Positioning the 401(k) Plan for the Future

Lori Lucas, CFA
Defined Contribution Practice Leader
Callan Associates

Stacy Schaus, CFP®
Defined Contribution Practice Leader
PIMCO
Discussion Topics

- American worker’s risk appetite versus risk capacity
- Approaches to managing risk in the “New Normal”
- Relative risk of various asset allocation solutions
- Required savings rates to meet retirement savings with minimal risk
American Workers’ Risk Appetite Versus Risk Capacity

- European Union desires a common, portable pension program – like U.S. automatic program and target dates, yet not the risk

- Americans reputation for willingness to take risk “optimism” or “naivety” – living in the “land of opportunity”
  - 70% participate in some form of gambling
  - Over one half of U.S. household own stocks
  - Greater optimism and belief that hard work is rewarded and the system is fair

- Yet, can Americans take risk with their retirement savings?
  - Only 16 percent of workers are confident about having enough for a comfortable retirement
  - Investors pain of financial loss is twofold pleasure from financial gain
  - Retirees are five times more risk averse than non-retirees

SOURCE: Employee Benefit Retirement Institute 2010 Retirement Confidence Survey annual survey; Interview with Professor Eric Johnson of Columbia University on Hyper Loss Aversion
Americans are Generally More Dependent on DC Plans Than Vast Majority of Citizens of Other Countries

Spectrum of Pension “Scheme”

- Pure DB (final pay)
- Average Salary DB
- Various Hybrids
- DC with Guarantee
- Outcome Oriented DC
- Pure DC

<table>
<thead>
<tr>
<th>Investment Risk to Participant</th>
<th>Tenure and Final Pay Risk to Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure DB</td>
<td>EBRI reports less than 25% of retirees have DB income with the median payout at $10,000</td>
</tr>
<tr>
<td>Average Salary DB</td>
<td>Americans generally need DC to replace 40-60% of final pay via DC or other voluntary savings</td>
</tr>
<tr>
<td>Various Hybrids</td>
<td></td>
</tr>
<tr>
<td>DC with Guarantee</td>
<td></td>
</tr>
<tr>
<td>Outcome Oriented DC</td>
<td></td>
</tr>
<tr>
<td>Pure DC</td>
<td></td>
</tr>
</tbody>
</table>

SOURCE: Oxera schematic, Employee Benefit Retirement Institute
Americans Receive Significantly Less Social Security Than Most Europeans...

<table>
<thead>
<tr>
<th></th>
<th>% Public Pension (Social Security)</th>
<th>% Mandatory Private DC</th>
<th>% Voluntary Private DC</th>
<th>% Pension Total</th>
<th>% Public (Social Security)</th>
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</thead>
<tbody>
<tr>
<td>Austria</td>
<td>80.1</td>
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<tr>
<td>Belgium</td>
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<tr>
<td>France</td>
<td>53.3</td>
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<td>Germany</td>
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<td>18.3</td>
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<td>Greece</td>
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<td>Hungary</td>
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<td>65.9</td>
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<td>81.9</td>
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<td>Ireland</td>
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<td>67.9</td>
<td>27.7</td>
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<td>71.0</td>
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<tr>
<td>Luxembourg</td>
<td>88.1</td>
<td></td>
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<td>100.0</td>
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<tr>
<td>Netherlands</td>
<td>30.2</td>
<td>58.1</td>
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<td>Norway</td>
<td>51.9</td>
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<td>72.1</td>
<td>72.0</td>
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<tr>
<td>Slovak Republic</td>
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<td>32.4</td>
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<td>56.4</td>
<td>42.6</td>
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<tr>
<td>Spain</td>
<td>81.2</td>
<td></td>
<td></td>
<td>81.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Sweden</td>
<td>37.8</td>
<td>23.7</td>
<td></td>
<td>61.5</td>
<td>61.5</td>
</tr>
<tr>
<td>Switzerland</td>
<td>35.6</td>
<td>22.7</td>
<td></td>
<td>58.3</td>
<td>61.1</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>30.8</td>
<td>39.2</td>
<td></td>
<td>70.0</td>
<td>44.0</td>
</tr>
</tbody>
</table>

Europe        48.5  37.9  23.9  71.6  68.5
United States  38.7  40.1  78.8  49.1

Version 1 – Last updated: 09/10/09
“Try as Investors Might, So Much Depends on Chance”

“Investors…can’t buy the one thing that will have the biggest impact on their nest egg: luck,” by Sam Mamudi, Wall Street Journal 08/02/10

SOURCE: Wall Street Journal
What is Risk in a DC Plan?

