Optimal Transfer Rules and Heterogeneity

Dario Cardamone

University of Notre Dame

SEA 94th Annual Meeting

Are fiscal transfers becoming a conventional policy tool?

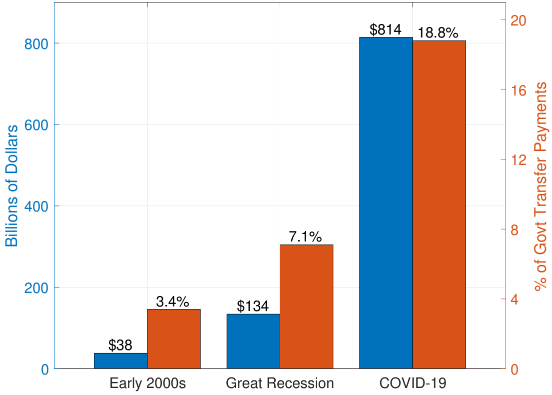

Figure 1: Tax Rebates During Economic Downturns

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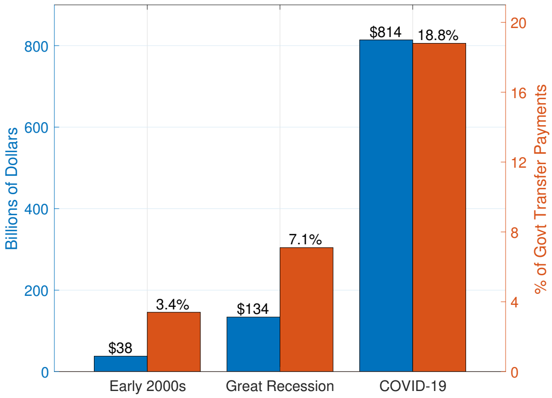

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- Stimulate spending during downturns

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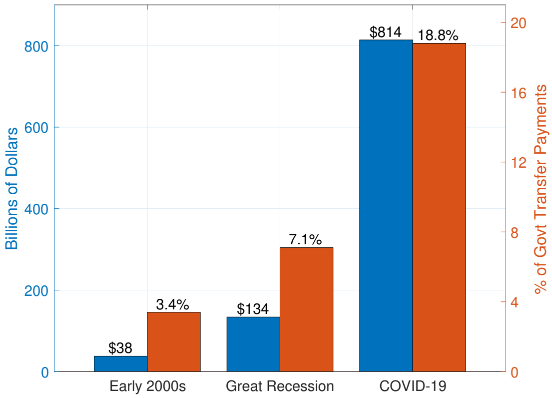

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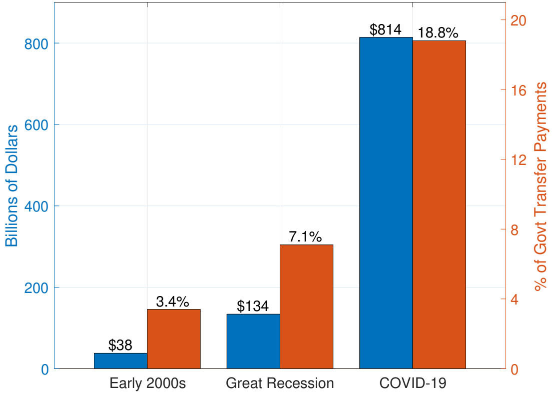

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Implications for welfare:

- Suboptimal size and timing can limit welfare gains

Optimal transfer rules and heterogeneity

This paper in a nutshell:

- **Simple, automatic rules** for fiscal transfers
- Optimal design in terms of **size**, **timing**, and **targeting**

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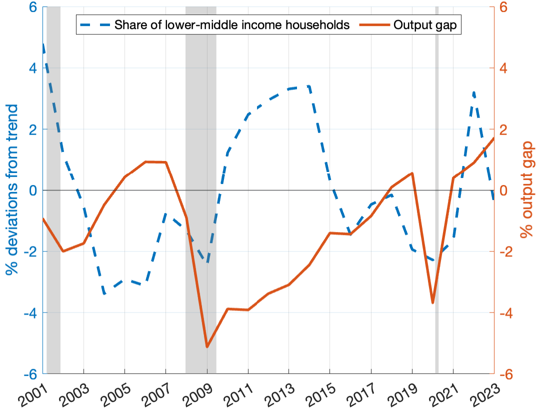

