Why Do Individuals Choose Defined Contribution Plans? Evidence from Participants in a Large Public Plan

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Abstract: Using a unique survey of participants in a large public pension plan that provides participants with a choice between a defined contribution (DC) and a defined benefit (DB) retirement plan, we are able to study what types of individuals choose DC plans while holding all characteristics of the employer and the job fixed. We find sensible patterns with regard to economic and demographic factors: DC plan choice decreases with age, rises with the level of education, and is less frequent among groups (e.g., police officers) for whom there are additional financial benefits to the DB plan. Second, we find that the ability to control for beliefs, preferences, and financial skills nearly triples the amount of variation in plan choice that we are able to explain, relative to using standard economic and demographic variables alone. Especially important are respondent attitudes about risk/return trade-offs, self-assess investment skills, general and choice-specific financial literacy, and beliefs about plan parameters. Third, we note that beliefs about plan parameters are very important, even when these beliefs are factually incorrect. In general, people seem to making sensible choices based on what they believe to be true about the plans, but they do not always have accurate beliefs (and thus may not be making optimal decisions). Finally, we provide suggestive evidence that preferences over the attributes of the retirement system (e.g., the degree of control provided) and perceptions of political risk are also significant determinants of the DC/DB decision.

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1. **Introduction**

Perhaps the single most important trend in the retirement landscape in the United States over the past quarter century has been the shift away from traditional defined benefit (DB) pension plans and toward defined contribution (DC) pension plans. Numerous studies have explored the underlying determinants of this shift from both the employer and employee perspective. On the employer side, studies have suggested that this shift is driven by factors such as the shift from large manufacturing firms (which traditionally offered DBs) to the rise of service firms (which are more likely to offer DCs), the decline of unions, reduced administrative costs associated with DC plans, and the reduction in funding risk associated with DC plans relative to DB plans (e.g., Gustman and Steinmeier 1992, Ippolito 1995, Munnell and Sunden 2004). Other studies have underscored the importance of employee preferences in driving this shift: for example, according to Munnell and Sunden (2004), DC plans are attractive to employees because they enable employees to "gain control" of their retirement planning and increase the degree of portability of plans for mobile workers.

Although it is quite intuitive that the preference for DC versus DB pension plans would vary based on individual demographics, preferences, and beliefs, there is surprisingly little evidence on this point. One explanation for the paucity of data is that most employers do not provide workers with a choice between DC and DB and, thus, the only way most individuals can make such a choice is to choose their employer on this basis. However, the choice of employer is a multi-dimensional choice over many job and employer characteristics, and it is likely that many of these other characteristics swamp the pension decision in importance for individuals on the verge of making an employment decision. As such, efforts to empirically examine DC/DB plan choice are hampered by the difficulty in finding a clean choice setting.

In the public sector, however, the ability to choose between a DC and a DB plan upon employment is much more common, especially in higher education. As we will discuss in more detail below, half of all states provide a subset of public sector employees with a DC versus DB choice at the start of employment. This creates an interesting "laboratory" in which we can observe who choses DC over DB while holding all other employment characteristics constant.

We make use of micro survey data for one such plan, the State Universities Retirement System (SURS) of Illinois. Since the late 1990s, every person entering employment in public higher education in Illinois is given a one-time, irrevocable choice between participating in a DB or a DC plan. There are at least three features of the SURS plan that make it an attractive environment in which to learn more about the DC versus DB plan choice. First, SURS participants represent a broad cross-section of the population. Unlike many states that offer choice only to certain classes of employees, the SURS system covers all individuals in higher education, including a broad range of occupations (ranging from faculty to secretaries to maintenance workers to police and fire personnel) and a range of employers (ranging from a prestigious public research university to regional state institutions to community colleges).[1] Second, the DC/DB choice offered to SURS participants is a very consequential decision, ensuring that individuals take this choice seriously. Employment covered by SURS is not covered by Social Security, and thus the SURS system is designed to substitute for both Social Security and an employer-provided pension. This, and the fact that the combined employer / employee contribution to SURS is substantial (a minimum of 14.6% of salary) means that this is a high-stakes decision for anyone planning to be in the system for more than a very short period

[1] Clark et al (2006) analyze the DB/DC plan choice of new entrants in the University of North Carolina system, but their study is restricted to faculty and they have only administrative records.

of time. Third, the SURS administrative staff has been enormously supportive of academic research, and allowed our research team to field a survey of SURS participants.

Prior research analyzing administrative data from SURS found that the employees who choose the DC plan (known as the "Self-Managed Plan") were disproportionately younger, with academic appointments (as opposed to staff appointments), and had higher earnings (Brown & Weisbenner 2007). However, it is not possible from administrative data to provide empirical evidence on the underlying motivations for this choice. In order to understand why people choose DC plans, we fielded a detailed survey of SURS participants in summer 2007. This survey, which will be described in more detail below, allows us to probe participants for detailed information about a wide range of issues, including their understanding of plan parameters, preferences over financial decisions, financial literacy, and much more.

We analyze the DB versus DC decision of nearly 5,000 responses, and this analysis yields several novel findings. First, we find sensible patterns with regard to economic and demographic factors: DC plan choice decreases with age, rises with the level of education, and is less frequent among groups for whom there are additional financial benefits to the DB plan. Second, we find that the ability to control for beliefs, preferences, and financial skills nearly triples the amount of variation in plan choice that we are able to explain, relative to using standard economic and demographic variables alone. Especially important are respondent attitudes about risk/return trade-offs, self-assess investment skills, general and choice-specific financial literacy, and beliefs about plan parameters. Specifically, as measured by R-squared, economic and demographic characteristics such as gender, marital status, presence of children, education, income, net worth, occupation, and (self-reported) health can explain only 10 percent of the overall variation in the DB versus DC plan choice (R-squared = 0.099). When we expand

our regression to include information about beliefs, preferences, and abilities, the R-squared rises to 0.28. We can explain nearly half of the overall variation (R-squared = 0.47) if we also include a handful of additional preference parameters that are less exogenous – such as how much individuals value control over their investments, concerns about political risk, and expectations about future returns. Third, we note that beliefs about plan parameters are important, even when these beliefs are incorrect. In general, people seem to making sensible choices based on what they believe to be true about the plans, but they do not always have accurate beliefs (and thus may not be making optimal decisions). Finally, we provide suggestive evidence that preferences over the attributes of the retirement system (e.g., the degree of control provided) and perceptions of political risk are also significant determinants of the DC/DB decision.

This paper proceeds as follows. In section 2, we discuss the availability of DC versus DB choices in public plans across the U.S. In section 3, we provide more detailed information about the choice setting confronting participants in Illinois SURS. In section 4, we discuss our survey procedures and methods. We present our empirical results in section 5, and provide further discussion and conclusions in section 6.

2. How Common is DB/DC Plan Choice in the Public Sector?

In the private sector, it is uncommon to allow participants to have a choice between a DC and a DB plan. Although many employers sponsor both DC and DB plans, they are generally not structured so as to allow choice: instead, the plans are designed to cover different employees, or the DC is designed as a (sometimes mandatory, sometimes voluntary) supplement to the DB.

