California Secure Choice
Program Design Market Scoping Overview

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Agenda

- Framing Secure Choice program design
- Market scoping overview
- Overview of retirement program basics
- Payout phase observations
- Investment risk / uncertainty
- Summary of all accumulation (investment phase) options reviewed
- Analysis of three options:
  - Target Date Fund (TDF)
  - Variable Annuity (Insurance)
  - Pooled IRA with Reserve Fund (SB 1234)

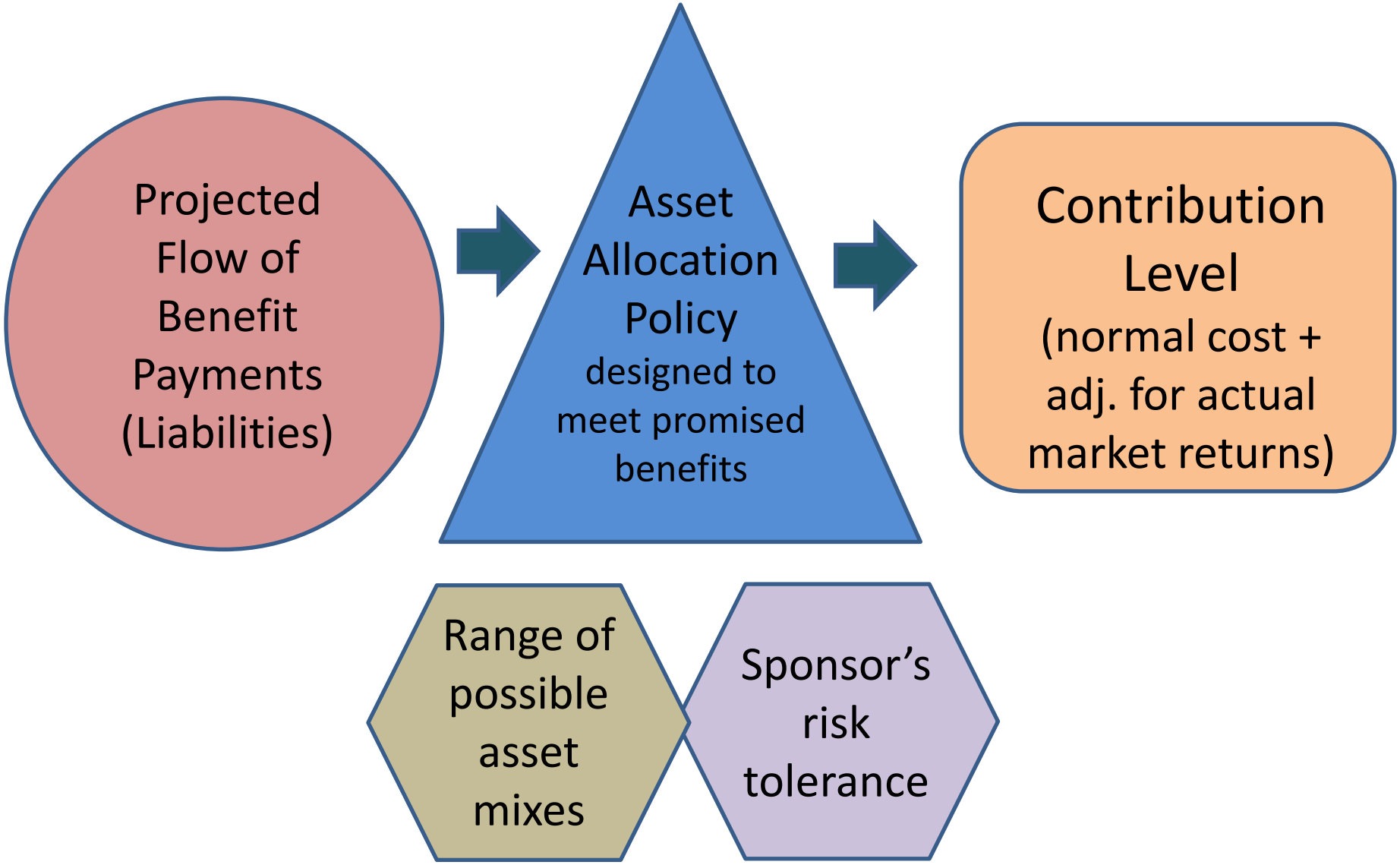
Key Program Design Choices

- **Retirement income** is the ultimate measure of the value of a retirement plan, whether Defined Benefit (DB) or Defined Contribution (DC).
  - DB plans designed for retirement income
  - Growing consensus that DC plan design needs to shift from wealth to income focus

