

# **RISK AND INDIVIDUAL CHOICE IN ACCUMULATING RETIREMENT SAVING**

**James Poterba  
MIT and NBER**

**Munich Lecture II  
November 2003**

## **SHIFTING PENSION STRUCTURE PLACES GREATER CHOICE WITH INDIVIDUALS**

- **Germany: Concern Over Future of Government Retirement Provision, Greater Emphasis on Private Alternatives**
- **U.K.: Increasing Importance of Defined Contribution Plans**
- **U.S.: Rising Importance of Self-Directed Retirement Arrangements**

## **DEFINITION: DB vs. DC PENSION PLANS**

- **Defined Benefit (DB) Plan: Specifies a Guaranteed Annuity Payout According to a Formula Based on Wages, Years of Service, etc.**
- **Defined Contribution (DC) Plan: Payout at Retirement Depends on Value of Assets, Which Depend on Past Employer and Employee Contributions**

## **SHIFTING LANDSCAPE FOR U.S. PENSION SAVING**

- **Rapid Rise in Retirement Assets/Wages (0.5 to 2.5, 1975-99)**
- **1975: DC Plans Represent About 25% of Participants and Plan Assets**
- **1980: 64% of Private Retirement Saving Contributions to DB Plans**
- **1999: 85% of Contributions are to “Individual Directed” Plans, > 50% of Assets in DC Plans**

## **WHY THE SHIFT FROM DB TO DC PLANS?**

- **Reduced Employer Costs**
- **Greater “Pension Portability” for Workers**
- **Regulatory Changes such as ERISA (USA, 1974)**
- **Rising Stock Market and Shifting Worker Tastes**
- **Long-Term Government Budget Stress**

# COMPARING THE RISKS OF DB AND DC PLANS

- **DC Plans: Worker Bears Risk of Asset Price Changes, Must Make Investment & Withdrawal Decisions**
- **DB Plans: Worker May Lose Large Fraction of Benefits if Changes Jobs Before Benefits Fully Vest**
- **Government DB: Risk of Policy Change**

# **POLICY ISSUES RAISED BY GROWTH OF DC PLANS**

- **Accumulation Phase: Should Worker Choice be Restricted? Should There be Guarantees on Returns? What is the Role of Participant Education?**
- **Payout Phase: Should Annuities be Required? Again, What Role for Education? (Lecture III)**

# **CURRENT U.S. POLICY DEBATE ON ACCUMULATION**

- **High-Profile Collapse of Firms with Company Stock in 401(k) Plans (Enron, Polaroid)**
- **Weak Stock Market Performance Since 2000 Trimming 401(k) Balances**
- **Links to Policy Debate on Social Security Privatization**

# IMPLICATIONS FOR DESIGN OF SELF-DIRECTED PENSIONS IN GERMANY

- **Should There Be Restrictions on Investment Choices?**
- **Who Monitors Expenses and Costs of Investments?**
- **Can Workers Make “Appropriate” Portfolio Decisions?**

# **ASSET ALLOCATION IN 401(k) PLANS: STYLIZED FACTS**

- **Overall Asset Allocation in DC Plans is Similar to Asset Allocation in DB Plans**
- **About 20% of 401(k) Assets are in Employer Stock**
- **Many Plans Have High Company Stock Holdings**

# AGGREGATE ASSET ALLOCATION IN 401(k) PENSION PLANS

<b>Equity Funds</b>	<b>51%</b>
<b>Bond Funds &amp; GICs</b>	<b>19</b>
<b>Company Stock</b>	<b>19</b>
<b>Balanced Funds</b>	<b>8</b>
<b>Other</b>	<b>7</b>

# HOW MUCH EMPLOYER STOCK IN 401(k) PLANS

- **Most Plans Hold None**
- **Large Plans of Publicly Traded Firms Have Substantial Holdings**
- **Need to Distinguish Employee Allocations vs. Employer Match**
- **Some Saving Plans Were “ESOPs”**

## **ASSET ALLOCATION PATTERNS BY AGE – US 401(k) PLANS**

	<b>30s</b>	<b>40s</b>	<b>60s</b>
<b>Company Stock</b>	<b>18.4%</b>	<b>19.7%</b>	<b>16.3%</b>
<b>Equity Funds</b>	<b>60.2</b>	<b>54.8</b>	<b>39.8</b>
<b>Fixed Income</b>	<b>4.6</b>	<b>7.5</b>	<b>19.3</b>

# **INVESTMENT IN COMPANY STOCK: CHOICE OR CONSTRAINT?**

- **Some Investment is Worker Directed --  
Workers Decide to Hold Company Stock**
- **Some Investment is Driven by Firm  
Contributions, Particularly “Matching  
Contributions”**
- **Do Workers Think About Correlation with  
Human Wealth?**

# INVESTMENT DECISIONS OF 401(k) PARTICIPANTS WHO CAN INVEST IN OWN STOCK

>30% in Co. Stock	39%
> 50%	28%
> 70%	20%
> 90%	15%

# **HOW RISKY IS COMPANY STOCK?**

## **(Mitchell & Utkus)**

- **Ten-Year Average Annual Return on Company Stock (1992-2001): 10.9%**
- **Ten-Year Average Annual Return on S&P 500: 12.9%**
- **Average Standard Deviation of Company Stock Return: 34.4%**
- **Average Standard Deviation of S&P500 Return: 17.3%**

# PERCEIVED RISKINESS OF DIFFERENT MUTUAL FUND TYPES

- **Money Market Funds: 2.4**
- **Balanced Funds: 2.8**
- **Company Stock: 3.2**
- **Stock Funds: 3.6**
- **International Funds: 4.0**

## SHARE OF COMPANY STOCK IN FIVE LARGEST DC PLANS

- General Electric: 68% ( $\sigma = 33\%$ )
- Verizon: 38% ( $\sigma = 33\%$ )
- IBM: 12% ( $\sigma = 39\%$ )
- General Motors: 21% ( $\sigma = 35\%$ )
- Lockheed-Martin: 36% ( $\sigma = 37\%$ )

# **UTILITY-BASED LIFECYCLE APPROACH TO EVALUATING COST OF RISK**

- **Simulate Retirement Wealth for Different Investment Volatilities**
- **Evaluate Expected Utility of Wealth-at-Retirement**
- **Compare with Expected Utility Various Investment Strategies**
- **Translate Into Certainty-Equivalents**

# CALIBRATION FOR EXPECTED UTILITY ALGORITHM

Contribution Profile:  $.10 * (\text{Labor Income})$

Utility of Wealth at Retirement:

$$U(W_{\text{ret}} + W_{\text{other}}) = (W_{\text{ret}} + W_{\text{other}})^{1-\alpha} / (1-\alpha)$$

E(Utility of Retirement Wealth) =

$$EU_{\text{Company}}, EU_{\text{Bonds}}, EU_{50-50}, EU_{\text{SP500}}$$

Wealth Equivalent:

$$[WE_{\text{SP500}}]^{1-\alpha} / (1-\alpha) = EU_{\text{SP500}}$$

# **SPECIFIC ACCUMULATION ASSUMPTIONS**

**Working Life: 35 Years Starting at Age 30**

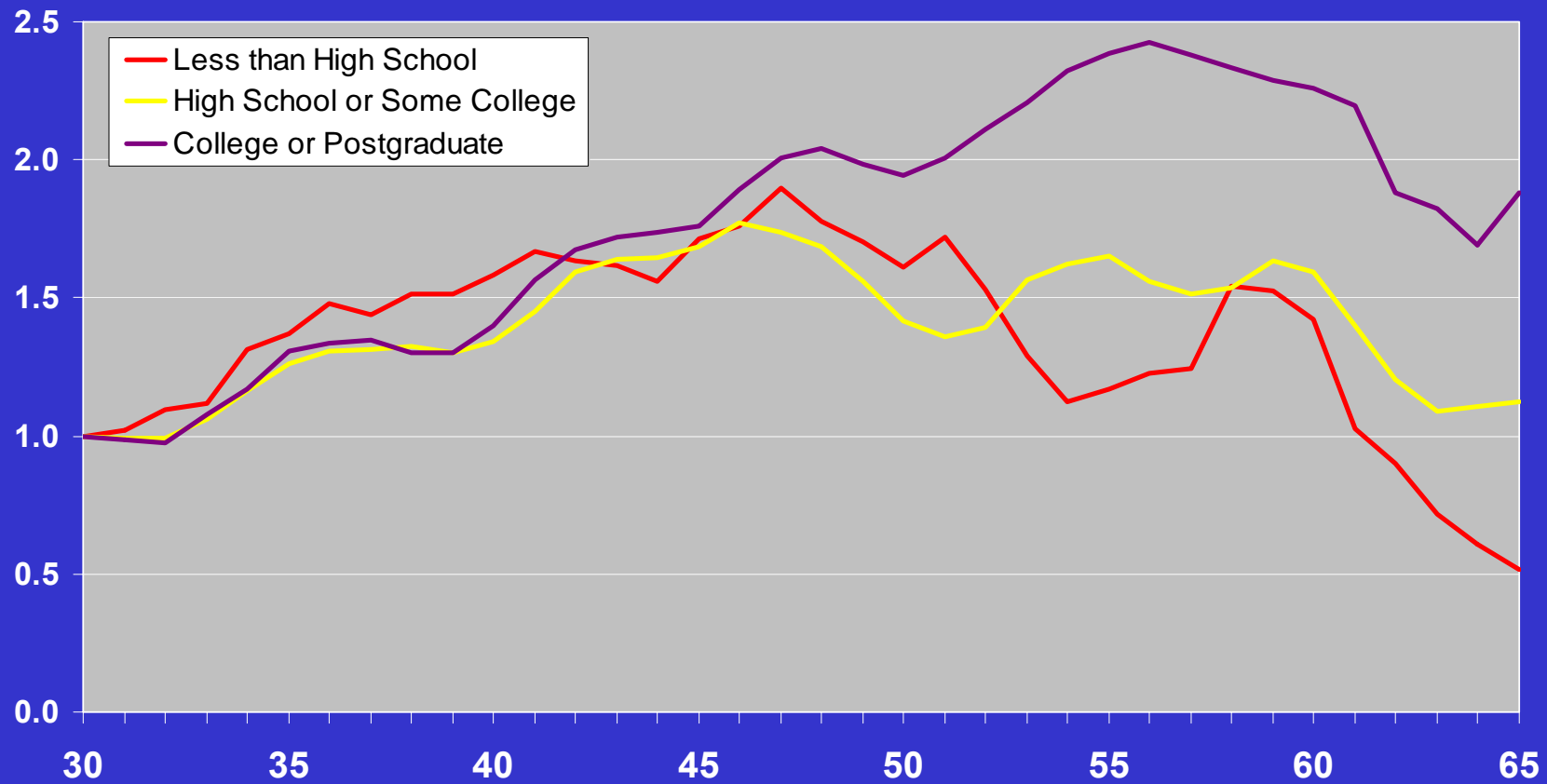
**Contributions = 10% of Wage Earnings**

