Behavioral Finance and the Post-Retirement Crisis

A Response to the Department of the Treasury/Department of Labor Request for Information Regarding Lifetime Income Options for Participants and Beneficiaries in Retirement Plans

Prepared by
Shlomo Benartzi, UCLA

Sponsored and submitted by
Allianz of America
April 29, 2010

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Foreword

Allianz is pleased to submit this response to the Request for Information Regarding Lifetime Income Options for Participants and Beneficiaries in Retirement Plans. As we contemplated what form our response would take, we came to the conclusion that we could make a valuable contribution by complementing the more technical, product-specific RFI responses (including the response from Allianz Life Insurance Company of North America) with insight on the equally important behavioral aspects of retirement decision-making. After all, such decisions will have a direct impact on retirees' quality of life in the years after they retire—the period we are calling "post-retirement."

With the shift from defined benefit plans to defined contribution plans, it is increasingly individuals—rather than institutions—who are required to make complex, life-altering decisions about how much to save and how to make those savings last. As this responsibility is transferred to individuals, we believe that understanding how and why they make decisions is critical to developing effective policy and designing plans that encourage sponsors and their participants to choose wisely.

We knew there was a vast body of academic research on behavioral finance which we believed could make a significant contribution to this discourse, so we asked Prof. Shlomo Benartzi of UCLA to help us reach out to some of the leading academics in the field. We then asked each one what key insight they believed would be most important for government and business to consider in crafting policy and developing solutions to counteract the looming post-retirement crisis. We are pleased to deliver their insights within this response. As you will see, we have taken particular care to ensure that these ideas can be easily translated into practical and workable solutions.

Allianz is committed to sharing knowledge. We seek to provide the best insight and perspective from around the globe to help individuals, along with their financial advisors, make better financial decisions throughout their lives. In particular, we believe we share a responsibility to help the millions of current and future retirees, both in the US and abroad, achieve a secure and dignified retirement. With so many nearing retirement ill-prepared, a crisis is most assuredly in the making. We believe that averting such a crisis will require the full engagement and collaboration of government, the financial industry, plan sponsors, financial advisors, the academic community, and individuals alike. The RFI process is an important first step in this collaboration.

We would like to offer our thanks to Prof. Benartzi for leading this effort on our behalf and to all the academics who generously provided their insights.

To best understand *how* and *why* individuals make decisions about their finances, and in particular, their retirement, we must consider the behavioral factors behind those decisions before we can even begin to address the more technical and product-specific dimensions of retirement. We humans, it turns out, are not the rational, mechanical decision-makers often described in textbooks.

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Introduction:
Behavioral Finance and the Post-Retirement Crisis

By Prof. Shlomo Benartzi of UCLA

Many observers today are actively discussing the so-called retirement crisis. They note that people do not save enough and will not accumulate sufficient assets to retire comfortably. They maintain that 401(k) plan participants frequently make poor investment decisions, and in extreme cases such as Enron, these dubious decisions resulted in employees losing a large portion of their retirement savings.

This report focuses on a related issue: The "post-retirement" crisis. While the retirement crisis centers on the financial struggles of people saving for retirement, the post-retirement crisis focuses on the financial difficulties of people near or in retirement.

Of 10 people who reach age 65, one will pay for just four years of expenses and another will pay for 34 years of expenses.

To illustrate the unique financial complexities facing retirees, consider 10 high school friends who decide to retire at age 65. Now, guess when the first of those 10 friends will die. As it turns out, the first death is likely to occur only four years into retirement, at age 69. Next, try guessing when the last person will die. The answer is 34 years into retirement, at age 99![1]

Put differently, one retiree needs to pay for just four years of expenses whereas another has to pay for almost ten times more, that is, for 34 years of expenses. Thus, the risk of retirees outliving their money is significant. One might also argue that this "longevity risk" is actually far greater than investment risk, since the variability of longevity seems far greater than the variability of investment returns.

The post-retirement crisis is about outliving your assets. The effects of this crisis become worse as employers switch from defined benefit plans to defined contribution plans. In the past, longevity risk was borne by employers who provided employees with defined benefit pension plans and guaranteed income for life. Today, employers offer defined contribution plans, such as 401(k)s, where employees must bear the responsibility for making sure they do not outlive their assets.

The post-retirement crisis is magnified by the poor financial decision-making of retirees. For example, those retiring after stock market increases of six to 12 months are much more likely to select the lump sum option rather than lifetime income (Previtero, 2010). It is a concern that retirees make such long-term financial decisions based on very recent short-term stock market performance, especially given that some of these decisions are irreversible. Clearly, retirees are struggling to make sensible investment decisions.

About one fifth of widows end up in poverty following the deaths of their husbands.

Retirees also do a poor job of calculating how much they can spend each month. Some retirees spend too much during the early years of retirement, leaving too little for later years. In addition, older women see a 47% drop in income following the death of their husbands. As a result, about one in five widows ends up in poverty (Holden and Zick, 2000).

There are many different "toolboxes" that could be used to address the post-retirement crisis. In this report, we open the behavioral finance toolbox to look for expla-

1. Author's own calculations based on the IRS unisex actuarial table.

nations of, and solutions to, the crisis. Behavioral finance is a combination of finance and behavioral science. It is about understanding how people actually make financial decisions, what money mistakes they make, and most importantly, how we can help them make better decisions.

