DO SMALLER PUBLIC EMPLOYER PENSIONS SPUR MORE SAVING?

By Laura D. Quinby and Geoffrey T. Sanzenbacher*

INTRODUCTION

A simple lifecycle model predicts that employees should react to variation in their expected pension income by adjusting their supplemental retirement saving. Whether this prediction is accurate may turn out to be very important for state and local workers.

While a common narrative holds that state and local workers spend a full career in government and retire with substantial defined benefit pensions, in practice, their defined benefit wealth varies widely across jurisdictions, and a subset of plans are so poorly funded that they may not be able to pay full benefits.[1] In addition, about 25 percent of state and local workers are not covered by Social Security in their current job.[2]

To see whether public workers are likely to augment their pensions with outside savings, this *brief,* based on a recent study, explores the relationship between participation in a supplemental defined contribution plan and three factors that could impact the need to save: low wealth accumulation in a defined benefit plan, low plan funded levels, and lack of Social Security coverage.[3]

The discussion proceeds as follows. The first section describes what we know about the interaction between saving in defined benefit pensions (employer plans and Social Security) and supplemental saving. The second section discusses the data used to examine how supplemental saving relates to public employer defined benefit plans. The third section describes the methodology that relates supplemental savings to an employee's pension plan savings, the plan's funded ratio, and Social Security coverage. The fourth section presents the results, which show that workers modestly increase their participation in a defined contribution plan in response to lower required contributions to their pension, but not to a low pension funded ratio or a lack of Social Security coverage.

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The final section concludes that if states and localities hope their workers will make up for reduced pension income through supplemental savings, that hope may be ill-founded.

Background

In theory, a simple lifecycle model predicts that workers will respond to a one-dollar decrease in their defined benefit saving by increasing their supplemental savings by one dollar.[4] And all state workers and most local workers have access to supplemental savings vehicles – i.e., 457, 401(k), 401(a), and 403(b) defined contribution plans – where they could adjust their savings.[5] In practice, however, worker behavior may deviate from this simple prediction. In particular, state and local workers may not be aware of how much saving is accruing through their defined benefit pension, the extent to which their plan is adequately funded, and whether they are covered by Social Security.

The literature offers mixed messages on the extent to which workers respond. A number of studies support the simple prediction that more pension wealth is associated with lower non-pension net worth.[6] And a simulation using a lifecycle model comes to a similar conclusion.[7] While none of these studies focus on state or local workers, or on the specific tradeoff between pensions and supplemental saving vehicles, they do suggest that public employees may pay attention and adjust their outside savings.

However, a few studies do not find the predicted relationship between wealth in employer-sponsored plans and other types of savings.[8] And a study using data from Denmark concluded that automatically increasing retirement contributions did not crowd out other savings, as people were generally passive in their savings decisions.[9] To the extent that various aspects of state and local pensions may not be salient to workers, a difference in pension saving may have no effect on their outside saving.

Given the lack of clarity in the literature, the following analysis investigates how public sector workers respond to various characteristics of their primary defined benefit pension.
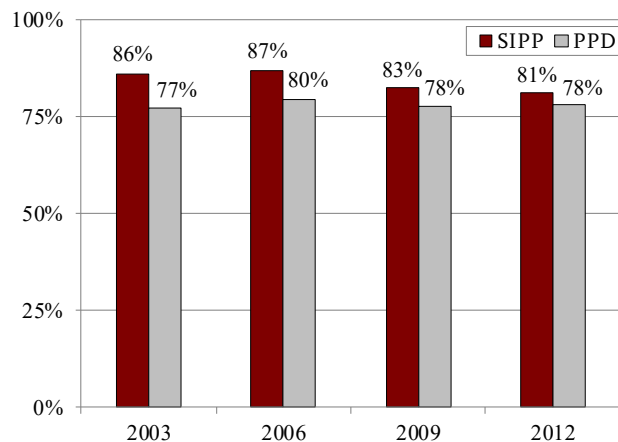
Data

Individual-level data come from the *Survey of Income and Program Participation* (SIPP). These data are then merged with plan-level data from the *Public Plans Database* (PPD).

SIPP Data

The SIPP, collected by the U.S. Census Bureau, follows individuals within a sampled household for 2½ to 4 years.[10] With these data, we construct a sample of full-time state and local workers who are eligible for a pension based on their hours worked and occupation.[11]

The SIPP also asks workers if they are covered by Social Security. It is worth noting that the PPD also contains data on Social Security coverage and, especially in the earlier panels, suggests a lower rate of coverage than the SIPP (see Figure 1). However, the SIPP data reflect workers' own perceptions – whereas the PPD is administrative – and perceptions are most likely to inform behavior. Therefore, the analysis uses the SIPP version of the variable.

