Decisions, Decisions: Choices That Affect Retirement Income Adequacy

EBRI-ERF Policy Forum #72
Thursday, May 9, 2013

Panel 1: Low "Blows": What a sustained low-interest rate environment means for retirement savings and retirement income.

EBRI-ERF Policy Forum #72
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What a sustained low-interest rate environment means for retirement income adequacy

EBRI Policy Forum #72

May 9, 2013

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Key points from today's presentation

- A low interest-rate environment has an extremely large impact on failure rates when viewed in isolation
  - But the impact is muted when included as part of the entire retirement portfolio
- There appears to be a limited impact on retirement income adequacy for those in the lowest (pre-retirement) income quartile
  - Very significant impact for the top 3 income quartiles though
- Overall, 25-27 percent of Baby Boomers and Gen Xers who would have had "adequate" retirement income under historical averages end up running "short" of money in retirement if today's rates are assumed to be a permanent condition
  - This assumes retirement income/wealth covers 100 percent of simulated retirement expense
  - Impact significantly reduced at less stringent thresholds
    - For example, at an 80 percent of simulated retirement expense threshold, the percentages are only 5-8 percent

Previous Research: Finke, Pfau and Blanchett (2013)

- Analyzed failure rates for 4% inflation adjusted withdrawals over 30 years with a 50/50 asset allocation for three different asset return assumptions (arithmetic means):
  - Historical averages: 8.6% real return for stocks, 2.6% for bonds
  - Real bond returns of 0: 6.0% real return for stocks and 0% for bonds
    - keeping equity premium constant
  - Real bond returns = 5-year TIPS yield at the start of 2013: 4.6% real return for stocks and -1.4% for bonds
- Findings:
  - 6 percent failure rate for historical averages
  - 33 percent for real bond returns = 0
  - 57 percent for real bond returns = -1.4 percent
- Failure rate on this portion of the retirement portfolio is extremely sensitive to the bond return assumptions
  - But what happens when other components are factored in?
    - Social Security, defined benefit, housing equity
  - Given the existence of Social Security, most households will never run "out" of money in retirement
    - But there is a probability they will run "short" of money in retirement
  - How does this vary by age, income and years of future eligibility for a defined contribution plan?

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Today's results based on EBRI's Retirement Security Projection Model®

- Accumulation phase
  - Simulates retirement income/wealth for Boomers and Gen Xers from defined contribution, defined benefit, IRA, Social Security and net housing equity
    - Pension plan parameters coded from a time series of several hundred plans.
    - 401(k) asset allocation and contribution behavior based on individual administrative records
      - Annual linked records dating back to 1996
      - More than 23 million employees in 60,000 plans.
- Retirement phase
  - Simulates 1,000 alternative life-paths for each household starting at 65
  - Deterministic modeling of food, apparel and services, transportation, entertainment, reading and education, housing, and basic health expenditures.
  - Stochastic modeling of longevity risk, investment risk, nursing facility care and home based health care.
- Produces a Retirement Readiness Rating™
  - Percentage of simulated life-paths that do NOT run short of money in retirement
    - Supplemented with metrics on those with enough for 80 or 90 percent of simulated expenses

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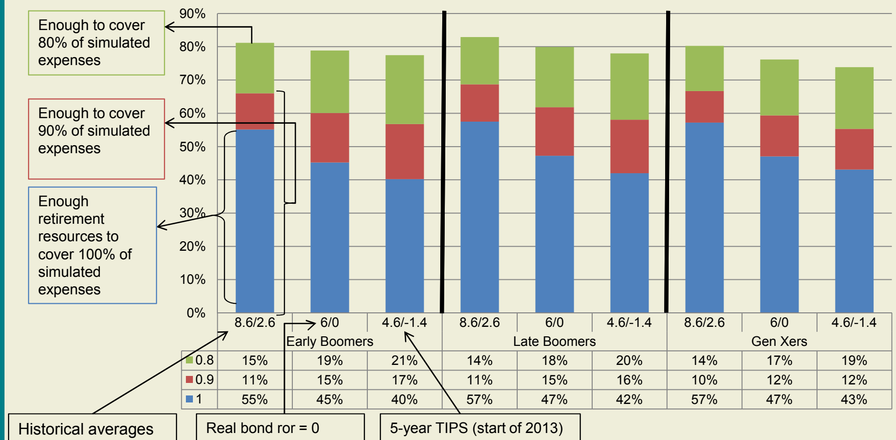
Impact of low-interest rate scenarios on Retirement Readiness Ratings(TM) by age cohort

Percentage of simulated life paths that will NOT run short of money in retirement at various thresholds



	Early Boomers			Late Boomers			Gen Xers		
	8.6/2.6	6/0	4.6/-1.4	8.6/2.6	6/0	4.6/-1.4	8.6/2.6	6/0	4.6/-1.4
0.8	15%	19%	21%	14%	18%	20%	14%	17%	19%
0.9	11%	15%	17%	11%	15%	16%	10%	12%	12%
1	55%	45%	40%	57%	47%	42%	57%	47%	43%

Source: EBRI Retirement Security Projection Model® Versions 1750, 1755 and 1760
Return assumptions are presented as arithmetic means for equities and bonds as real returns. Fees are not incorporated in this version of the model.

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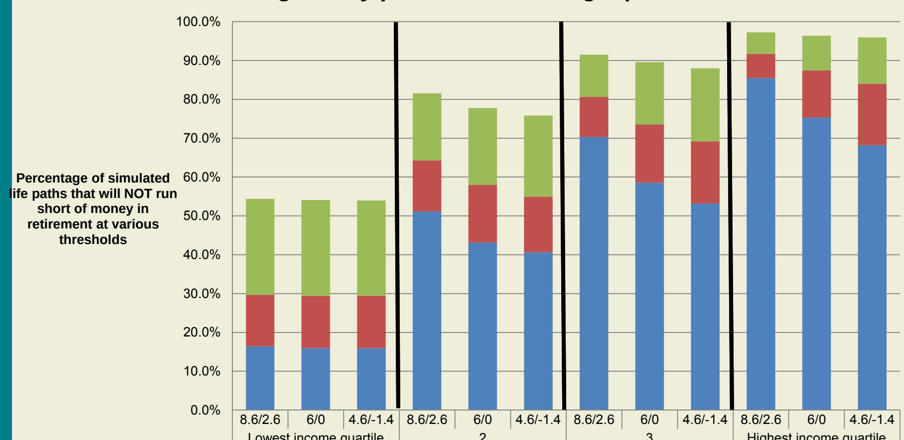
Impact of low-interest rate scenarios on Retirement Readiness Ratings(TM) by pre-retirement wage quartile



	Lowest income quartile			2			3			Highest income quartile		
	8.6/2.6	6/0	4.6/-1.4	8.6/2.6	6/0	4.6/-1.4	8.6/2.6	6/0	4.6/-1.4	8.6/2.6	6/0	4.6/-1.4
80%	24.7%	24.7%	24.5%	17.3%	19.8%	20.9%	10.9%	16.1%	18.8%	5.5%	8.9%	11.9%
90%	13.2%	13.4%	13.5%	13.2%	14.8%	14.3%	10.3%	15.0%	16.0%	6.3%	12.2%	15.8%
100%	16.4%	16.0%	15.9%	51.1%	43.2%	40.6%	70.3%	58.5%	53.2%	85.5%	75.3%	68.2%

Source: EBRI Retirement Security Projection Model® Versions 1750, 1755 and 1760
Return assumptions are presented as arithmetic means for equities and bonds as real returns. Fees are not incorporated in this version of the model.

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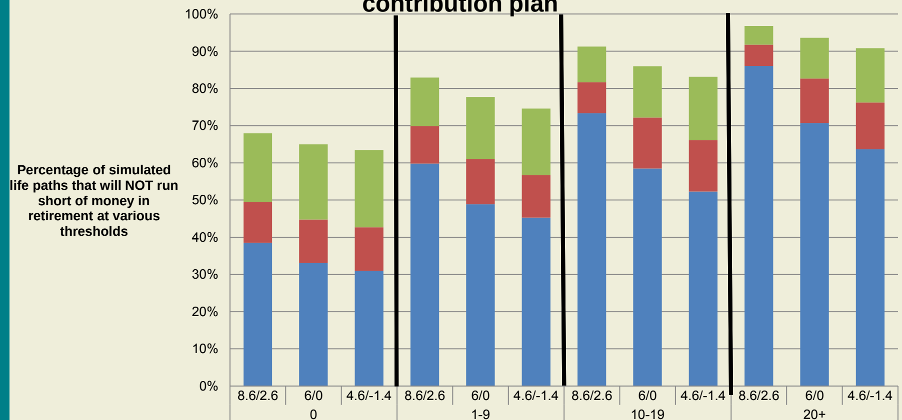
Impact of low-interest rate scenarios on Gen Xer's Retirement Readiness Ratings(TM) by future years of eligibility for a defined contribution plan



	8.6/2.6	6/0	4.6/-1.4	8.6/2.6	6/0	4.6/-1.4	8.6/2.6	6/0	4.6/-1.4	8.6/2.6	6/0	4.6/-1.4
		0			1-9			10-19			20+	
0.8	18%	20%	21%	13%	17%	18%	10%	14%	17%	5%	11%	15%
0.9	11%	12%	12%	10%	12%	11%	8%	14%	14%	6%	12%	13%
1	39%	33%	31%	60%	49%	45%	73%	58%	52%	86%	71%	64%

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Source: EBRI Retirement Security Projection Model® Versions 1750, 1755 and 1760
Return assumptions are presented as arithmetic means for equities and bonds as real returns. Fees are not incorporated in this version of the model.

Previous results assumed a permanent shift to one of the alternative investment scenarios

- What happens if this is only a temporary phenomena?
- The next slide models the same scenarios for a limited period of time after retirement
  - 5 years
  - 10 years
- NB: no attempt to model short-term capital losses on bond portfolio that may result from increase in yields at this time

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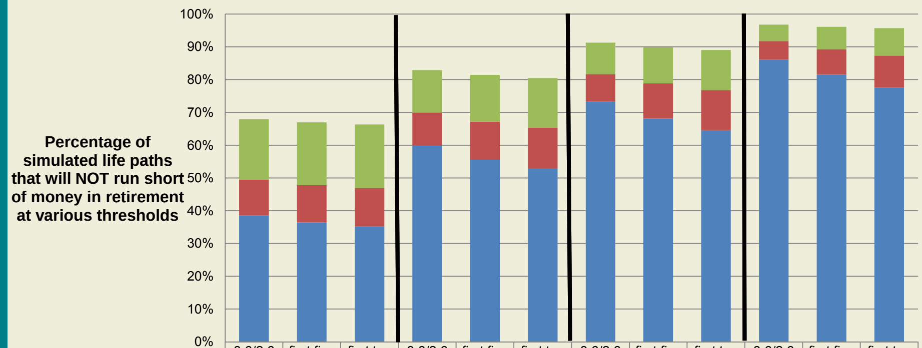
Impact of low-interest rate scenarios during the first five/ten years of retirement on Retirement Readiness Ratings(TM) by future years of eligibility for a defined contribution plan



	8.6/2.6	first five	first ten	8.6/2.6	first five	first ten	8.6/2.6	first five	first ten	8.6/2.6	first five	first ten
	0			1-9			10-19			20+		
0.8	18%	19%	19%	13%	14%	15%	10%	11%	12%	5%	7%	8%
0.9	11%	11%	12%	10%	12%	12%	8%	11%	12%	6%	8%	10%
1	39%	36%	35%	60%	56%	53%	73%	68%	65%	86%	82%	78%

Source: EBRI Retirement Security Projection Model® Versions 1750, 1755 and 1760
Return assumptions are presented as arithmetic means for equities and bonds as real returns. Fees are not incorporated in this version of the model.

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Summary

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- VanDerhei, Jack (June 2012). Retirement Readiness Ratings and Retirement Savings Shortfalls for Gen Xers: The Impact of Eligibility for Participation in a 401(k) Plan, EBRI Notes
- VanDerhei, Jack (May 2012). Retirement Income Adequacy for Boomers and Gen Xers: Evidence from the 2012 EBRI Retirement Security Projection Model®, EBRI Notes
- VanDerhei, Jack and Craig Copeland (July 2010). The EBRI Retirement Readiness Rating:™ Retirement Income Preparation and Future Prospects. EBRI Issue Brief.

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Appendix: Brief Chronology of the EBRI Retirement Security Projection Model®

- 2001, Oregon
  - Simulated retirement wealth vs. ad hoc thresholds for retirement expenses
- 2002, Kansas and Massachusetts
  - Full stochastic retiree model: Investment and Longevity risk, Nursing home and home health care costs
  - Net housing equity
- 2003, National model
  - Expanded to full national sample
- 2004, Senate Aging testimony (January)
  - Impact of everyone saving another 5 percent of compensation
- 2004, EBRI Policy forum (May)
  - Impact of annuitizing defined contribution/IRA balances
- 2006, EBRI Issue Brief (March)
  - Evaluation of defined benefit freezes on participants
- 2006, EBRI Issue Brief (September)
  - Converted into a streamlined individual version for the ballpark estimate Monte Carlo
- 2008, EBRI policy forum (May)
  - Impact of converting 401(k) plans to automatic enrollment
- 2009, Pension Research Council
  - Winners/losers analysis of defined benefit freezes and enhanced defined contribution employer contributions provided as a quid pro quo
- 2010, EBRI Issue Brief (April)
  - Impact of modification of employer contributions when they convert to automatic enrollment for 401(k) plans
- 2010, EBRI Issue Brief (July)
  - Updated model to 2010, included automatic enrollment for 401(k) plans
- 2010, EBRI Notes (September)
  - Analyzes how eligibility for participation in a DC plan impacts retirement income adequacy
- 2010, EBRI Notes (October)
  - Computes Retirement Savings Shortfalls for Boomers and Gen Xers
- 2010, Senate HELP testimony (October)
  - Analyzes the relative importance of employer-provided retirement benefits and Social Security
- 2010, EBRI Issue Brief (November)
  - The Impact of Auto-enrollment and Automatic Contribution Escalation on Retirement Income Adequacy

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Appendix (continued)

- 2011, February EBRI Issue Brief
  - Analyzes the impact of the 2008/9 crisis in the financial and real estate markets on retirement income adequacy
- 2011, EBRI policy forum (May)
  - Analyzes impact of deferring retirement age
- 2011, July EBRI Notes article
  - Analyzes the impact of the 20/20 limit recommended by the National Commission on Fiscal Responsibility and Reform
- 2011, August EBRI Notes article
  - Analyzes value of defined benefit plans
- 2011, Senate Finance Hearing (September)
  - Analyzes the impact of modifying tax incentives for defined contribution plans
- 2012, Urban Institute Presentation (February)
  - Analyzes whether Boomer and Gen X women will be able to afford retirement at age 65
- 2012, March EBRI Notes article
  - Analyzes employer and employee reaction to proposal to modify tax incentives for defined contribution plans and simulates the expected impact on account balances at retirement age
- 2012, May EBRI Notes article
  - Updates RSPM to 2012
- 2012, June EBRI Notes article
  - Analyzes the impact of eligibility for participation in a 401(k) plan on Gen Xers
- 2012, August EBRI Notes article
  - Provided additional evidence on whether deferring retirement to age 70 would provide retirement income adequacy for the vast majority of Baby Boomers and Gen Xers.
- 2012, September EBRI Notes article
  - Analyzed the impact of increasing the default contribution rate for automatic enrollment 401(k) plans with automatic escalation of contributions.
- 2012 November EBRI Notes article
  - Reclassified the RRRs to provide additional information on those substantially above the threshold; close to the threshold; and substantially below the threshold.

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Your Global Investment Authority

Presentation for Employee Benefit Research Institute Policy Forum

DC Design: Low Rate Challenges

May 2013

Low "Blows": What a sustained low-interest rate environment means for retirement savings and retirement income.

