

Economics 742 Lecture 13b: Empirical Evidence on HANK

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Outline For Today

- How strong is the micro-empirical evidence on HANK?
- HANK papers attempt to match the distribution of MPCs but
 - Not great evidence.
 - Auclert: What matters is *covariance* of MPCs with characteristics.
- Today: Papers thinking about empirical evidence for HANK more seriously using two approaches:
 1. Scandinavian Data: Impact of monetary shocks on *distribution*.
 2. New results on MPC heterogeneity.
- Theme: Model has some successes, but wealthier, higher-liquid-asset households seem to play a bigger role and have higher MPCs than traditional models can explain.
 - Ultimately, evidence is unsatisfying.
 - But that means there are many open questions!

Scandinavian Data

- Availability of detailed population-wide data has transformed economics in last decade.
 - US: Tax data (e.g. Chetty et al.).
 - For macro Guvenen et al. on Social Security data.
 - But limited in what one can see in the US. No assets, consumption, etc.
- Scandinavian data provides several advantages:
 - Detailed data on portfolio choice, savings, can back out consumption.
 - Because they have wealth taxes the government collects this information.
 - Can link to lots of other interesting data sets.
 - Need a Scandinavian coauthor. I want you to know about these papers more as empirical facts to use as inspiration than because I think you should write one.

Examples of Scandinavian Data in Macro

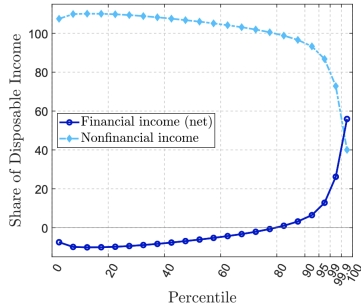
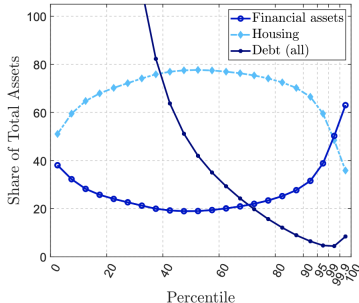
- MPC Heterogeneity Based on Lotteries: Fagereng, Holm, Natvik (2021) in Norway
 - Saw for iMPCs in Auclert-Rognlie-Straub papers.
- Saving Across the Wealth Distribution:
 - Fagereng, Holm, Moll, Natvik (2020) in Norway.
- Portfolio Returns Heterogeneity Across the Wealth Distribution:
 - Fagereng, Guiso, Malacrino, and Pistaferri (2020) in Norway.
 - Bach, Calvet, Sodini (2020) in Sweden.
- Lifecycle Wealth Dynamics:
 - Halvorsen, Hubmer, Ozkan, and Salgado (2023).
- Today: Distributional Effects of Monetary Policy in Norway: Holm, Paul, and Tischbirek (2021).
 - See also Andersen, Jorgensen, Johannesen and Pyedro (2023) in Denmark.

Holm-Paul-Tischbirek: High Level Overview

- Create Romer-Romer shocks for Norway.
 - Produce standard macro IRFs (skip).
 - Micro data response looks like macro (skip).
- Estimate dynamic responses of consumption, income, and savings along liquid asset distribution.
 - Observe income and savings, back out consumption.
 - Guided by HANK models, cut by liquid assets (and others).
 - Consistent: Low liquid asset households' consumption is more sensitive than medium liquidity households.
 - Inconsistent: High liquidity households also respond significantly to monetary policy.
- Decompose direct and indirect effects of monetary policy.
 - Direct effect dominates short term.
 - Indirect effects are gradual and build up over time and eventually play a bigger role.

Institutional Setting: Norway

1. Mortgages are adjustable rate.
2. Highly interest rate sensitive deposits are predominant form of liquid asset holdings across wealth distribution.
3. Giant sovereign wealth fund from oil revenues funds public pension system.

