

# Social Pensions, Savings and Labor Supply



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Tokyo, February 21st 2007

# Motivation



- By changing permanent income social pensions can affect individual behaviors:
  - Labor supply (hours of work and choice of sector).
  - Retirement decisions.
  - Savings.
- These effects are often ignored in policy analysis yet can be non trivial and affect the costs and benefits of the program.
- It is an important area of investigation because some designs for SPs might be more efficient than others.
- Particularly important in the case of an integrated system of old-age income subsidies (pensions and/or contributions).

# Outline



- Some insights from economic theory.
- Some empirical evidence.
- Methods for ex-ante evaluation of economic impacts.
- Policy implications.

# 1. Insights from economic theory




- Flat basic pensions unequivocally:
  - Reduce savings.
  - Reduce labor supply (participation rates / number of hours worked).
  - Reduce participation in formal sector (willingness to contribute).
  - Induce early retirement.
  - ..> lower marginal utility of future consumption; reduce the cost and the benefit of delaying retirement.
- For “tested” basic pensions effects more difficult to predict:
  - Substitution effects.
  - What happens depends on individual preferences.

## 2. The (tin) empirical evidence



- Several studies look at the effects of mandatory pensions on labor participation / retirement decisions (mainly OECD).
- Much less work on the effects on savings.
- Very few focused on the effects of social pensions in MICs and LICs:
  - Early retirement labor supply
  - Nothing on savings...
- No estimates of “welfare impacts” (net effects) or at least economic costs.

# Some results related to mandatory systems



- OECD (Gruber and Wise, 2004; Samwick, 1998):
  - Increasing min. retirement age 3 years would increase participation rate of men aged 53 to 62 from an average of 50-60% to 72-78%.
  - 25 percent of the observed drop in LFP for men over 65 between 1955 and 1975 was caused by the 50 percent increase in the coverage of social security
- Spain (Jimenez-Martin and Sanchez, 2003):
  - Enactment min. pension guarantee would result in a threefold increase in the rate of retirement at age 60.
  - Early retirement (before age 60) would increase by 50 percent.

# Some results related to social pensions



- South Africa (Bertrand et al. 2001)
  - Probability that adults work is reduced by 7 pp if somebody in the household becomes eligible for a pension.
  - Effect is stronger if the working person is a women or the eldest son.
- Namibia (Adamshack, 1995):
  - Social pensions give more flexibility to working adults to find better jobs.
  - Migration increases as a function of SP.
  - But appearance of “skip generation” households.

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## □ Brazil (Carvalho, 2002):

- Reduction in labor force participation among eligible individuals (elasticity of 0.65 with respect to pension benefit).
- Effects are higher among workers with low levels of education.
- Increase of R\$ 100 in pension benefits increases probability of not working in the reference week by 15 pp.
- Also a reduction of hours worked per week of 8.5h and a reduction of monthly earnings of R\$ -317.




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- On average, probability of not working increases by 45.2 pp.
- Hours worked per week reduced by 25.2h and monthly earnings reduced by R\$632.


#### □ Brazil (Camargo and Reis, 2005)

- Between 1990 and 1999 unemployment increased from 3.1 to 8.6% (long-term unemployment rate from 0.97 to 4.5%).
- At the same time pension income up by 78% and wages down by 13%.

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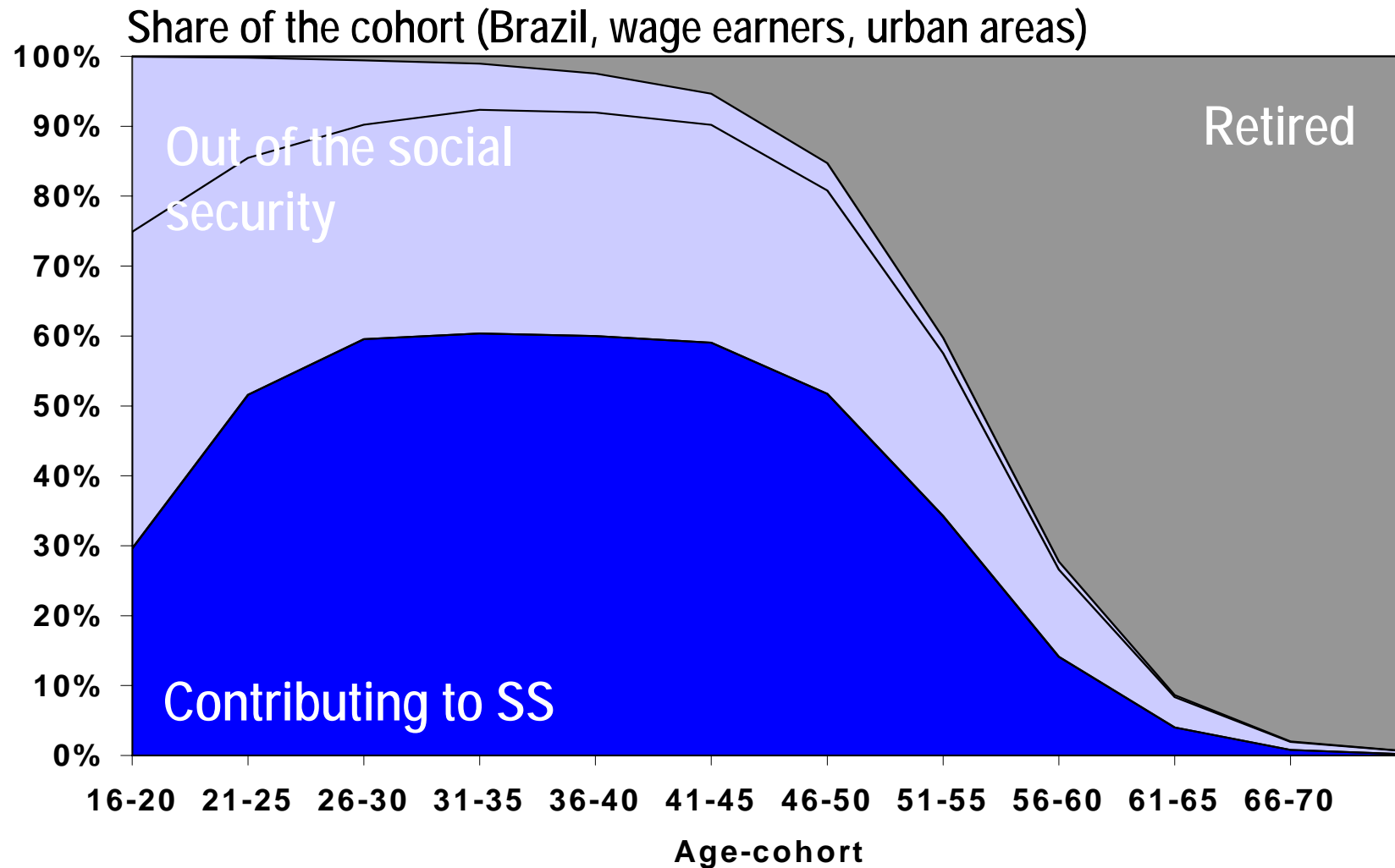
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- Increase of R<sub>hial</sub> 100 in pension income increases probability of short & long term unemployment by:
    - 1.2 / 0.6 pp (unskilled)
    - 0.7 / 0.35 pp (semi-skilled)
    - 0.2 / 0.1 pp (skilled)
  - ... probability of participating in LF is reduced by
    - 8.6 pp (unskilled)
    - 2.3 pp (semi-skilled)
    - 0.4 pp (skilled)
  - Results imply that the increase in pension income was shared among household members.

### 3. Methods for ex-ante assessment of impact of SPs on behaviors



- Analysis based on life-cycle model:
  - Individuals maximize the expected present value of utility which depends on consumption, leisure and “effort” made to preserve/find jobs.
- At each time  $t$  individuals decide:
  - How much to save.
  - How much effort to put in keeping/finding formal sector jobs.
  - And whether to retire or wait.
- Decisions affected by the presence of the SI system: pensions and unemployment.