Not having enough money to meet retirement expenses
401(k) Plans Birthed in 1981…and Grew Up in a Bull Market…

SOURCE: Bloomberg; Facts and Fantasies about Commodity Futures by Gary Gorton and K. Geert Rouwenhorst (June 2004)

Hypothetical example for illustrative purposes only.
Refer to Appendix for additional index information.
* From January 1981 to December 1990, commodities is represented by a hypothetical equally-weighted performance index of commodity futures constructed by Gorton and Rouwenhorst. Data was from the Commodities Research Bureau using daily prices for individual futures contracts since 1959. The data was appended from the London Metals Exchange. Starting in January 1991, commodities are represented by DJ-UBS Commodity TR Index;
** Simulated TIPS Total Returns were calculated in the periods before TIPS were issued by combining actual U.S. CPI (NSA) inflation with estimated price returns and real yields prior to February 1997. The estimates were from the Livingston Survey of Economists’ Forecasts. The estimated price returns were calculated by multiplying the monthly changes in these estimated real yields by an assumed duration of 7 years. Estimated real yields were calculated by subtracting 12 month ahead forecasted CPI (NSA) from ten-year U.S. Treasury yields. From beginning of February 1997 through 2000, TIPS Total Returns were represented by the Barclays Capital U.S. TIPS Index.
Current DC Design Reflects the Economic Times in Which They’ve Evolved…
“Children of the Bull Markets”…

Over 70% of investment offerings in plans tend to be equity…often covering the style boxes

Refer to Appendix for additional risk information.
DC Participants Have Been Taught “Risk Goes Down Over Time” – So, Just “Stay the Course”

Picture implied risk dissipates over time

SOURCE: Bloomberg
Refer to Appendix for additional index information.
Yet, Risk Can Increase Over Time…Greater Risk of a Long Period of Zero Return…

Over Past 207 Years, 173 years Were in Spans of at Least 15 Years Before the Next Real High. Is Now Such a Span?

SOURCE: Research Affiliates, LLC, Standard & Poor’s, Ibbotson Associates, Cowles Commission and Schwert

Hypothetical example for illustrative purposes only. The Real Stock Price Index is a hypothetical index developed by Research Affiliates that shows the price-only real return for U.S. stocks using the S&P and Ibbotson from 1926 through June 2010, the Cowles Commission data from 1871-1925, and Schwert data from 1802-1670. Refer to Appendix for additional hypothetical example information.
Greater Risk of a Market Shock or “Black Swan” – or Two, Three, Four…

<table>
<thead>
<tr>
<th>Daily Change (+/-)</th>
<th>Normal Approximation</th>
<th>Actual</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 3.4%</td>
<td>60 days</td>
<td>1041 days</td>
<td>17</td>
</tr>
<tr>
<td>&gt; 4.5%</td>
<td>6 days</td>
<td>388 days</td>
<td>65</td>
</tr>
<tr>
<td>&gt;7%</td>
<td>1 in 300,000 years*</td>
<td>53 days</td>
<td>Large</td>
</tr>
</tbody>
</table>

Major Financial Crises since 1980

1982  Mexico defaults on bonds leading to international debt crisis
1987  Black Monday, Dow drops 22.6% in one day
1989-91 United States S&L and Latin American debt crises
1992-3 European Monetary System crisis
1994-5 Mexican peso crisis, requiring $50 bn US guarantee
1997-8 Asian financial crisis, requiring $40 bn IMF bailout
1998  Russian default and LTCM
2001-2 Argentine default, dot-com bust, Sept 11 terrorist attacks
2007-9 Financial market meltdown

SOURCE: PIMCO, Benoit Mandelbrot.
Sample for illustrative purposes only.
* Assumes 252 trading days per year.
** The analysis of the final 1527 trading days (2003-2009) was conducted by PIMCO using historical data and identical methodologies as the original study conducted by Mandelbrot. Refer to Appendix for additional index information.
“Pure DC” and Current Investment Structure Has Placed Participants on Highly Volatile Ride

Inflation Adjusted (CPI-U) DJIA Index Returns from 1930 to 2009

SOURCE: Bloomberg
Refer to Appendix for additional index information.
Yet, Despite Market Volatility and “Black Swans” Past Markets Would Have Delivered Respectable Replacement Income….So What’s the Worry?

As of December 30, 2009

Real Replacement Income

Stock/Bond Glide Path

Assumptions:
- Starting salary - $50,000
- Real wage increase – 1%
- Savings rate – 6%-9.8% over 40 years
- Employer match – 3.5%
- Annuity Rate:6%

SOURCE: PIMCO
Hypothetical example for illustrative purposes only.
Real Replacement Income is based on return streams beginning in 1930.
Refer to Appendix for additional asset allocation tables, assumptions, glide path, hypothetical example, index, and risk information.
Future Markets are Unlikely to Deliver Returns Seen in the Past

- A fundamental secular transformation of the global economy and financial markets is underway
  - Increased regulation and government intervention
  - Slower global growth as savings increase and leverage decreases
  - Lower earnings and equity returns expected

- Highly volatile markets challenge ability to meet retirement income goals

- DC plans should be modified to succeed in the “new normal” economic environment

Refer to Appendix for additional outlook information.
New Normal: Wider Range of Outcomes as Risks Become More Distributed