**Investment Options: Index Bonds (1.5% Per  
Year, Real Return); Large Cap Stocks;  
Company Stock**

**Calibrate Non-401(k) Wealth at Retirement  
Based on Health and Retirement Survey**

**Lump Sum Withdrawal Option at Job  
Change**

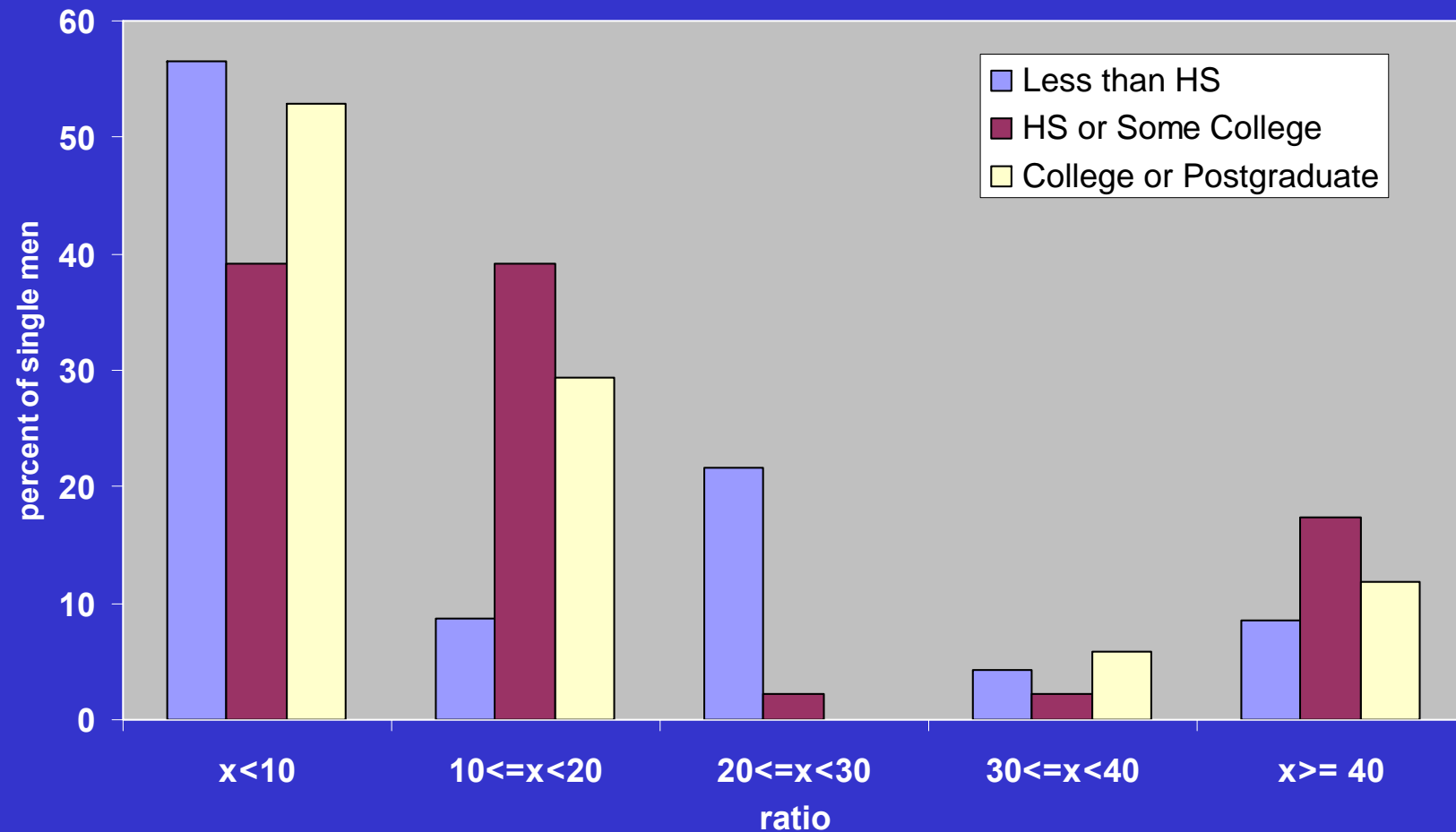
# MEDIAN EARNINGS HISTORIES, SINGLE MEN AGED 66-67



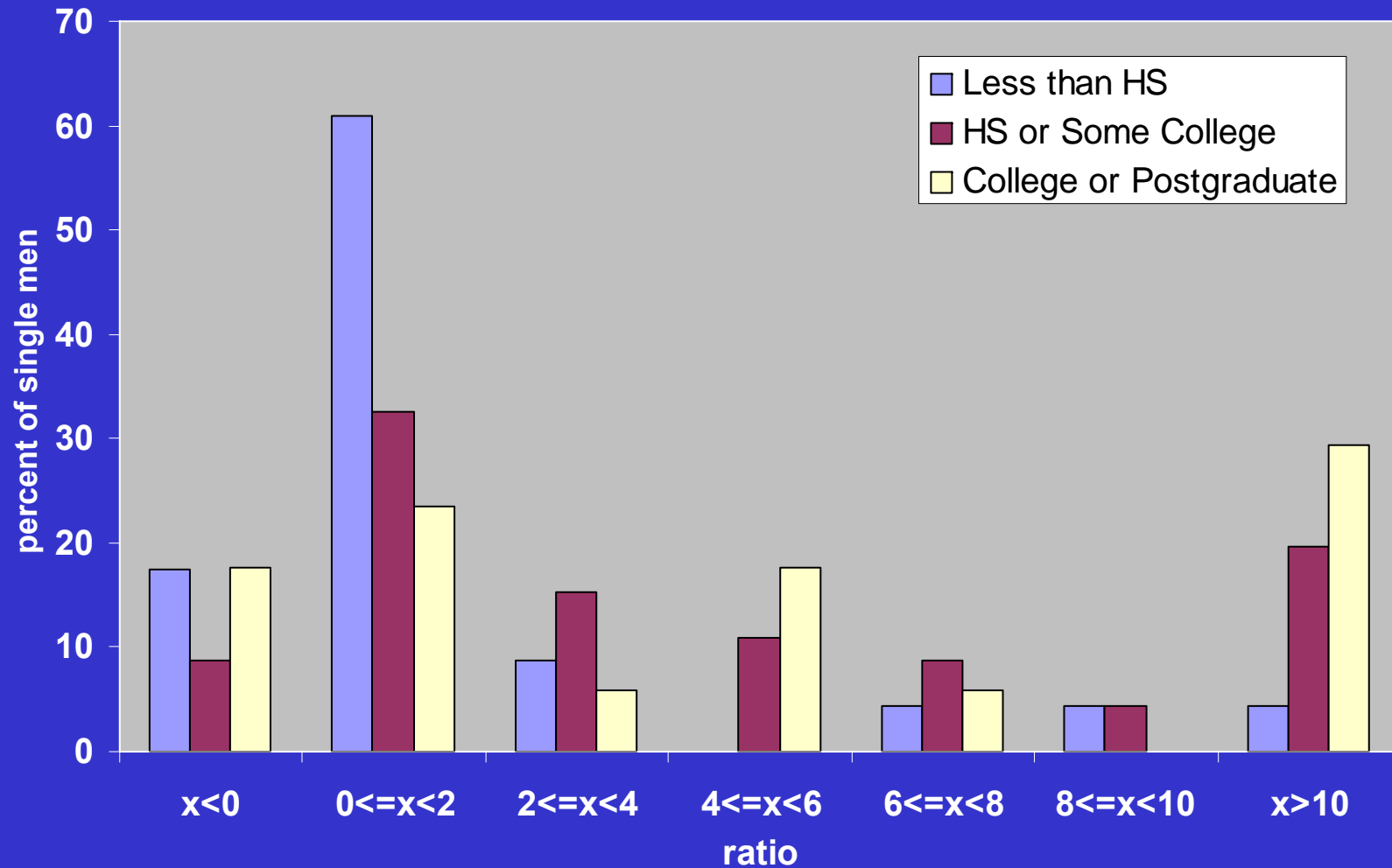
## **MEDIAN WEALTH AT RETIREMENT, SINGLE MEN AGED 66-67 (\$2000)**

	<b>&lt; HS Education</b>	<b>HS + Some College</b>	<b>Beyond College</b>
<b>PDV Social Sec.</b>	<b>\$126.3</b>	<b>\$147.8</b>	<b>\$175.5</b>
<b>DB Pension</b>	<b>15.9</b>	<b>100.6</b>	<b>136.8</b>
<b>Other Financial</b>	<b>16.7</b>	<b>69.0</b>	<b>245.0</b>