# Parameters estimated to “match” the distribution of age cohorts



# Illustration (no specific country)



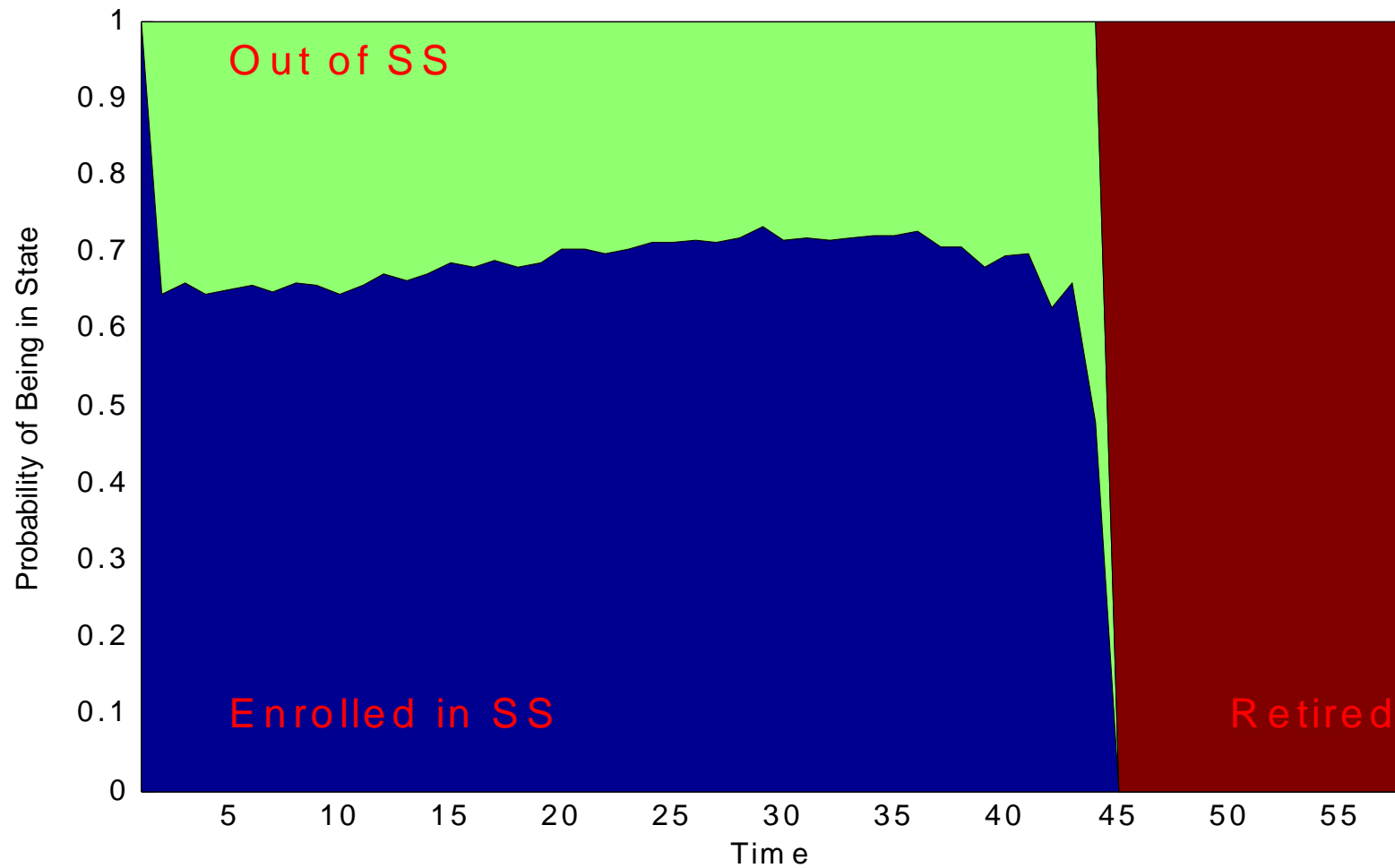
## □ Behaviors in four settings:

- No social pension.
- Social pension of 20% of average earnings at 55.
- Social pension of 20% of average earnings at 65.
- DB (1.5% accrual) with 20 basic pension with 30% clawback

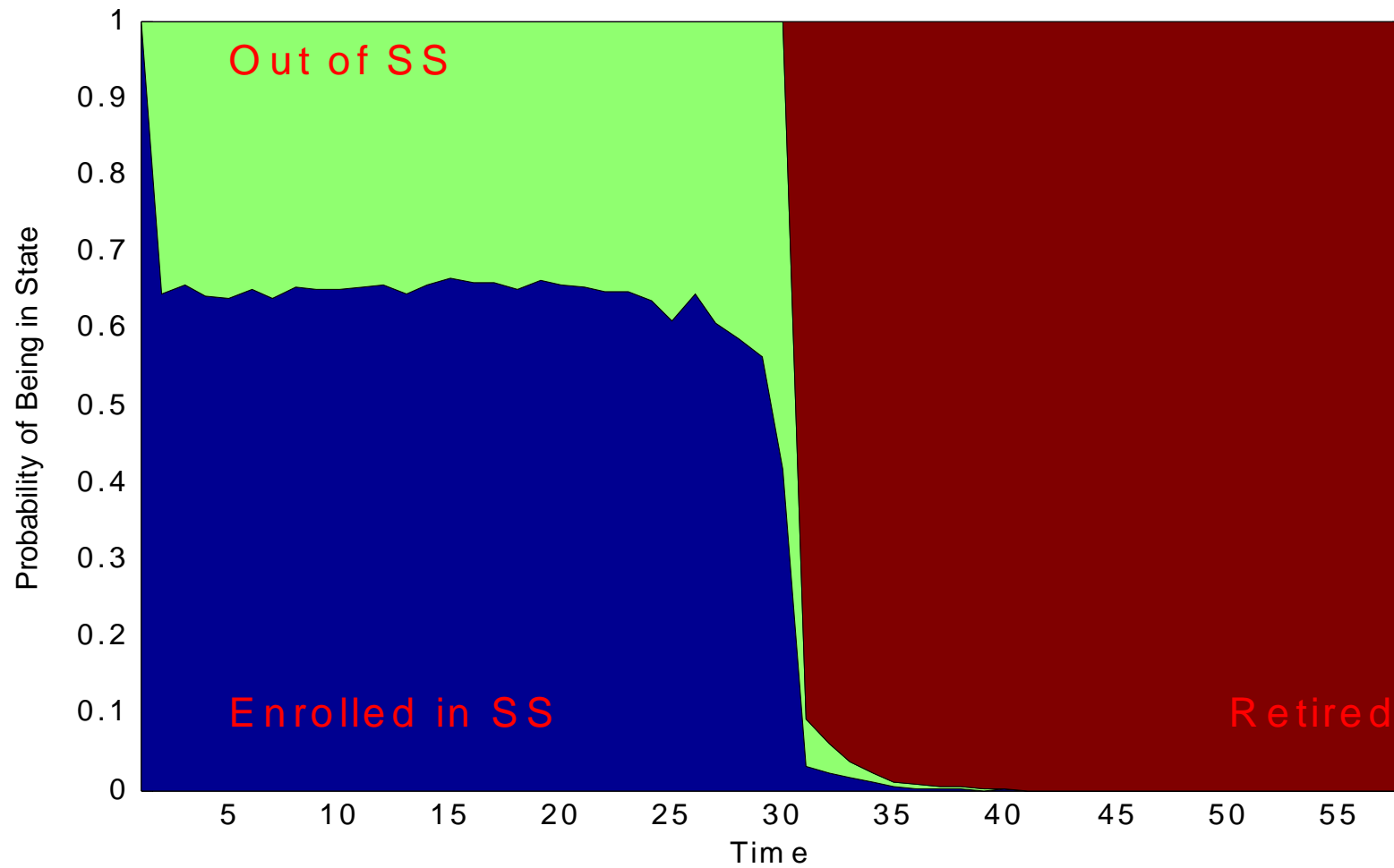
## □ Characteristics of the cohort:

- Age 25 when entering the labor market.
- Income equal to 50% of economy wide average earnings.
- Exogenous transition probabilities: 15% probability of losing a job when employed and 85% of finding a job when unemployed (at maximum effort).
- Preferences fixed at the average level.

