

The 2nd European Colloquia

29th November 2007

Asset Allocation over the Life-Cycle: Theory and Practice

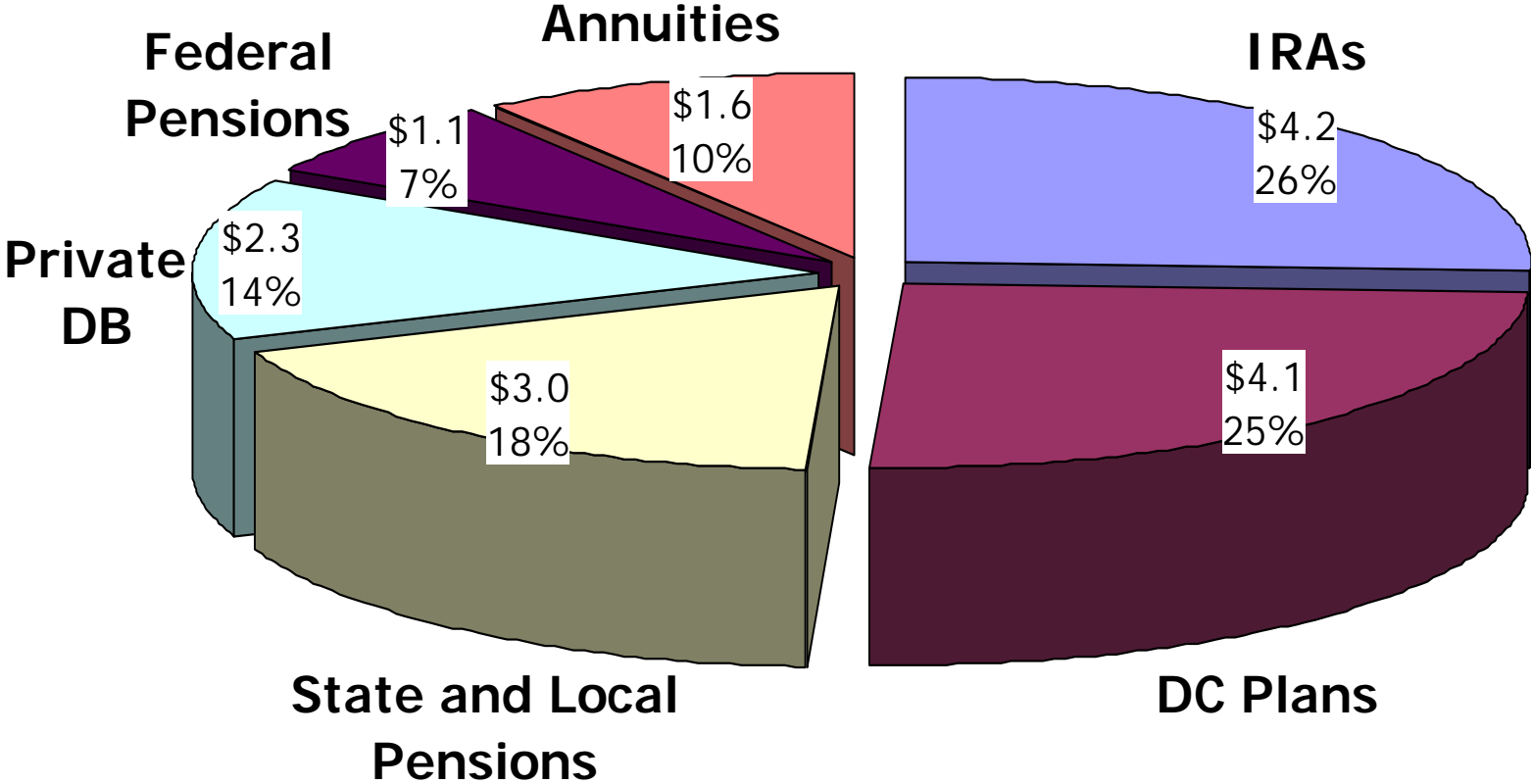
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U.S. Retirement Assets

