DC Plans Should Look and Feel More Like DB Plans

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DB pension funds

- Saving now to pay a bill that comes due in 20, 30, 40… years
- Not only “the most sophisticated financial service ever designed” (Bill Sharpe), but the most important
- Either it is
  - very hard, or
  - we are very bad at doing something simple.
  - Which is it?

Why DB investing is hard

- Market risk
- Liability risk
  - Discount rate
  - Changes in the promise
- Agency risk
- Underfunding risk
- Theft risk (large sums of money are easy target for rent seekers)
- Time risk (everything else than can happen)

"Look… why don't we just quit this silly chase and go raid the employee pension fund."

OK, let’s start over

- DC plans are the fresh start – and let’s do it better!
- DC plans have succeeded tremendously
- But they, too, are underfunded
- And, most seriously, have not given thought to *decumulation* to make them more like DB plans
  - – DB got decumulation right but not perfect

The crisis crisis

- Everything’s a crisis
- For DC plans to succeed, let’s not replicate aspects of DB that have failed/likely to fail
  - Underfunding
    - Unrealistic discount rates
    - Amortization and smoothing, concealing true results
    - Failure to make even small contributions required given unrealistic assumptions
    - Agency issues, e.g. managed by boards of directors with no skin in the game
    - Lump-sum payout

What does the DB system offer that a DC plan would like to provide

- Stream of consumption
- Guaranteed over lifetime of uncertain length
- Inflation protection?

- Handholding through decumulation

Plus possibility of upside

Decumulation outline

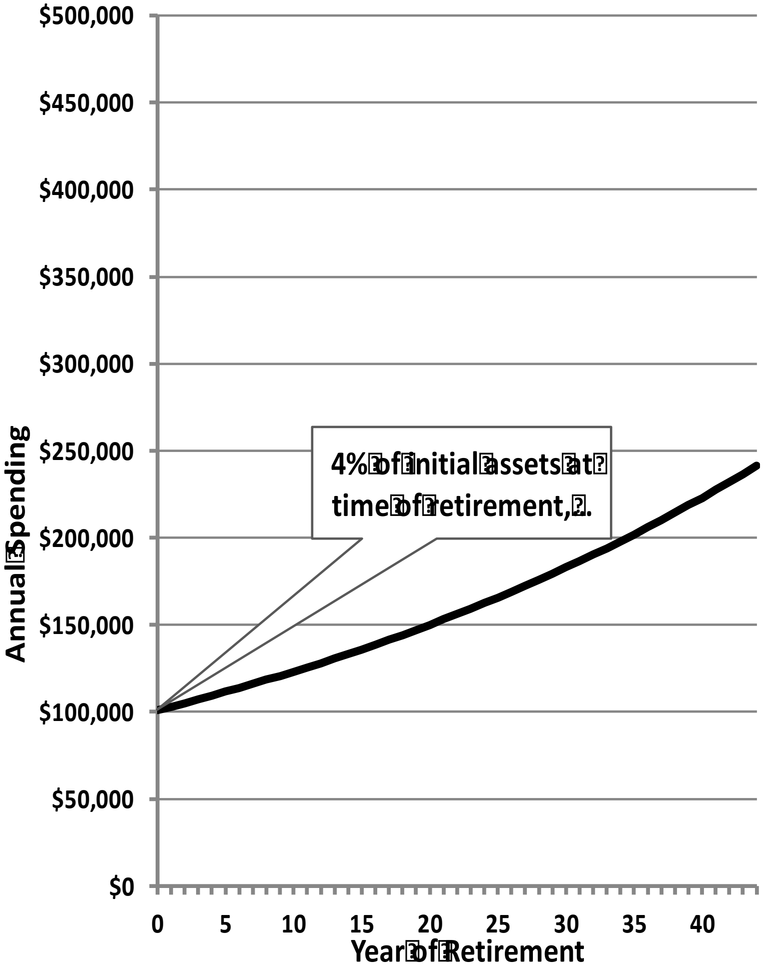
- Decumulation without annuities
  - 4% rule (spend 4% of initial assets + inflation)
  - Endowment rule (spend 5% of current MV)
  - ARVA best practices
    - Reshaping

