

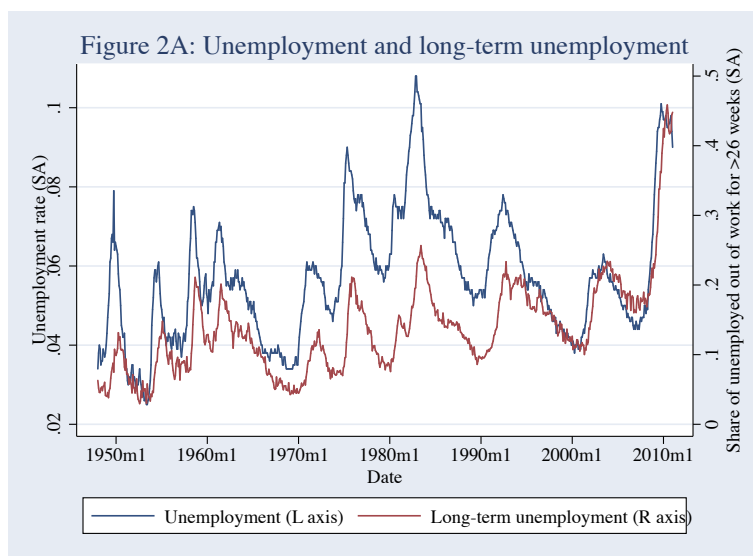
# Unemployment Insurance and Job Search in the Great Recession

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Preliminary and *extremely* incomplete

1

## Unemployment levels and durations have risen sharply in the Great Recession



2

## Expansions of UI benefits

- Extended Benefits (EB) program
  - 13 or 20 weeks.
  - Triggered by state unemployment rate (several options about specific triggers).
  - Was split 50-50 state-federal; shift to 100% federal.
- Emergency Unemployment Compensation (EUC) program.
  - Tier 1: 13-20 weeks, introduced June 2008
  - Tier 2: 13-14 weeks, introduced Nov. 2008
  - Tier 3: 13 weeks, introduced Nov. 2009
  - Tier 4: 6 weeks, introduced Nov. 2009
- Several expiration dates & reauthorizations. When authorization expires, EB turns off immediately; EUC recipients can finish current tier.

3

## What link (if any)?

- Unemployment insurance has three effects:
  - Substitution from work to continued search.
  - Income/liquidity effect: More leisure.
  - Substitution from idleness to search.
- All raise unemployment, 2/3 reduce employment.
- But magnitudes are unknown.

4

## Literature review: Effect of UI durations

- 1980s-1990s
  - Administrative UI data (Katz & Meyer 1990, Card & Levine 2000)
  - Retrospective reports of UE spells (Katz & Meyer 1990)
- 2000s
  - Regression discontinuity analyses of Germanic administrative data (Card, Chetty & Weber 2007, Schmeider, von Wachter & Bender 2011)

5

## Estimates of the effect of UI extensions in the Great Recession

- UI extensions explain 10-25% of increase in avg. duration since July 2008, or 25-50% of 2008-2009 increase.
  - Aaronson, Mazumder & Schechter (2010)
  - Calibrated from Katz & Meyer (1990), Card & Levine (2000) estimates of  $d(\text{avg. duration of UE})/d(\text{UI duration})$
- UI extensions raised unemployment rate by 0.4 p.p. at end of 2009, 0.8 p.p. by mid-2010.
  - Valletta & Kuang (2010a, b)
  - Comparison of changes in UE durations of job losers & job leavers.
- UI extensions raised unemployment rate by 1.2 p.p.
  - Fujita (2011)
  - Changes in UE exit hazard from 2004-7 to 2009-10, less contribution of changes in labor demand (identified from time series regression on vacancy rate).

6

## This paper: Attempt to identify effect of extensions on unemployment exit and reemployment

- Four distinct identification strategies
  - Panel data, using state-by-month variation in eligibility for UI extension tiers.
  - Add a dimension, using job leavers, entrants, and reentrants as a control group
  - Use variation in state take-up of optional extended benefits triggers.
  - Hazard models using individual's remaining eligibility (simulated) as explanatory variable.
- Data source: Matched monthly CPS
  - Large sample
  - Not tied to UI administrative records
  - National, high frequency, very current
  - Simulate exposure of each respondent to UI extensions.

7

## Quick summary of results

- CPS data can be used for this, but caution is necessary
  - Misreporting of durations
  - Cycling between unemployment & idleness
- No spike in reemployment at/near 26 weeks
- UI extensions led to small reductions in job finding and in labor force exit
- Effect on unemployment less than 1% (i.e., less than 1 p.p.). Effect on employment of formerly unemployed around 0.5%.

