# Saving and Portfolio Allocation Before and After Job Loss

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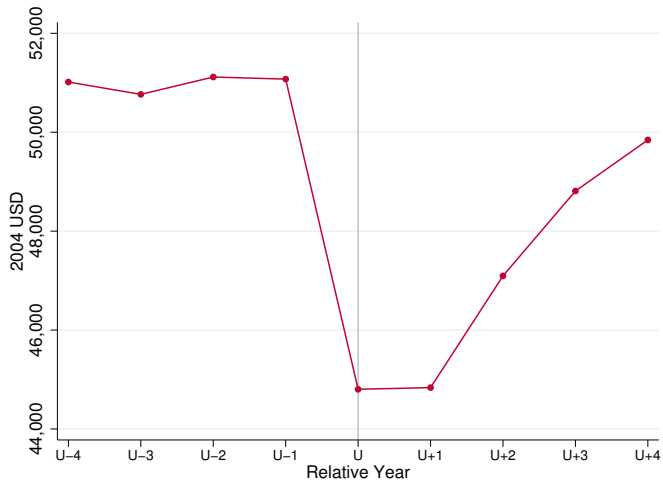Kjetil Telle (Statistics Norway)

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# Research Questions

To what extent do households ...

1. Rely on prior savings during unemployment?
2. Save more before (and after) job loss?
3. Re-allocate savings to safer / more liquid assets before?

# What our results will look like

# Outline

# Lit. 1/3: On Optimal Unemployment Insurance

- Key papers:
  - Baily, *Some aspects of optimal unemployment insurance*, JPubE 1978
  - Chetty, *A general formula for the optimal level of social insurance*, JPubE 2006
- Private savings and unemployment insurance (UI) as substitutes:
  - "Hand-to-Mouth" consumers cut consumption 1-for-1 with income; Evidence e.g. in Browning & Crossley 2001 (for Canada)
  - Households with sufficient savings might need no UI at all
- So understanding use of private savings is important for optimizing UI
- Benefits of UI: Income effect of UI resolves liquidity constraints, which prevent households from choosing consumption optimally
- Costs: Price effect of UI causes Moral Hazard

# Lit. 2/3: On Liquidity Constraints of the Unemployed

- Key papers:
    - Card, Chetty & Weber, *Cash-on-Hand and Competing Models of Intertemporal Behavior: New Evidence from the Labor Market*, QJE 2007
    - Basten, Fagereng & Telle, *Cash-on-Hand and the Duration of Job Search: Quasi-Experimental Evidence from Norway*, 2014
- They show that unemployment duration, a form of consumption, responds to one-off severance payments
- Can be interpreted as evidence of liquidity constraints: Absent severance payments, or more generous UI, some households must accept a new, thus sub-optimal job too early...

# Lit. 3/3: On wealth and its use during unemployment

- So far, the data situation has limited how much we know about households' saving and dissaving behavior around job loss
- Exception is Gruber 2001 ("*The Wealth of the Unemployed*"):
  - Data from US Survey of Income and Program Participation (SIPP)
  - Compares wealth at 2 points in time: before and after job loss
  - Drawback: Bound to underestimate true extent of dissaving
  - Also, he cannot cover how much is being saved before, and in which assets

- Betermier et al (JFE 2012): Swedish households moving from a low- to a high-wage-volatility job reduce risky share
- This is where effects of the labor market on household finance can start to matter for financial stability...

