Labor Income Uncertainty and the Macroeconomy

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Presentation at “Uncertainty and the Macroeconomy”
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US Personal Saving Rate ($s$), 1966–2011

Percent of Disposable Income

0 2 4 6 8 10 12 14
Theory

\[ v(m_t) = \max_{\{c_t, x_t\}} \ u(c_t) + \beta \mathbb{E}_t [v(m_{t+1})] \]

\[ \text{s.t.} \]

\[ R_{t+1} = \zeta R_{t+1} + (1 - \zeta) R \]

\[ m_{t+1} = (m_t - x_t - c_t) R_{t+1} + \theta_{t+1} \]

- Labor Income Uncertainty
  - Unemployment Is Biggest Shock
  - Lots of Micro Evidence that Precautionary Saving Is Big
  - Basically, people facing greater \( \sigma \):
    - 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, \( \sigma \uparrow \Leftrightarrow C \uparrow \)
  - Portfolio share in risky asset is reduced
Literature on $C$

- **“Wealth Effects”**
  - Modigliani, Klein, MPS model, ...
  - $s_t = -0.05m_t + \text{other stuff}$
- **“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:
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 $\Upsilon$
Credit Easing/Financial Innovation & Deregulation

$m$ 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.”
\( \mathcal{U}_t \) Implied by Michigan U Expectations

\textit{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

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

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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 |
Scenarios based on SPF and our judgement
Conclusions

- All three effects present
- Easier borrowing largely explains secular decline
- 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 $\delta$
References


Background Slides
Assumptions/Scenarios for Out-of-Sample Forecasts

Household net wealth
(percent of disposable personal income)

Unemployment rate
(percent of labor force)

Sources: Haver Analytics and authors' estimates.
Assumptions/Scenarios for Out-of-Sample Forecasts

Credit conditions

Baseline scenario
Upside risk scenario
Downside risk scenario

Household saving rate

Baseline Scenario
Upside Risk Scenario
Downside Risk Scenario
Fitted values of model

Sources: Haver Analytics and authors' estimates.
Actual and Target Wealth

- Actual Wealth (black line)
- Target Wealth (red line)

Yearly Actual Wealth:
- 1970: 16
- 1975: 18
- 1980: 20
- 1985: 22
- 1990: 24
- 1995: 26
- 2000: 24
- 2005: 22
- 2010: 20

Yearly Target Wealth:
- 1970: 16
- 1975: 18
- 1980: 20
- 1985: 22
- 1990: 24
- 1995: 26
- 2000: 24
- 2005: 22
- 2010: 20
Household Wealth 2007–↓ by 150% of Income
Sustained Expectations of Rising Unemp Risk

Thomson Reuters/University of Michigan $E_t(u_{t+4} - u_t)$
Tighter HH Credit Supply (Based on Muellbauer)
Consumption Function

\[ c^e(m) = \text{Stable Arm} \rightarrow \]

\[ \Delta m^e + 1^e = 0 \rightarrow \Delta c^e + 1 = 0 \rightarrow \text{SS} \]
Overshooting and Fiscal Policy

DSGE models:

- Frictions, frictions everywhere; but missing here
- If $\Delta c$ 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

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

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\(\bar{R}^2\) | 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

\[ s_{t}^{\text{meas}} = \gamma_0 + \gamma_m m_t + \gamma_{\text{CEA}} CEA_t + \gamma_{\text{Eu}} \mathbb{E}_t u_{t+4} + \gamma_t t + \gamma_u C (\mathbb{E}_t u_{t+4} \times CEA_t) + \varepsilon_t \]

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\[ \bar{R}^2 \]

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\[ DW \text{ stat} \]