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The Right Target for Pension Funding

By Doug Chandler

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Chairperson's Corner

By Grace Lattyak

As a pension actuary who works for—and has always worked for—US corporate single employer plans, I came into my tenure on the Pension Section Council with some preconceived notions about retirement plans in general:

> Most retirement plans are transitioning to DC. Being a retirement actuary is a lot about being really good at following complicated rules, and a lot of the actuarial science we have learned is great as background for the calculations we do. However, there isn't much opportunity to use discretion in how to apply that actuarial science. Public plans and multiemployer plans are all poorly funded. Financial economics theory is interesting, but I don't need to worry too much about it since my calculations are prescribed. And so on.

As I have had the opportunity over the past three years to talk with pension actuaries with different perspectives, many of those preconceptions have been challenged and altered, and I have been able to grow in how I approach my own consulting.

The public plan and multiemployer plan actuaries I have encountered have opened my eyes to the variety of financial health statuses that exist among their pension plans. Many are managed extremely well. Many have made all of their required contributions, and some even voluntarily disclose wind-up cost liabilities (which many corporate plans do not). Of course, we hear about the problematic plans because their poor funded status will likely have a direct negative impact on participants and/or taxpayers, and we should be paying attention to those plans. However, it is important not to extrapolate the experience of the problem plans to all others, and we can learn from the plans that are doing well.

Not all retirement plans are going to shift to DC. The type of retirement plan that works for an employer or group of employers varies. One size does not fit all. A government employer is fundamentally different from a corporate employer whose business may transform significantly in a generation. Canadian provinces are playing with a lot of risk-sharing ideas. The answer doesn't have to be just defined contribution (DC) or just defined benefit (DB) or just cash balance. We can get creative in helping an organization find the right sharing of risk that works for its particular needs.

If you want to have some real fun with actuarial science, like having discretion with funding methods and discount rates, talk to a public or multiemployer plan actuary. As a corporate actuary, should I just follow the rules prescribed by ERISA and FASB and not consider any other measure of liability or a non-prescribed funding strategy? As with the plan design, different clients find different measures of pension "expense" more useful and applicable than others. Having an open mind regarding what is the best measure of liability (versus the prescribed measure) can help my clients make better decisions about what they do with their plans.

Financial economics and how it should or should not be applied to pension plans is an ongoing discussion and one that I personally want to hear a lot more about. There are smart people on both sides of the discussion who really have the best interest of pension plans at heart. After hearing many discussions and reading about this topic, I certainly think about financial economics much more when consulting with my clients. Regardless of your view on how financial economics should be applied to pension plans, I do think being conversant in the concepts helps us to engage more with financial professionals outside the actuarial world.

If you want to learn more about plans outside your field of expertise or hear the experiences of actuaries who have a different main area of practice, I recommend you take a look at the Pension Section webpage for research papers, podcasts, *The Pension Forum*, and *Pension Section News* articles. Even better, attend a networking event or a meeting in your city, or volunteer with an actuarial organization where you can directly engage with other actuaries. Go to some annual meeting sessions, or listen to some webinars that aren't directly in your wheelhouse. Extrapolate what you learn from others to your own work so you can grow as a retirement actuary.

It has been a privilege to serve on the Pension Section Council these past three years, this past year as the chair. As with actuarial valuations (good data in, good data out), you get out what you put in when it comes to growing as an actuarial professional, so I am excited to remain engaged as a volunteer in the actuarial profession and, as a result, continue to grow in my career. ■

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A View From the SOA's Staff Fellow for Retirement

By Andrew Peterson

In the June issue of *Pension Section News*, this column highlighted financial wellness as a current hot topic and the call for essays on that subject conducted by the SOA's Committee on Post-Retirement Needs and Risks (CPRNR). The June issue featured the first prize essay, "Calculating ROI: Measuring the Benefits of Workplace Financial Wellness," by Greg Ward and this September issue features two more essays from among the prize winners: "Fighting Procrastination for Financial Wellness: Harness the Power of Inertia" by Tianyang Wang and "My Financial Wellness Solution: The 401(k) as a Lifetime Financial Wellness Solution" by Jack Towarnicky.

Continuing on the theme of writing opportunities, I'd like to highlight a new call for essays. Over the last several years, the SOA's CPRNR has invited essays that address diverse risks in retirement and financial wellness. The call for 2017 focuses on the theme "Securing Future Retirements: Innovations in Planning Strategies, Financial Products and Employee Benefit Plan Structure." The primary motivation of this call is to identify potential solutions, whether they are existing products or strategies or innovative ideas that will assist workers and retirees to better prepare for retirement. The intent is to include not just planning strategies but also financial products that can be used for individuals or benefit plans.

The deadline for essay submission is Nov. 1, with winners selected by Dec. 31, 2017. As an incentive to participate and encourage strong entries, $10,000 in prize money has been allocated for this call for essays. The prize committee will select the leading essays and determine how to allocate the prizes. Depending on how many essays are received and the diversity of the topic areas, suitable venues for publication and dissemination will be selected. Typically we have featured select essays at an SOA meeting, webcast, or other professional development event. More information is available at *www.soa.org/research-opps/2017-securing-future-retirements/*.

I encourage you to think about what ideas you can contribute to this year's CPRNR essay call. As always, we welcome your feedback, ideas and suggestions.

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Perspectives from Anna: Responding to Challenges to Old-Age Security

By Anna M. Rappaport

In May 2017, I attended the Pension Research Council symposium "Saving and Retirement in an Uncertain Financial Environment" as well as the Plan Sponsor Council of America (PSCA) annual meeting, "The World of Retirement." Both meetings focused on strategies for improving retirement outcomes in a world where employers have shifted to defined contribution (DC) plans, the population is aging, and lower interest rates have changed the investment environment. The Pension Research Council symposium is a research-focused meeting bringing together academics, plan sponsors and those who advise them, financial services organizations and policymakers. The PSCA is primarily an organization of plan sponsors and those who support them. Its focus is on practical solutions and doing things that will work for plan sponsors in the current and next few years. I found quite a lot of overlap in the themes and discussion in the two meetings and some key differences. I was very happy to be able to participate in each of the meetings and to talk with people who have a variety of different roles with regard to the retirement system.

I have grouped what I heard into four categories: the environment today, strategies to deal with the environment, public policy issues and ideas, and interesting research. The PSCA meeting focused on the United States, whereas the Pension Research Council symposium was much more international in scope. That brought home the idea that the big picture issues discussed often have parallels in many countries. Many issues were covered in both meetings, and I have blended together what I heard in the two settings.

THE ENVIRONMENT TODAY

Asset Returns

Low interest rates have been with us since 2008, and there was a lot of focus on the changed investment environment. Equity returns are also lower than they were a few years ago. The consequence of the lower return investment environment is that people need to save much more as a percentage of pay today than they did 20 years ago in order to provide an adequate retirement fund. The discussion indicated that there is an expectation of continued low interest rates on fixed income investments and considerable uncertainty about equity returns in the future. This investment environment affects both individuals saving in DC plans and sponsors of defined benefit (DB) plans.

The Impact of Debt

Many employees are financially stressed, and this stress affects their day-to-day performance at work. It is common for individuals to graduate from college with much more debt than in the past. While interest rates paid on investments are very low, interest charged on student debt is approximately eight percent, and that on credit card debt is often 18 percent or higher. Payday loans carry even more exorbitant rates and are another problem. Effective financial decisions about saving need to consider outstanding debt and the interest charges on it. Financial wellness programs may offer employees assistance in managing these decisions on an integrated basis. Many employers are increasing their role in helping employees understand these trade-offs.

Demographics and Longevity

Longer life spans, together with different numbers of births in different years, mean that society is aging markedly. This is an issue in many different countries.

Other Findings

An examination of today's retirees using data from the Health and Retirement Survey shows that since 2008, the 10 percent with the largest assets have fared well. Their assets, which are often invested in equities, have grown very nicely. In contrast, the 25 percent with the lowest financial assets have not done well, and many have spent down the assets they had and, in some cases, have used their housing equity as well.

Workers are more concerned about having employee benefits than in the past, in part because of fear about what may happen to government programs.

Social Security remains critically important to much of the population.

While a substantial number of today's retirees still have income from DB plans, that number is gradually changing; an increasing number of retirees will have only DC plans. Many people will also not have any employer-provided retirement benefit.

People are much more likely to save for retirement if they have access to an employer-sponsored plan.[1] The number of people without any employer-sponsored retirement benefit has not decreased; however, the savings rates have dropped.

Medical costs are increasing more rapidly than general inflation, and Medicare premiums have risen rapidly.

Some people are working longer, and it is becoming increasingly common for retirees to work part-time. Individuals wanting to work longer find that it is challenging to do so. Relatively few employer programs encourage and facilitate longer work or provide innovative arrangements.

STRATEGIES TO DEAL WITH THE ENVIRONMENT

The major strategies for individuals include saving more, retiring later, managing assets effectively, managing assets in retirement and spending less in retirement. Investments can be chosen to increase risk, making it possible to earn more investment income but also making it possible to lose.

Saving More

The use of good default options is a method of getting more people to save and of getting people to save more. Examples include auto-enrollment and auto-escalation in contributions. However, these defaults may not be as effective in increasing savings as they are in getting more people into the plan. People who would have saved more than the default contribution may drop back to the default. One of the challenges with default options is getting people engaged. Using messaging and designing programs that link to employee concerns can improve engagement.

Managing Assets Effectively

Efficiency is a concern. Areas of plan sponsor focus when thinking of efficiency include not only planning expenses, but also using annuitization to increase payout efficiency, fine-tuning investment options, reducing leakage, getting more people to save and improving financial wellness.

Financial products are being fine-tuned to respond to the current environment. Target date funds are commonly used as the investment defaults in 401(k) plans.

Health Savings Accounts are growing rapidly and are increasingly recognized as an important part of the retirement savings portfolio. Some participants are using these accounts to prefund retiree medical costs.

Employees are often not focused on the issues that experts think are most important. There has been continued research on how people make decisions and what messages fit with their current interests. It is widely recognized that most people are not making decisions based on a long-term financial analysis. There is a growing focus on how to make financial issues relevant to the day-to-day concerns of employees and how to communicate effectively.

Financial wellness programs have moved beyond retirement savings and try to teach employees and assist them in broader management of their finances. Emphasis is placed on issues like maintaining an emergency fund, debt management, budgeting and saving for retirement.

Retiring Later

Delaying retirement is a way to increase the buildup of retirement assets and at the same time shorten the period of time over which benefits are to be drawn. A two- to three-year increase in retirement age can make a big difference. Social Security retirement benefits can be claimed between ages 62 and 70. Monthly Social Security income increases for later claiming, and claiming later is often a good deal for the retiree. The average age of exit from the labor force has been increasing, but few employers offer options to help employees who wish to phase down

> The paper points out that employees are becoming more interested in employers playing an ongoing role in benefits because of concerns that government-provided benefits may be cut.

before retirement. Labor force participation at higher ages is an important issue in many countries.

Managing Assets in Retirement

A major concern is the method of benefit payout and how assets are used during retirement. When assets are annuitized, those who live longer receive more benefits compared to those who die earlier. Annuitization is a method of increasing effective retirement income. Defined contribution plans most often pay benefits as lump sums, but they may offer other options, including installment payouts and life annuities. At one time, there was a popular rule of thumb that it was safe to withdraw 4 percent of assets each year. That may not be sustainable in today's investment climate. The most common practice is that individuals over 70½ years of age must take a Required Minimum Distribution from tax deferred accounts. Retirees have told the Society of Actuaries (SOA) that they prefer to hold on to assets and not withdraw more from funds than is required.

