Pension Risk Transfer:
The Deferred Challenge

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Prudential
Bring Your Challenges

Agenda

Purpose: To describe the risks associated with insurers taking on ***Active*** & ***Terminated Vested*** participants through pension buyout transactions and comparing to similar risks already assumed by the industry.

- ✓ **Introduction**
- ✓ **Liability Risks**
- ✓ **Investment Risks**
- ✓ **Operational Risks**
- ✓ **Wrap-Up**

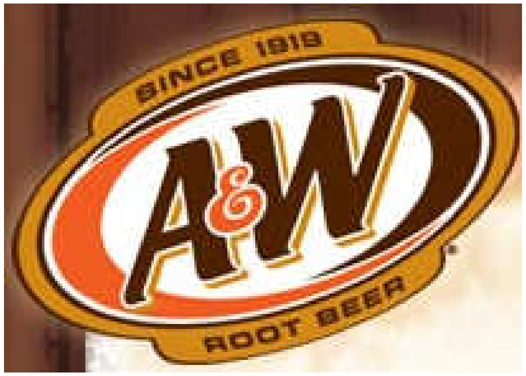
Introduction: Presenter

✓ **Career**

- Variable Annuities
- Corporate Borrowing
- Permanent Life Insurance
- Institutional Income
- **Pension Risk Transfer**

✓ **Personal (Shared on 11/11/14 for Longevity Underwriting)**

- Good for life expectancy: nonsmoker, employed, & moderate exercise
- Bad for life expectancy: red meat, sugar, & sleep deprivation
- Appointed life expectancy expert for family & friends



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Introduction: Presenter

✓ **Result:** Hypertension

✓ **Personal (Updated 5/19/16)**

- Exercise more in a week than eat red meat
- Vegetables!
- Second daughter wakes up once a night rather than staying awake all night like the first
- Pension consultant for family & friends

Introduction: Deferred History in the Marketplace

✓ **<u>1980s</u>:** Substantial market activity including $1B+ transactions after 1970s volatility and high "new money rates" along with changing corporate & competitive environment of 1980s. Transactions included substantial deferred lives to ***allow for complete plan termination***.

✓**<u>1990s-2000s</u>*:*** Reduced market activity with focus mostly on small and mid-size plans, which contained both retired and deferred lives, as interest rates decline, equities boom, and fallout from insurer insolvencies in the later 1980s. Plan freezes become increasingly popular.

✓ **<u>2010s</u>:** Increased market activity as a result of funding volatility caused by double-dip "tech bubble" and "housing bubble" bursts, higher PBGC costs, increased life expectancy, and various other reasons. Multiple deals larger than $1B+ were transacted, yet they largely focused on retirees only until the Philips transaction in late 2015. Liability driven investing and lump sum offerings increasingly popular.

> Philips—maker of razors and Sonicare electric toothbrushes—has agreed to transfer $1.1 billion of US pension liabilities to three insurers, the Amsterdam-based corporation announced today.
>
> Market-leader Prudential splits $900 million of current retiree obligations evenly with US-newcomer Legal & General (L&G) America. OneAmerica takes on the remaining $200 million of future liabilities for Philips workers who have yet to retire.

http://www.ai-cio.com/channel/l-g-america-takes-on-prt-market,-inking-major-pension-buyout/