- Decumulation with annuities
  - Annuity-only (DB plan)
  - Combining conventional investing and annuities (Sexauer-Siegel-Totten)

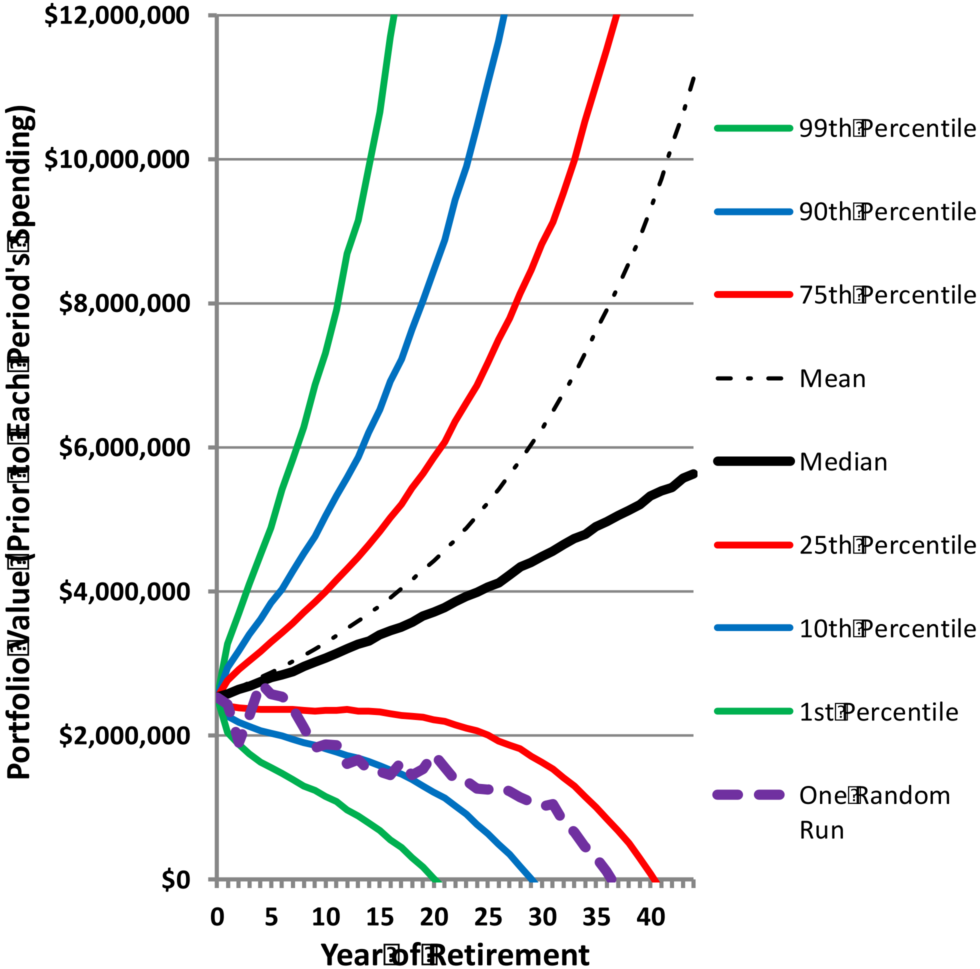
The 4% rule: very high risk

Either spending into ruin, or not spending enough

Spending is constant (real). . .



