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Decision-making approaches and the propensity to default: Evidence and implications



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ABSTRACT

This paper examines heterogeneity in the responsiveness to default options in a large state retirement plan, focusing on individuals' decision-making approaches as well as their economic and demographic characteristics. Analyses of a survey of plan participants show that procrastination and the need for cognitive closure are important determinants of the likelihood of default. This paper also explores an important implication of defaulting—individuals who default are significantly more likely to subsequently express a desire to enroll in a different plan. The desire to change plans is also correlated with numerous economic and decision-making characteristics, including procrastination.

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1. Introduction

One of the most influential contributions of behavioral economics to business practice and public policy over the past decade has been to demonstrate the substantial power of default options in influencing human behavior. Nowhere is this influence more apparent than in the area of retirement plan design and policy. Compelling evidence that changing the default option dramatically increases participation and savings in 401(k) plans (e.g., Madrian and Shea, 2001; Choi, Laibson, Madrian, and Metrick, 2002, 2004)

prompted the U.S. government in the 2006 Pension Protection Act to provide safe harbor provisions for firms offering automatic enrollment in defined contribution retirement plans. In recent years, there has been a dramatic increase in the use of automatic enrollment, automatic escalation of contributions, and automatic portfolio allocation and rebalancing both in the U.S. and abroad. For example, the Plan Sponsor Council of America's (2012) 55th Annual Survey finds that 46% of surveyed defined contribution plans have an automatic enrollment feature in 2011, while Munnell and Sundén (2004) report that 7% of plan sponsors offered automatic enrollment in 1999. There have also been calls to extend the logic of defaults to the post-retirement payout phase of retirement plans by encouraging automatic annuitization (Gale, Iwry, John, and Walker, 2008).

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Although countless studies show profound effects of defaults on behavior, there is still limited understanding of why defaults have such large effects overall, and, equally importantly, why there is heterogeneity in the responsiveness to defaults. This paper provides an empirical analysis of the determinants of a default decision in a large public plan that offers an irrevocable choice among three retirement plans: a traditional defined benefit plan, a portable defined benefit plan, and a defined contribution plan. In addition to examining the full range of economic and demographic factors, analyses also shed light on the role of several relevant individual decision-making approaches identified in the judgment and decision-making literature. These include approaches in the presence of decision conflict, or uncertainty about which course of action to take (Mann, Burnett, Radford, and Ford, 1997); indecision (Frost and Shows, 1993); the propensity to regret (Schwartz, Ward, Monterosso, Lyubomirsky, White, and Lehman, 2002), and the need for cognitive closure, or the desire to come to an answer (Roets and Van Hiel, 2011). Measures of economic, demographic, and decision-approach factors that affect defaults are captured using a broad survey conducted among participants in the State Universities Retirement System (SURS) of Illinois. In all, over 6000 public university employees in the State of Illinois responded to the survey during the fall of 2012.

We first study whether individuals made an active retirement plan choice or defaulted into the traditional defined benefit plan (individuals are defaulted six months after joining the system unless they make an active election prior to that date). Approximately 27% of survey respondents defaulted whereas the remainder actively chose among the three plans. Numerous demographic and economic variables influence the propensity to default. For example, higher income and higher net worth individuals are significantly less likely to default, as are women, those with higher self-assessed investment skills, those with greater knowledge of the retirement system, and a higher education level.

With regard to decision-making approaches, results show that a tendency toward procrastination is significantly positively correlated with the likelihood of default. Numerous authors have speculated that procrastination is a plausible reason for default, although this has not been shown empirically.¹ This finding is quite intuitive: those with a tendency to procrastinate are less likely to make an active decision before the default deadline. It is also consistent with a body of economic theory that portrays procrastination as an outcome of present-biased preferences (Akerlof, 1991; O'Donoghue and Rabin, 1999). In this view, people with present-biased preferences tend to systematically overweight the cost of making a decision today, a tendency that manifests itself as procrastination.

Results also show that individuals with a strong need for cognitive closure are less likely to default. Kruglanski (1990, p. 337) defines need for closure as a desire for “an

answer on a given topic, any answer...compared to confusion and ambiguity.” A need for closure is therefore a natural factor to explore that can potentially mitigate default behavior.

Having established that individual decision-making approaches are correlated with the likelihood of default, we then turn to understanding how individuals evaluate the suitability of their retirement plan *ex post*. In addition to providing some insight into the individual welfare implications, this analysis is also useful for ruling out the possibility that procrastinators might accept the default because they believe it is the best option. For example, self-aware procrastinators might decide that the Traditional Plan is best for them because it requires less active oversight or because it removes the temptation to cash out the plan upon retirement. Survey respondents were asked, “If you could go back in time and re-do your original pension choice (assuming the rules when you joined SURS are still in place), which plan would you choose?”, and also rated the strength of their desire to choose a different plan. Results show that respondents who defaulted into the Traditional Plan are 21% less likely to want to select the same plan if given a chance to re-do their choice. This result is true even relative to those who actively chose the same plan into which others were defaulted, suggesting that it is the default behavior rather than the plan itself that is driving the desire to switch to a different plan. In addition, the proportion of those who would “strongly desire” to switch plans is significantly greater among defaulters than among active choosers.

We relate the desire to change plans to the same set of economic, demographic, and decision-making characteristics studied above. Results again show that procrastination is important: individuals who procrastinated their way into the default are significantly more likely to desire to be in a different plan, which argues against the alternative hypothesis that procrastinators default into the Traditional Plan because they believe it is the best option for them. Respondents who are buck-passers—those that are content to leave decisions to others—are significantly less likely to express a desire to switch plans.

These results are relevant for public policy, given the broad use of default options in public and private retirement plans. In particular, the findings that procrastination leads to defaults and that procrastinators are more likely to subsequently express a desire to be in a different plan are important for assessing the welfare consequences of defaults. The use of defaults is often portrayed as a Pareto improvement because a well-designed default can guide individuals into making potentially welfare-improving decisions while still providing the freedom to choose. But if individuals end up dissatisfied with the results of the default, especially in settings like ours in that the default is irreversible, then defaults may not be Pareto improving. Other authors (e.g., Carroll, Choi, Laibson, Madrian, and Metrick, 2009; Carlin, Gervais, and Manso, 2013) note that various characteristics of the choice setting will help determine whether automatic enrollment defaults are preferable to or inferior to other options, such as forced choice or voluntary choice (i.e., when enrollment requires an active choice).

¹ Brown and Previtro (2015) do not study default behavior, but do present evidence consistent with procrastinators being more likely to stick with the default portfolio allocation.

For example, research shows that poorly designed defaults can reduce welfare if employees fail to later adjust away from the defaults to suit their needs (Choi, Laibson, Madrian, and Metrick, 2002, 2004, 2006; Beshears, Choi, Laibson, and Madrian, 2008, 2010) and that optimal defaults can vary depending upon participant characteristics (Carroll, Choi, Laibson, Madrian, and Metrick, 2009; Carlin, Gervais, and Manso, 2013; Goda and Manchester, 2013). Our results add to this list and suggest that reliance on defaults can lead to dissatisfaction with the outcome. Because our setting is one with particularly high stakes and is irreversible, the magnitude of our findings should not be generalized to all settings in which defaults might be used. Nonetheless, our results suggest caution against over-relying on defaults when there is a high-stakes, irreversible choice in a population for which there is heterogeneity in the optimal choice.

This paper proceeds as follows. Section 2 summarizes prior literature on defaults, and Section 3 briefly describes prior literature related to individual judgment and decision-making approaches in complex settings. Section 4 provides background on the SURS retirement system, and Section 5 includes details of our survey design. Section 6 presents results of analyses of factors associated with the likelihood of default and with the desire to subsequently make a different choice. Section 7 includes a summary and conclusion.

2. Prior literature on defaults

The earliest work on defaults in the retirement space showed that changing the 401(k) enrollment procedure to one in which a participant must actively opt out of a plan rather than actively opt in dramatically increases plan participation (Madrian and Shea, 2001). Additional research shows that changing the default savings rate and default investment allocations exerts a powerful influence on savings plan outcomes (Choi, Laibson, Madrian, and Metrick, 2002, 2004). This early work, as well as industry experience, propelled policy conversations that led to the U.S. government paving the way for more widespread use of automatic enrollment in defined contribution retirement plans via the 2006 Pension Protection Act (PPA). The PPA and subsequent regulatory actions have also encouraged the widespread use of “Qualified Default Investment Alternatives” (QDIAs) as default portfolio allocations, as well as the use of automatic escalation of contributions. Many financial services firms also now offer automatic rebalancing of portfolios. There have also been policy proposals to enact automatic annuitization as a default distribution strategy after retirement (Gale, Iwry, John, and Walker, 2008; Brown, 2009).

The idea that governments and organizations can influence behavior through the use of defaults and other forms of non-binding approaches is often referred to in academic and popular literature as “soft paternalism” or “libertarian paternalism” (Sunstein and Thaler, 2003; Thaler and Sunstein, 2003, 2008). Some proponents of libertarian paternalism suggest that careful design of policies and defaults can do more to increase welfare than can providing information to increase individuals’ knowledge about their

choices (Sunstein and Thaler, 2003; Benartzi and Thaler, 2007). While retirement plan design has been a very visible and important application of this concept, the effect of defaults on individual choice is recognized in other domains as well, including email marketing (Johnson, Bellman, and Lohse, 2002), health care (Halpern, Ubel, and Asch, 2007), health club memberships (DellaVigna and Malmendier, 2006), insurance (Johnson, Hershey, Meszaros, and Kunreuther, 1993), and organ donation (Johnson and Goldstein, 2003; Abadie and Gay, 2006).

