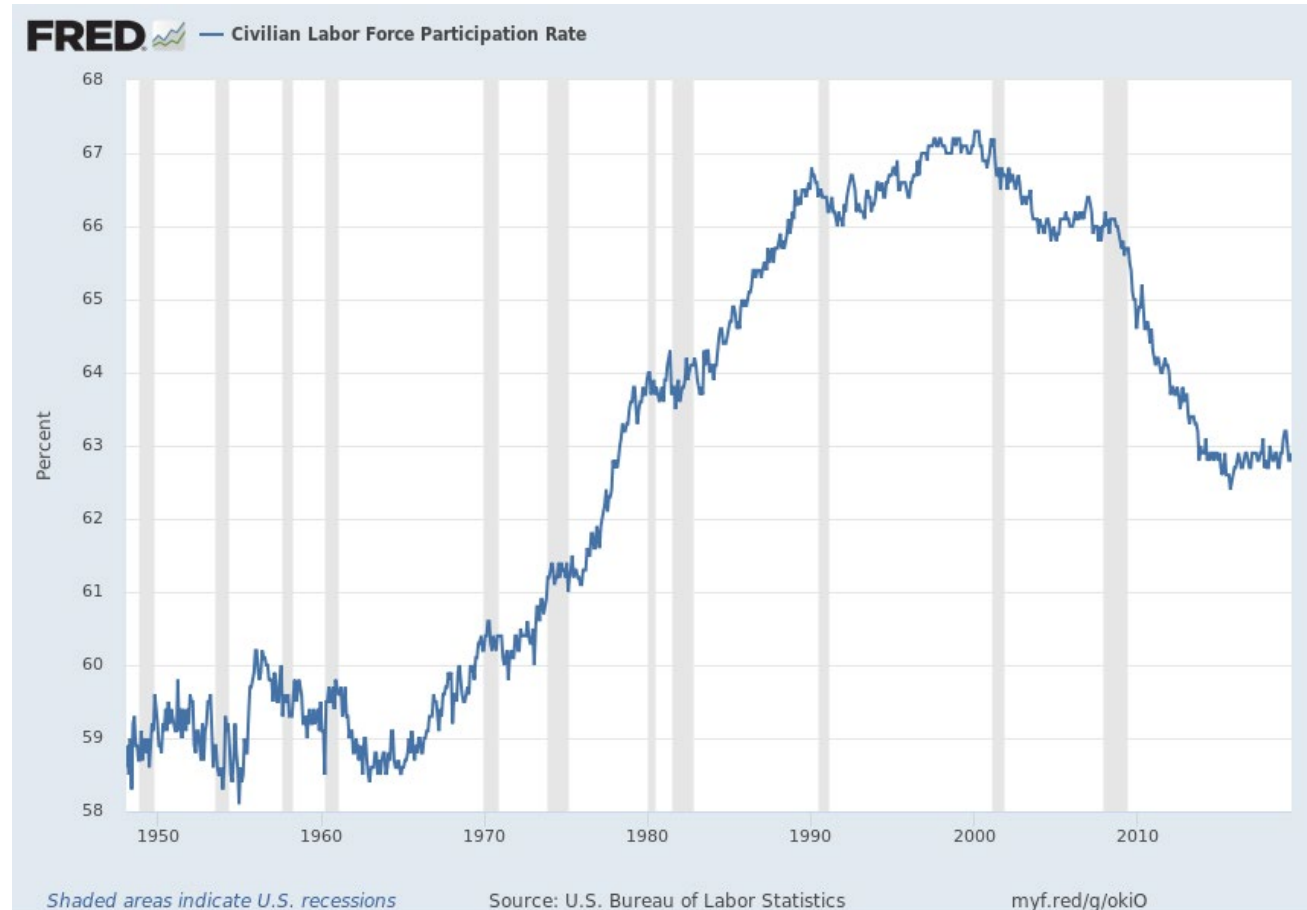# A Meta-Analysis of the Decline in the Labor Force Participation Rate

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Labor Force Participation (LFP) peaked in 2000 after 40 years of growth
Has fallen since then (though roughly steady since 2015)

What has driven the decline?

- Many explanations has been proposed
  - Ageing of the population
  - Increase in school enrollment among the youth
  - Increase in (mental and physical) disability rate: Krueger (2017)
  - Rise in incarceration
  - Stagnation of real wages for low-income individuals: CEA (2016)
  - Technological changes that may have reduced labor demand – automation: Acemoglu and Restrepo (2017)
  - Technological changes that may have reduced labor supply - video games: Aguiar et al (2017)

This meta analysis

- Evaluates the contributions of
  - Behavioral vs. demographic factors
  - Inflows vs. outflows
  - Supply vs. demand side factors
- Also address specific factors
  - Education
  - Disability

Data

- Current Population Survey (CPS)
  - Large sample: ~60,000 households monthly
  - But each household is not followed over time
- Panel Survey of Income Dynamics (PSID)
  - Has tracked a representative cohort of households since 1968
  - Includes health outcomes

Demographic vs. behavioral shifts

- The difference in the LFP rate between any two periods can be decomposed into two components:
  1. changes in the distribution of population across demographic groups, $\mu_{it} - \mu_{is}$
 2. changes in the LFP rate of each demographic group, $LFP_{it} - LFP_{is}$

$$LFP_t - LFP_s = \sum_i\big((\mu_{it} - \mu_{is})LFP_{it} + \mu_{is}(LFP_{it} - LFP_{is})\big)$$

$$= \sum_i\big((\mu_{it} - \mu_{is})LFP_{it}\big) + \sum_i\big(\mu_{is}(LFP_{it} - LFP_{is})\big)$$

