Household Propensities to Plan for Retirement: A Lifecycle Analysis

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Goal: Better Understand Retirement Saving Behavior

- Use a long panel of individuals to link <u>retirement behavior</u> with <u>behavior while young</u>.

- Do households who look like they failed to plan sufficiently for retirement look like they failed to plan accordingly throughout their working lives

- **KEY:**   **Examine the consumption/saving behavior of pre-retired households when they were young!**

- **GOAL:**   **Can we learn anything about housing planning behavior by observing that household's consumption behavior while young, their pre-retirement saving, and subsequent retirement outcomes?**

What I Find……..

- There is a large disparity in wealth for households with similar economic circumstances (this is not new…..this is well documented in the literature)

- Households with low *relative* wealth:

  – Experience larger consumption declines and work more in retirement (compared to similar households with higher wealth).

  – **Have consumption patterns that respond to predictable income shocks during their working years (*key innovation of the paper*).**

    - Such behavior is similar to 'rule-of-thumb' consumption plans (Campbell and Mankiw (1989)).
    - Such behavior is NOT found among high relative wealth households.
    - Such behavior is NOT due to liquidity constraints.
    - Such behavior found only among those with the lowest 20% of normalized wealth.

Conclusions

- Need a theory to explain the following facts:

    - Households with "too little" wealth entering retirement:

        - Experience large consumption declines in retirement
        - Work more after first date of retirement
        - Appear not to follow standard consumption theories during their youth.

    - No such behaviors are found among higher wealth households.

Conclusions (continued)

- Very few formal consumption theories can jointly explain all of those facts

- However, *differences in planning behavior* across households can explain these facts (if poor planners are low savers).

  - Differences could be due to myopia (no desire to plan for the future)
  - Differences could be due to time inconsistent preferences (desire to plan for the future, but inability to commit to that plan)

  - Either way, planning propensities differ across households in the population.

- **Conclusion: Within the population, there exists two types of households.**

  - Those that plan for future (and, as a result, act according to the PIH).
  - Those that do not plan for the future (like those myopic with respect to consumption decisions).

Additional Results (which are kind of cool…)

- Examine results to *self assessment* questions asked of PSID respondents in the early 1970s.

  – My sample of households were in their 30s when they answered these questions (15-25 years prior to their subsequent retirement)

  – **Households who entered retirement with low wealth self reported that:**

    - **they were less likely to plan for the future.**
    - **they were less likely to carry out the plans that they did make.**
    - **they were less likely to save for the future.**
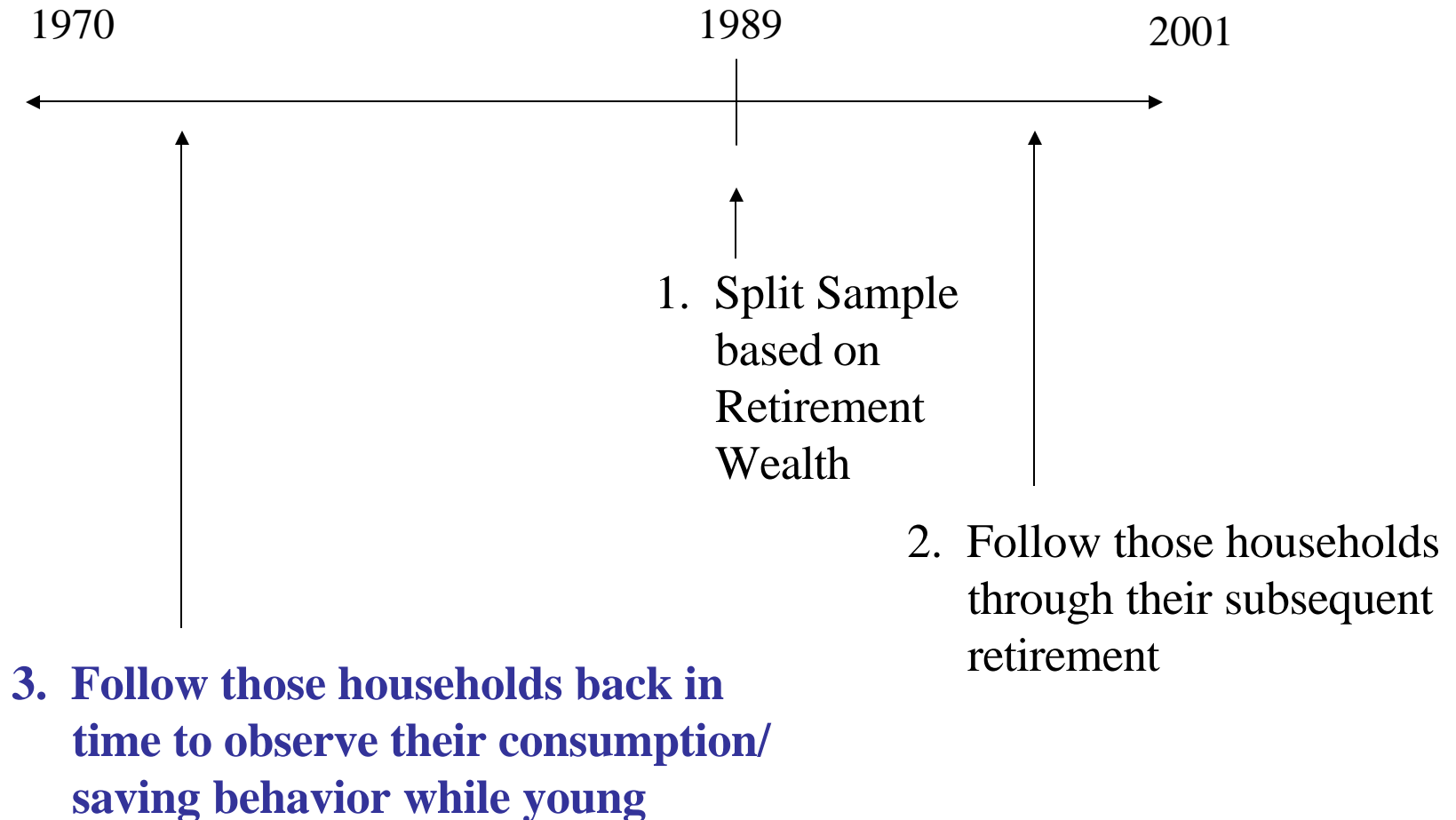
Why Do We Care???

