Labor Income Uncertainty and the Macroeconomy

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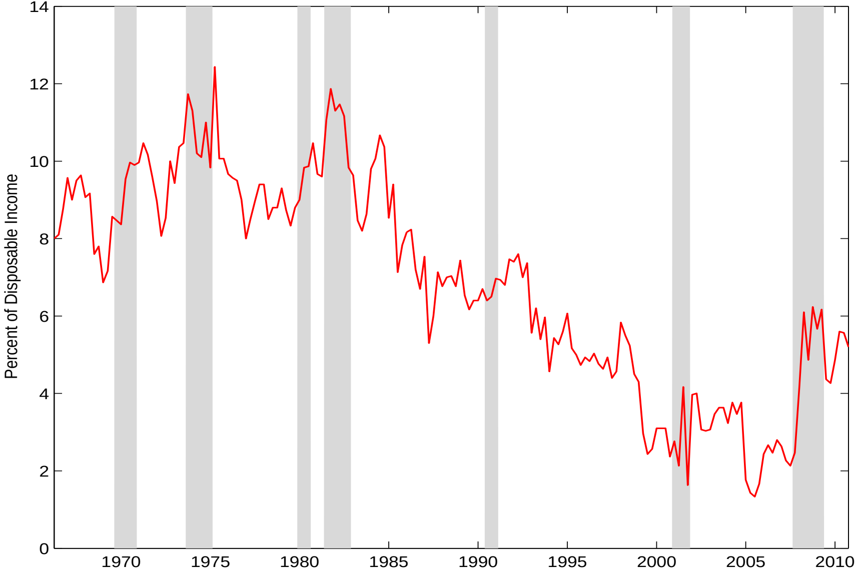
US Personal Saving Rate (s), 1966–2011



Theory

$$
\begin{aligned}
\mathrm{v}(m_t) &= \max_{\{\mathrm{c}_t, \mathrm{x}_t\}} \; u(\mathrm{c}_t) + \beta \mathbb{E}_t \left[\mathrm{v}(m_{t+1}) \right] \\
&\text{s.t.} \\
\mathcal{R}_{t+1} &= \zeta \mathbf{R}_{t+1} + (1 - \zeta)\mathsf{R} \\
m_{t+1} &= (m_t - x_t - c_t)\mathcal{R}_{t+1} + \theta_{t+1}
\end{aligned}
$$

- Labor Income Uncertainty
  - Unemployment Is Biggest Shock
  - Lots of Micro Evidence that Precautionary Saving Is Big
  - Basically, people facing greater σ:
    - Don't buy a house/car ($x = 0$)
    - Hold larger net worth
- Rate-Of-Return Uncertainty
  - Theoretical effects on C ambiguous
    - For plausible parameter values, $\sigma \uparrow \Rightarrow C \uparrow$
  - Portfolio share in risky asset is reduced

