Household finance

James J. Choi
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Household finance

“How households use financial instruments to attain their objectives”
--John Campbell AFA Presidential address, 2006

• Saving
• Asset allocation
• Spending out of savings
• Borrowing
Propellants of growth

• New data

• Big Data

• Great Recession: Household finance matters for aggregates!
Outline

• Savings adequacy
  – Retirement expenses
  – Pre-retirement expenses
• Financial literacy
• Savings nudges
• Household capital structure
Many Americans arrive at retirement with no liquid wealth

Net worth excluding pensions, student loans, durables, homes, and collateralized debts, ages 61-70

Source: 2013 Survey of Consumer Finances
Adding defined contribution pensions doesn’t really affect the left tail

Net worth excluding defined benefit pensions, durables, homes, and collateralized debts, ages 61-70

Source: 2013 Survey of Consumer Finances
The left tail accumulates wealth mainly through illiquid home equity

Net worth excluding defined benefit pensions, ages 61-70

Source: 2013 Survey of Consumer Finances
Are American undersaving?

• Scholz, Seshadri, and Khitatrakun (2006)
  – Build lifecycle savings model
  – Find that 84% of age 50-61 households in 1992 Health and Retirement Study are at or above optimal savings level
  – Median deficit among those below target is $5,260

• But left tail’s net worth is mostly housing equity
  – Most households don’t use housing equity to finance non-housing consumption in early decades of retirement (Poterba, Venti, and Wise, 2011)
Consumption drop at retirement

Aguiar and Hurst (2005)

- Food expenditure drops but **not** food consumption (or quality) on average across retirement threshold
- **BUT** among retirees with < $1,000 in liquid assets and no home ownership (bottom wealth decile), 19% decline in calories consumed

Hurst (2008):

- “Lifecycle model has a hard time matching the magnitudes of the decline in expenditures for households in the bottom quartile of the wealth distribution”
Expenditure paths in retirement

Source: Hurd and Rohwedder (2012)
Most people don’t want decreasing income in retirement

Preferences over annuity income growth paths

Source: Beshears, Choi, Laibson, Madrian, and Zeldes (2014)
Dying with no assets

Sample: Households whose head was age 70+ in 1993

In the last two years before death, 40% had < $20,000 of annuity income and < $10,000 of financial assets

Of these 40%, 55% also had zero home equity

Poterba, Venti, and Wise (2012)
Financial fragility

46% of American adults say they could not come up with $400 to cover an emergency without borrowing or selling something (Board of Governors, 2016)
Most hand-to-mouth households have illiquid assets

Kaplan, Violante, and Weidner (2014)
Why live hand-to-mouth with illiquid assets?

- Kaplan and Violante (2014)
  - Illiquid assets earn illiquidity premium
  - So worthwhile to invest all wealth in illiquid assets and suffer welfare losses from unsmoothed consumption

- Angeletos et al. (2001)
  - Households have self-control problems and know it
  - Invest in illiquid assets in order to restrain spending
Is hand-to-mouth optimal choice?

- Social Security benefits paid on 2nd, 3rd, or 4th Wednesday of each month
  - Based on day of the month you were born

- Four months per year have five Wednesdays
  - Causes pay cycles to be 35 days instead of 28

Within-month financial distress

• Compared to 2nd Wednesday group, 4th Wednesday group is
  – 3% less likely to experience overdraft
  – 10% less likely to bounce a check
  – 14% less likely to get online payday loan
  – 4% less likely to get storefront payday loan

• In 35-day pay period
  – 5% more likely to experience overdraft
  – 3% more likely to bounce a check
  – 16% more likely to get online payday loan
  – 31% more likely to get storefront payday loan

Measuring financial literacy: The Big Three questions

Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

- More than $102
- Exactly $102
- Less than $102

Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy more than today, exactly the same as today, or less than today with the money in this account?

- More than today
- Exactly the same today
- Less than today

Source: Lusardi and Mitchell (2008)
Measuring financial literacy: The Big Three questions

Do you think that the following statement is true or false: buying a single company stock usually provides a safer return than a stock mutual fund?