There are three key reasons why we decided to use the behavioral finance toolbox. First, whereas in the older defined benefit plans the key to success was investment performance only, the success of the newer defined contribution plans depends on a combination of investment performance and the human element. And, since the responsibility for managing money is shifting from employers to employees and retirees, the human element is vital to understanding how retirees manage—or mis-manage—their savings and critical to designing better solutions and policies.

Second, behavioral finance has already positively affected the accumulation phase and how people save for retirement. The influential work of behavioral economists James Choi, David Laibson, Brigitte Madrian, and Andrew Metrick on inertia and automatic enrollment features changed the way providers and plan sponsors designed 401(k) plans and eventually boosted employee participation rates (Madrian and Shea, 2001; Choi et al, 2004, 2002).

Similarly, my work with Richard Thaler on identifying behavioral obstacles to savings led us to develop Save More Tomorrow™, a program that allows employees to pre-commit to increase their savings automatically every time they get a pay raise. In our first case study, deferral rates for program participants increased from 3.5% to 13.6% over three and a half years (Thaler and Benartzi, 2004). The program is now offered by more than half of the large employers in the US, and a variant of the program was incorporated in the Pension Protection Act of 2006 (Hewitt, 2010).

Third, we strongly believe that behavioral finance offers significant insight into post-retirement financial decisions. For example, Eric Johnson from Columbia University researched the risk preferences of retirees and found that retirees are up to five times more sensitive to losses than the average person (AARP and ACLI, 2007).

David Laibson from Harvard University investigated cognitive impairment and its effect on financial decision making. He found that half the people in their 80s suffer from either dementia or significant cognitive impairment that prevents them from making sound financial decisions (Agarwal et al, 2009).

Alessandro Previtero (2010) from UCLA studied the effect of active choosing on the decision to choose lifetime income solutions. He found that when retirees have to actively choose between guaranteed lifetime income and lump sum distributions, half of them choose the lifetime income option, indicating significant demand for guaranteed income.

In this report, we describe the interviews we conducted over the last few months with top psychologists, consumer behavior experts, and behavioral economists. We report on the unique behavioral insights each academic provides and how those insights affect post-retirement financial decisions. We also discuss the policy implications of the insights offered by this exceptional group of academics. Finally, we wrap up the report with a behavioral checklist to help policy makers and others evaluate retirement income strategies from a behavioral perspective.

The behavioral finance toolbox has the potential to reshape the financial lives of retirees.

We hope you enjoy reading about the behavioral insights of this academic team and find that behavioral finance has the potential both to reshape the financial lives of retirees and to contribute to solving the post-retirement crisis.

Framing:
Positioning Products as Income Solutions Dramatically Increases Their Attractiveness

Based on an interview with Prof. Jeffrey Brown of the University of Illinois

Consider the "70% rule" that advises people to plan on spending about 70% of their current income during their retirement. For most people, this rule of thumb is intuitively appealing, which could explain why it has become so popular among financial planners.

Now let's use slightly different lenses and reframe the 70% rule as the 30% rule. That is, rather than focusing on the 70% of expenditures someone would sustain through retirement, let's consider the 30% of expenditures that should be eliminated. Most people find the 30% rule unpalatable, even though the 70% and 30% rules are mathematically identical.

The popularity of lifetime income solutions tripled when monthly spending was emphasized rather than investment returns.

The comparison of the 70% and 30% rules highlights how seemingly small changes to the lenses or "frames" we use can have a huge impact on our decisions, including policy issues (Tversky and Kahneman, 1981), charitable giving (Gourville, 1998), and medical treatments (McNeil et al, 1982).

In the case of financial decision-making, Brown et al (2008) investigated the role of framing in choosing lifetime income solutions. They asked more than 1,300 individuals older than 50 to make a choice between:

1. A life annuity paying $650 each month until death, or
2. A traditional savings account of $100,000 bearing 4% interest.

The two choices were designed to have the same actuarial value in order to ensure an apples-to-apples comparison.

Half the people in the study were presented with the two options in a "consumption" frame, where the annuity was described as providing monthly income of $650 for life. Of those viewing the consumption frame, 70% preferred the annuity. The other half were presented with the choices in an "investment frame," where the annuity was described as an investment with a $650 return for life. Only 21% of those who viewed the choices in an "investment" frame selected the annuity. While the economic characteristics of the choice sets were essentially the same, the framing of the alternatives in terms of either monthly income or investment return had a dramatic effect on the outcomes.

Help consumers focus on future income needs rather than on investment return.

These results can be explained by the fact that lifetime income solutions are perceived to be safe when framed as a consumption plan because they guarantee lifetime income. However, the same solutions are perceived to be quite risky when framed as an investment plan because the policy owner runs the risk of dying early and relinquishing wealth to the insurer.

Clearly, the context in which retirement income solutions are presented has a dramatic effect on their attractiveness. If we agree that the underlying purpose of retirement plans is to provide income at retirement, it is more appropriate to frame those plans in terms of monthly income, not investment return.

