

LDI for Individuals: A Good Fit

ERISA Defined Benefit Practices Applied to 401(k) and IRAs

For 401(k) Fiduciaries and their Advisors

*(This is food for thought, not advice)**

Executive Summary

The SECURE Act has inspired many 401(k) plan trustees to ask: “What type of annuities should we consider” and “What do they cost?” While these are good questions, we propose another: “How do annuities fit into an individual’s overall retirement income plan?”

This essay attempts to show how plan participants can combine annuities within Liability Driven Investing (LDI) to improve their chances of successfully budgeting for -- and funding -- a happier retirement.

LDI has yet to be translated from institutional into a pragmatic strategy for individuals; the reasons are complex. This essay hopes to reconcile best practice disconnects and offer a simple solution for bridging the gap.

To answer the question “How do annuities fit?”

- 1) **We enhance the accuracy of consumer expense budgeting net of inflation;** our process itemizes personalized priorities, segments them into three customized risk buckets, and illustrates the idea of matching them with income vehicles based on financial economics.
- 2) **We present the tradeoffs between different income solutions in new ways;** our charts illustrate potential risk and return profiles based on expected variability of lifetime purchasing power.
- 3) **We build on academic and pension thought leadership;** Bill Sharpe’s recent book ([“Retirement Income Analysis with Scenario Matrices – ‘RISMAT’”](#)) is quoted, and we add insights from pension expert Barton Waring’s book ([“Pension Finance, Putting the Risks and Costs of Defined Benefit Plans Back Under Your Control”](#)).
- 4) **We address important behavioral finance issues;** our case study portrays the risk of relying too heavily on part time work in retirement.

Introduction

Since fiduciary best practices are defined by process, not products, researching the idea of adding annuities inside a 401(k) plan should include how they can fit into a participant’s total portfolio. This is especially true if plan sponsors want to ensure objective education about annuitization when it is used as the default safe harbor calculation for lifetime income illustrations on plan statements (note: we wrote a participant version of this essay to help).

A longstanding advice industry debate over whether risk pooling via annuitization is a good idea for individual retirement planning suggests to us that new perspectives are needed for advisors as well. In fact, we believe these two things are connected. At the center of regulators' desire to impose a best interest standard for consumers is tension -- between attitudes toward Single Premium Immediate Annuities (SPIAs) on the one hand, and the very intentional DOL selection of annuitization as the safe harbor default for income illustrations on the other.

Complicating the tension is the reality that annuitization is commonly used in defined benefit (DB) space as a prudent tool to de-risk liabilities. However, retail fiduciary standards often omit consideration of these products as part of best practices.

The SECURE Act may be the catalyst for both LDI and annuities to begin the transition. Our essay shows how LDI would help 401(k) participants make better decisions about what is perhaps their most critical problem -- how to budget for, and then securely fund, core retirement expenses such as food, shelter and healthcare. We also explain how LDI helps define where annuities fit within overall portfolio decision making, potentially blended with target date funds and other riskier investments.

New ideas are needed to explain all of this as simply as possible so individuals can understand it.

Companies with defined benefits may already use LDI in their DB policy, but do not educate DC participants about it. For those plan sponsors with DC plans only, it's helpful to know the evolution of LDI in pension space. In short, we see the SECURE Act as following the transformational path institutions have taken since the Pension Protection Act (PPA) in 2006. The headline is: the PPA came about because the old way of managing pension plans wasn't working (more on this shortly).

SECURE plays a similar role and it might help plan participants to understand this evolution because it places annuities squarely in the center of prudent process. Under the LDI framework, individuals could view annuities as tools to match up essential expenses with guaranteed cash flow for life to protect purchasing power -- especially if it increases via guaranteed cost of living adjustments (COLAs).

This would reduce the fragility of a systematic withdrawal strategy used in isolation. A proper educational program would explain that the annuitized portion of one's assets comes with a substantial tradeoff -- the same dollars would no longer be intended to fund personal pensions and then become inheritances. Bequests would need to be funded elsewhere in a financial plan. The reduction in plan fragility may be worth it for many, while other people will choose to hope for good luck in risk markets. We believe plan participants should at least be offered the chance to consider all ideas, and be educated objectively in order to decide.

A Brief History

Companies with defined benefit plans record their retirement promises they've made to employees as liabilities (expenses) on their balance sheets. They regularly calculate their pension liability amounts each year relative to the assets they have saved, which indicates whether they are fully funded for all current and future pensions as employees retire. Not all employees retire in any one year, so not all pension promises are due in any one year.

To begin, it's useful to remember that both PPA and SECURE followed painful bear markets. Legislating pension fixes historically happens after massive financial losses, which fits with crisis as the mother of intervention going back to the 1920s. The Great Depression was followed by the 1940 Act; ERISA followed the severe 1973-1974 bear market; PPA followed 2000-2002. These periods all suffered large losses which took many years to recover from.

From 2000-2002, the dot-com stock market crash combined with declines in interest rates to leave pensions severely underfunded. This caused many companies – including industry leaders like IBM – to finally close or cap their defined benefit plans. The 2006 passage of the PPA was intended to (finally) fix the flaws which over the years kept causing corporate pensions to be so fragile in the first place. A key component was new discount rate rule for calculating funding ratios, including penalties for falling short. This created what we call “three bucket” accounting:

ERISA DB Discount Rates Set by the PPA

Liability Due Date	Discount Rate
Within 5 Years	Short term rate
5-15 years	Mid-term rate
More than 15 years	Long term rate

The PPA's new mandate for measuring defined benefit funding ratios uses interest rates based on the different levels of economic certainty to the plan. The new rules specify three investment grade bond yield categories, with the corresponding maturity profiles outlined in the chart above. Plans that do not maintain minimum funding levels are subject to disclosure that affects their financial statements. In other words, current ERISA law codifies the idea that discount rates should match the risks rather than being at the discretion of the plan's actuary and sponsor.

