

Wealth Shocks, Unemployment Shocks and Consumption in Times of Crisis

Tullio Jappelli
University of Naples Federico II

Household Finances and Behavior in Times of Crisis
Amsterdam October 26, 2012

1. Motivation

2. Consumption and the Great Recession
3. The Wealth Effect
4. US Results
5. Agenda for Europe
6. Other “Wealth Effects”

Joint work with with D. Georgarakos and D. Christelis

1. Motivation

Households were hit by three *different contemporaneous* shocks:

- Drop in **house prices**
- A strong decline in the **stock market**
- Worsening of **labor market conditions**
- **Credit crunch**

Research questions: What is the MPC from wealth shocks?

What is the impact of unemployment on consumption?

Questions:

- crucial to understand consumers' behavior
- evaluate policy changes (e.g., about UI).
- help households to improve balance sheets.

Impact of shocks depends on market completeness

$$\Delta \ln c_{it} = \lambda \Delta z_{it} + \sum_{k=1}^K \phi^k \pi_{it}^k + v_{it}$$

- Complete markets: no impact if shocks are idiosyncratic ($\phi = 0$).
- PIH, buffer stock model, precautionary saving model: consumption responds strongly to permanent shocks, not to transitory shocks.
- Models with partial insurance (governments, firms, family networks): consumers insure shocks to a larger extent than in models with self-insurance.
- Also anticipated income changes may affect consumption (liquidity constraints).

Heterogeneity in size and impact of shocks

- Households were **differently affected by shocks** (size of shocks, heterogeneity in financial asset holdings, home ownership status, location, labor market participation, etc.).
- Different **economic environments** (e.g. generosity of **unemployment insurance** and social programs, availability of **social networks**).
- **Internationally comparable micro data**: allow in-depth analysis of these shocks on households' *expenditures* and *portfolio choices* across countries.
- **Here**: focus mostly on the US case.

1.Motivation

2. Consumption and the Great Recession

3.The Wealth Effect

4.US Results

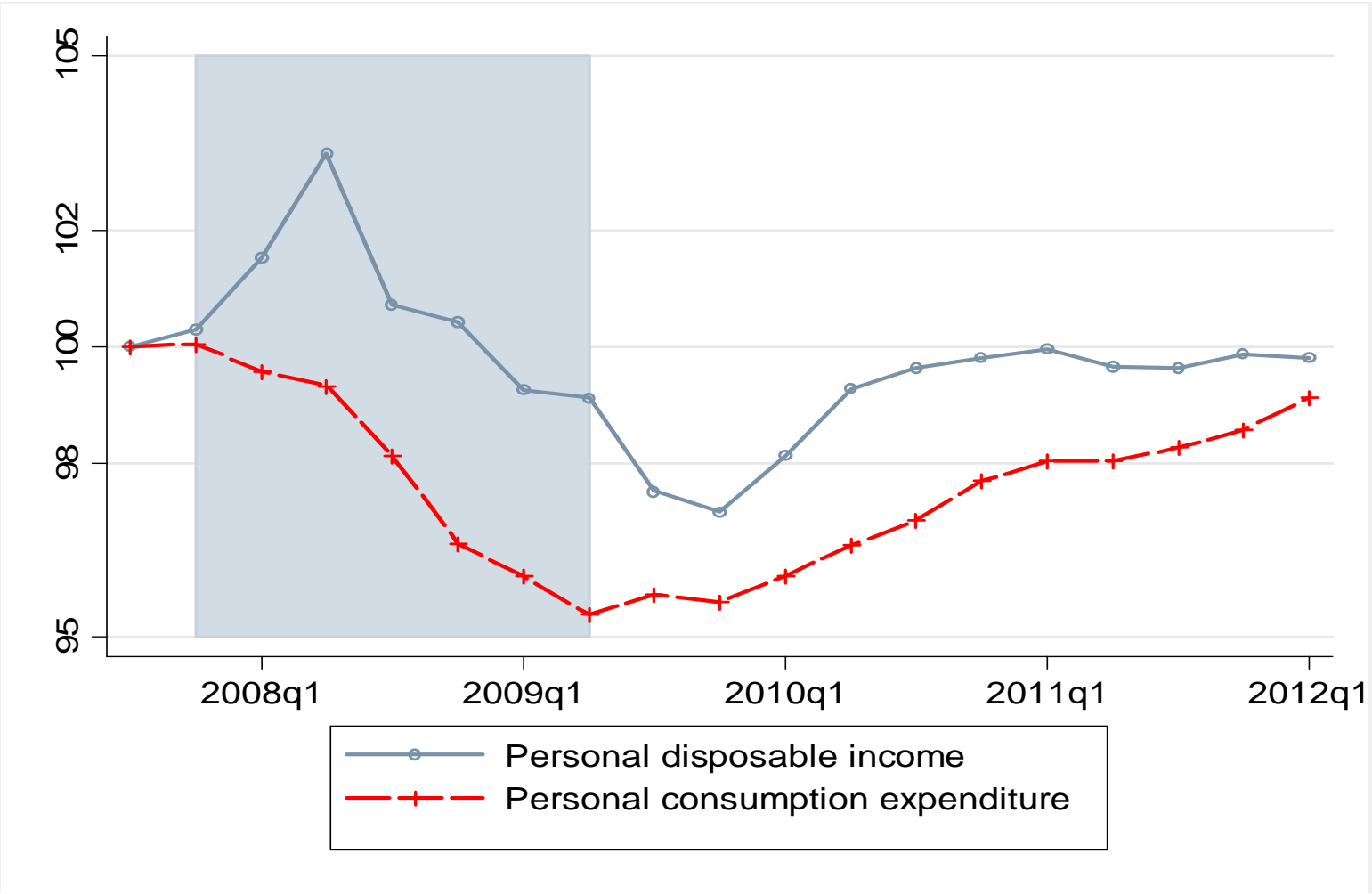
5.Agenda for Europe

6.Other “Wealth Effects”

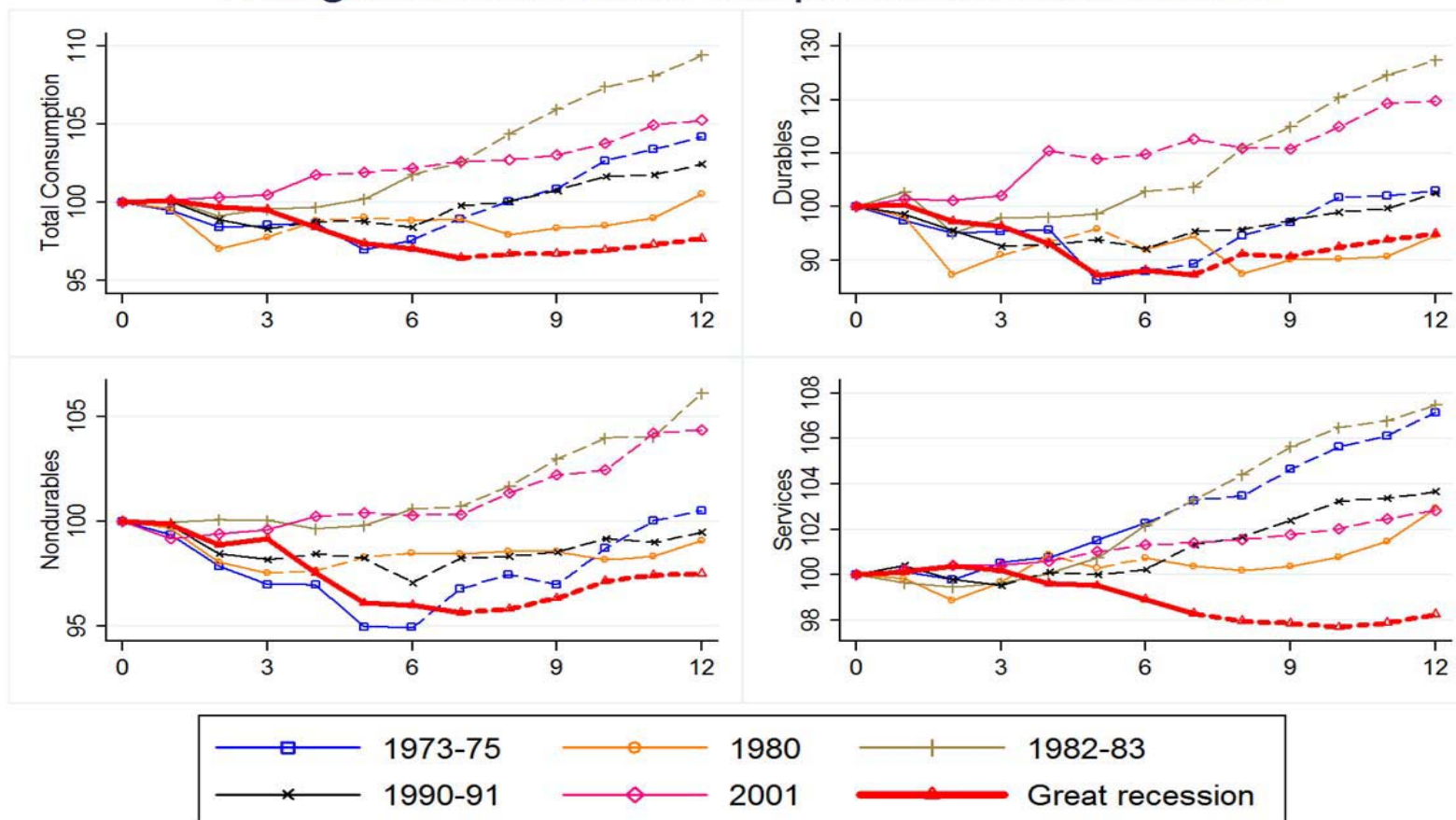
The US Recession

- In 2008 US households suffered capital losses of 13,6 trillion \$, on a disposable income of 11 trillion \$.
- Unemployment doubled between early 2008 and late 2009 (from 5% to 10%).
- **Question:** How much was household spending during 2008-09 affected by capital losses and unemployment?
- We address the question using recently collected micro data (sample of 50+, overwhelmingly home owners) with information on capital gains, transition into unemployment, and stock market expectations