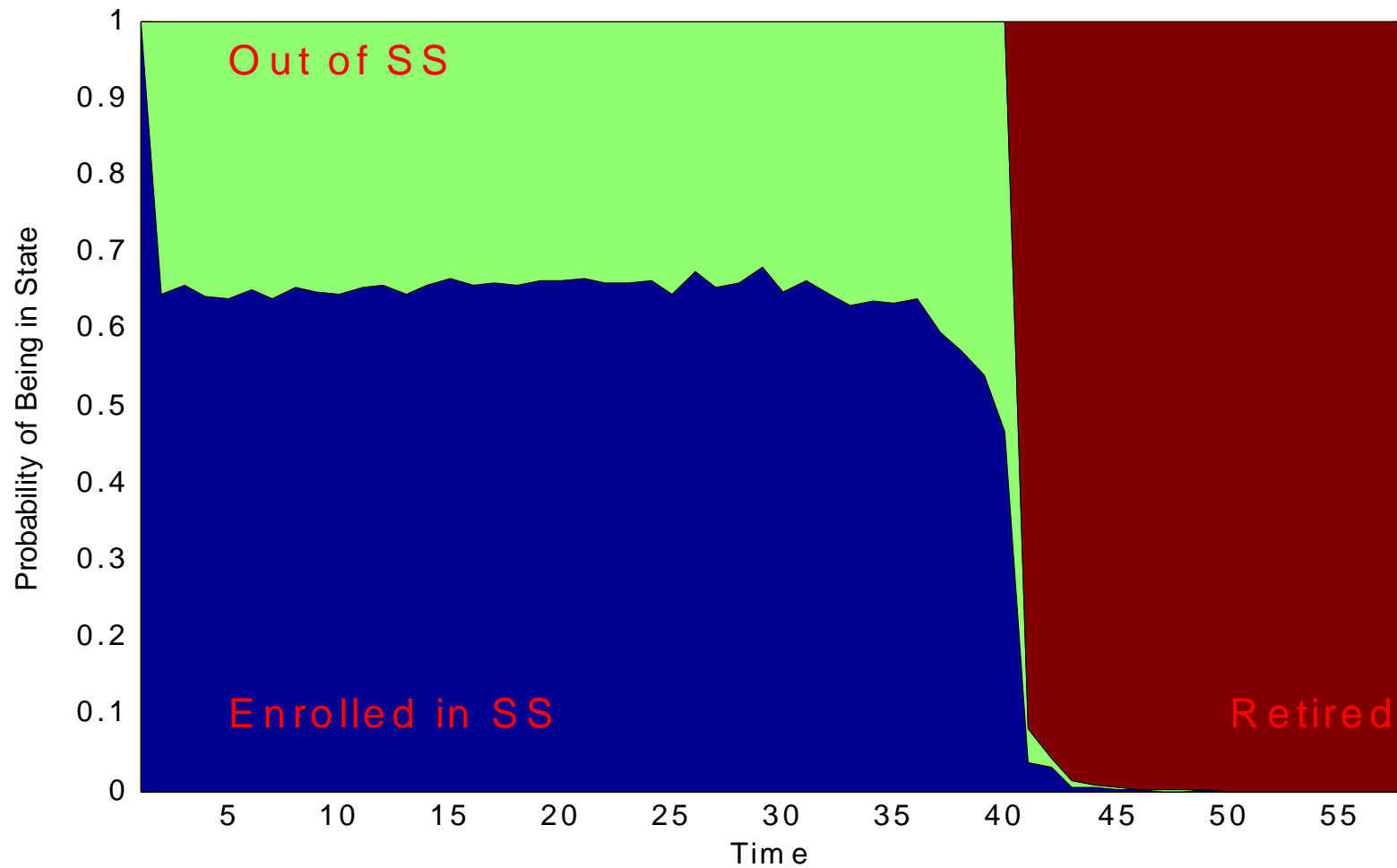
# No basic pension



# Basic pension at 55

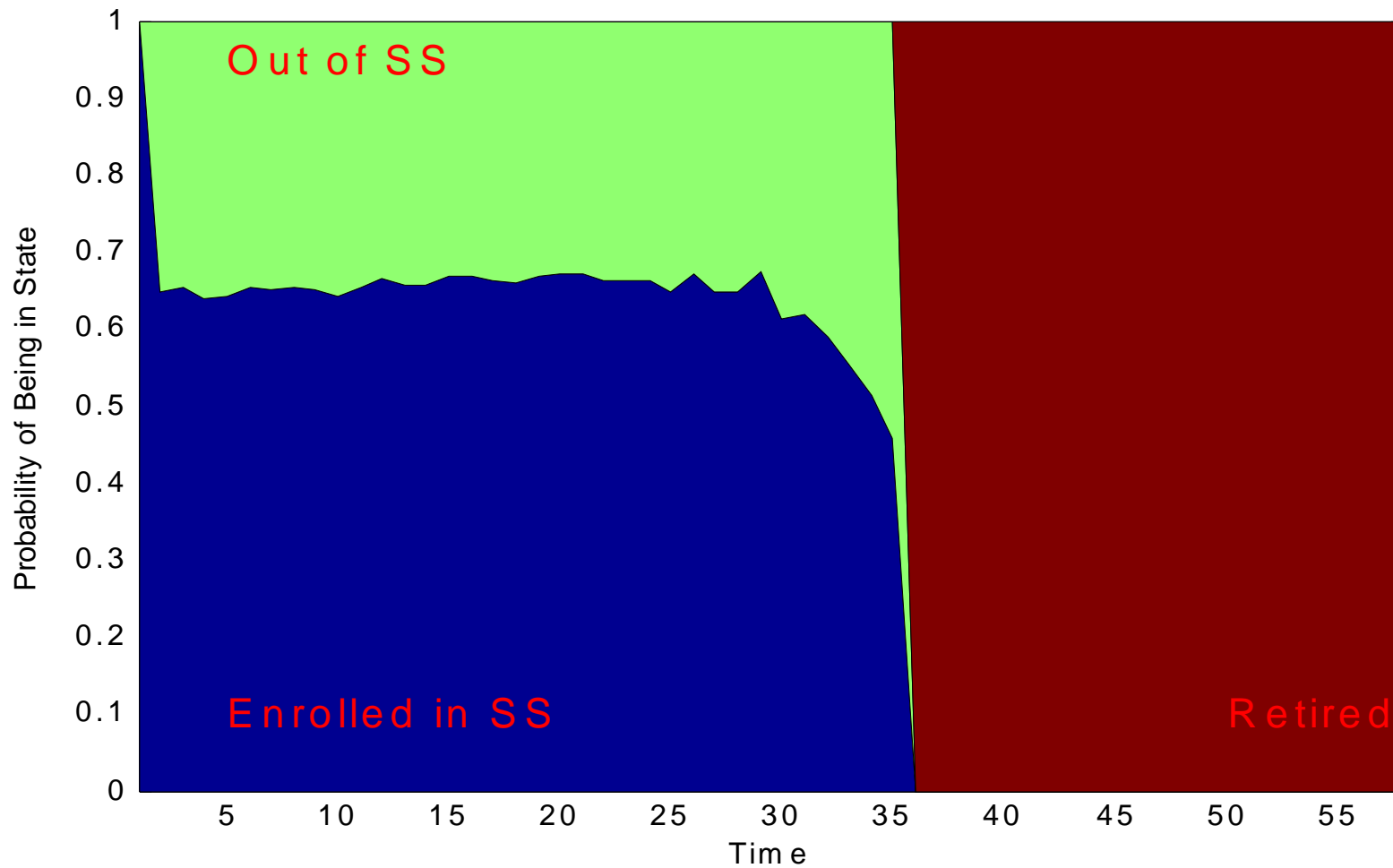