While libertarian paternalism is often portrayed as an ideological “win-win” by guiding behavior while preserving individual choice, literature has begun to raise potentially negative consequences. For example, Glaeser (2006) points out that there is a danger of leading individuals to suboptimal outcomes because those who design policies and choose default options likely bring their own incentives and biases to that task.² Some studies show that poorly designed defaults, such as those with low default savings rates or excessively conservative asset allocations, can reduce welfare if employees fail to later adjust away from the defaults to suit their needs (Choi, Laibson, Madrian, and Metrick, 2002, 2004, 2006; Beshears, Choi, Laibson, and Madrian, 2008). At another extreme, Beshears, Choi, Laibson, and Madrian (2010) examine a setting in which the default savings rate for a defined contribution retirement plan is extremely high, and find that the rate is suboptimal for all employees.

Other research has explored conditions under which defaults are more or less likely to improve social welfare. Carroll, Choi, Laibson, Madrian, and Metrick (2009) contrast forced active choice, automatic enrollment defaults, and non-automatic enrollment defaults in savings plans and find that forced choice is optimal when participants could procrastinate or have heterogeneous preferences, while automatic enrollment is optimal when participants are financially illiterate. Similarly, Carlin, Gervais, and Manso (2013) model conditions under which providing default options for financial decisions could be optimal; they find that even well-thought-out defaults can be detrimental to welfare when participants have heterogeneous attributes (and less is known about them) and when the economic stakes of the decision are large. Goda and Manchester (2013) examine the welfare effects of age-based defaults and find that varying the default option by age groups can result in welfare gains relative to a single default for all age groups.

Although prior literature provides insights into when defaults may or may not be optimal, the empirical evidence regarding who defaults and why is more limited.

² Glaeser (2006) also discusses a number of other criticisms and negative consequences of over-reliance on libertarian paternalism as a guide to policy, including: (i) soft paternalism can pave the way towards stricter forms of paternalism that reduce welfare by reducing individual choice; (ii) soft paternalism may rely on stigmatizing behaviors, which can then lead to negative consequences for those who choose to engage in those behaviors; (iii) relative to governments and organizations that design paternalistic policies, individuals face stronger incentives to make choices that improve their own welfare; and, (iv) paternalism often relies on persuasion and governments and organizations have an incentive to abuse persuasion-based systems to enhance their own power.

Beshears, Choi, Laibson, and Madrian (2008) propose three reasons that individuals may default, including the complexity of the decision, the belief that the default is a signal or endorsement of the best choice, or that procrastinators never get around to making a decision. Understanding why people default is crucial for evaluating the welfare consequences of relying on defaults as opposed to other interventions.

This paper begins to address the empirical gap by exploring economic, demographic, and individual decision-making determinants of default behavior in a high-stakes setting. Although our setting does not allow us to examine the welfare effects of default, it does allow us to shed light on this question by examining individuals' post-decision subjective satisfaction with the plan in which they are enrolled. This subjective satisfaction is also important for employers who design defaults. After all, employers have an incentive to ensure that the significant sums they spend to provide retirement benefits are valued by employees at least as much as a comparable sum spent on wages (Gustman, Mitchell, and Steinmeier, 1994; Gustman and Steinmeier, 2005).

3. Prior research on decision-making approaches

Standard economic models of rational consumers assume that individuals make decisions by maximizing expected utility. Indeed, even with the insights of behavioral economics, most economic models of decision-making are still based upon an assumption of optimization, albeit occasionally with non-standard preferences (e.g., loss aversion or hyperbolic discounting). One of the reasons that economists have found default behavior interesting is that it is difficult to reconcile the powerful effect of default options with standard economic models.

There is growing acceptance in economics that not all individuals approach decision-making in the same manner, and thus their decisions themselves can diverge from an economics-based definition of optimality. For example, Choi, Kariv, Müller, and Silverman (2014) conducted an experiment to test the quality of decisions as measured by their consistency with Generalized Axioms of Revealed Preference (GARP) and find evidence of substantial heterogeneity in decision quality. Lusardi and Mitchell (2014) summarize a large literature that shows substantial heterogeneity in financial literacy and its implications for retirement well-being (among other outcomes).

A long history of research shows that, when faced with complex decisions, individuals frequently adopt simplifying decision strategies (Wood, 1986; Campbell, 1988; Payne, Bettman, and Johnson, 1993; Sethi-Iyengar, Huberman, and Jiang, 2004; Benartzi and Thaler, 2007; Bonner, 2008). For example, an individual could only consider a subset of information, and the information chosen may not necessarily reflect the relevance of the information to the choice. Individuals could also speed up information processing in response to time pressure, which can introduce error into the choice process. Alternately, they could adopt a simpler processing strategy, which at the extreme can be avoiding choice all together by accepting a default (Payne, Bettman, and Johnson, 1993; Sethi-Iyengar, Huberman, and Jiang,

2004; Benartzi and Thaler, 2007; Beshears, Choi, Laibson, and Madrian, 2008).

In drawing on this rich judgment and decision-making literature, our research focuses on what has been called “decision-coping,” of which our discussion below draws directly from Mann, Burnett, Radford, and Ford (1997). Particularly relevant is prior literature on decision conflict, which assumes that “stress engendered by decisional conflict is a major determinant of failure to achieve high quality decision making” (Mann, Burnett, Radford, and Ford, 1997, p. 2). In brief, when faced with a difficult decision, not all individuals respond in the same way. A subset will respond in a manner that would be consistent with economic models of optimizing behavior, i.e., by collecting and analyzing relevant information and choosing the outcome that maximizes utility. However, other individuals will ignore information and continue the present course of action; some will adopt whichever course is most strongly recommended; some will procrastinate or shift responsibility for the choice; and some will “impulsively seize upon hastily contrived solutions that seem to promise immediate relief” (Mann, Burnett, Radford, and Ford, 1997, p. 2).

As described more fully in Section 5, the survey includes questions that capture decision approaches identified in prior literature that are likely to manifest in our decision context—a complex, high-stakes, and irrevocable financial choice. Because procrastination is hypothesized to be a possible cause of defaults in the prior literature (Beshears, Choi, Laibson, and Madrian, 2008), a priori this is an important characteristic to measure. The survey includes the procrastination scale from the Melbourne Decision-Making Questionnaire, which is extensively used and validated in prior literature. This questionnaire is designed to capture approaches individuals can adopt when facing complex and often high-stakes decisions within a limited time period, which is characteristic of our plan-choice setting. Along with procrastination, the Melbourne Questionnaire measures three other approaches to coping with decision conflict: vigilance, hypervigilance, and buck-passing. As such, survey measures capture the various decision-making approaches a respondent uses rather than just procrastination alone.

A review of prior literature on decision-making suggests three other general decision-making tendencies that are highly relevant to the default setting (and our analysis of whether defaulters subsequently wish to switch plans). First, a tendency to regret decisions could be particularly important for a high-stakes, irrevocable decision such as that studied in our paper. This measure also allows us to disentangle whether a desire to switch plans stems from a general tendency to regret rather than a procrastination approach to decisions. Second, a measure of indecisiveness provides a means to disentangle whether defaulting stems from a general tendency to waiver about decisions or a tendency to put off making them in the first place. Third, a measure of the need for cognitive closure, defined as “a desire for an answer on a given topic, any answer...compared to confusion and ambiguity” (Kruglanski, 1990, p. 337), provides a means to disentangle whether those who actively choose plans did so because they relied on more systematic information processing (as captured by, for

example, a vigilance approach) rather than the desire to simply make a choice to tie up loose ends.

Finally, based on the work of [Brown and Previtero \(2015\)](#), we include a question to capture how busy respondents believed themselves to be. This helps distinguish procrastination arising from present-biased preferences from simply missing the deadline due to other priorities.

4. Background on the SURS retirement system

Our decision context is the State Universities Retirement System (SURS) for the state of Illinois.³ Employees in the system have a one-time irrevocable choice among three different retirement plans that have very different features (described below). Individuals who fail to make a choice within six months of joining the system are defaulted into a defined benefit (DB) plan and have no subsequent opportunities to alter that choice. Given that SURS-covered employment is not covered by Social Security, the retirement plan provided by SURS is meant to replace both Social Security and an employer pension. As such, in addition to being very complex, this decision is enormously consequential.

As background, SURS covers over 200,000 current and former employees of over 65 Illinois universities, community colleges, and state agencies. Participants include university and college administrators, faculty members, clerical and support staff, campus police, and others. SURS withholds 8% of a participant's salary as a contribution to his/her retirement plan. Social Security taxes are not withheld and participants do not earn credit toward Social Security benefits based on their earnings from a SURS-covered employer. The state/employer contribution for an employee varies by retirement plan type, and because all SURS participants are employees of the state of Illinois, these employer contributions are a general state obligation.

From its inception in 1941 until 1997, all participants in SURS were covered by a traditional defined benefit plan. In 1997, the Illinois legislature passed a law allowing SURS-covered employers to offer participants a choice from among three plans, and virtually all did so by 1999. The choice now offered by SURS employers is extremely complex due to the myriad ways in which the three plans differ.

The defined benefit plan, called the "Traditional Plan," remains one of the three plan options and is the default option for participants who do not make an active choice within six months of the date that SURS receives certification of their employment. Participants contribute 8% of salary for the Traditional Plan, an amount that is meant to cover the employee's share of the normal retirement benefit, automatic annual increases in retirement benefits, and

survivor benefits. The state's share of the normal cost of maintaining the plan has varied over time, but the Illinois legislature has a long history of under-funding the plan and thus the state contributions are rarely made in full. Benefits are paid as joint and survivor life annuities; single participants can take one-eighth of their contributions plus interest as a lump-sum at retirement in lieu of the survivor benefits. There are two formulas for calculating the annuity—a standard defined benefit formula and a money purchase calculation—and a participant receives the larger of the two amounts ([State Universities Retirement System of Illinois, 2009](#)). The money purchase formula was eliminated for new participants in 2005. While the Traditional Plan is fairly generous for those who retire from the system, it is less so for those who leave early.

