Hysteresis from Employer Subsidies

by E. Saez, B. Shoefer, and D. Seim

François-Xavier Ladant Armando Miano

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Motivation

- Investigate **hysteresis effects** of large employment subsidies in Sweden targeting young workers
- Large body of evidence on **employment hysteresis**
  - From labor market shocks – Blanchard and Summers (1986), Davis and Von Wachter (2011)
  - Recession shocks – Blanchard and Katz (1992), Yagan (2019)
  - Trade shocks – Autor et al. (2014)
- Little evidence on persistent employment effect of active labor market policies
- Relevant policy question
  - Often policies are one-time push to lift individuals on better employment trajectories

Preview of Results

- Subsidy fully translates in labor cost reduction – no effect on net wages of young workers
- **Long-term employment effects** (+4.4pp) larger than short term effects (+2.3pp)
- **Lifecycle hysteresis**: positive employment effects even when workers age out of reform eligibility
- **Market-level hysteresis**: positive employment effect (+6pp) after repeal
- Hysteresis could be explained by decrease in discrimination against young

Outline

1. Related Literature
2. Institutional Setting and Data
3. Summary of Saez, Shoefer, and Seim (AER, 2019)
4. Results
5. Discussion

Literature on Incidence of Payroll Taxes

- **Traditional view**: incidence of payroll taxes falls on employees, even if nominally paid by employers
  - Standard competitive labor market model where labor demand is more elastic than labor supply
- Some studies using micro-data find incidence of employer payroll taxes shifted to employees through wages
  - E.g. Gruber (1997) on Chile; Cruces, Galiani and Kidyba (2010) on Argentina; Anderson and Meyer (1997, 2000) on US
- Others find limited or no pass-through on workers
  - Kluger and Kluger (2009) on Colombia; Saez, Matsaganis,Tsakloglou (2012) on Greece; Bozio, Breda, Grenet (2016) on France

Literature on Employer Subsidies

- Katz (1998) on wage subsidies in the US: moderately positive employment effects for disadvantaged populations if salient and simple to administer
- Payroll tax cuts or subsidies targeting specific groups
  - Kramarz and Philippon (2001) on permanent employer payroll tax cut in for minimum wage workers in France
  - Cahuc, Carcillo and Le Barbanchon (2016) on temporary subsidy to hire unemployed workers during the Great Recession
  - Both find positive employment effect
- Geographically targeted and temporary payroll tax cuts in Nordic countries
  - Bohm and Lind, 1993 and Bennmarker, Mellander, and Ockert, 2009 for Sweden; Johansen and Klette 1997 and Gavrilova et al. 2015 for Norway; and Korkeamaki and Uusitalo, 2009 for Finland
  - Some pass-through to wages and significant but modest employment effects

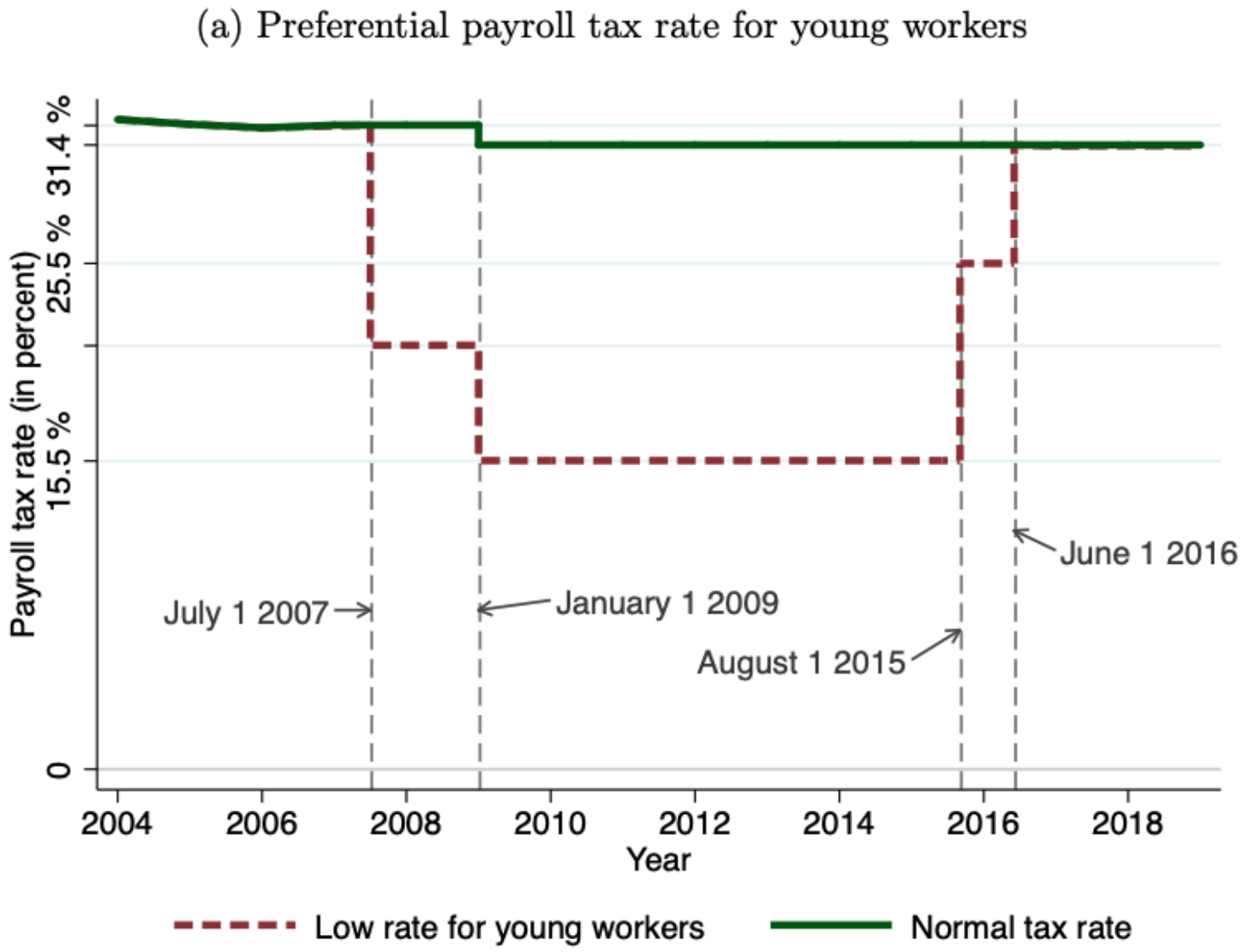
Institutional Setting: Payroll Tax in Sweden