Consumption drop in US recession



The great recession vs. previous recessions



Source: BEA, NIPA Tables 2.1, 2.3.4 and 2.3.5

Source: Petev et al. (2011)

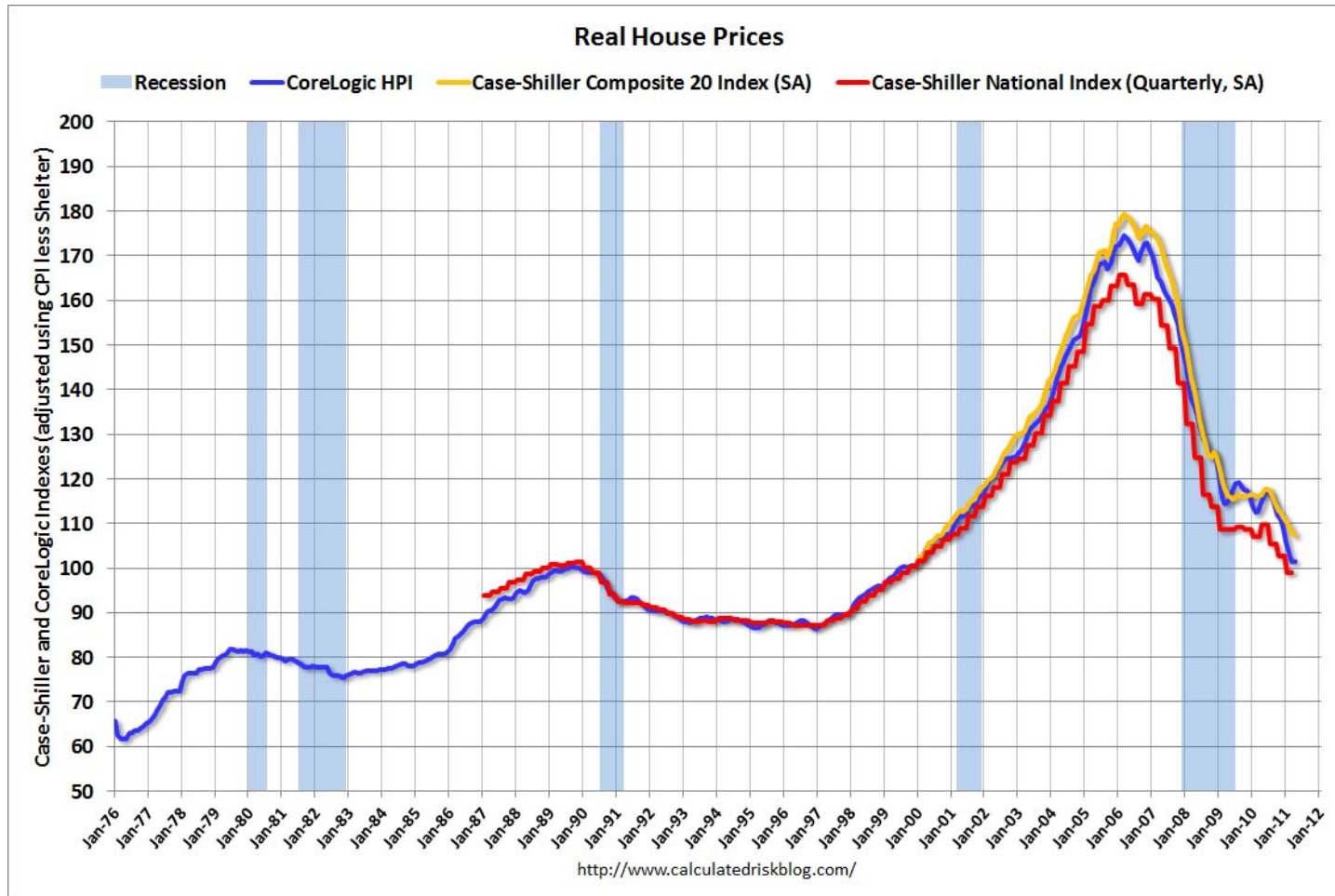
Explanations for the consumption drop

- Negative wealth shock (permanent or transitory?)
- Negative income shock due to unemployment
- Worsening of income expectations, increase in uncertainty
- Worsening of credit conditions

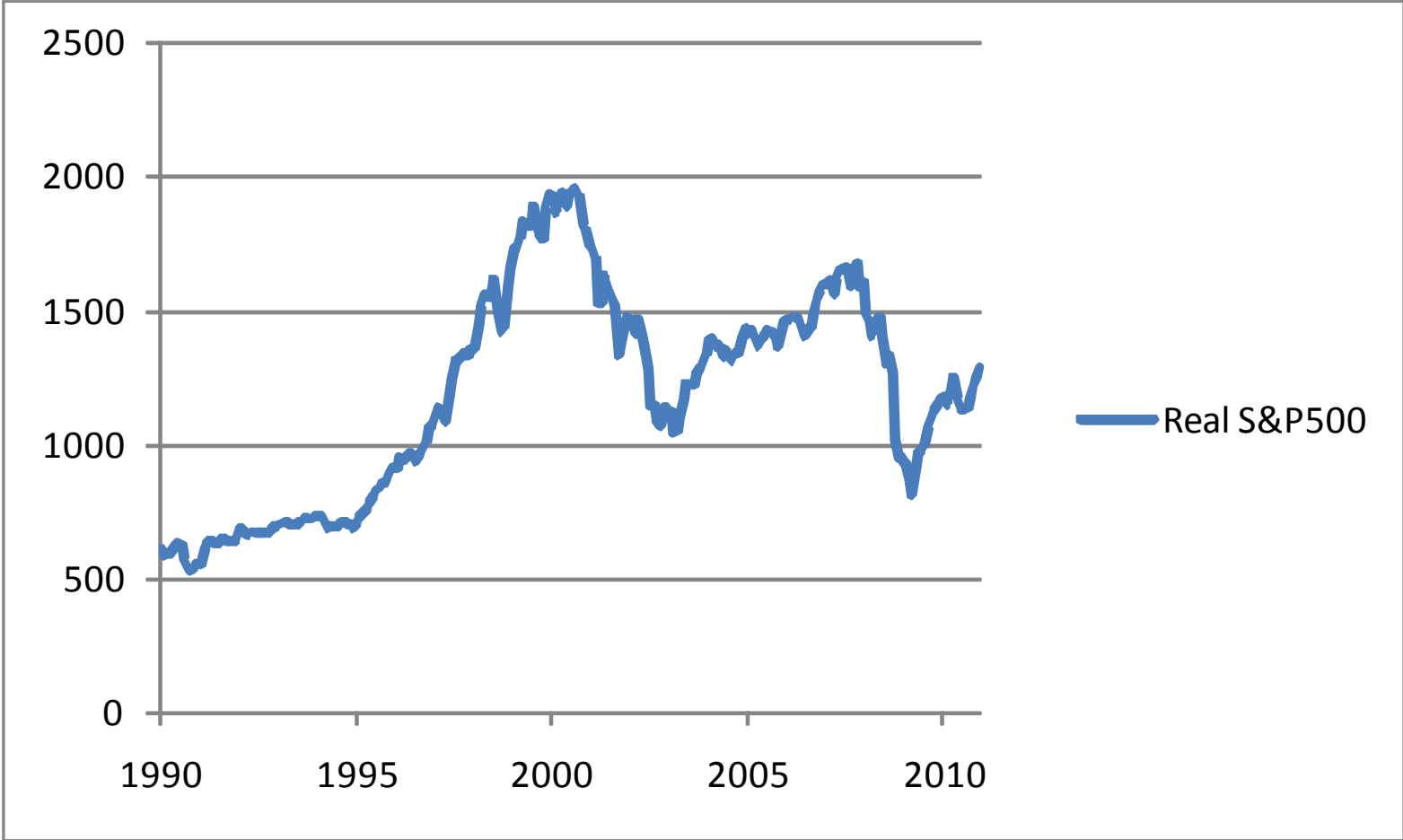
Key findings

- Strong effect of financial wealth losses on consumption
- Weaker effect, but still relevant, for housing losses
- Strong response of consumption to unemployment shock
- The response of consumption to financial losses is stronger for households who perceive the negative shock to their financial wealth to be permanent.
- Insignificant effect of increased uncertainty (of our proxies)

