

**The Long-Term Effects of Job Displacement
and
The Effects of Extended Unemployment Insurance**

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What is the Effect of Job Loss During a Recession on Affected Workers?

- In 2008 Recession** ... ~ 8 million drop in payroll employment
... ~ 10% unemployment rate
... ~ 17% labor underutilization rate
... ~ 44% unemployed more than 6 months
- Basic Questions** What does it mean for affected workers?
What are effects of extended UI?
- This Lecture** Provide answers using estimates of the short and long-term consequences of previous (large) recessions

Question No. 1: What are Implications for Affected Workers?

Job Losers Experience Earnings Losses Lasting 15-20 Years

von Wachter, Song, and Manchester (2009)

Job Losers Experience Rise in Instability Lasting 10 Years

von Wachter, Song, and Manchester (2009)

Job Losers Experience Persistent Rise in Mortality Rates

Sullivan and von Wachter (2009)

Job Loss has Effects on Family Stability and Children

Oreopoulos, Page, Stevens (2009), Stevens and Schaller (2009)

Labor Market Entrants also Suffer Consequences for 10 Years

Oreopoulos, von Wachter, Heisz (2008), Kahn (2010), Oyer (2008)



Question No. 2: What Are Effects of Extensions in UI?

UI Extensions is a Common Policy Tool in Recessions

- Does it reduce employment? Lead to scarring? Aid job search?
- Hard question since UI rises when unemployment high

Examined Effect of Large UI Extensions in Germany

- Have large extensions in UI occurring by exact age
- Have universe of UI spells in for past 30 years

Findings Suggest that Effects of UI on Employment Modest

- Effects on employment decline in recessions
- Conclusion strengthened if we allow for GE effects
- No effect on wages or long-term employment



Part I: Long-Term Earnings Effects of Job Loss

“The Long-Term Effects of Mass-Layoffs During the 1982 Recession”

by Till von Wachter, Jae Song, and Joyce Manchester

Quoted: New York Times
Wall Street Journal
Chicago Tribune
The Atlantic, Harpers
NPR



30 Years Earnings & Firm Information from SSA

Merge Several Sources of Administrative Information

- 1) Longitudinal earnings records for 1% sample of SSN
- 2) Firm-level employment size by aggregation from 100%

Key Advantages Over Existing Data

- large national panel covering almost 30 years: 1974 – 2003
- information on careers and firms, as well as program receipt

Approach

- 1) Analyze Long-Term of Mass-Layoffs in U.S. Labor Market
- 2) Analyze Effect for Different Groups, Alternative Channels



Identify Mass-Layoffs at Firm Level

- Job Displacement:** Separate from main employer held in 1979 during a mass-layoff event
- Mass-Layoffs:** Lasting 30% Employment Drop Over Two Years Relative to Level in 1979
- Jacobson, Lalonde, and Sullivan (1993)
 - [→](#) Hildreth, Von Wachter, Handwerker (2008)
- Main Sample:** Male workers born 1930-1959
- At least 3 or 6 Years of tenure in 1979
 - EIN Size in 1979 > 50
 - Industry restriction, Drop workers older 55

Dynamic Pattern of Annual Earnings Losses

Distributed Lag Model Jacobson, Lalonde, and Sullivan (1993)

$$e_{it} = \alpha_i + \gamma_t + \sum_{|k| \leq m} D_{it}^k \delta_k + f(\text{age}_{it}) + \varepsilon_{it} \quad \begin{array}{l} k = \text{years since job} \\ \text{loss (to job loss)} \end{array}$$

Events Leave 1979 Employer in 1980-1986
while Employer has MLF

Control Group Any Worker Not Separating 1980-86
(Identify Year Effects) [*Stayers*]

Key Assumption Trend in Earnings of Control Group
of 'Stayers' is Valid Counterfactual

Alternative Control Groups (1): Selection & Sorting

1. Stayers in Other Firms: Similar Worker & Firm Trends

$$e_{it} = \alpha_i + \gamma_t \lambda_j + \sum_{|k| \leq m} D_{it}^k \delta_k + f(\text{age}_{it}) + \varepsilon_{it} \quad \begin{array}{l} k = \text{years since job} \\ \text{loss (to job loss)} \end{array}$$

Worker Differences: Mean & Growth Earnings 1974-1979

Firm Differences: Industry, Firm Size & Wage Bill in 1979

- ➔ Use trend of workers with similar mean/growth of pre-earnings, same firm size, same industry as counterfactual
- ➔ Can be also implemented in matching/re-weighting framework

Alternative Control Groups (2): Firm-Level Analysis

2. Analyze MLF at Firm Level: Pool Movers and Stayers

$$e_{it} = \alpha_f + \gamma_t \lambda_j + \sum_{|k| \leq m} D_{ft}^k \delta_k + f(\text{age}_{it}) + \varepsilon_{it} \quad \begin{array}{l} k = \text{years since job} \\ \text{loss (to job loss)} \end{array}$$