Liability Risks

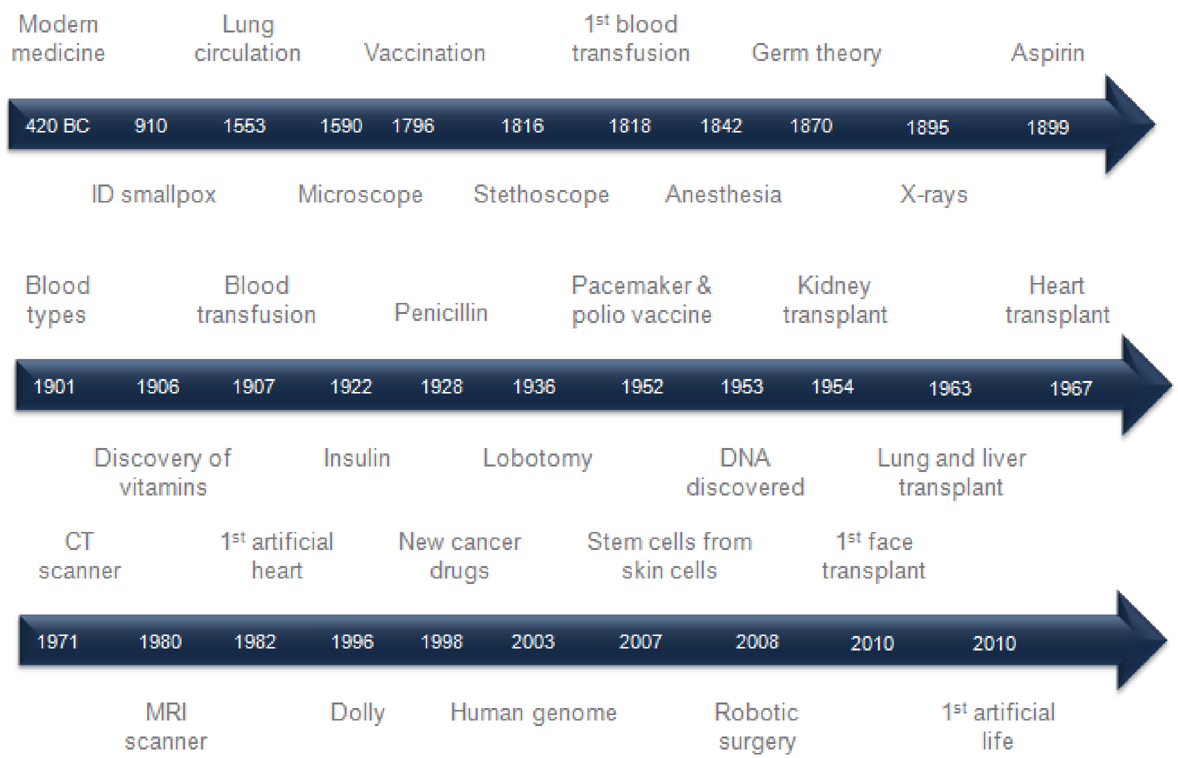
The liability risks are similar and in many cases less than other non-buyout products due to the group nature of the product, which lacks an individual financial advisor relationship and has less volatile more restrictive policyholder options.

Risk	Description	Products
Longevity	Increased uncertainty due to younger age of population	Individual Deferred Annuities Structured Settlements Long-Term Care Individual Permanent Life
Retirement Age	Possible anti-selection given pensioner's knowledge of health & plan incentives	Individual Deferred Annuities
Optional Form	Possible anti-selection given pensioner's knowledge of health & plan incentives	Individual Deferred Annuities
Death Benefits	Unhealthier population more susceptible	Individual Deferred Annuities Individual Permanent Life
Disability	Unhealthier population more susceptible	Disability

For this section, consider lump sum another optional form.

Liability Risks: Longevity

The younger a pensioner, the more medical breakthroughs they will be able to experience.

