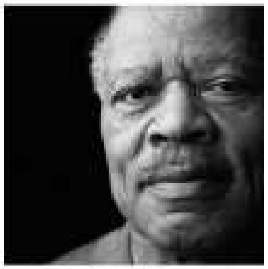

"The Role of Life Annuities in a Changing Retirement Landscape"

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Overview

- Nearly 80 million baby boomers are approaching retirement in the United States
- Never before in history have so many individuals faced the challenge of supporting themselves financially for decades after retirement.
  - Increasing life expectancy means that a typical retiree will spend 2-3 decades in retirement
  - The decline of traditional, defined benefit retirement systems
  - Uncertainty about the future of Social Security
- Financial planning for retirement is made difficult due to longevity uncertainty
- Life annuities can help solve this problem by converting wealth into a steady streams of income that last a lifetime

Retirement Security

- Most public policy, public education, and financial planning with regard to retirement is focused on the ***"accumulation phase"***
  - How much to save
  - Tax planning
  - Portfolio allocation
- The "forgotten half" of retirement security is carefully planning the ***"payout phase"***
  - How fast to consume
  - Tax planning
  - Portfolio allocation
  - How make resources last a lifetime

Longer Lives, Longer Retirements

- Americans are living longer
  - A 25-year increase in life expectancies during the 20th century
    - 51.5 years for males and 58.3 years for females in 1900
    - 80 years for males, and over 84 years for females in 2000
- The result – people are spending more time in retirement than ever before
  - Average retiree spends about one-fourth of his or her total life in retirement
  - It is now necessary to financially plan for retirements that could easily extend up to four decades long!

Insuring "Longevity Risk"

- Financial planning would be easy if we knew with certainty how long we each would live
  - Simply allocate wealth so that it lasts until the day you die
  - "Good versus excellent estate planning"
- But length-of-life is highly uncertain
  - 65-year-old woman today
    - One in three chance that she will live to age 90
    - One in thirty will live to 100
- Uncertainty forces one to trade-off two risks
  - If consume too aggressively, you will "run out of resources" before you die
  - If consumer too frugally, you lower your standard of living

