Discussion of "'Demographic Trends and the Real Interest Rate"' by N. Lisack, R. Sajedi, G. Thwaites

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The views are those of the author and do not necessarily represent the views of the Bank of Italy

Overview

- What is behind the fall in real interest rates since the 1980s?
- Topic of paramount importance for central banks: low real rates imply higher probability of hitting effective lower bound during downturns
- Explanations put forward (Ferrero-Neri (2017)):
  - "Real/structural" view: adverse demographics developments, lower pace of technological innovation have led to an increasing propensity to save and decreasing propensity to invest
  - "Financial/cyclical" view: Combination of deregulation in the financial sector, overly optimistic expectations (credit expansion) with need to deleverage after the financial crisis depressed real rates
- This paper: **demographic factors**
  - Long term trends in fertility and life-expectancy in developed economies
  - Slow moving factors: their effects (if any) will last for some time

This paper

- Use an OLG model to quantify the impact of global demographic trends on real interest rates, house prices and household debt

- Related works:
  - Gagnon et al. (2016): OLG model with demographic trends calibrated on US data
  - Carvalho et al. (2016): life-cycle model with demographic trends calibrated on developed economies

- **Contribution of this work**: add **housing** and consider also implication for house prices
  - Important to include since housing is a sizeable component of wealth
  - Accumulation of housing wealth can interact with real interest rate dynamics

Overview of comments

- Work is preliminary
- However main idea is there and it is compelling

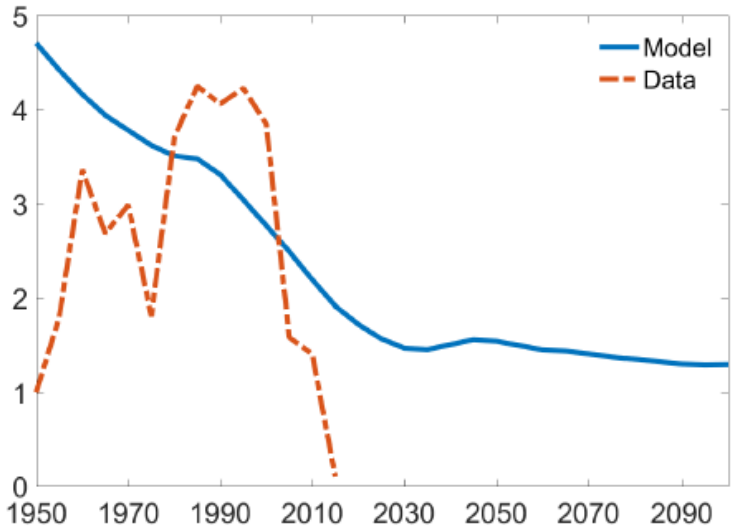
Main comments:

- Effect of housing in the model
- Calibration

and some minor comments.

Model results

(a) World annual real interest rate (%)

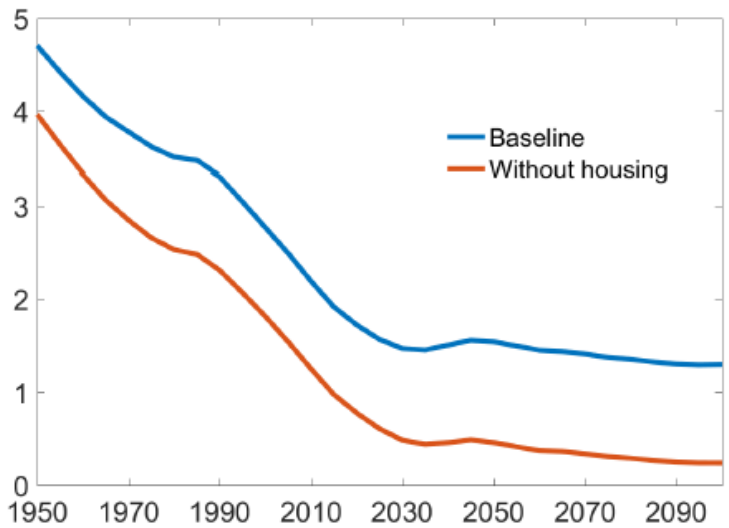


- Model accounts for around half of the decrease in real rates between 1980 and 2015
- Longer life expectancy and slower population growth (old people make up larger share of population) increase aggregate savings, depressing interest rates
- Plateauing in both life-expectancy and old-age dependency ratio imply that real rates will stabilize in the long term, but at low levels.

