

# Long-term investment in the low interest rate environment



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# Implication of low interest environment

- DB- / DC- / Hybrid pension schemes
- Households versus pension providers
- Accumulation / Decumulation
- Risk and Guarantees:
  - income / return & investment / longevity risk

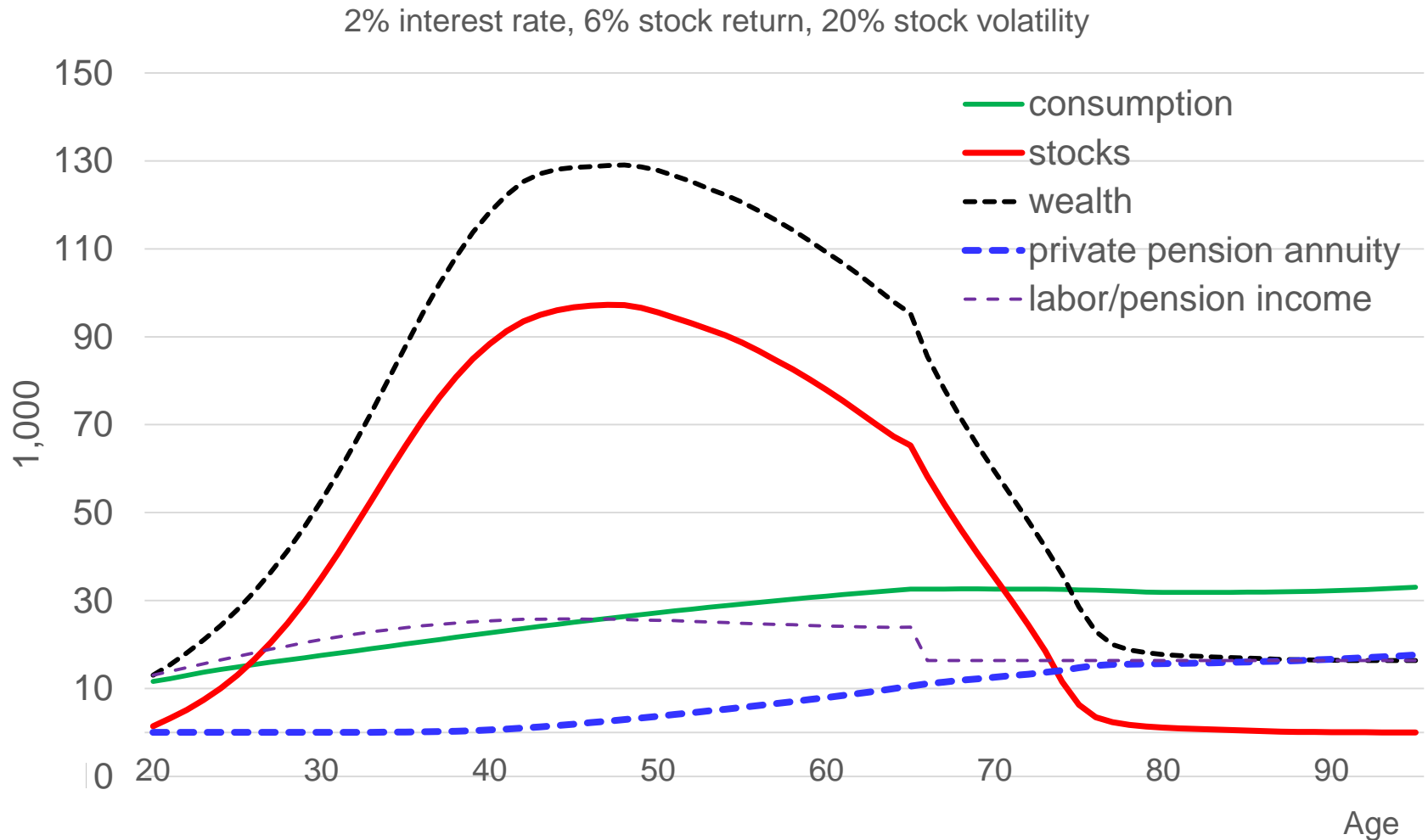
# DB-pension schemes

- Employer is **risk taker** (income / return guarantee)
- Assumed interest rate (AIR) to discount future liabilities implies a (short term) **target return** (solvency requirements)
- Problem:  $AIR > \text{nominal ("riskfree") interest rate}$
- Possible solutions?
  - Risk & Liquidity premium (equities, credit, real estate, alternatives)?
  - Smoothing?
  - **Pay**: Higher reserves / supplementary contributions
  - Cut benefits (directly / indirectly)

