

*Heterogeneity and Aggregate Fluctuations: Insights from TANK models*

*Authors: Davide Debortoli, Jordi Galí*

*Discussants: Matthew Rognlie, Johannes Wieland*

Jonathan Parker opened the discussion. He commented that it is crucial to understand whether differences across households' consumption choices are driven by heterogeneity in preferences or liquidity. The HANK model can be thought to have both dimensions. However, to an extreme, the TANK model can be interpreted as having only the former kind of heterogeneity because these models feature two types of agents: impatient and patient households. He also pointed out that, according to the consumption literature, heterogeneity in preferences is crucial to understanding consumers' behavior. This could explain why TANK models are a good approximation of the current version of HANK models for many but not all uses.

Deborah Lucas spoke next. She underlined that the model does not include capital for tractability purposes; however, capital seems like an essential force in these models, as it was for the earlier versions of the heterogeneous consumption-based asset pricing models. Indeed, the implied interest rate is sensitive to the ability of agents to smooth consumption across periods by trading capital assets. Given that this mechanism is shut down in the presented paper, the model's predictions could be sensitive to this assumption. For example, she added, the agents' desire to self-insure lowers the interest rate, which should lead to an increase in the stock of capital and, thus, in production.

Afterward, Adrien Auclert, building on Matthew Rognlie's discussion, pointed out that his work with Rognlie and Ludwig Straub showed that heterogeneity is most relevant for deficit-financed government spending. For this reason, he suggested the authors discuss this point in their paper. He further commented that heterogeneity could also play a role in the supply side of these models, implying a different Philips curve from what is assumed usually.

Following Adrien Auclert's point, Ricardo Reis also emphasized looking at the effects of deficit-financed government spending in TANK and HANK models. Still within fiscal policy, and whether financed by deficits or not, he noted that targeted transfers, from one group to another, have very different implications in the two models, which could be tested in the data. More generally, fiscal shocks may be better than monetary ones at discriminating which model is the better one to use.

Adam Guren commented next, agreeing with Matthew Rognlie's point that TANK models are suitable for teaching and explaining. He added that TANK models could also be useful when an assumption is needed to cut through complexity for larger and more complicated models, such as multi country models. In that sense, TANK should be thought of like CES preferences, Calvo price adjustment, or isoelastic money in the utility function — assumptions that allow us to get past a roadblock and consider more complicated models.

Afterward, Jonathon Hazell pointed out that, as Matthew Rognlie discussed, HANK models need sticky wages rather than sticky prices, an established finding in the literature. However, he expressed

concern that the micro-foundation of sticky wages in HANK models does not seem to have the desired properties arising from the data.

Lawrence D.W. Schmidt next suggested that the normative statements and welfare analysis of HANK and TANK models could be distinct. Furthermore, he added that heterogeneity could matter if a shock itself changes the income dynamics (e.g., income risk) of some but not all agents. Indeed, income risk can be endogenous to monetary policy. He believes TANK models could be suitable for shedding insights into this propagation channel.

Davide Debortoli followed up next. He thanked the discussants and the participants for their comments. Going back to Matthew Rognlie's discussion, he pointed out that, working on this paper, he realized that the results of HANK models are susceptible to the parameters' values used. He added that small parameter changes, even those that seem innocuous, could lead to dampening or amplification effects. He believes that TANK models could also help understand why this is the case. Debortoli further noted that the aim of TANK models is to match reality, not HANK models. Indeed, TANK models are suitable for this scope if precautionary saving motives are small, as suggested by the recent paper of Berger, Bocola, and Dovis. This paper shows that precautionary savings motives can, on average, explain a small fraction of business cycle fluctuations. However, precautionary savings could be more relevant in historical examples such as the Great Recession or the COVID-19 crisis. Finally, he concluded by commenting that it is established in the literature that income risk is cyclical and for which agents this cyclical component is more pronounced. However, these patterns are not as well-established for consumption. He believes that for heterogeneous models, it is relevant to understand how income risk is translated into consumption risk, which ultimately depends on the ability of agents to insure themselves.

Following his co-author, Jordi Galí thanked the discussants and participants for their comments. Following up on Johannes Wieland's discussion, he pointed out that he and his co-authors solved HANK models before TANK models in the paper because their aim is to let TANK match HANK. However, if the goal is to match the data, there is no need to solve HANK beforehand. He added that HANK models can be more suitable than TANK models in answering some particular questions. Afterward, he discussed Matthew Rognlie's comments on the equivalence of HANK and TANK: the equivalence shows that the equilibrium representation in the two models is exactly the same, which is an interesting result. However, the coefficients of the two models in such representation are different.

Finally, Valerie Ramey concluded the conference, thanking the authors, the panelists, the discussants, and all the participants for their comments and participation.