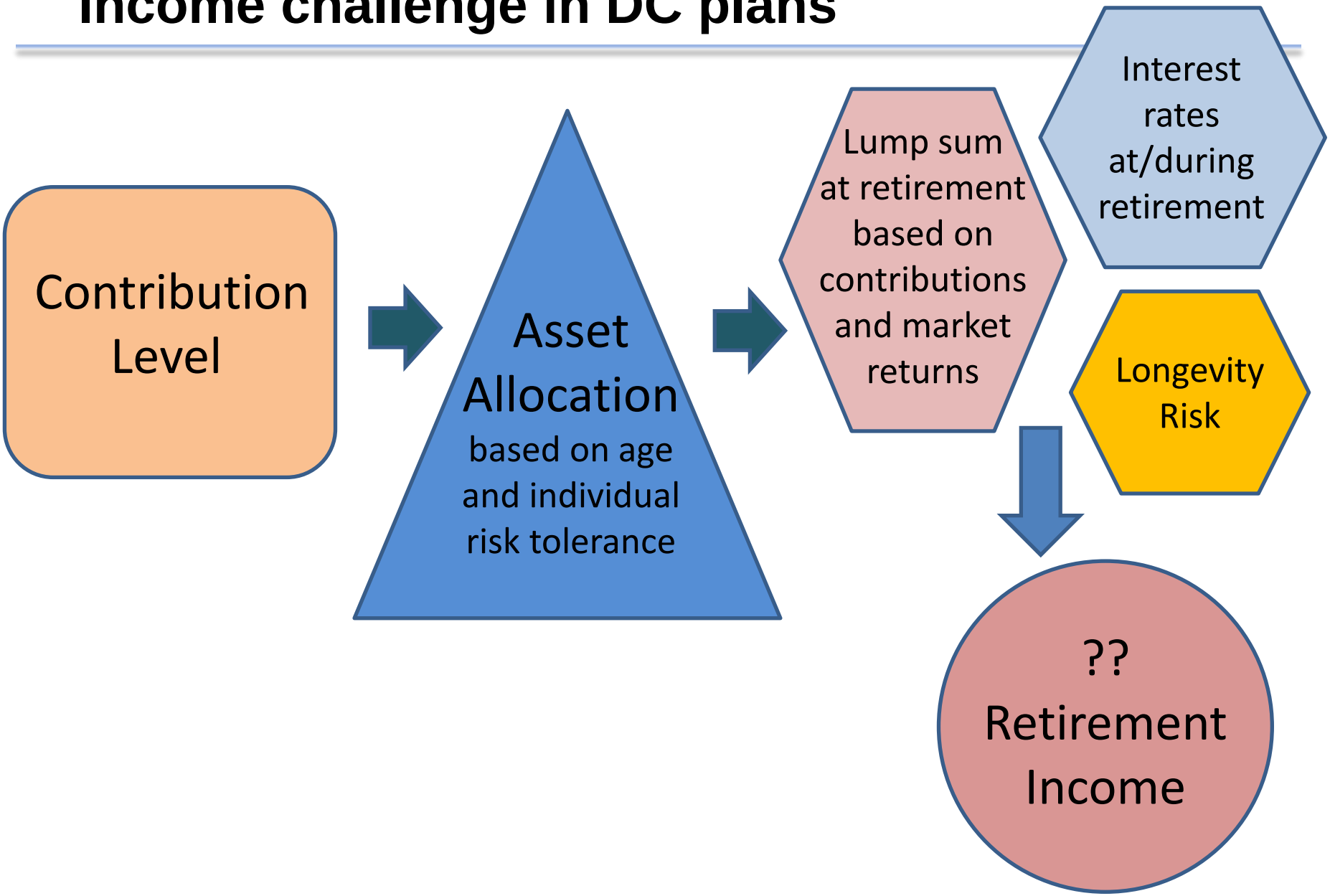
- **Contributions** and **asset allocation** (e.g., mix of stocks/bonds) are the most important drivers of retirement income from a DC plan

