Discussion of

"On the Welfare Effect of Social Security in a Model with Aggregate and Idiosyncratic Risk"

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2^{nd} Cologne Workshop on Macroeconomics
July 10, 2011

Objective of this Paper

- Construct a quantitative OLG model with
  - Idiosyncratic income and mortality risk
  - Aggregate wage and return risk
- ....to evaluate welfare consequences of simple social security reforms. Compare expected lifetime utility with
  - No social security
  - Small social security system

Elements of the Model

- Aggregate Technology

$$Y = \zeta(z) K^{\alpha} L^{1-\alpha}$$

  and stochastic depreciation $\delta(z)$.

- Aggregate wage and return risk

$$\begin{aligned} w &= (1-\alpha)\zeta(z)k^{\alpha} \\ r &= \alpha\zeta(z)k^{\alpha-1} - \delta(z) \end{aligned}$$

- Key: wage risk of young and return risk of the old imperfect correlated. Room for improved intergenerational risk sharing via social security.

Elements of the Model

- Uninsurable (by assumption) idiosyncratic risk
  - Mortality risk (and no annuity markets)
  - Labor income risk (and no private income insurance) $\eta' = \eta + \sigma(z)\nu$
- Social security provides full substitute for missing annuity markets and partial substitute for missing income insurance.
- Costs of social security: lower aggregate capital stock (crowding-out), lower return of social security (if economy is dynamically efficient).

What is the Question?

- Option 1: Quantitatively, intergenerational risk sharing alone does not provide a normative argument for social security (Krueger and Kubler, 2006). Can additional insurance against idiosyncratic risk push social security over the hump?

- Option 2 (more interesting?): Interaction between idiosyncratic and aggregate risk provides stronger rationale for social security than adding the two isolated effects. Where does interaction come from?

  - Idiosyncratic earnings risk higher in recessions (Storesletten et al.).

What They Stick In?

- Technology shocks $\zeta(z) \in \{0.98, 1.02\}$ to match volatility of TFP.
- Depreciation shocks $\delta(z) \in \{0.2, -0.12\}$ to match volatility of r.
- Countercyclical idiosyncratic shocks $\sigma(z) \in \{0.13, 0.07\}$, perfectly correlated with the $\zeta(z)$ shock.
- Mortality risk from life tables.
- $\tau = 2\%$, benefits adjust to guarantee budget balance.

Introduction of Social Security: What They Get Out?

- Saving for retirement falls.
- Portfolio shares shift towards risky capital (social security is similar -but not identical- to the bond). Equity premium falls since demand for bonds falls by more than demand for risky capital.
- Still, capital falls (a lot). So does welfare. Magnitude depends a lot on the presence and cyclicality of idiosyncratic risk.

Introduction of Social Security: What They Get Out?

	Only Agg. Shocks	Idio. Shocks $\sigma(z) = \sigma$	Idio. Shocks $\sigma(z)$
K/Y	1.64	2.69	2.88
r	16.7%	8.58%	7.73%
$E(r - r_f)$	4.05%	5.13%	5.90%
$\Delta K/K$	-2.29%	-12.82%	-15.63%
$\Delta E(r - r_f)$	-0.02%	-0.21%	-0.24%
CEV	-3.18%	-3.74%	-3.25%

Comments I: Modeling Choices

- Social security is really social insecurity here
  - Not too much insurance against aggregate fluctuations since benefits tied to aggregate wages
  - No insurance against idiosyncratic earnings risk -in fact, SS makes permanent shocks even more permanent. At least it provides insurance against mortality risk.
- Tying benefits to past earnings makes sense to reduce labor supply distortions $\Rightarrow$ probably need to endogenize labor supply (what is elasticity?).

Comments II: Quantitative Choices

- Calibrate model with (large) social security to observed return data (since observed data come from economy with social security).
  - Matters since that lowers returns to capital in economy *without* social security towards the potential return on social security $g+n$.
  - With that calibration, is the economy dynamically efficient? If not, of course social security might be good.
- If you want to compare across economies, should re-calibrate.
- Cyclical properties of c, i, given the large shocks to $\delta(z)$.

Comments III: Computational Choices

- Model is solved with standard Krusell-Smith algorithm. Does it have approximate aggregation?

- Given the shock process and the OLG structure, in model without idiosyncratic risk, Kubler and I found that one needs age distribution of asset holdings for good approximation.

- Not a problem here? Why not? Want to see the appropriate statistics.

Conclusion

- Is there a normative role for introducing social security?
- Intergenerational risk sharing? Not so much?
- Intragenerational risk sharing? Perhaps, but good design matters. Insurance vs. labor supply distortions.
- Putting the two together might strengthen the insurance role. Given CCV, how should taxes/benefits vary over the cycle.