This created a new incentive for investment committees to begin matching each of the three liability buckets with assets with similar economic profiles. The PPA (and changes to

accounting standards) turned pension underfunding into a CEO-level issue, because potential variability in stocks and bonds became a greater risk to consistent earnings stability. The old model had created a miss-match between guaranteed promises and risk assets -- in the hope that higher expected returns would allow for lower contributions (savings).

New ideas were needed for calculating and managing pension risks with more precision.

Most recently, the financial crisis from 2008 to 2009 delivered yet another blow to funding ratios, which accelerated the both the use of LDI for DB and the trend of offering only 401(k) plans to new hires.

Employees in 401(k)s have been left to figure out their own cash flow needs for life, their own current funding ratios, and their own tolerance for the risk of running out of money for all of their expenses. Unfortunately, they don't know the history of what went so wrong with secure pension funding in the past, and so are prone to repeating the mistakes.

Without a thoughtful translation of LDI for 401(k) participants, DC plans have created the same kinds of economic mismatches that the pre-PPA DB plans used to have. The savings goals usually suggested are often not much more than imprecise rules of thumb. Garbage-in expense estimates are matched with hoped-for income returns from stocks and bonds, and the unfortunate result is likely to be garbage-out.

Nestle: A Masterclass on Adding Annuities to 401(k)

Nestle is a recent example of a company that grappled with adding annuities to their DC plan. A webinar produced by their consultant Russell Investments interviews the two pension executives in charge of their committee's due diligence decisions. We recommend [the full video](#) (available on the internet), but will highlight just the beginning where they discuss their project as fundamentally about helping employees to solve for better matching of expenses and income (we see this as a very LDI-like concern):

"In continental Europe Defined Benefit with an annuity is the standard... here [people] don't have to think about next of kin or longevity... [but in the U.S.] our conversation was driven by [participant] anxiety due to complexity of the retirement budgeting decisions... [as a result] we realized that people may underspend... what I would do differently is... start with the 'why'."

- Umberto Chirri, Head of Pensions, Nestle¹

In the next section we present a series of ideas based on LDI and apply them to individuals. The goal is to solve several deficiencies in current retail retirement advice practices, including financial planning failures caused by unstable risk tolerance questionnaires, poor economic

matching of expenses and income streams, and the common misuse of statistics to forecast funding for long retirements.

LDI Idea: Stock Market Risk Does Not Decrease With Time

“Risk to portfolio wealth from random and uncertain investment returns does not go away with time... Probability distributions... gradually widen as the time period lengthens. Rather than going away, risk to wealth actually accumulates over time.”

- Barton Waring, “Pension Finance”

The idea that statistics do not provide reliable evidence for reduced risk over time is contrary to conventional financial industry thinking. Historical annualized returns may appear to be a safe way to model a financial future, but as time increases there are more opportunities for black swan events or just long periods of negative average returns that compound into significant losses.

As Waring notes: ***“in the 1980s and 1990s, realized returns were well above the expected return for a 20 year horizon....But if good luck can happen over such an extended term, two decades of equally bad luck can occur just as easily....”***

Former Wharton professor David Babbel described relying on computer generated probability models to fund retirement as akin to playing Russian roulette (more about this later in our Case Study).

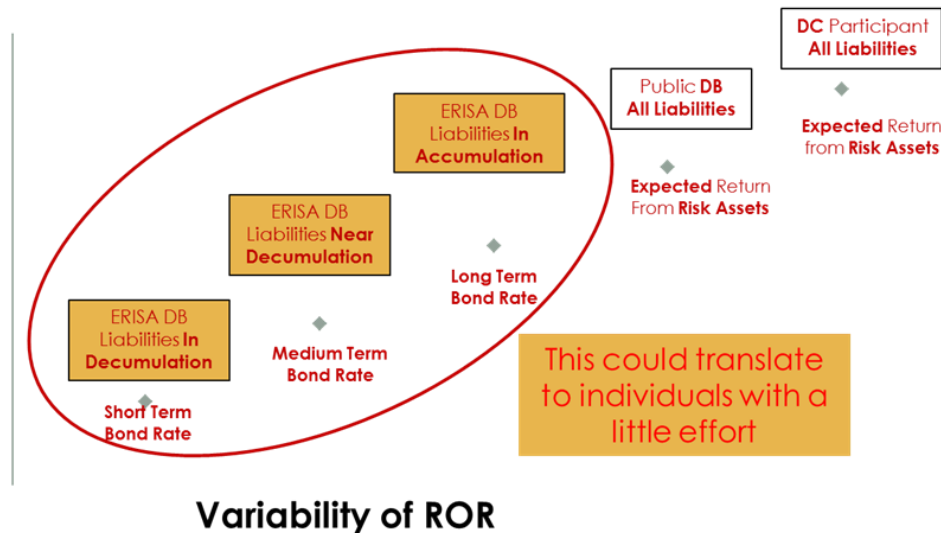
LDI Idea: Guaranteed Expenses Modeled with Risk Aren't Secure

“...the pension fund [that models liabilities with expected returns from] riskier assets will have a lower actuarial valuation of its pension liabilities and thus a lower required contribution rate. This process not only distorts the economic valuation of pension liabilities, it creates incentives for more risk taking in the pension fund. This combined distortion of value and encouragement of risk taking provided a structural driver for the enormous and seemingly rapidly changing underfunding of defined-benefit plans of today.” - Barton Waring, “Pension Finance”

The following chart illustrates the current disconnect between ERISA DB plans and individuals.

Separating Discount Rate Metrics for Projecting Funding Needs

ROR



It's a well-known fact that many defined benefit pension plans have had extended periods of moderate to severe underfunding. The above rate of return (ROR) chart illustrates how retail industry best practices effectively equate individuals with public pensions, which makes little sense since they have very little in common economically. For both, expected returns from risk assets are used to model the cost of their funding needs. Public plans are different because they can increase taxes to make up for funding shortfalls, and are intended to continue in perpetuity with never-ending new contributions added to the asset base.