Figure 1. Percentage of Employees with Social Security Coverage, 2003-2012

Source: Authors' estimates from the U.S. Census Bureau, *Survey of Income and Program Participation* (SIPP) (2003-2012); and the *Public Plans Database* (PPD) (2003-2012).

The SIPP also contains information on worker demographics, such as education and marital status, that may be correlated with both their propensity to save and the characteristics of their defined benefit pension. Similarly, the SIPP contains data on workers' job characteristics aside from their pension, including their salary, tenure, and union status.

The SIPP is also used to construct the primary dependent variable: participation in a supplemental defined contribution plan. Of course, this dependent variable is somewhat narrow, since it would fail to pick up household responses if a public worker's spouse is the one who adjusts saving. Fortunately, the SIPP also contains data on household retirement savings.

PPD Data

The PPD is a comprehensive database of financial, governance, and plan design information for 200 state and local defined benefit plans.[12] Importantly, the PPD provides measures of pension savings and funded status. The main measure of pension savings consists of the employer and employee required contributions to the normal cost, which is the present discounted value of lifetime pension income that the employee accrues in a given year. The funded status is the plan's ratio of assets to liabilities.

Merging the SIPP and PPD

The SIPP and PPD data are merged using three pieces of information: 1) state of residence; 2) status as a state or local employee; and 3) occupation. This process works well for state employees because each worker can be uniquely paired to a state-administered plan based on occupation. For local teachers, the approach also works well, since most teachers are covered by state-administered umbrella plans (e.g., CalSTRS). For other local government workers (and teachers not covered by an umbrella plan), the merge is more difficult because the SIPP does not contain data on an individual's city of employment. Instead, local workers are assigned to "composite" plans that average the PPD data for all local pensions in the state, weighted by membership.[13]

In the end, the sample consists of over 10,000 state and local employees, representing every major occupational group (see Figure 2). The typical member of the sample is mid-career, married, and college educated. About 21 percent report participation in a supplemental defined contribution plan, and the participants' characteristics are fairly similar to non-participants, though they have slightly higher tenure, earnings, and education.

Empirical Approach

Regression analysis is used to relate a worker's saving outside of defined benefit pensions to their saving inside these pensions, the funded status of the pension plans, and Social Security coverage. The main equation uses participation in a supplemental defined contribution plan as the dependent variable and includes three groups of explanatory variables.

Figure 2. Occupational Distribution of Analysis Sample, 2003-2012
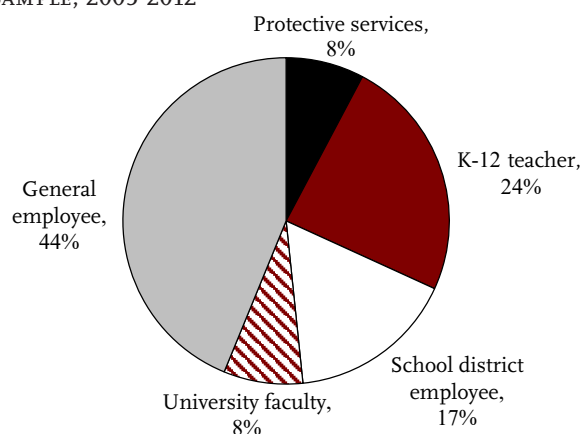
Note: Protective services includes police, fire, and corrections.
Sources: Authors' estimates from the SIPP (2003-2012); and the PPD (2003-2012).

- Pension information, including the employer's required contribution to the normal cost as a percentage of pay, the employee's required contribution rate, whether the employee's pension plan has a funded ratio in the bottom third, and self-reported Social Security coverage.[14]

- Demographic information, such as age, marital status, gender, race, and education.

- Job characteristics, such as tenure with current employer, total compensation, union membership, sector of employment (state or local), and whether the worker is a police officer, corrections officer, teacher, school employee, or university employee (general employee is the base case).

The equation is run with the full sample and with three alternative samples. In addition, a separate specification is estimated using a broader measure of a worker's outside saving – whether the worker's household has any type of retirement saving.

Results

The first set of results is for participation in a supplemental plan using the full sample, followed by the results for subsets of the full sample, and then those using the alternative dependent variable of any household retirement saving.

Participation in a Supplemental Plan: Full Sample

The key results suggest that workers do respond to the income provided by their primary defined benefit plan, although the magnitudes are small (see Figure 3). For example, a 1-percentage-point increase in the employer normal cost rate is only associated with a 0.19-percentage-point decrease in the participation rate, relative to a baseline of 21 percent. Similarly, a 1-percentage-point increase in the employee contribution rate is associated with a 0.46-percentage-point decrease in the participation rate.