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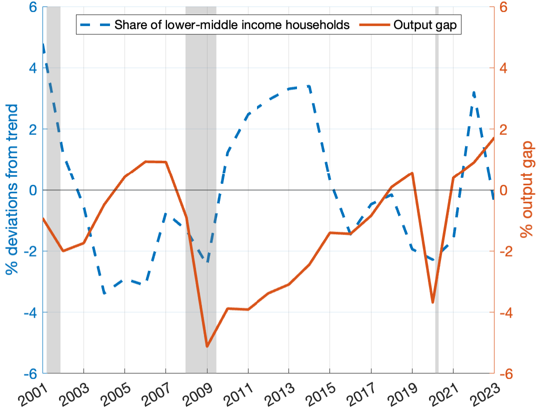
Solution:

- THANK with **endogenous switching** (new!)



THANK with endogenous switching

Household block:

As in the THANK model, but with **endogenous switching** between Savers and Hand-to-Mouth households:

$$\begin{bmatrix} Sav_t & HtM_t \end{bmatrix} = \begin{bmatrix} Sav_{t-1} & HtM_{t-1} \end{bmatrix} \begin{bmatrix} s_t & 1-s_t \\ 1-h_t & h_t \end{bmatrix}$$

with probabilities $h_t = f\left(Y_t^D\right)$ and $s_t = g\left(Y_t^D\right)$ responding to changes in disposable income.

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Log-linearized dynamics:

$$\widehat{HtM}_t = (s+h-1)\,\widehat{HtM}_{t-1} - (\tilde{\gamma}_s + \tilde{\gamma}_h)\,\Delta\hat{y}_t^D$$

Intuition: $\uparrow$ disposable income leads to $\downarrow$ in the share of HtM, for $\tilde{\gamma}_s, \tilde{\gamma}_h > 0$ full model

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Endogenous switching generalizes THANK:

- Probabilities of switching are **time-varying**: $s \rightarrow s_t$ and $h \rightarrow h_t$
- Household composition **adjusts** to economic shocks: $HtM \rightarrow HtM_t$

Welfare analysis

Ramsey planner's social welfare:

Second-order approximation following McKay and Wolf (2023):

$$\mathscr{L} = \frac{1}{2}\sum_{t=0}^{\infty}\beta^{t}\left[\chi_{w}\left(\pi_t^w\right)^2 + \chi_p\left(\pi_t^p\right)^2 + \chi_y\left(\hat{y}_t\right)^2 + \chi_s\left(\hat{\omega}_t^S\right)^2 + \chi_h\left(\hat{\omega}_t^H\right)^2\right]$$

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Endogenous switching matters for optimal policy:

$$\hat{\omega}_t^S \equiv \omega^S\left(-\delta_{\omega_S}\widehat{HtM}_t + \hat{c}_t^S - \hat{c}_t^{aggr}\right), \qquad \hat{\omega}_t^H \equiv \omega^H\left(\delta_{\omega_H}\widehat{HtM}_t + \hat{c}_t^H - \hat{c}_t^{aggr}\right)$$

Intuition: Consumption shares depend on relative consumption and household composition **(new!)**

Optimal fiscal transfers

Government budget constraint:

$$T_t^S \cdot Sav_t - T_t^H \cdot HtM_t = 0$$

Intuition: fiscal policy is entirely financed through taxation of savers.

Redistribution follows a simple fiscal rule:

$$\hat{t}_t^H = \eta \cdot \widehat{target}_t$$

where the transfer rate to hand-to-mouth households is proportional to a target variable.

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Target: $\left(\widehat{target}_t\right)$	**Benchmark** 0	**Aggregate Consumption** $(\hat{c}_t^{aggr})$	**Consumption gap** $(\hat{c}_t^{gap} = \hat{c}_t^H - \hat{c}_t^S)$	**Consumption inequality** $\left(\hat{\omega}_t^H - \hat{\omega}_t^S = \delta_{HtM} \widehat{HtM}_t + \hat{c}_t^{gap}\right)$
Optimal η	0	-0.82	0.65	0.40
C.E.V.	0%	4.43%	4.45%	5.04%

