

The Impact of Payroll Tax Subsidies: Theory and Evidence

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Still firms play a key role in wage determination

- ▶ Mostly theoretical discussion on the impact of public policies (e.g. UI)
- ▶ Key result: heterogeneous impact across firm and worker types

Study impact of payroll tax subsidies in an equilibrium job search model

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Study the impact on employment and wages

- ▶ Heterogeneity by firm productivity and worker type

Policy Relevance of Age Specific Payroll Taxes

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- ▶ Incidence: do firms or workers get the money?
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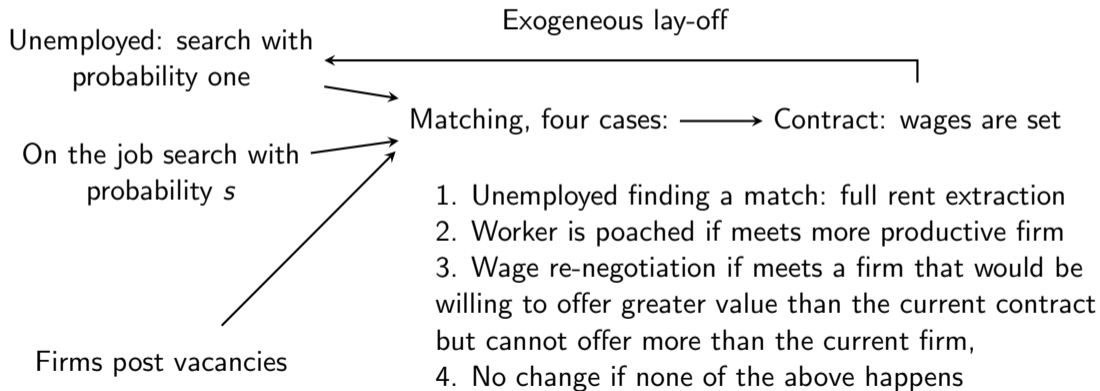
Empirical evidence is mixed, mostly focused on younger workers

- ▶ Non-negligible positive effects on employment: Egebark and Kaunitz (2018), Kramarz and Philippon (2001), Saez, Schoefer and Seim (2019), Svraka (2019)
- ▶ No clear evidence on employment effects: Boockmann, Zwick, Ammermüller and Maier (2012), Huttunen, Pirttilä and Uusitalo (2013)
- ▶ Little evidence for wage effects

Model

Main features of the model – Setup

Standard search and matching model (Bagger and Lentz, 2019; Lise, Meghir and Robin, 2016; Moscarini and Postel-Vinay, 2018; among others)



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4. The increase in wages is larger for high productivity/high poaching firms
 - ▶ *Intuition: More poaching and wage renegotiation happens at more productive firms, leading to workers getting more of the subsidy*

Background

Labor income is taxed heavily

- ▶ 16% (flat-rate) personal income tax;
- ▶ 18.5% social security contributions (SSC) paid by the employee;
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Job Protection Act, in effect from 2013

- ▶ Workers aged below 25 or above 55: employer SSC reduced to 14%
- ▶ Other subsidized groups: e.g. elementary occupations, long-term unemployed

▶ Subsidy Interaction

- ▶ For a previous policy evaluation see Svraka (2019)

Administrative data

- ▶ Use employer-employee administrative data from Hungary between 2011-2017
- ▶ 50% random sample
- ▶ Links employment, tax, pension, health, labor, etc.