8

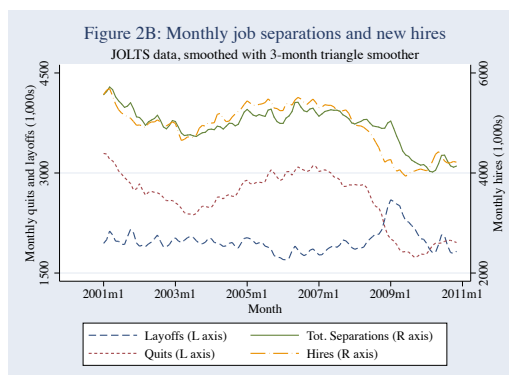
## Outline

1. Introduction
- 2. Overview of labor market trends**
3. UI extensions
4. Matched CPS data
5. Descriptive analyses
6. Estimates of UI effect on hazards for UE exit, reemployment
7. Simulation for effects on total unemployment
8. Conclusion

9

## Overview of labor market trends

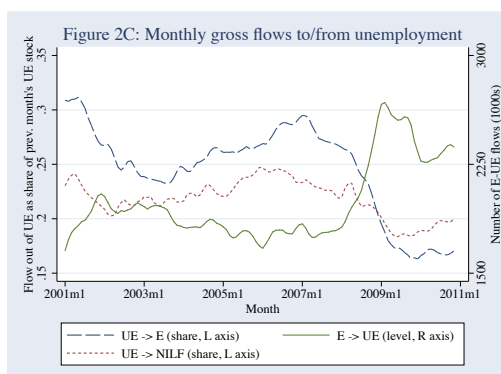
- Layoffs spiked in late 2008/early 2009, quits & hires plummeted.
- Layoffs returned to normal by 2010, but quits & hires remained low.



10

## Overview of labor market trends

- Layoffs spiked in late 2008/early 2009, quits & hires plummeted.
- Layoffs returned to normal by 2010, but quits & hires remained low.
- Similar pattern in gross flows in 2008/2009, but E→U transitions stayed high through 2010.
- U →N transitions fell despite weak labor market.



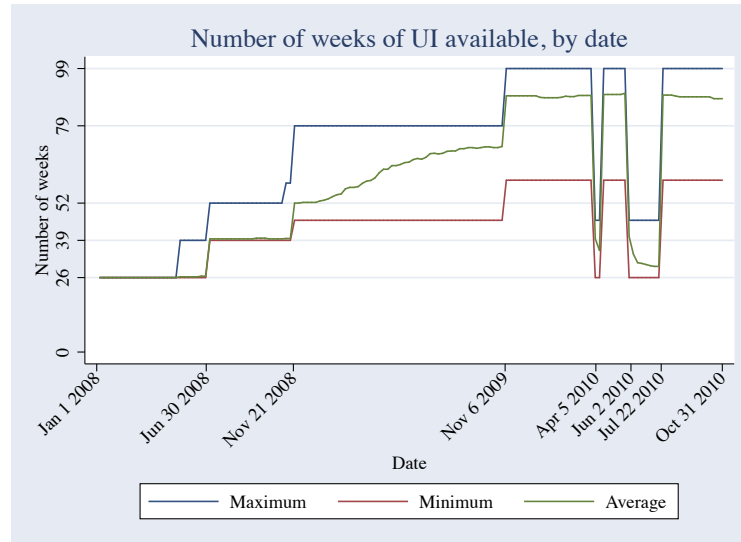
11

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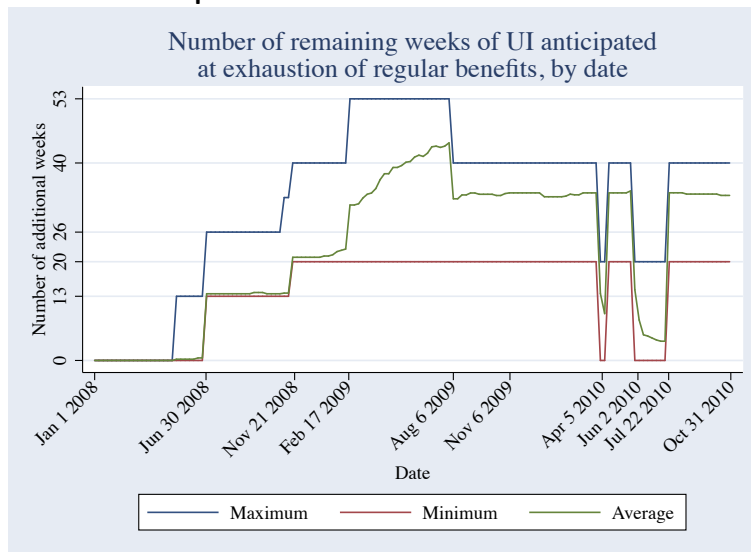
12

