

Heterogeneity in what? Cognitive Skills, Beliefs and the Liquid Wealth Distribution

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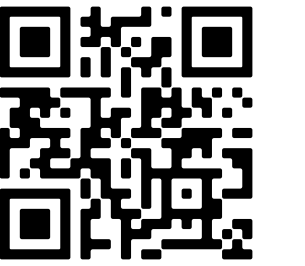
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Motivation and Contribution

Motivation:

- **Heterogeneity in households' savings behavior and financial situations** is important for macroeconomic fluctuations and policy
- Standard approach: heterogeneity purely driven by shock realizations; the role of **permanent dimensions of heterogeneity** usually ignored
- One such promising dimension is **cognitive skills**, as cognitive skills have been linked to differences in economic growth, households' expectations formation, behavioral biases, and income

Q: What is the role of cognitive skills and beliefs about these skills for heterogeneity in households' savings and financial situations?

Contribution:

- provide evidence on systematic relationship between **cognitive skills, beliefs and households' savings behavior**
- **HANK model with skill and belief heterogeneity** rationalizes our empirical findings
- model matches well untargeted moments on **MPCs and wealth distribution**
- skill & belief heterogeneity matters for **fiscal policy** (positively & normatively)

Empirical Evidence

Data: American Life Panel, modules on behavioral biases and cognitive skills (Stango/Zinman 2023), link to questions on financial situations (expected & actual future financial situations, 6 measures of Hand-to-Mouth (HtM) status)

Overconfidence: perceived cognitive skills > actual cognitive skills

Main findings:

- lower-skilled consumers **more likely to be HtM**
- **lower-skilled** consumers tend to be **overconfident**
- overconfident consumers **1.5 times as likely to be too optimistic about their future financial situation** than non-overconfident consumers
- **overconfident** consumers more likely to be **HtM**
- patience and risk aversion show much weaker correlations with HtM status and subjective financial conditions than cognitive skills and overconfidence

HANK with Cognitive Skills and Overconfidence

Households: Household of (permanent) type g :

$$V_{g,t}(b_{t-1}, e_t) = \max_{c_t, b_t} \left\{ \frac{c_t^{1-\gamma}}{1-\gamma} - \frac{n_t^{1+\varphi}}{1+\varphi} + \beta \mathbb{E}_{g,t} V_{g,t+1}(b_t, e_{t+1}) \right\}$$

subject to

$$c_t + \frac{b_t}{1+r_t} = b_{t-1} + (1-\tau_t)w_t \bar{e}_g e_t n_t, \quad \text{and} \quad b_t \geq -\underline{b}$$

Type g : pins down permanent **skill type** \bar{e}_g and **beliefs** $\mathbb{E}_{g,t}$

Beliefs: Let $p_{ij} \equiv p(e_{t+1} = e_j | e_t = e_i)$ denote actual **transition probability**, with $e_1 < e_2 < \dots < e_J$. **Perceived transition probabilities** \tilde{p}_{ij} are given by

$$\tilde{p}_{ij} \equiv \begin{cases} \alpha p_{ij}, & \text{if } i < j \\ \frac{1}{\alpha} p_{ij}, & \text{if } i > j \\ 1 - \sum_{j \neq i} \tilde{p}_{ij}, & \text{if } i = j, \end{cases}$$

$\alpha > 1$: **overconfidence**, $\alpha = 1$: rational

Final good producer: $Y_t = N_t$, prices fully flexible

Labor unions: sticky wages + and all households work same amount

Government: fiscal policy raises taxes and issues bonds, monetary policy controls real rate

Calibration: standard HANK calibration + target new empirical findings:

- two types: i) 38% of HHs are overconfident and low-skilled ($\bar{e}_L = 0.55 \cdot \bar{e}_H$); ii) 62% high-skilled and rational
- overconfident HHs are 1.5 times as likely to be too optimistic about future financial situations $\Rightarrow \alpha = 1.9$

Model vs. Data

Key insight: With one additional parameter, capturing overconfidence, our model overcomes several shortcomings of existing models while jointly accounting for our new findings on skills, beliefs and financial situations.

