

## Welfare and Spending Effects of Consumption Stimulus Policies

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## Related literature

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- ▶ **Welfare measures in HA models:** Bhandari, Evans, Golosov and Sargent (2021); Dávila and Schaab (2022)

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- ▶ Robustness Exercise: HANK model

# Quantitative Micro Realism

Idiosyncratic income process: Friedman/Muth (transitory and permanent shocks)

$$\mathbf{p} \quad - \quad \text{'permanent income'} \quad (1)$$

$$\xi \quad - \quad \text{'transitory income shock'} \quad (2)$$

$$\psi \quad - \quad \text{'permanent income shock'} \quad (3)$$

$$\mathbf{p}_{t+1} = G\mathbf{p}_t\psi_{t+1}$$

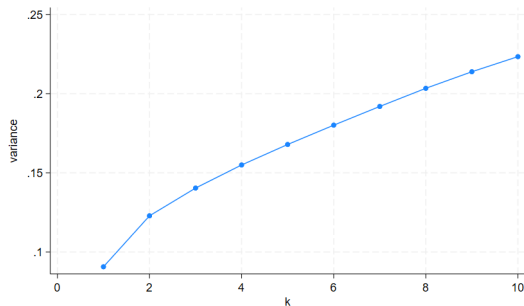
$$y_{t+1} = \mathbf{p}_{t+1}\xi_{t+1}$$

## Evidence?

For  $n > 3$ ,

$$\text{var}(\log y_{t+n}/y_t) = 2\sigma_{\log \xi}^2 + n\sigma_{\log \psi}^2 \quad (4)$$

Millions of datapoints from Norwegian National Registry:



Source: SSB (Elin Halvorsen)

Also see Crawley, Holm, and Tretvoli (2022)

## Preferences, Beliefs, and Wealth

Infinite horizon model: target wealth depends on 'Growth Impatience' condition:

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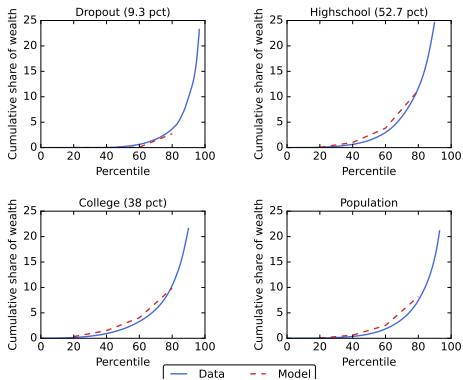
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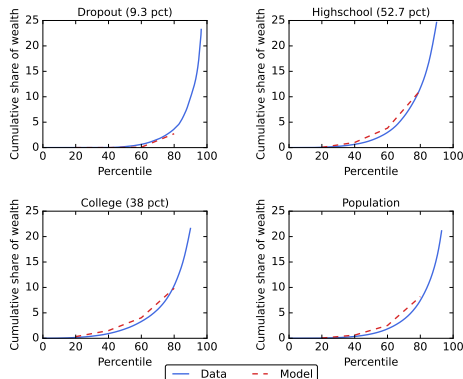
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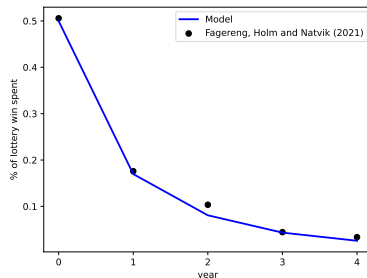


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## Intertemporal MPC from Fagereng, Holm, Natvik (2021)



Modeling device: 'Splurge' in consumption, i.e. exogenously given fraction of income directly consumed

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  - ▶ Poorly targeted and much spending likely to occur after end of recession

# Model

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$$\sum_{t=0}^{\infty} \beta_i^t (1 - D)^t \mathbb{E}_0 u(\mathbf{c}_{opt,i,t}). \quad (6)$$

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- ▶ Budget constraint, given existing market resources  $m_{i,t}$  and income state, and a no-borrowing constraint:

$$\mathbf{m}_{i,t+1} = R \underbrace{(\mathbf{m}_{i,t} - \mathbf{c}_{sp,i,t} - \mathbf{c}_{opt,i,t})}_{\geq 0 \text{ (no-borrowing constraint)}} + \mathbf{y}_{i,t+1} \quad (7)$$

( $R$ : exogenous gross interest rate)

## Income process

- Income subject to transitory, unempl. and permanent shocks

$$\mathbf{y}_{i,t} = \begin{cases} \xi_{i,t}\mathbf{p}_{i,t}, & \text{if employed} \\ 0.7\mathbf{p}_{i,t}, & \text{if unemployed for } \leq 2q \\ 0.5\mathbf{p}_{i,t}, & \text{if unemployed } \geq 2q \end{cases} \quad (8)$$

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- ▶ "Permanent income":  $\mathbf{p}_{i,t+1} = \underbrace{\psi_{i,t+1}}_{\text{perm. shock}} \underbrace{\Gamma_{e(i)}}_{\text{educ.-specific growth}} \mathbf{p}_{i,t}$

## Income process

- ▶ Income subject to transitory, unempl. and permanent shocks

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- ▶ Idiosyncratic income in the extension model is then given by

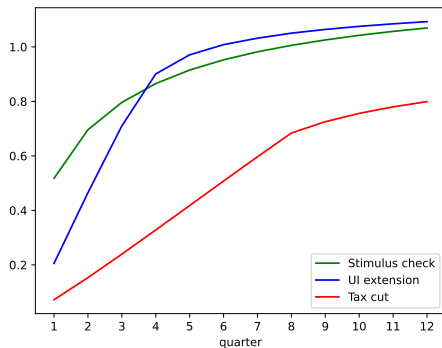
$$\mathbf{y}_{AD,i,t} = AD(C_t)\mathbf{y}_{i,t}. \quad (10)$$



