Sustainable Social Security

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This discussion reflects my views and not necessarily those of the Federal Reserve Bank of Minneapolis or the Federal Reserve System

Big-Picture Overview

- Suggestions for interpretation
- Suggestions for quantitative work

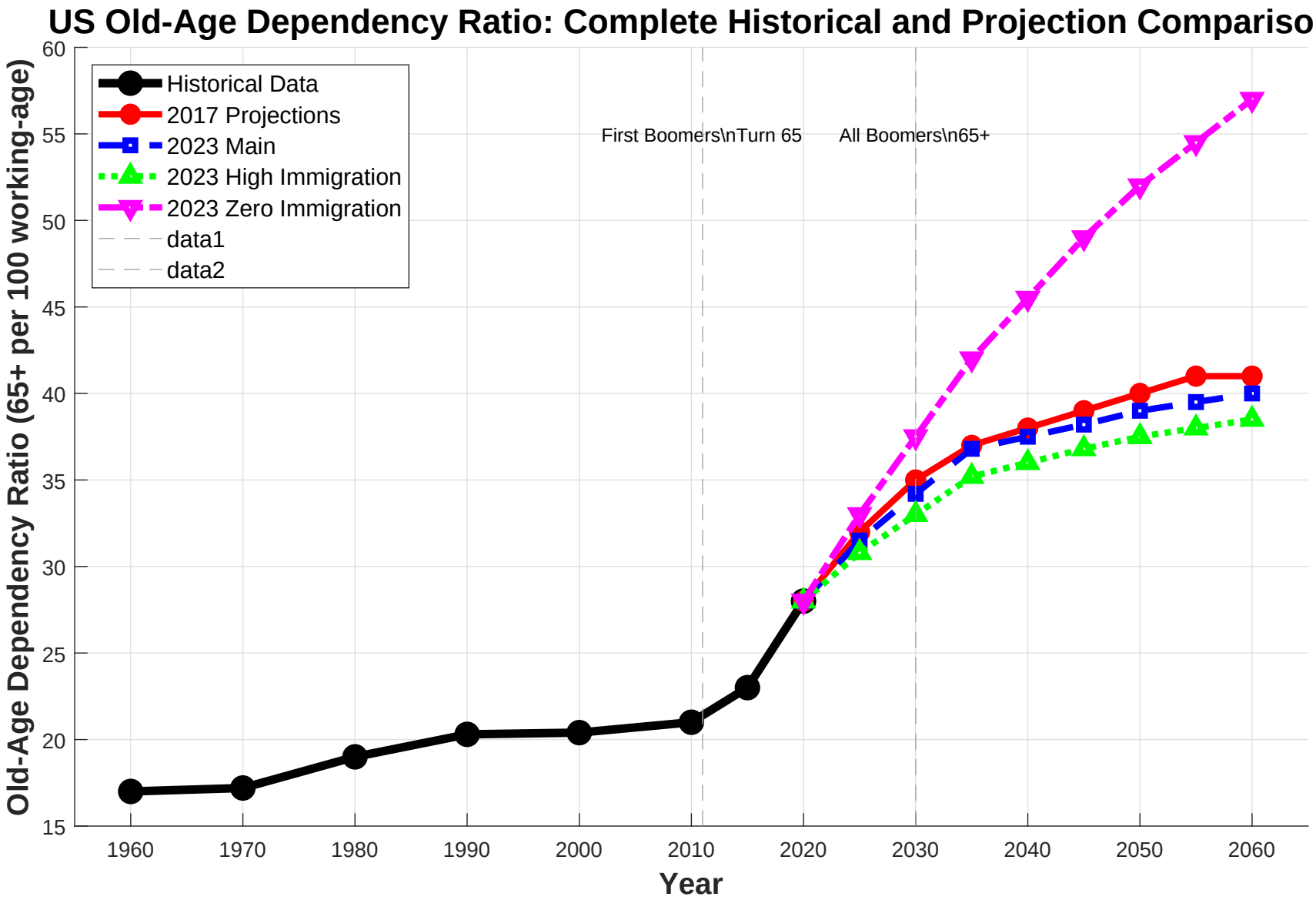
Key Question

- Pareto-optimal insurance across cohorts
- Main Risks:
  - Growth (abstracted in the current version, could be added)
  - Dependency ratio (source not so important):
    - ★ Mortality (used in the paper)
    - ★ Fertility
    - ★ Immigration