- Entirely paid by employers
- Proportional to the wage: $\simeq 31 - 32\%$ over the period under study (2006-2017)
- No cap, no exemption

The Reform

- **Payroll Tax cut**
  - Jan 1, 2007: a first cut to 21.31% (normal rate: 32.42%)
  - Jan 1, 2009: second cut to 15.49% (normal rate: 31.42%)
- Who is concerned?
  - From Jan 1, 2007 to Jan 1, 2009: workers turning 25 or below during the calendar year
  - From Jan 1, 2009: extended until 26
- Take-up close to 100% due to direct administration through the tax software used by employers
- Reform abolished in 2015 in two steps:
  - Aug 1, 2015: rate increased to 25.46% for workers $\leqslant 25$
  - Jun 1, 2016: normal rate for everyone

The Reform


(a) Preferential payroll tax rate for young workers
Payroll tax rate (in percent)
0
15.5 %
25.5 %
31.4 %
2004
2006
2008
2010
2012
2014
2016
2018
Year
July 1 2007
January 1 2009
August 1 2015
June 1 2016
Low rate for young workers
Normal tax rate

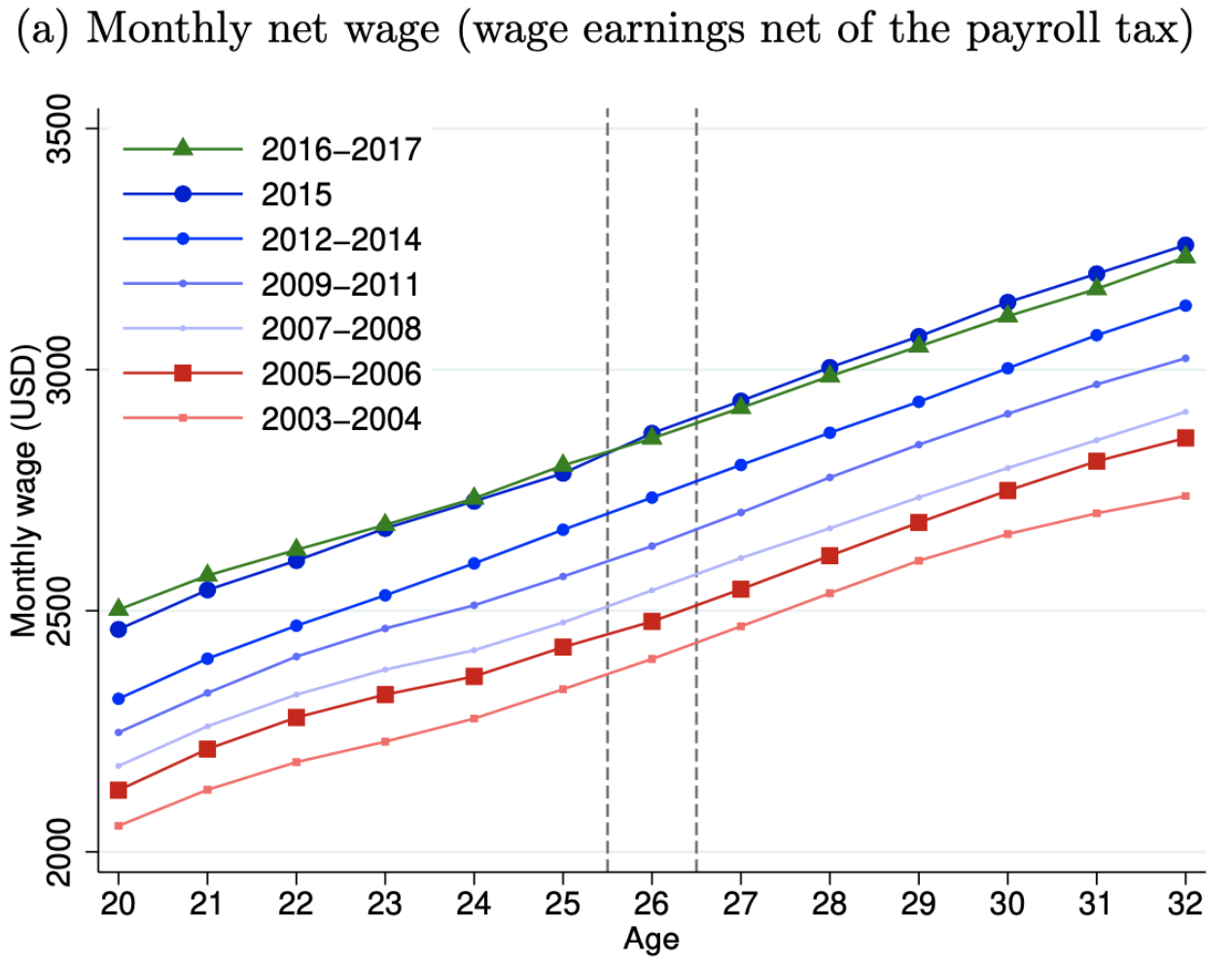
Data

- Who?
  - All Swedish residents aged 16 and above over 1990-2017
- What?
  - Matched employer-employee records: annual wage payments and months worked
  - Income Tax Register: total wage earnings
  - IDLMR: unemployment history (days registered as unemployed + benefits receipts), gender, month and year of birth
  - Structure of Earnings Survey: covers a "very large number of firms" (but only 50% of private sector workers); data collection during a measurement week; worker-level monthly wage prevailing at the time of the survey