Decomposition of changes in LFP

| Year	Labor force participation (%)	Change (pp)	Demographic contribution (pp)	Behavioral contribution (pp)
1990	66.53			
2000	67.07	0.55	0.85	-0.31
2007	66.04	-1.03	-0.61	-0.42
2015	62.65	-3.39	-1.61	-1.77
2017	62.85	0.20	0.72	-0.52

[1] Labor force is computed from CPS data provided by IPUMS (Ruggles et al. 2017), weighted using the final person-level weight for 1990 and composite weight thereafter, to match published BLS figures.
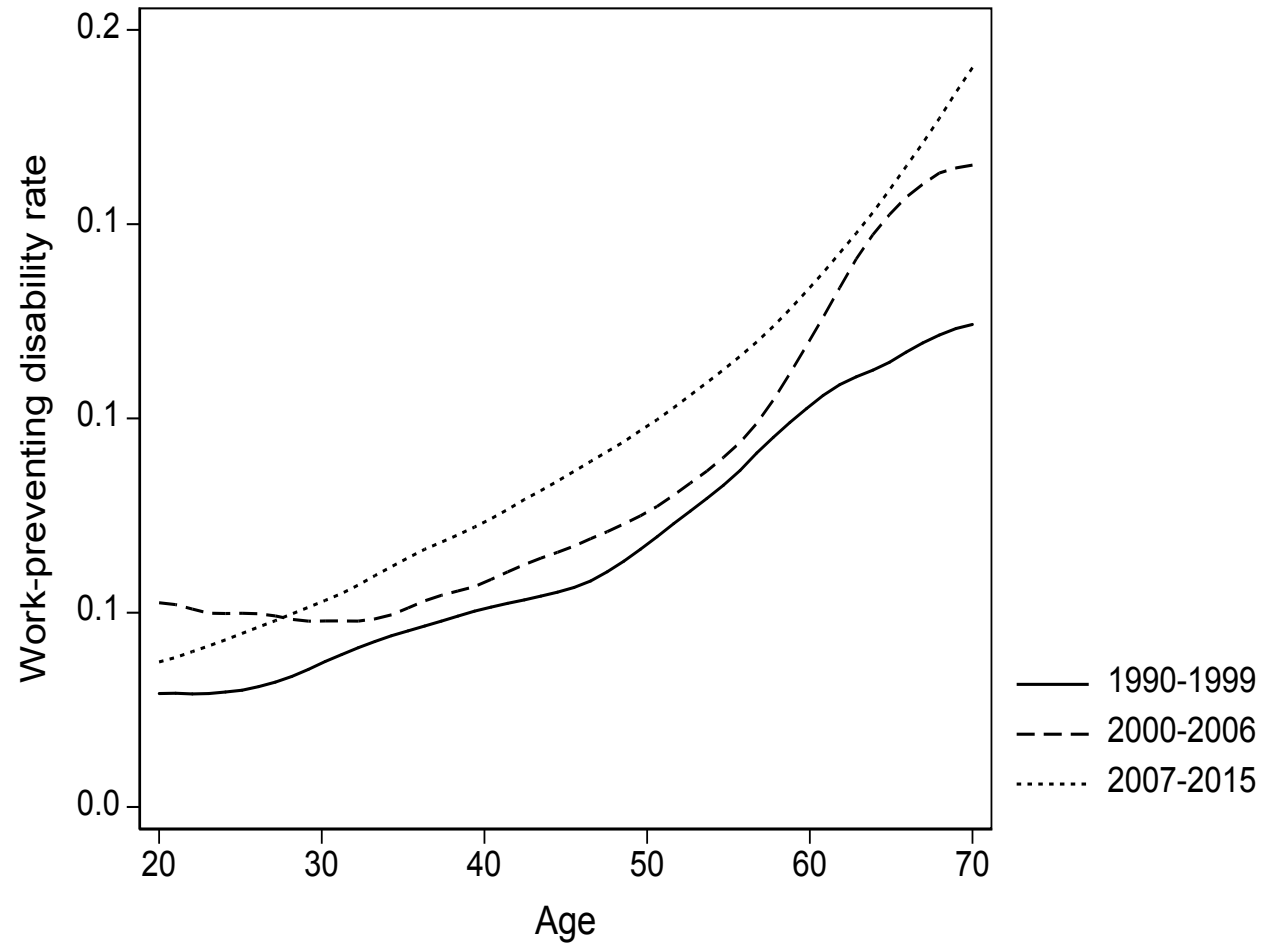
Decomposition of changes in LFP
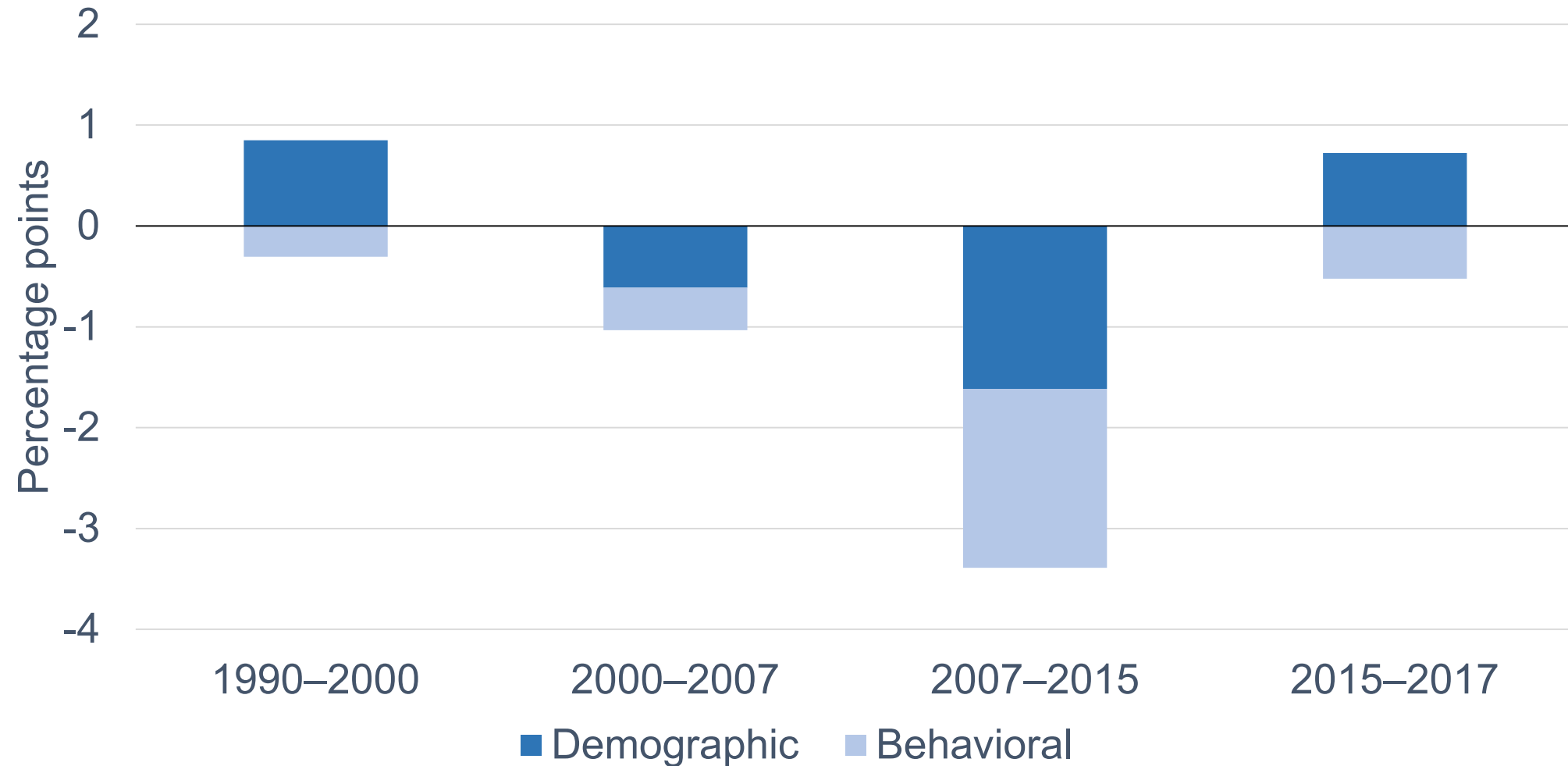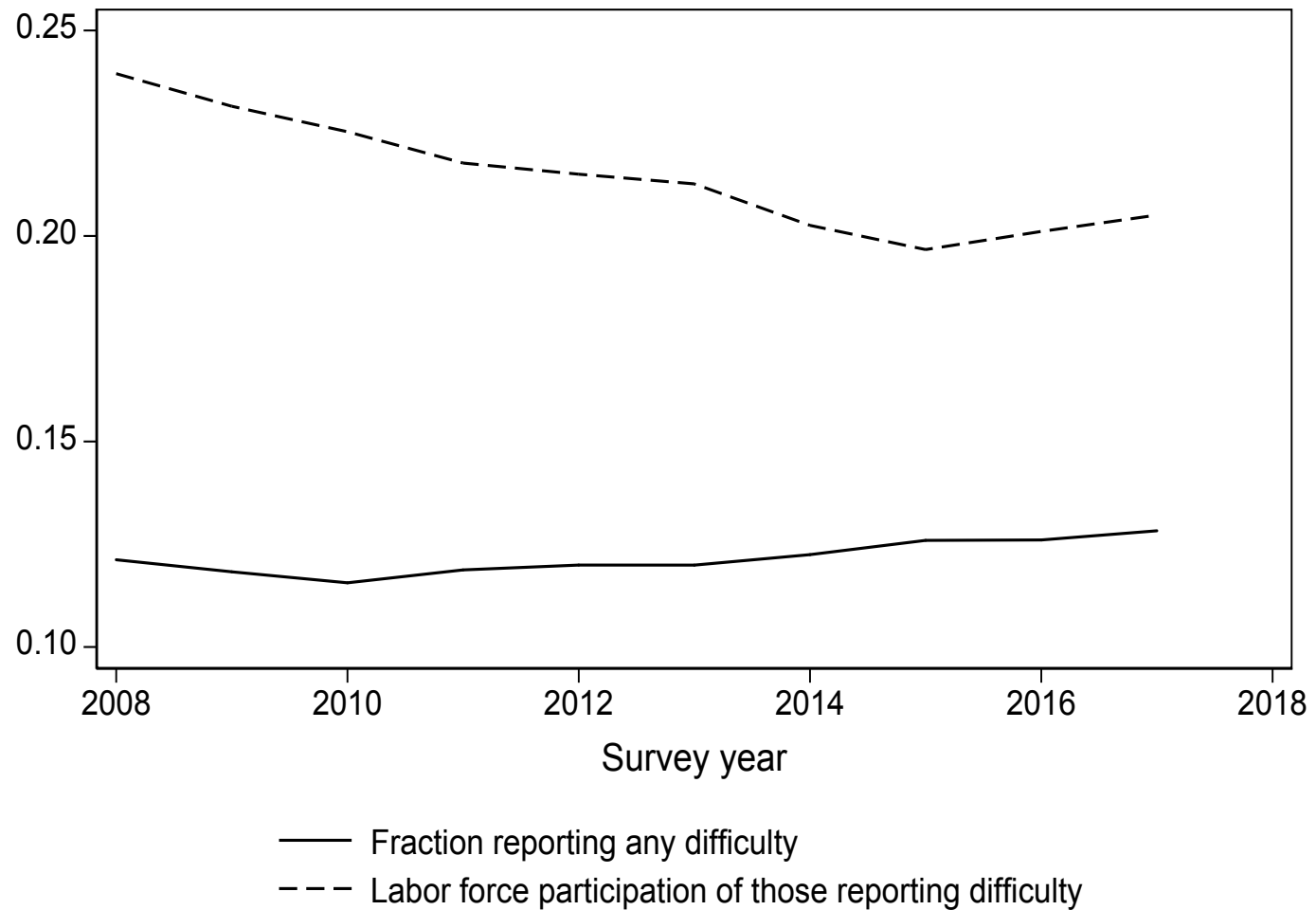