Limit to insurance

Participation constraint from future generations

- Participation constraint in the paper: "autarky"
- Details not so important, could be changed
- What matters: participation constraint tightens when there are a lot of old people


US Old-Age Dependency Ratio: Complete Historical and Projection Comparison
Old-Age Dependency Ratio (65+ per 100 working-age)
Year
Historical Data
2017 Projections
2023 Main
2023 High Immigration
2023 Zero Immigration
data1
data2
First Boomers\nTurn 65
All Boomers\n65+
60
55
50
45
40
35
30
25
20
15
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060

Some Lessons

- There is a lot of uncertainty (key input in the paper)
- The dependency ratio is going up
  - Might want to specify a Markov process consistent with this
  - Trickier: adjust theorems so that they work even when we do not go back to unconstrained social security

The Key Equation

$$u\left(w - p_t \frac{\phi_t}{n}\right) + \beta E_t \left[\phi_{t+1} u(\alpha + p_{t+1})\right] \geq \underline{\mathsf{U}} := u(w) + \beta u(\alpha) E_t \phi_{t+1}$$

Start from ϕ constant

$$u\left(w - p_t \frac{\phi}{n}\right) + \beta\phi u(\alpha + p_{t+1}) \geq \underline{U} := u(w) + \beta\phi u(\alpha)$$

Observation 1:

- The economy must be dynamically inefficient at autarky
- ... otherwise p_t recursion explodes

Start from ϕ constant

$$u\left(w - p_t \frac{\phi}{n}\right) + \beta\phi u(\alpha + p_{t+1}) \geq \underline{U} := u(w) + \beta\phi u(\alpha)$$

Observation 1:

- The economy must be dynamically inefficient at autarky
- ... otherwise p_t recursion explodes
- Not necessarily true with other $\underline{U}$

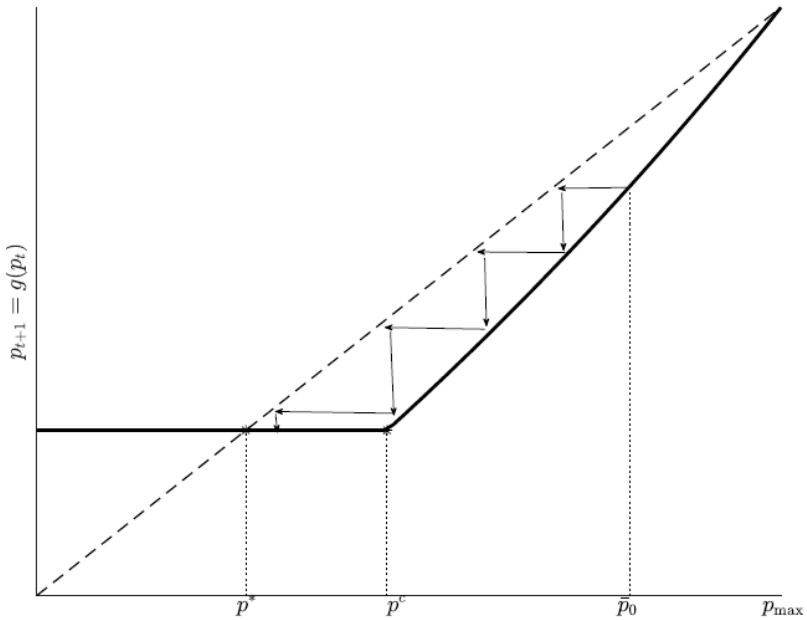
ϕ constant

$$u\left(w - p_t \frac{\phi}{n}\right) + \beta\phi u(\alpha + p_{t+1}) \geq \underline{U} := u(w) + \beta\phi u(\alpha)$$

Observation 2:

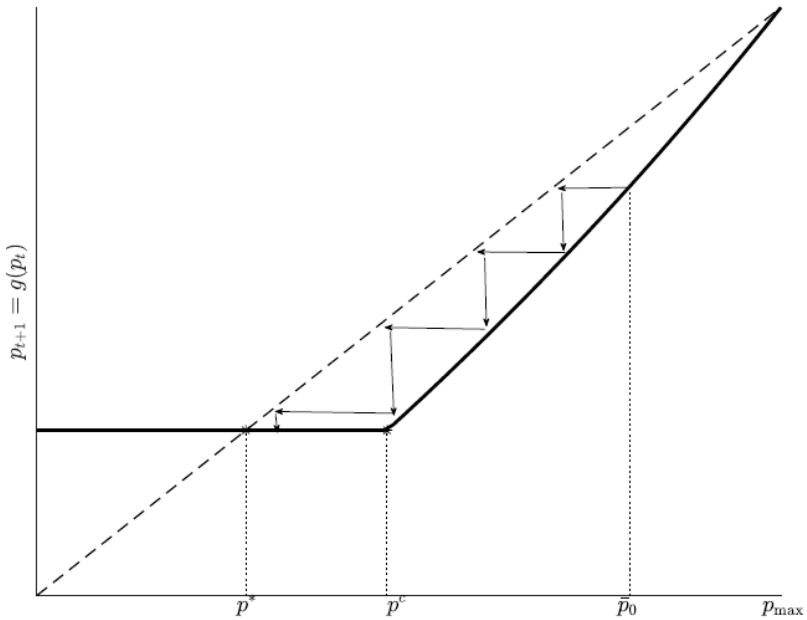
- The planner will choose a dynamically efficient allocation
- ... otherwise can increase all p_t's

Deterministic dynamics



- The economy must be dynamically efficient at a constant p^*
- Q. How can then pensions shrink over time?

Deterministic dynamics



- The economy must be dynamically efficient at a constant p^*
- Q. How can then pensions shrink over time?
- A. Gov't monopoly power: can only choose gov't allocation or autarky (no marginal change)
- So, deterministic dynamics are a force that pushes to floor (where PC does not bind)

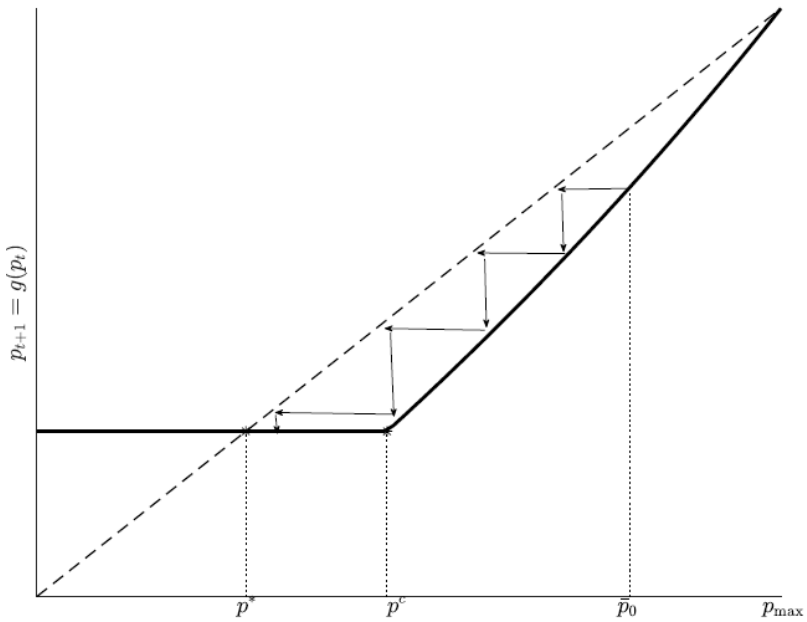
With randomness

- Bad shocks (high dependency ratio) can push up
- Anticipation of a bad shock pushes down current pension (to loosen future participation constraint)

A Big Beautiful Question

- What about government debt?
- As always, can reinterpret SS system as a combination of transfers and debt
- So, paper is as much about the dynamics of debt as it is about the dynamics of SS
- Should really do dynamics of generational accounting (Auerbach and Kotlikoff)

Reinterpretation



- Constant p^*: can be achieved by a combination of:
  - Constant debt level
  - Transfer from young to old
- Why do we still need the transfer?
  - At p^*, the interest rate is above the growth rate of the economy
  - Payments to the old would explode at market rates
  - Need some debt at market rate, and some pure transfers

Implications of a shock to the dependency ratio

- If the dependency ratio $\Uparrow$...
- Need to cut payments to the old...
- either default or inflation (to cut debt)
- Remaining debt is repaid gradually

From participation constraint to "moral hazard"

- Immigration: key policy controlling dependency ratio
- Generalize optimal mechanism to take this into account

Ramsey problems and MIT shocks do not mix well

- Ramsey problem does not pin down optimal allocation under measure 0 shocks
- No reason to assume that promise p holds after a shock to n
- Use a shock to ϕ for impulse responses