Total U.S. retirement assets = \$ 16.4 trillion

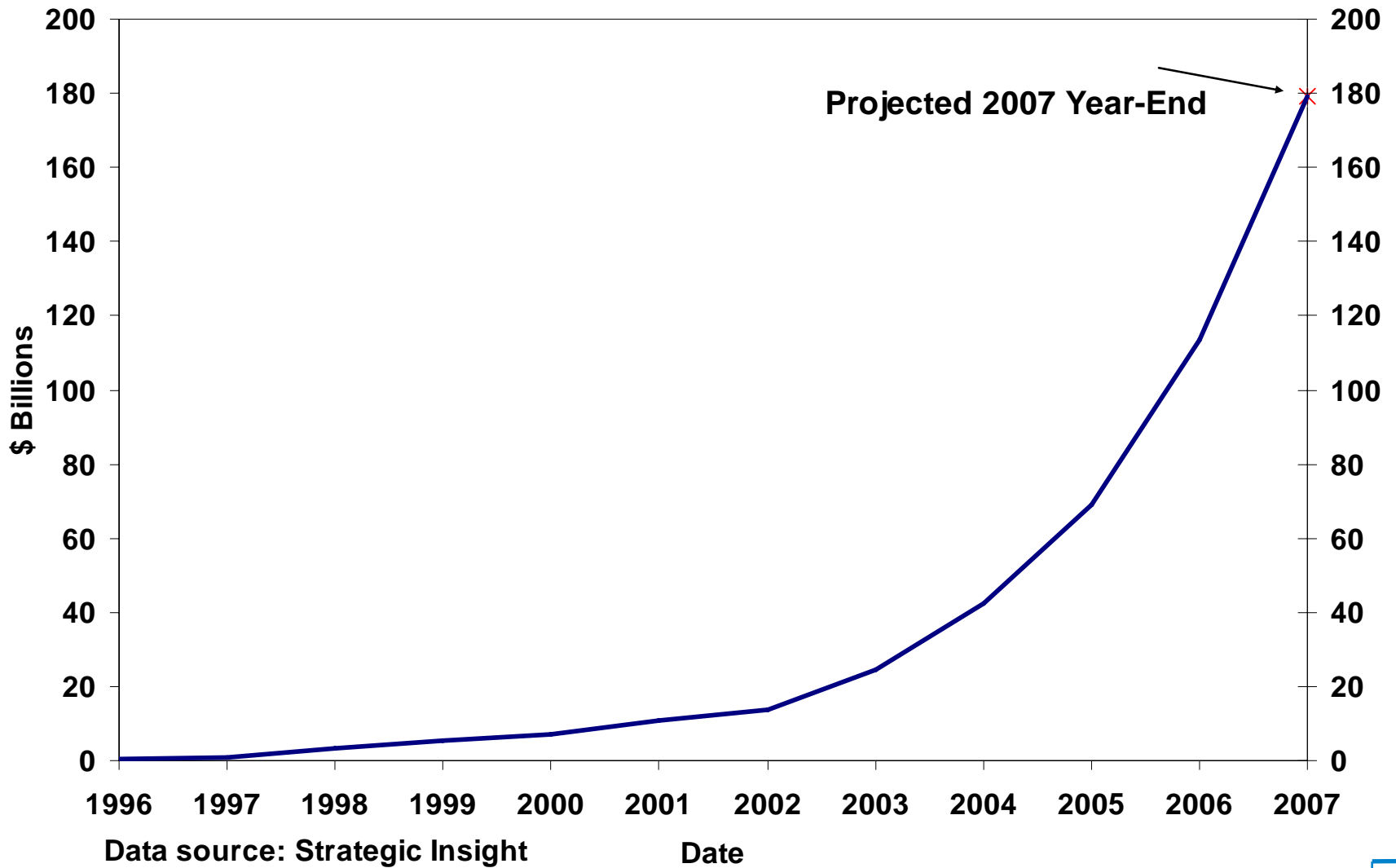


Data are for 2006
Source: ICI, July 2007

Life-cycle funds: Small but growing segment of retirement market

- Based on a “target” retirement date
- Rebalance to keep equity, bond, and cash shares at targeted level
- Gradually reduce equity share as target date gets closer
- Usually structured as a fund of funds

