent employees from lying about illness or prematurely claiming old-age that has weakened their stamina. However, this led to the unexpected problem of employees staying past the point of high productivity and around the turn of the century, large employers introduced mandatory retirement age. In order to stay in the good favors of the workforce and the public in general employers retired their workers on pensions. They also paid the full cost of the pension benefits (DB type plan) without accepting employee contributions to maintain compliance with the mandatory retirement age (Sass 2006, 81).

By the 1930s employers' plans covered up to 15% of the workforce in the United States (pg. 81). In 1950 the figure became 19.93% (Kotlikoff and Smith 1983, 3). Coverage of private wage and salary workers doubled from the 1950s through the 1970s from 23.79% to about 50% (pg. 4). Yet, these plans were not the answer to old-age income problems because most employees left the company they worked for, voluntarily or not, before they reached the retirement age, and thus failed to qualify for pension benefits. Only a small percentage of the work force actually received pension benefits from employers. In order to protect the rights of employees who have entered into pension agreements with their employers, certain acts and laws have been passed. One such example is the Employee Retirement Income Security Act (ERISA) of 1974. ERISA mostly conducts regulation of the DB pension fund balances, and this is a burden for employers. This is a possible reason for the recent emergence of DC plans. Furthermore DC plans were better for employees who left the firm because their benefits would already be accruing in an account and thus were portable. In 1977, about 74% of pension plan participants had DB plans and about 25% had DC plans (Kotlikoff and Smith 1983, 51). Note that few workers were covered by both types

of plans. Today more workers are covered by both types of plans and the gap has closed a great deal between the figures for DB coverage and DC coverage: perhaps due to ERISA. ERISA will be discussed in more detail later in the paper.

By 1980 pension reserves exceeded 6% of all household wealth. In 1983 pension funds owned close to 15% of all corporate stock. In 1983 45.28% of the workforce was covered by a pension (Kotlikoff and Smith 1983, 2-4) and by 1994 that number grew even further to 57% (Bureau of Labor Statistics, Spring 1998).

Analysis in a later section will demonstrate that employer contribution amounts to DC plans have decreased between 1999 and 2005. Contrary to what is happening now, in the 1950s contributions to private funds was 1.69% of total private sector wage and salary compensation, and by 1975 that number had jumped to 5.10% (pg 4). In more recent history, from 1983 to 2001 the value of pension accounts, including IRAs, Keough plans, 401(k) plans and the values of DB and DC plans, as a percentage of total household wealth rose from 1.5% to 12.3% (Wolff 2006, 155).

As pension plans became more popular, it is interesting to see who was actually participating. In 1979, about 30.2 million of the 67.3 million workers in the private sector were covered under private pension plans. About 70% were male, 89.36 % were white and 56.36% were older than 40. Almost 75% participated in DB plans with the rest participating in DC plans. A huge 44.87% of the labor force reported being covered by a pension plan while only 21.43% acknowledged that they were vested. About 20% admitted they did not know whether or not they were vested (pg. 5). To be vested means that one owns all the rights to their pension account. For example, the vesting period for one company could be five years. So after five years of service if the worker changes jobs, they still have the rights

to their pension money from their current company. The dismissal of workers just prior to vesting was a pension plan abuse which contributed to the passing of ERISA.

Today the incentives for providing pension plans remain essentially the same. However, pensions are also believed to reduce turnover. The idea is that if employees know that they will receive a pension plan from a company, they are less likely to leave. We can rationalize this more with DB plans than DC plans, because the retirement payout is a function of years of service, and most, if not all, DC plans are portable. To demonstrate this let us assume a simple function for determining DB payout.

$\text{Payout} = .02 * \text{years of service} * \text{final average salary achieved}$

Note that the years of service is only up to a certain limit, usually 30 years.

First assume one worked at company 1 for 30 years, achieved an average final salary of \$50,000 and retired. Then:

$\text{Payout} = .02 * 30 * 50000 = \$30000/\text{year}$

Note that in this example, 30 years of service create a 60% replacement of pre-retirement income. Now assume one worked at company 1 for 15 years, achieved a final salary of \$30,000 and moved to company 2, worked for 15 years and achieved a final salary of \$50,000. Then:

$\text{Payout} = .02 * 15 * 30000 + .02 * 15 * 50000 = \$24000/\text{year}.$

We can assume that the salary after 15 years of working for the first company is less than \$50,000, because in the last 15 years we imagine the salary would rise to \$50,000 from a smaller base.

If an employee, who participates in a DB plan, is taking their pension benefit into consideration before they switch jobs, they will realize that it is beneficial to remain at their current job. Yet, we cannot be sure that employees make such calculations, and employers can have an incentive to avoid large pension payouts, leading to unjustified early termination.

Today we have come full circle and seen large companies suffering while the future lies in the hands of small to medium sized businesses. The sustainability and permanence of large firms was the foundation and logic behind DB plans. Today they may be outdated and too big of an obligation for firms to take on.

### **3. Regulatory Acts to Protect Employees**

In 2005, \$4.9 trillion dollars were held by qualified private retirement savings plans, \$1.3 trillion in private pension plan assets were held by life insurance companies and \$3.7 trillion were held by deferred compensation plans covering government workers (Wiedenbeck and Zumbalen 2008, 1). With such a grand amount of money invested in private retirement plans, the United States needed regulation to make sure that these benefits were actually reaching the participants. This section is devoted to discussing the factors which led to the 1974 passage of the Employee Retirement Income Security Act (ERISA), the most important regulatory act designed to ensure that workers receive benefits promised by their employers. Before we can discuss ERISA, it is important to understand the controversy over what pension plan benefits are legally considered to be.

At one extreme, private pension plans are thought to be gratuities or gifts granted by employers to their workers. Thus, the employer has no legal obligation to pay out the pension money, and can revoke it at any time (Aaron 1961, 5). However, workers depend on

the promise of pension money for retirement income. They have no reason to believe that their employer would renege on the offer of a retirement benefit. If the pension plans cause employees to work harder and stay with the firm, it is highly unethical to deny the benefit. The following view is the most accepted theme in the literature. People think of pensions as deferred wages. In which case, the employers are unquestionably obligated to pay out, because the employees have already worked for the benefit.

One of the most upsetting things that occurred before official regulatory acts were passed, and was mentioned briefly before, was the dismissal of employees just before they were vested. Companies would not blatantly fire someone because they were reaching the vesting period. They would make it seem as though it was a legitimate release because of reorganization, downsizing etcetera and let the about to be eligible go from the firm. Studies showed that those who were about to be vested were being let go at a very disproportional rate compared to those who were not about to be vested. With such blatant disregard for employees by their employers, the federal government had to step in to try to regulate these pension plans and hold firms accountable for their promises of pension benefits. So emerged the Employee Retirement Income Security Act (ERISA) of 1974, and the Pension Benefit Guarantee Corporation (PBGC) created by ERISA. The PBGC is a program established by ERISA whose purpose is to ensure fulfillment of vested rights of pension participants. It applies to all qualified DB pension plans, with some exceptions (McGill and Grubbs 1989, 55). The PBGC is a self-financed entity and is not dependent on the federal government for support. A few sources of its funds are premium income, paid by sponsors of DB type plans, investment earnings and assets of terminated insufficient plans (pg. 607).

When reading about pension plans in the United States, it is hard to come across a literature written post 1974 that does not mention the significance ERISA. Its implementation can be traced back to a 1965 report under the Johnson Administration (Horton 1976, 13). This report called for Federal standards to be imposed on the private pension system. ERISA changed the way pensions were handled and was a potential cause of the shift from Defined Benefit plans to Defined Contribution plans because it mainly focused on how DB plans were managed and funded. With ERISA it became very difficult for firms to have DB plans without dealing with the PBGC. ERISA not only looks to regulate private pensions, but all plans that it deems to be employee benefits. It defines an employee benefit plan as “an employee welfare benefit plan or an employee pension benefit plan or a plan which is both an employee welfare benefit plan and an employee pension plan” (Wiedenbeck and Zumbalen 2008, 5). This includes such benefits as healthcare. Here we will focus on what ERISA specifically has to say about private pensions.