Model accounts for empirical findings:

- strong correlation between **cognitive skills and HtM status**
- \hookrightarrow driven by heterogeneity in overconfidence, not skills
- \hookrightarrow overconfident HHs **underestimate insurance needs** and perceive price of asset as too high to accumulate buffer stock \Rightarrow more likely to be HtM

Model does well in matching untargeted moments:

- matches jointly average quarterly **MPC** (0.17 in model vs. 0.15-0.25 in data) and **average wealth to income ratio** of 4.1
- \neq rational HANK predicts average MPC of 0.032
- median wealth (1.8 in model vs. 1.5 in data) \Rightarrow **no "missing-middle puzzle"**
- **top 10% wealth share** (40% in model vs. 49% in data)

Extension to two-asset model:

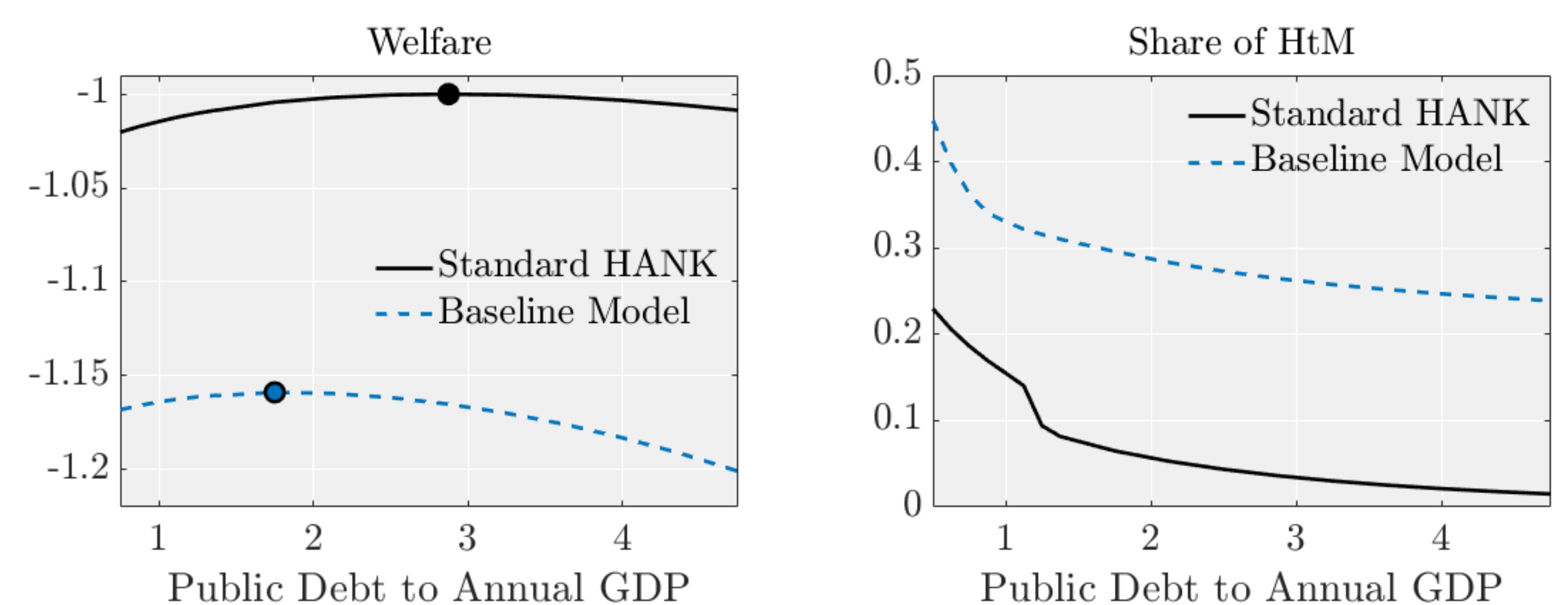
- **two-asset model** (liquid and illiquid): matches average MPC, total wealth-to-income, and liquid wealth-to-income with lower (and empirically more realistic) return gap than rational model