## Statutory durations rose as high as 99 weeks in many states



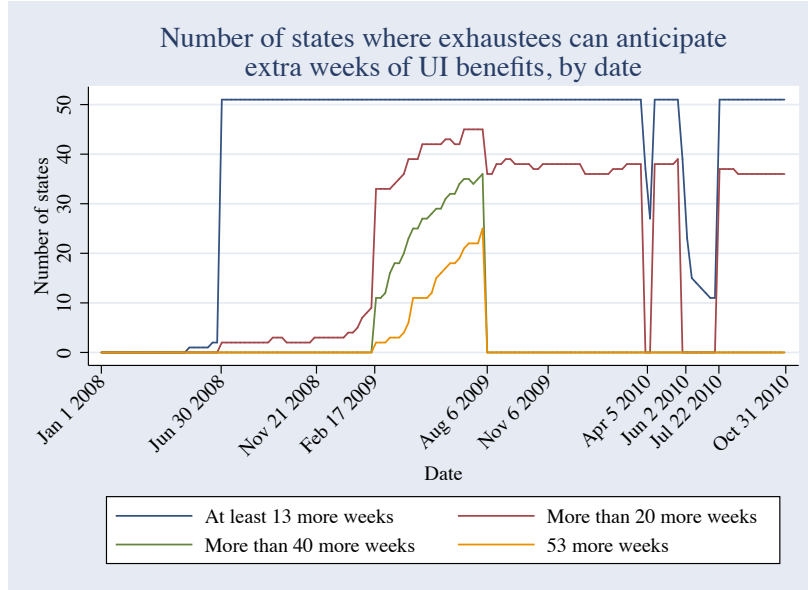
13

## Short expirations, repeated reauthorizations meant that no newly-unemployed worker ever anticipated 99 weeks of benefits.

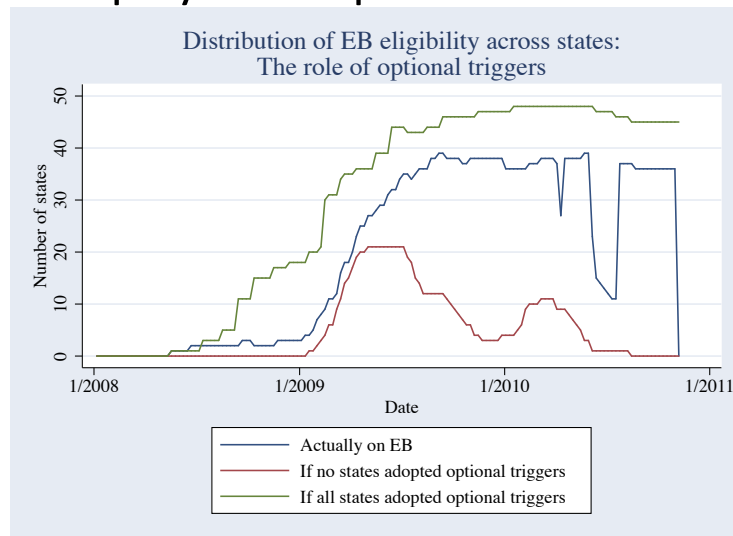


14

## Lots of heterogeneity across states



## Non-take-up of optional EB triggers plays an important role





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17

## Data

- Matched monthly CPS
- 2004 – November 2010, age 18-64.
- Unemployed report number of weeks unemployed, reason for unemployment.
- Match to UI rules to simulate eligibility – assume all job losers are eligible for full benefits, all spells are continuous.
- N = 201K unemployed, 58% job losers.

18

## Advantages and disadvantages of CPS data

- Advantages
  - Current data.
  - Self-reported job search, without incentives to misreport.
  - Follow individuals in and out of labor force.
- Disadvantages
  - LF status & duration self-reported, noisy.
  - Difficult to track when churning is frequent.
  - No direct measure of UI eligibility, receipt.

19

## Match rates – forward matches

Distribution of month 2 status, among those unemployed in month 1	
No match (incl. move out, refuse)	7.0%
Bad merge (change in age/sex/etc.)	1.9%
Employed	21.4%
Not in labor force	18.3%
UE – duration too short	2.4%
UE – duration too long	1.3%
UE – duration valid	47.9%

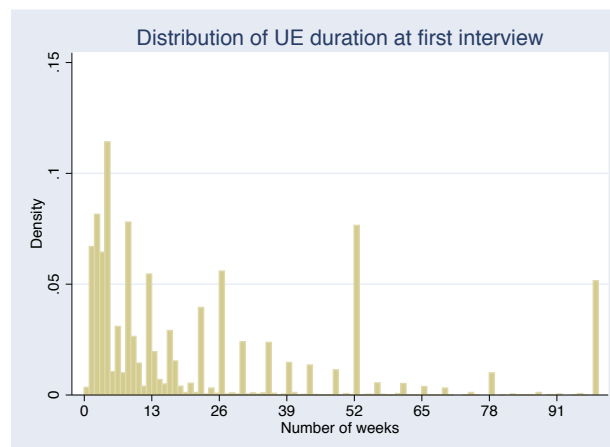
20

## Match rates – backwards matches

Distribution of month 1 status, among those unemployed in month 2		
	UE < 6 wks	UE 6 wks +
No merge (incl. move in)	13.6%	7.4%
Bad merge	2.4%	2.1%
Employed	52.2%	6.2%
Not in labor force	22.3%	15.7%
UE – duration too short	-----	1.8%
UE – duration too long	4.1%	1.5%
UE – duration valid	5.4%	65.3%

