



TIAA-CREF INSTITUTE: **TRENDS AND ISSUES**

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FRAMING EFFECTS IN RETIREMENT SAVINGS

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EXECUTIVE SUMMARY

This paper examines how supplemental retirement savings decisions of higher education faculty are influenced by the generosity and structure of an individual's primary retirement plan. Defined contribution pensions in many post-secondary institutions are funded by a combination of an employer premium and a mandatory employee premium, analogous to the distinction found in the Social Security tax. Employees can also make tax-deferred contributions to supplemental savings accounts, called Supplemental Retirement Annuities (SRAs) at TIAA-CREF. Standard economic models of saving predict that an extra dollar contributed to an employee's primary defined contribution account will reduce the supplemental savings of that employee by one dollar, regardless of the source (employer or employee) of the pension contribution.

Surprisingly, we find that supplemental savings rates depend on how compensation is labeled. In particular, supplemental savings are significantly lower when a larger fraction of the primary pension contribution appears as a salary deduction. The discrepancy is large: we estimate that supplementary savings are reduced by 60-90 cents per dollar of employee contributions to the primary pension, but only by one-half as much per dollar of employer contributions. Consequently, two faculty members with the same total compensation and the same total contribution rates to their primary pension will reach retirement age with substantially different amounts of supplemental saving, depending on the share of primary pension contributions labeled as an employee contribution.

Nevertheless, it appears that the welfare consequences of under-responding to employer pension contributions are modest. An example calculation suggests that the welfare costs are equivalent to a reduction of lifetime wealth on the order of 2 to 3%, at most.

INTRODUCTION

Savings rates vary widely across people, even among those with similar age, income, and family structure. A strictly neoclassical view is that individuals solve a lifecycle planning problem and reach different savings decisions depending on their preferences for current versus future consumption. Although this perspective provides the basis for most economic analyses, a growing body of research suggests that savings decisions are also affected by a wide range of influences that play no role in a conventional neoclassical model.

Our study is related to a number of strands of the existing literature on savings behavior. One well-known set of papers studies the effect of tax deferred savings accounts on overall savings rates. Poterba, Venti, and Wise (1996, 1998) argue that tax deferred savings mechanisms like IRAs and 401(k) programs lead to an increase in savings, while Gale and Scholz (1994), Engen, Gale, and Scholz (1996), and Gale (1998) argue that the balances in these accounts are offset by reductions in other forms of household wealth. Our question is closely related, but we avoid some of the difficulties in this literature by focusing on the offset between savings flows that are treated equally by the tax system, and by using the same data source to measure pension contributions and supplemental savings.

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A second related body of research establishes that seemingly minor details about a defined contribution pension plan – such as the “default” arrangements for plan participation — can have relatively large effects on pension savings behavior (see Choi, Laibson, and Madrian, 2004, for a recent survey). In an influential study, Madrian and Shea (2001) found that a change in the default option governing 401(k) enrollment (from “not enrolled” to “enrolled”) led to a sharp increase in plan participation. Confirmatory evidence is presented by Choi, Laibson, Madrian and Metrick (2005) and Choi, Laibson, and Madrian (2004). Other studies have examined the effect of allowing employees freedom of choice in the allocation of pension contributions (Papke, 2004; Huberman, Iyengar, and Jiang, 2003), and the effect of default options in asset allocation choices (Beshears et al., 2007).

A third literature examines the quality or transparency of the information available to savers. Surveys suggest that many workers lack basic information on their public and private retirement benefits (Bernheim, 1994; Gustman and Steinmeier, 2001). Moreover, a number of recent studies have shown that people respond more strongly to transparent or easily accessible information (such as the posted pre-tax price of an item) than to “hidden” information (such as the tax-inclusive price). See Della Vigna (2007) for a review of the growing literature on “limited attention” biases. Recent examples are Chetty, Looney, and Kroft (2007) and Hossain and Morgan (2006), although these do not examine savings choices.

Since employee pension contributions appear as deductions on monthly payroll statements, whereas employer contributions do not, a concern in our setting is that people pay closer attention to their own pension contributions than to their employer’s, leading to differential impacts on supplementary savings. Unlike Social Security or defined benefit pension plans, TIAA/CREF sends regular quarterly statements showing recent premium payments (with separate entries for employer and employee premiums). In view of this, we believe that differential accessibility of information is unlikely to account for our findings.

