Discussion of

"Estimating HANK for Central Banks"

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XXV Annual Conference of the Central Bank of Chile:
"Heterogeneity in Macroeconomics: Implications for Monetary Policy"

November 21-22, 2022

*The views expressed are mine and do not necessarily reflect the position of the CBC or its Board members. I thank Ítalo González for his help with the exercises shown.

Summary of the paper

- Paper applies an approach for estimating a HANK model, matching both macro time series and micro moments, and analyzes its fit and forecasting accuracy.
- Following their previous work (Cai et al., 2021; Acharya et al., 2020), authors use sequential Monte Carlo to make estimation feasible through parallelization.
- **Novelties:** frontier two-asset HANK including Smets-Wouters features (as in Bayer et al., 2022); evaluation of fit and forecasting accuracy of HANK vs. RANK/DSGE-VAR.
- **Main findings:** macro data and micro moments seem to complement each other in terms of estimation precision; estimated HANK produces reasonable forecasts.

General comments

- **Yet another important contribution!**
- Opening the way for using HANK models for practical macroeconomic forecasting and policy analysis at central banks.
  - Need estimated models matching relevant moments to produce satisfactory forecasts and forecast-based policy prescriptions.

Rest of the discussion

1. Remarks on the importance of heterogeneity in DSGE models used for inflation forecasting and monetary policy analysis

2. Specific comments

Relevance of heterogeneity in DSGE models

- Prototypical RANK-type DSGE models (Christiano et al., 2005; Smets & Wouters, 2007; Del Negro et al., 2013) satisfy **Ricardian equivalence proposition**:
  - Forward-looking rational agents internalize government budget constraint.
  - Among other things, deficit-financed increases in government transfers do not affect equilibrium allocation of consumption, output, inflation, etc.
- Agent heterogeneity breaks Ricardian equivalence (other ways: risky government debt, distortionary taxes, imperfect rationality).
  - TANK (Campbell & Mankiw, 1989; Galí et al., 2007): two-agent models with fraction of hand-to-mouth households that consume entire disposable income.
  - HANK (Kaplan et al., 2018): uninsurable idiosyncratic income shocks generate wealth distribution and different marginal propensities to consume.
- Impact of fiscal shocks on output, inflation and monetary policy response can be **very different in models with heterogeneity.**

Fiscal transfers during 2020-2021: US and Chile

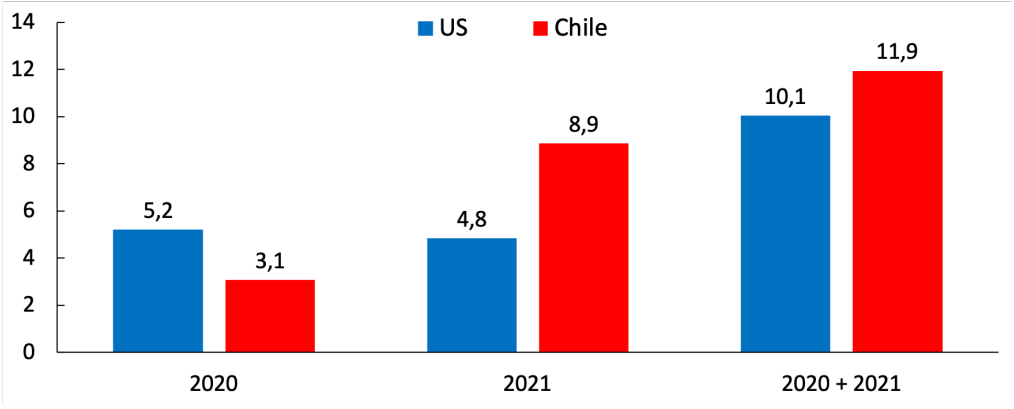

Figure: **Government transfers as % of nominal GDP, deviations from 2013-2019 average**. Federal gov. social benefits to persons (US) & Central gov. subsidies and donations (Chile).