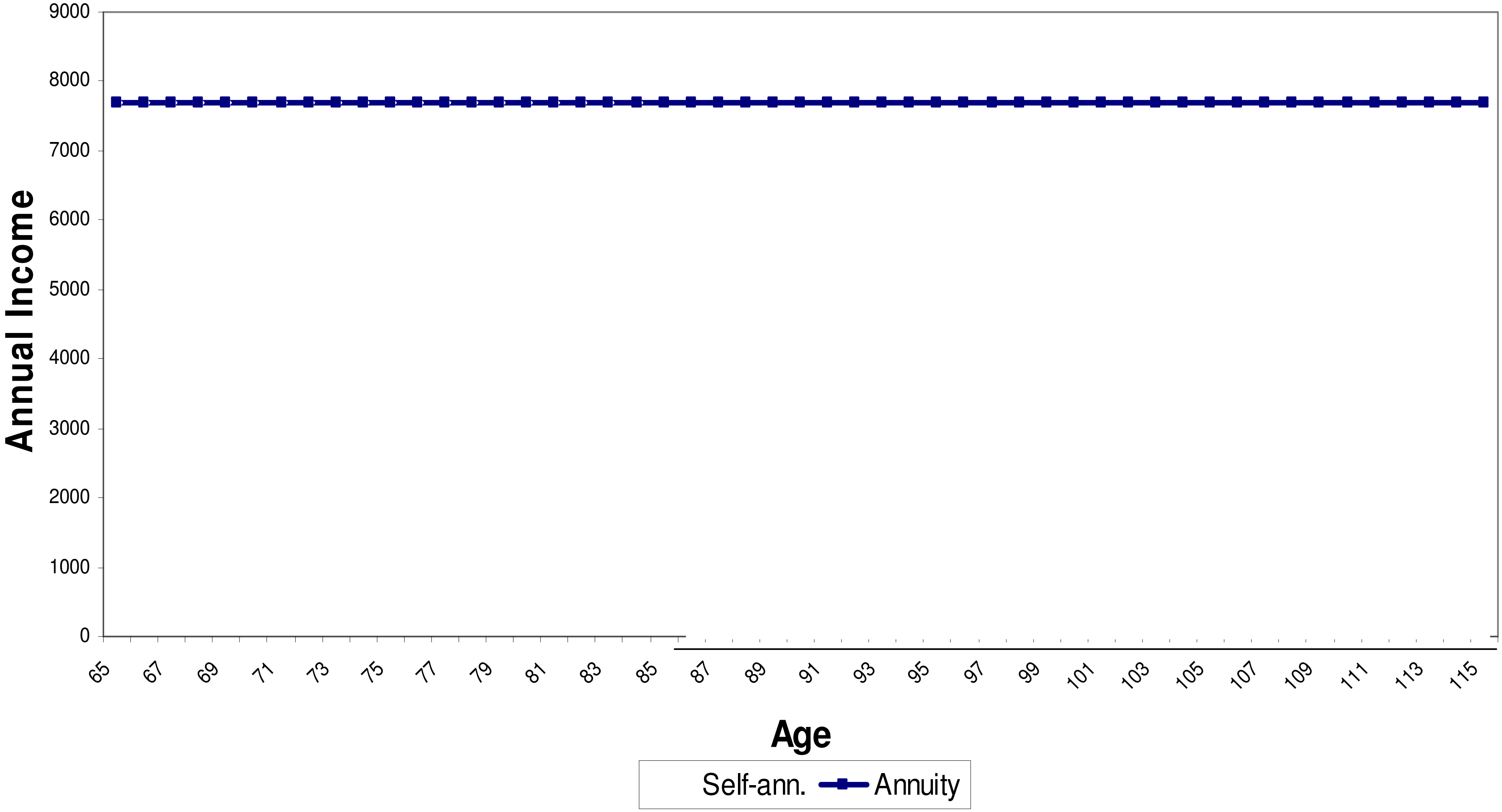
Life Annuities as the Solution

- *Life* annuities are financial products that help solve the financial planning problem
  - Important to distinguish from *life* annuities from accumulation products called annuities

- Individual trades a stock of wealth for a flow of income that *lasts as long as individual lives*

- An annuity can provide a *higher* level of sustainable income than can be achieved from a non-annuitized asset