Vividness:
Making the Future Easier to Imagine Can Improve Retirement Outcomes

Based on an interview with Prof. Daniel G. Goldstein of Yahoo Research and London Business School

What will someone's life be like in 20 years? It's difficult to picture a time that's so far away and subject to change. Yet that's precisely what employees are asked to do as they begin planning for a retirement that may last a third of their lives or more.

But what if new technology could make those future images more real? How would that influence an employee's financial decisions? Daniel Goldstein, along with Hal Ersner-Hershfield and other colleagues (in progress), is exploring these questions to see if people who connect more vividly with their future selves will make better financial choices.

Preliminary findings suggest that vividness does improve outcomes. In previous work, Ersner-Hershfield, Jeremy Bailenson, and Laura Carstensen had participants enter an immersive virtual reality environment and see themselves in a virtual mirror. Half of participants saw digital representations of their current selves in the mirror, while the other half saw age-morphed versions. Next, all participants were asked to allocate money toward a hypothetical retirement savings account. Participants who saw their older, future selves allocated over two times more money than those who saw their current images!

People doubled their saving rates after seeing age-adjusted versions of their future selves.

Ersner-Hershfield and Goldstein have also started testing a promising new web-based tool that increases the vividness of tradeoffs between current and future consumption by showing participants images of both their current and future (age-morphed) selves with facial expressions that change in accordance with a selected saving rate. When participants save more for retirement, their future faces become happier and their current faces become sadder; when they save less, the current faces are happier and future faces are sadder.

Encourage the use of tools that let retirees see vivid images of how financial decisions will affect their satisfaction and lifestyle.

While this study examined asset accumulation decisions, the findings may translate to decumulation decisions as well: Strengthening retirees' connection to their future selves could improve the quality of the decisions they make about their retirement income strategies—and that could have far-reaching consequences.

For example, a tool could be developed to address retirement income decisions by helping recent retirees "see" themselves at age 85 or 90, while also including actual data about the happiness of people who chose different types of income solutions. Research by Panis (2003) shows that retirees who use guaranteed income products to cover more of their expenditures are happier than those who do not. What's more, these individuals maintain their level of happiness over time. A tool that presents this type of information in a vivid and easily accessible way could improve the quality of retiree decision-making.

Hyper Loss Aversion:
Retirees Show Extremely High Sensitivity to Loss, But Shy Away From Guarantees That Require Giving Up Control

Based on an interview with Prof. Eric Johnson of Columbia University

In their landmark studies of risk-taking behavior, Daniel Kahneman and Amos Tversky (Kahneman and Tversky, 1979, and Tversky and Kahneman, 1992) established the now axiomatic investment truth that, for most of us, "losses loom larger than gains." That is, investors experience the pain of a financial loss much more acutely than they feel the pleasure of the same size gain, by a factor of about two to one. So on an emotional level, the possibility of losing $50 is roughly equivalent to the potential of winning more than $100.

More recently, in collaboration with AARP and ACLI, Eric Johnson re-visited the Kahneman and Tversky loss aversion principle to see how retirees' reactions to loss compared to the reaction of the general population (AARP and ACLI, 2007).

Retirees are up to five times more sensitive to losses than the general population.

Their findings: Retirees displayed what one might call "hyper loss aversion." They were up to five times more loss averse than the average person. Nearly half of the retirees said that they would refuse a gamble with a 50% chance of winning $100 and a 50% chance of losing as little as $10, which suggests they weighted losses about 10 times more heavily than gains.

While the magnitude of loss aversion was far greater than Johnson predicted, he was not all that surprised that retirees were more concerned about loss than their younger brethren. What was surprising was their attitude toward products designed to minimize loss. While Johnson assumed that hyper loss aversion would translate into a preference for products with guaranteed lifetime income, his research revealed just the opposite. Retirees with hyper loss aversion actually responded less favorably to financial products with more protection and guarantees.

Create income solutions that address loss aversion and reposition guarantees as a way to gain control over income and spending.

How to explain this apparent disconnect? Johnson believes that giving up control of their money was viewed by the retirees as just another type of loss. Given their hyper loss aversion, retirees were reluctant to give up their ability to withdraw money whenever they wanted in exchange for future certainty about a steady income. They were also less willing to trade off this control for protection against a large drop in the stock market.

Johnson's research offers new insights into the resistance that planners must overcome when designing new financial solutions for people near and in retirement. Because retirees show such strong aversion to loss and change, new products that offer guarantees and protection must be positioned as a way to gain control of income and spending.

Cognitive Impairment:
Precipitous Declines in Cognition Can Set the Stage for Poor Decisions about Retirement Finances

Based on an interview with Prof. David Laibson of Harvard University

While old age may bring more experience and wisdom, it also diminishes the quality of decision making. In his studies of older Americans, Laibson and his collaborators (Agarwal et al, 2009) report a significant decrease in "analytic cognitive functioning" as people age and an increase in the occurrence of dementia. After age 60, the prevalence of dementia roughly doubles every five years. By the time people reach their 80s, more than half will suffer from either dementia or other significant cognitive deficits.

The older adults that Laibson studied also showed marked declines in "numeracy"—the mathematical skills needed to cope with everyday life and to understand information in graphs, charts or tables. They also had great difficulty understanding simple measures of risk. When asked which numbers represented the biggest risk of getting a disease, 1 in 10, 1 in 100 or 1 in 1000, an astounding 29% of older adults (ages 65-94) could not answer the question correctly! (Peters, 2008a, 2008b) That's a troubling finding given that working with numbers and understanding risk is important to building a retirement income plan.