An ERISA pension plan, otherwise a pension plan that is within the reach of ERISA regulation, is one “that systematically defers cash compensation until termination of employment (or longer)” (pg. 5). The description of a pension plan here echoes that of a DB plan and not so much that of a DC plan, explaining why ERISA maintains a focus on DB plans.

The main goal of ERISA with respect to private pensions is well-defined; to make sure that employers have adequate funds to make good on their promises of retirement income. In the event that a company faces hard times and does not have adequate funds, they may request that their pension obligations be removed and assumed by the PBGC



(Pension Benefit Guarantee Corporation). The PBGC then determines whether or not it is necessary to terminate the company's pension plans and assume the liability.

Earlier we learned that when public pensions were introduced they were referred to as Old Age Insurance. Yet, one of the fundamentals of insurance is to avoid writing massive amounts of insurance on correlated risk. If a disaster destroys every house in a town, and your company insures many, if not every house, you will not be able to provide the coverage promised by your policy. Insurance companies remain solvent due to the very miniscule probability that all or a lot of their policy holders will make a claim at once. This does not seem to be the case for the PBGC. With everyone heavily invested in the stock market, there is a huge amount of correlated risk. If the stock market goes down, as it has today, everyone suffers at the same time, and no matter how well the pension accounts are managed, they will inevitably lose money. When many companies experience hardships they try to pass their pension liabilities to the PBGC, whose funds are also low due to the same hard economic times. It is difficult to see how the PBGC could manage to take on so much liability of correlated, systematic risk, even though they receive premiums, and be able to remain solvent itself. One way in which the PBGC avoids too much risk, is that it has a cap on the amount of benefit that a worker can receive when it assumes the responsibility of their pension plan. This seems unfair to the employee and can be illustrated by a case study, discussed further in the paper, of the PBGC's role in managing the pension funds of pilots for US Airways in 2003.

ERISA has been a subject of controversy and confusion since its inception in 1974. There are numerous works devoted simply to explain its purpose and even its paperwork. After reading about ERISA and learning about the many courts cases that have arisen since

its passing, it seems that ERISA and the PBGC are merely bailing out bankrupt companies. The PBGC aids companies in avoiding payment of pension benefits instead of making sure that companies have adequate pension funds in the first place. The PBGC is more of a crutch to fall back on than a strong arm that forces companies to manage their pension funds appropriately.

## **4. Statistical Analysis Demonstrating Recent Pension Transitions**

The following sections are devoted to discussing current predicaments that millions of, but not all, workers are finding themselves in with regards to their pension funds.

### **4.1 Recent Shift from DB plans to DC plans**

Here we assess empirically the shift away from DB plans to DC plans seen in the United States. The Panel Study of Income Dynamics (PSID) data source is used to verify the extent of this shift. It is important to note that all analysis was restricted to male heads of household as defined by the PSID. With the rise of better jobs for women the analysis might look different in a family two-earner context. The data were weighted unless otherwise indicated. These weights are designed to have the sample from the PSID more accurately represent the United States' population. In the initial investigation the purpose is to confirm the shift from DB to DC plans with weighted PSID data. Transition tables are also used to confirm the shift. Table 1. shows the transition from pension status in 1999 to 2005 for a balanced panel of adult men. The rows of the table correspond to pension status of male heads in 1999 and the columns correspond to the data from 2005. In the bottom right cell is the number of observations. The table only includes male heads at least 30 years of age in

1999 and not more than 60 years of age in 2005 to avoid an age bias in the not working totals as retirement takes place. Also, with a balanced panel there is a six year age difference between 1999 and 2005 so included is some life cycle shift to pensions, offset by change in the composition of pension coverage.

**LEGEND:**

**NW:** Not Working Full-Time (<1499 hours per year at one job)

**NP:** Working Full-Time but not participating in a Pension Plan

**DB:** Benefits accumulate by a Defined Benefit Pension Plan

**DC:** Benefits accumulate by a Defined Contribution Plan

**BOTH:** Benefits accumulate by both a Defined Benefit and Defined Contribution Plan

Table 1:

<b>1999\2005</b>	NW	NP	DB	DC	BOTH	Total
NW	5.01%	3.67%	0.53%	0.65%	0.34%	10.19%
NP	7.94%	28.73%	3.63%	4.34%	1.34%	45.98%
DB	3.56%	5.34%	<b>5.85%</b>	2.44%	2.13%	19.32%
DC	1.95%	6.67%	1.53%	3.72%	1.38%	15.26%
BOTH	1.82%	2.40%	2.93%	1.06%	1.06%	9.26%
Total	20.28%	46.80%	14.48%	12.20%	6.24%	3,753

\*weighted with 2005 Family Weights

Focusing on the row labeled NP in 1999 will verify the shift to DC plans. Of those who were working full time without participating in a pension plan in 1999, 3.63% of them migrated to having a DB plan in 2005 while 4.34% migrated towards DC plans. However, between 1999 and 2005 the male head did not remain idle. Thus, two more transition tables were created to correspond to the time periods, 1999-2001 and 2003-2005. Again these tables only include those who were older than 30 in the earlier year and no older than 60 in the later year.

Table 2.

<b>1999\2001</b>	NW	NP	DB	DC	BOTH	Total
NW	6.50%	2.87%	0.39%	0.57%	0.35%	10.67%
NP	4.54%	30.22%	3.38%	5.50%	2.03%	45.66%
DB	1.13%	4.22%	8.76%	2.20%	3.48%	19.79%
DC	0.90%	5.48%	1.86%	4.54%	1.31%	14.09%
BOTH	0.51%	2.53%	2.48%	2.03%	2.23%	9.78%
Total	13.58%	45.32%	16.86%	14.85%	9.39%	3,811

\*weighted with 2001 Family Weights

Using Table 2. a shift towards DC plans is again verified. Of those with the status NP in 1999, 3.38% had DB plans in 2001 while 5.50% had DC plans in 2001. This is an even bigger difference in percentage than demonstrated by Table 1. It is telling to look at the other columns to see where males with NP status in 1999 fell in 2001 and 2005. In 2005, 20.28% were not working full time, while in 2001 only 13.58% were not working full time. Table 2. depicts that 30.22% persistently had no pension between 1999 and 2001 and Table 1. shows that 28.73% persistently had no pension between 1999 and 2005. This could be a result of the recession in 2001 or an indication of a general shift away from pensions. More simply, Table 1. gives the male head six years to find a better job while Table 2. only provides for two years. The PSID data was entered in 2001 before the recession, and the effects could be manifesting in the 2005 data.

Looking at the 2003/2005 transition table, we can see the effects of the recession.

Table 3.

<b>2003\2005</b>	NW	NP	DB	DC	BOTH	Total
NW	9.42%	6.02%	0.99%	0.62%	0.15%	17.20%
NP	6.96%	32.34%	2.75%	3.90%	1.33%	47.28%
DB	1.27%	2.86%	6.86%	1.91%	1.78%	14.68%
DC	0.73%	4.52%	1.53%	4.30%	1.20%	12.29%
BOTH	0.88%	1.90%	2.56%	1.31%	1.89%	8.55%
Total	19.27%	47.64%	14.70%	12.03%	6.37%	4,183

\*weighted 2005

9.42% persistently were not working in 2003 and 2005. This is higher than in the previous two tables, and it reflects the poor condition of the labor market. In this table, 6.96% of the males with no pension status in 2003 went to not working full time in 2005. By looking again at all three tables, more of the shift from NP to NW happened between

2003 and 2005 than between 1999 and 2001. More of the shift to any type of pension plan between 1999 and 2005 occurred between 1999 and 2001 as opposed to 2003 and 2005.