Income from Alternative Strategies



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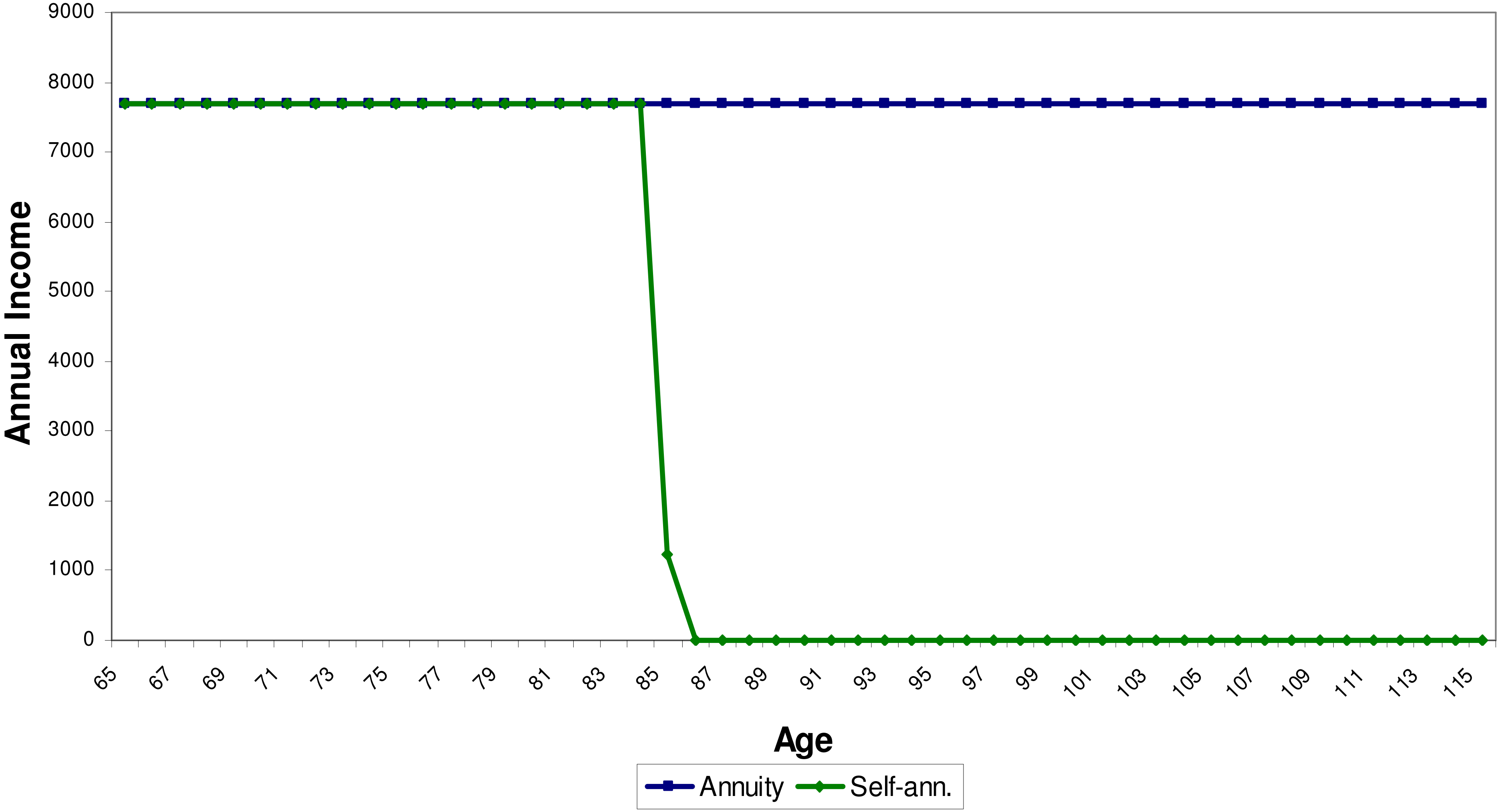

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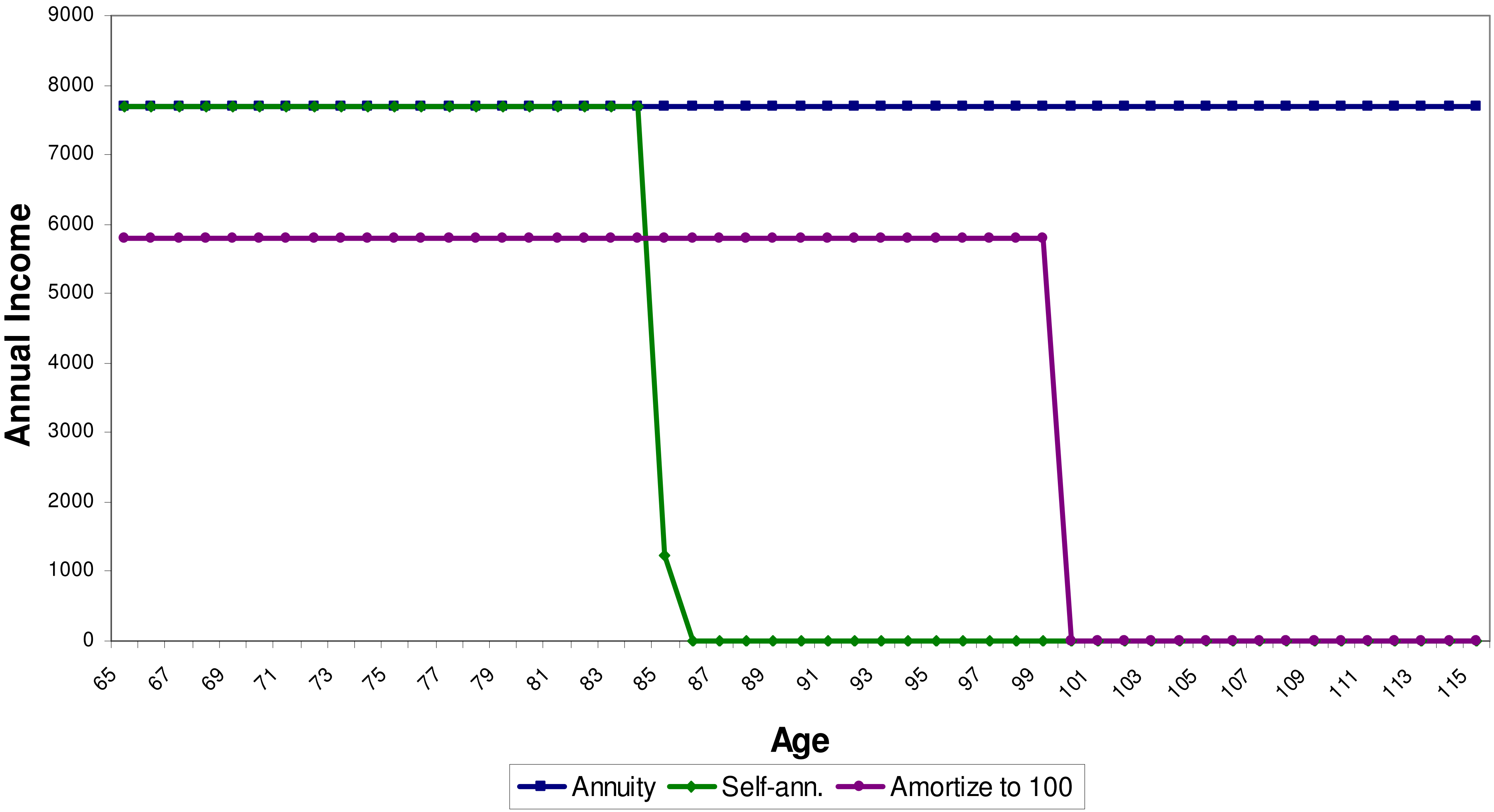