Pacific Investment Management Company LLC, 840 Newport Center Drive, Newport Beach, CA 92660, 949-720-6000

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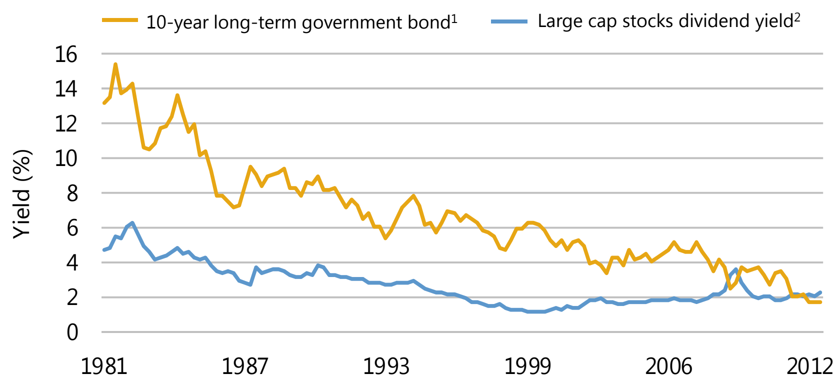
Low Rate Environment Presents Challenges for Accumulation as well as Distribution Phase



As of 31 December 2012.
SOURCE: Bloomberg
[1] US Government 10 year interest rate (GS10)
[2] Large-cap stock dividend yield represented by S&P 500 from 1981 through present
Refer to Appendix for additional index information.

Low Rate Risks and Considerations for DC Plans

"Low-return, high-volatility environment" expected to continue two or more years per vast majority of consultants (86%)

- Low rates present challenges:
  - Risk of rising rates to bond prices
  - Insufficient returns to build savings
  - Inability to stay ahead of inflation
  - Low income and annuity payouts

DC plans sponsors should evaluate their investment structure to improve participant outcomes

As of 31 December 2012
SOURCE: PIMCO's 2013 Defined Contribution Consulting Support and Trends Survey

Rising rates may be better for long term returns

Citi Broad Investment Grade (BIG) Bond Index

HYPOTHETICAL ILLUSTRATION OF ANNUALIZED INDEX RETURNS OVER VARIOUS TIME HORIZONS (%)

CHANGE IN INTEREST RATES	1-YEAR	3-YEAR	5-YEAR
+200 bps	(5.98)	0.57	1.87
+100 bps	(1.91)	1.26	1.88
+/- 0 bps	1.86	1.80	1.79

SOURCE: Citigroup Yield Book

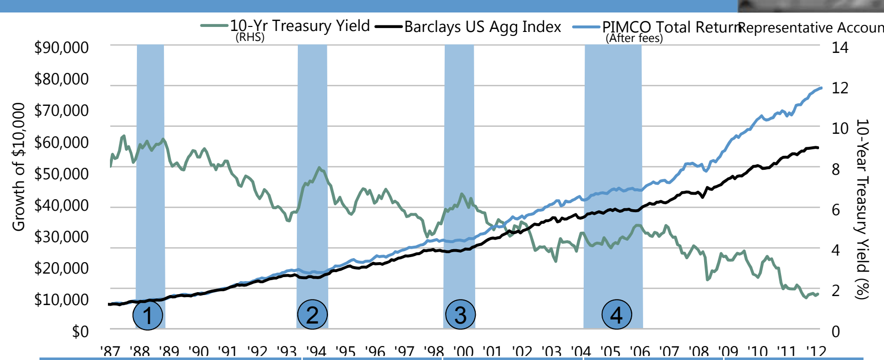
Note: The simulation assumes that rates change on day one and then stay constant for the next thirty years.

Hypothetical example for illustrative purposes only.

No representation is being made that any account, product, or strategy will or is likely to achieve profits, losses, or results similar to those shown. Hypothetical or simulated performance results have several inherent limitations. Unlike an actual performance record, simulated results do not represent actual performance and are generally prepared with the benefit of hindsight. There are frequently sharp differences between simulated performance results and the actual results subsequently achieved by any particular account, product, or strategy. In addition, since trades have not actually been executed, simulated results cannot account for the impact of certain market risks such as lack of liquidity. There are numerous other factors related to the markets in general or the implementation of any specific investment strategy, which cannot be fully accounted for in the preparation of simulated results and all of which can adversely affect actual results. The simulation assumes the index portfolio is static despite interest rate movements.

Refer to Appendix for additional hypothetical example, index and risk information.

Active Management Offers Potential to Better Navigate Rising Rate Periods



	Fed rate hike #1 3.25%	Fed rate hike #2 3.00%	Fed rate hike #3 1.75%	Fed rate hike #4 4.25%
Barclays U.S. Agg Index returns	3.41%	-2.23%	2.17%	3.09%
PIMCO Total Return representative account returns (after fees)	4.80%	-2.84%	2.60%	3.47%

As of 31 December 2012 Source: PIMCO, Bloomberg, Barclays Live

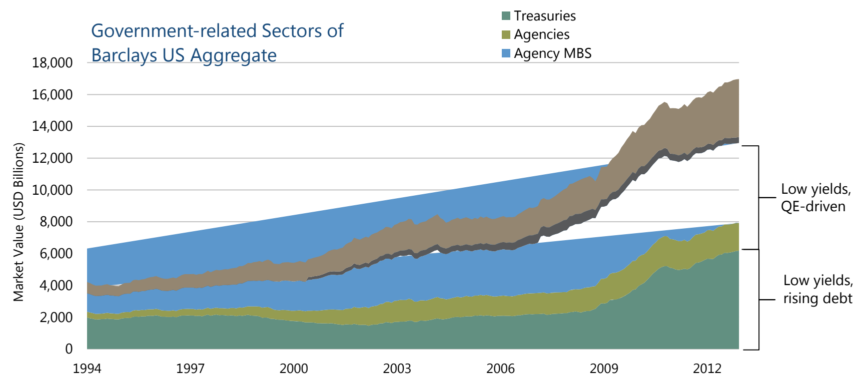
Hypothetical example for illustrative purposes only.

The representative account information presented is provided as supplemental information to the PIMCO Core Plus – Total Return Full Authority Composite performance presentation Included in the Appendix.

Fed rate hike #1 period from 29 Mar '88–24 Feb '89; Fed rate hike #2 period from 4 Feb '94–1 Feb '95; Fed rate hike #3 period from 30 Jun '99–16 May '00; Fed rate hike #4 period from 30 Jun '04 – 29 Jun '06

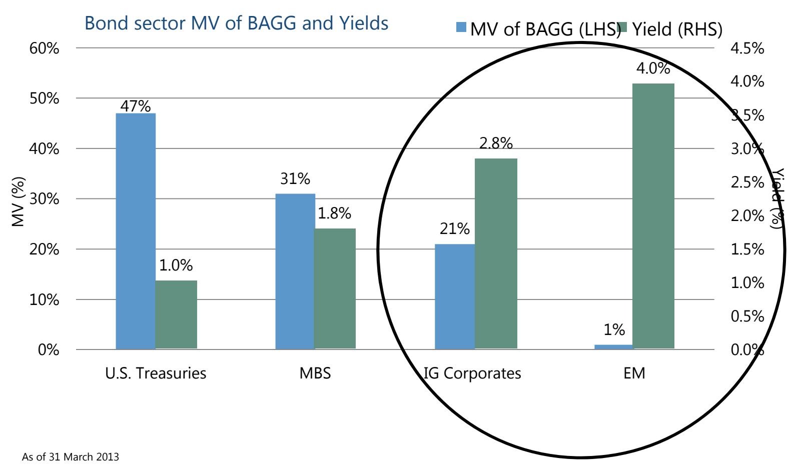
Refer to Appendix for additional performance and fee, chart, hypothetical example, index, investment strategy, representative account and risk information.

Passive exposure may increase sector concentration risk and offer low yields



As of 4 February 2013
SOURCE: Barclays.
Refer to the Appendix for additional risk and index information.

Core bond portfolios are primarily composed of lower-yielding mortgages and treasuries



As of 31 March 2013
Source: Barclays Live
BAGG is Barclays U.S. Aggregate Bond Index
Sector yields are represented BAGG sub sector yields
Refer to Appendix for additional index information.

Periodic table of bond returns: diversification matters

ANNUAL RETURNS FOR KEY INDICES (2003 –2012) RANKED IN ORDER OF PERFORMANCE (%)

2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
37.43	22.97	10.25	15.22	22.58	27.40	29.82	19.86	14.54	17.44
29.79	15.69	9.82	14.67	18.11	5.24	25.56	17.50	12.64	16.76
24.41	15.53	6.27	12.36	15.15	-3.27	22.02	15.68	7.84	12.31
22.21	14.45	2.43	9.86	11.44	-4.59	21.98	12.76	7.35	10.86
~~16.92~~	~~11.62~~	~~1.05~~	~~9.72~~	~~9.44~~	~~5.22~~	~~10.02~~	~~12.24~~	~~7.35~~	~~6.01~~
16.92	11.44	-3.15	4.41	6.97	5.22	11.12	6.54	7.34	5.60
9.93	5.90	-8.28	4.33	6.97	-14.38	5.93	6.54	2.13	4.22
4.10	4.34	-12.57	4.33	5.14	-24.57	5.93	-2.47	-1.75	4.22
4.10	4.34	-12.57	-0.65	5.14	-24.57	-1.44	-2.47	1.75	-9.47

United States
Eurozone
Japan
Australia
Canada
Local EM
External EM
United Kingdom

U.S., Eurozone, and Japan have been dominating the bottom performers recently

As of 31 December 2012
SOURCE: Bloomberg
United States represented by Barclays U.S. Agg Index, eurozone represented by Barclays Euro Agg Index USD Unhedged, Japan represented by Barclays Japanese Agg Index USD Unhedged, Australia represented by Barclays Australian Agg Index USD Unhedged, Canada represented by Barclays Canadian 300 Index USD Unhedged, Local EM represented by JPMorgan GBI-EM Global Diversified Index USD Unhedged, External EM represented by JPMorgan EMBIG Diversified Index USD Unhedged, United Kingdom represented by Barclays Sterling Agg Index USD Unhedged
Refer to Appendix for additional index and risk information

Going global and adding income are most common enhancements to DC fixed income menus

Consultants indicate fixed income is important to actively manage – both non-U.S. bonds (92%) and U.S. bonds (76%)

What actions are plan sponsors likely to take to enhance their DC fixed income offerings?

Add global fixed income strategies (non-US, emerging market)	**94%**
Add diversifying income strategies (investment-grade, high yield)	**85%**
Add unconstrained fixed income strategies	**62%**

n = 49

As of 31 December 2012
SOURCE: PIMCO's 2013 Defined Contribution Consulting Support and Trends Survey

Low Rate Challenges Extend to Others Parts of DC Plan Structure

Target date default

Custom target-date strategies:
- Mix of core
- Tail-risk hedging

Packaged target-date products:
- Broad asset and risk diversification
- Tactical asset allocation
- Tail-risk hedging

Hybrid

Is our plan's **investment default** likely to navigate changing economic environments?

Retirement Income

- At-retirement target date
- Conservative and diversified fixed income
- Managed account/systematic withdrawal
- Stable value
- Out-of-plan deferred annuities
- Living benefit

How can we structure **income focused** strategies for retirees?

Core investment offerings

Capital preservation
- Money market
- Stable value
- Short-term

Is our **capital preservation** strategy optimal?

Global fixed income
- Core bond
- Global
- Yield

How do we deliver additional **fixed income diversification**?

Inflation hedging
- TIPS, commodities, and real estate
- Global multi-asset
- Outcome oriented

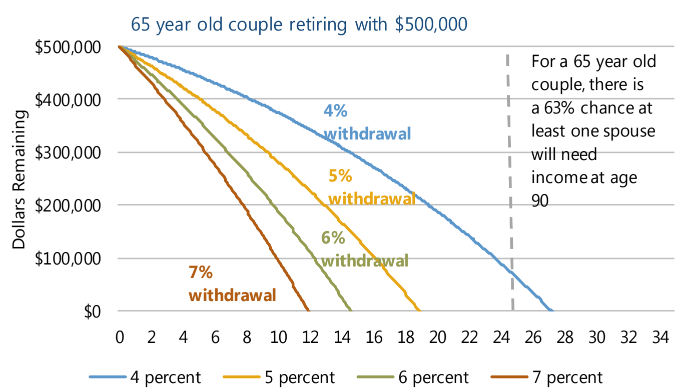
What **inflation hedging** may offer attractive returns to participants?

Global balanced
- Global multi-asset/risk managed
- Outcome oriented

Global equity
- U.S. large, mid, small
- Non-U.S. developed, emerging markets
- Multi-asset/risk managed
- Dividend and income

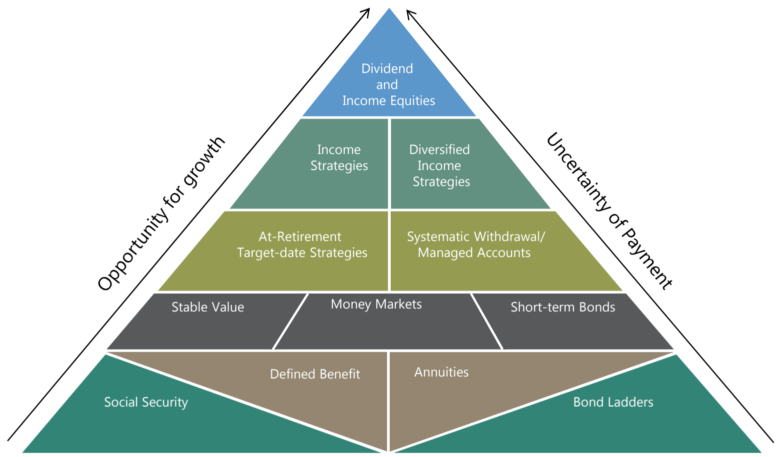
Should we introduce **low volatility-focused equity** strategies and/or **liquid alternatives**?

Low Rates Test 4% Rule



SOURCE: PIMCO
Hypothetical example for illustrative purposes only.
Assumptions: Portfolio Return: 4%. Inflation: 2.5% Annually
The withdrawal amounts, depicted at initial rates, are adjusted for inflation
Refer to Appendix for additional hypothetical example and risk information.

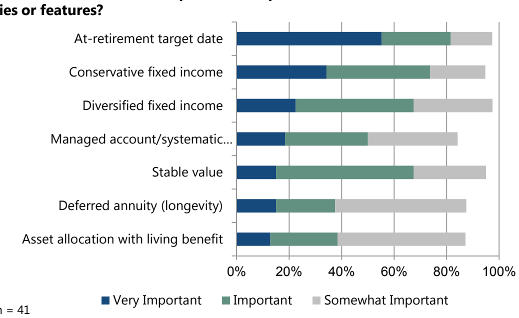
Opportunities for retirement income growth increase *yet with trade off of increased uncertainty of payment….*



Sample for illustrative purposes only.

Target-date strategies and fixed income offerings rated as most important in retirement distribution tier

To build a distribution tier within the DC plan, how important is each of these investment or insurance retirement income strategies or features?



n = 41

Trends in Retirement Income

- While consultants believe that some or the majority of plan sponsors prefer to retain retiree assets (81%), they report that their clients do not actively encourage retired asset retention.
- While little growth is expected in retirement income broadly, deferred income annuities (out-of-plan), managed account/systematic withdrawal, and managed payout solutions ranked the highest in terms of expected growth.

As of 31 December 2012
SOURCE: PIMCO's 2013 Defined Contribution Consulting Support and Trends Survey

Risk mitigation strategies supported to reduce risk of loss beyond participant's *capacity*

What market risk mitigation approach would you recommend plan sponsors consider to help protect participant assets, especially within asset-allocation strategies?