Saez, Shoefer, and Seim (AER, 2019)

- Same data but until 2013
- Main effects of the reform:
  - Decrease in youth unemployment. Analyzed in more details in this WP
  - Young-intensive firms experience faster growth in employment, assets, sales and profits after the reform
  - More credit-constrained firms experience a faster growth in employment and assets
  - All workers at youth-intensive firms prior to the reform enjoy a higher increase in net wage earnings than in old-intensive firms → Within-firm rent sharing

Wage Incidence: Effect on Net Wages

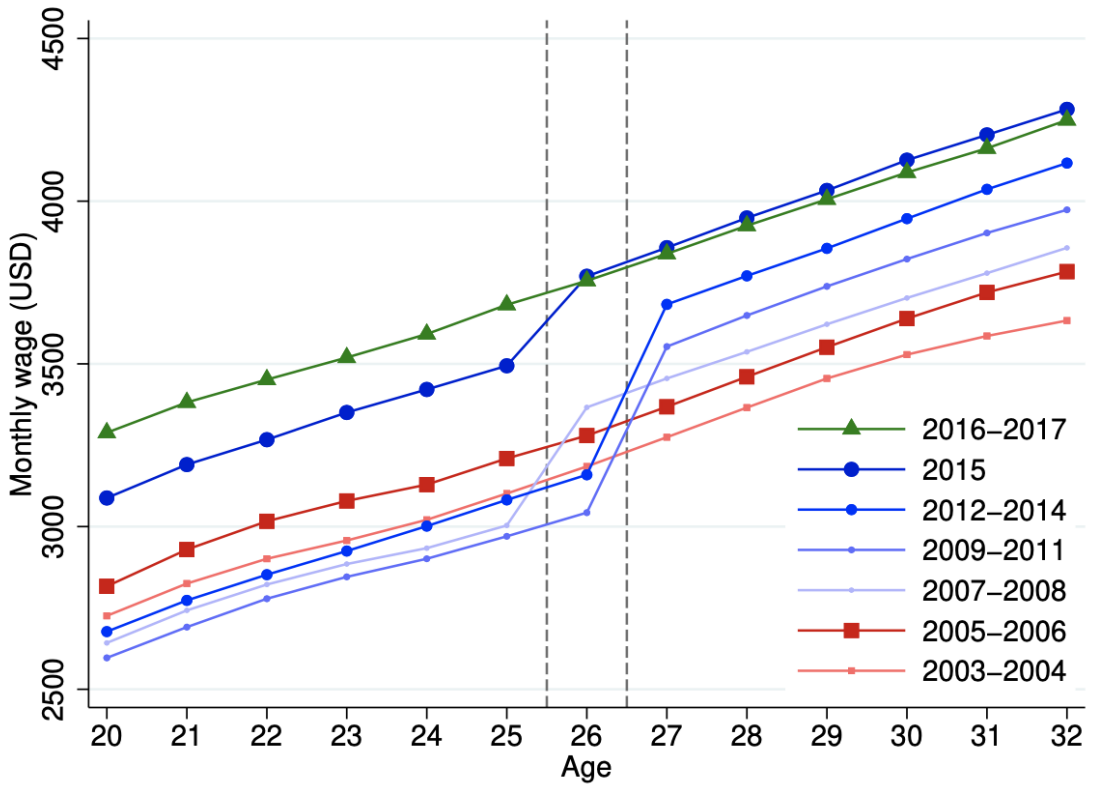


Full-time equivalent monthly wage, adjusted for inflation.

Source: Structure of Earnings Survey

Wage Incidence: Effect on Gross Wages

(b) Monthly gross wage (wage earnings gross of the payroll tax)



Phase-in: 2007-2008 for age $\leqslant 25$, 2009-2010 for age $\leqslant 26$. Phase-out: 2015 for age 26, 2016 for age $\leqslant 25$

$$\uparrow\downarrow \text{ Payroll tax} \Rightarrow \uparrow\downarrow \text{ Labor cost}$$

Effects on Employment

- **Employment rate** by age group and overtime

$$e_{at} = \frac{E_{at}}{E_{at} + U_{at}}$$

E_{at}: employed residents with annual wage earnings above a small threshold

U_{at} unemployed residents (registered with the Unemployment Office)