- Lots of focus on the extent to which households "plan" for retirement.

  - Approach is usually to ask households how much time they spend doing planning activities.

  - Such an approach may be limited to the extent that some households are more efficient at planning or to the extent that households follow simple decision rules that work very well for them.

- The hope is to put more structure on the extent to which we can define a household's planning behavior.

The Data

- Use the Panel Study of Income Dynamics (PSID)

    – Follows the same households each year since 1968 (very little attrition).

    – Can measure the behavior of the same household from when they were young through retirement!

    – Survey only measures wealth in the 1984, 1989, 1994, 1999, and 2001 supplements.

    – Income, health, and demographics are measured in every year of the survey.

    – Food consumption is measured in most years.

How I will Use the PSID

- Start with a sample of households aged 50-65 in the 1989 PSID

1970   1989   2001

1. Split Sample based on Retirement Wealth

2. Follow those households through their subsequent retirement

3. Follow those households back in time to observe their consumption/ saving behavior while young

Splitting the Sample: The Data

Start by examining 'pre-retired' households in 1989.

1)   Between the ages of 50 and 65,

2)   Currently not retired

3)   Have positive wealth (only affects less than 4% of sample).

Definition of Wealth

– Cash, Stocks, Bonds, Savings and Checking Accounts, Home Equity, Vehicle Equity, Business Equity, other Real Estate, Collectables, Stock Portion of IRAs, Money Market Accounts Less Non-Collateralized Debt

– **Omissions**:   Private and Public Pension Wealth

– However, in 1989, individuals were asked questions asked about pension replacement rates.   Use this as a regression control.

Splitting the Sample by Wealth

Goal: Estimate households who save little given their lifetime resources

$$W_{i,1989} = f_0 + f_1 X_{i,,1989} + f_2 Z_{i,historical} + ?_{i,1989} ;$$

where $W_{i,1989}$ is log wealth of *i* in 1989

Regress 1989 log wealth on: (*Adjusted R-squared = 0.53*).

1) Income controls: 1989 income, average historical income, changes in income.
2) Employment: Current and Past Unemployment Shocks (inc. duration).
3) Income Variability: Coefficient of Variation of Income
4) Health Shocks: Current and Past Self-Reported Bad Health (inc. duration).
5) Demographics: Race, Age, Education, Occupation, Industry, Region, Marital Status, Family Size, Children Age Ranges, Past Divorced Status, some demographic interaction.
6) Pension Status: Have Pension, *Expected* **Replacement Rate**, Past Contributions.

Splitting the Sample

- Take residuals from first stage log wealth regression ($?_{i,1989}$)

- Define low pre-retirement wealth households as the bottom 20% of **residuals**

- *Two comparison groups*:

  - **bottom 20% of residuals**
  - **and all other pre-retired households.**

- In the full version of the paper, I explore the robustness of this sample split.