There is a need to provide more help to people in planning for the post-retirement period. Employers interested in moving forward with new post-retirement solutions are concerned about fiduciary issues. However, it is also important to understand retiree preferences.

PUBLIC POLICY ISSUES AND IDEAS

United States DC plan sponsors are concerned about what impact tax reform might have on DC plans. Possibilities include reduced limits for tax-preferred saving.

Public policy should support later retirement. Raising retirement ages in the Social Security systems is one way to do this, but there is also a great concern that the population is split between segments that are living longer and segments that are dying sooner. Other policy issues can serve as a support for or a barrier to later work.

In regard to payout options, there is a need for regulatory actions that make it easy for plan sponsors to include lifetime income options in their portfolio of options.

As many companies have cut benefits, the importance of Social Security and other social benefits has grown. However, the public is very concerned that these benefits may also be cut and worried about what will happen to their benefits.

> When they think of retirement in the future, all stakeholders today find them- selves with greater challenges than many anticipated.

Social Security claiming and claiming ages could be modified so that benefits increase for claiming ages beyond age 70. There were also suggestions that people should be able to partially claim of Social Security benefits.

Fiduciary responsibility is an important part of the plan sponsor role, and major changes in the Department of Labor's fiduciary rules are being implemented in 2017. However, there is uncertainty about how these new rules may change and exactly what they mean.

One of the big policy issues today is how to get people who do not have employer plans into the retirement system. Several states have enacted legislation providing state-run programs for people without an employer plan, and there have been proposals of a federal auto-IRA program. The state plans face added uncertainty about the regulatory climate for these plans going forward.

The potential exists for improving 401(k) requirements to reduce leakage and improve savings. There have also been proposals and discussion of focusing on a lifetime savings approach.

There was a call for greater simplicity. Regulatory complexity and instability have long been problems.

INTERESTING RESEARCH

Repeated discussion focused on several strategies for the individual: save more while working, retire at a later age, spend less in retirement, manage assets effectively, manage assets in retirement and take more risk in the hope of earning more on savings. Note: The Pension Research Council symposium is supported by working papers that will be posted on the Pension Research Council website[2] later this year.

The paper "Global Developments in Employee Benefits" provides an overview of major trends and shows their similarity across a number of countries. The biggest shift is from DB to DC in funding retirement benefits. There is now a parallel shift taking place for health benefits. The paper points out that employees are becoming more interested in employers playing an ongoing role in benefits because of concerns that government-provided benefits may be cut. Financial wellness programs offer an increased focus on employee well-being. Newer technologies and choice architecture enable new benefit structures, and there is widespread understanding of the power of auto-enrollment. There is also increased acknowledgment of the importance of offering structures that work for different demographic and generational groups.

Several Pension Research Council papers included data analysis and modeling. The paper "Low Returns and Optimal Retirement Savings" showed how the amount that is needed for retirement varies based on different rates of return. Moving from historical averages to the current low returns in estimating needed retirement savings increases the rate of savings needed by about 50 percent for lower income households and nearly doubles the amount that higher income households need to save. The structure of Social Security benefits is a big factor in the difference by type of household. This paper offers a prospective look at what must be saved under different return scenarios.

The paper "Household Reactions and Strategic Responses to Retirement Wealth Building and Decumulation in a Low Interest Rate Environment" looks at a nationally recognized database, the Health and Retirement Study,[3] and reports how the low interest rates have affected actual retirees for the last few years. That paper shows that the top 10 percent of retirees by wealth had substantial gains in wealth and hold significant amounts of equity. It also shows that many of the retirees with the lowest quartile of wealth ended up spending down their assets, and a significant number also started to draw down their housing equity. Eighteen years of retirement was a typical period for this group to deplete wealth.

The paper "Investing for Retirement in a Low Return Environment: Making the Right Decisions to Make the Money Last" looks at the interaction between savings rates, retirement ages and replacement rates. It shows how Social Security is much more important to lower income households and offers commentary on the different challenges at low and high income levels. It discusses policy in several areas and provides insights about interventions designed to promote more savings and make it easier for people to work longer. Policy examples include insights about required savings in the United Kingdom and Australia. Policies to encourage longer work include abolition of mandatory retirement and the possibility of being able to claim retirement benefits on a partial basis, as well as phase-in claiming.

The paper "Challenges and Opportunities of Living and Working Longer" looks at several factors that point to longer work. When an individual reaches the early 60s without adequate retirement savings to maintain a living standard, longer work is an option, but saving more will not enable immediate retirement. Reducing one's living standard is also an option. This paper offers a discussion of alternative paths to retirement, including bridge jobs and working part-time. It shows that the labor force participation for men in their late 50s and 60s declined for many years from the mid-1900s but has been increasing in the last 20 years. Women's labor force participation at higher ages has been steadily increasing. It is my opinion that the increases in labor force participation at higher ages are occurring without much support from the business community. With more support, there is the potential for a considerably greater increase.

At the PSCA meeting, Harry Conaway of the Employment Benefit Research Institute (EBRI) presented results of the 2017 Retirement Confidence Survey.[4] One of the interesting findings was how much more confident employees are who have an employer-sponsored retirement plan. In 2017, 71 percent of those respondents who had a plan were very or somewhat confident that they would have enough money to live comfortably through retirement. This compared to only 33 percent of those who had no employer-sponsored plan. Retirees were more confident than workers. Three in 10 workers reported that preparing for retirement causes them to feel mentally or emotionally stressed, and another three in 10 said they worry about their personal finances while at work. The 2017 study is one of a long series of annual studies from EBRI. It documents the value and importance of employer plans, gaps in the retirement system and the emerging stress of employees at work. (All of the series can be downloaded from the EBRI website.)

Research conducted by the SOA also provides insights that help in understanding and dealing with these issues. The Financial Wellness Essay Collection[5] published in 2017 provides a range of ideas for plan sponsors and individuals. Of particular interest in thinking about the issues related to the structure of DC plans is the essay "The 401k as a Lifetime Financial Wellness Solution." The Post-Retirement Risk Surveys also illustrate how employees and retirees are thinking about risk and planning for it.[6]

CONCLUSION

It is a challenging time for all stakeholders focused on old-age security. Over the last 100 years, life spans have increased significantly, retirement systems have become well established in many countries, and investment returns have varied greatly. Many of today's retirees have done very well. The situation is more murky when we think about the future. When they think of retirement in the future, all stakeholders today find themselves with greater challenges than many anticipated. ■

Anna Rappaport, FSA, serves as chairperson of the Committee on Post-Retirement Needs and Risks (aka the Committee on Post- Retirement Risk).

ENDNOTES

1 However, very small employers are much less likely to provide such benefits.

2 *https://pensionresearchcouncil.wharton.upenn.edu/publications/papers/*

3 *http://hrsonline.isr.umich.edu/*

4 *https://www.ebri.org/surveys/rcs/2017/*

5 *https://www.soa.org/News-and-Publications/Publications/Essays/2017-financial-wellness-essay-collection.aspx.*

6 Carol Bogosian and I were pleased to have the opportunity to present some highlights of the Post-Retirement Risk surveys at the PSCA meeting.

The Right Target for Pension Funding

By Doug Chandler

Earlier this year, I published a research paper on provisions for adverse deviations (PfADs) in pension plan funding targets. I calculated the size of a loading that would be required to achieve a given level of confidence such that the assets and best-estimate future investment returns would be sufficient to meet plan obligations at the time of the next actuarial valuation three years later. This led to questions and discussions about the basic premise of going concern funding. Some regulators and plan members believe the only type of benefit security that matters is the ability to buy annuities to settle the vested benefit obligation. They are critical of attempts to fund pension plans on a going concern basis, anticipating future benefit obligations and future investment returns. For them, the key finding of my research is that going concern funding, even with a strong PfAD, does an uneven job of wind-up funding. A going concern funding target that includes a PfAd can do a good job of maintaining solvency in an equilibrium environment and for plans with significant element of future salary growth, but it does a poor job for other types of plans and in a rising interest rate environment.

FUNDING FOR WIND-UP

Preoccupation with settlement cost takes us down the path to destruction of the defined benefit (DB) pension system:

1. A pension plan isn't merely a plan, it's a promise. The sponsor's obligation isn't merely to make contributions as they fall due: it's to ensure the benefit is paid.
2. The best way to defease this obligation is by buying annuities or, failing that, by investing in long-term bonds that match the timing of the benefits.
3. The best way to measure the sponsor's obligation is using bond yields to set the discount rate.
4. A shortfall in funding relative to the cost of settlement is a problem that needs to be recognized immediately in the value of a public company and addressed quickly in contributions. This viewpoint leads to wide year-to-year swings in pension expense and contributions. It punishes any plan sponsor that chooses to invest in anything other than long-term bonds.
5. Pensions are deferred wages, so any unfunded wind-up obligation should take precedence in bankruptcy similar to wages—ahead of other creditors. This punishes sponsors of DB pension plans with higher borrowing costs.

The peculiar thing about this point of view is that there is very little evidence that plan members actually want or need this kind of retirement income security:

- When left to their own devices in a defined contribution (DC) pension plan, they rarely park their entire account balance in a long bond portfolio, and they rarely purchase annuities when they retire.
- Members of DB pension plans face considerable uncertainty about the monthly pension they will ultimately receive. Their pension depends on future salary increases and whether or not their employment lasts until early retirement eligibility.
- Individuals face large gaps between their target living standard replacement ratio (LSRR) and the conventional gross replacement ratio targets used in the design of DB pension plans.
- Lifestyle costs in retirement depend on health, family situation, emerging technologies and a host of other factors that

cannot be foreseen. Disability and divorce are major financial risks, even after retirement.

- Retirees find they can adapt their routine monthly expenses to match their monthly income but struggle to deal with non-routine expenses.

In this context, uncertainties about investment returns do not seem particularly troubling—as long as they are understood in advance.

FINDING A BALANCE

A pension contribution regime must balance competing objectives:

- Contributions that are too high will lead to excessive tax deferral and unmanageably large surplus. If the surplus cannot be refunded to the party that originally carried the burden of the contributions, it will lead to unintended benefits for future plan members.
- Contributions that are too low can lead to reductions in promised benefits following the bankruptcy of the plan sponsor and can even be the cause of bankruptcy. In a continuing pension plan, underfunding can undermine the confidence of plan members.
- Contributions that are too volatile or unpredictable can impair the plan sponsor's cash management and undermine the confidence of investors.

Pension costs are part of total compensation and total business operating costs. When contributions are used to define cost, the wrong level of contributions leads to intergenerational inequities. Most surviving DB pension plans cover workers in the public sector or rate-regulated industries, where the wrong price translates into inequities between generations of taxpayers or ratepayers.

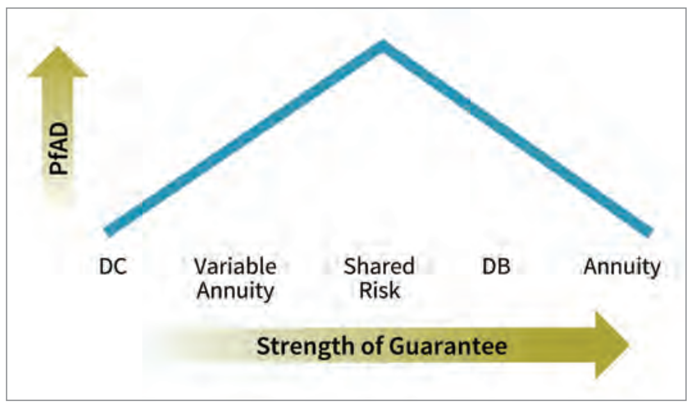
Contributions calculated using best estimates of future expected returns are just as likely to produce shortfalls as surpluses. If the problems of overfunding are no greater than the problems of underfunding, then contributions on this basis might be the right balance. If shortfalls are of greater concern, then a margin of conservatism is justified. The types of investments with the highest expected returns and the lowest expected long-term pension costs are also the ones with the highest risks. All else being equal, these "return-seeking" assets (equities) will require larger margins of conservatism. In some pension deals, the aggressive use of return-seeking assets makes the contribution balance impossible: even modest margins of conservatism are likely to produce unmanageable surplus, without having much effect on the risk of serious underfunding. This may be acceptable to plan members, but it creates a "heads you win, tails I lose" situation for employers. Increasingly, shareholders are rejecting these kinds of pension deals.