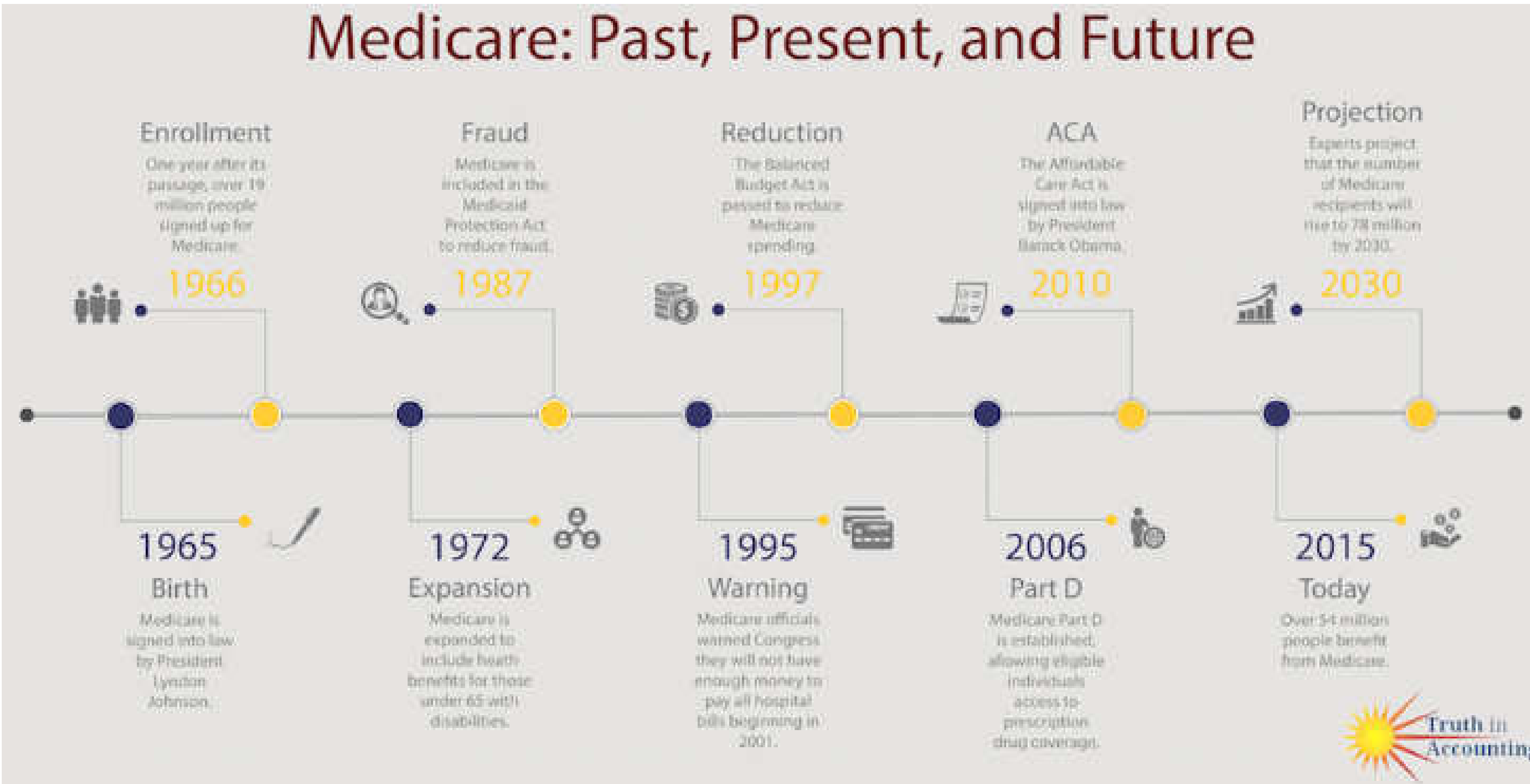


Source: Momentum, “The Perfect Storm: Are your clients prepared for the longevity revolution?”, June 2011

Examples: Jimmy Carter’s melanoma and Oxford Performance Materials

Liability Risks: Longevity

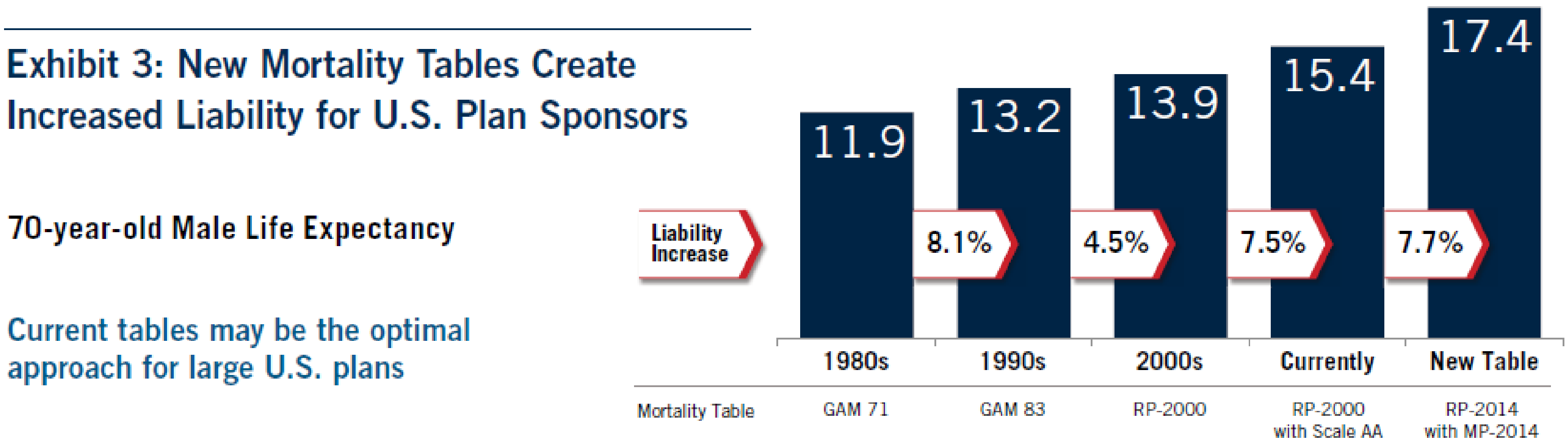
The younger a pensioner, the more expanded coverage they may receive.



