Sequence of Returns Risk

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Outline for Presentation

• Retirement Income Planning:
  Overview of new circumstances and risks
  Deep Dive into Sequence Risk
• Risk Management Techniques for Sequence Risk
  • Reduce Portfolio Volatility
    1. Relationships between return, volatility, and spending
    2. Rising equity glidepaths during retirement
• Flexible Spending Strategies
  1. Decision Rules to Guide Retirement Withdrawals
Retirement Risks

Longevity Risk

- Unknown Planning Horizon

Macro/Market

- Investment Volatility
- Interest Rate Volatility
- Public Policy and Taxation
- Sequence of Returns

Inflation

- Rising Costs of Living

Personal Spending

- Health & Long-Term Care
- Help Other Family Members
- Divorce
- Fraud/Theft
Challenges for an Individual Pension Plan

• **Asset Returns**
  • *Pension Manager* – Pool returns across generations
  • *Advisor* – One whack at the cat

• **Longevity Risk**
  • *Pension Manager* – systemic increases in longevity
  • *Advisor* – Idiosyncratic longevity risk
“[Retirement Income Planning] is a really hard problem. It’s the hardest problem I’ve ever looked at.”

William Sharpe
CFA Institute Conference, 2014
Sequence of Returns Risk

Journal of Financial Service Professionals, January 2014
Sequence Risk

• Most vulnerable to returns when wealth is largest
• Pre-retirement dollar cost averaging reverses in distribution phase
Sequence Risk - Accumulation

- Wealth Accumulation with Rolling 30-Year Savings Periods
- Mean Return = 7%, Standard Deviation = 20%
- With 15% savings rate & constant salary, Expected Wealth = 10
Sequence Risk - Distribution

- Maximum Spending with Rolling 30-Year Distribution Periods
- Mean Return = 7%, Standard Deviation = 20%
- With market expectations, Expected Spending rate = 6.2%
Withdrawal Rates: Explanatory Power of Early and Late Returns

\[
\text{MWR} = 4.34 + 0.41 \times \text{First10} \quad R^2 = 77\%
\]

\[
\text{MWR} = 5.81 + 0.16 \times \text{Last20} \quad R^2 = 5\%
\]
Lifetime Sequence of Returns Risk
Low Bond Yields = Lower Sustainable Withdrawal Rates & Heightened Exposure to Sequence Risk

Journal of Financial Planning, June 2013
Importance of current market conditions

• Sources of bond returns:
  • initial bond yield
  • subsequent yield changes

• Sources of stock returns:
  • dividend income
  • growth of the underlying earnings
  • changes in the valuation multiples placed on those earnings
Figure 2
Relationship Between Bond Yields and Subsequent Bond Returns

Intermediate-Term Government Bond Yield

Return = 0.3 + 1.07 * Yield
R² = 0.88

Return = 0.75 + 0.96 * Yield
R² = 0.92
Monte Carlo Simulations

Failure Rates for 4% Inflation-Adjusted Withdrawals over 30 Years
For Different Asset Return Assumptions

<table>
<thead>
<tr>
<th>Historical Characteristics (means, volatilities, correlations) 1926-</th>
<th>30% Stocks</th>
<th>50% Stocks</th>
<th>70% Stocks</th>
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<tbody>
<tr>
<td>Historical, Except:</td>
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<td>real bond returns = 1.75%</td>
<td>24%</td>
<td>24%</td>
<td>27%</td>
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<td>real stock returns = 5.5%</td>
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<td>Historical, Except:</td>
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<td>real bond returns = 0%</td>
<td>47%</td>
<td>33%</td>
<td>28%</td>
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<td>real stock returns = 6%</td>
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<td>Historical, Except:</td>
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<tr>
<td>real bond returns = -1.4%</td>
<td>77%</td>
<td>57%</td>
<td>46%</td>
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<td>real stock returns = 4.6%</td>
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<td>Historical, Except:</td>
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<tr>
<td>real bond returns = -1.4% for 10 Years (then 2.6% thereafter)</td>
<td>43%</td>
<td>32%</td>
<td>38%</td>
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<td>real stock returns = 4.6% for 10 Years (then 8.6% thereafter)</td>
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<td>Historical, Except:</td>
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<tr>
<td>real bond returns = -1.4% for 5 Years (then 2.6% thereafter)</td>
<td>22%</td>
<td>18%</td>
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<tr>
<td>real stock returns = 4.6% for 5 Years (then 8.6% thereafter)</td>
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</table>
The 4% Rule

A Unique Cause of Sequence Risk

Determination of Withdrawal Rates Using Historical Data

by William P. Bengen

The 4% Rule

At the start of retirement, investment advisors make crucial recommendations to clients concerning asset allocation, as well as deficit forecasts they can safely withdraw annually, so clients will not outlive their money. This work utilizes historical withdrawal rates on real portfolios for more meaningful, realistic projections of the withdrawal rate. The results reflect the maximum sustained withdrawal rate (as a percentage of initial portfolio value), and illustrate the effect of (a) the randomness of realized portfolio returns, and (b) the randomness of the withdrawal rate within each portfolio. Finally, it provides guidance on "minimum returns" changes of asset allocation and withdrawal rates.