Excluding return-seeking assets drastically increases the expected cost of retirement income. Investing 100 percent of a retirement fund in long-term bonds may sound like a good idea for a shareholder, but it's a poor way to save for retirement. Financial advisors would describe this approach as "reckless conservatism."

WHOSE MONEY IS IT?

This brings us to the nub of DB pension troubles. Accountants tend to think of pension funds as the property of shareholders, while lawyers tend to think of them as the property of plan members—at least when there is a surplus. The truth depends on the specifics of the plan and is often somewhere in the middle. The question of ownership might depend on whether there is a surplus or a deficit and may not be resolved until the plan is wound up or some other crisis strikes. Ownership is important, because it determines the loyalties of the plan's fiduciaries and influences their decisions around investment policy and the need for margins of conservatism.

Figure 1
Importance of a PfAD



WHO NEEDS A PfAD?

The need for conservatism in the operation of a pension plan depends on the strength of the guarantee associated with the monthly pension a member expects.

In a pure DC pension plan, the projected monthly pension is nothing more than an aspiration. A well-defined PfAD doesn't make sense in the absence of a well-defined monthly pension. Similarly, once an annuity or deferred annuity has been purchased from an insurance company, the risk rests primarily with the insurance company's shareholders, so a PfAD held in the pension plan doesn't seem necessary.

PfADs are key to shared-risk pension plans, such as multiemployer plans, jointly sponsored plans and target benefit plans. Plan members and sponsors will see value in contributing a little more than the long-run expected cost to be confident that the target benefit will be attained. They might be prepared to contribute as much as the price of a guaranteed annuity, or even more, in the hope that one day the excess contributions will turn into benefit improvements. They might also be prepared to contribute a bit extra in response to a temporary shortfall that threatens benefits for the current generation of active plan members. However, deficits so great as to produce long-term contribution rates higher than any measure of what a new entrant ought to pay for the target benefit jeopardize the sustainability of the plan. The balance of benefit policy, funding policy and investment policy needs to offer good value to new entrants and reasonable security to pensioners. PfADs, investment risk and the prospect of future benefit adjustments are all pieces of the same puzzle.

Setting aside the desire to fund for plan wind-up and the complexities of risk sharing, going concern funding might still warrant a PfAD if one of the purposes of funding is to provide security for plan members and if reasonable surplus ownership arrangements are in place.

HOW BIG SHOULD A PfAD BE?

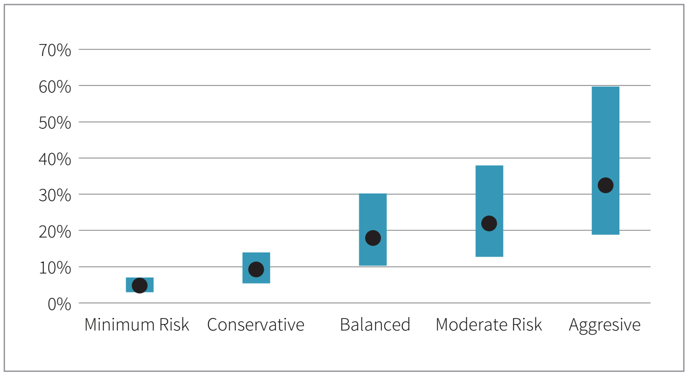
Figure 2 illustrates some of the results of my research. It attempts to answer the following question:

> *How much bigger than the best estimate does the funding target have to be in order to achieve a high probability that the assets will be at least as big as the liabilities after three years?*

The black dot indicates the PfAD required to achieve an 85 percent likelihood of full funding, while the bottom and top of each bar indicates the PfAD required to achieve a likelihood of 75 percent and 95 percent, respectively.

Not surprisingly, a "minimum risk" portfolio of bonds that matches the duration of the pension liabilities requires a relatively small PfAD, while an aggressive portfolio requires a much larger PfAD, especially if a high degree of confidence is required. Other factors, such as plan design, maturity of the membership group and specific asset class characteristics, matter too, but the overwhelming factor is the allocation to return-seeking assets.

Figure 2
Provisions for Adverse Deviation (PfAD) Required to Achieve Predetermined Confidence Levels



CONTRIBUTION VOLATILITY

It is important to note that including a PfAD does not, by itself, alleviate the volatility of contributions. On the contrary, simply raising the funding target by a fixed percentage (or equivalently by a fixed reduction in the discount rate) magnifies contributions and correspondingly magnifies changes in contributions. To manage volatility, regulators and sponsors must adopt amortization or deferred recognition of gains and losses. A PfAD can make these strategies more palatable or can serve as a buffer or corridor. In a regime where the primary focus is on settlement cost or where contribution rates are particularly sticky, the PfAD question can be turned upside down. Instead of asking how big the PfAD needs to be on the going concern basis, actuaries can assess how likely it is that solvency contributions or fixed contributions will create surplus or deficiency problems in the absence of a plan wind-up. A pension funding target might be wrong for the circumstances, but then the question is "How wrong?" This is the first step toward a discussion of the right target. ■

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More Ideas from the Financial Wellness Essay Collection: Please Add to the Dialogue

By Anna M. Rappaport

In the last issue of *Pension Section News*, you were introduced to the online monograph featuring the financial wellness essays available at *https://www.soa.org/News-and-Publications/Publications/Essays/2017-financial-wellness-essay-collection.aspx*. The first-place essay was also published in that issue.

Two more essays have been selected for publication in this issue, and I hope they will start a dialogue among SOA members.

The first essay is "Fighting Procrastination for Financial Wellness—Harness the Power of Inertia" by Tianyang Wang. Many of us are aware that is it difficult to get people to act. It is easy to say that we should save more but hard for many people to do it, just as it is easy to say that we should lose weight but hard to do it. This essay provides ideas about getting people to act. I hope that the readers of this essay will provide discussion and ideas.

The second essay is "The 401k as a Lifetime Financial Wellness Solution" by Jack Towarnicky. Jack provides us with ideas for modifying the 401(k) system in the future. This is an important issue for pension actuaries. I hope this essay will inspire many of you to submit your suggestions for changes to the system and that it will start a good discussion. Here are some questions to think about:

- To what extent should the system be a retirement system versus a lifetime savings system?
- Under what circumstances should participants be able to withdraw funds?
- What would make plans more attractive to people who do not save?
- What would prevent leakage?
- What concerns would you have in enlarging the role of 401(k) plans beyond retirement preparation?

Financial wellness is a topic that is getting more attention every year. The essay collection includes 14 essays on a variety of topics. Comments on all of the other essays are also welcome.

To participate in these discussions, you can use SOA Engage or LinkedIn or submit a short article to *Pension Section News*. ■

Anna Rappaport, FSA, serves as chairperson of the Committee on Post- Retirement Needs and Risks (aka the Committee on Post-Retirement Risk).

ON THE RESEARCH FRONT

Discount Rate Sensitivities in Pension Plans

The SOA and the Canadian Institute of Actuaries (CIA) developed a research report on the relationship between discount rates and pension liabilities. The report examines demographic characteristics of pension plans, and other factors, to establish simple rules for estimating liability over a wide range of discount rates. Canadian retirement research actuary Doug Chandler, FSA, FCIA, discusses the report "Discount Rate Sensitivities in Pension Plans" in his recent podcast. His research examines the means of assessing discount rate sensitivity. Access the report and listen to the podcast.

https://www.soa.org/resources/research-reports/2017/discount-rate-sensitivity/

Adverse Deviations in Pension Plans

The SOA and CIA developed a research report on provisions for adverse deviations (PfAD) in pension plans due to economic factors. The report examines PfADs as a percentage of best estimate liabilities, for a range of plan designs, confidence levels and investment strategies.

https://www.soa.org/research-reports/2017/adverse-deviations-actuarial-valuations/

Fighting Procrastination for Financial Wellness: Harness the Power of Inertia

By Tianyang Wang

Editor's Note: This essay is part of the 2017 Financial Wellness essay collection.

"The secret of getting ahead is getting started."

—Mark Twain

The need to save for financial wellness is universal, yet planning for it is hard. According to a 2016 PricewaterhouseCoopers survey,[1] 52% of employees report difficulty managing their personal finances. A majority of Americans today face a looming retirement crisis considering the fact that the median retirement account balance is only $2,500 for all working-age households and $14,500 for near-retirement households.[2] More astoundingly, a recent Federal Reserve study[3] reports that nearly half of Americans do not even have $400 in savings in case of an emergency.

Financial wellness has become one of the biggest challenges in our society. There is an increasing need for financial wellness programs to help more people find balance and control over their personal finances. Improved financial wellness will lead to a more engaged and productive workforce, and healthier and happier society.

Aside from economic and external factors that cannot be controlled, perhaps the biggest roadblock to financial wellness is procrastination. While traditional economic theory posits people are always rational, behavior finance shows the opposite. People often make irrational decisions due to various cognitive errors and behavior biases. When people procrastinate, they depart from economically rational decisions that are in their best interests. Throughout different age groups and cultures, procrastination has been identified as the major source of suboptimal retirement planning.[4] As the word cloud art shows in Figure 1,[5] procrastination is often like the sword of Damocles hanging over people's financial wellness.

People procrastinate for a variety of reasons and situations. Sometime we clearly know we're procrastinating but just cannot resist it; sometime we don't even realize we are doing it. In this essay, we will outline various behavioral and psychological factors of procrastination at different stages of the savings lifecycle. Furthermore, we will discuss strategies that could harness the power of inertia to achieve financial wellness. Figure 2 summarizes the typical causes of procrastination and strategies against it.

TYPICAL CAUSES OF PROCRASTINATION FOR FINANCIAL WELLNESS

Getting started or keeping going, there are many points to falter over on the road to financial wellness. Many cognitive and behavior biases are natural to human nature but could have significant negative impact on one's financial position.

Initiation Difficulty

The first step is often the hardest. If a good start is half the battle, a halted start is losing the battle. Some people already give up on their financial wellness plan simply because they never really get started.