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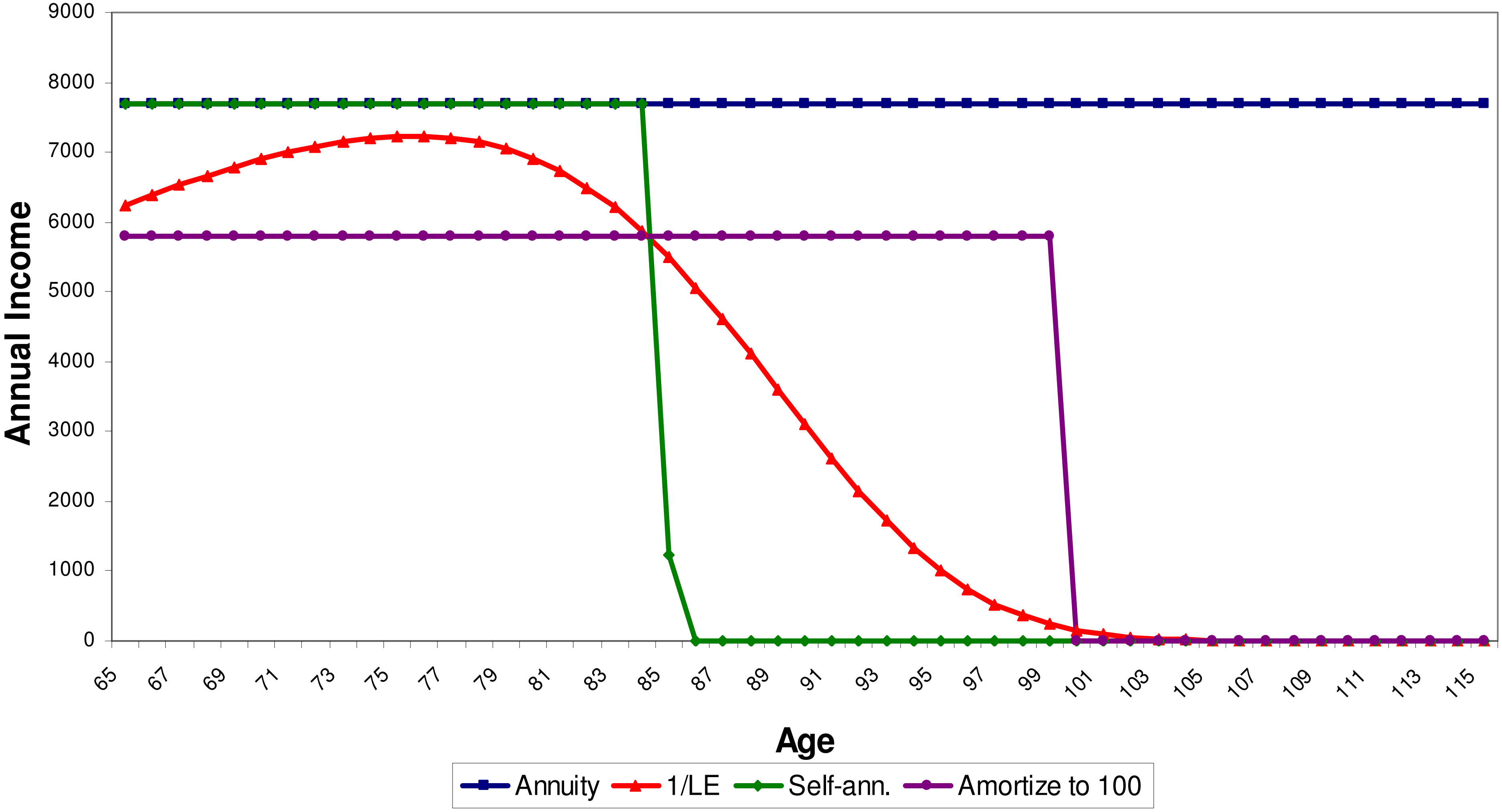