In Table 3, there is still the shift towards DC plans. Of the male heads with NP in 2003, 2.75% migrated to DB plans and a higher 3.90% to DC plans. In each table, a non-negligible percentage of male workers move from not working to no pension. There could be an age story with younger workers not migrating into pension coverage states, especially not DB plans, as well as older workers having their DB plan status removed. Another aspect of the data that is most striking is that in the “Total” cells for NP, which again means working full time but not participating in a pension plan, there is a huge percentage of the population; more than 45%. This indicates that many people who may be eligible for pension plans are not opting to participate, and clearly their firms are not requiring them to. It is confounding to see that so many people would not participate in a plan that is designed to help them. This could imply that people have a hard time placing value on the future, especially the far future. Potentially workers do not understand how pension plans work and just see that they have to give up some of their money now in order to participate. Either way participation in pension plans is decreasing, be it voluntary or not.

## **4.2 Those Unaffected or Mildly Affected by the Recent Shift to DC Plans**

Having verified the shift to DC plans away from DB plans between 1999 and 2005, the cells of the Table. 1 can be used to define a set of dependent dummy variables to classify the male heads. For example, if a male head is a member of a certain cell he will be assigned of value of one and if not, a value of zero. There will be no overlap since the cells are disjoint. This means that if a worker had a DB plan in 1999 and a DC plan in 2005 the

worker could not have had a DB plan in 1999 and not been working in 2005. The cell chosen to focus on was the cell DB in 1999 and DB in 2005. As we can see from the cell in Table 1, 5.85% of male heads persistently had DB plans from 1999-2005. As previously discussed, DB is generally the more generous plan. Those who managed to retain their DB plans clearly are the special group. Using STATA, the probabilities that one would be in this group given the industry in which they worked in 2005 were estimated. The variable used for industry designation from the PSID was ER25128. The categorization of industries came from the 2000 Census of Population and Housing: Alphabetical Index of Industries.

In this regression, the dependent variable is a binary variable, 'persistent DB pension'. It equals one if the person had a DB plan in both 1999 and 2005 and zero if not. Each industry is represented by a dummy variable that equals one if the person works in the said industry and zero if not. These serve as the independent variables in the regression. A binary dependent variable causes the error term to be heteroskedastic corroborating the use of robust standard errors. The second and third columns show the estimated coefficient of the dummy variables. The second regression, whose results are in the third column, includes two more variables which are explained further along in the paper. Underneath each estimated coefficient is its robust standard error. The estimates predict how much a worker's probability of having a persistent DB plan in 1999 and 2005 will increase for those working in a given industry. In the previous transition tables all male heads are included, working or not, thus the industry that is excluded for the regression to avoid issues of colinearity is "no industry".

Linear regression is used to estimate probabilities that a male head of household maintained their DB plan. This linear regression suffices to estimate the relative differences

between the industries. A limitation of the linear regression is when assuming a linear functional form there is nothing to restrict the predicted values of the dependent variable from rising above one or falling below zero. This issue is not observed with the given data, and thus the somewhat preferred logit and probit techniques can be avoided. In our case, we have a binary dependent variable, which only takes on two values. Papers have shown that the linear estimation is similar to that of the probit and logit estimations.

The results of the regression are as follows.

Table 4. Persistent DB plan from 1999 to 2005 by Industry

	<u>Model I</u>	<u>Model II</u> (explanation following)
<b>2005 Industry</b>	<b>Probability of having a DB in 99 and 05 (robust standard error)</b>	<b>Probability of having a DB in 99 and 05 (robust standard error)</b>
<i>Agriculture, Forestry, Fishing, and Hunting</i>	0.007641 <sup>+</sup> (0.0029614)	0.0076868 <sup>+</sup> (0.0029747)
Mining	-0.0242874 (0.0140860)	-0.0191768 (0.0122367)
<b><u>Utilities</u></b>	0.1379771 <sup>+</sup> (0.0593864)	0.1449973 <sup>+</sup> (0.0597092)
<i>Construction</i>	0.045674 <sup>+</sup> (0.0124477)	0.0353041 <sup>+</sup> (0.0103019)
Manufacturing	0.0715727 <sup>+</sup> (0.0134530)	0.0754517 <sup>+</sup> (0.0134225)
Wholesale Trade	0.0149448 (0.0085111)	0.0157161 (0.0084353)
Retail Trade	0.0388285 <sup>+</sup> (0.0157555)	0.0402724 <sup>+</sup> (0.0158202)
Transportation and Warehousing	0.0352661 (0.0229007)	0.0141267 (0.0094305)
Information	0.0217084 (0.0216993)	0.0252907 (0.0215416)
Finance and Insurance	0.0574405 <sup>+</sup> (0.0208590)	0.0574981 <sup>+</sup> (0.0208645)
Real Estate and Rental and Leasing	0.0175489 (0.0153270)	0.0178945 (0.0153207)
Professional, Scientific, and Technical Services	0.0344772 <sup>+</sup> (0.0158821)	0.0349485 <sup>+</sup> (0.0161184)
Management, Administrative and Support, and Waste Management Services	0.0165178 (0.0111203)	0.0174405 (0.0110430)
<b><u>Educational Services</u></b>	0.1152662 <sup>+</sup> (0.0290475)	0.1236549 <sup>+</sup> (0.0292888)
Health Care and Social Assistance	0.0827493 <sup>+</sup> (0.0238549)	0.0848741 <sup>+</sup> (0.0239374)
Arts, Entertainment, and Recreation	0.0582593 (0.0465109)	0.0592253 (0.0464710)
<i>Accommodations and Food Services</i>	0.0169734 <sup>+</sup> (0.0058079)	0.0182978 <sup>+</sup> (0.0056423)



Other Services (Except Public Administration)	0.0291915 <sup>+</sup> (0.0119133)	0.0294216 <sup>+</sup> (0.0119021)
<b><u>Public Administration and Active Duty Military</u></b>	0.198339 <sup>+</sup> (0.0335945)	0.2054878 <sup>+</sup> (0.0337282)

These are the results for other variables that were pertinent to the regression:

Variable	Model I	Model II
Union*	0.11962 <sup>+</sup> (0.0260020)	0.0961203 <sup>+</sup> (0.0300666)
Age	0.001827 <sup>+</sup> (0.0003670)	0.0018497 <sup>+</sup> (0.0003665)
ConsUnion**	-----	0.1153145 (0.0817192)
TransUnion**	-----	0.0864383 (0.0746060)
Constant	-0.0884074 <sup>+</sup> (0.0177641)	-0.0894258 <sup>+</sup> (0.0177427)

-results are weighted using the PSID 2005 Family Weights

<sup>+</sup> Statistically significant given  $\alpha = 0.05$

\*Union is a dummy variable that equals one if the male head was in a union in 2005 and 0 if not. The value of 0 is also given to those who were not working.  
(3921 observations)

\*\*explained in paragraph (\*\*)

The three industries which produce the highest probabilities have been **bolded and underlined**, and the three that significantly have the lowest probabilities, using a level of significance equal to five percent, have been *italicized and underlined*. A few of the industries produce very low probabilities which are not statistically significant. The following paragraphs discuss the first regression.

Being in a union increases a worker's chances of persistently having a DB plan between 1999 and 2005 by about 12%. Unions are designed to have the best interest of their members in mind, and therefore must push for better benefits and pension plans. Previous studies have shown the role of unions in boosting the probability of pension coverage,

specifically a similar study performed by the Bureau of Labor Statistics in 2008 (March 2008 Table 1). Age increases one's chances by .18% per year of age. A potential explanation is that some workers do not settle into their career of choice until they have more experience and finish their education, which can take a lot of time.