- **Lack of financial literacy: "I don't really understand it."** According to analysis of a Financial Industry Regulatory Authority survey,[6] 63% of Americans are financially illiterate and lack the basic skills to reconcile their current budget and plan for the future. As a result, people often avoid

Figure 1
Procrastination: Sword of Damocles Hanging Over Financial Wellness

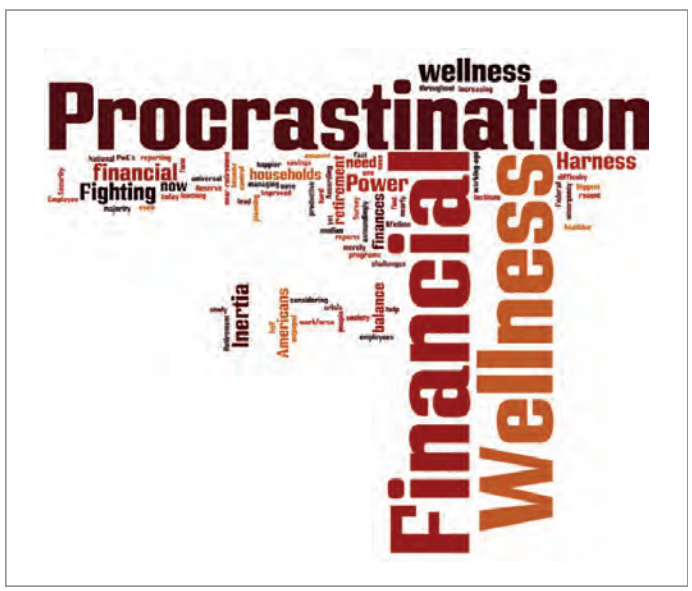

Figure 2
Typical Causes of Procrastination and Strategies Against It

CAUSES

Initiation Difficulty
- Lack of financial literacy
- Fear of embarrassment
- Choice overload
- Hand-to-mouth middle class or richer
- Those wasted windfalls
- Small reckless purchases
- What you need vs. what you want
- Trade-off anxiety
- The psychology of the credit card

Lousy Implementation
- Default effect
- Overly relying on rule of thumb

Stagnant Maintenance Mode
- Status quo

STRATEGIES

Incentivizing Initiation
- Financial literacy education breaks the ice
- Financial counseling ease the embarrassment
- Limited choices make choosing easier
- Adjusting reference point can help you save
- Use mental accounting to your advantage
- Break big goals into achievable steps
- Small incentives can go a long way
- Make a precommitment to future
- Track your spending for goal attainment

Better Implementation
- Use default options cleverly
- Step forward from the rule

Dynamic Maintenance Mode
- Introduce automatic rebalancing and lifecycle funds
- Reward the good behavior

discussing their personal finances due to lack of knowledge or lack of understanding.

- **Fear of embarrassment: "I feel so embarrassed talking about it."** Sometimes people already know they have financial problems but feel too embarrassed to admit it or to seek help. In addition, they may have no idea where to go if they do need help in figuring out how bad those problems are and how to fix them.

- **Choices overload: "I don't know which one to choose."** When faced with too many options, people may freeze and not make a decision. For instance, presenting too many investment fund choices can cause confusion and hence inaction.

- **Hand-to-mouth middle class or richer: "I have no extra money to save."** National Bureau of Economic Research analysis[7] shows that about a third of Americans households are living paycheck to paycheck; two-thirds of that group are middle class or richer—the "wealthy-hand-to-mouth." A quarter of that group earns over $100,000 annually. These people may believe they have no disposable money. This is more likely because of impulse spending than low income.

- **Those wasted windfalls: "A gift card is not for saving."** Mental accounting underlies people's tendency to value some dollars less than others and thus to waste them. Study has long shown that when people get financial windfalls such as a bonus, tax refund or gift card, they are more likely to spend it than to save it.[8]

- **Small reckless purchases: "It is just a Starbucks' latte."** Many people don't consider themselves reckless spenders and are cost-conscious on large financial decisions such as a house or car. However, mental accounting discipline is relaxed when making small purchases, such as a daily Starbucks' latte.

- **What you need vs. what you want: "But I really want it."** People often spend impulsively on things they want but don't really need out of immediate emotions. When we're in a good mood, we would spend out of pleasure. When we're in a bad mood, we would spend to make us feel better.

- **Trade-off anxiety: "Live in the present, at the cost of tomorrow."** Saving for retirement involves a trade-off between now and the future. Dollars assigned to future mental accounts are often devalued, which leads us to pursue small but immediate gains and hence spend more easily and more foolishly in the present.

- **The psychology of the credit card: "Just put it on the card."** People tend to spend more when they use credit cards than when they use cash because credit card spending desensitizes people from the pain of spending.[9] Moreover, many people have savings in their bank accounts and at the same time revolving balances on their high interest credit cards.

Lousy Implementation

Procrastination is still here even when you get started. A financial wellness plan is often like a new year's resolution. Many people make it; less people achieve it. We already recognize that we need to make some change in life. Procrastination is the thief of that change in our life.

- **Default effect: "I will stick to the default."** When procrastinators do make decisions, they often simply pick the default choices. For example, many employer-sponsored saving plans require active elections on the part of employees. Consequently, many employees will not be enrolled by default.[10] In addition, study also finds that the majority of employees participating in a 401(k) plan tended to stick to the default contribution rate of 3% or less.[11]

- **Overly relying on a rule of thumb: "According to the rule."** Many procrastinators can't or won't make time to examine their own financial needs and choose to take the easy way out by overly relying on some rule of thumb for making financial decisions. While rules of thumb are useful as general guidelines, they often oversimplify complex issues in ways that can fail individuals' long-term financial prospects.

Stagnant Maintenance Mode

Procrastination persists years after you get started. Many people prefer sticking with a financial wellness decision made a long time ago and fall into the trap of status quo bias by doing nothing. In the face of dynamic changes in our life and in the market, making no decision could actually be a bad decision.

- **Status quo: "I will just keep it that way."** Once the financial decision is made, many procrastinators do nothing and just leave it unchanged. For example, an early study shows that more than half of TIAA-CREF plan participants had never changed their initial chosen asset allocation over their lifetimes.[12]

HARNESS THE POWER OF INERTIA FOR INCENTIVIZING SAVINGS

Employers and advisers can adapt their programs to ease people into better financial wellness. We underscore some strategies and tools to equip people to effectively initiate and manage their financial wellness plans.

Incentivizing Initiation

A journey of a thousand miles begins with a single step. Employers and advisers can incentivize and promote positive behaviors that help one make the first step toward a successful financial wellness plan.

- **Financial literacy education breaks the ice.** Financial wellness programs can offer basic financial literacy workshops with interactions, humor and games. For instance, a Monopoly-based game can walk people through different life stages such as buying a house or having a child and encourage participants to engage in "savings missions." Evidence shows that most workshop participants will take positive actions to improve their financial well-being.

- **Financial counseling eases the embarrassment.** Money issues can be overwhelming and confusing. Many employers offer financial counseling services as part of financial wellness program. Talking to a knowledgeable and trustable professional can help ease the embarrassment and get people help with their personal finances.[13]

- **Limited choices make choosing easier.** The more funds offered, the less the participation rate. Consolidated options and personalized recommendations could solve the problem of choice overload.[14]

- **Adjusting your reference point can help you save.** A hand-to-mouth person may find it too difficult to save because of current financial needs. By adjusting expectations to a lower reference point such as hypothetically imagining a salary cut or tax increase, an individual may realize he or she can actually adapt to a smaller paycheck and save for retirement.

> Financial wellness plan is often like a new year's resolution. Many people make it, less people achieve it.

- **Use mental accounting to your advantage.** By funneling money into a pension fund or savings account directly from your paycheck, people usually mentally count it as savings and thus less are likely to spend it. Similarly, by allocating debt payments such as a mortgage, student loan or credit card balance through direct deposit, people will mentally subtract the money from income and therefore are more likely to pay down their debts.

- **Break big goals into achievable steps.** Small steps are the secret to big success. Just a few dollars a day can add up to significant savings over time. It helps people recognize that saving may not be as daunting as it seems. For example, a person may easily save the cost of a Starbucks' latte—$5 per day—and put away $1,825 a year, or $73,000 in 40 years, even without taking the interest rate into consideration.

- **Small immediate incentives can go a long way.** A small immediate incentive can encourage people to reach large long-term savings goals. For instance, employers can offer a $100 wellness incentive to employees who complete a financial fitness check with a retirement vendor.

- **Make a precommitment to the future.** The budget indicates the priority. People can employ precommitment strategies to help them accomplish their long-term goals. For instance, retirement accounts are such precommitment devices as they discourage impulsive behavior through penalties on early withdrawal.

- **Track your spending for goal attainment.** When people track their expenditures, they are often shocked to discover how much money is overspent or gets used for things they really don't need. Most people have a strong tendency to avoid losses, and tracking spending can help people stop unnecessary purchases and head in the right direction regarding their financial goals.

Better Implementation

For people interested in improving their financial wellness, there is always room for further improvement through better implementation. Financial wellness programs sponsored by employers and advisers can help people get access to financial education and guidance to more effective management of their personal finances.

- **Use of default options cleverly.** Empirical evidence shows that default options—such as employees are entered into an automatic savings plan by default and must take action to opt out—have tremendous impact on savings and participation rates. While less than 10% of individuals eligible for IRAs participate in a self-initiated plan, employer-sponsored retirement plans such as a 401(k) with automatic enrollment boast participation rates in excess of 90%.[15]

- **Step forward from the rule.** We can use the rule of thumb as the starting point but must adjust it based on an individual's situation. For instance, one can use the commonly cited "100 minus your age" rule to understand the basic principle of gradually reducing risk over time but select lifecycle funds to professionally determine proper investment mixes tailored to meet investment objectives based on various time horizons.

Dynamic Maintenance Mode

Just like driving a car, you have to make adjustments along the way. A successful financial wellness program should be interactive and dynamic, such as rewarding people for making wise decisions and navigating them through different life stages for their financial wellness plans.

- **Introduce automatic rebalancing and lifecycle funds.** This strategy exploits an individual's tendency to stick with the status quo, at the same time dynamically adjusting their portfolios to meet investment objectives. For instance, retirement management firms can suggest or make it as default that retirement portfolios are automatically rebalanced on participants' birthdays. People can also select lifecycle funds that are automatically adjusted and balanced during the course of the fund's time horizon as the investor ages toward retirement.

- **Reward the good behavior.** We all like a treat for our good behaviors. Small rewards for good saving behaviors help reduce the stress and negative emotions associated with following a planned budget.

SUMMARY

Financial wellness has increasingly become a key component of individuals' overall healthiness, happiness and productivity, yet many Americans are considerably less prepared for their personal finances due to procrastination. In this essay, we discussed various causes and negative implications of procrastination, and also different strategies to harness the power of inertia to aid individuals in their pursuit of future financial well-being. It is our hope that this work will serve to further increase public awareness about how procrastination may limit the degree of financial wellness and provide insights to help people make positive changes around financial wellness.

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My Financial Wellness Solution: The 401(k) as a Lifetime Financial Instrument

By J. M. "Jack" Towarnicky[1]

Editor's Note: This essay is part of the 2017 Financial Wellness essay collection.

There exists a single financial wellness solution that obviates the need for all of the essay challenge suggested analysis, evaluation and investigation. It is already available to all private sector employees. It is called the 401(k)—a profit sharing plan qualifying under Internal Revenue Code Section 401(k)—a variant of the plan that holds my lifetime of savings.

CONCEPT

Meet workers where they are—specifically those who lack financial acumen and those who live paycheck to paycheck.[2] Change the 401(k) paradigm—the attitudes and mindset of workers, plan sponsors, legislators, regulators and policymakers. Morph the 401(k) into a **lifetime financial instrument**—so workers use the plan to build greater financial security—*today and tomorrow*. Eliminate all marketing and communications focus on retirement preparation because retirement is seldom a priority for those in need of a prescription to improve their financial wellness.

This 401(k) would focus workers solely on today's short-term financial considerations. It minimizes the need for workers to make investment and financial decisions. *This* 401(k) will maximize workers' financial wellness—it is structured to avoid mistakes and overcome inertia while, at the same time, it doesn't require advanced financial knowledge, awareness, analytical skills or heuristics.

BACKGROUND

When I served in plan sponsor roles at four Fortune 500 employers, each corporation pursued numerous benefits objectives—but all had retirement preparation as a priority. Over five decades, I saw tens of thousands of co-workers prepare for retirement. Early on, it was obvious who would almost always succeed—those who prioritized retirement.