As of June 30, 2010

RISKS

Savings Spike
- Households insurance in reaction to uncertainties

Shocks
- Geopolitical or environmental shocks, such as terrorism, tensions among nation-states, or natural disasters

“Flation”
- Central banks overshoot or under-react, triggering inflation or deflation

UPSIDE

Emerging Market Handoff
- Emerging economies (and China in particular) unleash domestic consumption

Innovation
- Scientific advance could surprise and lead to large productivity gains

Effective Policy
- Effective monetary and fiscal policy results in stable price levels and lower unemployment

This secular period of changing risks and opportunities requires constant adaption

Refer to Appendix for additional outlook information.
Positioning the 401(k): Fiduciary Perspective

- Target date funds
- Stable value
- Income for life solutions
- Index funds
- Alternative investment vehicles
Fiduciary Trends: Target Date Funds

- In early 2010, EBSA and the SEC provided guidance to help investors and plan participants better understand the operations and risks of target date funds.
  - The guidance describes basic features of target date funds and ways to evaluate a target date funds.

- In June 2010, the SEC proposed a series of amendments to increase disclosure around target date fund names and marketing.
  - “To” versus “Through” disclosure was a central focus on the amendments.
Does “To” versus “Through” Matter?

Pure Equity Exposure Glidepath Differences in Accumulations Years

Investor Age

Total Equity Exposure

0% 20% 40% 60% 80% 100%

25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

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“To” versus “Through” Glidepaths

Trends favoring “Through” glidepaths:

- Most participants participate in “Through” paths – this trend has not changed after the 2008 financial crisis.
- Morningstar’s Target-Date Series Research Paper: 2010 Industry Survey
  - Looking at the 15 largest target-date mutual fund providers, approximately 90% of the assets ($256 billion in total) are invested in “Through” paths as of December 31, 2009.
- Callan Consensus GlidePath
  - 9 organizations offer “To” paths (28%)
  - 23 organizations offer “Through” paths (72%)
“To” versus “Through” Glidepaths

Pros and cons of each glidepath approach:

“**To**”

- **Pro:** Low short-term volatility will exist near retirement.
- **Con:** Lower median income replacement ratios over the long run—less chance of meeting long-term retirement goals.
- **Con:** High risk of running out of assets if drawing down assets overtime.
  - This can be mitigated by purchasing an annuity, but experience shows that most participants will not do this.
- **Con:** Glidepath is static after retirement.
  (A 65-year old has a very different risk tolerance than a 75-year old.)

“**Through**”

- **Pro:** Higher income replacement ratios over the long run. In other words, a better chance of meeting long-term retirement goals.
- **Pro:** Less risk of running out of assets if drawing down assets overtime. Through path strives for optimal balance between longevity risk, market risk and inflation risk after retirement.
- **Pro:** Glidepath is optimally designed and tailored to post-retirement assets (after age 65).
- **Con:** Higher short-term volatility will exist near retirement relative to a To path.
  - However, this can be mitigated by designing a conservative Through path.
Bigger Debate: Types of Asset Classes?

Types of asset classes are a primary driver of TDF performance:

- Capital Accumulation
  - Large Cap U.S. Equity
  - Small/Mid Cap U.S. Equity
  - Non-U.S. Equity
  - Emerging Markets Equity
  - High Yield
  - Real Estate/REITs
- Diversification
  - Commodities
  - TIPS
  - Real Estate
  - U.S. Fixed Income
  - Alpha Generation
  - Small/Mid Cap U.S. Equity
  - Non-U.S. Equity
  - Emerging Markets Equity
- Expand Opportunity Set
  - Non-U.S. Fixed Income
  - High Yield
- Inflation Hedge
  - TIPS
  - Real Estate
  - Commodities
  - Low Volatility
  - Stable Value
  - Short Duration
  - U.S. Fixed Income
  - TIPS
Off-the-Shelf Asset Class Exposures

% of Paths With Strategic Exposure

- TIPS
- High Yield
- Emerging Equity
- REITS
- Non-U.S. Fixed
- Commodities
- Long Duration
- Pvt Real Estate

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What About the Core Fund Lineup?

Callan’s 2011 DC Trends Survey – Preliminary Results

- Funds added in past 12 months: domestic fixed income, domestic small/midcap equity, global equity.
- Funds to be added in next 12 months: TIPS, emerging markets equity, real return, domestic fixed income.
Fiduciary Trends: Stable Value

Stable Value Funds were challenged in several areas:

- Wrap providers are becoming more demanding in terms of fees and contract language.
- With the expectation of rising interest rates, yield premiums could shrink diminishing the attractiveness of stable value funds relative to money market funds.
- The recently passed Dodd-Frank Wall Street Reform and Consumer Protection Act also creates uncertainty surrounding stable value funds.
Historic Performance

Rolling One-Year Returns
for 20 Years ended June 30, 2010

Returns

90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09 10

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Will Structural Changes Eliminate Stable Value’s Advantage?

