Building Best Practices in Retirement Income
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Conference Proceedings

Stanford Center on Longevity
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longevity.stanford.edu/financial-security
INTRODUCTION

Background

The move from defined benefit (DB) to defined contribution (DC) retirement plans in the United States and much of the developed world has led to three challenges that threaten the retirement security of workers around the world:

1. Inadequate contributions to retirement plans
2. Leakage from plans due to loans and early distributions
3. Challenges with converting savings into reliable lifetime retirement income

In recent years, DC plan sponsors have implemented features in their plans that have made significant progress in addressing the first two challenges, including auto-enrollment, auto-escalation of contributions, design of the investment lineup of funds under ERISA Section 404(c), and qualified default investment alternatives (QDIA). Legislative and regulatory guidelines for these features provided significant encouragement to plan sponsors to adopt these features and are widely credited for increasing their prevalence.

However, very little progress has been made in lifting some of the burden retirees face in generating reliable income from their savings (challenge number three). Currently, the most common practice is for plan sponsors to distribute plan accounts to participants in a lump sum payment at the election of plan participants upon their termination of employment or retirement. Participants are then on their own to generate retirement income from their savings throughout their retirement, or to seek help from retail financial institutions and/or advisors.

Employers and plan sponsors are in a unique position to help retiring employees generate retirement income from their DC accounts, yet few employers currently offer this benefit.

The Conference

This conference, “Building Best Practices in Retirement Income,” sponsored by the Stanford Center on Longevity and co-hosted by Nobel Laureate Dr. Bill Sharpe, gathered a small group of experts to discuss important issues regarding implementing programs of retirement income in DC plans. The group identified areas of agreement and disagreement, and identified topics for future discussion.
For the purpose of the conference, a program of retirement income includes:

- One or more mechanisms for converting savings into income, called retirement income generators (RIGs)
- A default or recommended retirement income solution
- Participant disclosures to help make informed decisions
- Administrative rules and procedures to implement employee decisions, including the ability to allocate savings among two or more RIGs and/or the ability to phase the deployment of RIGs

The first day of the conference was divided into six discussion sessions that each began with a short presentation, followed by a group discussion. The sessions addressed the following questions:

1. What is the business case for employers/plan sponsors to offer a program of retirement income in their DC plans, to help participants use their retirement savings to generate reliable retirement income?

2. What should a retirement income program include? Possibilities include in-plan or out-of-plan income solutions; communications and education; and counseling and advice.

3. What retirement income solutions are possible to be offered in an employer-sponsored retirement plan and might be considered efficient and optimal?

4. What are the relevant fiduciary issues for plan sponsors? What types of regulatory and legislative changes would be supportive?

5. What practical barriers exist to implementing programs of retirement income? How can these barriers be addressed?

6. What are the relevant behavioral finance and communication issues that employers should be aware of when designing a program of retirement income?

Day two began with three presentations offering information about Social Security claiming strategies, an international perspective from Australia, and innovative ideas for the future. The group then individually voted on several statements to identify areas of agreement and disagreement among conference attendees. Results from the voting were calculated after the conference and are presented in these proceedings (see Summary of Consensus Voting on pg. 37).

A number of key themes emerged over the day-and-a-half conference. Many attendees highlighted the need to build a better business case for including programs of retirement income in DC plans. We need more movement from employers and more demand from employees. With respect to product and program characteristics, the group stressed the importance of simplicity and flexibility. The best solutions will incorporate insights from
behavioral finance and will address the great heterogeneity in both employers and plan participants.

The group also identified several research ideas and projects that could further the field. For example, developing regulatory guidelines that would make plan sponsors comfortable with implementing retirement income programs would be extremely beneficial (this project is already underway at SCL). Another research idea is to collect and analyze data to show how retirees spend their retirement savings. Do they spend down savings too quickly or do they hoard their money for fear of running out? A complete list of research and project ideas is presented in these proceedings (see Action Agenda on page 47).

Overall, attendees expressed great enthusiasm for the topic and the intention to remain engaged for future discussions and projects.

The pages that follow are intended to document the conversations and key points made at the conference. They are best understood when read together with the discussion leaders’ slides that are included in the Appendix.
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TOPIC #1
THE BUSINESS CASE

Discussion Leader: Steve Vernon, FSA, Consulting Research Scholar, Stanford Center on Longevity

Discussion Questions:

• Can employers improve the financial security of their employees by implementing programs of retirement income in their DC plans?
• What is the business case for employers to offer a program of retirement income in their DC plans?

Vernon began the session by enumerating the commonly cited reasons why employers are well-suited to improve the retirement security of their employees. Large, sophisticated employers have the resources to conduct due diligence and the buying power to increase retirement incomes. They also have the ability to improve decision-making through unbiased communications and can increase the chance of their employees’ success by providing administrative rules and procedures to implement participants’ elections.

But why would companies want to include programs of retirement income in their plans? In other words, what’s the business case? Vernon offered several commonly-expressed reasons why implementing programs of retirement income would be beneficial to the employer, including workforce succession management, improved productivity, positive workplace branding, retention of assets which reduces per participant administrative costs, and corporate responsibility. He added two more insights to help build the business case:

• A program of retirement income increases the likelihood that employer contributions – representing a significant expenditure of valuable employer capital – accomplish the original goal of improving retirement security.
• Such a program can be positioned as a low-cost benefit improvement.

He asked the attendees to add to this list of how employers can help their employees— and why they should want to.

Key Discussion Points:

Employer Benefits of Providing Retirement Income

• Workforce Management
  – The existence of retirement income could be useful for succession planning. As echoed at previous SCL conferences about adapting to an aging workforce, many companies find that they can no longer manage the exits of their employees after the DB to DC transition. Having reliable income in retirement may facilitate the exit of older workers in a predictable fashion.
There is some debate as to whether retirement income options could be used as recruiting and retention tools.

- Some argue that 401(k) product options are not really effective as recruiting tools. What seems to matter more to employees is the existence of broad retirement plan features, not the specific details of the plan.
  - For example, it matters if the employer offers matching contributions (vs. not offering matching), but the percentage of the matching does not seem to be as important.
- However, as DB plans continue to disappear, they may become a novelty that could be used as a recruitment tool. This might also apply to DC plans with DB-like functionality.
- One reason employees may not find retirement income solutions appealing is that they may be susceptible to the cognitive barrier of present bias. They have difficulty visualizing their life in retirement and may not have a concrete sense of need.
  - Thinking about these biases will aid in developing design solutions and policy interventions.

- Reducing Healthcare Costs
  - For many companies, healthcare costs grow exponentially as employees age. Offering employees the certainty of lifetime income may encourage them to retire earlier and reduce the overall healthcare costs of the employer.

- Company Branding
  - Offering retirement solutions that lead to positive outcomes for retirees is a way to enhance a company’s reputation in the community.
  - This may be particularly important to large companies in small towns where reputation is very important.

- Corporate Social Responsibility
  - For some companies, offering lifetime income is just seen as the right thing to do. Employers who have recently closed or frozen their defined benefit plans may fall into this group. These companies may feel it’s their duty to provide income stability for their employees after retirement. For this group, a business case is less critical because there is also a moral case for offering lifetime income.

_Bolstering the Business Case_

- If the employer is designated as the best channel through which to offer lifetime retirement income, then it would be beneficial for the government to offer employers some sort of “nudge,” most likely through policy incentives.
- Employers have a significant impact on employee decision-making, whether intentional or unintentional. Employers can influence outcomes through careful choices of offerings and defaults. However, such offerings have the most power when participants are indifferent; if employees already have strong preferences for lump sum payments, they may continue to elect them even if it’s not in their best interest.
• Wider adoption among peers would offer plan sponsors greater proof of concept and examples of real-world success.
• It may be helpful to approach this issue by identifying the characteristics of employers who are likely to offer retirement income programs. What do they have in common? Large employers who previously offered DB plans to their employees cared about retirement security at one time in their history, and they may be more inclined to take action steps to improve retirement security with DC plans.

**Employer Heterogeneity**

• Both the “business case” and the feasibility of implementing lifetime income products into retirement programs vary by company size.
  – Small companies may not have the resources that large companies do. At the small end of the market, retirement plans are often more of a team effort among plan providers, financial advisors, and plan administrators, who may need to demonstrate leadership and innovation with their product and service offerings.
• It is also important to think about options for the self-employed, part-time employees, and contractors, who do not have access to the same benefits as traditional employees.
• Small business owners may implement retirement income options in their plans out of self-interest.
• Since employers exhibit such heterogeneity, it may not be appropriate to require them to offer the same “bundles” of products or opportunities for their employees.

**Challenges and Concerns**

• There’s a lot of skepticism in the HR, legal, and consulting community that retirement solutions in DC plans are possible or desirable. Leadership is needed to overcome this skepticism through awareness-raising and advocacy. The fact that attendees came to the conference is evidence of optimism that positive solutions are possible.
• If employers don’t offer institutionally-priced retirement income programs, many employees will be placed in high-priced retail solutions, significantly reducing their retirement income.
• Most employees fail to actively plan for retirement, they didn’t value or understand the details of their DB plans, and now they may not understand the value of including retirement income solutions in DC plans. To succeed, employers will need to tell employees in compelling ways why they should care about retirement security.
• The illusion of control is an important driver in participant behavior. In Australia, once plan balances reach significant levels, participants don’t trust providers anymore and move their balances to private plans.
• A critical success factor is to build a culture around the importance of paycheck replacement.
TOPIC #2
RETIREMENT PROGRAM ELEMENTS

Discussion Leader: Neil Lloyd, FSA, Partner, Mercer

Discussion Questions:

- What retirement income solutions exist today that can be offered through employer-sponsored retirement plans?
- How can these solutions be described and organized to help employer decision-making?
- Does a motivated and interested plan sponsor need to wait for the market to evolve more robust retirement income solutions?

Neil Lloyd highlighted that most experts agree the sustainability of current retirement programs is an issue worth addressing. Yet, there has been very little progress with implementing retirement income options. This can be attributed to several factors, including the complexity of the topic and the different perspectives (and priorities) of the stakeholders involved. Lloyd offered several suggestions for how to promote progress in this area. He noted that many employers start by searching the marketplace for available products without understanding the prerequisite issues of why a retirement income focus is important for their organization, what their employees need, or how much time and money the organization is prepared to expend. He highlighted the fact that no products (current or future) will be perfect, but weaknesses can be addressed if the employer is truly committed to implementing a retirement income solution.

Key Discussion Points:

Balancing Objectives

- Designing retirement income products is complicated by the fact that these products must balance multiple, often conflicting, perspectives.
  - Products must balance the three competing objectives of retirees: the “retirement trilemma” of access to capital, protection from risk, and participation in upside if investments perform well. No product addresses all three objectives, so retirees must prioritize based on individual needs and preferences.
    - The amount of initial income is also an important factor for retirees.
  - Plan sponsors also need to weigh these trade-offs when designing the retirement income solutions to offer participants. The perfect product that addresses all three objectives doesn’t exist, or if it appears to, it most likely has high fees with many restrictions in the fine print.
  - Employers also have several objectives to balance, including transferability to another plan, whether the products are in-plan or out-of-plan, fiduciary and/or regulatory issues, and fees, among others.

Note: The presentation slides contain summaries of various retirement income generators and how they meet various competing objectives. These checklists are important for understanding the discussion summarized here.
The Employer’s Path Forward

• Employers must first confirm why a retirement income focus is important for their organization and what exactly their employees need. Without this foundation, they are likely to give up when the process becomes difficult.
  – Employers too often start by searching the marketplace before truly understanding their organizations’ needs.
• Both stochastic and deterministic modeling of outcomes can help.
  – Stochastic modeling shows the range of possible outcomes.
  – Deterministic modeling is useful for showing extreme scenarios.
• No product (or combination of products) will be the “silver bullet,” but employers who have clarified why providing retirement income is important should be able to overcome the barriers.
• “Perfect” solutions don’t (and may never) exist, so let’s not wait for perfection in the product and service offerings.

Product Characteristics

• The topic is extremely complex, but retirees desire simple products that are easy to understand.
  – We should look to the automotive and cell phone industries for examples of well-designed user interfaces. Both products are internally complex, but outwardly simple to facilitate a positive consumer experience.
  – The financial industry’s ultimate acceptance of target date funds may be an analogous situation. Though they are not perfect, target date funds are better than failing to invest in anything at all.
  – The simplicity must be real – consumers will feel duped if they are sold complex products that are advertised as “simple.”
• Combination products are often better than single products in addressing retiree and employer needs.
  – Historically, there were DB plans that were integrated with Social Security. One could now imagine a DC plan that is integrated with Social Security. For example, employer contributions could be set aside to fund an annuity that helps cover expenses to enable delayed Social Security claiming.
• Research has shown that flexibility, in terms of timing and product combinations, is an important dimension to consider.
  – Many current products are “now or never” and “all or nothing.” Products of lifetime
income might be more appealing if they could be purchased gradually over time (rather than exclusively at the point of retirement) or by converting just a portion of savings (rather than converting the whole account).

- It would be helpful for the industry to agree on a common set of product standards. Companies could then compete on various dimensions that consumers (and industry professional alike) could understand.
  - One idea is to create a checklist of product dimensions that consumers could use to evaluate products based on their valuation of various attributes. This checklist would also incorporate various personal factors (home ownership, marital status, inheritance) to help consumers assign priorities to the product dimensions.
- It is still very difficult to get a clear understanding of the fees associated with various products.
- A limited menu of retirement income offerings may be an effective way to address various employee goals and circumstances. It would help greatly if the features and communications of these offerings are standardized to help participants decide how to select the solutions that best fit their circumstances. One example is that car design is fairly standardized – steering wheels, pedals, gear shifts and dashboards are consistent across most cars, yet cars are very complex. Nevertheless, there are distinguishing features of cars that consumers understand to help them select the car that works for them.

**Individual Preferences & Human Bias**

- One challenge with annuities and longevity insurance is that individuals see these products as investments rather than insurance. Consumers don’t want their money back from auto insurers if they don’t get into an accident, but they do feel like they will be “cheated” by annuities if they don’t live a long time.
- Industry professionals must remember that they are designing products for people who don’t think like they do. The average American retiree does not create an optimized retirement plan. Instead, focus groups have shown that a common financial strategy (or lack thereof) is to “deal with it later” or to just make ballpark decisions and deal with the consequences.
- It is possible that individual preferences regarding level of engagement in retirement planning change over time.
  - Passive investors may become more active as they age or reach higher account balances. In Australia, for example, many people transfer their accounts once their balances reach a certain level.
  - Alternatively, active investors may not retain their financial capacity into old age.
  - Some retirees don’t want to commit or spend their savings early in their retirement, but they become more willing to deploy their retirement savings as they progress through retirement. They may not want to commit their savings to illiquid assets (i.e. annuities) until later in their retirement.
- There are significant differences in understanding and engagement between participants
with significant wealth and rank and file employees with modest savings. Optimal solutions are different for these two groups, but the conversations are often driven with well-heeled employees in mind. Plan sponsors need to put themselves in the shoes of retirees with modest resources and limited engagement and understanding. One goal is to design programs that have a high probability of success for the vast majority of employees.

- There is a clear need for better education and financial counseling that can help individuals understand their future retirement needs.

**Holistic Perspective**

- It is important to consider the retiree within the context of his or her overall household situation.
  - Optimizing retirement income must also take into account other private assets (like a house or 401(k) plans from previous employers), other costs (like long-term care, elder care, and health care), and household transitions.
  - It’s possible that one effective use of retirement savings is to pay off the home mortgage upon retirement.
  - Though there seems to be general agreement that annuities are under-utilized, we need to remember that for some individuals, particularly those of lower socio-economic status, purchasing an annuity may not be the best use of funds.
TOPIC #3
OPTIMAL RETIREMENT INCOME SOLUTIONS

Discussion Leader: Dr. Wade Pfau, Professor of Retirement Income, The American College

Discussion Question:

- What retirement income solutions are possible to be offered in an employer-sponsored retirement plan and might be considered efficient and optimal?

Dr. Pfau began by stating that generating retirement income from savings is complicated. Individuals need to address key unknowns, such as how long they might live and investment returns from risky and volatile investments. There are many different solutions and approaches to generating retirement income, which he summarized in his slides (the Appendix contains these slides that help with understanding this discussion).

There are two general approaches to generating retirement income from savings:

1. A probability-based approach assigns the odds of failure or success to a particular solution. A solution is considered acceptable if it has low odds of failure, which can mean either running out of money or retirement income falling below acceptable levels. Probability-based approaches usually use invested assets, not insured approaches. The four percent rule is one example of this approach.

2. A safety-first approach contends that any probability of failure is unacceptable. This approach seeks to guarantee a minimum level of income that lasts for life and will not decrease due to stock market volatility. Most annuity products are examples of a safety-first approach.

Americans often express conflicting goals – they want the safety of guaranteed income but also want access to assets. These conflicting goals are reflected in the different approaches and retirement income solutions.

Dr. Pfau presented summary results from the paper The Next Evolution in Defined Contribution Retirement Plan Design, a collaboration between him, the Stanford Center on Longevity (SCL), and the Society of Actuaries Committee on Post-Retirement Needs and Risks (SOA-CPRNR). This paper studied the characteristics of stand-alone retirement income generators (RIGs) to better understand how they behave under different circumstances.

Dr. Pfau presented a graph (included in the Appendix) showing that different RIGs are expected to generate significantly different amounts of retirement income throughout retirement. He then presented graphs showing that insured approaches (annuities) perform better under unfavorable economic scenarios, and investing approaches (systematic withdrawals) perform better under favorable economic scenarios.
Dr. Pfau also presented preliminary results from a current project with the SCL/SOA-CPRNR that analyzes retirement income solutions that could be considered optimal, using two different efficient frontier analyses.