Source: CPS

Enrollment and LFP
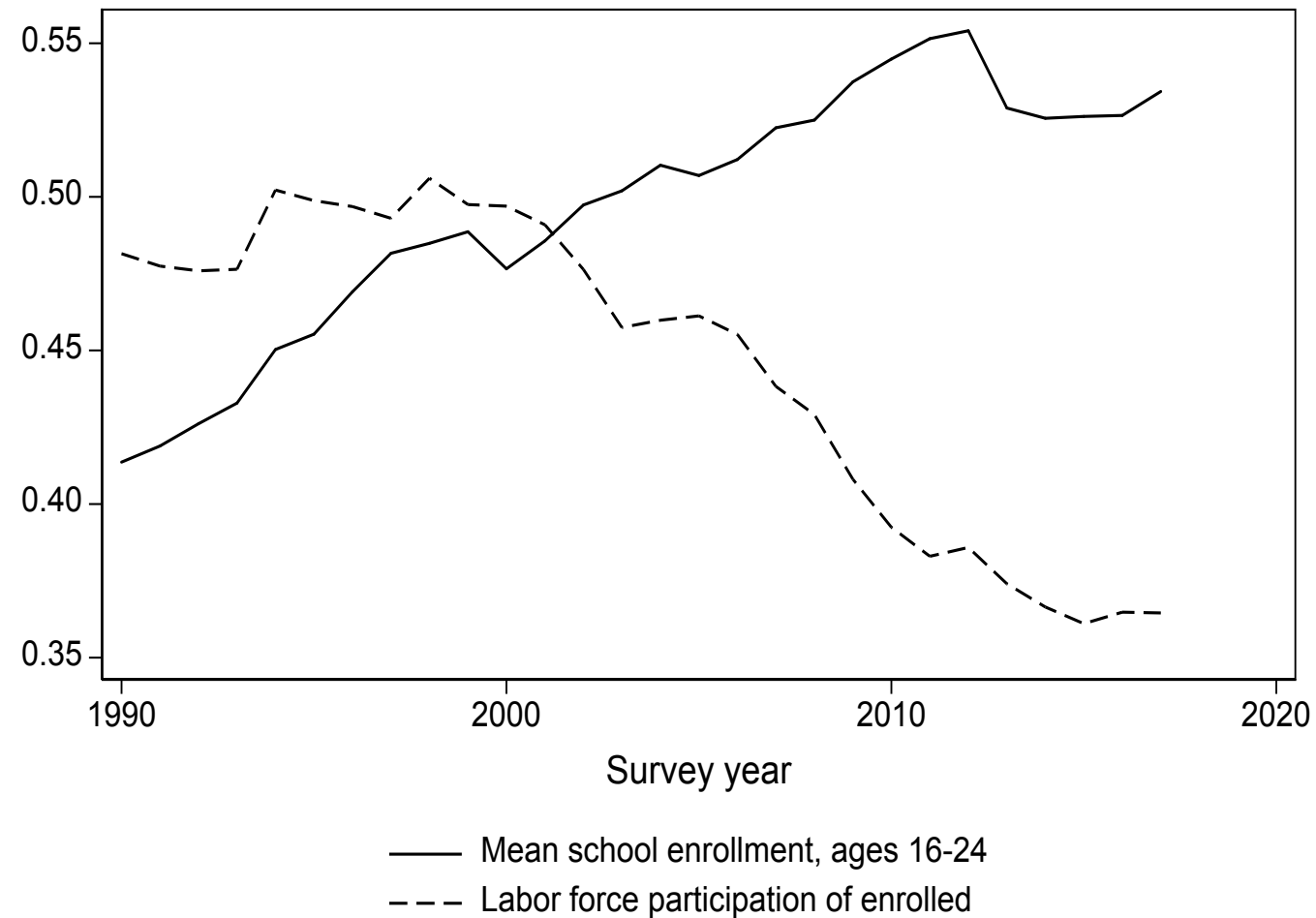
Work-limiting disability