Is it Magic?

- No – “there is no free lunch”
- Annuities pay a higher return when alive *in exchange for giving up right to wealth upon death*
- Advantages of annuities
  - Higher return while living
  - Guaranteed income as long as you live
- Disadvantages of annuities
  - Cannot bequeath the money (no inheritances)
  - If annuity markets are poorly developed, and thus there are concerns about:
    - Pricing
    - Liquidity

What Exactly is an Annuity?

- It is *extremely* important to distinguish between *life* annuities versus other products which are called "annuities" but which have no longevity insurance
- The language is confusing, and the industry has certainly not helped itself.
- For example:
  - Most "variable annuities" are tax-advantaged accumulation products that are never converted to a life-contingent payout stream
  - But some companies also offer variable life annuities
  - Extremely confusing to consumers (and even regulators and academics who specialize in this area!)

Annuities as an Accumulation Device

- Many "deferred annuities" are available that operate primarily as accumulation products
  - "Variable Annuities" – the lion's share of the US market
  - Essentially operate like a mutual fund, wrapped in an annuity contract
    - Offer a number of non-longevity insurance features, such as minimum guaranteed death benefits, minimum return guarantees, etc.
    - Tend to have high expense ratios
    - Receives favorable tax treatment (inside build-up)
  - While many of these products offer an option to convert to a lifetime payout annuity, there is no requirement that this be done and very few people do

Anatomy of a *Life* Annuity

- Timing of premiums
  - Immediate
  - Deferred
- Number of lives
  - Single
  - Joint and survivor
- Bequest options
  - Period certain guarantees
  - Refund options
- Type of payout
  - Fixed
  - Graded
  - Inflation indexed
  - Variable – linked to underlying portfolio

Economic Theory of Life Annuities

- Yaari (1965): under certain conditions, individuals should convert 100% of their wealth to annuities
  - No bequest motives
  - Actuarially fair annuities
  - Von Neumann-Morgenstern expected utility
  - Exponential discounting
  - Utility of consumption is additively separable over time
  - No uncertainty other than date of death

- In Davidoff, Brown and Diamond (2005), we show that, with complete markets, sufficient conditions for optimality of full annuitization are:
  - No bequest motives
  - Annuity return to survivors > conventional asset return