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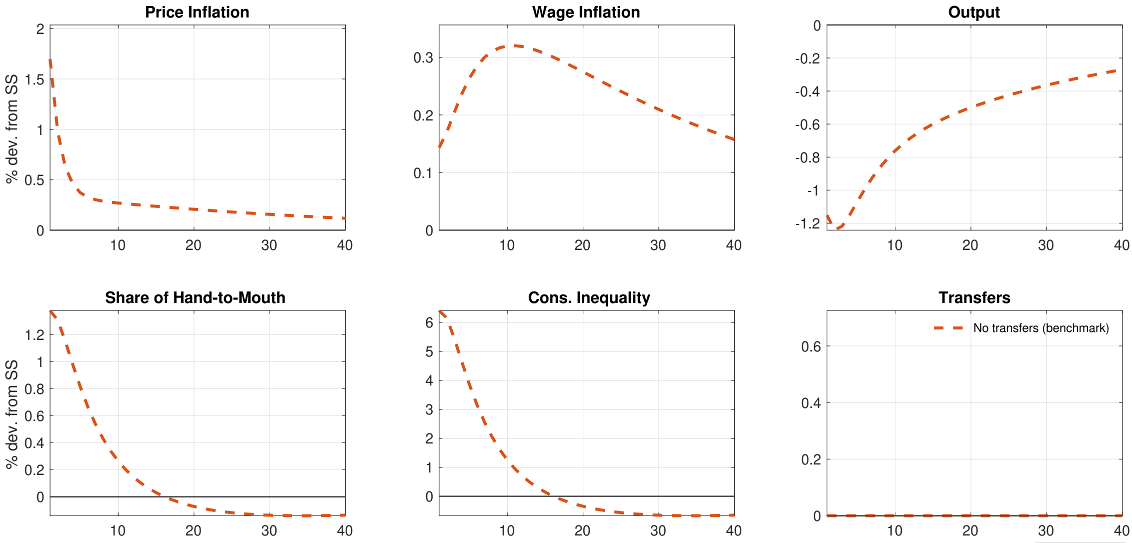

Volatility gains

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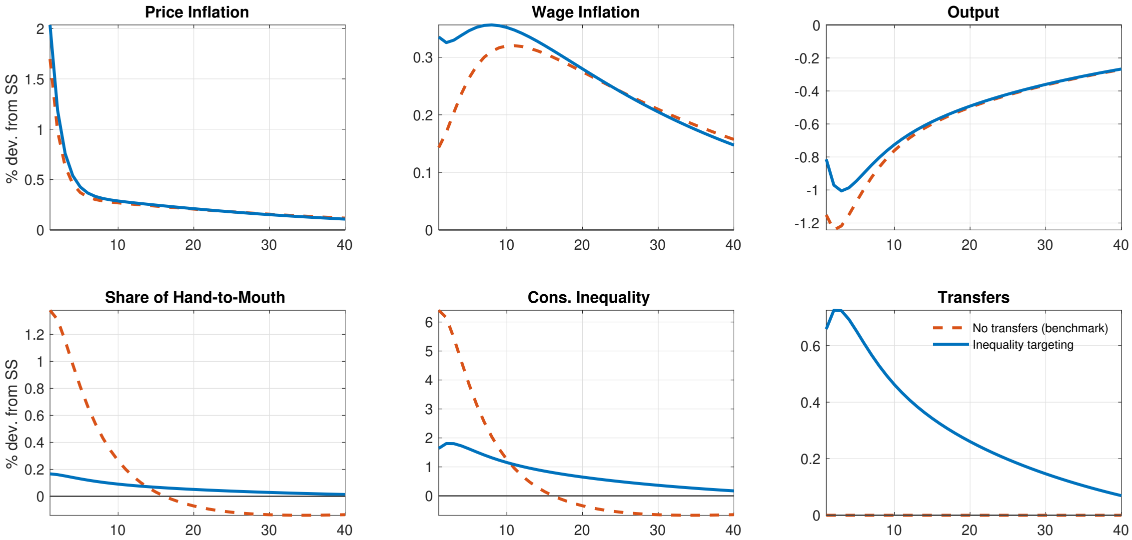

Volatility gains

Assessing the optimality of COVID-19 transfer payments

Question: Was the timing and size of COVID-19 transfers payments optimal?

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Assessing the optimality of COVID-19 transfer payments

Question: Was the timing and size of COVID-19 transfers payments optimal?