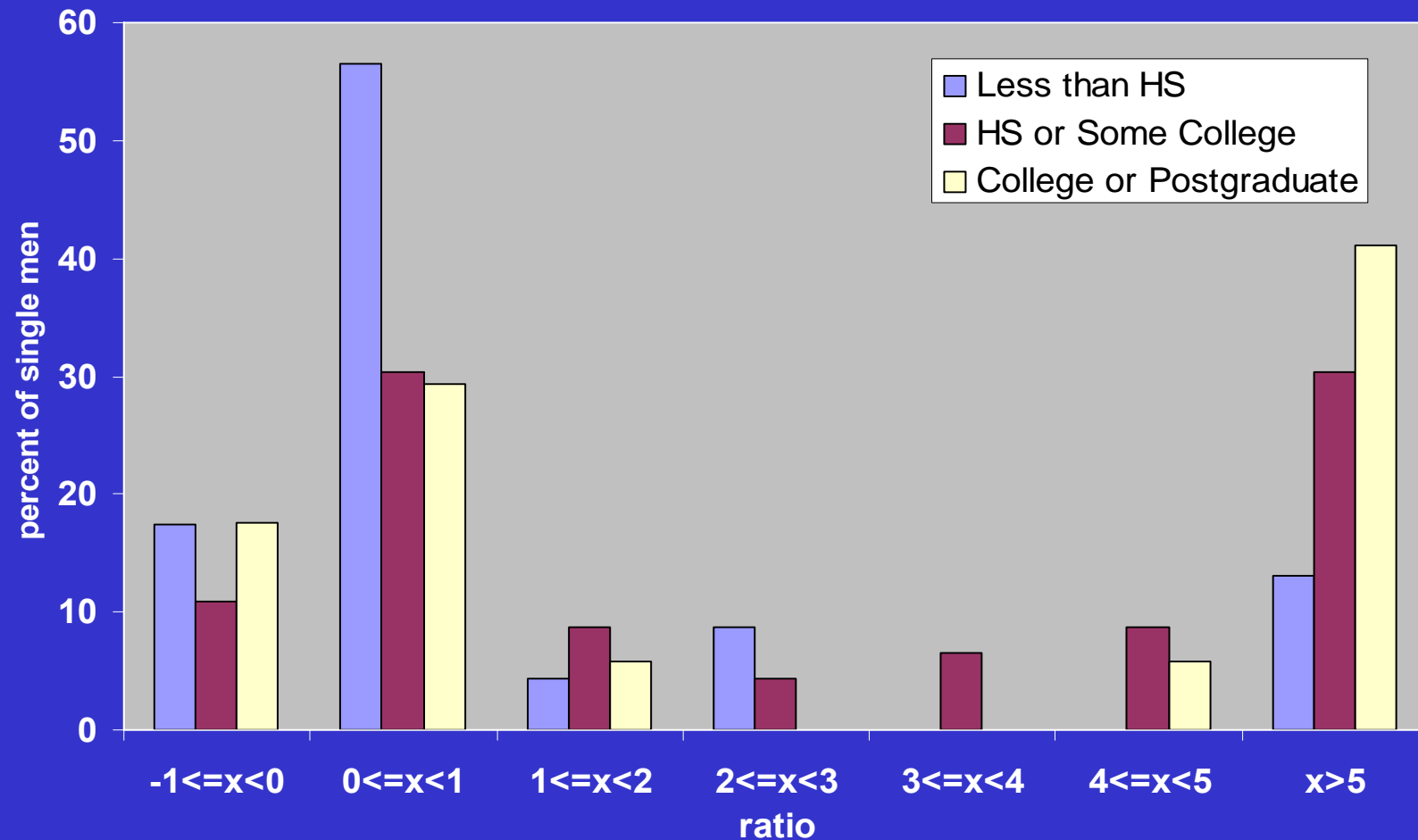
# (SOCIAL SECURITY + DB + FINANCIAL WEALTH) RELATIVE TO FINAL EARNINGS



# FINANCIAL WEALTH RELATIVE TO FINAL EARNINGS



# FINANCIAL WEALTH OUTSIDE RETIREMENT ACCOUNTS RELATIVE TO FINAL EARNINGS



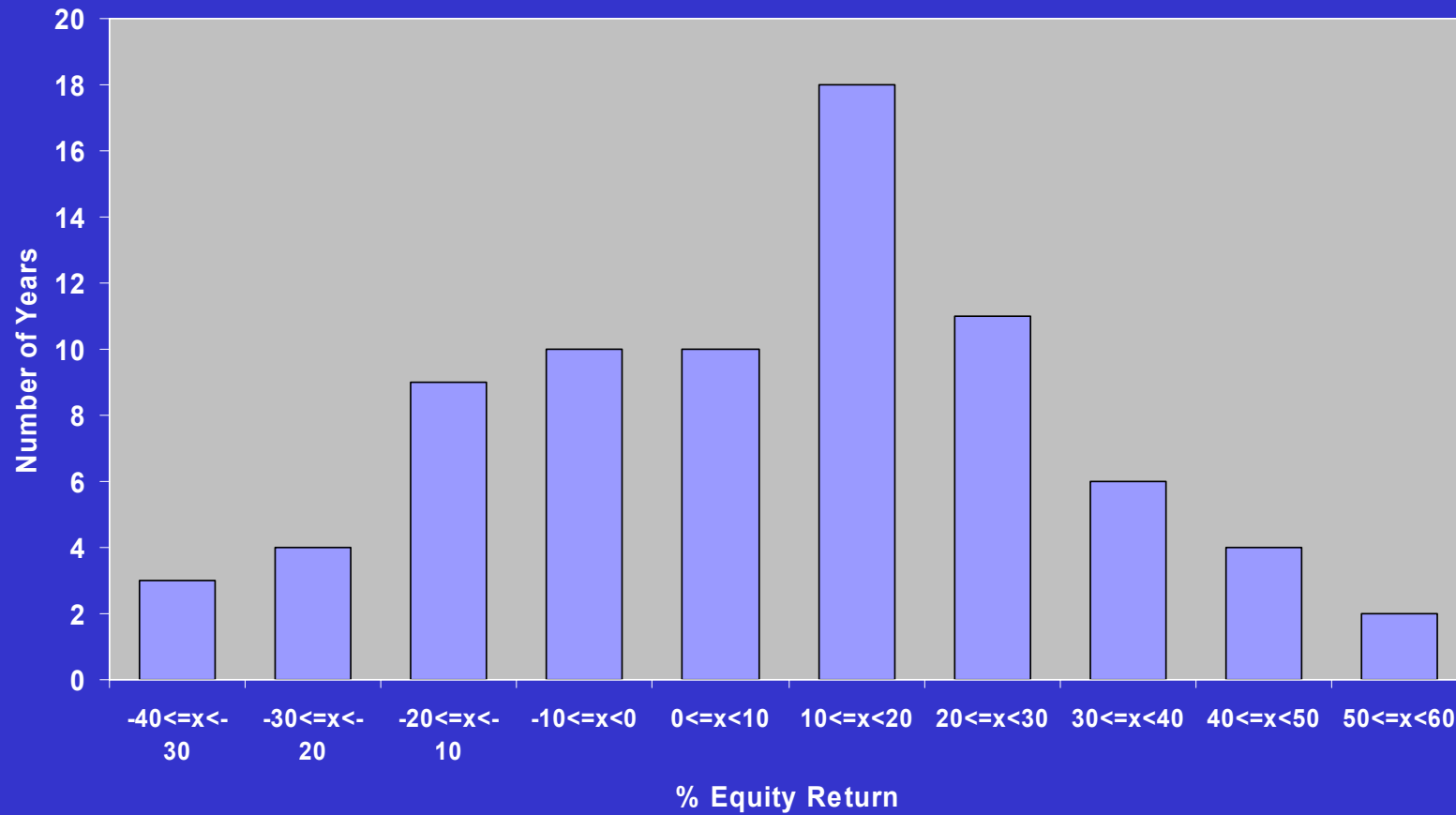
# **ASSUMPTIONS ABOUT ASSET RETURNS**

**Return on Index Bonds: 1.5% Per Year (Real)**

**Large-Cap Stock Returns: Empirical Distribution, 1926-2002; Mean Real Return of 9.0%, Annual Standard Deviation of 20.7%**