Those industries with the highest probabilities of persistent DB type plans between 1999 and 2005 are the Utilities, Educational Services and Public Administration and Active Duty Military industries: Utilities being 13.79%, Educational Services being 11.53%, and Public Administration and Active Military Duty being 19.83%, greater than the overall average. All of these industries are somewhat 'protected' sectors. Public Administration consists of government jobs. Future pension costs are discounted by the current political leadership at the time of contract renewal. That is, the current political leadership takes into account the pensions payments at the time of contract renewal thus diminishing the large effects of those payments later on. So the cycle of having DB plans continues. Many utilities providers are municipally owned, and thus part of a local government, explaining their higher probability of persistent coverage. Again the BLS studies from 2008 strongly agree that a very high percentage of utilities providers offer their employees DB type plans, 81% to be exact (Bureau of Labor Statistics, March 2008 Establishments). The Education Industry includes those who work for the public school system, and thus receive money from the government both state and federal. The reason people who work in educational services have good pension plans is to retain good teachers. DB plans are designed to benefit those who work at their job for a long time, seeing as the annuity payments are determined by years of service as well as the highest salary years. It is very important to retain educators especially in public schools where they are needed the most. The DB plans are incentive for

teachers to stay, even though their salaries might not be as high as they could receive in another job.

As mentioned all three industries above are associated with the public sector. These findings agree with the article from the Bureau of Labor Statistics in 2007. The Employee Benefits in State and Local Government article, although it describes 2007 data, states that 89% of workers in State and Local Government had access to employer-sponsored retirement benefits in 9/2007; 83% had access to DB plans and 29% had access to DC plans, implying that some employees had access to both DB and DC plans, or there exist spousal pensions, which provide benefits for the widowed spouse if the worker dies first (AARP, June 2003). Finally, 96% of the workers who had access to DB plans chose to participate in them, while only 63% of the workers with access to DC plans chose to participate. The major findings of the BLS in August 2008 concluded that 61% of employees in the private sector had access to DB types plans compared to the 89% of state and local government employees (Bureau of Labor Statistics, August 2008).

An investigation conducted at the Center for Retirement Research at Boston College, rationalizes that the two main reasons for DB plan persistence in the public sector are the makeup of the workforce and the characteristics of the employer (Munnell, Haverstick and Soto 2007, 1). State and local workers have longer tenure with their employer than private sector workers. This would lead to preference for DB type plans by workers in the public sector because they favor long-service workers. Such characteristics of the public sector workers make unions much more attractive, and they do indeed demonstrate strong unionization (pg.3). Surely this union participation has contributed to the persistent DB type plans we see in the public sector since this unionization gives the workers negotiation power

(pg. 4). Another reason for the DB persistence in the public sector is the stability of the government. When discussing the emergence of private pension plans, it was noted that very large stable companies were able to offer DB benefits without much risk involved because they would remain solvent in the near or even far future. The government has an interest in their employees' choosing long job tenure. Many jobs can be quite specific and DB type plans are a way to retain workers, as mentioned when discussing education (pg. 5). It is also important to note that the public sector has not been subject to such extensive regulatory acts like ERISA, whose regulation processes have deterred private sector firms from offering DB plans (pg. 1).

Those who work in some industries are not likely to persistently have DB plans. The accommodations and food services industry demonstrates a very low coverage probability. Food service workers most likely do not stay at their job for a long time, nor is it very important to retain certain workers, implying no need for the DB plan. They are not persistently covered because they are not covered in either year. Agriculture, forestry, fishing and hunting also have a very low probability. These industries are seasonal, and thus their contracts of employment are different. Sometimes employees in these industries work on an individual level, and thus have nowhere from which to receive pension plans. It is also important to note that if a person has a persistently low income over the course of their life, then Social Security will replace a higher percentage of pre-retirement income lowering their interest in participating in additional pension based income replacement, mitigating the need for pension income (Munnell and Perun 2006, 7).

(\*\*)Construction demonstrates a low probability on its own. It turns out that belonging to a union when working in the construction industry has a huge effect on having

a DB plan. The same holds for trucker drivers. Construction workers and truck drivers, particularly those that are owner-operators are employed by many different companies over their careers. When they belong to a union, the union demands a certain pay and requires some of that pay to be put aside in a DB account. Re-estimating the regression a second time, two new dummy variables are added. The dummy variable ConsUnion equals one if the person belongs to a union and works in the construction industry. A similar dummy variable, TransUnion, has been created for the transportation industry. These dummy variables appear to capture those industries in which belonging to a union would make an especially noticeable difference. Those belonging to the finance and insurance business likely will not be affected by union participation as much. The new regression results are in the third column of Table 4.

The results from the second regression vary from those of the first in only a few ways. First of all, the estimated coefficient of the Union has decreased from about .120 to .096 due to the positive correlation of TransUnion and Union and ConsUnion and Union. Being in a union, if you are a construction worker or truck driver, has a huge positive impact on the probability that you will have a persistent DB plan between 1999 and 2005. However, such high wages and benefits for unionized truckers may lead to a decline in the number of unionized truckers employed.

### **4.3 Recent Decline in the Number of Good Pension Plans**

It has been demonstrated that some workers have managed to hold onto their DB plans, and that these workers are more likely to work for the government, belong to unions or work for education. Not everyone fits into these categories. So what is happening to the rest of the workforce? We have discussed why DB plans are good; mainly they are part of a

better compensation package, but some DC plans with substantial employer matches can be good as well. Here a good pension is defined to be one which is of DB type or one which is of DC type to which employers contribute 5% or more of their employees' income to the DC pension accounts.

Table 5 depicts the percentage of head males with such good pensions. Clearly there has been a steady decline in the median percentage of employer matching over the years.

Table 5.

YEAR	PERCENT OF MALES WITH A GOOD PENSION	Average Employer Contribution Percent (Median)	Average Employer Contribution Percent-Nonzero (Median)
1999	24.2174	3.842742(3)	5.968685(5)
2001	20.7737	3.241169(2)	5.578616(5)
2003	17.3301	2.571947(0)	5.717742(4)
2005	15.7648	2.378572(0)	5.38835(4)

Between 1999 and 2005 there is a strong decline in the percentage of employees with good pensions. All of these decreases are statistically significant as shown through t-tests testing the null hypothesis that the population mean in the later year is greater than that of the earlier year. This implies that as employers switch away from DB plans to DC plans, they are not replacing their DB plans with equally good DC plans, and perhaps are offering weak DC plans with matching percentages of zero. The average employer contribution percent and the median employer contribution percent, including values of zero, are decreasing over time. This decrease is statistically significant until 2003. The employer contributions between 2003 and 2005 are not statistically different. This result was verified using a t-test that compares the means of two populations. The results of all of these t-tests

can be seen in the Appendix. Turning our attention to the employer contribution percents not including values of zero, there is not a monotonic pattern in the averages. However, a decrease from 5% in the first two sample years to 4% in the second two sample years in median employer contribution percent is observed. Between 2001 and 2003 the average employer contribution percent rose from about 5.58% to 5.72% while the median fell from 5% to 4%, implying increased levels of inequality in employer contribution percent to DC type plans.

Table 6. depicts the average voluntary contribution percent by employees, and we see that it too has decreased over time, but perhaps not by a lot. One interesting aspect of these two tables is that the averages including percentages of zero are similar, but the average nonzero contribution for employees is much higher than that of employers. It implies that many employees contribute nothing, but when they do contribute, they contribute a high percentage of their income.

Table 6.