This changed for corporate defined benefit plans in 2006 (the PPA acknowledges they are different because they can neither raise taxes nor count on being in business forever). They now use a discount rate based on conservative asset/liability matching. This creates a blended funding ratio weighted by the three liability segments (what we've referred to earlier as a "three bucket strategy"). In effect, corporate pension needs are measured according to the degree of risk of not being fully funded. This leads to an asset matching solution that can hedge the risk of underfunding.

Waring suggests how, from an economic standpoint, a correct hedging portfolio for a retirement expense has ***"the same market-related risk characteristics as the thing it is hedging."*** As we apply his logic to individuals in DC plans, we may ask ourselves the same question Waring asks about institutions: ***"Can the sponsor make up investment losses without undue stress?"***

This question also applies to Individuals since they are at risk of underfunding their own retirement needs. They too could use a kind of three bucket approach, one that uses a risk free rate for their most essential needs while expected returns from risk assets could be used to budget and fund their more discretionary expenses. Overall funding ratios could simply become a weighted average of the three buckets.

LDI Idea: Segmenting Expenses into Three Economic “Utility” Buckets for Individuals

“The market-related discount rate for the portion of any cash flow streams that are expected to be risk free is the risk-free rate.” - Barton Waring, “Pension Finance”

Do Waring’s other ideas about liability cost distortions apply to individuals? **We think so.** If consumer funding is modeled with higher expected returns from risk assets they run the risk of an unmatched economic position – without realizing it. Like the problems faced by continually underfunded pension plans, **when higher returns are inputted into planning calculators it suggests they can save less to achieve their goals.** Sometimes it’s proposed that they can use the same pool of savings to fund their retirement needs and inheritances for their kids while maintaining liquidity as well. This can result in stressful retirements for people who dangerously under-save, especially for the things that are most important to them. **This is why we use utility matching as a bucket strategy, as opposed to other bucket strategies based on time segments.**

“So we see that a sponsor can, by more closely matching the pension assets to the economic characteristics of the accrued liability, manage the risk in the pension plan to almost any desired level.” -Barton Waring, “Pension Finance”

To summarize what we’ve discussed thus far, the sea change stemming from the PPA shifted corporate DB investment policy toward an immunization approach. Many industry professionals thought this was long overdue. Waring was one such expert. In his book he points out that the practice of using assumed rates of return to discount and value the cost of retirement plans is not used in finance to value **“anything else, anywhere else.”** For 401(k) participants in their roles as the “sponsors” of their own retirements, the financial needs they set for themselves can be segmented differently based on economic necessity. The question is: what’s the right discount rate to budget them?

LDI Idea: Matching Different Expenses with Different Funding Vehicles

Waring suggests the ***“correct discount rate is one that matches (or “hedges”) the risk (variability) of the assets to the risk of the obligation....Expected returns for asset classes are totally irrelevant because the obligations of the plan are fixed contractually and therefore have low variability.”***

Our juxtaposition of individuals with DB plans compares the spirit of the promises made by trustees to participants with the most critical desires of retirees for themselves and/or each other. **In contrast, individuals in DC plans are still educated that their retirement planning can use a simple rule of thumb, such as “the 4% spending rule”.** This tool is ineffective when planning for such an important life event. It’s certainly user-friendly, but lost in the simplicity is the fact that expenses differ in terms of their economic necessity. Estimating the cost of an individual’s retirement could be improved by using a similar three bucket approach, where differences in economic necessity are tailored to each consumer’s personal preference. With this strategy, calculating the amounts needed to fund their different economic needs could become tethered to market economics, instead of rules of thumb.

Solving for More Accurate Risk Matching: Beyond Risk Tolerance Questionnaires

In his book, Bill Sharpe questions the value of the risk tolerance step in current retail retirement income matching:

“...advisors often ask clients to answer a series of questions on a ‘risk questionnaire’ to assess their willingness to take risk in pursuit of higher expected future incomes. ...To be kind, one must say that many of these questionnaires are based on little or highly questionable research.” - Bill Sharpe, RISMAT

A similar conclusion was published by the CFA Institute in 2018:

“... the best investment portfolio might not help a client whose risk perceptions change dramatically in different financial market circumstances. When emotions run high, even the best portfolio might be abandoned, leaving the client with inferior investment outcomes. Managing risk perceptions requires the financial adviser to act more like a therapist than a mechanic. It is above all about managing expectations and emotions and helping clients to better deal with emotions when it comes to financial decisions.”ⁱⁱ

– “Risk Profiling and Tolerance: Insights for the Private Wealth Manager”, CFA Institute

