Why have defined benefit plans survived in the public sector?

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*By Alicia H. Munnell, Kelly Haverstick, and Mauricio Soto**

Introduction

While 401(k) plans now dominate the private sector, defined benefit plans remain the norm among state and local governments. Why have public sector employers not shifted from defined benefit plans to 401(k)s like their private sector counterparts?

This *brief* examines the unique factors affecting the two sectors that may explain their very different patterns of pension coverage. State and local governments have an older, less mobile and more risk-averse workforce, with a higher degree of unionization to press for benefits that satisfy the needs of these workers. The nature of the employer is also fundamentally different. Unlike private sector firms, state and local governments are perpetual entities. They do not disappear — like many of the large manufacturing firms — taking their plans with them, and they are much less concerned about the financial volatility associated with defined benefit plans. States and localities can also increase required employee contributions to keep the plan's finances under control. Finally, the public sector has not had comprehensive pension regulation like the Employee Retirement Income Security Act of 1974; the absence of such regulation lowers administrative costs and enables later vesting.

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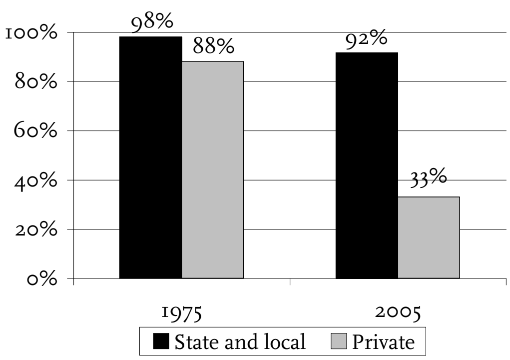
A Very Different Pattern

In the old days, the nature of pension coverage in the public and private sectors was quite similar. In both sectors, the overwhelming majority of those with pensions were covered by a defined benefit plan. By 2005, however, the picture was quite different (see Figure 1). While the vast majority of public sector workers remained in defined benefit plans, only one third of private sector employees had such coverage.[1]

Figure 1. Percent of Workers with Pension Coverage with Defined Benefit Plans, by Sector, 1975 and 2005



Sources: U.S. Congress (1978); Authors' calculations from U.S. Department of Labor (1998); U.S. Department of Labor (2000); U.S. Department of Labor (1990-2006); and Standard & Poor's (2005).

The difference in the nature of pension coverage produces a significant difference in the risks facing workers and employers. A traditional defined benefit plan pays a lifetime annuity at retirement that is generally a percentage of final salary for each year of service. The employer bears the investment risk during the worker's employment and longevity risk after retirement. In the public sector, the employer also adjusts benefits for inflation, thereby absorbing the inflation risk as well.[2] In both sectors, however, employees bear "mobility risk" in that they forfeit benefits when they move from one employer to another.

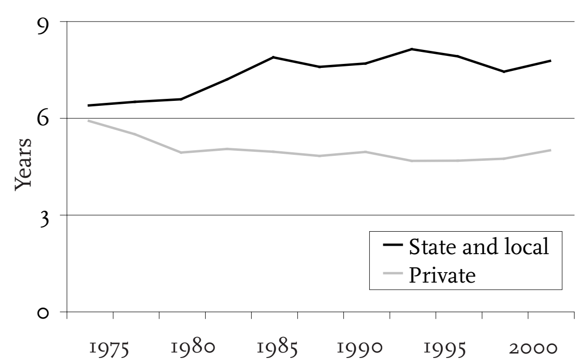
In contrast, defined contribution plans — most often 401(k)s — are like savings accounts. Generally the employee, and often the employer, contributes a specified percentage of earnings into the account. These contributions are invested, usually at the direction of the employee, mostly in mutual funds consisting of stocks and bonds. Upon retirement, the worker generally receives the balance in the account as a lump sum, albeit with the option to roll it over to an IRA. One important advantage of 401(k) plans is that mobile employees do not forfeit benefits when they shift jobs as their assets can move with them. On the other hand, the employee bears all the investment risk during the accumulation phase as well as longevity and inflation risk after retirement.

The question is why the pattern of pension coverage and risk differs so sharply between the two sectors. The three areas for investigation are the nature of the workforce, the nature of the employer, and the regulatory environment.

The Workforce

One reason that pensions could differ between the two sectors is that the workforce has different characteristics. State and local workers tend to remain with their employer longer than workers in the private sector. While private sector workers have become more mobile over time, the median years of tenure of the public sector workforce have actually increased over the past 30 years (see Figure 2). In 2004, the median tenure for state and local employees was 7.7 years, compared to 5.0 years in the private sector.