Finally, our work builds directly on earlier studies of the influence of “mental accounting” on savings behavior. A basic premise of the mental accounting literature is that people assign different income sources to different “accounts”, and treat the balances in different accounts as imperfect substitutes (Thaler, 1999). Shefrin and Thaler (1992) use this framework to explain the excess sensitivity of consumption to temporary income shocks, while Thaler (1990) posits that a mental accounting process can explain why people do not reduce their savings dollar-for-dollar by the amount of their pension wealth.

PENSIONS AND OTHER RETIREMENT SAVINGS ACCOUNTS IN HIGHER EDUCATION

As in other sectors, there are two basic types of faculty retirement programs: defined benefit (DB) plans, which provide a pension benefit based on an employee’s age, years of service, and average salary; and defined contribution (DC) plans, which create a retirement fund owned by the employee. Typically, DC pensions are funded by payments from the employer and the employee into an asset fund like TIAA-CREF or Vanguard. Employees usually have some choice in how funds are invested, but cannot freely access the money until they retire or reach a minimum age.

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Our empirical analysis is based on a sample of faculty who participated in defined contribution plans managed by TIAA-CREF in the mid-1990s. Defined contribution pension plans differ widely across colleges and universities in the United States, but plans can be grouped into three broad categories. In the first, the institution makes a contribution to the plan on behalf of the employee, and the employee is not required to make any contribution. We refer to this as a “noncontributory” plan. A second type, patterned after the original template recommended by TIAA-CREF in 1916, requires that the employee make a contribution in addition to the employer contribution. (According to Greenough (1990), the original recommended funding formula was for both the employer and employee to contribute 5% of salary.) We label these as “contributory” plans. Contribution rates in both types of plans can vary by age or salary.

In a third type of pension arrangement the employer offers a minimum contribution rate together with a matching formula based on the voluntary contributions of employees. Although matching formulas are relatively common outside of academia (see, e.g., Choi, Laibson, and Madrian, 2005) they are less common in the post-secondary education sector. For example, among the 96 institutions in the Faculty Retirement Survey for which we are able to obtain pension plan characteristics, only 19 had some sort of matching formula for at least a fraction of employees. In our empirical analysis, we therefore focus on the savings behavior of faculty at institutions with either no employee contribution to the regular pension or a fixed employee contribution.

In addition to a primary pension program, most colleges and universities offer a supplemental program for tax-deferred savings, known as a Section 403(b) elective deferral plan, or in the case of TIAA-CREF, as a Supplemental Retirement Annuity (SRA). These plans permit an individual to set aside part of his or her current earnings and avoid Federal and (in most cases) state income taxes. Contributions to these plans are subject to a maximum annual contribution limit, set at approximately \$9,000 in the early 1990s.

Because of their favorable tax treatment and ready accessibility, SRA's are a convenient instrument for supplemental retirement savings by college and university professors, and arguably represent the preferred vehicle for the “first dollar” of supplemental savings by people who are allocating their primary pension contributions to TIAA-CREF.

FRAMING EFFECTS, MENTAL ACCOUNTING AND IMPERFECT INFORMATION

According to standard life-cycle models of savings, holding constant preferences and the lifecycle profile for income, supplemental savings are reduced dollar-for-dollar by the sum of total primary pension contributions made by the employer and the individual in period.¹

Although these models suggests that people should treat wages and employer pension contributions as fully fungible, a behavioral perspective suggests that people may treat them differently. In particular, suppose that people assign the employer's pension contributions to one mental account, and wages to another. Since employee pension

¹ For theoretical details, please see our companion paper, “Pension Plan Characteristics and Framing Effects in Employee Savings Behavior,” in the Research Dialogue Series.

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contributions and supplemental savings are both withdrawn from the “wages” account, supplemental savings will be offset dollar-for-dollar by the value of employee pension contributions. With imperfect fungibility across accounts, however, supplemental savings will be less sensitive to employer contributions.

For example, consider an individual under two hypothetical pension arrangements. In the first, he receives a salary of \$100,000 and an additional \$14,000 contribution to his pension account. In the second he receives a salary of \$107,000, and the university contributes \$7,000 to the pension account but also requires him to contribute \$7,000. In either of these positions, the individual receives \$100,000 in current compensation and \$14,000 in deferred compensation. Standard models suggest that the employee would have the same desired savings level and would thus make the same contribution to an SRA, regardless of the pension arrangement. On the other hand, a behavioral perspective might suggest that the individual would contribute less in the second case, because he is more sensitive to or aware of the contribution that he is required to make. In fact, this is what we find evidence for this in our analysis.