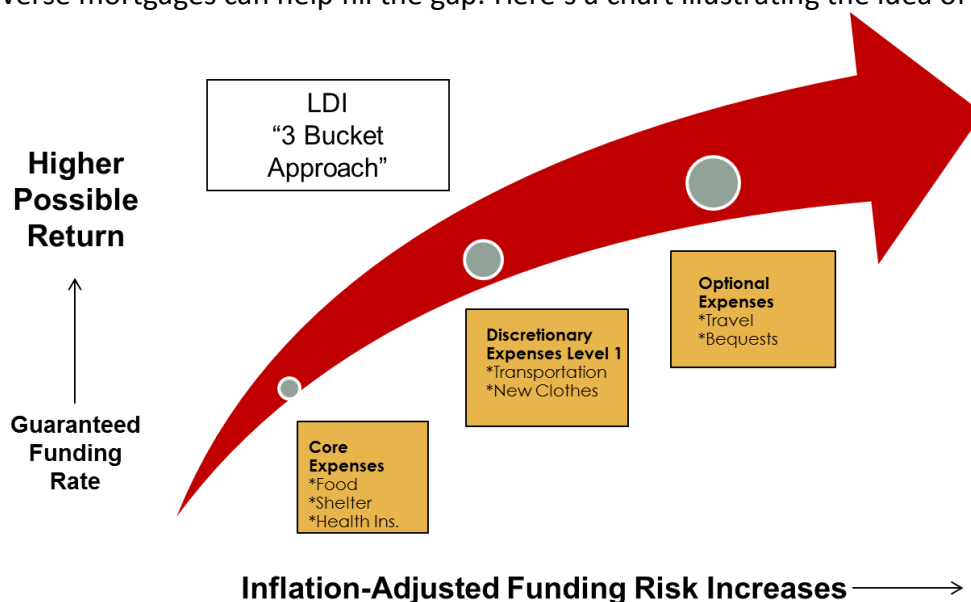
Instead of beginning with risk tolerance questionnaires, what if plan participants prioritized their individualized lists of retirement expenses according to personal preference? Then they could consider matching their dedicated asset funding needs to vehicles of similar certainty. The most necessary expenses would be the most costly to fund, while others could be invested more aggressively in hope of higher returns which could require less funding.

An annuity calculation is the DOL’s default for illustrating lifetime income to help Americans understand how much money it takes to purchase a secure retirement, and how far apart they may be from being able to accomplish it. We anticipate that plan participants will have

many questions when they start receiving these statements after the effective date of September 2021. What an ideal opportunity for plan sponsors, consultants and independent financial planners to educate plan participants on how annuities work and why they might consider an annuity in their retirement plan. One of the hoped for outcomes for individuals is similar to the PPA's impact on matching assets and liabilities based on economic risks.

Translating Asset/Expense Matching to Individuals

Our work assumes that investments dedicated to fund core expenses will not consume all available savings. Retirees whose assets just barely fund core expenses have serious problems that our approach may not solve, unless Social Security income and liquidity from home equity reverse mortgages can help fill the gap. Here's a chart illustrating the idea of LDI for individuals:



In our chart the bucket labeled "**Core**" is positioned lower left, indicating a near-zero tolerance for the risk of not being able to meet those expenses. To match the need for economic certainty, the income used to fund this bucket should be guaranteed.

It's important for retirees to expect low rates of return available from assets that are low enough risk to be considered good matches for funding this first bucket (which is why it's positioned at the bottom left of our chart). Social Security is one such example of core income, but it may not be enough to cover all core expenses for life (especially after the death of one of the spouses). Annuities are another example of guaranteed lifetime income (we cover this in more detail later).

The "**Discretionary**" bucket is to the right, indicating a consumer's willingness to accept more uncertainty for expenses that they see as less critical. This bucket is also higher on the chart, indicating that investments with more potential return might be chosen to fund these

discretionary items. One benefit of higher expected return assets is they add hoped-for increases in future cash flows to the model, and higher returns means less savings are required to fund those buckets versus what is required to generate the guaranteed income in the Core category.

The “**Optional**” bucket is even further right and higher still, representing both higher funding variability and higher possible return.

This three bucket approach is fairly simple: If riskier investments like stocks and bonds do well, retirees may be able to easily cover the expenses in the Discretionary and Optional buckets. When risky investments do poorly, retirees may have to reduce these expenses, but their Core needs, funded with low risk assets, will be covered.

As stated before, this chart assumes that social security combined with investments dedicated to fund core expenses will not consume all available savings. Retirees whose assets just barely fund core expenses have problems that our approach may not solve. Perhaps liquidity from home equity reverse mortgages can help fill the gap. Those fortunate enough to be able to fund the Core category without Social Security may want to consider the benefits of delaying it.

We agree with the DOL that an annuity calculation is the best default for illustrating lifetime income to help Americans understand how much money it takes to purchase a secure retirement -- and to show them how far apart they may be from being able to accomplish it.

We anticipate that plan participants will have many questions when they start receiving statements with this calculation on them. It’s important for sponsors, consultants and independent financial planners to explain not just how annuities work but how to consider them for part of their retirement income.

Case Study: Connie and Ziggy’s Retirement Nightmare

The following real world example may help to clarify the reasons why individuals need a better retirement solution than what is commonly used today.

Connie and Ziggy, a married couple well into their retirements by 2008, were not ready for the global financial collapse that engulfed them back then. In an effort to be wise with their finances, they’d created a retirement plan many years before. They’d sought retirement planning advice from competent investment professionals who followed standard industry best practices. It was based on asset allocation theory modeled with statistical simulations. While this was a current best practice for individual investment advice, and blessed by the firms’ compliance departments, their advisors were unaware of the LDI risk reduction approach followed by many corporate pension plans.

Ziggy sold his optical business but continued to work there part time. He could walk to work from their condo, a home which held tremendous sentimental value for them. Both agreed that aging in place was their top priority in retirement (Note: This seems a common goal for retirees in America; a 2018 AARP survey found 76 percent of those ages 50 and older said they preferred to remain in their current residence as they age).

The global financial collapse of 2008 created a crisis that grew by the day as a threat to their dream. Like many Americans, they were exposed to several pitfalls in common retail financial planning strategies. To begin with, the common use of risk tolerance questionnaires to determine asset allocations turned their retirement security into a stressful nightmare.

This couple did not understand how much their investments were designed to fluctuate. They knew their portfolio could vacillate, but did not fully comprehend they were susceptible to big declines at any point in time. Their advisors' computer simulations modeled average annual losses within a likely range of "plus x and minus y percent" two thirds of the time. Less understood was the potential for losses of y percent "or more" one sixth of the time. The Global Financial Collapse that began in 2008 was the "or more" part of that bargain.