**Individual Company Stock Return: Mean of 9.4%, Standard Deviation of 40.4%**

# US LARGE COMPANY EQUITY RETURNS (1926-2002)

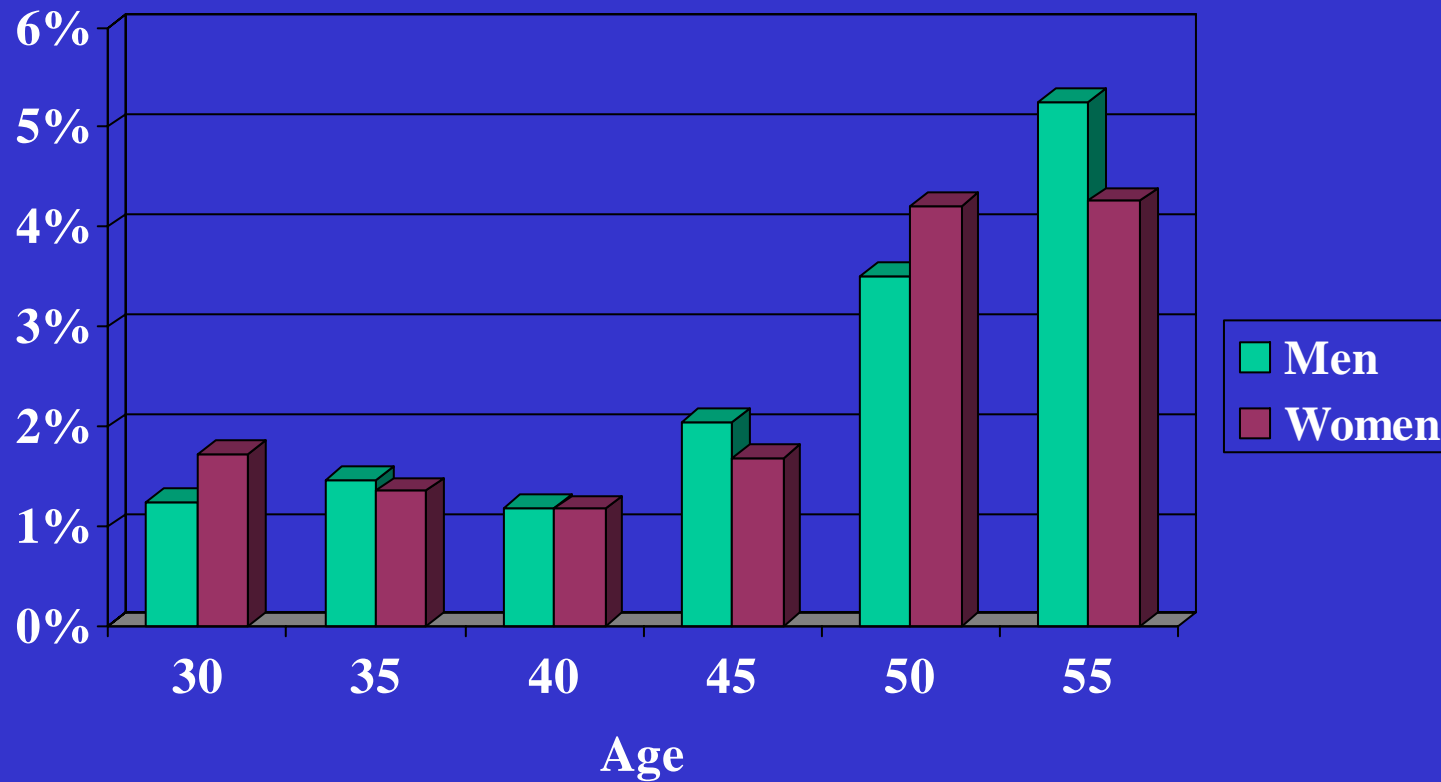


# **ASSUMPTIONS ABOUT LUMP SUM DISTRIBUTIONS AND “PENSION LEAKAGE”**

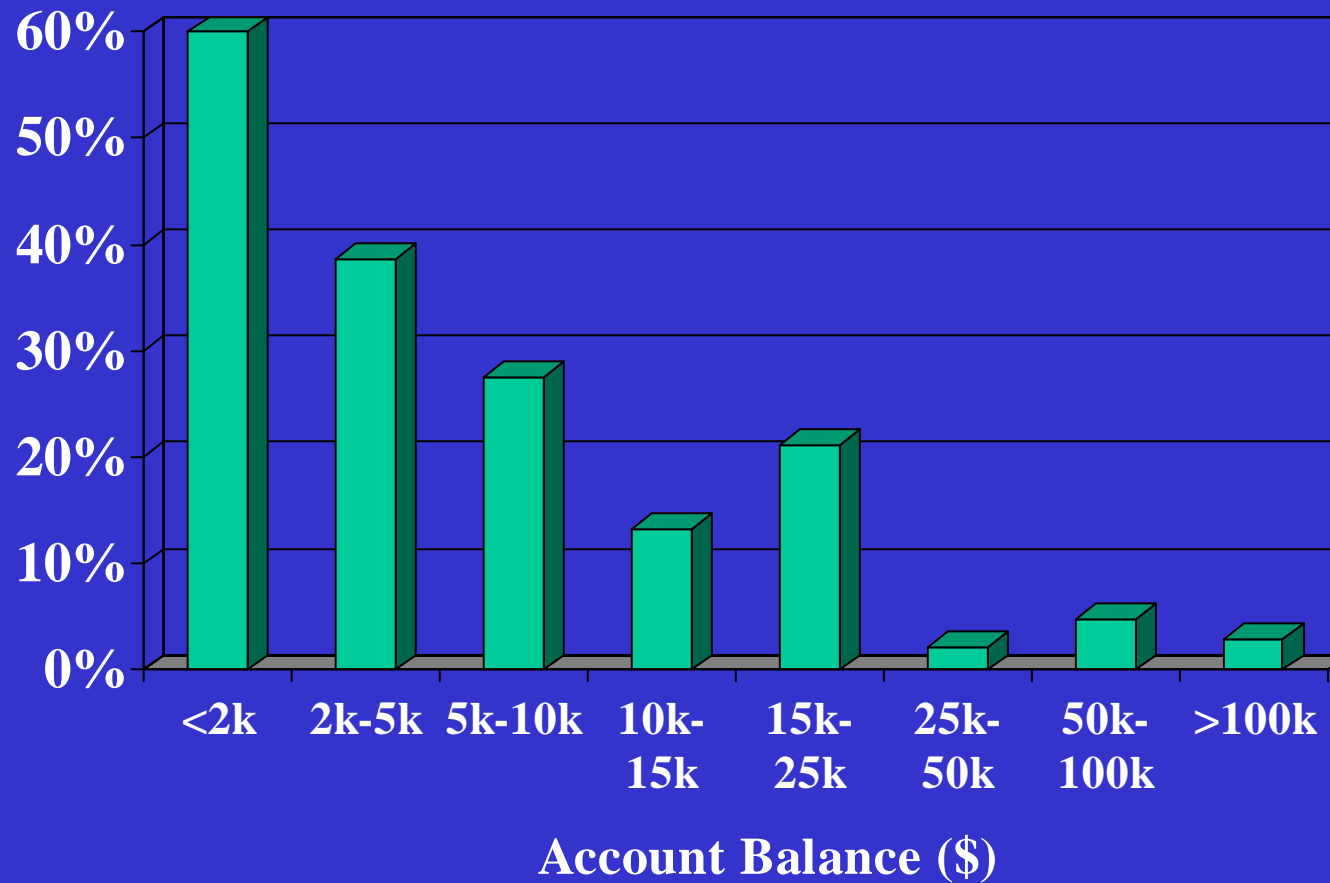
**Probability of Job Change Depends on Age  
and Pension Characteristics**