The second plan option, the "Portable Plan," is similar to the Traditional Plan but has a few key differences. First, if a participant leaves the SURS system before retirement and takes a refund (i.e., "cashes" out his/her pension), s/he receives a much higher refund than under the Traditional Plan. Second, those who refund from the Portable Plan receive a dollar-for-dollar matching contribution from the employer, whereas those who refund from the Traditional Plan receive only employee, and not employer, contributions. Third, the effective interest rate for the Portable Plan is determined annually by the SURS Board of Trustees and is typically higher than the rate provided by the Traditional Plan. For example, the Traditional Plan provides an interest rate on contributions of 4.5%, whereas the interest rate applied on Portable Plan funds has averaged 8.8% over the period from September 1989 through June 2010. Fourth, if a participant retires from the SURS system, the Portable Plan benefit is paid as a single life annuity, and married participants must accept an actuarial reduction to convert it to a joint and survivor annuity. Thus, for participants who leave SURS service and take refunds, the Portable Plan is more generous than the Traditional Plan, but for those who retire from the SURS system the benefits from the Portable Plan are not as generous as those from the Traditional Plan.

The third plan option, the "Self-Managed Plan," is a participant-directed defined contribution (DC) plan that invests 14.6% to 15.1% of salary (8% from the employee and between 6.6% and 7.1% from the employer⁴) into a participant's account. Participants are able to choose from a variety of mutual funds and annuity contracts from Fidelity and TIAA-CREF. Upon full vesting after five years of service, a participant who leaves SURS service is entitled to a full refund of both employer and employee contributions plus investment gains/losses. Upon retirement, the participant can choose from a wide range of annuities or a lump-sum distribution.

Participants must make their choice of retirement plan within six months of the date on which SURS receives certification of employment from the employer (which is essentially the date of hire). If they do not do so, they are

³ The discussion of institutional details updates a prior discussion of SURS in [Brown and Weisbenner \(2009\)](#), where a more detailed description of the SURS retirement plan options can be found. We note that the reduction in the number of employers covered by SURS in the two papers reflects the combining of several campuses. Most of the factual information about SURS is drawn from the SURS website (www.surs.org, last accessed 12/11/2012).

⁴ The 6.6% rate was in effect from the plan's inception until the past few years. More recently, the rate has risen as SURS has determined that the cost of providing disability benefits to Self-Managed Plan participants is not as high as previously calculated.

automatically enrolled in the default option, which is the Traditional Plan. Importantly, plan choice, including enrollment in the Traditional Plan by default, is permanent and irrevocable.

A complete comparison of the three plans is extremely complex and involves consideration of multiple information items, some of which are not immediately evident in the basic enrollment materials. For example, a participant who leaves SURS service can take a lump-sum refund, but the difference in the refund between the Portable and Self-Managed Plans is small prior to being vested (which is less than five years for most participants) but is much larger after vesting. For participants who retire from SURS, the expected value of the Traditional or Portable Plans is higher than that of the Self-Managed Plan due to factors such as differing match rates, differing interest rate assumptions, and more generous annuitization rates in the Traditional and Portable Plans than are available in the private sector. There are also countless other complexities that make it very difficult to make an optimal plan choice.

In light of the complexity and importance of this decision, it is a natural setting in which to understand decision-making heterogeneity and its impact on default behavior.

5. Survey design and sample statistics

5.1. Survey methods

In cooperation with administrators at SURS, we administered a web-based survey of SURS participants. The target population was participants with an active email address on file who joined the system in or after 1999, to ensure that the participants made their SURS plan choice as new employees. SURS sent these participants an email in August 2012 inviting them to participate in the survey, with a link to the online survey if they wished to do so. Participants received two subsequent reminder invitations in approximate two-week intervals. In total, out of 60,625 valid emails, 6065 usable responses were received, for a 10% response rate. This response rate compares favorably to response rates for surveys of individual investors of 4% and 6% found in Hoffmann, Post, and Pennings (2013) and Dorn and Sengmueller (2009), respectively. Several other surveys in finance report response rates around 4–9% for chief financial officers (e.g., Graham and Harvey, 2001; Brav, Graham, Harvey, and Michaely, 2008; Dichev, Graham, Harvey, and Rajgopal, 2013) and 4–6% for institutional investors (e.g., Farnsworth and Taylor, 2006; McCahery, Sautner, and Starks, 2015).

SURS sent four separate invitations, one each for active choosers of each of the three plans and one for those who defaulted into the Traditional Plan (all surveys were approved by the Institutional Review Boards at the authors' institutions). Thus, the data capture respondents' actual plan choices as listed in SURS administrative records, as well as whether the plan choice was active or by default. The four surveys were virtually identical. They differed because of the different text that was needed to reveal what plan respondents were in according to administrative records (and whether they had defaulted). This

administrative plan enrollment information (e.g., "According to SURS administrative records, you are enrolled in the PORTABLE PLAN") appeared after respondents were asked to self-report plan enrollment. This allowed us to capture whether a respondent's self-reported plan enrollment differed from that in the administrative records as a high-level test of plan knowledge, and to do so in a manner that did not require acquisition of any personally identifiable information.

The survey questions capture three broad categories of data. First, questions capture respondents' basic demographic and economic information such as gender, marital status, age, employment, education, income, and net worth. Several questions capture risk preferences, investment skills, and financial literacy.

Second, questions capture respondents' experiences with and recollections of SURS plans, the enrollment process, and their desire to switch plans if they could. After being asked their recollections of their plan enrollment status, all respondents' actual enrollment status per SURS records was revealed to them; this revelation differed across the four surveys.

Third, the survey includes four validated scales from prior judgment and decision-making literature to capture respondents' decision-making approaches relevant to our context. These scales have been extensively used in prior research, including work on consumer behavior, the effects of decision-making on well-being, cross-cultural differences, and choice in specific contexts (e.g., health, health care, career, and other lifestyle choices). Given the number of questions required to construct these scales, these questions were interspersed throughout others on the survey to minimize respondent fatigue.

The first decision-approach scale we use is the Melbourne decision-making questionnaire (Mann, Burnett, Radford, and Ford, 1997), a 22-item scale to assess an individual's approach to decision-making in the presence of decision conflict because of uncertainty. Four sub-scales are constructed from the Melbourne questions.

- Procrastination (five questions): Delaying decisions, which we hypothesize will positively predict default.
- Vigilance (six questions): A thorough analysis of alternatives, which is consistent with an economist's definition of optimizing behavior; we hypothesize this will negatively predict default.
- Hypervigilance (five questions): An anxious process of hastily settling on an answer, which we hypothesize will negatively predict default.
- Buck-passing (six questions): Leaving decisions to others, which we hypothesize will positively predict default.

The decision-making approaches measured by the Melbourne scale are quite relevant to our context—a complex, multi-alternative, irrevocable, and time-constrained choice before default. Indeed, as Mann, Burnett, Radford, and Ford (1997) note, the assumption underlying the Melbourne scale is one in which three conditions influence the choice of decision approach, each of which is satisfied by our setting. Specifically, the authors note "Janis and Mann's (1977, p. 2) conflict model is essentially a social

psychological theory of decision making in which the presence or absence of three antecedent conditions are held to determine reliance on a particular coping pattern. The three conditions are: (1) awareness of serious risks about preferred alternatives, (2) hope of finding a better alternative, and (3) belief that there is adequate time to search and deliberate before a decision is required.”

The survey also includes a 15-item scale to measure compulsive indecisiveness (Frost and Shows, 1993). Indecisiveness is the tendency of an individual to avoid making decisions, which in our setting could lead one to default.

To measure the propensity for regret, the survey includes a five-item scale from Schwartz, Ward, Monterosso, Lyubomirsky, White, and Lehman (2002). Our decision context is one in which the alternatives are permanently foregone after one chooses or is defaulted and thus the potential for regret could be especially salient.

Finally, the survey includes Roets and Van Hiel's (2011) 15-item questionnaire to measure an individual's need for cognitive closure, defined as a “desire for an answer on a given topic, any answer ... compared to confusion and ambiguity” (Webster and Kruglanski, 1994, p. 1049). The full Need for Closure Scale was developed by Webster and Kruglanski (1994), but given constraints on survey length, the survey includes the shorter, 15-question version from Roets and Van Hiel (2011). We hypothesize that people with a need for cognitive closure are more likely to make an active decision rather than default.

While procrastination is likely important to measure when studying default behavior, the ability to control for the three other decision-making approaches in the Melbourne Questionnaire (as well as a few others) is important to our study. This allows us to control for some tendencies that could be correlated with procrastination but could have their own independent effects on the likelihood of defaulting, giving us greater confidence in our ability to isolate the effect of procrastination.

5.2. Sample and summary statistics

Table 1 shows that of our 6065 respondents, 27% defaulted into the Traditional Plan, 19% actively chose the Traditional Plan, 34% chose the Portable Plan, and 20% chose the Self-Managed Plan.⁵ In our data, plan enrollment is classified based on SURS administrative data rather than self-reported responses of plan enrollment. It is nonetheless notable that respondents are knowledgeable about their plan selection—92% of respondents correctly identified the plan in which they are actually enrolled in the survey (with high knowledge rates regardless of plan enrollment). These rates of correct plan reporting are substantially higher than the 77% found in Gustman and Steinmeier (2005, Table 2), suggesting that SURS participants

are more knowledgeable about their retirement plans than the general U.S. population.

