

A Goal-Driven Declining-CVaR Glidepath Approach for Target-Date Fund Design

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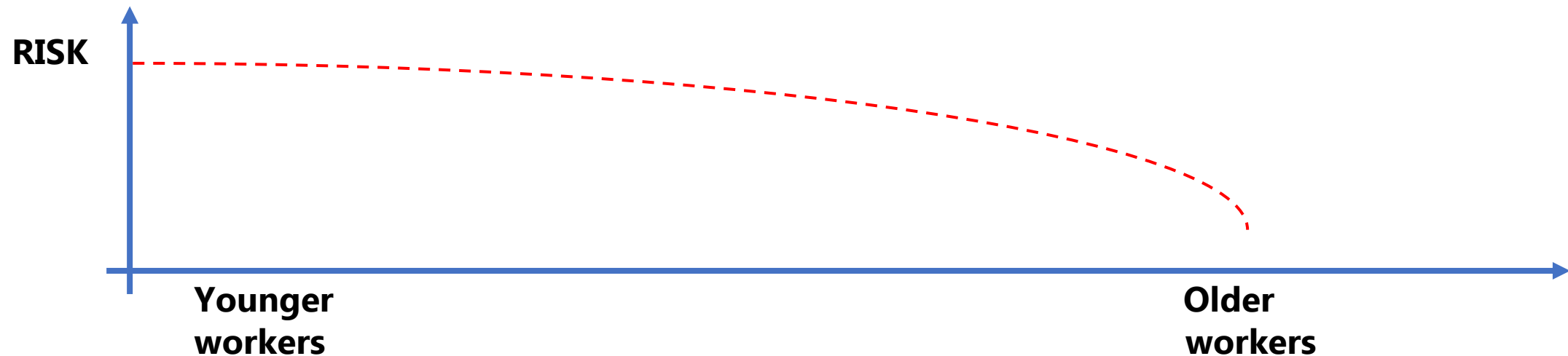
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What Is a Target-Date Fund (TDF)?

A retirement fund that groups people of roughly the same age

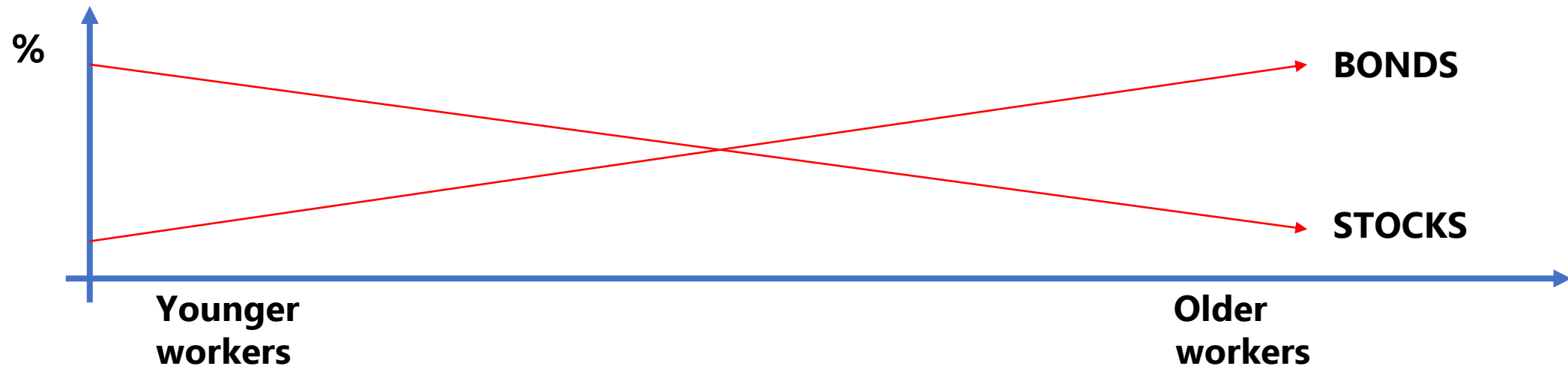
Basic assumption:

**Younger people can take more risk
Older people should take less risk**



Design of TDFs: The “Standard” Approach Until Now

- ☐ Stocks are dangerous & bonds are safe
- ☐ No risk control with any appropriate risk metric
- ☐ No clear objective (e.g., minimum return)