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Employment and wages

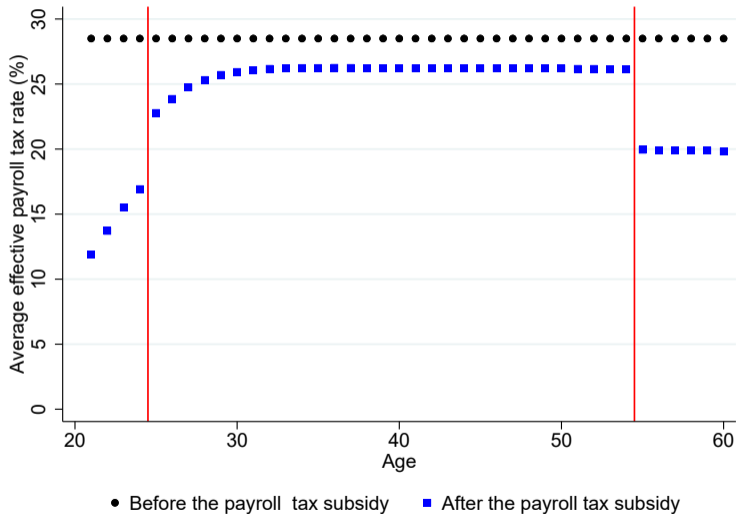
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Sample

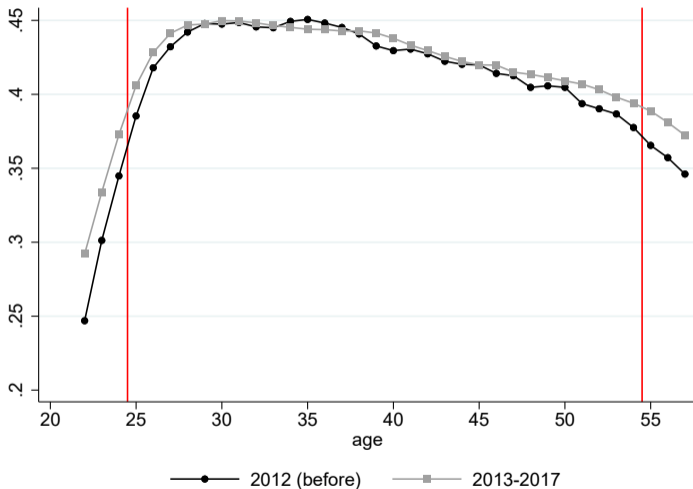
- ▶ Focus on men in main analyses (women retire early at high rates)
- ▶ Focus on ages 22-27 and 52-57
- ▶ Private sector employees

Results

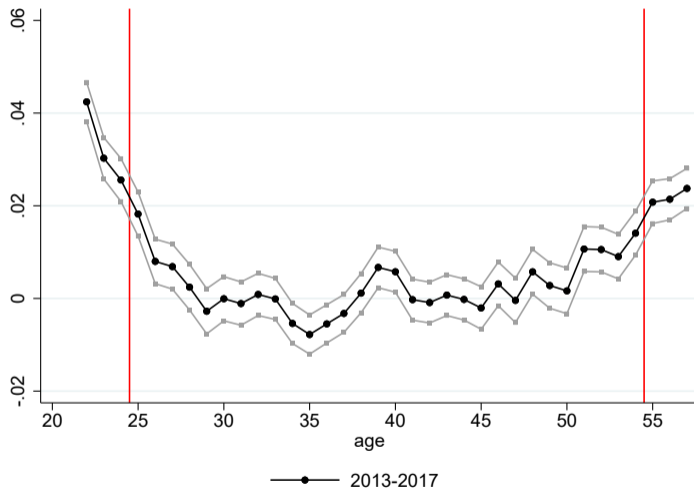
Average Payroll Tax Rate by Age



Employment in Private Sector Companies By Age (Males)



Change in Employment in Private Sector Companies By Age (Males)



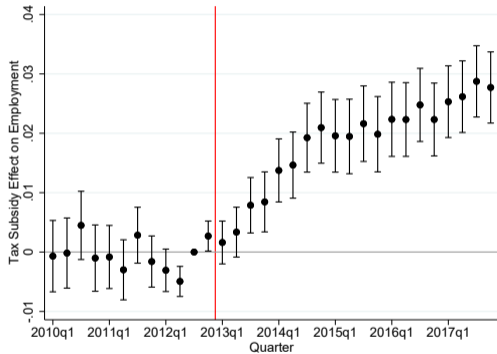
Estimation: Employment

$$y_{it} = \alpha_a + \beta_q + \sum_q \delta_q Treated_{it} + \varepsilon_{it}$$