In contrast, an explicit DC or DB choice is fairly common in the public sector, especially in higher education. Many states have a core public DB plan, but then offer an "alternative" or

"optional" DC plan as a substitute into which individuals can voluntarily opt to participate instead of the DB plan. Although we are unaware of any single data source that provides a definitive list of DB versus DC plan choice among public plans in the U.S., we believe we have compiled a reasonably comprehensive list of plans though a variety of channels. First, for non-higher-education employees, we rely on the work of Clark and Hanson (2011), who reviewed 105 of the largest public retirement plans for general state employees and public school employees in each of the 50 states. Although they were interested in a different set of research questions, Table 2 from their paper provides the following break-down of plans that offer choice.

Choice between DB and DC		Choice between DC or Combination Plan		Choice between DB or DC or Combination Plan	
CO	PERA	UT	PERS-Tier 2	OH	PERS
FL	FRS	WA	PERS	OH	STRS
MT	PERS	WA	TRS		
ND	PERS				
SC	SCRS				

The Clark and Hanson data does not cover higher education plans, except for those in which the higher education employees are part of another plan (such as Ohio STRS). To examine this sector – where plan choice is more common – we began with a list of state plans that provide choice that was compiled by the government affairs office of a large financial services institution. We then independently verified the presence or absence of a DC versus DB plan choice by going to the websites of the state plan and/or the benefits website of a range of institutions in the state. As a general rule, we found that it was relatively straightforward to document those states that offer a choice, as presence of such a choice was often prominent in the materials provided to new employees. In contrast, it is more difficult to definitely document the absence of such a choice.

Based on this analysis, our best estimate is that approximately half of all states offer at least a subset of higher education employees a choice between a DB and a DC system. States for which we have been able to independently confirm that at least some higher education employees have the ability to choose between a DB and DC plan include:

Alaska	Arizona	Arkansas	Connecticut	Florida
Georgia	Illinois	Iowa	Kentucky	Louisiana
Maryland	Massachusetts	Michigan	Mississippi	Montana
New Mexico	New York	North Carolina	Ohio	Pennsylvania
South Carolina	Tennessee	Texas	Virginia	Wyoming

It is impractical to accurately estimate the overall number of employees faced with this choice nationwide, for several reasons. First, not every higher education institution within each state participates in the same plan. For example, in Kentucky, the largest public universities (e.g., University of Kentucky, University of Louisville), do not offer a choice, whereas most of the regional universities (e.g., Western Kentucky, Kentucky State) do offer a choice. Second, even at some universities that offer choice, the choice is not always available to all employees. For example, classified civil service employees in the Louisiana State system have no choice but to participate in the Louisiana State Employee's Retirement System (LASERS), a DB plan, whereas full-time faculty members in the LSU system are offered a choice between the Teacher's Retirement System of Louisiana (TRSL) and an optional DC plan. Third, even in states that provide choice to all higher education employees, the availability of choice is new enough that not all current employees were eligible to choose at the time they joined the system. For example, although the State Universities Retirement System (SURS) of Illinois has existed for approximately 70 years, the option to choose a DC plan was only introduced in 1998.

Despite these limitations in constructing aggregate data, our analysis of the plan documents reveals several interesting facts. First, for those plans that offer choice, the vast

majority require that the choice is permanent and irrevocable. There are a few plans that allow a one-time option to switch plans (for an analysis of this option in Florida, see Lachance et al 2003, and Milevsky and Promislow 2004), but this is the exception rather than the rule. Second, most plans that offer such a choice use the traditional DB plan as the default option for those that do not elect the DC plan within a specified time period. Third, there is meaningful variation in the time period allowed to make such a choice, ranging from one to six months.

The primary motivation of this paper is to use the Illinois SURS system as an opportunity to learn about DC versus DB preferences in a setting that, by private sector standards, is unique – namely, a setting in which individuals have an explicit DC versus DB choice that holds fixed all other job characteristics. Given that this choice is reasonably common in the public sector, our findings from the Illinois SURS system will also be of direct interest to many of these other public plans.

3. Background on the SURS Pension Options[2]

The State Universities Retirement System (SURS) of Illinois is the retirement program for all employees of the Illinois state university and community college system. Established in 1941, SURS "serves over 70 employers in Illinois, including state universities, community colleges, and state agencies … and provides benefit services to over 180,000 members throughout the world" (SURS website). Employees include university, college or campus administrators, faculty members, administrative and clerical staff, individuals in the employ of university police, and others. Social Security taxes are not withheld from SURS earnings, and SURS participants are not eligible for Social Security coverage based on their employment with

[2] This background section draws heavily from prior work using administrative data from SURS (Brown and Weisbenner 2007). A more detailed description of the SURS plan options can be found there.

a SURS covered employer.[3] SURS withholds 8 percent of salary as an employee contribution to SURS. The "normal cost" to the state of providing these benefits varies by plan.

Historically, all employees in the SURS system were covered by a traditional defined benefit (DB) system. In 1997, the Illinois Legislature passed a law allowing participating employers to offer individuals a choice of three plans, and virtually all SURS covered employers began offering this choice by 1999. The DB plan, known as the "Traditional Benefits Package," serves as the default option for individuals who do not make an active plan designation within 6 months of the date that SURS receives certification of their employment. Participants contribute 8 percent of pay, and this entitles them to a retirement benefit, cost-of-living adjustments after retirement, and survivor benefits. Because all SURS-covered workers are employees of the State of Illinois, the employer contribution to SURS is a general State obligation. At the time our survey was conducted in 2007, the employer normal cost for the various benefits and expenses associated with the DB plans (both the Traditional and the Portable, which will be explained below) were approximately 10.8 percent of payroll.[4]

Benefits from the traditional plan are paid as life annuities, and are calculated as the higher of two formulas for calculating the retirement annuity.[5] The first formula, known as the "General Formula," specifies that those retiring at age 60 receive a benefit that is equal to 2.2% x Years of Service x Final Average Earnings.[6] The second formula, known as the "Money Purchase Formula," is generally equal to 6.5% of the employee's salary plus a 140% match by the State of Illinois plus interest accumulated at a rate set by the SURS Board all divided by a

[3] Participants hired after March 1986 are subject to withholding for Medicare.
[4] Based on personal communication with SURS, August 7, 2006.
[5] A third option, known as the minimum annuity formula, is so rarely used that it is largely obsolete.
[6] For non-disabled individuals with less than 30 years of service, there is an early retirement actuarial reduction of 0.5% for each month under age 60. For retirement after August 2, 2002, retirement at any age – without reduction – is permitted if a member has 30 or more years of service.

unisex annuity factor.[7] In recent years, the majority of retirees have received the highest level of benefits under the money purchase formula. The only additional restriction is that, regardless of method, benefits in retirement cannot exceed 80 percent of final average pay (and some individuals have lower maximum pensions based on their termination date).[8]

The Traditional DB plan is not a very generous plan for those who leave the system early and take a refund. Regardless of length of service, participants in the Traditional Benefit package who take a refund from the system upon terminating employment will receive their own contributions (equal to 8 percent of salary) plus a 4.5% interest rate. No employer/State contributions are refunded, even after the individual is vested. Many individuals who leave the system early would be better off leaving their contributions in the SURS system and claiming a benefit based on the money purchase formula.