**Probability of Cash-Out Conditional on Job  
Change Depends on Account Balance**

# PROBABILITY OF JOB SEPARATION CONDITIONAL ON DC PLAN ELIGIBILITY



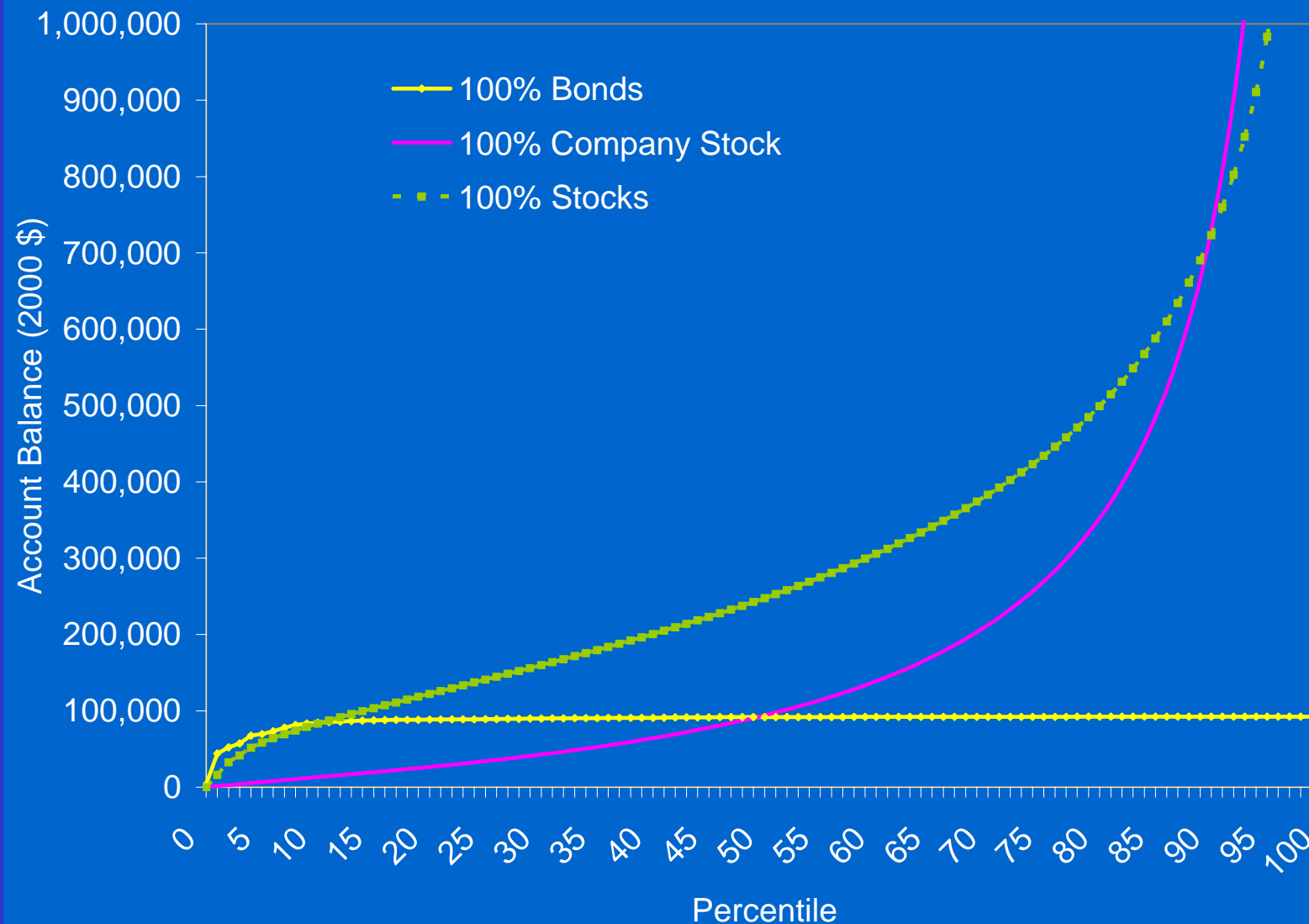
# PROBABILITY OF CASHING OUT 401(k) CONDITIONAL ON JOB SEPARATION



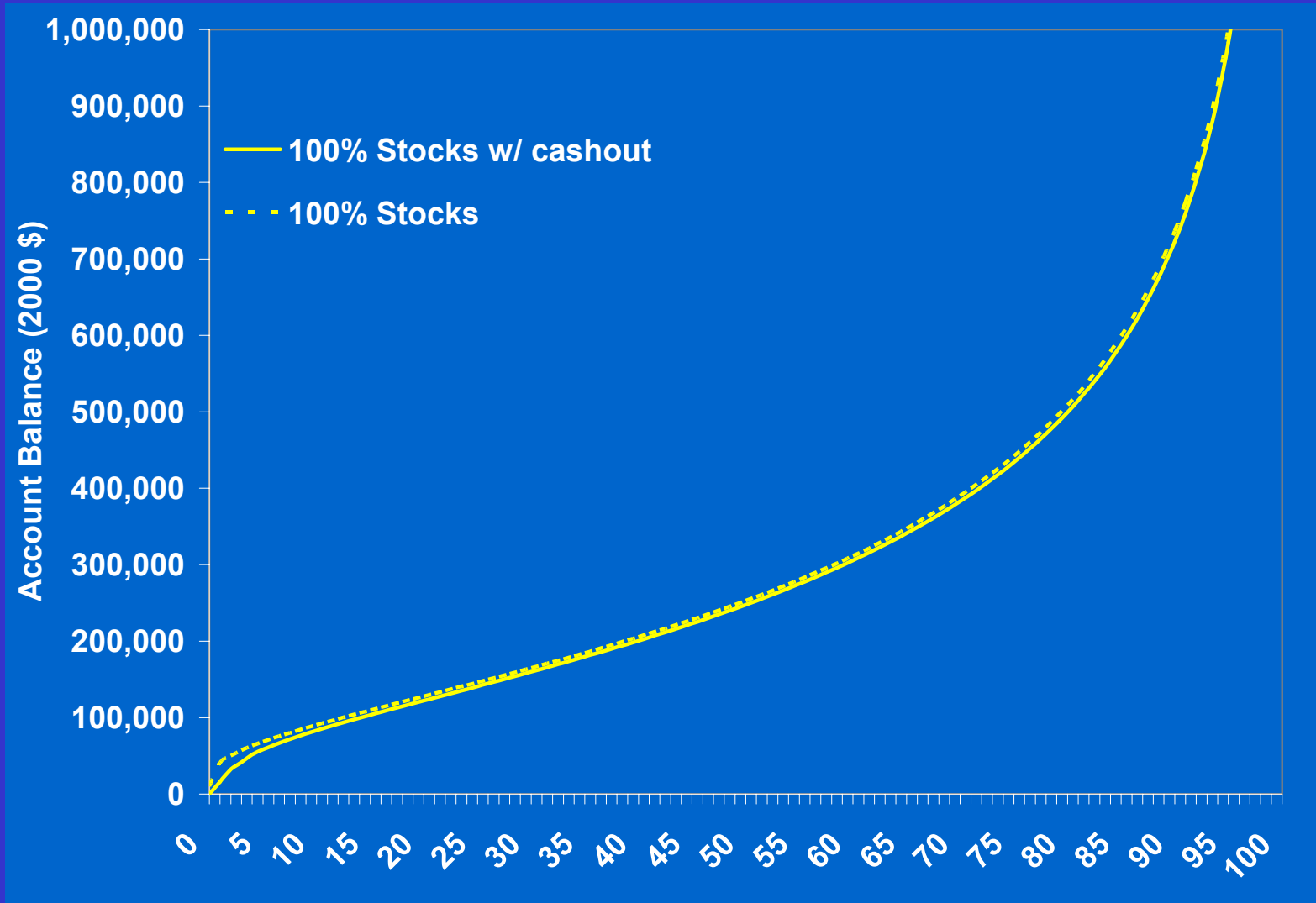
## **SIMULATION ALGORITHM**

- 1. Draw Sequence of 35 Annual Stock Returns (and Associated Company Stock Returns) from Empirical Distribution for Actual Returns**
- 2. Calculate Wealth at Retirement for Each Education Group for Each Sequence**
- 3. Evaluate Utility of Retirement Wealth**
- 4. Repeat (300,000 times)**
- 5. Compute Sample Means as Estimates of Expected Utility**
- 6. Calculate Certainty Equivalents**

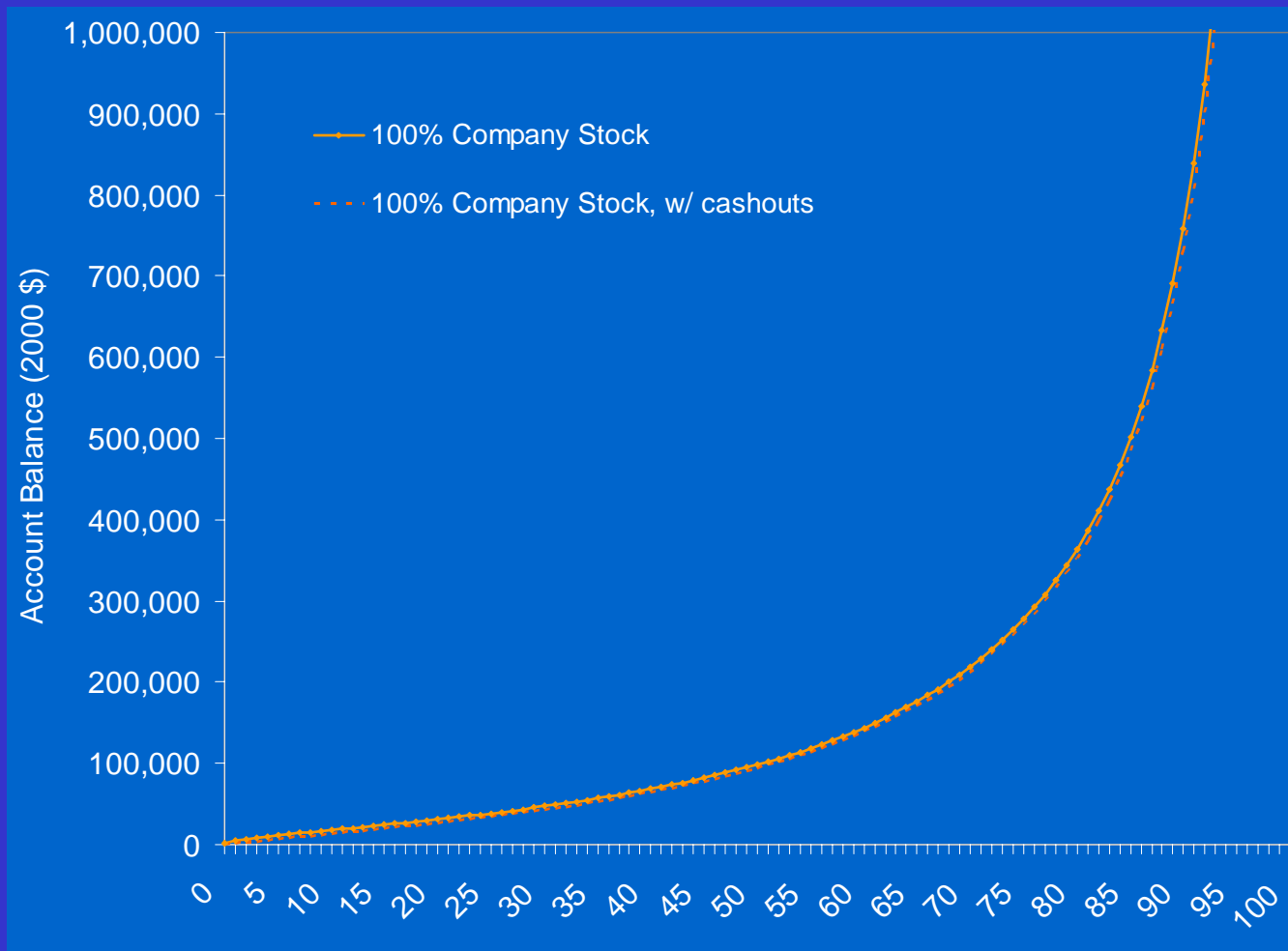
# DISTRIBUTION OF 401(k) WEALTH, MEN WITH HS DEGREE AND/OR SOME COLLEGE, ALLOWING CASHOUT