1. **Replicate observed dynamics using smoothed shocks:**
   - Output
   - Inflation
   - Nominal interest rate
   - Fiscal transfers (i.e., stimulus checks)
2. **Counterfactual analysis:**
   - Replace observed fiscal transfers with optimal ones derived from an inequality-targeting rule

COVID-19 Counterfactual: Optimal fiscal transfers

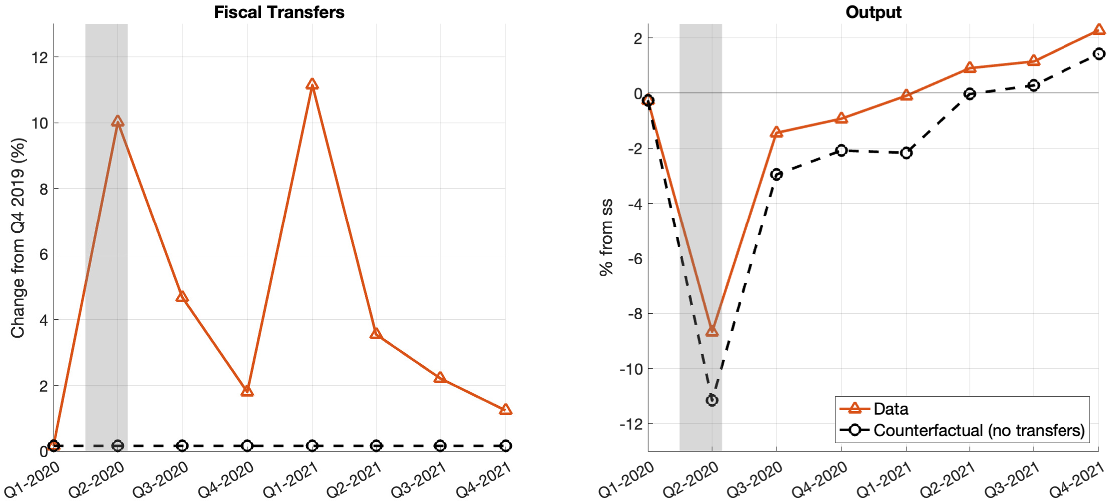

Figure 2: COVID-19 counterfactual: Optimal fiscal transfers

Broader effects

COVID-19 Counterfactual: Optimal fiscal transfers

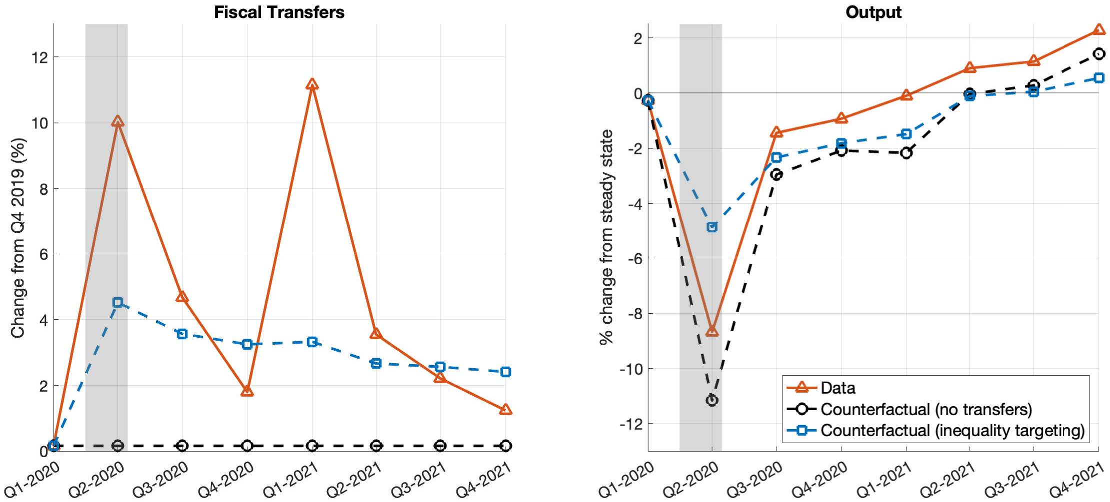

Figure 3: COVID-19 counterfactual: Optimal fiscal transfers

Broader effects

Thank you!

References

- Bilbiie, F. O. (2024). Monetary policy and heterogeneity: An analytical framework. Forthcoming, Review of Economic Studies.
- Bilbiie, F. O., Primiceri, G. E., & Tambalotti, A. (2023). Inequality and business cycles. NBER Working Paper 31729.
- McKay, A., & Wolf, C. K. (2023). Optimal policy rules in hank. Revise and Resubmit, Review of Economic Studies.