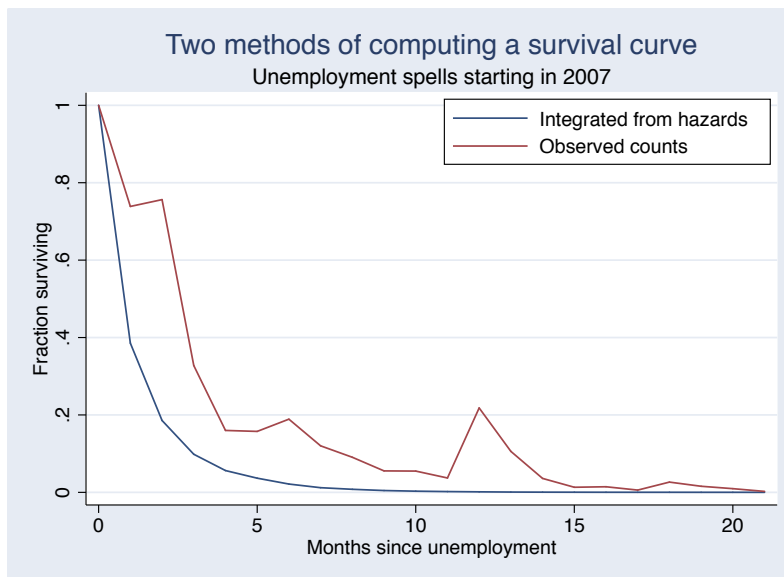
## Duration accuracy

- MIS 1 and 5 (incoming rotation groups) are a stock sample of self-reported durations.
- Durations updated automatically in subsequent interviews.

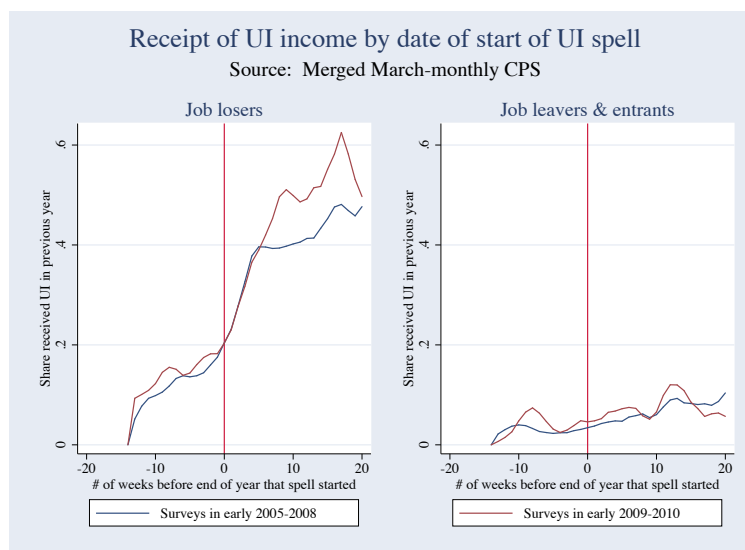


22

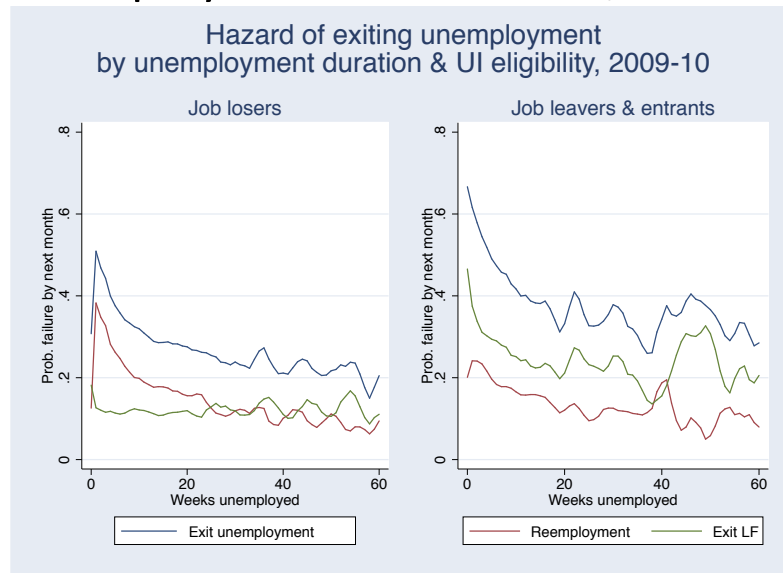
### More on duration accuracy: Survival and resurrection