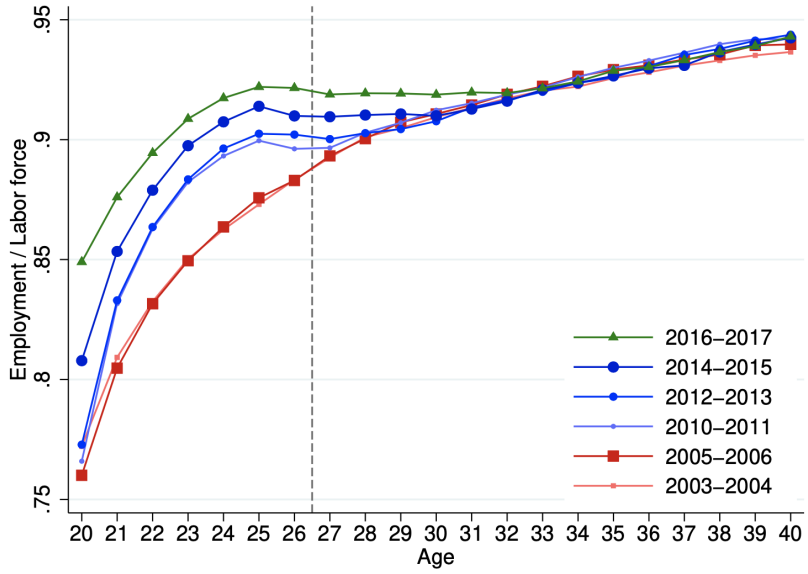
- **Adjusted diff-in-diff** employment rate
  - Controls for overall business cycle employment effects
  - Normalize e_{at} by aligning unemployment rate for ages 35-40 to 2006 level

$$\widehat{e_{at}} = 1 - (1 - e_{at}) \cdot \frac{u_{35-40,2006}}{u_{35-40,t}}$$

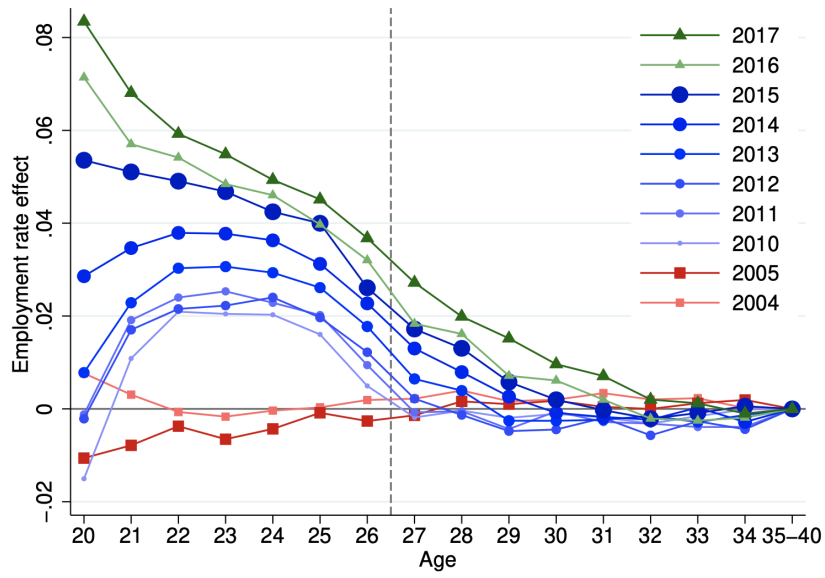
  - Plot $\widehat{e_{at}} - \widehat{e_{a,2006}} = (e_{at} - e_{a,2006}) \cdot \frac{u_{35-40,2006}}{u_{35-40,t}}$

During the Subsidy: Medium- vs. Long- Run Effects

(a) Employment rates by age and period



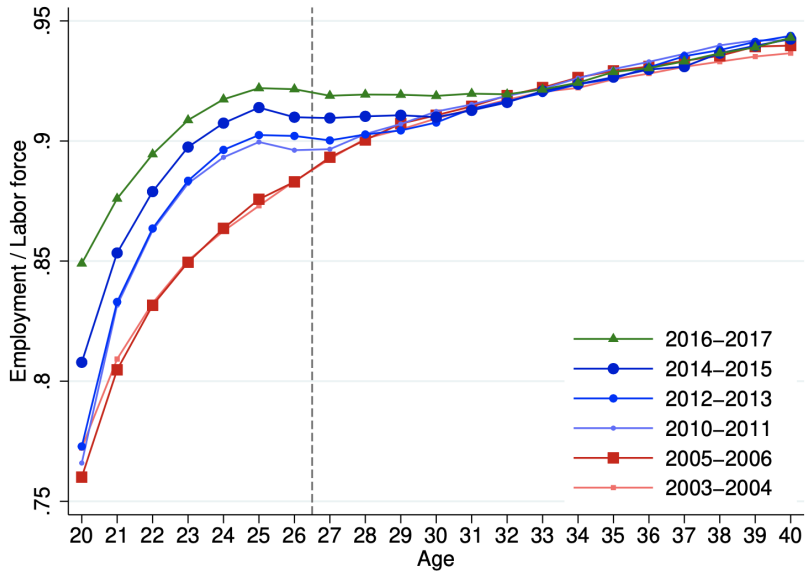
(b) Employment rates by age and year relative to 2006