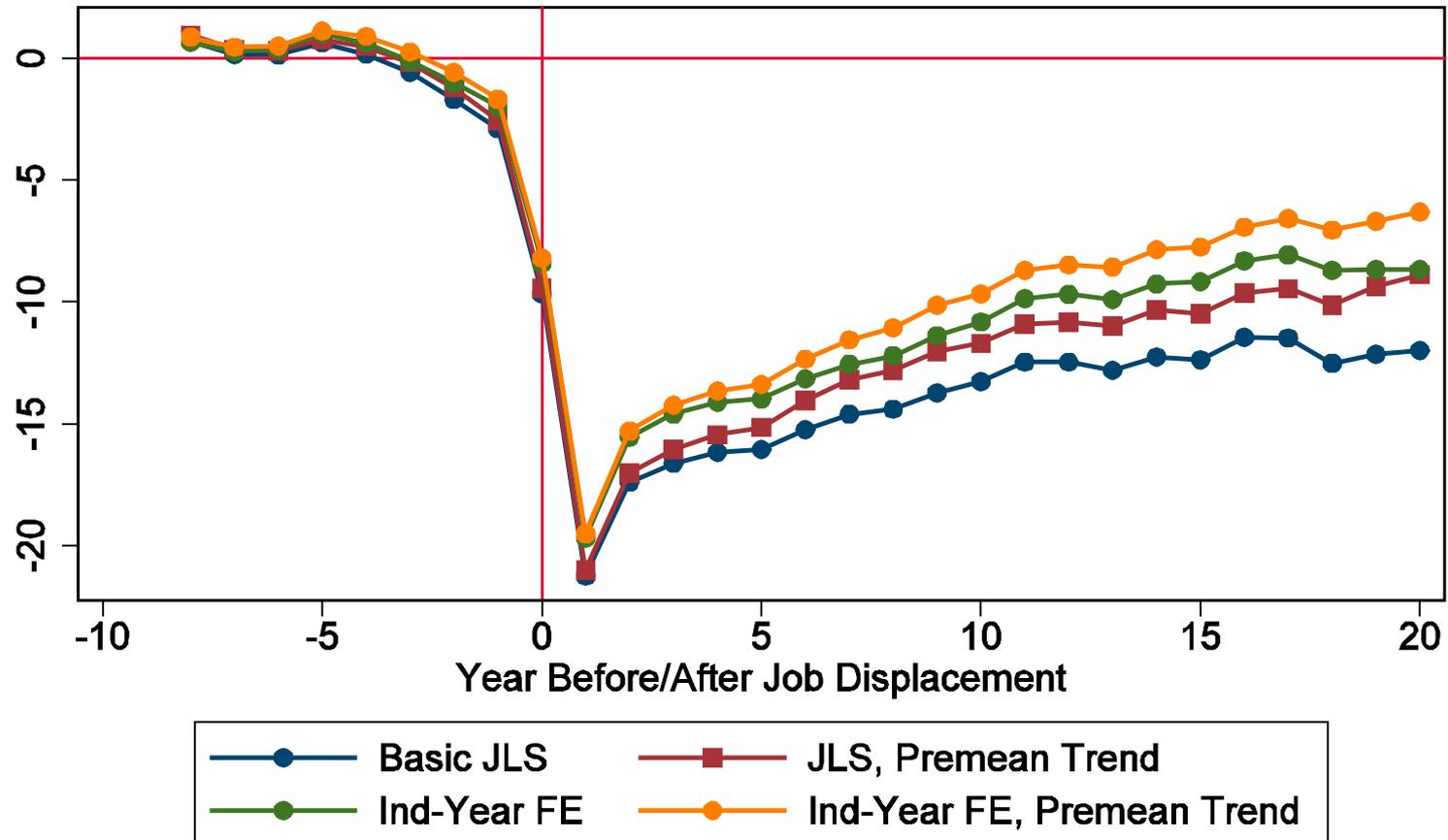
- Compare change in mean earnings of all workers at MLF firm with earn. change of workers at similar non-MLF firms
- Intent-to-treat: - effectively use firm mass-layoff date as event
- rescale by effect of mass-layoff on job mobility

3. Stayers in Same Firm: Similar Worker Trends

- Use trend of similar workers in same firm as counterfactual
- Subtract any effect on stayers from effect of separators