Table 1 also indicates that although the sample is not nationally representative, it is nonetheless diverse in terms of demographics, occupation, and economic background. Not surprisingly, given that this system covers higher education, respondents are highly educated, with 62% holding a Master's degree, professional degree, or Ph.D. Among the remaining respondents, 10% have no post-secondary degree, another 6% have an Associate's degree, and just over 20% have a Bachelor's degree. Respondents also come from a range of occupations, with about 13% employed as tenured or tenure-track faculty, and 25% non-tenure-track faculty. The remaining occupations are spread amongst academic professionals, executives, support staff, and maintenance and public safety personnel. There is also substantial variation in income and household net worth.

Table 2 summarizes the distribution of responses for the measures of decision-making approaches. Recall that every question is asked (or reverse-coded) on a five-point scale, with one being “strongly disagree” and five being “strongly agree.” Each decision-approach measure is computed as the average of the five-point response for each of the questions associated with that approach, and thus can range from 1.0 to 5.0. Interestingly, the average respondent in our sample views themselves as being vigilant (that is, a careful optimizer), with an average score of 4.1. The average person disagrees with the characterization of being a procrastinator, with an average score of 1.9. Perhaps more important for our purposes, however, is that the standard deviation of responses is between 0.5 and 0.7, which is useful to keep in mind when evaluating the magnitude of the coefficients below.

6. Results

6.1. Factors associated with the likelihood of default

6.1.1. Decision-making approaches as determinants of default

Table 3 provides the result of a linear probability model (ordinary least squares) with the dependent variable set to one if respondents defaulted into the Traditional Plan and zero if they made an active choice of plan (i.e., picked any of the three plans before the six-month deadline). Coefficients are rescaled by multiplying them by 100 so that they represent percentage points. All specifications are also estimated using a nonlinear probit model, and the marginal effects are nearly identical to those reported. Since respondents occasionally skipped or chose not to respond to a question in the survey, dummy variables capture non-responses for the various explanatory variables so an observation is not lost because of a non-response for a particular variable. These dummy variables are included in the regressions reported in Tables 3–5 (though the coefficients are not reported for the sake of brevity).

Two decision-making approaches are significant predictors of default. Respondents who are prone to procrastinate are significantly more likely to default (coefficient=3.9). While one-fifth of respondents answered “strongly disagree” to all five procrastination questions (i.e., a score of 1.0 out of 5.0), one-ninth of respondents averaged at least

⁵ Relative to the full universe of SURS participants who have joined the system since 1999, our sample population under-represents defaulters and over-represents active choosers. This pattern is primarily because those who default into the system are substantially less likely to have an email address on file with SURS, and thus were less likely to be solicited by the survey. Relative to the population of SURS participants who joined the system since 1999 and who have an email address on file, our sample proportions are much closer, as 36% of this population defaulted.

Table 1

Summary statistics for sample, percent of respondents reported.

This table reports descriptive statistics for the sample of 6065 State Universities Retirement System of Illinois participants who completed a survey in August 2012. These descriptive statistics are based on survey questions that capture respondents' basic demographic and economic information such as gender, marital status, age, employment, education, income, and net worth, and questions that capture risk preferences, investment skills, and financial literacy.

<i>Actual plan enrollment</i>		<i>Demographic characteristics</i>	
Traditional (defined benefit), by default	26.9%	Age (when joined SURS, in years) – mean	48
Active choice of:		Age (when joined SURS, in years) – 25th%	35
Traditional Plan (defined benefit)	19.0%	Age (when joined SURS, in years) – 75th%	60
Portable Plan (hybrid)	33.6%	Female?	56.8%
Self-Managed Plan (defined contribution)	20.5%	Married?	72.2%
<i>Correctly identified plan in survey</i>		Have children?	67.7%
Full sample	91.9%	Ranking of health relative to others	
Traditional (defined benefit), by default	96.4%	Very poor or poor	2.9%
Active choice of:		Average	21.4%
Traditional Plan (defined benefit)	97.8%	Good	46.4%
Portable Plan (hybrid)	84.6%	Excellent	29.3%
Self-Managed Plan (defined contribution)	92.8%	<i>Economic characteristics</i>	
<i>Risk preferences, investing skill</i>		Occupation	
Risk-return tradeoff preference		Support staff (secretary)	17.7%
Below average risk and return	15.1%	Executive	1.9%
Average risk and return	65.4%	Academic professional	23.3%
Above average risk and return	19.5%	Faculty (tenured)	3.5%
Take gamble (50/50, 100% ↑ or 33% ↓)?		Faculty (tenure-track, not tenured)	9.5%
No	62.1%	Faculty (non-tenure track)	25.0%
Yes	18.8%	Police, fire, and public safety personnel	1.5%
Don't know	19.1%	Maintenance and facilities personnel	3.6%
Self-assessment of investment skill		Other	14.1%
Much or slightly worse than others	31.7%	SURS-covered job income	
Same as others	38.5%	Less than \$20,000	18.3%
Slightly or much better than others	29.8%	\$20,000 to \$39,999	23.0%
<i>Belief of how long stay in SURS</i>		\$40,000 to \$59,999	25.1%
Expected to stay rest of career when joined		\$60,000 to \$79,999	17.8%
Not at all or slightly likely	50.7%	\$80,000 to \$99,999	6.8%
Moderately likely	12.5%	\$100,000 to \$119,999	3.9%
Very or extremely likely	36.8%	\$120,000 or more	5.0%
<i>Belief of political risk</i>		Share of family income in SURS-covered job	
Not at all confident in Illinois legislature	71.8%	0–24%	21.5%
Slight or more confidence in Illinois	28.2%	25–49%	20.5%
<i>General knowledge</i>		50–74%	21.7%
Basic financial literacy – Correctly answered		75–100%	36.3%
both questions	43.2%	Household net worth	
Education		Less than \$20,000	13.7%
Less than Associate's degree	10.2%	\$20,000 to \$49,999	11.5%
Associate's degree	6.2%	\$50,000 to \$99,999	19.9%
Bachelor's degree	21.3%	\$100,000 to \$249,999	25.3%
Master's or professional degree	42.6%	\$250,000 to \$499,999	14.1%
Ph.D.	19.7%	\$500,000 or more	15.4%
College degree in finance or business?	18.5%	<i>For sample of defaulters</i>	
Work experience in finance?	35.8%	Pick a different plan if can re-do choice today?	
<i>SURS-specific knowledge</i>		Would stay with Traditional Plan	40.2%
Basic SURS knowledge – Correctly answered		Would switch to diff. plan or don't know	59.8%
both questions	59.6%	Have strong desire to switch plans	16.6%
		<i>Sample size of all respondents</i>	
		6065	
		<i>Sample size of defaulters</i>	
		1630	

a 3.0 on this scale (indicating at least some agreement with having a tendency to procrastinate). Such a difference in procrastination is associated with a 7.8% higher likelihood of defaulting into the Traditional Plan (3.9×2). Another way to assess the economic importance of procrastination is to measure the effect of a one-standard-deviation change in this variable on defaults. Recall that the stan-

dard deviation on this variable is 0.7 (on a five-point scale). Thus, a one-standard-deviation increase in this measure of procrastination is associated with a 2.7% (3.9×0.7) increase in the likelihood of default, or a 10% increase relative to the baseline default rate of 27%.

The simplest interpretation is that those who procrastinate are less likely to choose a plan, and thus are more

Table 2

Summary statistics for decision-making approaches and being in a hurry.

This table is based on a sample of 6065 State Universities Retirement System of Illinois participants who completed a survey in August 2012. It reports summary statistics for decision-making approaches and a measure of being busy (in a hurry). The various measures of decision-making approaches are based upon the responses to questions for each approach, with each individual response scored from one (strongly disagree) to five (strongly agree). The decision-making approach score is then the average of responses for the questions pertaining to that approach and thus can vary from 1.0 to 5.0. Specifically, measures of procrastination (5-question index), vigilance (6-question index), hypervigilance (5-question index), and buck-passing (6-question index) are from Mann, Burnett, Radford, and Ford (1997), i.e., the Melbourne Decision-Making Questionnaire. The tendency to regret (5-question index) is from Schwartz, Ward, Monterosso, Lyubomirsky, White, and Lehman (2002). Indecisiveness (15-question index) is from Frost and Shows (1993). The need for cognitive closure (15-question index) is from Roets and Van Hiel (2011). Finally, our measure for being busy is based on the response to a single question “To what extent do you disagree or agree with the following statement: “I often do not have time to fully consider all of my options because I am always in a hurry,” with the response scored from one (strongly disagree) to five (strongly agree).

	Mean	S.D.	10th%	25th%	50th%	75th%	90th%
Decision-making approaches:							
Procrastination	1.9	0.7	1.0	1.2	2.0	2.4	3.0
Vigilance	4.1	0.5	3.5	3.8	4.0	4.3	4.8
Hypervigilance	2.4	0.7	1.6	2.0	2.4	2.8	3.4
Buck-passing	2.0	0.7	1.0	1.3	2.0	2.3	3.0
Tendency to regret	2.7	0.7	1.8	2.2	2.6	3.2	3.6
Indecisiveness	2.4	0.5	1.8	2.1	2.4	2.7	3.1
Need for cognitive closure	3.1	0.5	2.5	2.9	3.1	3.5	3.7
Busy/hurried:							
Often do not have time to fully consider options because always in a hurry	2.8	1.1	1.0	2.0	3.0	4.0	4.0

likely to find themselves defaulted.⁶ Economists tend to view procrastination as being a manifestation of present-biased preferences. Present-biased individuals put too little weight on time-distant outcomes (in this case, retirement preparedness) relative to the near-term cost of making an active decision. It is worth noting that there are other reasons besides present bias that an individual could procrastinate. For example, procrastination could simply result from being busy or not having enough time. Thus, as a simple control, a separate question measures the extent to which a respondent is too busy or in too much of a hurry. The coefficient on this “busy” measure is not significant, nor does it alter the magnitude of the coefficient on procrastination. The correlation between procrastination and defaulting may not be causal. For example, the results presented thus far cannot rule out the possibility that procrastinators find the Traditional Plan to be the best choice and deliberately default to end up in their desired plan with the least possible effort. This concern is addressed below by examining the extent to which procrastinators are more or less likely to desire to stay in the same plan when asked at a later time.

