Bhandari, Evans, Golosov and Sargent
Inequality, Business Cycles and Monetary-Fiscal Policy
A Dicussion (Take One)

Morten O. Ravn

September 2018

BEGS

Seminal Paper
It has the BEST equations

BEGS: Contributions

Paper addresses a **super interesting and important question**.

- Ramsey optimal monetary-fiscal policy in model with
  - idiosyncratic income risk and incomplete markets,
  - aggregate shocks,
  - sticky prices,
  - monopolistically competitive firms.
- Extremely challenging optimization problem:
  - Wealth *distribution* is a state variable,
  - endogenous *distribution* of promise-keeping constraints,
  - both of these depend on the policy.
- Develop new numerical solution method.
- Find new and very provocative results.

The Ramsey Problem: NK

Representative consumer

$$\inf \sup \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t [\left(\frac{c_t^{1-v} - 1}{1-v} - \frac{n_t^{1+\gamma}}{1+\gamma} \right) + ..$$

2nd order approximation of social welfare (assuming steady-state distortion is neutralized) can be expressed as:

$$\frac{1}{2} \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \left(\Pi_t^2 + \chi \tilde{y}_t^2 \right)$$

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- **Inflation is costly** (because of price dispersion and/or because of costs of changing prices).
- **Deviations of output from its flexible price** (efficient) level is costly.
- **Trade–off is limited**: stabilizing prices also stabilizes output.

New Keynesian Models

Very large literature on optimal policy in NK models:

- Neutralize monopolistic competition wedge with a labor subsidy.
- Set monetary policy to implement flexible price outcome or close to it - Divine coincidence.

Key results:

1. Simple interest rate rules which respond aggresively to inflation come close replicating allocations in the Ramsey optimal allocation.

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- Enormous impact on policy.
- NK models also been very successful in accounting for key features of the data.

BEGS: The Ramsey Problem

Government solves:

$$\inf \sup \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \Big[\int \Big\{ \left(\frac{c_{it}^{1-v} - 1}{1-v} - \frac{n_{it}^{1+\gamma}}{1+\gamma} \right)$$
$$+ \mu_{it} \left(c_{it}^{1-v} - c_{it}^{-v} \left(T_t - s_i D_t \right) - n_{it}^{1+\gamma} \right)$$
$$- \xi_{it} \frac{a_{it-1} c_{it}^{-v} \left(1 + \Pi_t \right)^{-1}}{\beta \mathbb{E}_{t-1} \left[c_{it}^{-v} \left(1 + \Pi_t \right)^{-1} \right]} + \left(1 - \beta \right) c_{i0}^{-v} b_{i,-1} \mu_{i0} \Big\} di$$
$$+ \Lambda_t C_t^{-v} Y_t \left[1 - \Phi_t \left(1 - \frac{W_t}{\alpha N_t^{\alpha-1}} \right) \right]$$
$$+ \left(\Lambda_{t-1} - \Lambda_t \right) C_t^{-v} \psi \left(1 + \Pi_t \right) \Pi_t \Big]$$

- subject to bunch of initial conditions and $\mu_{it} = \mu_{it-1} + \xi_{it}$
- horrible!