Former Wharton professor David Babbel describes the problem of retirees counting on retirement income from projections based on statistics as like playing Russian roulette with live ammunition: "[the risk of running out of money in retirement using systematic withdrawal] may only be 15%... [but] that is roughly equivalent to the 16.7% odds of losing in a game of Russian roulette... and few people are prone to participate in such games!"

Panicked by such a market decline, Connie and Ziggy tried to find a better solution from a different company. But without realizing it they were essentially put right back in the same portfolio. They again received the standard recommendation – using statistics to create a diversified portfolio without regard to matching assets with expenses – and their ability to cover their essential needs like housing was still in question. Their must-haves were lumped in with more discretionary things like entertainment, and averaged into risk tolerance scores that exposed their entire budget to fluctuations in stock and bond markets.

Connie and Ziggy didn't know how this was risky for them because they were not offered a sensible alternative. The outcome was terrifying.

Looking back, Connie believes it is impossible to pinpoint what came first: the onset of Ziggy's failing memory or the financial collapse. However, she knows the bear market was clearly a contributor to the exponential increase in his overall stress levels. Causes and effects for dementia and Alzheimer's typically highlight psychological factors that include anxiety and depression. Ziggy began a daily obsession of watching price declines of their mutual funds in the paper. He lost sleep and grew more and more forgetful. This unfortunately compounded

the overall situation as it also impacted his part time employment, which in turn contributed to further progression of his memory loss.

Connie still remembers her husband's biggest concern was that their brokerage account would run out of money. He had crunched their spending numbers enough to know what would happen if he died first and the investment account failed: Connie would lose one of their two Social Security checks and would struggle financially to remain in the condo alone. Whether this outcome was probable or not based on their advisor's statistics-driven simulations was irrelevant. To Ziggy it simply felt like Connie's safety was at risk. The condo was their most important must-have expense item. The idea of losing it felt like an existential threat. The need for a fail-safe funding strategy was never discussed. Their financial plan put them in an unmatched position, they did not know how to solve it, and hearing the words "just change your spending" didn't fix it.

In 2009, their financial advisor recommended switching to a fee-based discretionary account diversified with low cost ETFs. This was still a mix of risk exposures and many of the values continued to decline. Signs appeared that Ziggy's forgetfulness was progressing rapidly. Their financial adviser lost patience while trying to keep him calm, insisting he look at the return of the whole portfolio instead of individual funds. This was an exercise in futility. Ziggy's diminished capacity kept him from appreciating the logic of a diversified mix of risky assets.

They next tried moving their account to a discount brokerage, where they were guided to invest in a professionally managed active mutual fund program. This approach was nearly identical to that of their prior firm. Unfortunately, many of these new funds fared poorly as well. To add to their despair, Ziggy lost his job. The new owner of the business told Connie Ziggy couldn't continue interfacing with customers given his memory loss. It was like a rogue wave to their financial plan. Sadly, the disease progressed quickly, leading to a nursing home, physical decline from things such as urinary tract infections and, tragically, hastened his death a year later.

Connie's physical health deteriorated during this time too, as the stress of watching her beloved suffer and slip away combined with the pressure of assuming sole decision making responsibility for their financial security and became too much to bear. It was all new to her, and scary. She wishes there could have been a different way they could have budgeted for retirement, and that they done so well in advance.

What if they had prioritized their retirement expenses into three buckets based on what was most important to them? The approach of segmenting and funding different expenses with more economic precision would have eased Connie and Ziggy's overall stress and does not require rocket science. If implemented from the start, it may have helped Ziggy live longer.

“We need to know more about useful ways to show retirees the ranges of possible future outcomes in a manner that can lead to intelligent choices.” - Bill Sharpe, RISMAT

We suggest individuals should begin retirement planning by identifying the economic necessity of each of their various budget items based on importance. In other words, individuals would create a list that first itemizes what they want and need most as they age, and ends with things they’re most willing and able to sacrifice during periods of financial stress.

LDI Idea: Economic Utility = Happiness

“The idea is that ‘utility’ is some measure of ‘happiness’ and ‘expected utility’ is an average of all the possible levels of future happiness, weighted by their probabilities. The goal is thus to pick from feasible alternative scenarios the ‘best’ one that has the greatest expected utility.... When future income is uncertain, so too will be future utility.” - Bill Sharpe, RISMAT

If economic utility is the key measure in managing an investor’s stress and contentment, the reality for Connie and Ziggy was sub-optimal. Our suggested process would begin by helping people itemize their individual preferences for different expenses in a simple way. An example might look like the following table:

Connie and Ziggy’s Risk Buckets

The following table is an example of prioritizing retirement expenses into three buckets based on what is most important to the individual(s):

<u>Expense Item</u>	<u>Most Important</u>	<u>Medium</u>	<u>Least</u>
Food	*		
Shelter	*		
Health Insurance	*		
Transportation		*	
Bequests/Inheritances			*
Travel and Entertainment			*
Clothing			*
Liquidity Reserve	*		

Budgeting for Inflation

A frequently cited rationale for using risk assets is that retirees need equity exposure for inflation protection in order to fund long retirements. However, according to Sharpe’s analysis, there has been no statistically significant correlation between stock prices and inflation. His analysis seems almost ignored today by the retirement planning community:

“We will be more concerned with changes in the real value of a portfolio of [stocks... From 1871 through 2013 there was] more likely to be a negative correlation... [and] during the 21st century there was, if anything, a positive correlation, but it was statistically insignificant.”

