Discussion of “A Model of Secular Stagnation: Theory and Quantitative Evaluation” by Gauti Eggertsson, Neil Mehrotra and Jacob Robbins

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This paper

1. Presents the first theoretically consistent model of *secular stagnation*
   - $Y < Y^*$ because $r = i - \pi > r^*$ in a **steady state**
   - Overcomes significant theoretical challenges from previous literature
   - Eggertsson and Mehrotra (2014)

2. Explores the quantitative importance of factors behind $r^*$ decline since the 1970s
   - Major role of fertility, mortality, and productivity [-2% each]
   - More minor role for markup rise and $P^I$ decline [-0.5% each]
   - Counterbalancing: govtt debt and deeper credit markets [+2.5%]
   - Overall, baseline OLG model can account for entire -4% decline
My assessment of the paper

- This is already a very influential paper
  - Quantification will only increase its already large impact

- My discussion:
  1. Explain mechanisms in asset supply/demand framework
  2. Suggest one route to discipline magnitudes empirically
Key theoretical innovations

- Before EM, 2 significant challenges to modeling secular stagnation.
- Want to achieve, in a *steady state*,

\[
i - \pi > r^* \quad \text{and} \quad x = \frac{Y - Y^*}{Y^*} < 0
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1. At the ZLB, \( i = 0 \), and if on target \( \pi = \pi^* > 0 \)
   - **Standard models**: dynamic efficiency \( r^* > g > 0 \)
   - **EM**: OLG model \( \Rightarrow \) dynamic inefficiency, \( r^* < -\pi^* \) possible
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2. In NK model, \( \pi = \frac{\kappa}{1-\beta} x \): long run Phillips curve near vertical
   ▶ **Standard models**: \( \pi \) diverges in a secular stagnation
   ▶ **EM**: Downward nominal wage rigidity \( \Rightarrow \)

\[ \pi \simeq - (1 - \gamma) + (1 - \gamma) \frac{1 - \alpha}{\alpha} x \]

\( \pi \) is bounded in secular stagnation, consistent with Japan experience
Quantitative findings

- Quantitative model: 56 period OLG model, where key inputs are
  - Fertility: number of children per household $\Gamma$
    - changes ss pop growth
  - Aging: shifting probabilities of survival $\{s_j\}$
    - changes life expectancy

- Main quantitative finding: can get 4% decline in $r^*$
  1. **Productivity**: almost same as in standard rep agent model
     \[ \Delta r^* \approx \frac{1}{\sigma} \Delta g^a \]
     with $\sigma = 0.75$ and $\Delta g^a = -1.35\%$, gets us -1.8%
  2. **Other factors** can all be understood in long run asset supply/demand framework (complementary to paper’s good market approach)
Equilibrium in long-run capital markets: \( A = B + K \)
Asset supply and demand

- **Fertility, mortality** $\Rightarrow$ savings $\uparrow$, $r^* \downarrow$

\[ A = B + K \]

1970 Asset Supply

2015 Asset Demand

$B_{1970}$
Asset supply and demand

- **Gov debt** $B \uparrow$ mitigates this. **Borrowing constraint** is equivalent.

\[ A = B + K \]

\[ B_{2015} \]

\[ 2015 \text{ Asset Supply} \]

\[ 2015 \text{ Asset Demand} \]
Asset supply and demand

- **Markups** ↑ contracts asset supply (will come back to this)
Asset supply and demand

- **Price of investment** ↓ also provided capital-labor elasticity $\sigma < 1$

\[ A = B + K \]

2015 Asset Supply

2015 Asset Demand

$B_{2015}$

$r^*$
Using elasticities to understand magnitudes

- Can cross-validate the model using first order approximation:

\[ \Delta r^* = \frac{\frac{\Delta A}{A}}{\epsilon_D - \epsilon_S} \]

where \( \frac{\Delta A}{A} \) is % change in asset demand-to-GDP holding \( r \) constant, and \( \epsilon_D (\epsilon_S) \) is semielasticity of asset demand (supply) to \( r \)

- In paper, inferring from \( B \) change, \( \epsilon_D - \epsilon_S \approx \frac{68\%}{2.11\%} \approx 33 \)
  - Similar to semielasticities from typical Bewley-Aiyagari models

- Since get \( \Delta r^* = -3.6\% \) from demographics, implied \( \frac{\Delta A}{A} = 118\% \)

- Is this plausible?
SCF net worth by age in 2013

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SCF net worth by age in 1989

![Graph showing SCF net worth by age in 1989 with different lines for 2013 Net worth to GDP, 2013 Population shares, and 1989 Population shares.](image)
Decomposing effects

- Simple shift-share analysis only predicts 2.5% change in $\frac{A}{Y}$, but
  - Does not take account of population shifts from 75 to 89
  - Does not take account changes in life-cycle profile of assets
  - Here: more retirement saving, more bequests per children, ...

- Suggestion: decompose the effects in model into these sources and map to data profiles when possible
Other comments

1. Paper shows *large* steady state output gap $x = -15\%$ with standard parameter values
   - In ‘Inequality and aggregate demand’, we show that large $r$ to $Y$ conversion is highly mitigated with responsive fiscal policy ($B$ and $G$)

2. Does increase in markups reduce $r^*$?
   - We show that if markup profits are capitalized, then a rise in markups that leads to a decline in labor share always increases $r^*$
     - asset supply ↑, not ↓
   - Key questions: do markups ↑ also increase asset values? Is risk-free rate appropriate for them?
Conclusion

- A key paper in the literature just got even better with quantitative analysis
- Includes most of the relevant forces
  - Rightly emphasises that they do not all go in same direction
  - Role of demographics very interesting, deserves more investigation
- Going forward for the literature: need more on understanding
  - factors that shift savings at constant $r$
  - as well as elasticities of aggregate savings wrt $r$