Fiscal Policy Implications

Optimal government debt level:

substantially **lower than in rational model** because:

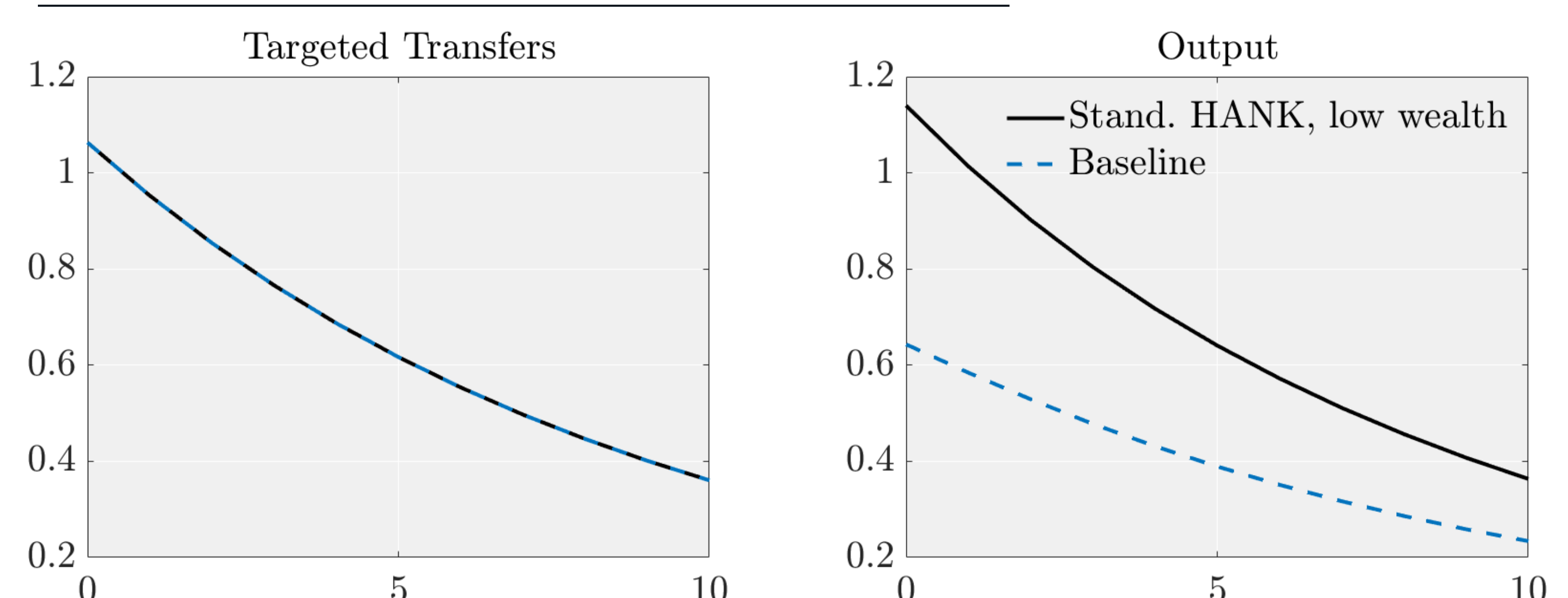
- overconfident HHs do not make use of additional liquidity (remain HtM)
- lower asset demand increases equilibrium real interest rate \Rightarrow higher taxes



Transfers targeted to low-income HHs as social insurance:

- crowds out private insurance in rational model, but not as much in model with overconfident HHs
- \hookrightarrow overconfident HHs do little precautionary saving to begin with, so there is less scope for crowding out

Targeted transfers as business cycle policy:



\Rightarrow **less effective** in our model ("Baseline") because:

1. **relaxation of self-insurance motive** is not as powerful because overconfident HHs underweight these low-income states
2. **average MPC of transfer recipients is lower** even though overall average MPC is the same (income not as important for HtM status, consistent with data)

Details are in the paper—if interested, please scan the QR code at the top to get the latest version of our paper!