The first efficient frontier analysis emphasizes retirement income, looking for the solutions that maximize expected lifetime retirement income while minimizing the odds that the income will decrease under unfavorable economic scenarios. With this efficient frontier, annuities look optimal. The results are included in the graph in the Appendix.

The second efficient frontier analysis balances the amount of lifetime retirement income with access to assets, illustrating the trade-off between conflicting goals that Americans often express as noted above. This analysis shows that expected retirement income decreases as access to savings increases. Solutions on the efficient frontier combine traditional single premium immediate annuities (SPIAs) with systematic withdrawals using either the IRS Required Minimum Distribution (RMD) or a four percent endowment method. A key result is that for the portion of assets devoted to systematic withdrawals, 100% investment in equities is optimal. The reason is that Social Security and the SPIA represent the “fixed income” portion of a retirement income portfolio, and the systematic withdrawal solution represents the equity portion of a retirement income portfolio.

Key Discussion Points:

- The analyses presented illustrate one example of the due diligence that plan sponsors may want to conduct when analyzing retirement income solutions to be offered to their employees. Plan sponsors should understand how the various RIGs work and how they can be combined to meet common retirement planning objectives.
- Spending patterns in retirement should be considered when designing retirement income offerings. Empirical evidence shows that people spend less money as they age. It may not be necessary to generate retirement income that is fully indexed for inflation.
- On the other hand, spending late in retirement can increase significantly due to needs for long-term care.
- For many people, access to savings is important early in their retirement. It may not be that important 20 years into retirement. It is important to recognize, however, that if the savings are spent, they are no longer there to generate retirement income. So in one sense access to savings is overrated.
- Another complicating factor is that many people may not have the ability to manage their retirement savings and income strategy at advanced ages.
- One potential approach that balances the competing objectives expressed above could be a package that utilizes retirement savings by:
  - Enabling optimization of Social Security benefits through delaying benefits,
  - Offering a longevity annuity starting at an advanced age, and
  - Using systematic withdrawals with invested assets to generate retirement income until the advanced age.
- There is tremendous variance in individual amount of wealth, circumstances, and preferences, and this variance presents challenges to designing retirement income offerings.
TOPIC #4
PRACTICAL AND PERCEIVED BARRIERS

Discussion Leader: Kevin Hanney, United Technologies Corporation

Retirement for the 21st Century: A Lifetime Income Strategy, Due Diligence & Design Review

Discussion Questions:

- What are the barriers to employers implementing programs of retirement income?
- Which barriers are real, and which are perceived?
- How can these barriers be overcome?

To provide a real-world example of change, Kevin Hanney presented his experience implementing a new lifetime income strategy in the DC plan at United Technologies Corporation (“UTC”). He explained that the project was a grassroots effort to design and implement a program for retirement income that could be used broadly across UTC’s U.S.-based workforce. The program efficiently accumulates savings and converts it into a guaranteed stream of income in retirement while preserving a range of options for managing the uncertainties people invariably face as they age in retirement. The project had multiple phases, including an analysis of plan participants to understand their earnings capacity and savings capability over the span of their entire working life, expected investment returns, modeling of income replacement rates yielded by withdrawals from a range of retirement income generators, including a form of insurance contract known as an allocated group variable annuity contract with guaranteed lifetime withdrawal benefits (“GLWB”) which was eventually selected for use in the UTC program, and investigation of annuity selection rules and other regulatory issues. Hanney noted that the key to their success was having committed individuals in the organization who were willing to go the extra mile, as well as management who were willing to support the project with people at the highest levels of the organization.

He encouraged conference attendees to be flexible about the specific instruments used as retirement income generators, and stressed the importance of the proverb: “Don’t let perfect be the enemy of good.” He urged them to look for solutions that can be used broadly and effectively and to re-frame the retirement conversation from wealth accumulation to consumption, spending, and income.
When asked how the Investment group at UTC secured senior management’s approval for the project, he answered that many of their presentations were not specifically focused on the lifetime income, and that was strategic. The UTC team deliberately apportioned their internal education efforts so it was digestible and recommended a phased roll out of plan enhancements designed to lower cost, keep it simple, and maintain flexibility.

**Key Discussion Points:**

*Employee Interest*

- Active employees focus their time and energy on work and their personal lives. Few people direct their attention to financial matters which don’t present an immediate challenge. So, it’s crucial to design retirement income programs that acknowledge this behavioral bias and adapt to changing economic conditions and shifting personal priorities.
- Some companies indicated they are unlikely to offer retirement income “solutions” if their employees aren’t indicating that there is a problem.
- However, nearly 20,000 participants in the UTC defined contribution plan currently have some or all of their assets allocated to their Lifetime Income Strategy, which serves as their qualified default investment alternative (“QDIA”) and over 4,000 participants have proactively selected it since the program was introduced in June 2012.
- As the availability of defined benefit retirement plans waned, many companies shifted focus and resources to promote health care benefits as a tool to attract and retain talented employees. However, next generation retirement programs may experience a resurgence if the importance of health care benefits declines as a major part of a competitive employment proposition (due to the Affordable Care Act).

*Competing Company Priorities*

- In the face of competing priorities, many corporate decision makers don’t currently view retirement security as important enough to divest resources from other areas of concern.
- However, these executives underestimate the business impact of an aging workforce that lacks a clear path to a secure retirement.
- Business leaders might become more engaged if they are presented with products, solutions, and messaging that helps them connect the dots.

*Lack of Examples of Success*

- Companies are more likely to offer retirement income solutions if they have seen examples of positive outcomes with other employers like themselves.
- Wider adoption in the large- and mega-plan market may ultimately engage the force of positive peer pressure – leading to even greater adoption among industry peers.
- At this time, there is greater adoption of retirement income generating options in the small plan market.
**Insufficient Record-Keeping**

- Another impediment to proper adoption of retirement income is that record-keeping platforms are not currently built to offer such products.
- The infrastructure which supports most of the defined contribution plan market in the U.S. was designed to emphasize investment products and wealth accumulation, with little attention paid to the development of standards and ubiquity of retirement income generating alternatives.

**Conflicts of Interest**

- It is important to remember that there may be some people with influence in the industry who do not want to see consumers’ assets moved into institutionally-priced retirement income products because it will detract from their retail business.
- Effective retirement income programs must meet fiduciary standards of care, while simultaneously acknowledging the economics of service providers and remaining adaptable to changing business models if they are to be sustainable.

**Regulatory Guidance & Fiduciary Risk**

- Though regulatory and fiduciary issues are often cited as barriers to implementing retirement income products, experts seem to agree that the current U.S. regulatory climate does not pose significant legal roadblocks.
- Still, since companies have so many competing priorities, more regulatory guidance and safe harbors could help to ease their worries and offer a clearer path to implementation.

**Potential Market Meltdown**

- There is not a consensus as to whether a future market meltdown (like that of 2008) should be seen as a barrier to broad utilization of annuity products.
  - Some worry that state guaranty organizations would not be able to handle their financial obligations if there were another market meltdown, and believe federal backing would reduce this risk.
  - Others think that a collapse of the insurance industry (and federal backing for that matter) is unlikely and that inaction due to market risk is just an excuse to do nothing.
TOPIC #5 FIDUCIARY AND REGULATORY ISSUES

Discussion Leaders:

- Mark Iwry, Senior Advisor to the Secretary of the Treasury
- Robert Toth, Attorney, Law Office of Robert J. Toth, Jr., LLC
- Steve Vernon, FSA, Consulting Research Scholar, Stanford Center on Longevity

Discussion question:

- What are the real and perceived legal and regulatory barriers to implementing retirement income programs in DC plans?

Mark Iwry started by stating that the topic of generating retirement income is important to the IRS and DOL. He pointed out that the migration from DB to DC isn’t really complete. Most 401(k) plans are undefined benefits and undefined contributions.

Iwry made the observation that cash balance plans are the most robust plan in the system today, which defines the contribution and allows for annuity payouts. However, most benefits from cash balance plans are paid as a lump sum even though the default is an annuity payout. This provides evidence that defaults may not work as well in the payout phase as they do in the accumulation phase.

He summarized existing and proposed mechanisms that can be used today to generate retirement income in DC plans.

- DB plan sponsors can allow DC balances to be transferred to the DB plan to generate retirement income, although uptake by plan sponsors and participants is quite low.
- Recent rules show how annuities can be placed in DC plans.
- There is nothing preventing an employer from deciding to place its contributions in a deferred annuity for a participant.
- Similarly, there is nothing preventing an employer from offering a temporary payout to enable delaying Social Security benefits.
- Proposed regulations to allow longevity annuities may be finalized soon. These annuities can help protect against the tail risk of longevity. The proposed rules would allow longevity annuities to comply with required minimum distribution requirements. Note: these regulations have been finalized and published since the end of the conference.
- Abandon the “all or nothing” architecture that is prevalent with payout options in many DC and DB plans. There is nothing preventing a plan to offer partial annuitization of account balances with the remainder of assets staying invested in the DC plan. Similarly there is nothing preventing a DB plan from allowing a partial annuity and partial lump sum.
Bob Toth stated that the guidance offered by the Treasury in recent years has torn down the barriers to offering annuities in DC plans. The rules make it clear that buying an annuity in a DC plan is an investment, and they’ve clarified when spousal consent rules apply. Revenue Ruling 2012-3 and the preamble to the proposed regulations on qualified longevity annuity contracts (QLAC) lay out how the rules all work together. There aren’t a lot of regulatory walls left, and the fiduciary rules should not be much of a burden either, though there is still resistance and concern in the marketplace on this issue.

Steve Vernon presented key points from a paper written by SCL and the SOA/CPRNR that proposes how guidance could be structured on the design of a retirement income menu, using guidance on the investment menu under ERISA Section 404(c) as a template. If a plan sponsor complies with the design, disclosure, and administrative requirements of ERISA Section 404(c), it is protected from liability if a plan participant experiences unfavorable investment outcomes. ERISA Section 404(c) and related regulations require that a DC plan offer at least three distinct investment options.

The analogous result in the income phase proposed by Vernon would be that if a plan sponsor complied with guidance on the design, disclosure, and administrative requirements applying to the payout phase, it would be protected if a participant experienced unfavorable outcomes in the payout phase, such as running out of money, retirement income not keeping pace with inflation, or retirement income decreasing due to unfavorable investment experience. Under this proposal, a plan sponsor would offer three distinct retirement income options:

- Some form of annuity payout
- A systematic withdrawal solution where assets are invested with a payout method that is intended to last for life, but with no guarantee if a participant lives a long time or experiences poor investment results, and
- A temporary payout to enable delaying Social Security benefits as a means to optimize the value of those benefits

Vernon’s slides are included in the Appendix.
Key Discussion Points:

- The real threat is living a long time AND experiencing poor investment returns. It may be ok to live a long time if investment returns are favorable. Innovative product solutions may protect against the combination of these threats.
- One suggestion is to allow participants to start annuitizing small, incremental amounts during their working career. This lowers the stakes; it’s not an “all or nothing” decision. It might also fit with the passive nature of many plan participants.
- Regarding the lack of take-up of annuities in cash balance plans, there could be a distinction between a legal default and a “de facto” default. If it is widely viewed that everybody takes the lump sum in a cash balance plan, many participants will opt out of the default annuity choice and elect a lump sum. It would be desirable if a plan sponsor could express the default as a retirement income solution that could work for a broad group of participants.
- One thought was expressed that the insurance industry relies on the state guaranty associations of the states. However, these associations are unfunded, and if there is a significant financial downturn the states may not be able to make good on their promises. In this case, the federal government may step in, and they have not always made wise financial decisions in a crisis.
- Another participant expressed the view that the threat of insurance company insolvency is a red herring, and is an excuse to do nothing. There have been very few bankruptcies of insurance companies that have resulted in contract-holder losses. Much of the concern about insurance company insolvency was generated by one bankruptcy: Executive Life.
TOPIC #6
COMMUNICATIONS AND BEHAVIORAL FINANCE ISSUES

Discussion Leaders:

- Dr. Gopi Shah Goda, FSA, Stanford University
- Steve Vernon, FSA, Consulting Research Scholar, Stanford Center on Longevity

The last discussion session highlighted the role of behavioral finance research in designing and implementing effective retirement solutions. There is already a great deal of information available about what people should do in order to achieve financial security, but many still fail to act in their own best interest. This suggests that many of the challenges they face are behavioral. Gopi Shah Goda and Steve Vernon shed light on this issue by presenting insights from seminal and current behavioral finance research.

Discussion Questions:

- How can plan sponsors help their employees make informed decisions?
- Is education enough, or should plan sponsors deploy behavioral finance strategies? If yes, what are those strategies?

Communications and Behavioral Finance Issues

While most of the preceding discussions concerned the employer perspective, Dr. Gopi Shah Goda switched gears to examine the decision-making of the employees themselves. Economic models of decision-making assume 1) that individuals/households have the level of cognitive ability to solve complex, financial problems, and 2) that they have sufficient willpower to implement decisions. In her presentation, Dr. Goda shared evidence of cognitive and behavioral barriers that challenge these assumptions. She concluded by offering insight into how we can design interventions and make policy recommendations that take into account how real people make decisions.

Dr. Goda summarized research she completed which investigated if providing retirement income statements to participants would increase their savings amounts. While modest increases in savings were reported for the group as a whole, a breakdown of the results showed that people who self-reported a tendency to procrastinate did not increase their savings. The results also depended on the numbers presented: people with larger amounts were more likely to take action based on seeing the retirement income statements.

Behavioral Finance Issues and Ideas

Steve Vernon added to the discussion by sharing information about a recent paper he is working on at the Center. The paper, *Behavioral Finance: The Next Frontier in Retirement Plan Design*, summarizes relevant research from behavioral finance and proposes a model of positive
behavioral engineering. The primary goal of the paper is to provide guidance for employers, non-profit organizations, and businesses in designing programs of behavior change.

The slides from Dr. Goda’s and Vernon’s presentations are included in the Appendix.

**Key Discussion Points:**

*Understanding Employee Capabilities and Preferences*

**Cognitive Barriers**
- Many individuals exhibit cognitive barriers that cause them to make decisions that do not promote financial security.
  - For example, levels of financial literacy in the United States are very low. Only 39% of Americans can correctly answer three basic questions about interest rates and compound interest, inflation, and risk diversification.
    - Keep in mind that these three questions represent an imperfect method to measure financial literacy.
  - Similarly, many people exhibit exponential growth bias, or the inability to fully grasp the concept of exponential growth.
    - In practice, this seems to discourage retirement savings, perhaps because individuals do not recognize the benefits of compound interest.

**Behavioral Barriers**
- Many Americans also show behavioral biases that discourage planning for retirement in both the accumulation and decumulation phases.
  - Research has shown that most individuals exhibit present bias. These individuals value their present state over future states and are known to procrastinate.
    - Among procrastinators, some are naïve about their tendencies, but others recognize their propensity for procrastination and actually want some sort of forcing mechanism to help them avoid their natural inclinations.
  - There is also indirect evidence of “limited attention,” which encompasses peer effects (being influenced by what your co-workers do, for example), default effects (being influenced by the default option), and framing effects (being influenced by messaging).
- When it comes to retirement decisions, people tend to fall into one of three groups:
  - Do it for me
  - Help me do it
  - I’ll do it myself
- The “I’ll do it myself” segment of the population is very small, yet the vast majority of 401(k) plans are designed for this group.
- It is possible that people may change groups as they age, or as their account balances grow larger. It is also possible that there could be generational differences, with older people preferring a “do it for me” approach.
Influencing Behavior

- Academic studies of financial education interventions have shown mixed results.
  - This could be due to ineffective education, or the fact that knowledge does not always translate into appropriate action. Evidence supports that a greater number of hours spent in the financial literacy program can result in more positive results.
  - Somewhat ironically, financial education could also lead to poorer outcomes if individuals develop a false sense of confidence in their abilities.
- Defaults and automatic enrollment have a large impact on many different financial decisions, including enrollment, contribution rates, asset allocation, and retirement plan choice.
  - However, defaults have several limitations.
    ▪ For example, they are known to lead to high participation in retirement plans but low contribution rates.
    ▪ They may also prove ineffective in encouraging adoption of retirement income solutions if individual preferences are strong enough to overcome this “nudge.”
      » For example, even though annuitization is the default pay-out option for cash balance plans, a large majority of participants actively elect out of the default in favor of lump sum distribution.
- Simplifying the enrollment process tends to increase rates of enrollment in retirement plans. This provides further evidence of the importance of simplicity when creating retirement income products.
- Financial wellness programs may be enhanced by including profiles of various types of “savers” with whom employees can identify. One employer representative shared that they use a “people like me” concept with their financial wellness program. This also helps to address multi-generational differences in savings behavior.
- We need to keep in mind the fact that financial advisors are also susceptible to the same human biases as plan participants.

Implementing Employee Programs

- There are two possible responses to address the mismatch between current 401(k) plan design and employee preferences and capabilities:
  - DC pension: It is possible to create a DC plan with DB-like features.
  - Guiding design: Behavioral finance could be further integrated into plan design to essentially nudge, persuade, beg, and “shove” individuals to make optimal decisions.
Social Security Claiming Strategies
“Efficient Retirement Design: Combining Private Assets and Social Security to Maximize Retirement Resources”
By John Shoven, Stanford Institute for Economic Policy Research (SIEPR), Stanford University

Dr. John Shoven, Economics Professor at Stanford and expert on Social Security, began day two with a presentation about effective Social Security claiming strategies. According to Dr. Shoven, Social Security is more than a social program – it’s a financial asset with many choices that can be leveraged for maximal outcomes.