Life-cycle funds: assets under management



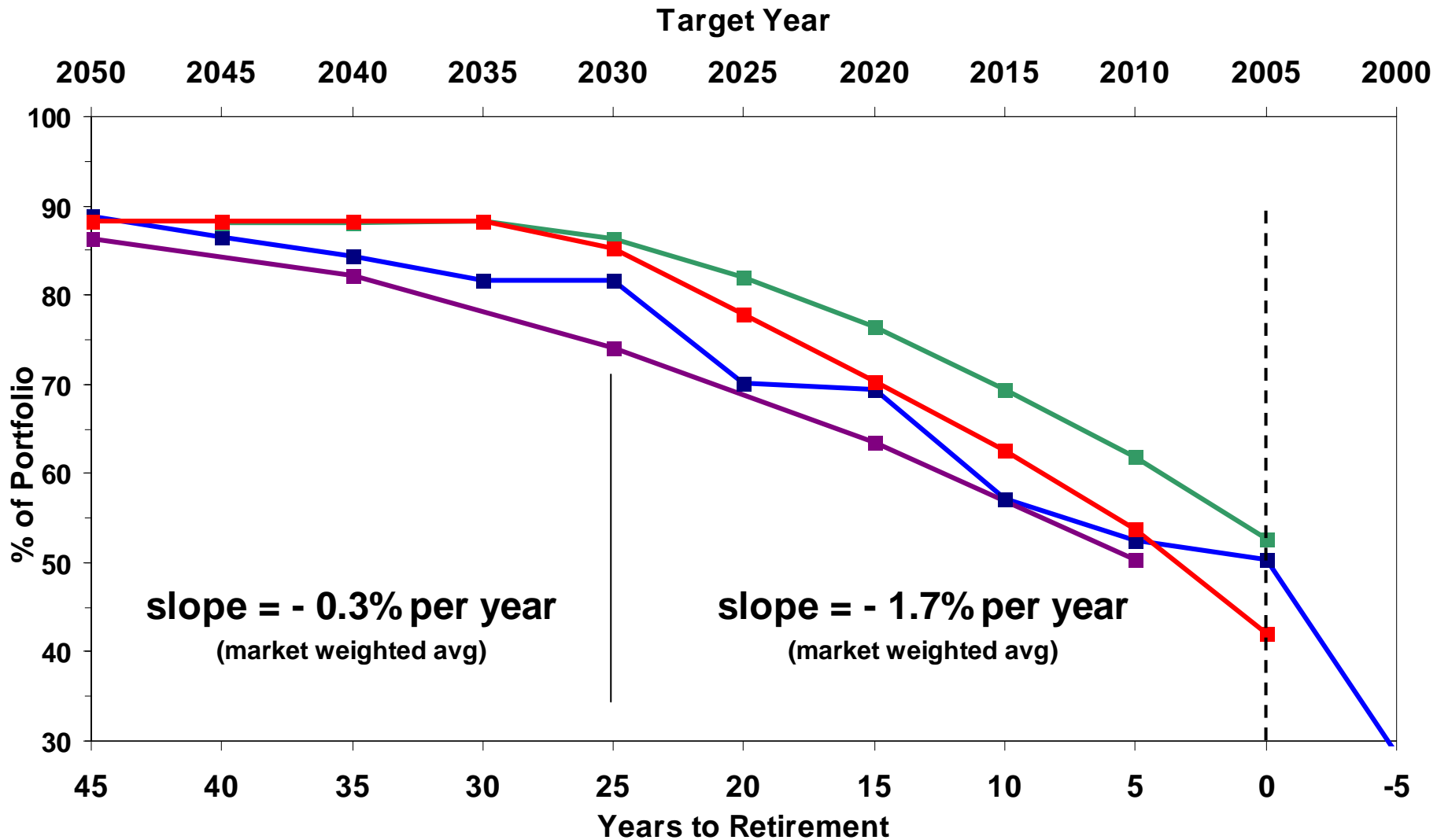
401(k) plans adopting life-cycle funds as defaults

- Pension Protection Act of 2006 signed into law by President Bush
- U.S. Department of Labor issued rules for Qualified Default Investment Alternative (QDIA), October 2007
- QDIAs
 - Life-cycle or targeted-retirement-date fund
 - Balanced fund or
 - Professionally managed account
- Target date funds poised for dramatic growth

U.S. life-cycle fund data

- \$166 billion under management (Sept 2007)
- Net new inflows: \$ 40b in first 3 qtrs of 2007
- Offered by 35 different firms
- 84% of assets managed by 3 firms