But wealth is explosive (+ or –)



Endowment rule: Spend *x*% of then-current market value

- Won’t run out of money, but could run very low on funds/spending
- Same volatility as market
- If market performs well, leaves a lot to heirs/escheat

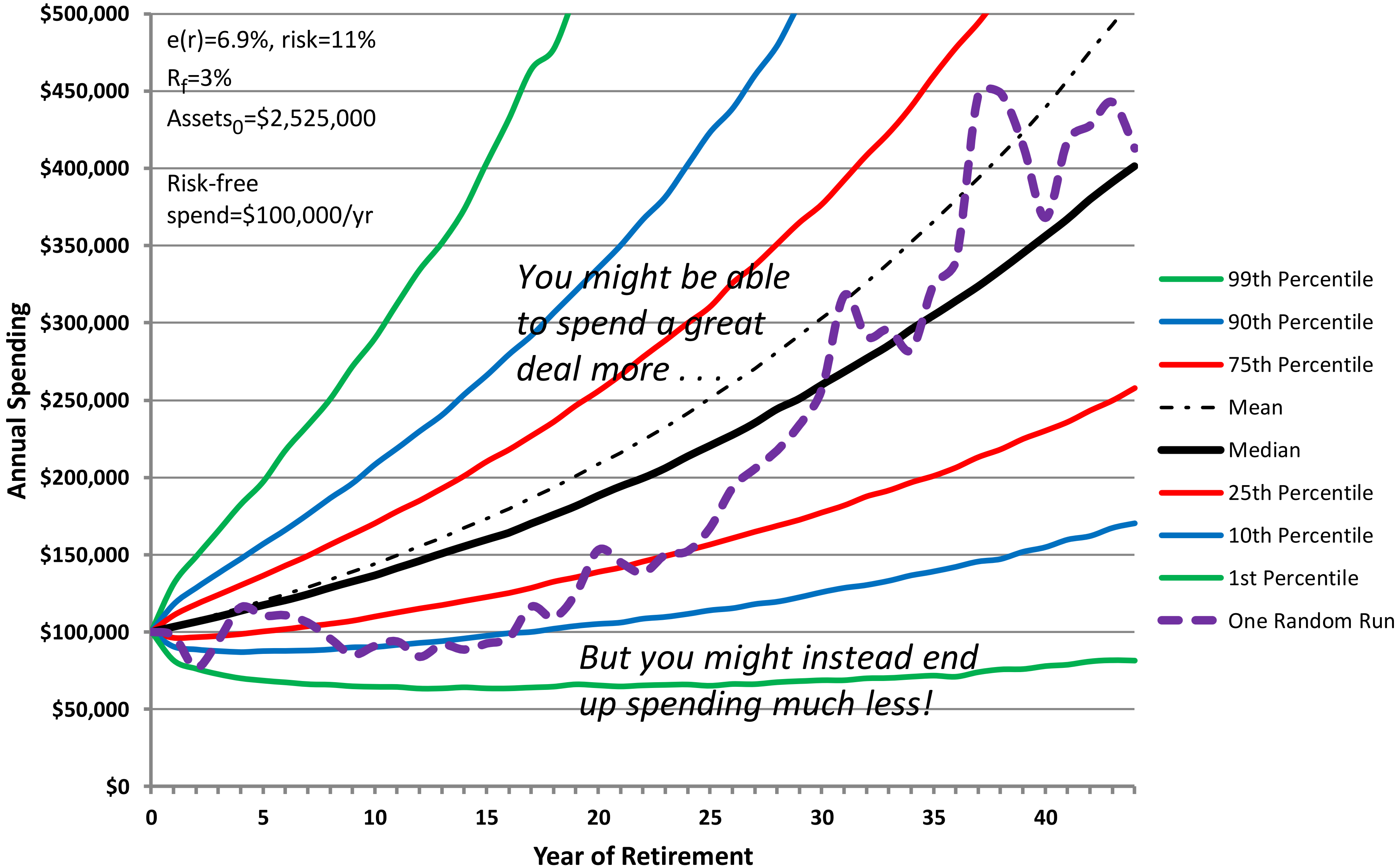
ARVA:
Annually Recalculated Virtual Annuity

- Each year, spend what a freshly calculated annuity payment (at updated term, interest rate, and asset value) would be in its *first* year
- Next year, repeat the process!