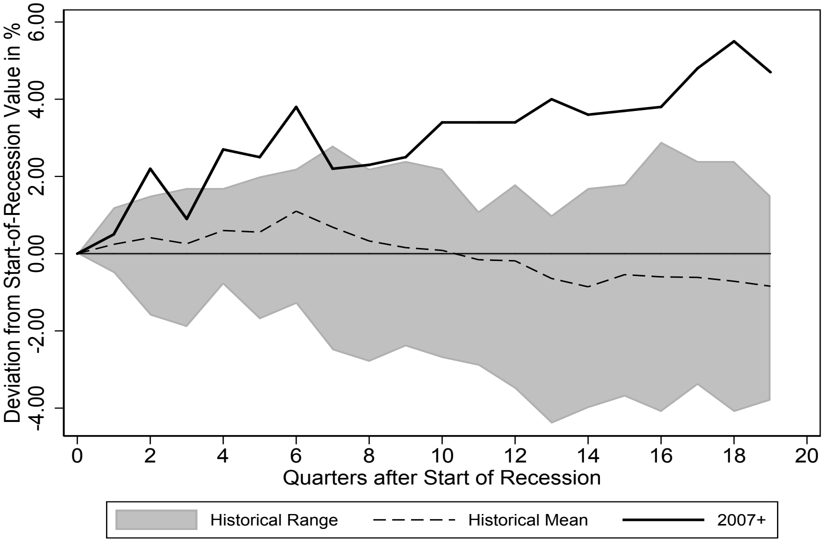
Literature on C

- "Wealth Effects"
  - Modigliani, Klein, MPS model, ...
    - $s_t = -0.05m_t +$ other stuff
- "Precautionary"
  - Carroll (1992)
    - Saving rate rises in recessions
    - $\Delta \log C_{t+1}$ strongly related to $\mathbb{E}_t(u_{t+1} - u_t)$
- "Credit Availability"
  - Secular Trend:
    - Parker (2000), Dynan and Kohn (2007), Muellbauer (many papers)
  - Cyclical Dynamics:
    - Guerrieri and Lorenzoni (2017), Eggertsson and Krugman (2012), Hall (2011)

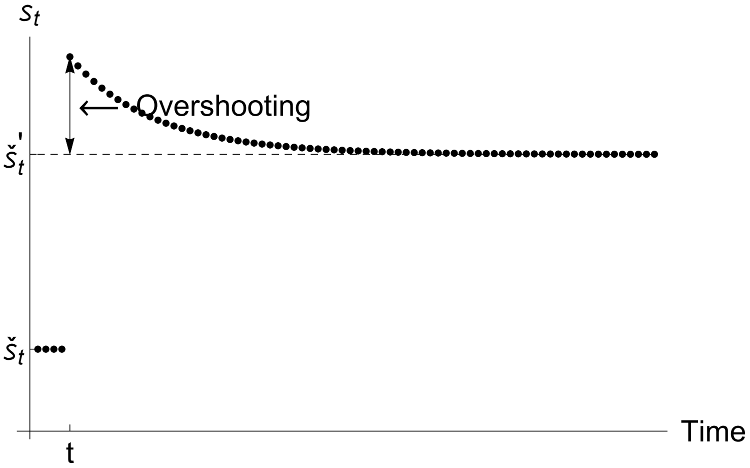
Great Recession 2007–2009

- s rises by $\sim$4 pp
- Bigger & more persistent increase than any postwar recession
- But all three indicators also move a lot:
  - Credit conditions tighten
  - Unemployment Expectations rise
  - Wealth falls

