Section 7: Consumption Smoothing

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November 5, 2021

Outline

OG Keynes

$$c_t = \alpha_0 + \alpha_1 y_t$$

- How does this capture concepts we've talked about?
- What are important features it leaves out?

Friedman (1957) PIH Reframed

$$\max E_t \left[\sum_{n=0}^{\infty} \delta^n u(c_{t+n}) \right]$$

subject to the constraint

$$a_{t+1} = (a_t + y_t - c_t) R_{t+1}$$

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Euler equation:

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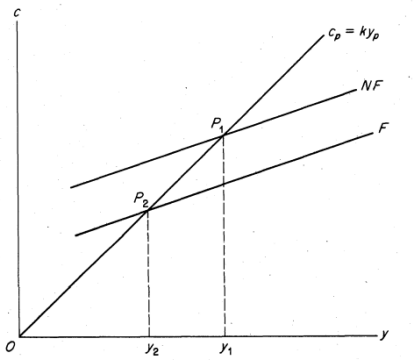
- How does this capture the PIH?
- What modifications could we make to capture violations of the PIH?

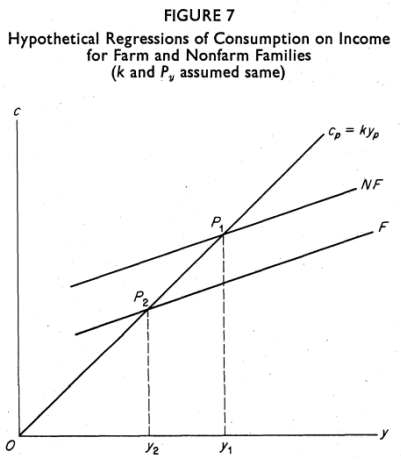
Visualizing PIH: Groups

FIGURE 7

Hypothetical Regressions of Consumption on Income for Farm and Nonfarm Families (k and P_y assumed same)



Visualizing PIH: Groups



- MPC out of permanent income $= k$
- Conditioning on occupation

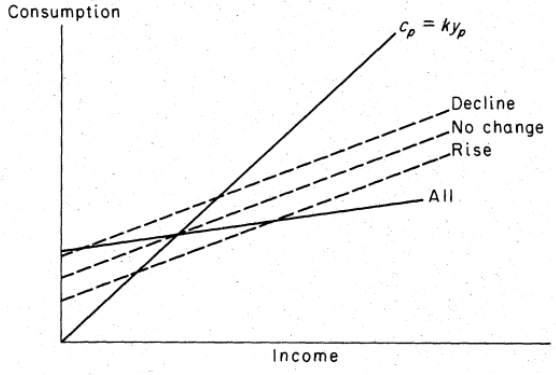
  $\Rightarrow y$ variation more transitory

  $\Rightarrow$ shallower slope

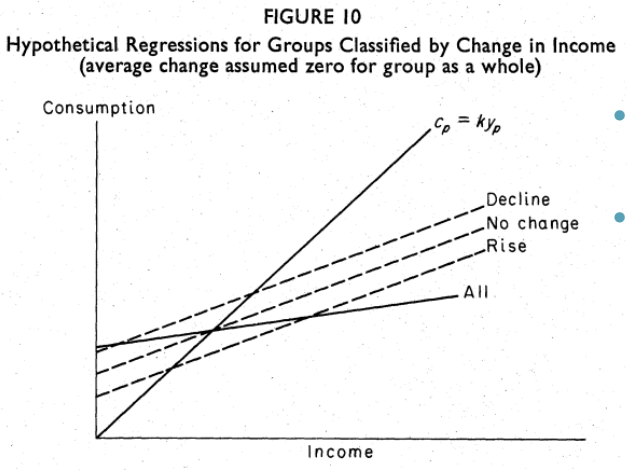
Visualizing PIH: Panels

FIGURE 10

Hypothetical Regressions for Groups Classified by Change in Income (average change assumed zero for group as a whole)



Visualizing PIH: Panels



- Cross-sectional slope includes both permanent and transitory y differences
- Conditioning on income change
  $\Rightarrow$ y variation more permanent
  $\Rightarrow$ steeper slope

Hall (1978) JPE Test of PIH

Recall Euler equation:

$$u'(c_t) = E_t \left[R_{t+1} \delta u'(c_{t+1}) \right]$$

Assume:

1. $R_{t+1} = R$
2. $R\delta = 1$
3. $u(\cdot)$ is quadratic

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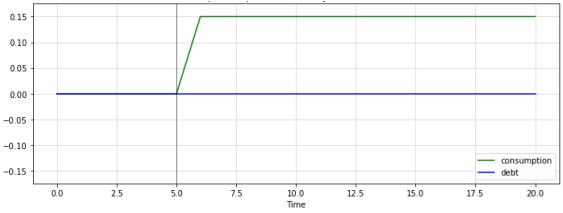
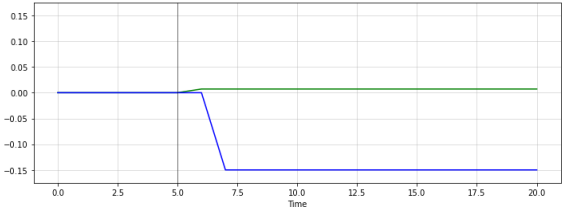
- How does this capture the PIH?
- What happened to the distinction between transitory and permanent income?

Visualizing Hall (1978) Test of PIH

Permanent Income Shock

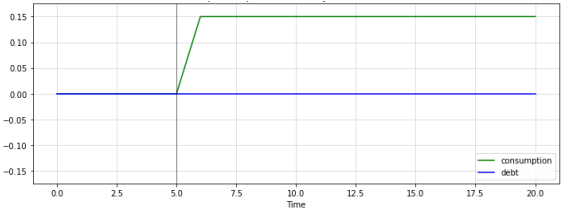


Transitory Income Shock

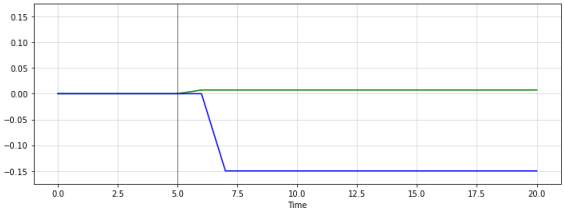


Visualizing Hall (1978) Test of PIH

Permanent Income Shock



Transitory Income Shock



- Impulse response functions simulated in QuantEcon lecture notes (great computational reference!)
- Infinitely lived consumer saves transitory shock and consumes (constant) interest payments
- Turns out Hall (1978) finds support for "consumption random walk" in aggregate data!

Outline

Beshears, Choi, Laibson, and Madrian Taxonomy

Reasons for "excess sensitivity" of $\frac{\mathrm{dc}}{\mathrm{d}y}$ Handbook of Behavioral Economics chapter on behavioral household finance

1. Rational
2. Behavioral

Rational Explanations

- High impatience
- Support for dependents
- Liquidity constraints
- Durables
- 2-asset buffer stock model
- Near-rationality

Behavioral Explanations

- Present bias
- Mental accounting
- Myopia

Outline

Nonzero MPC Predicted by Different Mechanisms

	Predictable Income Change	
	Increase	Decrease
PIH	✗	✗
Liquidity	✓	✗
Behavioral/myopia	✓	✓

Hendren (2017) AER using PSID Consumption Changes

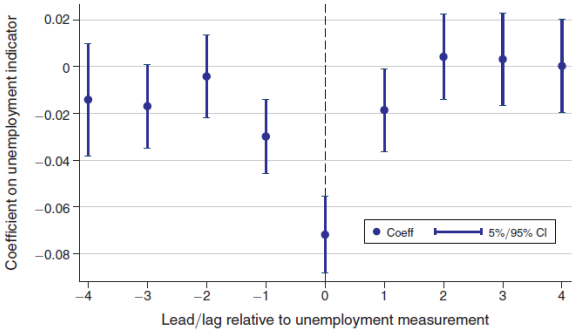


FIGURE 4. IMPACT OF UNEMPLOYMENT ON CONSUMPTION GROWTH

Notes: This figure presents coefficients from separate regressions of leads and lags of the log change in food expenditure on an indicator of unemployment, along with controls for year indicators and a cubic in age. Data are from the PSID with one observation per household per year. Unemployment is defined as an indicator for the household head being unemployed. Following Gruber (1997) and Chetty and Szeidl (2007), food expenditure is the sum of food in the home, food outside the home, and food stamps. The horizontal axis presents the years of the lead/lag for the consumption expenditure growth measurement (i.e., 0 corresponds to consumption growth in the year of the unemployment measurement relative to the year prior to the unemployment measurement). The sample is restricted to household heads who are employed in $t-1$ or $t-2$.