Right now, most people begin claiming Social Security benefits immediately after they retire, but Dr. Shoven argues that the decision to retire should be separated from the decision to start collecting benefits. For most people, delaying claiming until well after the age of retirement increases the present value of their lifetime benefits. The larger monthly payments that result from later claiming are intended to be an actuarially fair adjustment to account for the fact that an individual who claims later will most likely receive benefits for a shorter period of time. However, recent low interest rates and improved mortality have made delaying benefits actuarially advantageous – “what used to be a good deal in the 1950s is a great deal now.”

The potential gain in present value of benefits can be $100,000 for many people, and up to $250,000 for others. Dr. Shoven therefore suggests that individuals use their DC assets to finance deferral rather than to supplement Social Security benefits. His suggested claiming strategy is:

- Single men in average health should defer to ages 68 to 70.
- Single women in average health should defer to age 70.
- Higher earner in a couple should defer to age 70 unless both spouses are in poor health. Higher earner should consider collecting spousal benefits at age 66.

However, Dr. Shoven argues that, at current real interest rate, almost everyone, including those in poor health, would benefit from at least some degree of deferring.

Dr. Shoven’s slides are included in the Appendix, which include an example for a married couple that estimates the financial advantage of delaying Social Security benefits.
Views from Down Under: The Australian Experience
“Building Best Practices in Retirement Income: An Australian Perspective”
By Dr. Michael E. Drew, Griffith University

Dr. Drew started by stating that Australia has a world-class retirement savings system, but he thinks they don’t have a world-class retirement income strategy. DB plans are basically dead, with DC plans dominating the market in Australia. Australia has a system of compulsory contributions to superannuation funds of 9.5% of pay, increasing to 12% of pay by 2022. They are also changing the mandated retirement age to 70 over the coming decades – which will be the highest in the OECD.

As a result, Australia has accumulated sizable retirement savings. They are one of the few countries where the pool of retirement savings is greater than annual GDP. However, in numerous surveys of the general population, there is a lack of engagement in superannuation in Australia, particularly by younger members. So they have a good retirement saving system, but, as with many countries around the world, Australia still struggles to get people engaged.

Much attention has been paid to accumulating savings, and they are now turning their attention on payouts in retirement. Annuity elections are very low, so the focus is on account based pensions (and the related issue of sustainable [or safe] withdrawal strategies).

Australia is one country where using historical investment history to devise sustainable withdrawal rates may be dangerous, as they have had higher equity returns historically compared to other nations. These high returns may not be repeated in the future, and it may be prudent when developing systematic withdrawal strategies to use assumed returns for equities that are lower than historical averages. At a minimum, stress testing of these strategies is vital.

Dr. Drew presented results showing the outcomes of systematic withdrawal strategies for a number of different countries; the main point is that the results of systematic withdrawal strategies are highly volatile and depend significantly on equity returns, which are difficult to predict.

Dr. Drew also presented “heat maps” for five countries showing the relationship between payout rates and how long the assets lasted. These are helpful for explaining the issues and tradeoffs to decision-makers and participants.

Does the 4% rule work? Yes for 10 years, maybe for 20 years, but not really for periods longer than 20 years. A 3% withdrawal rate can be justified for periods longer than 20 years.
Dr. Drew presented results of analyses that forecast retirement savings accumulations and decumulations over long periods of time, using historical variance in returns. The results show the interplay of the sequence of returns when the largest amount of retirement savings is at risk (or the portfolio size effect), the point being that it’s very hard to develop reliable sustainable withdrawal rates.

Most retirees do not have sufficient wealth to live off the income without spending the principal. So safe withdrawal rates of principal are becoming a key issue. The challenge is that recent studies suggest that a safe withdrawal rate could range between less than 2% and as much as 7% of assets.

The 4% rule can be a starting point for devising a retirement income strategy. But it’s crucial to adopt strategies that are more dynamic, flexible, and adapt to investment returns and economic conditions as they unfold throughout a retiree’s life.

Dr. Drew’s slides are included in the Appendix.

**Ideas and Innovations for the Future**

“Are Tontine Schemes a Viable Income Option for DC Plans?”

*By Dr. Moshe Milevsky, York University*

Dr. Milevsky proposed adding tontine schemes as a viable retirement income option for DC plans, which are products that might address the significant challenges with classic annuities. He started by outlining problems with annuities – consumers don’t like them (payout too low), advisors don’t like them (commissions too low), plan sponsors don’t like them (fiduciary concerns, default risk), and the media and press don’t like them (they confuse them with expensive annuities). And there could be solvency challenges as well, in the sense that companies might be asked to hold more capital as protection against the annuities they sell, making them even more expensive.

Classical (single premium) immediate annuities use mortality pooling where the assets of people who die before their life expectancies help fund the benefits of people who die after their life expectancy. When the last person dies, no further payments are due. The issuer (insurance company) is liable for guaranteeing that the payments will be made to all annuitants.

Tontines could accomplish the same goal in a DC environment. In its simplest form, retirees pool their savings to buy a fixed-income bond that generates periodic coupon income. When a participant dies, their share in the coupons is distributed to the survivors, who receive an increase in their income. This process is repeated until the last survivor dies. By definition the pool of money will last until the last survivor dies. There is no liability incurred by the issuing institution, since the pooled assets are the sole source of funding benefits.
There are many ways to design the pattern of payments to participants in a tontine scheme. The pattern of payments can be expected to decrease, stay level, or increase over time, depending on the design of the tontine scheme, although typically payments increase – conditional on survival – with most tontine schemes.

Dr. Milevsky presented examples of how a tontine scheme would work in a simple hypothetical situation over a 25-year period.

“Last survivor takes all” tontine schemes are very rare, have resulted in colorful fiction, and may have unfairly given tontines an unfavorable reputation. Don’t confuse fact with fiction.

Dr. Milevsky compared tontines to life annuities from the perspective of participants and the issuers. Tontines might appeal to individuals with above-average longevity expectations, since their payments increase the longer they live. They are rewarded for living a long time, whereas with classic annuities the payment is typically fixed.

One key advantage of tontines over annuities is that the issuer (which is better described as a custodian) isn’t exposed to longevity risk, and doesn’t need to charge for this risk other than minimal transaction costs and a small fee. Insurance companies that sell conventional life annuities are exposed to the risk that people may live longer than expected; since they are at risk, they will charge for this. Dr. Milevsky presented the results of an analysis that helps determine the amount of load for annuities that represent a fair trade-off compared to tontines. What this shows is that individuals would be willing to incur the (small) idiosyncratic mortality pool risk themselves, if the loading on the annuity was too large.

Dr. Milevsky presented a 320 year-old example of the choice between a tontine and life annuity – King William’s Tontine of 1693, which was used to fund a war with France. Citizens (investors) were offered the choice of an annuity or tontine. Some selected the tontine; some selected the annuity. He then suggested that like the situation in England over three centuries ago, perhaps retirees should also be offered the choice of either a tontine or a life annuity.

He finished by offering discussion questions:

- Would a tontine scheme appeal to retired participants in a DC plan?
- Would such a scheme appeal to plan sponsors?
- Would adding a tontine on a menu of post-retirement options increase the appeal of a life annuity?
- What are the regulatory and legal burdens that must be overcome in the U.S.?

Dr. Milevsky’s slides are included in the Appendix.
Key Discussion Points:

- ERISA contains an exemption for state insurance plans. There should be no reason why an ERISA-based plan can’t offer a tontine.
- From a practical perspective, anyone thinking of issuing a tontine would need to create some reserves for litigation.
- There is “actuarial table” risk with both tontines and annuities if the actuary’s mortality table is wrong. With annuities, insurance companies bear the risk that their reserves are insufficient. With tontines, the participants bear the risk that payments won’t increase as fast as predicted by the mortality table.
- From the perspective of a participant, a tontine with an increasing pattern of payments isn’t much different from an inflation-adjusted annuity. If you have trouble selling an inflation-adjusted annuity, you might have trouble selling a tontine.
- A tontine should appeal to a mutual fund company, since it can’t sell insurance. One challenge today for mutual fund companies is that they can’t guarantee lifetime income.

Consensus Statement #1

Employers can improve the financial security of their employees by implementing programs of retirement income in their DC plans.

As shown above, there was strong agreement that employers can improve the financial security of their employees by offering programs of retirement income. Many attendees agreed that most people don’t possess the technical skills to devise effective retirement income strategies, and/or they may lack the discipline to implement such a strategy. In addition, an employer has the potential to increase retirement incomes through institutional pricing, and they can improve the odds that a retirement income strategy will be adopted by making it easy to implement through their retirement plan.
Consensus Statement #2

There is a business case for employers to offer a program of retirement income in their DC plans.

In general, most conference attendees agreed or somewhat agreed that there is a business case for employers to offer retirement income programs in their DC plans, although the business case may not be crystal clear and won’t apply across all employers. One important consideration regarding the business case is the size and sophistication of the plan sponsor. While some employers may have the resources to conduct the due diligence for selecting and implementing retirement income programs, many smaller employers may not.

Even for those employers who possess the necessary resources, it’s possible that their workforce demographics may not make retirement income a pressing issue at this time. Large, sophisticated employers with a desire to manage an aging workforce may present the best case for implementing programs of retirement income in DC plans.
Consensus Statement #3

Retirement income solutions currently offered by financial institutions and plan administrators are sufficiently robust to offer today. Interested and motivated plan sponsors need not wait for the market to evolve further.

While many attendees agreed that the current retirement income solutions are sufficient to offer today, a significant number of attendees still see room for improvement. One theme that emerged repeatedly was the need to offer retirement income solutions with descriptions of the key features that are simple enough to enable plan participants to make an informed decision. One suggestion was to standardize the description of the key features to help minimize confusion among plan participants.

Another theme was the need for appropriate packaging and framing of insurance products to pool longevity risk. While longevity pooling has the potential to increase retirement security, expensive riders and features can dilute the effectiveness of insurance products. In other words, an expensive annuity product may not offer more financial value than an inexpensively managed bond portfolio.
Consensus Statement #4

*The existing legal and regulatory framework is sufficient to enable plan sponsors to implement programs of retirement income.*

Attendees heard a few ideas for implementing retirement income programs that require no further guidance and carry low fiduciary risk (see Discussion Topic #5 on the regulatory/legal issues). However, as seen on the next page, there is strong consensus that additional regulatory guidance would be helpful.
Consensus Statement #5

The following legislative/regulatory actions would encourage implementation of retirement income programs in DC plans.

![Bar chart showing percent of attendees responding to questions about program design, product selection, and income statements.]

The above items are described further below:

- Guidance on the design of a program of retirement income, analogous to guidelines for the investment menu under ERISA Section 404(c) and QDIAs
- Guidance on the selection of retirement income products/institutions
- Guidance on preparing retirement income statements for participants
Consensus Statement #6

The following activities and developments would encourage the implementation of retirement income programs.

- Over two-thirds of attendees agreed that a few well-publicized plan sponsor implementations, such as the United Technologies Corporation program, would encourage employers to implement retirement income programs.

- Other suggestions:
  - Studies to improve the transparency of fees added on retail annuity products, which would help the business case for offering solutions with institutional pricing
  - Advisors and consultants advocating for retirement income solutions and developing the business case
  - Platforms that make it easy to offer retirement income solutions
The conference ended with participants expressing key insights, observations, and “aha’s” that they gained from the conference. These insights fall into a handful of themes.

**Building the Business Case for Decision-Makers**

- There are plenty of good products and solutions. To move forward on retirement income, we need more movement from employers. And they will need to see demand from employees. This is a societal issue that needs more attention.
- Observations from an employer: Regulatory guidance would help, as well as packaged solutions that are simple (the Duncan Hines approach). Kudos to Kevin Hanney and UTC for providing a courageous example.
- Observations from another employer: It’s difficult to make the business case. We need simple solutions, but also solutions that can meet a variety of needs. We need to see either our peer group moving forward or our employees asking for retirement income programs.
- There’s an important tension that needs to be resolved. We acknowledge that many individuals are unable to make effective retirement planning decisions, either because they don’t have the intellectual understanding or the discipline to stick with their plans. However, employers are reluctant to substitute their judgment for individuals’ judgment. We have a situation where we make employers pay dearly if they provide advice improperly, so they don’t want to do it. Yet we know most individuals are incapable of making these decisions. It would help greatly if there were a common vocabulary to describe retirement income solutions and safe harbors that employers could follow without violating ERISA.
- We need to develop a solid business case for implementing retirement income solutions that can be sold to the CEO. We don’t have that yet.
- If employees don’t know any better, we won’t have demand from the bottom up. If C-suite executives don’t see value to employees, then we will be stuck with the status quo for a long time. We need to reach employees and decision-makers on the importance of retirement income.
- The high utilization of the UTC program gives an example that retirement income solutions can be implemented successfully.
- We need a greater sense of urgency to address this problem. We can’t dither and wait for the perfect solution.
**Elements of Effective Solutions**

- Low-hanging fruit is helping participants delay taking Social Security, through a temporary payout feature in a DC plan coupled with communications.
- We need solutions that are as easy to use as the post-it note. Help people understand how to take the next steps and why that is important.
- It’s important to communicate retirement income goals to participants and to help them understand how much income they really need in retirement, considering their savings and Social Security. It’s important to consider spending patterns that may drop in retirement.
- Let’s try to differentiate between annuities and mortality credits. Annuities need to offer a better payout than an invested bond portfolio. Often annuities don’t meet this litmus test, due to added fees and watering down the longevity pooling effect through added contract features.
- Solutions need to be flexible, both for consumers and employers. Low-income people have different needs than people with more assets, and an annuity might not be appropriate for them. Medical care is also an important issue that employers and individuals need to address.
- We need to put ourselves in the shoes of our plan participants. Many plans are designed with the best intentions for people like us, but not for typical plan participants.
- Long-term care costs could be the elephant in the room.
- Use of housing wealth is another important consideration. People decumulate housing wealth at different rates; single people tend to decumulate housing wealth faster than couples.

**Potential Research Projects That Can Help**

- The safe harbor protection for target date funds offers an example of how defaults in the payout phase could be successful.
- One potential future research project would help understand how people actually deploy their assets in retirement. Do they spend their savings too rapidly on Winnebagos, or do they hoard it until they are forced to receive payouts at age 70-1/2. There are some statistics and anecdotal evidence, but it would help to have reliable data. The HRS study was mentioned as one possible source of data.
- The difference between guidance and advice is important; guidance may be biased and not adhere to regulatory standards. The role of the advisor and how they are paid is an important topic for future research.

**Unintended Consequences**

- Much of the information presented at this conference has been available for several years, and has been distributed through financial advisors. This is another example of income inequality – people at the low-income spectrum often don’t have access to good
information about Social Security claiming strategies and generating retirement income.

- We should be aware of unintended consequences. If there is too much uptake with GLWB annuities and we have a major economic downturn, the insurance industry might be vulnerable.

**Helpful Next Steps**

- It would help if a group of plan sponsors could be organized to give feedback to financial institutions on developing and communicating solutions.
- One good next step would be to identify a few employers who are most likely to move on this topic, employers who believe it’s ok to be a little paternalistic.
- It’s been valuable bringing together academics, employers, consultants, and representatives from financial institutions. A LinkedIn discussion group would very helpful.
Action Agenda

One purpose of the conference was to identify possible research and projects that could increase the adoption of retirement income programs in DC plans. Here are some areas where further research could provide valuable insights:

- Collect and analyze data to show how retirees spend their retirement savings. Do they spend down savings too quickly or do they hoard their money for fear of running out?
- Collect and analyze data on the spending patterns of retirees. Do they decrease their spending, and if yes, is this decrease voluntary, or do they decrease spending because they are running out of money?
- Develop standard descriptions of retirement income solutions that would improve understanding and comparisons of solutions – think food labeling applied to retirement income solutions.
- Develop prototype solutions that could be applied to a limited number of hypothetical cases. This could be used to develop solution protocols that might best serve a handful of common yet different circumstances.
- Explore how tontines can be used to develop sustainable retirement income solutions that are also acceptable to participants.

Here are potential projects that arose from the discussions:

- Explore how employees can be informed and motivated to care about retirement income, to generate bottom-up demand.
- Develop the business case that would convince senior decision makers of the importance of retirement income programs.
- Develop regulatory guidelines that would make plan sponsors comfortable with implementing retirement income programs (this project is already under way at SCL).
- Collect feedback from plan sponsors that would be useful to developers of retirement income solutions.
- Putting the last two thoughts together, collect feedback from employers regarding
regulatory guidelines that would make them comfortable to proceed with implementing retirement income programs, to demonstrate the need to government regulators.

• Develop packaged retirement income solutions so that they are sufficiently simple for retirees to make informed decisions.

**Thought Questions**

Several thought questions emerged from the conference discussions. These questions require further consideration not only by industry professionals, but by society at large.

• Who is ultimately responsible for providing individual financial security? The individual? The employer? The government?
• Who is responsible for making lifetime income products simple? The insurance industry? The financial services industry?
• What factors influence individual decisions about how to decumulate assets?
• How can we make employer financial advice more effective?
CONCLUSION

The move from DB to DC retirement plans has led to challenges that threaten the retirement security of workers around the world, including inadequate contributions to retirement plans, leakage from plans due to loans, and challenges with converting savings into reliable lifetime retirement income. DC plan sponsors have recently begun implementing features in their plans that address the challenges of accumulation and leakage. However, very little progress has been made to help retirees convert savings into reliable income. Employers and plan sponsors are in a unique position to help retiring employees generate retirement income from their DC accounts, yet few employers currently offer this benefit.