⁶ Respondents who tend to procrastinate may be attracted by an opportunity to avoid doing certain tasks. While completing our survey may be a way to procrastinate on other tasks, we told participants upfront that the survey would take around 20 minutes, and the survey itself had 38 screens of questions. As such, given its length, our survey is probably not ideal for purposes of providing a simple distraction to respondents. Even if some respondents viewed completing the survey as a means to procrastinate on other tasks, this suggests we have a higher fraction of procrastinators in our sample, but would not have a clear bias on the effect of procrastination on defaulting or a desire to switch plans, which is the ultimate focus of the paper.

Consistent with our hypothesis, respondents with a stronger need for cognitive closure are less likely to default. Individuals who have a need for closure are believed to be uncomfortable with ambiguity and strongly desire to arrive at “an answer” (although not necessarily the “right answer”). The coefficient on the need for closure is -4.5 . Thus, a one-standard-deviation increase (0.5 units on the five-point scale as reported in Table 2) leads to a -2.3% reduction in the likelihood of defaulting, or more than an 8% reduction relative to baseline default rates.

Interestingly, the coefficient on vigilance—the one approach that is most closely associated with the economic view of rational decision-making—is not significantly different from zero. Likewise, the other measures of decision-making approaches are not significant predictors of default behavior.

6.1.2. Economic and demographic determinants of default

Continuing with Table 3, results show that risk preferences and self-assessed investment skills are significantly correlated with default probabilities. Two questions assess risk preferences. The first is modeled on a question used in the Survey of Consumer Finances (SCF) that asks respondents whether they would prefer to take above (below)-average risk for above (below)-average returns. The pattern of significant coefficients indicates that less risk-averse respondents are less likely to default, which could reflect that respondents who are comfortable taking financial risks could be more likely to prefer the defined contribution plan option, which requires an active choice. However, a second question based upon the risk aversion questions in the Health and Retirement Survey (HRS) asks respondents to choose between their current income or a 50/50 gamble between doubling their salary or seeing it cut by

Table 3

Regression of whether defaulted into retirement plan choice.

This table is based on a sample of 6065 State Universities Retirement System of Illinois participants who completed a survey in August 2012. It reports coefficients from a linear probability model (OLS) in which the binary dependent variable is equal to one if respondents defaulted into the Traditional Plan and zero if they made an active choice of plan. Coefficients are multiplied by 100 so they are expressed in percentage points. Standard errors, shown in parentheses, allow for heteroskedasticity. ***, **, * indicates significance at the 1%, 5%, and 10% levels, respectively.

<i>Decision-making approaches</i>		<i>Belief of how long stay in SURS</i>	
Procrastination	3.9*** (1.2)	Expected to stay rest of career when joined	
Vigilance	0.9 (1.4)	Moderately likely	0.2 (1.8)
Hypervigilance	-0.9 (1.4)	Very or extremely likely	6.3*** (1.4)
Buck-passing	-0.5 (1.1)	<i>Belief of political risk</i>	
Tendency to regret	0.4 (1.0)	Not at all confident in Illinois legislature	-1.9 (1.4)
Indecisiveness	-0.5 (1.8)	<i>General knowledge</i>	
Need for cognitive closure	-4.5*** (1.5)	Basic financial literacy – Correctly answered both questions	-0.0 (1.2)
<i>Busy/hurried</i>		Education	
Often do not have time to fully consider options because always in a hurry	-0.6 (0.6)	Associate's degree	-4.6 (3.0)
<i>Risk preferences, investing skill</i>		Bachelor's degree	-3.4 (2.5)
Risk-return tradeoff preference		Master's or professional degree	-4.6* (2.6)
Average risk and return	-5.0*** (1.8)	Ph.D.	-8.3*** (2.9)
Above average risk and return	-9.5*** (2.1)	College degree in finance or business?	-2.0 (1.7)
Take gamble (50/50, 100% ↑ or 33% ↓)?		Work experience in finance?	1.9 (1.4)
Yes	3.3** (1.6)	<i>SURS-specific knowledge</i>	
Don't know	-0.3 (1.6)	Basic SURS knowledge – Correctly answered both questions	-4.5*** (1.3)
<i>Self-assessment of investment skill</i>		<i>Demographic characteristics</i>	
Same as others	-4.0*** (1.5)	Age (when joined SURS, in years)	-0.10 (0.06)
Slightly or much better than others	-5.7*** (1.7)	Female?	-2.8** (1.2)
<i>Demographic characteristics (cont.)</i>		Married?	-0.6 (1.5)
Ranking of health relative to others		Have children?	2.7** (1.3)
Average	3.5 (3.6)	<i>SURS-covered job income</i>	
Good	-0.5 (3.5)	\$20,000 to \$39,999	-2.3 (2.6)
Excellent	-0.9 (3.5)	\$40,000 to \$59,999	-2.5 (2.7)
<i>Economic characteristics</i>		\$60,000 to \$79,999	-1.6 (2.9)
		\$80,000 to \$99,999	-3.0 (3.5)
		\$100,000 to \$119,999	-8.0** (3.7)

(continued on next page)

Table 3 (continued)

Occupation		\$120,000 or more	–7.3* (3.8)
Executive	–0.0 (4.4)	Share of family income in SURS-covered job	
Academic professional	–2.4 (2.1)	25–49%	–3.3 (2.5)
Faculty (tenured)	0.5 (3.8)	50–74%	–1.3 (2.6)
Faculty (tenure-track, not tenured)	–5.6** (2.8)	75–100%	–0.5 (2.6)
Faculty (non-tenure track)	5.0** (2.4)	Household net worth	
Police, fire, and public safety personnel	–4.1 (4.9)	\$20,000 to \$49,999	–0.9 (2.6)
Maintenance and facilities personnel	2.7 (3.6)	\$50,000 to \$99,999	–2.6 (2.3)
Other	–0.9 (2.1)	\$100,000 to \$249,999	–5.3** (2.3)
		\$250,000 to \$499,999	–9.1*** (2.6)
		\$500,000 or more	–11.1*** (2.6)
		<i>Fixed effects for year of enrollment?</i>	Yes
		<i>Fixed effects for employer?</i>	Yes
		<i>Adjusted R-squared of regression</i>	0.100
		<i>Sample size</i>	6065

a third. Here, those most willing to take the gamble are more likely to default. Reconciling this offsetting pattern of coefficients in these two questions is admittedly puzzling; notably, though, the economic and statistical significance is much larger for the response to the SCF question (i.e., less risk-averse respondents are less likely to default) than for the HRS question.

Respondents with more confidence in their own investing skills are less likely to default. This result could reflect a general level of comfort making financial decisions. It could also again reflect the fact that these respondents could be more interested in participating in the defined contribution plan option.⁷

Respondents who report that it is very or extremely likely they will remain in SURS-covered employment for the rest of their career are more likely to default. At first blush, this finding seems counterintuitive because those with longer career horizons with a SURS employer should view pension choice as an even more consequential decision. However, those with shorter horizons likely find the Portable or Self-Managed Plans more attractive options than the Traditional Plan because of the more favorable cash-out terms offered by the two former plans once

SURS-covered employment ends, thus explaining the positive coefficient on expected job tenure in Table 3.

The top of the right-hand column includes the coefficient on a question that controls for perceptions of political risk. The poor funding status of public pensions in Illinois is widely known; nearly three-quarters of respondents stated that they were “not at all confident” in the Illinois state legislature, and thus, one might think that greater concern about funding would make one less likely to default into the poorly funded defined benefit plan. However, active choice does not necessarily protect one from political risk: only the Self-Managed Plan avoids it because both the Traditional and Portable Plans are supported by the same funds. Thus, while the coefficient on lacking confidence in Illinois government is negative, it is insignificantly different from zero.

Respondents with more education are less likely to default. Specifically, those with a Master’s or Professional degree are 4.6% less likely to default, and those with a Ph.D. are 8.3% less likely to default. Conditional on education, measures of financial literacy⁸ and degrees or work experience in finance or business do not explain default

⁷ We also estimated a regression analogous to that in Table 3 with the choice of the Self-Managed Plan as the outcome variable. In untabulated results, we find significantly positive (and large in magnitude) effects of a willingness to take risk and a high self-assessment of investment skill on selection of the Self-Managed Plan. This result suggests that the negative effects of these variables on defaulting indeed reflects these types of respondents’ interest in the Self-Managed Plan.

