# How fast should the Social Security eligibility age rise?

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$$V_t = \max_{l_t, c_t} E\left[ \sum_{t=current\ age}^{100} p_t \frac{v(c_t) - e(h_t, t) l_t}{(1+r)^{t-current\ age}} \right]$$

subject to:

$$h_{t+1} = P(|\, h_t)$$

$$a_{t+1} = (1+r)a_t + w_t l_t - c_t$$

$$a_{t+1} > 0$$

$$V_t = V_t\left[a_t, I(retired_t), I(health)\right]$$

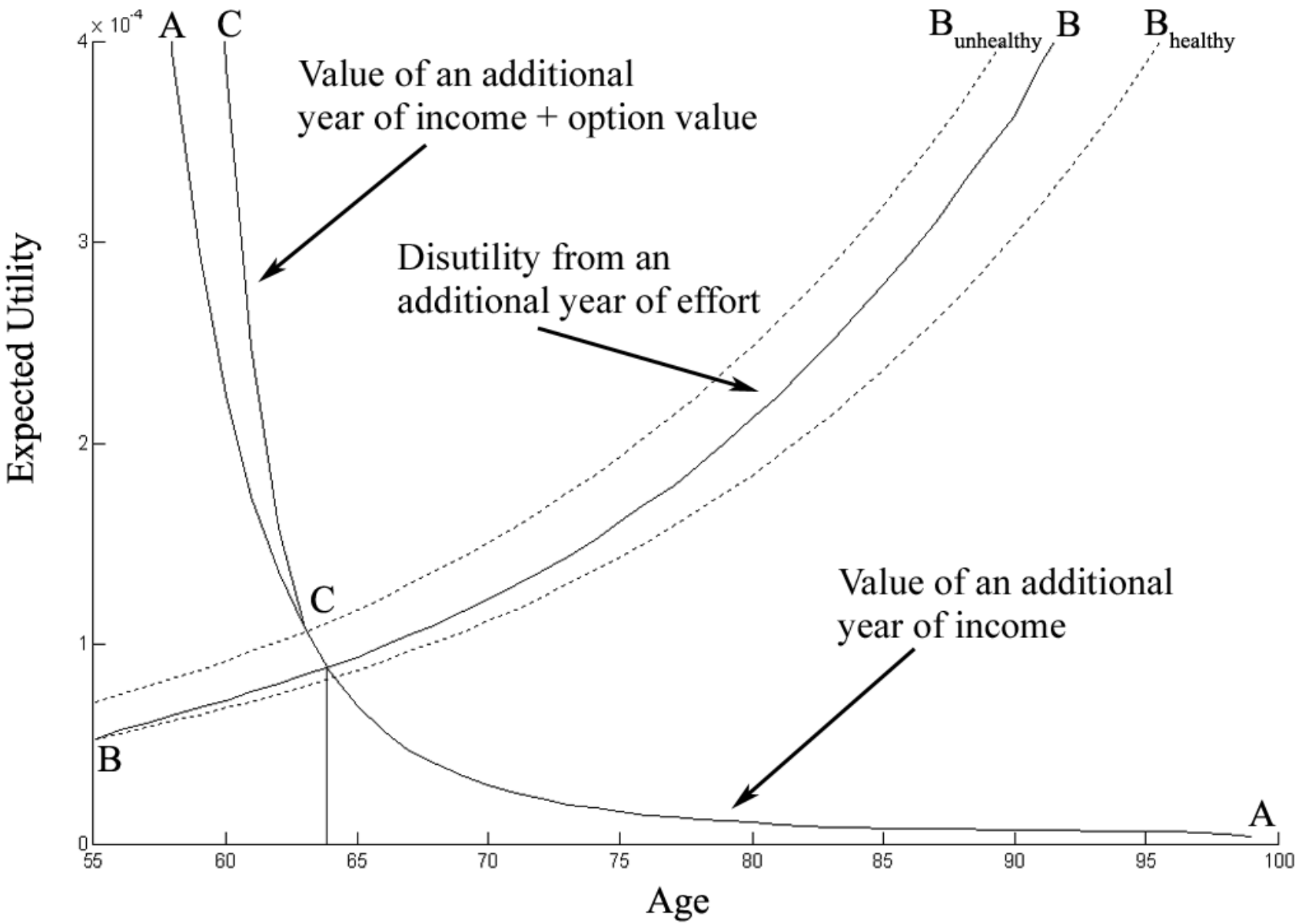
Expected difference in value function in a future year between retiring and working can be decomposed into three parts:

1. The utility value of the extra income the person earnings if he or she works one more year.

2. The option value a person maintains by remaining in the workforce.

3. The disutility of effort from the year's labor.

# The Retirement Decision



# Three things change over time

1. Productivity levels
2. Longevity (holding health at each age constant)
3. Health at each age

# Effects of Improvements in Productivity, Longevity, and Health

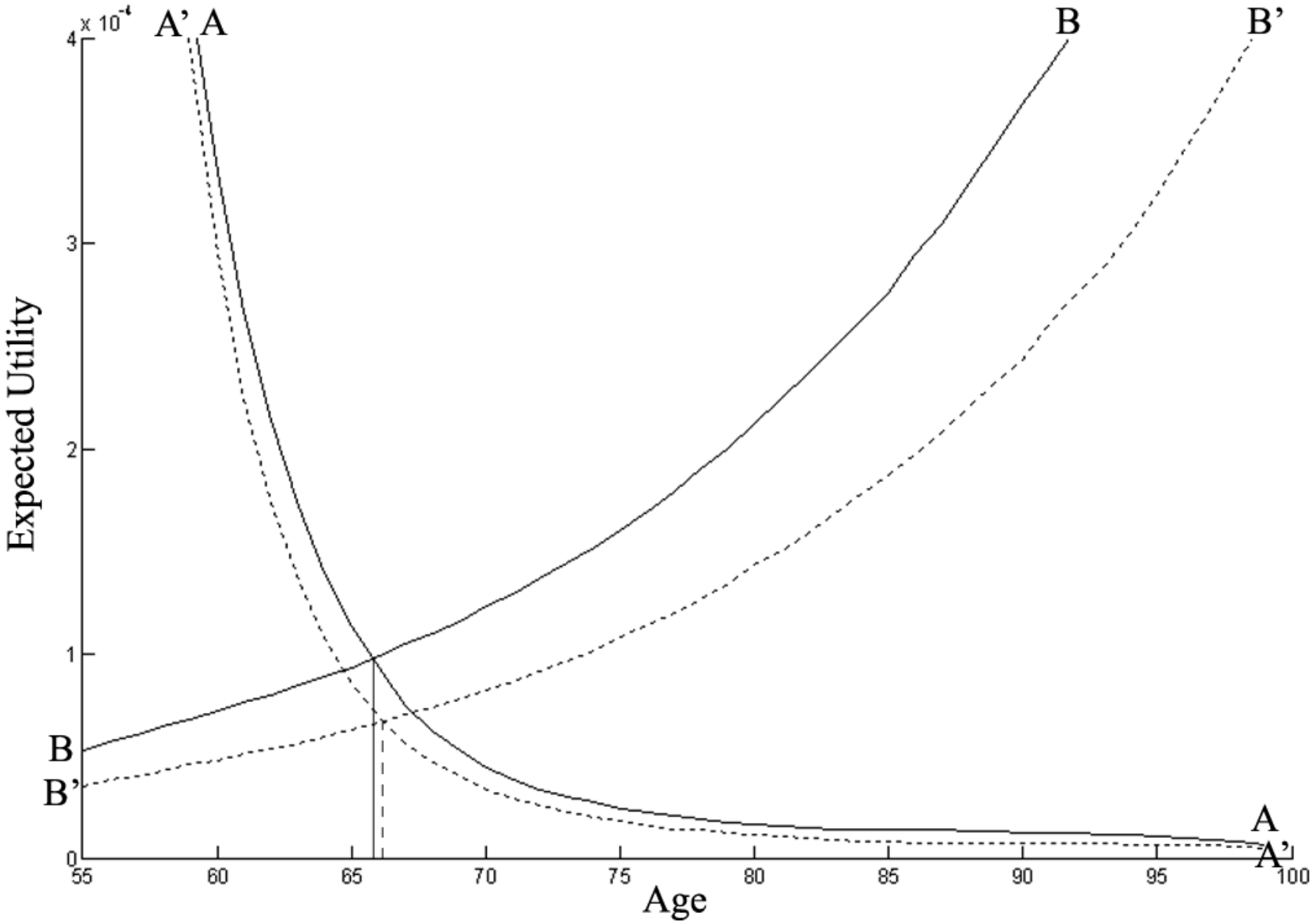
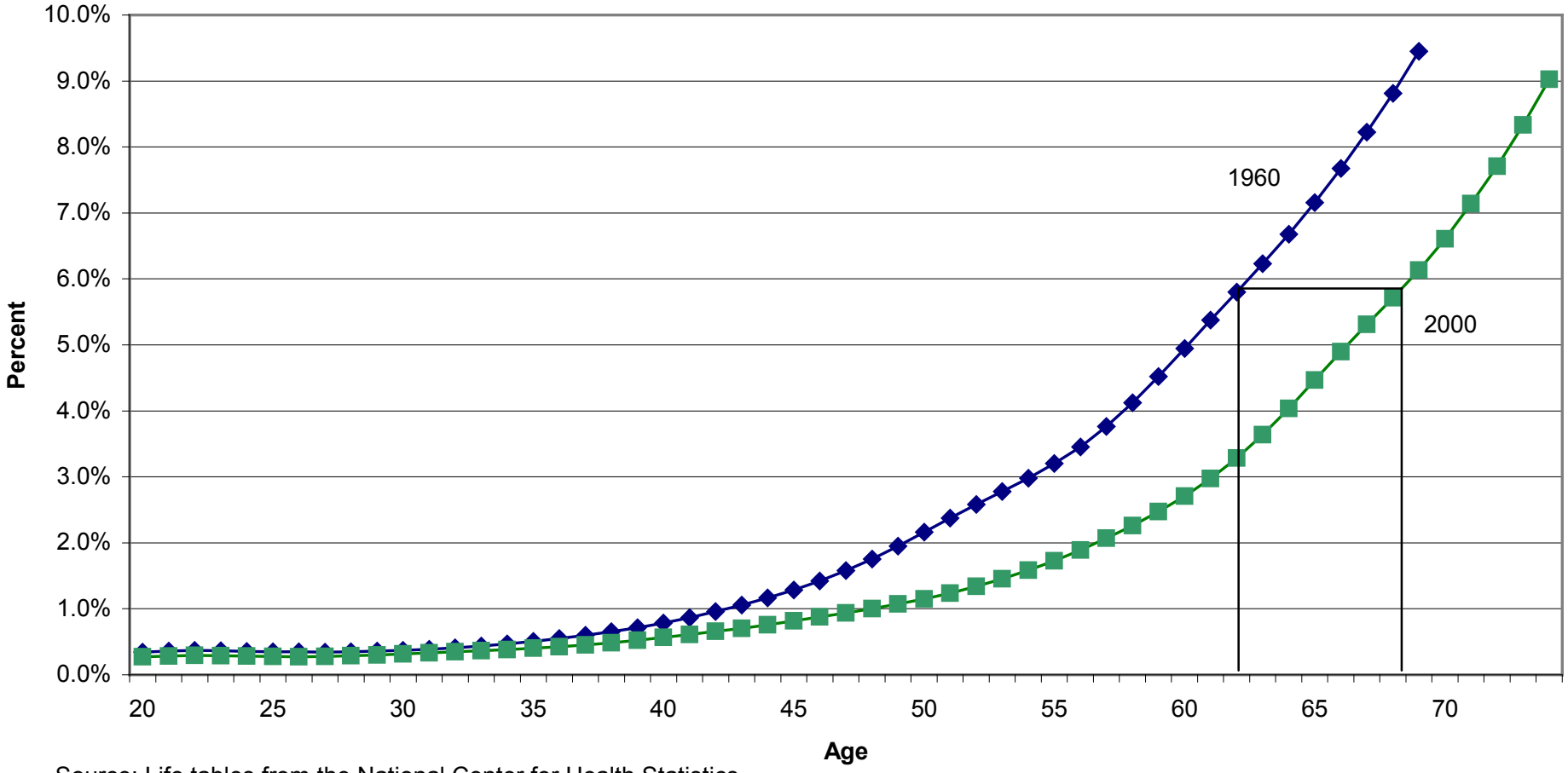