Source: Truth in Accounting, “Will Medicare Survive Another 50 Years?”, July 2015

Liability Risks: Longevity

By the time a deferred 55 year old in 2000 reached age 70 as a retiree in 2015, his or her life expectancy would've increased by 2 years or 7.7% in liability. A single year of life expectancy is worth between 3%-4% in liability.



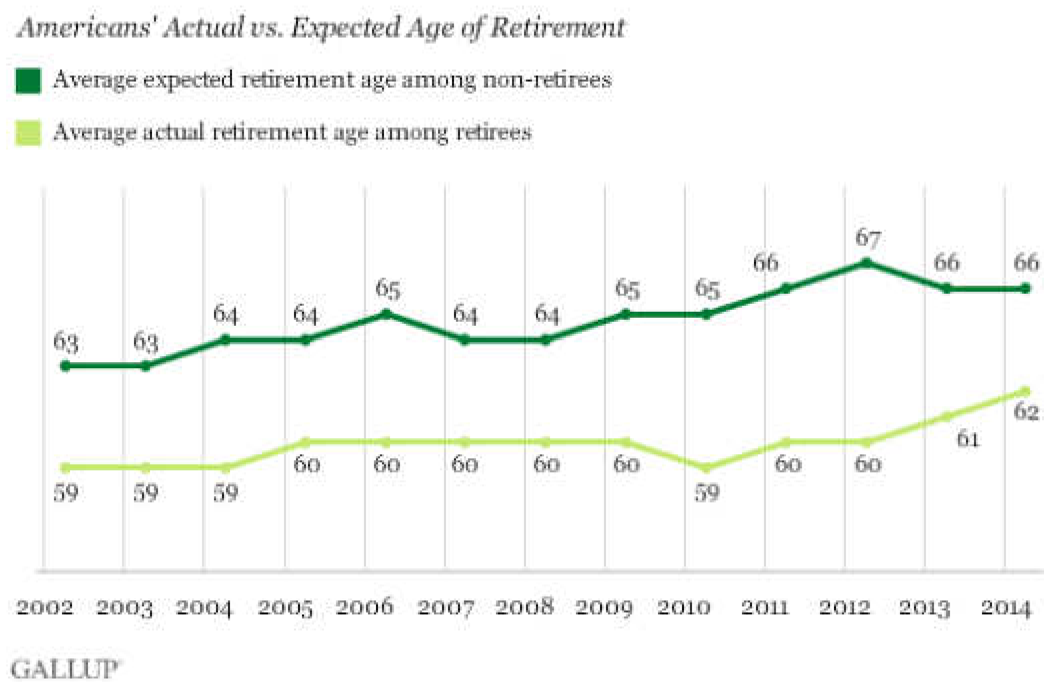
Source: Prudential, "The Pension Risk Transfer Market at $260B", October 2015

<u>Potential Ways to Manage Longevity Risk for Deferred</u>

- Diversified enterprise with longevity/mortality netting at similar ages & socioeconomic status
- Diversify with uncorrelated risks e.g. P&C
- Longevity reinsurance
- Hedging in the future?
- Hold capital
- Recognize Baby Boomer cohort

Liabilities: Retirement Age

Expected retirement age appears to be climbing with life expectancy, but whether that translates into actual retirement age remains unclear. When do you think you will retire?



<u>Two Sources of Risk:</u>

1. Unhealthy optimize based on shorter life expectancy & healthy optimize based on longer life expectancy
2. Early reduction factors may be "subsidized" or "punitive" relative to "economic" early reduction factors
    - Accidental- Interest rates & life expectancies were very different when factors set than today
    - Intentional- Incent workers to retire earlier or later depending on goals of company

Liabilities: Retirement Age

It is critical to consider non-economic early reduction factors.

Plan Type	Age 55 Early Reduction Factor	Sample GMWB Withdrawal Rate	Premium Impact
Punitive	30%	2.4%	Credit
Economic	50%	4.0%	None
Subsidized	70%	5.6%	Cost

Key Retirement Ages: 55, 59 ½, 62, 65, 67, & 70

Potential Ways to Manage Retirement Age Risk for Deferred

- Evaluate plan experience where credible
- Consider in-force or industry experience along with population trends where possible
- Develop mix of business that balances subsidized and punitive plans
- Recognize that working later often corresponds with increased life expectancy
- Be cognizant that company actions (such as bankruptcies or mass layoffs), industry trends, social changes, economic trends, or changes to Social Security can change retirement age

Liabilities: Optional Form

Pension plans typically contain several, sometimes complicated, payout options that are often selected based on an individual's circumstances. Can we match the pensioner to the pension type?