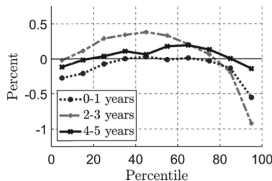
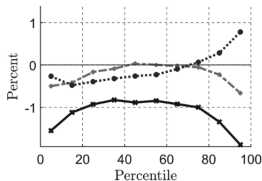


Response By Liquid Asset: Methodology

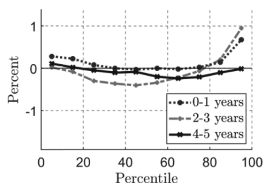
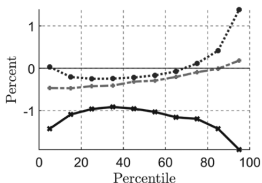
$$\frac{y_{i,t+h} - y_{i,t-1}}{inc_{i,t-1}} = \delta_i^h + \beta_g^h \varepsilon_t^{MP} + \gamma_g^h X_{i,t-1} + u_{i,t}^h \quad \forall i \in g, h = 0, \dots, 5$$

- Coefficient of interest β_g^h is group-specific response to annualized monetary shock ε_t^{MP} .
- g : Deciles of liquid assets (deposit + stock + bonds) in $t - 1$.
- y is outcome normalized by lagged income so β^h is comparable across groups.
- δ_i^h is household fixed effect.
- Controls include 3 years of lagged ε_t^{MP} , 2 years of lagged 1-year growth rates of dependent variable.

Responses By Group to Monetary Tightening: Bottom Consumption and Consumption / Income

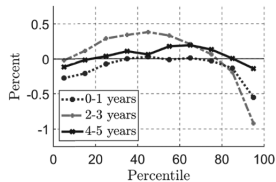
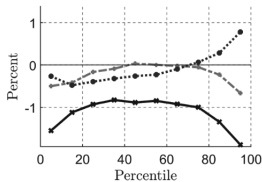


Net Income and Saving

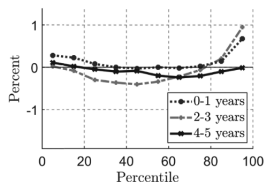
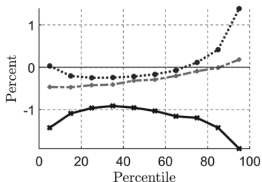


- Bottom: C falls over time. Y falls gradually. No S response.
- Middle: C falls less. Dip into savings.

Responses By Group to Monetary Tightening: Top Consumption and Consumption / Income

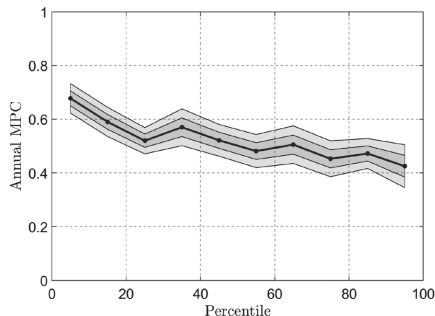


Net Income and Saving



- Top: C rises in short run as interest income from deposits rises. Then falls in long run as Y falls. All financial income.

MPCs High at the Top Too

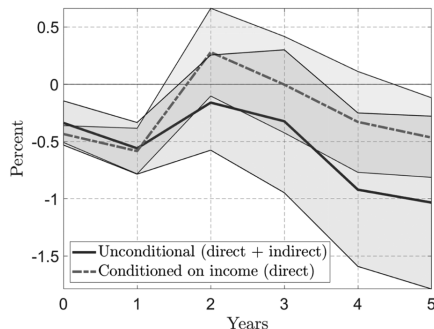


- From Fagereng, Holm, and Natvik (2021) on lottery winnings.
- High MPCs and response at top of liquid assets is inconsistent with HANK!
- Also explore by net interest rate exposure – see paper.

Direct vs. Indirect Effects

- Idea: Run same local projections, controlling for income changes over impulse response horizon.
 - Prior controls were before $t - 1$.
 - Now control for $t - 1$ to $t + h$.
- This gives the partial effect of monetary policy at horizon h , holding income constant.
 - They interpret these as the direct effects.
- This is not *exactly* the theoretical decomp. But it is close.
 1. In KMV, indirect effect includes changes in consumption due to expected future income.
 2. KMV include wealth effects. They do some robustness.