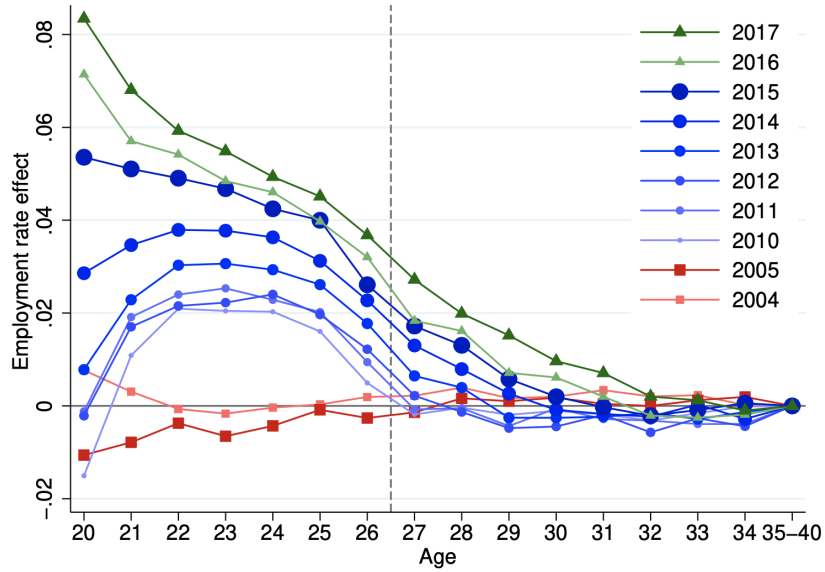
- Clear increase in youth employment in early years of reform (2010-13)
- Effects concentrated at ages 22-24, smaller for workers close to threshold
- Initially smaller effects for workers aged 20-21
- Much **stronger long-run** effect: in 2015 employment effect is 3x as large as in 2010

During the Subsidy: Lifecycle Hysteresis

(a) Employment rates by age and period



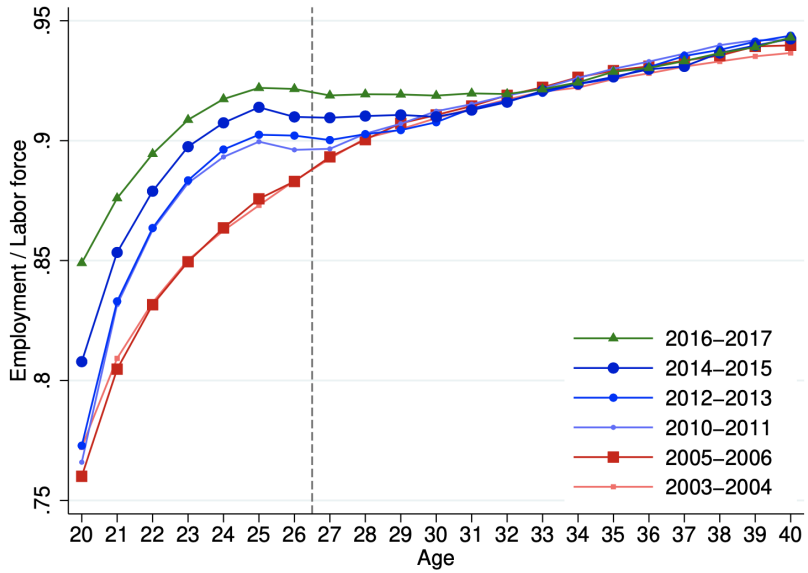
(b) Employment rates by age and year relative to 2006



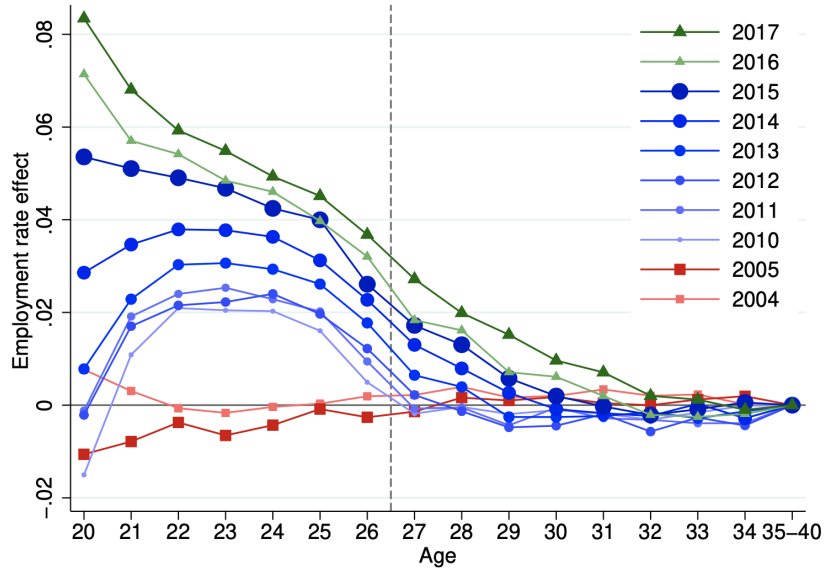
- Higher employment of workers slightly above 26 in 2014-15
- These workers were exposed to the reform in earlier years → Hysteresis effect
- Reform spills over gradually across slightly older groups

After the Subsidy: Hysteresis for All Young Workers

(a) Employment rates by age and period



(b) Employment rates by age and year relative to 2006



- Employment effects of young keep increasing in 2016-17 – *after repeal* → Hysteresis at the group level
- Lifecycle hysteresis continues after repeal

Regression Evidence

Basic diff-in-diff regression based on aggregate unadjusted cohort-year time series: $e_{at} = \alpha_0 + \alpha_a + \alpha_t + \gamma_A T$