- True
- False

Source: Lusardi and Mitchell (2006)
## Measured financial literacy

<table>
<thead>
<tr>
<th></th>
<th>USA</th>
<th>Netherlands</th>
<th>Japan</th>
<th>Germany</th>
<th>Chile</th>
<th>Mexico</th>
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<tr>
<td><strong>Interest</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Correct</td>
<td>78%</td>
<td>85%</td>
<td>71%</td>
<td>82%</td>
<td>47%</td>
<td>45%</td>
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<tr>
<td>Don’t know</td>
<td>10%</td>
<td>9%</td>
<td>13%</td>
<td>11%</td>
<td>32%</td>
<td>2%</td>
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<tr>
<td><strong>Inflation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct</td>
<td>65%</td>
<td>77%</td>
<td>59%</td>
<td>78%</td>
<td>18%</td>
<td>71%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>19%</td>
<td>14%</td>
<td>29%</td>
<td>17%</td>
<td>21%</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Risk</strong></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Correct</td>
<td>53%</td>
<td>52%</td>
<td>40%</td>
<td>62%</td>
<td>41%</td>
<td>47%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>40%</td>
<td>33%</td>
<td>56%</td>
<td>32%</td>
<td>33%</td>
<td>1%</td>
</tr>
<tr>
<td><strong>All correct</strong></td>
<td>39%</td>
<td>45%</td>
<td>27%</td>
<td>53%</td>
<td>8%</td>
<td>15%</td>
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</table>

Source: Hastings, Madrian, and Skimmyhorn (2013)
Does more extensive financial education help?

Expansion over time in state high school financial education mandates

• Bernheim, Garrett, and Maki (2001): Positive wealth accumulation effect
• Cole and Shastry (2010): No effect

Mandatory 8-hour financial literacy course (plus assistance in enrolling in Thrift Savings Plan) for new soldiers in U.S. Army, roll-out staggered across bases (Skimmyhorn, 2016)

• Avg. contribution to TSP is $20/month higher than control in first year after, $14/month higher than control in second year
• Debt balance is $608 lower than control in first year after, $202 lower than control in second year
Do people get professional advice?

<table>
<thead>
<tr>
<th>% using financial advisor</th>
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<tbody>
<tr>
<td>&lt; High school</td>
</tr>
<tr>
<td>0%</td>
</tr>
</tbody>
</table>

Lusardi, Michaud, and Mitchell (2017)
One solution: Forced savings

Singapore

- Compulsory saving of 37% of covered wages until age 50, lower percent after that
  - 20% employee contribution
  - 17% employer contribution
The old routine when you joined a company with a 401(k) plan

Welcome to the company

Here is information on your 401(k) plan

If you’d like to join, call this toll-free number or visit the benefits website
Automatic 401(k) enrollment

Welcome to the company

Here is information on your 401(k) plan

If you don’t do anything before a deadline, you will be automatically enrolled at this default contribution rate and asset allocation

If you’d like to opt out, call this toll-free number or visit the benefits website
Automatic enrollment effect

Tenure (months)

Fraction enrolled in 401(k)

- Hired and observed before automatic enrollment
- Hired under automatic enrollment (3% contribution default)
- Hired under automatic enrollment (6% contribution default)

Source: Beshears, Choi, Laibson, and Madrian (2008)
Autoenrollment in U.S.

- Legislatively encouraged by Pension Protection Act of 2006

- 58% of 401(k) plans in 2015 automatically enrolled employees (Plan Sponsor Council of America, 2016)
Autoenrollment in UK

- Mandatory automatic enrollment being phased in from 2012-2017 by firm size

- Chancellor George Osborne: “Biggest changes to pensions in 100 years”

- To date, opt-out rate of only 9-10%
  - “a surprising shock, with the DWP initially expecting a 28% opt-out” (https://www.autoenrolment.co.uk/news/the-statistics-of-success-auto-enrolment-so-far)
Aggregate effect of UK autoenrollment

Defaults and herding

Choi, Laibson, Madrian, and Metrick (2006)
Defaults and herding

Before Automatic Enrollment

- Money Market: 7%
- Bonds: 18%
- Stocks: 75%

After Automatic Enrollment

- Money Market Default Fund
- Stocks: 16%
- Bonds: 3%
- Money Market: 81%

Madrian and Shea (2001)
How sticky are defaults?