A second version of the DB plan, known as the "Portable Benefits Package," is available to those who want a DB plan with a better separation package. Under Portable DB, if the person leaves the system early and takes a refund of their contributions, they have historically received a rate of interest that is substantially higher than the 4.5% provided by the Traditional plan. Indeed, this Effective Interest Rate has averaged over 8% for the 20 years leading up to the date of our survey.[9] If an individual has at least 5 years of service, and is thus vested, he/she also receives a full dollar-for-dollar match from the State. In return for receiving a more generous refund option, the Portable DB plan is less generous than the Traditional DB for those that retire

[7] Both these approaches to calculating the benefit have numerous additional complexities that we do not expand on here in the interest of space. For example, there are special rules governing a supplemental minimum annuity guarantee, reversionary annuities to provide a spouse or dependent with higher income than the usual survivor benefits, and an additional formula that applies only to police officers and firefighters.

[8] Benefits are automatically increased by 3 percent every January 1. There are also survivor benefits both before and after retirement. In particular, the benefit that comes out of these calculations is automatically paid as a joint and 50% contingent survivor annuity. If a single individual retires under the Traditional plan, then in addition to receiving the calculated monthly benefit, he is entitled to a refund of 1/8 of his contributions plus interest.

[9] Since 7/1/05, the State Comptroller sets the ERI for the Money Purchase option when calculating retirement benefit. The SURS Board continues to set the ERI for refund calculations. Since 7/1/06, these rates have diverged.

from the system. In particular, for participants in the Traditional plan, the monthly benefit amount is paid as a joint and survivor annuity (single individuals, instead, can take 1/8 of their lifetime contributions plus interest as a lump-sum at retirement in lieu of the survivor benefits). In contrast, under the Portable DB, the retirement benefit is a paid as a single life annuity, and married individuals must accept an actuarial reduction to receive survivor benefits.

As an alternative to the Traditional or Portable DB plan, SURS participants also have the option to choose a DC plan. This DC option is known as the "Self-Managed Plan," or SMP. This is a participant-directed defined contribution plan that invests a total of 14.6% of salary (8% employee and at least 6.6% employer[10]) into an individual account managed by Fidelity or TIAA-CREF (or both, if the individual wishes to divide their assets across the two options). After 5 years of service, an individual who separates from SURS employment is entitled to a 100% refund of both employer and employee contributions plus any investment gains or losses. Upon retirement, the individual is able to choose from a wide range of annuities (e.g., joint and survivor with 50%, 75%, or 100% survivor benefits, and the option of 10, 15, and 20 year period certain guarantees) or a lump-sum.[11]

As discussed in our previous paper (Brown and Weisbenner 2007), the educational material provided by SURS at the time of our study guided new participants through the plan choice by focusing on the distinction between DB and DC plans. Those that go down the DB path are then presented with a choice between the Traditional and Portable plan. The focus of this paper is on the first branch of this decision tree – namely, whether to take a DC or a DB plan.

[10] The 6.6% rate has been the rate applied since the program's inception. Technically, this rate could rise slightly if SURS decides that the cost of providing disability benefits to SMP participants is less than 1%. It cannot rise beyond 7.6%, and indeed is unlikely to rise anywhere near this level due to the cost of paying disability benefits.
[11] In both the Portable plan and the SMP, an individual must annuitize their account balance if they wish to be eligible for retiree health care benefits.

4. Survey Procedures and Data

4.1 Survey Methods

In cooperation with administrators at SURS and the University of Illinois Survey Research Lab, we fielded a web-based survey of SURS participants during the summer of 2007. We limited the survey to SURS participants who joined the SURS system after 1998 in order to ensure that the participants were making their SURS pension plan choice as new employees. Approximately 26,000 SURS participants who met our selection criteria and for whom SURS had a valid email address were sent an email in late July, 2007 inviting them to participate in the survey. Those who chose to participate clicked on a link that directed them to an online questionnaire. Individuals who did not respond to the initial invitation received two subsequent invitations, with each invitation arriving approximately 2 weeks after the prior one. Several months later, we sent out a series of three additional reminders, again two weeks apart, to those who had not yet responded. In total, we received approximately 5,000 responses (4,951), for a response rate of nearly 20%. DC plan participants are over-represented in our survey because SURS is missing email addresses for many of the participants who defaulted into the DB plan. However, our survey population is reasonably representative of those who were sent the survey (i.e., those for which SURS had a valid email address).

The survey covered a wide range of topics related to SURS, including questions about the individual's occupation, expected tenure under SURS, knowledge of SURS provisions, relative importance of various factors in making a decision (e.g., risk, control, etc.), knowledge and attitudes about investing, beliefs about risk and returns, confidence in various financial and political institutions, risk preferences, and basic demographics. In addition, the Survey Research Lab provided us with a dataset that merged these survey responses with SURS administrative

data, so that we know the individual's actual (as well as self-reported) pension choice, employer, and so forth.[12]

4.2 Summary Statistics

Table 1 reports summary statistics for our sample. Our main variable of interest is whether or not an individual chose the DC plan or a DB plan: indeed, our dependent variable in our specifications will be an indicator variable for whether the individual chose the DC plan (i.e., the Self-Managed Plan). In our sample, 27.3 percent of individuals participate in the DC plan.

In our analysis below, we will group our control variables into three broad categories. First, we will control for a broad range of standard demographic and economic variables. We will refer to these variables, such as gender, marital status, income, and so forth, as our "core demographic and economic variables." Second, we will control for expected job tenure, risk/return preferences, financial literacy and investment skills, and plan knowledge. We will then report a third specification that also includes expectations about future returns, political risk, and the relative importance of plan attributes (e.g., the importance of having control.) We separate this third group because this set of measures, while of strong interest, is less "clean" from an identification perspective. Specifically, when it comes to return expectations, political risk and plan attributes, we worry that respondents may answer the questions in a manner that *ex post* helps to rationalize their DC versus DB plan choice (e.g., those that chose the DC plan may be more likely to state a high expected return on equities). Thus, we provide specifications both with and without these controls in order to ensure that our other findings are robust.

4.2.1 Core Demographic and Economic Variables

[12] Consistent with IRB protocols and the requirements of SURS, all data was stripped of any information that could be used to identify individual participants. This included providing categorical data rather than continuous data for items such as earnings, age, etc.

Approximately 3 out of 5 respondents is female, and just over 70 percent are married. The mean (median) age of respondents is 38 (37) years. Not surprisingly, given the population of participants, this is a highly educated group: 19% of respondents have a Ph.D., 41% have a Master's or professional degree, and another 23% have a Bachelor's degree. Of the remaining 17%, most have some college or an associate's degree. About 17% of respondents have at least one college degree in business, accounting, economics or finance, and 29% of the sample reports have some work experience in these areas. About one-third of respondents are members of the faculty, with a majority of these being non-tenure track. Academic professionals make up another 30% of respondents, followed by support staff (23%), "other" (14%), and only a small number of executives (2%).

The distribution of income from the SURS-covered job is quite disperse, with 20% of the sample earning less than $20k per year, 27% earning $20k – 40k, 28% earning between $40k – 60k, 13% earning $60k-80k, 5% earning $80k-100k, and 6% earning $100k or more. We also control for the fraction of total household income that comes from a SURS-covered position, and it is also quite disperse: in 23% of households, income from SURS-covered employment accounts for less than a quarter of household income, whereas for a third of the sample it accounts for more than three-quarters of all income. Household net worth also varies greatly. About a quarter of the sample reports a net worth of less than $50,000, whereas another quarter reports a net worth in excess of $250,000.

When asked to compare their health to individuals of similar age, our sample reports a high level of health: only 2% report their health as being poor or below average, and only 20% being average. Fully 45% of the sample report health being good and another 33% excellent.