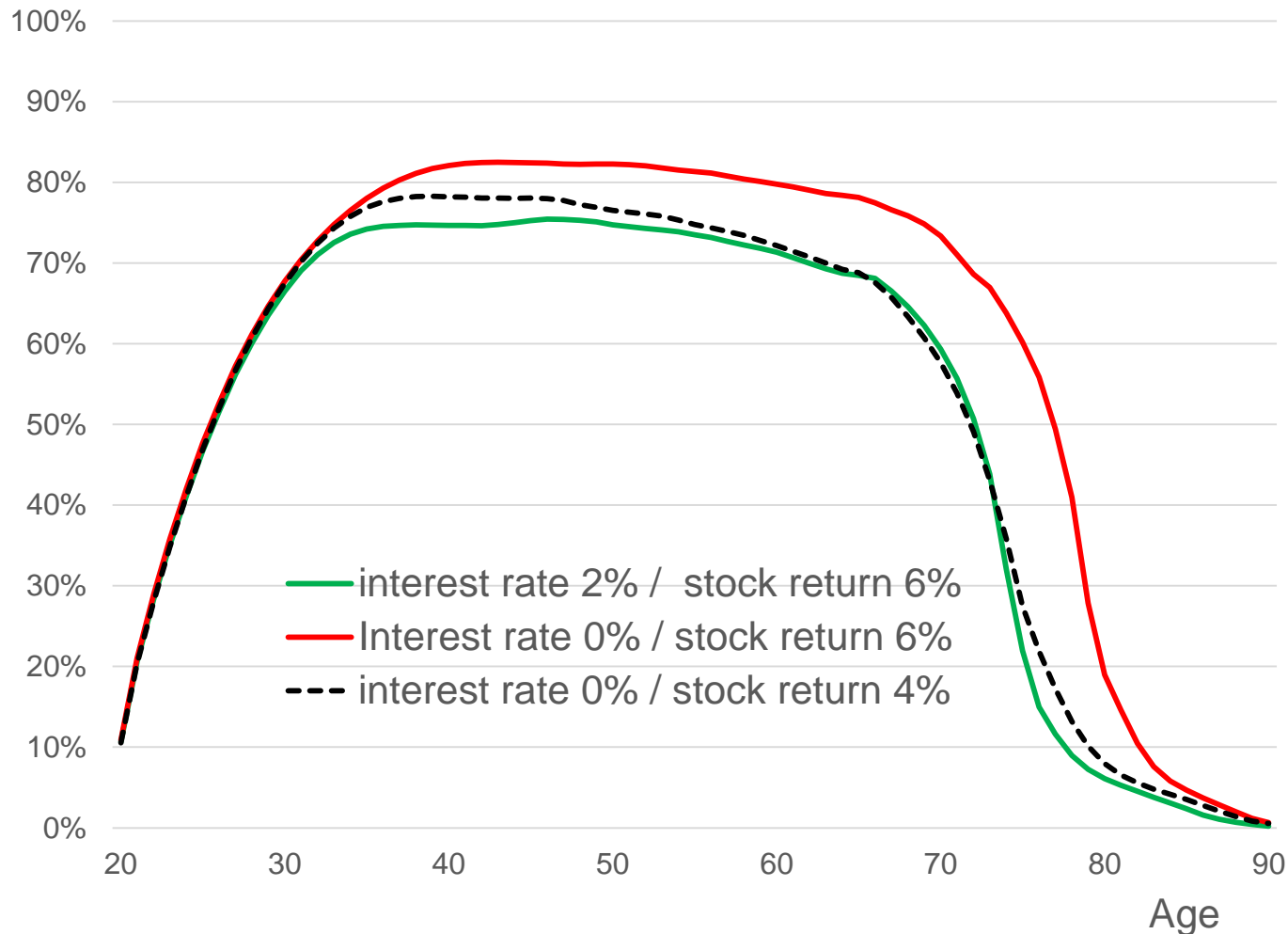
# DC-pension schemes

- Private household risk taker (investment & longevity risk)
  - Hedging of Investment Risk: Bonds
  - Hedging of Longevity Risk: Private pension annuities
  - Providing long term return: Stocks
  