Type
Single Life Annuity
Joint & Survivor 75%
Certain & Life
Social Security Leveling Option
Single Life Annuity with COLA

Pensioners
Jim- Laid off at age 58 with no other income, savings, or jobs
Bob- Pays rent as opposed to owning home
Mary- Healthy part-time yoga instructor who is widowed
Janet- Has permanent heart condition
Richard- Has healthier spouse who relies on pension

Two Sources of Risk: Same as retirement age though 1 is likely more severe and 2 more moderate relatively

Potential Ways to Manage Optional Form Risk for Deferred

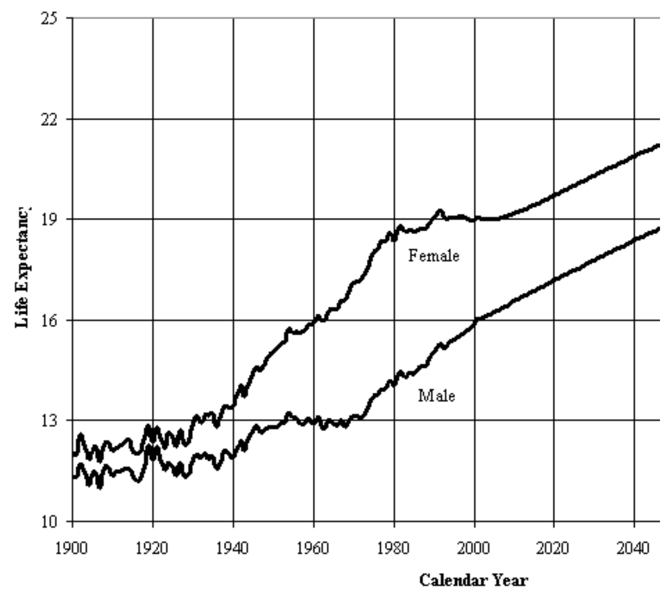
- Evaluate plan experience where credible
- Consider in-force or industry experience
- Be cognizant that social trends (dual income household prevalence & marriage/divorce/re-marriage rates) and changes to Social Security can impact

Liabilities: Optional Form

To the extent gender life expectancy differences have changed along with interest rates, factors may no longer be economic though risk isn't as large as retirement age. Additionally, the law requires conversion factors to apply the same to both males and females.

Plan Type	Primary Male J&S 75% Factor Spouse 3 Years Younger	Primary Female J&S 75% Factor Spouse 2 Years Older	Premium Impact
Punitive	N/A	84%-89%	Credit
Economic	80%	90%	None
Subsidized	84%-100%	91%-100%	Cost

Figure 2b—Life Expectancy at age 65
by Sex and Calendar Year
(Based on Period Tables)



Not for distribution beyond intended audience.

Liabilities: Death Benefits & Disability

Pension plans typically contain a couple other provisions that accelerate benefit payments in the circumstances of death and disability:

1. Death Benefit- Survivor receives payment as if primary had elected pension at later of earliest possible retirement age or age at death and elected a J&S 50%

2. Disability Benefit- Ability to start pension plan payment earlier and/or at lessened early retirement penalty

<u>**Potential Ways to Manage Optional Form Risk for Deferred**</u>

• Death benefits are a natural hedge assuming proper longevity underwriting of each plan segment
• Disability benefits are more of an indirect hedge as disability incidence -> higher mortality rates
• Carefully inspect each plan’s death benefit to make sure it isn’t enhanced beyond expected pension value in some way had the individual made it to retirement
• Carefully assess each plan’s disability provisions and incidence experience to ensure qualification standards are not overly lax

Investment Risks

The investment risks are similar and are likely less dynamically market sensitive due to the group nature of the product, which lacks an individual financial advisor relationship, though doesn't contain provisions such as surrender charges, in-the-money benefits, etc.