About 12% of respondents have some "reciprocal service" with another public pension (such as TRS for teachers or SERS for non-higher-education public employees). Due to the reciprocal service arrangement, this individuals will have an incentive to choose the DB plan in order to combine their years of service (the other public pensions in Illinois do not have a DC option). Less than 1% of the sample is comprised of police officers, but this is a relevant control because police and fire have some special provisions that make the DB more attractive. Only 3% of the sample can purchase extra years of service (valuable in calculation of DB-plan benefits). It is also worth noting that although SURS-covered employment is not eligible for Social Security, 44% of SURS employees expect to have at least 20 years of other employment (e.g., from a prior job, or a concurrent job) that is covered by Social Security.

4.2.2 Expected job tenure, risk preferences, financial literacy and skills, and plan knowledge

We asked respondents a wide range of questions about their beliefs, preferences, and their understanding of plan parameters. These key variables are also summarized in Table 1. When asked about the likelihood of staying in the SURS plan for at least 10 years, 41% of the sample rated this as below average likelihood, and 34% as above average (i.e., very or extremely likely). This is a highly relevant parameter because the DB plan is more attractive the longer one stays with the system (as is often the case with DB plans, which tend to have steep benefit accruals later in one's career). When asked the standard "risk versus return" question (which has been used in the Survey of Consumer Finances for many years), we found that 29% of the sample were willing to take higher than average risk to earn higher than average returns, 62% of the sample preferred to take average risk to achieve average returns, and only 8% reported being comfortable taking only below average risks. As another measure of risk aversion, we also

asked a question similar to the Health and Retirement Survey risk aversion question about one's willingness to take a gamble in which there is a risk of doubling one's salary or seeing it reduced by a third. Overall, about half the sample is unwilling to accept the gamble, about 28% is willing to take the gamble, and about 21% of the sample checked "don't know" (which we control for in our regressions via an indicator variable).

We also have substantial dispersion with regard to proxies for investment knowledge. With regard to self-assed investment skills relative to others, about 38% rate themselves as average, 29% below average, and 32% above average. We also assessed their ability to compute compound interest (a variable that is commonly used as a proxy for financial literacy), and found that 57% of the sample was able to accurately compute the value of $200 invested at 10% for two years with annual compounding (i.e., answered $242): this is a much higher level of financial literacy than is found in the general population.

In addition to general financial sophistication, we also tested for task-specific knowledge. About two-thirds of respondents accurately report that the employee contributions to SURS is between 6-10% (the exact answer is 8%), and about three-quarters of respondents are aware that Social Security contributions are not withheld from their SURS earnings. We also asked questions to assess their understanding of SURS plan rules. For example, for each of the plans (Traditional DB, Portable DB, and SMP) we asked whether an individual – if they were to leave SURS after 3 years and withdraw their pension from SURS – would be eligible to keep no contributions, employee contributions only, or both employee and employer contributions (because SURS vesting occurs after 5 years, the correct answer after 3 years of service is that they would be able to keep employee contributions only, and this is true under all the plans). We also asked the same after 10 years of service: at this point, an individual who departs the system

and wishes to withdraw their pension is entitled to employee and employer contributions under the SMP and Portable DB, but still only employee contributions under the Traditional DB. Finally, we also ask a question about the relative size of the employer matching contribution available to those who refund from the system under each of the three plans after 10 years of service (the size of the annual employer contribution that can be refunded to participants is 8% for Portable DB, 6.6% for the DC, and 0% for the Traditional DB). By comparing a respondents' answers for each of the three plans, we can then construct a variable indicating whether they believe one plan is better than the others (for example, if they stated that the SMP allowed you to keep both employer and employee contributions, while also stating that the other plans only allow you to keep employee contributions or no contributions). We find that about 16% of the sample believes that one plan clearly dominates the other two after three years (an incorrect belief because all only refund employee contributions). About 10% of the sample believes one plan dominates at the 10 year mark by our definition, when the reality is that the SMP and Portable DB are the same. With regard to which plan provides the largest matching contribution after 10 years, we find that 18% believe the SMP is most generous and 17% believe the Traditional DB is most generous, both of which are incorrect. One quarter correctly believe the Portable DB provides the largest employer match.

4.2.3 Return expectations, political risk and the importance of plan attributes

A third set of variables pertain to issues that we believe are relevant to the DC versus DC plan choice, but for which we recognize the possibility of *ex post* rationalization bias in responses. Given this, we report regressions both with and without these variables. Summary statistics for these variables are contained on the second page of Table 1.

The first set of questions in this section ask respondents to provide their subjective assessment of what average returns in the stock market, money market funds, and the SURS "effective rate of interest" will be over the next 20 years. In each case, a large fraction of the sample is unable to provide an answer (a fact that we will control for). Among those who answer, the median (mean) stock return expectation is 10% (10.2%), the median (mean) money market return is 5% (7.4%), and the mean and median SURS ERI is 8% (8.5%).

We assess the importance of political risk (i.e., the risk of future benefit changes) by asking individuals to rate their confidence in various institutions, including the Illinois state legislature, which is responsible for funding (or, more accurately, failing to fund) the DB pensions.[13] Consistent with concerns about funding, we find that 72% of respondents have a below average level of confidence in the Illinois legislature (i.e., are not at all or only slightly confident). Interestingly, most respondents are able to distinguish between SURS staff (which manage the pension system and its assets) and the legislature (which sets the rules and is responsible for funding), as only 20% of respondents have a below average confidence in SURS (and 39% being very or extremely confident in SURS). Individuals participating in Illinois' SURS are, on average, equally pessimistic about the U.S. Social Security system, with 71% of respondents having no or only slight confidence in that system. In contrast, respondents' confidence in banks is much higher, with only 10% having a low level of confidence.

Finally, we asked individuals how important various attributes of a plan were to them. Not surprisingly, 78% of respondents believe that having a safe retirement is very or extremely important and only 7% saying it was not important. 43% of respondents rated as very or extremely important the idea that they would prefer to have an expert manage their money for

[13] Shoven and Slavov (2006) discuss the notion of political risk in the context of public pension funding for the case of the U.S. Social Security system.

them, whereas 25% viewed this as of no or slight importance. 39% rated as very or extremely important that they be able to have control over their pension investments, 66% felt the same way about tracking their pension plan balance, and 33% put that high level of importance on being able to invest their pension in stocks.

5. Empirical Results: Why Do Individuals Choose DC over DB?

As noted above, we create a binary indicator binary variable "Are you in the Self-Managed Plan (the DC plan)?," that takes on the value 0 if no and 100 if yes. To simplify the presentation, we run a linear probability model (although we have also run probit models, and have evaluated the marginal effects evaluated at the mean and found similar effects). Since the indicator dependent variable is 0 or 100, the coefficients on the explanatory variables are expressed in percentage points.

Table 2 reports the results of the regression that includes only the core set of demographic and economic variables. As noted in the introduction, this set of variables can explain only about 10% of the overall variation in the dependent variable (R-squared = 0.099). Although the overall explanatory power is limited, a number of individual variables are highly significant. Single women are 4-5 percentage points less likely to choose the DC plan relative to married women (the omitted category) as well as relative to men. The difference between single women and men could reflect differential risk preferences (women have been shown in other studies to be more risk averse than men), or it could reflect that the DB annuity is more valuable to women due to their longer life expectancies. Interestingly, however, differences between married women, married men, and single men are small and insignificant. Whether the respondent has children (a crude proxy for bequest motives) has no effect.