Optimality in Two Period Model

- Utility = $U(c_1, c_2)$
- Saving in form of:
  - A (annuities): return R_A if alive, 0 if dead
  - B (bonds): return R_B in all states
  - $R_A > R_B$ [Note: $R_A = R_B/(1-q)$ if actuarially fair]
- $C_2 = A^*R_A + B^*R_B$
- Assume cannot die in debt (B>0)

The Dual Problem

$$\underset{c_1, A, B}{Min} \quad c_1 + A + B$$

$$subject\ to: (i)\ U(c_1, R_A A + R_B B) \geq \overline{U}$$

$$(ii)\ B \geq 0$$

- Solution is B=0 (full annuitization)
- Otherwise, consumer can reduce expenditures, holding consumption vector fixed, by selling R_A/R_B bonds and buying 1 unit of annuity

Basic Logic of Optimality

- Annuitized asset return > conventional asset return to survivors
- If place no value on money when dead, then annuity return strictly dominates
- Arbitrage-like gain
- If own bonds, you can increase utility by selling $1 of bonds and buying $1 of annuity

Generality

- If markets are complete, the optimality of full annuitization survives the extension of the problem to many time periods and many states
- With *in*complete markets, result can fail
  - If there is a severe mismatch between the desired consumption path and the annuity income stream, full annuitization sub-optimal.
  - Example: *some* forms of expenditure shocks (i.e., medical shocks early in life)
- Key issue – relative liquidity and ability to match desired consumption path

Bottomline of Theory

- With complete markets and no bequests, full annuitization is optimal
- Even with incomplete markets, full annuitization often optimal
- Result breaks down only when there is a severe mismatch between desired consumption path, and the income path available from annuities
- Even in these cases, optimal level of annuitization remains quite high (e.g., one-half to two-thirds of total wealth)

What Does This Mean in Practice?

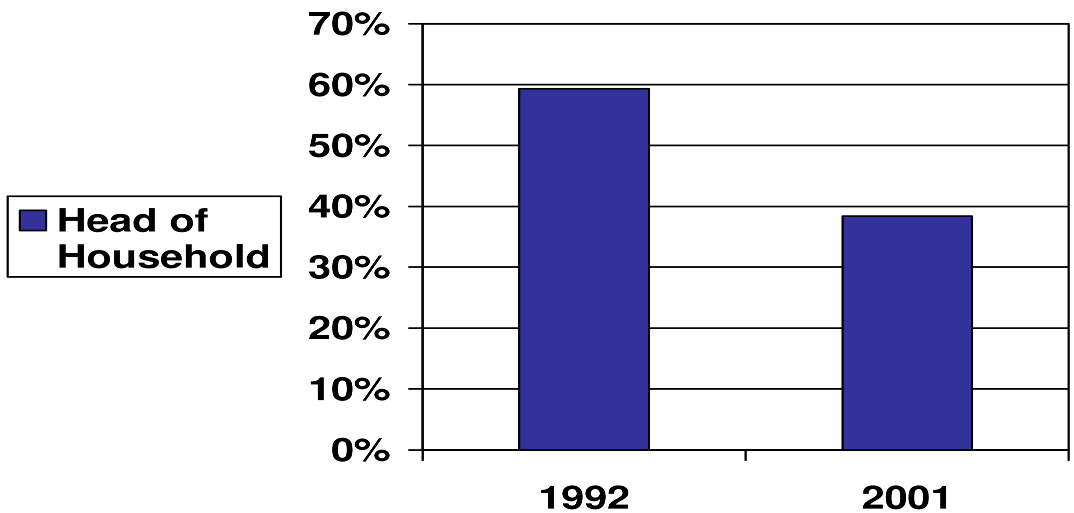
- Consumers ought to be annuitizing a large fraction of their wealth
- Consumer welfare would increase if *more* asset types were offered in an annuitized form
  - Not just fixed nominal payments
  - Inflation indexed annuities
  - Life annuity payouts linked to other investment classes
    - Stocks, bonds, real estate
    - Imagine *every* asset offered in an annuitized form
- If individuals fail to adequately annuitize on their own, it *may* justify government intervention
  - Social Security
  - Role of annuities in private plans

What is the Reality?