This conference, “Building Best Practices in Retirement Income,” sponsored by the Stanford Center on Longevity and co-hosted by Nobel Laureate Dr. Bill Sharpe, gathered a small group of experts to discuss important issues regarding implementing programs of retirement income in DC plans. Experts at the conference agreed that employers could significantly improve the financial security of their employees by offering a program of retirement income.

For the purposes of this conference, such a program includes one or more mechanisms for converting savings into income (called retirement income generators [RIGs]), a default or recommended retirement income solution, participant disclosures, and administrative rules and procedures to implement employee decisions. While attendees agreed there is a need for implementing programs of retirement income into DC plans, there was less consensus about whether or not there is a strong business case for employers to do so.

Attendees pointed out the many potential benefits of offering a program of retirement income, including workforce management, reducing healthcare costs, company branding, and corporate social responsibility. Still, many attendees suggested that more employee demand will be necessary to catalyze employers. Overall, conference attendees seemed to agree that there is a case to be made, we just need to make it.

With respect to product and program characteristics, the group stressed the importance of simplicity and flexibility. The best solutions will incorporate insights from behavioral finance and will address the great heterogeneity in both employers and plan participants. The group also agreed that additional regulatory guidance would significantly encourage the implementation of retirement income programs.

More thought, research and collaboration are necessary in order to truly affect change in this area. We hope this conference helped stimulate a conversation that will be continued among industry experts, employers, and policymakers.
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Steve Vernon — Consulting Research Scholar, Stanford Center on Longevity

Adam Walk — Research Fellow, Griffith University

John G. Watson — Fellow, Financial Engines
## Agenda

### Day 1: Thursday, May 15th, 2014

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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</thead>
<tbody>
<tr>
<td>8:00 – 8:30</td>
<td>Breakfast</td>
</tr>
<tr>
<td>8:30 – 9:30</td>
<td>Welcome, opening remarks, and introductions</td>
</tr>
<tr>
<td>9:30 – 10:15</td>
<td>Topic #1: The Business Case &lt;br&gt;&lt;i&gt;Discussion Leader: Steve Vernon, Stanford Center on Longevity&lt;/i&gt;</td>
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<tr>
<td>10:15 – 10:30</td>
<td>Break</td>
</tr>
<tr>
<td>10:30 – 11:30</td>
<td>Topic #2: Retirement Program Elements &lt;br&gt;&lt;i&gt;Discussion Leader: Neil Lloyd, Mercer&lt;/i&gt;</td>
</tr>
<tr>
<td>11:30 – 12:30</td>
<td>Topic #3: Optimal Retirement Income Solutions &lt;br&gt;&lt;i&gt;Discussion Leader: Dr. Wade Pfau, The American College&lt;/i&gt;</td>
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<tr>
<td>12:30 – 2:00</td>
<td>Lunch with presentation by Dr. Laura Carstensen, Founding Director, Stanford Center on Longevity</td>
</tr>
<tr>
<td>2:00 – 2:45</td>
<td>Topic #4: Practical and Perceived Barriers &lt;br&gt;&lt;i&gt;Discussion Leader: Kevin Hanney, United Technologies Corporation&lt;/i&gt;</td>
</tr>
<tr>
<td>2:45 – 3:45</td>
<td>Topic #5: Fiduciary and Regulatory Issues &lt;br&gt;&lt;i&gt;Discussion Leaders: Mark Iwry, Department of Treasury&lt;br&gt;Steve Vernon substituting for Bruce Ashton, Drinker Biddle &amp; Reath&lt;/i&gt;</td>
</tr>
<tr>
<td>3:45 – 4:00</td>
<td>Break</td>
</tr>
<tr>
<td>4:00 – 5:00</td>
<td>Topic #6: Communications and Behavioral Finance Issues &lt;br&gt;&lt;i&gt;Discussion Leaders: Dr. Gopi Shah Goda, Stanford University&lt;br&gt;Steve Vernon, Stanford Center on Longevity&lt;/i&gt;</td>
</tr>
<tr>
<td>5:15 – 6:00</td>
<td>Reception</td>
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<tr>
<td>6:00 – 8:00</td>
<td>Dinner with presentation by Dr. Bill Sharpe</td>
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</table>
# Day 2: Friday, May 16th, 2014

<table>
<thead>
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<th>Time</th>
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<tbody>
<tr>
<td>8:00 – 8:30</td>
<td>Breakfast</td>
</tr>
<tr>
<td>8:30 – 8:45</td>
<td>Introduction to Day 2 and Housekeeping</td>
</tr>
</tbody>
</table>
| 8:45 – 9:15 | Social Security Claiming Strategies  
Presenter: Dr. John Shoven, Stanford University |
| 9:15 – 9:45 | Views from Down Under: The Australian Experience  
Presenter: Dr. Michael Drew, Griffith University |
| 9:45 – 10:30 | Ideas and Innovations for the Future  
Presenter: Dr. Moshe Milevsky, York University |
| 10:30 – 10:45 | Break                                                                |
| 10:45 – 11:30 | Consensus Voting/Informal Discussions                                   |
| 11:30 – 12:30 | Directions for the Future, Research Agenda, Wrap-up, and Next Steps |
| 12:30 – 2:00 | Box Lunch, Departures, Informal/Impromptu Meetings                   |
Three Challenges in a DC World

1. Inadequate contributions – need 10% to 20% of pay contributed consistently for 30+ years

2. Leakage due to loans, early withdrawals

3. Employees on their own to convert savings into reliable income
Program of Retirement Income

- Mechanism(s) for converting savings into income
  - Retirement income generators (RIGs)
- Default/recommended option
- Participant disclosures to help informed decisions
- Ability to allocate savings among two or more RIGs

Retirement Income Options Not Yet Widespread in Employer-Sponsored DC Retirement Plans

Figure 2.8 Retirement Income Options Provided by Employers

<table>
<thead>
<tr>
<th>Percentage of employers offering</th>
<th>Online modeling tools or mobile apps</th>
<th>Installment payment features</th>
<th>Professionally managed accounts for distribution phase</th>
<th>Annuities outside the plan</th>
<th>In-plan managed payouts</th>
<th>In-plan annuities</th>
<th>Transfers to defined benefit plan to elect annuity payout</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage</td>
<td>61%</td>
<td>37%</td>
<td>19%</td>
<td>13%</td>
<td>12%</td>
<td>10%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Source: 2013 Hot Topics in Retirement, AonHewitt

From Society of Actuaries’ report: The Next Evolution in Defined Contribution Retirement Plan Design
Barriers to Adding Retirement Income Solutions

From Society of Actuaries’ report: The Next Evolution in Defined Contribution Retirement Plan Design

Today’s Agenda

1. The business case (Steve Vernon, FSA)
2. Inventory of retirement income solutions (Neil Lloyd, FSA)
3. Optimal retirement income solutions (Dr. Wade Pfau)
4. Barriers – real and perceived (Kevin Hanney)
5. Legal and regulatory issues (Mark Iwry, Steve Vernon filling in for Bruce Ashton)
6. Communications and behavioral finance issues (Dr. Gopi Shah Goda, FSA, and Steve Vernon, FSA)
Friday’s Agenda

1. Social Security claiming strategies (Dr. John Shoven)
2. The view from Down Under (Dr. Michael Drew)
3. Future innovations (Dr. Moshe Milevsky)
4. Discussion and voting on consensus statements and questions
Consensus Statements and Questions

- Programs of retirement income can improve retirement security.
- There’s a business case for implementing programs of retirement income.
- Current retirement income solutions are sufficiently robust.
- Existing legal and regulatory framework is sufficient.
- What are desirable legal and regulatory guidelines?
- What are desirable future developments?

How Can Programs of Retirement Income Improve Retirement Security?

- Employers have resources to conduct due diligence
- Buying power can increase retirement incomes
- Act on behalf of plan participants
- Improve decision-making through unbiased communications
- Increase chances of success by implementing elections
- Others?
What’s the Business Case?

- Facilitate workforce succession, improve productivity
- Retain assets, driving down per capita costs
- Implement low-cost benefit improvement
- Increase likelihood that assets accomplish their goal – improve retirement security
- Enhance employer brand as desirable place to work
- Be a good corporate citizen – it’s the right thing to do
- Others?
IT SEEMS THAT WE ALL AGREE THAT SUSTAINABILITY OF RETIREMENT PROGRAMS IS AN ISSUE WE NEED TO ADDRESS

$4.3$ Trillion: Aggregate retirement income deficit for all Baby Boomers and Gen Xers

89%: Percentage in survey who want income generating options in their retirement savings plan

2x: Increase in personal debt for individuals 65 and older over last decade

57%: Percentage of US workers that reported less than $25,000 in total household savings

20%: Percentage of investors who spend more time planning for retirement than vacations

SO WHY SO LITTLE PROGRESS WITH RETIREMENT FUNDS?

SOME PRACTICAL EXPERIENCE

Seems to be agreement that this is a social imperative, but is it a business imperative?

- The topic is complex
- Retirees desire simplicity; easy to understand products
  - Often are made to sound simpler than they really are
- Products balance conflicting retiree objectives
- Regulation could be more helpful
- There are other more immediate priorities
TO HELP MOVE THINGS FORWARD...

- Confirm why a retirement income focus is important for the organization
- Understand your employees’ needs
- Understand what the organization is prepared to do (fiduciary concerns, budget etc.)
- Understand the market environment. Availability of products, legislative issues etc.
- Develop and implement the solution that best addresses your objectives

Too often, clients start here

UNDERSTANDING THE MARKETPLACE
### RETIREMENT INCOME SOLUTIONS
WHAT PRODUCTS ARE OUT THERE?

<table>
<thead>
<tr>
<th>Solution/Product</th>
<th>Sample of providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managed payout funds</td>
<td>Fidelity, Schwab, Vanguard and others</td>
</tr>
<tr>
<td>Longevity annuities</td>
<td>New York Life, Hartford and others</td>
</tr>
<tr>
<td>Annuity exchange</td>
<td>Heuler income solutions, CANNEX</td>
</tr>
<tr>
<td>Variable immediate annuities</td>
<td>Vanguard/American General Life, TIAA-CREF</td>
</tr>
<tr>
<td>GMWB/GLWB</td>
<td>Prudential, Diversified/Transamerica, GWL and others</td>
</tr>
<tr>
<td>Deferred annuities in place of fixed income pre-retirement</td>
<td>BlackRock</td>
</tr>
<tr>
<td>Deferred annuities</td>
<td>VALIC</td>
</tr>
<tr>
<td>Longevity annuities pre-retirement</td>
<td>UBS</td>
</tr>
<tr>
<td>GMWB pre-retirement</td>
<td>AllianceBernstein</td>
</tr>
<tr>
<td>Managed account/advice solutions</td>
<td>Financial Engines, Guided Choice, Fidelity PAS-W, Morningstar</td>
</tr>
</tbody>
</table>

Difficult to keep up to date – lots of innovation, so how do we analyse these?

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### THE RETIREMENT TRILEMMA
FROM A RETIREE/PARTICIPANT PERSPECTIVE

Retirement income solutions struggle to solve the retirement trilemma: balancing competing retiree objectives

- **Access to capital**
- **Initial Income**
- **Protection from risk**
- **Participation in Upside**
# Retirement Income Solutions

## From a Retiree/Participant Perspective

<table>
<thead>
<tr>
<th>Protection from Risk</th>
<th>Initial Income Generation</th>
<th>Longevity risk</th>
<th>Inflation risk</th>
<th>Insurer credit risk</th>
<th>Downside market risk</th>
<th>Annuity conversion rate risk</th>
<th>Terms and conditions risk</th>
<th>Participation in Upside</th>
<th>Access to capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable annuity (GMWB)</td>
<td>Medium (4.5% - 5%)</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>=</td>
<td>-</td>
<td>=</td>
<td>+</td>
</tr>
<tr>
<td>Annuity bidding platform</td>
<td>High (6%-7%)</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Managed payout</td>
<td>Low (4% rule)</td>
<td>-</td>
<td>=</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>=</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

## Some More About Solutions

But what about the Employer Perspective

<table>
<thead>
<tr>
<th>Retiree/Participant perspective</th>
<th>Employer perspective</th>
</tr>
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<tbody>
<tr>
<td>Initial income generation</td>
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</tr>
<tr>
<td>Protection from risk</td>
<td>Transferability to another provider</td>
</tr>
<tr>
<td>Longevity risk</td>
<td>In-plan or out of plan</td>
</tr>
<tr>
<td>Inflation risk</td>
<td>Fiduciary/regulatory concerns</td>
</tr>
<tr>
<td>Insurer credit risk</td>
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</tr>
<tr>
<td>Downside market risk</td>
<td>Fees</td>
</tr>
<tr>
<td>Annuity conversion rate risk</td>
<td>Potential conflicts</td>
</tr>
<tr>
<td>Terms and conditions risk</td>
<td>Other</td>
</tr>
<tr>
<td>Participation in upside</td>
<td></td>
</tr>
<tr>
<td>Access to capital</td>
<td></td>
</tr>
</tbody>
</table>
In reality things are rarely this black and white, but all these issues (and their “butts and maybes”) should be considered.

### RETIREMENT INCOME SOLUTIONS

**FROM AN EMPLOYER’S PERSPECTIVE**

<table>
<thead>
<tr>
<th></th>
<th>Initial income generation</th>
<th>Lifetime income</th>
<th>Transferability to another provider</th>
<th>Out of plan</th>
<th>Fiduciary/ regulatory concerns</th>
<th>Issuer credit risk</th>
<th>Fees</th>
<th>Potential conflicts</th>
<th>Other</th>
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</table>

In reality things are rarely this black and white, but all these issues (and their “butts and maybes”) should be considered.
Now your turn – looking for input:

- On solutions you have seen
- Other ways to categorise products
- What further analysis is useful to help us make progress?

There is no silver bullet!
But product weaknesses can be addressed, if you believe you need a solution.
KEY MESSAGE:

- Confirm why a retirement income focus is important for the organization
- Understand your employees’ needs
- Understand what the organization is prepared to do (fiduciary concerns, budget etc.)
- Understand the market environment. Availability of products, legislative issues etc.
- Develop and implement the solution that best addresses your objectives
Deciding How to Spend Down Assets in Retirement

- Capital Market Expectations
- Planning Horizon
- Asset/Product Allocation
- Funded Status
- Spending Flexibility / Risk Capacity
- Emphasize spending or bequest, downside or upside
- Unexpected expenses and shocks
“[Retirement Income Planning] is a really hard problem. It’s the hardest problem I’ve ever looked at.”

William Sharpe
CFA Institute Conference, 2014

Retirement Income Strategies

<table>
<thead>
<tr>
<th>Total Returns / Constant Spending</th>
<th>Time Segmentation</th>
<th>Variable Spending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe Withdrawal Rates</td>
<td>Age Banding (L. Bensley)</td>
<td>Declared and Maximum Distribution with Spending Rules (olstream Solutions)</td>
</tr>
<tr>
<td>Safe Savings Rates</td>
<td>Asset Allocation (J. Bristow and W. King)</td>
<td>Decision Rules and Guarantees (L. Grooter, W. King)</td>
</tr>
<tr>
<td>Cash Flow Management</td>
<td>Income Discovery (W. Liewr)</td>
<td>POOL and Ceiling (W. Bensley)</td>
</tr>
</tbody>
</table>
| Rising Equity/Globestock         | Income Discovery (W. Liewr) | HS PND Rule (W. Titker, W. Nif)
|                                 | Wealth (O. Mofield) | Mortality-Updating Constant Failure Probabilities (D. Brandtew, L. Frank, & co-authors) |
|                                 |                   | Swedeloth (O. Jol) |
|                                 |                   | Actuarial Approach (L. Stine) |

Safety-First Approaches

<table>
<thead>
<tr>
<th>Utility Maximization / Dynamic Programming</th>
<th>Locked-in (lifetime) Flooring</th>
<th>At-Risk Flooring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Allocation and Efficient Frontiers</td>
<td>(M. Millers, F. Hare, M. Pinzger, W. Wachsharz, NY Life Insurance Co., W. Plata)</td>
<td></td>
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<tr>
<td>Efficient Value vs. Sharpe's Value</td>
<td>Dimensional Managed DC (M. Newton, Z. Bodie)</td>
<td>FYPE (Michael Morley)</td>
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<tr>
<td>Spending on the Present Value (M. Milletto and F. Hare)</td>
<td>Engineering Approach (M. Zwecher, Retirement Income Industry Association)</td>
<td></td>
</tr>
<tr>
<td>Lifecycle Finance</td>
<td>Modern Retirement Theory (L. Bressard and W. Ray Groz)</td>
<td>Funded Ratio Management - Asset-Liability Matching (Russell Investments)</td>
</tr>
<tr>
<td>Financial Guidance Theory</td>
<td>Gallery-Frontier-Based Approach (I. Bodie and A. Toepf)</td>
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<tr>
<td>ELPAVAR (L. Khalil)</td>
<td>TIPS &amp; Defined Immediate Annuities (S. Green, Sherbar, J. S. Journal, et al.)</td>
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<td>Financial Engines (W. Sharpe)</td>
<td>Floor Leverage Rule (J. Scott &amp; B. Watson)</td>
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<tr>
<td>Dynamically Adjusting Asset Allocation and Withdrawal Rates (J. F. Morgan)</td>
<td>Thrive University (C. Doge)</td>
<td></td>
</tr>
<tr>
<td>Asset Allocation Calculator (J. Hart)</td>
<td>Liability-Matching Portfolios (M. Bannister)</td>
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</tbody>
</table>
The Retirement Income Challenge