Age is a strong predictor of DC plan choice: each year older reduces the probability of choosing the DC option by four-tenths of one percent. All else equal, this suggests that a 30-year old is 7.6 percentage points more likely to choose the DC plan than a 50 year old. Such a pattern is sensible, given that the relative benefit accrual patterns of DB and DC plans (specifically, the fact that DB benefit accruals tend to be more steeply rising at older ages, and are thus more advantageous for older workers).

Education is strongly predictive of DC plan choice: relative to individuals without a Bachelor's degree (the omitted category), college graduates, those with Masters degrees, and those with Ph.D.s are 5 percentage points, 10 percentage points, and 18 percentage points more likely, respectively, to choose the DC plan option. Interestingly, whether or not one has at least one degree in a business related field, and whether or not one has financial experience in their jobs, are not significantly correlated with plan choice. The respondents' job type (e.g., professor versus staff versus academic professional, etc.) is not correlated with plan choice after one controls for level of education.

Most of the coefficients on income are individually insignificant, with the exception being that those making over $100,000 per year are nearly 7 percentage points more likely to choose the DC plan. The share of income that comes from SURS and net worth indicators are all individually insignificant (the indicators for net worth are marginally significantly under a joint test).

Perhaps not surprisingly, individuals who own mutual funds or stocks outside of SURS are 8% (mutual funds) and 5% (stocks) more likely to choose the DC plan. Individuals who own life insurance policies are less likely to choose the DC plan: this may be proxying for risk aversion. Self-reported health is insignificant.

The three variables that are included to indicate those that have an extra incentive to stay with the DB plan come in significant and with the expected sign: those with reciprocal service in another state DB plan are 5 percentage points less likely to choose the DC plan, police officers are 16 percentage points less likely to choose DC, and those who are able to purchase additional years of service are 13 percentage points less likely to choose DC.

In Table 3, we augment our specification with controls for expected job tenure, risk preferences, financial literacy and skills, and plan knowledge. As noted above, the explanatory power of this regression increases nearly three-fold in comparison with the basic specification in Table 2. In general, most of the coefficients that were significant in Table 2 remain so, although the size of some of the effects is partially attenuated. A few exceptions are that after controlling for the new set of covariates, married and single men are now *less* likely to choose the DC than are married women, and that owning stocks or mutual funds outside of the SURS plan is no longer a sizeable and significant predictor of picking the Self-Managed Plan.

Five findings jump out from the controls for beliefs and preferences. Expectations about job tenure, self-reported risk preferences, self-assessed investment skills, financial literacy, and (possibly incorrect) beliefs about plan parameters are all important determinants of DC plan choice.

Consistent with the observation that the DB plans are a better deal for individuals who plan to work for a SURS-covered employer for a long time, those who have a high level of confidence that they will work for SURS for at least ten years are more than 3 percentage points less likely to choose the DC plan. However, this is one of the few coefficients for which the functional form matters: whereas this is significant in the linear probability model, it is not significant in the probit model.

Risk preferences are clearly important. Relative to those who state that they are comfortable taking average risks for average returns (the omitted category), those individuals that are comfortable taking above average risks for above average returns are nearly 18 percentage points more likely to choose the DC plan. Those who are especially risk averse, i.e., are comfortable taking below average risks for below average returns, are nearly 7 percentage points less likely to choose the DC option. The difference in these two coefficients – just under a 25 percentage point difference in the propensity of taking the DC plan – is on par with the 27% baseline DC rate in our sample.

Even after conditioning on risk preferences, self-assessed investment skills are also quite important. Those who rate themselves above average are more than 6 percentage points more likely to choose the DC plan, whereas those who rate themselves below average are nearly 6 percentage points less likely to choose the DC plan, relative to those who rate themselves as average.

Both general and choice-specific financial literacy are important. Our measure of general financial literacy is the respondent's ability to accurately compute compound interest ($200 invested for 2 years at 10% compounded annually). Those able to answer this question correctly (i.e., typed $242 in a text box) are 3 percentage points more likely to choose the DC plan. As a measure of plan-specific literacy, we find that individuals who are able to state (with a +/- 2 percentage point band of the correct answer of 8%) the fraction of employee pay that is contributed to the SURS plan are 4 percentage points more likely to choose the DC plan.

Beliefs about relative plan generosity are important, even when these beliefs are inaccurate. For each of the three plans (traditional DB, portable DB, and DC) we ask the respondent about plan rules regarding separation refunds. Specifically, we ask whether when

someone leaves the SURS system after 3 years of service and wants a refund, and again at 10 years of service, whether they will be permitted to keep no contributions, only employee contributions, or both employee and employer contributions. As noted above, we then construct a series of variables based on these responses that indicates whether the individual's combined responses suggest that they believe the traditional DB plan is more generous, the portable DB plan is most generous, or the SMP plan (i.e., the DC plan) is most generous.

We do not find statistically significant effects for the perceived generosity after 3 years. At the 10-year horizon, however, we find large effects. Those who believe the SMP/DC plan rules provide a more generous refund formula than the DB plans are 16 percentage points more likely to choose the DC plan, whereas those who believe one of the DB plans are more generous are about 7 percentage points less likely to choose the DC plan. Importantly, these responses are all based on incorrect beliefs – in reality, only those individuals who did not indicate a clear "winner" are correct as both the SMP and Portable DB allow both employee and employer contributions to be refunded after 10 years. Relatedly, we also asked respondents which of the three plans provided the largest employer match when they separate from the system and request a refund. Those believing the DC plan was most generous are 19 percentage points more likely to choose the DC, even though this belief is incorrect. Those believing the Traditional DB plan had the highest match were 16 percentage points less likely to choose the DC, even though this belief is incorrect. The correct answer – that the Portable plan offered the highest percentage match – leads to an 18 percentage point reduction in the probability of choosing the DC plan.

These results suggest that people make important choices based on a flawed understanding of plan parameters. Interestingly, they make sensible choices conditional on the

information they believe to be true: the problem is that the information that some of them believe to be true is, in fact, incorrect.

In Table 4, we add a final set of covariates concerning beliefs and preferences that we believe are important, but which are more likely subject to the possible bias by *ex post* rationalization of one's decision. In the interest of space, we only report the coefficients for these new belief and preference variables in Table 4 (all of the controls from Table 3 are included in the Table 4 regression as well).