Source: PSID. Note: Each line displays the result of a kernel-weighted local polynomial regression.
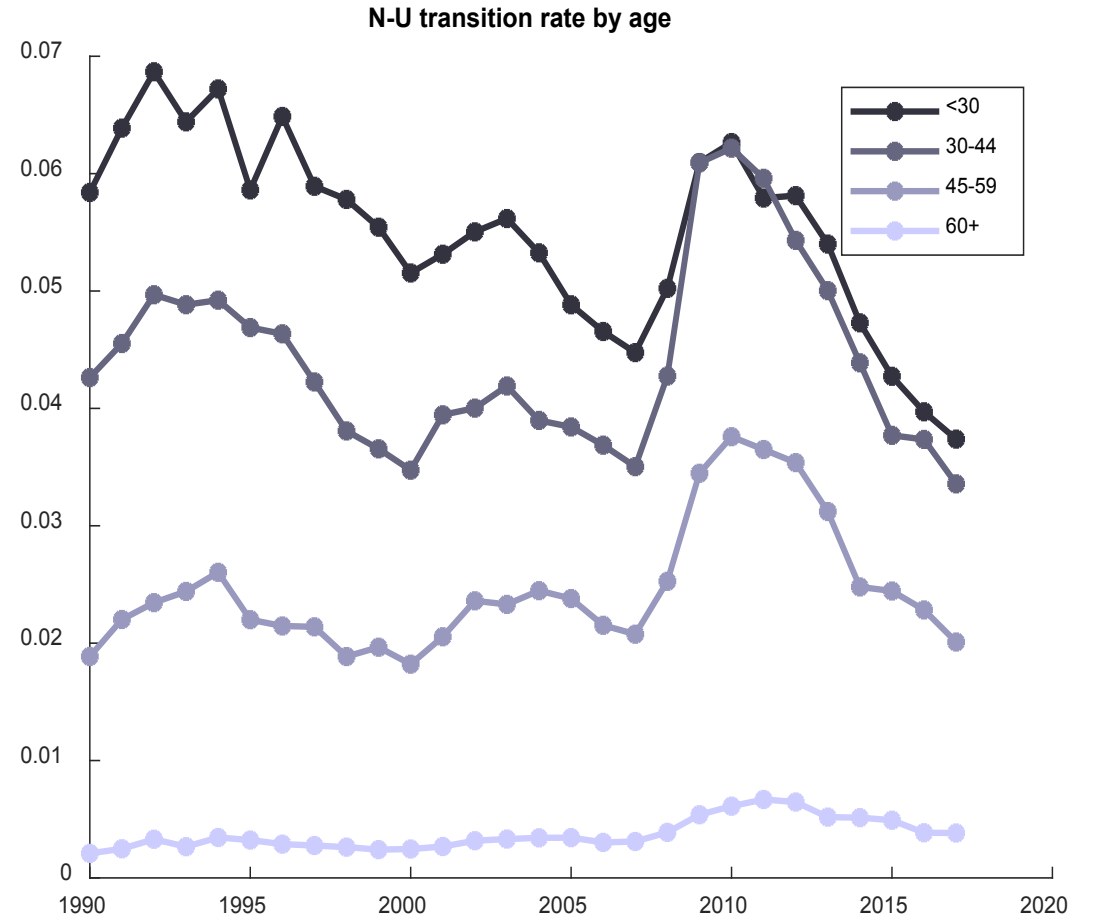
Disability and LFP

Source: PSID

Labor market transitions

- Three employment states:
  - **E**mployed
  - **U**nemployed (looking for work)
  - **N**ot in labor force
- Change in LFP can be decomposed into shares in each state and shares switching states:

$$\Delta LFP_{it} = \left(\pi_{NE}^{it} + \pi_{NU}^{it}\right)N_{it} - \left(\pi_{EN}^{it}E_{it} + \pi_{UN}^{it}U_{it}\right)$$

Transitions into labor force

N-E transition rate by age

N-U transition rate by age
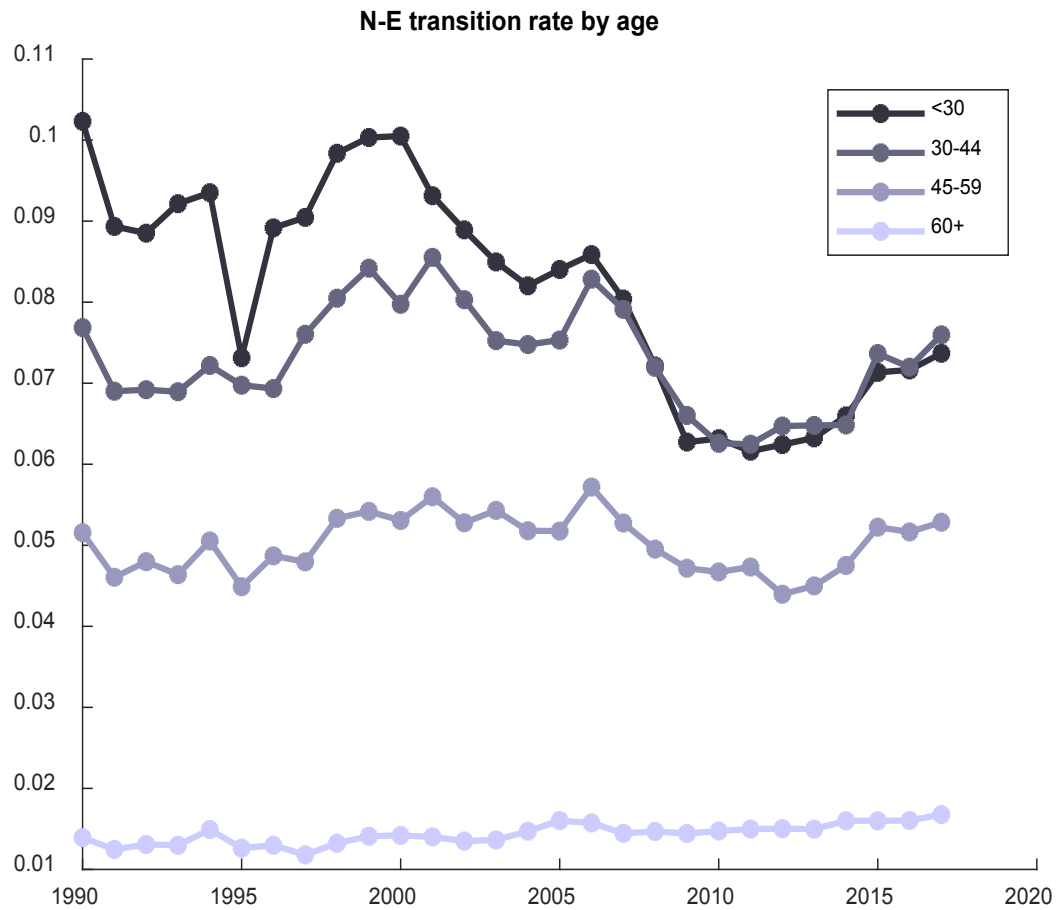
Source: CPS. Note: transitions calculated as in Shimer (2012).