### UI recipiency rates from link to March CPS



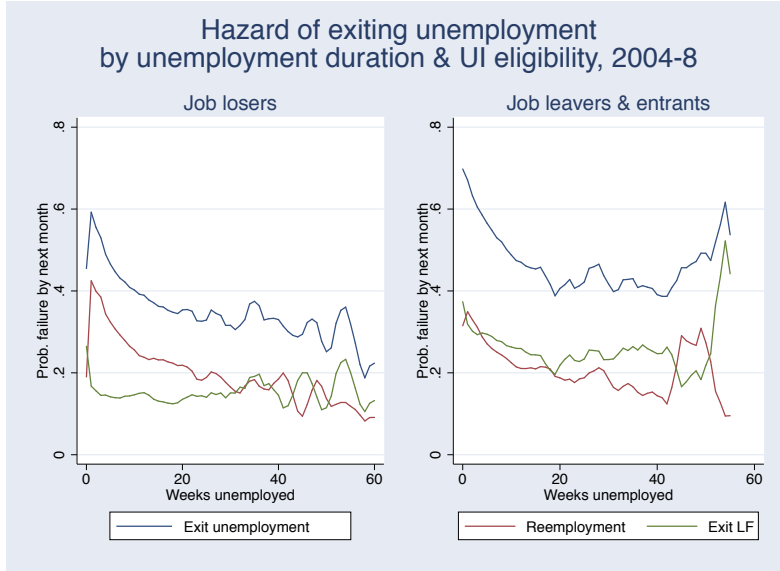
## Unemployment exit hazards, 2009-10



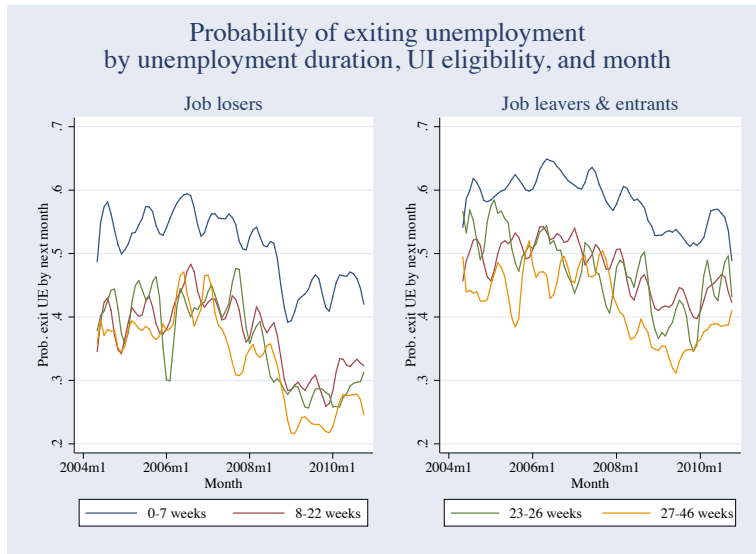
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## Unemployment exit hazards, 2004-8



## Evolution of hazards over the recession



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29

## Comparisons to identify the UI effect

- Panel data: # of weeks available in state  $s$  in month  $t$ , controlling for state and time effects
- Add a difference: Difference out UI-ineligibles
- Compare states that do and do not take up optional EB triggers, with control function for trigger status
- Focus on individual time-to-exhaustion – extensions allow identification with unrestricted duration effects.

30

### Approach 1: Exploit state-month variation in availability of extra weeks

$$\ln \left( \frac{h_{ist}}{1 - h_{ist}} \right) = \alpha_s + \delta_t + f(d_{ist}; \theta) + W_{st}\beta + UE_{st}\gamma$$

where:

- $h_{ist}$  is the monthly unemployment exit hazard for job loser  $i$  from state  $s$  at time  $t$
- $\alpha_s$  is a state effect
- $\delta_t$  is a time effect
- $d_{ist}$  is the unemployment duration
- $f(d; \theta) = d\theta_1 + d^2\theta_2 + d^{-1}\theta_3 + \mathbf{1}(d = 1)\theta_4$
- $W_{st}$  is the number of weeks of UI available
- $UE_{st}$  is (a cubic in) the state unemployment rate

31

### Approach 2: Use job leavers/entrants/reentrants as controls

$$\ln \left( \frac{h_{ist}}{1 - h_{ist}} \right) = \alpha_{st} + f(d_{ist}; \theta(e_i)) + e_i W_{st}\beta + e_i UE_{st}\gamma$$

where:

- $h_{ist}$  is the monthly unemployment exit hazard for unemployed individual  $i$  from state  $s$  at time  $t$
- $\alpha_{st}$  is a state-by-month effect
- $e_i$  is an indicator for UI eligibility (i.e., for being a job loser rather than a job leaver/entrant/reentrant)

32



## Approaches 1 &amp; 2: Logit coefficients [&amp; odds ratios]

1: Just job losers	Exit UE (1)	Exit UE (2)	Exit UE (3)	Exit to emp. (4)	Exit LF (5)
# of weeks of benefits	<b>-0.0033</b> (0.0008) [0.9967]	<b>-0.0023</b> (0.0009) [0.9977]			
# wks * UE < 26 wks			-0.0007 (0.0012)	-0.0009 (0.0011)	0.0005 (0.0011)
# wks * UE >=26 wks			<b>-0.0050</b> (0.0008) [0.9950]	<b>-0.0068</b> (0.0012) [0.9932]	<b>-0.0027</b> (0.0012) [0.9973]
UE rate control	linear	cubic	cubic	cubic	cubic
<b>2: Differencing out job leavers, entrants &amp; reentrants</b>					
# of weeks of benefits	<b>-0.0026</b> (0.0010)	<b>-0.0025</b> (0.0010)			
# wks * UE < 26 wks			-0.0009 (0.0012)	-0.0006 (0.0015)	-0.0014 (0.0014)
# wks * UE >=26 wks			<b>-0.0056</b> (0.0010)	<b>-0.0066</b> (0.0015)	<b>-0.0051</b> (0.0014) <sup>3</sup>

