Retirement Income Planning:
A New Efficient Frontier and Outcome Based Investment Strategies

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President

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Agenda

- Investor Goals
  - Maintain a comfortable lifestyle in retirement (convert savings into a sustainable lifetime income)
  - Bequest
- Shortfall Factors
  - Market risk
  - Longevity risk
  - Inadequate savings
- Solutions
  - Controlling the 3 risk factors
  - New Efficient Frontier between traditional assets and **outcome based investment products**: Principal Protected Products, Annuities (Payout or VA+GLiB)
New Efficient Frontier for Retirement Income

- Traditional Mean-Variance Efficient Frontier
  - Does not handle “outcome based” strategy well
- New Income Frontier
  - Average Sustainable Income vs. Shortfall Income for a given horizon
  - Shortfall Income → Value-at-Risk (VAR)
  - VAR → estimate of the loss that we expect to be exceeded with a probability (e.g. 5%)
  - Shortfall Income → shortage of income against a target in the worst scenario (5th percentile)
Real Median Sustainable Income vs. Real Shortfall Income
30 Year Horizon

Source: Ibbotson Associates
### Asset Allocation with Payout Annuity and VA+GLiB: Key Factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Proportion to Implement with PA or VA+GMWB</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Bequest</td>
<td>Lower</td>
<td>Preference to leave more</td>
</tr>
<tr>
<td>High Income Sustainability</td>
<td>Higher</td>
<td>Preference for personal consumption</td>
</tr>
<tr>
<td>High Subjective Survival</td>
<td>Higher</td>
<td>Perceived longevity risk / suitability</td>
</tr>
<tr>
<td>Probability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Fees</td>
<td>Lower</td>
<td>Fees reduce returns</td>
</tr>
<tr>
<td>Large Wealth</td>
<td>Varies</td>
<td>Ratio of wealth to income need</td>
</tr>
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</tbody>
</table>

*Ibbotson has US Patent 7120601B2. Granted October 10, 2006*
Asset Allocation with Payout Annuities or VA+GLiB

Objective Factors
- Financial Wealth
- Retirement Income Need
- Guaranteed Income

Subjective Factors
- Subjective Survival
- Likelihood of Holding for Life
- Consumption vs. Bequest

Product Allocation
- Traditional Assets
- Outcome based strategies, Payout Annuities, VA+GLiB
Summary

- New retirement income efficient frontier is more effective for tradeoffs on retirement income than traditional mean-variance efficient frontier

- Shortfall Factors can be Managed by combining Traditional Asset Allocation with **outcome based products**

- Caveats
  - Default risk
  - Investor with shorter retirement period
  - For investors with existing market risk and retirement income risk coverage, the benefit will be smaller (existing DB)
Thought Leadership

Lifetime Financial Advice: Human Capital, Asset Allocation, and Insurance

Human Capital, Asset Allocation, and Life Insurance

Peng Chen, CFA, Roger G. Ibbotson, Marthe A. Minoukay, and Kevin X. Zhu

Financial planners and advisors increasingly recognize that human capital must be taken into account when building retirement portfolios for individuals. However, it is not simple to measure and value human capital in the same way as other financial assets. This makes the valuation of human capital a complex and subjective task. Life expectancy plays a critical role in the valuation of human capital. The article provides a framework for valuing human capital and discusses the implications for financial planning.

2007 Graham and Dodd Award

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