Risk	Description	Products
Interest Rates	Longer tail liabilities are beyond typical investable universe and key rate duration/cash flow matching challenge within investable universe.	Individual Deferred Annuities Structured Settlements Long-Term Care Individual Permanent Life
Liquidity	If a lump sum is requested, an insurer must readily provide out of existing cash on hand or by selling assets. Incidences & timing of such requests are hard to predict.	Individual Deferred Annuities Individual Permanent Life

Investment: Interest Rates

One key risk to understand and to address is the "tail" (30+ years) cash flow percentage that extends beyond the typical investable universe.

Category	Buyout Retiree Average Age in 70s	Buyout Deferred Average Age in 50s
Total Liability Duration	8 - 10 Years	15 - 20 Years
Liability Duration w/out Tail	8 - 10 Years	13 - 18 Years
% Tail of PV CF	0% - 5%	10% -20%
Potential 100 bps Loss if Match w/out Tail	0 bps - 50 bps	100 bps - 200bps

✓ While the deferred investment horizon is comparatively long for a Buyout transaction, other product lines such as Individual Annuities and Long-Term Care have historically issued policies to individuals in their 40s & 50s. Structured Settlements and Individual Permanent Life coverage may be issued to individuals at any age.

✓ Though a 100 bps fall in rates seems unrealistic, the US 30 year Treasury is in the mid-3% range while the equivalent Japanese measure is in the mid-30bps range even though it had been about 1.3% at year-end 2015 when many experts thought it could not fall further.

✓ An argument can also be made that rates are likely to climb in the U.S. as well, which if believed, would make a portfolio manager re-consider trying to match the tail.

Investment: Interest Rates

✓ The asset classes below can potentially support tail liabilities

Asset Classes	Pros	Cons
Public Bonds 30+	Liquid	Limited Supply
Private Bonds 30+	Customized	Illiquid
Zero Coupon Bonds	Higher Duration at 30 Years	Limited Types
Direct Real Estate	Diversified Risk	Property Bubbles
Commodities	Tracks Inflation	Volatile
Public Equity	Liquid	Undefined
Private Equity	Potentially Higher Returns	Illiquid
Infrastructure	Potentially Very Long-Term	Limited Success
Convertibles	Mix of Debt and Equity	Exercise Uncertainty
Derivatives	Liquid	Collateral Requirements

✓ Other potential ways to mitigate tail liabilities in addition to asset class selection:

- Target plans that have been frozen & closed to new entrants for an extended period of time
- Encourage plans to offer lump sums to deferred participants prior to buyout transactions
- Manage retiree & deferred in-force business mix
- Hold capital

Microsoft sells $2.25bn of 40-year bonds

Vivianne Rodrigues in New York

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Microsoft sold 40-year bonds for the first time in its history, joining the ranks of multinationals that have offered long-term corporate debt in the US this year.

The top-ranked borrower sold $2.25bn worth of 40-year debt on Monday, as part of a $10.8bn offer — the largest corporate bond sale so far this year — that also included securities maturing in five, seven, 10, 20 and 30 years.

Cintra, the U.S. subsidiary of the Spanish firm Ferrovial S.A., inked a 50-year deal with the North Carolina Department of Transportation last May to build and operate toll lanes along I-77.

In 2005, Cintra and the Australian firm Macquarie Group formed a company that leased the rights to toll the Chicago Skyway—a roughly eight mile road linking major Chicago arteries with the city's southern suburbs—for 99 years.

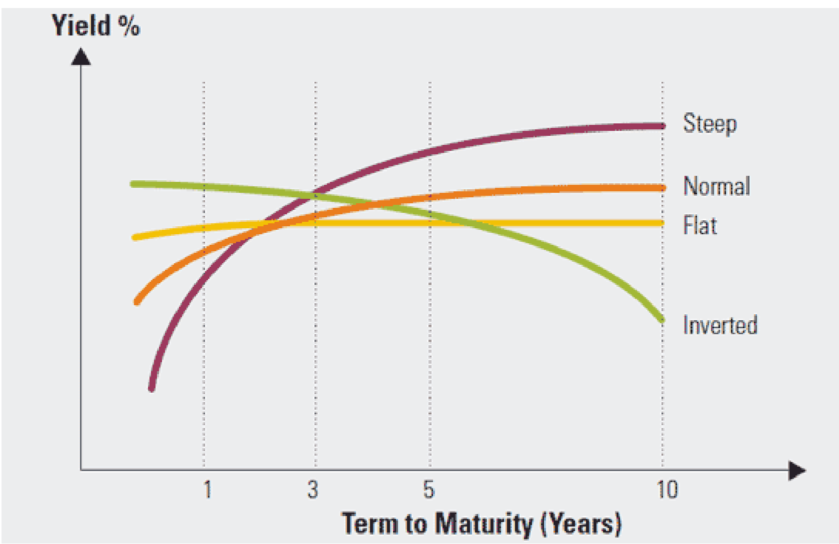
The major attraction of a derivatives overlay strategy is that it can be implemented without radically disturbing underlying portfolios. This will be very attractive for multi-manager situations. There are many advantages to using derivatives to reduce the mismatch between plan liabilities and plan assets. First and foremost is efficiency. The interest rate derivatives market is deep, liquid, and highly efficient and has performed well during periods of financial market stress. Derivatives, such as Treasury futures, interest rate swaps, options and swaptions provide an efficient mechanism for extending asset duration and hedging inflation risk. Derivatives are also very cost effective and allow for a high degree of precision when implementing a liability driven investment strategy.