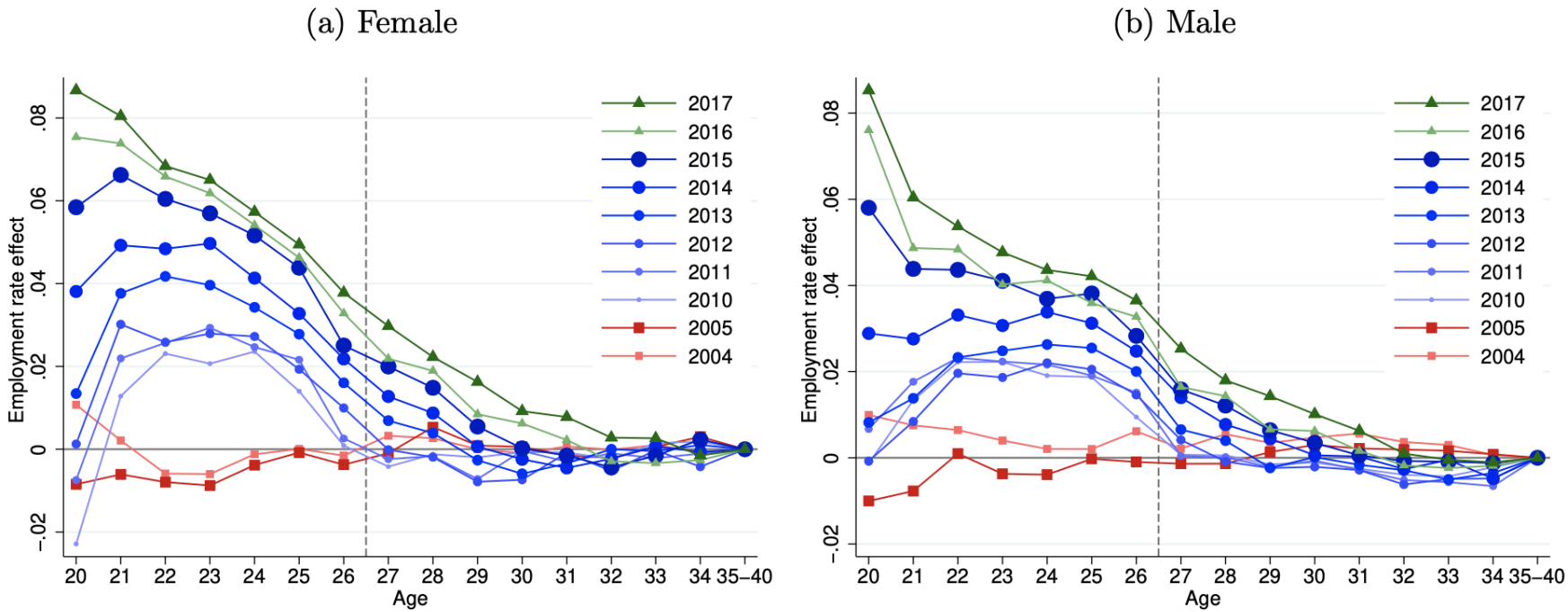
Table 1: Direct and Indirect Effects of Payroll Tax Cut on Employment

	Age Groups					
	Directly Treated	*Spillovers*				
Periods	20-26	27-28	29-30	31-32	33-34	20-34
Panel A: Treatment Effects on Employment Rate in Percentage Points						
2003-4	0.543	0.300	0.116	0.171	0.011	
Placebo	(0.395)	(0.238)	(0.242)	(0.286)	(0.315)	
2010-13	2.316	0.204	-0.292	-0.251	-0.321	
Medium Run	(0.339)	(0.183)	(0.215)	(0.201)	(0.263)	
2014-15	4.352	1.340	0.161	-0.196	-0.173	
Long Run	(0.346)	(0.218)	(0.234)	(0.237)	(0.284)	
2016-17	5.991	2.176	0.946	0.238	-0.193	
Post-Repeal	(0.475)	(0.234)	(0.232)	(0.216)	(0.253)	

Table confirms and quantifies visual impression:

- Employment effect doubles from early years to late years or reform
- Post-repeal hysteresis
- Spillover effects significant from from 2014, insignificant before