⁸ We define a respondent as having basic financial literacy if s/he answered two questions correctly. One component to our financial literacy measure is being able to identify that a savings account of \$200 earning 10% per year will grow in two years to “more than \$240” (as opposed to “less than \$240” or “exactly \$240”). The second component is answering that the stock of an individual company is at least as risky as a mutual fund of U.S. stocks, which is at least as risky as a mutual fund of U.S. government bonds, which is at least as risky as a money market fund (as revealed by individual risk rankings of the various investments). Just over two-fifths of the sample answered both questions correctly.

behavior. The exception is that respondents who are able to correctly answer two basic questions about the SURS system (the approximate share of salary employees contribute to the plan, and whether they pay Social Security tax on SURS income) are less likely to default.⁹ However, we caution against drawing a causal inference because respondents who chose the Self-Managed Plan could have learned more about these issues during the process of making an active choice or even after the fact.

Finally, results show that women are less likely to default, whereas those with children are more likely to do so. Results also show differences in default rates based on occupation, income, and net worth. Specifically, higher income and higher net worth respondents are significantly less likely to default.

In sum, the data in Table 3 indicate that the probability of default is inversely related to financial sophistication and wealth. More highly educated respondents, those with more confidence in their investment skills, those with more basic SURS knowledge, and those with higher income and net worth are all significantly less likely to default. Even after conditioning on these and other factors, however, individual decision-making approaches like procrastination matter in explaining default behavior.

6.2. An implication of defaults: the subsequent desire to switch plans

6.2.1. Average differences by plan in desire to switch

Whether the reliance on default options enhances or detracts from social welfare depends largely on how the default affects the utility of individuals who accept the default relative to whatever action they would have taken otherwise. We are not aware of any research that has attempted to address this difficult question, nor do we address it directly here because we are unable to vary the default or measure the utility consequences of the various plan choices.

Nonetheless, our research can inform this issue. Survey respondents were asked, “If you could go back in time and re-do your original pension choice (assuming the rules when you joined SURS are still in place), which plan would you choose?” This question allows us to measure whether the respondent views his or her plan as the best choice as of the time of the survey, or whether s/he now prefers a different plan.¹⁰ This does not measure *ex ante* expected utility at the time of the decision, nor is it an *ex post* measure of derived utility by the end of life. It does, however,

measure the preferences of respondents at the time of the survey, and as such, it is relevant for assessing overall satisfaction with the plans.

Of course, even if respondents reported that they would choose to enroll in a different plan, the reasons behind such responses are important. For example, if personal circumstances changed (e.g., changes in tenure, marital, or health status), then a desire to be in a different plan does not necessarily mean that the original choice was *ex ante* suboptimal given the uncertainty at the time. In contrast, if respondents learned something about their plans that they should have known at the time of their decisions, or did not select pension plans “best” for them because they did not get around to making a decision before the deadline, then there is concern that the default guided at least some participants into suboptimal decisions. While analyses of these and other factors follow in more detail later, simple tabulations provide some insight into this issue.

Fig. 1 reports the fraction of respondents who would choose the same versus different retirement plans than the ones in which they are enrolled if they were allowed to switch. Across the horizontal axis, the sample is split into defaulters and active choosers, followed by the active choosers divided by each of the three plans (Traditional, Portable, and Self-Managed). For each group, the figure reports the fraction who would and who would not choose the same plan (either through selecting a different plan or choosing “don’t know”).

Strikingly, three out of five defaulters would not choose the same plan today, which is 21% higher than that for all active choosers. Of course, such a comparison does not allow us to determine whether it is the act of defaulting or the plan itself that leads to differences in the desire to switch plans, and absent the ability to default different people into different plans, these reasons are difficult to disentangle. Nevertheless, this concern can be addressed by holding enrollment in the Traditional Plan constant, and comparing those who defaulted into the Traditional Plan to those who actively chose the same plan. Even with the same plan, the difference in the desire to switch plans is still 16%. This result is especially striking because there is absolutely no financial benefit to actively choosing the Traditional Plan versus allowing oneself to be passively defaulted into it. Contributions, benefits, program rules, and all other aspects of the plan are identical regardless of how a participant is enrolled in the Traditional Plan. In particular, benefits accrue from the date of hire, not the date of enrollment.

Fig. 1 is based on a broad definition of wanting to change plans; it includes those who responded “don’t know” when asked which plan they would choose today, and it does not capture the intensity with which a respondent wishes to switch plans. Fig. 2 refines the measure by including only respondents who stated a different plan choice, and that their desire to switch is strong or extremely strong. With this measure, 17% of defaulters have a strong desire to change plans, compared to only 7% of active choosers. When the Traditional Plan is held constant by comparing those who defaulted into the Traditional Plan and those who actively chose it, results show

⁹ Specifically, we code respondents as having “basic SURS knowledge” if they know both that they do not pay Social Security taxes on income from their SURS employment and that they contribute in the range of 6–10% of salary as an employee contribution (the actual number is 8%). Three-fifths of the sample answered both basic-SURS-knowledge questions correctly.

¹⁰ The reason we include the phrase “assuming the rules when you joined SURS are still in place” is because of a reform that was implemented January 1, 2011 for new hires after that date that reduced the generosity of various retirement plans offered under SURS. The reforms only affected new hires and thus, we wanted to be clear in our question that respondents hired before this date expressing a desire to switch plans would not be affected by the recent reform.

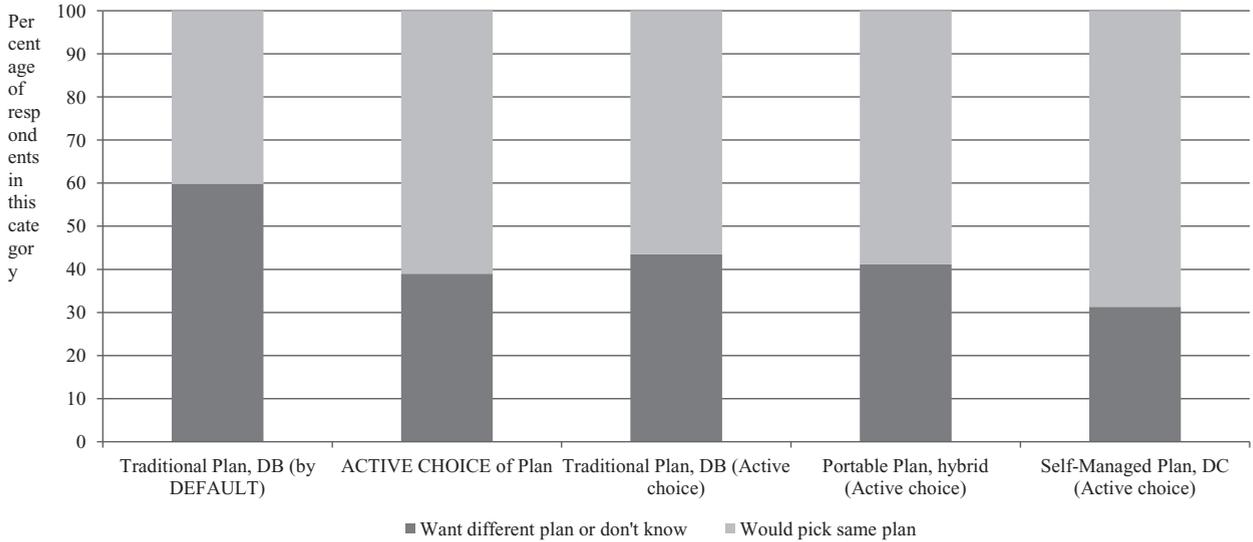


Fig. 1. Percent of respondents who would choose the same vs. a different retirement plan. Based on a sample of 6065 State Universities Retirement System of Illinois participants who completed a survey in August 2012. Of these respondents, 26.9% defaulted into the Traditional DB Plan and 73.1% made an active choice of plan (of which 19.0% chose the Traditional DB Plan, 33.6% chose the Portable Plan, and 20.5% chose the Self-Managed DC Plan). Survey respondents are asked, “If you could go back in time and re-do your original pension choice (assuming the rules when you joined SURS are still in place), which plan would you choose?” This figure plots the percent of respondents who would choose a different plan (or do not know which plan they would choose) and who would pick the same plan again, categorized by those who defaulted versus made an active choice and by plan type.

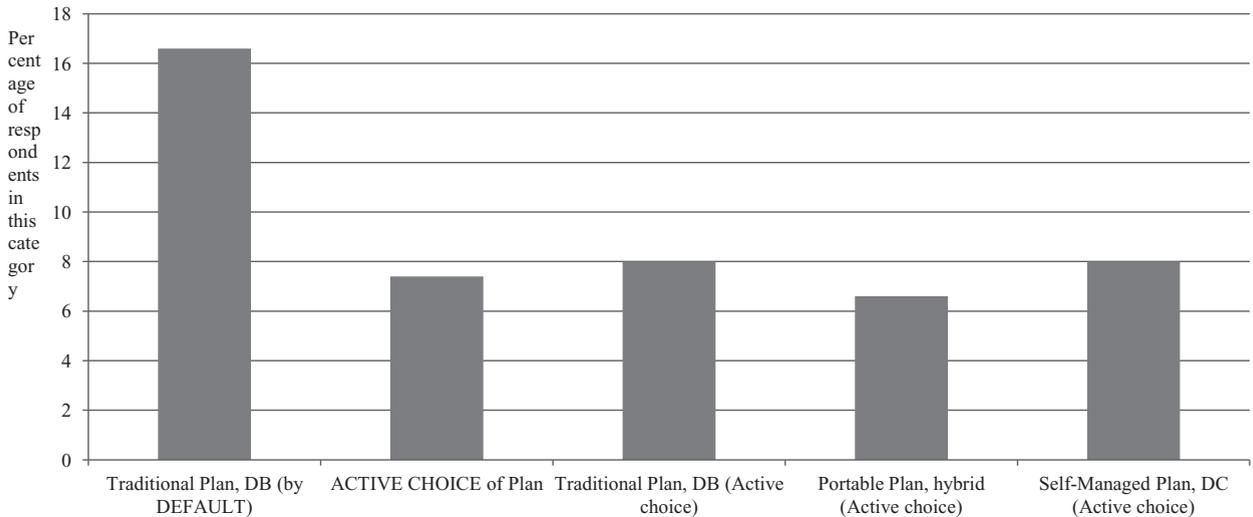


Fig. 2. Percent of respondents who would strongly desire a different retirement plan. Based on a sample of 6065 State Universities Retirement System of Illinois participants who completed a survey in August 2012. Of these respondents, 26.9% defaulted into the Traditional DB Plan and 73.1% made an active choice of plan (of which 19.0% chose the Traditional DB Plan, 33.6% chose the Portable Plan, and 20.5% chose the Self-Managed DC Plan). Survey respondents are asked, “If you could go back in time and re-do your original pension choice (assuming the rules when you joined SURS are still in place), which plan would you choose?” This figure plots the percent of respondents who would pick a different plan and who further indicate a strong or extremely strong desire to re-do the choice, categorized by those who defaulted versus made an active choice and by plan type.

a similar pattern: 17% of defaulters versus 8% of active choosers strongly desire to change plans.