Main JLS Specification and Additional Control Groups

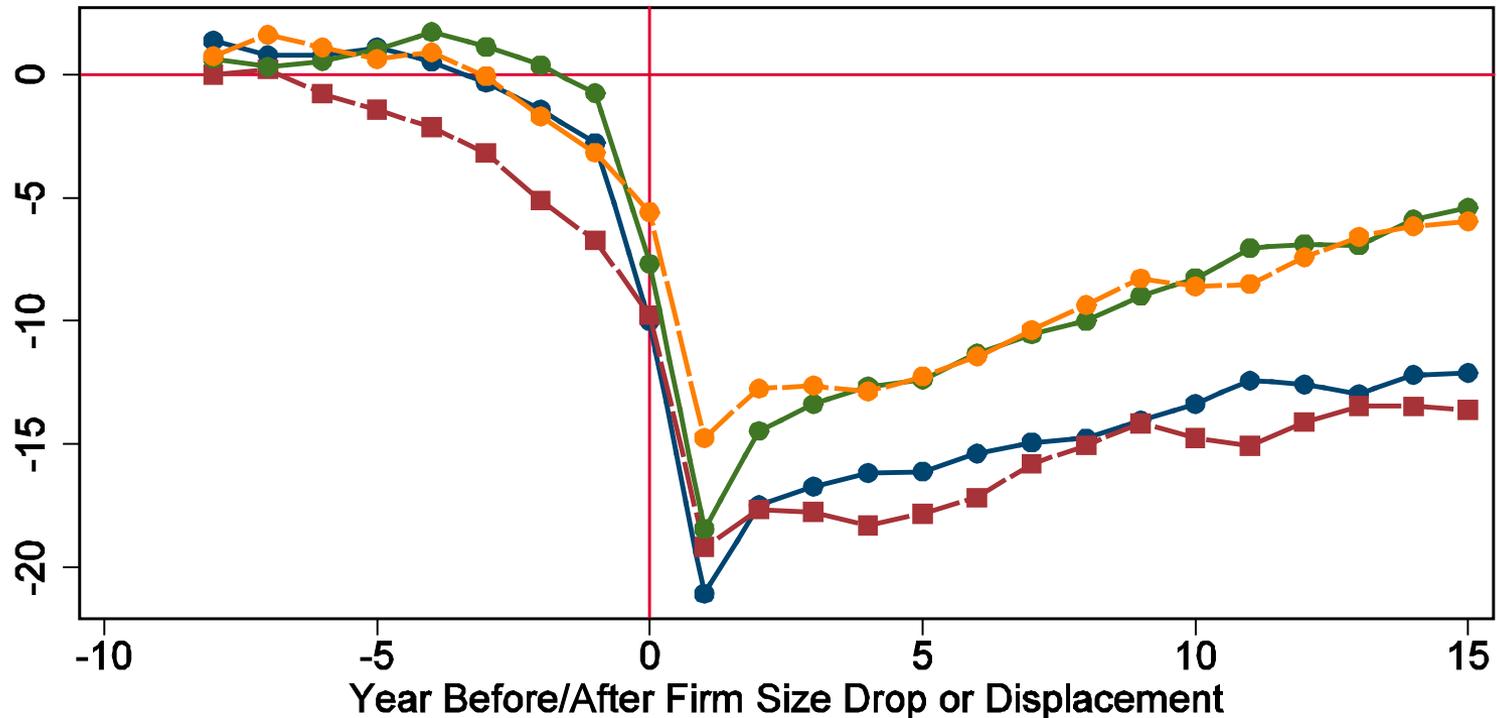
Earnings Losses at Job Separation 1980-1986 Relative to Non-Separators
Earnings All Jobs Including Zeros, Men in Stable Job 1974-1979 (in \$1000)



Source: 1% Files of Social Security administrative data (see text). Earnings in 2000 Dollars.

Firm-Level Analysis Compared to JLS Event Study Approach

Earnings Losses for Both Job Separators and Non-Separators
Earnings All Jobs Including Zeros, Men in Stable Job 1974-1979 (in \$1000)



Source: 1% Files of Social Security administrative data (see text). Earnings in 2000 Dollars.

Effects of Mass-Layoff on Earnings

Find Large and Lasting Earnings Losses from Layoff

- 20% losses well beyond 5 years: up to 20 years
- Hold for entire US, larger due to inclusion of zero earnings
- Holds for broader groups than previously studied

Holds within Industries, Firms, Robust Across Specifications

- Not affected by Selection, Sorting, Industry Trends

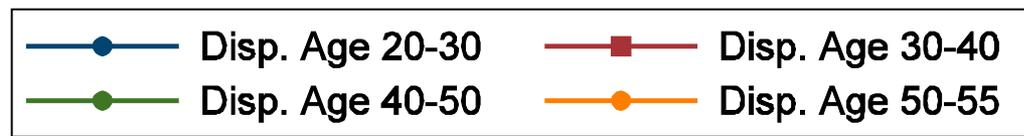
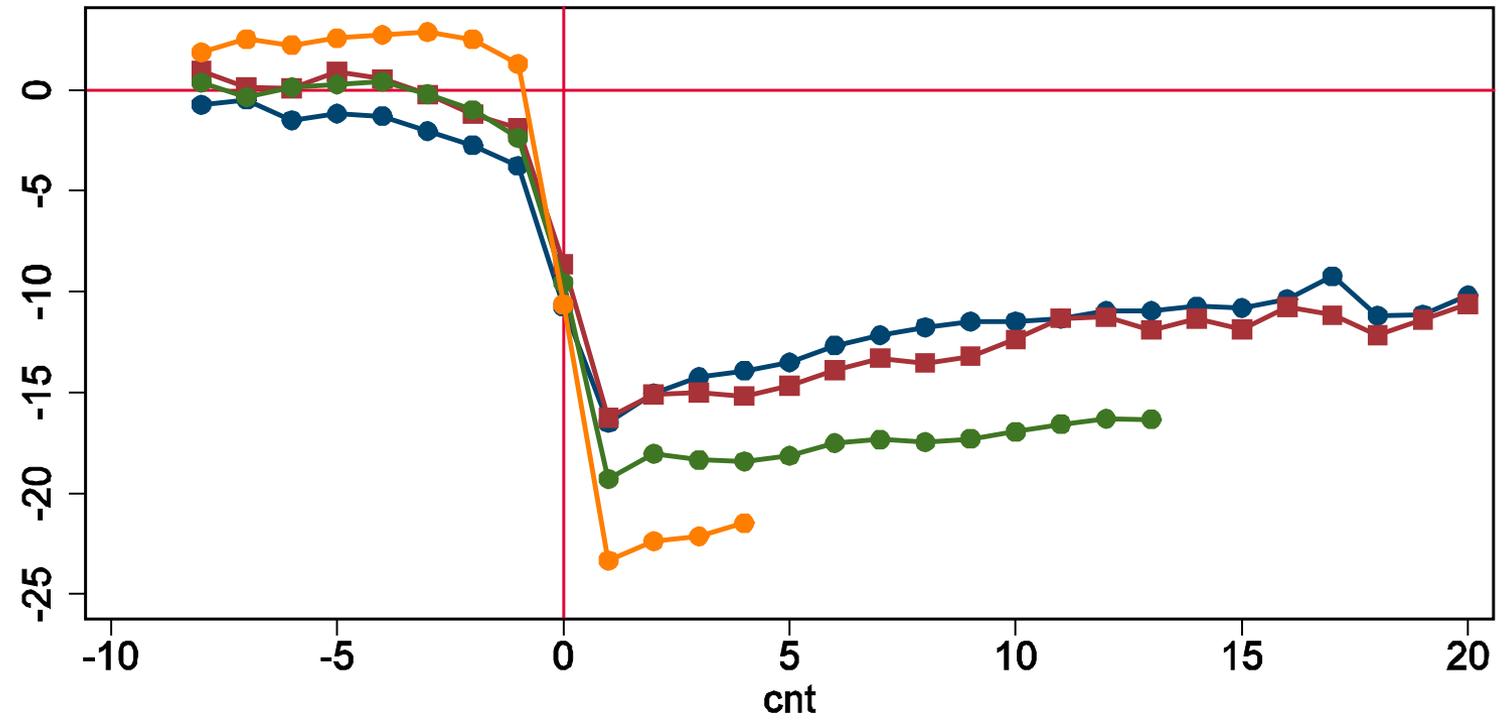
Also Holds for All Age-Groups, Most Industries, Women