After age 60, the prevalence of dementia roughly doubles every five years.

Laibson and his colleagues also discovered that older adults make more financial mistakes. When they examined 10 different types of credit behavior, they found that the quality of decisions started declining at around age 53 and continued to diminish thereafter. The older group, for example, borrowed at higher interest rates and paid more fees than middle-aged individuals.

The implications of this research are significant to those creating retirement income solutions, because cognitive impairment may leave many older adults ill-equipped to make good decisions about drawing down their assets and protecting their income during retirement.

Current regulations seek to protect workers from making bad choices during the accumulation years by specifying the types of investments to be offered and encouraging the use of target date and asset allocation funds for QDIAs (qualified default investment alternatives). Unfortunately, no such regulations are in place to protect retirees in the decumulation years, when they may be less capable of making sound financial decisions.

Going forward, there should be such solutions, including investment strategies and public policies that encourage people to make binding decisions earlier in life and prior to the onset of cognitive impairment. They must also protect older adults from unwisely draining their assets too quickly, either by offering financial products that guarantee payouts for life or by limiting the amount that may be withdrawn at a given point in time.

Build solutions that help people make key decisions about retirement income as early as possible.

Examples of such pre-need planning are already in place in parts of Europe, Latin America, and Asia. There, regulations require people to commit a portion of their tax-advantaged retirement savings to guaranteed life income or systematic withdrawal products.

Tangible Mental Accounts:
Bucketing Assets into Specific Subaccounts Can Increase Retirees' Ability to Meet Their Financial Needs

Based on an interview with Prof. George Loewenstein of Carnegie Mellon University

The seminal work of Thaler (1985) on "mental accounting" suggests that people often divide their money into separate mental "buckets"—for dining out or travel, for example—as a way to keep track of spending. One of the advantages of this mental accounting is that it helps people control their spending. But if applied to the extreme, it can result in poor outcomes.

Suppose, for example, that a retiree's "dining out" bucket is depleted but his "travel" bucket is still full. Along comes his 10th wedding anniversary. While he would prefer to take his spouse out to celebrate, his mental dining bucket is depleted, so he opts to stay at home. If that retiree had been less rigid about a bucketing strategy, he could have tapped a bit of the travel account for the celebration—and avoided the wrath of his spouse!

Earmarking savings in an envelope with a picture of their children nearly doubled the savings rate of parents.

The process of mentally bucketing money in multiple accounts is often combined with earmarking the accounts for specific goals. (In the above example, buckets were designated for "dining out" and "travel.") While it seems like an inconsequential process, earmarking can have a dramatic effect on retirement saving. Cheema and Soman (2009) found that earmarking savings in an envelope labeled with a picture of a couple's children nearly doubled the savings rate of very low income parents.

The results by Cheema and Soman could explain why some US financial institutions offer clients the opportunity to label college savings accounts with a child's name. Saving becomes easier because the money is earmarked for the education of a specific child.

Applying the bucketing and earmarking concept to the retirement decumulation phase, Loewenstein et al (2010) propose separate "pay the rent" and "spoil the grandkids" accounts for retirees who are concerned about investment losses and outliving their money. The pay-the-rent account can be invested conservatively—for example, in products with guaranteed lifetime income—so there is no risk of running out of money to pay the rent and other essential expenses. The discretionary spoil-the-grandkids account can be invested more aggressively to generate growth.

Reinforce the positive effects of bucketing and earmarking by offering new account structures that mirror retirees' needs and goals.

Not only does this system of multiple accounts provide peace of mind about covering the basics, it may also reduce the pain of paying for a vacation to Disneyland with the grandkids because it comes from an account earmarked for exactly that purpose.

Inertia:
Default Payout Options Can Handicap Retirees Who Are Not Motivated to Adopt a Personalized Strategy

*Based on an interview with Prof. **Brigitte Madrian** of Harvard University*

To increase participation in their 401(k) plans, many companies now automatically enroll employees. Automatic enrollment has been shown to significantly boost participation rates. Madrian and Shea (2001) examined data from a large US corporation that switched to an automatic enrollment policy from opt-in enrollment (where employees had to apply for participation).

In their seminal paper documenting the strong influence of inertia on 401(k) allocations, they reported that automatic enrollment increased participation from 49% to 86%. Further, most of these employees remained enrolled, continuing to participate. In addition, 61% retained the default contribution rate and investment allocation. Only 1% of workers who entered the 401(k) program prior to automatic enrollment selected the default options.

61% of employees enrolled automatically in a 401(k) plan retained the default contribution rate and investment allocation.

However, Madrian also pointed out that over time some employees recognized that the default allocation was not their optimal strategy. At first, only 10% of employees chose an allocation other than the default. But within a month, that number had grown to about 35% and within two years, to 50%.

Significantly, employees who stay with sub-optimal defaults appear to be those with the least assets. Madrian reported that more than 70% of individuals earning less than $20,000 per year stuck with the 401(k) default as compared to less than one third of those earning between $70,000 and $79,000.