The Ramsey Problem: NK with HtM

Suppose that there are **HtM households**

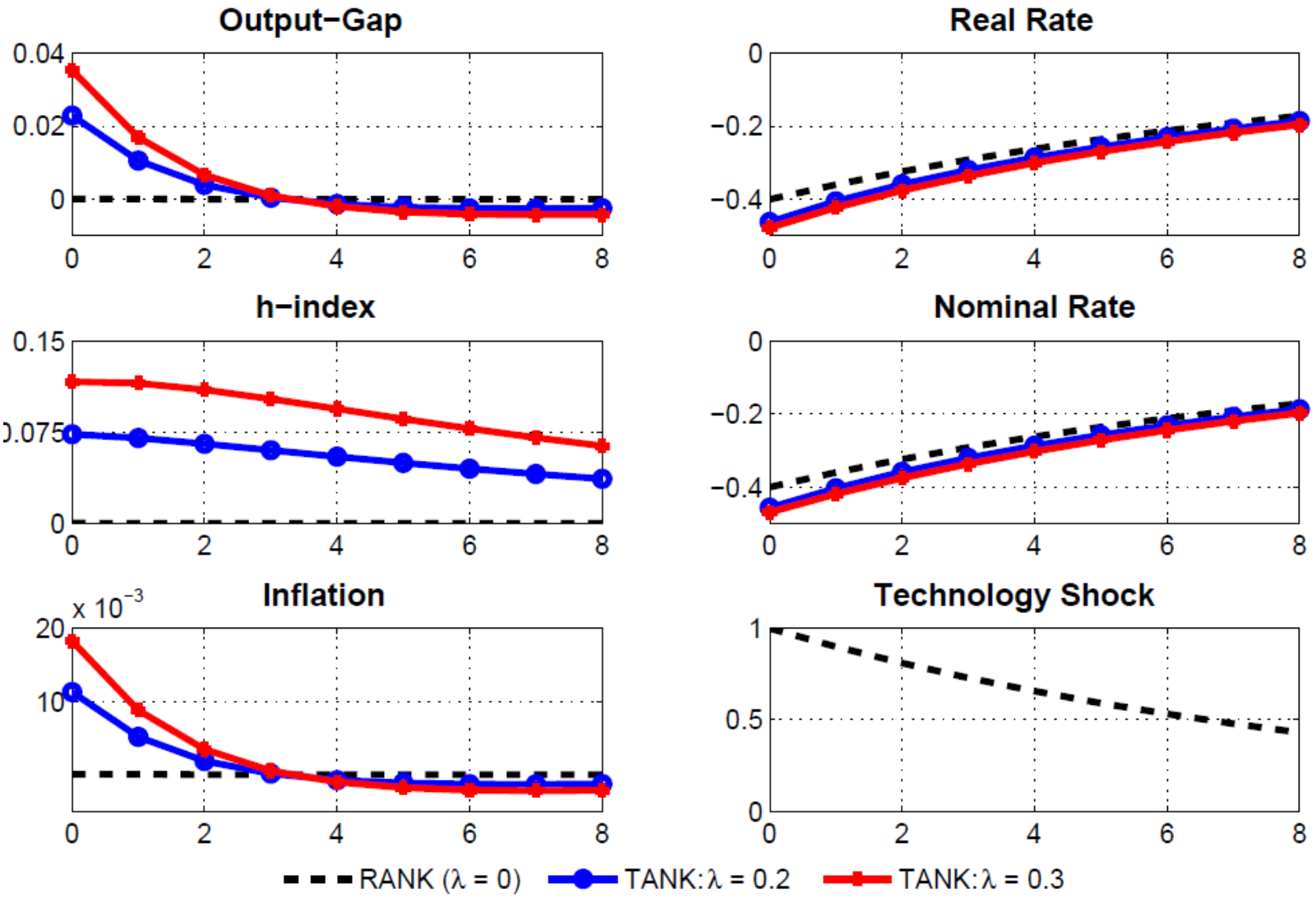
$$\inf \sup \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t [\theta_R \left(\frac{c_{R,t}^{1-v} - 1}{1-v} - \frac{n_{R,t}^{1+\gamma}}{1+\gamma} \right) + \theta_H \left(\frac{c_{H,t}^{1-v} - 1}{1-v} - \frac{n_{H,t}^{1+\gamma}}{1+\gamma} \right) ..$$

2nd order approximation of social welfare (assuming egalitarian steady-state) can be expressed as:

$$\frac{1}{2} \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \left(\Pi_t^2 + \chi \widetilde{y}_t^2 + \omega \left(\widehat{c}_{R,t} - c_t \right)^2 \right)$$

- trade-off between inflation, output and inequality and social planner will always have a strong incentive to engage in redistribution to equalize marginal utilities of consumption

The Ramsey Problem: NK with HtM



BEGS

What's different: Impact of incomplete markets on social welfare Government must now address

- Monopolistic competition, (BEGS **DO NOT** neutralize it with a labor subsidy)
- Sticky prices, (**demand matters more** due to IM and idiosyncratic risk although demand-supply interaction is limited)
- Market incompleteness, (**more general** than HtM)
- Wealth distribution can be impacted by policy, (**DO NOT** look at egalitarian steady-state)

$\Rightarrow$ **No guarantee** that it's best to target flexible price allocation, unlikely to be exactly the case