Source: Principal Global Investors, "Dollar Duration Matching: A Framework for Evaluating LDI Strategies", 2007

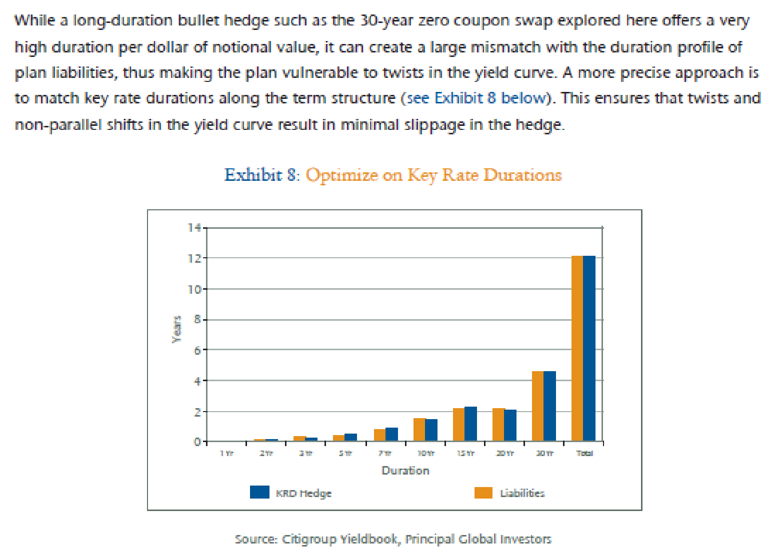
Investment: Interest Rates

Another key risk to understand and to address is key rate duration and cash flow matching considerations within the “non-tail” period.

- ✓ A substantial portion of deferred liability cash flows occur after year 10 and prior to year 30 where the number of investable tenors from the primary bond market is limited.
- ✓ To the extent a portfolio is only duration matched, the portfolio is then exposed to non-parallel shifts of the interest rate curve (see bottom left graphic).
- ✓ Ideally liability and asset cash flows would perfectly offset, but this outcome being impractical, key rate duration (see bottom right graphic) represents another option to cover non-parallel shifts.



Source: Morningstar, “A Guide to Exchange-Traded Australian Government Bonds”, June 2013



Source: Principal Global Investors, “Dollar Duration Matching: A Framework for Evaluating LDI Strategies”, 2007

Investment: Liquidity

The presence of lump sums as an optional form at retirement creates liquidity risk that requires proper asset-liability management.

✓ Lump sum optional form has become increasingly common
- Shrinks pension plan without paying buyout premium
- Regulations not always reflect economics
- Participants may prefer lump sum as more similar to 401(k)