Transitions out of labor force

E-N transition rate by age

U-N transition rate by age
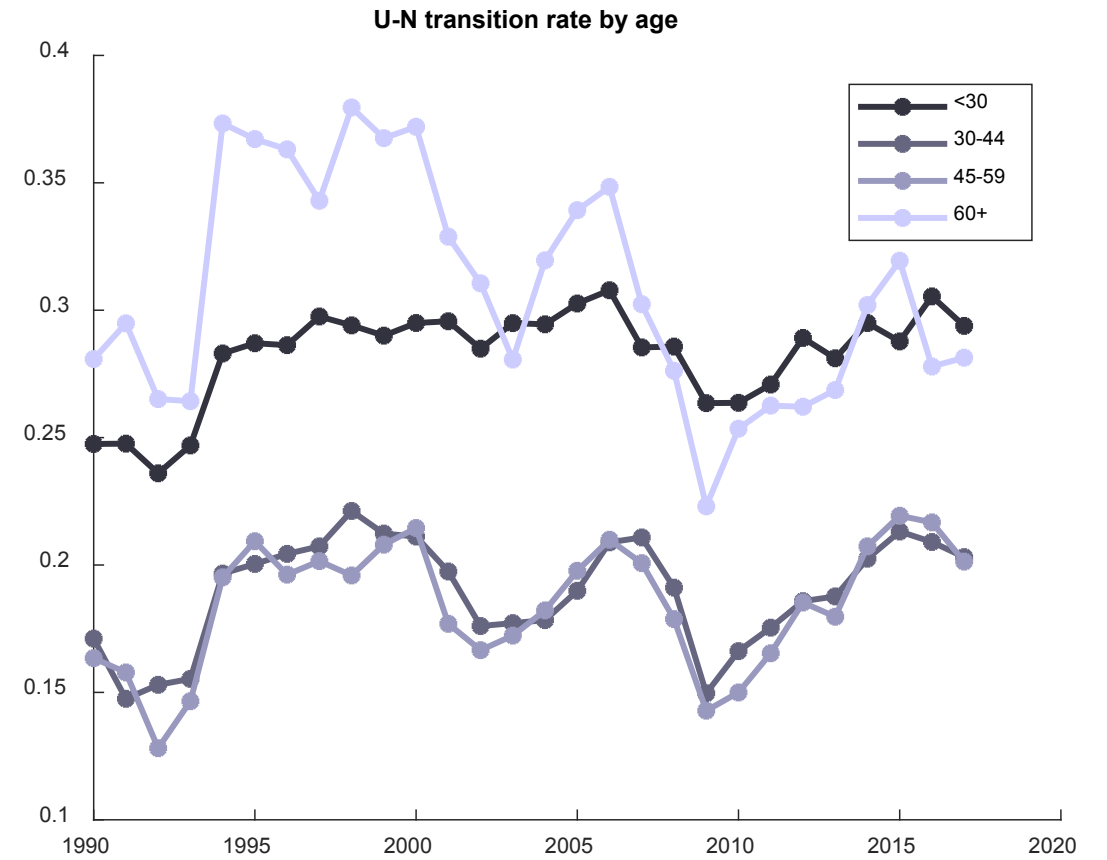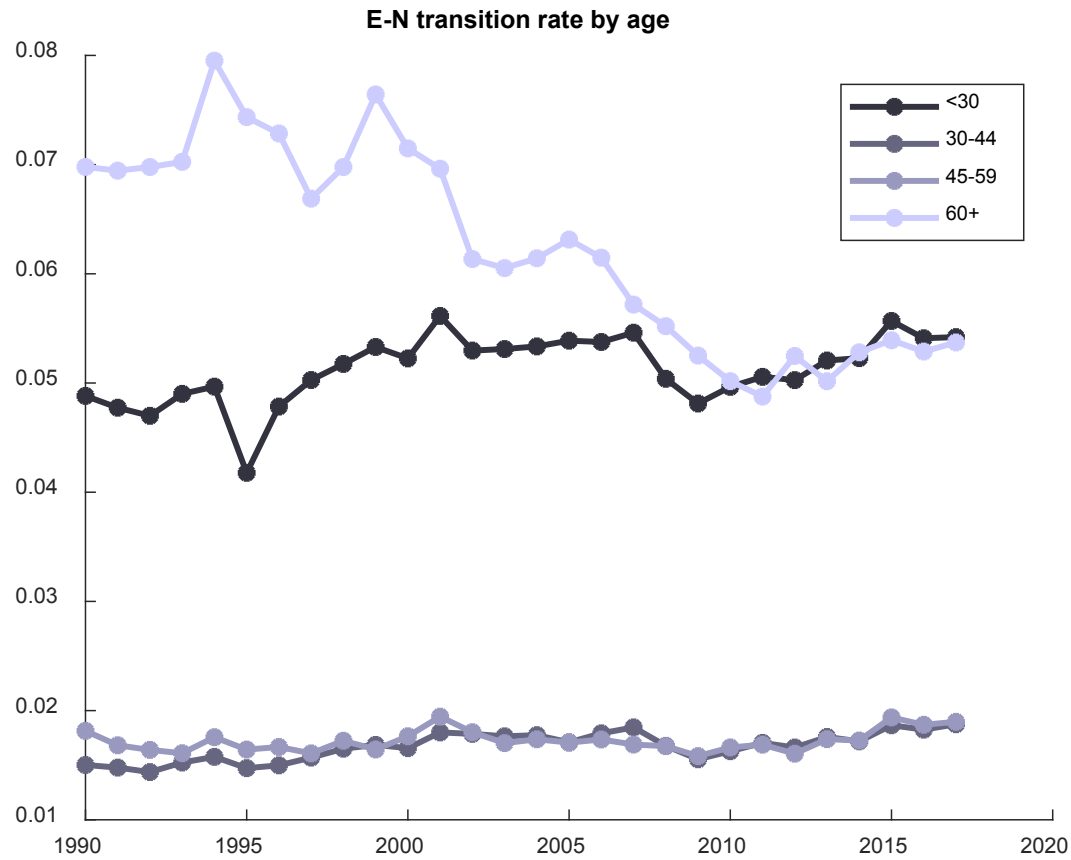
Source: CPS. Note: transitions calculated as in Shimer (2012).