## Approach 3: Exploit state-month variation in take-up of optional EB triggers

$$\ln\left(\frac{h_{ist}}{1-h_{ist}}\right) = \alpha_s + \delta_t + f(d_{ist}; \theta) + EB_{st}\beta + g(UE_{st}; \gamma) + \widehat{EB}_{st}\psi$$

where:

- $EB_{st}$  is an indicator for the availability of EB benefits in state  $s$  at time  $t$
- $g(UE_{st}; \gamma)$  is a cubic in the state unemployment rate
- $\widehat{EB}_{st}$  is a set of simulated EB eligibility indicators:
  - Indicators for each of the 4 EB triggers
  - Indicators for EB eligibility under the most and least restrictive options

34

### Approach 3: Logit coefficients [& odds ratios]

	Exit UE (1)	Exit to employment (2)	Exit LF (3)
EB benefits available	-0.03 (0.03)	-0.04 (0.04)	-0.00 (0.04)
EB avail * UE < 26 wks	0.05 (0.04)	0.02 (0.04)	0.07 (0.06)
EB avail * UE >=26 wks	<b>-0.16</b> (0.04) [0.856]	<b>-0.20</b> (0.04) [0.822]	<b>-0.10</b> (0.05) [0.901]
EB avail * other benefits remaining	0.01 (0.03)	-0.01 (0.04)	0.01 (0.05)
EB avail * other benefits expired	<b>-0.33</b> (0.07) [0.720]	<b>-0.50</b> (0.09) [0.606]	-0.13 (0.08) [0.875]

35

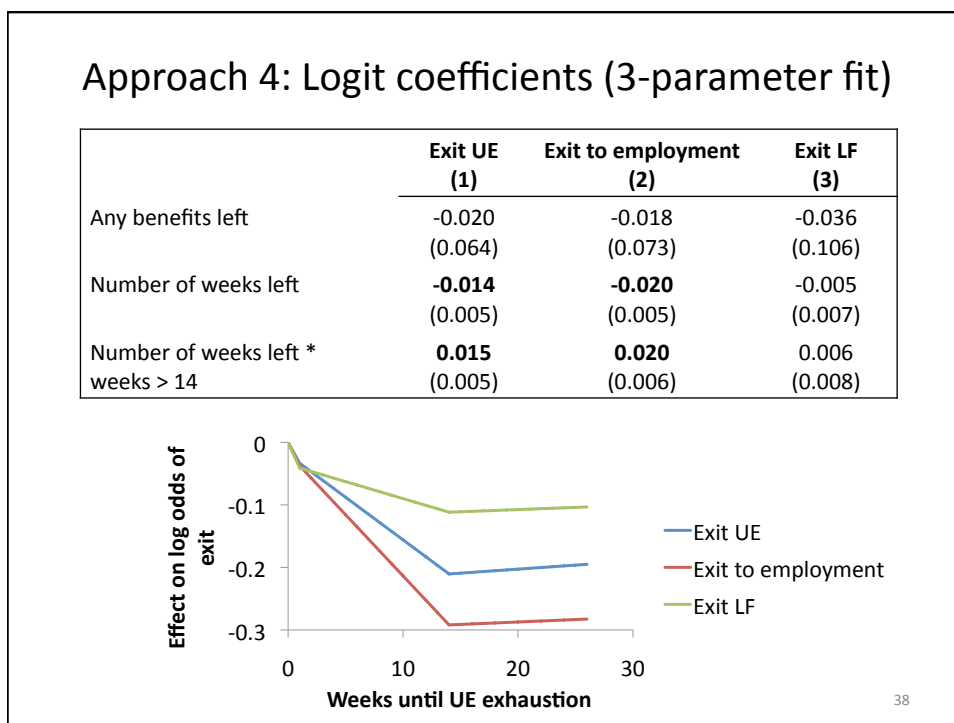
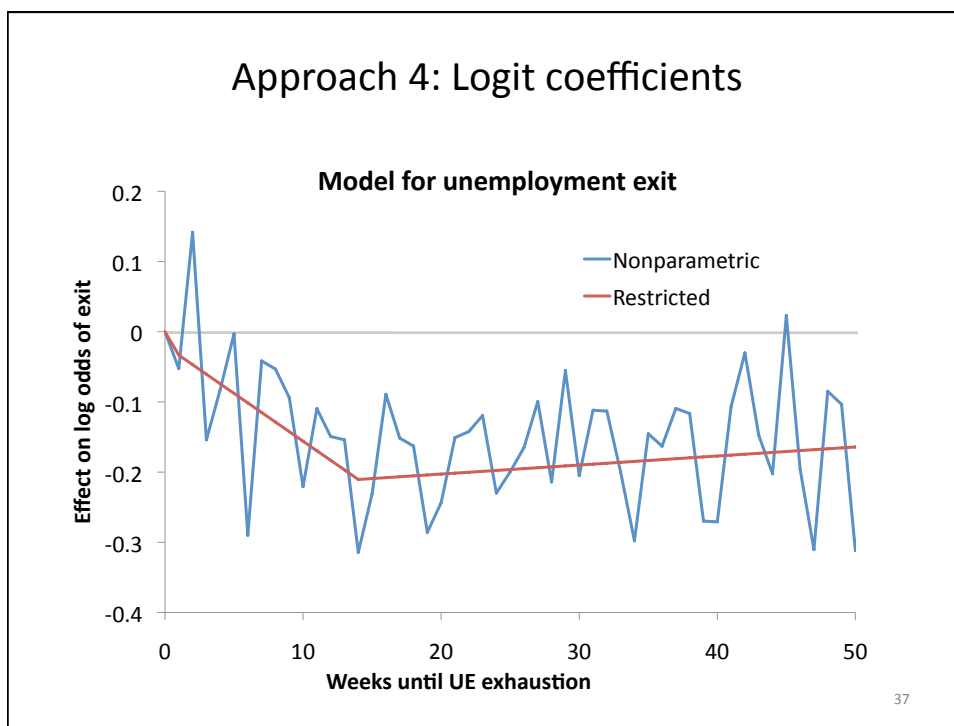
### Approach 4: Exploit individual-level variation in weeks remaining until exhaustion