- Historic Premium 1.5%
- Product Descriptions 1%-2%
- Higher Wrap Costs 10 to 15 bps
- Shorter Durations 10 to 30 bps
- Higher Treasury Allocations 10 to 40 bps
Stable Value Fund Trends

Stable Value Style Group—Market to Book Value Ratio

Stable Value Style Group—Crediting Rating

MV/BV

Crediting Rate

10th Percentile
Median
90th Percentile

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Stable Value Fund Trends

Stable Value Style Group—Duration

Stable Value Style Group—Wrap Fees

10th Percentile  Median  90th Percentile

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Future of Stable Value

- Financial Reform didn’t deal a death blow to stable value funds.
- Still, stable value is a different animal today than it was a few years ago.
  - Wrap provider capacity constraints, etc. mean that yield premiums of stable value funds are likely permanently lower than they’ve been historically.
- Plan sponsors must weigh the potential advantages of stable value funds against the complexities and constraints they introduce to 401(k) plans.
What Investment Choices Do Plan Sponsors and Participants Have?

<table>
<thead>
<tr>
<th>Asset Allocation Approach</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
</table>
| Stable Value or Cash Only                     | • Principal Preservation Characteristics  
• Relatively stable return | • May not outpace inflation 
• Low nominal return |
| Treasury Inflation Protected Securities (TIPS) Only | • Principal Preservation Characteristics U.S. Government Guaranteed  
• Inflation and deflation sensitive | • Low nominal return |
| Stock & Bond Glide Path                       | • Upside return opportunity | • High relative risk exposure and volatility 
• Market shock and long-term loss potential 
• May not outpace inflation |
| Diversified Glide Path                        | • Upside return opportunity  
• Increased inflation sensitivity  
• Reduced volatility and “outcome” focus | • Relative risk exposure and volatility 
• Exposure to market shocks 
• Potential downside risk |
| Diversified Glide Path with “Tail Risk Hedging”| • Upside return opportunity  
• Increased inflation sensitivity  
• Reduced volatility and “outcome” focus  
• Hedging against severe market shocks (e.g., 15% or more) | • Potential relative risk exposure and volatility |

Refer to Appendix for additional risk information.
Target-Date Strategies are Evolving to Include More Diversifying Assets such as Inflation Hedging…

SOURCE: PIMCO.
Hypothetical example for illustrative purposes only.

Inflation-hedging assets include Treasury-Inflation Protected Securities (TIPS), Commodities and Real Estate (typically via Real Estate Investment Trusts).
Refer to Appendix for additional asset allocation tables, glidepath, hypothetical example and risk information.
Understanding the Overall Volatility as Well as Its Sources is Vital to Risk Management…

Diversified Glide Path shows lower overall volatility and broader risk allocation as retirement approaches

SOURCE: PIMCO.
Hypothetical example for illustrative purposes only.
Refer to Appendix for additional asset allocation tables, glide path, hypothetical example and risk information.

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Tail-Risk Hedging May Provide Downside Risk Mitigation in Target-Date Strategies...

<table>
<thead>
<tr>
<th>Objective</th>
<th>Potential Solution</th>
<th>Implementation Ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cushion the portfolio against systemic market crises</td>
<td>Explicitly hedge against tail events using option-like securities</td>
<td>Reduce exposure to risk assets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Buy direct hedges e.g., long-dated equity puts, put spreads or collars</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Indirect hedges e.g., credit default swap index and index tranches, interest rate swaptions and other options in deep liquid markets sensitive to macroeconomic events</td>
</tr>
</tbody>
</table>

SOURCE: PIMCO
Refer to Appendix for additional investment strategy and risk information
Investment Managers Reach Beyond Asset Diversification to Hedge Against Downside Market Volatility Including Shocks

As of December 31, 2009

Growth of $1 Since 01/01/1980

Tail Hedge Assumption: S&P 500 put options with 1 year maturity, 25% S&P 500 Index implied volatility, risk free rate of zero. Implied volatility surface is available since April, 2005. For data before 2005, a threshold factor augmented vector auto-regression model was used to interpolate the implied volatility surface based on market factors including realized volatility, daily stock return and lagged values of the model's interpolated volatilities.

Source: PIMCO, Standard & Poor's
January 1, 1980-November 20, 2009

Hypothetical example for illustrative purposes only. Refer to Appendix for additional hypothetical example, index and risk information.
Tail-Risk Hedging Added Value 72% of Years Increasing DC Participant Account Value by 12%

Assumptions:
Starting salary - $50,000
Real wage increase – 1%
Savings rate – 6%-9.8% over 40 years
Employer match – 3.5%

Tail Hedge Assumption: S&P 500 put options with 1 year maturity, 25% S&P 500 Index implied volatility, risk free rate of zero. Implied volatility surface is available since April, 2005. For data before 2005, a threshold factor augmented vector auto-regression model was used to interpolate the implied volatility surface based on market factors including realized volatility, daily stock return and lagged values of the model’s interpolated volatilities.