Remaining blocks of the model

New Keynesian block:

- **Labor unions:** Set sticky wages to maximize expected social welfare

$$\frac{W_t^*}{P_t} = \mathscr{M}_w \left[\frac{HtM_t}{MRS_t^H} + \frac{Sav_t}{MRS_t^S} \right]^{-1}$$

- **Intermediate goods producers**: Choose sticky prices to maximize expected profits

$$P_t^* = \mathscr{M}_p MC_t$$

- **Central bank**: Sets the nominal interest rate according to a standard Taylor rule

$$i_t = \rho_i i_{t-1} + (1-\rho_i)(\phi_\pi \pi_t + \phi_y \hat{y}_t) + u_t^v$$

Government:

- Provides transfers to HtM agents according to a simple **fiscal rule**

$$\hat{t}_t^H = \eta \cdot \widehat{target}_t$$

back

Volatility gains under different rules

back

COVID-19 counterfactual under optimal transfers: broader effects

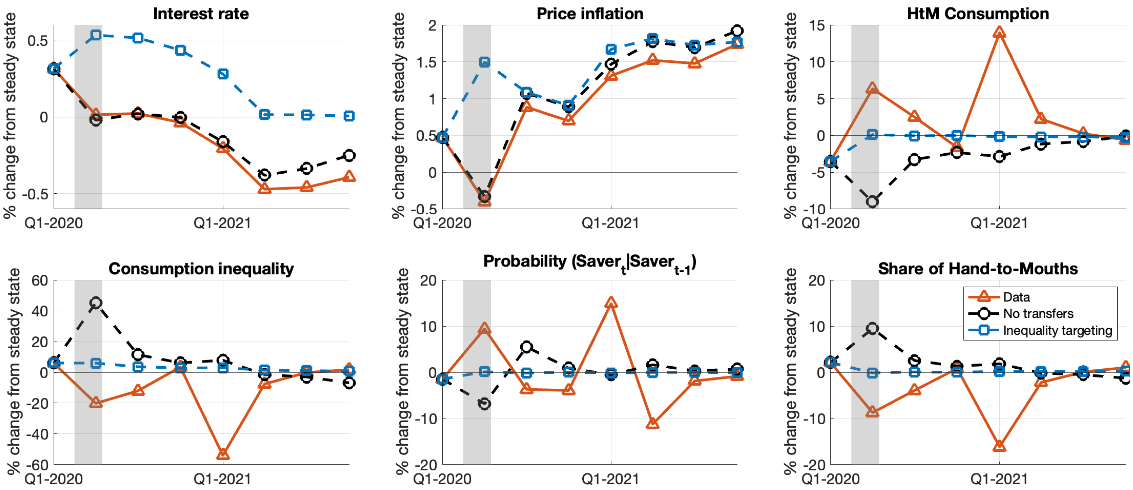

Figure 4: COVID-19 counterfactual: Optimal fiscal transfers

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Decomposing inequality and output during COVID-19

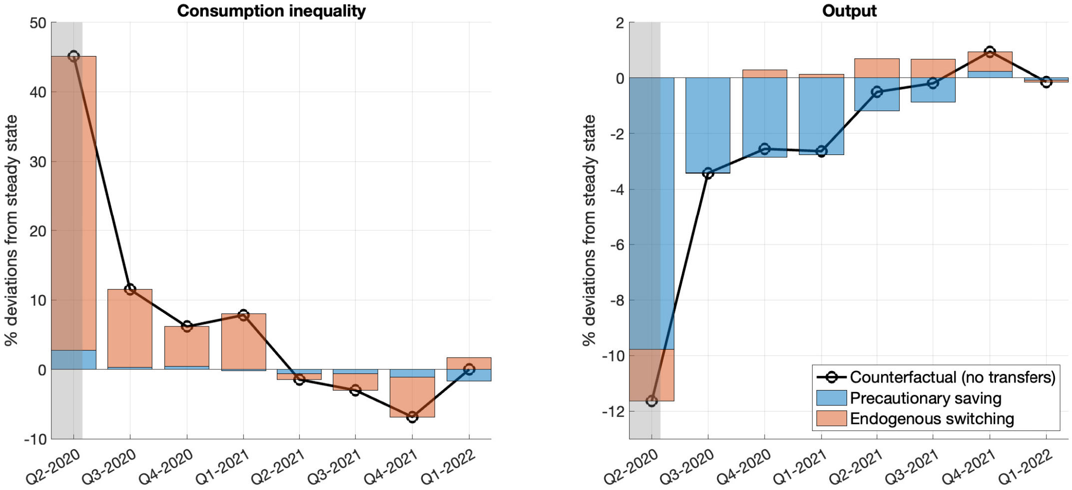

Figure 5: COVID-19 counterfactual: No fiscal transfers