Effects of fiscal transfers in TANK model for Chile[1] and its RANK version

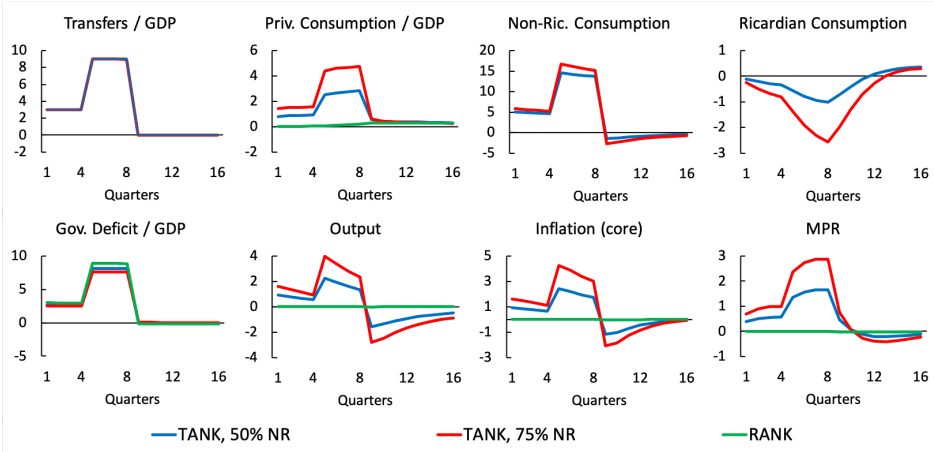

Figure: **Impulse responses to gov. transfer shocks, XMAS model.** Transfers, priv. consumption, gov. deficit: % of nominal GDP; Output, NR & R consumption: Δ% from trend; Inflation, MPR: annualized Δ% from mean.

[1] García et al. (2019): "XMAS: An extended model for analysis and simulations," CBC Working Paper 833.

Would the assessment of inflation drivers change in estimated HANK?

- Del Negro et al. (2022)[2] analyzed the **drivers of US inflation based on the NY Fed DSGE model**, a RANK. Main findings:
  - "The recent rise in inflation is mostly accounted for by a large cost-push shock." $\rightarrow$ Demand?
  - "This shock is expected to fade gradually over the course of 2022." $\rightarrow$ Persistence?
- **Caveats recognized:**
  - "In our model, the large fiscal transfers enacted during the pandemic have no direct effect on consumption because its representative household anticipates the increase in taxes."
  - "This would not be the case in a model with heterogenous agents (...). In such a model, the boost to consumption demand from fiscal stimulus would be larger."

[2] "Drivers of Inflation: The New York Fed DSGE Model's Perspective," Liberty Street Economics, March 1.

Inflation decomposition from TANK model for Chile and its RANK version

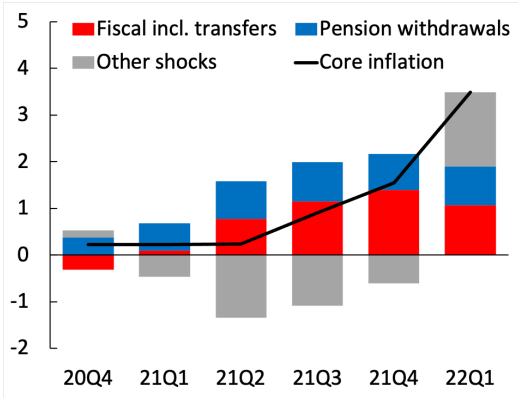

Figure: Annual core CPI inflation (Δ% from mean), XMAS model: **TANK, 50% NR**.

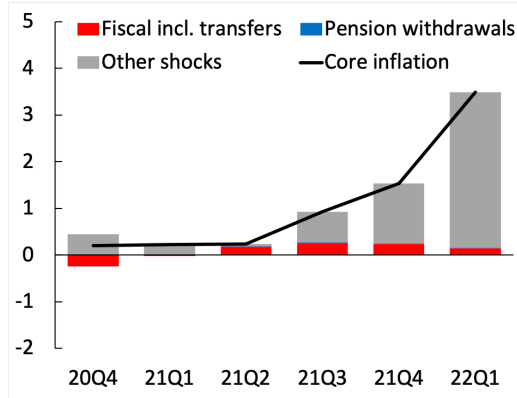

Figure: Annual core CPI inflation (Δ% from mean), XMAS model: **RANK version**.

Specific comments

1. **Would the assessment of US inflation drivers change** in estimated HANK? It would be interesting to compare decomposition from estimated HANK with RANK counterpart.
2. **What do we gain by HANK over simple TANK?** Debortoli & Galí (2017): TANK captures reasonably well the implications of a baseline HANK model for aggregate shocks. It would be interesting to compare HANK's fit and forecasting accuracy with TANK.
3. **Is it possible to relax the assumption that there is no household debt** in HANK? Intrinsic contradiction with actual household wealth distributions.
4. **Why no habit persistence** in estimated HANK?

Final remarks

- **Congratulations to the authors** for a project that will surely become a key reference in the literature on HANK models, especially for central bank practitioners.
- Thank you for your attention!