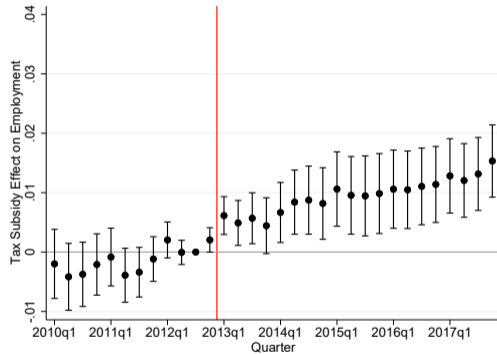
where

- ▶ y_{it} indicator of private sector employment of individual i in month t
- ▶ α_a are age fixed effects
- ▶ q quarterly date index runs between 2010 – 2017
- ▶ $Treated$ is one for ages under 25 (younger treated) or for ages at and above 55 (older treated)
- ▶ Restrict the sample to 22-27 for the younger workers and 52-57 for the older workers
- ▶ δ_q terms are quarter-specific dummies

Results: Employment

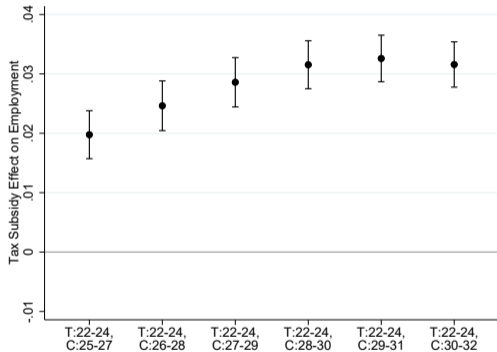


Young, age 22-27

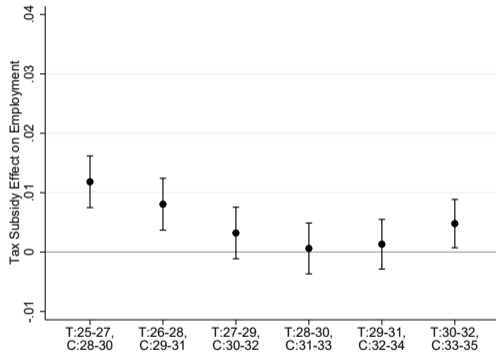


Old, age 52-57

Alternative Control Ages and Placebo Analyses: Employment

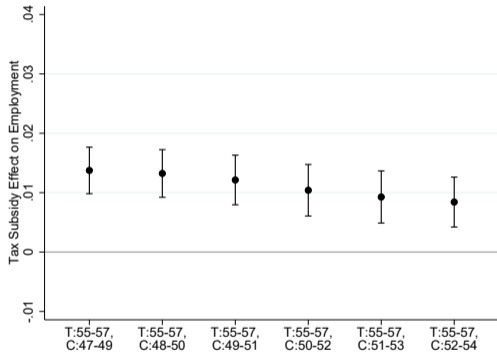


Controls: Young

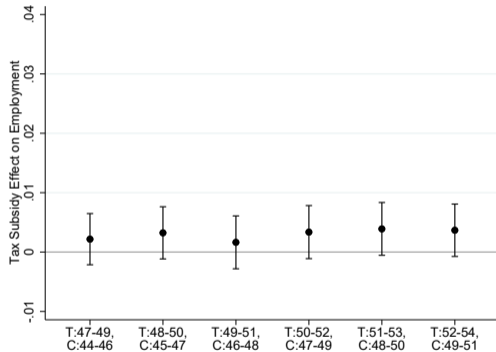


Placebos: Young

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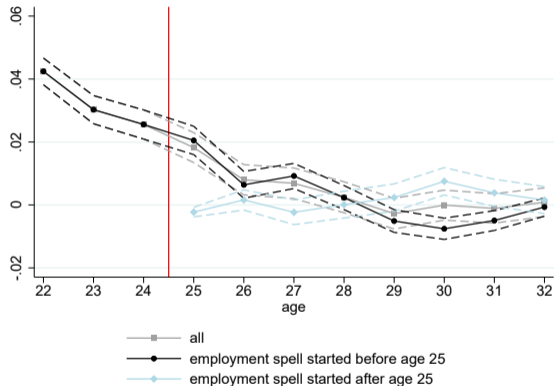