ESTIMATION RESULTS

We have access to data on primary pension contributions and supplemental savings in TIAA-CREF accounts for faculty over the age of 45 who are employed at a set of institutions in the Faculty Retirement Survey (Ashenfelter and Card, 2002) and observed in the years between 1986 and 1996. We observe an individual’s salary in year each year, and the pension plan parameters at his or her institution, enabling us to construct total compensation and the effective pension contribution rates for each person in each year. In addition, we observe any SRA contributions, and a set of individual characteristics (including age, gender, and academic department).

Given this information we estimate a Tobit censored regression model model for the observed SRA contribution rate. In this model we examine the effect on SRA savings that results from a change in the pension plan parameters.

If we constrain the effect of the individual’s contribution and the institution’s contribution to the primary plan to be equal we find that an additional dollar of pension contributions reduces desired supplemental savings by only about \$0.50 to \$0.60. However, when we allow the two sources to differ, we find rather different effects—an individual’s contribution of \$1 to their pension plan reduces desired supplemental saving by about 60 cents, while an additional \$1 contributed by the institution reduces desired supplemental savings by only about 20 to 25 cents. The difference is statistically significantly different from zero.

We estimate these effects in a variety of different models, adding controls such as type of institution, gender, race, field of study, and total compensation. We also estimate the model using a sample restricted to older professors only (those age 55 to 61). The labeling effect is quite robust and does not change substantially across different specification.

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DISCUSSION

The difference in these responses suggests that mental accounting (or differential inattention) leads to substantial differences in realized supplementary savings amounts across people with similar compensation streams but different pension formulas. To get a sense of the magnitudes involved, and the potential misallocation costs that arise when a larger fraction of pension contributions is made by the employer, we conducted a simple simulation, calibrated to reflect the characteristics of a typical member of our sample. Specifically, we consider an individual with perfect foresight who is employed between the ages of 30 and 65 and then retires and lives to 90. We assume that the individual's total annual compensation follows a traditional Mincerian profile, peaking at age 58, with an average value of \$73,000 between the ages of 45 and 65 (a little above the average for our estimation sample). We also assume the individual is entitled to Social Security benefits of \$16,800 per year (roughly the maximum level for new retirees in the early 1990s), and ignore taxes. We make fairly standard assumptions about time preference and interest rates and choose a common utility function.

To evaluate the misallocation costs of under-responding to the employer pension contribution, we compared two scenarios. In the first, an individual's pension plan has no employer contribution and a 12% employee contribution rate. We assume the individual fully recognizes his or her contribution in determining supplemental savings, leading to a fully optimal lifetime allocation of consumption. In the alternative scenario we assume that the pension plan has a 12% employer contribution and no employee contribution, and that the individual ignores one-half of the employer contribution in determining both the path of total saving until retirement and the offset effect of pension contributions on supplemental savings. Under this scenario the individual over-saves early in life, and then is surprised by the pension wealth he or she has accumulated at retirement.

To calculate the welfare loss arising from the misallocation of consumption under the mental accounting scenario, we chose different values of utility parameters and then found the reduction in total lifetime wealth that would make an optimized consumption plan equivalent to the mental accounting plan (in discounted utility units, as of age 30). Although the mental-accounting profile leads to higher savings and a 40% higher level of retirement income, the welfare loss from following this profile relative to a fully optimal profile is small—about 2 to 3 percent in our example. As noted by Chetty, Looney, and Kroft (2007), this reflects the fact that around an optimized profile, the cost of misallocating spending from one period to another is second-order.

In summary, we find that the supplementary savings decisions of older college and university faculty — a group with ready access to tax-advantaged savings plans — are affected by seemingly minor differences in how their regular pension plans are set up. We interpret these findings as further evidence that behavioral departures from a strict neoclassical choice framework can help to explain the observed variability in savings behavior and wealth outcomes. Despite the distortionary effects on supplementary savings, the impacts on lifetime utility are modest — equivalent to 2-3 percent of lifecycle wealth. The small cost of non-optimizing behavior may help explain why it appears to persist even among a highly educated group like college professors.

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