Social Security and Growth in a Divided Society

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Introduction

- Social Security Reform: Higher Savings and Higher Social Security Cover
- Are these two objectives compatible?
- A Model of Divided Society
- Limits to Redistribution

Savings and Social Security

Motives for saving:

1. Consumption-smoothing
2. Intertemporal substitution
3. Precautionary saving
4. Bequest motive
5. Saving for downpayment on lumpy investment
6. Love of wealth

Social Securty affects Intertemporal distribution of Resources and Saving Behaviour

Social Security Reform

- Social assistance grants
- Mandatory participation in a national social security system
- Additional mandatory participation in private occupational or individual retirement funds,
- Supplementary voluntary savings, permitting individuals to choose how they allocate income over their lifetime.
- A wage subsidy to offset the costs of social security

Literature

- Diamond (1965) - Social Security to Eliminate Dynamic Inefficiency
- Auerbach and Koflikoff (1987) Negative Impact on savings
- Kemnitz and Wigger (2000) if human capital is the engine of growth PAYG might be growth enhancing
- Coronado (2002) Chile's social security privatization increase savings by 5-10%
- Not Much on Inequality (Bertola et al 2006)

Social Security Design in a Divided Society

- Model Social Security in Dual Economy
- Capture the Main characteristics of the Reform
- Analyse the aggregate effects only
- Question: can we have redistribution and growth and the same time?

The Model

- Standard two periods OLG model with heterogeneous agents (Young - Old, Rich - Poor)
- Agents work in the first period and retire in the second
- Difference between Rich and Poor: Productivity (for past human capital accumulation)
- Social Security in period one or subsistence for the poor in period 2

Demographic Structure

Population

$$L_t = L_t^R + L_t^P = \beta L_t + (1-\beta)L_t$$

$$L_t = (1+n)L_{t-1}$$

Human Capital

$$H = H^R + H^P$$

$$H^R = \sigma H$$

$$H^P = (1-\sigma)H$$

Households

Rich maximise intertemporal utility (log for semplicity)

$$\max U = \ln c_{it}^{R} + \frac{1}{1+\rho} \ln c_{it+1}^{R}$$

$$c_{it} + \frac{c_{2t+1}}{1+r_{t+1}} = w_{it}^{R}$$

Poor are credit constraint (receive a social grant in the second period)

$$c_{it}^{P} = w_{1t}^{p}$$

$$c_{it+1}^{P} = \overline{c}$$

Households

Rich household: perfect consumption smoothing

$$c_{it}^{R} = w_{1t}^{R} - \frac{c_{it}^{R}}{(1+\rho)} = w_{1t}^{R}\frac{(1+\rho)}{(2+\rho)}$$

$$s_{it}^{R} = w_{it}^{R} - c_{it} = w_{it}^{R}\frac{1}{(2+\rho)}$$

Firms

$$\max K_t^{\alpha}(H^R L_t^R + H^P L_t^P)^{1-\alpha} - w_{1t}^R L_t^R - w_{1t}^P L_t^P - r_{t+1} K_t$$

FOC

$$r_{t+1} = \alpha K_t^{\alpha-1}/(H^R L_t^R + H^P L_t^P)^{\alpha-1} = \alpha k_t^{\alpha-1}$$

$$w_{1t}^R = (1-\alpha) H^R K_t^{\alpha}/(H^R L_t^R + H^P L_t^P)^{\alpha} = (1-\alpha) H^R k_t^{\alpha}$$

$$w_{1t}^P = (1-\alpha) H^P K_t^{\alpha}/(H^R L_t^R + H^P L_t^P)^{\alpha} = (1-\alpha) H^p k_t^{\alpha}$$

Equilibrium Capital Accumulation and Steady State

$$K_{t+1} = s_{it}^R L_t^R = H^R w_t \frac{1}{(2+\rho)} L_t^R = \frac{(1-\alpha)}{(2+\rho)} H^R k_t^\alpha L_t^R$$

$$k_{t+1} = \frac{(1-\alpha)}{(1+n)(2+\rho)(1+2\sigma\beta-\beta-\sigma)} \sigma\beta k_t^\alpha$$

Steady State

$$k^* = [\frac{(1-\alpha)}{(1+n)(2+\rho)(1+2\sigma\beta-\beta-\sigma)} \sigma\beta]^{1/(1-\alpha)}$$

Introducing Social Security

Rich

$$c_{1t}^{R} = (1-t)\, w_{1t}^{R} \frac{(1+\rho)}{(2+\rho)}$$

$$s_{1t}^{R} = (1-t)\, w_{1t}^{R} - c_{1t}^{R} = (1-t)\, w_{1t}^{R} \frac{1}{(2+\rho)}$$

Poor

$$c_{1t}^{p} = w_{1t}^{p}$$

$$c_{t+1}^{p} = (1+r_{t+1})\, \tau w_{t}^{r}$$

New Equlibrium

Aggregate Savings

$$S_t = \left(s_t^R + \tau w_t^R\right) L_t^R = \left(\left(1-\tau\right) H^R w_t \frac{1}{\left(2+\rho\right)} + \tau H^R w_t\right) L_t^R$$

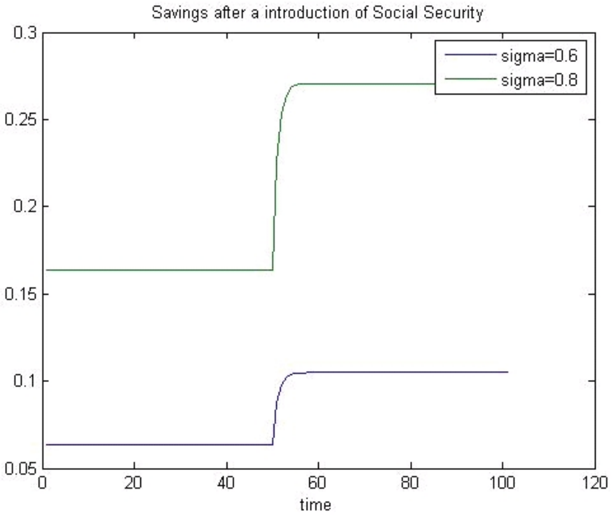
Per Capita Capital Accumulation

$$k_{t+1} = \frac{\left(1-\alpha\right)}{\left(1+n\right)\left(1+2\sigma\beta-\beta-\sigma\right)} \left(\frac{1+\left(1+\rho\right)\tau}{\left(2+\rho\right)}\right) \sigma\beta k_t^{\alpha}$$

Steady state

$$k^* = [\frac{\left(1-\alpha\right)}{\left(1+n\right)\left(1+2\sigma\beta-\beta-\sigma\right)} \left(\frac{1+\left(1+\rho\right)\tau}{\left(2+\rho\right)}\right) \sigma\beta]^{1/(1-\alpha)}$$

Graphic Analysis



Conclusions

- Proposed Social Security System: Forced Savings
- Fully funded system plus redistribution from young rich the same generation poor when old
- It will increase capital accumulation if no smoothing by the poor (and same rate of return)
- With Smoothing effect is unclear