This has significant implications for the decumulation phase of retirement wealth management. Employees carried by inertia can change their contribution amounts and allocations if they decide the default settings are not in their best interests. However, retirees who by default choose certain retirement income solutions cannot. Unlike accumulation decisions, some decumulation decisions are irreversible.

Consider the financial circumstances of low-income employees. Because many of these individuals depend on Social Security payments, the largest proportion of their retirement assets is illiquid. If they have also defaulted into an irreversible lifetime income solution, they may find it difficult to draw on their retirement savings for a large unexpected expense like a medical emergency.

Create customized defaults that nudge retirees toward optimal payout decisions.

Before setting defaults, plan sponsors would be well advised to evaluate the potential impact of inertia on different types of retirees. For example, as explained above, it may be inappropriate to offer identical default decumulation options to higher- and lower-income employees. Furthermore, policymakers should make it easier for sponsors to customize decumulation options by eliminating non-discrimination rules that require all retirees—even those with unique needs—be presented with the same default payouts.

Evaluability:
When Assessing Their Options, Retirees Gravitate Toward Those That Are Easiest to Understand

*Based on an interview with Prof. **John Payne** of Duke University*

In their decision making, human beings do best when presented with apples-to-apples comparisons. Research shows that the ease with which a product's attributes can be evaluated and compared strongly influences decisions (Hsee, 1996). However, by focusing on the easiest aspects of a decision, people do not always make optimal choices.

Currently, retirement income solutions are presented in such a way that retirees overweight certain attributes at the expense of others. For example, 69% of married women and 28% of married men opt for single life annuities rather than joint and survivor annuities (Johnson et al, 2003). Although some may have good reason to do so, others may be responding to the way the information they receive is presented.

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For lifetime income solutions, retirees are typically presented with materials highlighting the monthly payouts provided by each option. For many, the optimal choice is obvious: the highest monthly payout. Why would a retiree choose a product paying $3,000 per month when another product offers them $4,000 per month? A payout of $4,000 per month has the most intuitive appeal. In other words, the dollar amount—the attribute that is easiest to evaluate—trumps all other attributes.

As a result, retirees may fail to recognize the implications of their decision on their spouse. Some guaranteed lifetime income solutions stop payouts after the purchaser's death while others continue making payments to the deceased's spouse. Products with higher spousal benefits tend to offer lower monthly payouts during the buyer's lifetime. So making a choice based only on the initial monthly payouts—the most prominently featured product attribute—can have serious consequences for the surviving spouse.

Payne suggests that a new language is needed to help retirees make better-informed decisions. This language would make a product's attributes more meaningful and would facilitate an apples-to-apples comparison between offerings. Payne uses the example of energy usage labels on appliances, where the "Jargonese" kWh is given context by providing a scale. Consumers can evaluate a potential purchase by seeing where its performance lies along the scale—closer to the end that represents less efficiency or the end that represents higher efficiency (Cox and Payne, 2005).

Use a new language to make it easy for retirees to see the implications of their decisions and identify the most appropriate financial solution.

Payne's new financial language would avoid Jargonese and encourage presentation methods that provide context and help retirees compare products. For example, the implications for retirees making a choice between single life annuities and joint and survivor annuities would be clearly spelled out, with the monthly spousal payouts in the event of the buyer's death listed prominently. This way, it would be easy for the retiree to see which products fail to provide for the surviving spouse. Payne argues that this approach would improve the quality of retirees' financial decision making.

Active Decision-Making:
When Asked to Choose, Many Retirees Pick Guaranteed Lifetime Income Over a Lump Sum

Based on an interview with Dr. Alessandro Previtero of UCLA

Almost half a century ago, Yaari (1965) developed a theoretical model suggesting retirees should annuitize all of their wealth. Yaari's provocative theory was somewhat limited as it did not consider real world complexities such as paying out-of-pocket medical expenses. But even after factoring in additional complexities, many academics still feel retirees should annuitize a significant portion of their wealth.

Though many theoretical models point to the benefits of guaranteed lifetime income, there is very little evidence that retirees favor annuities. For example, Schaus (2005) reports that from 1999 to 2005, only 2% to 6% of retirees elected guaranteed lifetime income when it was available in their 401(k) plans. The dramatic discrepancy between theoretical predictions and the actual behavior of retirees has been dubbed the "Annuity Puzzle."

49% of those actively choosing selected guaranteed lifetime income over a lump sum.

Is there really an Annuity Puzzle? Put differently, do most retirees really "choose" not to purchase lifetime income? Or do retirees pick lifetime income solutions when they must make an active choice about retirement payouts and do not have the option of remaining with the status quo or a default?

Recently, Previtero (2010) identified a unique dataset of more than 100 defined benefit plans, covering more than 100,000 retirees. Each of these individuals had to actively choose between guaranteed lifetime income and a lump sum. Because there was no default, they had to decide themselves how to withdraw funds.

Previtero reports that 49% of retirees making an active choice between guaranteed lifetime income and a lump sum actually picked the lifetime income option (see also related work by Choi at el, 2009). This result flies in the face of the so-called Annuity Puzzle and the widespread perception that retirees do not like lifetime income solutions.

When making this type of active decision, context can be highly influential. In subsequent research, Previtero compared payout decisions in defined benefit plans with those in cash balance plans.

