

Executive Summary

The Impact of Philadelphia’s DROP Program on the Age of Retirement and Employer Pension Costs

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Purpose of the Study

- To investigate whether the City of Philadelphia’s Deferred Retirement Option Plan (DROP) has had an impact on when employees retire for pension purposes.

Research Questions

- How has the DROP program affected employee retirement behavior?
- How much do employees delay retirement on average?
- How much does DROP cost the employer?
- Does the DROP program have a disproportionate effect on high-performing employees?

Overview of Philadelphia Pension System¹

The City of Philadelphia operates defined benefit pension plans for members of the city’s fire and police departments and municipal employees. A defined benefit plan is a plan where the employer guarantees to pay the employee a fixed monthly pension benefit for life, upon retirement. The monthly pension benefit is calculated based on the employee’s plan membership, the percentage of pension benefits accrued, the age at retirement and the employee’s salary. No employee may receive a pension benefit that is greater than the employee’s salary while working for the city. Philadelphia’s retirement plan parameters are outlined below.

Hire date	Pre-1988		Post-1988	
	Police and Fire	Municipal	Police and Fire	Municipal
Employee type				
Percent accrual rate				
First 10 years	2.50	2.50	2.20	2.20
11-20 years	2.50	2.50	2.20	2.00
21+ years	2.50	2.00	2.00	2.00
Normal retirement age	45	55	50	60
Early retirement age	40	50	40	52
Monthly early retirement reduction	0.50%	0.50%	0.50%	0.50%
Source: Authors' calculations using administrative data.				

¹ The rules governing retirement eligibility, pension contribution rates and pension benefit accrual terms vary from plan to plan and are set forth fully in the Public Employees Retirement Code, Title 22 of the Philadelphia Code.

DROP Summary

Beginning in 1999, Philadelphia adopted a DROP program as an alternative to the traditional retirement track. Under DROP, employees retire for pension purposes but continue to work for the city for a maximum of four years. When an employee makes the irrevocable decision to enter DROP, the employee continues to work for the city and receive a salary. However, the employee stops making pension contributions and stops accruing pension benefits.

During the DROP period (the period beginning when the employees enters DROP and ending when the employee ceases working), the pension fund credits the employee's pension benefits that would otherwise be due under a traditional retirement track to a notional tax-deferred, 4.5% interest bearing account. At the end of the DROP period, the employee stops working for the city and the pension fund makes a lump sum payment to the employee of the account balance. The employee also begins to receive his or her monthly pension benefits which are calculated based on the date the employee entered the DROP program. For a comparison of the two programs, see the attached chart.

Research Findings

- **DROPs Effect on Retirement Behavior**

We determined that the DROP program has a significant impact on employee retirement patterns. Under DROP, there is a significant reduction in the probability that an employee retires from the workforce at the age at which the expected present value of pension benefits peaks, or who are one or two years past that age. Our finding of a significant effect is robust to alternative assumptions regarding interest and inflation rates and rates of salary growth. but its magnitude varies across employee types.

- **Average Employee Retirement Delay Due to DROP**

We find that the DROP program had the largest impact on the workforce retirement age of municipal workers – with an average delay of 1.27 years, or 15 months under our base case assumptions. Fire employees were the next most impacted group, with a delay of .95 years, or 11 months, on average. Police officers are the least impacted by the DROP program, only delaying retirement by 0.183 years.²

Employee Class	Average Delay in Workforce Retirement Under DROP
Municipal	15 months
Fire	11 months
Police	2 months

² The estimate for municipal employees is relatively insensitive to the assumed rate of wage growth, those for fire and police employees more so.

Employees entering the DROP program prior to 2005 stayed an average of 45.6 (fire), 43.4 (police) and 39.8 (municipal) months in the program. Employees in all classes entered the program between two and three-and-a-half years prior to the age at which they would have otherwise retired. This means that employees under DROP are retiring for “pension purposes” at an earlier age than they would have if DROP did not exist and are retiring for “workforce purposes” at a later age than they would have if DROP did not exist.