How sticky are defaults?


Fraction of participants

Tenure (months)

Hired before AE: Default rate and fund
Hired before AE: Default rate (2%)
Hired before AE: 100% in default fund
Hired after AE: Default rate and fund
Hired after AE: Default rate (2%)
Hired after AE: 100% in default fund
Opt-out delay from a 0% contribution default

Carroll, Choi, Laibson, Madrian, and Metrick (2009). Area of bubble is proportional to number of employees at that contribution rate.
Dynamic defaults: Save More Tomorrow

401(k) contribution rate rises automatically in the future

Rise may coincide with pay raises

Thaler and Benartzi (2004)
Auto-escalation effect

![Graph showing the Auto-escalation effect]

Contribution rate

Before | Pay raise 1 | Pay raise 2 | Pay raise 3 | Pay raise 4

Red line: Accepted advice to save more now
Blue line: Joined SMT

Thaler and Benartzi (2004)
Auto-escalation works better if it’s the default

Benartzi, Peleg, and Thaler (2012)
Why do defaults work? Some candidate mechanisms

- Opting out requires paying effort cost
  - Exacerbated by time inconsistency
- Belief that default is a recommended choice
- Unawareness that default exists or can opt out of it
- Cognitive dissonance causes people who find themselves at default to manufacture reasons why it’s the right choice
- Default serves as an anchor
- Individuals consider only a subset of possible choices, and default is disproportionately likely to be in that subset
- Default becomes a reference point around which gains and losses are evaluated
Active choice

- Welcome to the company

- You have 30 days to tell us whether you want to be in the 401(k) plan

- Not stating a preference is not an option

Carroll, Choi, Laibson, Madrian, and Metrick (2009)
Active choice 401(k) participation effect

Carroll, Choi, Laibson, Madrian, and Metrick (2009)
Active choice 401(k) contribution rate effect

Carroll, Choi, Laibson, Madrian, and Metrick (2009)
Active choice vs. asymptotic opt-in contribution rate distributions
Active choice vs. asymptotic opt-in contribution rate distributions
Do savings nudges increase total savings?

Chetty et al. (2014)

- Danish data that include measure of total wealth
- Policy studied: Changes in mandatory employer pension contributions when people switch jobs
  - Not automatic enrollment, and not a nudge
  - But can be undone by people not at a corner
Do savings nudges increase total savings?

Chetty, Friedman, Leth-Petersen, Nielsen, and Olsen (2014)
How long does the savings increase last?

Chetty, Friedman, Leth-Petersen, Nielsen, and Olsen (2014)
Debt overhang (Melzer, 2017)

• Idea
  – For homeowners with negative equity, home improvements benefit creditor, not homeowner
  – Therefore, invest less in home

• Main data
  – Consumer Expenditure Survey
Home improvements

Home Improvement Spending per Quarter, Mean

Loan-to-value ratio (%)

Spending ($)
Unscheduled principal payments

Unscheduled Principal Payment per Quarter, Mean

Loan-to-value ratio (%)
Debt overhang results

- Homeowners with negative equity
  - Spend $200 (30%) less per quarter on home improvements and maintenance
  - Cut unscheduled principal payments by $180 (40%)

- Differences not explained by income, total expenditures, financial wealth, demographics, property characteristics, mortgage traits

- Estimate that debt overhang reduced national spending on home improvements by 3-5% per year, 2008-2011
  - >10% in Arizona, California, Florida, and Nevada
Empirical challenge

- Negative equity homeowners may be more financially constrained
- Arguments against this confound
  - Results also hold for high-income households with substantial financial assets
  - Results weaker in recourse states
  - Spending on appliances, furniture, entertainment durables, jewelry, and vehicles unaffected by negative equity after controls
  - Holds when comparing two properties, one underwater and the other not, owned by a single person
Debt overhang (Bernstein, 2016)