- Bill Sharpe, RISMAT

Single Premium Immediate Annuities (SPIAs) have offered guaranteed increasing income for life with cost of living adjustments or COLAS for a long time. However, retail sales data suggests they get very little use. This may be related to the fact that inflation has been relatively low of late. Plus, the initial income is lower than SPIAs without COLAs, making them seem less attractive. However, a research effort led by behavioral finance professors found considerable interest once consumers are educated about the devastating results of increasing expenses over time, concluding ***“Highlighting the effects of inflation increases demand for cost of living adjustments.”***ⁱⁱⁱ

Understanding the differences between SPIAs and other types of annuity income streams also comes into play. Insurance companies have created other products to sell into the retail accumulation market featuring optional income “riders”, which, among other things, allow consumers to target asset growth and then transition to income while hopefully preserving liquidity and bequests. Frequently these income riders do not come with guaranteed COLAs. We suggest there are important tradeoffs to explore in this area. **Important note: The DOL does not use an inflation-adjustment in their safe harbor calculation, deciding that doing so would add too much complexity and confusion. This suggests to us that there is an even greater need to explain inflation’s risk and long term impact through ongoing education.**

The Importance of Translating Inflation’s Impact for Individuals

As Sharpe states in his book: ***“...our focus is on real, not nominal income. Hence it is important that our returns be stated initially in real terms, and that the riskless asset provide payments with predictable purchasing power, not those with fixed nominal monetary values .”*** – Bill Sharpe, RISMAT

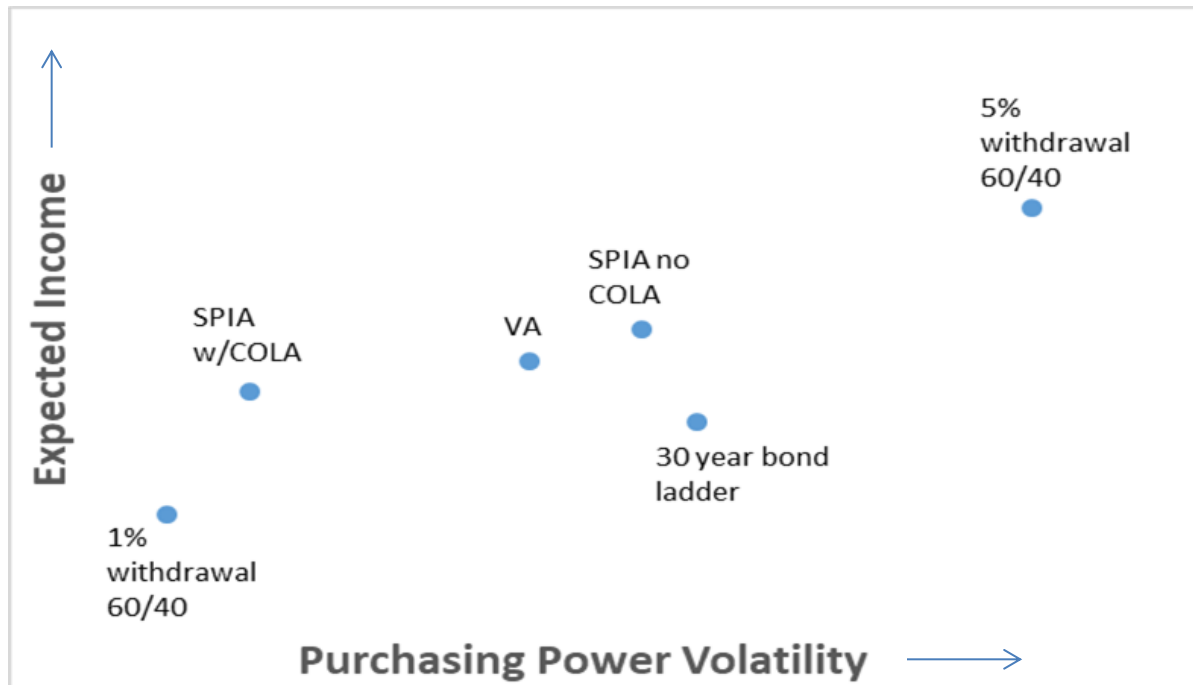
One simple way consumers can estimate the impact of inflation is with the rule of 72; dividing 72 by any number will tell you the amount of time until the value doubles at that rate. At 2% inflation compounding annually, the purchasing power is cut in half in 36 years. But even if you don’t live that long, if your property taxes increase by 2% per year and you have a nominal income stream funding it, you grow increasingly underwater from the start.

The next three charts are meant to help illustrate the long term risks of inflation, including relative to some of the retirement solutions commonly in use today.

This chart illustrates the long term effect of compounding even a 2% inflation rate:

Hypothetical Annual Property Tax Bill	With 2% Annual Inflation the Tax Bill Increases To	Yearly Shortfall Amount if No Cost of Living Increase
At Age 65	\$5,000	-\$0.00
At Age 75	\$6,095	-\$1,095
At Age 85	\$7,430	-\$2,430
At Age 95	\$9,057	-\$4,057
At Age 105	\$11,040	-\$6,040