- Estimates vary! But all groups bear large & lasting losses
- Permanent effects even for younger workers

→ Broad Groups of Workers [up to 10% of labor force] Suffered Substantial Losses in PDV of Earnings as a Result from MLFs in the early 1980s

Effect of Displacement by Age at Displacement

Earnings Losses at Job Separation By Age at Displacement
Earnings All Jobs Including Zeros, Men in Stable Job 1974-1979 (in \$1000)



Source: 1% Files of Social Security administrative data (see text). Earnings in 2000 Dollars.

Table: PDV of Annual Earnings Losses in 20 Years After Job Loss for Workers Displaced at Mass-Layoffs 1980-1986, Individual and Total

Fraction Displaced during Mass-Layoff in 1980-1986	Number of Workers Displaced During Mass-Layoff in 1980-1986		PDV of Annual Earnings Loss Interest Rate = 4%	Total PDV of Earnings Loss (Billion)
	Sample	Population		
(1)	(2)	(3)	(4)	(5)

Employment Situation in 1979:

Panel A: Including Zero Earnings in Calculation of Losses

<i>Six Years Job Tenure</i>	0.15	9,652	965,200	-\$163,897	-\$158.2
<i>Three Years Job Tenure</i>	0.17	16,900	1,690,000	-\$141,190	-\$238.6
<i>Six Years Employment</i>	0.19	28,082	2,808,200	-\$106,672	-\$299.6
<i>Three Years Employment</i>	0.20	36,642	3,664,200	-\$102,897	-\$377.0

Notes: Earnings figures are in 2000 Dollars. Discounted values are calculated at five years before displacement. Earnings losses are assumed to have returned to zero 20 years after displacement.

Measuring the Costs of Recessions for Job Losers

Ideal: Decline in Present-Discounted Value of Income

- *Measures change in opportunity-set of individuals*

Here: Use Earnings Path as Imperfect Proxy for Income

- *Earnings is probably not a bad proxy for long-run income decline*

Even this is Difficult to Measure:

- *Rarely have life-time earnings paths for large enough samples*

Find: Earnings Paths Shifted Downward Permanently

- *Robust for many groups, across many different specifications*

Estimates Suggest Significant Costs of Recessions

- *Other Direct Effects of Job Loss strengthen this conclusion*



**Part II: The Effects of Extended Unemployment on
Insurance, Labor Supply, and Wages in Recessions**

*“The Effects of Extended Unemployment Insurance over the Business Cycle”
by Johannes Schmieder, Till von Wachter, and Stefan Bender*

Ongoing Debate on Effect of Extensions in Unemployment Insurance in Recessions

- Extending Duration of UI in Recessions is a Common Policy Tool
 - ⇒ Substantial increases in UI duration in each major US recession
 - ⇒ Would like to know employment and wage effects of such expansions
- Long Literature has Studied Disincentive Effect of UI Parameters
 - This incentive effect is an important cost of unemployment insurance.
 - Disincentive effect of increases in UI durations tends to be moderate.
 - ⇒ Typical focus of literature estimated effect of moderate expansions of UI during regular economic times
- However effect of UI may vary with the size of expansion and the economic environment.