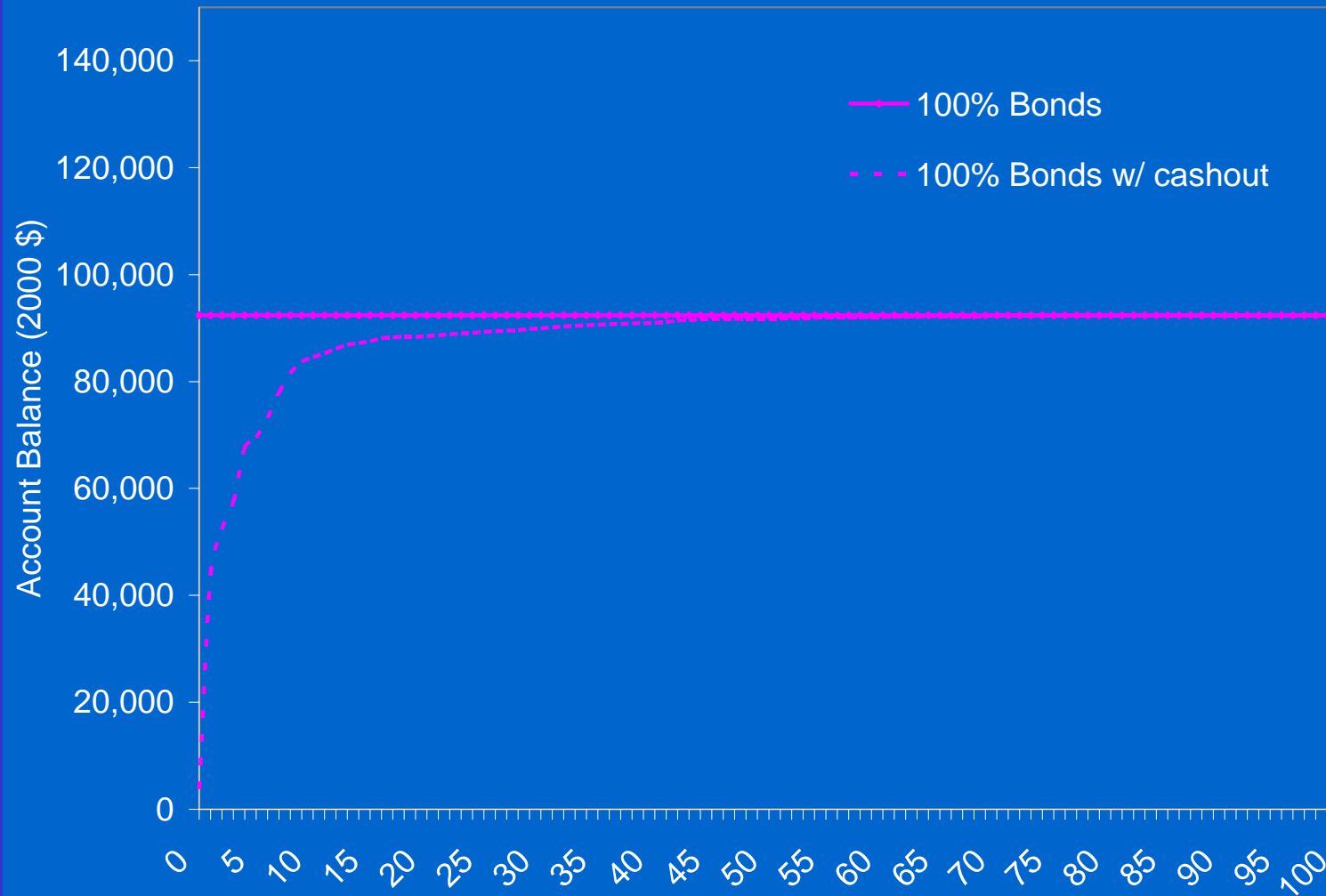
# DISTRIBUTION OF 401(k) WEALTH, LARGE CAP STOCK INVESTMENT



# DISTRIBUTION OF 401(k) WEALTH, COMPANY STOCK INVESTMENT



# DISTRIBUTION OF 401(k) WEALTH, BOND INVESTMENT



# CERTAINTY EQUIVALENTS, HS GRADUATES, ALLOWING CASH-OUTS, OTHER WEALTH NON-STOCHASTIC

Relative Risk Aversion	Large Cap Stock	Company Stock
$\alpha = 0$	711.8	734.6
$\alpha = 1$ (Log)	641.9	533.3
$\alpha = 2$	593.9	477.8
$\alpha = 4$	533.9	436.0

# CERTAINTY EQUIVALENTS, HS GRADUATES, NO CASHOUTS, OTHER WEALTH NON-STOCHASTIC

Relative Risk Aversion	Large Cap Stock	Company Stock
$\alpha = 0$	720.4	749.3
$\alpha = 1$ (Log)	651.9	541.4
$\alpha = 2$	606.6	484.6
$\alpha = 4$	552.0	442.8

**CERTAINTY EQUIVALENTS,  
HS GRADUATES, 50% OF OTHER WEALTH  
IN STOCK MARKET, ALLOWING CASHOUTS**

<b>Relative Risk Aversion</b>	<b>Large Cap Stock</b>	<b>Company Stock</b>
$\alpha = 0$	703.4	726.2
$\alpha = 1$ (Log)	580.3	463.3
$\alpha = 2$	486.7	370.8
$\alpha = 4$	358.0	283.8

**CERTAINTY EQUIVALENTS,  
HS GRADUATES, BOND INVESTMENTS,  
50% OTHER WEALTH IN STOCK MARKET**

<b>Relative Risk Aversion</b>	<b>No Cashouts</b>	<b>Allowing Cashouts</b>
$\alpha = 0$	439.1	435.2
$\alpha = 1$ (Log)	418.6	413.4
$\alpha = 2$	400.0	392.5
$\alpha = 4$	368.0	353.4

## **CONCLUSIONS FROM SIMULATIONS**

- **Investments Restricted to Company Stock Are Worth Less than Diversified Equity Holding (So Why Do Workers Choose This?)**
- **“Equity Premium Puzzle” Appears: Return to Diversified or Poorly Diversified Equity Portfolio is High**
- **Costs of Non-Diversification Depend on Other Elements of Household Portfolio**

# KEY CONSIDERATIONS FOR POLICY DESIGN

- Can Workers be Trusted as Investors?
- Do Investors Accurately Perceive Risk-Return Tradeoffs?
- Problem of Investor Heterogeneity: Should Those Who Desire “Plausible” Allocations Be Constrained to Avoid “Risky” Allocations of a Minority?

# **PUBLIC AND PRIVATE RESPONSES TO LACK OF DIVERSIFICATION**

- **Limitations on Investment Options**
- **Limitations on Asset Allocation – How Frequently “Tested?”**
- **Participant Education by Government or Firm – Any Liability Issues?**

# **PUBLIC POLICY, ANNUITY MARKETS, AND DECUMULATION OF RETIREMENT WEALTH**

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MIT and NBER**

**Munich Lecture III  
November 2003**

## **PRIVATE RETIREMENT SAVING VEHICLES RAISE NEW QUESTIONS ABOUT ASSET DECUMULATION**

- **GOVERNMENT-PROVIDED DEFINED BENEFIT PROGRAMS PROVIDE ANNUITIZATION FOR PARTICIPANTS**
- **PRIVATE SAVING FOR RETIREMENT PERMITS INDIVIDUALS TO DECIDE HOW TO DRAW DOWN ASSETS**
- **CAN PRIVATE MARKETS FOR ANNUITIES AND RELATED PRODUCTS ACHIEVE POLICY GOALS?**
- **SHOULD ANNUITIZATION BE REQUIRED?**

# **GOVERNMENT POLICY IN MARKETS WITH ASYMMETRIC INFORMATION**

- **ADVERSE SELECTION MAY OFFER A WELFARE GAIN FROM GOVERNMENT ACTION**
- **COMPETITIVE EQUILIBRIUM MAY NOT EXIST**
- **EQUILIBRIUM MAY NOT BE PARETO OPTIMAL**
- **GOVERNMENT POLICIES: COMPEL MARKET PARTICIPATION, REGULATE STRUCTURE OF CONTRACTS**

# **ADVERSE SELECTION, ANNUITY MARKETS, AND PUBLIC POLICY**

- **DIAMOND (1977), E/E/P (1985): LACK OF REAL ANNUITY MARKET IS ONE RATIONALE FOR PUBLIC SOCIAL SECURITY PROGRAM**
- **WHY IS THE PRIVATE ANNUITY MARKET SO SMALL? ADVERSE SELECTION IS ONE POTENTIAL EXPLANATION**

## **CURRENT UPTURN OF INTEREST IN PRIVATE ANNUITY MARKETS**

- **SHIFT FROM DEFINED BENEFIT TO  
DEFINED CONTRIBUTION PENSION  
PLANS**
- **GROWING IMPORTANCE OF WEALTH  
DECUMULATION IN AGING SOCIETY**
- **POTENTIAL ROLE OF PRIVATE  
ANNUITIES IN PRIVATIZED SOCIAL  
SECURITY SYSTEM**

# **MOTIVATION FOR STUDYING MARKET FAILURE IN ANNUITY MARKETS**

- **WELFARE ANALYSIS OF SOCIAL SECURITY AND RELATED POLICIES HINGES ON SELECTING AND ANALYZING THE APPROPRIATE THEORETICAL FRAMEWORK**
- **EMPIRICAL WORK IS CRITICALLY DEPENDENT ON THE THEORETICAL FOUNDATION**

# **ANALYZING INSURANCE MARKETS WITH ADVERSE SELECTION**

- **Rothschild-Stiglitz/Wilson Framework: Markets May Not Exist**
- **If Markets Exist:**
  - **Firms May Offer Price & Quantity Contracts**
  - **With Fixed Prices, the Marginal Value of an Extra Unit of Insurance Varies According to Risk Type (Single Crossing)**
  - **Positive Correlation Between (Privately Known) Risk Type and Features of Insurance Whose Marginal Value is Greater for High Risk Types**
  - **Firm Pricing Should Reflect Self-Selection**

# **HOW DO ACTUAL ANNUITY MARKETS COMPARE WITH STYLIZED ANALYSIS?**

- **Private Annuity Markets Are Small – Are These “Missing Markets”?**
- **Contract Structure**
  - **No Restriction on Size**
  - **Limited Information Collection by Insurer**
  - **Some Product Heterogeneity**
- **Regulatory Restrictions Affect Contract Supply**
- **Annuity Market is One of Many Ways to Achieve Retirement Security**