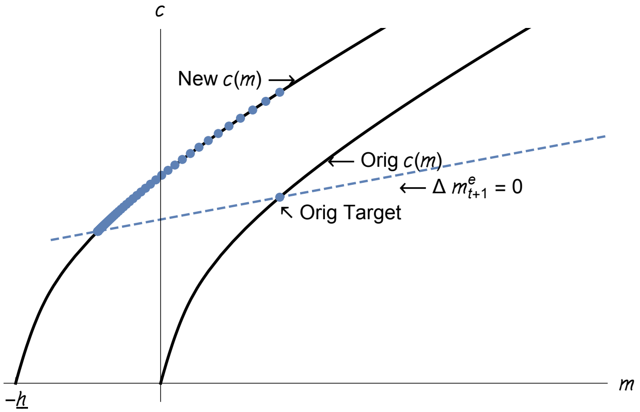
Personal Saving Rate 2007– ↑



Saving Rate After a Permanent Rise in ℧

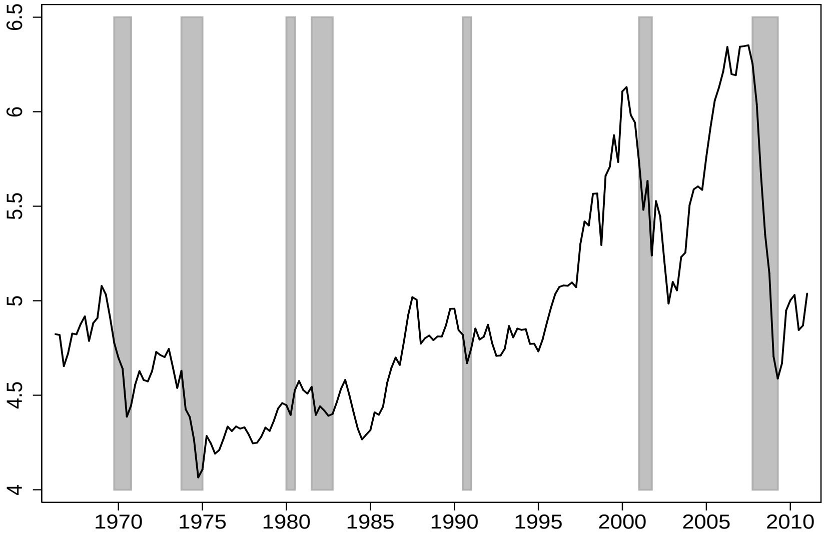


Credit Easing/Financial Innovation & Deregulation



$\check{m}$ is close to linear in credit conditions

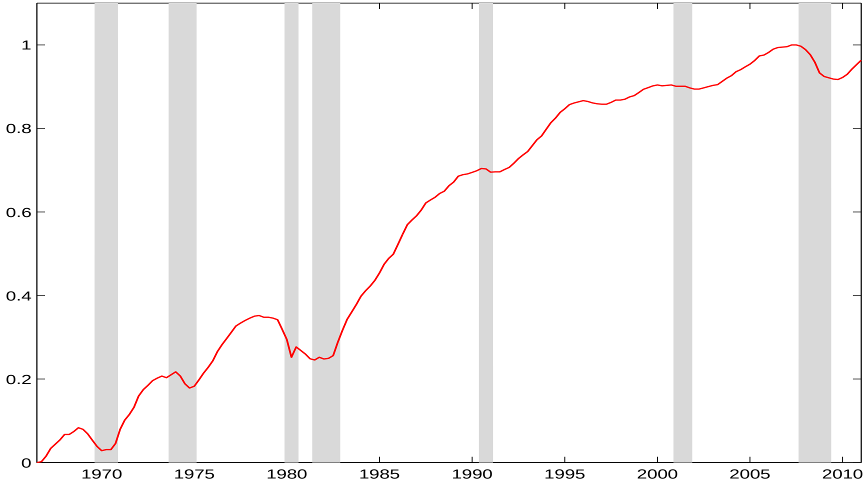
Net Worth (Ratio to Quarterly Disp Income)



Credit Easing Accumulated (CEA) (à la Muellbauer)

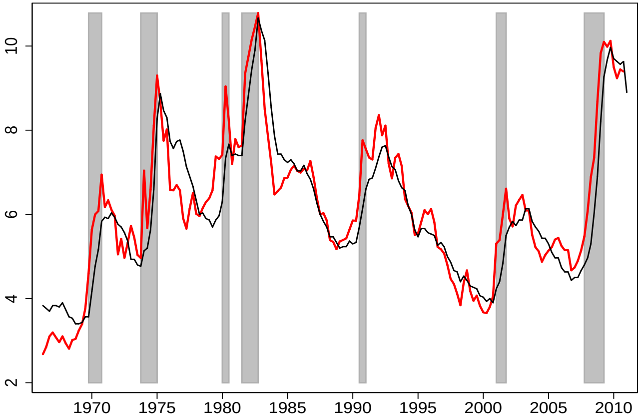
Accumulated responses, weighted with debt–income ratio, to:

"Please indicate your bank's willingness to make consumer installment loans now as opposed to three months ago."



$\mho_t$ Implied by Michigan U Expectations

UExp: "How about people out of work during the coming 12 months—do you think that there will be more unemployment than now, about the same, or less?"



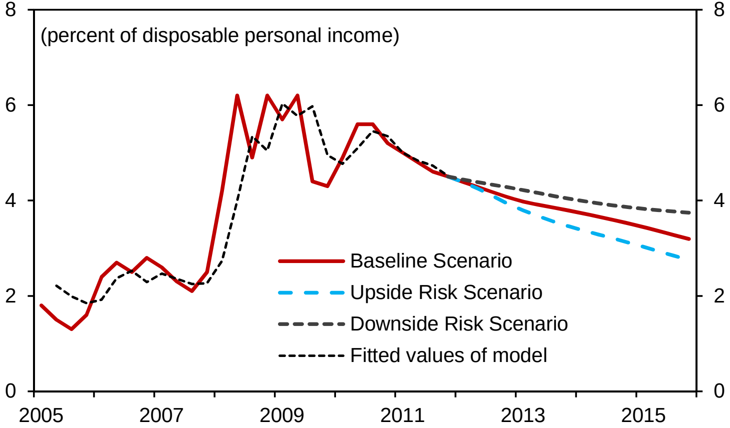
Reduced-Form Regressions

$$s_t = \gamma_0 + \gamma_m m_t + \gamma_{CEA} CEA_t + \gamma_{Eu} \mathbb{E}_t u_{t+4} + \gamma_t\, t + \gamma_{uC}(\mathbb{E}_t u_{t+4} \times CEA_t) + \varepsilon_t$$