Differential Supply Effects by Business Cycle Conditions

Reasons to Believe that Effect of UI Varies with Business Cycle

- 1 Stronger Disincentive Effect in Recessions (e.g., Sargent & Ljungqvist 1998)
 - In more 'turbulent' environment skills are lost (reallocation)
 - Effective replacement rate of UI increases
 - UI may have larger effects on equilibrium unemployment
- 2 Weaker Disincentive Effect in Recessions
 - ⇒ Workers take any job in difficult times

Answer to this question matters

- 1 From macro point of view, care about effect of UI extension on total UR
 - ⇒ This is what FED tries to estimate
- 2 From micro point of view, want to know what optimal extension of UI is
 - ⇒ Evidence on optimality of **level** of benefits, not on **durations**

There is no direct empirical evidence for whether the effect of UI varies with the economic environment.

New Estimates of Effects of Large Extensions in UI Durations Over The Business Cycle from Germany

1. Use age thresholds in UI system to estimate employment effects of large UI extensions using a regression discontinuity design:
 - Use administrative data on universe of UI spells with detailed information on employment and job outcomes.
2. Estimate duration elasticities at different points of the business cycle using data spanning nearly 20 years
3. Assess effect of extended UI on wages, job characteristics and long-term career outcomes.

Discuss Interpretation of Our Findings:

- Application 1: Effect of extended UI on aggregate UR.
- Application 2: Evaluate potential welfare gain from extended UI.

Discrete Changes in UI Duration with Age in Germany

1st Tier: Unemployment Insurance Benefits:

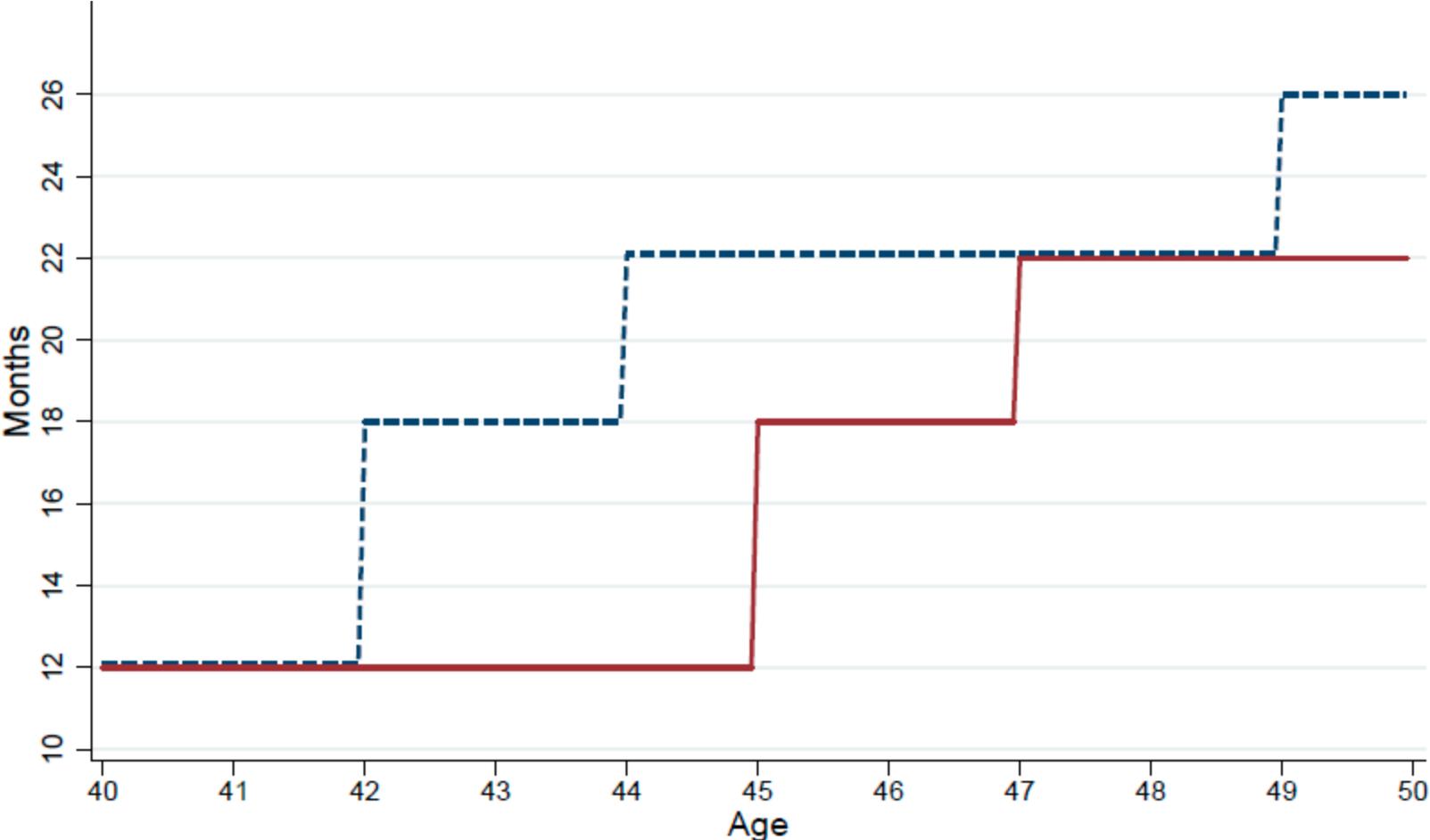
- fixed replacement rate of 63 percent of net wage, eligible after working for at least 12 months.
- The maximum duration of UI benefits depends on the exact age on the date of claiming UI.