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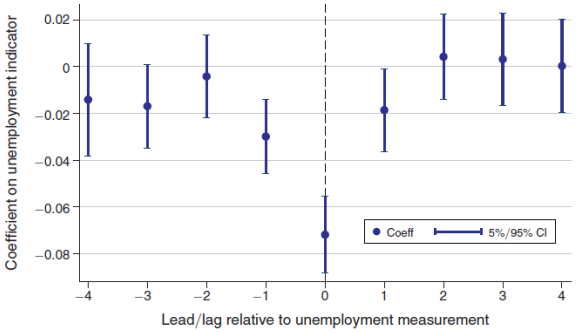

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What is familiar? What is unfamiliar?

Robustness Check: Ex Ante Δc not driven by Δy

TABLE 4—EX ANTE DROP IN FOOD EXPENDITURE PRIOR TO UNEMPLOYMENT AND IMPLIED (EX ANTE) WILLINGNESS TO PAY FOR UI

	Baseline (1)	Controls for needs (2)	Under-50 sample (3)	Job loss (4)	Household income controls (5)	Household head income controls (6)
Impact of unemployment on $\log(c_{t-1}) - \log(c_{t-2})$						
Unemployment	−0.0271	−0.0211	−0.0288	−0.0260	−0.0272	−0.028
Standard error	(0.00975)	(0.0105)	(0.0106)	(0.00824)	(0.00969)	(0.00983)
Specification details						
Sample employed in $t-2$ and $t-1$	X	X	X	X	X	X
Controls for change in log needs ($t-2$ versus $t-1$)		X				
Change in log HH income ($t-2$ versus $t-1$) (3rd-order poly)					X	
Change in log HH head income ($t-2$ vs. $t-1$) (3rd-order poly)						X
Mean dependent variable	0.000	−0.001	0.007	0.000	0.000	0.000
Observations	65,483	53,327	52,463	65,556	65,399	64,119
Households	9,557	8,371	8,512	9,560	9,547	9,448

Notes: This table presents estimates of the impact of unemployment in year t on consumption growth in year $t-1$ relative to $t-2$, $\log(c_{t-1}) - \log(c_{t-2})$. Column 1 controls for a cubic in age and year dummies and restricts to the baseline sample of those who are employed in both year $t-2$ and $t-1$. Column 2 adds controls for the change in log expenditure needs (*need_std_p*) between $t-2$ and $t-1$ and the change in total household size between $t-2$ and $t-1$ (this is not available in all years of the survey). Column 3 restricts the sample to those aged 50 and under to the baseline specification. Column 4 replaces the unemployment indicator with an indicator for job loss. Job loss is defined as an indicator for being laid off or fired. Column 5 adds controls to the specification in column 1 for a third-degree polynomial in the household's change in log income between years $t-2$ and $t-1$. Column 6 adds controls to the specification in column 1 for a third-degree polynomial in the household head's change in log income between years $t-2$ and $t-1$. All standard errors are clustered at the household level.

Alternative (Predictable) Unemployment-Based Income Drop

- Peter's paper used predictable benefit expiry to test consumption-smoothing models
- Job loss might have both a predictable and unpredictable component. Implications:
  1. Cons. models:
  2. Gruber (1997) value of UI:
  3. New value of UI:

Alternative (Predictable) Unemployment-Based Income Drop

- Peter's paper used predictable benefit expiry to test consumption-smoothing models
- Job loss might have both a predictable and unpredictable component. Implications:
  1. Cons. models: Ex ante Δc is itself evidence of consumption-smoothing
  2. Gruber (1997) value of UI: Downward bias by relying on the drop at UE onset
  3. New value of UI: Given perceived UE risk, drop prior to UE itself gets UI WTP estimate unaffected by state-dependent utility concerns