• Idea
  – Income-contingent distressed mortgage modification acts as an implicit tax on labor supply
  – More earnings → more repayments to creditor
  – Effect: Reduce earnings

• Main data
  – Transaction-level bank/credit card/mortgage account data from financial institution covering >25% of U.S. households, 2010-2014
  – Restriction to households with main bank account and mortgage at data provider → ~200,000 households
Debt overhang (Bernstein, 2016)

• Empirical challenge
  – Economic distress causes both negative equity and reduced job opportunities

• Instrument while controlling for region × time fixed effects
  – Loan-to-value if house appreciation since mortgage = regional avg. rate and repayment rate was minimum under 30-year fixed rate with national median mortgage rate
  – Variation driven by when moved to region
Effect of negative equity

- LTV > 100 → 3.63% decline in income

- Effect stronger in regions with higher mortgage modification rate, controlling for delinquency rate

- Effect stronger in states with judicial foreclosure requirements
  - Harder to foreclose, so more modifications
Payment priority (Gathergood, Mahoney, Stewart, and Weber, 2017)

• How do individuals choose how much to pay back on each credit card?

• Optimal behavior with two cards
  – Pay minimum on each card
  – Any extra payment goes to highest interest card
  – Only pay lower interest card if other card paid off in full

• Data: 1.4 million individuals in U.K across five major card issuers, 2013-2014
Does this choice matter?

• Among those who hold exactly 2 cards
  – Average APR difference between cards: 6.5 percentage points
  – Average APR level: 19.7%
  – Average revolving balance on higher-APR card: £2,198
  – Average revolving balance on lower-APR card: £2,049
Repayment behavior, 2 cards
Repayment behavior, 3 cards

(B) Three Cards

Card 1 = Lowest APR

Card 3 = Highest APR

Actual Payment
Optimal Rule
Repayment behavior, 4 cards
Repayment behavior, 5 cards

(D) Five Cards

Card 1 = Lowest APR

Card 2

Card 3

Card 4

Card 5 = Highest APR

Actual Payment
Optimal Rule
Rational inattention?
Rational inattention?
Inexperience?
What’s going on?

• Balance matching
  – Match share of payments to share of balances on card
  – Consistent with heuristic such as “pay 10% of each card’s balance”
Bankruptcy policy (Yannelis, 2016)


- Should we allow these defaulters to discharge their student debt in bankruptcy?
  - Answer partially depends on how much default is strategic
Two reforms

- Bankruptcy discharge reform
  - Before 1998, could discharge student loans in bankruptcy after 7 years in repayment
  - Starting in 1998, student loans almost completely non-dischargeable

- Wage garnishment reform
  - Before 2006, defaulted student loan borrowers subject to wage garnishment of 10% above threshold
  - Starting in 2006, garnishment rate increased to 15%

- Both reforms do not affect current liquidity of borrowers
Data

• National Student Loan Data System
  – Contains all federally guaranteed student loans (92% of all student loans in 2011-2012)

• IRS data from Compliance Data Warehouse
  – W-2 forms
  – Schedule C (business income)
Diff-in-diffs of defaults across garnishment threshold following wage garnishment reform
Results summary

• Student loan borrowers who can discharge student debt in bankruptcy are 18% more likely to default

• When garnishment rate increases by 50%, additional $10,000 of garnishable income leads to 15% decrease in default rate
Summary

• Most Americans arrive at retirement with almost no liquid wealth
  – Result: Financial fragility during working life
• Evidence that at least the left tail of Americans doesn’t save enough for retirement
• Financial literacy is low
• Financial education has only modest effects
Summary

• Nudges like automatic enrollment and active choice can increase retirement account balances
  – Some evidence that increases total savings, not just reshuffling of assets

• Lots of opportunity to study household capital structure


Bernstein, Asaf, 2016. “Negative equity, household debt overhang, and labor supply.” University of Colorado working paper.


Yannelis, Constantine, 2016. “Strategic default on student loans.” NYU working paper.