6.2.2. Correlates of desire of defaulters to switch plans

Having established that defaulters are more likely to want to switch plans than active choosers, the next analysis sheds light on decision-approach, economic, and de-

mographic characteristics that are associated with the desire of defaulters to switch plans. The linear probability models in Tables 4 and 5 contain the same explanatory variables and are conducted on the sample of respondents who defaulted into the Traditional Plan; the only difference is the dependent variable. Specifically, Table 4 uses the broad measure of the desire to switch plans used in

Table 4

Regression of whether those defaulted into Traditional Plan would not pick same plan today.

This table is based on a sample of 6065 State Universities Retirement System of Illinois participants who completed a survey in August 2012. It reports coefficients from a linear probability model (OLS) in which the binary dependent variable is equal to one if the respondent would not pick the same plan today (either by picking a different pension plan or answering "don't know" to the question, would you re-do your original pension choice) and zero otherwise. Coefficients are multiplied by 100 so they are expressed in percentage points. The sample is all respondents who were defaulted into the Traditional Plan. Standard errors, shown in parentheses, allow for heteroskedasticity. ***, **, * indicates significance at the 1%, 5%, and 10% levels, respectively.

<i>Decision-making approaches</i>		<i>Belief of how long stay in SURS</i>	
Procrastination	4.7* (2.5)	Expected to stay rest of career when joined	
Vigilance	1.2 (2.8)	Moderately likely	-5.9 (4.4)
Hypervigilance	6.3** (3.0)	Very or extremely likely	-13.0*** (3.1)
Buck-passing	-4.1* (2.5)	<i>Belief of political risk</i>	
Tendency to regret	3.2 (2.1)	Not at all confident in Illinois legislature	11.5*** (3.0)
Indecisiveness	2.0 (3.8)	<i>General knowledge</i>	
Need for cognitive closure	-5.6* (3.0)	Basic financial literacy – Correctly answered both questions	-0.1 (3.0)
<i>Busy/hurried</i>		<i>Education</i>	
Often do not have time to fully consider options because always in a hurry	1.2 (1.4)	Associate's degree	4.3 (6.1)
<i>Risk preferences, investing skill</i>		Bachelor's degree	6.7 (5.0)
Risk-return tradeoff preference		Master's or professional degree	0.3 (5.2)
Average risk and return	1.4 (3.2)	Ph.D.	0.6 (6.3)
Above average risk and return	10.7** (4.7)	College degree in finance or business?	-4.7 (4.3)
Take gamble (50/50, 100% ↑ or 33% ↓)?		Work experience in finance?	1.0 (3.3)
Yes	3.2 (3.5)	<i>SURS-specific knowledge</i>	
Don't know	3.2 (3.6)	Basic SURS knowledge – Correctly answered both questions	-6.2** (3.0)
Self-assessment of investment skill		<i>Demographic characteristics</i>	
Same as others	-4.2 (3.2)	Age (when joined SURS, in years)	-0.83*** (0.13)
Slightly or much better than others	-2.5 (3.9)	Female?	11.3*** (3.0)
<i>Demographic characteristics (cont.)</i>		Married?	-4.3 (3.1)
Ranking of health relative to others		Have children?	2.8 (3.1)
Average	-7.6 (7.2)	<i>SURS-covered job income</i>	
Good	-12.4* (7.1)	\$20,000 to \$39,999	-3.1 (4.8)
Excellent	-8.9 (7.3)	\$40,000 to \$59,999	-1.2 (5.3)
<i>Economic characteristics</i>		\$60,000 to \$79,999	-0.1 (5.7)
Occupation		\$80,000 to \$99,999	-2.9 (7.4)
Executive	-2.3 (12.0)	\$100,000 to \$119,999	-4.0 (9.4)
Academic professional	-6.4 (5.2)	\$120,000 or more	-26.0*** (10.0)
Faculty (tenured)	7.3 (9.0)	<i>Share of family income in SURS-covered job</i>	
Faculty (tenure-track, not tenured)	6.4 (7.0)	25–49%	8.3 (5.1)
Faculty (non-tenure track)	3.3 (5.1)	50–74%	5.0 (5.0)
Police, fire, and public safety personnel	-12.5 (9.1)	75–100%	3.9 (4.9)
		Household net worth	
		\$20,000 to \$49,999	-10.8** (5.0)

(continued on next page)

Table 4 (continued)

Maintenance and facilities personnel	4.2 (7.5)	\$50,000 to \$99,999	–2.7 (4.6)
Other	4.8 (4.8)	\$100,000 to \$249,999	–5.2 (4.8)
		\$250,000 to \$499,999	–6.4 (5.7)
		\$500,000 or more	–15.9*** (6.2)
Fixed effects for year of enrollment?			Yes
Fixed effects for employer?			Yes
Adjusted R-squared of regression			0.144
Sample size			1402

Fig. 1 (equal to one if the respondent would choose a different plan or does not know which plan s/he would pick and zero otherwise), while Table 5 uses the refined measure used in Fig. 2 (equal to one if the respondent has a strong or extremely strong desire to choose a different plan and zero otherwise). As before, we rescale the coefficients by multiplying them by 100 so they represent percentage points. Since the results are comparable across the two tables and the Table 5 analysis focuses only on respondents who strongly desire to re-choose a specific plan, the discussion focuses on Table 5, with any important differences across the two analyses noted.

First, we examine the effects of decision-making approaches. Recall that in Table 3, procrastination is correlated with the probability of defaulting. One limitation to interpreting the correlation between default and procrastination is that self-aware procrastinators could simply find the Traditional Plan to be a better choice, such as if it prevents them from having to make future investment decisions on which they know they will procrastinate. This reasoning would suggest that procrastinators would be more likely to be satisfied with their plan choice and thus be less likely to wish to change plans. In contrast, if procrastinators defaulted into the Traditional Plan because they never got around to making an active decision, then they would be more likely to want to change plans. In Table 5, procrastinators who default are significantly more likely to express a strong desire to switch plans. A one unit increase on the five-point procrastination scale is associated with a 4.2% increase in defaulters having a strong desire to switch plans. Given that the standard deviation on the procrastination measure is 0.7, a one-standard-deviation increase in procrastination is associated with a 2.9% (4.2×0.7) increase in the likelihood of strongly wanting to switch plans—a 17% increase relative to the baseline desire to strongly change plans of 17%. An interpretation of these findings is that procrastinators defaulted not because the Traditional Plan was the right one for them, but because they never got around to making a choice. As such, they are more likely to subsequently wish they had made an active choice, and that choice would have been one of the other two plans.

One might be concerned that procrastinators' desire to switch plans could alternatively be driven by a general tendency to want to change plans regardless of the plan they happened to join. To test this possibility, we conducted

a falsification test in which the regressions from Tables 4 and 5 were re-estimated using the sample of respondents who actively chose any plan. Consistent with our earlier interpretation, the coefficient on procrastination is small and statistically insignificant among active choosers. Specifically, in the regression corresponding to Table 4, but using the sample of active choosers of any plan, the coefficient on procrastination is 1.3 with a standard error of 1.6, and in the regression corresponding to Table 5, but using the sample of active choosers of any plan, the coefficient on procrastination is 0.3 with a standard error of 0.9. Thus, the finding that procrastinators who default end up desiring to change plans is not simply the result of procrastinators being more likely to want to switch plans regardless of the plan they happened to join.

Vigilance, which is most closely associated with an approach that economists would label as an optimizing approach, is not correlated with a desire to switch plans. Hypervigilance, which is described in prior literature as an impulsive or contrived decision, is positively associated with a desire to switch plans. However, as discussed below, the coefficient on hypervigilance becomes insignificant and falls in magnitude by two-thirds when the model includes additional controls to measure changes in the circumstances of respondents since they joined SURS, so this result is not robust.

“Buck-passing” is negatively associated with a desire to switch plans. Buck-passing is the tendency to leave decision-making to others, so in our setting “buck-passers” would be content having the pension decision made for them, and thus are unlikely to make an active decision to change the plan in which they are already enrolled. The significant coefficient on buck-passing is -5.6 . Thus, a one-standard-deviation increase (0.7 units on the five-point scale as reported in Table 2) leads to a 3.9% reduction in the likelihood of strongly desiring to switch plans, or a 23% reduction relative to the baseline desire to switch.¹¹

¹¹ The coefficients on procrastination, hypervigilance, and buck-passing are similar across Table 4 and 5, both in magnitude and statistical significance. One difference across Table 4 and 5 is the coefficient on a need for cognitive closure. While a need for cognitive closure is not associated with a strong desire of defaulters to change plans (Table 5), it is negatively associated with the broader measure of the desire to change plans that includes ‘don't know’ responses (Table 4). This negative effect is consistent with a respondent not wanting to revisit a prior decision.