- Traditionally, only substantial source of life annuitization came from two sources
  - Employer provided defined benefit pensions
  - Social Security
- Individual market for *life* annuities in the U.S. is actually quite small
  - Most of what shows up as “annuity” sales in ACLI or other industry data are deferred products

Defined Benefit Pensions In Decline

- Fewer retirees participate in traditional, defined benefit pensions that pay steady income for life
  - From 1992 to 2001, the percentage of family heads covered by DB declined from 59.3 to 38.4 percent



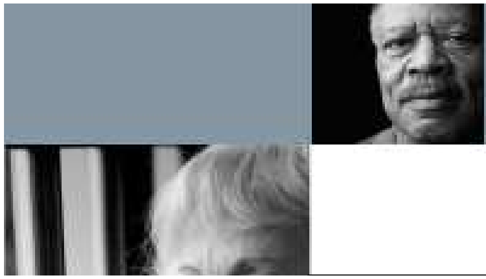
- Many private DB pensions in US are severely underfunded, and the PBGC is being stretched thin

401(k) Plans on the Rise

- The 401(k) is now the dominant form of private pension in the U.S.
- But very few 401(k) plans even offer the option to annuitize
  - Estimated to be only 27% of plans in late 1990s that offered an annuity
  - Consensus seems to be that it has dropped sharply in the recent years