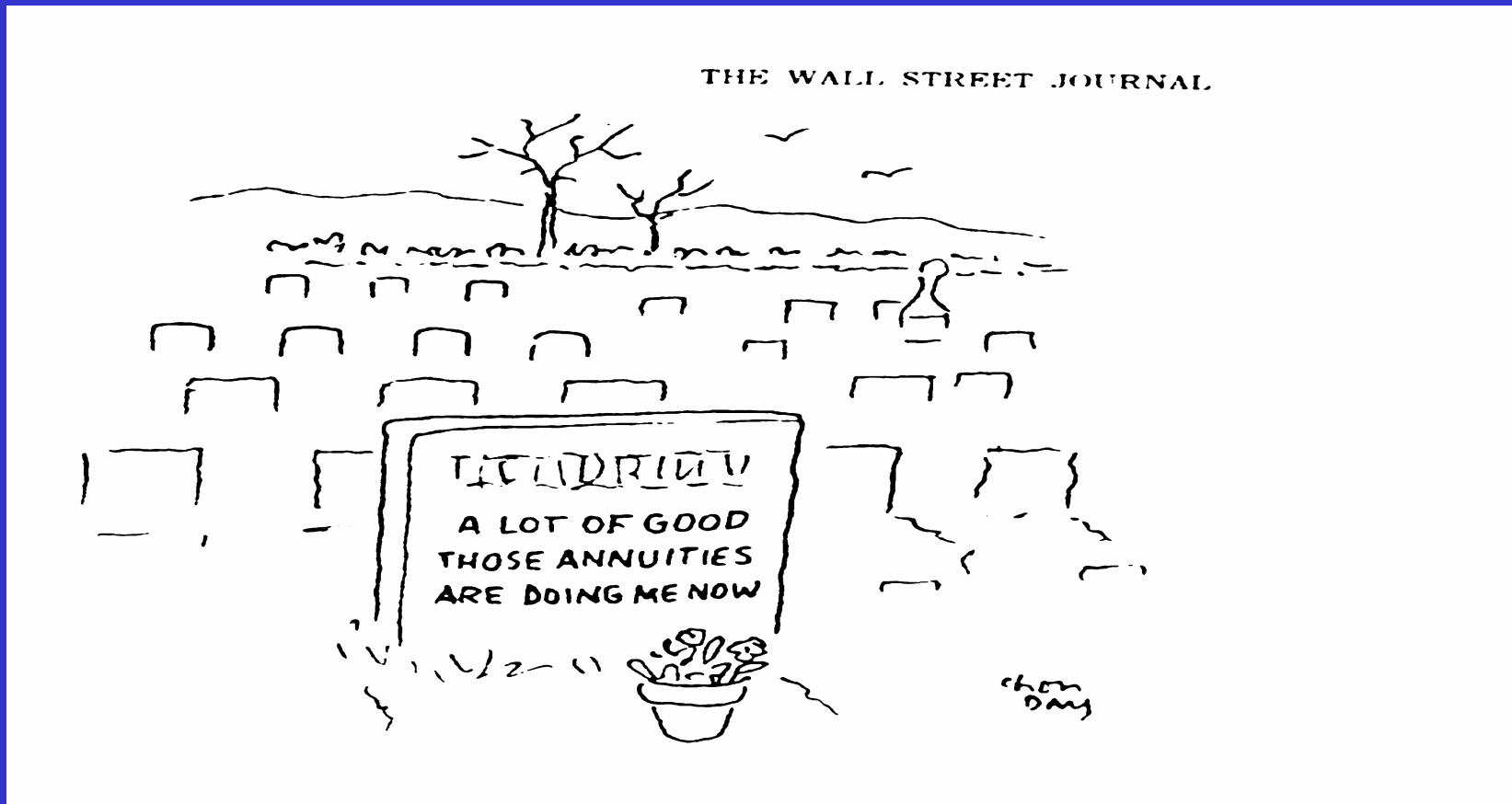
## **HOW LARGE IS THE PRIVATE ANNUITY MARKET?**

- **U.S. Purchases of Non-Qualified, Immediate, Annuities: \$6 Billion/Year**
- **Many Products are Labeled “Annuities”:  
Sales of Deferred Annuities Are 30 Times Greater than Immediate Annuities**
- **Some “Annuities” are Fixed Payout Contracts (GICs)**
- **Variable Annuities Are “Annuities”**
- **Group Annuity Market: Comparable in Size to Individual Market**

# **IS THE SMALL PRIVATE ANNUITY MARKET EVIDENCE OF “NON- EXISTENCE”?**

- **POTENTIAL EXPLANATIONS OF LIMITED DEMAND FOR PRIVATE ANNUITIES:**
  - **ANNUITIES ARE “EXPENSIVE” (ADMINISTRATIVE COSTS? SELECTION?)**
  - **BEQUEST MOTIVES**
  - **PRECAUTIONARY DEMAND FOR LIQUID ASSETS**
- **“ANNUITIES ARE SOLD, NOT BOUGHT” (NEED TO CONSIDER SALES ARRANGEMENTS)**

# INVESTOR RELUCTANCE TO PURCHASE ANNUITIES



# **INDIVIDUAL ANNUITY MARKETS IN HISTORICAL PERSPECTIVE**

- **ANNUITY VALUATION PROBLEM FIRST AROSE IN ANCIENT ROME -- PARTLY TO AVOID WEALTH TRANSFER TAXES!**
- **VARIOUS ANNUITY-LIKE CONTRACTS EXISTED THROUGHOUT THE MIDDLE AGES**
- **LATE 1600s - FIRST FORMAL STUDIES OF ANNUITIES (HALLEY, DeWITT)**

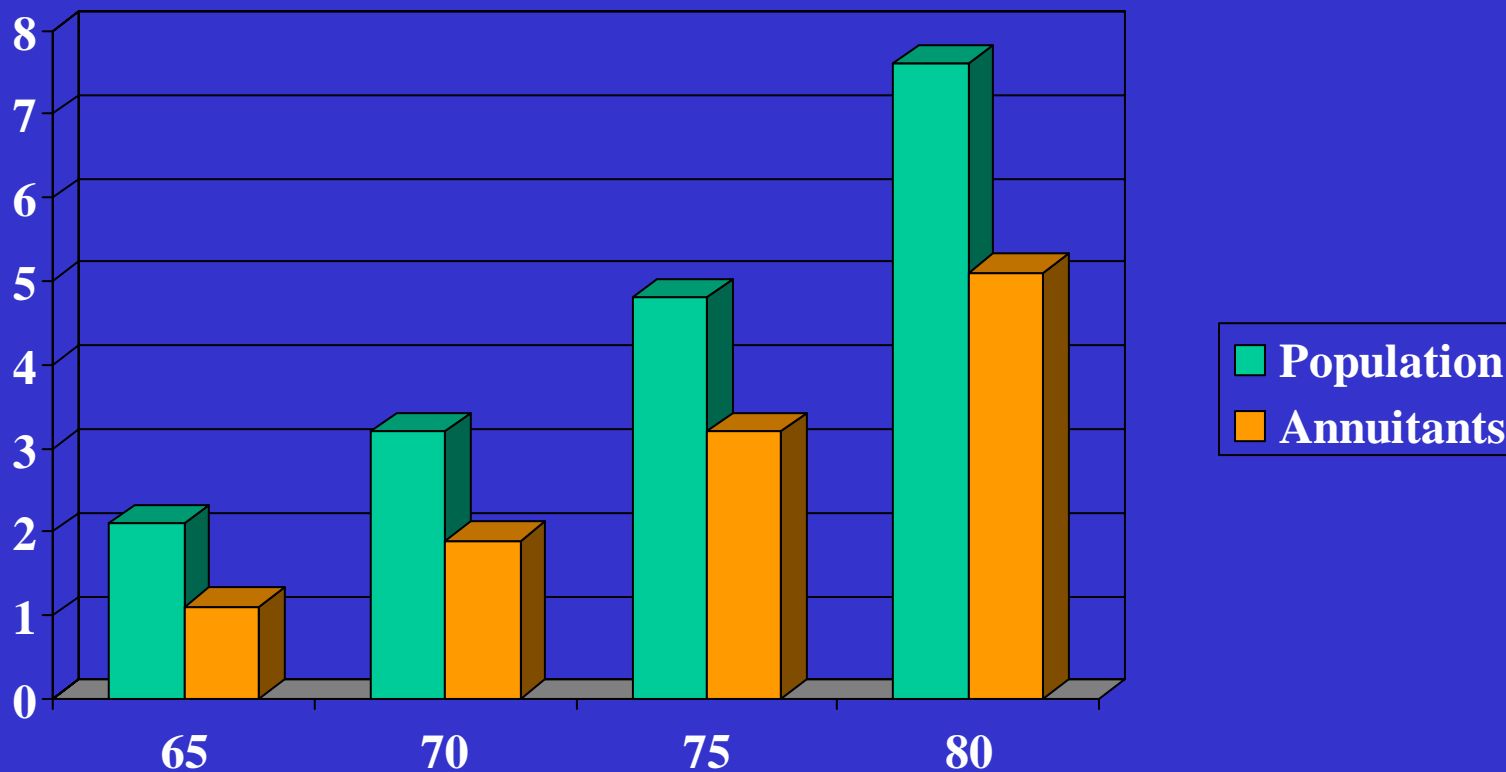
# **HISTORICAL ANECDOTES ON ASYMMETRIC INFORMATION**

- **HOLLAND, ENGLAND, FRANCE SOLD ANNUITIES IN 16<sup>th</sup> & 17<sup>th</sup> CENTURIES**
- **DUTCH SYNDICATES PURCHASING ANNUITIES IN ENGLAND**
- **“TRENTE DEMOISELLES” CONTRACTS SOLD BY GENEVAN SPECULATORS**

# **RECENT EMPIRICAL WORK ON ADVERSE SELECTION IN ANNUITY MARKETS**

- **HOW IMPORTANT IS ASYMMETRIC INFORMATION?**
- **DO INDIVIDUALS USE PRIVATE MORTALITY INFORMATION IN FINANCIAL PLANNING FOR RETIREMENT?**
- **DOES ADVERSE SELECTION CONTRIBUTE TO LIMITED DEMAND FOR VOLUNTARY PRIVATE ANNUITIES?**