→ Workers with high labor force attachment (those eligible for maximum), have three steps in benefit durations

2nd Tier: Unemployment Assistance:

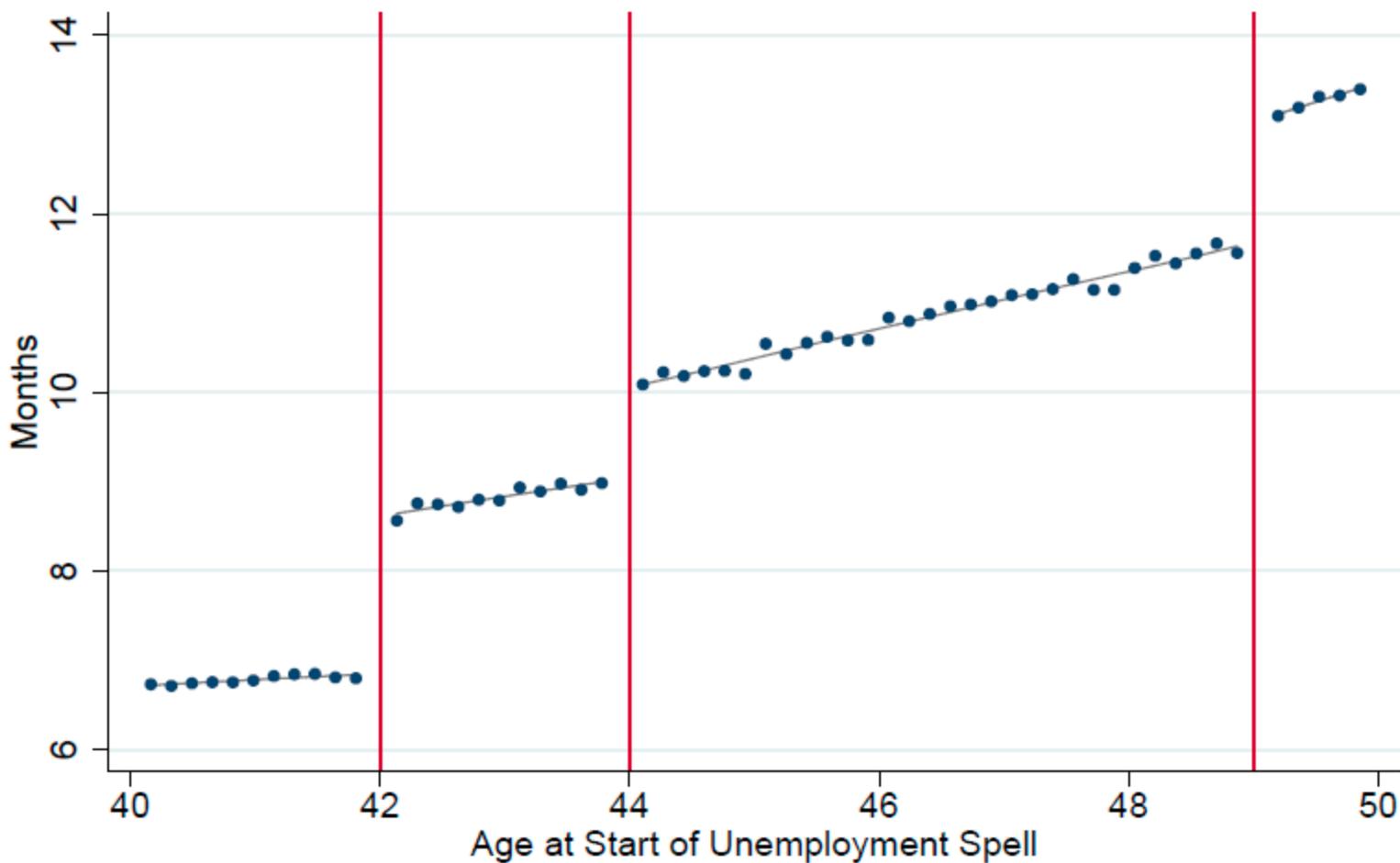
- Means tested support. Replacement rate 53 percent but other
- income (e.g. spousal) is deducted. No maximum duration.