Defined benefit plan payout options are typically communicated in terms of monthly income, and viewed through this lens, guaranteed income products tend to look attractive. In contrast, cash balance plans are often communicated in terms of account balances or lump sums, which is less favorable for guaranteed income products. Not surprisingly, Previtero found that retirees in defined benefit plans were 17% more likely to choose the guaranteed lifetime income than their peers in cash balance plans.

Make retirement income solutions available in 401(k) plans and nudge retirees to actively choose.

The so-called Annuity Puzzle may be no more than circumstantial. Active decision-making and a plan context which highlights monthly income could increase the attractiveness and adoption of retirement income solutions.

Money Illusion:
People Vastly Underestimate the Impact of Inflation on their Cost of Living

Based on an Interview with Prof. Eldar Shafir of Princeton University

Most people fail to gauge the impact of inflation on their nest-egg. They are inclined to think in nominal dollars—in terms of day-to-day prices. Consider real estate. Many individuals celebrate when they sell their houses at a higher price than they paid. But adjusted for inflation, these homeowners may have actually lost money.

Inflation's corrosive effect has significant implications for a person's standard of living, not to mention quality of life. The purchasing power of a dollar can vary greatly over time. For example, the medical services for the elderly that cost just one dollar in 1983 now have a price tag of more than four dollars (Schondelmeyer et al, 2009).

So when it comes to retirement or any long-term savings goal, the impact of inflation is a critical consideration. The cumulative effect of compounding—that even low rates of inflation can multiply exponentially—is frequently overlooked. An inflation rate of just 3% compounded over 10 years can erode purchasing power by 25%. Compounded over 20 years, a 3% inflation rate can reduce purchasing power by nearly 50%.

Medical services for the elderly that cost just one dollar in 1983 cost more than four dollars today.

Older adults, who experience declines in numerical ability, may be particularly prone to neglecting or underestimating the impact of inflation. Retirees can fail to recognize the extent to which the purchasing power of future payouts designated in nominal dollars will be diminished, leaving them with insufficient funds to maintain their lifestyle or pay for essential medical services. With the average length of retirement at approximately 20 years, this possibility is quite likely.

Shafir examined the psychological basis of the money illusion, which refers to the outsized influence of nominal dollars on decision-making. He found that an individual's preference for an inflation-indexed or a non-indexed contract could be influenced by the way the risk was presented (Shafir et al, 1997).

Incorporate some inflation protection into retirement income solutions.

When the possibility of losing "real" dollars (that is, dollars adjusted for inflation) was prominently featured, people tended to favor an inflation-indexed contract. However, when the possibility of losing nominal dollars was emphasized, a non-indexed contract was preferred. Interestingly, when contract information was presented in a neutral way, an individual's preferences were similar to those when a possible loss of nominal dollars was presented. These findings suggest that people naturally think about risk in terms of nominal dollars. It also indicates that if the risk to real dollars is demonstrated to them, the money illusion can be minimized.

It should be a standing policy to offer financial products that provide some protection from inflation. Such products may not intuitively appeal to older adults or retirees, but Shafir's work suggests their benefits can be presented effectively.

Fairness:
The Attractiveness of a Retirement Income Solution Depends on its Perceived Fairness

*Based on an interview with Prof. **Suzanne Shu** of UCLA*

Imagine that two people receive a windfall in the form of a chocolate cake. Now suppose a third of the cake lands on one person's plate while the other two-thirds lands on the plate of a neighbor. What happens next?

Economic theory predicts the one who receives less cake will happily eat it, grateful for the unexpected windfall. However, Thaler (1988) has reported the exact opposite in dozens of studies. Many people choose to throw away the cake because they consider it unfair that someone else got more than they did. They actually want no one to have cake, unless they get their fair share.

Shu contends that fairness considerations impact important real-world decisions such as our choice of retirement income solutions. For example, without receiving the right information, retirees might mistakenly perceive that lifetime income providers unfairly profit from early deaths. To combat this perceived unfairness, one could educate retirees about mortality credits and explain that, in fact, any early deaths subsidize the individuals who live longer. However, a more effective way to address this, Shu suggests, is to redesign the menu of retirement income solutions in a way that promotes their perceived fairness.

In some circumstances, the majority of people reject a financial windfall they perceive as unfair and choose to walk away with nothing.

For example, consider the case of tontines. Tontines are pooled assets that let a group of people, say all firefighters retiring in 2010, self-insure against longevity. They all contribute to the pool and receive interest and dividends proportional to their contribution. As time passes and some retirees die, only those who are still alive share the interest and dividend payments.

Now compare conventional annuities and tontines in terms of perceived fairness. In the case of annuities, an uninformed retiree might believe that an early death benefits the financial institution. However, in the case of tontines, an early death benefits other firefighters, which is likely to be perceived as far more fair.

Design and present retirement income solutions in ways that maximize perceived fairness.

Interestingly, Shu tells us that in 1905, there were 9 million tontine policies outstanding among a population of 18 million households (Ransom and Sutch, 1987). Tontines, however, had their own shortcomings. Tontines were outlawed in the early 1900s because of corruption within the industry. Traditional tontines also had the risk that one community member would kill another to profit from their death—a problem that could be solved with anonymous membership in the tontine pool.

To summarize, careful consideration should be given to how we can integrate the concept of fairness into the design and presentation of retirement income solutions.