$$\ln\left(\frac{h_{ist}}{1-h_{ist}}\right) = \alpha_{st} + \sum_{w=1}^{99} \mathbf{1}(d_{ist} = w)\theta_w + \lambda(wksleft_{ist}; \beta)$$

where:

- $\sum_{w=1}^{99} \mathbf{1}(d_{ist} = w)\theta_w$  is a full set of UE duration dummies
- $\lambda(wksleft_{ist}; \beta)$  is a more or less parametric function of the number of weeks of benefits remaining for an individual in state  $s$  and month  $t$  who has used  $d_{ist}$  weeks of benefits to date.

36



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39

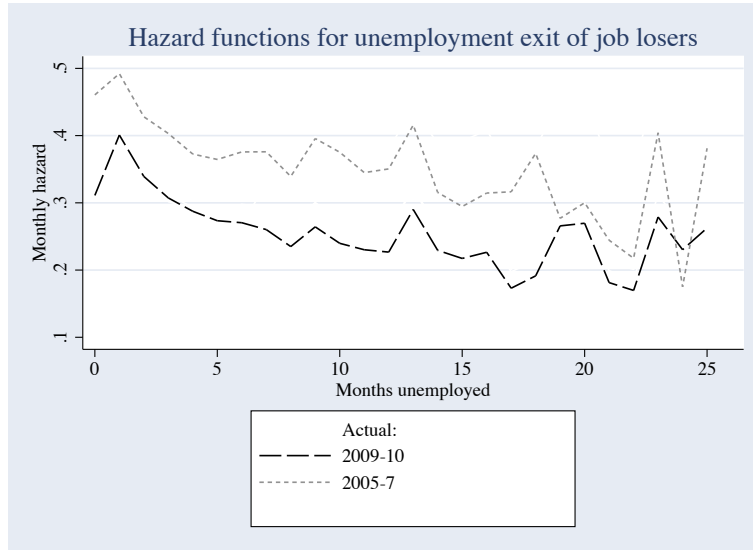
## Scaling the estimates

- Baseline hazards estimated from 2009-10 pooled data.
- Counterfactual hazards assume just 26 weeks of benefits in 2009-10.
- Assume employment and out-of-labor force are absorbing states, with independent hazards.
- What to do about resurrections (entry to UE at duration  $d > 0$ )?
  - Approach 1: Follow a cohort from UE entry on, with no resurrections
    - Hazard for labor force exit = 1 at 2 years.
  - Approach 2: Focus on unemployment at a point in time.
    - Use observed duration profile (including late entries).
    - Counterfactual adds extra UE in month  $m+1$ , duration  $d+1$  from  $(m, d)$ .
    - Hazards constant after 2 years.
    - Let  $h(d)$ ,  $\tilde{h}(d)$  be actual & counterfactual hazard,  $n(m, d)$  and  $\tilde{n}(m, d)$  actual and counterfactual counts. Then:

$$\tilde{n}(m+1, d+1) = n(m+1, d+1) + \underbrace{n(m, d) * [h(d) - \tilde{h}(d)]}_{\text{Extra survival rate in month } m} + \underbrace{[\tilde{n}(m, d) - n(m, d)] * (1 - \tilde{h}(d))}_{\text{Extra stock in month } m}$$