# Model 1/4: Saving and Portfolio Choice

- Households work and consume in two periods, and may save a fraction $s$ of their period 1 income for period 2
- Households place a fraction $(1 - \alpha)$ of savings in assets with fixed return $R_F$ and $(\alpha)$ in risky assets with risky returns
- With probability $1 - q$ the risky returns are high, $R_H > R_F$ and with probability $q$ low, $R_L < R_F$.
- Expected returns on risky assets are higher than the fixed return: $R_H(1 - q) + R_L q > R_F$

# Model 2/4: Job Risk

- With probability $p$ the worker is unemployed (low income) in period 2, and with probability $(1-p)$ keeps the job, so ...
    - With $\Pr = (1-p)*(1-q)$ : Employed, high returns
    - With $\Pr = p*(1-q)$: Unemployed, high returns
    - With $\Pr = (1-p)*q$: Employed, low returns
    - With $\Pr = p*q$: Unemployed, low returns

# Model 3/4: Optimization Problem

- The maximization problem:

$$\underset{\alpha,s}{Max} \quad u((1-s)y_1) +$$
$$\beta[(1-p)(1-q)u(c_2^{EH}) + (1-p)q \cdot u(c_2^{EL})$$
$$+ p(1-q) \cdot u(c_2^{UH}) + pq \cdot u(c_2^{UL})]$$

subject to: $0 \leqslant s, \alpha \leqslant 1.$

$$c_2^{i,j} = y_i + (\alpha R_j + (1-\alpha)R_f)sy_1 ,$$

where $i = E, U$ and $j = H, L$

# Model 4/4: Predictions

- **Prediction 1:** A positive probability of future unemployment increases savings
- **Prediction 2**: A positive probability of future unemployment reduces the share held in risky/illiquid assets
- **Prediction 3:** A positive probability of returning to work induces depletion of wealth during unemployment
- **Note:** To simplify, we currently focus only on whether households are unemployed next period; ignore probabilities

# Data & Context 1/3

- Best-available data so far, because ...
- Gruber 2001 uses SIPP *survey* data, observing wealth only *once before and once after* job loss
- We have *annual* tax data on pensionable income & financial wealth (bank deposits, bonds, stocks, funds) for all Norwegians
- With data for 1995-2007, we *track individuals for 9 years around job loss*, from U-4 through U+4
- Like Gruber, we focus on financial wealth only (Chetty&Szeidl 2010 argue a house cannot easily be liquidated)
- In addition to total financial wealth we also observe its main components (bonds, stocks, mutual funds, bank deposits)

- Generous welfare state, unemployment insurance 62% up to two years
- Early retirement schemes widespread from age 62
- Low youth unemployment by OECD standards
- The risky assets we look at are directly held, not in retirement accounts (these are locked for use until age of 62-67)

# Data & Context 3/3: The Sample

- We balance the sample the over the whole observation window (1995-2007)
- To track all households 4 years before and 4 years after job loss, focus on households with job losses between 1999 and 2003
- Yields 8,645 households involved in exactly 1 unemployment spell
- Follow Chetty (JPE 2008) in excluding those who return immediately to the same plant (...), so get base line sample of 5,513 households
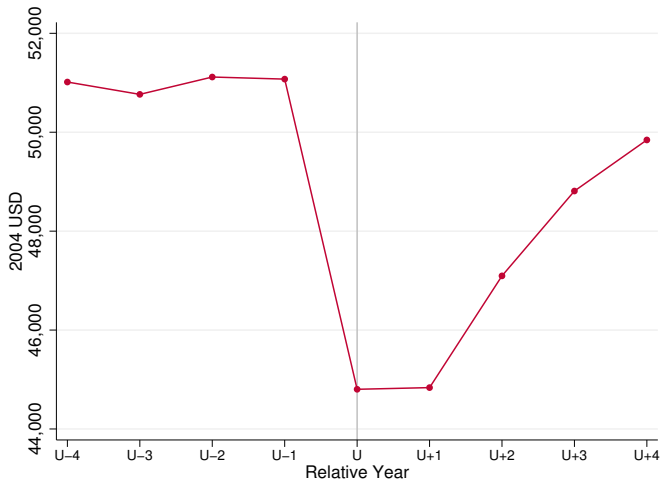
## Empirical Strategy:

Estimate for outcomes income, financial wealth, wealth components:

$$Y_{i,t} = a_i + \gamma_t + \sum_{k=-4}^{4} \beta_k U_{i,t}^k + \varepsilon_{it}, \tag{1}$$
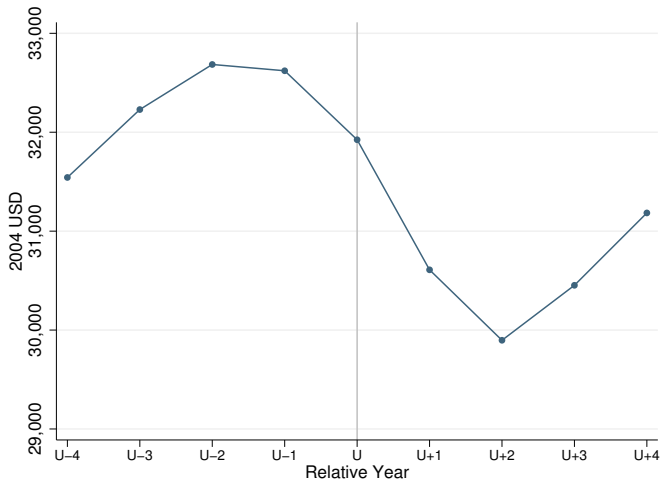
where:

- $Y_{i,t}$ denotes different outcomes in year t for household i.
- $a_i$ is an individual (household) fixed effect
- $\gamma_t$ is a vector of calendar year fixed effects
- Vector $\beta_k$ contains the effects of the different Relative Years [-4,...,0,...,+4] around lay-off, which we will plot below

# Results 1/3: Income around Unemployment:

# Results on Income and Wealth

Income

- *On average and at annual level*, income frops from $51,000 to $45,000 (about 12%) in years U and U+1
- Reflects a drop by $>=38\%$ (given 62% UI replacement rate) for each day of unemployment –
- Note: Income of average household recovers almost fully by U+4
- Total cumulage "shortage" (to 100%) is on average about 12%+12%+8%+4%+2%=**38% ($20,000)** until U+4, $12-13,000 net of taxes.

Financial Wealth:

- Average household depletes about $ 3,000 – some, but not much
- Almost entirely compensated by extra saving before and after

# Results 3/3: Portfolio Reallocation
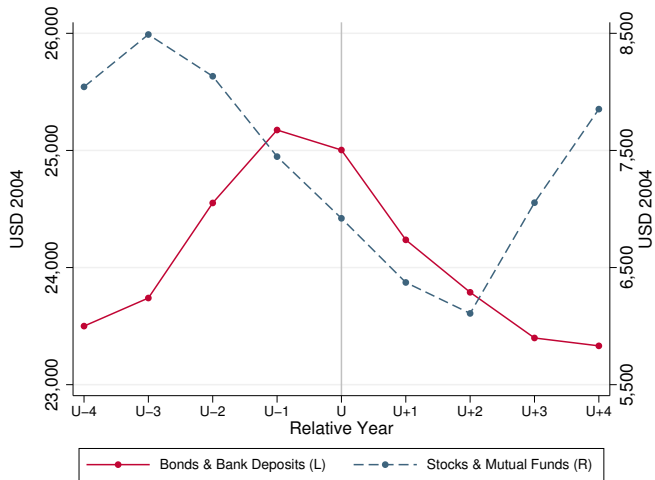
# Results on Portfolio Reallocation

- Pre-unemployment, holdings of safe/liquid assets increase, holdings of risky/illiquid decrease
- During unemployment, both are depleted, but the liquid ones more so
- Afterwards most re-saving is placed in the risky asset again, so that by U+4 the level of risky assets is about where it was in U-4

# If time permits Robustness 1/2: Exploiting Mass Layoffs

- The above methodology with calendar year and individual fixed effects removes any confounding factors that:
  - vary by individual, but for a given individual are the same each period
  - vary by period, but for a given period are the same for each individual
- But what if there are confounding factors varying by both individual and period at the same time?
  - A confounding factor scenario: Someone going through a personal crisis in some periods might then become unemployed and change his saving behavior
  - A reverse causality scenario: Someone winning big in the stock exchange in some period might therefore "decide to become unemployed"

