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Until recently,

the widespread use of defined benefit retirement plans and Social Security meant that many Americans received most of their retirement income in the form of guaranteed payments until death. With employers moving increasingly to defined contribution retirement plans and the near certain decline in Social Security benefits, lump sum payments from 401(k) and other savings plans are replacing guaranteed benefits as the main source of retirement income for many. As individuals become more responsible for managing their wealth in retirement, one of the most important decisions they will face is whether to annuitize some or all of their accumulated wealth, thus guaranteeing benefits until death.

Academics have long asserted that the most basic type of annuity, the fixed, immediate, lifetime annuity, can offer individuals substantial benefits because it eliminates the risk that the purchaser will outlive their financial resources. Yet despite theoretical predictions, the actual size of the annuity market is quite small. Over the years, researchers have considered many rational theories to explain the relatively small size of the market but none of their studies have been able to fully explain what is observed. Very recently, researchers have turned their attention to possible psychological reasons for the low demand and the preliminary results look promising.

This report summarizes the first published findings (May edition of The American Economic Review) from new experimental research that explores some psychological aspects of the decision whether to buy an annuity or to invest retirement savings in the stock market. Specifically, we look at the role of information framing (positive or negative) and defaults. This research was funded by a generous grant from the FINRA Investor Education Foundation. The main experiment consisted of a "retirement game," where the participants had to choose between purchasing a fairly priced annuity or investing the money in a simulated "market". Two important findings resulting from this study were that negatively framing the information about one of the financial choices offered significantly influenced the participants decision away from this choice and the effectiveness of the framing depended on the participant's gender. The significant results have important implications for financial firms, regulators and consumers. In addition, they may suggest that other financial decisions can be affected by this framing as well.

This report describes the main findings of the paper and their implications, but first provides some background behind the annuity puzzle and the researchers' motivation for studying the effects of framing and defaults. In addition, a more detailed description of the experiment and its distinguishing features from other studies is included. Finally, a reading list for those wishing to delve deeper into this subject is included.

The Research Team

The summarized study was conducted by a team of researchers from the College of William and Mary with expertise in many diverse areas, including experimental economics, behavioral finance, retirement research and marketing. Their contact information is below. The team is currently working on several additional research pieces focusing on different aspects of the annuity decision using the experimental data.

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The Annuity Puzzle

The most basic type of annuity, the fixed, immediate, lifetime annuity, was the type of annuity simulated in this study. The main benefit of this sort of annuity is that the purchaser is guaranteed a steady stream of income for the rest of their lives. However, the downside of this security is that in exchange for the guaranteed income, the purchaser is generally prohibited from cashing out the security for unexpected expenses. In addition, when the purchaser dies, even if it is soon after buying the security, nothing from the investment is distributed to the heirs. Economists have suggested that individuals can achieve substantial gains to their welfare if they eliminate the uncertainty related to their lifespan by purchasing annuities. Yet, despite this, the overall annuity market is much smaller than economic models predict. This is what academics call "the annuity puzzle."

Until recently, research has focused on rational reasons why people might not buy an annuity. For example, researchers have suggested that annuities may be unfairly priced or that individuals may dislike that their heirs inherit nothing from the investment after they die. Jeffrey R. Brown (2008) in a working paper from the National Bureau of Economic Research summarizes all the past theories but finds that, in total, they still cannot explain the limited market size. He strongly suggests that psychological reasons may be an important factor and presents many new behavioral theories to consider.

Background Literature

Heads You Win, Tails I Lose.

Researchers have been studying the effectiveness of positive and negative framing, particularly in the health communications literature, for some time. Positively framed messages present the good outcomes one can expect if they follow a suggested behavior. For example, if I purchase an annuity, I will have guaranteed income for life. Alternatively, negative framing highlights the dire consequences you will experience if you do not follow the recommended behavior (e.g.; If I don't purchase an annuity, I may outlive my savings). While retirement decision making is an ideal scenario to test whether negative framing influences choice, we are unaware of any previous research addressing it.

Moreover, while negative framing has been shown to be effective in persuading individuals to undergo preventive healthcare treatments for multiple diseases, including colon cancer, breast cancer, sexually transmitted diseases and skin cancer, it is not always more effective than positive framing (Maheswaran and Levy 1990; Block and Keller 1995). Block and Keller (1995) demonstrate that there are two conditions that contribute to negative framing being more effective: (1) when there is uncertainty whether following the recommendation will lead to the desired outcome (e.g.; If I purchase an annuity, will I really be financially secure in retirement?) and (2) when more effort is spent processing the information.

