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Complexity and asset legitimacy in retirement investment☆

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ABSTRACT

Despite their importance, many individuals do not actively manage their retirement investment accounts. We use a laboratory experiment to examine the role that complexity plays in retirement investment decisions. We find that complex fee structures significantly increase both decision errors and default option choices compared with simple fees. We also find evidence of myopic risk aversion while complexity has no effect on the risk profile of investment decisions. The complexity effect is robust to increased asset legitimacy by having subjects earn the investment money in the experiment, although earning the investment money leads to faster learning.

1. Introduction

Recent years have witnessed a surge in empirical evidence for bounded rationality in consumer choice, especially in the domain of household finance. One area where consumers are especially struggling is with saving and investment for retirement. Many individuals, for example, do not participate in (attractive) retirement savings plans (Choi et al., 2004) and if they do, they put a disproportionate share of their wealth in bonds (Siegel and Thaler, 1997) or they fail to take advantage of employer matching (Choi, Laibson and Madrian, 2011). Such behavior can be attributed to financial illiteracy (Van Rooij, Lusardi and Alessie, 2011), present-biased preferences (Laibson, 1997) or myopic loss aversion (Gneezy and Potters, 1997) among other things. In this paper, we examine the effect of complexity on retirement investment decisions.

Our main contribution is the following. Using a laboratory experiment, we find that complexity of retirement investment products leads to costly mistakes. The detrimental effects of complexity are due to individuals failing to minimize account fees or choosing the inferior default option. The complexity effect is robust to increased asset legitimacy by having subjects earn the investment money in the experiment and the use of a more representative subject pool. On the other hand, complexity per se has no effect on portfolio risk allocation in our experiment.

Retirement investment decisions are inherently complicated. The complexity of these decisions can potentially lead individuals to make costly errors by failing to minimize on mutual fund fees (Choi, Laibson and Madrian, 2010), remain in the default investment option (Carroll et al., 2009) or even put off saving for retirement altogether (Madrian and Shea, 2001). Despite the prevalence of complexity in financial decisions and increasing acceptance of the potential implications (Carlin and Manso, 2011) there is little empirical research.[1]

One potential consequence of complexity is reliance on the status quo or default option rather than active management of the

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[1] There is field evidence in the retirement investment domain that suggest complexity leads to inferior choices. However, complexity in these studies is varied solely through the number of options available to individuals. For example, Iyengar and Kamenica (2010) find that a larger choice set is associated with certainty bias and an increased preference towards investment in bonds. Similarly, Beshears et al. (2013) find that replacing all available retirement plans with a new plan that features a pre-selected contribution rate and asset allocation leads to higher participation rates. Even though the number of available options should be expected to result in cognitive load similar to the complexity mechanism we use in our experiment we believe our method is cleaner in at least two ways. First, while we can objectively identify mistakes in our experiment, as we induce subjects' preferences, the above mentioned field studies cannot, as they do not control for individual preferences (for example, preferences for risk). Second, apart from being a source of complexity, large choice sets can also be beneficial for some individuals with less common preferences and might also affect saliency of individual options in these choice sets.

funds. Choi et al. (2002) describe such behavior as choosing "the path of least resistance" and document the prevalence of passive decision making in U.S. saving behavior. The pattern is similar in other developed countries such as Australia where the majority of employees remain in the default option in their retirement plan (Bateman et al., 2014).

In this paper, we use a laboratory experiment to examine how complex fee structures affect retirement investment decisions. Laboratory experiments are particularly suited to examine these research questions for a number of reasons. First, by inducing subjects' preferences we can clearly identify when a decision mistake occurs. While such mistakes may involve remaining with the default option, we can also identify broader types of mistakes than is possible with naturally occurring data. Second, in our laboratory environment we are able to vary the complexity of decisions without also changing other elements such as number of options, flexibility, and risk profile of available options.[2] That is, we can isolate the impact of complexity per se.

The main task we use in the experiment is as follows. Subjects are given an endowment and are asked to choose among ten investment options. The investment options exhibit three risk levels and for each risk level, there are three options with differing levels of fees. Hence, the subjects' task is to find options that reflect their risk preferences and choose the option that has the lowest fees among those options. In addition to these nine options, there was one option called the "default option" that had the same risk profile as the least risky option but exhibited the highest fees. The endowment is invested in the subject's retirement account of choice for thirty rounds (reflecting thirty years); hence, a subject's payoff for her choice is her accumulated earnings (net of the fees) from the thirty rounds of investment. Finally, to examine learning, the task is repeated six times.