First, we ask about expected annual returns over the next 20 years on stocks, money market funds, and the SURS "effective rate of interest" (the interest rate that SURS applies to money purchase account balances). Interestingly, those who do not even provide an answer to the question about stock return expectations (i.e., do not provide a number and do not even select "Don't Know") are 10 percentage points less likely to choose the SMP plan, possibly reflecting the propensity that those not familiar with stock market investing choose the DB plan. Analogously, those who are unable to give any response to the effective rate of interest question are more likely to choose the SMP plan (i.e., do not provide a number and do not even select "Don't Know").[14] Among those that do answer, those expecting a higher ERI from SURS are less likely to choose the SMP. Of course, all of these responses could reflect reverse causality –

[14] For some of the questions, a very small number of respondents would simply skip the question and provide no response. For example, 39 out of the 4951 survey respondents did not provide their educational attainment and 44 did not provide their current occupation. To account for this, we created appropriate indicator variables for such non-response, so that these observations would not be dropped from the regression. We include all of these non-response indicator variables in our regressions, but in the interest of space, do not report the non-response coefficients. Regarding the question concerning stock return expectations, of the 4951 total survey respondents, 3,205 provided a number, 1,374 selected "Don't Know" and 374 providing no response at all. As reported in the text, the 374 that skipped the stock-return expectation question are 10 percentage points less likely to pick the SMP (statistically significant at the 5-percent level). Regarding the "effective rate of interest" (ERI) expectation question, 2,445 respondents provided a number, 2,066 selected "Don't Know", and 440 provided no response at all. The 440 that skipped the ERI expectation question are 7 percentage points more likely to pick the SMP (statistically significant at the 5-percent level). There was only one other variable for which non-response was significantly correlated with the decision to pick the SMP – the 44 people that provided no response to the personal risk-return preference question were 11 percentage points less likely to pick the SMP plan.

participants in a defined contribution plan such as the SMP are more likely to follow the market and form expectations about stock returns, whereas those in the DB plans are more likely to follow how SURS sets the effective rate of interest. Thus, we hesitate to draw causal inferences from these correlations.

We also ask a series of questions about the respondent's degree of confidence in various institutions, including the Illinois legislature (that is responsible for funding the DB plans), the SURS system itself, the U.S. Social Security system, and banks. We find that individuals who are very or extremely confident in the Illinois legislature are about 5 percentage points less likely to choose the DC plan (i.e., more likely to choose a DB option). Similarly, those that have no or only slight confidence in private financial institutions (banks) are 5 percentage points less likely to choose the DC plan. After controlling for confidence in the Illinois state legislature, confidence (or lack thereof) in U.S. Social Security is unrelated to an individual's choice of a DC or DB plan in Illinois' SURS.

Finally, we ask respondents about the importance of various attributes of a retirement plan, including the desire for safety, expertise, control, the ability to track investments, and the desire to have stock exposure. Those who rate safety as an attribute of above average importance are 7 percentage points less likely to choose the DC option. There is also a very large effect related to the importance of leaving the decision to experts: the difference between those who rate this as above average importance versus those rating it as below average importance is about 17 percentage points.

Similarly, the importance of "control" is very high: those who rate it as very important are 20 (26) percentage points more likely to choose the DC plan than those who rate it as being of average (below average) importance. Finally, and not surprisingly, those who rate the ability

to invest in stocks highly are 17 (21) percentage points more likely to choose the DC plan than those who believe this attribute is of average (below average) importance.

6. Discussion and Conclusions

The dramatic shift from DB to DC plans has arguably been the single most important change in the retirement landscape in the U.S. over the past three decades. Although there has been much discussion of the relative pros and cons of DB and DC plans for participants, we actually have surprisingly little empirical evidence on the heterogeneous preferences regarding these two very different types of retirement plans. This paper helps to fill that void by providing evidence on a wide range of factors that are correlated with the DC versus DB decision in an environment where individuals are able to choose their pension type while holding all other job characteristics fixed.

The evidence suggests several conclusions. First, individual characteristics are correlated with DC/DB plan choice in sensible ways – younger workers, more highly educated, more financially literate, and less risk-averse individuals are more likely to choose DC plans. Second, our evidence supports the importance of providing participants with accurate information about plan options: we find that people respond sensibly to their beliefs about plan parameters (e.g., choosing the plan they view as being more generous) *even when their beliefs are objectively mistaken*. Third, our research shows the importance of preferences and beliefs that are not easily observable in the absence of detailed survey information: indeed, our ability to explain the variation in the DC/DB plan choice increases dramatically when we are able to account for beliefs, preferences and expectations.

From a policy perspective, our results are highly relevant. Numerous states are suffering from severe funding shortfalls in their public pension plans (Novy-Marx and Rauh 2009), and this has led to increasing interest in reforming public DB plans. Often, reform proposals include a role for a DC system as a partial or complete substitute for a legacy DB plan. A key finding of this analysis is that there is substantial heterogeneity among public sector employees in the extent to which they prefer DB versus DC plans, and that much of this heterogeneity is not easily observable from information available in administrative records.

References

Brown, Jeffrey R and Scott J. Weisbenner. 2007. "Who Chooses Defined Contribution Plans?" NBER Working Paper No. 12842.

Clark, Robert, Linda Ghent, and Ann McDermed, "Pension Plan Choice Among University Faculty," *Southern Economic Journal*, January 2006, pp. 560-577.

Clark, Robert and Emma Hanson. 2011. "Distribution Options in State Pension Plans." North Carolina State University working paper.

Gustman, Alan and Thomas Steinmeier. 1992. "The Stampede toward Defined Contribution Pension Plans: Fact or Fiction?" *Industrial Relations* 31(2): 361-69.

Ippolito, Richard. 1995. "Toward Explaining the Growth of Defined Contribution Plans." *Industrial Relations.* 34(1): 1-19.

Lachance, Marie-Eve, Olivia S. Mitchell, and Kent Smetters. 2003. "Guaranteeing Defined Contribution Pensions: The Option to Buy Back a Defined Benefit Promise." *Journal of Risk and Insurance.* 70(1): 1-16.

Milevsky, Moshe A., and S. David Promislow. 2004. "Florida's Pension Election: From DB to DC and Back." *Journal of Risk and Insurance.* 71(3): 381-404.

Munnell, Alicia H. and Annika Sunden. 2004. Coming Up Short: The Challenge of 401(k) Plans. Washington, DC: Brookings Institution Press.

Novy-Marx, Robert and Joshua D. Rauh. 2009. "The Liabilities and Risks of State-Sponsored Pension Plans." *The Journal of Economic Perspectives*, Vol. 23, No. 4 (Fall, 2009), pp. 191-210.

Shoven, John B. and Sita N. Slavov. 2006. "Political Risk Versus Market Risk in Social Security." NBER Working Paper No. 12135. (April).

Table 1: Summary Statistics – Averages of Variables (continues on next page)