Comments: effect of housing

- Housing provides an additional asset for transferring wealth over time
- However when housing is absent, very small effect on time variation in real rates (between 1980 and 2100, 10bps lower than baseline)

(c) Annual interest rate



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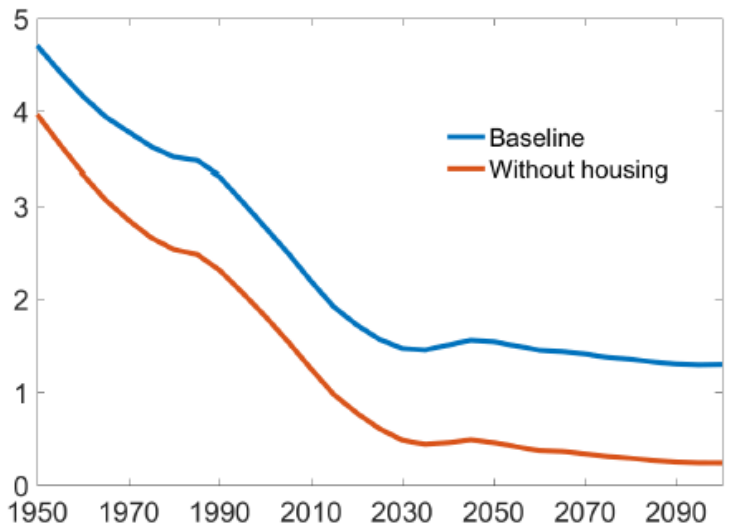

- Likely cause: housing is not very different from asset savings in the model

Comment: preference for housing calibration

HH maximize the following utility function:

$$\max_{\{c_{\tau,t}, a_{\tau,t}, h_{\tau,t}\}_{\tau=1}^{T}} \quad \sum_{\tau=1}^{T} \beta_\tau \tilde{\psi}_{\tau,t} \left(\ln c_{\tau,t} + \theta_\tau \ln h_{\tau,t}\right) + \beta_T \tilde{\psi}_{T,t} \phi \ln a_{T,t}$$

where θ_τ sets the relative preference for housing.

Authors allow to change units of housing only at some pre-set "move-date" (done to match housing wealth over the life cycle).

Result FOC of the housing choice is:

$$\sum_{j=\tau}^{\tau'-1} \beta_j \tilde{\psi}_{j,t} \theta_j h_{\tau,t}^{-1} = p_{t+\tau-1}^{h} \lambda_{\tau,t} - p_{t+\tau'-1}^{h} \lambda_{\tau',t} \qquad \forall \tau \in \text{“move dates”} \quad (4)$$

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Is this an inconsequential calibration? Important for determining evolution of house prices and also real interest rate.

Comment: mortality calibration

- **Exogenous drivers** of the model are population growth and (cohort-specific) **survival probabilities** based on a panel of countries:
  - Austria, Belgium, Denmark, France, Germany, Ireland, Italy, Netherlands, Portugal, Spain, Switzerland, UK
  - Canada, US
  - Australia, Japan, New Zealand
- Survival probabilites are based on evolution of cohort size. In particular, if size does not decrease between the ages of 20 and 64, zero probability of death before retirement.
- **Effect of migration on cohort size does not seem to be taken into account**
- Migration movements between selected countries probably wash-out in the aggregate, but these countries experience also **large inflows from other countries** ▸ Data

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- Migration movements between selected countries probably wash-out in the aggregate, but these countries experience also **large inflows from other countries** ▸ Data
- **Is migration having the effect of over-estimating the survival probabilities?**
- Not trivial issue, since migration and mortality could have different long term trends. Probably estimates taken from life-tables should provide more robust survival probabilities (as for instance done in Gagnon et al. (2016))

Some additional comments

- Demographic trends are taken from set of selected countries, while life-cycle profiles are calibrated on US data (using Survey of Consumer Finance) and aggregate variables on a subset of selected countries (Australia, Canada, France, Germany, Italy, Japan, UK, US).
  - Why not focus only on US?