Result



Not a Happy One

Our Approach (1): First, Establish a Clear Objective

Final salary, replacement rate
& life expectancy



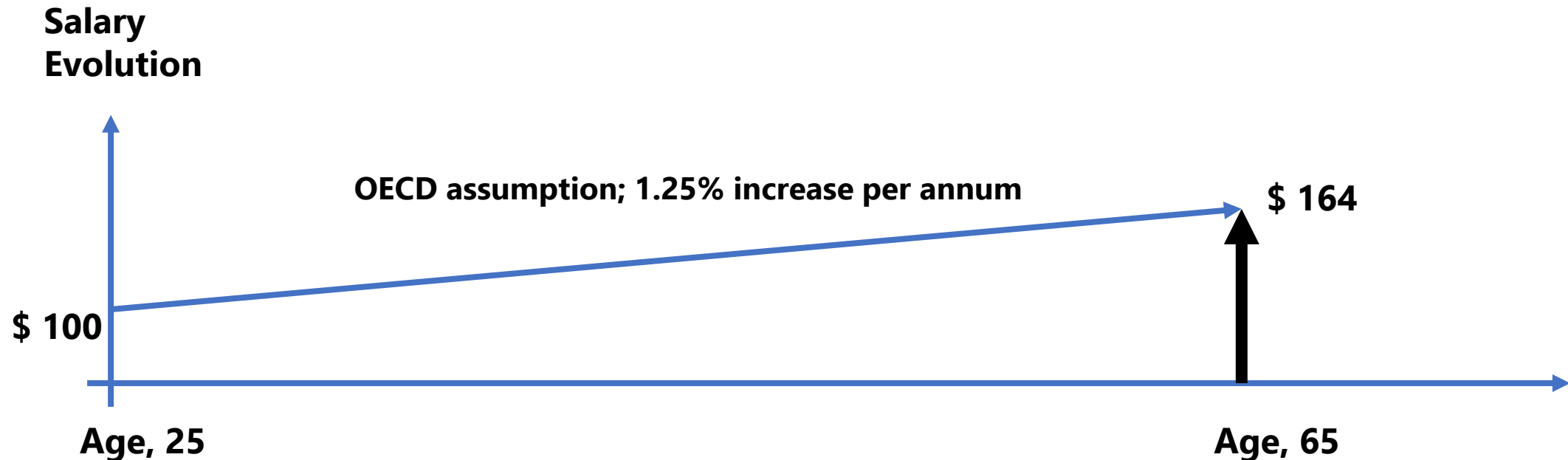
Capital required at 65



Capital required at 65 & monthly (%) contribution



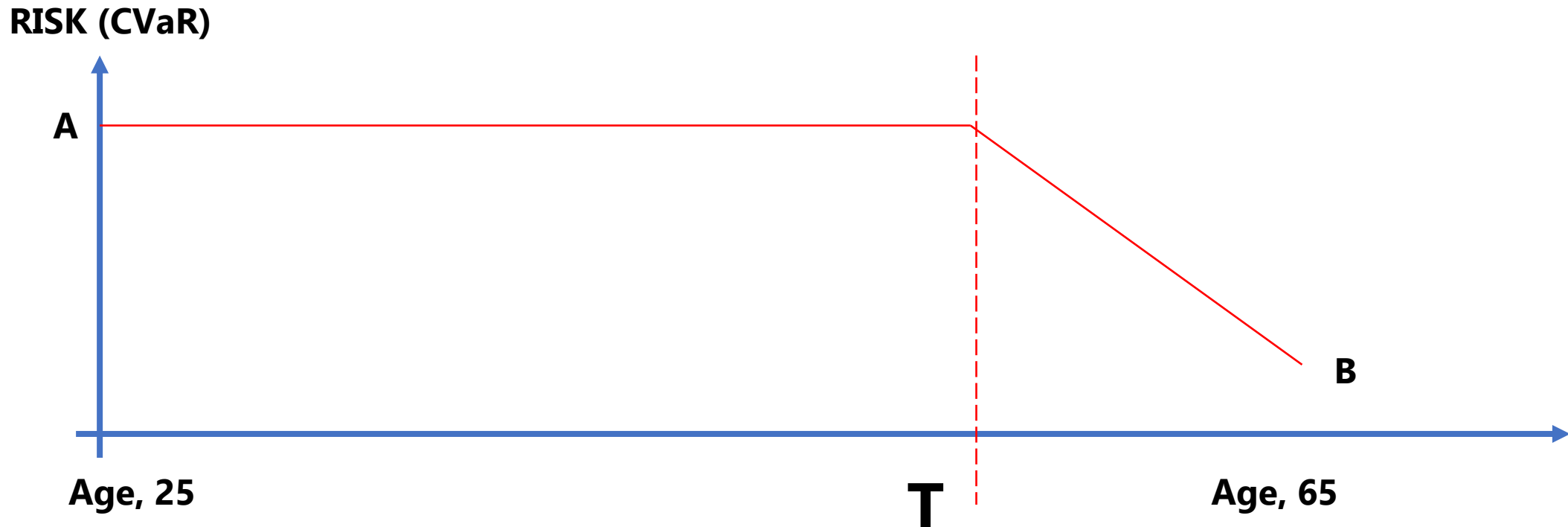
Required return (R^*)