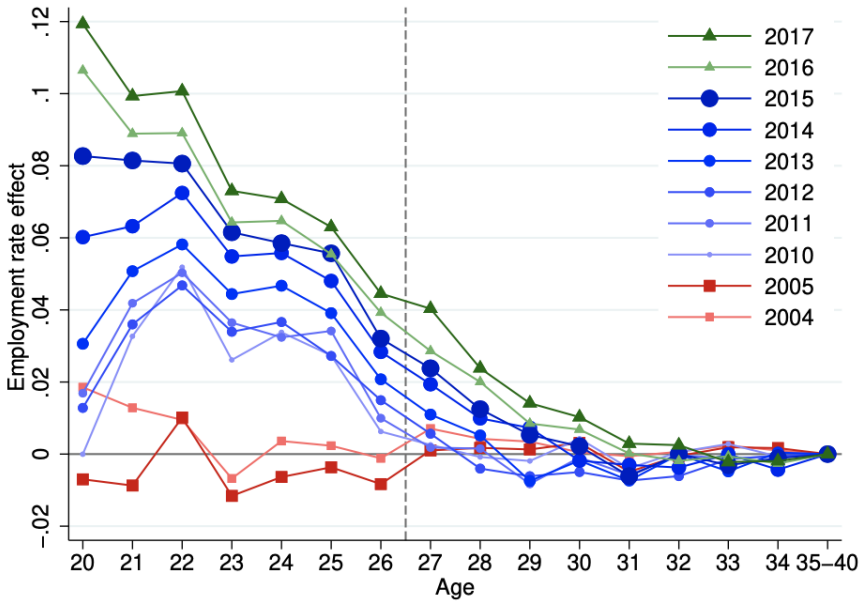
Heterogeneity by Gender



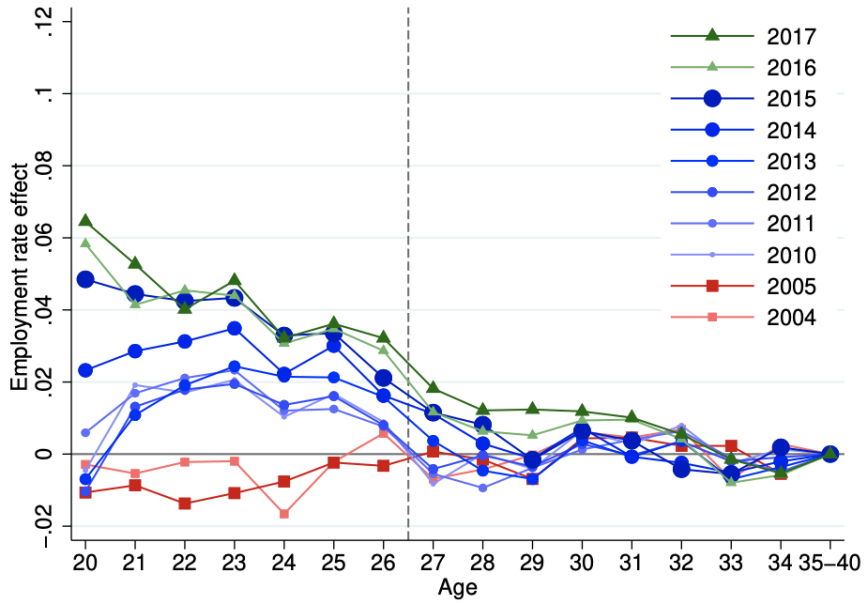
- Similar employment effect of the reform in early years (2010-13)
- Larger effect on young female workers in subsequent years and after repeal

Heterogeneity by Local Youth Unemployment (2006)

(c) Top quintile youth unemployment rate regions



(d) Bottom quintile youth unemployment rate regions



- Larger effect in regions where youth unemployment was high in 2006, both in the medium- and, more so, in the long-run
- Stronger hysteresis in higher unemployment regions

Implication of Hysteresis for Policy Effectiveness

- Out of all jobs created, 95% were among the directly treated 20-26 olds
- 30% of these jobs were created in final two years of policy (2014-15)
- Two post-repeal years account for 44.1% of all jobs created
- Hysteresis lowers significantly the per-job cost of the policy
  - From $113,943 in the medium-run to $66,678 in the long-run, accounting for "free" post-repeal jobs and lifecycle hysteresis

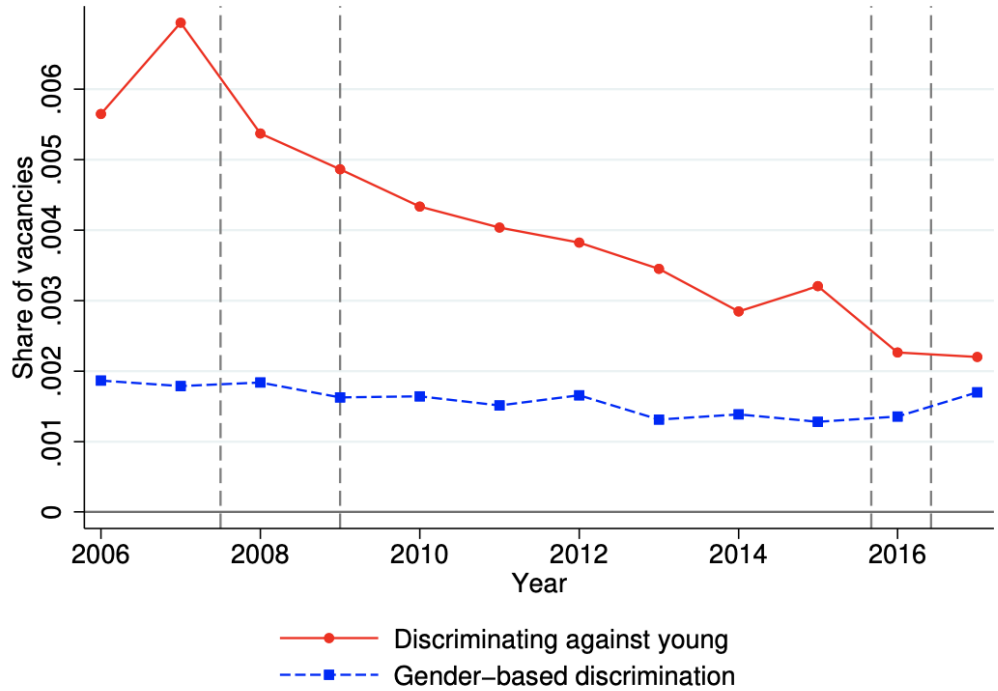
Panel B: Decomposition: Job-Year Counts (and Share of Total)						
2010-13 *Medium Run*	52,544	1,436	-2,135	-2,014	-2,662	47,169 (26.3%)
2014-15 *Long Run*	49,359	4,724	591	-783	-716	53,173 (29.6%)
2016-17 *Post-Repeal*	67,957	7,671	3,460	952	-801	79,239 (44.1%)
All Years	169,859 (94.6%)	13,831 (7.7%)	1,915 (1.1%)	-1,845 (-1.0%)	-4,179 (-2.3%)	179,581 (100%)

Hysteresis Mechanisms

- Employment response likely due to labor **demand** effects because of reduction in youth labor cost
- What can explain **persistence** of the employment effect?
  - Sluggish adjustment from attention to tax reversal
  - Persistent or permanent change in hiring decisions – e.g. firms may have developed youth-intensive technologies
  - **Permanent reduction in youth discrimination**

Hysteresis Mechanisms: End of Youth Discrimination?