Model	Time	Wealth	CEA	Un Risk	All 3	**Baseline**	Interact
γ_0	11.95***	25.20***	9.32***	8.24***	14.90***	15.23***	15.55***
	(0.61)	(1.73)	(0.57)	(0.42)	(2.56)	(2.16)	(2.56)
γ_m		−2.61***			−1.12***	−1.18***	−1.37***
		(0.32)			(0.42)	(0.35)	(0.46)
γ_{CEA}			−14.14***		−5.47***	−6.12***	−4.60***
			(1.74)		(1.94)	(0.57)	(1.72)
γ_{Eu}				0.67***	0.32***	0.29***	0.38***
				(0.05)	(0.12)	(0.08)	(0.11)
γ_t	−0.04***	−0.03***	0.04***	−0.05***	−0.00		0.00
	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)		(0.01)
γ_{uC}							−0.32**
							(0.16)
$\bar{R}^2$	0.70	0.85	0.82	0.88	0.89	0.90	0.90
F stat p val	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DW stat	0.30	0.69	0.50	0.86	0.94	0.93	0.98

PSR Forecasts—Out of Sample

2012–2015



Scenarios based on SPF and our judgement

Conclusions

- All three effects present
- Easier borrowing largely explains secular decline s
- Order of importance in Great Recession:
  1. Wealth shock
  2. Labor income risk
  3. Credit tightening
     - $\Rightarrow$ if credit has big cyclical effect, comes thru w and $\mho$

References

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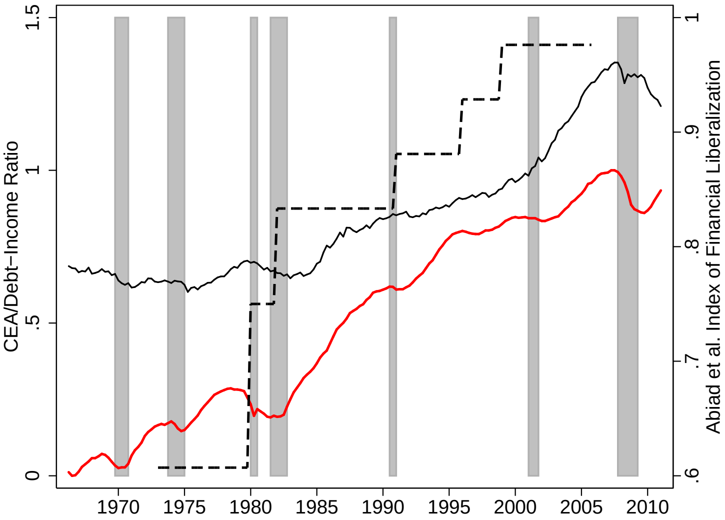
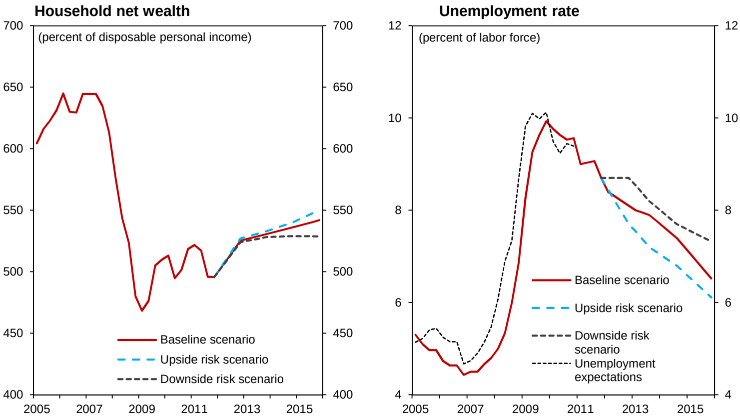
Background Slides