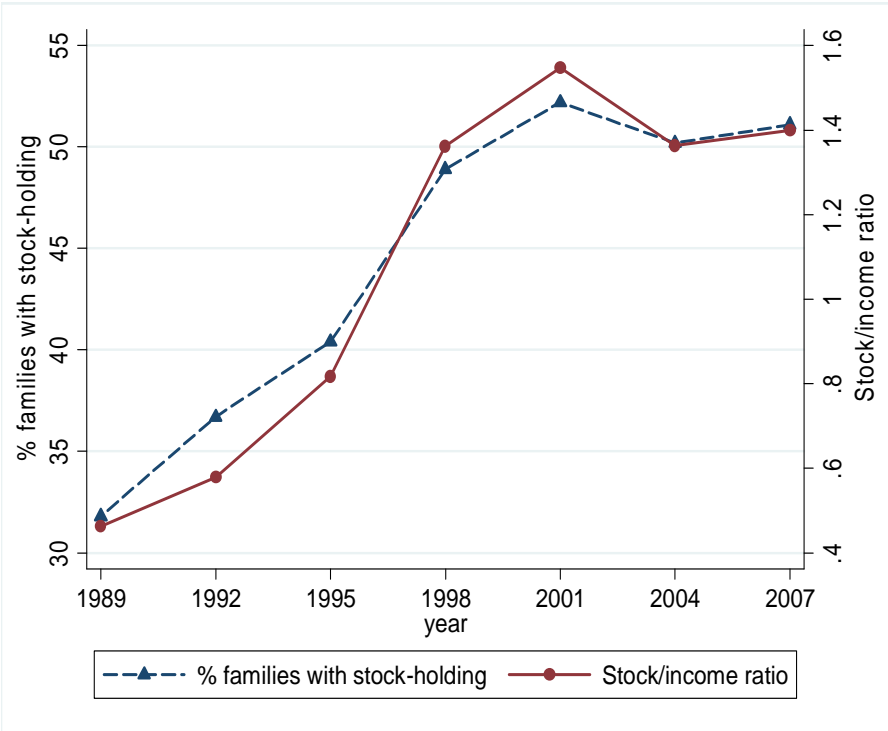
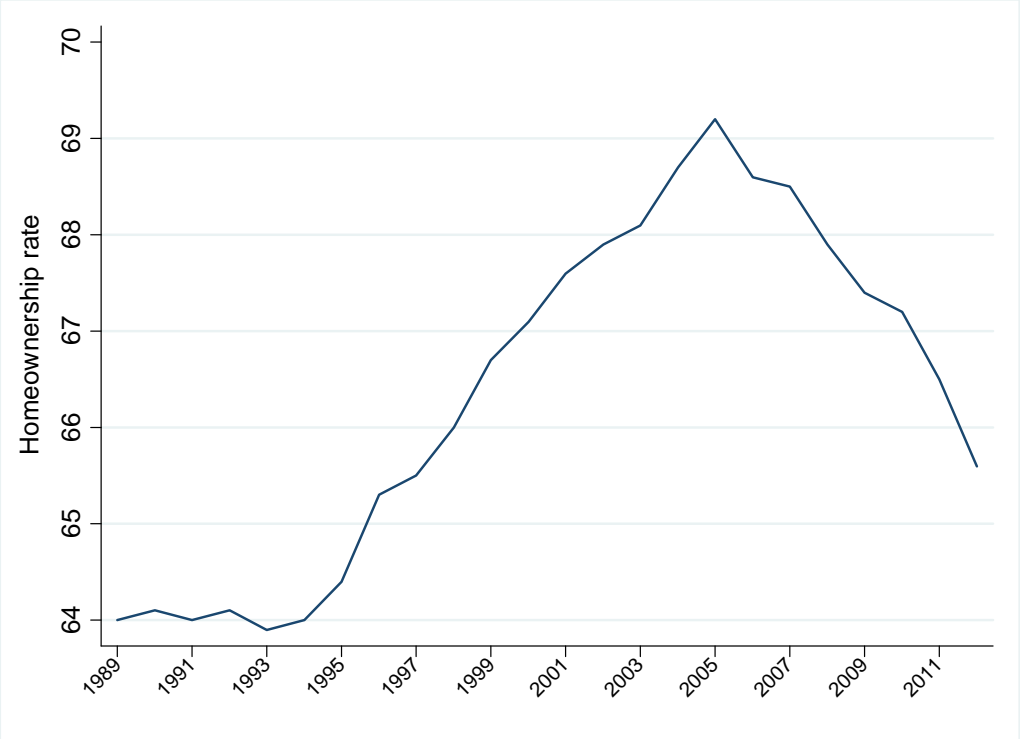
33% Decline in Real House Prices in 2008-09



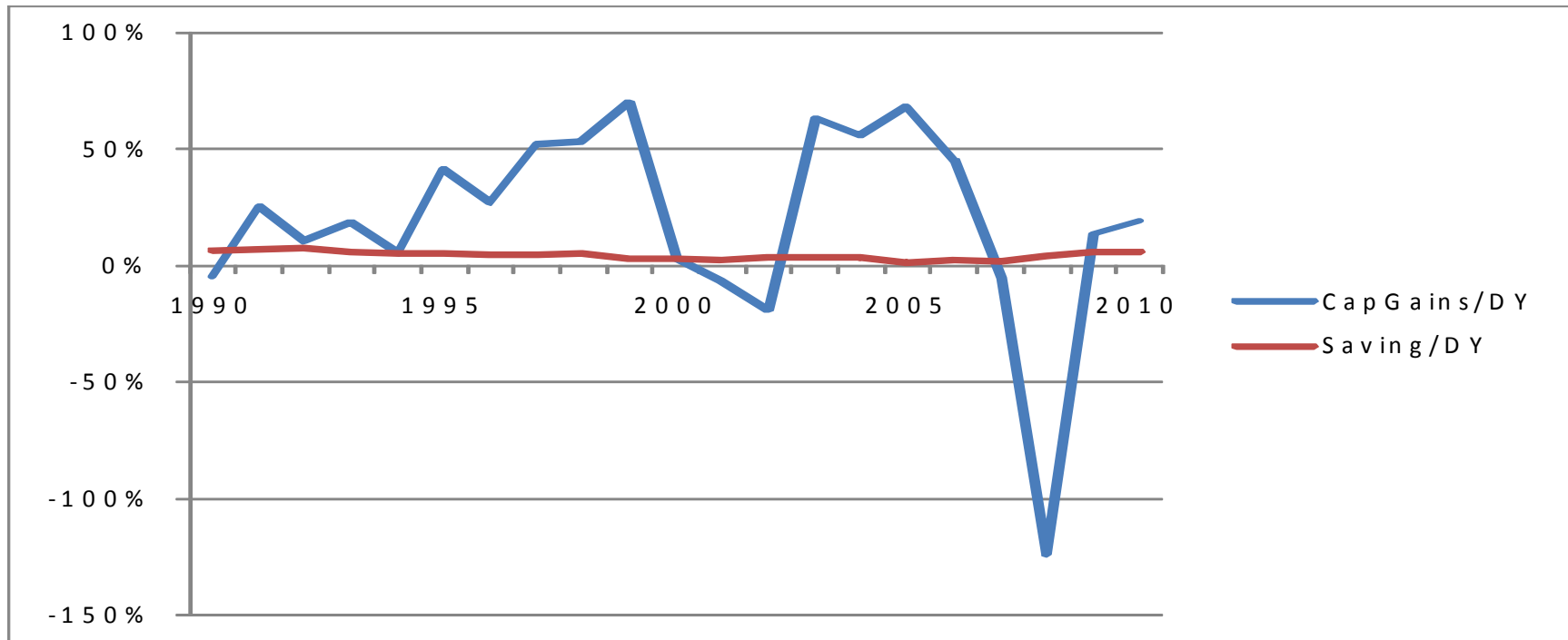
24% Decline in Real Stock Prices in 2008-09