(b) Share of youth discriminatory job ads before, during and after the tax cut



- Job vacancy postings from Swedish Public Employment Service
- Text search for discriminatory phrases (e.g. prior years of experience or minimum age)
- Youth discrimination declines during the reform and reaches its lowest in post-repeal years
- No significant changes in share of listings containing phrases of gender discrimination (used as control)

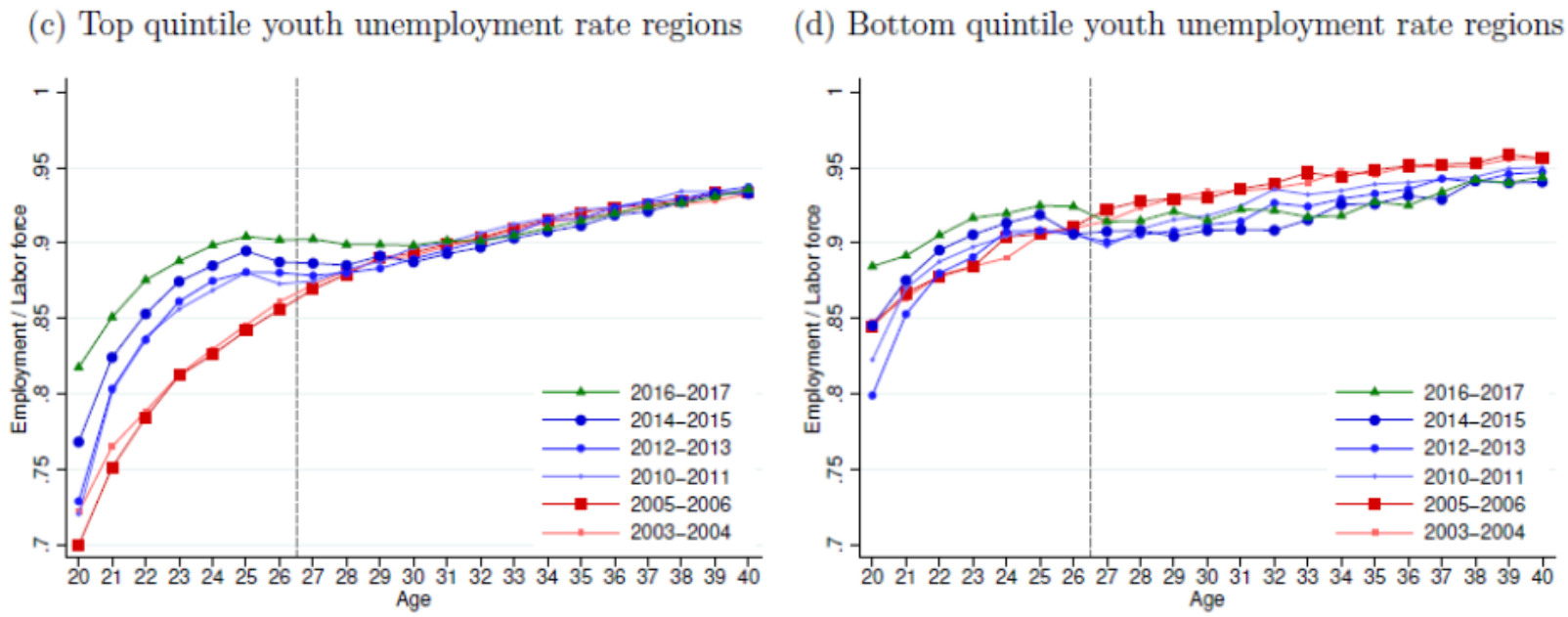
Discussion: Labor Demand vs. Labor Supply Effect

- Their argument relies on assimilating the tax cut to a labor cost reduction
- But their sample is likely to be biased:
  - all large firms are included
  - only 50% private sector workers covered vs. 100% public sector employees

Discussion: Net Job Creation vs. Substitution

- They rule out substitution effects based on Figure 3a
- Although imprecisely estimated, estimates show clear negative effect for 29-30 and 31-32 workers in 2010/2013 and 2014/2015
- Curves for 2007-2009 years not shown so impossible to know how firms adjusted when the reform started
- Hard to believe that firms have not at all substituted workers
  - Absent a reform, younger workers but above 26 might have experienced an increase in their employment rates rather than a slight decrease or no effect
  - Given data they have access to, they could have investigated responses at the firm level

Discussion: Differences by Regions



Unadjusted employment rate

- Very distinct effects between high- and low-unemployment regions.
- Why not contrasting the evolution of net and gross wages in these regions?
- Different mechanisms could be at work.

Discussion: Cost of the Reform

- Same problem as above: no attempt to check whether the increase in the unemployment rate of the treated workers happened at the expense of older, better paid ones
- They do not factor in the fact that there may be job destruction (or non-creation) for older workers who are paid much more on average (so loss in payroll tax)

Discussion: Aggregate vs. Worker-level Data

- Aggregate evidence on lifecycle hysteresis coherent with **two different mechanisms**
  - Young workers are not fired once they turn 27
  - Young workers are fired once they turn 27 but find jobs more easily because of higher work experience
- Generally, there are many interesting questions that could be answered by looking at worker-level rather than aggregate data
  - Job turnover
  - Career trajectories

Discussion: Discrimination as an Explanation for Hysteresis

- Random draw of 3,000 job out of which between 0.1% and 0.3% proved "discriminatory" (despite a lot of criteria)
- The "sharp decrease" observed over the 10 years of the study is a decrease from 9 discriminatory ads to 3-4 per category (might be just noise)
- Extrapolating their numbers, there were 35,000 yearly discriminatory ads before the reform vs. 11,000 in 2016-2017. This would explain at most 2/3 of the job creation in the post-repeal period
- They observe no effect on gender-based discrimination while hysteresis seems to have been much stronger for women than men