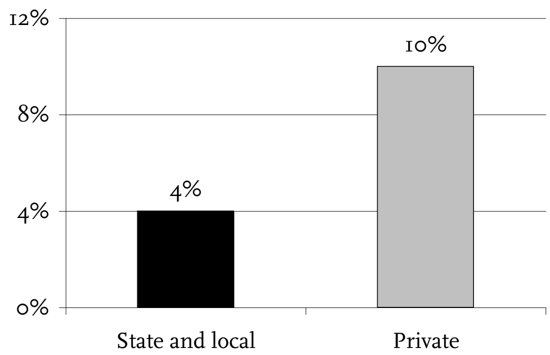
Figure 2. Median Years of Tenure of Wage and Salary Workers Ages 25-64, by Sector, 1973-2004



Note: The median tenure shown for state and local workers prior to 1983 is all government workers.
Source: Authors' calculations from the U.S. Census Bureau, *Current Population Survey* (CPS), 1973-2004.

Part of the longer tenure may reflect the fact that public sector employment is more secure than private sector employment. The *Displaced Worker Surveys* show that the job loss rate in the private sector has been 2.5 times higher than in the public sector

Figure 3. Average Job Loss Rate, by Sector, 1986-2004

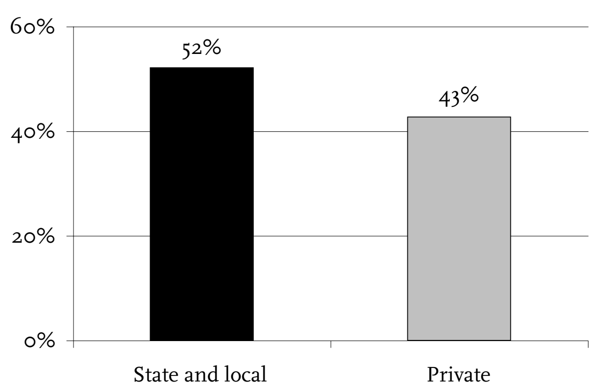


Note: State and local average is for all public sector workers.
Source: Farber (2005).

(see Figure 3). The lower displacement rate and the longer tenures of public sector workers would lead to a preference for defined benefit plans over defined contribution plans, since defined benefit plans disproportionately favor long-service workers.

The longer tenure and greater employment security in the public sector result in an older workforce (see Figure 4), and older workers are more likely to care about their retirement than younger workers. Not surprisingly, older workers favor defined benefit plans since they ensure a secure stream of income at retirement. The value of benefits accrued in such plans also rises sharply as workers age. Younger workers tend to prefer the immediate gratification of contributions to an account they can take with

Figure 4. Percent of Workers Age 45 and Over, by Sector, 2005

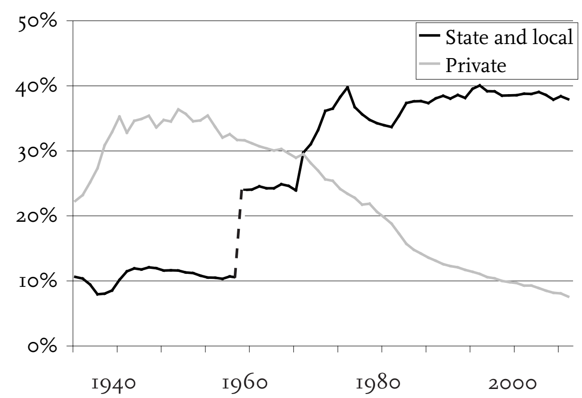


Source: Authors' calculations from the 2005 CPS.

them when they move from job to job, rather than the promise of a lifetime benefit at the end of a long career — especially when they are not sure they will be with the same employer five, ten, or twenty years in the future.