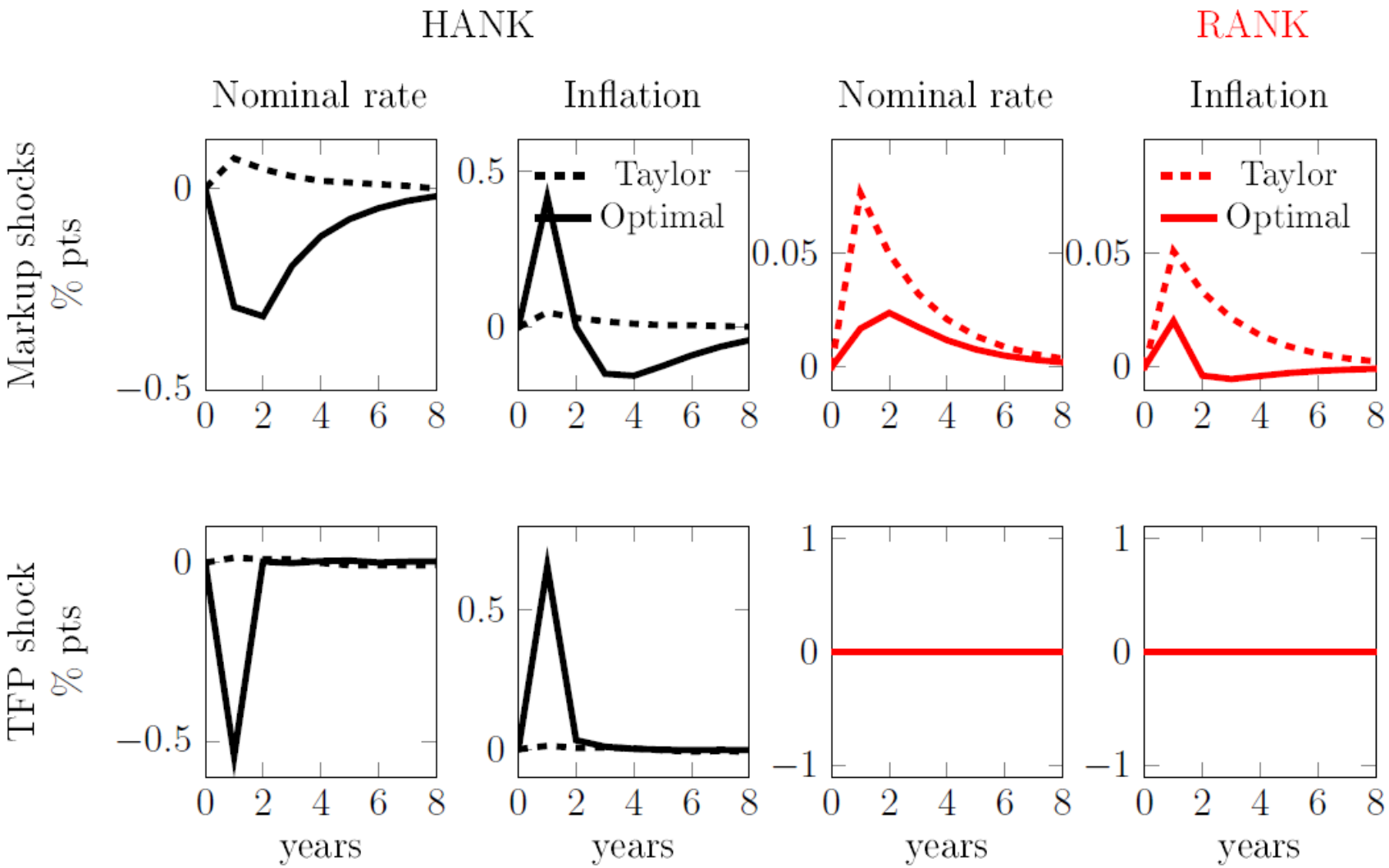
- But how much and how should it matter?

Ramsey Optimal Policies

	Decline in TFP	Increase in Markup
NK only MP	R^{nom} constant	$R^{nom} \uparrow$
NK MP and FP	R^{nom} constant	$R^{nom} (\uparrow), \tau \downarrow$
BEGS only MP	$R^{nom} \downarrow$	$R^{nom} \downarrow$
BEGS MP and FP	$R^{nom} \uparrow, \tau \uparrow$	$R^{nom} \downarrow, \tau \uparrow$

- Government should **give up on price stability**
- Government should **use monetary policy to address inequality**
- Government should **ditch tax smoothing**
- Government should **ditch Taylor type interest rate rule**

BEGS


HANK
RANK
Nominal rate
Inflation
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Markup shocks
% pts
TFP shock
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Taylor
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years

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6. Many minor issues.