# Basic pension at 65

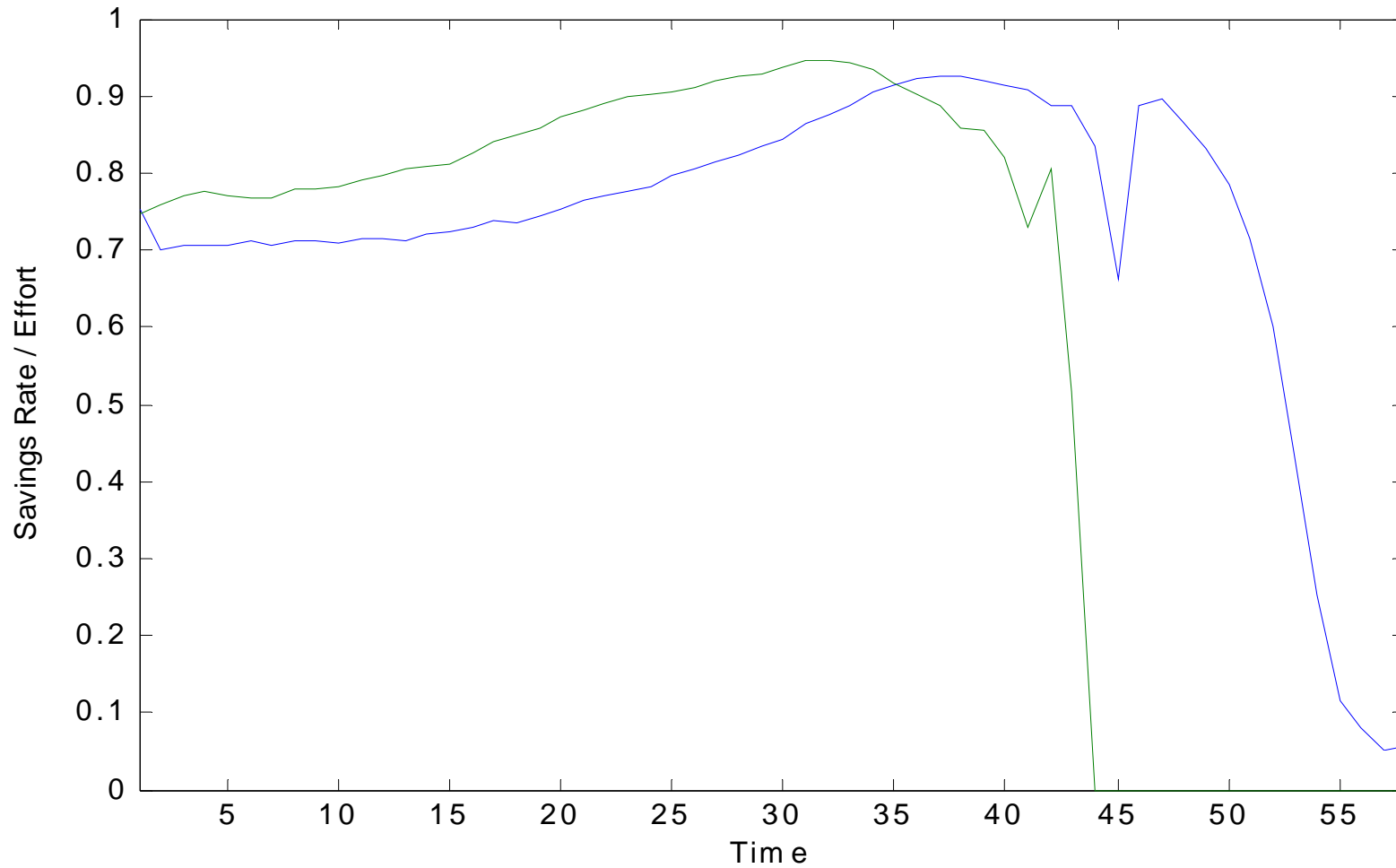




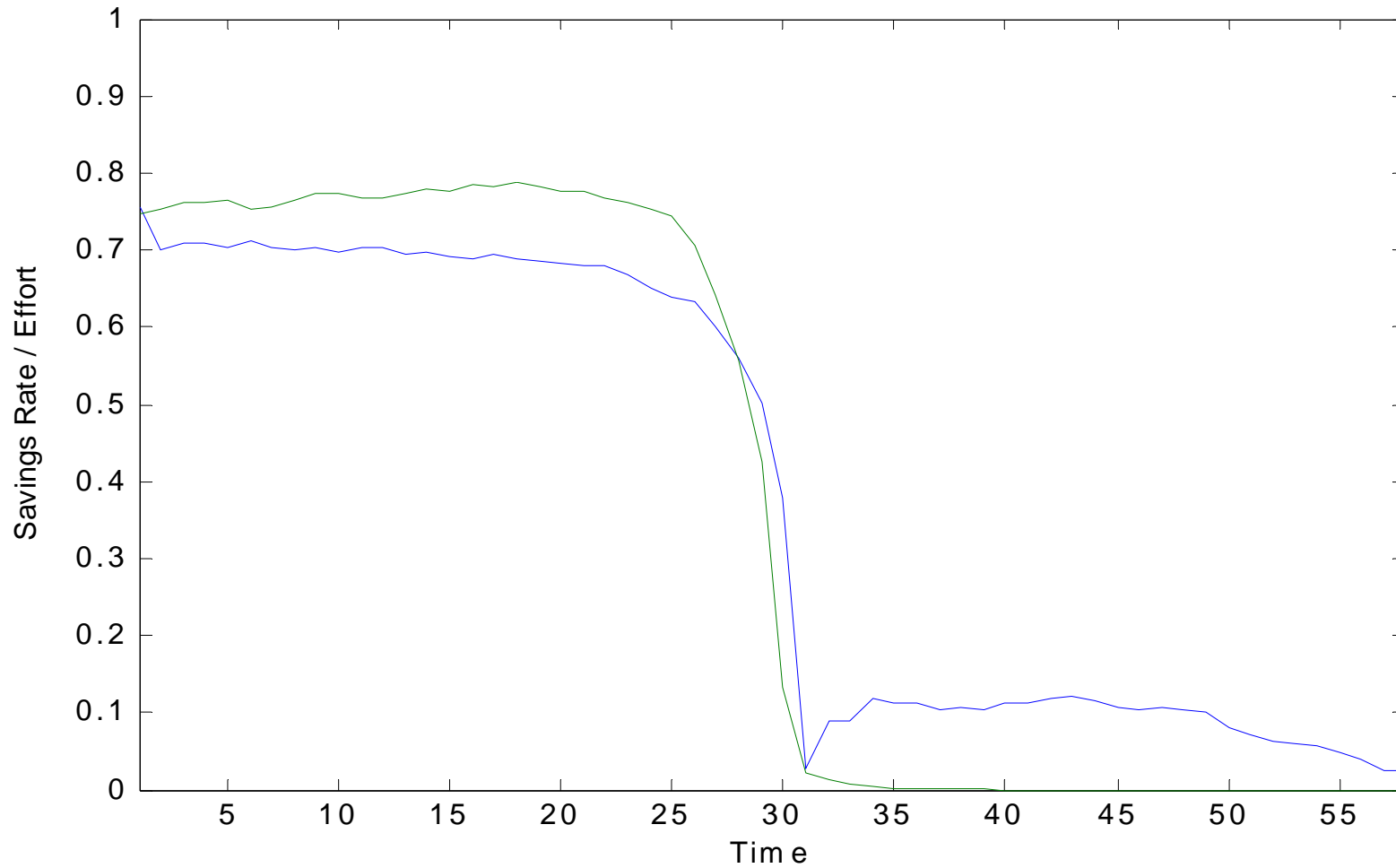
# DB 1.5% & basic pension with 30% clawback