  - Explore behavior of households in 0-10, 10-20, 20-30, etc.

Summarizing the Sample Split

- Two samples (high wealth and low wealth) are _similar_ along demographic characteristics (by definition)! (See Table 1)

  ## For example:

    - Low Wealth Group: Avg income 1980 – 1989 = $35,260
    - High Wealth Group: Avg income 1980 – 1989 = $37,793

    - High wealth group had 10 times the wealth as the low wealth group.
    - Groups are also similar along health and demographic characteristics!

    - Interestingly, food consumption between the two groups were nearly identical…. (food is approximately 14% of household budget).

- Note: Many other reasons which can explain wealth differentials across households (my subsequent research design is robust to these omissions…..)

A Quick Note On Subsequent Retirement Behavior ….

- **Have two samples of households in 1989:**

  - Can follow them through 2001 (the most recent wave of PSID available).
  - Do households with low wealth look like they planned accordingly for the subsequent retirement?
  - At the time of retirement, low wealth households (conditioned on observables), experience:

    - **a 20% decline in consumption (at the median) vs. a 11% decline for high wealth households**

    - a 75% decline in work hours vs. 85% for high wealth households (i.e., low wealth retired households are more likely to take on a part-time job).

- **Low wealth households act as though they are surprised by their low wealth status.**
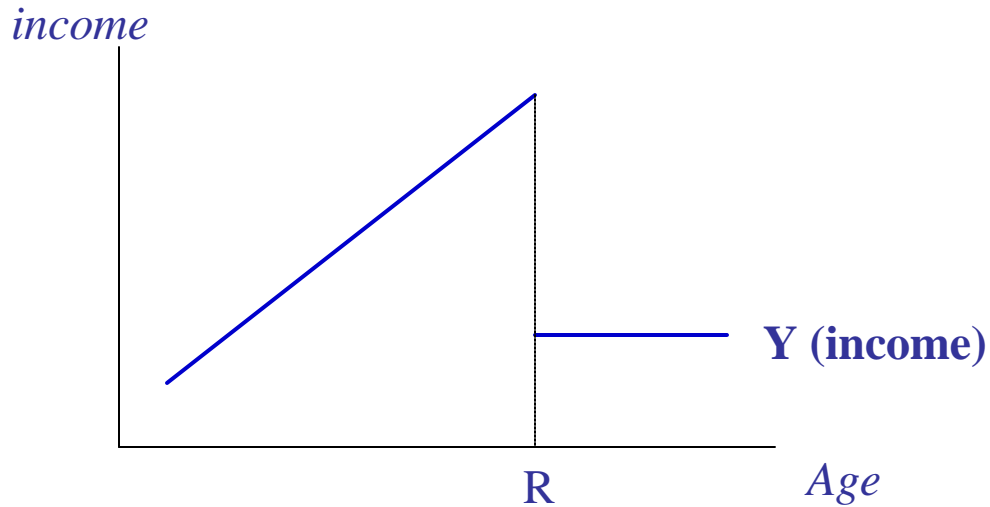
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Testing for lack of planning ability

- *Question I want to answer:* *Were these low wealth households consistently surprised over their lifetime by predictable changes in income?*

- In other words, do low wealth *residual* households consistently fail to plan for predictable income changes during their working years?

- We can follow these pre-retired households early in their life-cycle (over their working years) and find out.

- *Procedure:*

    - Take my 1989 sample of pre-retired households.
    - Put together a sample of these same households between 1975 – 1987.
    - Include information on their consumption growth, income growth, lagged income growth, demographics.
    - See if these households have consumption growth that responds to predictable income growth.

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Testing for lack of planning ability

- Permanent Income Hypothesis (Friedman, Modigliani) states that household should smooth marginal utility of consumption across predictable income changes (like retirement).

- If it is really poor planning driving the adverse retirement outcomes (i.e., the consumption declines), we should see evidence of poor planning through out their lives.

- In other words, retirement isn't the only predictable change in income that a household will face.