PENSION CHOICE			
Pick Self-Managed Plan (i.e., the DC plan)?	27.3%		
DEMOGRAPHICS & ECONOMICS		**DEMOGRAPHICS & ECONOMICS (cont)**	
Female and Married?	39.8%	Ranking of health relative to others	
Female and Single?	19.9%	Very poor or poor	2.0%
Male and Married?	31.3%	Average	20.2%
Male and Single?	9.1%	Good	45.0%
Age (when joined SURS, in years) – mean	38	Excellent	32.8%
Have children?	63.4%	Reciprocal service (DB option is attractive)?	11.5%
Education		Police (DB option is attractive)?	0.6%
Less than Bachelor's degree	17.0%	Extra service (DB option is attractive)?	2.6%
Bachelor's degree	23.3%	Paid Social Security for at least 20 years?	43.6%
Master's or professional degree	40.5%	**BELIEF OF HOW LONG STAY IN SURS**	
Ph.D.	19.2%	Expected to stay at least 10 yrs. when joined	
College degree in finance or business?	16.8%	Not at all or slightly likely	41.1%
Work experience in finance?	28.8%	Moderately likely	25.0%
Occupation		Very or extremely likely	33.9%
Support Staff (secretary)	22.7%	**RISK PREFERENCE & INVEST SKILL**	
Executive	1.7%	Risk-Return Tradeoff Preference	
Academic professional	29.6%	Above average risk and return	29.4%
Faculty (tenured)	2.1%	Average risk and return	62.3%
Faculty (tenure-track, not tenured)	9.1%	Below average risk and return	8.3%
Faculty (non-tenure track)	21.0%	Take Gamble (50/50, 100% ↑ or 33% ↓)?	
Other	13.8%	No	50.7%
SURS-covered job income		Yes	28.0%
Less than $20,000	20.4%	Don't know	21.3%
$20,000 to $39,999	28.0%	Self-assessment of investment skill	
$40,000 to $59,999	27.7%	Much or slightly worse than others	29.2%
$60,000 to $79,999	12.7%	Same as others	38.4%
$80,000 to $99,999	5.0%	Slightly or much better than others	32.4%
$100,000 or more	6.2%	**FINANCIAL LITERACY**	
Share of family income in SURS-covered job		Can calculate compound interest over 2 years?	56.5%
0-24%	22.8%	**BASIC SURS PENSION LITERACY**	
25-49%	19.8%	Know contribute 6-10% of salary to plan?	65.5%
50-74%	20.7%	Know do not pay Social Security tax?	73.7%
75-100%	36.8%	**BELIEVE SMP IS BEST IN:**	
Household net worth		3-year lump-sum withdraw rule	6.6%
Less than $20,000	14.7%	10-year lump-sum withdraw rule	3.1%
$20,000 to $49,999	13.7%	Employer contrib. when withdraw in 10 yrs.	17.7%
$50,000 to $99,999	19.7%	**BELIEVE TRADITIONAL IS BEST IN:**	
$100,000 to $249,999	24.8%	3-year lump-sum withdraw rule	3.0%
$250,000 to $499,999	13.1%	10-year lump-sum withdraw rule	2.2%
$500,000 or more	14.1%	Employer contrib. when withdraw in 10 yrs.	16.5%
Own mutual funds outside of SURS plan?	53.3%	**BELIEVE PORTABLE PLAN IS BEST IN:**	
Own stocks outside of SURS plan?	31.1%	3-year lump-sum withdraw rule	7.1%
Have life insurance (excluding from work)?	54.2%	10-year lump-sum withdraw rule	3.9%
Have supplemental disability insurance?	25.2%	Employer contrib. when withdraw in 10 yrs.	26.0%

Table 1: Summary Statistics – Averages of Variables (continued)

ASSET RETURN EXPECTATIONS		**IMPT. FACTORS IN PENSION CHOICE**	
Stock returns over next 20 years – mean	10.2%	Having a safe and secure pension benefit	
Don't Know Expectation	30.0%	Not at all or slightly important	6.6%
Money market returns over next 20 yrs. – mean	7.4%	Moderately important	15.6%
Don't Know Expectation	30.4%	Very or extremely important	77.9%
SURS ERI over next 20 years – mean	8.5%	Being able to leave invest decisions to experts	
Don't Know Expectation	45.8%	Not at all or slightly important	25.3%
CONFIDENCE IN INSTITUTIONS		Moderately important	31.6%
Illinois State Legislature		Very or extremely important	43.1%
Not at all or slightly confident	72.1%	Having personal control over investments	
Moderately confident	22.6%	Not at all or slightly important	32.9
Very or extremely confident	5.4%	Moderately important	27.8
SURS		Very or extremely important	39.3
Not at all or slightly confident	19.9%	Being able to easily keep track of plan balance	
Moderately confident	41.3%	Not at all or slightly important	12.0
Very or extremely confident	38.8%	Moderately important	22.2
U.S. Social Security		Very or extremely important	65.8
Not at all or slightly confident	71.3%	Being able to invest part of pension in stocks	
Moderately confident	20.5%	Not at all or slightly important	39.5
Very or extremely confident	8.1%	Moderately important	27.4
Banks and similar financial institutions		Very or extremely important	33.2
Not at all or slightly confident	9.6%		
Moderately confident	39.2%		
Very or extremely confident	51.3%	*Sample Size*	*4,951*

Table 2: Linear Regression of Whether Select Self-Managed Plan (the DC plan)

DEMOGRAPHIC & ECONOMIC EXPLANATORY VARIABLES:			
Female and Single?	-4.4** (1.9)	Share of family income in SURS-covered job	
Male and Married?	-0.3 (1.6)	25-49%	2.0 (2.3)
Male and Single?	0.4 (2.5)	50-74%	-0.1 (2.4)
Age (when joined SURS, in years)	-0.38*** (0.07)	75-100%	1.2 (2.3)
Have children?	0.4 (1.5)	Household net worth *(p-value for joint test of net worth controls = 0.09*)*	
Education		$20,000 to $49,999	-2.4 (2.4)
Bachelor's degree	4.6** (1.9)	$50,000 to $99,999	-3.1 (2.3)
Master's or professional degree	10.1*** (2.1)	$100,000 to $249,999	-0.5 (2.4)
Ph.D.	17.8*** (2.6)	$250,000 to $499,999	-2.9 (2.8)
College degree in finance or business?	0.3 (2.0)	$500,000 or more	3.9 (3.1)
Work experience in finance?	1.2 (1.6)	Own mutual funds outside of SURS plan?	8.3*** (1.4)
Occupation		Own stocks outside of SURS plan?	4.7*** (1.5)
Executive	-4.9 (5.8)	Have life insurance (excluding from work)?	-2.3* (1.3)
Academic professional	-2.1 (2.1)	Have supplemental disability insurance?	0.8 (1.5)
Faculty (tenured)	2.4 (4.9)	Ranking of health relative to others	
Faculty (tenure-track, not tenured)	4.4 (3.1)	Average	2.2 (4.2)
Faculty (non-tenure track)	0.2 (2.3)	Good	2.3 (4.1)
Other	-1.5 (2.0)	Excellent	3.6 (4.2)
SURS-covered job income *(p-value for joint test of income controls = 0.06*)*		Reciprocal service (DB option is attractive)?	-5.1*** (1.8)
$20,000 to $39,999	-3.1 (2.2)	Police (DB option is attractive)?	-16.2*** (3.7)
$40,000 to $59,999	0.8 (2.4)	Extra service (DB option is attractive)?	-12.6*** (3.2)
$60,000 to $79,999	2.2 (2.9)	Paid Social Security for at least 20 years?	0.2 (1.6)
$80,000 to $99,999	1.2 (3.7)	***YEAR EFFECTS***	***YES***
$100,000 or more	6.9* (4.0)	*R-squared*	*0.099*
		Sample Size	*4,951*

The specification is a linear probability model (OLS) in which the binary dependent variable, "Are you in the Self-Managed Plan?," takes on the value 0 if no and 100 if yes. Thus, the coefficients on the explanatory variables are expressed in percentage points.
Standard errors, shown in parentheses, allow for heteroskedasticity.
***, **, * indicates significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 3: Linear Regression of Whether Select Self-Managed Plan (the DC Plan), Adding Controls for Beliefs, Preferences, Financial Skills, & Plan Knowledge (continues on next page)