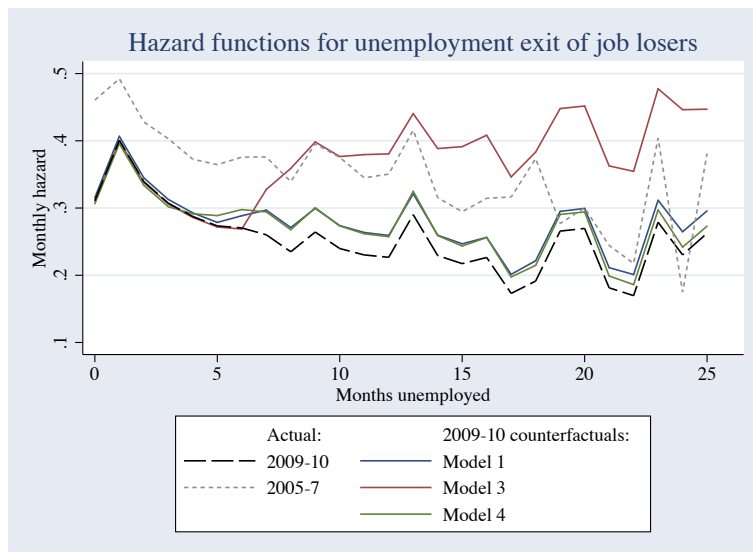
40

## Observed hazards, 2005-7 and 2009-10



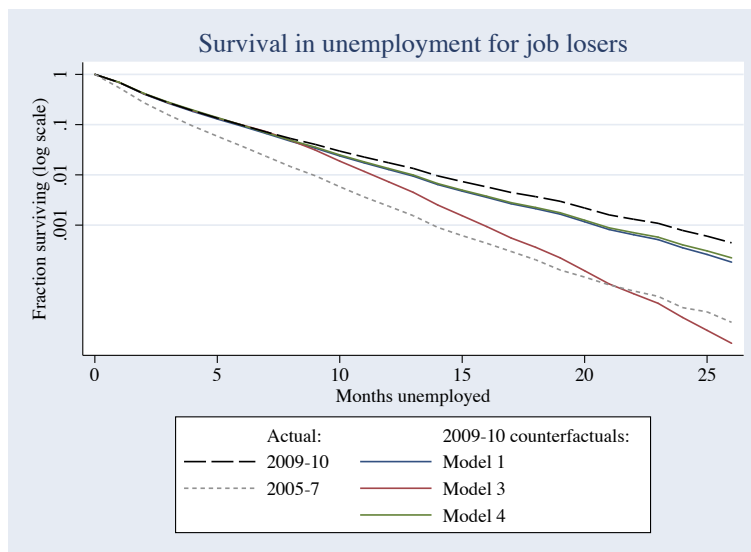
41

## Effect of UE extensions on hazards



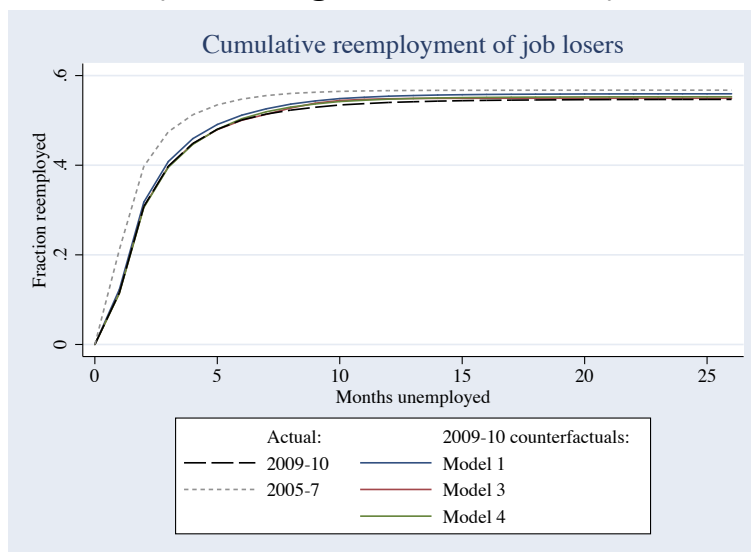
42

### Effect of UE extensions on survival (assuming no resurrection)



43

### Effect of UE extensions on reemployment (assuming no resurrection)



44

### Simulating the effect of extensions, v1

*No inflows to unemployment with duration > 0  
Anyone unemployed after 2 yrs exits LF  
Reemployment and LF exit risks independent*

	Baseline	Without UI extensions		
	2009-10	Model 1	Model 3	Model 4
Average censored completed UE duration (months)	2.03	1.98 -2.7%	1.98 -2.5%	2.02 -0.5%
Fraction ever reemployed	0.469	0.476 +1.6%	0.470 +0.3%	0.472 +0.8%
Average time to reemployment (months)	2.21	2.18 -1.1%	2.17 -1.7%	2.22 +1.0%
Steady state UE (share of monthly inflow)	2.53	2.48 -2.1%	2.48 -2.0%	2.52 -0.4%

45

### Simulating the effect of extensions, v2

*Using observed inflows to unemployment with duration > 0  
Reemployment and LF exit risks independent*

	Baseline	Without UI extensions		
	Oct. 2010	Model 1	Model 3	Model 4
Unemployment (millions)	13.9	13.4 -3.7%	12.7 -8.7%	13.5 -3.0%
Long-term UE share	48.8%	47.2%	43.9%	46.9%
Employment of those displaced 2007 and later (millions)	86.9	88.1 +1.4%	88.3 +1.5%	88.0 +1.2%

46

## Conclusion

- UI extensions reduce unemployment exit hazards.
  - About 2/3 from reemployment, 1/3 from LF exit
- Effect is to raise unemployment in late 2010 by 3
  - 9% (not percentage points!), with more credible estimates at lower end.
- Extensions reduce eventual reemployment on net (if risks are independent!), but effect is small.
- Analyses of CPS duration data need to account for churning between UE, out of labor force.

47