INCOME TOOLS
- Investment Portfolio: income, dividends, principal
- Social Security
- Managed Pensions
- Longevity (Illness)
- Inflation
- Income Losses
- Inflation
- Managed Pensions
- Social Security
- Managed Pensions

RISKS
- Sequence of returns at retirement
- Inflation
- Reduced capabilities
- Longevity
- Health
- Income

GOALS
- Maximize spending power
- Build an estate
- Hold assets for unexpected expenses
- Avoid spending cuts and income loss
- Maintain funded assets

PROCESS
Combine Income Tools to Balance Goals and Risks
- Death of Spouse
- Divorce
- Changing Need Income
- Long-Term Care
- Rising Costs of Living
- Divorce
- Inflation

Retirement Risk

Longevity Risk
- Unknown Planning Horizon

Macro/Market
- Investment Volatility
- Interest Rate Volatility
- Public Policy and Taxation
- Sequence of Returns

Inflation
- Rising Costs of Living

Personal Spending
- Health & Long-Term Care
- Help Other Family Members
- Divorce
- Fraud/Theft

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Fighting the Retirement Risk Juggernaut

- Spend Conservatively
- Adjust Spending to Market Returns
- Reduce Volatility
- Match Assets to Liabilities
- Mortality Credits and Longevity Risk Pooling
- Preserve Liquidity
- Monitor Funded Status
- Insurance for unexpected expenses

Two Schools of Thought on Retirement Income
Basic Questions – Conflicting Answers

- Can clients prioritize among goals?
- What is the appropriate investing approach?
- How are a client’s risk tolerance and risk capacity addressed?
- What is the strategy for risk management?
- How is the household’s balance sheet incorporated into a strategy?
- Do stocks become less risky over longer holding periods?
- What is the safe withdrawal rate from a diversified portfolio of volatile assets?
- What is the role of inflation-adjusted single premium immediate annuities?
Investment Approach for Retirement Income

- Systematic Withdrawals
- Time Segmentation
- Essential vs. Discretionary

Systematic Withdrawals

Spending ($)

Lifestyle Goal

Diversified Portfolio

Age
Time Segmentation

Essentials vs. Discretionary
### Retirement Income – Probability Based

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<td>Desired and Maximum Distribution with Spending Rules (Instream Solutions)</td>
</tr>
<tr>
<td>(W. Bengen, Trinity Study, M. Kitzes)</td>
<td>(S. Basu)</td>
<td></td>
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<tr>
<td>Safe Savings Rates</td>
<td>Asset Dedication</td>
<td>Decision Rules and Guardrails (J. Guyton, W. Klinger)</td>
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<tr>
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<td>(J. Breet Burns and S. Huxley)</td>
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<td>(H. Ewinski and D. Katz)</td>
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<tr>
<td>Rising Equity Glidepath</td>
<td>Income Discovery</td>
<td>IRS RMD Rule (A. Webb, W. Sun)</td>
</tr>
<tr>
<td>(M. Kitzes, W. Pflau, Midian Asset Manager)</td>
<td>(M. Malhotra)</td>
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<td>Mortality-Updating Constant Failure Probabilities (D. Blanchett, L. Frank, &amp; co-authors)</td>
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<tr>
<td></td>
<td></td>
<td>RetireSoft (D. Zolt)</td>
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<td>Actuarial Approach (K. Steiner)</td>
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### Retirement Income – Safety-First

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<tr>
<th>Safety-First Approaches</th>
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<td>Financial Guidance Theory (W. Markowitz &amp; GuidedChoice)</td>
<td>Safety-First Goals-Based Approach (Z. Bodie and R. Thoqui)</td>
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<td>CSIPlanner (J. Kotlikoff)</td>
<td>TIPS &amp; Deferred Immediate Annuities (S. Gwalt Shander, S. Searle et al.)</td>
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<td></td>
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</table>
Analysis of RIGs
Projections of Retirement Income

- Stochastic forecasts of:
  - Systematic withdrawals – constant amount 4% rule
  - Systematic withdrawals – constant percentage 4% of assets
  - Systematic withdrawals – IRS RMD
  - SPIA – inflation adjusted
  - SPIA – fixed
  - GMWB

- Assumptions
  - Systematic withdrawals and GMWB assume 60/40 equity/bond allocation
  - Institutional pricing
  - Assumptions on inflation, investment returns and annuity pricing reflect current low-interest environment

From Society of Actuaries’ report: The Next Evolution in Defined Contribution Retirement Plan Design
**Insured Products Fare Better in Unfavorable Scenarios**

10th percentile of stochastic forecast
$100,000 in retirement savings for 65 year-old couple

**Investing Solutions Fare Better in Favorable Scenarios**

90th percentile of stochastic forecast
$100,000 in retirement savings for 65 year-old couple
SOA Research Expanding Boundaries (REX)
Study on Optimal Retirement Income Solutions

Retirement Income Generators
Limited Menu of packaged retirement income solutions

- single premium immediate annuities (SPIAs)
- deferred income annuities (DIAs)
- longevity annuities (DIAs deferred to an advanced age, such as age 80 or 85)
- systematic withdrawals from invested savings
- Guaranteed Living Withdrawal Benefit (GLWB) annuities
Product / Withdrawal Choices

Systematic Withdrawals (Stock Allocations: 0%, 25%, 50%, 75%, 100%)
- 3% of remaining assets
- 4% of remaining assets
- 5% of remaining assets
- Withdrawals based on IRS RMD rules

Annuitzation
- Inflation-Adjusted SPIA
- Fixed SPIA
- SPIA with 3% growth factor
- VA/GLWB (Asset allocation: 60/40)
- (Later project phases: DIAs starting at 80 or 85)

Partial Annuitzation:
50% to Systematic withdrawal approach, 50% to Annuity
Illustrating Tradeoffs with Retirement Income Frontiers

Two types of efficient frontiers

1. **Emphasize retirement income**
   - Shortfall relative to Inflation-adjusted SPIA vs.
   - Average Annual Real Retirement Income

2. **Balance between income and legacy**
   - Survival-weighted remaining real wealth over lifetime vs.
   - Average Annual Real Retirement Income

Constrained Retiree #1

- Single 65-year old female
- $250,000 of assets
- Social Security @ 65 = $16,895

- Product Pricing:
  - Inflation-Adjusted SPIA: 4.82%
  - Fixed SPIA: 6.76%
  - SPIA with 3% growth rate: 4.88%
  - GLWB: 5%
Constrained Retiree #1: Single 65-yo woman with $250,000

**Figure**
Retirement Income Frontier
Average Income vs. Shortfall

- Fixed Percentages
- RMD Distribution
- SPIAs
- VA/GLWB
- Partial Annuitization

**Figure**
Retirement Income Frontier
Average Income vs. Average Remaining Wealth

- 3% gr. SPIA
- Partial: WR=RMD, 100% stocks & 3% gr. SPIA
- Partial: WR=4%, 100% stocks & 3% gr. SPIA
Constrained Retiree #2

- Married 65-year old couple
- $400,000 of assets
- Social Security @ 65 = $22,493 & $11,054

- Product Pricing:
  - Inflation-Adjusted SPIA: 4.06%
  - Fixed SPIA: 6.02%
  - SPIA with 3% growth rate: 4.29%
  - GLWB: 4.5%

![Figure](figure.png)
Affluent Retiree #3

- Married 65-year old couple
- $1.000,000 of assets
- Social Security @ 65 = $29,042 & $14,272

- Product Pricing:
  - Inflation-Adjusted SPIA: 4.06%
  - Fixed SPIA: 6.02%
  - SPIA with 3% growth rate: 4.29%
  - GLWB: 4.5%
Affluent Retiree #3: 65-yo couple with $1,000,000

Figure
Retirement Income Frontier
Average Income vs. Shortfall

Shortfall: Percentage of Inflation-Adjusted SPIA Income Provided (10th Percentile)

Affluent Retiree #3: 65-yo couple with $1,000,000

Figure
Retirement Income Frontier
Average Income vs. Average Remaining Wealth

Survival-Weighted Remaining Wealth Over Lifetime (Median Outcome)
Alternative Constrained Retiree #1

- Single 70-year old female
- $250,000 of assets
- Social Security @ 70 = $23,903

- Product Pricing:
  - Inflation-Adjusted SPIA: 5.64%
  - Fixed SPIA: 7.55%
  - SPIA with 3% growth rate: 5.7%
  - GLWB: 5.75%
Alternative Constrained Retiree #1: Single 70-yo woman w/ $250,000

Figure
Retirement Income Frontier
Average Income vs. Average Remaining Wealth

3% gr. SPIA

Partial: WR=RMD, 100% stocks & 3% gr. SPIA
Partial: WR=4%, 100% stocks & 3% gr. SPIA
Partial: WR=3%, 100% stocks & 3% gr. SPIA

Fixed Percentages
RMD Distribution
SPIAs
VA/GLWB
Partial Annuitization
RETIREMENT BENEFITS AT UTC
10 Years of accelerating change

Final Average Earnings DB formula + supplemental DC plan for decades
2002 DB FAE design replaced by DB cash balance design for new hires
2006 DC plan introduces “Target Retirement” target date funds ("TDFs")
2008 DC plan auto-enrollment for new hires, QDIA: Off-the-shelf TDFs
2009 FAE design sunset* announced
2010 Company automatic DC in lieu of cash balance DB for new hires
2010 DC plan opens to DB plan rollovers (including UTC Cash Balance)
2011 DC plan investment redesign, Custom TDF QDIA, Streamlined core
2012 Lifetime Income Strategy introduced as enhanced QDIA

* Future accrual for active FAE participants converts to cash balance design after 12/31/2014

UTC SAVINGS PLAN 2014

Lifetime Income Strategy
New Hire Default

Target Retirement Funds
Mixed Income
Diversifiers
Emerging
Non-U.S. Equity
U.S. Equity - Small
U.S. Equity

Mix & Monitor℠ Core Passive Options

Stable Value Fund
Gov./Corp. Bonds
U.S. Equity Large Cap
U.S. Equity Small Cap
Non-U.S. Equity
Emerging Equity

UTC Ownership

Common Stock & ESOP

Mutual Fund Window

Mutual Funds
10,000+ Funds Available
4,000+ no load/transaction fee
250+ Mutual Fund Families

Inflation Sensitive Assets Fund*
Multi-Market Risk Parity Fund*

* Scheduled for launch May 2014
LIFETIME INCOME STRATEGY
Putting theory into practice

A 21st Century Pension Design
Secure retirement QDIA offered through a defined contribution plan
Professionally managed investments
Retirement income guaranteed by insurance contracts
Combines a guaranteed floor income benefit with upside potential, liquidity, optional joint life and beneficiary features
Offers security & certainty in retirement like traditional pensions while preserving the freedom & flexibility participants want today

LIFETIME INCOME STRATEGY
Balances & participants by age, 4/30/2014

$740M in Assets
~20k Participants
**FUNDAMENTAL CONCEPTS**

Questions for employers & fiduciaries

*Which description best fits members of most defined contribution plans*

- a) *Valued Employees & Esteemed Retirees*
- b) *Risk Tolerant & Savvy Investors*
- c) *Disciplined & Frugal Savers*

*Which term best describes most defined contribution plan designs*

- a) *A Secure Retirement Benefit*
- b) *An Investment Portfolio*
- c) *A Savings Account*

*Are the answers to these questions in sync?*
TOOLS FOR PLAN DESIGN

The Retirement Policy Statement (“RPS”)

Defines employer objectives for offering retirement benefits
Outlines basic principles used in the design & delivery of benefits
Describes how benefits offered are expected to meet objectives
Identifies internal/external constituents who have authority, influence and accountability for design, implementation & oversight

Examples of RPS objectives
- Support employee access to secure retirement income
- Simplify choice architecture while offering a broad range of risk/return
- Emphasize default design with automatic enrollment & automatic escalation
- Establish & maintain a framework to enhance plan features & options with manageable participant disruption
- Address needs of all plan participants regardless of their “investor” type
- Offer low-cost investment options, negotiate institutional fees
- Maintain access to non-core investments through self-directed window

LIFETIME INCOME STRATEGY

Design objectives

Design an investment portfolio glide path:
- Consistent with needs of all participants
- Consistent with Qualified Investment Default Alternative (QDIA) status
- Seek 100% replacement rate in combination with
  Social Security
  UTC DB / DC-only Company Automatic Funding

AllianceBernstein observed that Non-Rep employees:
- Represent the largest segment of participants
- Tend to use target-date portfolios more
- Have the highest hurdle in achieving a secure income replacement
SAFE HARBOR FOR QDIA
29 CFR Part 2550, October 24, 2007

From the Preamble to the Final Rule:
“…The [Department of Labor] believes… the approach it is taking to defining qualified default investment alternatives for purposes of the regulation is sufficiently flexible to accommodate future innovations and developments in retirement products.”
“…It is the view of the [Department of Labor] that the availability of annuity purchase rights, death benefit guarantees, investment guarantees or other features common to variable annuity contracts will not themselves affect the status of a fund, product or portfolio as a qualified default investment alternative when the conditions of the regulation are satisfied.”

ANNUITY PROVIDER SELECTION RULES
Purpose, scope & intended impact

Establishes a safe harbor for the selection of annuity providers within individual account plans

Proposed rule (2007) included descriptive guidance which clarified the Agency’s position on sufficient due diligence process & selection criteria

Final rule (2008) includes changes to the proposed rule that clarify and (over?) simplify the safe harbor conditions in part by omitting the descriptive guidance

Fiduciaries would benefit greatly from widespread and commonly accepted understanding of the omitted guidance
QUALIFIED JOINT & SURVIVOR ANNUITY
IRS Private Letter Ruling, September 2010

Issued in response to request for ruling concerning the effects under 401(a)(11) & 401(a)(17) of adding an in-plan withdrawal benefit

Conclusions
(1) Guaranteed withdrawals under the ABC Option constitute a "life annuity" for purposes of the qualified joint and survivor rules under sections 401(a)(11) and 417
(2) The applicable "annuity starting date(s)" for QJSA purposes is the date of the GLW Election and the dates, if any, that an increase in the Guaranteed Withdrawal amount occurs as a result of an internal transfer or an external rollover

Source: AllianceBernstein IRS PLR received September 9, 2010

QJSA DISCRIMINATION CONCERNS
Conflicting federal & state laws

The Department’s QJSA regulations and IRS’s enforcement position required tax qualified plans to define “marriage” in accordance with the Defense of Marriage Act of 1996, regardless of conflicting state or local law. (See, e.g., IRS.gov website, Treas. Reg. § 1.401(a)(9)-5, Q&A-5(b); Treas. Reg. § 1.401(a)(9)-5, Q&A-5(c)(1); Treas. Reg. § 1.401(a)(9)-5, Q&A-5(c)(2); Treas. Reg. § 1.401(a)(9)-6)

Though plan sponsors maintain discretion to allow “non-spouse” (as defined by DOMA) survivor benefit beneficiaries, such non-spouse survivor benefits are not equal to spouse benefits

Conflict of state and federal marriage definition created plan sponsor / settlor concerns not entirely resolved by ERISA preemption (e.g. Connecticut state contractor issue)

Recent Supreme Court ruling should help resolve this, but plan sponsors are still seeking guidance for implementation.
RETIRED INCOME ON STATEMENTS
Past recommendations & queries


“... encourage, allow and facilitate plan communications that use retirement income replacement formulas and final pay multiples in employee benefit statements on a personal participant basis. Plan communications should encourage participants to have a numerical goal, whether as a result of a sophisticated or elementary formula, and repeat that message. At the very least, participants should be able to determine and have access to an estimated plan account balance necessary for retirement.”


“...encourage, authorize, endorse and facilitate plan communications that use retirement income replacement formulas based on final pay and other reasonable assumptions in employee benefit statements on an individual participant basis”

2010 Request for Information on Lifetime Income

“Should an individual benefit statement present the participant's accrued benefits as a lifetime income stream of payments in addition to presenting the benefits as an account balance? If...yes, how...?” “Should an individual benefit statement include an income replacement ratio...?”

REQUIRED MINIMUM DISTRIBUTIONS
Impact on lifetime benefit vs. fixed period

<table>
<thead>
<tr>
<th>Minimum Distributions</th>
<th>Spouse</th>
<th>Non-Spouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculation Basis</td>
<td>Life Expectancy</td>
<td>Life Expectancy</td>
</tr>
<tr>
<td>Calculation Frequency</td>
<td>Recalculated Annually</td>
<td>One-time</td>
</tr>
<tr>
<td>Payout Period</td>
<td>Lifetime</td>
<td>Fixed</td>
</tr>
</tbody>
</table>
INCOME BENEFIT STATEMENTS TODAY
Disclosure & Illustrations

Meet standards for participant disclosure
Emphasize retirement income framing
Describe income in annual & monthly terms
Provide & encourage use of planning tools

RETIREMENT INCOME ON STATEMENTS
Descriptions favored over prescriptions


“... Our consensus recommendations do not ask for a change to any, or new statute, regulation, interpretive bulletin, notice or opinion... The Working Group recognizes that the Department of Labor has the ability to influence plan sponsors short of formally changing the written law.”


“...Plan communications should facilitate an understanding of how much income participant account balances will provide, that result in a better understanding of how an account balance converts to annual retirement income. The Department of Labor can facilitate this by providing guidance to plan sponsors on best practices, illustrative model notices as well as assumptions to convert account balances into annual income streams. This builds upon a similar recommendation made by the 2007 Council that studied Financial Literacy.”