- **Core SCIB policy decisions**
  - **Contributions** : *default contribution level*, *eligibility rules*, other program features that affect *employee participation* and *employer compliance*
  - **Asset allocation:** ***default investment vehicle*** (today's subject)
  - Conversion/transition from accumulation phase to payout phase (can defer)

DB pensions begin with retirement income



Income challenge in DC plans



Market Scoping Approach:

- Overture team evaluation of 8 default investment options that represent several different approaches to investment & risk
  - Asset allocation strategies (individuals bear investment risk)
  - Collective IRA with Reserve Fund/SB 1234 (pooled investment risk)
  - Bank deposit (FDIC insured; negligible earnings)
  - Annuities (private insurance contracts with guaranteed benefit)
- List is not exhaustive, but representative of a broad range of market options from “plain vanilla” investments to products with stronger income focus and/or guarantee
- Each considered through a broad range of features/ characteristics, including (but not limited to): income replacement, several dimensions of risk, and administrative implications

Investment Options Studied (1 of 3)

Investment Option	Accumula-tion Guarantee	Paired w/ Income Guarantee ?	Description
1. Target Date Fund	No	No	Glide path from stocks to bonds as individuals approach retirement
2. Balanced Fund, with initial investment in Stable Value Fund	No	No	BF has fixed asset mix; SVF offers principal protection
3. Target Income Fund	No	No	Similar to TDF, but bonds portion of portfolio structured to offer more predictable retirement income than typical TDF

Investment Options Studied (2 of 3)

Investment Option	Accumula-tion Guarantee	Paired w/ Income Guarantee ?	Description
4. Pooled IRA with Reserve Fund (SB 1234)	Soft	Yes (Soft)	Pooled investment trust managed similarly to a Cash Balance plan, without the guarantee
5. Bank Deposit	Yes	No	Insured by FDIC, but will lose purchasing power under recent interest rates

Investment Options Studied (3 of 3)

Investment Option	Accumula-tion Guarantee	Paired w/ Income Guarantee ?	Descriptoiin
6. Deferred Fixed Annuity	Yes	Yes	Fixed monthly retirement income
7. Variable Annuity 1 Guaranteed Minimum Accumulation Benefit (GMAB)	Yes	No	Guaranteed minimum account balance at retirement
8. Variable Annuity 2 Guaranteed Minimum Withdrawal Benefit (GMWB)	Yes (age 55+)	Yes	Guaranteed income based on peak account balance, plus upside potential

Understanding investment options

- The remainder of today's presentation focuses on two key metrics...
  - **Average income replacement** for a given contribution rate
  - **Variability of income replacement rates** given known market risks

  … and the role of **asset allocation** in determining outcomes:

- These are illustrated using 3 representative examples
  - Target Date Fund
  - Pooled IRA with Reserve Fund
  - Variable Annuity