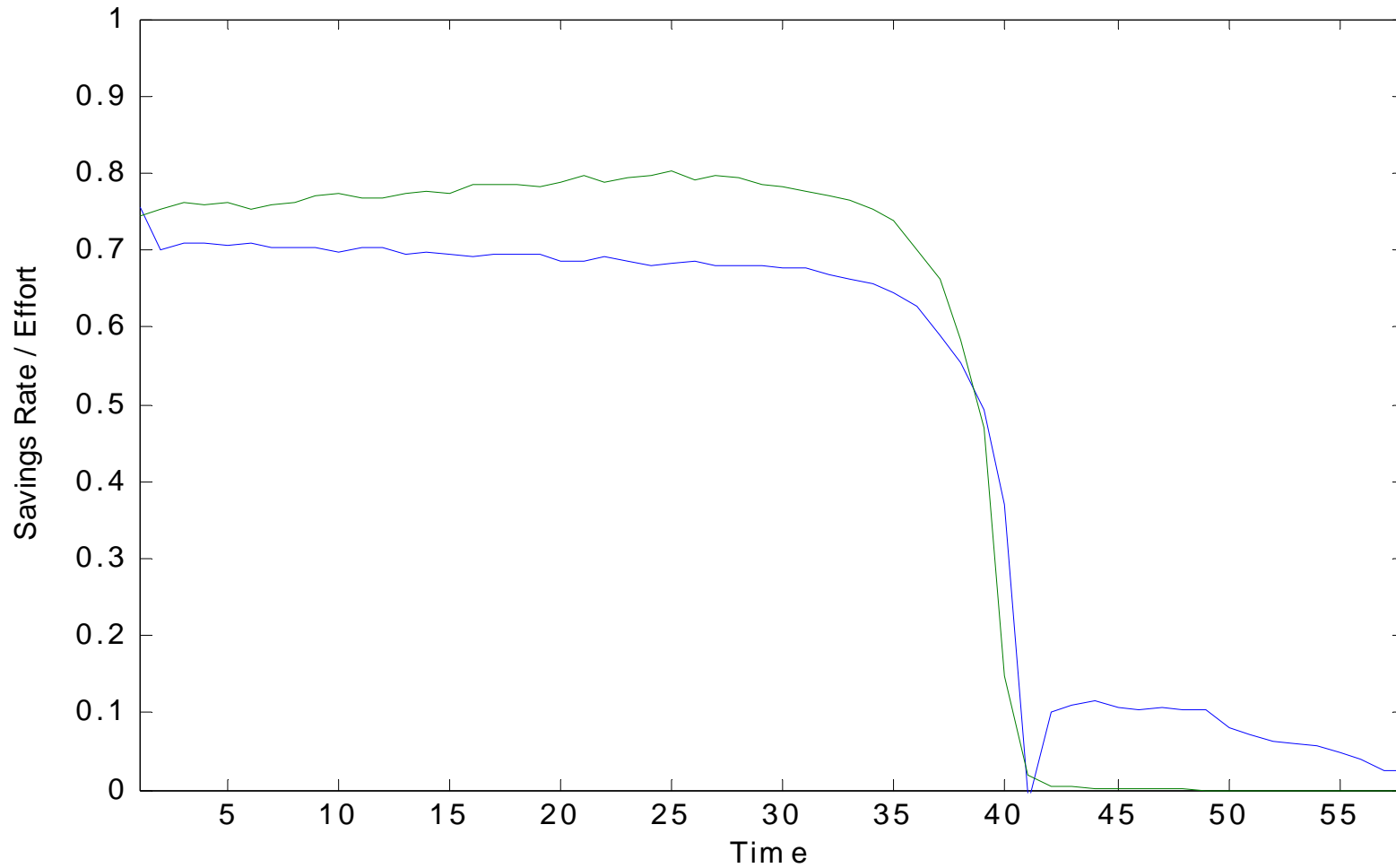
# No basic pension



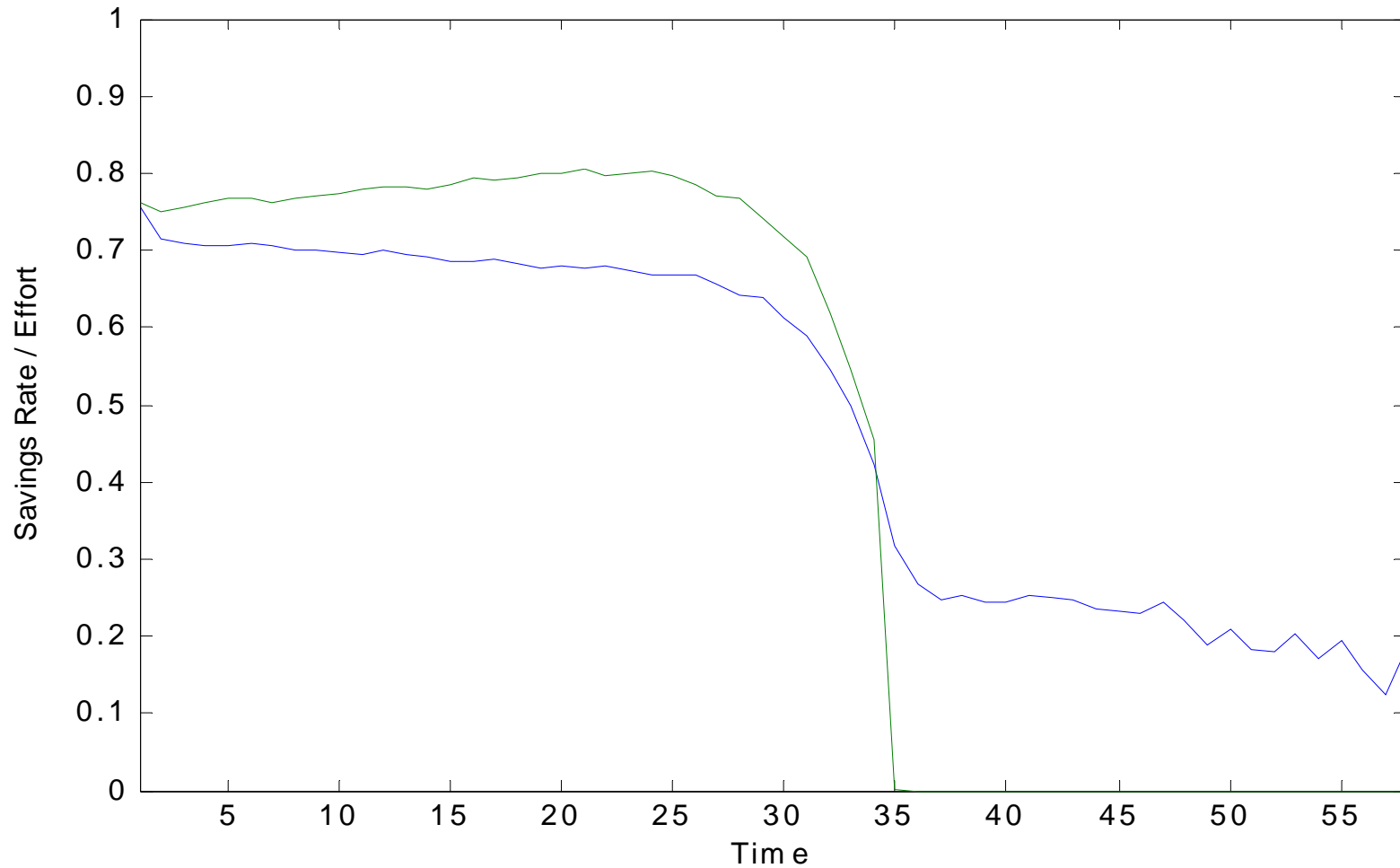
# Basic pension at 55



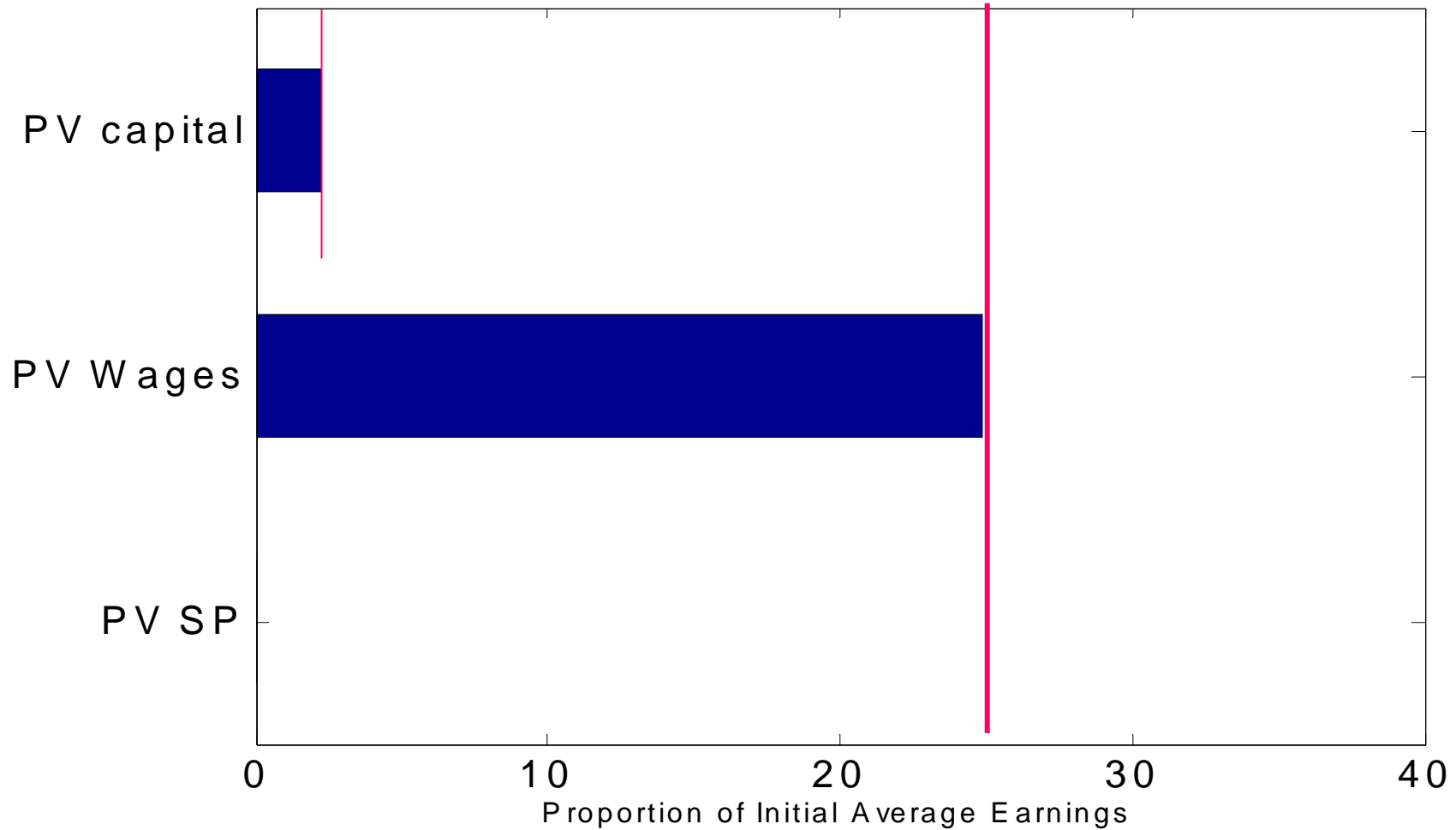
# Basic pension at 65



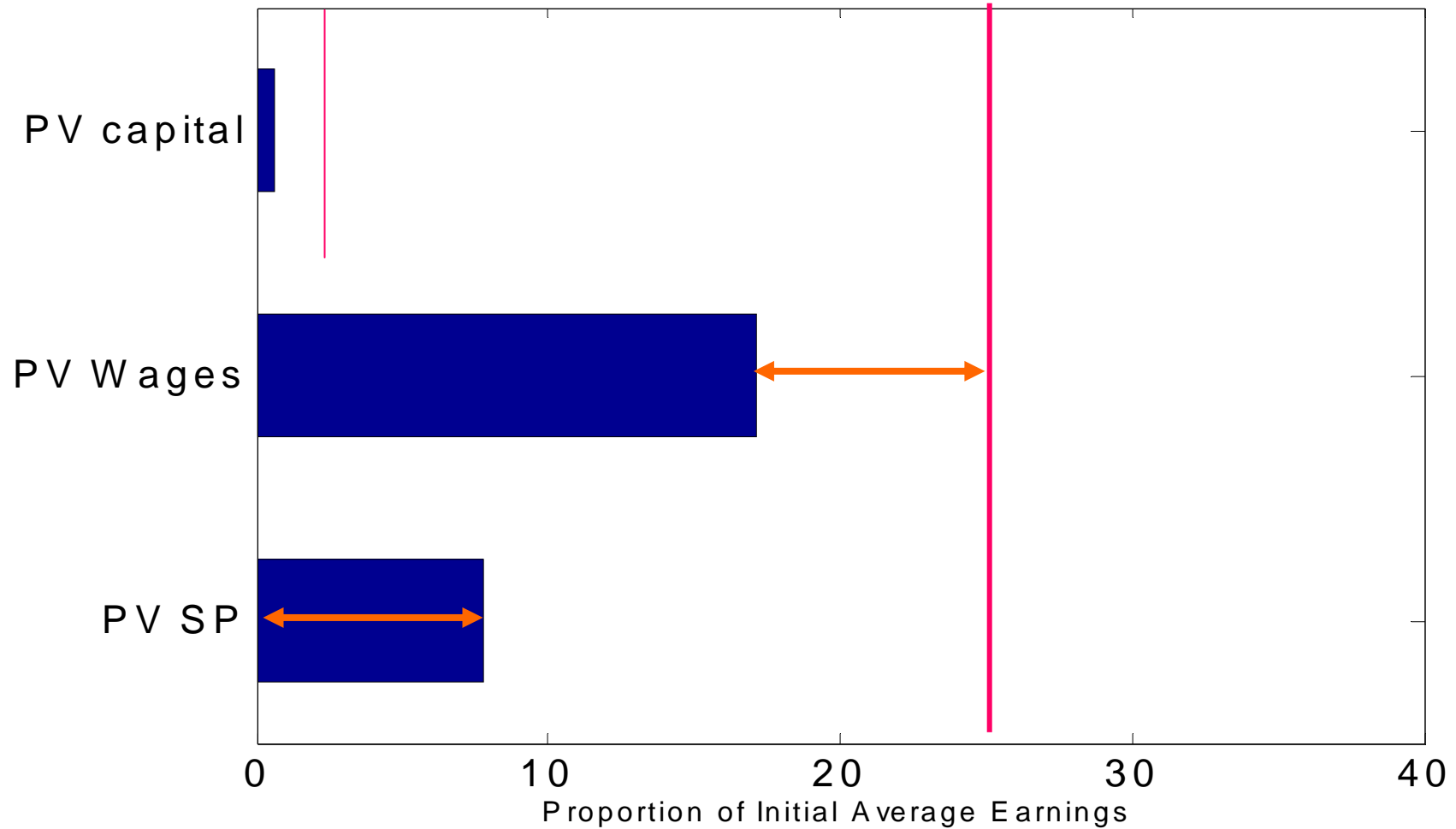
# DB 1.5% & basic pension with 30% clawback at 60



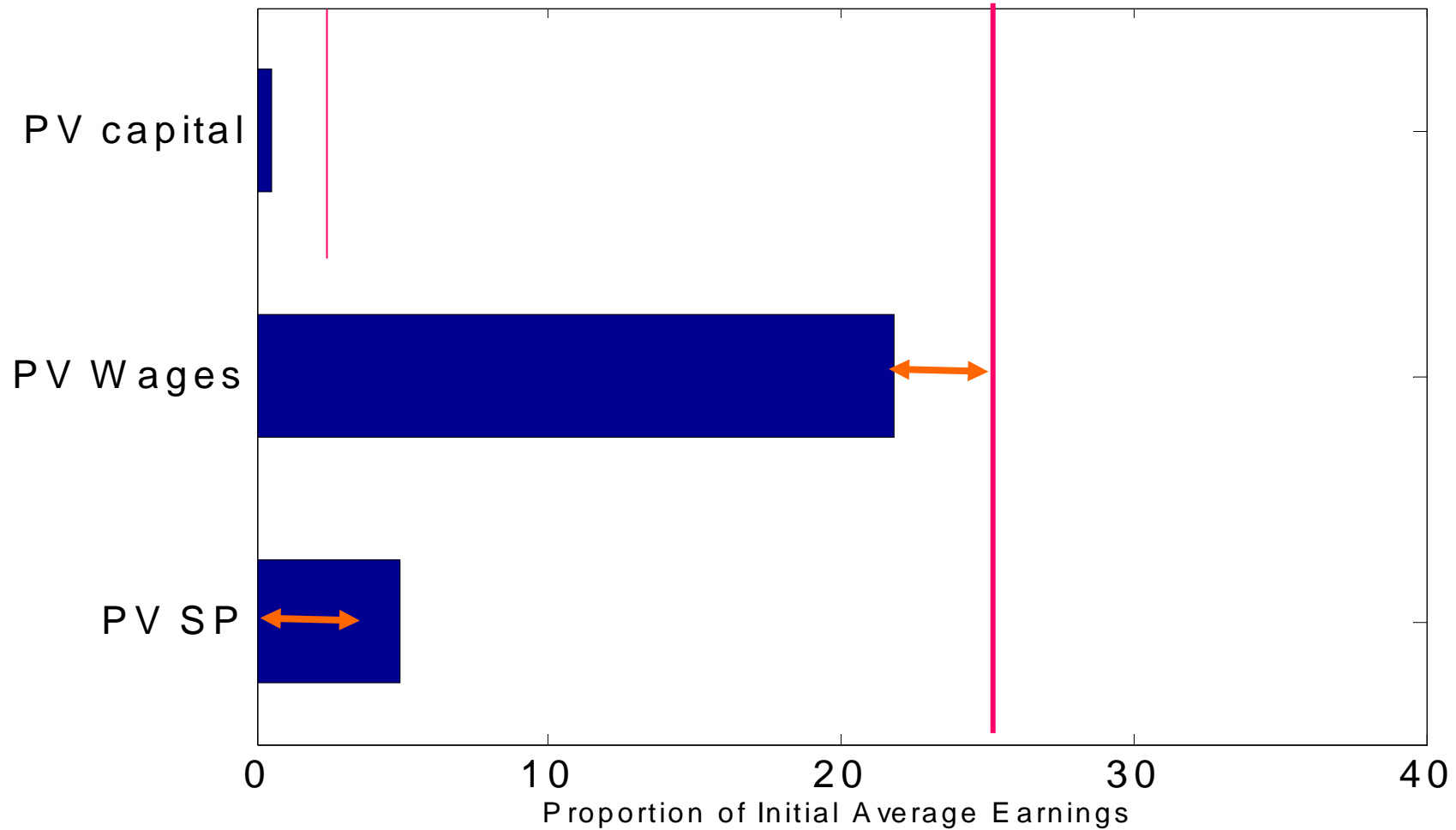
# No basic pension



# Basic pension at 55

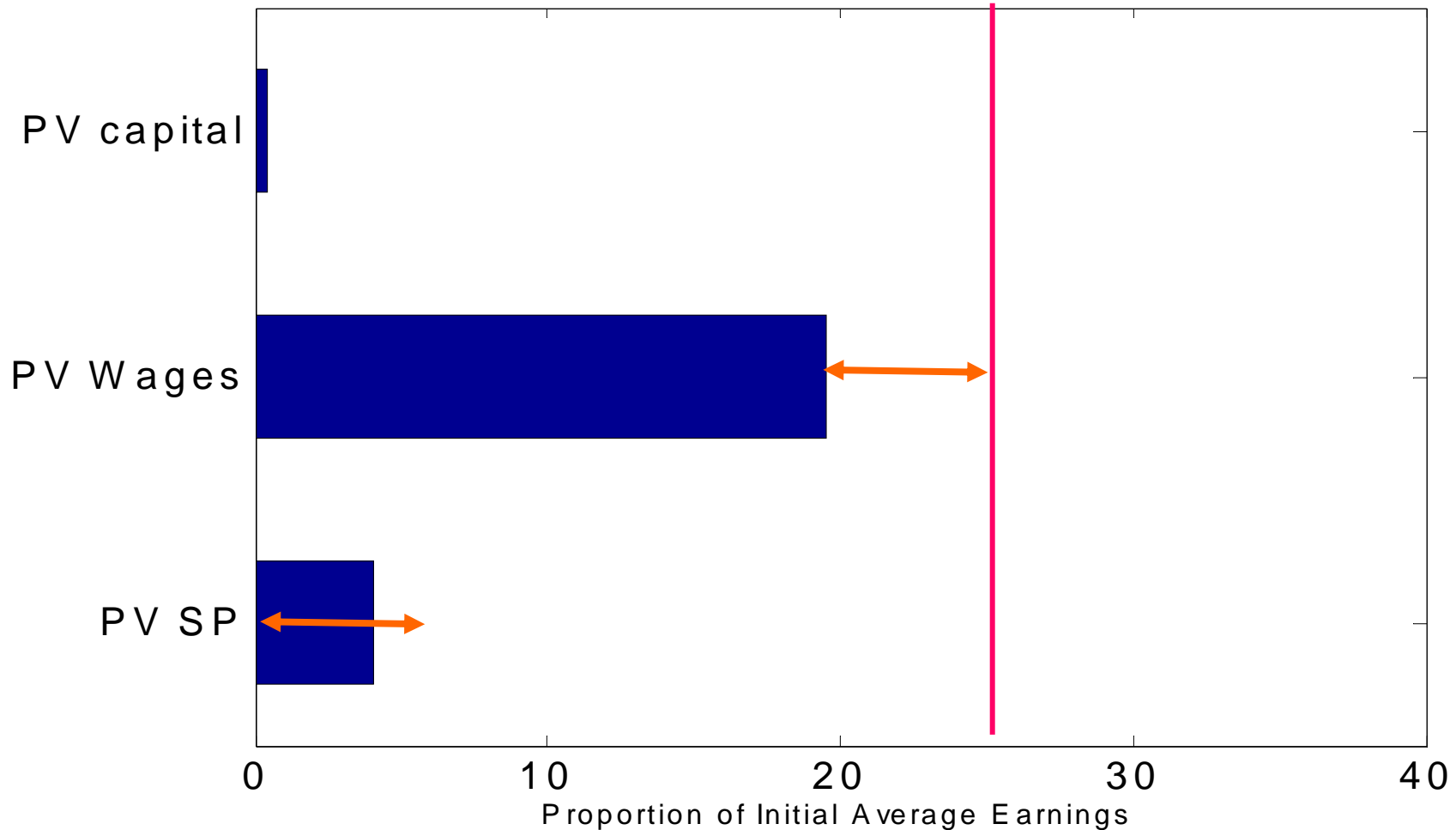


# Basic pension at 65





# DB 1.5% & basic pension with 30% clawback at 60



# Conclusions



- Social pensions can have unintended consequences with economic costs beyond the direct costs of the program:
  - Labor supply effects 0.5-1 time the cost of the program?
  - Also reductions in pre-retirement assets.
  - Individual behaviors change mainly towards the end of their careers.
- Important to continue empirical research of effects on sector choice, career histories, savings decisions.