Alternative Measures of Credit Availability

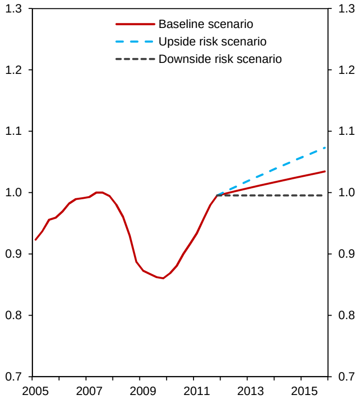


Assumptions/Scenarios for Out-of-Sample Forecasts

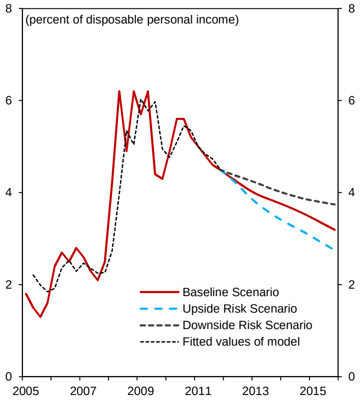


Assumptions/Scenarios for Out-of-Sample Forecasts

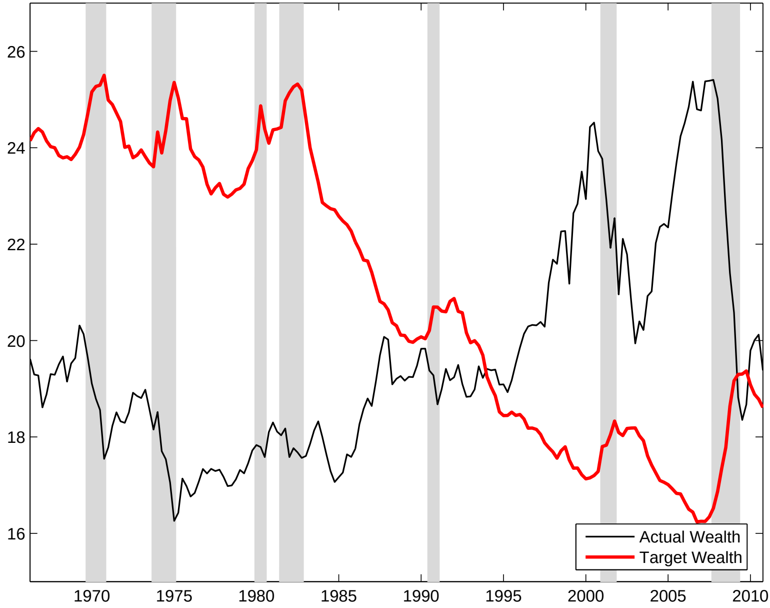
Credit conditions



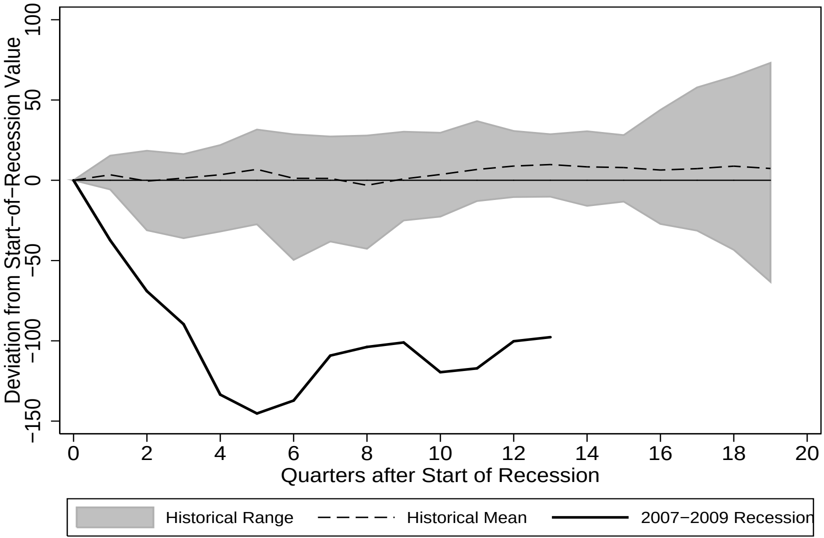
Household saving rate



Actual and Target Wealth

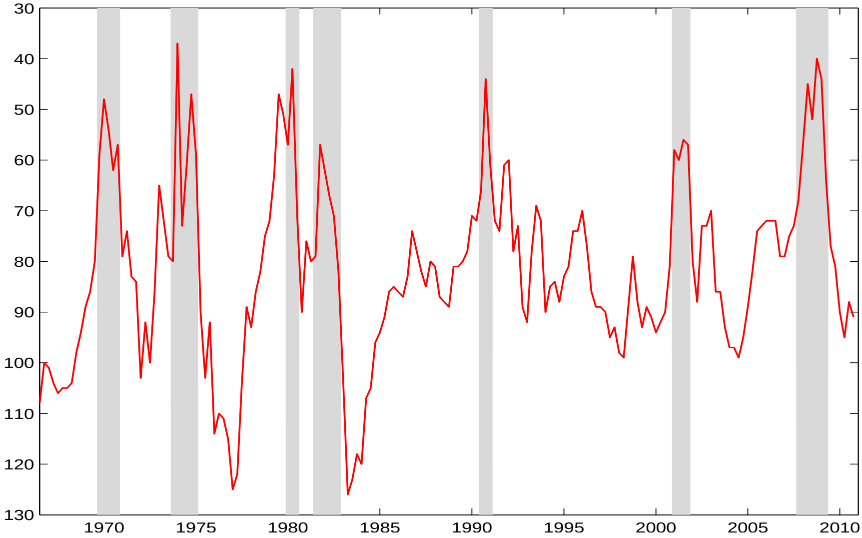


Household Wealth 2007– ↓ by 150% of Income

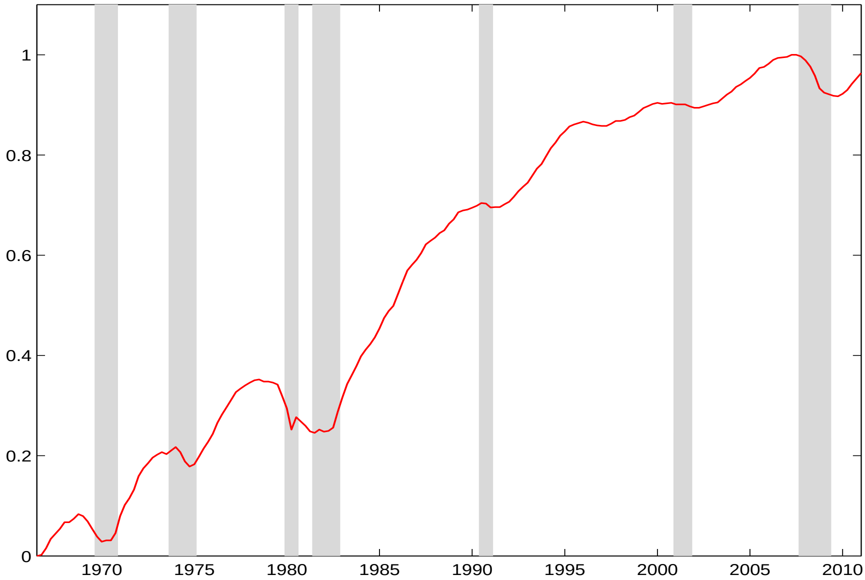


Sustained Expectations of Rising Unemp Risk

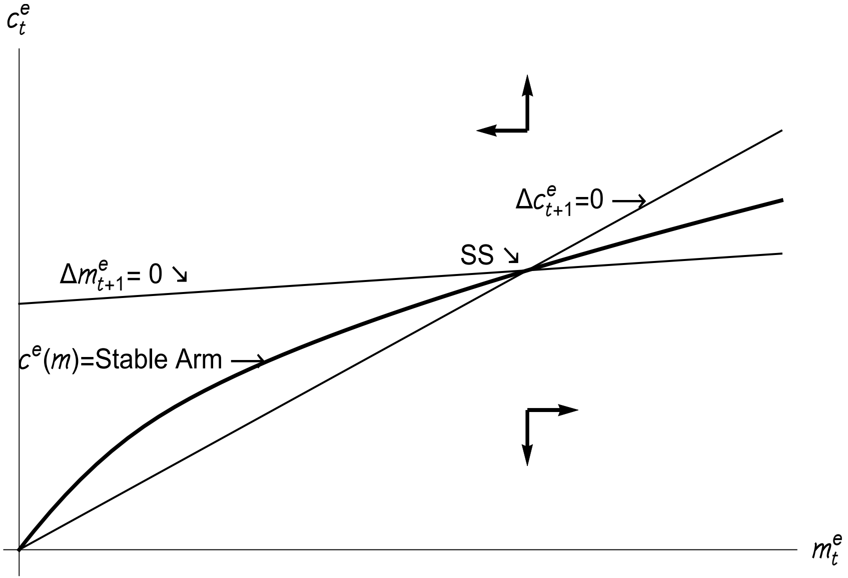
Thomson Reuters/University of Michigan $\mathbb{E}_t(u_{t+4} - u_t)$



Tighter HH Credit Supply (Based on Muellbauer)



Consumption Function



Overshooting and Fiscal Policy

DSGE models:

- Frictions, frictions everywhere; but missing here
- If Δc imposes 'external' costs
  - Sticky prices/wages
  - Capital (or Investment) adjustment costs
  - Other reasons for 'pecuniary externalities'