Maximum Durations of UI Benefits by Age and Year

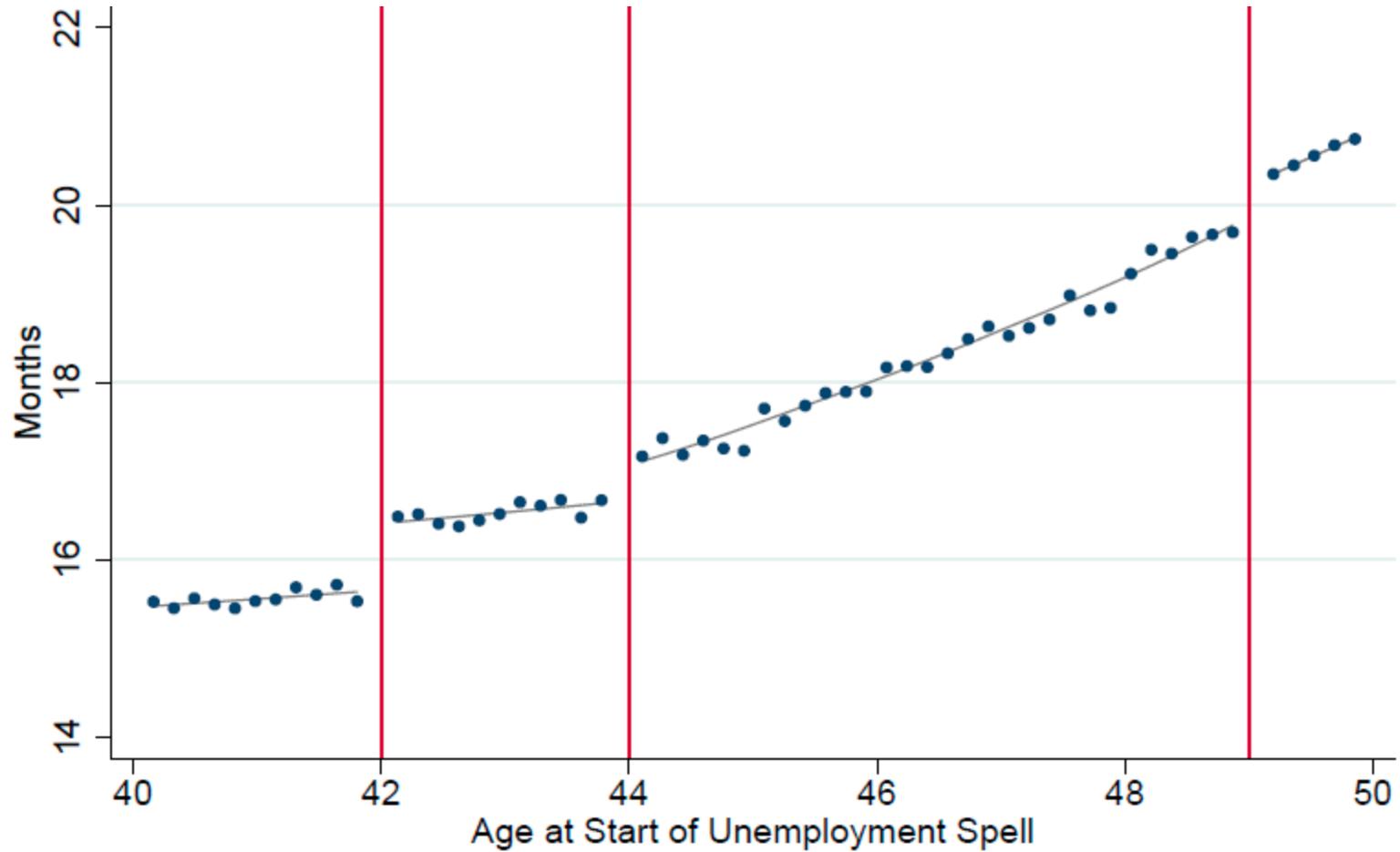


----- Jul 1987 - Mar 1999 ——— Apr 1999 - Mar 2004

Actual Changes in Duration of Take-up of UI Benefits



Resulting Increases in Duration of Total Non-Employment



Validity of RD Assumption

The identifying assumption for the RD design is that except for the treatment variable no other determinants of the outcome variable vary discontinuously at the cutoff.

- This may be threatened if individuals decide when to apply for UI based on their age.

Assessment: Check discontinuity in density, characteristics, waiting

- There is a very small increase in the density to the left of the 42 and 49 cutoff.
- All predetermined variables are smooth around the cutoffs. (Link)
- No sign that workers strategically delay applications.
- Density effect may be partly driven by employers delaying layoffs.

Overall, no reason to be concerned with validity of RD assumption

Result 1: Employment Effect of Large UI Expansions

Non-Employment Duration Elasticity of 0.13, Rescaled marginal effect of increase in one month of UI of about 0.1 - 0.13.

- Effect on non-employment smaller than on UI duration
- Not simply driven by increase in censored spells

Obtained several additional results

- Effects occur throughout duration of non-employment spells
- Slightly smaller in post-1999 reform
- There is no effect on probability of working 5 years later.

Results by Subgroups

- Results similar across education levels, tenure, gender, age
- Elasticity slightly lower for individuals who are likely to receive unemployment assistance after UI benefits (0.18 vs. 0.11)

→ Findings very robust to extensive sensitivity analysis.

Result 2: Variation of Employment Effect over Business Cycle

- Does employment effect of UI increases or decreases in a recession?
- Obtained a large number of RD estimates and correlate them with indicator of business cycle
- Follow Two Approaches Here:
 - ① Use Standard Business Cycle Indicators:
 - Reestimate RD for each year and age-group
 - Correlate it with measures of business cycle
 - ② Use Average Wage Loss by Industry as Indicator:
 - Reestimate RD for each quintile of industry loss
 - Reestimate RD for each industry and correlate with mean loss
- Estimate pooled linear model with interactions to raise precision.
- Estimate parametric hazard model which allows for differential effects of UI over the business cycle.

Result 3: Small Effects of UI Duration on Wages or Long-Term Employment

Multiple Outcome Measures:

- Effect on Average Wage at New Job
- Wage Growth on New Job, Wage Five Years Later
- Other Job Characteristics
- Employment and UI After 5 Years

Findings from RD Estimates:

- Zero effect on average wage
- No effect on job charact. (prob. of moving, chg. industry, firm size)
- Zero effect on wage growth or long-term wage
- No effect on long-term employment or UI take-up

➔ No effect of large UI extensions on wages or job characteristics, or longer-term employment outcomes

Application 1: Effect of Current U.S. UI Extensions on Unemployment Rate (UR)

- In steady state UR depends on average unemployment durations:

$$\Rightarrow \hat{UR} = \frac{\delta}{\delta + \frac{1}{D}}$$

- Unemployment durations depend on UI Benefits:

$$\Rightarrow D = a * B^\eta$$

⇒ Estimate: $\eta = 0.13$, Calibrate: $a = 21.8$, $\delta = 0.0016$.