CBs and Inequality

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  - Too much continuity in the income dynamics - is it realistic to assume that Mike can become a carpenter?
  - Will matter for optimal policy responses to shocks

Fiscal Policy

BEGS Do consider fiscal policy as well BUT: **Allow only for very blunt tax instruments**

1. Flat rate income tax rate.

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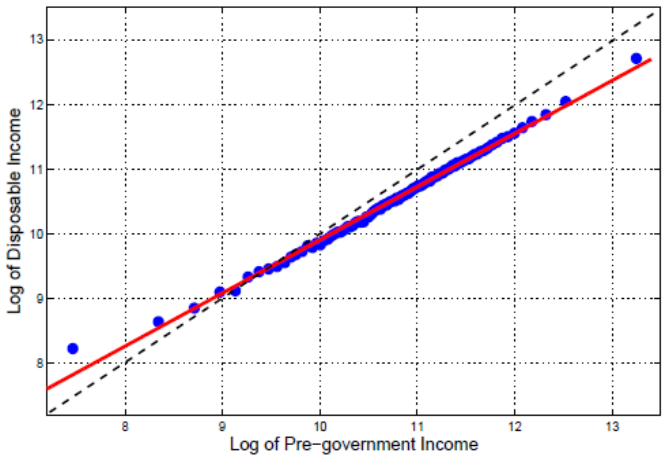
- In addition, statutory tax rates are cyclical.

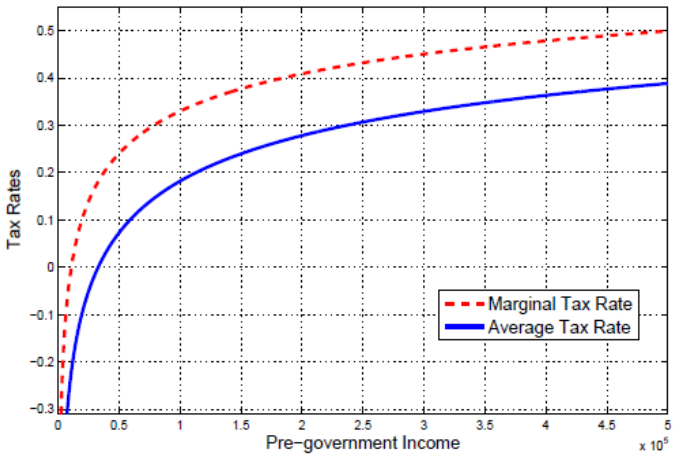
Fiscal Policy

Simple example: Progressive "net-taxation":

$$T\left(y_{it}^{disp}\right) = \tau_{0,t}\left(y_{it}^{gross}\right)^{\tau_{1,t}}$$



(a) Statistical fit on U.S. data



(b) Implied average and marginal tax rates

- Will/can provide substantial insurance for lower income households

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My guess: Results may be very sensitive to assumptions made on asset structure