Applying these condition to retirement decision making, it is fairly easy to conclude that negative framing should influence the choice to purchase an annuity or not—there is a level of uncertainly regarding the outcome, and there is a great deal of information to process when making the decision. This study seeks to answer whether financial advisors or insurance agents can lead investors to make specific financial decisions simply by framing information in a certain way, perhaps even unintentionally.

Defaults Matter!

In retirement research, the influential role of default choices is well known. In fact, the shift in many 401(k) plans from voluntary enrollment to automatic enrollment was prompted by research showing the dramatic increase in participation rates from this plan design change. If individuals are reacting rationally, whether they are automatically enrolled in a plan or must take action to participate in a voluntary enrollment plan should not affect participation levels. But a 2001 study by Brigitte Madrian and Dennis Shea, shows just the opposite. They find that participation rates dramatically increase with the change (Madrian and Shea 2001). Defaults have also been shown to have a strong effect in determining people's savings levels and asset allocation choices. This study examines whether defaults might matter in the annuity choice.

The Experiment

How the Experiment was Run?

1) Participants entered the room and signed a release form.
2) Participants completed a lottery choice experiment to estimate their level of risk aversion.
3) Participants completed a financial literacy quiz.
4) Participants viewed one of three different slide show presentations about the investment game. Two slides shows were negatively framed to favor one choice over the other and one slide show was unbiased. (See cut-out box)
5) Participants made decisions in the investment game.
6) Participants completed a comprehensive survey including questions on demographic information and actual investment behavior.
7) Participants were paid for the investment game and the session ended.

How Negative Framing was Incorporated into the Presentations: In order to negatively frame each choice, the authors relied on the participant's aversion to financial loss. For example, the presentation that favored annuities (the annuity bias) emphasized the potential financial losses associated with investing in the stock market, while the presentation favoring investments (the investment bias) focused on the losses associated with purchasing an annuity and dying early before recouping the benefits. A third presentation favored neither option (the neutral bias).

The presentations were designed based on actual marketing literature collected from several financial institutions. A series of rigorous pre-tests were used to determine which benefits and drawbacks would be featured in the experimental stimulus. Additional pre-testing was used to ensure that each slideshow was perceived as favoring the annuity, investment or neither.

How is this Study Different from Other Experimental Economics Studies?

- Size of Participant Pool: This study conducted the experiment on 845 nonstudent and 248 student subjects. The non-student results are presented here and the student results will be presented in subsequent research. Typical experimental research projects use much smaller sample sizes than this study.
- Composition of Participant Pool: Most experimental research uses student participants. This study used a diverse participant pool of adults ranging in age from 19 to 89. It included a substantial number of retirees.
- Large Cash Payments: Participants on average earned approximately $50 for participating. Some participants earned over $100. These cash payments earned are substantially higher than those earned in typical research.
- Connection of Experiment to the "Real World": Most economics experiments use neutral terminology to focus on the effect of financial incentives in the experiment and to avoid biasing subjects by connecting the experimental task with their actual day-to-day decisions. This study deliberately ties the experiment to the real world to explore whether biases can affect decisions in this particular environment.

Findings

Main Experimental Findings

- **Gender Differences in Risk Aversion and Financial Literacy Consistent with Prior Literature:** As in other studies, the authors found that women were more risk averse and less financially literate than men.

- **More Risk Averse People Choose Annuities:** The authors found that more risk averse people, as measured by a lottery choice experiment commonly used in economics (Holt and Laury 2002), were more likely to choose annuities. This is what would be expected by theory and supports using risk measures in research when examining financial decisions.

- **Financial Literacy Affects Choice:** For both males and females, scoring above average on a financial literacy quiz was associated with choosing the investment option more often than the annuity. Since the annuity was fairly priced, this was an interesting finding. It might be that those individuals with greater financial knowledge were more familiar with the investment option or more confident in their ability to invest and, thus, more likely to choose the investment option. More research is needed to understand this finding.