Year	Average Employee Voluntary Contribution Percent (Median)	Average Employee Voluntary Contribution Percent -Nonzero (Median)
1999	3.396907 (0)	7.645011 (6)
2001	3.163245 (0)	7.388128 (6)
2003	3.164352 (0)	7.947674 (6)
2005	2.752717 (0)	7.235714 (6)

Perhaps not as noticeable as with the employer contributions, voluntary employee contributions may have declined over the same time period, but definitely have not risen to offset the other employer shifts away from pension provision. Since the median voluntary contribution percent for all years is zero, meaning that less than 50% of the male heads make no contribution to their DC plans. The average voluntary contribution percent not including

values of zero percent is more than twice the percent including those values, enforcing the idea that many workers are not contributing at all. The median value for nonzero contributions remains at six percent for all years so it is perhaps the extreme values that are changing to affect the average. We do not see a distinct direction of inequality with employee contribution percentages.

Perhaps the employees that contribute little to nothing are discouraged by the fact that their employers are contributing less, or maybe the employers are seeing that their employees do not contribute much and infer that their employees do not value the pension plans so highly. Another explanation could be the employees are not fully informed about their pension accounts. In studies it has been suggested that employees are indeed less than fully informed about their pension accounts, and that when they are informed, their behavior can change (Gustman and Steinmeier 2004, 57). Employers can and are getting away with contributing little to nothing to their employees' DC funds if they do not keep their workers informed.

#### **4.4 Connection between Status of Pension Plan and Direct Pay**

The concept of “equalizing differences” is relevant to the topic of this paper. If firms are offering an alternative benefit as they decrease the number of good pensions then they are substituting and not eliminating at their workers' expense. Whether those with the same skill set and who receive fewer fringe benefits receive more direct pay, that equally compensates them, is a matter that has been up for debate for a very long time. Ideally, an employee with a not good or no pension should receive more direct pay than one with a similar job, skill set and a good pension plan, in order to offset the inequality (Schiller and Weiss 1980, 529). It is not an easy task to measure job skill sets perfectly, making the



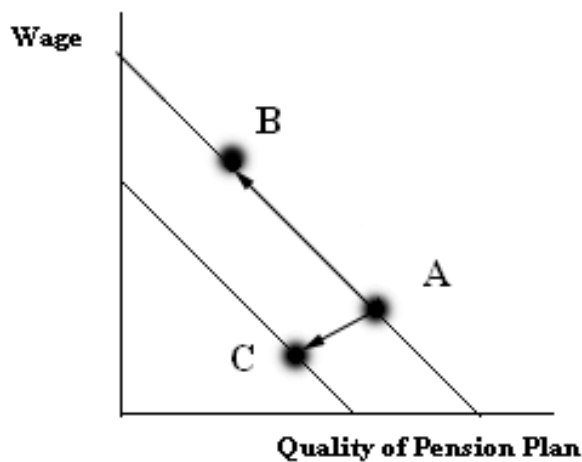
discovery of a tradeoff between pension plan and direct pay difficult to uncover. Schiller and Weiss (1980) hypothesize that workers will create demand for deferred wage programs, otherwise pension plans, in order to maximize their utility. If employers minimize costs, then differences in wages, company-wide, can be explained by the differences in deferred wages, pension costs. It is easier to restructure pay grades from younger new hires, due to their high turnover. Thus, the paper concludes that while company-wide wages and pensions are perhaps equalized, the cost of offering better pension benefits is mostly paid for and explained by the transfer of wealth from the younger to older workers (pg. 530). A more recent study conducted in 1992, that references the work of Schiller and Weiss, had more success in demonstrating the negative correlation between wage and pension status (Montgomery, Shaw and Benedict 1992, 111-112). The work of Montgomery, Shaw and Benedict suggests that the decline in the percentage of male heads with good pensions and in the average employer contribution percentage to DC plans between 1999 and 2005 may not be detrimental if the workers who are experiencing the loss are receiving more direct pay that equally compensates them.

Using the PSID again, an analysis of our population is conducted to determine that this is not the case and that this loss of pension benefits is certainly harmful for the workers. Those who are losing their good pension status are not seeing more direct pay to compensate for their loss.

This analysis yields dissimilar results than the previously mentioned studies because the nature of the analysis is slightly different. In the previous studies, the researchers addressed movements along a compensation curve. In Figure 2. this would be a movement from point A to point B. The situation here refers to a downward shift of a compensation

curve altogether. It may be the case that, for workers with the same job skill set, more direct pay implies less good pension benefits and vice versa, creating a compensation curve. Here it is argued that, while this may remain true, those workers with that same skill saw their compensation curves shift down between 1999 and 2005 implying less of both pension benefits and direct pay. In Figure 2. this is a shift of the curve on which point A lies to the curve on which point C lies. The following analysis will show that losing good pension status between 1999 and 2005 had a negative effect on the percent change in total wages and wage rate between 1999 and 2005.

Figure 2.



This analysis is based on a dummy variable, called “Decline in Pension Plan” that equated to one if the person had a good pension in 1999 and did not have a good pension in 2005. The average non-inflation adjusted nominal total wages of those whose value of Decline in Pension Plan is one was \$57,934.36 in 1999 and \$50,866.46 in 2005, with respective median values of \$48,000.00 and \$36,306.50. According to the Consumer Price Index from the Bureau of Labor Statistics, inflation between 1999 and 2005 was 17%. This

is a significant decrease. With these basic statistics it can be inferred that a worker who fell from having a good pension in 1999 to not having one in 2005 would indeed see a significant decline in wages implying that the worker is not otherwise compensated for their loss in pension benefits. In an attempt to clarify the decline two linear regressions were run against the dummy variable of interest, Decline in Pension Plan, and other important variables. Including more variables helps to improve control for omitted variable bias and better show the true effect of the dummy variable of interest. In the first regression the dependent variable is  $\ln(\text{total wages 2005}/\text{total wages 1999})$ , and in the second it is  $\ln(\text{wage rate 2005}/\text{wage rate 1999})$ . The functional form of the dependent variable is a Taylor Series approximation of percent change in wage between 1999 and 2005. Other variables included were age, change in education (measured in years), and a dummy, KeptJob, that states whether or not the employee remained at the same main job from 1999 to 2005. The regression results were as follows:

Table 7. **Effect of Losing a Good Pension between 1999 and 2005 on different Measures of Wage**

	Model 1	Model 2
<i><b>DEPENDENT VARIABLE</b></i>	<b>ln(total wages 2005 / total wages 1999)</b>	<b>ln(wage rate 2005 / wage rate 1999)</b>
<b>Independent Variable</b>	<b>Coefficient in Linear Regression (standard error)</b>	<b>Coefficient in Linear Regression (standard error)</b>
Age	-.0189958 <sup>+</sup> (0.0028824)	-.012164 <sup>+</sup> (0.0021493)
<b><u>Good Pension in 1999 and Not Good Pension in 2005 (dummy)</u></b>	<b>-.2756281<sup>+</sup></b> <b>(0.0493818)</b>	<b>-.1581761<sup>+</sup></b> <b>(0.0369677)</b>
Good Pension in 1999 and Good Pension in 2005 (dummy)	.0373631 (0.0646560)	-.0261620 (0.0484461)
Not Good Pension in 1999 and Good Pension in 2005 (dummy)	.1041169 (0.0601307)	.0210022 (0.0448744)
Kept Job Between 1999 and 2005 (dummy)	.3929842 <sup>+</sup> (0.0385134)	.3558369 <sup>+</sup> (0.0287708)
Difference in Years of Education between 1999 and 2005	.0523709 <sup>+</sup> (0.0109107)	.0335256 <sup>+</sup> (0.0081532)

Constant Term	.6007375 <sup>+</sup> (0.1232336)	.4310369 <sup>+</sup> (0.0920373)
---------------	--------------------------------------	--------------------------------------