Stock-holding and homeownership in the US

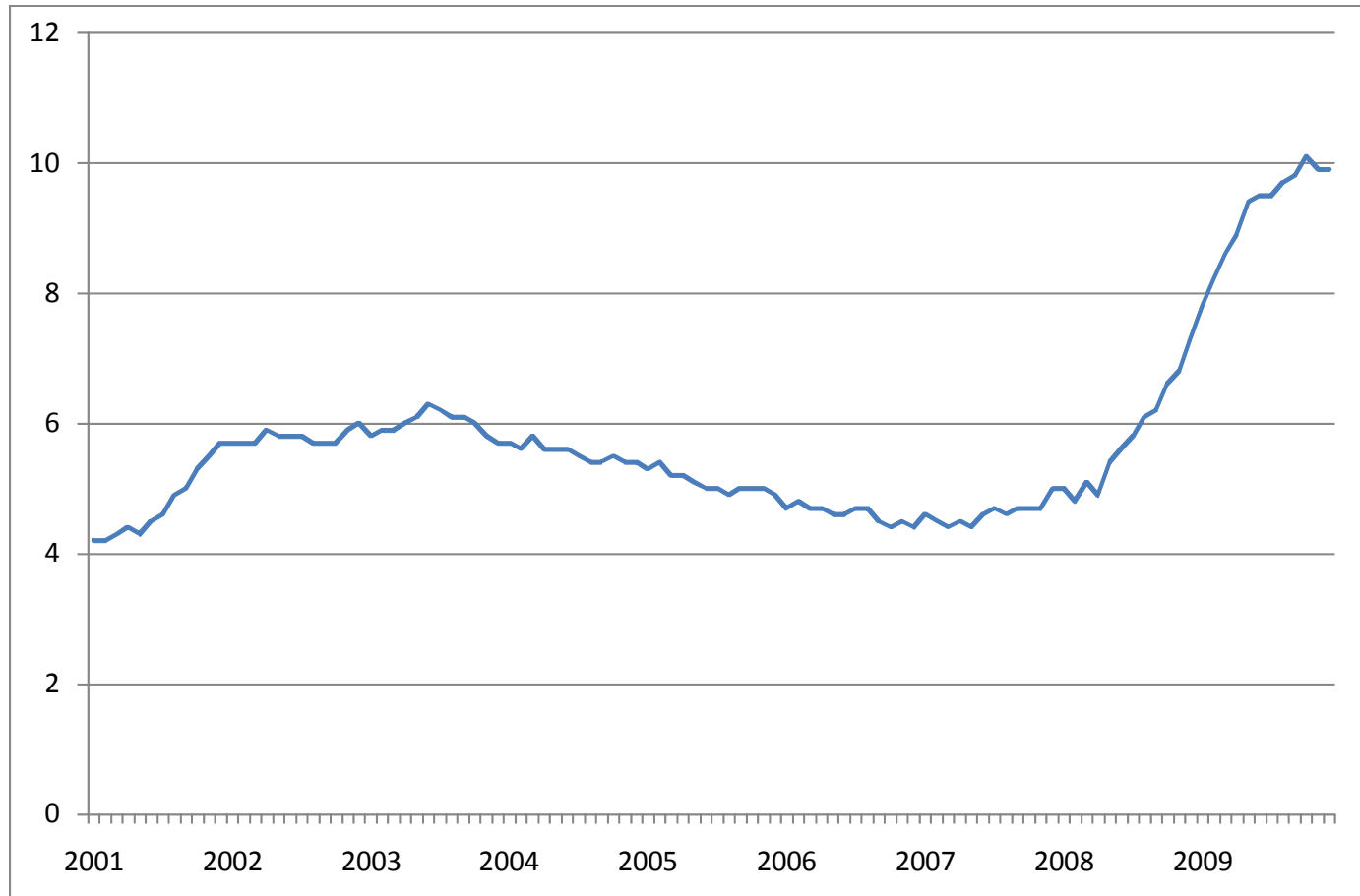


Capital Gains and Saving



- Capital gains/losses much larger than saving (median absolute ratio $CG/SAV=5.6$ from 1990 to 2010).
- Between 1995-2010, half of the time capital gains/losses larger than 40% of disposable income

- # 4% increase in unemployment rate



Growing Evidence on US Households during the Great Recession

Shapiro (2010): Cognitive Economics Study

Hurd and Rowhedder (2010): American Life Panel

Bricker et al (2011): Wealth changes in 2007–09 SCF panel, no consumption data

Petev and al (2011): CEX data, no capital gains/losses.
Consumption of the wealthy fell more than that of the less wealthy.
Wealth effect between 0.01-0.03

De Nardi et al(2012): consumption drop can be explained by drop in wealth and income expectations.

1. Motivation
2. Consumption and the Great Recession
- 3. The Wealth Effect**
4. US Results
5. Agenda for Europe
6. Other “Wealth Effects”

The wealth effect

$$\Delta \ln c_{it} = \alpha \Delta u_{it} + \beta \Delta HW_{it} + \gamma \Delta HW_{it} + \lambda \Delta z_{it} + \varepsilon_{it}$$

- β, γ = impact of shocks (unexpected changes) to house prices and stock market prices.
- Change in \mathbf{u} and \mathbf{z} reflect changes in employment status and demographic variables.
- Widely used: Parker (1999), Souleles (1999), Johnson, Parker, Souleles (2006), Campbell and Cocco (2007), Agarwal, Souleles, Liu (2007), Parker, Souleles, Johnson, McLelland (2010).

Two assumptions

1. Wealth shocks are not predictable and therefore not anticipated by consumers
2. Current prices are the best predictors of future asset prices. Thus changes in prices represent a permanent wealth shock.

It follows that the impact on consumption of wealth shocks should be equal to the annuity value of the shock.

Disagreement over size of wealth effect

1. Macro data: estimates between 2-6%.

2. Microdata

- Changes in stock prices have unambiguous wealth effects on consumption.
- But changes in house prices have different effects on owners and renters: Sinai and Souleles (2005, Campbell and Cocco (2007, Attanasio et al. (2009)

Mixed evidence: MPC from stocks price changes larger than from house prices. Some find large responses, other small effects.

Identification issues

- House and stock price changes are likely to be correlated with other economic events, and therefore have an impact on expectations of future income.
- Most studies rely on aggregate measures of house price changes (national, regional, county), while house price risk has idiosyncratic components.
- Hard to distinguish between transitory and permanent wealth shocks, which should have different impact on consumption.
- Consumers may respond only to large shocks, and ignore small ones.

Our approach

- We use data on capital losses / gains at the household level.
- These are typically unexpected
- Should we worry about how well actual losses are measured?
No, **perceived** losses are what matters
- Data on losses cover both housing and risky assets
- Important to distinguish empirically whether losses are permanent or transitory. We use subjective stock market expectations.

1. Motivation
2. Consumption and the Great Recession
3. The Wealth Effect
- 4. US Results**
5. Agenda for Europe
6. Other “Wealth Effects”

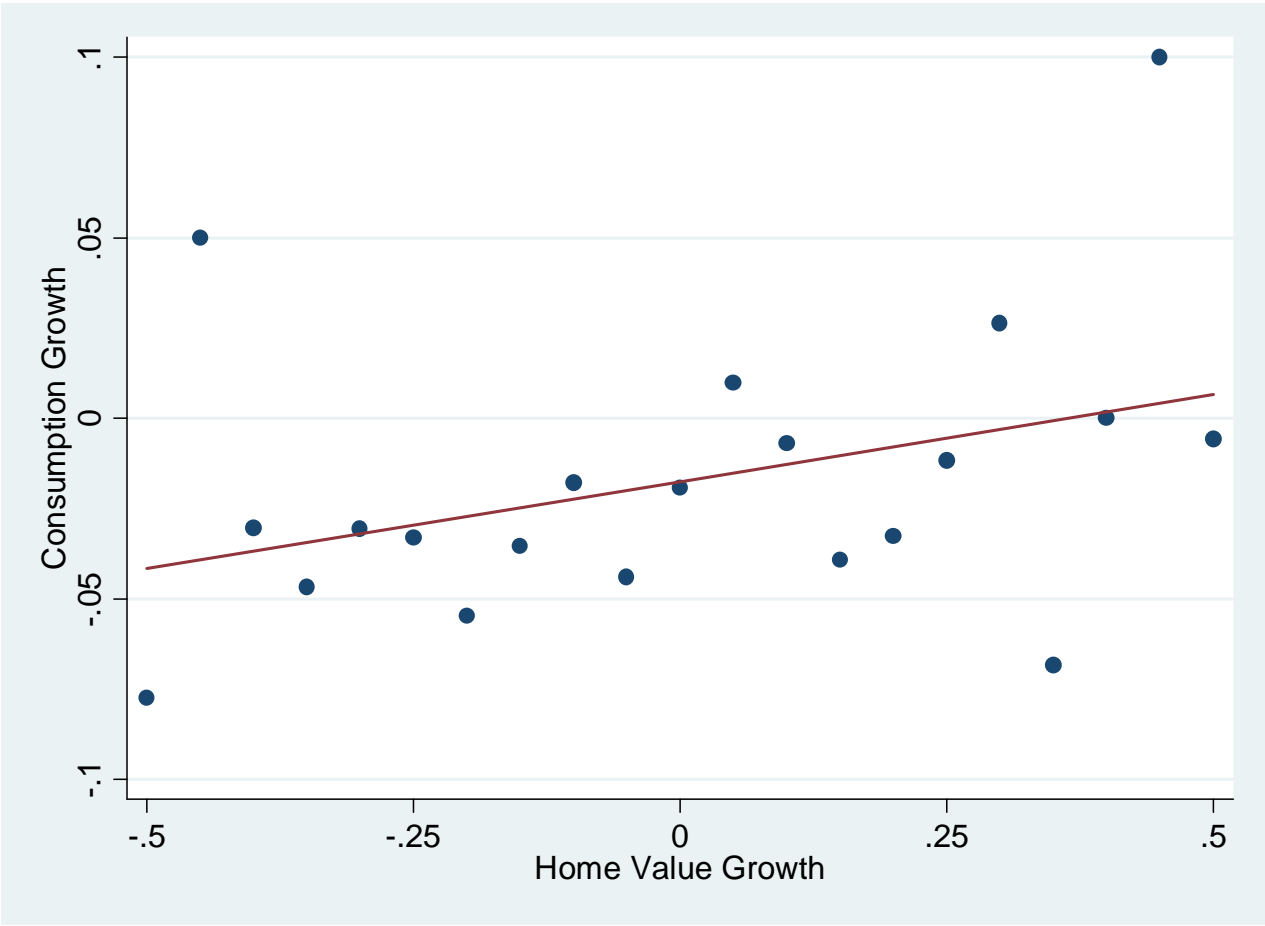
Data: 2008 HRS+2009 HRS Internet Panel+2009 CAMS