Source: PIMCO
Hypothetical example for illustrative purposes only.
Refer to Appendix for additional asset allocation tables, assumptions, glide path, hypothetical example, index, and risk information.
Projected DC Account Value at Retirement Age Given “New Normal” Return Assumptions

Assumptions:
Starting salary - $50,000
Real wage increase – 1%
Savings rate – 6%-9.8% over 40 years
Employer match – 3.5%

SOURCE: PIMCO
Hypothetical example for illustrative purposes only.
Refer to Appendix for additional asset class return assumptions, asset allocation tables, glide path, hypothetical example, and risk information.
Projected DC Account Value at Retirement Age Given “New Normal” Return Assumptions

Income Replacement Ratio at 1st, 50th, and 99th Percentile

<table>
<thead>
<tr>
<th>Portfolio Type</th>
<th>1st Percentile</th>
<th>50th Percentile</th>
<th>99th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable Value Only Portfolio</td>
<td>21.0%</td>
<td>36.6%</td>
<td>58.4%</td>
</tr>
<tr>
<td>TIPS Only Portfolio</td>
<td>21.0%</td>
<td>36.0%</td>
<td>58.2%</td>
</tr>
<tr>
<td>Stock/Bond Glide Path</td>
<td>17.0%</td>
<td>58.5%</td>
<td>171.2%</td>
</tr>
<tr>
<td>Diversified Glide Path</td>
<td>19.6%</td>
<td>57.4%</td>
<td>146.7%</td>
</tr>
<tr>
<td>Diversified Glide Path with Tail Hedge</td>
<td></td>
<td>60.8%</td>
<td>128.6%</td>
</tr>
</tbody>
</table>

Assumptions:
- Starting salary - $50,000
- Real wage increase – 1%
- Savings rate – 6%-9.8% over 40 years
- Employer match – 3.5%

SOURCE: PIMCO
Hypothetical example for illustrative purposes only.
Refer to Appendix for additional asset class return assumptions, asset allocation tables, glide path, hypothetical example, and risk information.
Although Stock/Bond Glide Path Appears to Meet the 50% Income Goal with a Low Savings Rate…

Projected Required Savings Rate for a 50% Probability of Having a 50% Income Replacement at Retirement

- Stock/Bond Glide Path: 11.3%
- Diversified Glide Path: 11.3%
- Diversified Glide Path with Tail Risk Hedge: 11.5%
- TIPS Only Portfolio: 16.6%
- Stable Value Only Portfolio: 16.9%

Assumptions:
- Starting salary - $50,000
- Real wage increase – 1%
- Annuity Rate: 6%

SOURCE: PIMCO
Hypothetical example for illustrative purposes only. Refer to Appendix for additional asset allocation assumptions, asset allocation tables, glide path, hypothetical example, and risk information.
A Diversified Glide Path with Tail Risk Hedging May Offer High Probability of Meeting Income Goal...at Low Savings Rate

Projected Required Savings Rate for a 50% & 99% Probability of Having a 50% Income Replacement at Retirement

- Diversified Glide Path with Tail Risk Hedge: 11.3% (50%) & 8.8% (99%)
- Stable Value Only Portfolio: 16.9% (50%) & 3.3% (99%)
- TIPS Only Portfolio: 16.6% (50%) & 8.3% (99%)
- Diversified Glide Path: 11.5% (50%) & 13.9% (99%)
- Stock/Bond Glide Path: 11.3% (50%) & 19.1% (99%)

Assumptions:
- Starting salary - $50,000
- Real wage increase – 1%
- Annuity Rate: 6%

SOURCE: PIMCO

Hypothetical example for illustrative purposes only.
Refer to Appendix for additional asset class assumptions, asset allocation tables, glide path, hypothetical example, index, and risk information.
Fiduciary Trends: Fees

- The Department of Labor (DOL) released interim financial regulation relating to improved DC fee disclosure requirements.
- The U.S. Supreme Court ruled that mutual fund fees do not violate the law unless they are “so disproportionately large” that they could not have been the product of arm’s-length bargaining.
- A U.S. District Court recently found that a plan sponsor offering the retail share classes of mutual funds in a DC plan without exploring available institutional share classes violated the duty of prudence.
# Large Cap Broad Equity versus S&P 500 Index

## Percent of Three-Year Periods where Manager Beat Benchmark by More than Hurdle - by Percentile

<table>
<thead>
<tr>
<th>Hurdle</th>
<th>0.25%</th>
<th>0.30%</th>
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**Average Annualized Excess Return - Median Manager:** -0.14%
**International Equity Core Broad Style versus MSCI EAFE Index**

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Average Annualized Excess Return - Median Manager: 2.77%
Structuring the Fund Lineup

Investment Structure Framework A

Risk Spectrum

Conservative

Tier I – Asset Allocation
Risk Based/Target Maturity

Tier II – Core Options
- Capital Preservation
- Core Plus Fixed Income
- U.S. Large Cap Value
- U.S. Large Cap Index
- U.S. Large Cap Growth
- International Equity
- U.S. Small/Mid Cap Core