Add inflation-protection securities	Reduce exposure to assets with highly uncertain outcomes	Use explicit "tail risk" hedging strategies
81%	**60%**	**50%**

n = 48

Given each retirement investment time horizon, what is the maximum 12-month account value loss a participant can withstand in the investment default and still meet his/her income goal?

n = 31

As of 31 December 2012
SOURCE: PIMCO's 2013 Defined Contribution Consulting Support and Trends Survey

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Actions Plan Sponsors May Consider

- Review DC plan line up:
  - Extend bond offerings to allow professional oversight and tap into global and higher income securities
  - Evaluate capital preservation option to consider stable value or short-term solutions rather than money markets
  - Confirm inflation-hedging within plan and extend beyond TIPS in an attempt to add diversification and return
  - Consider other diversifying equity and alternative strategies as well as tail-risk hedging
- Evaluate investment default to test for rising rate, inflationary and turbulent markets…both during accumulation and decummulation

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Appendix

Appendix

PERFORMANCE AND FEE
Past performance is not a guarantee or a reliable indicator of future results. Performance figures are presented net of management fees (described in PIMCO's form ADV, part II) commissions, other expenses, and the deduction of actual investment advisory fees; but do not reflect the deduction of custodial fees. The "net of fees" performance figures above also reflect the reinvestment of earnings. All periods longer than one year are annualized. Separate account clients may elect to include PIMCO sector funds in their portfolio; sector funds may be subject to additional terms and fees.

CHART
Performance results for certain charts and graphs may be limited by date ranges specified on those charts and graphs; different time periods may produce different results.

HYPOTHETICAL EXAMPLE
Hypothetical and simulated examples have many inherent limitations and are generally prepared with the benefit of hindsight. There are frequently sharp differences between simulated results and the actual results. There are numerous factors related to the markets in general or the implementation of any specific investment strategy, which cannot be fully accounted for in the preparation of simulated results and all of which can adversely affect actual results. No guarantee is being made that the stated results will be achieved.

INVESTMENT STRATEGY
There is no guarantee that these investment strategies will work under all market conditions or are suitable for all investors and each investor should evaluate their ability to invest long-term, especially during periods of downturn in the market.

REPRESENTATIVE ACCOUNT
The representative accounts shown were chosen because they are accounts within their respective composites that are considered most representative of the overall strategy. No guarantee is being made that the structure or actual account holdings of any account will be the same or that similar results will be achieved.

RISK
Investing in the **bond market** is subject to certain risks including market, interest-rate, issuer, credit, and inflation risk. **Corporate debt securities** are subject to the risk of the issuer's inability to meet principal and interest payments on the obligation and may also be subject to price volatility due to factors such as interest rate sensitivity, market perception of the creditworthiness of the issuer and general market liquidity. **High-yield**, lower-rated, securities involve greater risk than higher-rated securities; portfolios that invest in them may be subject to greater levels of credit and liquidity risk than portfolios that do not. Investing in **foreign denominated and/or domiciled securities** may involve heightened risk due to currency fluctuations, and economic and political risks, which may be enhanced in emerging markets. **Sovereign securities** are generally backed by the issuing government. Obligations of U.S. government agencies and authorities are supported by varying degrees, but are generally not backed by the full faith of the U.S. government; portfolios that invest in such securities are not guaranteed and will fluctuate in value. **Inflation-linked bonds (ILBs)** issued by a government are fixed income securities whose principal value is periodically adjusted according to the rate of inflation; ILBs decline in value when real interest rates rise. **Mortgage and asset-backed securities** may be sensitive to changes in interest rates, subject to early repayment risk, and while generally backed by a government, government-agency or private guarantor there is no assurance that the guarantor will meet its obligations. **Derivatives** may involve certain costs and risks such as liquidity, interest rate, market, credit, management and the risk that a position could not be closed when most advantageous. Investing in derivatives could lose more than the amount invested. **Diversification** does not ensure against loss.

Appendix

INDEX DESCRIPTIONS

The Barclays Euro-Aggregate Index in an unmanaged index that tracks fixed-rate, investment-grade Euro-denominated securities. Inclusion is based on the currency of the issue, and not the domicile of the issuer. The principal sectors in the index are Treasury, Corporate, Government-Related and Securitized. Securities in the index are part of the Pan-European Aggregate and the Global Aggregate Indices. The Euro-Aggregate Index was launched on July 1, 1998.

Barclays Global Aggregate (USD Unhedged) Index provides a broad-based measure of the global investment-grade fixed income markets. The three major components of this index are the U.S. Aggregate, the Pan-European Aggregate, and the Asian-Pacific Aggregate Indices. The index also includes Eurodollar and Euro-Yen corporate bonds, Canadian Government securities, and USD investment grade 144A securities.

Barclays U.S. Aggregate Index represents securities that are SEC-registered, taxable, and dollar denominated. The index covers the U.S. investment grade fixed rate bond market, with index components for government and corporate securities, mortgage pass-through securities, and asset-backed securities. These major sectors are subdivided into more specific indices that are calculated and reported on a regular basis.

The Barclays U.S. Treasury Index is a measure of the public obligations of the U.S. Treasury.

BofA Merrill Lynch Global High Yield BB-B Rated 2% Constrained Index tracks the performance of below investment grade bonds of below investment grade bonds of corporate issuers domiciled in countries having an investment grade foreign currency long term debt rating (based on a composite of Moody's, S&P, and Fitch). The index includes bonds denominated in U.S. dollars, Canadian dollars, sterling, euro (or euro legacy currency), but excludes all multicurrency denominated bonds. Bonds must be rated below investment grade but at least B3 based on a composite of Moody's, S&P, and Fitch. Qualifying bonds are capitalization-weighted provided the total allocation to an individual issuer (defined by Bloomberg tickers) does not exceed 2%. Issuers that exceed the limit are reduced to 2% and the face value of each of their bonds is adjusted on a pro-rata basis. Similarly, the face value of bonds of all other issuers that fall below the 2% cap are increased on a pro-rata basis. The index is re-balanced on the last calendar day of the month. The inception date of the index is December 31, 1997.

The Citigroup Broad Investment-Grade Bond Index (BIG) is a market capitalization weighted index consisting of U.S. Treasury and agency bonds, and corporate and mortgage bonds with ratings of BBB-/ Baa3 or higher, a stated maturity of at least one year, and a par value outstanding of $200 million or more.

The Citigroup Mortgage Index is the Mortgage component of the Citigroup BIG index that is comprised of 30- and 15-year GNMA, FNMA and FHLMC securities, and FNMA and FHLMC balloon mortgages.

Appendix

JPMorgan Corporate Emerging Markets Bond Index (CEMBI) Diversified is a uniquely-weighted version of the CEMBI index. It limits weights of those index countries with larger corporate debt stocks by only including a specified portion of these countries' eligible current face amounts of debt outstanding. The CEMBI Diversified results in well-distributed, more balanced weightings for countries included in the index. The countries covered in the CEMBI Diversified are identical to those in the CEMBI, which is a global, liquid corporate emerging markets benchmark that tracks U.S.-denominated corporate bonds issued by emerging markets entities.

The JPMorgan Emerging Markets Bond Index Global is an unmanaged index which tracks the total return of U.S.-dollar-denominated debt instruments issued by emerging market sovereign and quasi-sovereign entities: Brady Bonds, loans, Eurobonds, and local market instruments.

The PIMCO Global Advantage Bond Index (GLADI) is a diversified global index that covers a wide spectrum of global fixed income opportunities and sectors, from developed to emerging markets, nominal to real assets, and cash to derivative instruments. Unlike traditional indices, which are frequently comprised of bonds weighted according to their market capitalization, GLADI uses GDP-weighting which puts an emphasis on faster-growing areas of the world and thus makes the index forward-looking in nature. PIMCO's GLADI methodology is intellectual property covered by U.S. Patent No. 8,306,892. GLOBAL ADVANTAGE and GLADI are trademarks of Pacific Investment Management Company LLC.

It is not possible to invest directly in an unmanaged index.

PIMCO CORE PLUS - TOTAL RETURN FULL AUTHORITY COMPOSITE

	COMPOSITE RETURN (%) BEFORE FEES	COMPOSITE RETURN (%) AFTER FEES	BENCHMARK[a] RETURN (%)	COMPOSITE DISPERSION[b] BEFORE FEES	COMPOSITE 3-YR STD DEV[c] BEFORE FEES	BENCHMARK 3-YR STD DEV[c]	NUMBER OF PORTFOLIOS	TOTAL ASSETS (USD) MILLIONS	PERCENTAGE OF FIRM ASSETS
2003	6.30	5.86	4.10	1.08	4.56	4.20	183	129,915	35
2004	5.65	5.21	4.34	0.48	4.30	4.28	198	143,191	32
2005	3.31	2.89	2.43	0.31	4.09	4.07	213	167,015	32
2006	4.60	4.17	4.33	0.39	3.12	3.21	226	188,043	31
2007	9.34	8.88	6.97	0.82	3.17	2.77	226	214,522	32
2008	3.79	3.34	5.24	2.54	4.59	3.97	222	223,749	32
2009	14.68	14.17	5.93	2.38	4.99	4.11	206	320,710	34
2010	9.12	8.62	6.54	1.22	4.91	4.17	210	388,980	31
2011	4.68	4.20	7.84	1.71	3.68	2.78	211	390,199	29
2012	10.35	9.86	4.21	0.98	3.06	2.38	216	453,320	23

TOTAL RETURN SEPARATE ACCOUNT FEE SCHEDULE:	
1st $25 Million	0.500%
Next $25 Million	0.375%
Thereafter	0.250%

a Barclays U.S. Aggregate Bond Index
b Equal-weighted standard deviation of annual returns for all portfolios in the composite for the full year. Not statistically meaningful for periods shorter than a year or for years in which five or fewer portfolios were included for the full year
c The three-year annualized ex-post standard deviation measures the variability of the composite and the benchmark returns over the preceding 36-month period.

Pacific Investment Management Company LLC (PIMCO) is an SEC registered investment adviser that provides global investment solutions to institutions, individuals, and government entities worldwide. For GIPS compliance purposes, PIMCO has been defined to include its investment management activities as well as those of its subsidiaries, which include PIMCO Australia Pty Ltd, PIMCO Canada Corp., PIMCO Europe Ltd, PIMCO Japan Ltd, PIMCO Asia Pte Ltd, and PIMCO Asia Limited, as well as those of its affiliate PIMCO Deutschland GmbH. In March 2012, the firm was redefined to include assets managed on behalf of Allianz's affiliated companies. In addition, in January 2010, the firm definition was expanded to include fixed income assets managed in collaboration with Allianz Global Investors using the PIMCO investment process. Prior to 2010, country-specific limitations restricted the full implementation of the PIMCO investment process for these assets. A complete list of composite descriptions is available upon request.

PIMCO claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. PIMCO has been independently verified for the period January 1987 through December 2012 by PricewaterhouseCoopers LLP. Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. The Core Plus - Total Return Full Authority Composite has been examined for the period December 1989 through December 2012. Benchmark returns and composite returns after fees were not examined and are not covered by the report of independent accountants. The verification and performance examination reports are available upon request.

The Core Plus - Total Return Full Authority Composite includes all discretionary, fee-paying, U.S. dollar based, Total Return accounts that meet the U.S. Total Return Core Plus Full Authority criteria. PIMCO's Total Return accounts are managed to a core bond strategy that seeks to maximize price appreciation and current income with index-like volatility. Beginning January 1993, accounts must allow futures (long & short), options (long & short), non-U.S. dollar investments (permitted allocation of at least 20%), high yield (permitted allocation of at least 10%) and emerging markets to meet the Full Authority criteria. The composite creation date is November 2002.

The Barclays U.S. Aggregate Bond Index represents securities that are SEC-registered, taxable, and U.S. dollar denominated. The index covers the U.S. investment grade fixed rate bond market, with index components for government and corporate securities, mortgage pass-through securities, and asset-backed securities. Prior to November 2008, the index was published by Lehman Brothers.

Valuations are computed and performance is reported in U.S. dollars. Returns are presented gross and net of management fees and include the reinvestment of all income. Net results reflect the deduction of actual management fees and, in some instances, custodial and administrative fees. When applicable, composite performance is net of any actual withholding tax paid and not reclaimable. Index returns are gross of withholding tax. Policies for valuing portfolios, calculating performance, and preparing compliant presentations are available upon request.

Fixed income derivatives are frequently used in a non-leveraged manner as substitutes for physical securities. Futures, options, and swaps may be used to gain, hedge or restructure exposure to interest rates, volatility, spreads, foreign bond markets and currencies within the parameters allowed by individual portfolio guidelines. Use of these instruments may involve certain costs and risks such as liquidity, interest rate, market, credit, management and the risk that a position could not be closed when most advantageous. Investing in derivatives could lose more than the amount invested. Diversification does not ensure against loss.

Past performance is not a guarantee or a reliable indicator of future results.

SUSTAINED LOW INTEREST RATES

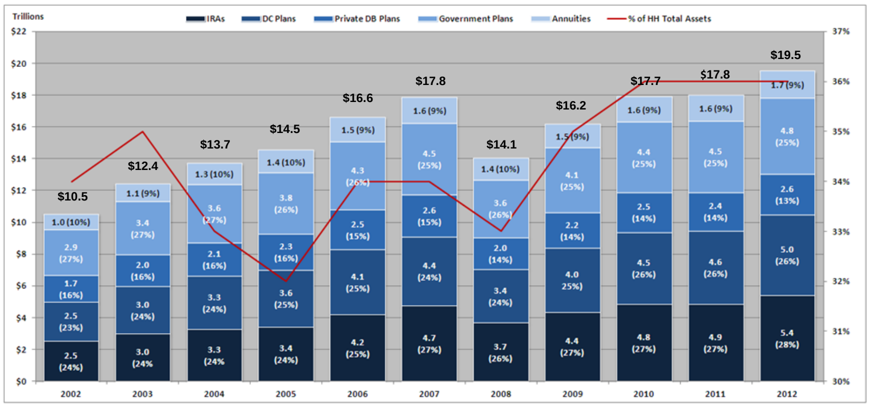
Michael L. Davis, Senior Vice President,
Head of Stable Value,
Prudential Retirement

Prudential
Bring Your Challenges

U.S. Retirement Market: Total Assets

Prudential
Bring Your Challenges

- As of Q4 2012, total U.S. retirement assets reached $19.5 trillion—an increase of 9.5% from FY 2011—and account for 36% of all HH financial assets ($54.4 trillion)
- U.S. retirement assets continue to increase as a result of factors such as market appreciation, and participant and employer contributions

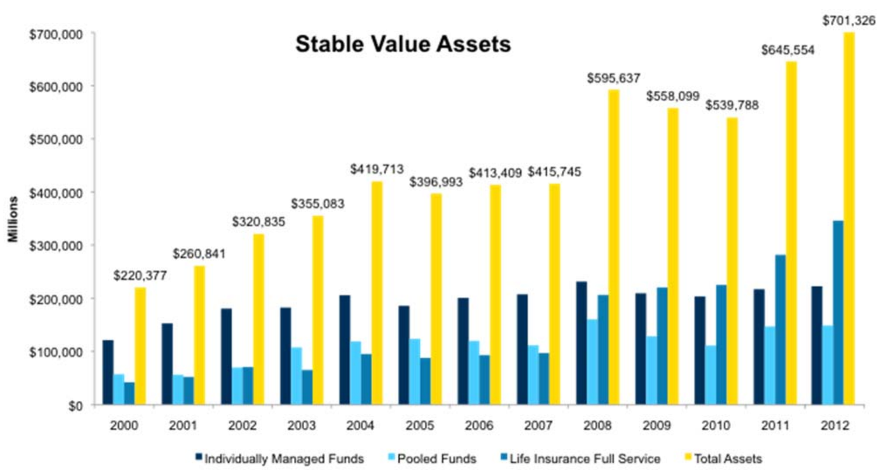


Source: Investment Company Institute. "The U.S. Retirement Market, 4th Quarter 2012," April 2013

37

Low interest rate environment is spurring added inflows into stable value

Prudential
Bring Your Challenges



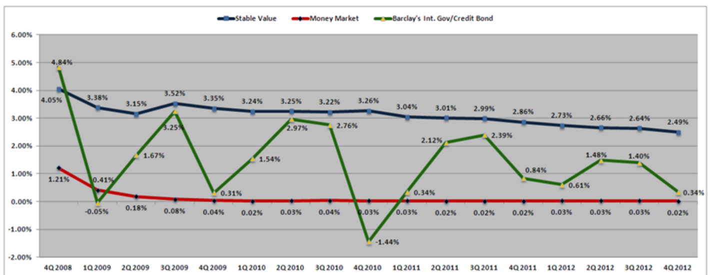
Source: SVIA Annual Stable Value Investment and Policy Survey, 2000-2012

38

Recent rate experience with short term fixed income products

Prudential
Bring Your Challenges

- The Federal Open Market Committee reiterated plans to keep rates at exceptionally low levels at least through mid-2015—dependent upon unemployment and inflation measures—which will continue to impact money-market rates
- While volatility in the bond market remains a concern to investors, the Fed's decision to hold borrowing costs steady into 2015 and buy mortgage debt each month is reducing bond market volatility and demand for options that hedge against changes in interest rates.