Glide paths for 4 representative target-date funds



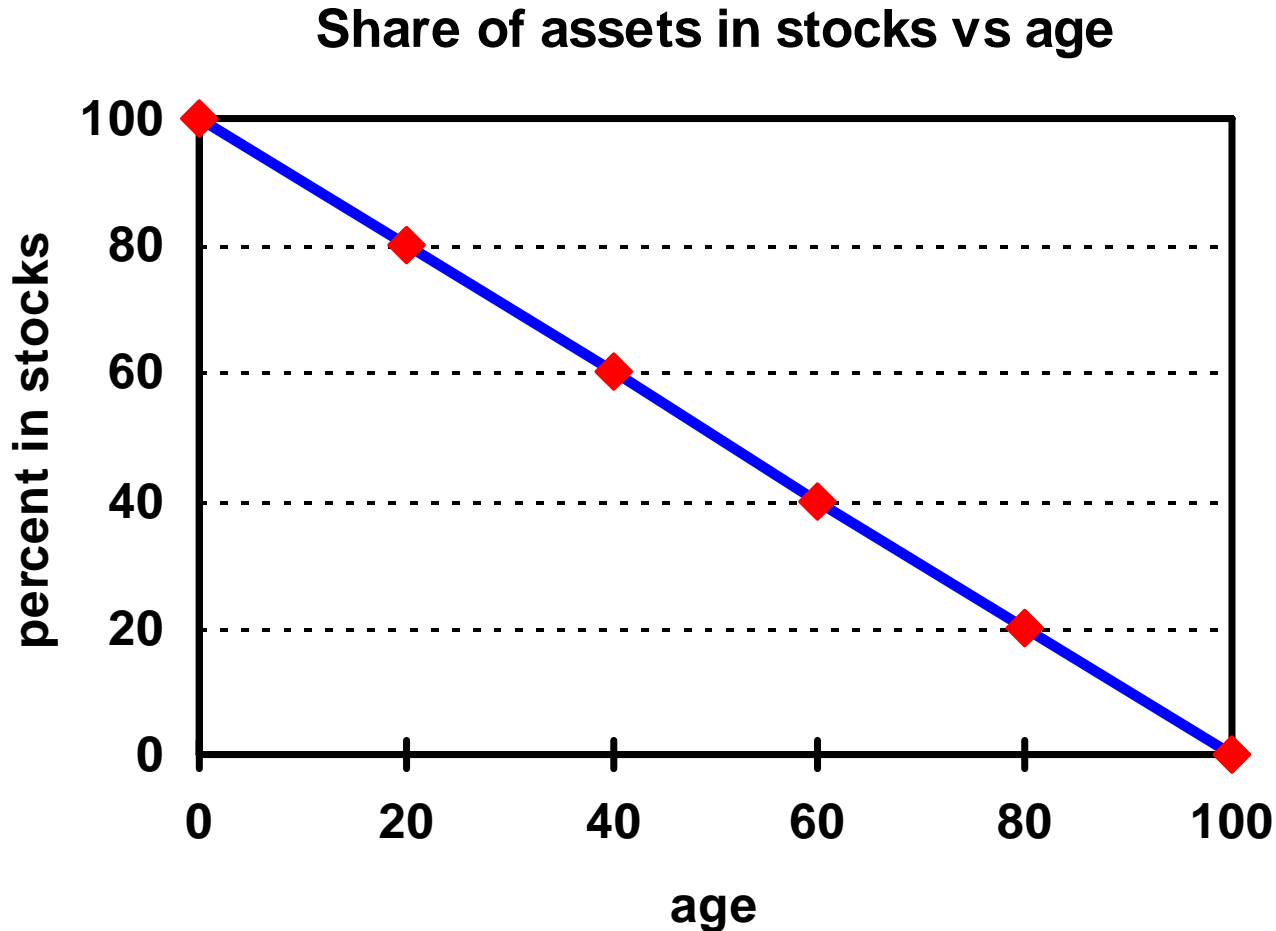
Source: Author's calculations based on data for September 2007 from Strategic Insight

Outline

- • Should investors reduce equity share with age?
- Do investors reduce equity shares as they age?
- Are life-cycle funds good for investors?

Professional advice: Equity share should decrease gradually with age

Typical rule of thumb: **Stocks/financial assets = 100 – age**



Benchmark economic model implies no decline with age

- **Assumptions**

- No labor income
- Stock returns uncorrelated over time (like coin tosses)
- Standard attitudes toward risk (constant relative risk aversion utility)

- **Benchmark result**

- Equity percentage should be **constant** across all ages

Equity shares should decline with age if...

- Labor income is sufficiently “bond-like”
- Labor supply is flexible
- Stock prices are mean reverting
- Risk aversion increases with age

Are these assumptions realistic?