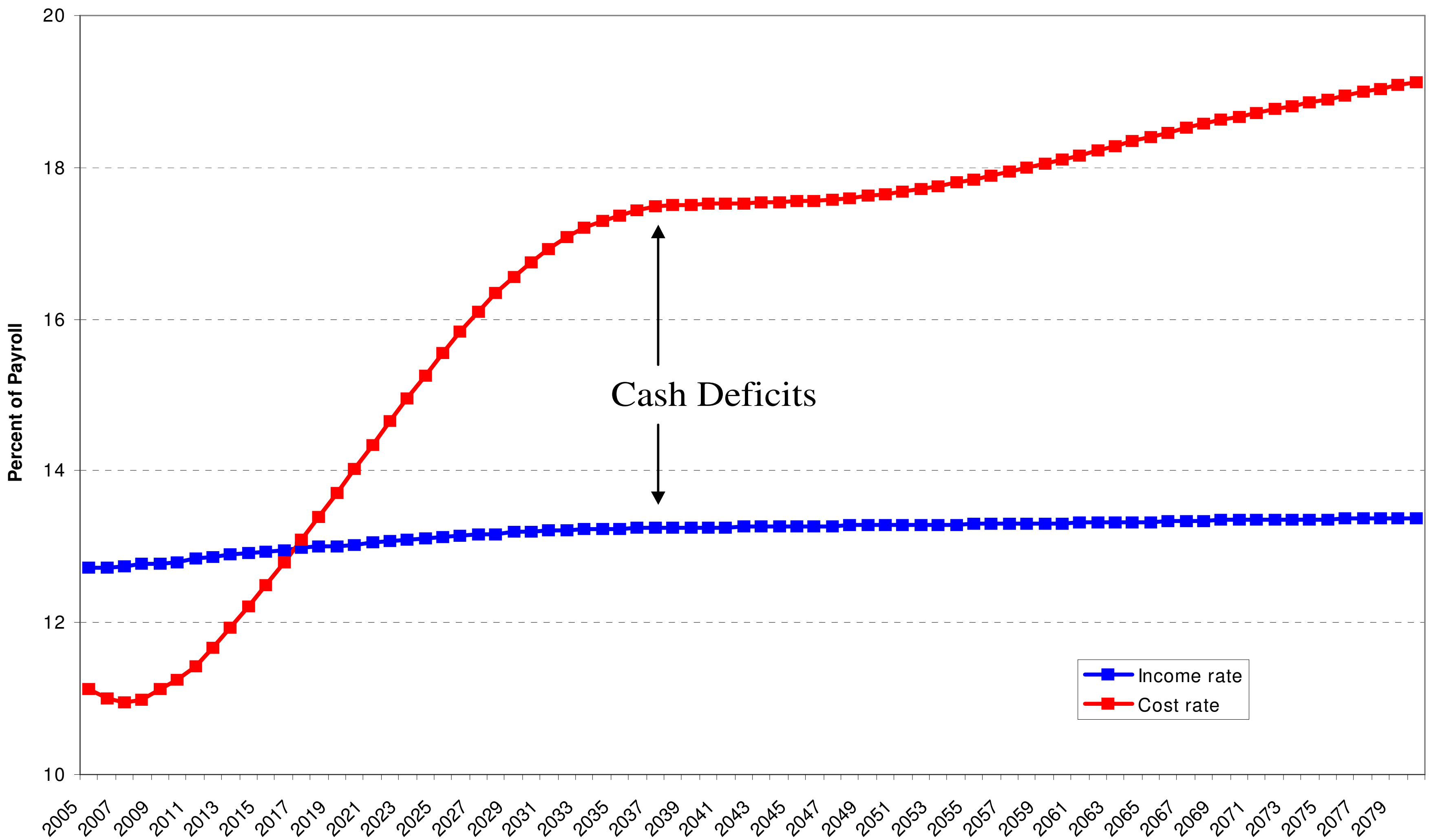
The U.S. Social Security System

- The U.S. Social Security system pays benefits as an inflation-indexed, life annuity
- Today, the U.S. Social Security system replaces 42 percent of earnings *on average*
  - Long-term financial deficits of the system make it likely that average replacement rates will need to decline in the future
- Social Security is financed on a pay-as-you-go basis
  - Today's workers pay for today's retirees
  - Ratio of workers to retirees is declining rapidly
  - Cash deficits begin in just 12 years



Social Security Finances

Figure 2: Cost and Income Rates Under Current Law



What Does This Mean?

- Social Security replacement rates will likely decline to address fiscal sustainability

- When combined with decline in DB plans, there is clear shift toward increased self-reliance in retirement planning

- In a fully rational world, this should substantially increase the demand for life annuities
  - Saving more is not enough
  - Must find a way to make the savings last

The Annuity Puzzle

- Economic theory says annuities are quite valuable and that retirees ought to hold most of their portfolio in this form
- Empirical evidence is that most individuals do not voluntarily annuitize their resources
- Why?

Resolving the Puzzle

- There are lots of possible ways to reduce annuity demand a standard model
  - Bequests
  - High prices (adverse selection or admin costs)
  - Families as substitutes
  - High discount rates
  - Uninsured medical expenditure shocks
  - Option value of waiting
  - All need to be combined with incomplete annuity markets
- These approaches cannot fully explain the observed lack of annuitization
- Likely explanations are psychological/behavioral

Future of the Market

- Demand side
  - Should see increased demand as traditional sources of lifelong income decline
  - But life annuities are poorly understood
    - Consumers
    - Financial planners
- Supply side
  - Only now seeing much innovation
    - Inflation indexed products
    - Equity linked products
  - Limitations
    - Lack of inflation linked corporate bonds
    - Regulatory restrictions

A Big Unknown in U.S.

- Social Security personal retirement accounts (PRAs)
  - President Bush has called for individuals to be able to redirect up to 4 percent of earnings into PRAs
  - Individuals would be required to annuitize enough to keep out of poverty
  - Joint and survivor annuities as the default option for married couples
- Would the annuities be provided by government or private sector?
  - Inflation protection
  - Role of regulation (state vs. federal)

Other Public Policy Considerations

- Compulsory life annuitization has distributional consequences
  - Life annuities are designed to transfer wealth from short-lived to long-lived individuals
  - Income and life expectancy positively correlated
- Extent of annuitization may have affect other government expenditures
  - Sufficient annuitization can help prevent reliance on means-tested programs
- Best policy *may* be to have annuities be the default option from public and private plans – preserve the option for those that want it

Concluding Thoughts

- Annuities are valuable component of any retirement portfolio
- Policy makers should be looking for ways to encourage, or at least not discourage, annuitization
  - Annuities as the "default" payout option
  - Regulations that allow more "complete" markets
    - Product innovation
    - Regulatory innovation
- Companies should figure out how to market
  - Getting incentives right for brokers and agents
  - Properly distinguish from the bad reputation of accumulation products
  - Labels: "Personal pension" or "Personal Social Security plan" rather than "annuity"?