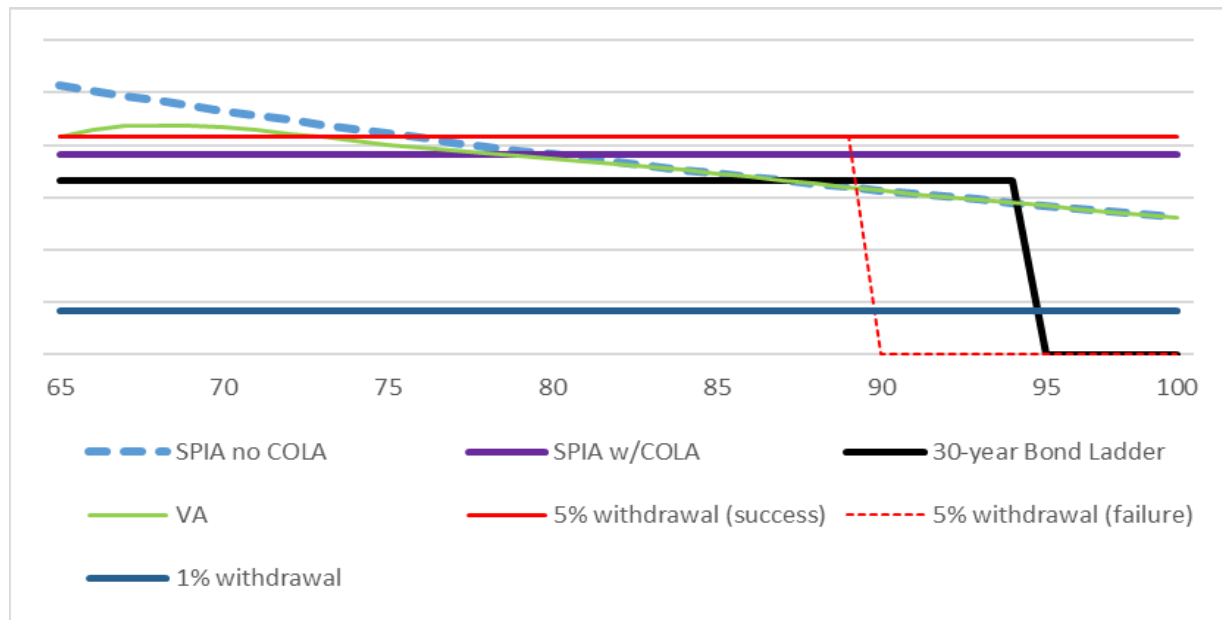
Hypothetical Illustration Charting Potential Outcomes (Not Comprehensive)
Potential Variability of Long Term Purchasing Power With 2% Annual Inflation



The vertical axis represents the size of the annual cash flow, while the horizontal axis portrays the variability (reliability) of cash flows increasing to offset inflation.

Hypothetical Inflation-Adjusted Income Lifetime Risk Trajectories

Descending lines suggest potential reductions in purchasing power as age increases, with the possibility that some strategies may fail completely over long periods



- 1) **A SPIA with a COLA** (cost of living adjustment): Single Premium Immediate Annuity lifetime income can remain level in real dollars.
- 2) **A SPIA with no COLA**: Lifetime income starts with the higher level of initial income, but income will decrease in real dollars year after year.
- 3) **VA w/income rider**: Initial income cannot decrease, and has the potential for inflation protection. However, our analysis suggests that at some point the increases will likely cease and income in real dollars will decline thereafter.
- 4) **30-year bond ladder**: Includes inflation protection but will likely run out of money in 30 years and due to low current interest that may need principal withdrawal to offset inflation.
- 5) **Systematic Withdrawal**: Income is adjusted for inflation, but at higher withdrawal rates (5%) the retiree is likely to run out of money in 25 years or less. At 1% the withdrawals are safer but may be too low to cover expenses.

Tradeoffs

1. **A SPIA with a COLA**

Single Premium Immediate Annuities offer guaranteed cash flow for life that is generally higher than the yield on low risk products like bank CDs, and can do so over the entire lifetimes of two spouses. In order to accomplish this, insurers take advantage of risk pooling, which combines interest with return of capital, and uses the assets of those who die at younger ages to fund those people in the annuity who live longer. Many companies offer COLAs as options which can be purchased to match a variety of inflation forecasts. A consumer's risk is extremely

low as the lifetime cash flow and inflation protection are guaranteed by contract, are fully reserved by the annuity provider, and supported by state-specific guaranty funds that specify maximum coverage limits.^{iv} The chances of a highly rated provider defaulting on a SPIA contract are almost nil, and diversifying across multiple issuers is easy to do to reduce this risk even further. **Tradeoffs:** SPIA payments are terminated when the holder(s) die so the contract does not allow for bequests (unless a “cash refund” option is purchased, which generates lower cash flow than one without a cash refund version). A joint and survivor SPIA continues for the longer of the two lives and then terminates. This is a lifetime contract, which means SPIAs are generally not considered liquid, but some contracts do offer a withdrawal provision in the early years that allows access to more than the contract payment in return for partial or full surrender of future benefits. Consumers should evaluate the full array of options and ramifications for possible beneficiaries that are present with annuity contract decisions, and make a written statement which explains their decisions to their potential heirs.

Note: Deferred fixed annuities are used to first accumulate assets and are not considered here because of our hypothetical need for immediate income. For example, **fixed indexed annuity (FIA)** products have deferred income riders; tradeoffs include contract complexity, which may be subject to change (possibly due to market conditions or financial troubles of the issuer.)^v FIAs usually provide income similar to a SPIA with no COLA once the income rider is activated (see next category).

2. **A SPIA with no COLA.**

This is the same basic product as #1 above, but initial income will be higher than the COLA version. **Tradeoffs:** Purchasing power of that income may begin higher but will decline with inflation, and at some point the COLA version crosses over to generate higher purchasing power. Other SPIA issues are same relative to the bequest and liquidity factors described for #1.

3. **A Variable Annuity with an income rider.**

A Variable Annuity is riskier than a SPIA because the underlying investments are riskier, although beneficiaries who may inherit them may be protected from loss. Income riders can be purchased to guarantee income for life even if your annuity loses money (due to an investment market decline). **Tradeoffs:** Total internal expenses of VAs can be high, and the income rider feature also comes at a cost, lowering the net rate of return the contract earns. At some point, income increases will likely cease due to costs, and purchasing power will decline thereafter.

4. **A portfolio with 60% equities and 40% bonds: 1% withdrawal and 5% withdrawal**

Many financial planners recommend a 60/40 portfolio as balanced between income (bonds) and growth (stocks). While this advice is questionable in our current low interest environment,

it is the standard solution, promising both income and capital gains. Withdrawing 1% per year, adjusted for inflation, has a low risk of running out of money historically. **Tradeoffs:** The **1% withdrawal** may be too small to fund expenses not covered by Social Security. Generating enough income to fund core expenses after Social Security income would require a very large initial investment, making this 1% income strategy one of the most expensive of the alternatives to use. On the other end of the spectrum, a higher **5% withdrawal** increases the probability of running out of money dramatically, which is portrayed in both of our charts.