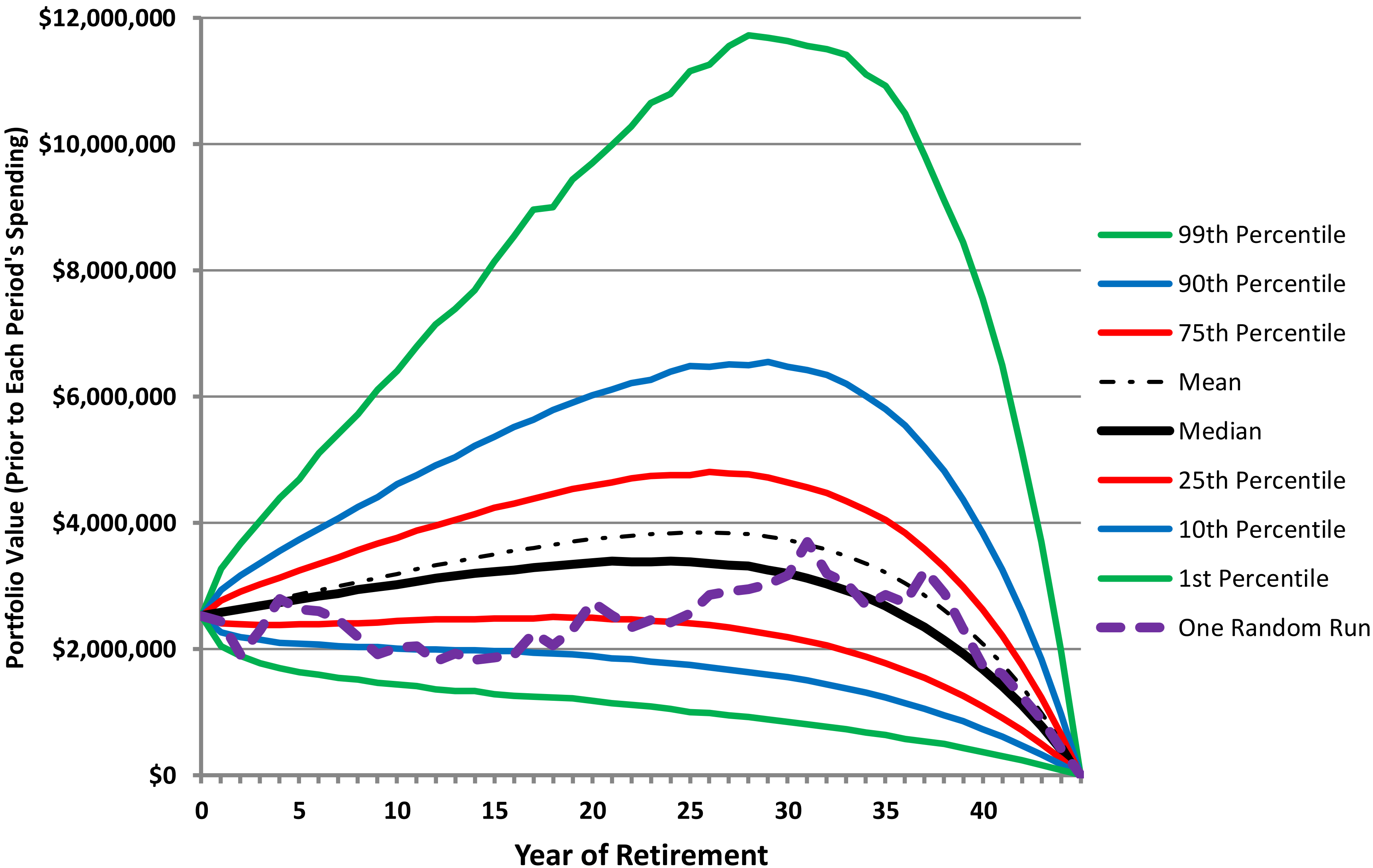
- i.e. spend-down over exactly the specified time horizon using annuity math – nothing left over, no chance of ruin
- Satisfies budget constraint: PV of spending = MV of assets at all times