However, success wasn't limited to those who prioritized retirement. Another group consistently succeeded—workers who were not at all focused on retirement preparation but who pursued wealth accumulation. One gentleman, Tom, woke me up to this fact in the early 1980s. He said to me: "Jack, I am single and 35. I maxed out saving in our 401(k). I have also maxed out my IRA contribution and I'm saving in a non-qualified, variable deferred annuity. I own my home and a rental property outright. I also have investments in a taxable brokerage account. Where do you recommend I invest my next dollar?" After a brief discussion to make sure I wasn't missing something, I gave Tom my very, very best expert advice: "Take an expensive vacation and enjoy yourself!"

I never ran into another worker like Tom. But I did encounter thousands focused on wealth accumulation—not retirement preparation. Most were workers once in the category of "just getting by." Many focused on getting ahead of the debt curve—to stop living paycheck to paycheck. The 401(k) was integral to those efforts—leverage the tax preferences, obtain the maximum employer support, create tax-savvy access to monies along the way to retirement and so on. These workers adopted wealth accumulation strategies long before there was a Consumer Financial Protection Bureau, long before we encountered today's "forward-thinking employers" who embrace "financial wellness." Most didn't have retirement preparation as a priority when they started saving—and I avoided trying to focus them on retirement. Instead, in the 1980s, I named these diligent savers focused on wealth accumulation "middle-class millionaires … someday."

I became aware of another distinction besides the difference in savings objectives—those focused on wealth accumulation also tended to de-emphasize the link between the 401(k) and their current employer. For them, a 401(k) was less of a plan to save/prepare for retirement from the current employer and more of a wealth accumulation opportunity that happened to be available through an employer. They understood the 401(k) was a separate legal entity—that plan participation need not end just because employment with that plan sponsor had ended.

Because 401(k) structures are malleable, they can be shaped to anticipate and meet the needs for workers with a variety of priorities, income levels, debt burdens, personal/family circumstance and so on. Unfortunately (or fortunately), a plan sponsor is typically limited to a single 401(k) plan. So, 401(k) plans continue to evolve, to incorporate new features designed to satisfy an ever more diverse group of workers with ever more varied financial needs—plus, they offer a sustainable constant that can remain in harmony with an individual's changing needs over a lifetime:

1. The early 1980s "salary reduction" design **(401(k) Release 1.0)** was a more than adequate retirement savings solution for workers with adequate disposable income who had retirement preparation as a priority. They knew that consistent saving in the 401(k), when combined with Social Security and Medicare, would be sufficient preparation. Millions of baby boomers are all around us today—enjoying retirement because they saved through their 401(k).

2. In the 1990s, **401(k) Release 2.0** designs emerged—incorporating automatic features—automatic enrollment, escalation and investment (using a qualified default investment alternative or QDIA). Plans increasingly adopted automatic features after the Pension Protection Act of 2006 clarified the opportunity. For example, one service provider's review of client 401(k) plans showed growth in automatic features from 10% (2006) to 41% (2015)— +300% in 10 years![3] Automatic 401(k) plan designs are adequate for workers whose disposable income will accommodate current financial needs/debt service *and* retirement savings, whether or not they have retirement as a priority.

3. In the 2000s, recognizing that some workers needed more than automatic features, some plans developed new structures. Coupling 401(k) Release 2.0 automatic features with 21st century loan functionality and other provisions designed to facilitate asset aggregation/consolidation and asset retention, **401(k) Release 3.0** was born. Where the 401(k) succeeds in aggregating savings, it will meet the needs of almost all workers except those who have breaks in employment or are otherwise economically vulnerable.

My experience is that the economically vulnerable and a majority of 20-, 30- and 40-something workers have little use for retirement preparation. Often, all disposable income is committed to debt service for past purchases or immediate financial needs. Too often, workers take on payday loans or other high interest debt—sometimes guaranteeing retirement poverty. My experience confirms, for the substantial minority of workers who don't have adequate disposable income and/or who don't have retirement as a priority, the 401(k) will succeed only if we meet workers where they are. So, slowly and iteratively, the plan sponsor took actions that morphed my 401(k) from a retirement savings plan for current, active employees into a **lifetime financial instrument** for all participants. See Figure 1 for the 25-year design journey.

While we didn't abandon all retirement preparation features, the marketing focus shifted dramatically with the 1996 introduction of new materials themed "Drive to Your Dreams." We did remove all references to and all use of the word "retirement." We knew younger workers weren't focused on retirement while older workers understood the 401(k)'s capability. Instead, we focused on a "vehicle" workers could use to "save up" for a "Drive to Your Dreams"—whatever they happened to be dreaming about. While no structure that requires a lifetime of savings will be successful where workers lack the ability to earn wages, this design enabled workers to traverse all roads, including the paycheck-to-paycheck lane and other streets with deep debt potholes.

THE FUTURE OF THIS CONCEPT

Unfortunately, because of unnecessary limits in current statutes and regulations, today's 401(k) plans are inadequate to fulfill the role of lifetime financial instrument **for economically vulnerable workers with median and lower incomes.** This essay proposes **401(k) Release 4.0**—completing the transition away from a retirement savings plan sponsored by a specific employer to a lifetime financial instrument (LFI) by coupling current capability (401(k) Release 3.0) with a series of modest, practical, cost neutral (from a federal budget perspective) statutory and regulatory changes.

LFI recognizes the diversity of the population to be served. It incorporates changes in concept, design, mindset and messaging. LFI is focused on wealth accumulation. It removes barriers to saving—incorporating strategies such as "once eligible, always eligible." It specifically and deliberately avoids and shuns cognitive challenges incorporated in "mental accounting"—how many households organize, evaluate and keep track of finances. LFI removes all of the complexity workers encounter in savings, investment and spending decisions. It ensures participants avoid any/all ex ante and ex post cost benefit analysis. It eliminates any need to annually, or more frequently, (re)balance "mental accounts."

LFI does all this by embracing and fully leveraging money's inherent fungibility. It eliminates the need for a retirement mental account—people won't need to be annually reminded about their lack of progress. While no lifetime of savings concept will successfully address the retirement preparation needs of the baby boomers (now all age 52+), LFI has sufficient flexibility so that it will successfully address the "retirement crisis" for today's workers under the age of 50 and for generations of workers to come.

Figure 1
Author's Plan Design Journey (1985–2010)

Provision	Component	1985	2010
Marketing/ Administration		Retirement savings plan for employees of this employer	Lifetime financial instrument
		Eligibles must take action to enroll	Automatic enrollment
		Voluntary; employer ambivalent about worker participation	Participation, savings strongly/repeatedly encouraged
Eligibility		Three years of service	At hire
Participation		Must contribute to participate	Can start with rollover from IRA, other employer plans
IRC § 401(k): Deferrals and Limits		Pre-tax contributions up to 16% of pay	Pre-tax, Roth (1% to 80% of pay, up to IRC § 402(g) max)
Enrollment		N/A	6% of pay default, perennial re-auto enrollment for all eligibles
Escalation		N/A	1% auto escalation if defer between 6% and 12% of pay
IRC § 402(g): Catch-up Contributions		N/A	Pre-tax, Roth (1% to 80% of pay, up to IRC § 414(v) max)
IRC § 401(a): Contributions		After-tax contributions (combined limit with pre-tax contributions up to 16% of pay) or, if less, IRC § 415(c) max	Only non-highly compensated employees (NHCEs) up to IRC § 415(c) max (to trigger company paid support for retiree medical)
IRC § 414(s): Covered Compensation		Salary only	All taxable wages—including but not limited to salary, overtime, shift differential, quarterly and annual broad based incentives
IRC § 408(q): Deemed IRA		N/A	(Not adopted due to administrative complexity) Expanded Roth savings opportunity for those limited by IRC §§ 402(g), 414(v) maximums
IRC § 25B: Savers Credit		N/A	Infrequent communication to potentially eligible participants
Employer Contribution		70% on 1st 2% of pay contributed, plus 40% on next 4% of pay contributed	50% on 1st 6% of pay contributed
Vesting		Vested immediately	Graded over 5 years
Investments	Core	5 investment options: bond fund, two large cap blended funds, one large cap growth fund and a guaranteed investment contract (GIC) (2 were retail mutual funds, 3 were separate accounts); from 1985–2006, we added 42 more funds and, in 2006, we reduced Core investment options to 15	13 white-labeled Core options (all but 1 are separate accounts): 4 index funds (S&P 500, small/mid, bond and international; 1 GIC; 1 money market; and 7 actively managed funds, large cap growth, small/mid growth, large cap value, small/mid value, international equity, global and Core+ bond
	Qualified Default Investment Alternative (QDIA)	N/A	QDIA uses 10 target maturity models (TMM): no cost, fully transparent, electronic allocations across 13 Core options for economies of scale
			QDIAs use age 65 target date (48% equity allocation, "through" glide path)
	Diversification	N/A	Directed brokerage is available

CONTINUE ON PAGE 23

Figure 1
Continued

Provision	Component	1985	2010
Rollovers/Transfers Into Plan		N/A	Full aggregation/consolidation as code permits
Loan		N/A	21st century loan process: max 2 loans (to enable rollover of most outstanding loans from predecessor plans); automatic clearing house (ACH) processing allows repayment after separation and loan initiation after separation
			Default on any loan = ineligible for future loans
			File mortgage, issue 1098: create tax deductible interest
			(Not adopted) Build credit by reporting to credit bureau
			(Not adopted) 1 loan using line-of-credit methodology
Roth Conversion		N/A	Full, in-plan conversion to Roth
Payout Options	While Employed	Hardship withdrawals	Eliminated hardship withdrawals in 1996
		In-service after-tax monies after 2 years (hardship), after-tax monies after 5 years	In-service after-tax/employer monies after 5 years
		N/A	Rollover-out to IRAs any assets rolled into plan
		Age 59-1/2	Age 59 -1/2
	Post-Employment	Lump sum only	Default: Continue account until 2nd to die (employee or spouse)
		If < age 55, must take payout or wait until age 55	Default: Installment payments to comply with minimum required distributions
		IRA rollover, or 10-year lump sum taxation	IRA rollover
		In plan annuity eliminated to comply with the Retirement Equity Act of 1985, Norris decision “unisex” requirements	No in-plan annuity payout provision
		Spouse can “step into participant shoes”	Same
		No ad hoc payments: all or nothing	Ad hoc payments up to 100% of account balance
Multiple Employer Plan (MEP)		N/A	Mutual insurance companies = “sponsored” MEP
Fees	Investments	Varies, from 0 to ~130+ basis points	Collective investment trusts: 2 to 60 basis points asset management fees
	Administration: Active employee	Internal administration via payroll system	Monthly per capita fee and transaction costs
	Administration: Former employee	No separate, added fees apply after termination	Same

A 401(k) that does not focus on retirement is heresy to today's practitioners, policymakers, plan sponsors and service providers (including the Society of Actuaries' Committee on Post-Retirement Needs and Risks); however, focusing workers on wealth accumulation has been shown to be successful. The four largest barriers to retirement preparation continue to be: lack of access, leakage, failure to save when eligible and failure to save enough.

- **Lack of access/leakage.** All workers have had access to an adequate retirement savings vehicle since 1982—the Individual Retirement Account (IRA). Coupled with Social Security, most workers can achieve adequate income replacement. An enhanced version of the IRA is available, the Deemed IRA, which would allow seamless rollover within a 401(k), enabling liquidity without leakage via 21st century loan functionality.
- **Failure to save when eligible/failure to save enough.** Automatic features coupled with liquidity using 21st century loan functionality ensures individuals can comfortably save more than they believe they can afford to earmark for retirement—allowing the plan to use higher default rates for automatic enrollment and automatic escalation.