**Figure 2: Share of Men in the Last Two Years of Life**




Source: Life tables from the National Center for Health Statistics.

# Model I: Force Myopes to Delay Claiming SS

**Three types of consumers**:

I. Myopes always claim Social Security benefits at EEA.

II. Unconstrained rational consumers have plenty of assets and don't care when Social Security benefits become available.

III. Constrained rational consumers with low assets would like to claim benefits relatively early (perhaps because of bad health).

**Raising the EEA**:

1. Helps myopes (until EEA exceeds their optimal retirement age)
2. Has no effect on unconstrained rational consumers.
3. Hurts constrained rational consumers.

4. Increases share of rational consumers who are constrained.

# Model II: At What Age Should Disability Screening Stop?

Assume health status is observable to the worker but is not perfectly observable to the government, even if the worker undergoes a costly screen for disability.

Worker productivity ranges from $\underline{w}$ *to* $\overline{w}$.

With screening a worker in poor health will apply for DI if:

$$p_p\left[u(c_d)-\left(u(c_w)-v(h_p)\right)\right]>B$$

Without screening a worker in poor health will apply for DI if:

$$u(c_d)-\left(u(c_w)-v(h_p)\right)>0$$

*Costs of screening*

- Government and applicants bear time, psychic, and application costs.
- Some sick individuals who apply for benefits are denied.

*Benefit of Screening*

- Some healthy people are denied benefits.

*Costs are higher at older ages*

- More people apply, so application costs rise.
- More sick people are denied benefits

*Benefits are lower at older ages*

- There are fewer healthy people who need to be denied benefits

At some age the costs exceed the benefits and universal benefits should be awarded. As population health improves, this age should rise.

# Calibrating the Model

$$U_t = \frac{c_t^{1-\gamma}}{1-\lambda} + (1-l_t)e^{\beta_0+\beta_1(age-62)+\beta_2(badhealth)+\varepsilon}$$

Largely follow Gustman and Steinmeier (2005).

- Similar preferences.
- Similar simulated method of moments estimation.
- Similar discount rate heterogeneity.
- Use HRS original cohort data.

Differences:

- In our model both health and mortality are uncertain
  => more elaborate dynamic programming.
- We don't allow part-time work.
- Currently very crude calculations of SS benefits and pensions.

# Calibrating the Model

$$U_t = \frac{c_t^{1-\gamma}}{1-\gamma} + (1-l_t)e^{\beta_0+\beta_1(age-62)+\beta_2(badhealth)+\varepsilon}$$

Five parameters: $\gamma, \beta_0, \beta_{age}, \beta_{poorhealth}, \sigma_\varepsilon$

How to separately identify $\gamma$ *and* $\beta_0$ ?