Figure 3. Effect of Select Characteristics on Participation in a Supplemental Plan, 2003-2012
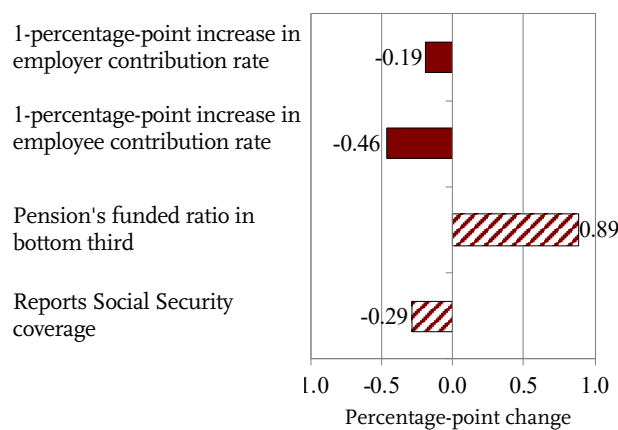
Note: Solid bars are significant at the 1-percent level.
Source: Authors' estimates from the SIPP (2003-2012); and the PPD (2003-2012).

Figure 3 also suggests that workers in pension plans with the lowest funded ratios – those in the bottom third – are no more likely to participate in a defined contribution plan than workers in plans in the top two-thirds.[15] This finding suggests that workers in poorly funded plans may be unprepared if sponsors cut benefits for existing workers in order to reduce costs. Moreover, lacking Social Security coverage also appears to have no effect on participation in a supplemental plan. Since uncovered state and local workers sometimes participate in pensions that fail to fully replace Social Security benefits, this result suggests that they may end up less prepared for retirement than their covered counterparts.

Participation in a Supplemental Plan: Select Subsamples

To ensure that the findings are not overly sensitive to the sample chosen, Table 1 shows the results for the whole sample and for each of the three subsamples.

Table 1. Percentage-Point Change in Participation in a Supplemental Plan Due to Select Characteristics: Full Sample and Subsamples, 2003-2012

Variable	Full sample	Vested only	State workers only	Reports having a DB plan
Employer contrib. rate	-0.19***	-0.29***	-0.19	-0.27***
Employee contrib. rate	-0.46***	-0.37**	-0.40*	-0.68***
Reports SocSec coverage	-0.29	0.52	-1.59	1.48
Lowest funding tercile	0.89	1.11	1.78	-0.41
Observations	10,295	6,650	3,862	6,765
R-squared	0.035	0.041	0.042	0.044

Notes: The coefficients for employer and employee contribution rates are scaled to reflect a 1-percentage-point change in the rate. Stars indicate statistical significance: *** <0.01, ** <0.05, * <0.10.
Sources: Authors' estimates from the SIPP (2003-2012); and the PPD (2003-2012).

One possible explanation for the small estimated effects in the full sample is that workers who are not yet vested in the plan do not react to its generosity. Limiting the sample to only vested workers produces fairly similar results, although vested employees do appear more responsive to the employer contribution than non-vested employees. Still, this finding suggests that a 1-percentage-point increase in the employer contribution rate would increase participation by just 0.29 percentage points, relative to a 21-percent baseline, and thus does not seem to contradict the main finding from the full sample of a relatively small effect.

Another possibility is that measurement errors are interfering with the results.[16] While the PPD should not contain error because it has administrative data, the process of merging the PPD with the SIPP

is not perfect, especially for local workers. The third column of Table 1 therefore drops all local workers, and runs the main specification on state workers only. Again, the coefficients are similar to the main specification, although in this case they are less statistically significant due to the smaller sample size.

A final possibility is that workers who understand the structure of their defined benefit pension do respond strongly to its provisions, whereas those who do not understand it fail to respond. The fourth sample therefore focuses only on workers in the SIPP who claim to have a defined benefit plan.[17] Still, the main finding of a small response seems to hold.

Household Retirement Savings

The final exercise broadens the definition of outside saving from current participation in a retirement plan to whether the worker's household has any retirement savings outside of a defined benefit plan. Roughly 30 percent of households in the full sample have some retirement assets outside of their defined benefit pension, compared to just 21 percent of workers who participate in a supplemental plan.

Despite the broader definition, the results are fairly similar to the main specification (see Table 2). When examining all households, a 1-percentage-point increase in the employer contribution rate reduces the worker's likelihood of having any outside retirement savings by 0.22 percentage points. A 1-percentage-point increase in the employee contribution to the normal cost decreases the likelihood of having outside savings by 0.68 percentage points. The comparable estimates for supplemental defined contribution savings only were 0.19 and 0.46 percentage points, respectively.