Controls: Old



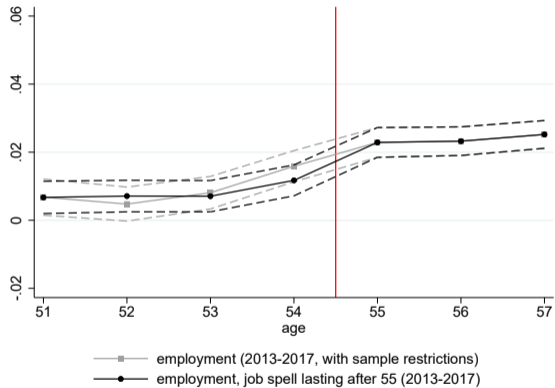
Placebos: Old

Spillover — Young



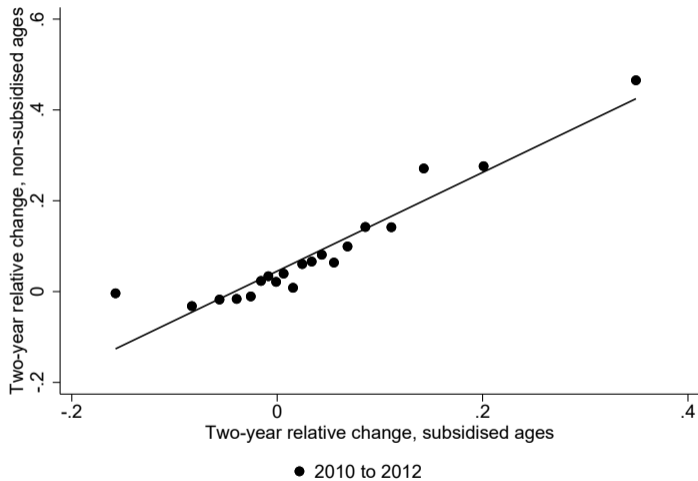
Employment spells starting before 25

Spillover — Old

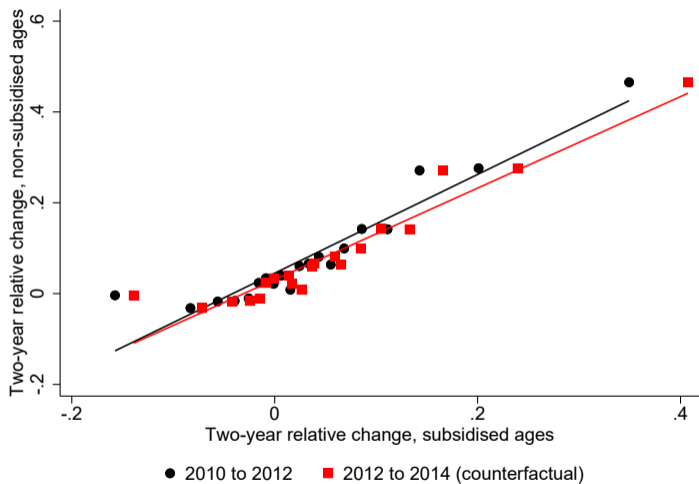


Employment spells lasting after 55

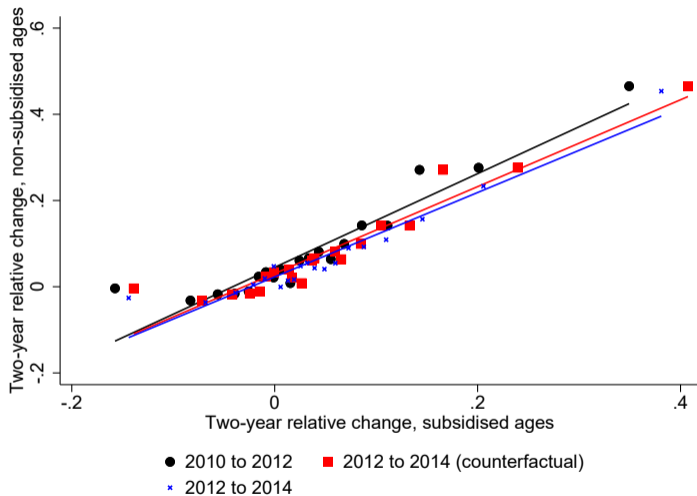
No Evidence of Substitution



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Heterogeneity: Employment

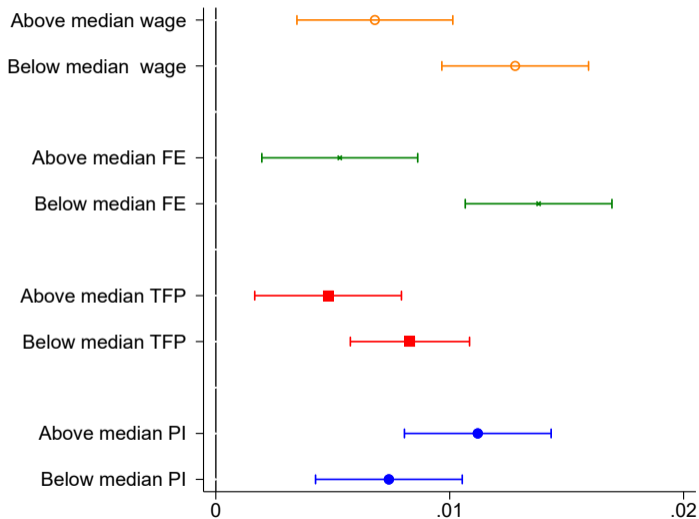
Estimate pooled version of difference-in-differences equation:

$$y_{it} = \alpha_a + \beta_q + \delta \text{After}_t \text{Treated}_{it} + \varepsilon_{it}.$$

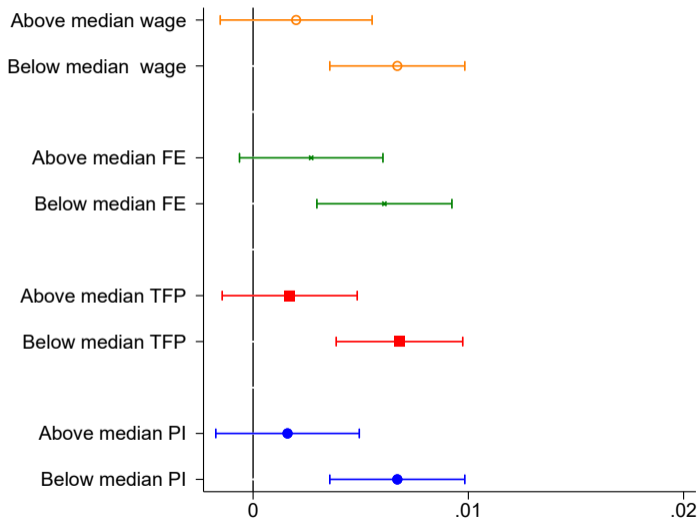
To assess heterogeneity: replace outcome variable y_{it} with binary indicator for employment in given type of job

- ▶ e.g., in above median poaching index firm, in above median TFP firm

Heterogeneity: Employment — Young



Heterogeneity: Employment — Old



Estimation: Wages

$$\ln(w_{it}) = \xi_a + \eta_t + (\phi_a + \zeta_t)\ln(w_{it-1}) + \psi X_{it} + \theta_t \text{Treated}_{it} + \nu_{it},$$