The longer tenures, older ages, and a preference for defined benefit plans are also likely to make unions more attractive to employees in the public sector. And indeed, the union picture for the two sectors has diverged dramatically (see Figure 5). While union membership in the private sector fell from 35 percent in the 1950s to 8 percent in 2006, the rate in the public sector increased from relatively low levels in the 1950s to over 35 percent today.[3]

Figure 5. Percent in Unions, Wage and Salary Workers Ages 25-64, by Sector, 1939-2006

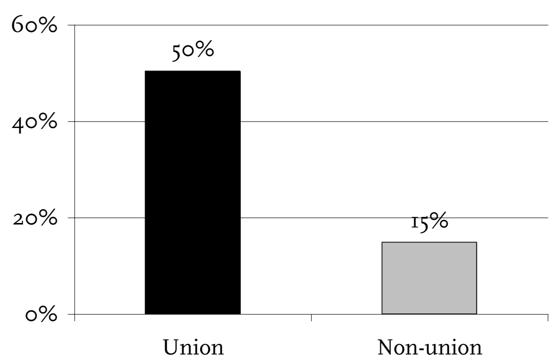


Note: The percent in unions shown for state and local workers prior to 1962 includes federal workers. The jump in union membership between 1961 and 1962 is due to the inclusion of associations, such as the National Education Association, which were previously excluded.
Sources: Troy and Sheflin (1985); U.S. Department of Labor (1939-1983); and Hirsch and Macpherson (2007).

A recent study attributed the sharply divergent patterns to several factors.[4] First, while employment has grown at about the same pace in the two sectors, the nature of that growth is very different. In the public sector, employment tends to grow steadily in line with population. When the growth occurs in jurisdictions already unionized, the number of unionized workers increases automatically. In the private sector, a portion of the growth involves the demise of old firms and creation of new firms. Since all new firms are created union free, unionization will decline without new organization. Second, the products produced by the two sectors differ. The private sector produces tradable goods, where competition can limit the ability of unions to increase compensation. The public sector generally produces non-tradable goods, such as police and fire protection and education, which makes it easier for public sector unions to raise compensation without the loss of jobs.[5] Finally, public sector unions can produce more membership benefits than their private sector counterparts. In addition to bargaining directly for compensation and workplace administration, union members can work for the election of union-friendly candidates, who can be helpful in contract negotiations. These greater potential membership benefits make unions relatively more attractive in the public sector.

With respect to pensions, the significantly greater level of unionization in the public sector has surely contributed to support for defined benefit plans. Some measure of union preference for defined benefit plans can be gleaned from the relationship between type of pension coverage and union membership in the private sector. Here, half of union members were covered by a defined benefit plan in 2005, compared to only 15 percent of non-union workers (see Figure 6).

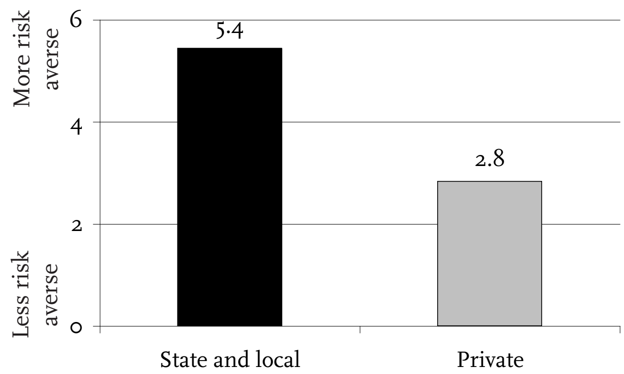
Figure 6. Percent of Private Sector Workers Ages 25-64 with Defined Benefit Pensions, by Union Membership, 2005



Source: Authors' calculations from the University of Michigan, *Panel Study of Income Dynamics* (PSID), 2005.

All these factors — longer tenure, more secure jobs, older workforce, and greater unionization — may also reflect the fact that public sector workers are more risk averse than their private sector counterparts. And risk-averse employees in relatively secure jobs would surely want a defined benefit pension where the employer absorbs investment, longevity, and inflation risk.

Figure 7. Median Coefficient of Risk Aversion, by Sector, 1996



Source: Authors' calculations from the 1996 PSID.

To evaluate risk preferences of individuals, economists generally use the Coefficient of Relative Risk Aversion (CRRA). Higher values of the coefficient indicate higher aversion towards risk. Figure 7 shows that public employees are less comfortable with uncertainty than their private counterparts.[6] A regression equation that estimated the probability of being employed in the public sector suggests that — even after controlling for gender, race and family status — the measure of relative risk aversion increases the probability of being a public employee by about 8 percentage points (see Appendix).[7]

The Employer

Employers in the public sector are also different from those in the private sector for two reasons mentioned above — they are perpetual entities and they do not face the same degree of market discipline. Each of these characteristics has both a direct and an indirect effect on the likelihood of having a defined benefit plan.