- Presentation and comprehensive analysis of 3 final options (TBD) in September

Illustration of Retirement Program Basics

Accumulation Phase

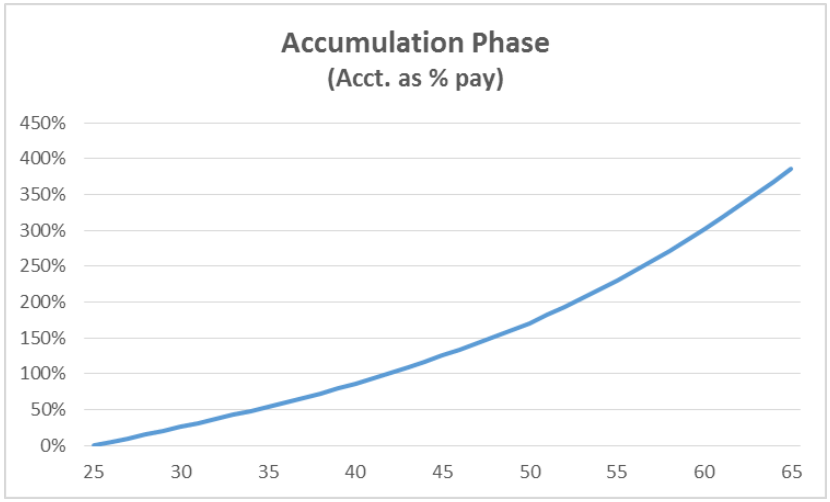
Payout Phase

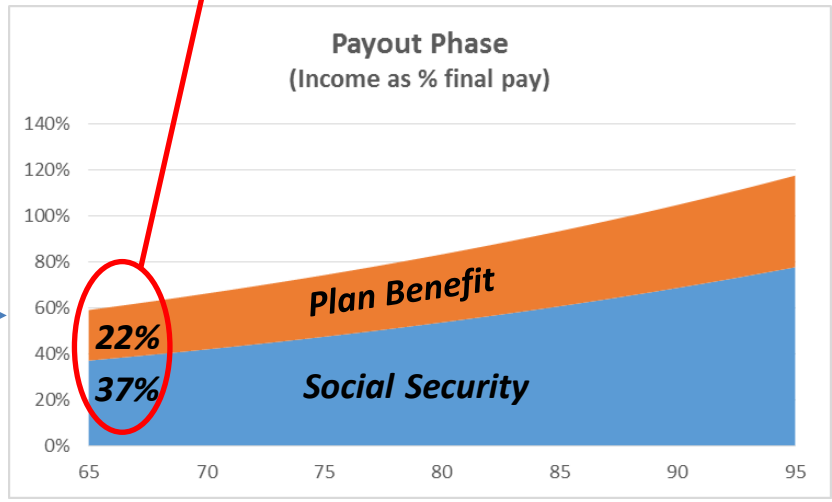
Contributions
(5% pay assumed)

Investment Returns
(6.7% assumed)

Convert Wealth to Income

Replacement Ratio:
From SS = 37% x final pay
From Plan = 22% x final pay
Total = 59% x final pay





Payout Phase

- Basic payout methods
  - Lump sum (participant can use retail insurance and/or investment products to create income stream)
  - Group annuity product with insurance company
  - Structured withdrawal programs (SWPs)
  - Combination of SWPs with insured annuity product
  - In-plan collective payout option
- Product space here is in rapid development – new concepts and products are likely in the coming 5-10 years.
- For some initial period (5-10 years) the account balance amounts for retirees under California Secure Choice will be relatively small (lump sum amounts of under 1x final pay)
  - Arguably too small to handle the extra cost of most income payout products
  - Best handled with lump sum payouts
- Provides the Board some time for more detailed consideration of options before selecting a final payout method to incorporate into the plan.

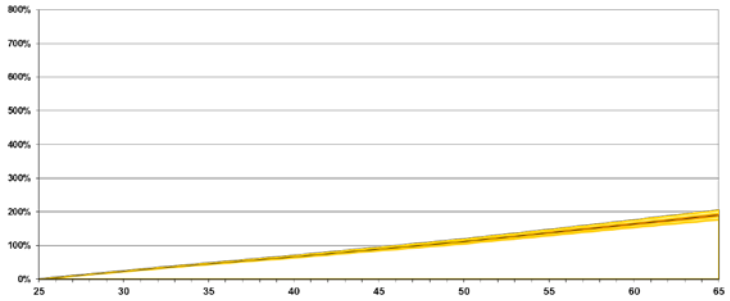
Investment Uncertainty in Accumulation Phase

- Asset classes span the risk spectrum
  - Very low risk (e.g. money market) = predictable but very low expected returns (inflation + 0.5%)
  - Low risk (e.g. bond index fund) = low variability but also low expected returns (inflation + 2-3%)
  - Risky (e.g. stock index fund) = significant variability with higher expected returns (inflation + 5-6%)
- Modeling of results to capture both expected returns and uncertainty
  - Run 1,000 different scenarios (stochastic, or Monte Carlo, model)
  - Scenarios are designed to statistically cover the full range of possible outcomes
    - Inflation
    - Pay growth
    - Interest yields
    - Bond returns
    - Stock returns
  - Can then show range of investment outcomes (e.g. expected, or 50th percentile, plus 5th percentile to show downside risk, and 95th percentile to show upside potential)

Modeling Investment Results in Accumulation Phase

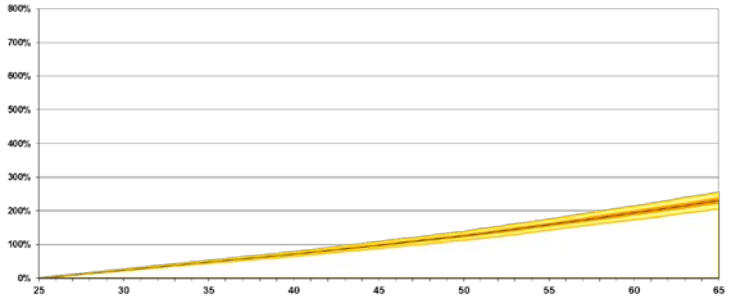
- For retirement savings, the long term outcomes are most critical:

Money Market



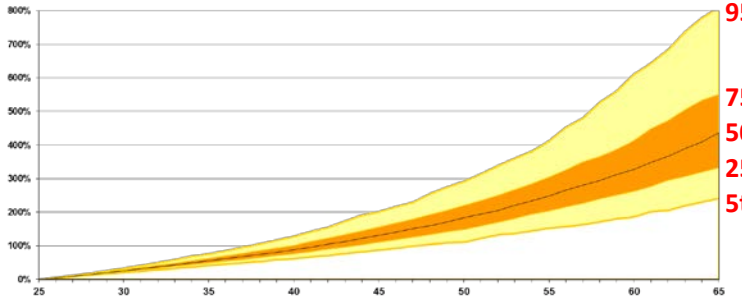
	Account Value as % Pay	
	After 5 yrs.	After 40 yrs.
Expected Value (50th %-tile)	23.7%	187.7%
"Best Case" Value (95th %-tile)	24.3%	201.6%
"Worst Case" Value (5th %-tile)	23.0%	175.2%

100% Bonds



	Account Value as % Pay	
	After 5 yrs.	After 40 yrs.
Expected Value (50th %-tile)	24.3%	231.1%
"Best Case" Value (95th %-tile)	25.9%	254.5%
"Worst Case" Value (5th %-tile)	22.6%	206.6%

70% Stocks + 30% Bonds



Percentiles:
95th
75th
50th
25th
5th

	Account Value as % Pay	
	After 5 yrs.	After 40 yrs.
Expected Value (50th %-tile)	25.8%	436.7%
"Best Case" Value (95th %-tile)	32.8%	809.2%
"Worst Case" Value (5th %-tile)	20.6%	241.6%

Summary of All Accumulation Options Reviewed

	Expected Plan Replacement Ratio*
Three options selected for detailed review:	
Target Date Funds (TDF)	
Typical investment risk	24.2%
Lower investment risk	21.6%
Variable Annuity (Insurance)	21.8%
Reserve Fund (Collective Smoothing)	
Cohort retiring 2055	20.7%
Cohort retiring 2075	29.0%
Other options:	
Money market / bank deposit	10.0%
Deferred Annuities (Insurance)	13.4%
Balanced Fund	
Typical investment risk (70% stock)	24.2%
Lower investment risk (55% stock)	21.4%