Wages and labor force participation

- Wages are important for distinguishing mechanisms!
- Demand-led changes (e.g. automation)
  - decrease in LFP is accompanied with decrease in wages
  - leading to a positive association between the two
- Supply-led changes (e.g. better video games)
  - decline in LFP is accompanies with increase in wages
  - Leading to a negative association between the two
- How are wages correlated with LFP?
  - Within and between demographic groups

Wages and labor force participation

	$Cov(w_{it}, LFP_{it})$, **Women**			
	Age			
Years	<30	30—44	45—59	60+
1990—1999	-0.005	0.465	0.840	0.308
2000—2006	0.067	-0.467	0.233	0.706
2007—2014	0.099	0.286	0.554	0.591
2015—2017	0.167	0.503	0.247	-0.067

|	$Cov(w_{it}, LFP_{it})$, **Men**			
	Age			
Years	<30	30—44	45—59	60+
1990—1999	-0.202	0.209	-0.137	-0.062
2000—2006	0.120	0.348	0.127	0.322
2007—2014	0.351	0.695	0.640	0.387
2015—2017	0.160	0.455	0.500	-0.063

Source: CPS.

Wages and labor force participation

- Covariance between growth in wages and LFP across demographic groups

- Each group is the same age (in years) and sex

- Mostly positive covariance

Years	$Cov(\Delta \log w_{it}, \Delta LFP_{it})$
1990—2000	0.000861
2000—2007	0.001019
2007—2015	0.000707
2015—2017	-0.000057

Source: CPS. Note: results weighted by group population.

Starting/exit wages

- Demand-led changes (e.g. automation)
  - Put downward pressure on starting wages
  - Once out of employment, (all, including relatively high-wage) workers either have to re-enter at a lower wage and thus suffer a wage loss, or are discouraged from reentry
  - Result: A larger increase in exit than starting wages, and a significant wage loss from employment gaps
- Supply-led changes (e.g. better video games)
  - Put upward pressure on both starting and exiting wages
  - A larger increase in exiting wages if LFP is declining
  - However, there should NOT be a significant wage loss from employment gaps

Starting/exit wages
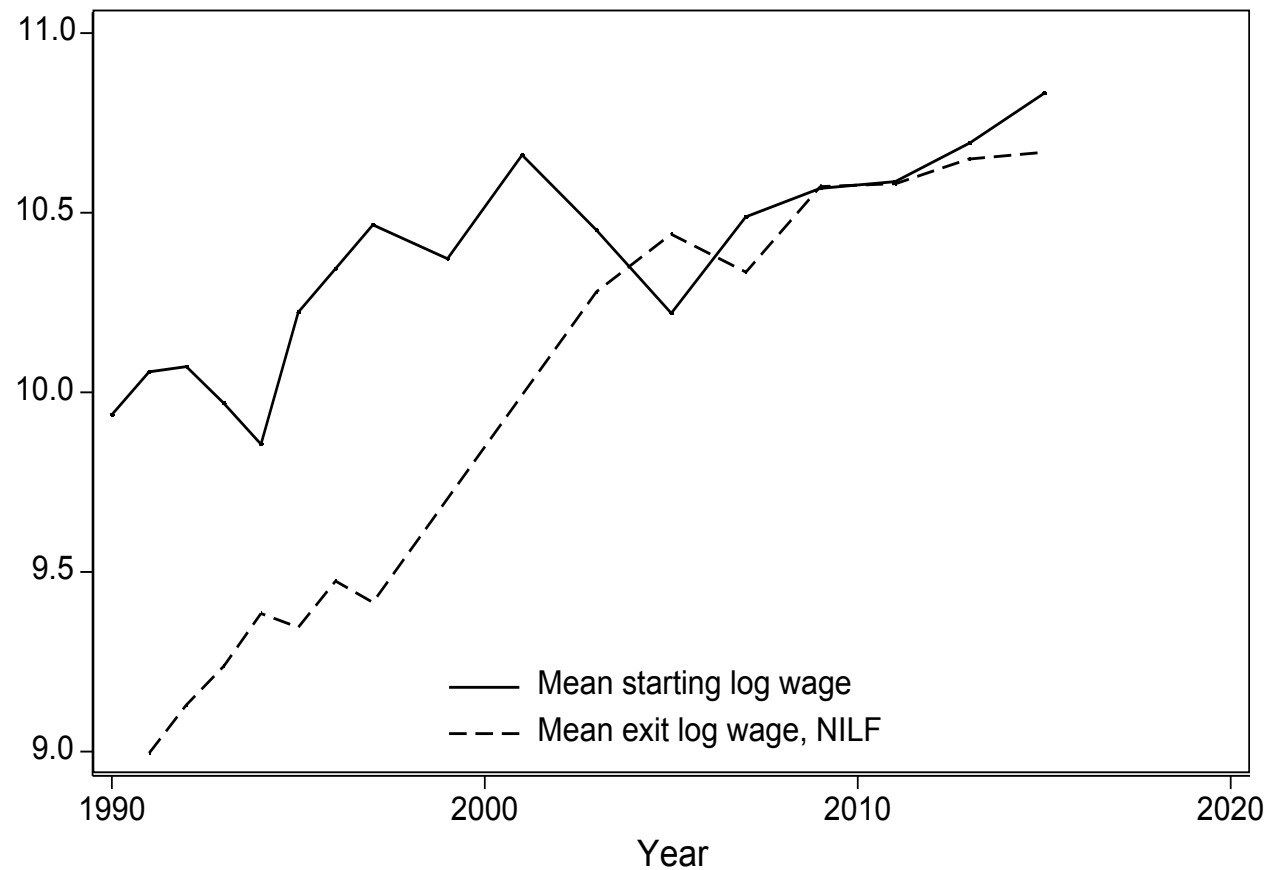
Source: PSID. Note: "starting" wage is log wage of workers who reported undergoing a spell of unemployment in the past year; "exit" wage is last reported log wage. All wages are deflated using the CPI-U-RS.