Perpetual Entities

In the private sector, the shift from defined benefit plans to 401(k)s primarily occurred through the decline of companies with defined benefit plans and the establishment of 401(k) plans at new companies. Thus, the demise of old firms in manufacturing and other industries and the rise of new firms in services and high tech provided an automatic mechanism for pension change in the private sector. Not until the recent round of "pension freezes" was there a significant movement of employers shutting down a defined benefit plan and opening a successor 401(k).[8]

No such "organizational churn" exists in the public sector, as most governmental units exist in perpetuity, so conversions from a defined benefit to a defined contribution plan are more difficult. The only way to shift plan type is through the political process, which involves considerable negotiations. Public employees and employee unions generally resist such change. In addition to this direct effect, the perpetual nature of state and local governments also leads to higher levels of unionization, further strengthening support for defined benefit plans.

Public sector employers also have an organizational interest in maintaining defined benefit plans. State and local governments are perpetual entities that deliver stable services. Public sector jobs may be quite specialized, resulting in both employees and employers benefiting from long job tenure. Defined benefit plans serve to attract and retain a high-skilled workforce needed to provide these specialized and stable services.

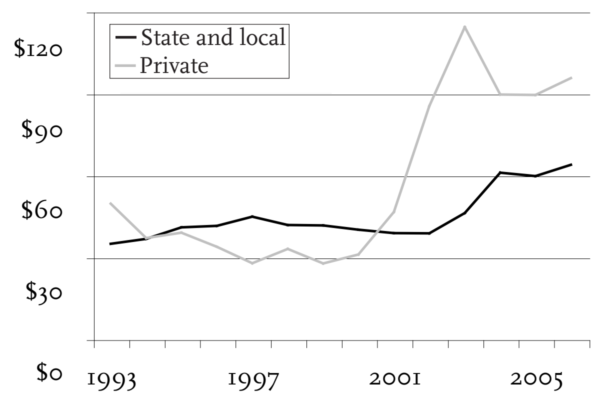
Less Market Discipline

The indirect effect of less market discipline is that state and local governments have less reason than private firms, which have to compete in the global marketplace, to resist union organizing efforts. And unions support defined benefit plans. More directly, less market discipline means that public employers do not have to worry nearly as much about how the financial volatility of defined benefit plans affects their income statements or balance sheets.

Volatility is a major concern in the private sector and in recent years has accelerated the pace of decline of private sector defined benefit plans. Private sector employers have had to respond to the financially devastating impact of the "perfect storm" of stock market decline and low interest rates at the turn of the century, legislation that will require underfunded plans to dramatically increase their contributions, and accounting changes that will force fluctuations in pension finance onto the earnings statement.[9] This volatility generates substantial movements in the company's cash flow and stock price, with the latter benchmark often directly affecting executive compensation.

Fluctuations in pension assets and liabilities also occur in the public sector. This volatility might affect debt ratings and increase the cost of borrowing. Elected officials may also face the unpopular prospect of having to raise taxes to cover pension contributions. States and localities, however, are better able to "manage" the ups and downs in the financial health of their defined benefit pension plans. The reason is that public plans have retained traditional actuarial methods to smooth their contributions over time. Underfunded public plans do not have to comply with the legislated funding requirements that apply to private plans, so a severe drop in the stock market and/or interest rates will have less of an impact on public sector pension contributions. During the "perfect storm," for example, employer contributions to private defined benefit plans tripled while those to public plans increased far less (see Figure 8).

Figure 8. Employer Contributions to Defined Benefit Plans, by Sector, Billions, 1993-2006



Sources: U.S. Department of Labor (1990-2006); and U.S. Census Bureau (1993-2006).

In short, the different characteristics of private and public sector employers also help explain the prominence of defined benefit plans in the public sector.

The Regulatory Environment

The final factor contributing to the different pension profile between the public and private sectors is the regulatory environment. In the private sector, the Employee Retirement Income Security Act of 1974 (ERISA) imposes minimum standards for participation, vesting, and funding; state and local plans are not covered by this legislation. ERISA also established the Pension Benefit Guaranty Corporation (PBGC), which collects premiums from plan sponsors and pays benefits (within limits and subject to certain restrictions) in the event of plan termination. Public plans are not covered by ERISA or the PBGC.[10] The absence of these regulations could increase the desirability of defined benefit plans by lowering administrative costs and allowing later vesting.