T...
William Bengen’s 4% Rule

**Figure 2.1**
Maximum Sustainable Withdrawal Rates
For 50/50 Asset Allocation, 30-Year Retirement Duration, Inflation Adjustments, No Fees
Using SBBI Data, 1926-2010, S&P 500 and Intermediate-Term Government Bonds

- Retirement Year
- Maximum Sustainable Withdrawal Rate
Our Hapless 1966 Retiree

50/50 Portfolio: **4.04%** was highest sustainable WR

Average 50/50 Real Return (1966-1995): 4.74%
Compounded 50/50 Real Return (1966-1995): 4.17%

If 1966 retiree could enjoy fixed compounded return:
WR = **5.67%**

Using 4.04% instead, 98% of initial real wealth remains after 30 years
Our Hapless 1966 Retiree

50/50 Portfolio: 4.04% was highest sustainable WR

Reverse Return Sequence: 1995 back to 1966,
WR = 7.62%

Using 4.04% instead, 160% of initial real wealth still available after 30 years
Problems with 4% Rule

• Incongruity of funding a smooth spending stream from a volatile portfolio – this is a unique cause of sequence of returns risk

• Solutions: Let spending fluctuate or lower the volatility
Managing Sequence Risk:
Reduce Portfolio Volatility
Relationship Between Returns, Volatility, & Sustainable Spending


(article link)
Reducing Retirement Risk with a Rising Equity Glide Path

by Wade D. Pini, Ph.D., CFP® and Michael F. Kitces, GEP®,


Rising Equity Glidepaths

(with Michael Kitces)
Traditional Target Date Funds

“To” Retirement

Stock Allocation

Bonds

Stocks

Years Before Retirement

Years After Retirement

0%
20%
40%
60%
80%
100%
Traditional Target Date Funds
“Through” Retirement

Stock Allocation vs. Years Before/After Retirement

- Bonds
  - 100%
- Stocks
  - 0%
Financial Planning: Maintain High Stock Allocation

- 100% Bonds
- 80% Stocks
- 60% Stocks
- 40% Stocks
- 20% Stocks

Years Before Retirement

Years After Retirement

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

0 5 10 15 20 25 30 35 40+
Target Date Funds
Rising Equity Glidepath

Stock Allocation

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

Years Before Retirement

Years After Retirement

Bonds

Stocks
Retirement Scenario Generator

- Can't Go Wrong
- Returns rise then fall
- Early portfolio growth negates later downturn
- Returns fall then rise
- Portfolio rescued by rising equity allocation
- Can't Go Wrong
Our Hapless 1966 Retiree

50/50 Portfolio: **4.04%** was highest sustainable WR

Using rising glidepath, 20% stocks increasing to 50%,
WR = **4.06%**

Less market risk still provides slightly improved outcome
Managing Sequence Risk:
Flexible Spending Strategies
Spending Flexibility and the Initial Spending Rate


Conclusion: Clients who are willing to make provisions for spending cuts, should the need arise, can confidently start with a higher withdrawal rate than deemed appropriate when using a constant inflation-adjusted strategy.
Example: Adjusting Distributions to Market Returns

**Constant Inflation-Adjusted Amount**
Initially withdraw 4.3%, Adjust for Inflation

**Constant Percentage**
Annually withdraw 4.3% of Remaining Balance

**Guyton-Inspired Distribution Management**
Initially withdraw 4.3%, Adjust for Inflation
Reduce spending by 10% if WR Exceeds 5.2%
Increase spending by 10% if WR Falls Below 3.4%
Don’t adjust for inflation after years when Return<0%
Spend More When Things Go Well...
But Preserve Assets By Cutting Spending When Things Go Poorly
Retirement Income Strategy

Total Wealth ➔ Process
  - Combine Tools
  - Meet Goals
  - Risk Management ➔ Income for Life
Thank you! Any Questions?

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