- **Negative Framing and Gender Matter:** The biased presentations did influence behavior. Women were influenced by the investment bias presentation. They were 16 percent less likely to choose the annuity option if they saw the presentation that negatively framed the annuity choice (investment bias presentation) than if they viewed the neutral presentation. The annuity bias presentation did not influence their behavior but this could be because it reinforced preconceived notions. Men were influenced by both presentations. They were 14 percent less likely to choose an annuity after the investment bias presentation and 21 percent more likely to choose the annuity after the annuity bias presentation, compared to the neutral presentation.

- **Defaults Findings Inconclusive:** The default options in most cases were not significantly related to the choice. This is inconsistent with prior research. One issue could have been that the experimental default was weak. Unlike naturally occurring decisions, the experiment did not allow for procrastination in making the investment choice. More research is needed in this area before a conclusion can be made.

Conclusion and Real World Implications

One of the most striking findings from this study is that a simple 5-minute presentation can significantly influence financial choices. This has real world implications for consumers, financial firms and regulators which are detailed below.

For Consumers:

Beware of the potential influence of negative framing from financial advisors, the media and marketing information. Every financial decision requires independent research of the pros and cons of the choice being made.

For Financial Firms:

Train your employees to present balanced and fair presentations. Employees may unintentionally be framing information in a way that is favoring one option simply based on their background.

Also, consider that women may be interpreting the information presented differently from men. Firms could consider tailoring presentations to different genders.

For Regulators:

This research demonstrates the significant influence of negative framing even when the information presented is factual. While not the subject of this study, the effect of negative framing using non-factual information may even be more powerful. Regulators should keep this in mind when they are pursuing possible offenders.

References and Further Reading

References

Agnew, Julie, Lisa Anderson, Jeffrey Gerlach, and Lisa Szykman, (Forthcoming), "Who Chooses Annuities? An Experimental Investigation of the Role of Gender, Framing and Defaults," *American Economic Review.*

Block, Lauren and Punam Anand Keller. 1995. "When to Accentuate the Negative: The Effects of Perceived Efficacy and Message Framing on Intentions to Perform a Health-Related Behavior," *Journal of Marketing Researh,* 32(2): 192-203.

Brown, Jeffrey, (2007), "Rational and Behavioral Perspectives on the Role of Annuities in Retirement Planning," National Bureau of Economic Research Working Paper 13537.

Holt, Charles and Susan Laury, (2002), "Risk Aversion and Incentive Effects," *American Economic Review,* 92(5): 1644-55.

Madrian, Brigitte and Dennis Shea, (2001), "The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior," *Quarterly Journal of Economics,* 116: 1149-1525.

Maheswaran, Durairaj and Joan Meyers-Levy (1990), "The Influence of Message Framing and Issue Involvement," *Journal of Marketing Research,* 27 (August), 361-67.

Further Related Reading

Academic Articles

Anderson, Lisa R. and Jennifer M. Mellor, (Forthcoming)
"Predicting Health Behaviors with an Experimental Measure of Risk Preference," *The Journal of Health Economics.*
Description: This paper uses a subset of data collected from the experimental study discussed here to examine whether self-reported risky health behaviors are significantly related to decisions made in a lottery choice experiment. Controlling for subject demographic and economic characteristics, the study finds that risk aversion is negatively and significantly associated with cigarette smoking, heavy drinking, being overweight or obese, and seat belt non-use.
Link: http://www.wm.edu/economics/wp/cwm_wp59rev.pdf

Non-Academic Publications

Agnew, Julie, Lisa Anderson, Lisa Szykman and Jeff Gerlach, (Forthcoming)
"The Annuity Puzzle and Negative Framing,"
Center for Retirement Research at Boston College Issue Brief.
Description: This short article that is expected to be published in the late summer/ early fall discusses in more detail the negative framing used in the research discussed here.
Link to Center: http://crr.bc.edu/

Trammell, Susan, (March/April 2008), "The Pool and the Stream," *CFA Magazine,* 19 (2): 40-45.
Description: This article discusses the new behavioral research being conducted to solve the annuity puzzle. It includes a discussion of this research.
Link: http://www.cfapubs.org/toc/cfm/2008/19/2

Zagursky, Erin, (Spring 2008) "Rational Misbehavior. Conservative Investor with a High-Risk Portfolio? You're a Piece of the 'Annuity Puzzle,'" *Ideation.*
Description: This article gives further background on this project.
Link: http://www.wm.edu/as/ideation.php