Source: Stable Value = SVIA Quarterly Characteristics Report; Money Market = iMoneyNet.com; Bond Fund = Barclay's Intermediate Gov/Credit data from Barclays.com

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Volatility of returns 12/31/1988 through 01/31/2013

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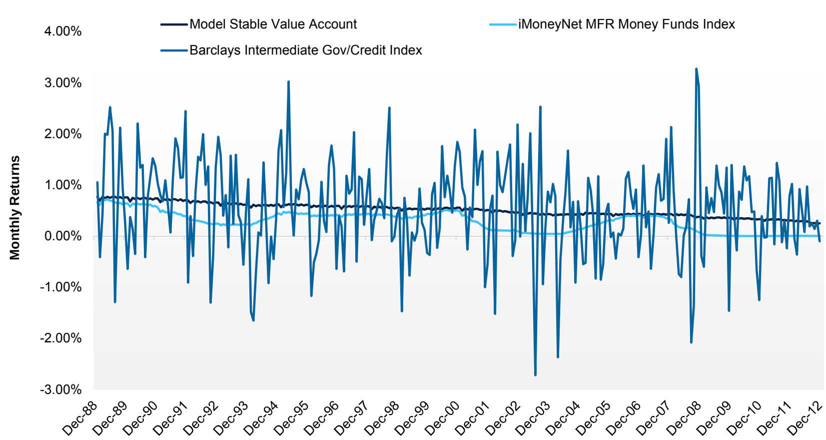

Source: Stable Value Investment Association's Stable Value Basics – January 2013

40

Average returns from 1989 to 2009

Prudential
Bring Your Challenges

Babbel and Herce Study – Wharton School of Business[1]

Intermediate-term Bonds	5.6%
Money Market Funds	3.9%
Inflation	3.0%
Stable Value	6.1%

[1] Dr. David Babbel and Dr. Miguel A. Herce, "Stable Value Funds: Performance to Date," The Wharton School, January 2011.
For Plan Sponsors, Financial Advisors and Industry Professionals Only.

Thank you

Prudential
Bring Your Challenges

Michael L. Davis, Senior Vice President,
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Disclosures

Barclays Capital U.S. Government/Credit 1-5 Year Index includes all medium and larger issues of U.S. government, investment-grade corporate, and investment-grade international dollar-denominated bonds that have maturities of between 1 and 5 years and are publicly issued. You cannot invest directly in an index.

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Panel 2: Source Spots: The impact(s) of the match – contribution timing, sources, and meeting plan objectives

EBRI-ERF Policy Forum #72
Thursday, May 9, 2013

POINTS OF VIEW
BENEFITS AND POLICY INSIGHTS

Economic Impact

How the economic environment of the past five years has impacted employer contributions

Jeanne Thompson
Vice President
Fidelity Investments

May 9, 2013

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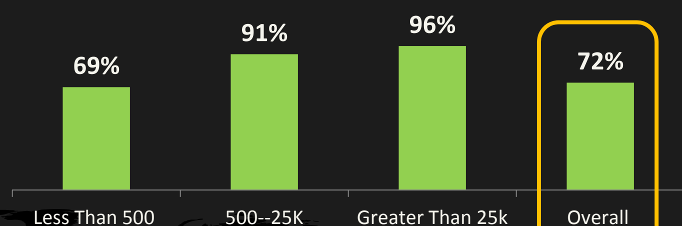
POINTS OF VIEW
BENEFITS AND POLICY INSIGHTS

Overall most organizations maintained employer contributions during the past 5 years

Percentage of Continuous Plans that Maintained or Added Employer Contributions
2008 - 2012



Plan Size by Number of Participants

Fidelity Investments recordkept data of 9,200 continuous corporate DC plans present at every quarter end from12/31/2007-12/31/2012

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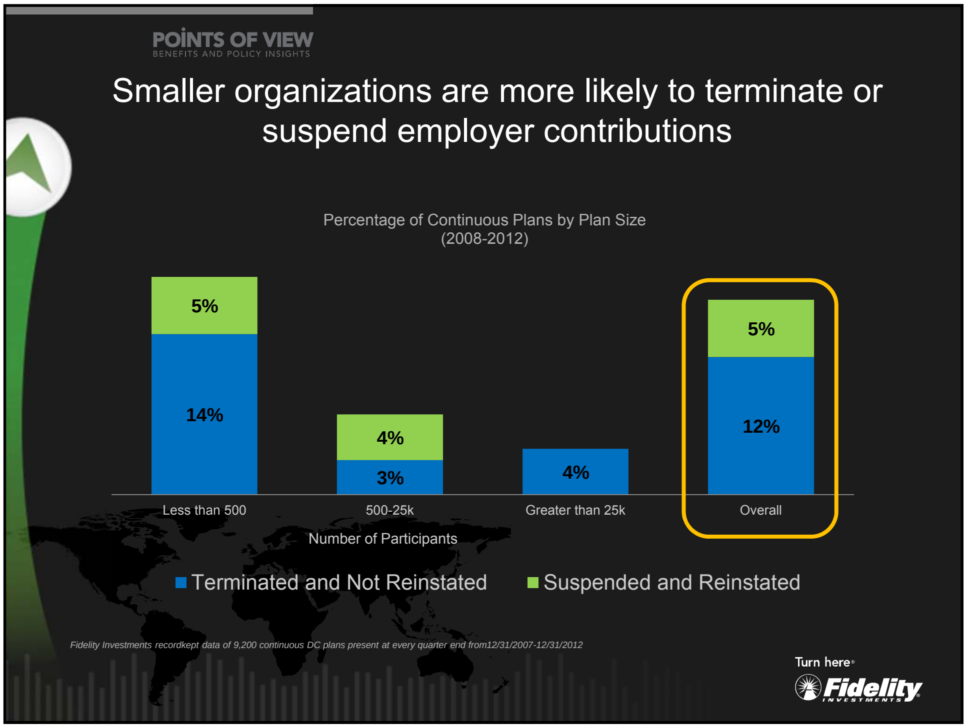
POINTS OF VIEW
BENEFITS AND POLICY INSIGHTS
Smaller organizations are more likely to terminate or suspend employer contributions
Percentage of Continuous Plans by Plan Size (2008-2012)
5%
14%
4%
3%
4%
5%
12%
Less than 500
500-25k
Greater than 25k
Overall
Number of Participants
Terminated and Not Reinstated
Suspended and Reinstated
Fidelity Investments recordkept data of 9,200 continuous DC plans present at every quarter end from12/31/2007-12/31/2012
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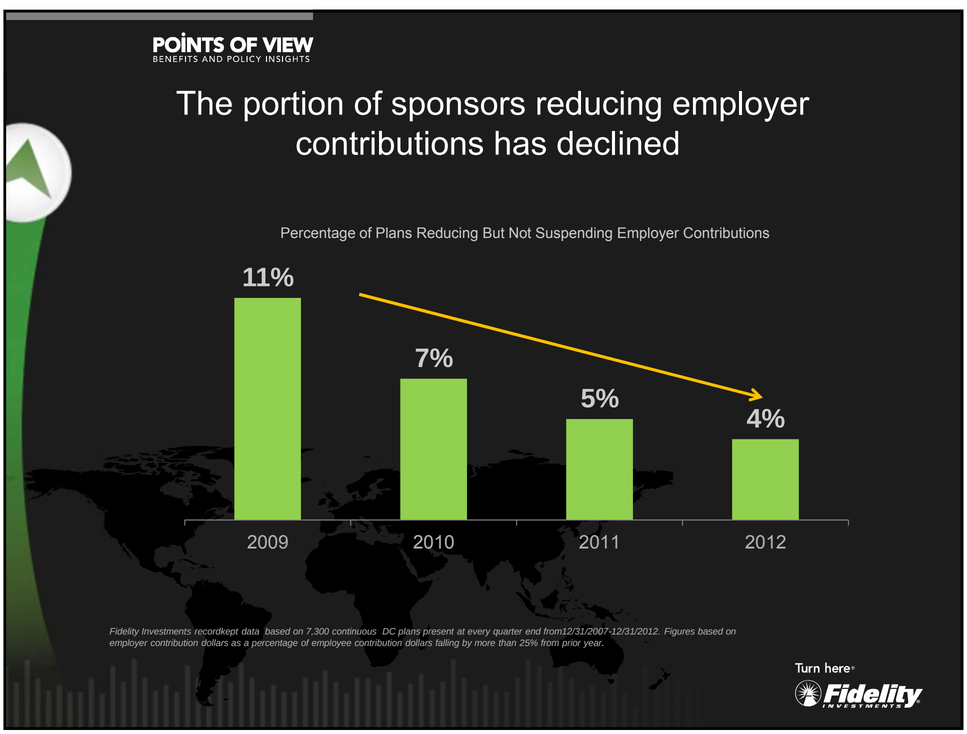
POINTS OF VIEW
BENEFITS AND POLICY INSIGHTS
The portion of sponsors reducing employer contributions has declined
Percentage of Plans Reducing But Not Suspending Employer Contributions
11%
7%
5%
4%
2009
2010
2011
2012
Fidelity Investments recordkept data based on 7,300 continuous DC plans present at every quarter end from12/31/2007-12/31/2012. Figures based on employer contribution dollars as a percentage of employee contribution dollars falling by more than 25% from prior year.
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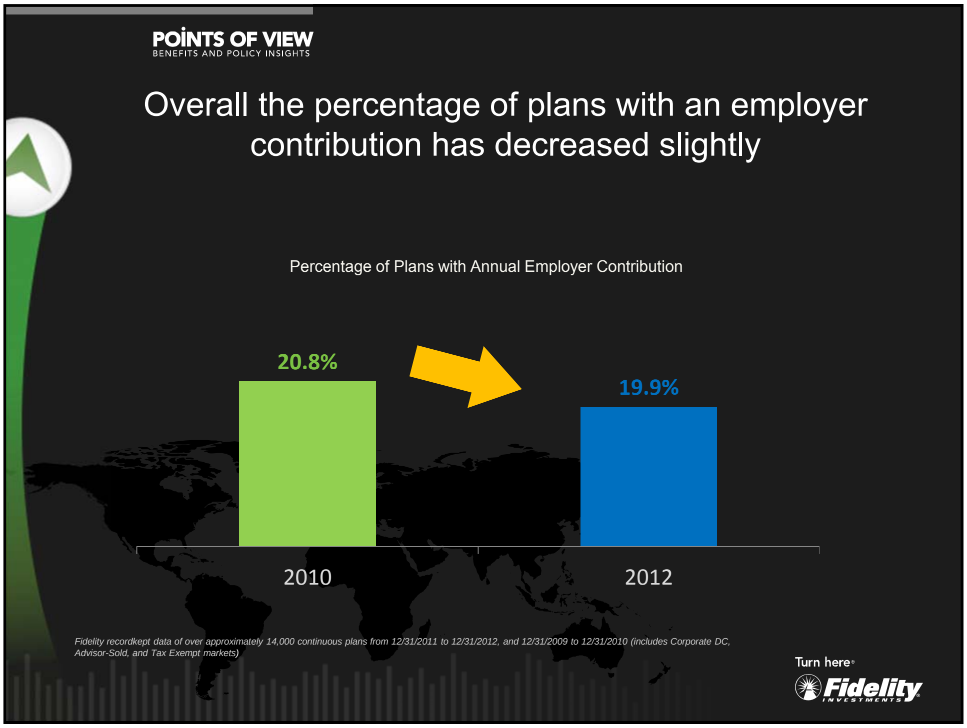
POINTS OF VIEW
BENEFITS AND POLICY INSIGHTS
Overall the percentage of plans with an employer contribution has decreased slightly
Percentage of Plans with Annual Employer Contribution
20.8%
19.9%
2010
2012
Fidelity recordkept data of over approximately 14,000 continuous plans from 12/31/2011 to 12/31/2012, and 12/31/2009 to 12/31/2010 (includes Corporate DC, Advisor-Sold, and Tax Exempt markets)
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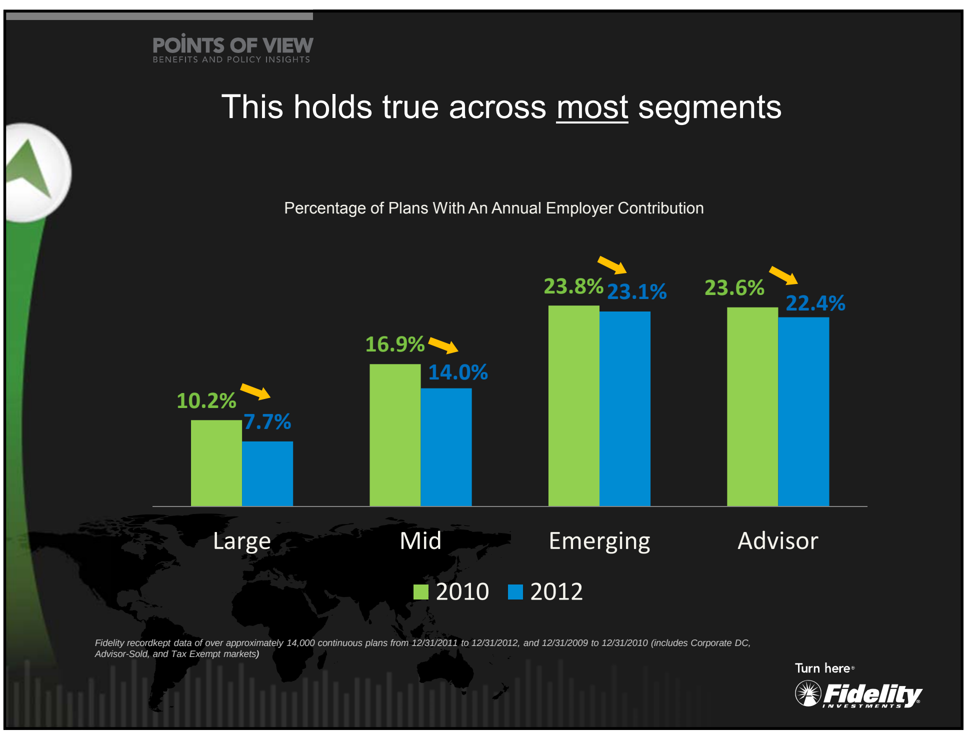
POINTS OF VIEW
BENEFITS AND POLICY INSIGHTS
This holds true across most segments
Percentage of Plans With An Annual Employer Contribution
10.2%
7.7%
16.9%
14.0%
23.8%
23.1%
23.6%
22.4%
Large
Mid
Emerging
Advisor
2010
2012
Fidelity recordkept data of over approximately 14,000 continuous plans from 12/31/2011 to 12/31/2012, and 12/31/2009 to 12/31/2010 (includes Corporate DC, Advisor-Sold, and Tax Exempt markets)
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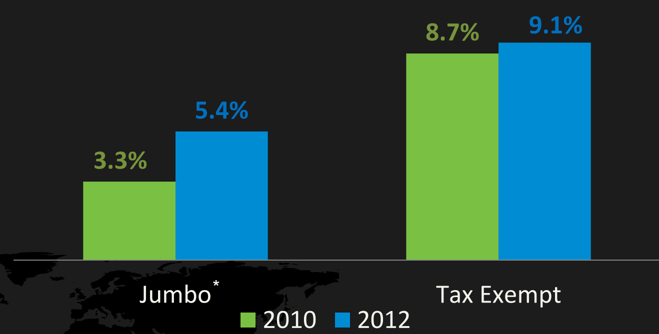
POINTS OF VIEW
BENEFITS AND POLICY INSIGHTS

A small percentage are moving to annual employer contributions

Percentage of Plans With An Annual Employer Contribution



Fidelity recordkept data of over approximately 14,000 continuous plans from 12/31/2011 to 12/31/2012, and 12/31/2009 to 12/31/2010 (includes Corporate DC, Advisor-Sold, and Tax Exempt markets)

** Jumbo = approximately $750M or greater in plan assets under administration.*

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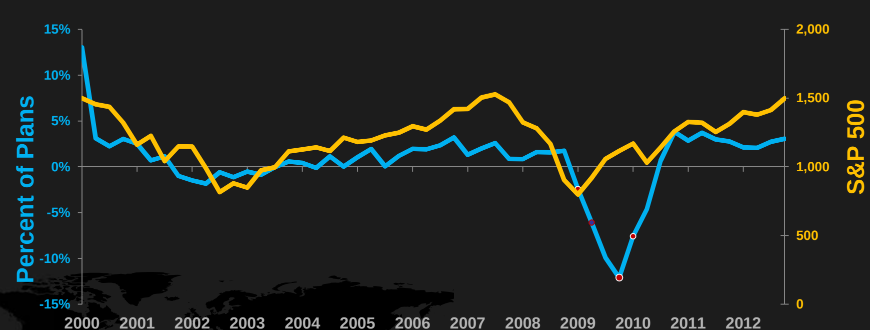
POINTS OF VIEW
BENEFITS AND POLICY INSIGHTS

The economic crisis of 2008-2009 had a significantly larger impact on employer contributions than the tech bubble

Change in percentage of plans offering employer contributions relative to prior year



Fidelity Investments recordkept data of nearly 2,500 DC plans present at every quarter end from 12/31/1999-12/31/2012

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POINTS OF VIEW
BENEFITS AND POLICY INSIGHTS

Plan design strategies for employers to consider

- Safe harbor match
- Performance-based match
- Discretionary match
- Revise match formula

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POINTS OF VIEW
BENEFITS AND POLICY INSIGHTS

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EBRI Policy Forum

Dan Campbell – Aon Hewitt

"Source" Spots: Impacts(s) of the employer match—contribution timing, sources, and meeting plan objectives.