Direct vs. Indirect Effects: Response to Tightening

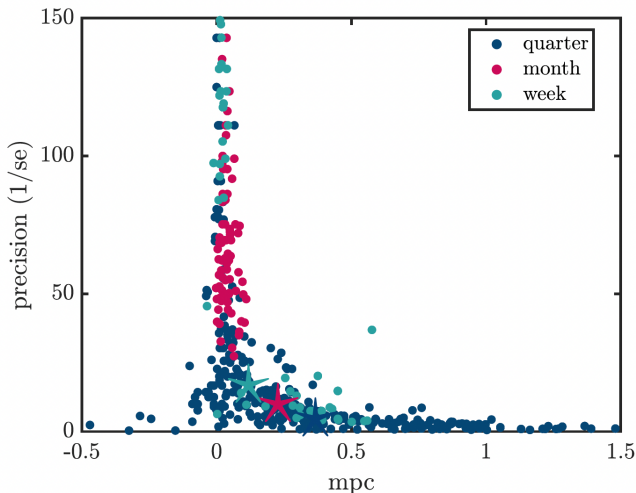


- Two lines on top in years 0 and 1 → direct effects dominate.
- Years 2+: Indirect effects dominate and large.
- Interpretation: GE indirect effects are important but take time to emerge. Direct effects matter initially.
 - Direct mattering initially may be due to Norwegian institutions.

MPC Literature

- What do we know about MPC heterogeneity?
 - Recent work on this is puzzling.
 - Higher MPC from higher liquid asset households than HANK models predict.
- Want to take you on a brief tour of the literature.
 - It remains unsettled.

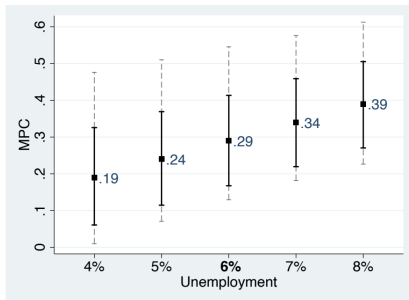
MPC: Meta Analyses (Havranek and Sokolova, 2020)



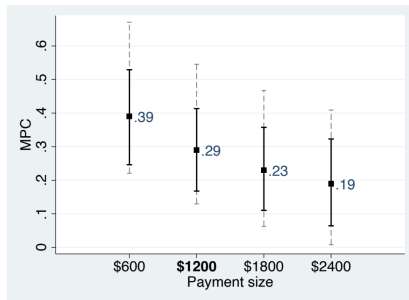
- Meta analysis of 500+ estimates: Average monthly MPC is

MPC: Meta Analyses (Sokolova, 2023)

(a) MPC and *Unemployment*

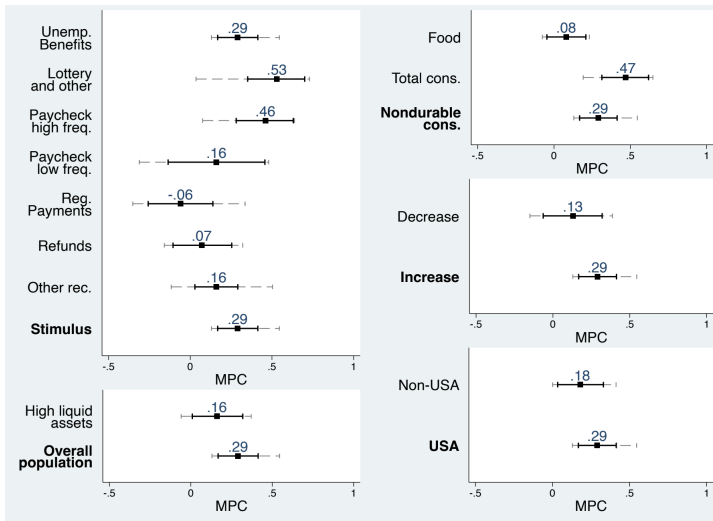


(b) MPC and *Payment size*



- Heterogeneity meta analysis.