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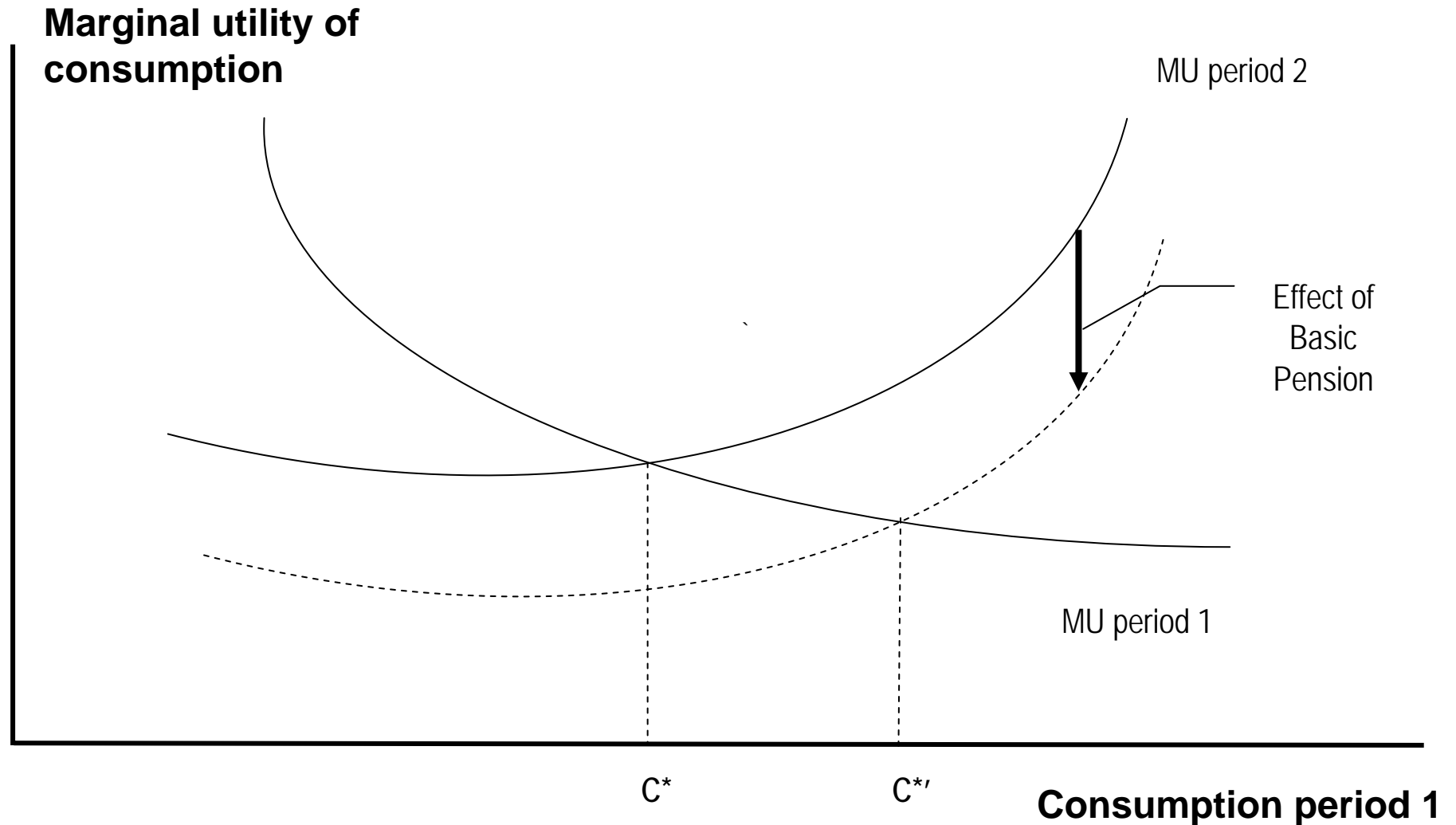
□ Some implications for design:

- Enforce “high” minimum retirement age to be eligible for the basic pension.
  - Broad or at least narrow means test.
  - “Small” transfers relative to average earnings targeted to those individuals with no savings capacity.
  - Behavioral changes would still be observed but would concern mainly low-income / low-skilled workers.
- In general, important to pilot/assess impact of a given program prior to full scale implementation.



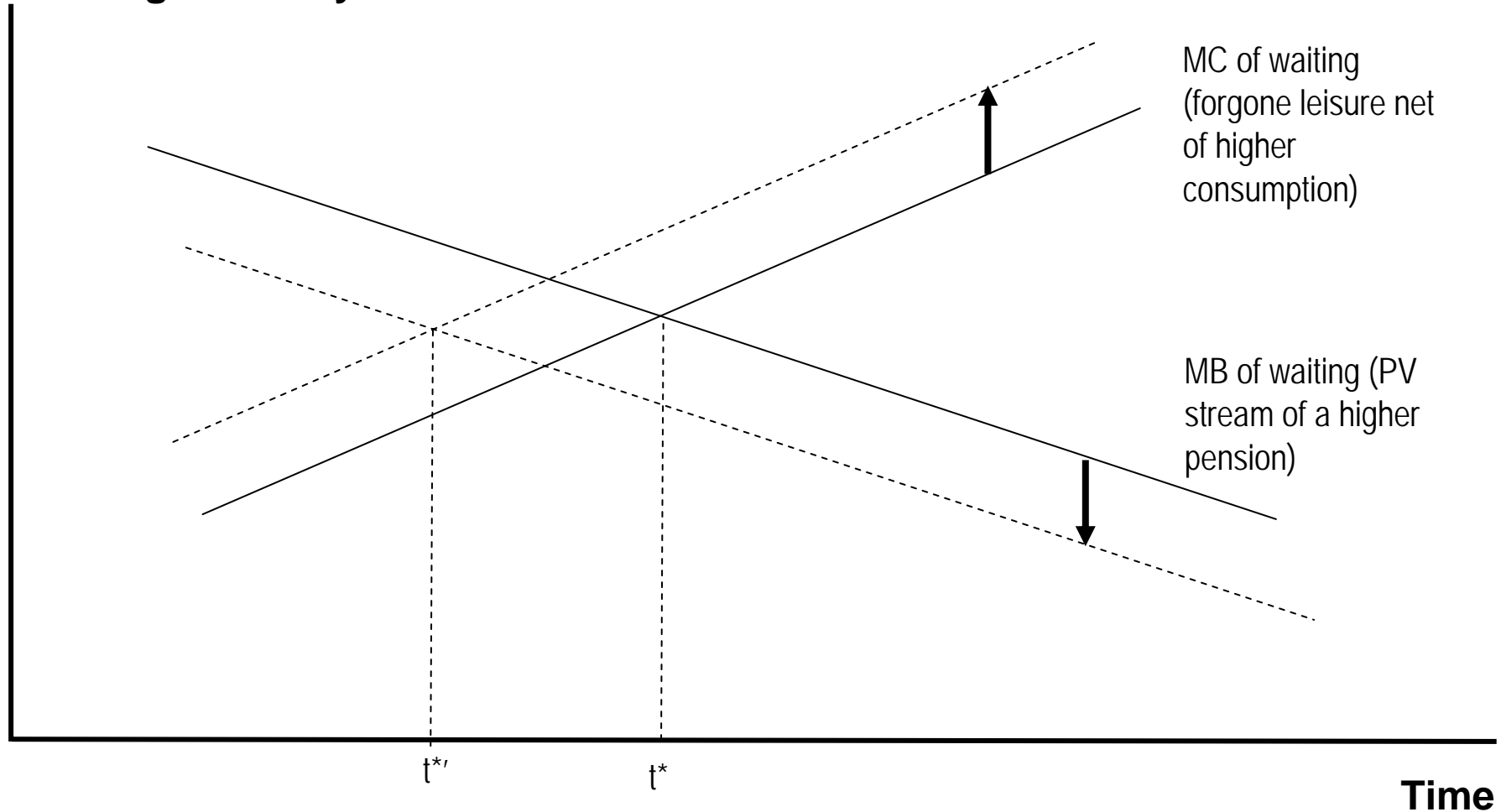
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# Basic pension reduces MU of future consumption