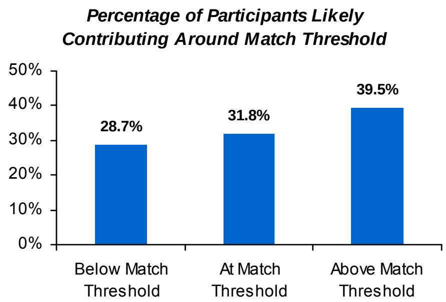
May 9, 2013

Agenda

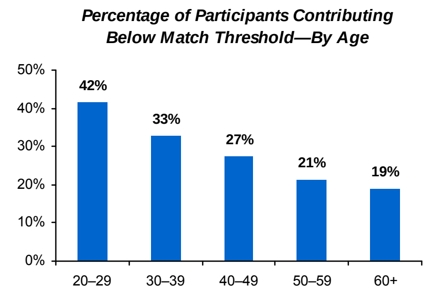
- Match Level Influence
- Automatic Enrollment Impact
- Match Timing

Source: 2013 Aon Hewitt Retirement Pulse Survey

Participants are Leaving Money on the Table

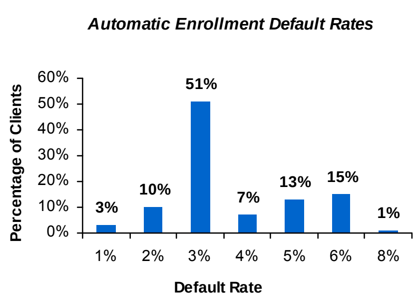


- Almost 1/3 of participants contribute at the match level
- Automatic enrollment defaults are generally set below company match threshold

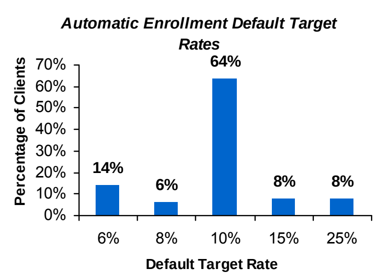


Source: Aon Hewitt *2012 Universe Benchmarks*

Automatic Enrollment Default Rates and Escalation Caps

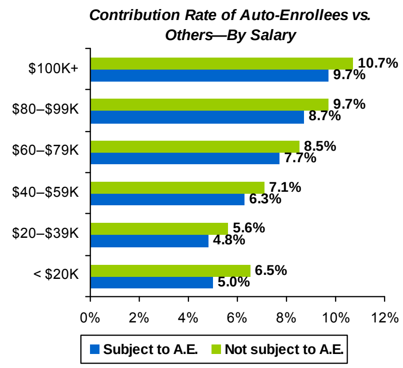


- 70% of plans have auto-enrollment
- 52% of the plans with auto-enrollment have automatic escalation
- The vast majority of plans escalate in 1% increments

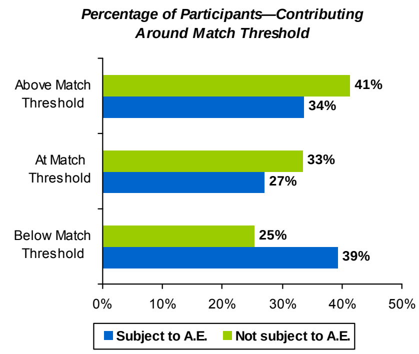


Source: Aon Hewitt *2013 Client Database*

Automatic Enrollment: Unintended Consequences



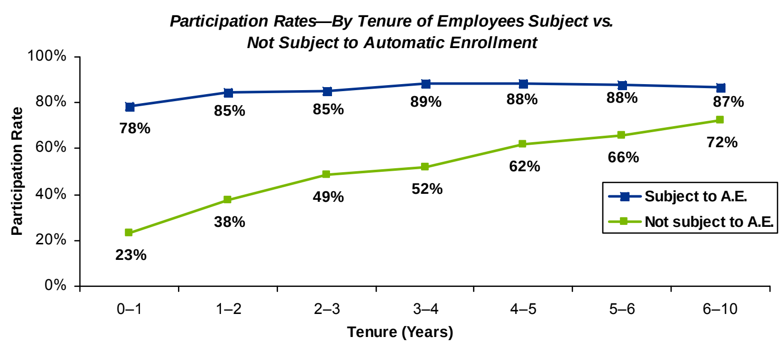
- 39% of participants subject to automatic enrollment save below match threshold



- Younger and lower-paid workers less likely to be at or above the match level, and more likely to stay at plan defaults

Source: Aon Hewitt *2012 Universe Benchmarks*

Automatic Enrollment: Positive Impact



Source: Aon Hewitt *2012 Universe Benchmarks*

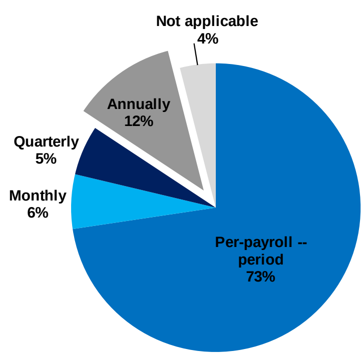
Timing of Company Match Survey

Headline	Plan sponsors are interested in how their 401(k) employer-matching contribution frequencies compares to other companies. Responding to this interest, Aon Hewitt conducted a brief pulse survey in January 2013.
Summary	Based on 392 responses, the survey results show that most employers (73%) make employer-matching contributions on a per-payroll-period basis. Twelve percent of respondents post their match annually. Most respondents (93%) are unlikely to change to an annual match/last day rule frequency for their matching contribution.
Importance	While companies may be exploring the option of changing their employer-matching contribution frequency, the decision requires careful consideration and review of plan documents.

Source: 2013 Aon Hewitt Retirement Pulse Survey

Employer-Matching Frequency

Currently, how frequently does your organization post matching contributions to participant accounts?

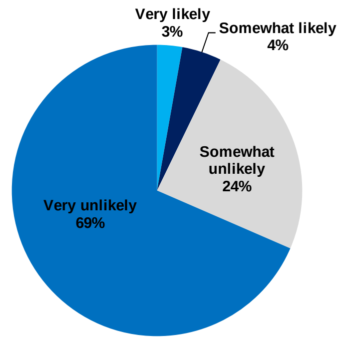


n=392

Source: 2013 Aon Hewitt Retirement Pulse Survey

Likelihood of Moving to an Annual Matching Contribution

How likely is your organization to move to an annual/last day matching contribution rule?

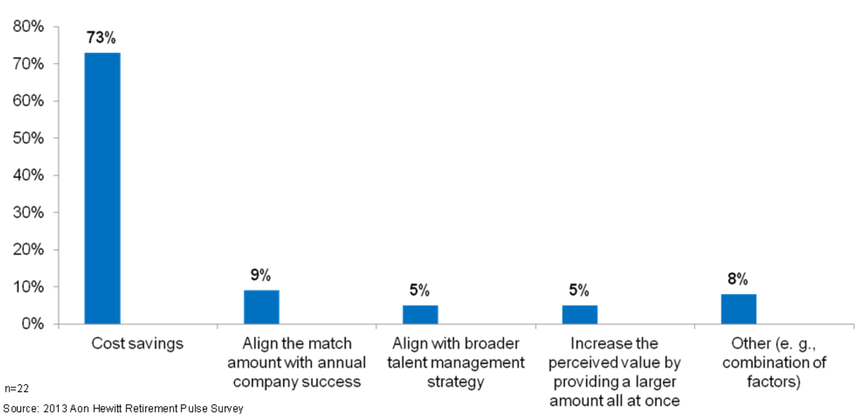


n=321

Source: 2013 Aon Hewitt Retirement Pulse Survey

Primary Factor for Changing to an Annual Match Contribution

What is the primary factor for considering a change to an annual match?

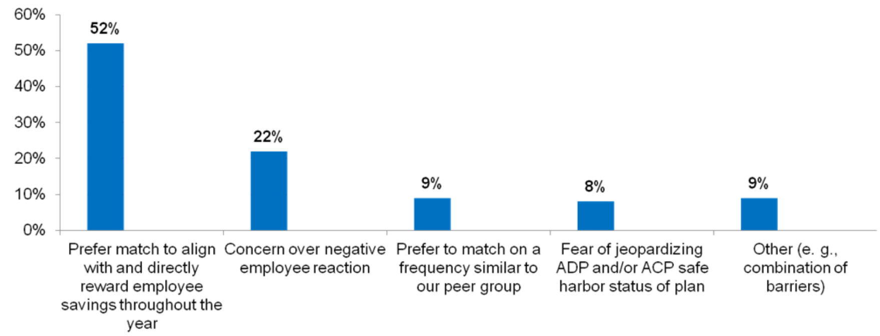


n=22

Source: 2013 Aon Hewitt Retirement Pulse Survey

Primary Barrier to Changing to an Annual Match Contribution

What is the primary barrier to changing to an annual match?



n=317

Source: 2013 Aon Hewitt Retirement Pulse Survey

May 2013 65

AON Hewitt

Callan
FORTY YEARS

"Source" Spots: Impacts of the Employer Match

Rethinking the Role of the Matching Contribution

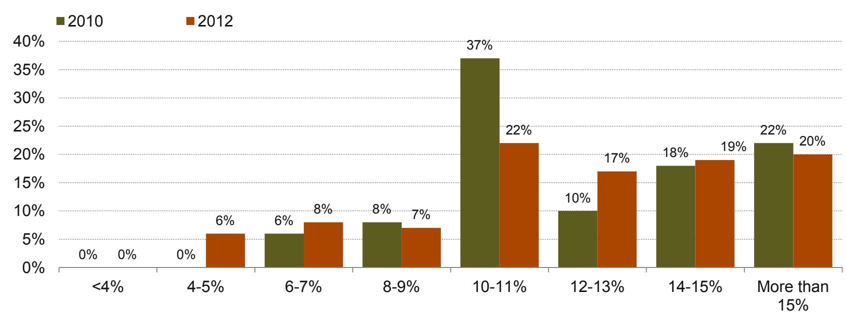
Lori Lucas, CFA
Executive Vice President

Agenda

- Optimal savings in DC plans
- Stretch match
- Another use for company contributions?

Optimal Savings Rates in DC Plans

Optimal Savings Rates According to Sponsors



- In a recent DCIIA survey, 78% of plan sponsors reported that the optimal savings (plan sponsor and participant) is 10% of pay or more.
- Yet many plans are geared for savings levels of less than 10%.

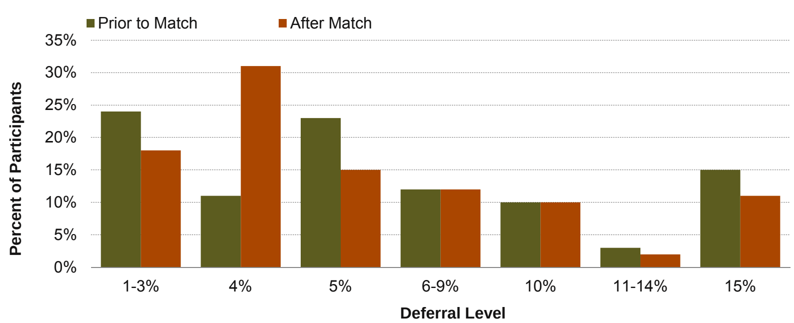
Source: 2012 DCIIA Plan Sponsor Survey.

Stretch Match

- One possible way to increase savings is by raising the deferral necessary to obtain the full employer match—stretching the match.
- Stretching the match involves raising the match threshold (e.g., from 6% to 8%),
- To keep costs neutral, plan sponsors could reduce the match rate (e.g., from 50% to 35–40%).
- Does stretch match work?

Match Threshold’s Influence Under Voluntary Enrollment

Deferral Levels With and Without Matching Contributions

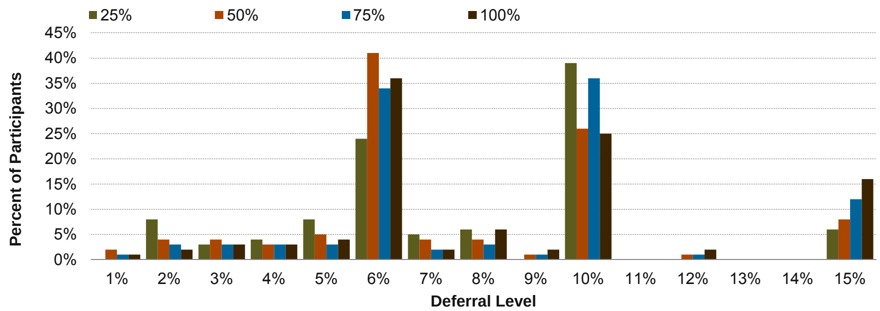


- Company A offered voluntary enrollment and no employer matching contribution.
- In 2000, Company A introduced a matching contribution with a 4% threshold.
- Contributions at the 4% of pay level dramatically increased.

Source: Choi et al.

Match Threshold's Influence Under Voluntary Enrollment

Participants with Various Deferral Levels



- A Fortune 500 company offered a matching contribution of 25% to 100% up to a match threshold of 6% for various populations.
- Regardless of the percent matched, deferral levels peaked at the match threshold and the pre-tax contribution limit.

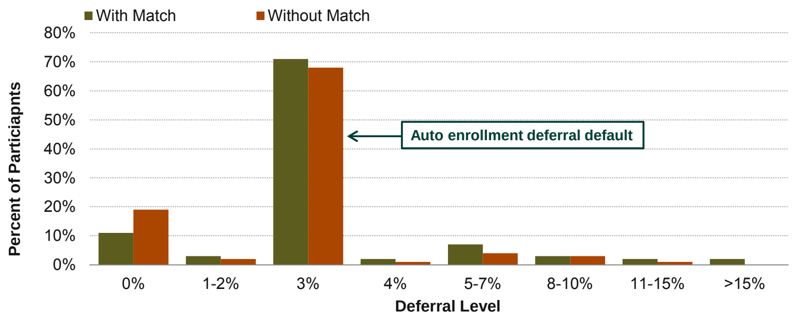
Source: Choi et al.