The main treatment dimension in our experiment is the complexity level. We vary complexity in the following way. In the simple treatment the fees for an investment option consists of just a single weekly fee. On the other hand in the complex treatment the fees are divided into three sub-fees; hence, the subject needs to aggregate these fees to find the actual cost of an investment option.

Our results show that complexity of fees leads to costly mistakes. On average, subjects choose options with higher fees nearly twice as often when fees are complex than when fees are simple. Around half of this effect occurs because complexity leads subjects to choose the (costly) default option significantly more often. Importantly, the effect of complexity diminishes with experience. On the other hand, complexity does not affect the risk profile of investment decisions.

We also examine the external validity of our results by running additional sessions. In one set of sessions we made subjects earn their investment money (endowment) using a word-encoding task. We find that the source of the investment money has no effect on decision errors and default option choices. However, earned investment money leads to less risk-averse account choices than unearned investment money. Note however, that many subjects in our experiment display myopic risk aversion (as in Benartzi and Thaler, 1999) since taking risks in our experiment is optimal due to the long investment horizon. In this sense, our results support the idea that individuals learn to make better decisions for themselves when the investment money is earned in the experiment. In another set of sessions we used a non-standard subject pool. Specifically, we use subjects that have work experience and experience with making actual retirement investment decisions. We find no difference in their decision accuracy in the experiment compared to student subjects.

Our results contribute to a growing literature on complexity and decision-making. Caplin, Dean and Martin (2011) find in a laboratory experiment that higher complexity leads to lower quality choices. Kalaycı and Serra-Garcia (in press) investigate the relationship between complexity of loan contract terms and credit choices, and find that complexity leads to errors, and, in particular to overweighting of salient contract terms . Beshears et al. (2010) find that simplified disclosure has no effect on mutual fund choice and most subjects fail to minimize on mutual fund fees. On the other hand, Beshears et al. (2013) find in a field study that simplification leads to greater enrollment in retirement saving accounts and can potentially increase contribution rates of employees who are already saving. Similarly, in a hypothetical choice experiment, Agnew and Szykman (2005) find that subjects, particularly those with lower literacy, feel overwhelmed and make more default option choices when faced with a complex information format compared to a simple information format.

In other domains, Frank and Lamiraud (2009) find that complexity leads to consumer confusion in health insurance, while Schram and Sonnemans (2011) show that increasing the number of alternatives lead to inferior decisions in health insurance. In similar vein, Hanoch et al. (2011) find that increasing the size of the choice set in Medicare Part D leads to poor quality decisions, especially for older participants. Relatedly, Brown, Hossain and Morgan (2010) find that consumers on eBay ignore shipping costs while Chetty, Looney and Kroft (2009) find similar effects for prices that are displayed exclusive of sales tax. Task complexity is also shown to be a good predictor of equilibrium selection in games (Ho and Weigelt, 1996) and decision time in lottery choice (Wilcox, 1993).

The previous literature shows procrastination, status-quo bias, anticipated regret, aging, and choice overload to be contributing factors for individuals to choose "the path of least resistance" (Choi et al., 2002; Madrian and Shea, 2001; Besedes et al., 2012; Agnew and Szykman, 2005). Our results show that complexity of retirement investment decisions is also an important reason for sticking with the default option. This finding is in line with Payne, Bettman and Johnson (1993) and Payne, Bettman and Luce (1996) who suggest that individuals adapt their choice rules when faced with complex choices and use strategies that require lower cognitive effort.

Our results also contribute to the literature on financial literacy that documents correlation between financial literacy and retirement savings decisions (e.g., Lusardi and Mitchell, 2009; Van Rooij, Lusardi and Alessie, 2011). With regards to retirement investment decisions, financial literacy has been found to be predictive of choosing a low fee investment portfolio (Choi, Laibson and Madrian, 2011; Hastings, Hortacsu and Syverson, 2013) and stock market participation (Van Rooij, Lusardi and Alessie, 2011). In our regression analysis however, we find no effect of financial literacy on participants' decision errors or on their investment risk profile.

2. Experimental design

2.1. Overview and hypotheses

To investigate how complexity affects retirement investment decisions, we designed an investment task where subjects choose their preferred investment option in each of six rounds. There are three different accounts, each with a different risk profile, to choose from, and three different companies offer each account. The distribution of returns (i.e. risk profile) for each account is the same across companies, but each company charges different fees for their accounts. Thus for each account type, there is one

[2] For example, Beshears et al. (2013) introduce simplicity to retirement decisions by eliminating all the options and offering only one simple enrolment option. Although such a method has important policy implications, it does not allow one to identify the exact source of the effect.