Panel A: Demographic and Economic Controls			
Female and Single?	-3.6** (1.7)	Share of family income in SURS-covered job	
Male and Married?	-3.7** (1.5)	25-49%	1.5 (2.1)
Male and Single?	-5.2** (2.3)	50-74%	-1.4 (2.2)
Age (when joined SURS, in years)	-0.27*** (0.07)	75-100%	1.3 (2.1)
Have children?	0.6 (1.4)	Household net worth *(p-value for joint test of net worth controls = 0.30)*	
Education		$20,000 to $49,999	-2.0 (2.1)
Bachelor's degree	2.9 (1.8)	$50,000 to $99,999	-2.3 (2.0)
Master's or professional degree	7.0*** (2.0)	$100,000 to $249,999	-2.6 (2.1)
Ph.D.	14.5*** (2.4)	$250,000 to $499,999	-5.4** (2.5)
College degree in finance or business?	-1.7 (1.8)	$500,000 or more	-0.6 (2.8)
Work experience in finance?	-2.9** (1.5)	Own mutual funds outside of SURS plan?	1.5 (1.3)
Occupation		Own stocks outside of SURS plan?	0.7 (1.4)
Executive	-4.9 (5.0)	Have life insurance (excluding from work)?	-2.7** (1.2)
Academic professional	-1.6 (1.9)	Have supplemental disability insurance?	-0.2 (1.3)
Faculty (tenured)	2.9 (4.6)	Ranking of health relative to others	
Faculty (tenure-track, not tenured)	2.4 (2.8)	Average	1.9 (4.0)
Faculty (non-tenure track)	1.5 (2.1)	Good	1.1 (3.9)
Other	-0.7 (1.8)	Excellent	1.9 (3.9)
SURS-covered job income *(p-value for joint test of income controls = 0.45)*		Reciprocal service (DB option is attractive)?	-4.1** (1.7)
$20,000 to $39,999	-1.3 (2.1)	Police (DB option is attractive)?	-16.3*** (4.3)
$40,000 to $59,999	0.1 (2.2)	Extra service (DB option is attractive)?	-9.9*** (2.9)
$60,000 to $79,999	1.2 (2.7)	Paid Social Security for at least 20 years?	2.4* (1.4)
$80,000 to $99,999	-0.7 (3.5)		
$100,000 or more	5.3 (3.5)		

Table 3: Linear Regression of Whether Select Self-Managed Plan (the DC Plan), Adding Controls for Beliefs, Preferences, Financial Skills, & Plan Knowledge (continued)

Panel B: Controls for Beliefs, Preferences, Financial Skills, and Plan Knowledge			
BELIEF OF HOW LONG STAY IN SURS		**BASIC SURS PENSION LITERACY**	
Expected to stay at least 10 yrs. when joined		Know contribute 6-10% of salary to plan?	4.3*** (1.2)
Not at all or slightly likely	0.4 (1.6)	Know do not pay Social Security tax?	1.6 (1.3)
Very or extremely likely	-3.3** (1.6)	**BELIEVE SMP (DC PLAN) IS BEST IN:**	-0.7 (3.5)
RISK PREFERENCE & INVEST SKILL		3-year lump-sum withdraw rule	-2.8 (2.7)
Risk-Return Tradeoff Preference		10-year lump-sum withdraw rule	15.9*** (3.8)
Above average risk and return	17.7*** (1.5)	Employer contrib. when withdraw in 10 yrs.	18.8*** (1.9)
Below average risk and return	-6.7*** (1.6)	**BELIEVE TRADITIONAL DB PLAN IS BEST IN:**	
Take Gamble (50/50, 100% ↑ or 33% ↓)?		3-year lump-sum withdraw rule	-4.2 (2.7)
Yes	-0.0 (1.4)	10-year lump-sum withdraw rule	-7.2** (3.0)
Don't know	2.1 (1.5)	Employer contrib. when withdraw in 10 yrs.	-16.2*** (1.5)
Self-assessment of investment skill		**BELIEVE PORTABLE DB PLAN IS BEST IN:**	
Much or slightly worse than others	-5.9*** (1.3)	3-year lump-sum withdraw rule	-0.4 (2.4)
Slightly or much better than others	6.5*** (1.5)	10-year lump-sum withdraw rule	-7.5*** (2.6)
FINANCIAL LITERACY		Employer contrib. when withdraw in 10 yrs.	-18.2*** (1.4)
Can calculate compound interest over 2 years?	3.3*** (1.2)	***YEAR EFFECTS***	***YES***
		R-squared	*0.276*
		Sample Size	*4,951*

The specification is a linear probability model (OLS) in which the binary dependent variable, "Are you in the Self-Managed Plan?," takes on the value 0 if no and 100 if yes. Thus, the coefficients on the explanatory variables are expressed in percentage points.
Standard errors, shown in parentheses, allow for heteroskedasticity.

***, **, * indicates significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 4: Linear Regression of Whether Select Self-Managed Plan (the DC Plan), Adding Further Controls for Beliefs and Preferences

COEFFICIENTS ON ADDITIONAL CONTROLS FOR BELIEFS & PREFERENCES (all prior controls from Table 3 included in this regression, coefficients not reported)			
ASSET RETURN EXPECTATIONS (in %)		**IMPT. FACTORS IN PENSION CHOICE**	
Stock returns over next 20 years (zero if answered "Don't Know")	0.09 (0.14)	Having a safe and secure pension benefit	
Don't Know Expectation	-3.6 (2.8)	Not at all or slightly important	-3.6 (2.3)
Money market returns over next 20 years (zero if answered "Don't Know")	-0.10 (0.14)	Very or extremely important	-7.1*** (1.5)
Don't Know Expectation	-0.1 (2.7)	Being able to leave invest decisions to experts	
SURS ERI over next 20 years (zero if answered "Don't Know")	-0.66** (0.14)	Not at all or slightly important	12.0*** (1.6)
Don't Know Expectation	0.5 (1.8)	Very or extremely important	-5.2*** (1.2)
CONFIDENCE IN INSTITUTIONS		Having personal control over investments	
Illinois State Legislature		Not at all or slightly important	-6.3*** (1.2)
Not at all or slightly confident	0.7 (1.3)	Very or extremely important	20.1*** (1.5)
Very or extremely confident	-5.1** (2.4)	Being able to easily keep track of plan balance	
SURS		Not at all or slightly important	0.6 (1.7)
Not at all or slightly confident	-1.2 (1.4)	Very or extremely important	-1.9 (1.2)
Very or extremely confident	-0.8 (1.1)	Being able to invest part of pension in stocks	
U.S. Social Security		Not at all or slightly important	-4.8*** (1.3)
Not at all or slightly confident	1.6 (1.3)	Very or extremely important	16.5*** (1.6)
Very or extremely confident	-0.1 (2.0)	***DEMOGRAPHIC & ECONOMIC CONTROLS FROM TABLE 3 INCLUDED***	***YES***
Banks and similar financial institutions		***BELIEFS, PREFERENCES, & FINANCIAL SKILLS FROM TABLE 3 INCLUDED***	***YES***
Not at all or slightly confident	-5.4*** (1.8)	***YEAR EFFECTS***	***YES***
Very or extremely confident	-2.0* (1.1)	*R-squared*	*0.470*
		Sample Size	*4,951*

The specification is a linear probability model (OLS) in which the binary dependent variable, "Are you in the Self-Managed Plan?," takes on the value 0 if no and 100 if yes. Thus, the coefficients on the explanatory variables are expressed in percentage points.
Standard errors, shown in parentheses, allow for heteroskedasticity.

***, **, * indicates significance at the 1 percent, 5 percent, and 10 percent levels, respectively.