Since one of the advantages of examining all forms of outside retirement savings is the ability of a spouse to respond, the sample was then limited to married couples, controlling for the demographic and job characteristics of the spouse. The resulting estimates are nearly identical to the full sample.

It seems that whatever dependent variable or sample is used, the basic result is the same: state and local workers respond to higher pension income as expected, but at a low magnitude, and do not respond at all to low plan funding or a lack of Social Security coverage.

Table 2. Percentage-Point Change in Likelihood of having Any Household Retirement Savings Due to Select Characteristics, 2003-2012

Variables	Specification	
	Full sample	Married only
Employer contribution rate	-0.22***	-0.18*
Employee contribution rate	-0.68***	-0.57***
Reports SocSec coverage	1.19	0.25
Lowest funding tercile	1.17	2.35*
Observations	10,295	6,885
R-squared	0.078	0.072

Notes: The coefficients for employer and employee contribution rates are scaled to reflect a 1-percentage-point change in the rate. Stars indicate statistical significance: *** <0.01, * <0.10.
Sources: Authors' estimates from the SIPP 2003-2012; and the PPD 2003-2012.

Conclusion

The lifecycle model suggests that state and local workers should respond to lower pension plan savings, low plan funded ratios, and/or a lack of Social Security coverage by saving more outside of their defined benefit plans. While such saving could occur through many vehicles – such as IRAs, housing, and debt reduction – the main focus in our analysis has been participation in defined contribution accounts sponsored by state and local employers.

The results from this *brief* suggest that workers with less pension savings – measured by employee and employer contributions to normal cost – are more likely to save in supplemental plans. But, the effects are relatively small. Furthermore, workers do not seem to respond to low funded ratios nor to a lack of Social Security coverage. The implication of these findings is that state and local workers are likely to have fewer resources in retirement should their employers continue to cut the generosity of defined benefit plans for new hires or be forced to cut benefits for current workers.

Endnotes

1 See Springstead (2021); Aubry, Munnell, and Wandrei (2020); and Aubry, Crawford, and Wandrei (2017).

2 Quinby, Aubry, and Munnell (2020).

3 Quinby and Sanzenbacher (2020).

4 This theory assumes that a defined benefit plan earns the same investment return as the worker's supplemental savings. Feldstein and Liebman (2002) summarize the classic model.

5 State and local governments often refer to these programs as "deferred compensation" plans. which are offered by all states and many large cities and school districts.

6 For studies in the U.S. context, see Gale (1998) and Engelhardt and Kumar (2009). Studies of other countries have also found evidence of crowd-out, including, for example, Hurd, Michaud, and Rohwedder (2012); Lachowska and Myck (2018); and Van Santen (2019).

7 Blau (2016).

8 For example, Gustman and Steinmeier (1999) find limited evidence that defined benefit and defined contribution plans crowd out other savings. Meanwhile, Slavov et al. (2019) instead focus on crowd-out due to Social Security wealth, and also do not find significant evidence of displaced saving.

9 Chetty et al. (2014).

10 The data collected for each panel consist of a core module of questions asked every four months and a series of topical modules asked once or twice during the panel. This paper relies primarily on SIPP data covering the years 2003-2012, corresponding to the specific waves of the 2001, 2004, and 2008 panels that include the "Retirement and Pension Plan Coverage" topical module.

11 Individuals without enough information to determine eligibility or without information on pension participation are excluded. In practice, workers whose *primary* plan is a defined contribution plan are also excluded; however, this restriction is implemented using the administrative PPD data on plan characteristics rather than self-reports.

12 The data, which cover 95 percent of U.S. state and local government employees, are maintained by the Center for Retirement Research at Boston College in collaboration with the Center for State and Local Government Excellence and the National Association of State Retirement Administrators.

13 This approach works well for workers in states dominated by a few local plans (e.g., in Illinois, the Chicago Teacher's Plan). However, in states with many local plans, this process may introduce measurement error. Therefore, the analysis is conducted both with and without local workers.

14 The regression also controls for whether the plan has a hybrid defined benefit/defined contribution design.

15 The average funded ratio in the bottom tercile is 64 percent, compared to 83 and 100 percent in the middle and top terciles, respectively.

16 Measurement error in the independent variable can cause attenuation of the coefficient towards zero.

17 Even though the PPD suggests that all employees in the sample do have a defined benefit plan, only about 65 percent of the full sample report having one, with the rest reporting a defined contribution plan.

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