* *Assumptions for replacement ratio calculation:*

Entry at age 25, with $30,000 annual pay

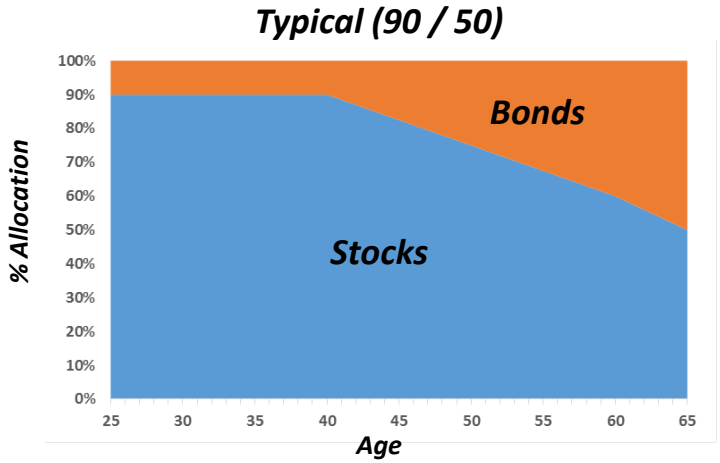
5% of pay contributions each year

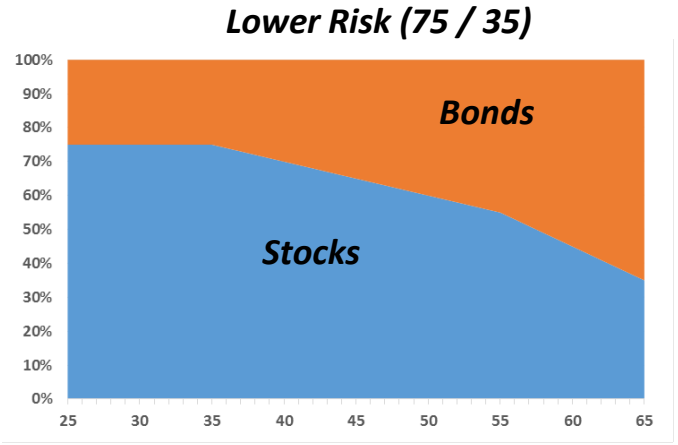
Retirement at age 67 (Social Security benefit would replace 43% of final pay)

Group annuity purchased at retirement, with 2% COLA and 15-year certain period guarantee

Target Date Fund

- Currently the best-accepted default investment option for 401(k) plans
- Conceptual basis:
  - Balanced fund
  - With automatic adjustment of asset allocation targets by age
    - More risk at younger ages
    - Declining risk as participant approaches retirement
    - Based on “lifecycle” concept of risk management across a career, with recognition of both retirement savings and future earnings from work
  - So plan has a collection of funds based on years to expected retirement (usually in 5 year groupings)
- Key design issue is the asset allocation “glidepath”





Results for Target Date Fund (42 year career from age 25 to age 67)

- Assumes that the balance at retirement is used to purchase a group annuity with a 2% COLA and 15-year certain period guarantee, priced at prevailing market interest rates
- Social Security benefits at age 67 would add another 43% of final pay to the replacement ratio (assuming a $30,000 starting wage at age 25)
- Here is the full range of plan benefit replacement ratios:

Percentile	*Typical*	*Lower Risk*
95th	47.2%	35.8%
75th	31.3%	26.2%
50th	**24.2%**	**21.6%**
25th	19.1%	17.8%
5th	13.4%	13.5%

Results for Target Date Fund (10 year career from age 57 to age 67)

- Assumes that the balance at retirement is used to purchase a group annuity with a 2% COLA and 15-year certain period guarantee, priced at prevailing market interest rates
- Social Security benefits at age 67 would add another 46% of final pay to the replacement ratio (assuming a $40,000 wage at age 57, and full coverage under Social Security for all prior years)

Percentile	*Typical*	*Lower Risk*
95th	4.3%	3.9%
75th	3.6%	3.4%
50th	**3.3%**	**3.2%**
25th	2.9%	2.9%
5th	2.6%	2.6%

Variable Annuity (Insurance)

- Before age 55 we assume contributions go into a typical TDF
- At age 55 we assume the balance is moved over to a variable annuity (VA) with an insurance company, and future contributions also go into the variable annuity
- The specific product we analyze is referred to as “variable annuity with a guaranteed minimum withdrawal benefit (GMWB)”
  - Basic guarantee is that for every $100 put into the VA, the insurance company guarantees a minimum lifetime income (no COLA) of $5 (i.e. 5% income guarantee) – even if the account value goes to zero
  - Insurance company invests assets in stocks and bonds (e.g. 60 / 40 split)
  - Insurance company also charges an annual fee of 1% of assets (on top of any other investment fees) for the guarantees
  - If net investment results are favorable, the guarantee can be “stepped up” – both prior to and after retirement
  - If death occurs before the account value is zero, death benefits are payable

VA-GMWB Results – Income Benefits

- We again assume a 42 year career from age 25 to age 67 with 5% of pay contributions
- Here is the range of initial benefits, compared with the range for a typical TDF (expressed as replacement ratio):

Percentile	*VA-GMWB*	*Typical TDF*
95th	41.6%	47.2%
75th	28.2%	31.3%
50th	**22.0%**	**24.2%**
25th	16.9%	19.1%
5th	12.7%	13.4%

- Benefit increases after retirement are possible, but not guaranteed. Most of the increases tend to occur in the earlier years of retirement. Over the first 20 years of retirement, the average increase equals 1.2% per year (compared with a fixed and guaranteed 2% COLA included in the TDF results above).
- Looking at the total benefits paid over all years of retirement, the VA-GMWB falls about 17% below the Typical TDF results, on average.