- **Health and Retirement Study (HRS)** – Biennial household survey of the 50+ in the US.
- Modules on demographics, employment, income, assets, expectations, physical and mental health, cognition etc.
- First wave in 1992. We use the 2008 wave, conducted between February 2008 and February 2009.
- Sample size: 11,187 households, 16,477 individuals
- **HRS Internet Survey of 2009** – Random subsample of the 2008 HRS. Sample size: 3,438 households, 4,415 individuals

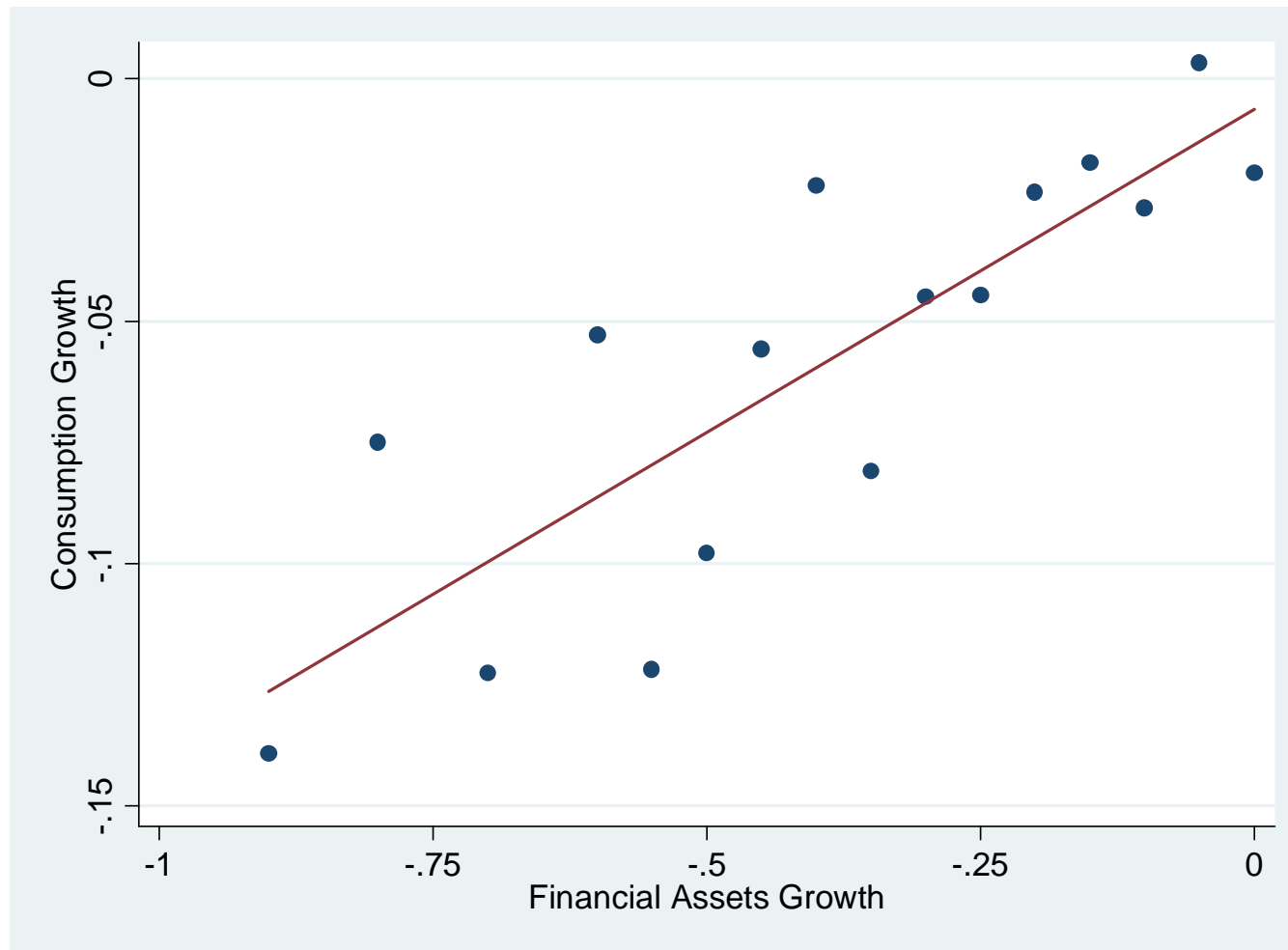
- Questions on spending:
 - Percentage change in spending in the last year
 - Spend less/same/more compared to previous year
- Question on percent losses (not gains) since September 2008:
 - Directly held stocks
 - Mutual funds
 - Employer-provided pension plans
 - Individual retirement accounts (IRAs)
 - Trusts
 - Stocks held in any other form
- Question on percent gain/loss in housing since Summer of 2006 (89% of our sample are owners)
- Question on employment (retirement, unemployment)

- Expectation about prices of blue chip stocks in one year
- Consumption and Activities Mail Survey (CAMS). Biennial, conducted one year after the main HRS survey. Has detailed questions on consumption
- Only 300 households with complete expenditure information are in both the Internet Survey and in CAMS.

Preview of results: Home value growth positively related to consumption growth, but relatively weak relation



Preview of results: Financial assets growth positively related to consumption growth



Capital Losses between 20 and 30%

Asset	(1)	(2)	(3)
	Ownership Prevalence	Prevalence of Losses, Conditional on Ownership	Mean
Panel A. Main Residence and All Financial Assets			
Main Residence	0.890	0.534	-0.199
Financial Assets	0.659	0.935	-0.271
Panel B. Financial Assets in Detail			
Pension Plans	0.348	0.865	-0.304
IRAs	0.387	0.910	-0.303
Mutual Funds	0.422	0.915	-0.294
Directly Held Stocks	0.312	0.834	-0.312
Trusts	0.116	0.836	-0.265
Other Assets	0.238	0.743	-0.258

Five different specifications

$$\Delta \ln c_{it} = \alpha \Delta u_{it} + \beta \Delta \ln HW_{it} + \gamma \Delta \ln FW_{it} + \lambda \Delta z_{it} + \varepsilon_{it}$$

1. Age, household size + price shocks
2. Transitions into unemployment, retirement, bad health
3. 2008 resources (excess sensitivity)
4. Proxies for uncertainty
5. Additional variables + robustness checks

Baseline Results

Variable	Marg. Eff.	Std. Error	
<u>Panel A. Regression Estimates</u>			
Becomes Unemployed	-0.0990	0.0277	***
Becomes Retired	-0.0241	0.0128	*
% Change in Value of the Main Residence	0.0541	0.0308	*
% Change in Value of Financial Assets	0.0838	0.0294	***
<u>Panel B. Marginal Propensities to Consume</u>			
Implied MPC with Respect to the Value of the Main Residence	0.0091	0.0050	*
Implied MPC Respect to the Value of Financial Assets	0.0321	0.0112	***

We compute MPCs as $\text{median}(\hat{\beta} * \frac{C_t}{Home_t})$, $\text{median}(\hat{\gamma} * \frac{C_t}{RiskyFinAssets_t})$

Disaggregated financial assets

Variable	Marg. Eff.	Std. Error	
Becomes Unemployed	-0.0994	0.0263	***
Percentage Change in Value of the Main Residence	0.0668	0.0288	**
Percentage Change in Value of Employer-Provided Pension Plans	0.0119	0.0283	
Percentage Change in Value of IRAs	0.0316	0.0274	
Percentage Change in Value of Mutual Funds	0.0179	0.0289	
Percentage Change in Value of Stocks Directly Held	0.0785	0.0254	***
Percentage Change in Value of Trusts	-0.0014	0.0421	
Percentage Change in Value of Other Assets Invested in Stocks	0.0044	0.0349	

Aggregate implications

Variable (2008.II - 2009.II)	Value	Induced % Change on Aggregate Consumption
% Gain in Real Estate	-0.130	-0.007
% Gain in Financial Assets	-0.200	-0.017
Change in Unemployment	0.040	-0.004
Total Effect on Consumption		-0.028
Actual Consumption Change		-0.027

- Caveat: our sample consists of older households, which should have a higher response of spending to wealth shocks due to their shorter life horizon

Permanent vs. transitory wealth shocks

- The response of consumption should be larger if capital losses are considered permanent rather than transitory
- We use a question on the probability that stock market prices will rise in a year's time.
- We distinguish between those whose expectation in 2008 is less than 50% (more likely to be perceived as permanent), or >50% (more likely to be transitory)

Variable	Marg. Eff.	Std. Error
<u>Panel B1. Reported probability in 2008 of a rise in stock prices equal to .5 or lower</u>		
Percentage Change in Value of Financial Assets	0.1195	0.0414 ***
Number of Observations		903
<u>Panel B2. Reported probability in 2008 of a rise in stock prices higher than .5</u>		
Percentage Change in Value of Financial Assets	0.0496	0.0414
Number of Observations		747