- **Cost of DROP to the Employer**

Our estimates of the cost of the program are somewhat sensitive to our assumptions regarding interest rates, the rate of wage growth, and the interest rate used by the employee to value prospective pension benefits. The following table reports our preferred estimate and a range covering plausible values for the above parameters.³ In no plausible scenario did the DROP program result in a reduction in pension costs. Our preferred estimate of the annual cost for all classes of employees is \$22.3 million, and our preferred estimate of the total cost of the program for all employees who entered the program prior to 31 December 2009 is \$258 million.

Employee Class	Average Cost Per Employee		Average Annual Cost	
	Preferred Estimate	Plausible Range	Preferred Estimate	Plausible Range
Municipal	\$29,700	\$28,000-\$36,000	\$15.9 million	\$15-\$19 million
Police	\$24,300	\$22,000-\$69,000	\$3.1 million	\$3-\$9 million
Fire	\$38,700	\$30,000-\$96,000	\$3.3 million	\$3-\$8 million

The additional cost is mainly the result of the changes in employee behavior referred to above. Employees do not only use the program to extend their worklives. They also time their entry into the DROP program to maximize the expected present value of their pension benefits.

If an employee used the program solely to extend his worklife, entering the program at the age at which he would otherwise have retired, the program would increase pension costs to the extent that the 4.5% return on the notional account exceeded the return on risk-free investments of similar maturities. We consider it inappropriate to compare the 4.5% with either the expected return on plan assets, or the realized return. The former includes a risk premium, and the latter includes the realized return for bearing risk.

³ Table 8A reports cost s assuming an 11% expected return on plan assets. This is shown for illustrative purposes and we do not regard it as lying within a plausible range of expected returns.

When employees enter the program prior to the age at which they would have otherwise have retired, the program can result in accelerated payments from the pension plan. At high assumed rates of investment return, relatively less weight is given to payments that will be made in the distant future. As a result, our estimates of the cost of the program are higher at higher assumed rates of return.

- **Effect of DROP on High-Performing Employees**

We investigated whether the DROP program might benefit the city by encouraging highly valued employees to delay retirement. For municipal workers, we found no evidence that high-quality employees delayed retirement. For fire employees, we find evidence that the DROP program may induce high-quality fire employees to delay retirement. For police employees, we find evidence that the DROP program speeds the departure of high-quality police employees, a possible reflection of the differences between post-retirement career options for police and fire employees.

Data and Methodology

In order to determine the effect of the DROP program on employees' decisions to retire, we conducted an econometric analysis of administrative data provided to us by the City of Philadelphia. We identified the effect of the DROP program on retirement behavior by comparing employees who received the "treatment" of eligible to participate in the program with a "control" group of employees who were ineligible to participate. We then used the parameter estimates derived from the model to predict the retirement behavior of eligible employees in a counterfactual scenario in which the program does not exist.

We used employment data provided by the City of Philadelphia covering the period 1990 to 2008. We calculated current and projected pension wealth at a variety of assumed interest and inflation rates and rates of salary growth and identified the age at which each employee's pension wealth peaked. Our econometric model controlled for gender, marital status, education, occupation, ethnicity, earnings, years of service, being at the employee's early or normal retirement age, current age relative to the age at which pension wealth peaked, the local unemployment rate and a full set of age and year dummies.

To quantify the cost of the DROP program, we calculated the differences between the payments each DROP eligible employee will receive over the course of his retirement, and the payments, net of employee pension plan contributions that would have been made had the employee retired as predicted in the non-DROP scenario. The differences are discounted back to the predicted, non-DROP retirement age using a rate of interest and annual survival probabilities.

Final Conclusions

A broader assessment of whether the DROP program represents a value for city taxpayers is beyond the scope of our study. Like other employers, the City of Philadelphia offers a pay and benefit package that is designed to recruit and retain productive employees. The DROP program is clearly valued by city employees as shown by the high take-up rate, and makes the city a more attractive employer. We are unable to offer an assessment of whether the DROP program might assist the city to recruit and retain employees at a lower cost than alternative enhancements to the pay and benefit package.