<sup>+</sup>Statistically significant given  $\alpha = 0.05$

The independent variable of interest has been **bolded and underlined**. In both regressions, the percentage change in total wages and the percent change in hourly wage rate between 1999 and 2005 are negatively correlated with the dummy variable that equals one if the employee had a good pension in 1999 and a not good pension in 2005. The first model predicts that an employee who kept their job, did not gain any years of education and lost their good pension status would see a:

$$.6007375 + .3929842 - 6 * .0189958 - .2756281 = 60.4\%$$

change in their total wages between 1999 and 2005, as opposed to a 91.7% increase for those who kept their good pension status. Similarly, the second model predicts that the same employee would see a 55.6% increase in their wage rate between 1999 and 2005, as oppose to a 71.4% increase for those who kept their good pension status. Here only the non-inflation adjusted nominal wage rate and total wages are reported. As reported by the BLS, inflation between 1999 and 2005 was 17%. This analysis conveys both a loss in wages and pension coverage. Thus we can proceed assuming that the decline in the number of good pensions between 1999 and 2005 was indeed detrimental to the worker or at least did not lead to a compensating increase in direct wage.

## 5. Case Studies Involving Pension Shifts

In the past few years there has been a lot in the news about specific companies altering or being unable to pay out their pension benefits. After learning about the recent private pension dilemmas and the implementation of ERISA, our attention is turned to case studies that examine how ERISA has been handling such problems. Here we will consider two companies that have changed their pension plans in such a way that can arguably be viewed as forms of pension abuse, namely, US Airways and IBM.

## **5.1 IBM's Transformation of DB plans to Cash Balance Plans**

There has been an emergence of the hybrid cash balance plans, resulting from a switch from DB type plans. These shifts have angered many employees, mostly older employees who find them to be age discriminatory. IBM chose to switch their traditional DB plans to cash balance plans in 1999 and introduced a pension equity formula in 1995 (Deloitte 2003). Changing to this cash-balance plan proved to be much more profitable for IBM, because cash-balance plans pay out less to the workers. This cost savings was most likely the motive for the switch. A class action lawsuit, covering around 130,000 IBM employees and retirees was brought against IBM. Most DB plans are formulated so that the employee receives a big jump in their benefit during their final years of working. The cash balance plan, a hybrid between the DB and DC plan, is not formulated this way. It provides for a steadier growth of pension benefit, giving the older workers less time to accumulate higher benefits.

In 2003, Judge G. Patrick Murphy of Federal District Court of Illinois ruled that IBM had violated age discrimination laws by making such a switch (Walsh 2003). This decision was overturned by the 7<sup>th</sup> U.S. Circuit Court of Appeals in 2006 and then the Supreme Court refused to review the subsequent appeal. An actuarial consultant for IBM claimed that the

ruling implied that every cash-balance plan was illegal on the basis of age discrimination (Walsh 2003). This is not the case. The concern here is that older workers who were expecting DB benefits would suddenly see their benefits decrease tremendously right before their planned retirement age. Studies have confirmed and denied the workers' concerns that the cash-balance plans do offer less income replacement. If the workers' fear was true, had IBM announced that all new hires would receive cash-balance plans they would not be renegeing on obligations to their current employees. A most striking cause for distress here is that IBM thought it was legitimate to change the structure of their pension plans without consulting their workers. If the workers expected a certain amount of retirement income, and pension benefits are indeed deferred compensation, the sudden switch to cash balance plans is disreputable. The question is then raised of what pensions are and how employers handle them. With an evolving pension climate, ERISA must adapt to more clearly address such issues.

## **5.2 US Airways Turns Over its Pension Liabilities to the PBGC in 2003**

In 2003 federal judge Stephen Mitchell in United States Bankruptcy Court in Alexandria, VA allowed US Airways to terminate their pilots' pension plan and pass on their liability to the Pension Benefit Guarantee Corporation (Maynard and Walsh 2003). The pension plan was underfunded since the company had filed for bankruptcy the summer earlier. By terminating the pension plan US Airways was trying to reorganize and ultimately save its floundering company. US Airways argued that it could not possibly pay out its pensions obligations, which were estimated to reach \$1.6 billion dollars by 2010 (Maynard and Walsh 2003). The PBGC is federally funded and is not designed to provide full

replacement of expected pension benefits. Instead, the pilot's pensions after being taken over by the PBGC would be no more than \$28,500 a year compared to the \$36,000 on average that currently retired pilots receive. The pilots union stated that this could, for some pilots, cost as much as 75% of their retirement income (Business Wire February 2003).

The pilots appealed the court decision because of the huge decrease in retirement income they would receive. By the time the appeal made it to court, many steps had already been taken in order to help US Airways emerge from bankruptcy. These depended on the PBGC assuming US Airways' pension responsibilities and had been implemented. The court dismissed the appeal as equitably moot (United States Court of Appeals 2004). The court did not want to overturn the decision to allow US Airways to terminate their pensions plan because they did not want to impair the reorganization. This process was taking place in order to help US Airways come out of Chapter 11 bankruptcy protection with a planned date of March 31, 2003 (United States Court of Appeals 2004). O.V. Delle-Femine, director of the Aircraft Mechanics Fraternal Association (AMFA), issued the following statement:

“We understand why the PBGC would want to terminate the plan now, to prevent the plan's unfunded obligations from growing even larger. The tragedy for 36,000 UAL employees, including AMFA members, is that the government permitted UAL and other airlines to underfund their pension plans even when profits were strong in the 1990s. Instead of being forced to overfund then for the inevitable downturns in this cyclical industry, the airlines were allowed to let the indebtedness to their pension plans grow so big that it became extremely difficult to repay when times got bad again. This foreseeable tragedy is going to hit people who retired after 2000 especially hard (Business Wire Website, March 2005).”

We have seen that firms do receive benefits by offering pension plans, and higher pension benefits, not just a higher direct pay. The benefits are manifested in the performance of the work force. The firms should be obligated to give out exactly what was promised. The injustice faced by the US Airways employees, especially those who received and will receive only a fraction of the pension benefits that they thought they would get is very clear.



For the PBGC, assuming the responsibility of administering pension benefits to approximately 5,000 US Airways pilots was adding to their already heavy financial load of responsibilities. The same negative market conditions that affected the airlines affected the PBGC funds, and the steel industry also turned their pension responsibilities over to the PBGC (Maynard and Walsh 2003). Many of the other major airlines faced tough times along with US Airways. United Airlines followed suit in 2005 when the court approved its request to turn their pension obligations over to the PBGC (ICFI May 2005). In this case it was the firms who benefitted from the ERISA and not the workers, who had to accept much less pension benefit than expected.

In the approximately 25 years that it has been implemented, in some cases ERISA has not been effective in ensuring that these airlines along with other companies have adequate funds to pay out their pension obligations. Instead, the federal government has to take on extra financial burden. This situation is difficult to remedy because companies could be punished for not having the funds to pay pension benefits, but money that does not exist cannot appear out of thin air.

## **6. Conclusion**

This paper has demonstrated using the Panel Study of Income Dynamics that between 1999 and 2005 there has been a decline in the percentage of male workers with good private pension plans. Those who lost their good pension status between the same time period did not see a compensating increase in wage. Their wages actually increased by a smaller percentage than those who retained their good pension status, solidifying that this decline in the percentage of good pensions is indeed a hurtful outcome. In order to maintain

pre-retirement standard of living in retirement, future retirees might have to work longer (Munnell and Perun 2006, 1).