Automatic Enrollment's Impact

- "The Impact of Employer Matching on Savings Plan Participation under Automatic Enrollment." (Beshears et al)
- Examined the impact of match structures on opt-out rates under automatic enrollment in 401(k) plans.
- Conclusions:
  - Across nine firms with automatic enrollment, moving from a typical matching structure of 50% on the first 6% of pay contributed to no match at all reduces savings plan participation under automatic enrollment by 5 to 11 percentage points.

Auto Enrollment and Company Matching

Deferral Levels With and Without Employer Matching



- Company C is a Fortune 500 company with automatic enrollment (default = 3% of pay).
- Originally, Company C had a matching contribution of 25% up to 4% of pay.
- It replaced its match with a 4% non-elective contribution.

Source: The Impact of Employer Matching on Savings Plan Participation under Automatic Enrollment

Stretch Match and Auto Enrollment

- Stretch match may make it possible to increase default deferral levels under automatic enrollment without increasing plan costs.
- ABC Company's plan has 3,120 employees and very low participation.
- ABC adds auto enrollment of new hires, auto enrollment of existing eligible employees and automatic increase.

Source: Getting Beyond Ordinary—Managing Plan Costs in Automatic Programs. T. Rowe Price.

Stretch Match and Auto Enrollment

- Plan ABC without auto enrollment:
  - 100% match on first 4% of deferrals
  - 4% nonelective contribution
  - Cost: $11,669,730
- Plan ABC with auto enrollment:
  - 100% match on first 4% of deferrals
  - 4% non-elective contribution
  - Auto enrollment at 4% of pay
  - Auto increase 1% annually up to 10% of pay
  - Cost: $14,487,570 (24% increase)

Source: Getting Beyond Ordinary—Managing Plan Costs in Automatic Programs. T. Rowe Price.

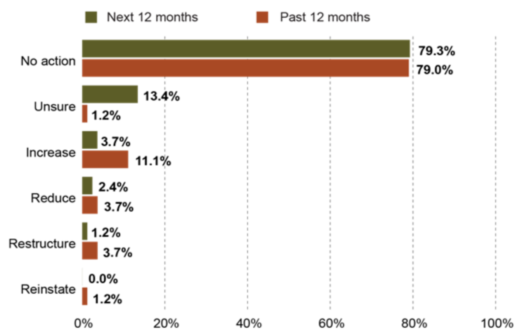
Stretch Match and Auto Enrollment

- Stretching the match to reduce ABC's costs
- Plan ABC with auto enrollment and stretch matching:
  - 100% match on first 1% of deferrals
  - 50% match on the next 5% of deferrals
  - 4% nonelective contribution
  - Auto enroll at 6% of pay
  - Auto increase 1% annually to 10% of pay
  - Cost: $13,528,971 (16% increase)

Source: Getting Beyond Ordinary—Managing Plan Costs in Automatic Programs. T. Rowe Price.

Few Changes to Company Matches Occurring

What steps has your plan taken and will your plan take with respect to company match?



- According to the survey, only one plan sponsor intended to "stretch" the match.

Source: 2013 Callan DC Survey

Pros and Cons of Stretch Match

- Pros
  - Evidence stretch match increases savings levels under voluntary enrollment – regardless of matching amount
  - Some possible positive impact under auto enrollment
  - Can keep costs down and facilitate more robust defaults under auto enrollment
- Cons
  - Lower paids may not be able to save enough to obtain full match
  - Less impactful on voluntary savings levels under auto enrollment
  - Possible communication challenges/ negative employee perception
  - Could reduce competitiveness of plan

A Modest Proposal

An Alternative Approach for Company Contributions

- Under automatic enrollment, are there “better” ways to deploy employer monies:
  - Create an employer-sponsored retirement “floor” for all employees.
  - Reduce or eliminate participant-paid DC fees.
  - Enhance other benefits.

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Panel 3: Taking Their Lumps: Helping plans and participants optimize their distribution choices (rollover, drawdown, and annuity options).

EBRI-ERF Policy Forum #72
Thursday, May 9, 2013

Annuity and Lump-Sum Decisions in Defined Benefit Plans: The Role of Plan Rules

Sudipto Banerjee, Ph.D
Employee Benefit Research Institute
EBRI-ERF Policy Forum, May 9, 2013

Panel 3: Taking Their Lumps: Helping plans and participants optimize their distribution choices (rollover, drawdown, and annuity options)

What We Already Know

- Annuities can tackle the problems of longevity risk, optimal rate of asset decumulation and also provide a steady source of income in retirement. But, do people annuitize their assets?

Defined Benefit Plans
- Hurd and Panis (2006) - 61%
- Mottola and Utkus (2007) – 27%
- Benartzi et. al. (2011) – 49%
- Benartzi et. al. (2011, IBM employees) – 88%

Cash Balance Plans
- Mottola and Utkus (2007) – 17%
- Benartzi et. al. (2011) – 41%

What explains such variations in annuitization decisions?

Different Types of Restrictions on Lump Sum Distribution

a. Traditional DB plans with no option of lump sum distribution

b. Traditional DB plans with strong restriction on lump sum distribution

- Lump sum available for those with the account balance of less than $10,000/$25,000
- Lump sum available only for employee contribution
- Explicit restriction on lump sum distribution (e.g. LS option is available if monthly benefit is less than $100)

c. Traditional DB or CB plans with weak restriction on lump sum distribution

- DB or CB in which lump sum is not available for all participants (e.g. a plan might have both FAP and CB option. LSD is not available for the FAP option but available for the CB option.)

d. Traditional DB plan with no restriction on lump sum distribution

e. CB plans with no restriction on lump sum distribution

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Data

- Total Number of plans with plan specific information from Aon Hewitt – 84
- Years studied – 2005 to 2010
- Total number of payout decisions – 118,730
- Largest plan accounts for only 9.28 percent of the entire sample.

➢ Age is not the age of the participant at retirement or when he/she left the employer. Age is the age of the participant at the time when he/she made the payout decision.

➢ Partial Annuitization
  - ➢ Those having both annuity and less than $10k in LS are considered as full annuitization.
  - ➢ Those having both annuity and LSD of at least $10k are dropped from the sample.

➢ Payout decisions are classified as annuitization or non-annuitization.

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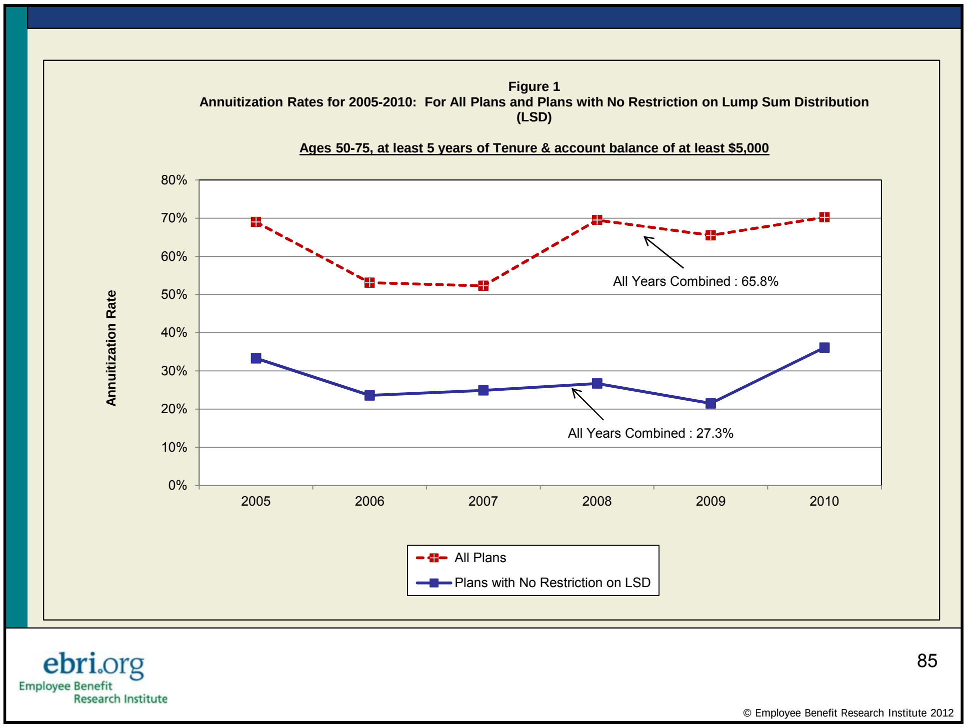
Figure 1
Annuitization Rates for 2005-2010: For All Plans and Plans with No Restriction on Lump Sum Distribution (LSD)
Ages 50-75, at least 5 years of Tenure & account balance of at least $5,000
Annuitization Rate
80%
70%
60%
50%
40%
30%
20%
10%
0%
2005
2006
2007
2008
2009
2010
All Years Combined : 65.8%
All Years Combined : 27.3%
All Plans
Plans with No Restriction on LSD
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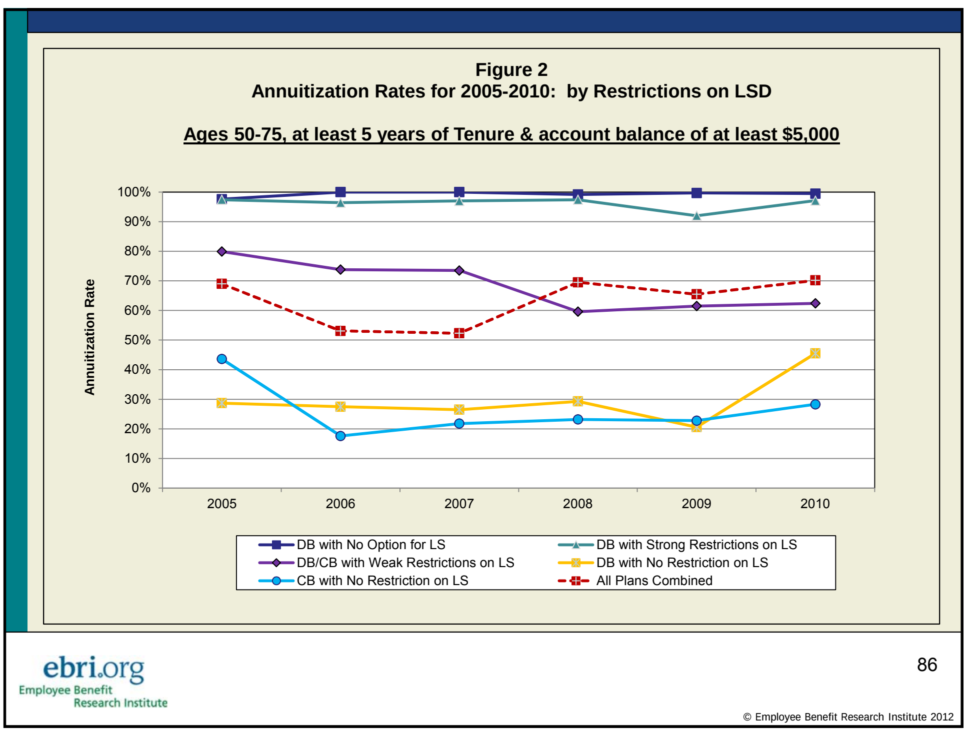
Figure 2
Annuitization Rates for 2005-2010: by Restrictions on LSD
Ages 50-75, at least 5 years of Tenure & account balance of at least $5,000
Annuitization Rate
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2005
2006
2007
2008
2009
2010
DB with No Option for LS
DB with Strong Restrictions on LS
DB/CB with Weak Restrictions on LS
DB with No Restriction on LS
CB with No Restriction on LS
All Plans Combined
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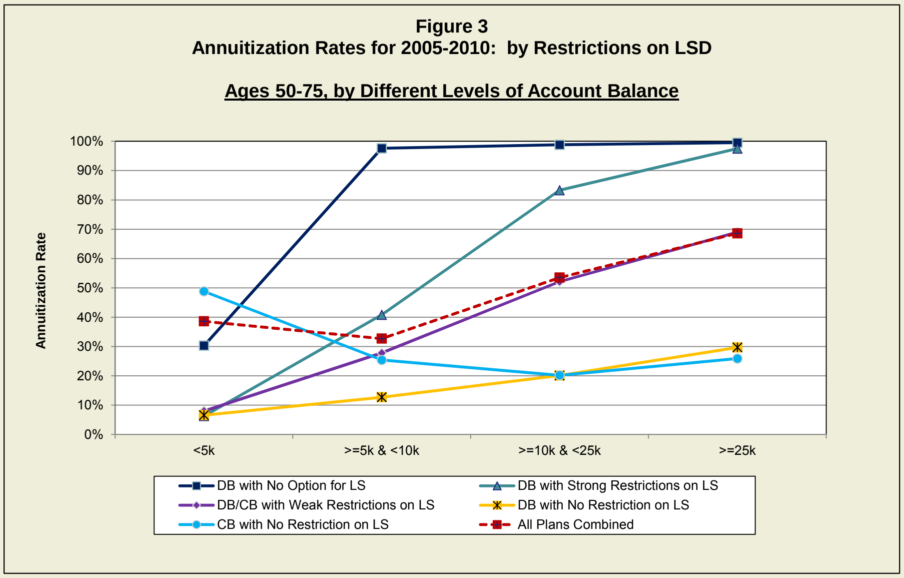

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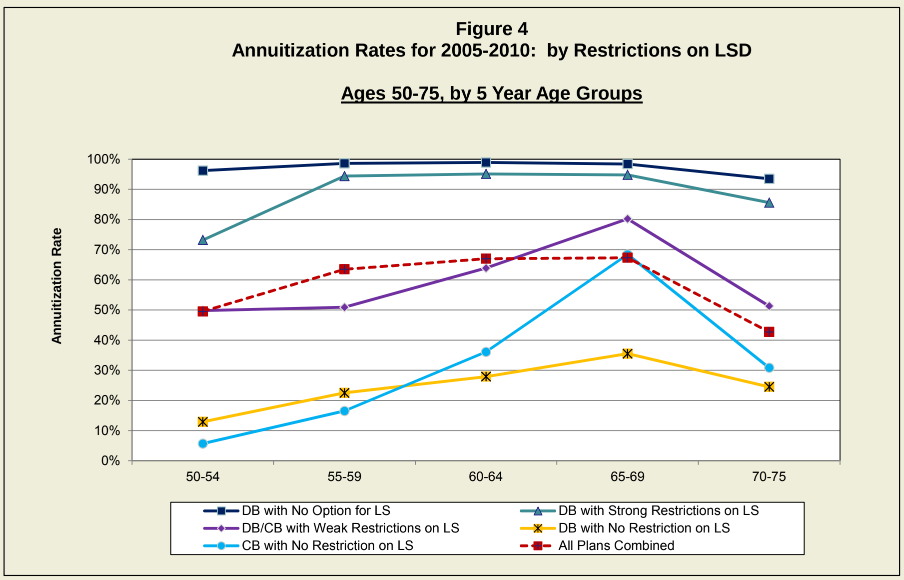

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Figure 5
Annuitization Rates for 2005-2010: by Restrictions on LSD

Ages 50-75, by Different Levels of Tenure

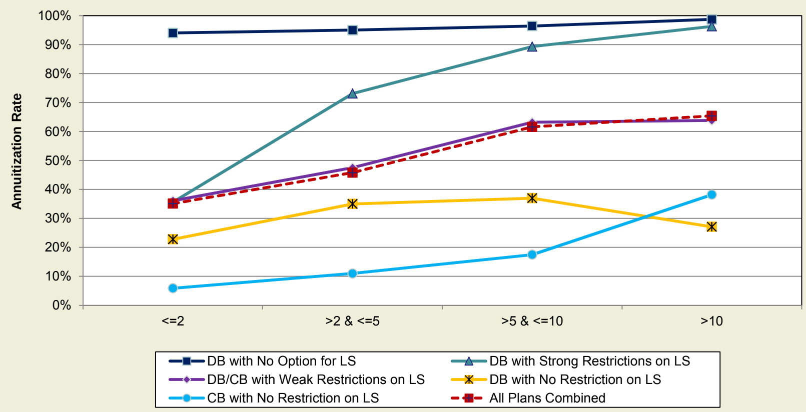

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Figure 6
Annuitization Rates for 2005-2010: by Restrictions on LSD