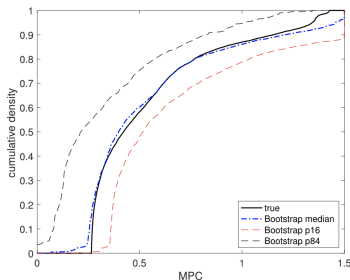
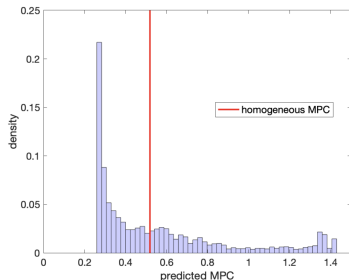
MPC: Meta Analyses (Sokolova, 2023)



Lewis, Melcangi, and Pilossoph (2022): Latent Heterog

- Gaussian Mixture Linear Regression on 2008 tax rebate.
 - Groups households with similar latent responses to rebate, then estimates MPC.
 - Argue that this “lets the data peak” without conditioning MPC on observables.
- Findings:
 - Significant heterogeneity: 2/3 less than 0.35, 1/4 greater than 1 over a quarter.
 - Corr with many observables, but only two robust to additional regressors: average propensity to consume and income
 - Both are *positively* correlated: “rich-spenders “ are important.
 - Observables explain at most 8% of variation in MPCs.
- Kosar et al.(2024): Use stimulus checks to pay down debt.
 - Marginal Propensity to Repay Debt is as big as MPC!
 - And higher for those with lower net wealth too income ratios, which drives down MPC.

Lewis, Melcangi, and Pilossoph (2022): Latent Heterog



Keung (2018), Boehm, Fize, and Jaravel (2024)

- Keung (2018) re-analyzes MPC from Alaska Permanent Fund.
 - Average quarterly MPC is 25% and highly heterogenous across households.
 - Surprisingly, increasing with income. High-income have MPC over 0.5 and drive aggregate.
 - Liquid assets only matter for low-income. High-income have high liquid assets.
 - Near-rationality as explanation: Small optimization errors.
- Boehm, Fize, Jaravel: MPC from randomized experiment
 - Average monthly MPC 23%. Higher if expire quickly.
 - Consumption response concentrated in first month.
 - Declines with liquid wealth but still 0.1 for those with high liquidity.
 - Significant heterogeneity.
 - Boar Discussion: Not so inconsistent with literature, unclear how important it is for models and counterfactuals.

Aguiar, Bilis, and Boar (2024): Preference Heterogeneity

- ABB ask “who are the hand-to-mouth?” using the PSID
 - Conclusion: **Preference heterogeneity is crucial.**
 - Not income process, bad luck, or borrowing constraints.
- Four facts:
 1. The same households tend to be persistently H2M.
 - If H2M at t , $10\times$ more likely to be H2M at $t + 4$.
 2. Consumption growth is not higher for H2M
 - Inconsistent w/borrowing constraints;
consistent w/ heterogeneity in target assets.
 3. H2M exhibit higher volatility in income and consumption.
 - Inconsistent with income processes driving differences.
 - EG steeper profile or more predictable \rightarrow less savings.
 4. H2M purchase fewer expenditure categories and adjust spending on extensive category margin.
 - Consistent with higher IES for H2M

Aguiar, Bilis, and Boar (2024): Preference Heterogeneity

- Extend Kaplan and Violante (2014) two asset model to have preference heterogeneity.
 - Calibration: 80% have standard “macro” preferences – patient and inter-temporally elastic.
 - Yet preference heterogeneity explains 84% of higher MPCs for poor H2M.
- Implications for policy:
 - Preference heterogeneity increases impact of targeted fiscal policy at poorest households.
 - Intuition: Increases MPC gap between poor and the rest.
 - Preference heterogeneity reduces spending impact of temporary decline in interest rates.
- Lots of space on questions related to preference heterogeneity. Have a feeling this is just the first paper.

Where Does This Leave Us?

- Accumulating evidence that the rich and high liquid asset can have higher MPCs
 - Confusing!
- Explanations: Debt repayment, preference heterogeneity, near-rationality...
- Implications: HANK models are incomplete.
 - Like some things about two asset model: iMPCs (ARS), higher MPCs on average, etc.
 - But need to go beyond it. But how?
 - Average MPC, iMPCs, covariance of MPCs with balance sheet exposure, how MPCs move in response to shocks all matter...
- State of literature is unsatisfying, but there is open space!
 - What models make sense? How should we calibrate?
 - How important is this for monetary transmission and other model features in the aggregate?