Similar results if we use a different split: Change in probability between 2008 and 2009 (≤ 0 permanent, > 0 transitory)

Quartiles of percentage capital gains

Variable	Marg. Eff.	Std. Error	
Becomes Unemployed	-0.0982	0.0278	***
2 nd Quartile of Percentage Change in Value of the Main Residence	0.0039	0.0155	
3 ^d Quartile of Percentage Change in Value of the Main Residence	0.0234	0.0155	
4 th Quartile of Percentage Change in Value of the Main Residence	0.0329	0.0137	**
2 nd Level of Percentage Change in Value of Financial Assets	0.0234	0.0119	**
3 ^d Level of Percentage Change in Value of Financial Assets	0.0358	0.0117	***
4 th Level of Percentage Change in Value of Financial Assets	0.0305	0.0137	**

Change in consumption (categorical)

Variable	Marg. Eff.	Std. Error
<i>A.1 Probability that Consumption is lower</i>		
Becomes Unemployed	0.2063	0.0525 ***
Percentage Change in Value of the Main Residence	-0.0146	0.0067 *
Percentage Change in Value of Financial Assets	-0.0204	0.0066 ***
<i>A.3 Probability that Consumption is higher</i>		
Becomes Unemployed	-0.1373	0.0243 ***
Percentage Change in Value of the Main Residence	0.0153	0.0072 **
Percentage Change in Value of Financial Assets	0.0218	0.0073 ***

- Similar results using quartiles of percentage changes
- Also similar results using disaggregated financial assets

Effect of uncertainty

- Probability of job loss in the next year
- Introduced both as p and as $p(1-p)$
- Not statistically significant
- Results weaker for housing loss (qualitatively similar), financial loss unaffected

Robustness checks

- Include regional variables (Census Divisions, change in GDP growth, unemployment rate)
- Incorporate selling/buying of financial assets between 2008 and 2009 (dummies).
- Include interview month dummies.

- Account explicitly for debts. Interaction of debts and wealth with capital gains terms is not significant
- Restricting the sample to those below 65 makes the semi-elasticity of unemployment slightly larger (11%)
- Using a nonlinear model (fractional variable model by Papke and Wooldridge, 1996) leads to identical results
- Experiment with unweighted financial gains

Summary of results

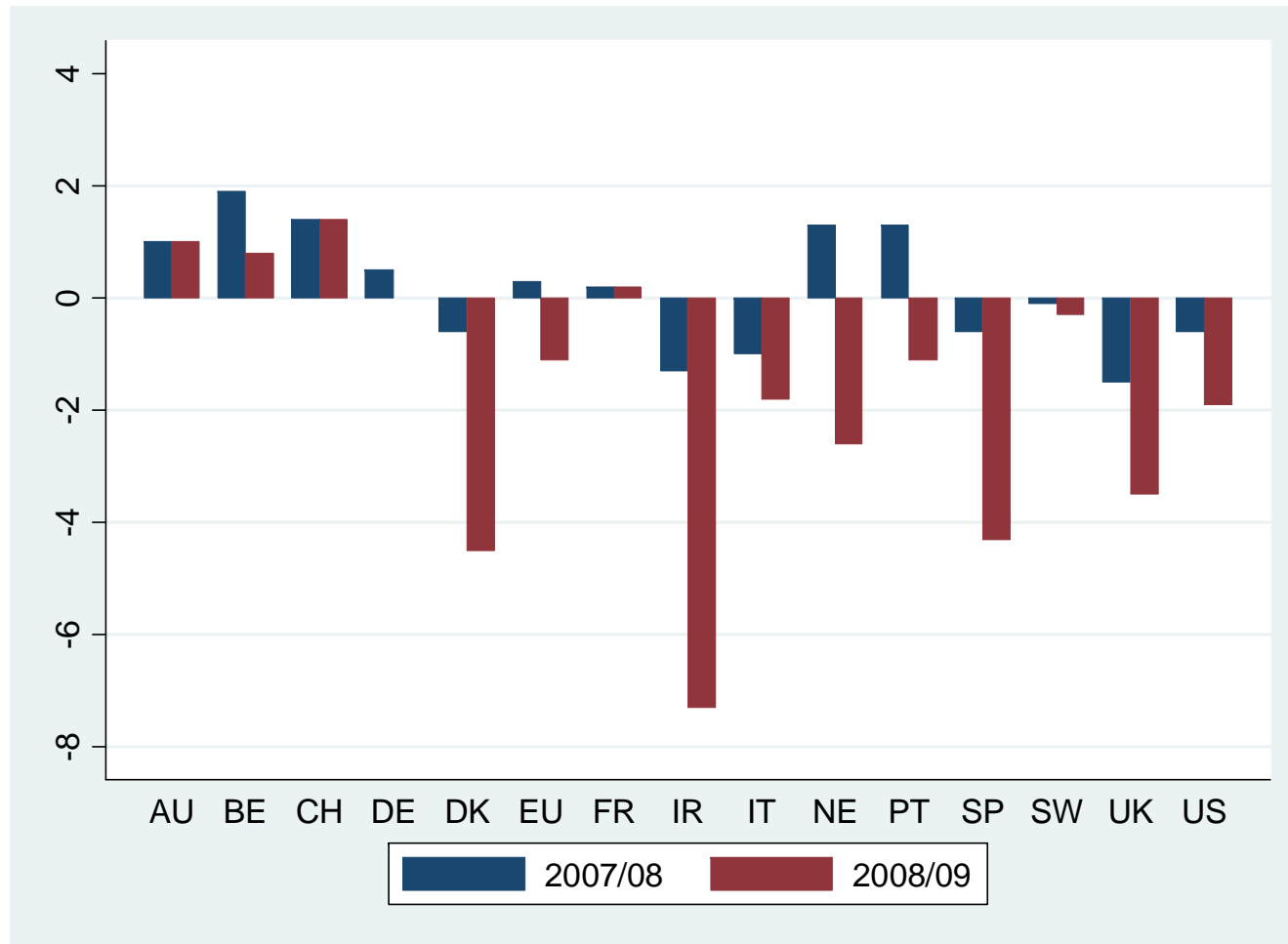
- US households aged 50+ adjust their spending after experiencing capital losses and unemployment
- The effect of a financial loss is stronger than that of the housing loss
- Results are robust to a variety of specifications
- Questions on capital gains/losses in household surveys can be very informative

1. Motivation
2. Consumption and the Great Recession
3. The Wealth Effect
4. US Results
- 5. Agenda for Europe**
6. Other “Wealth Effects”

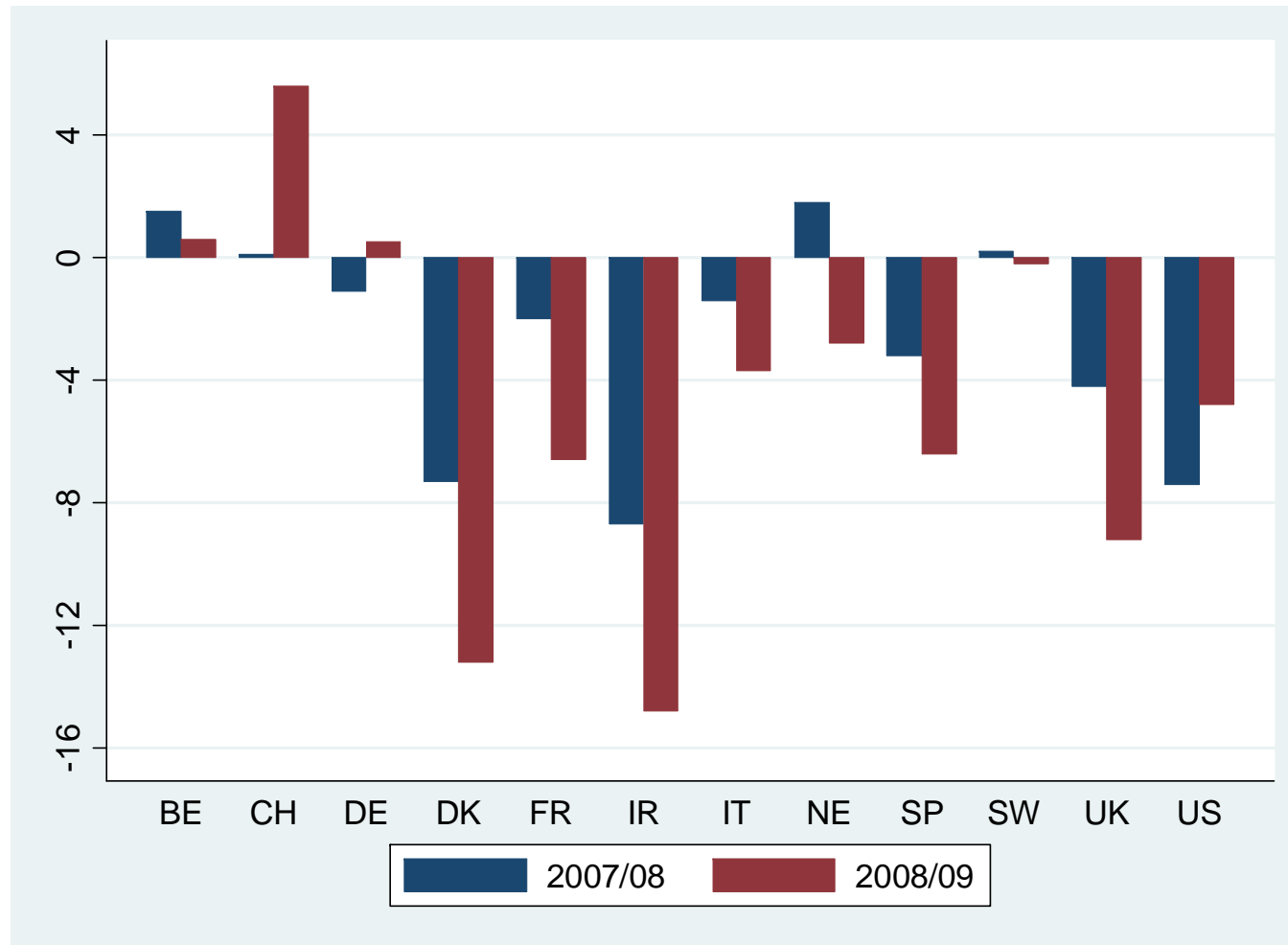
Future research: Consumption and the Great Recession in Europe