Ages 20-50, at least 5 years of Tenure & account balance of at least $5,000

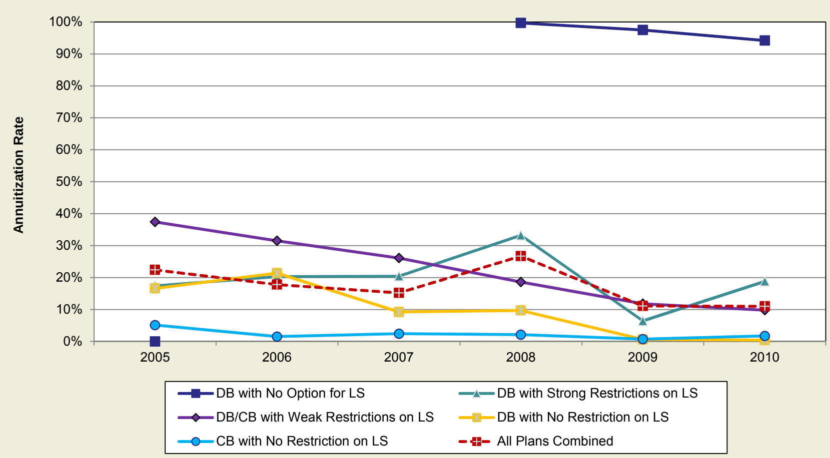

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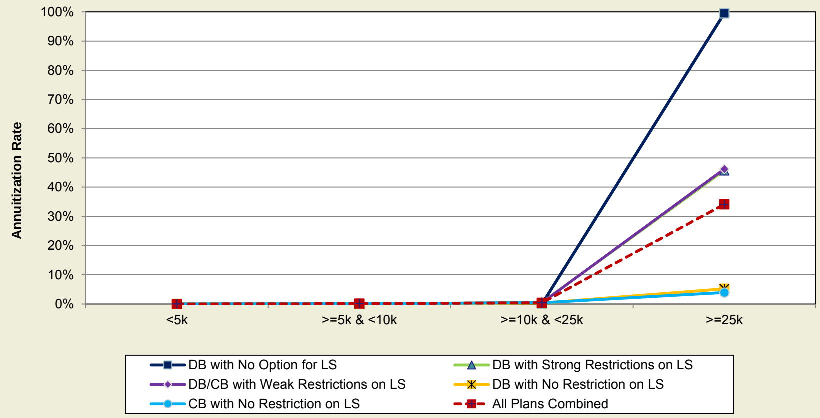
Figure 7
Annuitization Rates for 2005-2010: by Restrictions on LSD

Ages 20-50, by Different Levels of Account Balance



Note: Sample size for DB with no option for LS in the middle two categories is very small (less than 50).

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Figure 8
Annuitization Rates for 2005-2010: by Restrictions on LSD

Ages 20-50, by 10 Year Age Groups

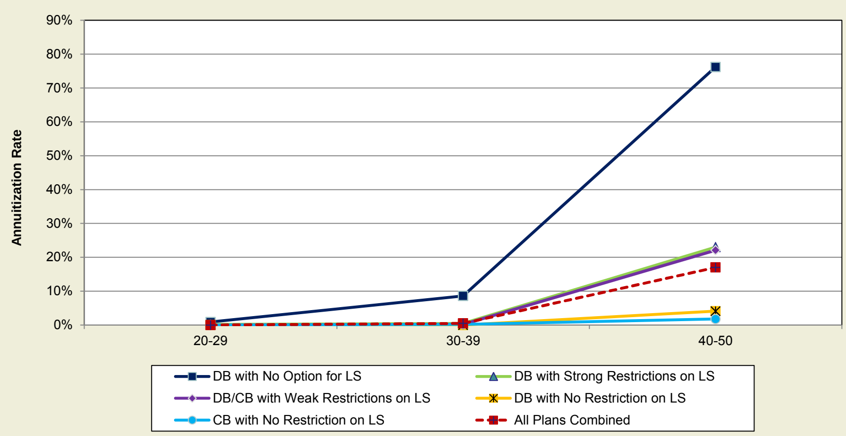

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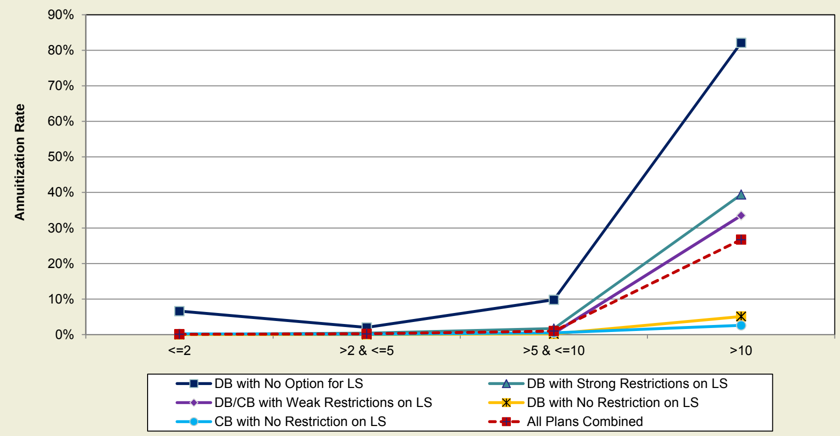
Figure 9
Annualization Rates for 2005-2010: by Restrictions on LSD

Ages 20-50, by Different Levels of Tenure



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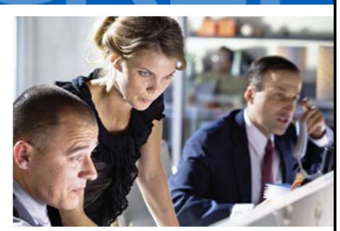
TIAA CREF Financial Services

TIAA CREF

Accumulation to Income in Defined Contribution Plans

Paul J. Yakoboski
Senior Economist
TIAA-CREF Institute

EBRI Policy Forum
Decisions, Decisions: Choices That Affect Retirement Income Adequacy
May 9, 2013



TIAA-CREF Institute

Reconsidering DC Design

TIAA CREF

What is the objective of retirement plan sponsorship?

- To provide participants with an adequate and secure source of income throughout retirement

What are the implications of the plan objective for plan design?

- During accumulation
- During retirement

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Converting Assets to Income

TIAA CREF

Survey of retirees with significant DC/IRA assets, but no pension income

- retired at least 3 years
- retired with at least $200k in DC and IRA assets
- not working for income
- less than $200/month in DB income

Annuitization rate of this group was 19%

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Impact of Plan Design

	Annuitized Retirees	Non-annuitized Retirees
Participated in a DC plan that offered…		
a deferred annuity in the investment menu during accumulation	29%	24%
Invested in the deferred annuity if available	45	25
the option to annuitize assets at retirement	41	28

Among annuitants…

- 32% annuitized through a DC plan
- So, 80% of annuitants offered an annuity payout option used it

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Advice Matters Too

Among annuitants…

- 71% worked with a financial advisor in deciding to annuitize and/or implementing the decision

Among non-annuitants…

- 57% have used a financial advisor in deciding how to manage savings during retirement
- 71% of the 57% follow all or most of the advice
- only 5% were advised to annuitize

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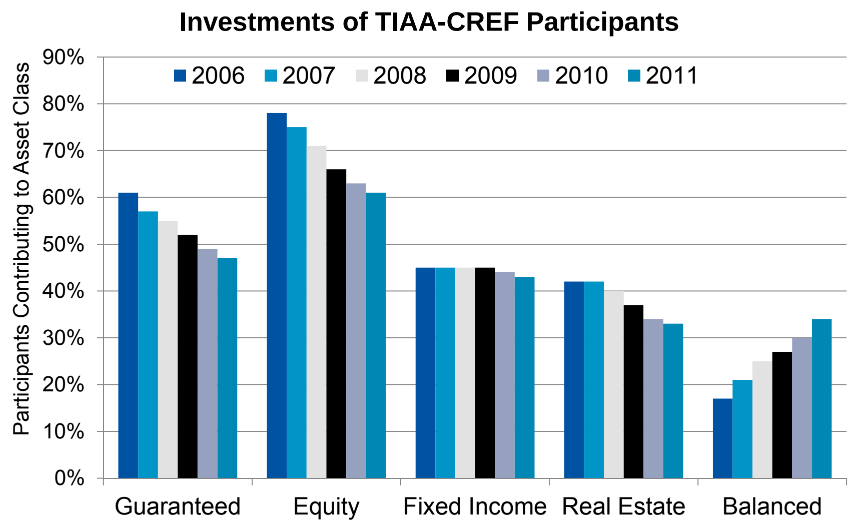
Annuities During Accumulation

TIAA CREF



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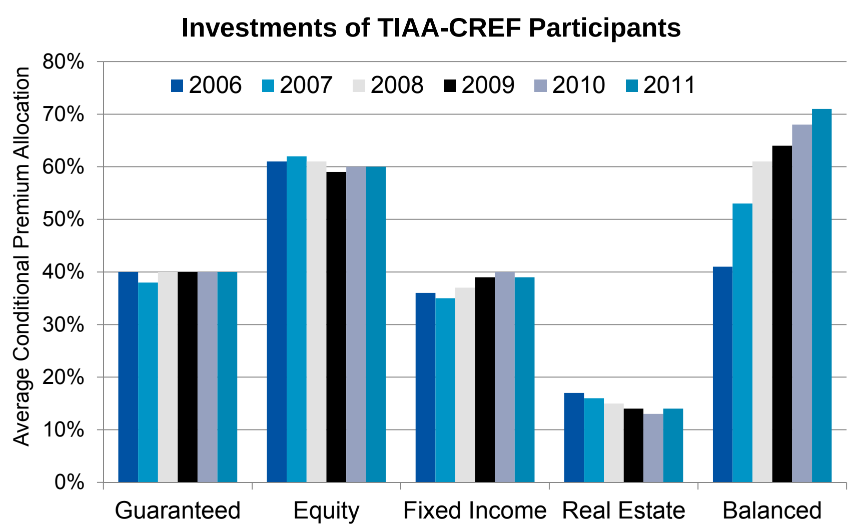
Annuities During Accumulation

TIAA CREF



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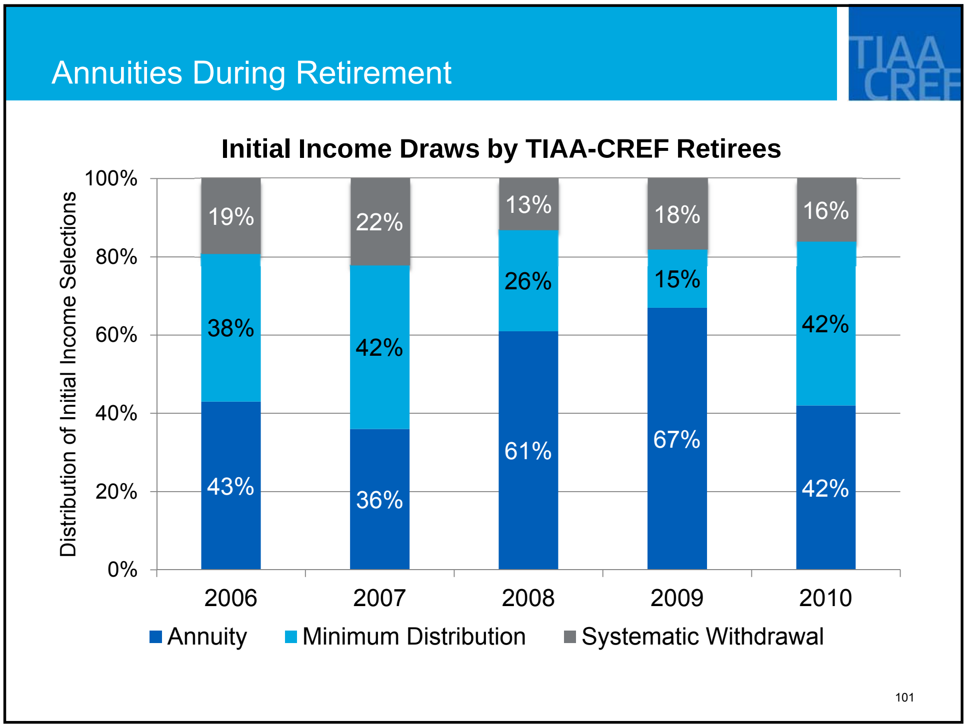
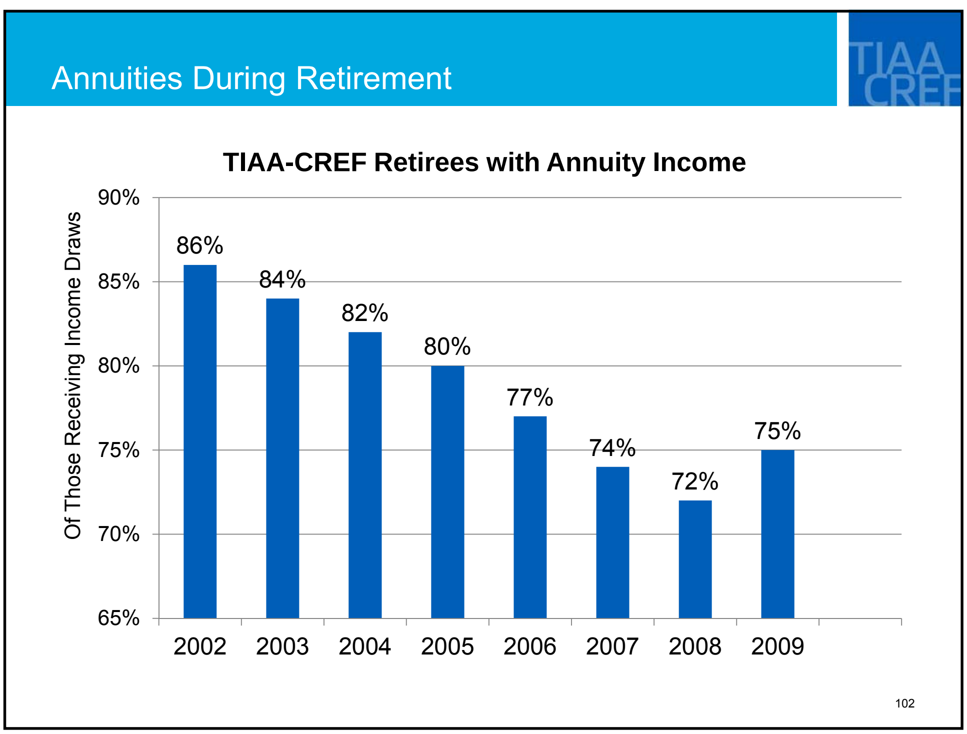

Annuities During Retirement
TIAA CREF
Initial Income Draws by TIAA-CREF Retirees
Distribution of Initial Income Selections
100%
80%
60%
40%
20%
0%
19%
38%
43%
22%
42%
36%
13%
26%
61%
18%
15%
67%
16%
42%
42%
2006
2007
2008
2009
2010
Annuity
Minimum Distribution
Systematic Withdrawal
101


Annuities During Retirement
TIAA CREF
TIAA-CREF Retirees with Annuity Income
Of Those Receiving Income Draws
90%
85%
80%
75%
70%
65%
86%
84%
82%
80%
77%
74%
72%
75%
2002
2003
2004
2005
2006
2007
2008
2009
102

Russell Investments

Evaluating guaranteed income solutions

From buyer *beware* to buyer *aware*

Josh Cohen - Defined Contribution, Practice Leader

MAY 9, 2013

Important Information

Quantifying longevity risk in today's low-rate environment

Initial annual withdrawal (from retirement savings)	Allocation to stocks					
	0%	20%	40%	60%	80%	100%
$ 1,000	100.0%	100.0%	100.0%	100.0%	99.9%	99.6%
$ 2,000	100.0%	100.0%	99.7%	98.9%	97.9%	96.0%
$ 3,000	91.2%	94.7%	94.6%	93.2%	90.5%	88.0%
$ 4,000	66.4%	75.1%	79.3%	80.0%	79.2%	77.8%
$ 5,000	50.2%	54.5%	60.2%	64.4%	65.7%	66.0%
$ 6,000	38.5%	41.5%	45.8%	49.8%	52.9%	54.5%
$ 7,000	28.3%	32.3%	35.3%	39.3%	42.9%	44.8%
$ 8,000	25.3%	26.2%	28.1%	31.5%	34.8%	37.3%
$ 9,000	19.9%	22.2%	23.6%	25.2%	27.9%	30.9%
$10,000	17.7%	19.2%	20.2%	21.5%	23.2%	25.7%

› 65-year-old retiree with $100,000 in savings

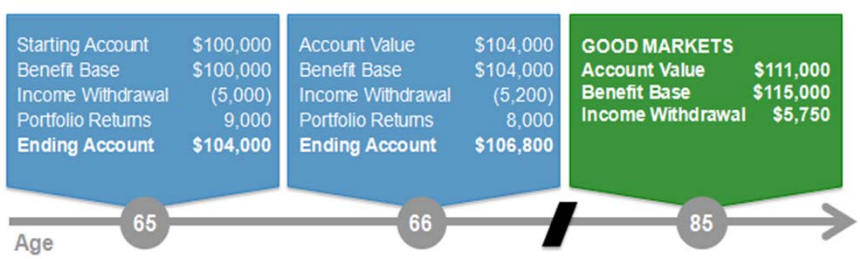
› 5% withdrawal with 2.5% COLA from a 60/40 stocks/bonds portfolio, has only a 64.4% chance of not running out

› He could obtain a COLA annuity with a $4,836 annual payout

Source: Russell Investments. Includes a 6.1% assumed average stock return, 2.1% assumed bond return, 2.5% annuity discount factor and 2.5% annual income raises. Example provided for illustration only. Not meant to represent any actual results.