- $\Rightarrow$ 'stimulus' payments, fiscal policy may reduce cost of cycle
- Justification for 'automatic stabilizers'?

Reduced-Form Regressions on Model Data

$$s_t^{\text{theor}} = \gamma_0 + \gamma_m m_t + \gamma_{\text{CEA}} \text{CEA}_t + \gamma_{Eu} \mathbb{E}_t u_{t+4} + \gamma_t\, t + \gamma_{uC} (\mathbb{E}_t u_{t+4} \times \text{CEA}_t) + \varepsilon_t$$

Model	Time	Wealth	CEA	Un Risk	All 3	**Baseline**	Interact
γ_0	11.96***	21.44***	9.35***	8.42***	12.24***	12.51***	12.49***
	(0.50)	(1.11)	(0.41)	(0.16)	(0.60)	(0.53)	(0.55)
γ_m		−2.33***			−0.79***	−0.85***	−0.94***
		(0.25)			(0.12)	(0.10)	(0.11)
γ_{CEA}			−13.82***		−5.85***	−6.49***	−5.33***
			(1.12)		(0.59)	(0.14)	(0.47)
γ_{Eu}				0.63***	0.33***	0.30***	0.37***
				(0.02)	(0.04)	(0.02)	(0.03)
γ_t	−0.04***	−0.03***	0.04***	−0.05***	−0.00		0.00
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)		(0.00)
γ_{uC}							−0.19***
							(0.04)
$\bar{R}^2$	0.80	0.93	0.93	0.98	0.99	0.99	0.99