Change in wages following unemployment

| Years	Change in log wages following unemployment	Standard deviation
1990—1999	-0.044	0.982
2000—2006	-0.156	1.198
2007—2015	-0.107	1.289

Source: PSID. Note: "starting" wage is log wage of workers who reported undergoing a spell of unemployment in the past year; "exit" wage is last reported log wage. All wages are deflated using the CPI-U-RS.

Returns to continued employment

- X_{it}: individual characteristics including an individual fixed effect, state fixed effects, a year fixed effect, and the total work experience of individual i at time t

- E_{it}: length of the current employment spell

- ε_{it}: error term.

- γ_t: return to continued employment in period t.

$$\log w_{it} = X_{it}\beta_t + \gamma_T E_{it} + \varepsilon_{it}.$$

Returns to continued employment

Estimated return to continued employment
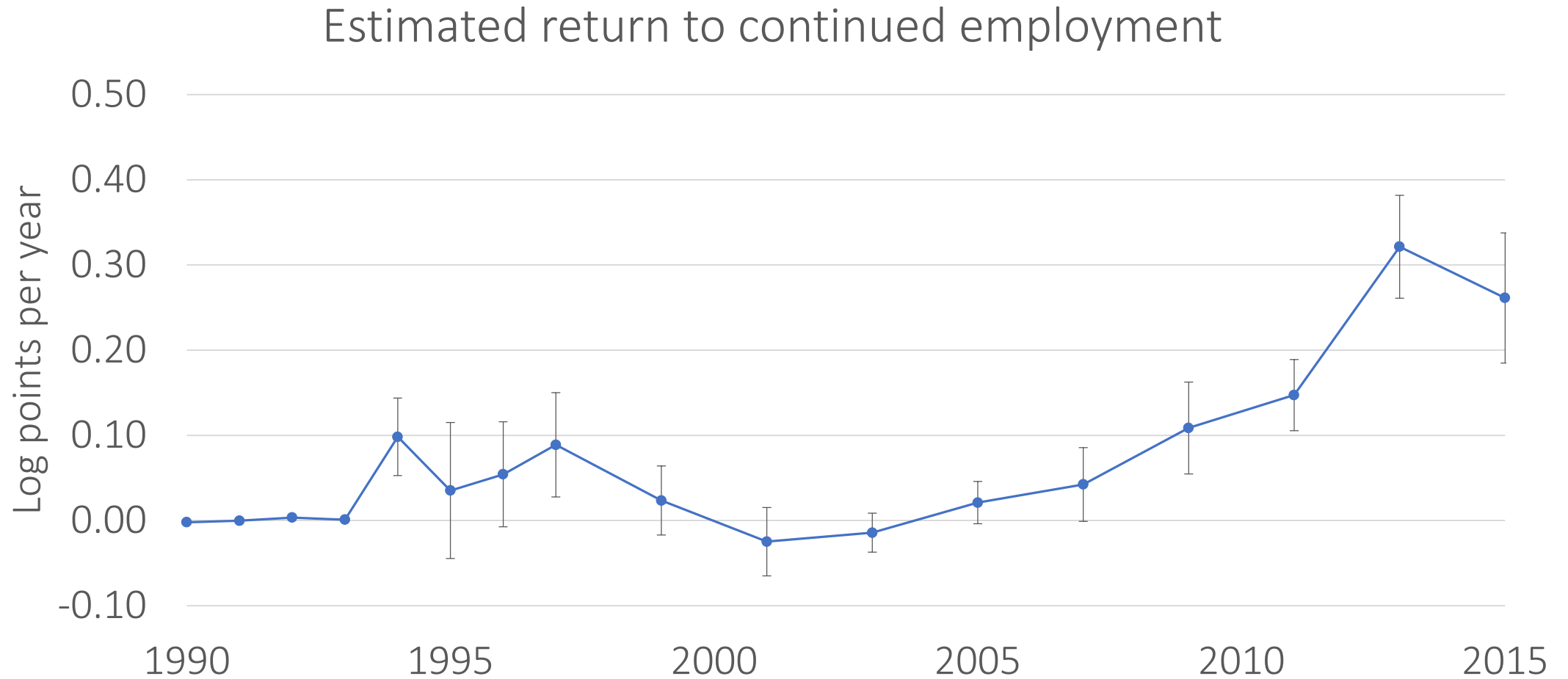
Source: PSID.

Conclusion

- Roughly half of LFP decline since 2000 attributable to demographic shifts

- Disability increasingly affecting labor force participation

- There seems to be a secular decline in the (re)entry rate, both NE and NU, of young workers

- Which is likely the result of demand-led shifts that raise the penalty for employment gaps, or equivalently, the return for continued employment