Figure 2 repeats the 2010 plan design from Figure 1 and adds 401(k) Release 4.0 features (legislative and/or regulatory actions are highlighted in red) to complete the transition to LFI—resolving access and other issues without resorting to new mandates. The design goals include provisions that:

- Meet workers where they are and accommodate workers as their circumstance changes—diverse personal interests, ability to save, current needs/accumulated debts
- Create a strong, vibrant savings habit with a laser-like focus
- Intentionally reduce the link between the 401(k) and the plan sponsor to ensure a sense of individual ownership and to minimize any suggestion that continued employment is required to continue the account or that payout should be linked to separation
- Eliminate distractions that result from separate identification of each financial need or goal, coupled with the need to calculate, plan and prepare for each goal (debt service, car, home, retirement, etc.), the need to recalculate periodically to reflect changing needs and investment results, and the need for mental accounting and related, multiple investment/savings products
- Anticipate frequent employment turnover, so workers can aggregate/consolidate accounts and actively participate in their plan of choice, including a former employer's plan (whether or not a current employer offers a 401(k) plan)
- Minimize leakage from hardship and other distributions while maximizing access using "repayment-savvy" 21st century loan functionality (save, get match, invest, borrow, continue contributions while repaying loan, rebuild account for a greater need in the future, repeat to/through retirement) featuring automatic clearing house (ACH) repayment functionality, line-of-credit structure(s), commitment bonds, etc.
- Highlight the "personal capital" relationship individuals should have with their 401(k) plans—fostering lifetime participation for the worker (and spouse, children or other dependents who are beneficiaries)

Before we "retire" the 401(k) as inadequate to resolve the "retirement crisis,"[3] why not shift workers focus to becoming a "middle class millionaire … someday" as "People (already) have within their own hands the tools to fashion their own destiny."[4] ■

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ENDNOTES

1 I would appreciate your suggestions/criticism regarding the plan presented in this essay. Email me at *jacktowarnicky@gmail.com*.

2 See question 6, in American Payroll Association, "2016 'Getting Paid in America" Survey Results," September 2016, *http://www.nationalpayrollweek.com/documents/NPW2016SurveyResults.pdf*. More than 60% of 27,000+ survey respondents indicated it would be very difficult or somewhat difficult to meet current financial obligations if their next paycheck was delayed one week. See also, Olivia S. Mitchell and Annamaria Lusardi, "Financial Literacy and Economic Outcomes: Evidence and Policy Implications," *Journal of Retirement* 3, no. 1 (Summer 2015): *doi:10.3905/jor.2015.3.1.107*. Two-thirds of surveyed Americans could not correctly answer three basic financial questions, described by the authors as having "the virtue of being simple, relevant, brief and good differentiators." See also, Board of Governors of the Federal Reserve System, "Report on the Economic Well-BeingofU.S.Householdsin2015,"May2016,*https://www.federalreserve.gov/2015-report-economic-well-being-us-households-201605.pdf*. More than 30% of survey respondents indicate their monthly income varies occasionally or significantly from month to month (where 43% attributed this to an irregular work schedule) while 46% indicated they could not pay for a hypothetical emergency expense of w$400 without having to borrow or sell something.

3 Stephen Gandel, "Why It's Time to Retire the 401(k)," Time Oct. 19, 2009, *http://content.time.com/time/magazine/article/0,9171,1929233,00.html* which argue the 401(k) has been a failure and that it should be eliminated or, at least, that the tax preferences should be removed This is similar to hundreds of other books and articles over the past decade through present day.

4 Murray D. Lincoln, *Vice President in Charge of Revolution* (New York: McGraw Hill, 1960).

Figure 2
Complete the Journey to 401(k) Release 4.0: A Lifetime Financial Instrument
Note: All changes are voluntary; in the aggregate, they are federal budget revenue neutral at current participation levels.

Provision	Component	2010	LFI: 401(k) Release 4.0
Marketing/ Administration		Lifetime financial instrument	Same
		Automatic enrollment	Same
		Participation, savings strongly/ repeatedly encouraged	Same, plus 401(k) = "Bank of Jack" for all significant financial needs
Eligibility		At hire	Same
Participation		Can start with rollover from IRA, other employer plans	Same, plus rejoin via rollover or Deemed IRA contribution, (aka once eligible, always eligible)
IRC § 401(k): Deferrals and Limits		Pre-tax, Roth (1% to 80% of pay, up to IRC § 402(g) max)	Same; however, other structures may be a better fit for other plans
Enrollment		6% of pay default, perennial re-auto enrollment for all eligibles	Department of Labor/IRS to provide guidance for choosing between pre-tax and Roth 401(k) as default
Escalation		1% auto escalation if defer between 6% and 12% of pay	If automatic enrollment default uses Roth 401(k) deferrals, change 90-day "opt-out refund" limit to 2.5 months after end of plan year
			Allow participants who do not have access at a current employer to contribute up to plan max using Roth 401(k)
IRC § 402(g): Catch-up Contributions		Pre-tax, Roth (1% to 80% of pay, up to IRC § 414(v) max)	Same, plus allow pre-age 65 Roth catch-up—allow catch-up in any 15 calendar years
IRC § 401(a): Contributions		Only non-highly compensated employees (NHCEs) up to IRC § 415(c) max (to trigger company paid support for retiree medical)	Same for NHCEs, but for any purpose (need not be linked to company funding of retiree medical)
IRC § 414(s): Covered Compensation		All taxable wages—including but not limited to salary, overtime, shift differential, quarterly and annual broad based incentives	Same
IRC § 408(q): Deemed IRA		(Not adopted due to administrative complexity) Expanded Roth savings opportunity for those limited by IRC §§ 402(g), 414(v) maximums	Simplify regulations, add/highlight post-separation contribution option/functionality
IRC § 25B: Savers Credit		Infrequent communication to potentially eligible participants	For those with incomes < savers credit threshold, IRC § 401(k)(4)(A) relief plus tax preference under IRC § 132(a)(7) where plans provided access to third-party tax preparation services
Employer Contribution		50% on 1st 6% of pay contributed	Same; however, other structure/amounts may fit other plans better
			Add IRC § 401(h) functionality for retiree medical funding to profit-sharing plans
			Allow/encourage NHCE "prize-linked" employer contributions

CONTINUE ON PAGE 26

Figure 2
Continued

Provision	Component	2010	LFI: 401(k) Release 4.0
Vesting		Graded over 5 years	Same; however, other structure/methods may fit other plans better
Investments	Core	13 white-labeled Core options (all but 1 are separate accounts): 4 index funds (S&P 500, small/mid, bond and international; 1 guaranteed investment contract (GIC); 1 money market; and 7 actively managed funds, large cap growth, small/mid growth, large cap value, small/mid value, international equity, global and Core+ bond	Same; however, other structure/methods may fit other plans better
			Add continued accrual insurance (death, disability) as an "investment" to secure continued accruals
	Qualified Default Investment Alternative (QDIA)	QDIAs use 10 target maturity models (TMM): no cost, fully transparent, electronic allocations across 13 Core options for economies of scale	Same, specifically confirm TMM qualifies as a QDIA
		QDIAs use age 65 target date (48% equity allocation, "through" glide path)	Same; however, lifetime participation suggests target date could be updated to required beginning date (when minimum required distributions must commence)
	Diversification	Directed brokerage is available	Same
Rollovers/Transfers Into Plan		Full aggregation/consolidation as code permits	Same, plus allow Roth IRA rollovers into Roth 401(k) account
			Allow plan-to-plan transfer while actively employed, while limiting distributions in the receiving plan to commence after age 59-1/2
Loan		21st century loan process: max 2 loans (to enable rollover of most outstanding loans from predecessor plans); automatic clearing house (ACH) processing allows repayment after separation AND loan initiation after separation	Same, but change to 1 loan per loan type (residential, general) using line-of-credit method
		Default on any loan = ineligible for future loans	Inflation-adjust 1974 loan dollar limit from \$50,000 to \$250,000, prospectively index
		File mortgage, issue 1098: to create tax deductible interest	Same
		(Not adopted) Build credit by reporting to credit bureau	Build credit by reporting to credit bureau
		(Not adopted) 1 loan using line-of-credit methodology.	Accept prior plan loan rollover/conversion without applying prior plan benefits rights and features; accept prior plan loan as a plan asset
			Allow "hardship loans" of up to \$500, lengthen repayment from quarterly to up to 1-year anniversary of initiating loan

Figure 2
Continued

Provision	Component	2010	LFI: 401(k) Release 4.0
Roth Conversion		Full, in-plan conversion to Roth	Same, plus allow "cashless conversion," accommodating federal/state tax withholding, funding it with a plan loan without applying IRC § 72 maximum amount loan limits
Payout Options	While Employed	Eliminated hardship withdrawals in 1996	Same
		In-service after-tax/employer monies after 5 years	Prospectively replace with life expectancy based penalty-tax free IRC § 72(t) payout
		10% penalty tax on non-qualifying taxable distributions	Increase to 20%, eliminate penalty-tax-free IRA payouts prior to age 59-1/2
		Rollover-out to IRAs any assets rolled into the plan	Same
		Age 59-1/2	Same, other plans may decide to prospectively eliminate all in-service withdrawals as part of lifetime structure
	Post-Employment	Default: continue until 2nd to die (employee or spouse)	Same, consider limiting payouts before normal retirement (prospective contributions only)
		Installment payment commences no later than minimum required distributions	Same; however, cap minimum required distributions payout at no more than 5% of prior year-end account balance
			Treat Roth 401(k) the same as Roth IRA for minimum required distributions purposes
		IRA rollover	Same
		No in-plan annuity payout	Plan insures itself (beneficiary "participating" self-insurance wrapper) to allow an annuity-like lifetime payout
		Spouse can "step into participant shoes"	Same, also apply to non-spouse beneficiary
		Ad hoc payments up to 100% of account balance	Same
Multiple Employer Plan (MEP)		Mutual insurance companies = "sponsored" MEP	Clarify unrelated firms use of "sponsored" MEP options—a participating employer must assume role of plan sponsor
			Confirm "sponsored" MEP ability to "spin off" "bad actors" into a separate plan
Fees	Investments	Collective investment trusts: 2 to 60 basis points asset management fees	Same
	Administration: Active Employee	Monthly per capita fee and transaction costs	Same
	Administration: Former Employee	No separate, added fees apply after termination	Add IRS Notice 2004-10, DOL FAB 2003-3 fees for Term Vested

Mean Reversion & Chronic Low Interest Rates

By Bob Crompton

Editor's Note: This article was originally published in Risks & Rewards, *Issue 69, February 2017. Copyright © 2017 by Society of Actuaries. Reprinted by permission.*

Interest rates continue at levels lower than historical norms. In early July of 2016, shortly after Brexit, yields on 10-year Treasury bonds had dropped below 1.50 percent and yields on 20-year Treasury bonds had dropped below 2.00 percent. Although interest rates have since recovered to pre-Brexit levels and higher, they remain low compared to what many people think as normal. This has caused me to think again about interest rate mean reversion.

There are currently a number of factors operating to keep interest rates at historically low levels rather than moving back to what many of us think as the historical norms—the "old normal." In this article I recapitulate interest rate mean reversion and why mean reversion doesn't mean we should expect higher interest rates any time soon. I also discuss a few of the developments that have given us the "new normal," chronic low interest rates. In addition, I discuss some changes that might lead back to the old normal.

INTEREST RATE MEAN REVERSION

What Do We Mean By The Term "Mean Reversion?"