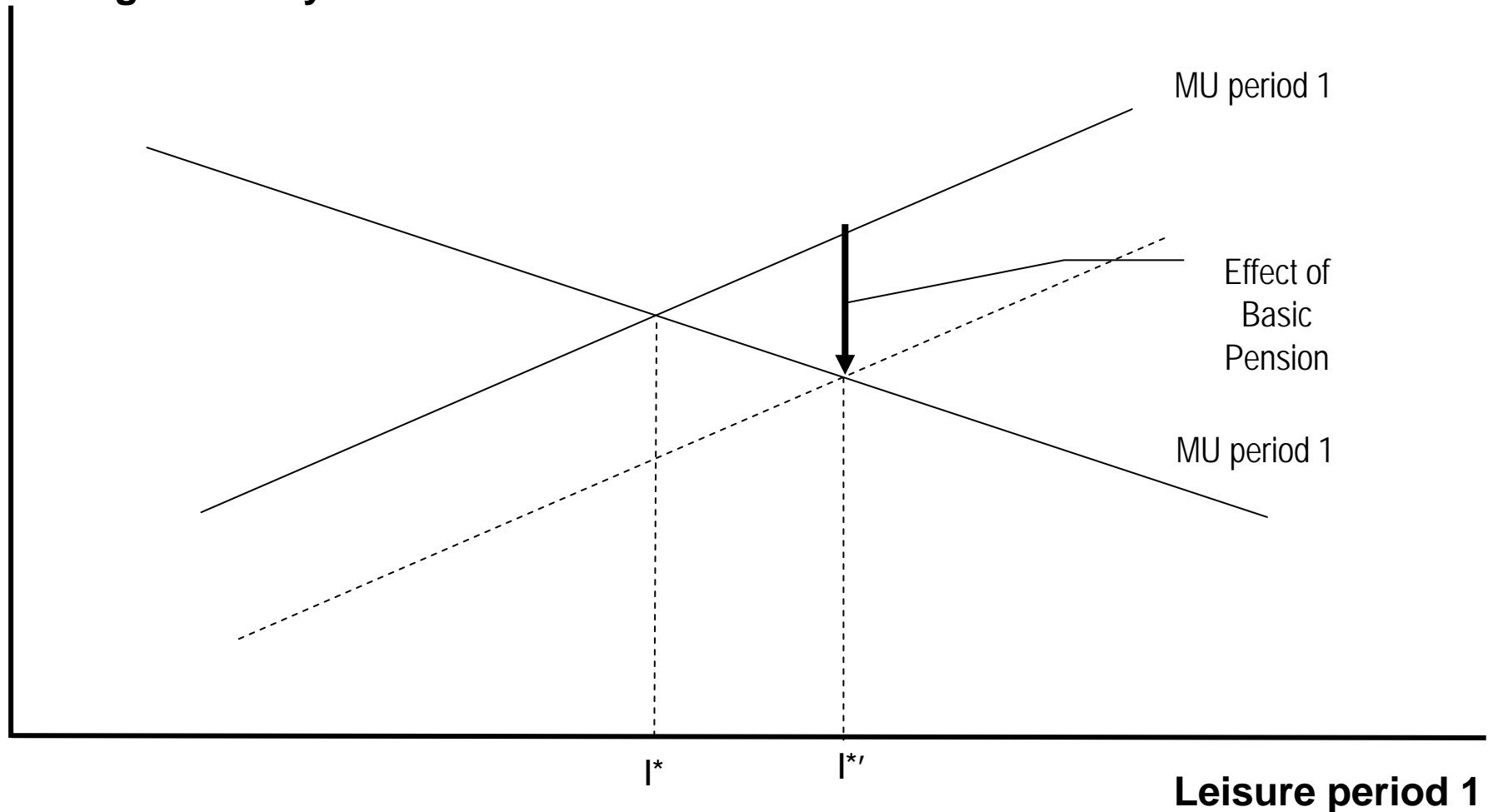
# Basic pension increases MC and reduces MB of delaying retirement

Change in utility

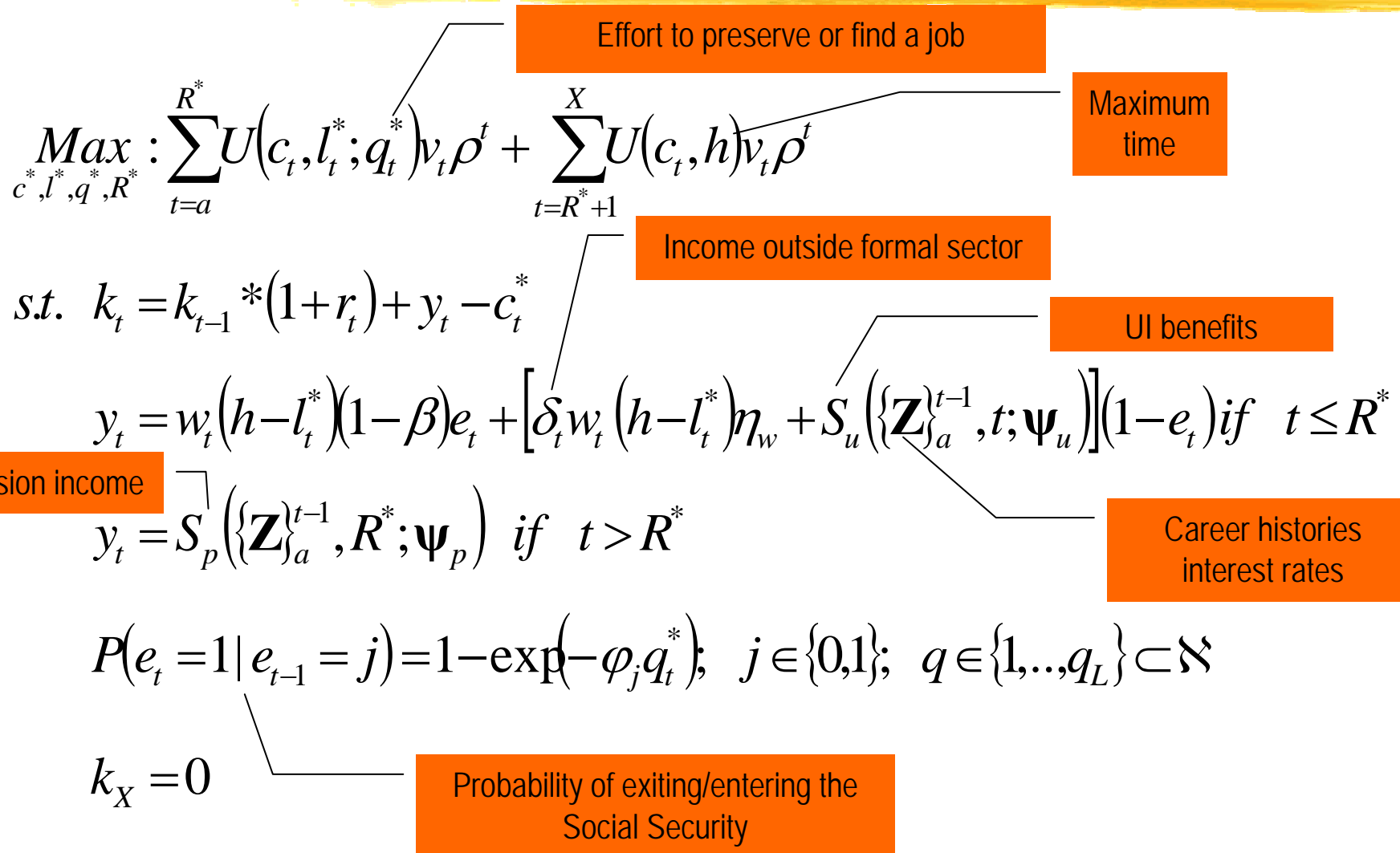


# Basic pension reduces MU in second period

Marginal utility of leisure



# Formalization of the model Behaviors





# Model can be solved recursively and parameters estimated to create a simulator

- Model is solved for each individual  $i$  in a sub-sample (or class  $C = \{\text{gender, generation, education}\}$ ).

$$\{q_t, s_t, E_t(R^*)\} = M_C(a_{t-1}, k_{t-1}, e_{t-1} \mid \{w, r\}_t^{R^*}; \theta), \quad \theta = \{\alpha, \lambda, \varphi_0, \varphi_1, \rho\}$$

- Parameters estimated based on pseudo-panel data to maximize the likelihood of the distribution of states of the cohort given the model (parameters from Brazil).
- A simulator is created that predicts trajectories given random shocks that affect exits from and entrance to the SS system :

$$\{q_t, s_t, E_t(R^*)\}_s = T(M(\cdot), \varepsilon_s); \quad s = 1, \dots, S$$

# Effects of social pensions on the marginal utility of delaying retirement