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Five parameters: $\gamma, \beta_0, \beta_{age}, \beta_{poorhealth}, \sigma_\varepsilon$

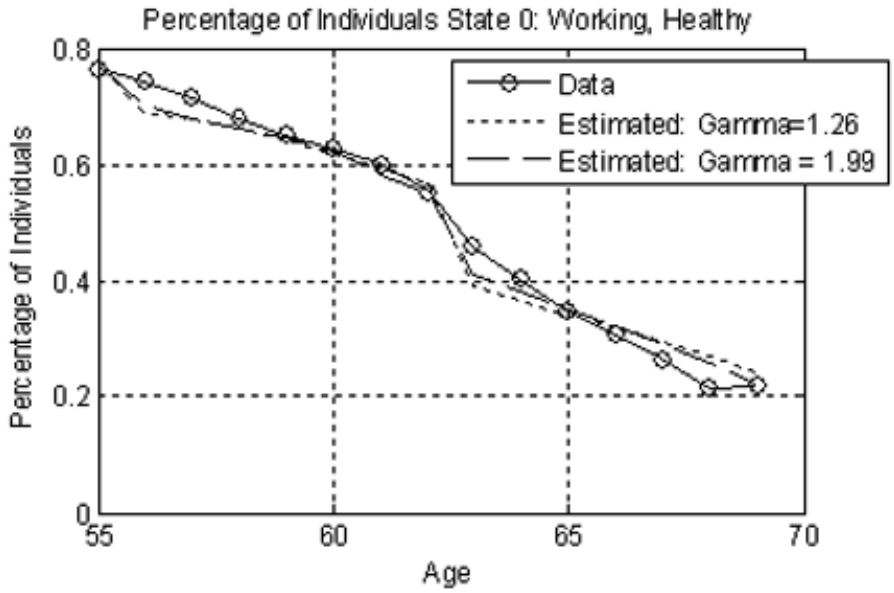
How to separately identify $\gamma$ *and* $\beta_0$ ?

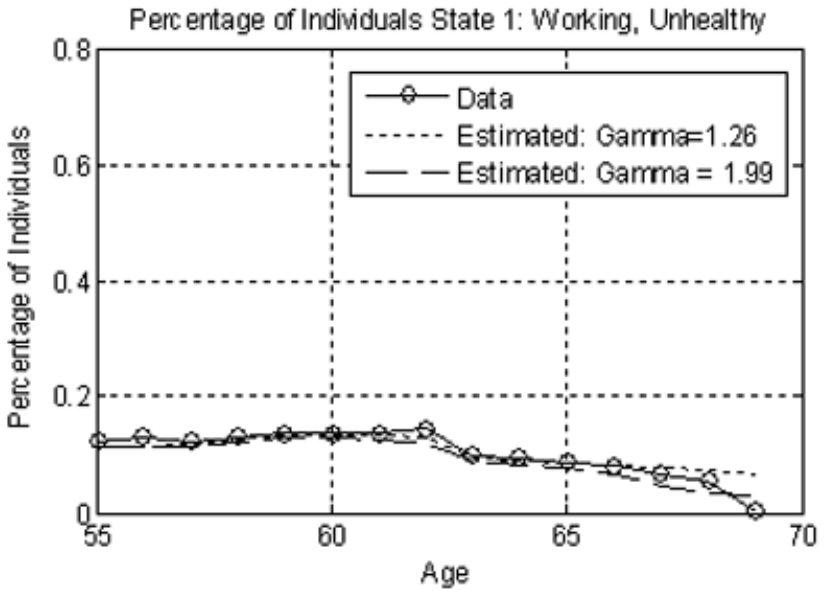
How to separately identify effects of health and age?