- Implications of low interest rates on ...
  - Long term asset allocation & Household welfare
  
- In the following: life cycle approach of worker
  - Base case: interest rate 2% , stock return 6% / Vola 20%
  - Scenario 1: interest rate 0% , stock return 6% / Vola 20%
  - Scenario 2: interest rate 0% , stock return 4% / Vola 20%

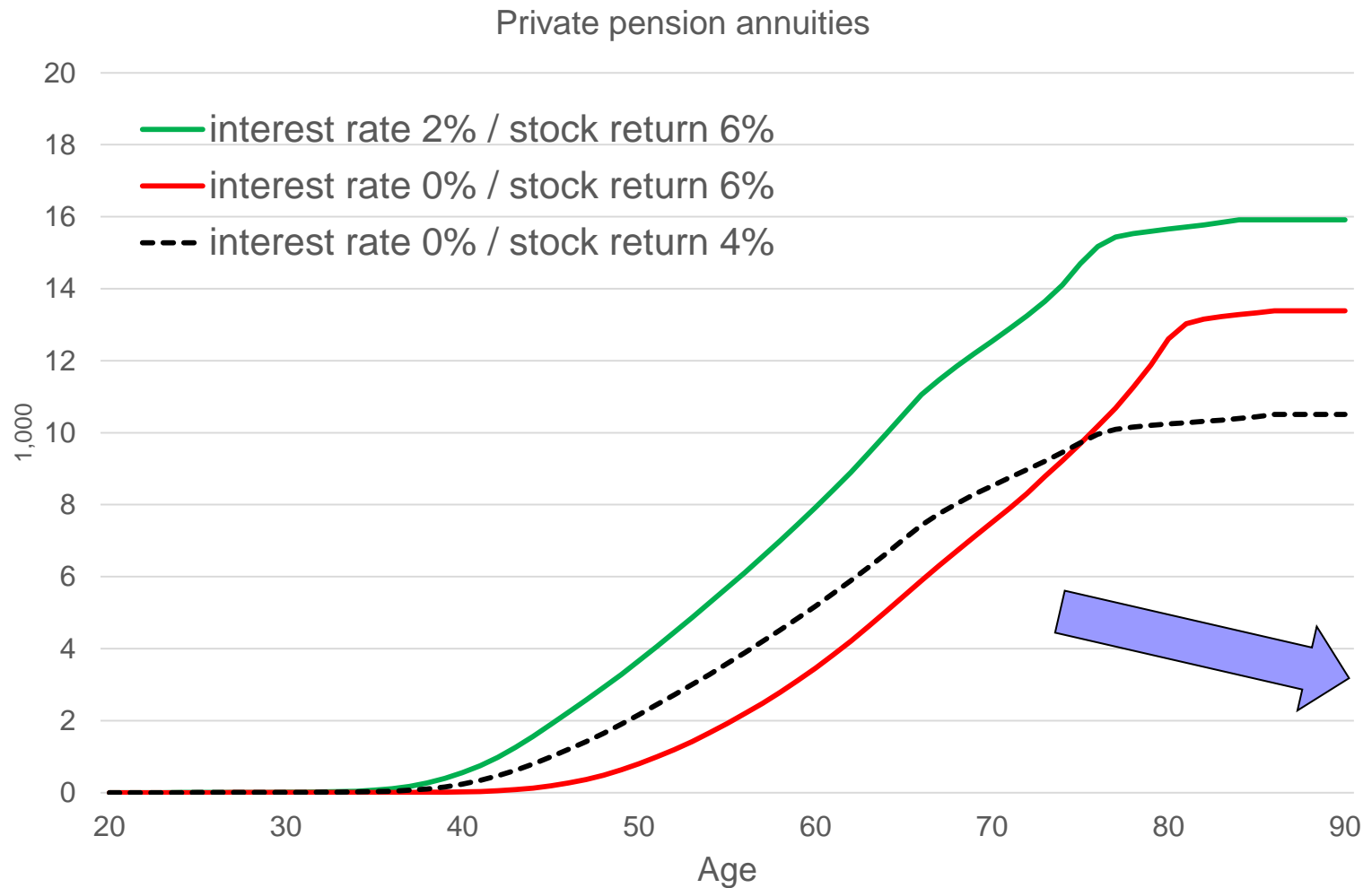
# Life cycle approach: base case



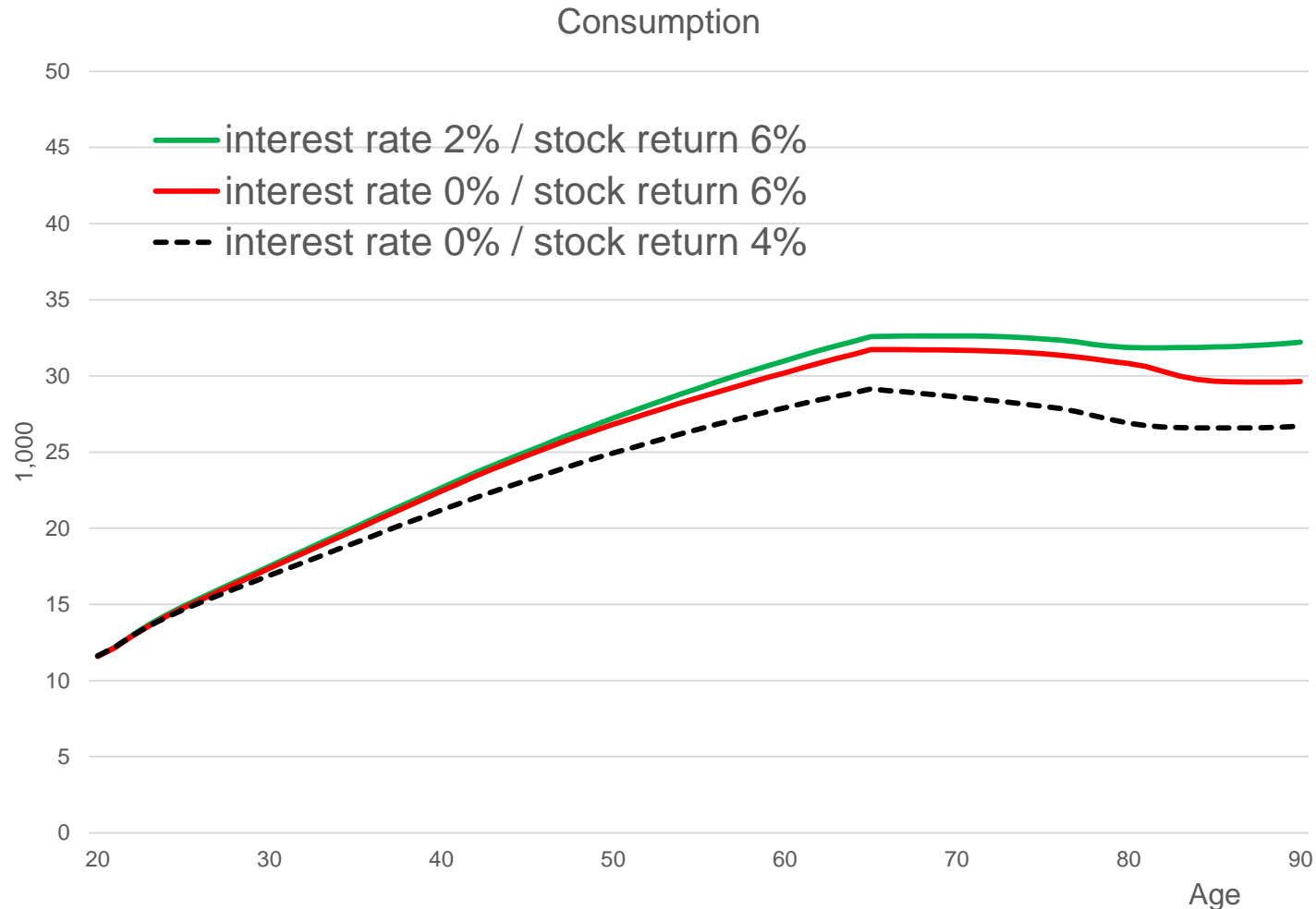
# DC-pension schemes: Equity exposure



# DC-pension schemes: Private annuities



# DC-pension schemes: welfare implication





# Conclusions: Low interest rates implies ...

- DB-pensions: costly and/or risky for provider
- DC-schemes:
  - **Equities:** slightly more in middle ages
  - **Private annuities:** later, necessary to hedge longevity risk
  - **Bonds:** mainly used in transaction account
  - **Household welfare:** low impact if asset allocation adjusted
- Open questions: hybrid pension schemes?