- Labor income is “bond-like”
 - Mixed evidence. Some argue that labor income is “stock-like” in long run, implying hump-shaped path for optimal equity share
- Labor supply flexibility
 - Retirement date can be altered
- Mean reversion in stock prices
 - Evidence generally supportive, but controversial
- Risk aversion increasing with age
 - Plausible that spending flexibility drops over time

Additional implications

- With labor income explanations, equity shares after retirement should be constant
- If mean reversion important, then asset allocations should also be strategic (e.g. high equity shares when stock prices are low)

By how much should equity shares decline with age?

- Academic research still in early stages (see Viceira, 2007)
- Almost no industry research on the topic, despite widespread use of “100-age” advice

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How do household portfolio shares vary with age?

- Ameriks and Zeldes (2004)
- Examine data on 16,000 TIAA-CREF retirement account participants over 10 years
- Observe all quarterly inflows, transactions, and balances

Determining empirical age profiles is not easy ... especially separating age, time and cohort effects

- **Age effect:** How much does the equity share change as a result of an individual being one year older?
- **Time effect:** How much does the equity share at time t differ from that at time $t-1$?
- **Cohort effect:** How much does the optimal equity share of someone born in 1970 differ from that of someone born in 1969 (regardless of time or age)?

A casual look at the data can be misleading...

- E.g. an annual cross-section of equity shares by age sometimes shows younger individuals with higher equity shares than older individuals
- But we argue that this does NOT give an accurate picture of how households vary equity shares as they age
- We argue that individuals have NOT historically reduced equity shares with age

Most investors rarely or never make active portfolio changes

- 44 % of active contributors made NO active changes over a 10 year period to
 - Allocation of new inflows
 - Allocation of existing balances
- An additional 21% made one change along either or both dimensions

(Source: Ameriks and Zeldes, 2004)

Initial decisions when joining a plan are important...

- Calendar year that participant joined plan influences equity allocations of inflows many years later
- Some evidence that initial choices related to stock market at time of entry

And when individuals do make changes ...

- They seem to respond to the recent history of returns in the stock market
- Equity allocations rose considerably during the bull market of the 1990s

Conclusions about age effects

- Investors do NOT gradually decrease equity shares as they get older
 - Most make no changes
 - Those that change are largely responding to market conditions
 - Cross sectional patterns largely due to cohort, year-of-entry, and aggregate time effects
- Some evidence that a small set of people shift completely out of equity around the time of retirement

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Are life-cycle funds good for investors?

- Relative to what?
 - Full optimization: probably not
 - Actual behavior in their absence: probably yes
- Left to their own, individuals are not ...
 - rebalancing equity shares after market movements or
 - gradually reducing their equity shares

Would some customization be appropriate (instead of a “one size fits all” path)?

- In a world with full information about investors (and a perfect model), it would be best to customize portfolios for
 - Risk tolerance, labor income profile and riskiness, flexibility in work hours and retirement dates, housing and pension wealth, life expectancy, family structure, ...

But in practice ...

- Difficult to learn information about investor preferences (they may not even know themselves)
- Customization could be based mostly on noise, leading customized portfolios to be worse than “one-size-fits-all”
- Complexity of customization may scare away investors

Customization entails tradeoffs

- Open and important questions
 - How much customization is appropriate ?
 - Along which dimensions (if any) should customization take place ?

Potential design improvements to life-cycle funds

- Improved glide path, based on analytics
- Additional international diversification
 - U.S. equities constitute 75% of equities in target date funds, but only 33% - 45% of world stock market capitalization
- Better benchmarking (based on glide path), to facilitate comparisons across funds
- Options for conversion into stream of retirement income

Conclusions

- Some valid reasons to reduce equity share with age
- People do not seem to do this on their own
- Scope for target date funds to improve portfolio allocations, at least relative to status quo
- Widespread adoption of target-date funds likely to alter life-cycle portfolio allocations
- Customization has benefits but also costs
- More research needed on optimal portfolio allocations
 - with uncertain labor income
 - during post-retirement payout phase

References

- Ameriks, John and Stephen P. Zeldes. “How do Portfolio Shares Vary with Age?” working paper, Graduate School of Business, Columbia University, 2004.
- Viceira, Luis. “Life Cycle Funds,” working paper, Harvard University, 2007.

The background is a technical map, likely a nautical chart, featuring contour lines, depth soundings, and various navigational symbols. A large, light-blue diagonal shape cuts across the bottom right corner of the image. Overlaid on the map is the text for the event.

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