2010 Request for Information on Lifetime Income

“Should the assumptions used to convert accounts into a lifetime stream of income payments be dictated by regulation, or should the Department issue assumptions that plan sponsors could rely upon as safe harbors?”
**TOMORROW’S LIFECYCLE STATEMENTS**

**Young & mid-life savers (20’s – 40’s)**

Focus on saving, diversification & long-term investing

Targeted messaging

“Maximize Your Match”

“Save More Tomorrow”

Potentially include income projections in response to regulatory requirements & industry best practices

---

**TOMORROW’S LIFECYCLE STATEMENTS**

**Pre-retirees (late 40’s – 50’s)**

Focus on building protection

Continue to address saving, diversification & long-term investing

Introduce & emphasize planning for secure income in retirement

Targeted messaging

“On Track Assessments”

“Catch Up Contributions”

Include accumulated & projected guaranteed income
Were the Agency to move forward with guidance and/or regulation, consider:

Participant statements include a Qualified Retirement Income Illustration ("QRII") in lieu of offering a Qualified Retirement Income Alternative ("QRIA")

Plans which offer a QRIA are entitled to rely on income derived from QRIA to meet minimum standard of care & disclosure requirements

Plans which do not offer QRIA are entitled to rely on:
- Advice of a fiduciary under ERISA
- Model & assumptions published by DOL

Definition of QRIA includes, but is not limited to:
- Annuities (fixed, variable, deferred, etc.)
- Withdrawal benefits and contingent deferred insured products
- High quality, buy & hold fixed income portfolios

QRIA status should apply equally to portfolio construction methods which include similar products & features, such as, lifecycle / target date strategies, managed drawdown programs, etc.

TOMORROW’S LIFECYCLE STATEMENTS
Near-retirees (late 50’s-60’s)

Focus on maximizing guaranteed income

Continue to address saving, diversification & planning for certainty of income at retirement

Targeted messaging, “On Track Assessments” “Catch Up Contributions” “Are you ready to retire?”

Include accumulated & projected guaranteed income

INCOME ILLUSTRATIONS
Considerations for future guidance

Were the Agency to move forward with guidance and/or regulation, consider:

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QRIA status should apply equally to portfolio construction methods which include similar products & features, such as, lifecycle / target date strategies, managed drawdown programs, etc.
Additional Background

WHY INVEST IN RETIREMENT PLANS
The business case for improving design

<table>
<thead>
<tr>
<th>BECAUSE YOU CAN</th>
<th>Managing service providers at the enterprise reduces cost &amp; improves outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT’S RIGHT</td>
<td>Addressing social impact enhances employment &amp; commercial brands</td>
</tr>
<tr>
<td>IT CREATES FLEXIBILITY IN MANAGING WORKFORCE</td>
<td>Retirement ready workforce increases flexibility &amp; reduces severance costs</td>
</tr>
<tr>
<td>IT ENHANCES EMPLOYEE ENGAGEMENT &amp; LOYALTY</td>
<td>Actively supporting employees differentiates employment &amp; improves engagement</td>
</tr>
<tr>
<td>IT WILL ENHANCE BARGAINING POWER</td>
<td>Retaining assets in the pension plan reduces costs for members &amp; the enterprise</td>
</tr>
<tr>
<td>IT WILL ATTRACT HIGHER QUALITY SERVICERS</td>
<td>Elevating plan status internally externally makes it a more desirable prospect</td>
</tr>
<tr>
<td>IT LEVERAGES EXISTING INFRASTRUCTURE</td>
<td>Aligning plan objectives &amp; retirement income creates consistent, whole-life approach</td>
</tr>
</tbody>
</table>

Source: Lloyd, 2013
**MORTALITY PREMIUMS**

Enhancing return on shareholder capital

Compensation and benefits is a significant shareholder investment

Simplified Example (Don’t Try This At Home)*

Suppose 100 individuals invest $1,000 each in a common fund

(Total investment = $100,000)

Ensuring 1-year investment return is 10%

Fund at end of year is worth $110,000

Unfortunately, only 98 individuals survive to end of the year

Each survivor now has $1,122 (= $110,000 / 98)

Individual rate of return = 12.2% for survivors

Even though assets returned only 10%

The extra 2.2% return is the “mortality premium”

Mortality premiums will vary based contract terms and pricing

Capturing mortality premiums enhances capital efficiency of retirement benefits

Ignoring mortality premiums in retirement plan design is a shareholder expense

---

*Source: Brown, 2014

---

**PROGRAM IMPLEMENTATION**

What happens “under the hood”

- **Lifetime Income Strategy Retirement Option**
  - **Participent**
  - **Investment Manager**
  - **Aggregator**
  - **Platform**
  - **Insurers**

**Diagram:***

- **Lifetime Income Strategy Fund** displayed as single option for investment elections and transfers
- Quarterly statements include single Lifetime Income Strategy Fund market value & income
- Web requests and accounting activity list single Lifetime Income Strategy Fund
- Some performance pages will display data for sub-funds
- Unique personal rates of return are calculated for participants at plan account-level

---

Structure delivers custom-built, individual Income Benefits

Unique to each participant by date of birth & individual activity

---

*Some text continues on the next page.*
INSURANCE GUARANTEE PLATFORM
Multi-carrier aggregator approach

- A flexible & extendable operational structure
- Aggregator interfaces with record keeper & insurers
- Diversification, competition & capacity
- Withdrawal rate process
  - Aggregator polls insurers monthly/quarterly
  - Allocate via rate & diversification formula
  - Fixed fee cannot increase
  - Purchased benefit cannot decrease

LIFETIME INCOME STRATEGY

Responsibilities

- **Investment Strategy / Asset Allocation / Glide Path**
  - Alliance Bernstein (AB)

- **Operations / Rebalancing**
  - Alliance Bernstein (AB), AonHewitt

- **Custody and Daily Valuation**
  - State Street

- **Manager* / Insurer Selection**
  - UTC

- **Income Benefit Guarantees**
  - Lincoln, Nationwide & Prudential

* Insurers retain authority to take fiduciary control of investments in group annuity
## RETIREMENT INCOME ALTERNATIVES

<table>
<thead>
<tr>
<th></th>
<th>Monthly 401k Withdrawals</th>
<th>CDs / Bond Interest</th>
<th>Lifetime Income Strategy</th>
<th>Variable Annuity</th>
<th>Traditional Fixed Annuity</th>
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</thead>
<tbody>
<tr>
<td>Lifetime Benefit</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
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<tr>
<td>Guarantor</td>
<td>★</td>
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<td>★</td>
<td>★</td>
<td>★</td>
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<tr>
<td>Income Protection</td>
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<tr>
<td>Indicative Income</td>
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<tr>
<td>Fixed Cost</td>
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<td>Fees</td>
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<td>★</td>
<td>★</td>
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<tr>
<td>Liquidity &amp; Control</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>Upside Potential</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
</tbody>
</table>

1 GLWB – Guaranteed Lifetime Withdrawal Benefit

## LIFETIME INCOME STRATEGY

### Obstacles / risks and solutions

<table>
<thead>
<tr>
<th>Obstacle</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low utilization rate</td>
<td>Growth, liquidity and control</td>
</tr>
<tr>
<td>Benefit becomes outmoded / Insurers discontinue benefit</td>
<td>Flexibility in design</td>
</tr>
<tr>
<td>Insurer insolvency</td>
<td>Multi-insurer, insurance safety net</td>
</tr>
<tr>
<td>Aggregator termination / replacement</td>
<td>Transferable platform</td>
</tr>
<tr>
<td>Early adopter</td>
<td>Design control</td>
</tr>
<tr>
<td>Regulatory</td>
<td>Broad support and interest</td>
</tr>
</tbody>
</table>
KEY FEATURES OF EFFECTIVE SOLUTIONS
Participant & plan sponsor perspectives

<table>
<thead>
<tr>
<th>Participants</th>
<th>Plan Sponsor/Fiduciary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifetime Income (Longevity Protection)</td>
<td>✓</td>
</tr>
<tr>
<td>Growth Potential (Income Ratchets)</td>
<td>✓</td>
</tr>
<tr>
<td>Full Liquidity &amp; Control of Assets</td>
<td>✓</td>
</tr>
<tr>
<td>Simplicity &amp; Portability</td>
<td>✓</td>
</tr>
<tr>
<td>Institutional Pricing &amp; Transparency</td>
<td>✓</td>
</tr>
<tr>
<td>Diversified Insurer Coverage</td>
<td>✓</td>
</tr>
<tr>
<td>QDIA (Integrated within Target-Date Portfolio)</td>
<td>✓</td>
</tr>
</tbody>
</table>

RETIREMENT INCOME ALTERNATIVES
A balance between control and certainty

Control | Certainty
---|---
Self Withdrawal
Complete Control | No Guaranteed Lifetime Income

Lifetime Income In-plan Withdrawal Benefit
Complete Control | Guaranteed Lifetime Income

Traditional Fixed Annuity
No Control | Guaranteed Lifetime Income
INCOME BENEFIT RATES
Variation over time*

Driving factors: Level of Interest Rates, Market Volatility, Participant Age, Competition, Fees

* AllianceBernstein simulation of Guaranteed Lifetime Withdrawal Benefit ("GLWB") annual withdrawal rates 1954-2010
**SUMMARY**

- **Salary at Retirement**: $82k
- **Balance at Retirement**: $743k
- **Benefit Base**: $941k
- **Guaranteed Withdrawal Rate**: 6.8%
- **Guaranteed Income for Life**: $64k

*All figures in 2010 dollars*
### PROJECTED INCOME LEVELS

#### Income Replacement Ratio

- **Secure Income Portfolio** - 60% equity/40% bonds, higher fee e.g. 119 bps, secure income
- **Traditional Investment Portfolio** - Custom allocation, low fee e.g. 12 bps, no secure income
- Income accumulation trend line (R-squared = 0.986)
- Percentage of final income accrued

#### Secure Income Portfolio - 60% equity/40% bonds, higher fee e.g. 119 bps, secure income
- **Lifetime Income Strategy** 50th Percentile
- **Target Retirement Strategy** 50th Percentile
- **Lifetime Income Strategy** 25th Percentile
- **Target Retirement Strategy** 25th Percentile

---

#### INCOME PHASE-IN

- Allocation %
- Age
- Traditional Investment Portfolio - Custom allocation, low fee e.g. 12 bps, no secure income
- Secure Income Portfolio - 60% equity/40% bonds, higher fee e.g. 119 bps, secure income
- Income accumulation trend line (R-squared = 0.986)
- Percentage of final income accrued

- Stylized Growth of Account Value
PROJECTED ACCOUNT BALANCES

 Account Balance at Retirement

<table>
<thead>
<tr>
<th>Age</th>
<th>Target Retirement Strategy</th>
<th>Lifetime Income Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>50th</td>
<td>$103,169</td>
<td>$89,502</td>
</tr>
<tr>
<td>25th</td>
<td>$77,467</td>
<td>$63,804</td>
</tr>
<tr>
<td>5th</td>
<td>$52,561</td>
<td>$38,900</td>
</tr>
</tbody>
</table>

Differential < 10%

INSURANCE FEE ANALYSIS

- **Availability of Benefit**: 80 bps, 100 bps, 120 bps
- **Guaranteed Income**: 4 of 4 Insurers
- **Account Value**: N/A

<table>
<thead>
<tr>
<th>Income Replacement Ratio</th>
<th>Account Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td></td>
</tr>
<tr>
<td>73</td>
<td></td>
</tr>
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<td>78</td>
<td></td>
</tr>
<tr>
<td>83</td>
<td></td>
</tr>
<tr>
<td>88</td>
<td></td>
</tr>
<tr>
<td>93</td>
<td></td>
</tr>
<tr>
<td>98</td>
<td></td>
</tr>
</tbody>
</table>

Differential: 100 bps - N/A, 120 bps - N/A
Analogous to protection for investment menu under ERISA Section 404(c) and qualified default investment alternative (QDIA)

Plan sponsor protected from unfavorable participant outcomes in retirement:

- Outliving assets
- Income decreases
- Income doesn’t keep pace with inflation
- Participant alleges retirement income generator not appropriate

- Retirement income program not required; protection only if plan sponsor voluntarily offers program
Safe Harbor Proposal for Program of Retirement Income in DC Plans

- Offer at least three distinct retirement income generators (RIGs).
  1. Systematic withdrawals (installment payments)
  2. Annuities
  3. Period certain payout
- Designate qualified default retirement income alternative (QDRIA).
- Provide participant disclosures to enable informed decisions.
- Enable ability to allocate accounts among alternatives at retirement.
- Can impose reasonable administrative rules and charges.
- Plan sponsor must still conduct due diligence to select RIGs.

DISCUSSION svernon@stanford.edu
CHALLENGES IN MAKING APPROPRIATE RETIREMENT PLANNING DECISIONS

- **Cognitive barriers**
  - Financial literacy rates are low (Lusardi and Mitchell 2007; Hastings, Madrian and Skimmyhorn 2012)
FINANCIAL LITERACY QUESTIONS

<table>
<thead>
<tr>
<th>Concept</th>
<th>Question</th>
<th>Answer Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest rates and compounding</td>
<td>Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?</td>
<td>More than $102</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exactly $102</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less than $102</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refused</td>
</tr>
<tr>
<td>Inflation</td>
<td>Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy more than today, exactly the same as today, or less than today with the money in this account?</td>
<td>More than today</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exactly the same as today</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less than today</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refused</td>
</tr>
<tr>
<td>Risk Diversification</td>
<td>True or false: Buying a single company stock usually provides a safer return than a stock mutual fund.</td>
<td>True</td>
</tr>
<tr>
<td></td>
<td></td>
<td>False</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refused</td>
</tr>
</tbody>
</table>

PERCENT CORRECT IN 2009 NATIONAL FINANCIAL CAPABILITY STUDY

All questions correct: 39%
CHALLENGES IN MAKING APPROPRIATE RETIREMENT PLANNING DECISIONS

- **Cognitive barriers**
  - Financial literacy rates are low (Lusardi and Mitchell 2007; Hastings, Madrian and Skimmyhorn 2012)
  - Exponential growth bias (Eisenstein and Hoch 2007; Stango and Zinman 2009; McKenzie and Liersch 2011; Levy and Tasoff 2014)

**Perceived Savings Trajectories for Savers with Varying Levels of Linearized Exponential Growth Bias**

Note: The figure shows the perceived asset value with a starting value of $1 at time zero growing at an annual interest rate of 10 percent.
CHALLENGES IN MAKING APPROPRIATE RETIREMENT PLANNING DECISIONS

○ Cognitive barriers
  • Financial literacy rates are low (Lusardi and Mitchell 2007; Hastings, Madrian and Skimmyhorn 2012)
  • Exponential growth bias (Eisenstein and Hoch 2007; Stango and Zinman 2009; McKenzie and Liech 2011; Levy and Tasoff 2014)

○ Behavioral barriers
  • Procrastination/present bias (O’Donoghue and Rabin 1998)

ILLUSTRATION OF PRESENT BIAS

○ Suppose an individual is presented a choice between 7 hours of an unpleasant activity on April 1 and 8 hours on April 15

○ If asked on February 1, most would prefer 7 hours on April 1

○ If asked on April 1, many may opt to put off the unpleasant activity until April 15 (despite the fact that it will take longer)
Challenges in Making Appropriate Retirement Planning Decisions

- **Cognitive barriers**
  - Financial literacy rates are low (Lusardi and Mitchell 2007; Hastings, Madrian and Skimmyhorn 2012)
  - Exponential growth bias (Eisenstein and Hoch 2007; Stango and Zinman 2009; McKenzie and Liersch 2011; Levy and Tasoff 2014)

- **Behavioral barriers**
  - Procrastination/present bias (O'Donoghue and Rabin 1998)
  - Indirect evidence of “Limited attention”

What Kinds of Interventions Can Improve Saving Decisions?

- **Interventions focused on cognitive barriers**
  - Financial education has mixed results on financial outcomes
    - Many experimental studies do not find evidence that financial education affects outcomes (e.g., Choi et al. 2002; Drexler et al. 2012; Choi et al. 2011)
    - Skimmyhorn (2012) finds substantial effects of an 8-hour financial literacy course among soldier saving behavior
  - Income disclosures have statistically significant but modest impacts on saving rates (Goda, Manchester and Sojourner 2014)
WHAT KINDS OF INTERVENTIONS CAN IMPROVE SAVING DECISIONS?

- Interventions focused on behavioral factors

  - Defaults/automatic enrollment (e.g., Madrian and Shea 2001; Beshears et al. 2006; Choi et al. 2002, 2004; Mitchell et al. 2009; Goda and Manchester 2013)

  - Peer Effects (e.g., Duflo and Saez 2002, 2003; Beshears et al. 2011)

  - Framing (e.g., Choi et al. 2012; Brown et al. 2008; Brown, Kapteyn and Mitchell 2012)

  - Incentives to “act now” or commit to future increases in saving (e.g., Benartzi and Thaler 2004)

  - Simplification of enrollment process (Choi et al. 2005)

OPEN QUESTIONS

- How does present bias correlate with retirement savings and wealth accumulation?

- How do cognitive barriers and behavioral barriers correlate and interact with one another?

- How should policies be designed to take into account both cognitive and behavioral biases?

- What influences decisions of how to decumulate assets?
Odds of Ruin with Various Withdrawal Rates

30 year retirement

Withdrawal rate

4.9%  20%
4.3%  10%
3.9%  5%

Odds of ruin, calculated by Dr. Wade Pfau
Here’s a Big Problem

"For many people, being asked to solve their own retirement savings problems is like being asked to build their own cars."