Our Approach (2):

Second, Propose a Risk Budget (a Declining-CVaR Glidepath) Such That Even a “Average” Asset Manager Will Have A Good Chance of Delivering the Target Return (R^*)

In short: the problem is reduced to finding a suitable CVaR Glidepath



Our Approach (3): Finding a “Good” CVaR Glidepath is an Inverse Problem; Must Test Several Glidepaths and Evaluate Them

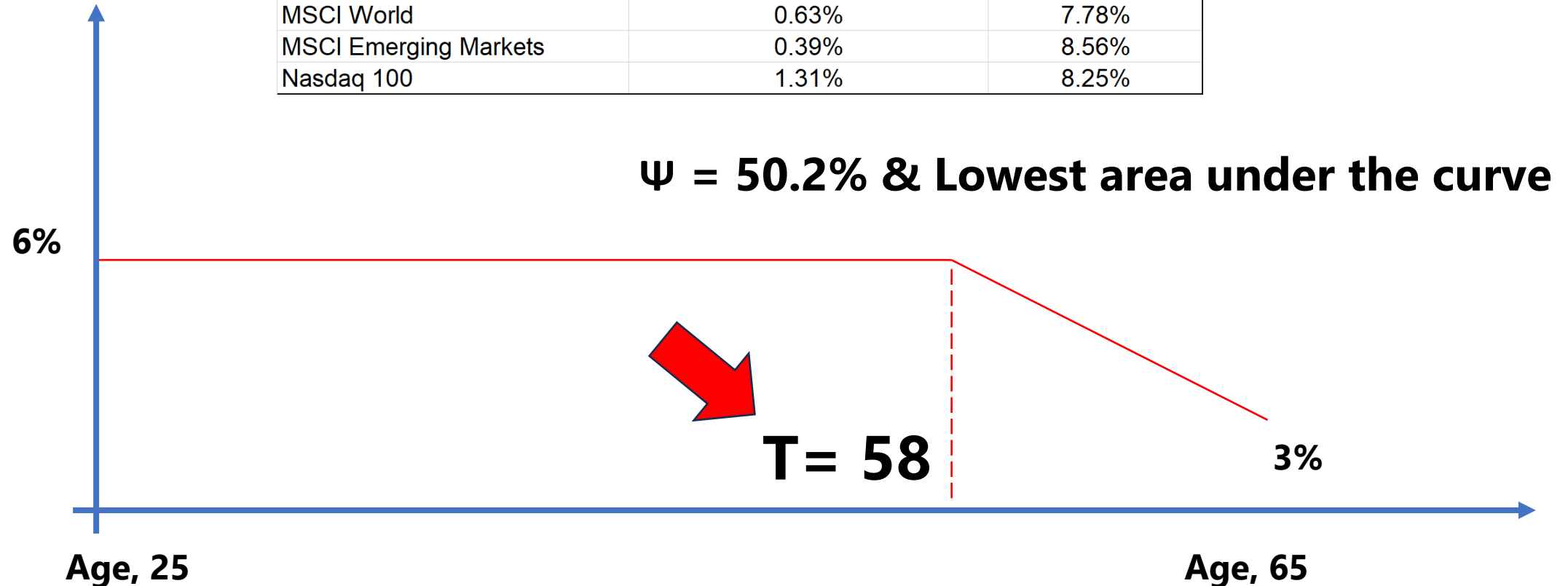
- ☐ **Select a set of feasible asset classes**
 - ☐ **Generate many return trajectories**
 - ☐ **Specify a glidepath, i.e., make a decision regarding A, B and T**
 - **Find, based on these return trajectories, many (N) asset allocations that satisfy the CVaR restriction**
 - **See which percentage (Ψ) of these N asset allocations can deliver the desired return (R^*)**
 - **If Ψ is higher than 50%, we consider the glidepath acceptable**
 - ☐ **Try several glidepaths, and select the “best”, for example, higher Ψ & lower risk**
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The Chilean Example: Best CVaR Glidepath

Asset Class	Mean (monthly) return	CVaR (90%)
Chilean CDs	0.01%	0.62%
Chilean Corporate Bonds	0.27%	2.87%
Chilean equities	0.34%	8.22%
Bloomberg Buyout Index	0.84%	6.13%
Global Bonds	0.13%	5.10%
U.S. High Yield	0.47%	5.62%
MSCI World	0.63%	7.78%
MSCI Emerging Markets	0.39%	8.56%
Nasdaq 100	1.31%	8.25%

$$R^* = 5.5\%$$

RISK (CVaR)



REFERENCE:

A Declining CVaR Glidepath Framework for Target-Date Fund Design with an Application to the Chilean Pension System

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<https://arxiv.org/abs/2606.13618>