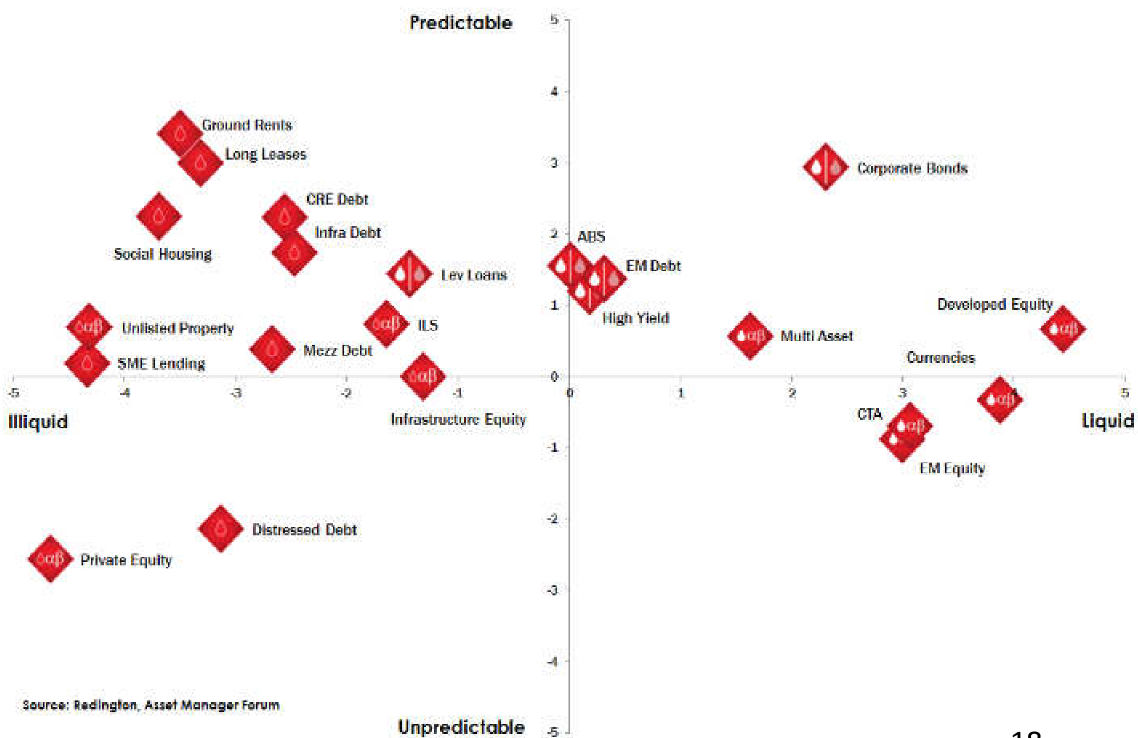
Percentage of Plans with Lump Sum Option
Source: Department of Labor

1991	1993	1995	1997	2000	2003	2005
14%	10%	15%	23%	43%	48%	52%

✓ More liquid asset classes are best to back potential lump sum liability
- Give up yield
- Generally require less capital
- Hold enough in this category to back expected election rate with provision for adverse deviation

✓ Election rate is highly variable from plan to plan, active vs. term vested, primary vs. beneficiary, male vs. female, & other characteristics.

✓ Difficult to obtain lump sum election rate experience as they are not tracked.



Operational Risks

The operational challenges are similar to other Retirement and Group Insurance products in that there is a plan sponsor & plan participants, but deferred participants as part of a buyout transaction are more complex due to tailored, plan-specific nature of many plan provisions.

Risk	Questions
Orphan Pensions	Are they dead or alive?
Retro Payments	If alive, how much interest are they owed?
Regulations	How will minimum benefits, such as death and lump sum, change in the future?
Calculation Accuracy	Does infrastructure exist and staff have expertise to perform needed calculations?
Expense	Have ability to incur costs to ensure calculation accuracy?

The Case of the Missing Pension

Tracking down a plan from a former employer can be difficult.

by Carol Matlack
from **Bloomberg Businessweek**

March 24, 2016 — 2:01 PM EDT

Getting our hands on the money may not be easy, as I recently learned when I decided to take inventory of my retirement assets. Job-hopping workers, corporate upheaval, and spotty record keeping have left billions of dollars owed to Americans in limbo. "It's a vast problem that has a huge impact on retirement security," says Jeanne Medeiros, director of the Pension Action Center, a research group at the University of Massachusetts Boston. She estimates unclaimed pension benefits could total as much as $8 billion annually.

I tried the Pension Benefit Guaranty Corp., a federal agency that takes over pension plans if they go bankrupt. It's also a repository for unclaimed benefits owed to people whose former employers have terminated their plans. The PBGC has an online database of some 35,200 people who are collectively owed $351.5 million. I wasn't in the database—which was frustrating, but also good news, since it meant my pension plan hadn't gone bust or shut down.

Wrap-Up

- ✓ Deferred lives create significant liability, investment, and operational risks compared to retirees…
- ✓ …but these risks are similar and often less severe than other risks that companies already manage.
- ✓ These risks can be managed with good data, risk diversification, capital, risk evaluation/monitoring, & asset-liability management strategies.
- ✓ Interest in buyout transactions with deferred lives will likely increase as plan sponsors seek solutions that provide for full exits as opposed to partial carve-outs.