VA-GMWB Results – Death Benefits

- The VA-GMWB product does provide significant death benefits when a retiree dies
- In the event of death in the first 15 years of retirement, the VA-GMWB provides a death benefit that is about 2.5 times larger, on average, than the 15-year certain period guarantee that we have included for the Typical TDF.
- In the event of death more than 15 years after retirement, death benefits will equal the remaining VA-GMWB account balance (if any) – which would be a positive factor for someone with a strong bequest motive.
- In summary, the VA-GMWB product provides good value on an overall basis (combining income and death benefits), but much of the value comes through the death benefits and the income benefits are inferior to what is available under a Typical TDF approach.

The Pooled IRA/Reserve Fund Model

- General operational scheme
  - Establish a CA public authority (or use an existing one) with purpose of:
    - Investing funds received (all employee contributions)
    - Issuing shares/bonds to employee accounts
    - Determining a dividend/interest rate at the end of each year, and crediting accounts with new shares based on that rate
    - Redeeming shares/bonds for cash, as needed, for distributions at retirement, termination, or other approved purpose
    - Shares/bonds only redeemable against assets in trust fund (**no state liability for benefits**, just as state general fund is protected against special district obligations)
  - Participating employee accounts are “invested” 100% in these shares/bonds

The “Reserve Fund” Model, cont’d.

- Fund investments
  - Balanced fund using low cost index funds
  - For our analysis, we assume a 70% allocation to equities and a 30% allocation to fixed income
- Determination of annual dividend/ interest rate used to credit employee accounts
  - Look at historical fund return, perhaps smoothed (we assume a rolling 3-yr. smoothed return)
  - Establish floor and cap for the basic rate (we assume a 0%-to-10% collar)
  - Determine “funded ratio” of total fund assets divided by total account balances
    - If within defined corridor, the final basic credit rate is the historical return with the collar limits imposed (we assume a corridor of 100% to 140% here)
    - If less than 100%, a negative credit is determined to bring the funded ratio back to 100% (e.g. if funded ratio is 93%, then the credit rate is negative 7%)
      - This can be referred to as a “soft” guarantee
      - A negative credit rate occurs about 3% of the time (vs 20+% with a Typical TDF approach)
    - If above the corridor max, then a bonus credit is added (we have used a schedule where bonus credits range from +2% up to +25%, depending on the funded ratio percentage)

Basic Trade-Off

- On the plus side, a properly designed “reserve fund” model with inter-generational risk smoothing will produce a tighter range of results with less downside risk – **in the long-term**
- On the negative side, in the early years some of the available returns will be diverted towards establishing the desired reserve surplus level, and will not flow into credits for participants

Early Year Returns/Credits

- Here is the distribution of returns for a standard DC plan:

Percentile	*1st 5 yrs*	*Next 5 yrs*	*1st 10 yrs*
95%	15.4%	16.0%	11.8%
80%	10.9%	11.9%	9.6%
50%	**6.7%**	**7.4%**	**7.0%**
20%	2.9%	2.7%	4.4%
5%	-0.6%	-1.6%	2.2%

- Here is the distribution of credits for the sample “reserve model” plan:

Percentile	*1st 5yrs*	*Next 5 yrs*	*1st 10 yrs*
95%	10.0%	10.5%	9.1%
80%	9.0%	8.7%	7.7%
50%	**5.9%**	**6.5%**	**6.2%**
20%	3.1%	4.0%	4.6%
5%	1.0%	2.0%	3.3%

- General observations about “reserve model”
  - At the median about 1 percentage point of the return is diverted
  - Upside is more limited
  - Some downside protection is provided

Long-Term Replacement Ratios

- For this we are jumping 40+ years into the future so we can observe results for retiring cohorts after a full career of participation
- Here are the distribution of results, compared with the TDF results, for cohorts retiring after a 42 year career (age 25 to age 67) and saving 5% of pay each year

	------ Reserve Fund -------		------ TDF -------	
Percentile	***2058 Cohort***	***2078 Cohort***	***Typical***	***Lower Risk***
95th	44.2%	65.6%	47.2%	35.8%
75th	29.5%	39.9%	31.3%	26.2%
50th	**22.4%**	**29.7%**	**24.2%**	**21.6%**
25th	17.5%	22.8%	19.1%	17.8%
5th	12.3%	15.4%	13.4%	13.5%

- Eventually (after 60 years) the results are clearly superior, but for the initial entrants into the plan, the results are inferior to what is produced by a Typical TDF approach (but arguably slightly better than those produced by a Lower Risk TDF approach)