- Different **size of shocks in different countries**.
- Different **economic environments** (e.g. generosity of **unemployment insurance** and social programs, availability of **social networks**).
- **Internationally comparable micro data**: allow in-depth analysis of these shocks on households' *expenditures* and *portfolio choices* across countries.

Consumption and the Great Recession in Europe and the US



Shock #1: % Change in House Prices



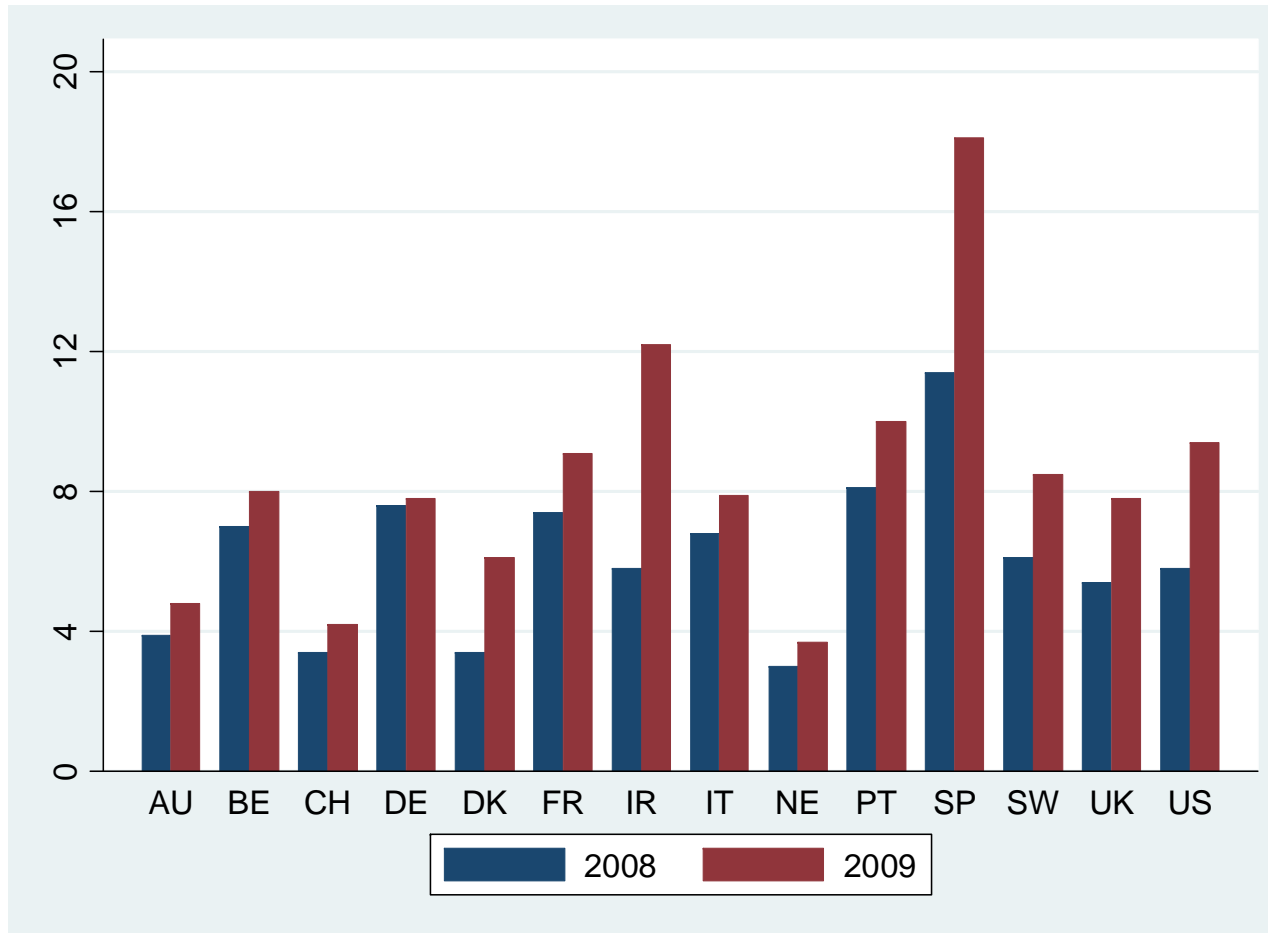
Source: OECD Economic Outlook No. 90, OECD Economic Outlook: Statistics and Projections (database)

Shock #2: Stock Prices – 2005-2011



© Yahoo! Inc.

Shock #3: Unemployment Rates



Source: OECD Employment and Labour Market Statistics (database)

**Using SHARE data we plan to examine
the effect on expenditure of:**

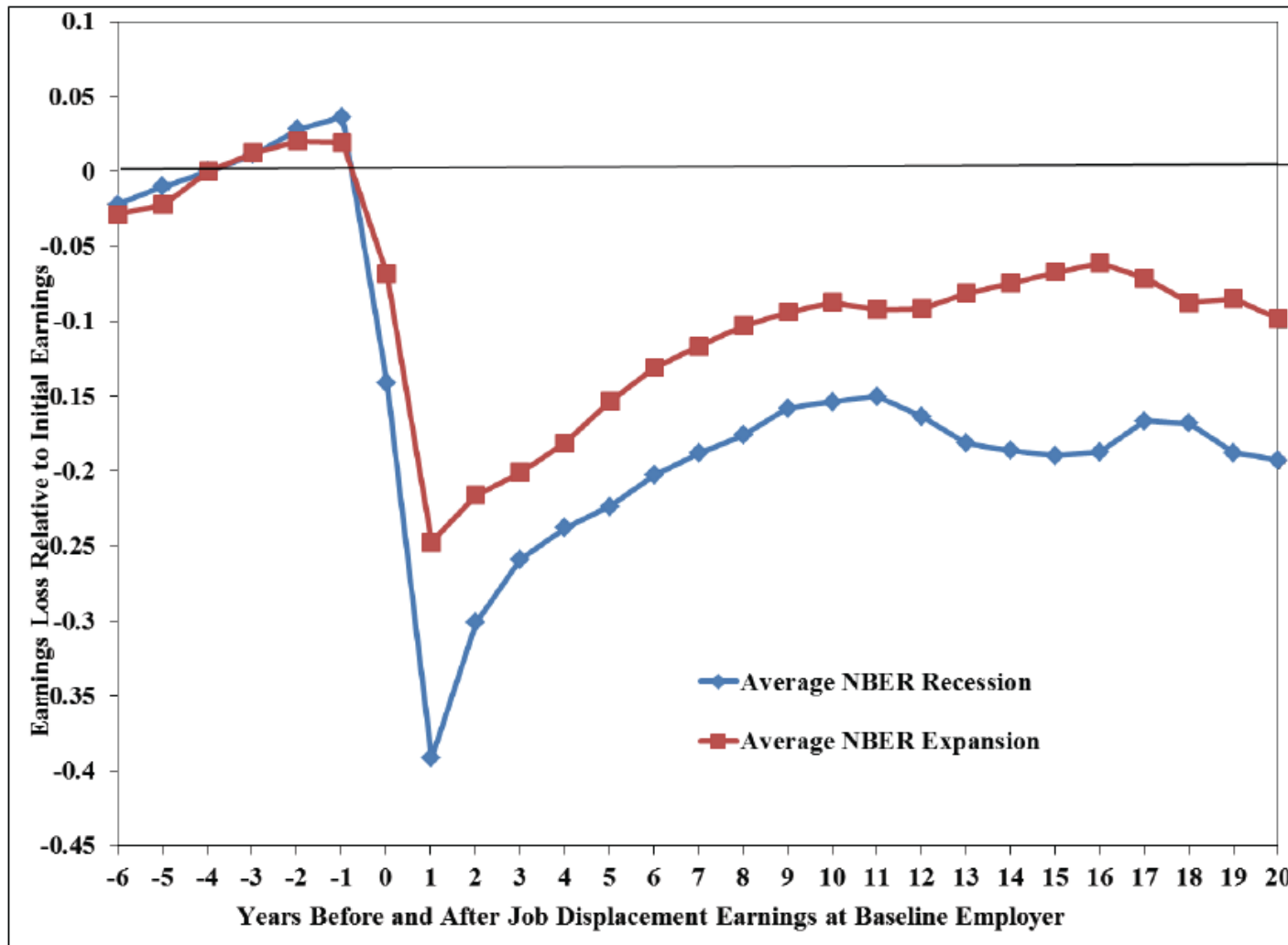
- Change in the value of house and real assets.
- Change in the value of financial assets, esp. the more risky ones (stocks, mutual funds, IRAs).
- Transition into unemployment.
- Examine whether **UB / family networks /social networks / access to finance** mitigate the adverse effects of shocks (e.g. through receipt of financial/in-kind assistance).