Summary:
A Behavioral Finance Checklist for Retirement Income Strategies

By Prof. Shlomo Benartzi of UCLA

In this report, we have outlined 10 behavioral insights that should be taken into account when creating and evaluating a retirement income strategy. These insights can add a human dimension to the design of a retirement system, helping to prevent "behavioral blind spots" that could dramatically compromise it.

At a time when individuals are asked to assume more responsibility for their retirement savings, we believe the human element is a critical determinative factor. For retirees, it can mean the difference between living in financial security and running out of money.

To facilitate the application of our 10 behavioral insights, we have created a behavioral checklist on the facing page that can be used by policy makers to evaluate how different policy proposals compare in terms of their impact on employee/retiree behavior. The checklist is in alphabetical order by last name of the researcher.

Similar checklists could be created for plan sponsors and financial advisors, tailored to their specific needs.

We sincerely hope that this checklist and our behavioral insights are helpful to policy makers as they evaluate proposals. Please do not hesitate to contact us if you have questions or would like us to conduct follow-up research.

For more information, contact Cathy Smith at Allianz Global Investors:
cathy.smith@allianzinvestors.com

A Behavioral Finance Checklist for Retirement Income Strategies

	Checklist	Inspired by the Work of Professor...
☐	Is the retirement income strategy framed in terms of the monthly income a retiree will receive?	Brown on *Framing*
☐	Are the implications of today's financial decisions vividly presented so employees see how their lives will be affected?	Goldstein on *Vividness*
☐	Is the strategy appropriate for retirees who are hyper-sensitive to losses?	Johnson on *Hyper Loss Aversion*
☐	Can retirement income decisions be made before the onset of cognitive impairment? Are the number and complexity of choices manageable for older individuals?	Laibson on *Cognitive Impairment*[2]
☐	Does the retirement income strategy offer multiple accounts to facilitate different goals, such as paying the rent or spending money on vacations?	Loewenstein on *Tangible Mental Accounts*
☐	Are employees, carried by inertia, assigned to a customized default that is appropriate to their situation?	Madrian on *Inertia*
☐	Does the language used to describe the retirement income strategy make it easy to evaluate its features?	Payne on *Evaluability*
☐	Does it encourage individuals to make active choices?	Previtero on *Active Decision-Making*
☐	Does the retirement income strategy provide some inflation protection?	Shafir on the *Money Illusion*
☐	Will it be perceived as fair by most retirees?	Shu on *Fairness*

[2] See also work by Iyengar et al (2004) on choice overload.

References

AARP and American Council of Life Insurers (ACLI). (2007). *What Now? How Retirees Manage Money to Make it Last Through Retirement. Report of Findings.*

Agarwal. S., Driscoll, J, Gabaix, X., and Laibson, D. (2009). The age of reason: Financial decisions over the life-cycle and implications for regulation. *Brookings Papers on Economic Activity*, 2, 51-117.

Benartzi, S., and Thaler, R. (2007). Heuristics and biases in retirement savings behavior. *Journal of Economic Perspectives*, 21(3), 81-104.

Carroll, G., Choi, J., Laibson, D., Madrian, B., and Metrick, A. (2009). Optimal defaults and active decisions. *Quarterly Journal of Economics*, 124(4), 1639-1674.

Cheema, A., and Soman, D., (2009). Earmarking and Partitioning: Increasing Saving by Low-income Households. Working paper. University of Virginia.

Choi, J., Laibson, D., Madrian, B., and Metrick, A. (2002). Defined contribution pensions: Plan rules, participant decisions, and the path of least resistance. In J. Poterba (Ed.), *Tax Policy and the Economy: Vol. 16* (pp. 67-114). Cambridge, MA: MIT Press.

Choi, J., Laibson, D., Madrian, B., and Metrick, A. (2004). For better or for worse: Default effects and 401(k) savings behavior. In D. Wise (Ed.), *Perspectives in the Economics of Aging* (pp. 81-121). Chicago, IL: University of Chicago Press.

Cox, James D. and Payne, John W. (2005). Mutual fund expense disclosures: a behavioral perspective. *Washington University Law Quarterly* 83, 907-938.

Ersner-Hershfield, H., Goldstein, D., Sharpe, W., and Bailenson, J. (2010). Future Self-Continuity and Saving Behavior. Working paper.

Gourville, J. (1998). Pennies-a-day: The effect of temporal reframing on transaction evaluation. *The Journal of Consumer Research*, 24(4), 395-408.

Hewitt Associates. (2010). *Hot Topics in Retirement*.

Holden, K., and Zick, K. (2000). Distributional changes in income and wealth upon widowhood: Implications for private insurance and public policy. In *Retirement Needs Framework*. SOA Monograph M-RS00-1. Schaumburg, IL: Society of Actuaries.

Hsee, C. The evaluability hypothesis: An explanation of preference reversals between joint and separate evaluations of alternatives. *Organizational Behavior and Human Decision Processes*, 67(3), 247-57.

Iyengar, S.S., Huberman, G., and Jiang, W. (2004). How much choice is too much? Contributions to 401(k) retirement plans. In O. Mitchell, and S. Utkus, (Eds.), *Pension design and structure: New lessons from behavioral finance* (pp. 83-95). Oxford: Oxford University Press.