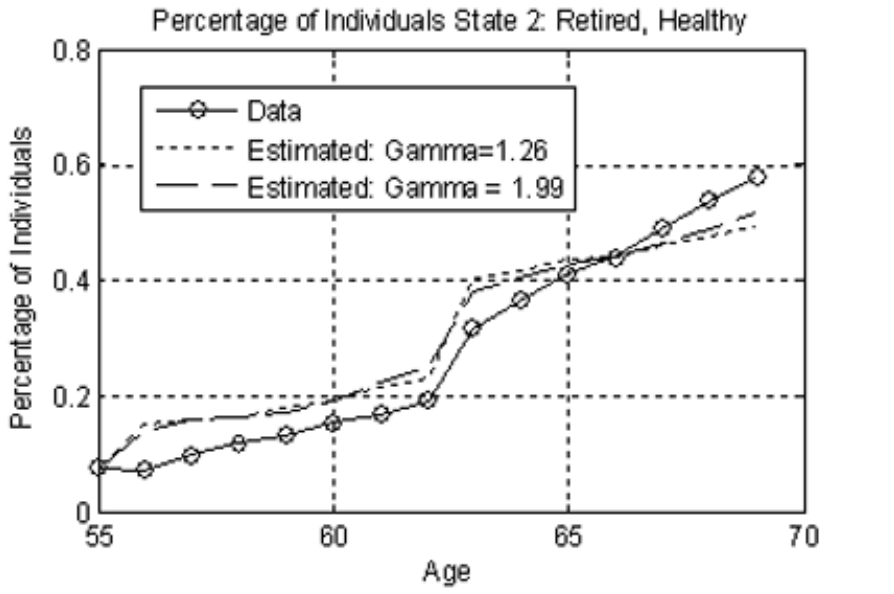
Many sources of heterogeneity in retirement dates:

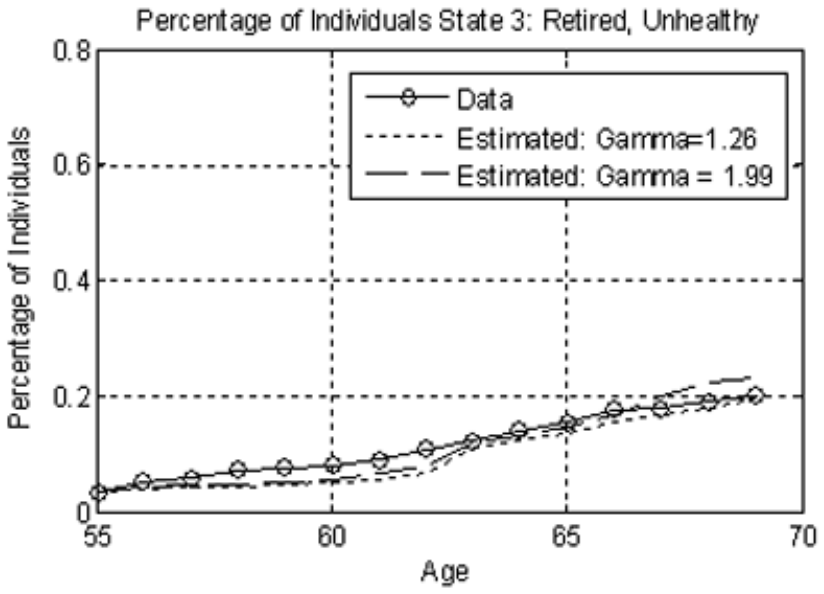
- parameters: $\varepsilon$ *and* $\beta_{age}$
- heterogeneous discount rates
- pension incentives

