Discussion of “A Model of Secular Stagnation: Theory and Quantitative Evaluation”

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“Do Changes in the Economic Landscape Require a New Policy Framework?”

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Introduction

Central tenet of Secular Stagnation hypothesis (Summers, 2014):

Low (possibly negative) equilibrium real interest rate
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- Data: Negative measured real interest rates

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- Need a model to construct equilibrium real interest rate
  
  ▶ And think about “real interest rate gap”

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EMR provide a model of Secular Stagnation

A new framework for policy analysis
Outline of Discussion

1. Brief summary and key findings

2. Decline of natural rate

3. Policy implications
Summary

First part: Three-period OLG model with borrowing constraint

\[
\max_{C_t^y, C_{t+1}^m, C_{t+2}^o} E_t (\ln C_t^y + \beta \ln C_{t+1}^m + \beta^2 \ln C_{t+2}^o)
\]

subject to

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\begin{align*}
C_t^y &= B_t^y = D_t / (1 + r_t) \\
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**Population growth:** \(N_t = (1 + g_t) N_{t-1} \Rightarrow (1 + g_t) B_t^y = -B_t^m\)
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- Population growth: \(N_t = (1 + g_t)N_{t-1} \Rightarrow (1 + g_t)B_t^y = -B_t^m\)

- Productivity growth: \(Y_t = A_t \bar{Y} \Rightarrow D_t = A_{t+1} \bar{D}\)
Summary

- **First part:** Three-period OLG model with borrowing constraint

- Get expression for equilibrium real interest rate

\[
rt = \frac{(1 + \beta)(1 + gt)(1 + xt)\tilde{D}_t + (1 + x_{t+1})\tilde{Y}_t^o}{\beta(\tilde{Y}_t^m - \tilde{D}_{t-1})} - 1
\]

where \( x_t \equiv A_t / A_{t-1} - 1 \)

- Three factors that can push down real interest rate
  1. \( g_t \): Demographics (Carvalho, Ferrero and Nechio, 2016)
  2. \( x_t \): Productivity (Gordon, 2015)
  3. \( \tilde{D}_t \): Deleveraging (Eggertsson and Krugman, 2012)
Summary

- **First part:** Three-period OLG model with borrowing constraint

- Temporary deleveraging shock \(\Rightarrow\) Permanently low real rate
Summary

- **First part:** Three-period OLG model with borrowing constraint

- **Nice narrative:**
  - Real rate already on decline due to trends in demographics and productivity
  - Becomes permanently negative because of crisis (deleveraging)
Summary

- **Second part**: Quantitative life-cycle model with
  - Age-specific income profile
  - Mortality risk
  - Bequest motive
  - Capital and CES production
  - Exogenous process for relative price of capital
  - Distortionary labor taxes

Calibrated to US data in 2015: Two options
  - No output gap (Stock and Watson, 2012)
  - Large output gap (Hall, 2016)
Summary

Second part: Quantitative life-cycle model

Legitimate to consider 2015 observed real rate as natural real rate but

- No output gap \(\implies\) Observed real interest rate = Natural rate
- Need additional assumption economy is in steady state
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- Results robust to alternative measures of output gap \(\in (-15\%, 0)\)?
  - Interesting that no deflation arises with large output gap
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- Paradox of wage flexibility (Galí and Monacelli, 2016)
  - Need more flexibility to generate more deflation and larger output gap
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Level

- Very low level of $r^*$ throughout sample (1970-2016)
  - Compare with estimates from Holston, Laubach and Williams (2016)

Figure 7: Transition path of the natural rate of interest
Level

- Very low level of $r^*$ throughout sample (1970-2016)
  - Large real interest rate gap since early 1980s?

![Ex ante and equilibrium real interest rates, 1962–2008](chart_image)

Sources: Authors' calculations based on data from Haver Analytics and the U.S. Bureau of Labor Statistics.

Source: Justiniano and Primiceri (2010)
What Explains a Falling $r^*$?

Table 6: Decomposition of decline in natural rate of interest: 1970-2015

<table>
<thead>
<tr>
<th>Forcing variable</th>
<th>$\Delta$ in $r$</th>
<th>% of total $\Delta$</th>
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<td>Total interest rate change</td>
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- Major role of demographics and productivity growth
- Government debt only factor that avoided much lower level
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- Some factors “disappear” from discussion
  - How would have $r^*$ looked like without crisis?
  - Role of increased inequality?
  - Would be interesting to see counterfactuals with major driving forces
Demographics and the Natural Real Rate

- Carvalho, Ferrero and Nechio (2016) find similar role for demographics
  - Larger relative contribution of increase in life expectancy
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- Main difference: In EMR, fixed lifetime horizon but decrease in mortality risk
  - Cannot live more than 81 years

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  - Increased over time and projected to keep increasing
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- Also, empirical consumption profile much less hump-shaped than in EFR
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- Bubbles and financial stability
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- Implication: Expansionary fiscal policy
  - Debt/GDP from 118% to 215% raises $r^*$ from -1.47% to +1%
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- Other policies options are challenging
  - Hard to increase fertility rates and productivity growth
  - Probably don’t want to increase mortality...
Policy Implications

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  - Bubbles and financial stability: Better raise $r^*$ than increase $\pi^*$

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- Implication: Expansionary fiscal policy
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  - But risk premia likely to rise

- Similar conclusions in Carvalho, Ferrero and Nechio (2016)
  - Additional option: Raise retirement age
  - But need increase well beyond currently contemplated reforms (OECD, 2010)
Conclusions

- Very nice paper, definitely useful to think about current policy challenges

- Decline in natural real interest rate product of
  - Financial crisis
  - Interacting with long-term trends

- May still require some fine tuning on quantitative part

- If Secular Stagnation is relevant scenario
  - Limited options for monetary policy?
  - Shift to more activist fiscal policy?