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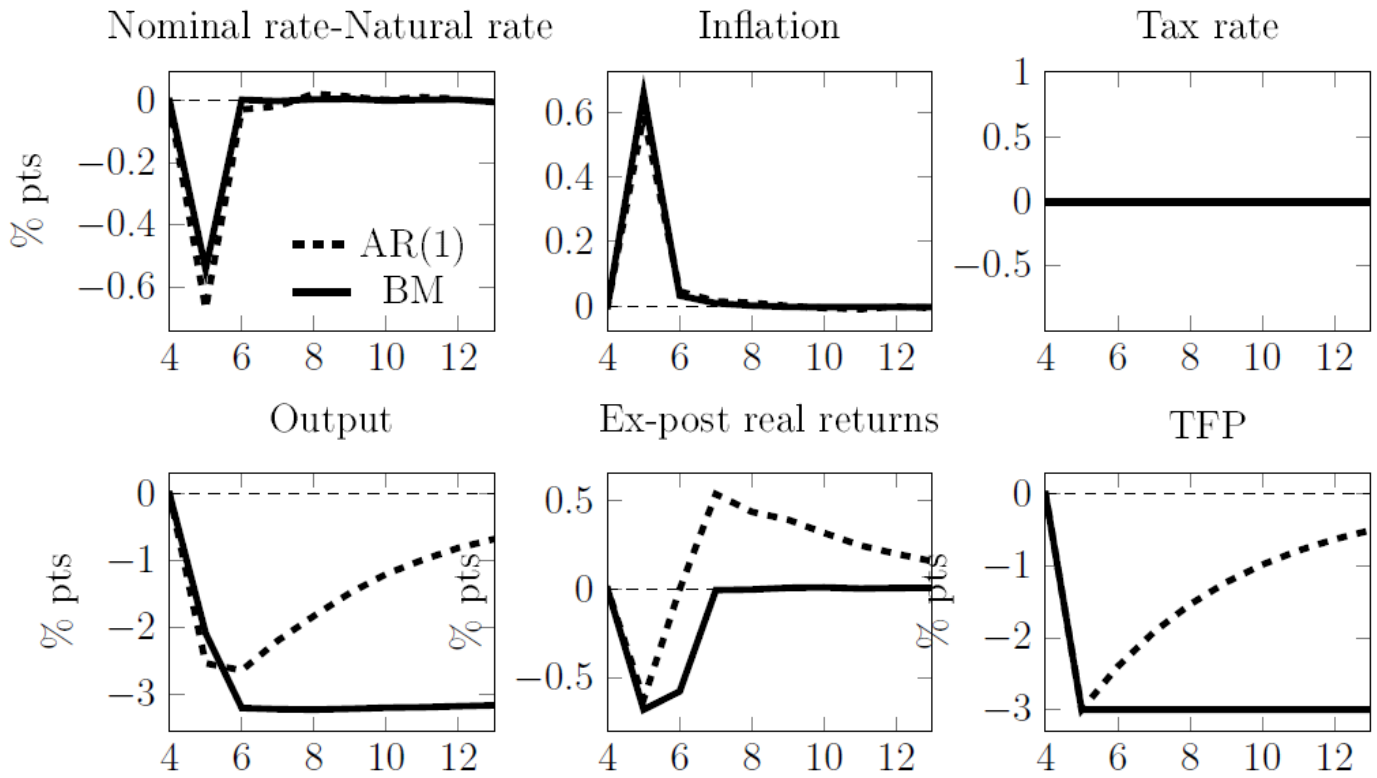
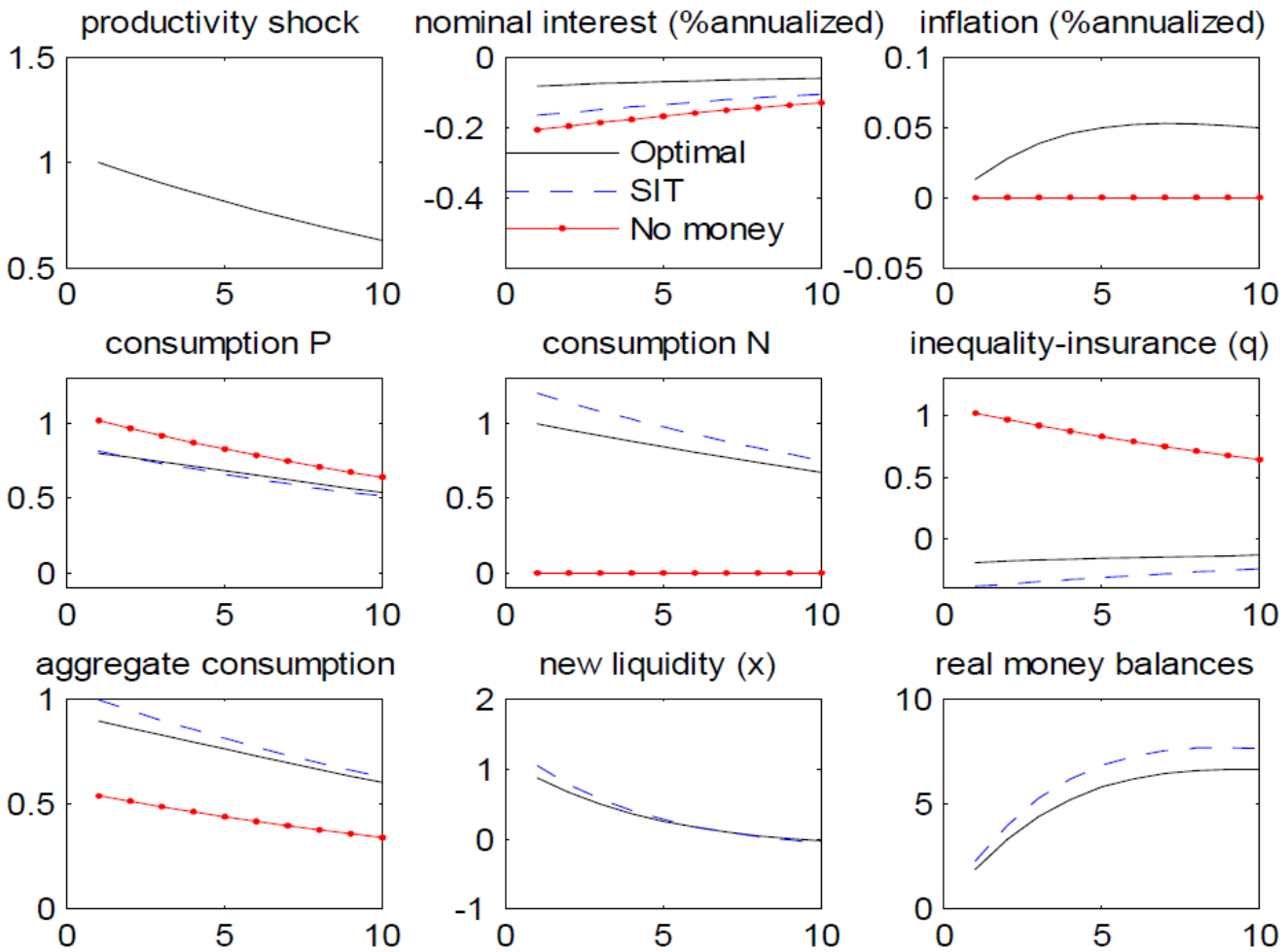
- Multiple asset HANK models probably perform better than single asset ones - who is constrained?