ARVA spending example:

Risky portfolio, $E(r)$ = 6.9%, σ = 11%



With ARVA, assets subject to spending always last full term



ARVA doesn’t take advantage of insurance principle

- Although like an annuity in terms of time horizon, doesn’t allow deceased investors to pay for the still living
  - Save for extreme old age to avoid small probability of ruin
  - Low spending rate
  - Most investors will leave a lot of money on table
    - “Reshaping” can help
- Is there another path to retirement security?

Combining conventional investing and annuities

- Age 65-85: Spend down DC savings
- After age 85: Live on payout from annuity or mini-DB plan

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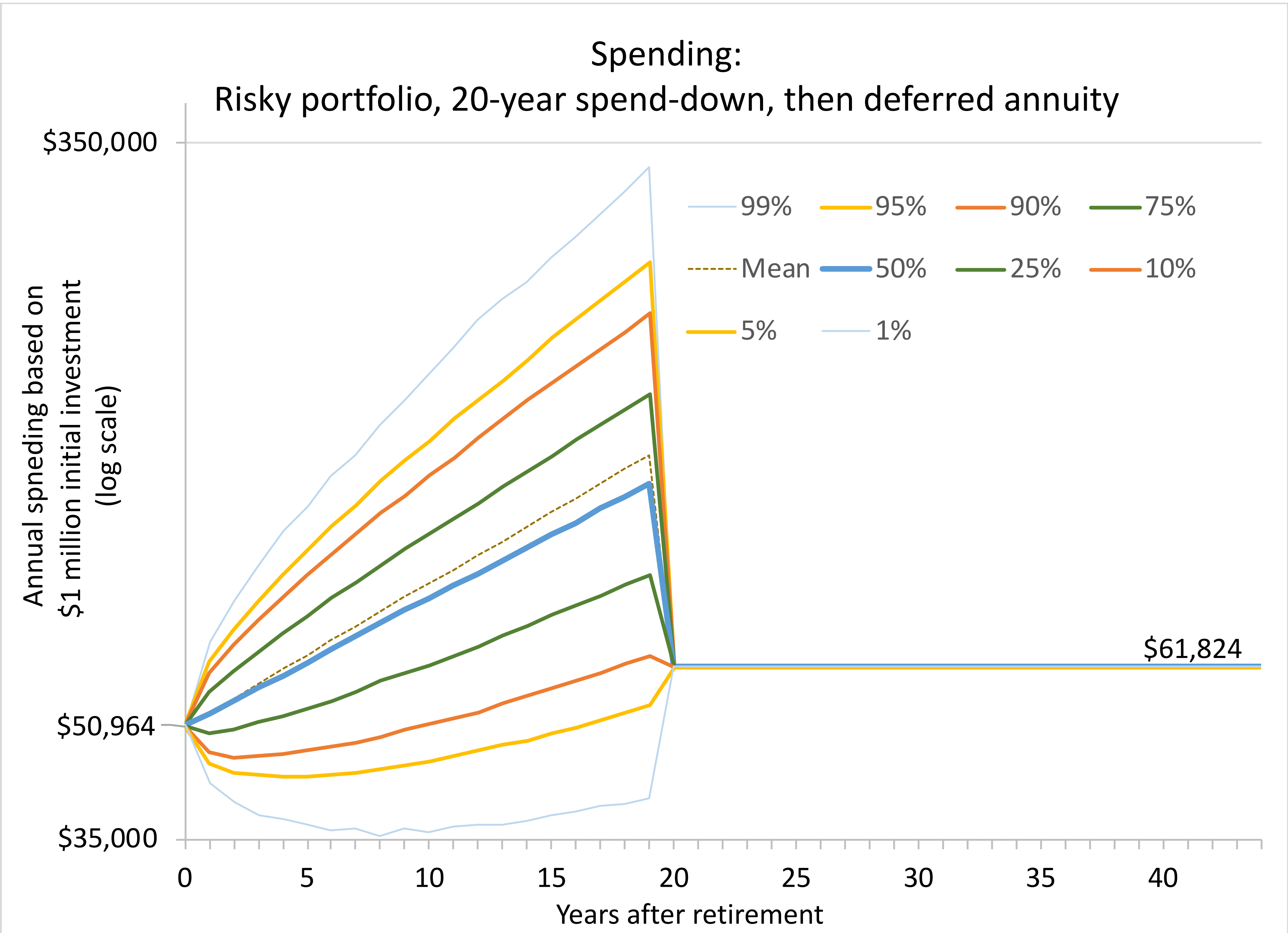
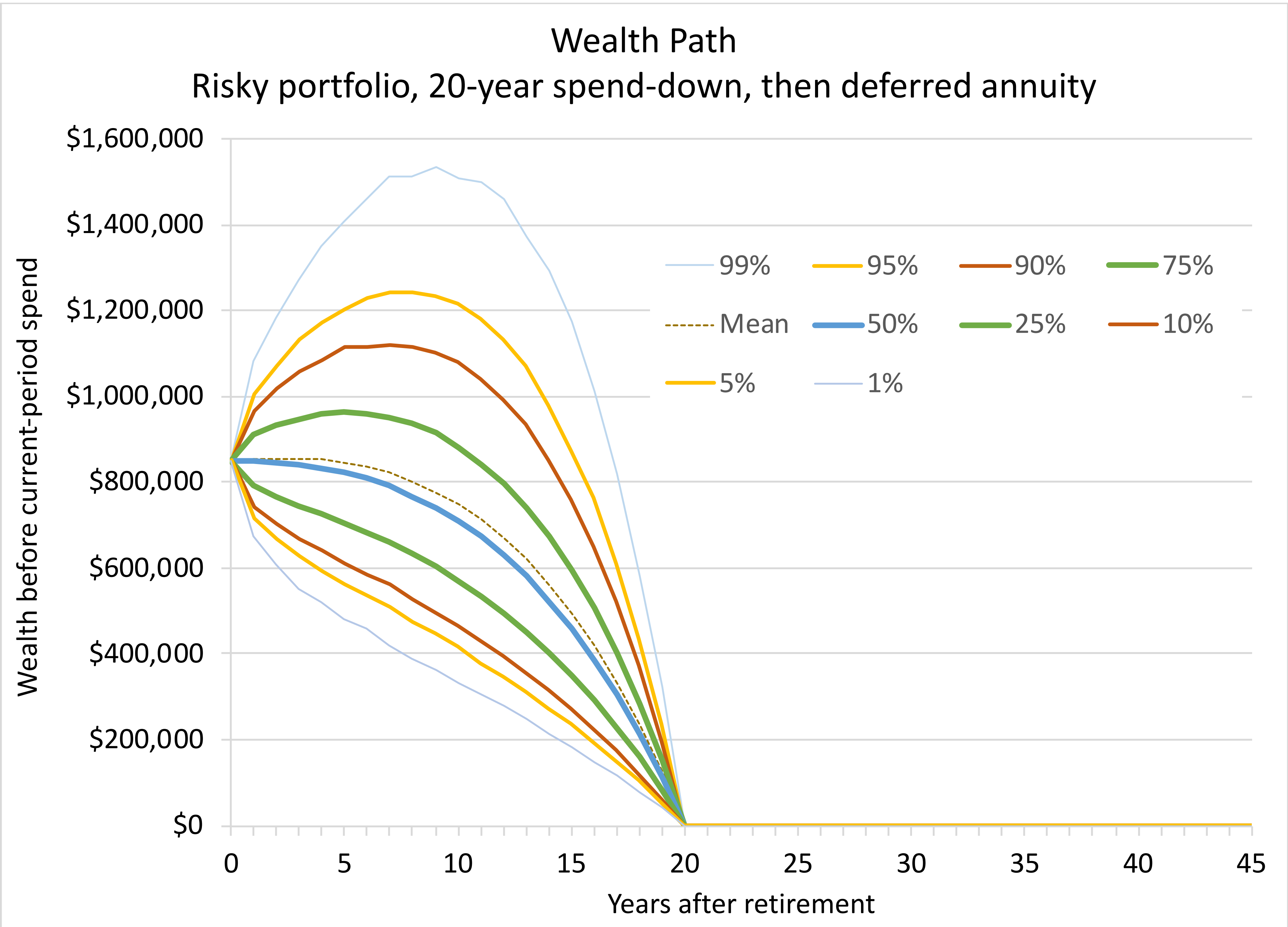
- Makes retirement saving and spending a manageable problem
- Annuity or mini-DB plan is cheap
- Allows for upside