F stat p val	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DW stat	0.05	0.22	0.09	0.39	0.72	0.71	0.99

Reduced-Form Regressions on Actual Data

$$s_t^{\text{meas}} = \gamma_0 + \gamma_m m_t + \gamma_{\text{CEA}} \text{CEA}_t + \gamma_{Eu} \mathbb{E}_t u_{t+4} + \gamma_t\, t + \gamma_{uC} (\mathbb{E}_t u_{t+4} \times \text{CEA}_t) + \varepsilon_t$$

Model	Time	Wealth	CEA	Un Risk	All 3	**Baseline**	Interact
γ_0	11.95***	25.20***	9.32***	8.24***	14.90***	15.23***	15.55***
	(0.61)	(1.73)	(0.57)	(0.42)	(2.56)	(2.16)	(2.56)
γ_m		−2.61***			−1.12***	−1.18***	−1.37***
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γ_{Eu}				0.67***	0.32***	0.29***	0.38***
				(0.05)	(0.12)	(0.08)	(0.11)
γ_t	−0.04***	−0.03***	0.04***	−0.05***	−0.00		0.00
	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)		(0.01)
γ_{uC}							−0.32**
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$\bar{R}^2$	0.70	0.85	0.82	0.88	0.89	0.90	0.90
F stat p val	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DW stat	0.30	0.69	0.50	0.86	0.94	0.93	0.98