105 Russell Investments

Illustration of variable annuity with guaranteed lifetime withdrawal benefits (GLWBs) in good markets



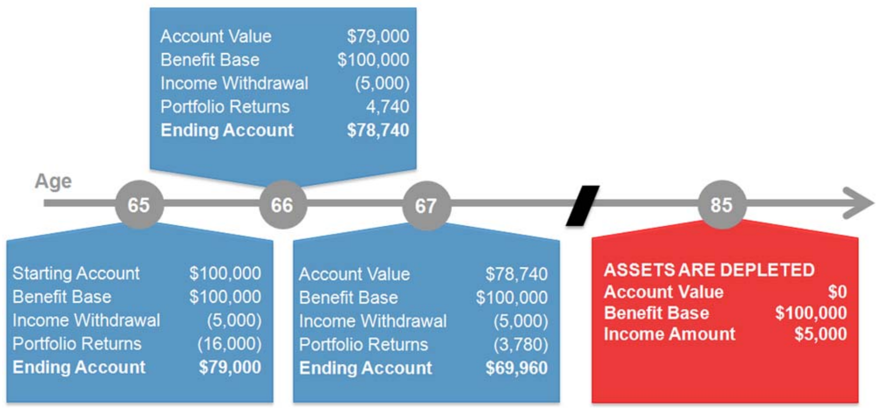
› Retiree maintains liquidity of their retirement assets and potential for bequests

› Potential for increases in income with good market performance

Source: Russell Investments.
Example provided for illustration only. Not meant to represent any actual results.

106 Russell Investments

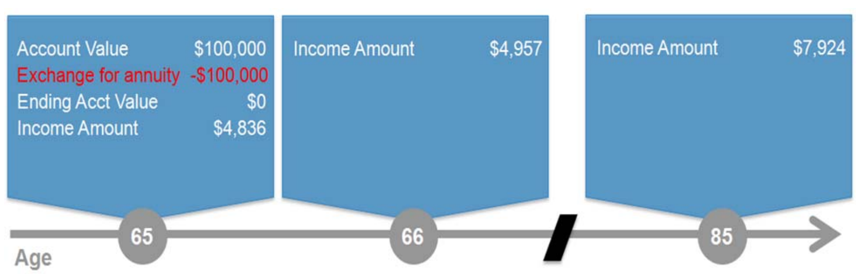
Illustration of GLWB in bad markets



› Guaranteed lifetime income protection regardless of market performance or how long the retiree lives

Source: Russell Investments.
Example provided for illustration only. Not meant to represent any actual results.

Illustration of fixed deferred annuities (FDAs)



The account value is exchanged for lifetime income that increases annually by 2.5%.

Source: Russell Investments.
Example provided for illustration only. Not meant to represent any actual results.

Case studies: Ted, age 55

Three approaches considered:

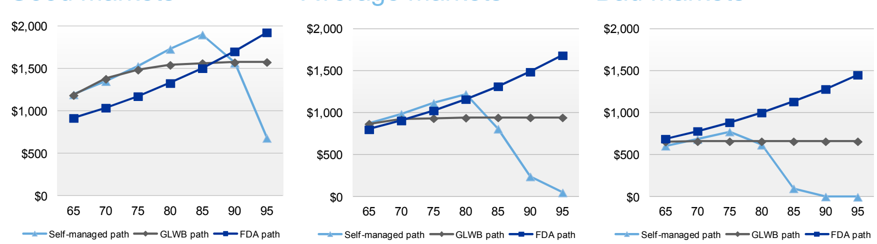
Guaranteed Lifetime Withdrawal Benefits (GLWB) path	Fixed Deferred Annuity (FDA) path	Self-managed path
• Gradually reallocates to a GLWB • Retires at age 65 • Takes 5% annual withdrawal • Includes high water mark	• Gradually reallocates to FDA • Retires at age 65 • Takes income based on accrued benefit • about 4.8% of his account value • Adjusts for a 2.5% COLA	• Contributes to a Target Date Fund (TDF) • Retires at age 65 • Takes 5% annual withdrawal • Adjusts for a 2.5% COLA

We account for fees:

- For the GLWB, 1.0% insurance fee and 0.3% management fee on underlying assets
- For the FDA, fee embedded in a discount rate spread used to determine the annuity factor

Average monthly income at several retiree ages

Good markets* Average markets* Bad markets*

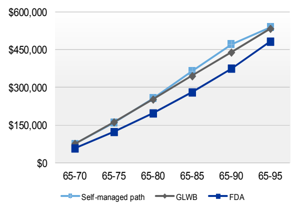


- › Retirees should consider longevity protection
- › The potential income step-ups for GLWBs may not materialize except in really good markets and only in the early part of retirement
- › In average markets, from ages 65 to 75, the GLWB's average income increased by just 7.6% while the self-managed increased by 28%

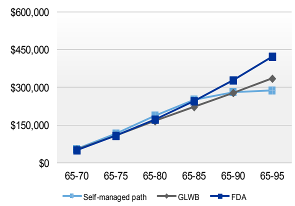
*We classify results according to the raw cumulative retirement income from the self-managed path through age 94, or a 30-year retirement period. We identify the top 10% of cumulative retirement income results as "good markets," the middle 80% as "average markets" and the bottom 10% as "bad markets." We note that the income amounts are nominal and that an inflation expectation has not been incorporated into our analysis.

Which one may provide more total income over a 30 year retirement?

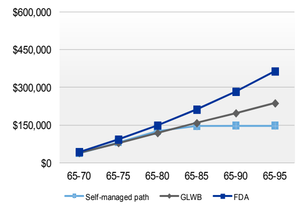
Good markets*



Average markets*



Bad markets*



- Total cumulative retirement income may be higher with the GLWB than the FDA in good markets
- The FDA may provide greater total cumulative retirement income in average and poor markets
- GLWB provides longevity protection and may provide higher total income in average and poor markets compared to self-managed

*We classify results according to the raw cumulative retirement income from the self-managed path through age 94, or a 30-year retirement period. We identify the top 10% of cumulative retirement income results as "good markets," the middle 80% as "average markets" and the bottom 10% as "bad markets." We note that the income amounts are nominal and that an inflation expectation has not been incorporated into our analysis.

How much assets may be available in retirement?

Balance (average)	Age 65		Age 75		Age 85		Age 95	
	Self-managed	GLWB	Self-managed	GLWB	Self-managed	GLWB	Self-managed	GLWB
Good markets	$285,961	$281,042	$293,385	$298,718	$175,290	$210,897	$27,425	$86,840
Average markets	$209,128	$201,392	$145,178	$133,361	$ 36,262	$ 51,484	$ 2,474	$11,658
Bad markets	$145,346	$136,472	$ 61,453	$ 40,589	$ 1,567	$ 330	$ 0	$ 0
Overall median balance	**$203,361**	**$195,519**	**$138,608**	**$125,063**	**$16,715**	**$ 33,169**	**$ 0**	**$ 0**

- Retirees should manage their expectations as to the amount of assets available in retirement or for bequests

Simple evaluation framework

	Guaranteed Lifetime Income	Provides Higher Cumulative Retirement Income	Retirement Liquidity/ Bequests
Self Managed with COLA		In good markets	✓
Fixed Annuity with COLA	✓	In average and poor markets	
Guaranteed Lifetime Withdrawal Benefit (GLWB)	✓	In good markets	✓

Source: Russell Investments
For illustrative purposes only.

Russell Investments

Appendix

Russell Investments

Appendix

Market assumptions	Return assumptions	Volatility assumptions
Stock portfolio	6.1%	18.0%
Bond portfolio	2.1%	0.0%
Interest rate (fixed deferred annuity only)	2.5%	0.0%

Participant assumptions	Investment assumptions
We take the perspective of a **55-year-old plan participant.** Age 55 represents a point where a participant may have accumulated significant savings and begun to contemplate his or her retirement. For the purposes of pricing the fixed annuity**, we consider this participant to be "unisex."** This assumption is consistent with the requirement to price annuities in qualified plans using a unisex mortality table. The sex of the participant does not otherwise factor into our analysis. **The participant starts with $100,000** initial balance, simply because it is a plausible round number for a 55-year-old to have accumulated. We do not believe using another figure with more empirical basis, such as an average account balance, would add significantly to our analysis. **The participant makes $50,000** a year initially and **receives a 2.5% salary COLA** in each subsequent year up to retirement. Our reasoning for this selection is similar to that for the initial balance. From the participant and employer combined, **total contributions equal 10% of salary.** This is consistent with typical participant deferral rates and employer matching contributions in Vanguard plans in 2011.[1] The participant plans to **retire at age 65** and commence receiving payout from plan assets.	**Invest non-guaranteed assets according to a glide path** based on the Morningstar Moderate Lifetime Allocation Index. The glide path invests in a decreasing percentage of stocks and an increasing percentage of bonds over time – 64% stocks at age 55, 48% stocks at age 65 – and reaches a minimum of 38% stocks at age 80. **The bond return is a constant 2.12% annually (before fees).** This was the interest rate for a 4- to 5-year-duration, AA credit rating fixed income asset at the time of analysis. We believe it represents both the duration and credit exposure typical of DC plan bond offerings – characteristics in line with the Barclays U.S. Aggregate Bond Index. **The stock return is the bond return plus a 4% risk premium and a volatility "shock."** The risk premium was selected at the authors' discretion and is intended to represent a global equity risk premium. The volatility of the return is 18%. **0.30% fee on the non-guaranteed assets**, which consist of a stock portfolio and a bond portfolio. The fee reflects the authors' assumption for net expenses on a passive mutual fund.

[1] Vanguard, "How America Saves 2012: A report on Vanguard 2011 defined contribution plan data."

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Appendix (cont.)

Self-managed path	GLWB path	FDA path
The participant invests according to the Morningstar glide path. Beginning at age 65, the participant takes annual withdrawals equal to the lesser of 5% of the age-65 account balance or the remaining account balance. Every 12 months, the withdrawal amount is increased by 2.5% – a cost-of-living adjustment, or COLA.	The participant invests non-GLWB assets according to the Morningstar glide path. Beginning at age 55, the participant follows a glide path for allocating to the GLWB. 10% of assets are transferred to the GLWB each year. So, the strategic target is 10% in the GLWB at 55, 20% at 56, etc., and finally 100% at 64. To maintain consistency with the FDA, we do not allow the GLWB-wrapped assets to be exchanged for non-guaranteed assets. In practice, this transaction may be allowed at the participant level, though not at the sponsor level (i.e., no wholesale trades of insurer-wrapped assets). The GLWB transfers are funded pro-rata from the glide path. The GLWB invests in a portfolio of 60% stocks and 40% bonds, in line with typical offerings on the market today. The insurance fee is 1.00% of underlying assets in the GLWB.[1] This is in addition to the 0.30% management fee stated above. GLWB entitles the participant to a maximum withdrawal allowance (without penalty) of 5% of the benefit base (explained below).[2] For this analysis, we assume the participant takes 1/12 of the maximum withdrawal each month. Once per year, the benefit base is re-calculated as the maximum of the following: current value of underlying GLWB assets, value of cumulative contributions to GLWB, or the prior year's benefit base. We assume no insurer default.	The participant invests non-FDA assets according to the Morningstar glide path. Beginning at age 55, the participant follows a glide path for allocating to the FDA. 10% of assets are transferred to the FDA each year. So, the strategic target is 10% in the FDA at 55, 20% at 56, etc., and finally 100% at 64. We do not allow the FDA assets to be exchanged for non-guaranteed assets. This constraint allows the annuity provider to offer more favorable rates. In practice, this transaction may be allowed at the participant level, though not at the sponsor level (i.e., no wholesale trades of guaranteed assets). The FDA transfers are funded pro-rata from the glide path. The annuity pricing can be summarized as follows: $194 principal at age 55 buys $1 of monthly income beginning at age 65, and $248 principal at age 65 buys $1 of monthly income beginning immediately. In between, the price increases by about 2.5% each year, in line with our 2.49% interest rate assumption (see below). The monthly income includes a 2.5% annual cost-of-living adjustment. The three primary determinants of the annuity's price are (1) interest rates (2) mortality assumptions and (3) any adjustment in payments. 1. We use LIBOR Swap spot rates at the time of analysis to price the deferred annuity for our 55-year-old plan participant.[3] The relevant rates (10-plus-year rates) ranged from 1.9% to 2.6%. We calculated the flat rate that would produce equivalent pricing to be 2.49% and applied this rate to price all annuities. This assumption is consistent with our approach of grounding the analysis in current market conditions. 2. We use a 50/50 blend of the Society of Actuaries' Annuity 2000 Basic Tables for Males and Females.[4] We do not grant "mortality credits" prior to commencement of income at age 65.[5] These assumptions, along with our interest rate assumption, make our pricing very consistent with the pricing data we obtained. 3. We grant the participant a 2.5% annual increase in his annuity income. We assume no insurer default.

[1] Retail variable annuity offerings may charge this fee on the benefit base, and not on the underlying assets.
[2] For the benefit of the reader, we note that any excess withdrawals reduce the benefit base proportionally. For instance, if the participant withdraws an excess amount equal to 10% of the market value of assets, then the benefit base is reduced by 10%.
[3] The selection of LIBOR Swap spot rates comes from discussions with a fixed annuity carrier.
[4] Available at http://tinyurl.com/c8d86om. Under this assumption, the participant's life expectancy is 20.3 years at age 65.
[5] This is consistent with our discussions with a fixed annuity carrier

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Regulatory support for in-plan guarantees is increasing

1. Safe harbor for selecting an annuity provider: December 2008 – DOL issued regulations that provide a safe harbor for selecting an annuity provider for benefit distributions from an ERISA plan.
2. Education on Lifetime Income: Feb. 2010 - DOL and Treasury jointly issued an RFI on how to educate participants on considering a lifetime income option and the barriers to offering lifetime income options in DC plans
3. Annuities Guidance: Feb. 2012 – Treasury provides guidance on annuities within DC plans to help participants obtain longevity protection
4. Guidance on Lifetime Income Disclosures: Under review – DOL and Treasury to conduct surveys on how plan sponsors and plan providers can provide lifetime income illustrations and disclosures in DC plans.

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