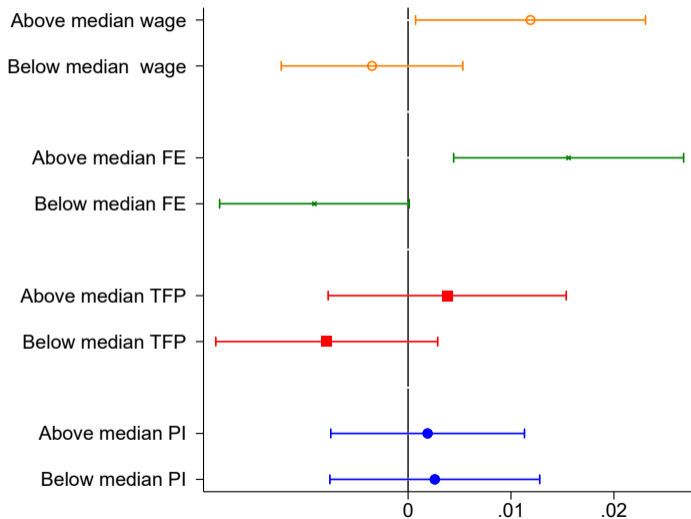
where

- ▶ w_{it} : annual average monthly wage adjusted for working hours of individual i at time t (May of years 2012-2013)
- ▶ ξ_a : age effects
- ▶ η_t : calendar year effects
- ▶ ϕ_a, ζ_t : age-specific and year-specific effects of lagged wage
- ▶ X_{it} : vector of controls, including occupation, log firm size, poaching index, ownership
- ▶ Focus on years 2012-2013

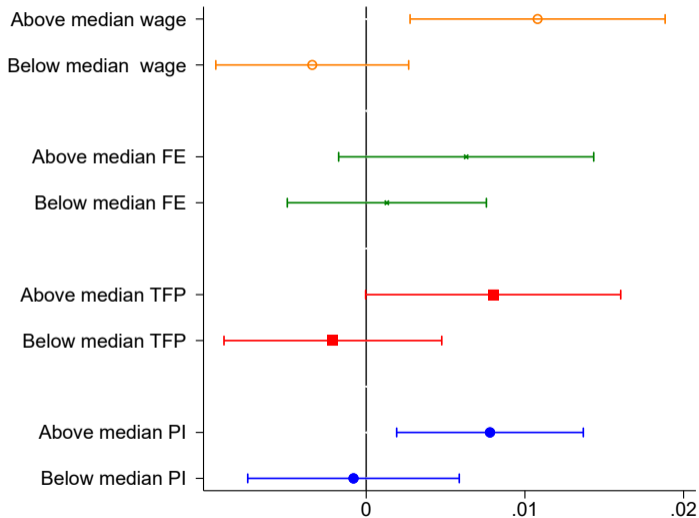
Results: Wages

	Log Wage of Young Age 22-27	Log Wage of Old Age 52-57
Average treatment effect	0.0023 [0.0043]	0.0038 [0.0028]

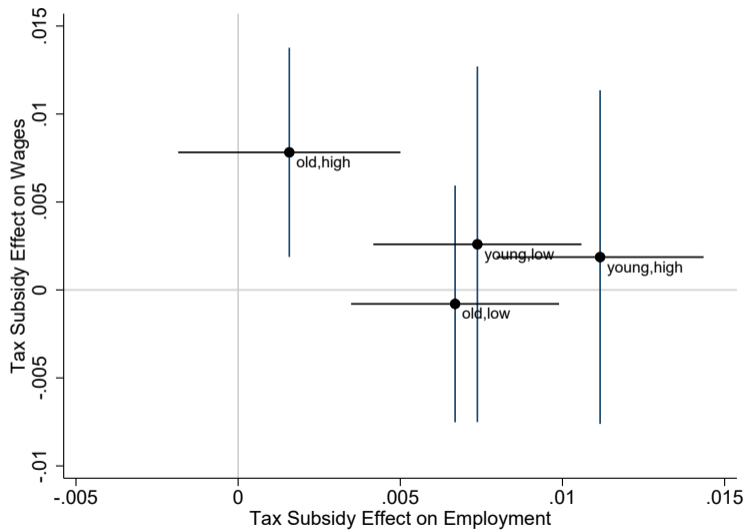
Heterogeneity: Wages — Young



Heterogeneity: Wages — Old



Employment vs Wage Effects — Age Groups + Quality



Model + empirical evidence on heterogeneities in the impact of payroll tax subsidies on employment and wages

- ▶ Model adds tax subsidy to canonical search and matching framework
- ▶ Empirical evidence based on policy experiment in Hungary allowing for diff-in-diff estimation

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Empirically, we find positive employment effects on both younger and older workers