- Obtain impact on total UR at current increase of UI

⇒ UI benefits ↑ from 26 to 104 weeks UR ↑ from 5.2 to 6.1%

⇒ For very large extensions in UI effects appear large even at moderate values of elasticity.

⇒ Made important simplifying assumptions: view as **upper bound**

Actual Effect of UI on Aggregate UR Likely to be Smaller

- Spillover Effect: Job finding rises below age-cutoff due to less crowding
- Universal Extension in Benefits: If the unemployed are competing for a fixed number of vacancies, presence of search externalities again imply that actual effect on aggregate UR smaller than individual elasticity.
 - ⇒ In a standard search model, if the matching function takes the form $m(v, u) = m_0 * v^{1-\alpha} * u^\alpha$, then the 'full' effect is α times the RD effect.
 - ⇒ A typical estimate for α is 0.5 (Pissarides 1996), in this case the relevant 'full' elasticity is only about half the elasticity estimated from the RD, about 0.07.
- UI Take Up: Even in recessions, about 50% of unemployed workers receive UI benefits and will therefore be affected by UI extensions (fraction is higher among laid off).

Table: Simulating the Effect of Unemployment Insurance Extensions on the Unemployment Rate in the United States

	Baseline Estimate	Inter. Model Point Est. Chg. GDP -4%	Inter. Model Point Est. Chg. GDP -4% Up. Bound CI	Extrapol. Elast. for Prob of UA = 0
Elasticity of Non-emp Duration	0.13	0.054	0.113	0.21
Simulation 1: Extending UI Durations from 26 to 104 weeks in March 2008 Baseline UR = 5.2%				
Partial Equilibrium Extrapolation	6.1%	5.5%	6.0%	6.8%
Assuming Matching Function $\alpha = 0.5$	5.7%	5.4%	5.6%	6.0%
Assuming Matching Function and 50% of Unemployed receive UI	5.4%	5.3%	5.4%	5.6%
Simulation 2: Decreasing Potential UI Durations from 104 to 26 weeks in February 2010 Baseline UR = 10.4%				
Partial Equilibrium Extrapolation	8.8%	9.7%	9.0%	8.0%
Assuming Matching Function $\alpha = 0.5$	9.6%	10.1%	9.7%	9.2%
Assuming Matching Function and 50% of Unemployed receive UI	10.0%	10.2%	10.1%	9.8%

Application 2: Think About Optimal UI Duration in Recessions

- Follow set up of search model used in Chetty (2008):
 - Workers choose search intensity at fixed wages.
 - Individuals can be liquidity constraint.
- Approximate Welfare Effect of Benefit Increases

$$\frac{dW}{db} = \frac{1-s}{s} \left(\frac{\partial s / \partial A}{-\partial s / \partial W} - \eta_{s,b} \right)$$

⇒ Changes in Benefit or Duration Isomorphic for a Fixed Long Period

- Use This Formula To Assess Whether Optimal Generosity Increases in Recessions

Measure Components of Formula

- Components of Welfare Formula Vary over Cycle
 - $\frac{\partial s}{\partial b}$ and $\eta_{s,b}$ approximately constant over business cycle
 - $\frac{\partial s}{\partial w} = \frac{\partial s}{\partial A} - \frac{\partial s}{\partial b}$
- ⇒ Cyclicity of $\frac{\partial s}{\partial A}$ determines cyclicity of welfare effect.
- It seems likely that $\frac{\partial s}{\partial A}$ goes up during a recession, i.e. individuals are more liquidity constraint.
 - Asset prices (such as real estate) decrease during recession.
 - At least in some recessions, banks are more hesitating to lend money.
 - During recession it is more likely that the spouse of an individual is also unemployed, decreasing ability to smooth consumption.
 - Longer unemployment durations lead to depletion of savings and credit.

Conclusion

- 1 The elasticity of nonemployment duration with respect to potential benefit durations is estimated to be about **0.13**, though appears to decrease slightly after the 1999 reforms.
 - 2 The nonemployment **elasticity** is **very stable** across the business cycle and across industries with different demand conditions.
 - 3 There is no effect on post-unemployment wages or on long-term career outcomes.
- ⇒ Large extensions of UI do not necessarily raise aggregate UR.
- ⇒ It seems likely that extending UI benefits during recessions may be beneficial if liquidity constraints become more binding.



Summary of Main Findings

Question No. 1: How are workers and families affected by recessions?

- Large earnings declines from job loss lasting 15-20 years
- Job loss can lead to declines in health and life-expectancy
- Job loss raises career instability, affects workers families, children
- Labor market entrants experience persistent losses

Question No. 2: What do we learn about the labor market?

- High persistence & sheltered stayers point to contracts
- Large earnings losses suggest specific investments, rents

Question No. 3: What can government policies do?

- UI delivers insurance at little efficiency cost, but not more
- No evidence of long-term scarring due to longer UI durations
- Reemployment policies may work, but little recovery in wages