- Suppose a household has the following income path over their life time.
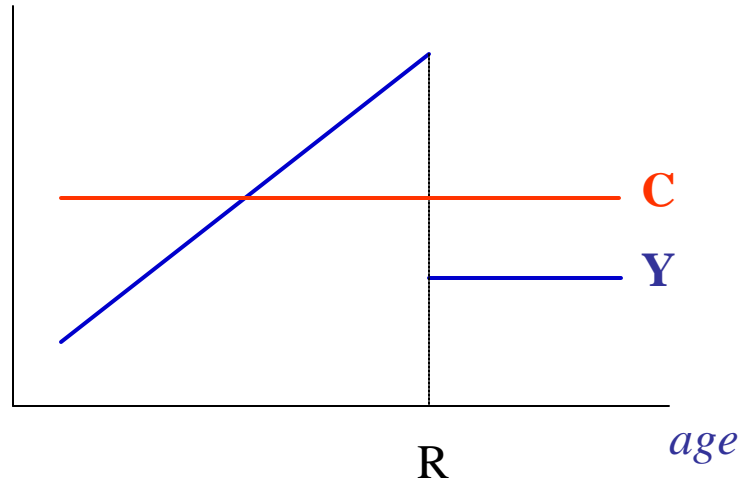

where R is the year of retirement.

The Foundation of the Empirical Test

Standard PIH (planning) consumers:

(with some assumptions on interest rate and preferences)

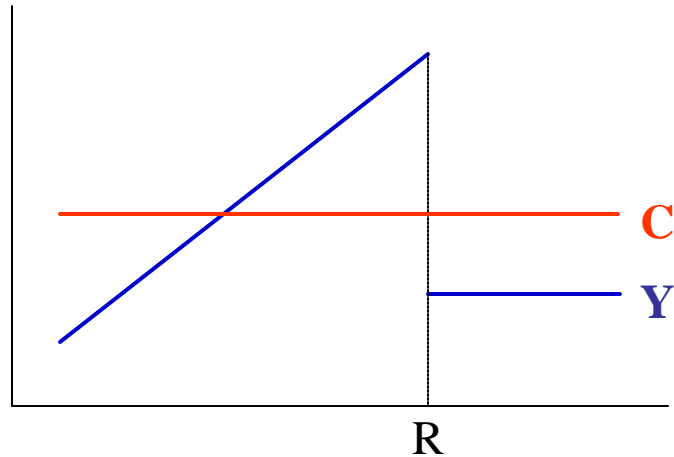**At "R", ? Y << 0 (and predictable).**

If household is PIH, ? C should be ˜ 0

C = consumption

- **With a general set of CES preferences, the growth rate of consumption will not respond to predictable changes in income.**

- Consumption growth should only respond to: 1) changes in after tax interest rates, 2) changes in preference parameters, and 3) changes in family size

- Note: Households face many predictable income changes aside from retirement.
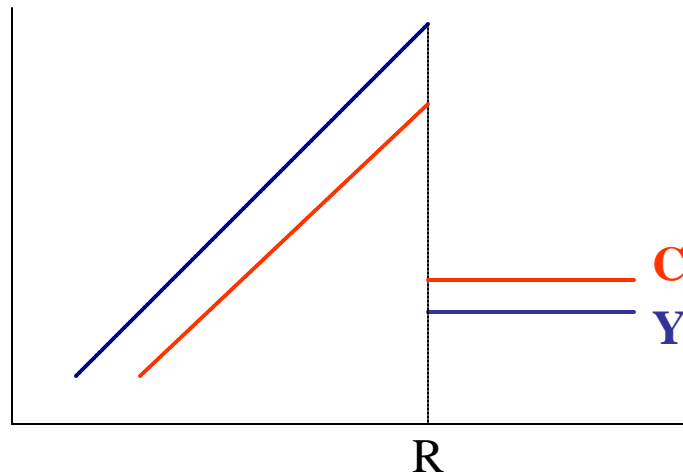
The Foundation of the Empirical Test

Standard PIH consumers (with some assumptions on interest rate and preferences)

At "R", ? Y ≪ 0 (and predictable).

If household is PIH, ? C should be ˜ 0

Non-Planning (myopic) PIH consumers (with same assumptions on preferences, etc.)

At "R", ? Y < 0 (and predictable).

If household is myopic/rule-of-thumb, ? C ≪ 0

Testing for Excess Sensitivity of Consumption

- Standard Consumption Euler Equation (see Zeldes 1989 --- complete details in paper)

$$\dot{C}_{i,t+1} = \lambda_0 + \lambda_1 \ln(1 + r_{ik,t+1}) + \lambda_2 \, \dot{famsize}_{i,t+1} + \lambda_3 age_{it} + \mu_{t+1} - \mu_t + e^{*}_{i,t+1}$$

$where: \dot{C}_{ik,t+1}$ is consumption growth for household i between t and $t+1$

μ_t is a time t fixed effect

$r_{i,t+1}$ is household i's interest rate between t and $t+1$

$\dot{famsize}_{i,t+1}$ is the change in household i's family size between t and $t+1$

λ_0 is a function of time discount rate and intertemporal elasticity of substitution

Testing for Excess Sensitivity of Consumption:

$$\dot{C}_{i,t+1} = \lambda_0 + \lambda_1 \ln(1 + r_{ik,t+1}) + \lambda_2 \, \dot{famsize}_{i,t+1} + \lambda_3 age_{it} + \mu_{t+1} - \mu_t + \beta_1 \dot{Y}^{Predict}_{ik,t+1} + e^{*}_{i,t+1}$$

Does consumption growth respond to predictable income changes?