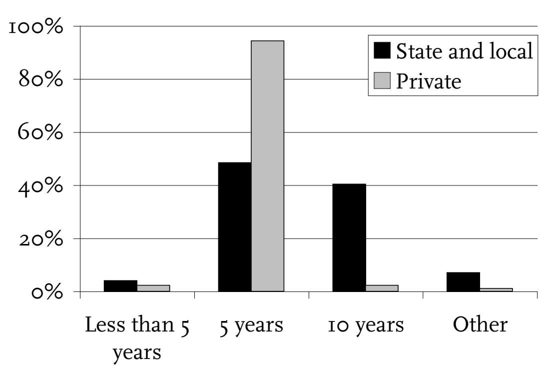
Administrative Costs

The enactment of ERISA raised the costs of running a private defined benefit plan. It was not just the effect of the original legislation, but during the 1980s Congress passed significant pension legislation every few years.[11] Congress also repeatedly raised PBGC premiums and imposed an excise tax on employers who claim the excess assets of terminated defined benefit plans. The cumulative impact of the legislative changes increased the costs of defined benefit plans relative to those for defined contribution plans.[12] A number of studies have identified regulatory costs as a factor in the decline of defined benefit plans.[13]

Vesting

In addition to the administrative costs, critics have charged that forcing plan sponsors to pay benefits to departing employees through accelerated vesting contributed to the demise of defined benefit plans in the private sector.[14] They say that paying small lump-sum distributions to short-tenure workers dramatically increased costs and reduced the ability of sponsors to pay benefits to long-service employees — thereby undermining the basic purpose of a defined benefit pension. To the extent that this view is accurate — studies in the 1970s suggested that these payments to short-service employees would not be a significant burden[15] — the later vesting in the public sector would make defined benefit plans more attractive to employers (see Figure 9).

Figure 9. Vesting Requirements for Defined Benefit Plans, by Sector



Note: These numbers are for employees with cliff vesting. The state and local data are for 1998 and the private data are for 2005.
Sources: U.S. Department of Labor (2007); and U.S. Department of Labor (2000).

Employee Contributions

As a rule, private sector employees do not contribute to defined benefit plans, while nearly all state and local employees do. One implication of these contributions is that state and local governments are unlikely to save much by converting to a defined contribution plan.[16] Moreover, public plan sponsors can raise contribution rates on employees to manage costs.[17] As shown in Table 1, contributions for Massachusetts public employees have gone from 0 to 9 percent plus a 2 percent surcharge on earnings over $30,000. The Massachusetts rates are higher than general because public sector workers are not covered by Social Security, but the pattern of increasing employee contribution rates has helped hold state and local government costs in check.

Table 1. Contribution Rates in Massachusetts Public Employee Retirement System

Date of hire	Contribution rate
Pre-1945	0%
1945-74	5%
1975-78	7%
1979-83	7% + 2% over $30,000
1984-96	8% + 2% over $30,000
1996- present	9% + 2% over $30,000

Source: Public Employee Retirement Administration Commission (2005).

Conclusion

Defined benefit plans dominated both the private and state and local sectors in the 1970s. Today they are disappearing in the private sector, but are alive and well in the state and local sector. The reasons for these divergent trajectories reflect the different nature of the public sector workforce — older, more risk averse, less mobile, and more unionized; the different nature of the public employer — a perpetual entity facing fewer market pressures; and a different regulatory environment — free from the administrative costs and vesting requirements of ERISA, with the ability to adjust employee contributions to control the employer's costs.

All is not quiet in the public sector, however. In the last ten years, states have explored defined contribution plans. A couple of states now have a defined contribution plan as their basic pension, and a number of others offer employees the option of a defined contribution plan. A future *brief* will explore where and why this activity is occurring.

Endnotes

1 State and local governments generally offer defined contribution plans as a supplement to their defined benefit plans. Two states (Alaska and Michigan) and the District of Columbia offer a defined contribution plan as a primary plan and do not have a defined benefit component; two states (Indiana and Oregon) offer a combined plan — with defined benefit and defined contribution components — in their primary plan; eight other states (Colorado, Florida, Montana, North Dakota, Ohio, South Carolina, Vermont, and Washington) offer the option to choose a primary plan with a defined contribution component.

2 In addition to the treatment of inflation risk, defined benefit pensions in the public and private sectors are different in other ways. First, public sector plans usually have somewhat higher accrual rates. Second, the financing differs between the two sectors. In the private sector, typically only the employer makes contributions to defined benefit plans, whereas in the public sector the employee typically contributes as well. Finally, with respect to mobility risk, government employees have somewhat more flexibility than their private sector counterparts as many states allow employees to change jobs within the state while remaining in the same municipal retirement plan. For additional details on the characteristics of public and private sector defined benefit plans, see Munnell and Soto (2007).

3 Union membership, of course, varies by region and type of job. For example, public safety employees and teachers tend to be more unionized than others.

