Discussion of

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

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2nd 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

\[ w = (1-\alpha)\zeta(z)k^{\alpha} \]
\[ r = \alpha\zeta(z)k^{\alpha-1} - \delta(z) \]

- 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?

<table>
<thead>
<tr>
<th></th>
<th>Only Agg. Shocks</th>
<th>Idio. Shocks $\sigma(z) = \sigma$</th>
<th>Idio. Shocks $\sigma(z)$</th>
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<tr>
<td>$K/Y$</td>
<td>1.64</td>
<td>2.69</td>
<td>2.88</td>
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<tr>
<td>$r$</td>
<td>16.7%</td>
<td>8.58%</td>
<td>7.73%</td>
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<td>$E(r - r_f)$</td>
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<td>$\Delta K/K$</td>
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<tr>
<td>$\Delta E(r - r_f)$</td>
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<td>$-0.21%$</td>
<td>$-0.24%$</td>
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<td>$-3.74%$</td>
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</table>
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 ⇒ probably need to endogenize labor supply (what is elasticity?).
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.