5. A laddered bond portfolio.

A laddered bond portfolio holds bonds that mature progressively every year from retirement to thirty years later. For example, some bonds mature after one year, some after two years, some after three years, and so on. Withdrawals modeled in our chart include all interest and some principal to maintain purchasing power. **Tradeoffs:** This portfolio will likely run out of money as principal is invaded to offset the increasing costs of expenses. Today, a bond portfolio is an expensive alternative to fund because interest rates are so low.

Example of Categorizing Expenses in a Hypothetical LDI-Like Framework

Expense Item	Most Important	Discretionary	Optional	Funding Match
Food	*			*Social Security
Shelter costs: HOA, Taxes, Maintenance	*			*Annuity W/COLA *Reverse Mortgage
Health Insurance	*			*Medicare *Social Security *LT Care Insurance
Income Taxes	*			*Social Security
Liquidity	*			*Savings *Reverse Mortgage
Transportation		*		*Social Security
Inheritances			*	*Home Equity *Investments *Life Insurance
Travel/Entertainment			*	*Investments
Clothing Other Optional Items			*	*Investments

The approach of segmenting and funding different expenses with more economic precision can ease overall stress, and does not require rocket science. If implemented from the start, it could prevent consumers’ anxiety and help them sleep at night.

It shouldn’t be prohibitively difficult for the retirement profession to devise scalable ways to help consumers itemize their expenses and separate them into three buckets based on priority. Forecasting accurate present values for future expenses is tricky, especially when different inflation estimates are needed to create accurate forecasts. However, this creates new value for advisors to provide. A software industry already exists for estimating future healthcare expenses, and Homeowners Associations are already using software to forecast future maintenance costs. Are we so far away from the day when filling in a table like the one below becomes pragmatic to use with average Americans? Essential expenses are a great place to start, as they can create a core retirement funding ratio for consumers (see the table below).

**Better Consumer Retirement Planning Through LDI
Estimating and Monitoring Inflation Adjusted Core Funding Ratios**

	Inflation	Age 67	Age 77	Age 100
CORE EXPENSES				
Food				
Shelter				
Medical Ins.				
CORE INCOME				
CORE FUNDING RATIO				

Questions Consumers Should Ask Themselves:

- 1) Do we have any idea what our core expenses are a likely to be if we live to over 100 years old?*
- 2) Are our core expenses currently projected to be funded for life when one of us dies?*
- 3) Do we know what our risk tolerance is for running out of money in retirement? Do we know what our spouse’s risk tolerance will be when one of us dies first?*

Conclusion

The use of expected returns from risk assets is still allowed for public plan funding ratios. To model a consumer's decumulation period in this way -- when it's no longer permitted for ERISA defined benefit -- seems outdated. Treating individuals like the public plans which can potentially tax their way out of trouble seems like a dangerous fallacy in best practices for consumer retirements. The SECURE Act codifies this idea.

To emphasize the point, an annuity calculation is now the Department of Labor's default for illustrating lifetime income on 401(k) statements. The goal is to help Americans understand how much money it takes to purchase a secure retirement -- and how far they may be from being able to accomplish it (spurring increased savings). We anticipate that plan participants will have many questions about how an annuity works and where it fits.

We realize our proposal is not perfect. We intend for the retirement industry to build on these ideas. It begins with open minded DC plan fiduciaries and the financial professionals from all walks of the industry who serve them. We want to encourage debate, which can lead to an aligned view on the proper positioning of solutions in new ways (such as our risk/return charts). We believe consumers will benefit when the industry can reach a consensus on the tradeoffs we present.

Our ideas may also help financial professionals meet the IRA rollover test for resolving conflicts of interest via the Investment Advice Prohibited Transaction Exception (PTE), as discussed in this opinion from the Wagner Law Group:

"All rollover recommendations must be specially documented and presented to the client before the transaction. The recommendation must describe the alternatives to the rollover and compare the investment options, fees and expenses, both in the current plan or arrangement and in the recommended IRA or other arrangement. The disclosure must explain why the adviser's recommendation is in the best interest of the client and whether the employer pays for any of the administrative expenses. It should also compare the different services available in the current arrangement to what is recommended."^{vi}

- Kimberly Shaw Elliott, The Wagner Law Group

***Please see the Disclaimer and Endnotes on the following page**

***Disclaimer: The information and ideas presented here are not for sale and are not intended to be a solicitation for insurance or investment advisory services by the authors to the public. The collaborators of the Open Architecture 2020 Group operate as a volunteer think tank which seeks to contribute to the conversation about retirement planning, and has no sponsors, fees, or revenues of any kind.**

Consumers should evaluate the full array of options and ramifications for possible beneficiaries that are present with annuity contract decisions, and make a written statement which explains their decisions to their potential heirs.

Endnotes

ⁱ Umberto Chirri, Head of Pensions, Nestle, Russell Investments webinar 6/16/2021, https://www.youtube.com/watch?app=desktop&v=WPN_Bng9luM&feature=share

ⁱⁱ CFA Institute Research Foundation Brief, 2018, "RISK PROFILING AND TOLERANCE: INSIGHTS FOR THE PRIVATE WEALTH MANAGER"

ⁱⁱⁱ Beshears, Choi, Laibson, Madrian, Zeldes, "What Makes Annuitization More Appealing?"

^{iv} See <https://www.annuity.org/annuities/regulations/state-guaranty-associations/>

^v See NAIC Rules section B(2)(c)(1); <https://content.naic.org/sites/default/files/inline-files/MDL-520.pdf>

^{vi} Kimberly Shaw Elliott, The Wagner Law Group; "So, You Are a Wealth Manager and You Think ERISA Does Not Impact Your Rollover Advice to IRA Owners? Think Again. Now." 10/12/2021