- Richard Thaler, University of Chicago

Current State of Research On Behavioral Finance

- framing effects
- prospect theory
- disposition effect
- representativeness heuristic
- affect heuristic
- serial position effect
- hyperbolic discounting
- loss aversion
- illusion of control

- consumerism and credit card effect
- overconfidence
- money illusion
- base rate neglect
- illusion of control

- planning fallacy
- choice overload
- Unrealistic optimism
- nudes
- mere-measurement effect
- accounting
- endowment effect

- Social norms
- illusion of control
- sunk cost fallacy
- overconfidence
- planning fallacy
- choice overload
- mere-measurement effect
- accounting
- endowment effect

- Unusual correlations
- confirmation bias
- Availability heuristic
“The essential difference between emotion and reason is that emotion leads to action while reason leads to conclusions.”

- Donald Caine, Neurologist

Three Population Segments

1. I’ll do it myself
Three Population Segments

1. I’ll do it myself

2. Help me do it

3. Do it for me
Proportion in Each Segment?

- 40% rank themselves as C, D, or F on personal finance knowledge
  - 2013 Consumer Financial Literacy Survey

- 48% rank themselves as “not at all knowledgeable” or “not very knowledgeable” of investments and financial products
  - 2013 LIMRA SRI Consumer Survey

- 85% would find “very useful” or “somewhat useful” an estimate of retirement income from savings
  - 2014 Retirement Confidence Survey, EBRI

- 88% would find “very valuable” or “somewhat valuable” recommendations on sustainable withdrawal amounts for lifetime income
  - 2014 Retirement Confidence Survey, EBRI

Two Possible Responses

- DC pension
- Guiding design
Moving Beyond Education and Awareness

**SCL MORE Model**

Refine the “awareness to action” model

Motivate → Optimize → Realize

Evaluate → Evaluate

Guiding Design

**Refine the “awareness to action” model**

<table>
<thead>
<tr>
<th>Motivate</th>
<th>Optimize</th>
<th>Realize</th>
</tr>
</thead>
<tbody>
<tr>
<td>stories</td>
<td>remove barriers</td>
<td>triggers</td>
</tr>
<tr>
<td>affirmations</td>
<td>milestones</td>
<td>nudges</td>
</tr>
<tr>
<td>envision future self</td>
<td>framing</td>
<td>defaults</td>
</tr>
<tr>
<td>dispel misperceptions</td>
<td>loss aversion</td>
<td>status quo bias</td>
</tr>
<tr>
<td>project future states</td>
<td>anchoring</td>
<td>endorsements</td>
</tr>
<tr>
<td>endorsements</td>
<td>project future states</td>
<td></td>
</tr>
<tr>
<td>trust</td>
<td>trust</td>
<td></td>
</tr>
<tr>
<td></td>
<td>stories</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What We’re Working On

• White papers: Behavioral finance – The Next Frontier of Plan Design

• Behavioral finance research with employee groups
  – Interventions to increase savings
  – Use of “big data” techniques to study personality types and decision-making
  – Decision-making at retirement
Efficient Retirement Design:
Combining Private Assets and Social Security to Maximize Retirement Resources

John B. Shoven
Sita N. Slavov

What is the Prevalent Retirement Design?
Answer = Start Social Security Almost Immediately

Commencement of Social Security

Research Supported by Social Security and the Sloan Foundation
### What Could People Do?

- Separate retirement and Social Security commencement decisions
- Social Security benefits are increased (actuarially adjusted) for later commencement
- DC assets could be used to finance deferral rather than to supplement Social Security benefits

### The Actuarial Adjustments for Delaying Social Security Commencement

<table>
<thead>
<tr>
<th>Defer to</th>
<th>% Change in Monthly Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>76.00 65.00 52.31 41.43 32.00 22.22 13.79 6.45</td>
</tr>
<tr>
<td>69</td>
<td>65.33 55.00 43.08 32.86 24.00 14.81 6.90</td>
</tr>
<tr>
<td>68</td>
<td>54.67 45.00 33.85 24.29 16.00 7.41</td>
</tr>
<tr>
<td>67</td>
<td>44.00 35.00 24.62 15.71 8.00</td>
</tr>
<tr>
<td>66</td>
<td>33.33 25.00 15.38 7.14</td>
</tr>
<tr>
<td>65</td>
<td>24.44 16.67 7.69</td>
</tr>
<tr>
<td>64</td>
<td>15.56 8.33</td>
</tr>
<tr>
<td>63</td>
<td>6.67</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Defer From</th>
</tr>
</thead>
<tbody>
<tr>
<td>62 63 64 65 66 67 68 69</td>
</tr>
</tbody>
</table>
Another Reason: People are Living Much Longer

Life Expectancy of People in Their 60s Today

Table 1. Remaining Life Expectancies of Retirement Age Singles

<table>
<thead>
<tr>
<th>Age</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>62</td>
<td>21.3 (33)</td>
<td>23.5 (35)</td>
</tr>
<tr>
<td>63</td>
<td>20.6 (32)</td>
<td>22.7 (34)</td>
</tr>
<tr>
<td>64</td>
<td>19.9 (31)</td>
<td>21.9 (33)</td>
</tr>
<tr>
<td>65</td>
<td>19.1 (30)</td>
<td>21.1 (32)</td>
</tr>
<tr>
<td>66</td>
<td>18.4 (29)</td>
<td>20.3 (31)</td>
</tr>
<tr>
<td>67</td>
<td>17.6 (28)</td>
<td>19.5 (30)</td>
</tr>
<tr>
<td>68</td>
<td>16.9 (27)</td>
<td>18.7 (29)</td>
</tr>
<tr>
<td>69</td>
<td>16.2 (26)</td>
<td>17.9 (28)</td>
</tr>
<tr>
<td>70</td>
<td>15.5 (25)</td>
<td>17.1 (27)</td>
</tr>
</tbody>
</table>

Note: Numbers in Parenthesis represent 90th percentile outcomes

Data: Social Security Cohort Life Tables for people born on 1/1/1951
Deferring is a Much Better Deal for the Higher Earner in a Couple

- Survivor (widow) benefits are based on the higher of the two individual benefit amounts
- Higher earner’s benefits are paid out as a second-to-die annuity (for 22 to 25 years)
- Lower earner’s benefits are paid out as a first-to-die annuity (12 to 15 years)
The Advantage of Knowing the Rules in Detail: Getting Paid By Social Security While Deferring

- If higher earner defers to 70, he or she can collect spousal benefits at 66 and still defer own-record benefits.

- Collecting spousal benefits after the Full Retirement Age (66) is almost always part of an efficient retirement design for couples.

- Many singles can collect spousal benefits on an ex-spouse and still benefit from deferring own-record benefits.

The Suggested Strategy

- Single men in average health should defer to 68 to 70.

- Single women in average health should defer to 70.

- Higher earner in a couple should defer to 70 unless both spouses are in poor health. Higher earner should consider collecting spousal benefits at 66.

- When the lower earner starts benefits doesn’t make much difference.
Case Study of Two-Earner Couple

- Husband and wife are both 62, in average health, and are retiring
- Husband’s average annual income was approximately $55,000
- Wife’s average income was approximately $42,000
- Combined 401(k) Assets are $250,000
- Common Strategy: Start Social Security at 62 and buy annuity with 401(k) funds
- Optimal Strategy: Husband Defers to 70, wife to 66
Efficient Retirement Design Has Wife Starting Benefits at 66, Husband Collecting Spousal Benefits at 66 and Own Benefits at 70

Couple’s Income with Efficient Retirement Design
Advantage: 25-30% Higher Widow’s Benefits

Survivor’s Income with Each Strategy

- Extra Widow’s Income with 66/70 Series Strategy
- Widow’s Income with Parallel Strategy

Difference in Income at 70 and Beyond

Income is Identical from 62-69

Monthly Income

Age

Monthly Income

Age
Social Security Benefit Rules are Very Complicated, but...

Who Should Defer Social Security?

The answer at current interest rates, 
almost everybody!

Add It Up

- Couple Has Same Income from 62-69
- $579 - $1,450 more per month from 70 onwards
- Survivor (Widow) Enjoys 25-30% more income
- Children may benefit since likelihood of a dependent widow is reduced
- Deferring to 66 and 70 dominates the outcome where both spouses start Social Security at 62
Who Should Defer Social Security?

At current real interest rates, almost everybody!

Optimal commencement age shown in parenthesis

- Single black male with less than high school education (68)
- Single male in poor health (2X mortality) (65)
- Single woman in average health (70)
- Single woman in poor health (2X mortality) (68)
- For couples, almost all primary earners should defer to 70
- Most non-earners in one-earner households (66)
- Secondary earners in two-earner households (varies from 62 to 70 depending on race, education and health)
Building Best Practices in Retirement Income

An Australian Perspective

Michael E. Drew, PhD SFFin
Professor of Finance, Griffith University, Australia

Building Best Practices in Retirement Income
Stanford Center on Longevity, May 2014

Superannuation Statistics – February 2014

Overview

| Type of fund | Total assets (Billions) | No. of funds | No. of fund
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>986.0</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Australian fixed interest</td>
<td>597.7</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>International fixed interest</td>
<td>27.6</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Australian shares</td>
<td>139.1</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Listed property</td>
<td>108.2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Unlisted property</td>
<td>103.7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Other assets</td>
<td>72.8</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,361.1</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Sources: APRA Annual Statistics, June 2013

Projected superannuation assets

<table>
<thead>
<tr>
<th>Year</th>
<th>Base amount</th>
<th>Growth rate</th>
<th>Growth rate</th>
<th>Growth rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>1210</td>
<td>1270</td>
<td>1370</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>2399</td>
<td>3090</td>
<td>3800</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>3180</td>
<td>3980</td>
<td>4900</td>
<td></td>
</tr>
<tr>
<td>2025</td>
<td>4290</td>
<td>5300</td>
<td>6500</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>5550</td>
<td>6900</td>
<td>8645</td>
<td></td>
</tr>
</tbody>
</table>

Sources: Assumptions for 2013, Treasury-FIU Report 2013, and Copper Panel

Manpower of investment

<table>
<thead>
<tr>
<th>Manpower</th>
<th>Number of Manpower</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

Funds with assets over $50bn

<table>
<thead>
<tr>
<th>December quarter 2013</th>
<th>January 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributions</td>
<td></td>
</tr>
<tr>
<td>Benefits</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

Total | 1,331.0 |

Source: APRA Annual Statistics, June 2013

Principal source of income for retirees aged 65

<table>
<thead>
<tr>
<th>Income type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax</td>
<td>65</td>
</tr>
<tr>
<td>Government</td>
<td>20</td>
</tr>
<tr>
<td>Other</td>
<td>15</td>
</tr>
</tbody>
</table>

Source: APRA Annual Statistics, June 2013

Mean balance (2009-2010)

<table>
<thead>
<tr>
<th>Mean balance</th>
<th>Age</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>50</td>
<td>75,626</td>
</tr>
<tr>
<td>Female</td>
<td>55</td>
<td>115,626</td>
</tr>
<tr>
<td>Mean difference</td>
<td>39,000</td>
<td></td>
</tr>
</tbody>
</table>

Sources: APRA Annual Statistics, June 2013

Mean returns

<table>
<thead>
<tr>
<th>Mean return</th>
<th>Period</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>5%</td>
<td>10 years</td>
<td>30,000</td>
</tr>
<tr>
<td>10%</td>
<td>5 years</td>
<td>60,000</td>
</tr>
</tbody>
</table>

Sources: ASFA (2014)
WHERE WILL AUSTRALIA BE IN 20 YEARS? In 2033 ...

The dynamics of an Australian $7.6 trillion superannuation system

<table>
<thead>
<tr>
<th>Pluses</th>
<th>Strains</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th largest in the world: Australia's superannuation system</td>
<td>2033: Super will be 180% of GDP</td>
</tr>
<tr>
<td>Deferring 5G increase to 2021 will reduce assets by &lt;1% by 2033</td>
<td>? h 12% enough?</td>
</tr>
<tr>
<td>$7.6 trillion 2033: pool of super assets</td>
<td>Number of Australians over 65 will increase 75% to 3.8 million in 2033</td>
</tr>
<tr>
<td></td>
<td>Since World War II average time in retirement increased by &lt; 50%</td>
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WHERE WILL AUSTRALIA BE IN 20 YEARS? In 2033 ...

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<tr>
<td></td>
<td>Since World War II average time in retirement increased by &lt; 50%</td>
</tr>
</tbody>
</table>

DEMOGRAPHICS AND LONGEVITY

Generational shift

2013 (%)

<table>
<thead>
<tr>
<th>Working age (55-69)</th>
<th>Retired (65+)</th>
<th>Working / retired population</th>
</tr>
</thead>
<tbody>
<tr>
<td>53</td>
<td>32</td>
<td>85</td>
</tr>
</tbody>
</table>

2033 (%)

<table>
<thead>
<tr>
<th>Working age (55-69)</th>
<th>Retired (65+)</th>
<th>Working / retired population</th>
</tr>
</thead>
<tbody>
<tr>
<td>59</td>
<td>36</td>
<td>75</td>
</tr>
</tbody>
</table>

Addressing longevity risk

- Now: working age individuals 4:1 retiree
- 2033: working age individuals 3:1 retiree
- Current under 30s will have 1/3 super assets in 2033
- Millennials will be 20% of workforce in 2033

Deloitte (2013)

Deloitte (2013)
THE STORY SO FAR …

*The Retirement Risk Zone #RRZ*

Both reports (and further research) are available from: [www.finsia.com](http://www.finsia.com)

---

THE THEORY ROOM …

![Diagram showing Retirement Risk Zone]

*Diagram: Retirement Nest-Egg, Accumulation, Pre-Retirement, Early Retirement, Late Retirement, Decumulation, Retirement Risk Zone or Conversion Phase*
WHAT’S THE BIG QUESTION?

You’ve arrived at retirement exactly as you planned it, you got the good sequence of returns and your pot of gold is full to the brim

Now the difficult question, what is a sustainable level of retirement spending?

Too much and you'll run out, too little and your beneficiaries will be most pleased

» Conventional wisdom says withdrawing 4% (commonly known as the ‘Golden Rule’) of your accumulated balance is the "right" number, is it?

» Is there a simple, robust solution to the asset-liability mismatch faced by many retirees?
SIZING THE PROBLEM?

Recent studies suggest that a safe withdrawal rate could range between less than 2% and as much 7% assets.

By any measure, this is an extraordinary range of results.

Imagine, on a starting balance of $800,000 …

- The lower bound (2%) would not replace the current public pension for a couple.
- The upper bound (7%) is equivalent to the current Association of Superannuation Funds of Australia (ASFA) comfortable standard of retirement income for a couple for a horizon of three decades.

RESEARCH AGENDA

- How Safe are “Safe Withdrawal Rates” in Retirement?
- The Retirement Risk Zone
- What is a Safe Withdrawal Rate?
- The 4% Rule is Dead… Long Live the 4% Rule
- Retirement Income Planning: The Next Steps
"Is there a magical formula to ensure that you don’t outlive your savings? Unfortunately the answer is an emphatic "no!"

http://online.wsj.com/ad/article/financialstrategies-retirement

"Well, it was beautiful while it lasted. In recent years, the 4% rule has been thrown into doubt, thanks to an unexpected hazard: the risk of a prolonged market rout the first two, or even three, years of your retirement."

http://online.wsj.com/news/articles/SB10001424127887324162304578304491492559684

...some experts are now claiming that retirees can safely withdraw just 3 percent of their savings each year.


Bengen (1994) ... assuming a minimum requirement of 30 years of portfolio longevity, a first-year withdrawal of 4 per cent, followed by inflation-adjusted withdrawals in subsequent years, should be safe (p.172)."

"You need retirement income. The question is how much money should you take out each year? You want to make sure you don’t spend down your accounts too fast. The answer is determined by calculating a safe withdrawal rate."

"What Is A Safe Withdrawal Rate?"

ACADEMIC VIEW …

• The 4% or **Golden Rule** (Bengen, 1994)

![Assuming a minimum requirement of 30 years of portfolio longevity, a first-year withdrawal of 4 per cent, followed by inflation-adjusted withdrawals in subsequent years, should be safe. Bengen (1994) p. 172]

• 3 – 4% (Cooley, Hubbard, and Walz, 1999)
• 4 – 5% (Cooley, Hubbard, and Walz, 2011)
• 1.5 – 8.8% (Pfau, 2011)
• Literature tests varying withdrawal rates, asset allocations and time horizons
• US-centric, little analysis on Australia

APPROACHES TO THE CONVERSION PHASE …

Income-only Plan (“The Dream”)
» Those members with sufficient wealth may manage their assets so that they can live off the income from those assets without spending the principal

Systemic Withdrawal Plans (“The Reality”)
» Most retirees lack sufficient assets to live solely off the income generated by those assets
» Rather, they will need to begin drawing down principal in addition to investment income - **Safe withdrawal rates**

Guaranteed Income/Annuittisation (“A Building Block”)
» Lower risk tolerance or high expectation of longevity, pooling?

WHAT IS A “SAFE WITHDRAWAL RATE”?

DATA AND METHOD

- Dimson-Marsh Staunton (2012) real returns 1900-2011 (stocks, bonds, bills)
- Historical simulation for selected countries
- Withdrawal rates in 1% increments, from 1-10%
- Investment horizons of 10, 20, 30 and 40 years
- Asset allocation exposure to stocks from 0-100%, in 25% increments
- SAFEMAX($x\%$), the safe maximum withdrawal rate at $x\%$ level (where $x = 100; 95; 90; 50$)

How much money can I withdraw annually from my retirement nest egg without running out?
Why Australia May Be the Worst Case Study for Safe Withdrawal Rates

Why?