The proportion of workers who retained the good DB type pension plan is not equal across industries. Those who work in government, education and the utilities industry were more likely to retain their DB type plans. DB type pension plans from the employees' perspective have been the more generous and easy to understand plans. Plausibly there exists much debate and problems with the current state of private pension plans in the United States because the reasons for the creation of DB plans do not hold water anymore. Minus the government, large firms do not exist that can be solvent for years to come and expected to pay large pension benefits without putting a huge sum of money aside. Compromising on DC plans, although less desirable for workers, lifts risk off the shoulders of the employers and workers will know and be able to see they have money set away for retirement.

From these data and statistics presented in this paper it can be concluded that the percentage of workers with DB plans is declining, and although there is a switch to DC plans, this has often been not just to equally good pensions, but is a wider shift away from pensions altogether. Secondly, since there are workers who retain their good pension plans, there is possibly a bifurcation into good pension plans on the one hand and poor pension plans on the other; potentially acting as another source of inequality in total wealth of individuals. With this shift towards DC plans and away from pensions, ERISA should adapt to regulate all types of pensions plans, not just DB plans. Events occurring in the early 21<sup>st</sup> century concerning huge companies involved in litigation over apparent pension abuse along

with the subsequent role of ERISA and the PBGC in mitigating the loss to employees qualitatively demonstrate the problems that workers face with their private pension plans.

Without serious reform of the private pension system, pension funds may not be able to sustain the retirees who depend on them, especially during a time of recession. When the airlines faced tough times, many of them opted to transfer their pension liabilities to the PBGC. With many companies vying to transfer their pension liabilities to the PBGC, the PBGC might not be able to handle such a burden. Recently the federal government granted the Big Three auto companies a bailout plan which is contingent upon the companies reorganizing with strategies to cut costs and demonstrate profitability. As we saw with the airlines, it is very likely that these cuts will come from their pension liabilities which they will hope to pass onto the PBGC. Here in Michigan, many families will suffer from such cuts. More should be done to ensure that companies have the ability to pay out their promises and not give them an easy way out. This is easier said than done. If this goal cannot be met, other ways must be found to protect employees who may find themselves on the verge of retirement with a sudden drop in expected benefits or no retirement income at all.

Future work must be accomplished to settle on what reform the private pension system requires. The most important reform is to make sure that workers are informed about how their plans function and changes being made. Wolff proposes seven ideas for reform to the pension system, and the most relevant to this goal are discussed here. First he believes that pension participation should be mandatory for employers and optional for employees. This ensures that employers will not ignore or take lightly the responsibility of overseeing the plans. Wolff is most concerned with total wealth inequality, and another of his

propositions for reform is to make provisions universal within a firm. The pension plans should be the same for all levels of workers, including top management (Wolff 2006, 175). This suggestion would make it easier for workers to be well informed about their plans. Through discussion and shared knowledge with coworkers, workers will improve their participation and contribution decisions. The final two relevant suggestions are to require independent investment advice and not allow employers to counsel their workers, and to allow workers to have some role in selecting the board of directors of their pension plans. With both of these suggestions the workers have a more hands on role in the maintenance of their pension plans. Workers will hopefully be able to make more informed decisions when deciding to participate and contribute and be able to speak up when they see a problem with their pension accounts on the horizon.

## Appendix

Here are the t-tests that demonstrate that the percentage of “good” pensions between 1999 and 2005 significantly decreased.

t-test goodPension99=goodPension01

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
goodPension99	4472	.2421735	.0064069	.4284467	.2296129	.2547342
goodPension01	4472	.207737	.0060672	.4057329	.1958423	.2196318
diff	4472	.0344365	.0071309	.4768627	.0204565	.0484165

mean(diff) = mean(goodPension99 - goodPension01)      t = 4.8292  
 Ho: mean(diff) = 0      degrees of freedom = 4471

Ha: mean(diff) < 0      Ha: mean(diff) != 0      **Ha: mean(diff) > 0**  
 Pr(T < t) = 1.0000      Pr(|T| > |t|) = 0.0000      **Pr(T > t) = 0.0000**

t-test goodPension01=goodPension03

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
goodPension01	4472	.207737	.0060672	.4057329	.1958423	.2196318
goodPension03	4472	.1733005	.0056607	.3785492	.1622027	.1843983
diff	4472	.0344365	.0066444	.4443277	.0214103	.0474627

mean(diff) = mean(goodPension01 - goodPension03)      t = 5.1828  
 Ho: mean(diff) = 0      degrees of freedom = 4471

Ha: mean(diff) < 0      Ha: mean(diff) != 0      **Ha: mean(diff) > 0**  
 Pr(T < t) = 1.0000      Pr(|T| > |t|) = 0.0000      **Pr(T > t) = 0.0000**

t-test goodPension03=goodPension05

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
goodPension03	4472	.1733005	.0056607	.3785492	.1622027	.1843983
goodPension05	4472	.1576476	.0054499	.364451	.1469631	.1683321
diff	4472	.015653	.0062894	.4205907	.0033226	.0279833
mean(diff) = mean(goodPension03 - goodPension05)					t = 2.4888	
Ho: mean(diff) = 0					degrees of freedom = 4471	
Ha: mean(diff) < 0		Ha: mean(diff) != 0		<b>Ha: mean(diff) &gt; 0</b>		
Pr(T < t) = 0.9936		Pr( T  >  t ) = 0.0129		<b>Pr(T &gt; t) = 0.0064</b>		

We find that for all sets of years, there is a statistically significant decrease in the percentage of “good” pensions.

Here are the t-tests that demonstrate that between 1999 and 2001 and then again between 2001 and 2003 employer contributions, including those contributions of zero, significantly decreased. Due to the statistical implications of low p- values, we can reject the null hypotheses that the mean contribution value from the earlier year is larger than the mean contribution value from the latter year. However in the third t-test we see that between 2003 and 2005 we cannot reject the hypothesis that the contribution means were the same.

t-test: Employer Contribution Percent 99(ECP99)=Employer Contribution Percent 01(ECP01);

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
ECP99	297	3.787879	.2501168	4.310435	3.295646	4.280111
ECP01	297	3.249158	.2082224	3.58844	2.839374	3.658942
diff	297	.5387205	.2722032	4.691066	.0030216	1.074419
mean(diff) = mean(ECP99 – ECP01)					t = 1.9791	
Ho: mean(diff) = 0					degrees of freedom = 296	
Ha: mean(diff) < 0		Ha: mean(diff) != 0		<b>Ha: mean(diff) &gt; 0</b>		
Pr(T < t) = 0.9756		Pr( T  >  t ) = 0.0487		<b>Pr(T &gt; t) = 0.0244</b>		

t-test: Employer Contribution Percent 01(ECP01)=Employer Contribution Percent 03(ECP03);

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
ECP01	301	3.657807	.2526001	4.382448	3.160715	4.1549
ECP03	301	2.827243	.2129011	3.693696	2.408274	3.246211
diff	301	.8305648	.2685913	4.659885	.3020031	1.359126
mean(diff) = mean(ECP01 – ECP03)					t = 3.0923	
Ho: mean(diff) = 0					degrees of freedom = 300	
Ha: mean(diff) < 0		Ha: mean(diff) != 0		<b>Ha: mean(diff) &gt; 0</b>		
Pr(T < t) = 0.9989		Pr( T  >  t ) = 0.0022		<b>Pr(T &gt; t) = 0.0011</b>		

t-test: Employer Contribution Percent 03(ECP03)=Employer Contribution Percent 05(ECP05);

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
ECP03	296	2.429054	.2340298	4.0264	1.968475	2.889634
ECP05	296	2.648649	.2325805	4.001466	2.190921	3.106376
diff	296	-.2195946	.2572968	4.426701	-.7259645	.2867753
mean(diff) = mean(ECP03 – ECP05)					t = -0.8535	
Ho: mean(diff) = 0					degrees of freedom = 295	
Ha: mean(diff) < 0		<b>Ha: mean(diff) != 0</b>		Ha: mean(diff) > 0		
Pr(T < t) = 0.1970		<b>Pr( T  &gt;  t ) = 0.3941</b>		Pr(T > t) = 0.8030		

In the third t-test, with such large p-values, we are unable to reject any of the null hypotheses.