# Results

# Multipliers

$$M_t^P = \frac{\text{NPV of induced consumption up to } t}{\text{NPV of the cost of the policy}}$$



	Stimulus check	UI extension	Tax cut
10y-horizon Multiplier (no AD effect)	0.872	0.910	0.847
10y-horizon Multiplier (AD effect)	1.245	1.200	0.999
Share of policy expenditure during recession	100.0%	80.6%	57.6 %

# Robustness: Multipliers in HANK

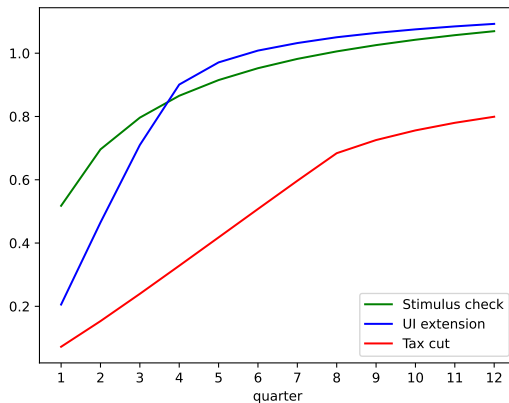


Figure: HA + AD effects

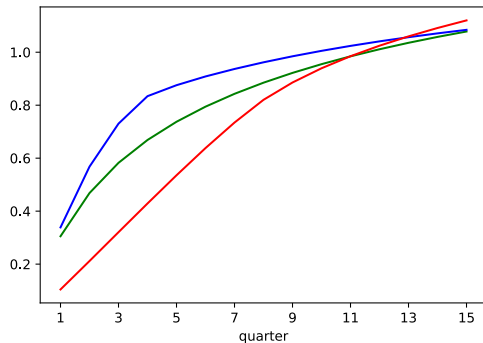


Figure: HANK

# Welfare measure construction

## Guiding principles

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Simple aggregation of consumer util. only satisfies principle 1 & 2:

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- ▶ The tax cut is both poorly targeted and may yield substantial spending after the recession is over
- ▶ Framework can be used to evaluate other candidate policies

# Thank you for your attention!

- ▶ Access the paper, presentation slides and code at:  
<https://github.com/llorracc/HAFiscal>



# Appendix

## Parameters describing the policies

Parameters describing policy experiments	
Parameter	Value
Change in unemployment rates in a recession	$\times 2$
Expected unemployment spell in a recession	4 quarters
Average length of recession	6 quarters
Size of stimulus check	\$1,200
PI threshold for reducing check size	\$100,000
PI threshold for not receiving check	\$150,000
Extended unemployment benefits	4 quarters
Length of payroll tax cut	8 quarters
Income increase from payroll tax cut	2 percent
Belief (probability) that tax cut is extended	50 percent

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- ▶  $\beta_S = 1/R$ : social planner's discount factor

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To satisfy principle 3 we define  $\mathcal{C}(\text{policy}, \text{Rec}, AD) =$

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- ▶  $\mathcal{C}$  measures only welfare effects beyond pure redistribution

## Robustness: Different replacement rates

► Discount factor distributions:

			Dropout		Highschool		College	
Splurge			$\beta$	$\nabla$	$\beta$	$\nabla$	$\beta$	$\nabla$
Baseline	$(\rho_b = 0.7, \rho_{nb} = 0.5)$	0.306	0.735	0.298	0.924	0.137*	0.984	0.010
Altern.	$(\rho_b = 0.3, \rho_{nb} = 0.15)$	0.306	0.609	0.445*	0.890	0.116	0.978	0.016

		Stimulus check	UI extension	Tax cut
no AD effects	Baseline $(\rho_b = 0.7, \rho_{nb} = 0.5)$	0.011	0.509	0.002
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		Dropout		Highschool		College	
	Splurge	$\beta$	$\nabla$	$\beta$	$\nabla$	$\beta$	$\nabla$
$R = 1.005$	0.307	0.740	0.298	0.927	0.193*	0.989	0.0082
$R = 1.01$ (baseline)	0.307	0.735	0.298	0.924	0.137*	0.984	0.0096
$R = 1.015$	0.307	0.724	0.357*	0.919	0.138*	0.979	0.0105



# Robustness: Multipliers in HANK

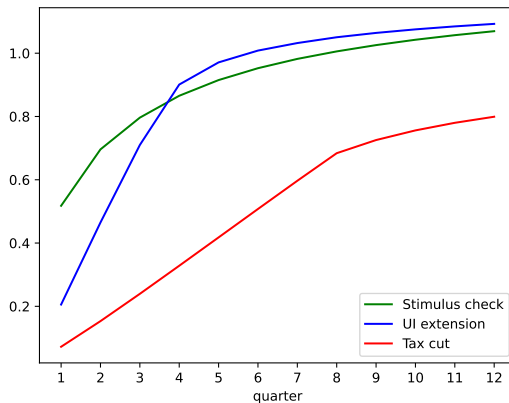


Figure: HA + AD effects

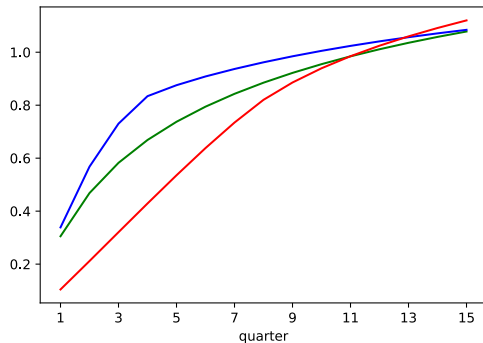


Figure: HANK