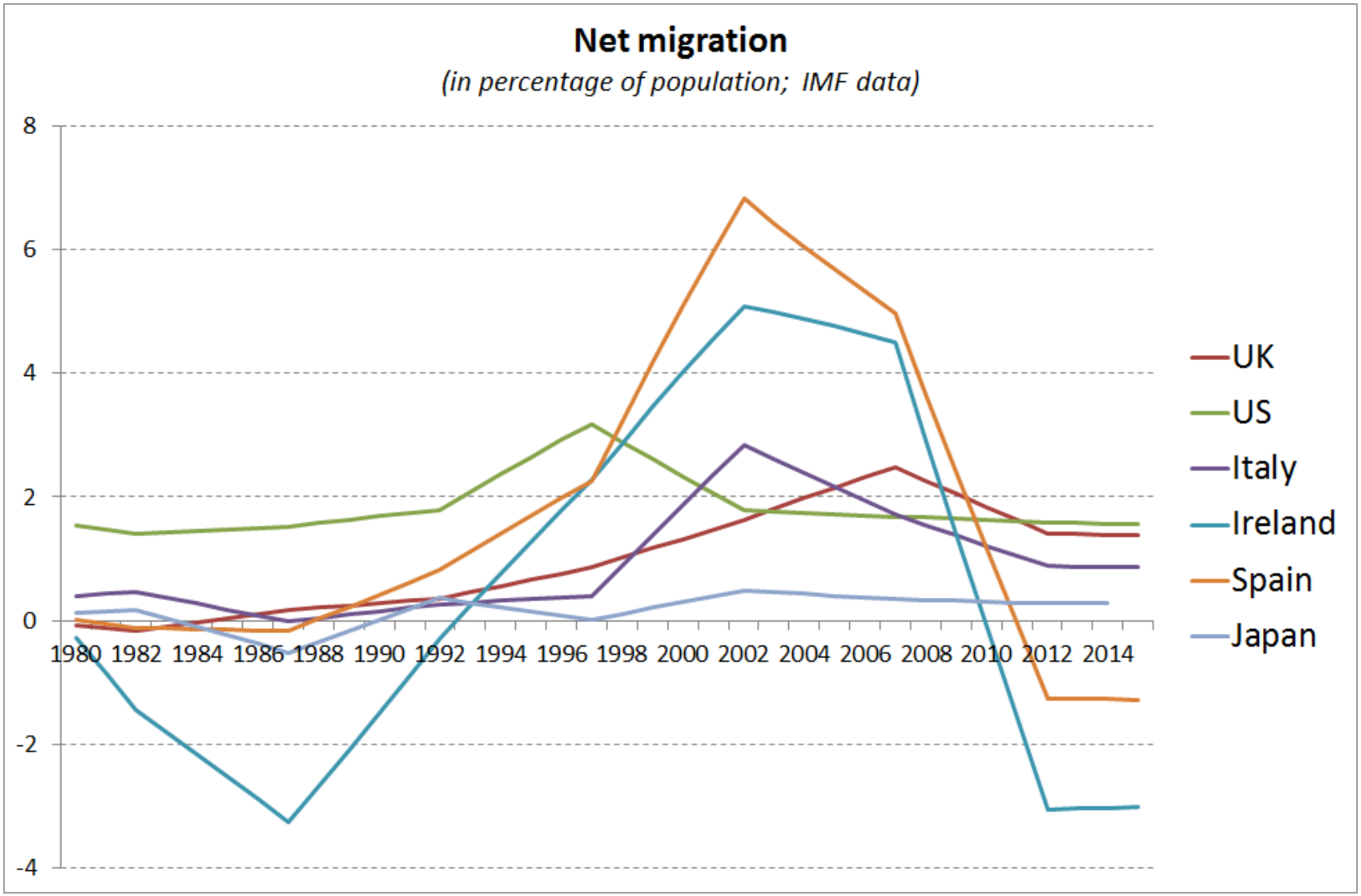
- **Small open economy**: take real interest rate from baseline simulation but calibrate demographic of a given country
  - Probably good approximation for some countries in the dataset, but arguably not very good for United States, Germany...
  - But clearly baseline model misses heterogeneity in demographics across countries, so question worth asking. A separate companion work? (See also new work by Carvalho et al (2017))

- **Monopoly power**: allow monopolistic competition and study how different redistribution of profits among agents alter baseline results.
  - Monopoly markups could be varying over the long time horizon of the model
  - Perfect competition is anyway able to let demographic trends have a role, without having to worry about how monopoliy profits are shared among the agents.

Conclusions

- Relevant work: demographic trends have important policy implications. But are they here to stay?
- Probably would focus more on the novel element (housing) and on calibration in order to make it more robust
- Great work, looking forward to see how it evolves!

Migration data



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