## References

- Aaron, Benjamin, and Pension Research Council. 1961. *Legal Status of Employee Benefit Rights under Private Pension Plans*. Homewood, Illinois. Richard D. Irwin, Inc.
- AARP Website. June 2003. "Spousal Benefits are Risk?" AARP Bulletin Today. <[http://www.aarp.org/money/work/articles/spousal\\_benefits.html](http://www.aarp.org/money/work/articles/spousal_benefits.html)>
- Arza, Camila, and Johnson, Paul. 2006. The Development of Public Pensions from 1998 to the 1990s. In *The Oxford Handbook of Pensions and Retirement Income*, edited by Clark, Gordon L, Munnell, Alicia H, and Orszag, J. Michael, 52-75. Oxford. Oxford University Press.
- Bureau of Labor Statistics. August 2008. "Employee Benefits in the United States news release text." <<http://www.bls.gov/news.release/ebs2.nr0.htm>>
- Bureau of Labor Statistics. March 2008. "Establishments offering retirement and healthcare benefits Data Table." <<http://www.bls.gov/ncs/ebs/benefits/2008/ownership/private/table01a.htm>>
- Bureau of Labor Statistics. March 2008. "Table 1. Retirement Benefits : Access, participation, and take-up rates." <<http://www.bls.gov/news.release/ebs2.t01.htm>>
- Bureau of Labor Statistics. September 2007. "Employee Benefits in State and Local Government-September 2007." <<http://www.bls.gov/news.release/pdf/ebs3.pdf>>
- Bureau of Labor Statistics. Spring 1998. "Employee Benefits in the United States 1994-95." <<http://www.bls.gov/opub/cwc/archive/spring1998brief3.pdf>>
- Business Wire Website. February 2003. "US Airways seeks termination of pilots' pension to meet reorganization date." <[http://findarticles.com/p/articles/mi\\_m0CWU/is\\_2003\\_Feb\\_25/ai\\_98051337](http://findarticles.com/p/articles/mi_m0CWU/is_2003_Feb_25/ai_98051337)>
- Business Wire Website. March 2005. "AMFA Vows to Wage Court Battle Over Termination of UAL Pension Plan." <[http://findarticles.com/p/articles/mi\\_m0EIN/is\\_2005\\_March\\_11/ai\\_n12935651?tag=content;coll](http://findarticles.com/p/articles/mi_m0EIN/is_2005_March_11/ai_n12935651?tag=content;coll)>
- Chu, Hung, and FitzPatrick, Richard C. 2007. The Rise and Demise of Defined Benefit Pension Plans. In *Employee Responsibilities and Rights Journal*, 223-232 Springer Netherlands. <<http://www.springerlink.com/content/35w7121574783n34/>>
- Deloitte's Washington Bulletin. August 2003. "IBM's Cash Balance and Pension Equity



Formulas Violate ERISA, District Court Rules.”  
<<http://benefitslink.com/articles/washbull030804.html>>

Gustman, Alan L, and Steinmeier, Thomas L. 2004. What People Don't Know about Their Pensions and Social Security. In *Private Pensions and Public Policies*, edited by Gale, William G, Shoven, John B, and Washawsky, Mark J, 57-125 Washington D.C. Brookings Institution Press.

Horton, Frank and The Commission on Federal Paperwork. 1976. *A Report of the Commission on Federal Paperwork: The Employee Retirement Income Security Act*. Washington D.C. Commission on Federal Paperwork.

International Committee of the Fourth International (ICFI). May 2005. “Court Approves Termination of United Airlines Pension Plans.”  
<<http://www.wsws.org/articles/2005/may2005/unit-m13.shtml>>

Kotlikoff, Laurence J, and Smith, Daniel E. 1983. *Pensions in the American Economy*. Chicago: University of Chicago Press.

Maynard, Micheline, and Walsh, Mary Williams. “Judge Rules US Airways Can End Pilots’ Pension.” *New York Times*. March 3, 2003. Business Section. Online Source.  
<<http://query.nytimes.com/gst/fullpage.html?res=9400E5DF1F3CF930A35750C0A9659C8B63>>

Mcgill, Dan M, Grubbs, Donald S. 1989. *Fundamentals of Private Pensions 6<sup>th</sup> Edition*. Homewood, Illinois: Irwin.

Montgomery, Edward, Shaw, Kathryn and Benedict, Mary Ellen. February 1992. Pensions And Wages: An Hedonic Price Theory Approach. *International Economic Review*, Volume 33, No 1: 111-128. Stable URL:  
<<http://www.jstor.org/stable/2526986?seq=2>>

Munnell, Alicia H, Haverstick, Kelly and Soto, Mauricio. December 2007. “Why have Defined Benefit Plans Survived in the Public Sector.” Chestnut Hill, MA: Center for Retirement Research at Boston College.  
<[http://crr.bc.edu/images/stories/Briefs/slp\\_2.pdf?phpMyAdmin=43ac483c4de9t51d9eb41](http://crr.bc.edu/images/stories/Briefs/slp_2.pdf?phpMyAdmin=43ac483c4de9t51d9eb41)>

Munnell, Alicia H, and Perun, Pamela. August 2006. “An Update on Private Pensions.” Chestnut Hill, MA: Center for Retirement Research at Boston College.  
<[http://crr.bc.edu/images/stories/Briefs/ib\\_50.pdf?phpMyAdmin=43ac483c4de9t51d9eb41](http://crr.bc.edu/images/stories/Briefs/ib_50.pdf?phpMyAdmin=43ac483c4de9t51d9eb41)>

Panel Study of Income Dynamics (PSID). University of Michigan, 1999-2005  
<<http://psidonline.isr.umich.edu/>>

- Sass, Steven. 2006. The Development of Employer Retirement Income Plans: From the Nineteenth Century to 1980. In *The Oxford Handbook of Pensions and Retirement Income*, edited by Clark, Gordon L, Munnell, Alicia H, and Orszag, J. Michael, 76-97 Oxford. Oxford University Press.
- Schiller, Bradley R, and Weiss, Randall D. November 1980. Pensions and Wages: A Test for Equalizing Differences. *The Review of Economics and Statistics*, Volume 62, No. 4: 529-538. Stable URL: <<http://www.jstor.org/stable/1924777>>
- Social Security Administration. January 2009. "Windfall Elimination Provision." <<http://www.ssa.gov/pubs/10045.html#when>>
- Thane, Pat. 2006. The History of Retirement. In *The Oxford Handbook of Pensions and Retirement Income*, edited by Clark, Gordon L, Munnell, Alicia H, and Orszag, J. Michael, 33-51. Oxford. Oxford University Press.
- United States Court of Appeals. 2004. The Retired Pilots Association of US Airways, Incorporated (Soaring Eagles) Plaintiff-Appellant v. US Airways Group, Incorporated Debtor-Appellee. <<http://pacer.ca4.uscourts.gov/opinion.pdf/031825.P.pdf>>
- Walsh, Mary Williams. "Judge Says I.B.M Pension Shift Illegally Harmed Older Workers." *New York Times*. August 1, 2003. Online Source. <<http://www.cwlocal4250.org/news/binarydata/ex%3D10604.pdf>>
- Wiedenbeck, Peter Joseph, and Zumbalen, Joseph H. 2008. *ERISA in the Courts*. Federal Judicial Center
- Wolff, Edward N. 2006. Pension, Social Security, and Inequality. *The Economic Outlook for 2006* : 141-78.