# True and Simulated Moments

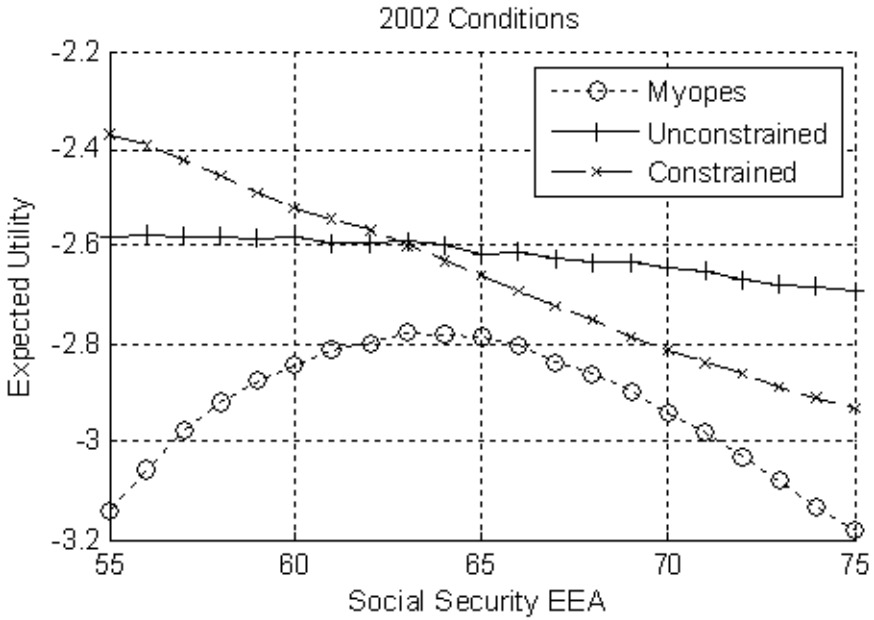


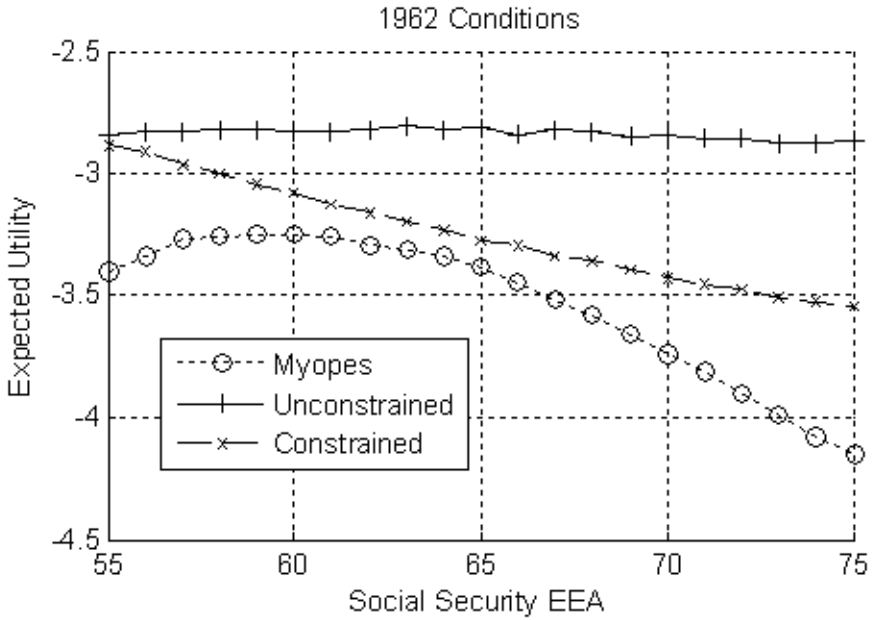



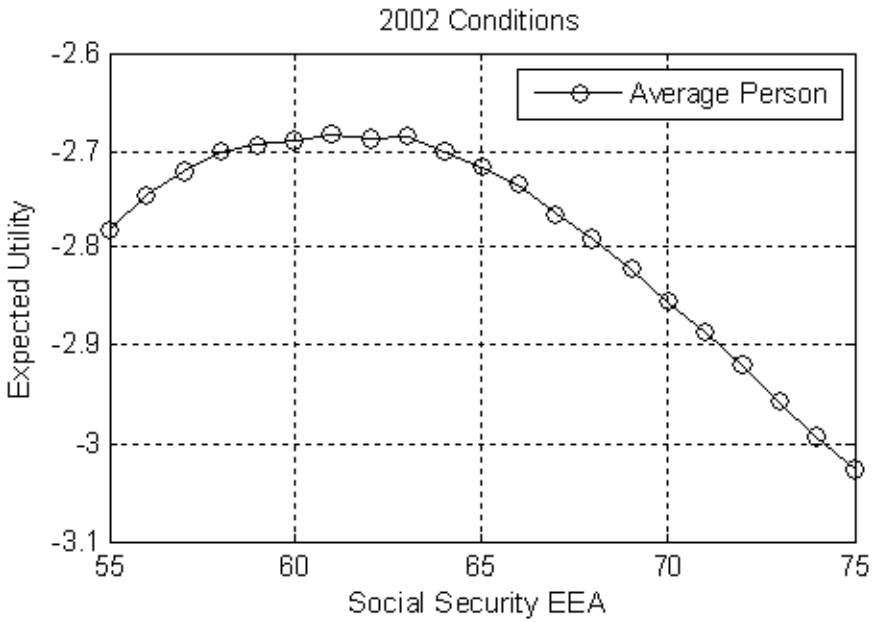



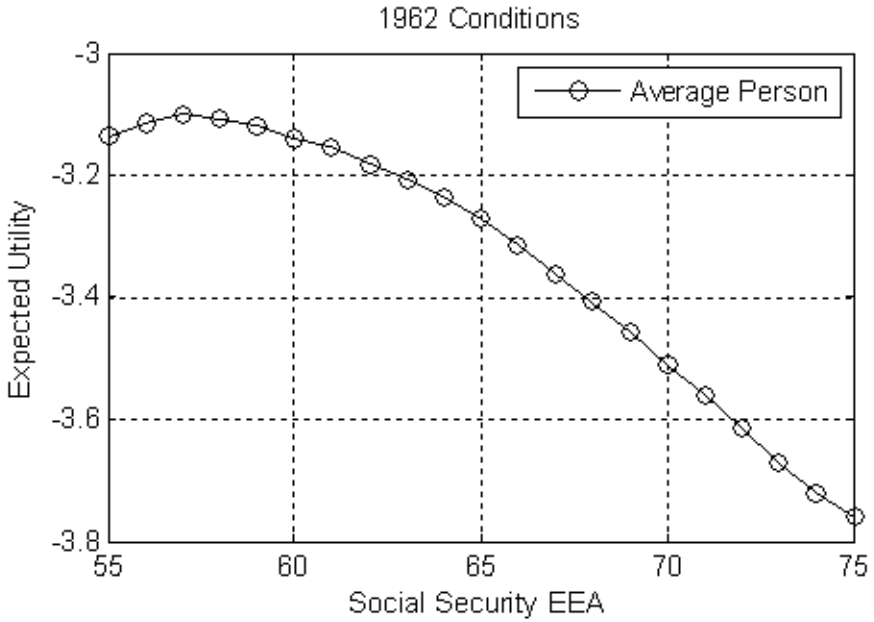



# Policy Simulations from Model I



| Simulations of Optimal SS Eligibility Age from Myopia Model | | | |
|---|---|---|---|
| Model | 2000 | 1962 Health shifted | 1962 Health & age shifted |
| $\gamma$=1.26 | 61 | 60 | 57 |
| $\gamma$ =2.00 | 62 | 62 | 60 |

# Tentative Bottom Line

- If we start from the optimal EEA, under the most plausible parameter values, the EEA should be rising by something in the range of half a year per decade.

- It is very hard to know if we are starting from an optimum. If there are not very many myopes, then the current EEA could be 5 years or more too high.

# Recent Improvements to the Model

(not yet incorporated into the paper)

- We have integrated the disability rationale and myopia rationale into a single econometric model.
- Are now using the restricted HRS administrative earnings records and pension records so we have more accurate measures of the incentives that people face.
- We have incorporated spouses in married couples which allows us to address issues like the relative well-being of single and married people in retirement. However, with current computing capacity we are stuck with the assumption that both spouses retire in the same year.
- We have set up a 16-processor parallel processing computing environment to allow the model to continue to be estimated in only a few days even with all of the enhancements.
- We have explored how the correlation between health and pre-retirement wealth has evolved over time.

# Median Household Net Wealth (Ages 55-59), Real 1996$