PIH (with patient consumers/perfect capital markets) says that β_1 should equal zero

How do we get predictable income changes over lifecyle?

- Standard approach taken in the literature to get predictable component of income:

  - Instrument current income growth (between t and t+1) with lags of income growth.

  - Lags of income strong predict current income growth.

  - What are we identifying off of:

    - Lifecycle profile of income (although, age is already included as a control)
    - **Changes in income are often temporary (income growth is mean reverting).**

  - For my sample, lags predict income growth very well.

    - F-stat of first stage of IV regression is 10.7 (p-value < 0.01)

$$\dot{C}_{i,t+1}=a_0+a_1 D_{<20}+a_2\ln(1+r_{i,t+1})+a_3 D_{<20}\ln(1+r_{i,t+1})+a_4 \dot{famsize}_{i,t+1}$$

$$+a_5 D_{<20}\dot{famsize}_{i,t+1}+a_6 age_{it}+a_7 D_{<20}age_{it}+j\,D_{Year}+$$

$$b_1 \dot{Y}_{i,t+1}^{Predict}+b_2 D_{<20}\dot{Y}_{i,t+1}^{Predict}+e_{i,t+1}^{*}$$

where: D_{year} is a vector of year dummies

$D_{<20}$ is a dummy variable if household has wealth residual in bottom 20%

Tests: **Does $\beta_1 = \beta_2 = 0$?**
Is $\beta_2 > 0$?
Is $\beta_1 \tilde{\ } 0$?
Is $\beta_2 > \beta_1$?

Main Results

- What I find:

$$\beta_1 = \text{-0.16 (0.15)} \qquad \beta_2 = \text{0.56 (0.28)}$$

  For low wealth residual group, response is $(\beta_1 + \beta_2) = 0.40$ (p-value $= 0.06$)

  Also, β_1 and β_2 are statistically different from each other!

- Low wealth residual group responds strongly to predictable income changes!

Why the 20% cutoff?

- I break up the residuals into ranges of residual (0-10%, 10-20%, 20-30%, 30-40%, 40-50%, etc.).

  The 0-10% group responds the strongest to predictable income changes (mpc ˜ 0.65)

  Note mpc = $\beta_2 - \beta_1$.

  The 10-20% groups responds as well (mpc ˜ 0.08)

  No other group responds to predictable income changes.

- **Approximately 10-20% of the population appears to act as non-planners.**

A Set of Facts in Search of a Theory ….

- **Two types of households in the population:**

  1) Low wealth conditional on observables entering retirement.

     Take large consumption declines in retirement

     Have consumption patterns that respond strongly to predictable changes in income during their working lives.

  2) Another group with higher wealth, much lower consumption declines in retirement and little statistical relationship between consumption growth and predictable income changes during their working lives.

Other Theories to Explain the Facts

- In the paper, I address the following alternate hypothesis:

  - Differences in discount rates (some people are just impatient)
  - Liquidity constraints
  - Precautionary savings
  - Habit Formation

  - All of the above theories fall to completely explain the facts.

  - I directly test the importance of non-separability between consumption and leisure in the utility function (add work hours in as additional control in the regression).

- Conclusion:

Myopia (unwillingness to plan) or time inconsistent preferences (inability to plan) are the only way I can think of to reconcile the behavior of the low wealth residual households.

More Evidence of Planning Differences!

- In 1972 and 1975, PSID asked all respondents to self assess behavior traits.

    - "Are you the kind of person that plans life ahead all the time or do you live more day to day?"
    - "When you make plans ahead, do you usually carry out things they way you expected?"
    - "Would you rather spend your money today and enjoy life today or save more for the future?"
    - "Do you have accumulated saving greater than two months of income?"

- Results

Results	Low Wealth	Others	p-value
Planning (1975)	0.38	0.56	0.01
Carry Out Plans	0.54	0.67	0.06
Spend	0.60	0.40	<0.01
Saving > 2 mos. income	0.29	0.48	<0.01