Accumulated Real Returns by Country since 1900

$2,459 (AUS)

$531 (NZL)

$193 (NLD)

$6 (ITA)

$53 (JPN)
AUSTRALIA – SUCCESS RATES

![Graph showing success rates over different withdrawal rates for various asset allocations.]

AUSTRALIA – 30 YEAR HORIZON

<table>
<thead>
<tr>
<th>Asset Allocation</th>
<th>Safemax100</th>
<th>Safemax95</th>
<th>Safemax90</th>
<th>Safemax50</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Stocks</td>
<td>2.74</td>
<td>4.20</td>
<td>5.13</td>
<td>7.63</td>
</tr>
<tr>
<td>75% Stocks/20% Bonds/5% Bills</td>
<td>2.94</td>
<td>4.01</td>
<td>4.31</td>
<td>6.71</td>
</tr>
<tr>
<td>50% Stocks/45% Bonds/5% Bills</td>
<td>2.96</td>
<td>3.54</td>
<td>3.62</td>
<td>5.37</td>
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<tr>
<td>25% Stocks/70% Bonds/5% Bills</td>
<td>2.45</td>
<td>2.69</td>
<td>2.85</td>
<td>4.11</td>
</tr>
<tr>
<td>95% Bonds/5% Bills</td>
<td>1.66</td>
<td>1.83</td>
<td>2.04</td>
<td>5.37</td>
</tr>
</tbody>
</table>
NEW ZEALAND (75th), NETHERLANDS (50th) AND JAPAN (25th)

<table>
<thead>
<tr>
<th>Asset Allocation (Rebalanced Annually)</th>
<th>SAFEMAX100</th>
<th>SAFEMAX95</th>
<th>SAFEMAX90</th>
<th>SAFEMAX50</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Stocks</td>
<td>4.05</td>
<td>4.68</td>
<td>4.95</td>
<td>6.82</td>
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<tr>
<td>75% Stocks/20% Bonds/5% Bills</td>
<td>3.97</td>
<td>4.37</td>
<td>4.51</td>
<td>5.96</td>
</tr>
<tr>
<td>50% Stocks/45% Bonds/5% Bills</td>
<td>3.64</td>
<td>3.90</td>
<td>3.97</td>
<td>5.18</td>
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<tr>
<td>25% Stocks/75% Bonds/5% Bills</td>
<td>3.12</td>
<td>3.22</td>
<td>3.36</td>
<td>4.30</td>
</tr>
<tr>
<td>95% Bonds/5% Bills</td>
<td>2.39</td>
<td>2.44</td>
<td>2.51</td>
<td>3.36</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Asset Allocation (Rebalanced Annually)</th>
<th>SAFEMAX100</th>
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<th>SAFEMAX50</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Stocks</td>
<td>2.93</td>
<td>3.14</td>
<td>3.40</td>
<td>5.25</td>
</tr>
<tr>
<td>75% Stocks/20% Bonds/5% Bills</td>
<td>3.31</td>
<td>3.51</td>
<td>3.77</td>
<td>4.98</td>
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<tr>
<td>50% Stocks/45% Bonds/5% Bills</td>
<td>3.19</td>
<td>3.53</td>
<td>3.67</td>
<td>4.65</td>
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<tr>
<td>25% Stocks/75% Bonds/5% Bills</td>
<td>2.83</td>
<td>2.99</td>
<td>3.10</td>
<td>3.85</td>
</tr>
<tr>
<td>95% Bonds/5% Bills</td>
<td>2.04</td>
<td>2.12</td>
<td>2.16</td>
<td>3.35</td>
</tr>
</tbody>
</table>

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<th>SAFEMAX50</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Stocks</td>
<td>0.47</td>
<td>0.49</td>
<td>0.54</td>
<td>6.52</td>
</tr>
<tr>
<td>75% Stocks/20% Bonds/5% Bills</td>
<td>0.37</td>
<td>0.40</td>
<td>0.43</td>
<td>6.30</td>
</tr>
<tr>
<td>50% Stocks/45% Bonds/5% Bills</td>
<td>0.24</td>
<td>0.27</td>
<td>0.29</td>
<td>5.71</td>
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<tr>
<td>25% Stocks/75% Bonds/5% Bills</td>
<td>0.12</td>
<td>0.14</td>
<td>0.15</td>
<td>4.87</td>
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<tr>
<td>95% Bonds/5% Bills</td>
<td>0.04</td>
<td>0.05</td>
<td>0.06</td>
<td>3.71</td>
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</tbody>
</table>

ITALY– SUCCESS RATES
ITALY – 30 YEAR HORIZON

<table>
<thead>
<tr>
<th>Asset Allocation</th>
<th>SAFEMAX100</th>
<th>SAFEMAX95</th>
<th>SAFEMAX90</th>
<th>SAFEMAX50</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Stocks</td>
<td>1.34</td>
<td>1.76</td>
<td>1.94</td>
<td>3.50</td>
</tr>
<tr>
<td>75% Stocks/20% Bonds/5% Bills</td>
<td>1.31</td>
<td>1.50</td>
<td>1.84</td>
<td>3.00</td>
</tr>
<tr>
<td>50% Stocks/45% Bonds/5% Bills</td>
<td><strong>0.89</strong></td>
<td><strong>1.01</strong></td>
<td><strong>1.23</strong></td>
<td><strong>2.66</strong></td>
</tr>
<tr>
<td>25% Stocks/70% Bonds/5% Bills</td>
<td>0.45</td>
<td>0.50</td>
<td>0.55</td>
<td>2.49</td>
</tr>
<tr>
<td>95% Bonds/5% Bills</td>
<td>0.18</td>
<td>0.21</td>
<td>0.22</td>
<td>2.09</td>
</tr>
</tbody>
</table>

COUNTRY HEAT MAPS (50/50) OVER 30 YEARS

Australia                  New Zealand

Netherlands                Japan

Italy
THE 4% RULE IS DEAD, LONG LIVE THE 4% RULE

IT’S TIME FOR A DIFFICULT CONVERSATION …

- Let’s assume (heroically) that a couple has $1m at retirement
  - ASFA Modest income for a couple - $32,656 p.a.
    - 3.27%
  - ASFA Comfortable income for a couple - $56,406 p.a.
    - 5.64%
COUNTRY HEAT MAPS (50/50) VS ASFA STANDARDS

In the real world, retirees face an array of expenses, the frequency of which range from:

- **Expected** (such as utility bills, insurance costs, general living expenses)
- **Stochastic** (for instance, major unanticipated health events and aged care)

However, the 4% Rule used as a ‘line in the sand’ can be very helpful as a heuristic for retirees.

Like many shortcuts, it provides an imperfect answer to help us better understand the problem.

### READY RECKONER

Withdrawal rates equivalents for varying starting values*

<table>
<thead>
<tr>
<th>Starting balance</th>
<th>ASFA modest $32,656</th>
<th>ASFA comfortable $56,406</th>
</tr>
</thead>
<tbody>
<tr>
<td>$250,000</td>
<td>13.06%</td>
<td>22.56%</td>
</tr>
<tr>
<td>$500,000</td>
<td>6.53%</td>
<td>11.28%</td>
</tr>
<tr>
<td>$750,000</td>
<td>4.35%</td>
<td>7.52%</td>
</tr>
<tr>
<td>$1,000,000</td>
<td>3.27%</td>
<td>5.64%</td>
</tr>
<tr>
<td>$1,250,000</td>
<td>2.61%</td>
<td>4.51%</td>
</tr>
<tr>
<td>$1,500,000</td>
<td>2.18%</td>
<td>3.76%</td>
</tr>
</tbody>
</table>

* nb, this ignores the public pension

*Drew and Walk (2014)*
RETIREMENT INCOME PLANNING: THE NEXT STEPS

**Withdrawal rate**
- Mortality updating
- Regular mid-point reviews

**Asset allocation**
- Growth matters - going too defensive can potentially lock in a bad outcome
- We focus on the worst paths, but good paths exist!
- Can we being judicious about selling expensive assets through time and not being a forced seller due to liquidity needs
- The rise and rise of **liability-driven investment**

**Planning horizon**
- Working longer and phased retirement results in saving more (and shortens the decumulation phase)
- Aged care costs, medical expenses and bequest motive?
Fees and after-tax management
» Fees are something more than an expense
» MER as a budget to assist retirees in managing their asset-liability mismatch?
» Retirees live on after fee, after-tax outcomes

Scenario testing
» Regularly update retirement expectations; i.e., the liability we need to meet and the asset base with which we must achieve this
» Range of simulation techniques

Risk management
» A tail event in the early stages of the income phase almost ensures portfolio ruin
» We insure for a range of events in our life - home and contents, life and disability – why not insure against tail events in late accumulation/early decumulation? [#RRZ]

Investment governance
» This is a “live” (heat vs light) debate
» Trustees must understand the asset-liability mismatch faced by retirees
» Mismatch is a multidimensional problem, a complex interplay between:
  – market risk, longevity risk, and inflation risk
» More than, ‘did we beat peers’ or ‘can we pick stocks?’
» Break current obsession with the return characteristics of the asset side of the equation and move the fiduciary focus to liability management
CONCLUSION

Strategies that are built on a philosophy of dynamism are key to putting the balance of probabilities in the retiree’s favour.

Drew and Walk (2014)

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**Drew, Walk & Co.**
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LinkedIn: Drew, Walk & Co.
Twitter: @DrewWalkCo
Are Tontine Schemes a Viable Income Option for DC Plans?

Moshe A. Milevsky
Schulich School of Business
York University, Toronto

My 25 minute plan...

- Review known “problems” with life annuities
- Explain the mechanics of a classical tontine.
- Discuss why tontines might be an appealing addition to the life annuity “menu”
- A 320 year-old example of “portfolio choice” involving tontines and annuities.
- Comments, Discussion...
What is a tontine?

1. A life annuity...
2. A life annuity with an increasing payout...
3. A life annuity with an increasing payout when other annuitants die.
4. A type of mortality-contingent lottery ticket?

Problems with life annuities...

- **Consumers** don’t like them → payout too low relative to subjective yield expectations.
- **Advisors** don’t like them → the commissions are low relative to other annuities.
- **Plan Sponsors** don’t like them (yet) → fiduciary concerns, default risk, newness, etc.
- **Media and Press** don’t like them → they confuse them with “expensive” annuities.
- **Solvency II** doesn’t like them → the capital cost for systemic longevity risk is increasing.
Example: Classical Tontine with 10% Annual Dividend

<table>
<thead>
<tr>
<th>Subscriber, Investor (Rich Male)</th>
<th>£ 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominee (Young Female)</td>
<td>£ 100</td>
</tr>
</tbody>
</table>

Dividend to Annuitant

While Nominee is Alive

Nominee Dies

Payment Obligations End

£ 0

Example: Classical Tontine with 20 Investors

(= Nominee = Annuitant)

£ 100

£ 100

£ 100

£ 100

£ 100

£ 100

£ 100

£ 100

£ 100

£ 100

£ 100

£ 100

£ 100

£ 100

£ 100

£ 100

£ 100

£ 100

£ 100

£ 100
Example: Classical Tontine with 20 Investors

End of Year 1:
All 20 investors are alive

£200 ÷ 20 survivors = £10 dividend per survivor

Example: Classical Tontine with 20 Investors

During Year 2:
4 people die
Example: Classical Tontine with 20 Investors

**End of Year 2:**
16 Investors are alive

**Interest Yr. 1 = 10%**

£200 = £200

£200 ÷ 16 survivors = £12.50 dividend per survivor

During Year 3:
6 people die
Example: Classical Tontine with 20 Investors

During Years 4-20:
6 people die

Interest Yr. 3 = 10%
£200
Interest Yr. 3 = 10%
£200

£200 ÷ 10 survivors
= £20 dividend per survivor

End of Year 3:
10 investors are alive
Example: Classical Tontine with 20 Investors

During Years 21-25:
3 people die

Interest Yr. 1 = 10% = £200
Interest Yr. 2 = 10% = £200
Interest Yr. 3 = 10% = £200

£200 ÷ 4 survivors = £50 dividend per survivor

End of Year 20:
4 Investors are alive

£50

£2,000

£50
Example: Classical Tontine with 20 Investors

**End of Year 25:**
Only 1 survivor

£200 ÷ 1 survivor
= £200 dividend for the last survivor

**End of Year 26:**
Remaining survivor still gets £200

£200 ÷ 1 survivor
= £200 dividend for the last survivor
Survivors Receive:

\[ D = (n \times w \times d ) \div N(i) \]

Dividend Received in Year (i)
Number of original Investors
Contribution of Each Investor
Payout Rate to Pool
Investors (Nominees) Alive in Year (i)

Example: Classical Tontine with 20 Investors

During Year 27: Final survivor dies
Issuer’s Obligation Ends

The Mathematics of the Tontine Payout
In fact, there are many ways to design a tontine scheme:
PV of guaranteed dividends over maximum life must equal price

Don’t confuse fiction with fact!

Last “survivor takes all” is very rare…
Compare: Tontines vs. Life Annuities

**Tontine** vs. **Life Annuity**

- **Total paid each period to group**
  - Tontine: stays constant
  - Life Annuity: declines

- **Payments to individual survivors**
  - Tontine: increase
  - Life Annuity: stay constant

**No Arbitrage:** The initial Life Annuity payment is higher than the guaranteed Tontine dividend.
Fact:
Classical tontines do not appeal to rational “utility maximizers” if a fair life annuity is available
**Intuitive explanation for why “classical” tontines are sub-optimal**

Range of Flat 4% Tontine Payout: Gompertz Mortality
10th vs. 90th percentile: N = 400 (m=88.721, b=10)

Even an “Optimal Tontine” Leaves Some Residual Risk…

Range of Optimal Tontine Payout: Gompertz Mortality
10th vs. 90th percentile: N = 400 (m=88.721, b=10)
But, sharing longevity risk is better than high loadings...

<table>
<thead>
<tr>
<th>$\gamma$</th>
<th>$n = 20$</th>
<th>$n = 100$</th>
<th>$n = 500$</th>
<th>$n = 1000$</th>
<th>$n = 5000$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>129.8 b.p.</td>
<td>27.4 b.p.</td>
<td>5.74 b.p.</td>
<td>2.92 b.p.</td>
<td>0.60 b.p.</td>
</tr>
<tr>
<td>9.0</td>
<td>753.6 b.p.</td>
<td>199.8 b.p.</td>
<td>45.9 b.p.</td>
<td>23.8 b.p.</td>
<td>5.09 b.p.</td>
</tr>
</tbody>
</table>

Assumes Age $x = 60$, $r = 3\%$ and Gompertz Mortality ($m = 87.25$, $b = 9.5$)

And, perhaps tontines might appeal to individuals with cumulative prospect theory (CPT) preferences...

I’ll live to be a Centenarian...

I’ll die young....
Give people a choice: Tontine vs. Life Annuity

- Given the choice between a tontine paying a 10% guaranteed dividend and a life annuity paying 14%, for example, which would you select?

- Factors to consider:
  - Subjective Health Status
  - Health of the Tontine Pool
  - Sponsor Default Risk
  - Term Structure of Interest Rates
  - Longevity Risk Aversion

Adam Smith (1776)

“...Upon the same revenue more money can always be raised by tontines than by annuities for separate lives....[The tontine] is really worth more than an equal annuity for a separate life, and from the confidence which every man naturally has in his own good fortune, the principle upon which is founded the success of all lotteries...[the tontine] generally sells for some-thing more than it is worth....”
This shows the great advantage of putting money into the present fund granted to their majesties, giving 14% per annum, at the rate of 7 years purchase for a life, when [even] the young lives at the annual [6%] rate of interest, are worth above 13 years purchase...

Archival records: Who selected the tontine vs. the annuity?
The “winner” of King William’s tontine survived to 1783 and received £1,081 in her last year of life, at the age of 100.

The annuity would have (only) paid £14

Questions to Ponder and Debate

✓ Would a tontine scheme appeal to soon-to-be retired plan members?

✓ Would a tontine scheme appeal to plan sponsors?

✓ Would adding the choice of a tontine on a menu of post-retirement options increase the appeal of a life annuity? (i.e. the “reverse jam” effect)

✓ What are the regulatory and legal burdens that must be overcome (in the U.S.)?

✓ Or…is this whole topic of mere intellectual curiosity?
The Stanford Center on Longevity

The mission of the Stanford Center on Longevity is to redesign long life. The Center studies the nature and development of the human life span, looking for innovative ways to use science and technology to solve the problems of people over 50 in order to improve the well-being of people of all ages.

Working as a catalyst for change, the Center identifies challenges associated with increased life expectancy, supports scientific and technological research concerning those challenges, and coordinates efforts among researchers, policy makers, entrepreneurs, and the media to find effective solutions.

The Center was founded in 2006 by two of the world’s leading authorities on longevity and aging. Laura Carstensen PhD, professor of psychology, is the founding director, and Thomas Rando MD, PhD, professor of neurology and neurological sciences, is deputy director. The Center received its initial funding from Richard Rainwater.

The Financial Security Division, directed by senior research scholar Martha Deevy, brings a unique interdisciplinary perspective to financial security issues facing our society by rethinking the perceived problems around an aging population, especially retirement planning and the need to work longer. By understanding the role that research, education, and policy can play in solving these issues and looking at the problems from multiple perspectives, the division drives the dialogue forward in order to facilitate a healthier state of long-term financial security for the individual and society.