Johnson, R., Uccello, C., and Goldwyn, J. (2003). Single life vs. joint and survivor pension payout options: How do married retirees choose? Urban Institute. Final Report to the Society of Actuaries and the Actuarial Foundation.

Kahneman, D., and Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47, 263-291.

Madrian, B., and Shea, D. (2001). The power of suggestion: Inertia in 401(k) participation and savings behavior. *Quarterly Journal of Economics*, 4, 1149-1187.

McNeil, B., Pauker, S., Sox, H., and Tversky, A. (1982). On the elicitation of preferences for alternative therapies. *The New England Journal of Medicine*, 306, 1259-1262.

Panis, C. (2003). Annuities and Retirement Satisfaction. Working Paper No. 03-17 DRU 3021. Santa Monica, CA: RAND Corporation.

Peters, E. (2008a). Aging-related changes in decision making.
Presented at the RAND Summer Institute, Santa Monica, CA.
http://www.rand.org/pubs/conf_proceedings/CF254/ agingrelated_changes_in_decision_making.html

Peters, E. (2008b). Numeracy and the perception and communication of risk.
Annals of the New York Academy of Sciences, 1128, 1-7.

Prevetiro, A. (2010). Stock Market Returns and Annuitization. Working paper.
University of California, Los Angeles.

Ransom, R., and Sutch, R. (1987). Tontine insurance and the Armstrong investigation: A case of stifled innovation, 1868-1905. *Journal of Economic History*, 47(2), 379-90.

Schaus, S. (2005). Annuities make a comeback. *Journal of Pension Benefits: Issues in Administration*, 12(4), 34-38.

Schondelmeyer, S., Purvis, L., and Gross, J. (2009). Rx watchdog report: Drug prices continue to fall despite lack of growth in general inflation rate. *Insight on the Issues* (AARP), 36.

Shafir, E., Diamond, P., and Tversky, A. (1997). Money illusion. *Quarterly Journal of Economics*, 112(2), 341-74.

Thaler, R. (1985). Mental accounting and consumer choice. *Marketing Science*, 4(3), 199-214.

Thaler. R. (1988). Anomalies: The ultimatum game. *Journal of Economic Perspectives* 2(4), 195-206.

Thaler, R., and Benartzi, S. (2004). Save More Tomorrow: Using behavioral economics to increase employee savings. *Journal of Political Economy*, 11, S164-S187.

Tversky, A., and Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty*, 5, 297-323.

Tversky, A., and Kahneman, D. (1981). The framing of decisions and the psychology of choice.
Science, 211(4481), 453-458.

Yaari, M. (1965). Uncertain lifetime, life insurance, and the theory of the consumer.
Review of Economic Studies, 32, 137-50.

Biographical Information for Academics

Below, in alphabetical order, are the academics interviewed for this report, along with academic information and links to their on-line CVs.

Shlomo Benartzi
UCLA Anderson School of Management, Professor and Co-Chair of the Behavioral Decision-Making Group
Co-founder of the Behavioral Finance Forum
http://www.anderson.ucla.edu/x1545.xml

Jeffrey Brown
University of Illinois, William G. Karnes Professor in the Department of Finance
Director of Center for Business & Public Policy at University of Illinois College of Business
Associate Director of the NBER Retirement Research Center
http://www.business.illinois.edu/jbrown/

Daniel G. Goldstein
Yahoo Research, Research Scientist
London Business School, Assistant Professor of Marketing
http://www.dangoldstein.com/
http://www.london.edu/facultyandresearch/faculty/search.do?uid=dgoldstein

Eric Johnson
Columbia University, Norman Eig Professor of Business
Director of the Columbia Center for Excellence in E-Business
Co-Director of the Center for Decision Sciences at Columbia University
http://www0.gsb.columbia.edu/whoswho/bio.cfm?ID=55614

David Laibson
Harvard University, Robert I. Goldman Professor of Economics
http://www.economics.harvard.edu/faculty/laibson

George Loewenstein
Carnegie Mellon University, Herbert A. Simon Chair of Economics and Psychology
Head of Behavioral Economics, Center for Health Incentives, University of Pennsylvania.
http://sds.hss.cmu.edu/src/faculty/loewenstein.php

Brigitte Madrian
Harvard University's Kennedy School of Government, Professor of Public Policy and Corporate Management in the Aetna Chair
Director Social Science Program at the Radcliffe Institute for Advanced Studies
http://www.hks.harvard.edu/fs/bmadria/

John Payne
Duke University, The Fuqua School of Business, Joseph J. Ruvane, Jr. Professor of Business Administration
Director, Center for Decision Studies, Fuqua School of Business
http://faculty.fuqua.duke.edu/~jpayne/bio/

Alessandro Previtero
UCLA Anderson School of Management, Postdoctoral Fellow
http://personal.anderson.ucla.edu/alessandro.previtero/CV.html

Eldar Shafir
Princeton University, William Stewart Tod Professor of Psychology and Public Affairs
http://weblamp.princeton.edu/~psych/psychology/research/shafir/index.php

Suzanne Shu
UCLA Anderson School of Management, Assistant Professor
http://www.anderson.ucla.edu/x19555.xml

Thanks also to the following writers who contributed to this response: Aileen Heinberg, Eve B. Rose, and Polly Walker.


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