Hendren (2017) AER using HRS Elicitations

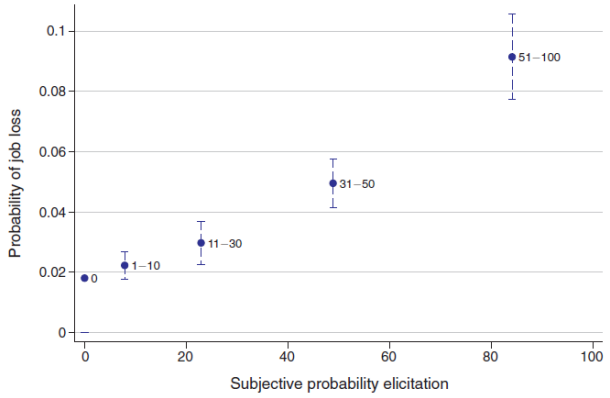


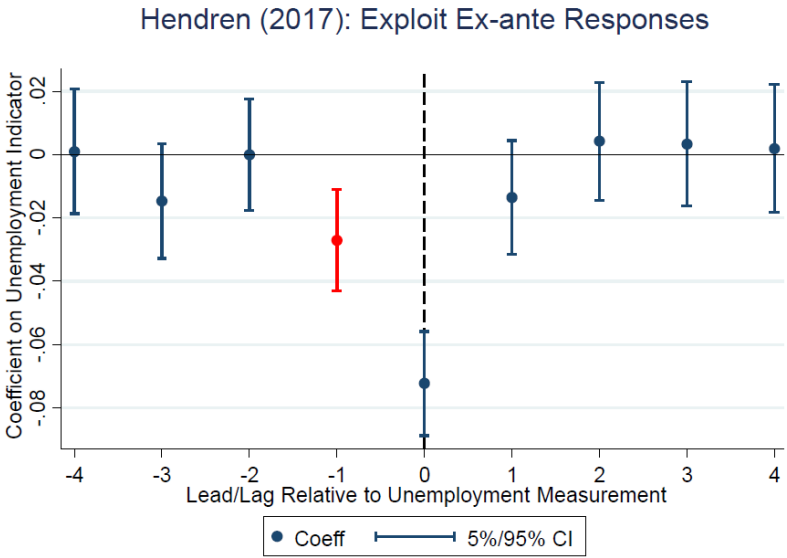
FIGURE 2. PREDICTIVE CONTENT OF SUBJECTIVE PROBABILITY ELICITATIONS:
BINNED SCATTER-PLOT OF U VERSUS Z, CONDITIONAL ON X

Notes: This figure reports mean rate of job loss in each elicitation category controlling for demographics, job characteristics, and year controls. To construct this figure, I run the regression in equation (1). The figure plots the coefficients on bins of the elicitations. I omit the lowest bin (corresponding to $Z = 0$) and add back the mean rate of job loss of 1.9 percent to all coefficients. The 5/95 percent confidence intervals are constructed using the standard errors of the regression coefficients, clustering by household.

Combining PSID Consumption Drop and HRS Private Info

- Both datasets have unemployment for a representative sample $\Rightarrow$ Two-sample IV scales the Δc "reduced form" by the $\Delta Pr(U)$ "first-stage"
- This can be done both for Δc at UE onset and Δc prior to UE onset

Hendren (2017) AER Ex Ante Responses



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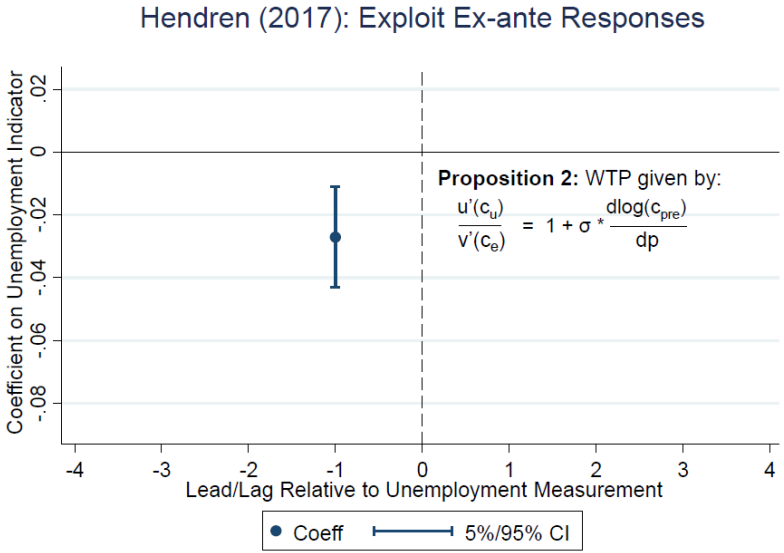

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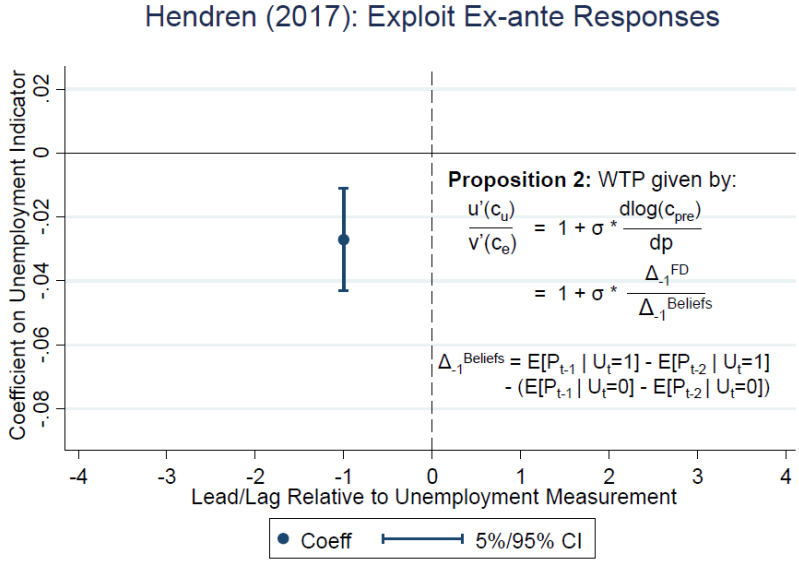