# Robustness 1/2: Exploiting Mass Layoffs

- To remove such personal idiosyncracies, a robustness analysis focuses on job losses due to mass layoffs (plant downsizings)
- We require plant mass layoff rates ≥**30%** (robust to other fractions, e.g. 50% as in earlier version), excluding within-firm movers
- Plant age ≥4 yrs, workforce≥10, no mass layoff in last 3 years
- The following graphs show that our main results (all unemployed, to keep a larger sample size) do not differ in a relevant way from the layoff ones: Suggests the extreme scenarios pondered above are not of relevance in our sample

# Exploiting Mass Layoffs: Income and Financial Wealth
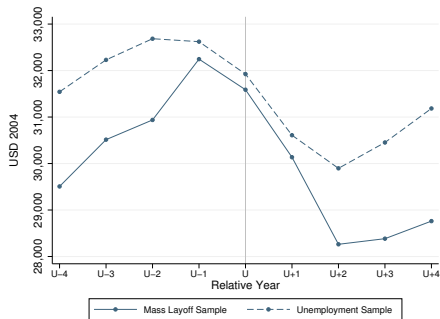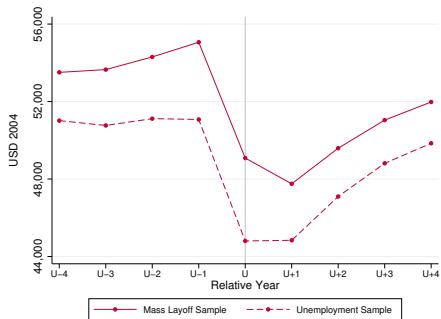
# Exploiting Plant Downsizings: Risky and Safe Assets
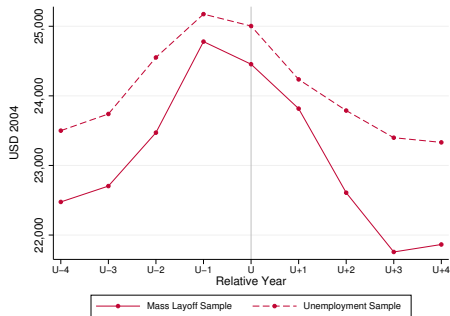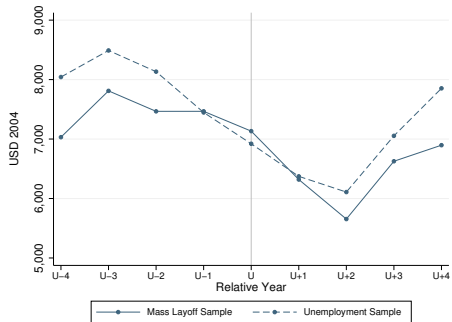
# Summary

- Find that even in Norway, with its relatively extensive UI benefits, households do also draw on private wealth
- On average no permanent traces in their wealth, extra spending compensated for by extra saving before and after
- This has to be seen in a context in which income does also almost entirely recover by U+4
- They also change the way they invest: Could affect financial markets when there is a lot uncertainty in the labor market
- Note these are all averages:
  - Some households may be in more trouble: See our companion paper
  - Yet policy must be made for some average household...

# Robustness 2/2: Placebo Sample

- To illustrate how well our fixed effects remove any influences not due to the job loss, we apply the same methodology to households that do not suffer job loss
- We match them to the job-losing households by age and education
- Placebo households are randomly allocated "job loss" year in one of our base years (1999-2003)

# Robustness 2/2: Placebo Sample



Male Income · Financial Wealth · Safe Assets · Risky Assets
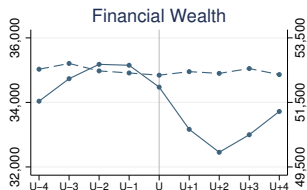
——●—— Unemployed sample (Left)    – –●– – Placebo (Right)