BEGS

Poor work, have low productivity and are short on nominal asset



HANK model where the constrained hold cash but OLF



How Effective is MP for Insurance Purposes?

Short run impact crucial: **Monetary Policy**:

- **CAN** move nominal deposit rates;

Fiscal policy (taxes) much better at impacting on real disposable income and perhaps even at jobs creation (taxes or spending)

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- **Doesn't move unemployment** much in the short run.

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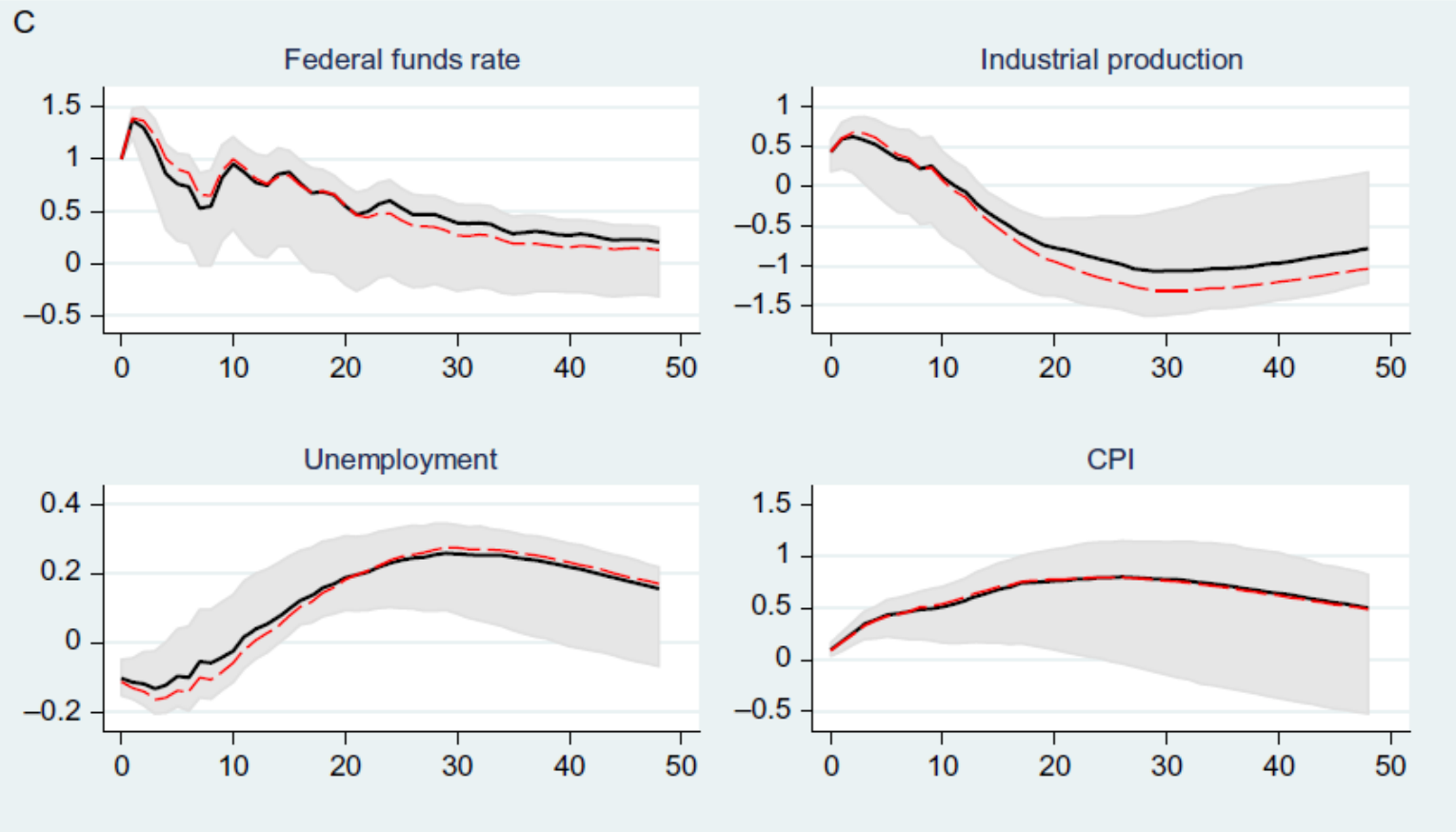
Proxy SVAR IV estimates of dynamic impact of monetary policy shocks:



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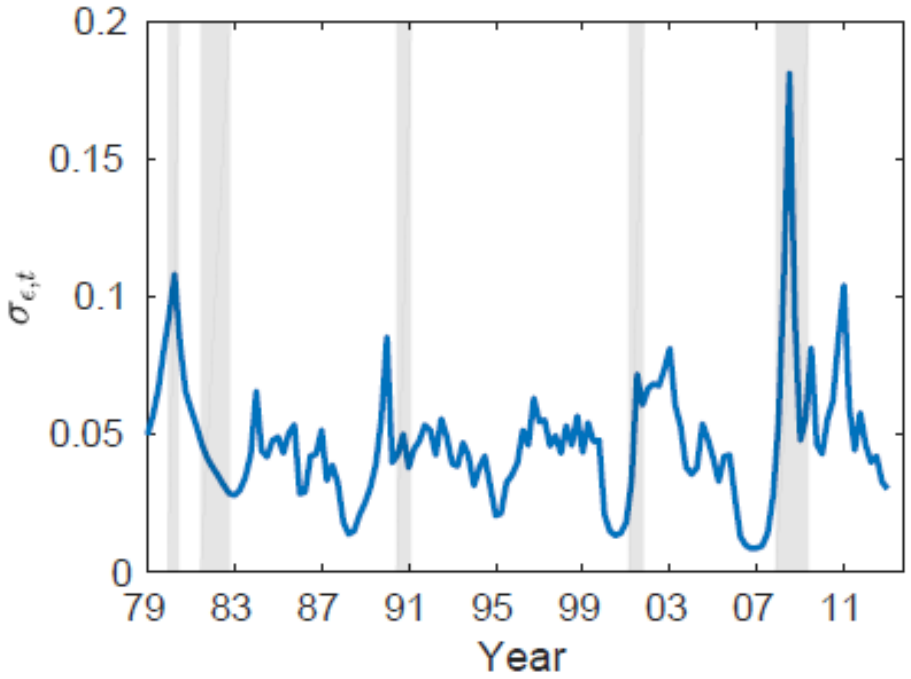
- Imply that stabilization becomes extra important

Cuntercyclical Earnings Uncertainty

Variance of persistent income shocks, married couples, SIPP 1984-2013 (Bayer et al, 2018)



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7. Cost of changing prices should be indexed on output.
8. Does model match wealth distribution?

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