Aggressive

Tier III – Specialty Options

Callan Associates
Structuring the Fund Lineup

Investment Structure Framework B

**Risk Spectrum**
- **Conservative**
  - Tier I – Asset Allocation
    - Risk Based/Target Maturity
  - Tier II – Core Passive
  - Fixed Income Index
  - U.S. Large Cap Index
  - International Equity Index
  - U.S. Small/Mid Cap Index
- **Aggressive**
  - Tier II – Core Active
    - Capital Preservation
    - Core Plus Fixed Income
    - U.S. Large Cap Value
    - U.S. Large Cap Growth
    - International Equity
    - U.S. Small/Mid Cap Core
  - Tier III – Specialty Options

CALLAN ASSOCIATES
Suggested DC Plan Structure for the New Normal: Broader Asset Diversification and Risk Management

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<th>Tier I: Target Date Default</th>
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<tr>
<td>Custom Target-Date Strategies:</td>
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<tr>
<td>- Mix of core</td>
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<tr>
<td>- Tail-risk hedging</td>
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<tr>
<td>Packaged Target-Date Funds:</td>
</tr>
<tr>
<td>- Broad asset and risk diversification</td>
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<td>- Tactical asset allocation</td>
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<td>- Tail-risk hedging</td>
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<table>
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<th>Tier II: Core Investment Offerings</th>
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<td>Capital Preservation</td>
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<td>- Stable Value and Money Market</td>
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<td>- U.S. and Non-U.S. Bond</td>
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<td>- Real Estate</td>
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<td>- Asset Allocation</td>
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<table>
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<th>Tier III: Brokerage Window</th>
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<td>Access to full brokerage:</td>
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<td>- Mutual Funds</td>
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<tr>
<td>- Stocks</td>
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<td>- Exchange Traded Funds</td>
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<tr>
<td>- Bonds</td>
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<tr>
<td>- Retirement Income Solutions</td>
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Refer to Appendix for additional risk information.
Alternative Investment Structures

- Retail Mutual Funds
- Institutional Mutual Funds
- Commingled Funds and Collective Trusts
- Separate Accounts
Fiduciary Trends: Lifetime Income Solutions

• The DOL and Treasury held a hearing on lifetime income in September 2010.
  – Focus was on making lifetime income solutions more palatable to plan sponsors and investors.

• This follows the Request for Information on the topic of retirement income solutions issued by the two agencies earlier this year.
Why In-Plan Annuities

• 73% of 401(k) participants gave “very important” ratings to both “knowing they would have a consistent, guaranteed monthly income in retirement other than Social Security” and knowing their “health care costs would be covered.”

Status of Product Innovation for In-Plan Annuities

- **Types and Evolution:**
- Fixed deferred annuities (BGI, Hartford, MetLife)
- Guaranteed minimum income benefit products (Genworth)
- Guaranteed minimum withdrawal benefit payment products (Prudential, UBS/Genworth, Great-West)
In-Plan Guaranteed Minimum Withdrawal Benefit Products

- Allow participants to lock in a certain base level of wealth from which income is drawn.
- Underlying assets are in a balanced or target date fund.
- Participants can lock in the account’s “high water mark”—as available—each year.
- The income base never declines below the highest “high water mark” no matter what the actual investment experience.
- In retirement, the guaranteed payment (e.g., 5% of the income base) is made at the highest water mark level.
- If the account runs out of money during the decumulation phase, annuity payments may still be provided to the participant.
Each year, on stated date, the income base is reset to the account value, if higher.

Example: In-Plan Guaranteed Minimum Withdrawal Benefit Products

Payments come from account value until it is exhausted—which may be never.
Issues with Guaranteed Income for Life Products

Many considerations with offering any of the in-plan annuities that are currently available.

- **Insurer risk**
  - Who is ultimately responsible for the guarantee?
  - How viable is the insurer?

- **Cost**
  - Insurance costs have risen substantially across the board—and may continue to do so; often, contracts allow fees to rise at insurer’s discretion.

- **Portability**
  - Rollovers; changes in recordkeepers

- **Plan sponsor fiduciary (selection) concerns**
  - Value of safe harbor
  - Difficulties eliminating products deemed no longer prudent

- **Recordkeeper support**
  - Expensive to support; conflicts with many recordkeepers’ rollover business

- **Participant interest/difficulty communicating**
  - “Do you want to have lunch?”
Alternatives to In-Plan Annuities

- Payout funds
- Systematic withdrawal programs
- Retirement education, communication, and advice
Distributions Stay Constant in Real (Inflation-Adjusted) Terms

The chart above depicts the components of the total distribution that an investor may receive over time. The cumulative inflation accruals may be adjusted higher or lower as a result of increases (inflation) or decreases (deflation) in CPI. Due to the "laddered" structure, the amount of principal in the distributions are higher in the later years.