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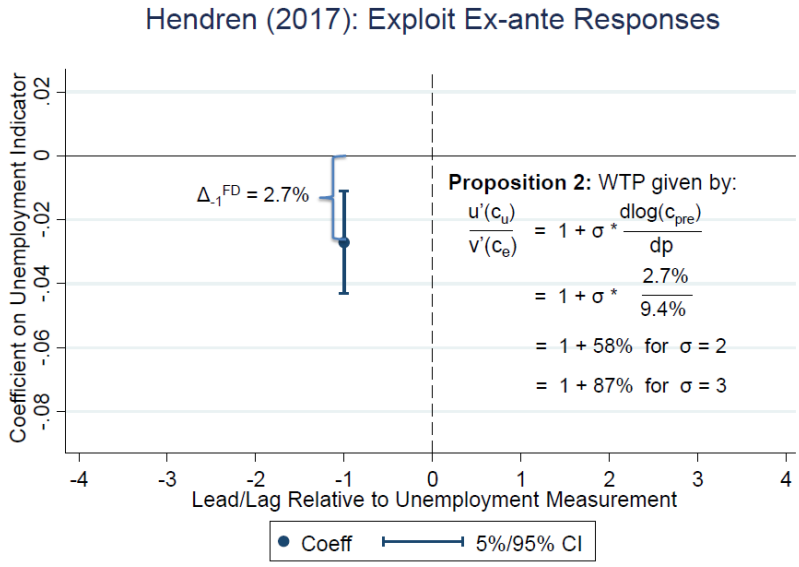

Hendren (2013) ECMA and Hendren (2017) AER

- What was the main takeaway from Hendren (2013) ECMA?
- How does it relate to what you've seen in Hendren (2017) AER?

Return to Adverse Selection: Pooled Price Ratio

- Recall notion of "average costs" as pooled price ratio $T(p) = \frac{E[P|P>p]}{E[1-P|P>p]} \frac{1-p}{p} \geq 1$
- Market unravels when $\frac{u'(c_u(p))}{v'(c_e(p))} < T(p) \quad \forall p$

Using Elicitations to Construct Pooled Price Ratio

Minimum Pooled Price Ratio

Specification	Sub-Samples: Age <= 55	Age > 55	Below Median Wage	Above Median Wage	Tenure > 5 yrs	Tenure <= 5 yrs
Inf T(p) - 1	**3.325**	**3.442**	**4.217**	**3.223**	**4.736**	**3.739**
s.e.	**(0.306)**	**(0.279)**	**(0.417)**	**(0.268)**	**(0.392)**	**(0.336)**
Controls						
Demographics	X	X	X	X	X	X
Job Characteristics	X	X	X	X	X	X
Num of Obs.	11,134	15,506	13,320	13,320	17,850	8,790
Num of HHs	2,255	3,231	2,916	2,259	2,952	2,437

Hendren (2017) AER Recap

- Consumption-smoothing prior to job loss is strong evidence in favor of a preference for smooth consumption and private information about job loss
- Assuming consumption-smoothing preferences and measuring job loss beliefs delivers value of UI

Outline

Connecting Consumption-Smoothing Lectures to Value of UI

- Shimer and Werning (2008) AER assume standard consumption-smoothing preferences and find little welfare benefit of UI once workers are provided with liquidity
  - Do workers not accumulate enough liquidity due to “rational preferences", “behavioral biases”, or the existing policy environment?
  - Given Kaplan and Violante (2014) ECMA “transaction-cost” model of liquidity, isn’t it less important to provide UI given that job loss is a large shock in dollar terms?

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  - Still not enough to justify a private supplemental market given the degree of adverse selection

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  - Still not enough to justify a private supplemental market given the degree of adverse selection
- Did these lectures instill more or less faith in the Landais and Spinnewijn (2021) RESTUD MPC estimates?

Connecting Consumption-Smoothing Lectures to PF

- How frequently should the government collect taxes and dispense transfers?
- How should the government pursue aggregate demand stimulus during recessions?
- What should be the time path of UI?