4 Farber (2005). Also, see Freeman (1988).

5 Increases in compensation in the public sector, however, have some risks. Public employers can outsource some of the services to private firms, increasing the risk of layoffs for public employees. Public officials also face political risks in that higher compensation might require tax increases. See Farber (2005).

6 The calculation of the Coefficient of Relative Risk Aversion (CRRA) is based on the responses to five questions in the 1996 *Panel Study of Income Dynamics* asking whether individuals would give up their current job for one with a 50-50 chance of doubling their income but also a 50-50 chance of cutting it by some percent. The five questions were asked in a sequence so that individuals could be categorized into six risk aversion groups. They were then assigned the mean coefficient for that risk aversion group following the methodology described by Barsky, et al. (1997) and Hryshko, Luengo-Prado and Sorensen (2007).

7 This magnitude is consistent with Bellante and Link (1981), who found an effect of 7.5 percentage points.

8 For a discussion of the factors underlying recent pension freezes, see Munnell and Soto (2007).

9 The Pension Protection Act of 2006 represents the most significant change in pension regulation since the Employee Retirement Income Security Act of 1974 (ERISA). The new funding rules, which take effect in 2008, significantly reduce the leeway that companies have in making contributions to their plans. Plans must now be 100 percent funded, and most sponsors of underfunded plans have only seven years to pay off any existing shortfall. Moreover, sponsors will have less ability to smooth the value of assets or liabilities, making cash contributions significantly more volatile. At the same time, the Financial Accounting Standards Board (FASB) has instituted the first step of a two-step pension reform project by requiring sponsors to show pension surpluses or deficits directly on the balance sheet. This change could introduce volatility to the balance sheet, which could seriously cut into shareholder equity. In the second step, expected in the next three years, FASB is expected to require companies to mark-to-market the value of pension assets and liabilities, eliminating the smoothing available under current rules. Given the enormous volatility in the stock and bond markets in recent years, marking-to-market could introduce significant additional volatility in reported earnings. Such volatility is not acceptable to corporate managers, and may in large part explain why large healthy companies have taken steps to end their defined benefit plans.

10 Plans in both the public and private sector operate under a common set of rules spelled out in the Internal Revenue Code. On the accounting side, standards governing public sector pensions were established by the Governmental Accounting Standards Board (GASB) in 1994. As with the Financial Accounting Standards Board (FASB) in the private sector, GASB acts as a standard-setter but does not actually enforce

compliance. However, compliance with GASB standards is necessary for the plan to receive a statement that its financial statement is in accordance with generally accepted accounting principles (GAAP).

11 The Omnibus Budget Reconciliation Act of 1987 reduced the full funding limits for defined benefit plans from 100 percent of projected plan liability to the lesser of that value or 150 percent of benefits accrued to date. Basing funding limits on benefits already accrued means that funding contributions no longer include any provision for anticipated pay increases (McGill et al., 2005). The funding restriction exposes the sponsor to higher costs in the future.

12 The biggest increase in both absolute and relative costs of defined benefit versus defined contribution plans occurred in the late 1980s as plans adjusted to the Retirement Equity Act of 1984 and the Tax Reform Act of 1986 (Hustead, 1998).

13 Kruse (1995) found that rising administrative costs contributed to the decline in defined benefit pension coverage over the period 1980-86.

14 See interview with Dallas Salisbury by David Macchia (2007). Before ERISA, it was not unusual for plans to lack vesting provisions. ERISA incorporated minimum vesting rules. Originally, ERISA set a maximum of 10 years (cliff vesting) or 15 years (graded vesting). The Tax Reform Act of 1986 reduced the limits to 5 and 7 years respectively. See Graham (1988).

15 Sass (1997).

16 An upcoming *brief* will explore in depth the financial implications of introducing a defined contribution plan.

17 Employee contributions for defined benefit plans in the public sector — unlike in the private sector — are not subject to federal income tax.

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APPENDIX

Table A1. Regression Results for the Probability of Being Employed in the Public Sector

Dependent variable: 1=Public employee, 0=Private employee		
Variable	Marginal effect	Std. error
Education	2.48 *	0.29
Age	0.51	0.34
Age squared	0.00 *	0.00
Married	-3.36	1.84
Number of children	0.24	0.66
Nonwhite	8.49 *	1.57
Female	3.03	1.77
High risk aversion	8.01 *	1.35

* Variable is statistically significant.
Source: Authors' calculations from the 1996 PSID.

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