1. Motivation
2. Consumption and the Great Recession
3. The Wealth Effect
4. US Results
5. Agenda for Europe
- 6. Other "Wealth Effects"**

Recessions induce other types of “wealth effects”

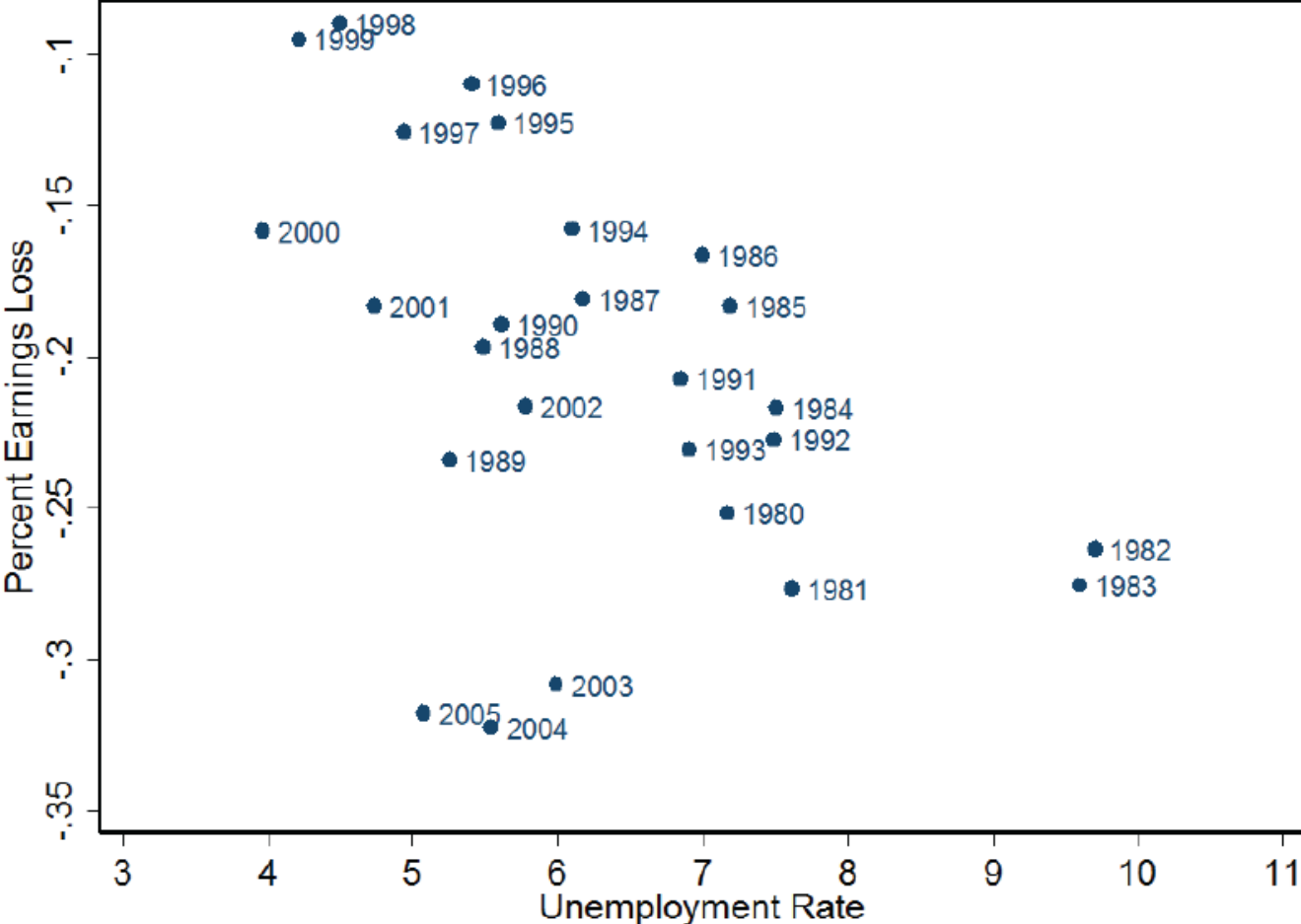
- Neglected in the household finance literature, but important.
- Destruction of human (and health & social) capital associated with layoffs, displacement, etc.
- Tends to be long-lived (“scarring”), and tends to be more severe and more persistent if it happens during recessions.

Earnings losses after displacement



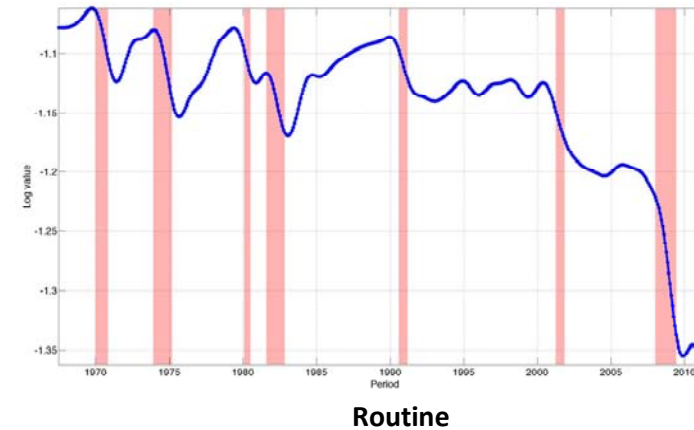
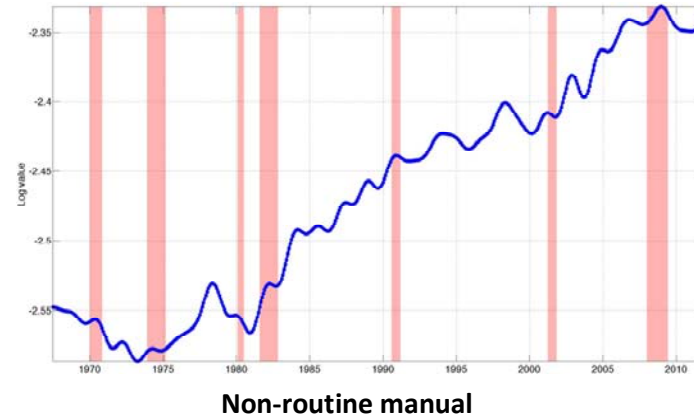
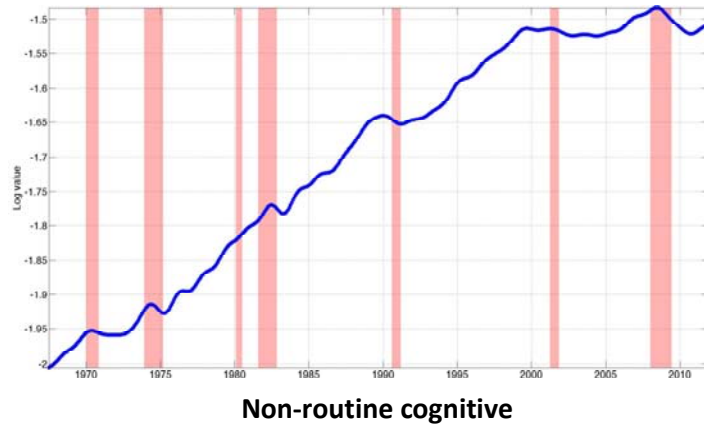
Source: Davis and von Wachter (2012)

Earnings losses 3 years after displacement are much higher during recessions



Source: Davis and von Wachter (2012)

Employment Trends for the three groups



Source: Jaimovich and Siu (2012)

—
Job polarization: recessions affect more routine jobs

Further effects

Social capital: Connections, networks, etc.

Health capital: “Are recessions bad for your health”?
Depression, anxiety, suicides increase in recessions
(but Ruhm (2000) finds that mortality is pro-cyclical)

Network effects

Consumption declines by certain type of households may be contagious:
“keeping-up-with-the-Joneses”, Conspicuous consumption.

De Giorgi, Frederiksson and Pistaferri (2012) find that a tax/transfer imposed on a group reverberates through the entire distribution

Reduced ability to insure against shocks, increasing risk vulnerability

Policy implications

On the asset side: Improve financial education to avoid over-optimism feeding demand for stocks and risky assets (including housing).

On the debt side: Help households improve their balance sheets

Reduce impact of macro risks on consumption

- Incentivize precautionary savings in good times?
- Allow people to borrow from pension funds when times are bad?
- Improve social insurance
- Rebuild human capital lost in the aftermath of recession – Training, etc.

Thank you for listening