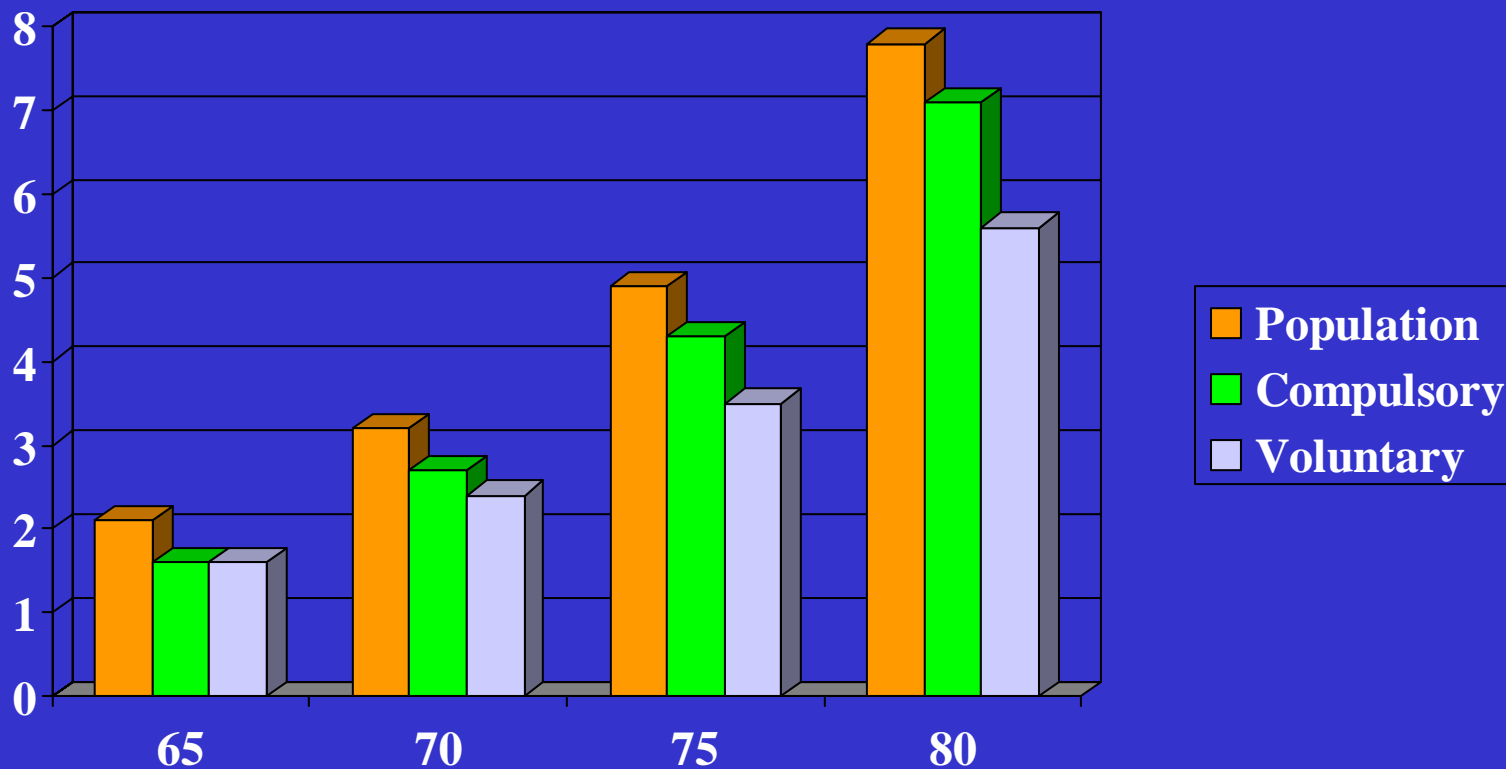
# MORTALTY RATES: U.S. MALE ANNUITANTS AND POPULATION, 2000



## **U.K. ANNUITY MARKET**

- **Compulsory and Voluntary Annuity Markets**
- **Compulsory Annuitization Appears to Halve the Cost of Adverse Selection**
- **Wide Range of Annuity Products are Available**

# MORTALTY RATES: U.K. MALE ANNUITANTS AND U.K. POPULATION



## **EVALUATING ANNUITY PRICES: “MONEYSWORTH”**

- **PROJECT FUTURE PATH OF ANNUITY PAYOUTS FROM VARIOUS PRODUCTS**
- **USE MORTALITY TABLES TO FIND EXPECTED PAYOUTS**
- **COMPUTE EXPECTED PRESENT DISCOUNTED VALUE (WHAT ARE APPROPRIATE DISCOUNT RATES?)**

## CALCULATING MONEY'S WORTH

$$EPDV_{NOM} = \sum_{t=1}^T \frac{A_{NOM} * S_t}{\prod_{j=1}^t (1 + i_j)}$$

## **DATA FOR MONEYSWORTH CALCULATIONS (MPWB 1999)**

- **ANNUITY PAYOUTS: AVERAGE OFFERINGS IN ANNUITY SHOPPER DATABASE**
- **INTEREST RATES: ZERO-COUPON YIELD CURVE FOR TREASURIES (KEY ISSUE: HOW RISKY ARE ANNUITY PAYOUTS?)**
- **MORTALITY RATES: SOCIAL SECURITY ADMINISTRATION, SOCIETY OF ACTUARIES**

# **MONEYSWORTH OF ANNUITIES AVAILABLE TO 65-YEAR-OLDS, 1999**

	<b>Population Mortality</b>	<b>Annuitant Mortality</b>
<b>Man</b>	<b>0.852</b>	<b>0.970</b>
<b>Woman</b>	<b>0.872</b>	<b>0.952</b>

# HOW MUCH IS AN ANNUITY WORTH? EVALUATING UTILITY GAINS WITH CRRA UTILITY ( $\alpha = 1, 2$ )

	No Other Wealth	Pre-Existing Annuity = .5*Wealth
Single	0.682 / 0.633	0.762 / 0.711
Married	0.848 / 0.802	0.904 / 0.867

# **AGGREGATE EVIDENCE ON SELECTION EFFECTS**

- **INDIVIDUAL ANNUITANTS ARE A SELF-SELECTED GROUP**
- **SELECTION ALONE DOES NOT APPEAR TO EXPLAIN SMALL SIZE OF MARKET**

# **EVIDENCE OF INDIVIDUAL ACTIONS BASED ON PRIVATE MORTALITY INFORMATION**

- **Finkelstein/Poterba Data Set On All Annuity Policies Sold by a Large U.K. Life Insurance Company**
- **Compare Mortality Patterns of Individuals Who Buy Different Annuity Products**
- **Examine Pricing of Different Annuity Products to Test for Equilibrium Adjustments to Mortality Differences**

# PRODUCT HETEROGENEITY IN U.K. ANNUITY MARKETS

- Annuity Size:
  - Larger Annuities Should Be Preferred By Long-Lived Annuitants
  - Larger Annuities Should Be Priced Higher Than Smaller Policies
- Backloaded Annuities:
  - Preferred By Long-Lived Annuitants
  - Priced Higher Than Front-Loaded Policies
- Guaranteed Annuities:
  - Preferred by Short-Lived (Low Risk) Annuitants
  - Priced Lower

## **DESCRIPTION OF DATA**

- **Complete Set of Immediate Annuities Sold By a Large U.K. Annuity Company Over a 17 year period (1981- 1998)**
- **All of the Information that the Insurance Company Has on the Annuitant (Age, Gender, Date of Death)**
- **Complete Details of the Policy Characteristics**

## **OVERVIEW OF FINDINGS**

- **Individuals Appear to Self-Select Among Annuity Products Based on Private Information About Their Mortality**
- **Pricing of Annuity Products Reflects the Product-Specific Average Mortality Patterns**

**PROBABILITY OF FIVE-YEAR  
SURVIVAL, MALE 61-65 ANNUITANT  
BUYING IN 1998**

	<b>Compulsory</b>	<b>Voluntary</b>
<b>Nominal, Baseline Policy</b>	<b>0.913</b>	<b>0.951</b>
<b>Escalating</b>	<b>0.970</b>	<b>0.989</b>
<b>Guaranteed</b>	<b>0.911</b>	<b>0.940</b>
<b>Index-Linked</b>	<b>0.962</b>	<b>0.980</b>

## **COMPLEMENTARY EVIDENCE: THE FIRM'S PRICING FORMULA**

- **Estimation of Firm's Pricing Policy is Notoriously Difficult**
- **Firm's Pricing Formula Was Described to Us: Small Fixed Fee, Constant Marginal Price for Larger Annuity Payment**

## **RECENT INNOVATIONS IN ANNUITY PRODUCT STRUCTURE (U.K.)**

- **“SMOKERS’ ANNUITIES”, “COAL MINERS’ ANNUITIES” AND OTHER POLICIES TARGETED AT HIGH-MORTALITY GROUPS**
- **POLICIES FIRST INTRODUCED BY NEW ENTRANTS TO ANNUITY MARKET**
- **KEY QUESTION: HOW DO INSURANCE COMPANIES SELECT THE MENU OF POLICIES? FIXED COST, ADMINISTRATIVE COST ISSUES**

# **ANNUITY MARKETS RAISE BROADER ISSUES OF POLICY DESIGN**

- **PRESERVING INDIVIDUAL CHOICE VS.  
MITIGATING ADVERSE SELECTION**
- **POLICY DESIGN WHEN MANY  
HOUSEHOLDS MAY NOT UNDERSTAND  
THEIR PRODUCT CHOICES**
- **IMPACT OF GOVERNMENT POLICY  
(SOCIAL SECURITY, MEDICARE) ON  
PRIVATE INSURANCE MARKET  
EQUILIBRIUM**

## HOW DO INSURERS DECIDE WHAT INFORMATION TO COLLECT?

- COST OF COLLECTION & VERIFICATION VS. IMPROVEMENT IN SELECTION
- “INFORMATIONAL EXTERNALITIES”
- ACTUARIES CLAIM THAT INITIAL TESTS (FOR SMOKING, ETC.) IMPROVE MORTALITY PREDICTION FOR SEVERAL YEARS; NO SUBSEQUENT EVALUATION
- SOME INFORMATION (ZIP CODE) IS NOT USED BUT COULD BE VALUABLE
- INSURERS PROTECT MORTALITY DATA

# **ANNUITIES AND THE REGULATORY ENVIRONMENT**

- **WHY REGULATE? BANKRUPTCY RISK FOR INSURERS COUPLED WITH LIMITED KNOWLEDGE AMONG BUYERS**
- **BROADER CAPITAL MARKET MAY AFFECT INSURANCE COMPANIES' CAPACITY TO DISPERSE RISK (INDEXED BONDS EXAMPLE)**

# **CONCLUSION AND DIRECTIONS FOR POLICY**

- **ASYMMETRIC INFORMATION MAY JUSTIFY SOME GOVERNMENT INVOLVEMENT IN DRAW-DOWN OF RETIREMENT ACCOUNTS**
- **DEGREE OF MARKET IMPERFECTION IS ENDOGENOUS**
- **TRADEOFF OF RESTRICTING INDIVIDUAL CHOICE VS. POTENTIAL WELFARE GAIN FOR THOSE WHO WANT ANNUITIZED INCOME**