Refer to Appendix for additional risk information.
What You Can do to Help Improve Your DC Plan…

- Help participants understand a higher savings need in the “New Normal”
- Evaluate “risk factors” or what drives volatility in asset allocation
- Add diversifying assets (e.g., TIPS, Commodities, REITS, global bonds)
- Consider adding tactical asset allocation and tail-risk hedging
- Seek best-in-class active managers with demonstrated skill
- Revisit the target date fund to ensure it has the right glide path
- Evaluate the stable value option
- Examine the full spectrum of retirement income solutions
- Consider alternative investment structures (collective trusts, separate accounts, etc.)
Appendix
## Stock/Bond Glide Path Asset Allocation

<table>
<thead>
<tr>
<th>Start in Year (from Now)</th>
<th>0</th>
<th>6</th>
<th>11</th>
<th>16</th>
<th>21</th>
<th>26</th>
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<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
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<tr>
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_Hypothetical example for illustrative purposes only._
_Large Cap: S&P 500 Index; Fixed Income: Barclays Capital U.S. Aggregate Index_

Refer to Appendix for additional hypothetical example and index information.
## Diversified Glide Path Asset Allocation

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Hypothetical example for illustrative purposes only.
Large Cap: S&P 500 Index; Small Cap: Russell 2000 Index; International: MSCI EAFE Index; EM Equity: MSCI EM Index; Real Estate: Dow Jones U.S. Select REIT TR Index; Commodities: Dow Jones UBS Commodity TR Index; Fixed Income: Barclays Capital U.S. Aggregate Index; TIPS: Barclays Capital U.S. TIPS Index; Long Treasuries: Barclays Capital Long-Term Treasury Index; Long TIPS: Barclays Capital U.S. TIPS: 10 Year+ Index; Cash: Citigroup 3-Month Treasury Index.
Past performance is not a guarantee or a reliable indicator of future results.

Assumptions
Return assumptions are for illustrative purposes only and are not a prediction or a projection of return. Return assumption is an estimate of what investments may earn on average over the long term. Actual returns may be higher or lower than those shown and may vary substantially over shorter time periods.

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Appendix

Glide Path
The glide path is intended to illustrate how allocations among asset classes change as a target date approaches. The target asset allocation is based on a target date, which assumes a normal retirement age of 65, and time horizons based on current longevity of persons reaching retirement in average health. The glide path is designed to reduce risk as the target retirement date nears, but may also provide investors diversification across a variety of asset classes, with an emphasis on asset classes that may protect against inflation over time. The target allocations used in this presentation are for illustrative purposes only. They are based on quantitative and qualitative data relating to long-term market trends, risk metrics, correlation of asset types and actuarial assumptions of life expectancy and retirement.

The glide path implements an optimal asset allocation mix that moves from higher risk to lower risk over time and is designed to manage the risk of an individual’s savings as they approach retirement. The glide path acts as a “benchmark portfolio”, reflecting an allocation that is optimal with respect to our long-run, real return assumptions for each asset class (referred to above as “capital market assumptions”). The glide path optimization takes into account the compounding of returns over the given investment horizon, unlike standard mean-variance analysis. PIMCO’s approach to developing a glide path incorporates liability-driven modelling in a “real return” framework, using a broad opportunity set of asset classes seeking to deliver meaningful improvements over traditional approaches. This approach may increase the median return and narrow the range of expected future outcomes when compared to the typical glidepath, while hedging the risk of future inflation and reducing the risk of a shortfall in future sustainable spending power. More income is likely to distribute near the median.

Hypothetical Example
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 information on future results or expectations should not be construed as an estimate or promise of results that a client portfolio may achieve.

Investment Strategy
There is no guarantee that these investment strategies will work under all market conditions and each investor should evaluate their ability to invest for a long-term especially during periods of downturn in the market.

Outlook
Statements concerning financial market trends are based on current market conditions, which will fluctuate. There is no guarantee that these investment strategies will work under all market conditions, and each investor should evaluate their ability to invest for the long-term, especially during periods of downturn in the market. Outlook and strategies are subject to change without notice.
Appendix

Risk
All investments contain risk and may lose value. Investing in the bond market is subject to certain risks including market, interest-rate, issuer, credit, and inflation risk; investments may be worth more or less than the original cost when redeemed. 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. 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. Treasury Inflation-Protected Securities (TIPS) are ILBs issued by the U.S. Government. Commodities contain heightened risk including market, political, regulatory, and natural conditions, and may not be suitable for all investors.

Equities may decline in value due to both real and perceived general market, economic, and industry conditions. 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. REITs are subject to risk, such as poor performance by the manager, adverse changes to tax laws or failure to qualify for tax-free pass-through of income. Derivatives and commodity-linked 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. Commodity-linked derivative instruments may involve additional costs and risks such as changes in commodity index volatility or factors affecting a particular industry or commodity, such as drought, floods, weather, livestock disease, embargoes, tariffs and international economic, political and regulatory developments. Investing in derivatives could lose more than the amount invested.