Mean reversion is usually taken to mean that market prices or interest rates will change in the opposite direction from a prior change, and that the current change may generate future changes until the price or interest rate reaches the mean of the generating function for the economic series under consideration.

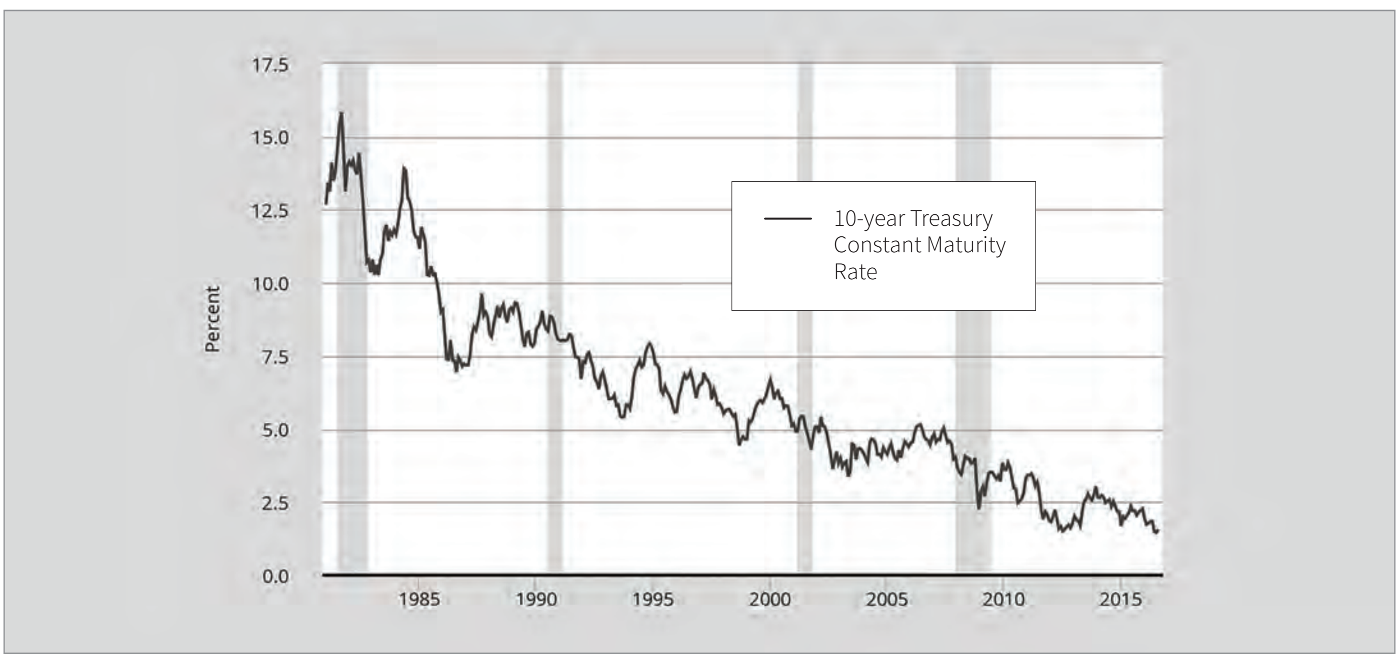
Does Mean Reversion Really Exist For Interest Rates?

Mean reversion has been established statistically for equity prices, but for interest rates, there is only limited statistical evidence of mean reversion.

However, many fixed income traders believe interest rate mean reversion exists. The late Fischer Black, one of the most astute observers of capital markets, made the following statement:

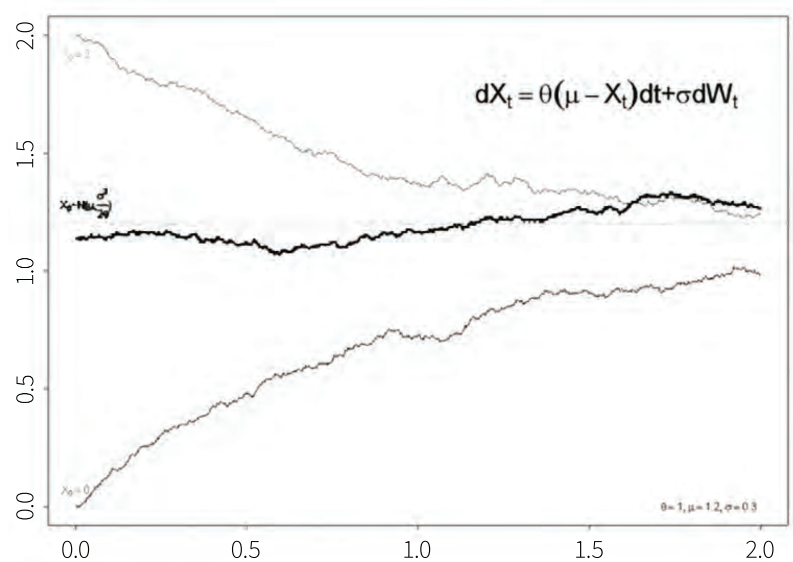
> "I believe that there is normally a considerable amount of mean reversion in the market—but it's hard to estimate how much."

Figure 1
Ten Year Treasury Yield Rate



Source: Board of Governors of the Federal Reserve System (US), fred.stlouisfed.org, myf.red/g/6z4a

Figure 2
Sample Paths from an Ornstein-Uhlenbeck Process



Although Black made the statement in the context of equity prices, it is clear that he believed that mean reversion existed for interest rates as well. One only has to take a quick look at the Black-Karasinski short interest rate model to see that.

In addition, the paper "Mean Reversion Models of Financial Markets"[1] makes the point that mean reversion can exist and yet leave very little statistical evidence.

Perhaps the correct answer to the question is, "To the best of our understanding, mean reversion exists for interest rates, but we have a limited understanding of the causes and mechanisms of such mean reversion."

What Causes Mean Reversion?

There is no strong theoretical underpinning to interest rate mean reversion. Mean reversion models have been developed to capture the historical data rather than to reflect critical aspects of financial and economic theories.

Some ideas that have been developed include:

- Interest rates revert to a long-term equilibrium. This is interesting, but leaves too much to the imagination. What does the long-term equilibrium look like, and how does it differ from today's economy? What sort of evolution should we expect to see from today's world to the long-term equilibrium?
- Interest rates fluctuate due to psychological factors affecting market participants, causing them to over-react to emerging news. There is probably some truth to this, but by itself seems inadequate to explain long-term reversion.
- Because there is a natural range for prices or interest rates, they will move within the range and naturally tend toward the center of this range. This is the naïve view that ignores the generating function for rates.

How Do I Determine What The Mean Reversion Point Is?

There is no good answer to this question. Since neither the mean reversion point nor the speed of reversion are observable, and since there is no solid theoretical framework from which to proceed, determination can only be indirect and approximate.

A typical approach used by actuaries is to take the mean of historical rates over some arbitrary time scale. This is clearly a methodology developed to be easily calculated and easily explained. To see why this approach is, in general, not the best way to estimate the reversion point, see Figure 1. It shows 10-year Treasury yield rates from January 1981 through August 2016. It is certainly possible to calculate the mean of this historical series, just as it is possible to calculate the mean of any time-ordered data series. But it is difficult to understand why—when there is such a clear and persistent downward trend—anyone would use an average as representative of the mean reversion point.

Based merely on a quick scan of the chart on page 3, we could reasonably conclude that interest rates at August 2016 are the reversion point of the historical rates. This is a likelier result than any sort of average over a trending period.

In fact, the trajectory of rates in Figure 1 (FRED) is reminiscent of the upper path in Figure 2[2] showing sample paths from an Ornstein-Uhlenbeck process. Recall that Vasicek's model of interest rates was based on the Ornstein-Uhlenbeck process.

No one would claim that you determine the mean reversion point for this by averaging across historical path values. Yet this is what the typical "actuarial" approach does. The actuarial approach will give a reasonable result when applied to a period of stable interest rates, but in general it is not a good approach.

An approach that might work better is to start with the Federal Reserve's targeted inflation rate, then add an appropriate spread to obtain the short reversion target. Completion of the rate curve depends on the view one has of the shape of the curve at the time reversion is reached. For instance, if mean reversion is associated with some form of long-term equilibrium, you probably want an upward-sloping yield curve with a standard short-long spread, but other views are also possible.

A third approach is to simply poll the experts—fixed income traders. Find out what sort of mean reversion they are using in their pricing formulas.

DEVELOPMENTS FAVORING LOW INTEREST RATES

I believe we are unlikely to see much interest rate movement due to mean reversion. There are a number of developments that indicate we are currently in a period of low interest rates.

Supply Of Financial Capital

Since interest rates represent the cost of borrowing, both the supply and demand for financial capital are determinants of interest rates.

The table below shows GDP, wealth and global capital for 2010, the most recent year for which I could find an amount for global capital.

$ Trillions		
Global GDP	Global Wealth	Global Capital
$65.6	$216.3	$600.0

For reference, global GDP in 2014 was $77.8 trillion and global wealth was $262.6 trillion.

There is no official tally of global financial capital, so where did I get these amounts? Global GDP is readily available.[3] Global wealth comes from the annual report put out by Credit Suisse.[4]

This statistic is included as a reasonableness check for the global capital amount since this is so surprisingly large. The amount of global capital is from the publication, *A World Awash in Money*.[5] This was published by Bain & Company.

Clearly there is an abundance of capital in the world. There may be difficulties in deploying capital, but there is no shortage with global capital at nine times the total amount of goods and services produced in a year. How did this happen? The financial sector of the economy has been growing faster than the production and service sectors. Leveraging of financial assets currently generates a greater return than the use of non-financial assets.

The sheer amount of capital available means interest rates will likely not rise to historical norms for some time to come. The supply of capital is so great, and the search for return on capital so competitive, that economic activity will have to increase significantly before interest rates will rise due to capital.

For example, an entrepreneur who has developed a business to the point of needing capital, may find it much easier to sell an ownership interest to a hedge fund rather than leveraging the firm through borrowing. While this approach may forego future gains, this is offset by the insurance provided to the entrepreneur's wealth function through such a transaction.

And so it is throughout the economy. As capital seeks a return, it rushes in where debt capital used to tread—and sometimes in places where debt capital feared to tread. The relentless drive for capital to be productive means the crowding-out of debt capital and downward pressure on interest rates.

Demand For Capital

Demand is the other side of the coin from Supply. If there is an abundance of capital, we could restate this by saying that there is a paucity of demand for capital. Although there are no available statistics on global demand for capital, a few qualitative observations are in order.

First, production of both goods and services has become notably more efficient over the last few decades. This increased efficiency is attributable to a number of factors, including:

- Improved supply chain management,
- Process improvement and
- Automation.

Increased efficiency affects interest rates by reducing the amount of new investment in production capacity compared to what would have been required even a decade ago.

Second, there is significant unused production capacity, particularly in China. Reliable statistics are difficult to come by, but this[6] reference gives some indication of the extent of the capacity glut.

Such overcapacity limits new investments with a corresponding drag on interest rates.

Third, there seems to be a shift in new enterprises—at least for high-profile companies. These new companies often require little or no capital investment. For example, in 2014 WhatsApp had a greater market value than Sony, but required next to nothing in terms of cost of entry.

If this is representative of new businesses, there is a significant drag on demand for investment capital.

Secular Stagnation

Some economists have recently revived the idea that developed nations have entered the age of economic senescence. This idea was first publicized back in the 1930s, and it said that the Great Depression signaled that the economy had moved into a chronic period of slow growth or contraction. The current reincarnation of this idea posits that the growth of the economy from 1940 to today was largely due to a series of fortunate one-off events that include the following:

- The kick-start the economy received from WWII,
- The baby boom's reversal of demographic contraction,
- Expansion of post-secondary education through such measures as the GI Bill and
- The expansion of work force participation rates from the large scale entry of women into the work force.