Spending:
Risky portfolio, 20-year spend-down, then deferred annuity
$350,000
$50,964
$35,000
Annual spneding based on
$1 million initial investment
(log scale)
99%
95%
90%
75%
Mean
50%
25%
10%
5%
1%
$61,824
0
5
10
15
20
25
30
35
40
Years after retirement


Wealth Path
Risky portfolio, 20-year spend-down, then deferred annuity
$1,600,000
$1,400,000
$1,200,000
$1,000,000
$800,000
$600,000
$400,000
$200,000
$0
Wealth before current-period spend
0
5
10
15
20
25
30
35
40
45
Years after retirement
99%
95%
90%
75%
Mean
50%
25%
10%
5%
1%


Spending:
Low-risk portfolio, 20-year spend-down, then deferred annuity
Annual spneding based on
$1 million initial investment
$350,000
$50,964
$35,000
99%
95%
90%
75%
Mean
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Years after retirement

Problems with annuities

- Default (counterparty) risk
  - Insurance companies may not be hedged to risks in annuity book of business
  - Long-term liability comes after all other payouts
- Illiquidity – can’t change your mind
- Lack of transparency
- High fees
- Adverse selection (Groucho)

Annuity solutions: Issuer
A challenge to the industry

- Separate corporate structure with no “bleed” from other products/risks
- Treasury-only portfolio that is duration-hedged to the liability
- Standardized contracts with transparent pricing
- Fully participating, so surprises (+/–, mostly mortality risk) are credited/charged to participants and do not bankrupt issuer
- Large pools to minimize adverse selection

Annuity solutions: Investor

- Diversify – buy 2 or 3 annuities
  - Include foreign issuer?
  - Still exposed to systemic risk, however;
  - State guarantee pools would fail if default is systemic
- Don't buy highest yield!
- Avoid complexity, buy "pure longevity insurance" (single premium, no "period certain")
- Keep some money in reserve outside the annuities

Conclusion: What we've done

- Thought in broader terms about converting assets to income
- Honoring budget constraint: within that, quite a bit of flexibility
  - Investment strategy
  - Reshaping
  - Blending conventional investing with annuities
- What is risk?
  - For decumulating investor, risk is volatility of spending and possibility of ruin; also leaving too much on table.
  - Get rid of last two risks through ARVA or blended strategy, both of which are all about honoring the budget constraint at all times

Further issues

- Pension problem is in real economy
  - Longer life spans
  - Relatively short work lives (can be made longer)
  - Relatively low real rates of return
- So you can't financially engineer your way out of it
- But let's do the best we can – we're financial engineers and don't control the real economy
- Blend conventional investing with guaranteed (insurance) income products
- Think in terms of generating income as the reason for accumulating the DC assets in the first place (Merton)

Thanks