Tail Risk Hedging involves entering into financial derivatives (including, options, swaps and other derivative instruments) that are expected to increase in value during the occurrence of tail events. If a tail event occurs, the strategy may lose any delivery of instruments or other collateral pledged as security due to the potential systemic import of the tail event adversely affecting the portfolio positions. Tail hedging strategies risk the loss of all or a portion of the value of the tail event instruments it may purchase or the derivative contracts it may enter into, even if a period of severe market stress occurs during the term of such securities. A tail event is unpredictable; therefore, investments in instruments tied to the occurrence of a tail event are speculative. Suitable derivative transactions may not be available in all circumstances. The use of these strategies involves certain special risks, including a possible imperfect correlation, or even no correlation, between price movements of derivative instruments and price movements of related investments. Derivatives are currently the subject of regulatory and statutory proposals, both in the U.S. and internationally. There can be no assurance that the enactment of rules or regulations in the future will not have an adverse effect on the strategy’s ability to carry out its investment strategy or to do so at a reasonable cost.

Stable value wrap contracts are subject to credit and management risk. PIMCO does not offer insurance guaranteed products or products that offer investments containing both securities and insurance features.

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Appendix

Index descriptions
Barclays Capital Long-Term Treasury consists of U.S. Treasury issues with maturities of 10 or more years. Prior to November 1, 2008, this index was published by Lehman Brothers.

The Barclays Capital 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 Capital U.S. TIPS Index is an unmanaged market index comprised of all U.S. Treasury Inflation Protected Securities rated investment grade (Baa3 or better), have at least one year to final maturity, and at least $250 million par amount outstanding. Performance data for this index prior to 10/97 represents returns of the Lehman Inflation Notes Index.

Barclays Capital U.S. TIPS: 1-10 Year is an unmanaged index market comprised of U.S. Treasury Inflation Protected securities having a maturity of at least 1 year and less than 10 years. Prior to November 1, 2008, this index was published by Lehman Brothers.

The Citigroup 3-Month Treasury Bill Index is an unmanaged index representing monthly return equivalents of yield averages of the last 3 month Treasury Bill issues.

The Consumer Price Index (CPI) is an unmanaged index representing the rate of inflation of the U.S. consumer prices as determined by the U.S. Department of Labor Statistics. There can be no guarantee that the CPI or other indexes will reflect the exact level of inflation at any given time.

The Dow Jones Industrial Average (DJIA) is a price-weighted average of 30 actively traded “blue chip” stocks, primarily industrials, but including financials and other service-oriented companies as well. The components, which change from time to time, represent between 15% and 20% of the market value of NYSE stocks.

Gorton and Rouwenhorst constructed a hypothetical equally-weighted performance index of commodity futures. Data was from the Commodities Research Bureau using daily prices for individual futures contracts since 1959. The data was appended from the London Metals Exchange.

The Hueler Analytics Stable Value Pooled Fund Comparative Universe is an equal-weighted total return average across all participating funds in the Hueler Universe and represents approximately 75% of the stable value pooled funds available to the marketplace and represents stable value investment strategies of $96 billion. All participating stable value pooled funds are available to investors through employer sponsored retirement plans. The index series dates back to 1983 and is produced on a monthly basis.
Appendix

The Dow Jones UBS Commodity Total Return Index is an unmanaged index composed of futures contracts on 19 physical commodities. The index is designed to be a highly liquid and diversified benchmark for commodities as an asset class. Prior to May 7, 2009, this index was known as the Dow Jones AIG Commodity Total Return Index.

The Dow Jones U.S. Select Real Estate Investment Trust (REIT) Total Return Index, a subset of the Dow Jones U.S. Select Real Estate Securities Total Return Index, is an unmanaged index comprised of U.S. publicly traded Real Estate Investment Trusts. This index was formerly known as the Dow Jones Wilshire REIT Index.

Gorton and Rouwenhorst constructed a hypothetical equally-weighted performance index of commodity futures. Data was from the Commodities Research Bureau using daily prices for individual futures contracts since 1959. The data was appended from the London Metals Exchange.

The Morgan Stanley Capital International Emerging Markets Index is an unmanaged index that measures equity market performance in the global emerging markets. As of May 2005, the Emerging Markets Index (float-adjusted market capitalization index) consisted of indices in 26 emerging countries: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia, Israel, Jordan, Korea, Malaysia, Mexico, Morocco, Pakistan, Peru, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, Turkey, and Venezuela.

The MSCI EAFE (Morgan Stanley Capital International Europe, Australasia, Far East Index) is an unmanaged index of over 900 companies, and is a generally accepted benchmark for major overseas markets. Index weightings represent the relative capitalizations of the major overseas markets included in the index on a U.S. dollar adjusted basis.

The Russell 2000 Index is an unmanaged index generally representative of the 2,000 smallest companies in the Russell 3000 Index, which represents approximately 10% of the total market capitalization of the Russell 3000 Index.

The S&P 500 Index is an unmanaged market index generally considered representative of the stock market as a whole. The index focuses on the Large-Cap segment of the U.S. equities market.

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