Secular stagnation states that since these one-off events will not be repeated, we should expect the economy to return to the trajectory it was on at the end of the Great Depression. This means that the next generation will not be richer than our generation, and may be poorer because the developed economies have chronically slowed. More detailed information on secular stagnation can be found in the publication, *Secular Stagnation: Facts, Causes and Cures*.[7]

In a world where our economy has slowed due to old age, we should expect interest rates to be permanently lower than they were during the more vigorous economic days. In a permanently slowed economy, there will be less expansion, less new business and less demand for borrowing.

Chronic War

Although there have been no major wars since 1945, there have been plenty of smaller conflicts since then. A Google search for "wars since 1945" yields a list far too long to include in this article.

> We have to be careful not to use mean reversion as a magical incantation to set assumptions at inappropriately high levels.

War is tragic from many perspectives. From the perspective of this article, wars depress business activity in areas where fighting and destruction occur, and cause capital to seek safety. Both of these have the effect of lowering interest rates (certainly this is true in capital havens, and may also be true in the war zones as well).

In addition, these conflicts occur in developing nations, where capital typically has its greatest productivity, since these are nations that are farther from the economic equilibrium of more economically mature nations.

In the U.S., one of the reasons that Treasury yields are depressed is because of increased global demand for safe haven assets. The more unstable the world becomes, the more demand there is for capital havens.

As well, continued armed conflict has a depressing effect on business and a corresponding effect on demand for investment capital.

Globalization And Anti-Globalization

Globalization—the free movement of goods, people and capital between nations—has many compelling reasons from the perspective of business and commerce. It might not be hyperbole to say that continued prosperity depends on increasing globalization.

Yet there are other views and perspectives on globalization than the perspective of business. Many people feel threatened by globalization. Globalization may mean alienation, loss of influence, impoverishment and loss of control of "our way of life." Many of these fears come from a visceral level that is not amenable to reason. We know that the other is evil.

In this Manichean world, there is a tug-of-war between the forces for globalization and the forces opposed to globalization. Whenever the forces of anti-globalization win a battle against globalization, capital owners will seek protection of their capital.

The reaction to Brexit points this out. There was an immediate flight of capital to safety, resulting in a sharp drop in U.S. Treasury yields. This sharp drop has moderated since then, but the point is that anti-globalization tends to depress interest rates by causing a flight to safety and by keeping economic growth lower than its potential level.

DEVELOPMENTS THAT WOULD FAVOR HIGHER INTEREST RATES

I do not believe that mean reversion will move interest rates very far from their current levels, but this does not mean that we are doomed to a world of low interest. There are other forces than mean reversion that change interest rates.

From a statistical view, the changes that we need are such that they will change the parameter vector of the interest rate generating function. From an economic view, these changes will disrupt the current equilibrium.

Signs And Portents

What events and developments should we expect as harbingers of increasing interest rates? I propose two main signs of impending changes in the overall level of interest rates. The first is a significant improvement in global political stability and the second is a large-scale commercial breakthrough of some existing technology.

First, any developments that generate increased political stability point to increasing interest rates. Political stability will reduce the flight to safety effects that cause reductions in interest rates in capital havens.

In addition, because business loves predictability, an improvement in political stability will tend to increase business activity.

The other main harbinger of higher interest rates is commercialization of some critical technological improvement. There has historically been a gestation period between discovery and commercialization, so it is possible that some existing technology could soon affect the economy. A number of areas seem to have the potential to come to a boil in the foreseeable future. These include:

- Genetic engineering,
- Materials science,
- Nano-scale construction and assembly and
- Robotics.

Any of these areas has the potential to create large-scale industries that would affect both sides of the economic balance sheet—production as well as consumption. It is the production side of this picture which distinguishes these potential businesses from the high profile developments where there is very little effect on the production side of the economy.

Although any of these areas could commercially explode, we should keep in mind that every solution creates its own set of problems. Any of these developments may solve low interest rates, but like a bad science-fiction movie, create new issues that are just as problematic. Utopia remains just as far away as ever.

CONCLUSION

Because low interest rates may still be with us for a long time, it is important to consider carefully how we project interest. We need interest rate generators that have the ability to generate scenarios that are reminiscent of today's interest rates.

We have to be careful not to use mean reversion as a magical incantation to set assumptions at inappropriately high levels. Since there is nothing that tells us that interest rates will return to the old normal, we need to use considerable caution in setting the mean reversion point.

Finally, actuaries may need to become conversant with economic forecasts and how economic developments are likely to influence interest rates. For most of us, interest rates are often considered as divorced from economic conditions. But it is the economic conditions which give rise to mean reversion and interest rate movements. ■

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ENDNOTES

1 This can be accessed at *http://elib.suub.uni-bremen.de/diss/docs/E-Diss549_diss02.pdf*

2 By Thomas Steiner—File:OrnsteinUhlenbeck3.png, CC BY-SA 3.0, *https://en.wikipedia.org/w/index.php?curid=22786192*

3 Available without charge at *http://www.statista.com/statistics/268750/global-gross-domestic-product-gdp/*

4 This publication is available at *https://www.credit-suisse.com/ch/en/about-us/research/research-institute/publications.html*

5 This publication can be downloaded at *http://www.bain.com/publications/articles/a-world-awash-in-money.aspx*

6 *http://www.reuters.com/article/us-china-overcapacity-idUSKCN0VV05R*

7 This publication can be downloaded at *http://voxeu.org/sites/default/files/pVox_secular_stagnation.pdf*

Retirement Is About More Than Money

Interview with Greg Ward

Society of Actuaries (SOA) research has repeatedly shown that there are many gaps in retirement planning and knowledge about retirement. At the same time, employee benefits are evolving to make employee decisions more important. The SOA, in partnership with Financial Finesse, recently released a new publication designed to improve financial literacy, *Retirement Health and Happiness*. This is the first in a series of educational publications designed to help Americans do a better job of retirement planning. It is designed for employers to give to employees as part of their employee benefit or retirement planning programs and to be used by members of the public for their own education. It can also be used by organizations that are promoting financial literacy and offering resources for financial education.

Greg Ward, director of the Financial Wellness Think Tank at Financial Finesse, led the development of this material. This interview provides information about the new project and the use of the information.

What is workplace financial wellness?

Workplace financial wellness is an employee benefit that provides ongoing access to unbiased financial guidance and coaching. It is designed to help employees effectively manage their benefits and to develop better financial habits and behaviors so they are able to make informed financial decisions that are in their best interests.

According to our best practices guide[1] for employers, a workplace financial wellness benefit is holistic in nature, covering topics ranging from cash and debt management to advanced estate planning. Ideally, it is designed and delivered by qualified financial experts as an employer-paid benefit available to all employees, regardless of job classification.

What is the current state of individual financial wellness?

We believe people experience a healthy level of financial wellness when they maintain a manageable level of financial stress; a lifestyle at or below their financial means; a strong financial foundation that includes adequate emergency savings, no high-interest debt and a sufficient insurance and estate plan to protect assets, income and loved ones; and an ongoing plan to achieve future financial goals. At present, only about 30 percent of the workforce is even close to this level of financial wellness. Because of their relationship, employers are uniquely positioned to help employees reach a healthier level of financial wellness.

How are employers responding to the need to increase financial wellness?

Several decades ago, employers attempted to improve financial wellness through traditional means, such as workshops and benefits communication materials. Unfortunately, this did little to move the needle. Over the last 10 years, forward-thinking companies began adopting more comprehensive approaches to financial wellness, which included combining financial wellness benefits with physical wellness benefits into what are becoming known as "total wellness programs."

Interest in this approach to financial wellness has skyrocketed, and today we are seeing a tremendous number of employers seeking to implement comprehensive financial wellness benefits that include financial coaching, workshops, webcasts and online learning as part of a total wellness program. Although it is a relatively recent development, we are already starting to see significant improvements in financial wellness and behavior among employees who actively engage in the program. These improvements include reductions in employee financial stress, decreases in debt balances and increases in retirement plan participation.

How do you see employee benefit plans changing?

Employers are no longer in a position where they can offer lifelong financial security to employees in the form of guaranteed pensions or retiree health plans, which means employees must take more responsibility for funding these future expenses on their own. To help subsidize employee savings, employers are contributing more to voluntary benefits—like 401(k) plans and health savings accounts—in the form of matching contributions, but employees may be underutilizing these benefits due to lack of understanding or cash flow.

For this reason, employee benefits are becoming more integrated. More and more employers are issuing what are referred to as "total reward" statements so employees can see the complete value of their compensation and benefits package. In addition, employers are offering "benefits planning" as part of their financial wellness program to help employees understand and maximize the benefits for their personal situation. This makes the employer a trusted partner in the employee's financial security.

The SOA and Financial Finesse are doing a series of publications to promote retirement literacy among working-age Americans. What makes these publications different from other retirement guidance available?

Much of the traditional retirement guidance available today is produced by financial service providers. It includes a list of facts and figures that are designed to encourage behavioral change through logic and reason. Unfortunately, this traditional approach has done little to improve retirement literacy in America.

This new series uses principles designed to move the reader beyond the logic and into a place where behavioral change is more likely to occur. Topics will include both financial and non-financial aspects of retirement. We hope this unique approach to retirement education is more far-reaching than traditional retirement guidance.

What is the main content of the first publication *Retirement Health and Happiness?*

It takes more than money to enjoy a successful retirement. In the first publication, we offer guidance and thought-provoking questions designed to help the reader emotionally and physically prepare for a successful transition to retirement.

What retirement trends does it respond to?

People are living longer, and today's retirees are more active than those of previous generations. Therefore, retirement planning must consider both the financial and non-financial challenges a longer, more active retirement creates. Today's retiree may continue working in some capacity, volunteer, travel or take on creative projects, especially in early retirement. The guide is designed to help this generation consider all the factors that contribute to a long, happy and healthy retirement.

> [R]etirement planning must consider both the financial and non-financial challenges a longer, more active retirement creates.

In your experience, are there some common areas that need more attention in retirement planning? How do the guides fit in?

What we see from our data, and anecdotally from conversations with employees, is that employees underestimate the costs of health care, both now and in retirement. They are confused about high deductible health care plans and why they should save in health savings accounts (HSAs), both for short-term expenses and long-term needs. There is a mistaken belief that Medicare will cover all their health care costs, including long-term care. We also see that employees don't always plan for longevity. They haven't planned for how their daily lives will change as they age and what decisions they may need to make about where they live and how they handle financial affairs. In our guides, we walk through the decision points for how to tackle these issues.

What do you think is working well in terms of financial wellness programs, and what could be improved?

Not enough companies offer comprehensive workplace financial wellness programs delivered as an employee benefit. We're still in the relatively early stages, but the benefit is on the verge of a tipping point. Per research from Aon Hewitt, over 90 percent of large companies are considering expanding financial wellness programs beyond retirement planning. I see a lot of confusion right now about what is and is not a financial wellness program. For example, many financial services firms are highlighting financial wellness, which is great, but employers need to be careful that they are not inadvertently creating a marketing opportunity for those firms to sell financial products and services to their employees. Financial sales is not a financial wellness program. There are also many interesting technology tools and fintech companies entering this space. Many are helpful, but we've found in our research that technology alone doesn't create behavior change. That generally requires repeat interaction between an employee and a financial coach. ■

ENDNOTES

1 *https://ffinesse.box.com/v/FinWellnessGuide*

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