Table 5

Regression of whether those defaulted into Traditional Plan would strongly desire to switch pension plans today.

This table is based on a sample of 6065 State Universities Retirement System of Illinois participants who completed a survey in August 2012. It reports coefficients from a linear probability model (OLS) in which the binary dependent variable is equal to one if the respondent had a strong or extremely strong desire to switch to a different pension plan and zero otherwise. Coefficients are multiplied by 100 so they are expressed in percentage points. The sample is all respondents who were defaulted into the Traditional Plan. Standard errors, shown in parentheses, allow for heteroskedasticity. ***, **, * indicates significance at the 1%, 5%, and 10% levels, respectively.

<i>Decision-making approaches</i>		<i>Belief of how long stay in SURS</i>	
Procrastination	4.2** (2.0)	Expected to stay rest of career when joined	
Vigilance	2.1 (2.4)	Moderately likely	-2.5 (3.6)
Hypervigilance	6.2** (2.5)	Very or extremely likely	-7.7*** (2.4)
Buck-passing	-5.6*** (1.9)	<i>Belief of political risk</i>	
Tendency to regret	-2.7 (1.7)	Not at all confident in Illinois legislature	8.0*** (2.2)
Indecisiveness	-3.9 (3.0)	<i>General knowledge</i>	
Need for cognitive closure	-0.3 (2.5)	Basic financial literacy – Correctly answered both questions	-1.0 (2.3)
<i>Busy/hurried</i>		<i>Education</i>	
Often do not have time to fully consider options because always in a hurry	0.4 (1.1)	Associate's degree	0.7 (4.2)
<i>Risk preferences, investing skill</i>		Bachelor's degree	6.2 (3.8)
Risk-return tradeoff preference		Master's or professional degree	-0.6 (3.7)
Average risk and return	3.5 (2.5)	Ph.D.	3.4 (4.6)
Above average risk and return	15.9*** (3.8)	College degree in finance or business?	4.7 (3.3)
Take gamble (50/50, 100% ↑ or 33% ↓)?		Work experience in finance?	-2.4 (2.3)
Yes	4.1 (2.9)	<i>SURS-specific knowledge</i>	
Don't know	-2.7 (2.8)	Basic SURS knowledge – Correctly answered both questions	2.6 (2.3)
<i>Self-assessment of investment skill</i>		<i>Demographic characteristics</i>	
Same as others	5.3** (2.5)	Age (when joined SURS, in years)	-0.51*** (0.10)
Slightly or much better than others	5.3* (3.2)	Female?	2.9 (2.3)
<i>Demographic characteristics (cont.)</i>		Married?	1.0 (2.4)
Ranking of health relative to others		Have children?	1.7 (2.4)
Average	5.5 (5.2)	<i>SURS-covered job income</i>	
Good	2.3 (5.0)	\$20,000 to \$39,999	-1.7 (3.5)
Excellent	7.2 (5.2)	\$40,000 to \$59,999	-0.2 (3.9)
<i>Economic characteristics</i>		\$60,000 to \$79,999	2.0 (4.6)
Occupation		\$80,000 to \$99,999	-0.7 (6.1)
Executive	-3.0 (7.3)	\$100,000 to \$119,999	1.0 (8.3)
Academic professional	-3.0 (4.0)	\$120,000 or more	-7.9 (7.4)
Faculty (tenured)	4.3 (7.2)	Share of family income in SURS-covered job	
Faculty (tenure-track, not tenured)	-3.6 (5.4)	25–49%	10.1*** (3.8)
Faculty (non-tenure track)	-0.4 (3.8)	50–74%	9.2** (3.8)
		75–100%	11.4*** (3.7)
		Household net worth	

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Table 5 (continued)

Police, fire, and public safety personnel	7.2 (8.2)	\$20,000 to \$49,999	–1.7 (4.4)
Maintenance and facilities personnel	9.8* (5.7)	\$50,000 to \$99,999	–5.0 (3.9)
Other	3.5 (3.9)	\$100,000 to \$249,999	–4.4 (4.0)
		\$250,000 to \$499,999	–4.3 (4.6)
		\$500,000 or more	–8.9* (4.6)
Fixed effects for year of enrollment?			Yes
Fixed effects for employer?			Yes
Adjusted R-squared of regression			0.116
Sample size			1402

Results in Table 5 show that several demographic and economic measures are associated with a strong desire of defaulters to switch plans. The probability of wanting to switch plans is significantly higher for those who are more tolerant of risk, are less likely to stay in SURS for their entire career, are younger, and have a higher share of family income accounted for by their SURS employment. While higher self-assessed investment skills are positively and significantly associated with a stronger desire to switch plans in Table 5, it is an insignificant negative predictor in Table 4. Interestingly, although political risk did not affect the likelihood of default in Table 3, it has a strong effect on the desire to switch plans: those who are not at all confident in the Illinois legislature are 8.0% more likely to strongly want to switch plans.

Our survey includes 22 questions about changes that the respondent experienced between the dates s/he joined SURS and our survey, such as changes to marital status and family structure, unexpected changes to income or expenditures, changes to health, expectations about length of employment, confidence in the State's ability to honor pension commitments, market expectations, and discovery of what retirement plan peers had selected. An extension of the analysis in Table 5 includes all 22 of these additional questions. Although some are significant in their own right, the decision to include or exclude these variables has little effect on the coefficients on the decision-making approach variables, with the exception of the coefficient on hypervigilance, which falls substantially in magnitude and is no longer significant.¹² Thus, we are confident that the role of decision-making approaches like procrastination in explaining the strong desire to change plans is not spuriously picking up unobserved changes in other life circumstances

or expectations. Rather, these decision-making approaches are exerting a direct influence on the desire to switch plans that is largely orthogonal to changing circumstances.¹³

One alternative explanation of our findings is that a respondent might state a preference for the same plan to appear consistent to the researcher or to herself rather than merely reflecting the true underlying desirability of the plan. To address this possibility, a survey question asked respondents to rate their agreement or disagreement with the statement, "I find that I often go back and forth concerning what I want." Respondents who disagree or strongly disagree with the statement are classified as "consistent," and those who agree or strongly agree are classified as "inconsistent." We can then compare, as in Figs. 1 and 2, the fraction of defaulters who desire to switch plans to the fraction of active choosers that desire to switch plans, and how these differences vary by whether the respondent is generally consistent or not in decision-making.

Using the same definition of desiring to switch plans as in Fig. 1, results show that there are still large differences in the fraction wishing to switch plans by whether one defaulted for each sub-group. For those who have consistent decision-making, the difference is 17.6% (54.2% of defaulters desire to switch plans versus only 36.6% of active choosers). For those who report inconsistent decision-making, the difference is 27.1% (69.7% of defaulters versus 42.6% of active choosers). Thus, defaulters are much more likely to desire to switch plans than active choosers in both the self-reported consistent and inconsistent sub-groups. This result also holds with the "strongly desire" to switch plans measure from Fig. 2. Using this definition, inconsistent defaulters are 10% more likely to have a strong desire to change plans than inconsistent active choosers (17.9% versus 7.9%), and there is a very similar 9.2%

¹² Specifically, with the addition of the 22 controls for change in circumstance, the coefficients on procrastination (4.3 with a standard error of 1.7) and buck-passing (–5.2 with a standard error of 1.7) are virtually identical to those in Table 5, while the coefficient on hypervigilance falls to 2.2 (SE=2.3). As before, the probability of strongly wanting to switch plans is significantly higher for those who are more tolerant of risk, have higher self-assessed investment skills, are less likely to stay in SURS for their entire career, are not at all confident in the Illinois legislature, are younger, and have a higher share of family income accounted for by their SURS employment.

¹³ We also estimated an extension of Table 4 that includes the additional 22 controls to capture changing circumstances since the respondent joined SURS. The coefficients on procrastination (4.6), buck-passing (–3.7), and a need for cognitive closure (–5.2) change little from Table 4 (although the coefficient on buck-passing switches from marginally significant to marginally insignificant). The coefficient on hypervigilance falls in magnitude and is no longer significant (3.2 with a standard error of 3.0).

difference among consistent defaulters and choosers (16.6% versus 7.4%).

7. Discussion and conclusion

This study shows significant heterogeneity across the population with regard to sensitivity to defaults. In addition to being influenced by economic and demographic factors such as income, wealth, knowledge, and investment skills, results show heterogeneity in the likelihood of defaulting based on measures of different decision approaches. There is an especially robust relation between respondents' tendency toward procrastination and the likelihood of default, as well as procrastinators' subsequent desire to be in different retirement plans than the one into which they were defaulted. There are also significant effects of other decision-making approaches. For example, those with a strong need for cognitive closure are less likely to default, while buck-passing is negatively associated with the desire of defaulters to switch plans.

The finding that decision-making approaches such as procrastination are associated with defaulting and the later desire to switch plans is important for assessing the welfare consequences of defaults. If individuals are subsequently dissatisfied with the default option, especially in settings in which the default is irreversible, our findings suggest another reason to be cautious about relying heavily on default options relative to alternative choice architectures. Future research could be helpful in exploring these issues in additional settings and in understanding what types of institutional or procedural mechanisms might help to mitigate procrastination.

Disclosure

Brown is a Trustee for TIAA and has also received compensation as a speaker, author, or consultant from a number of financial institutions that are involved in retirement plan design. Weisbenner has received compensation as an author of a white paper on defined-contribution plans.

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