- ▶ Driven by entry with some exit reduction for older workers
- ▶ No evidence of substitution
- ▶ Among older workers, employment effects are much larger in lower-quality firms and jobs

Small positive wage effects

- ▶ Larger effect in higher-quality firms – more so for older workers

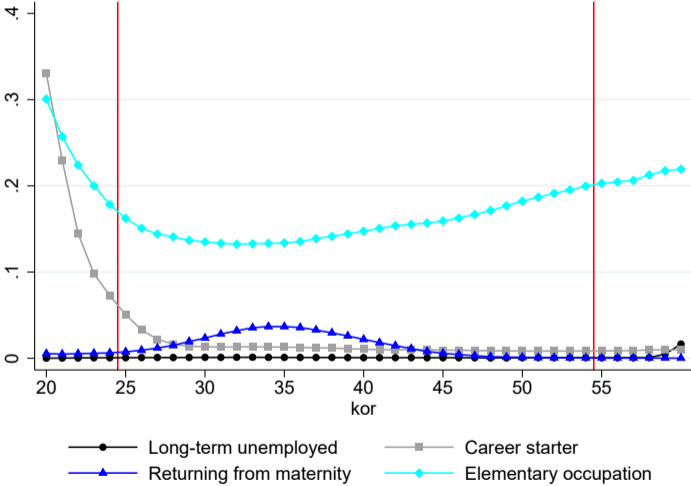
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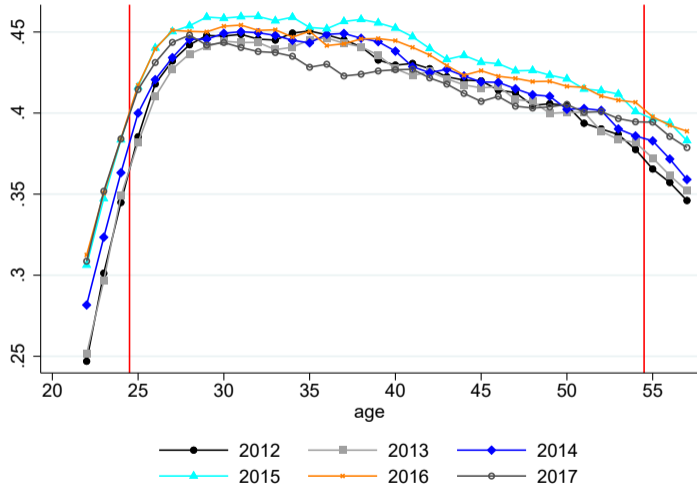
Suggests that in lower-quality firms and jobs, incidence is on firms, in higher-quality firms and jobs, incidence is on workers

- ▶ Wage and employment effects are negatively related
- ▶ Highlights importance of heterogeneity in the impacts of payroll tax subsidies
- ▶ Broadly consistent with model

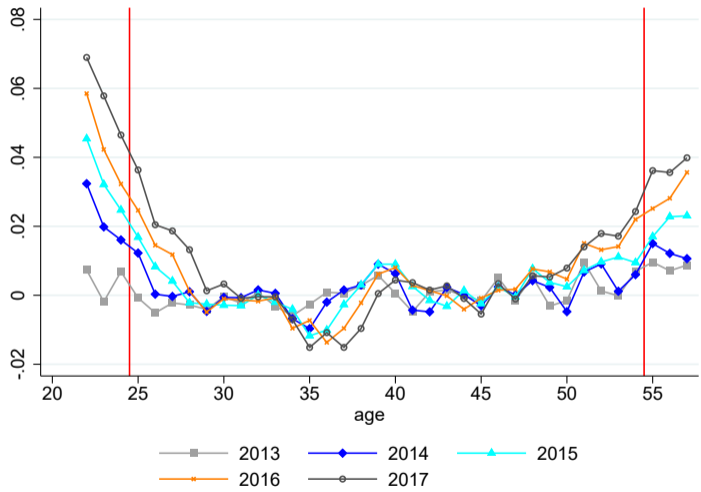
Age-dependent vs Other Subsidies



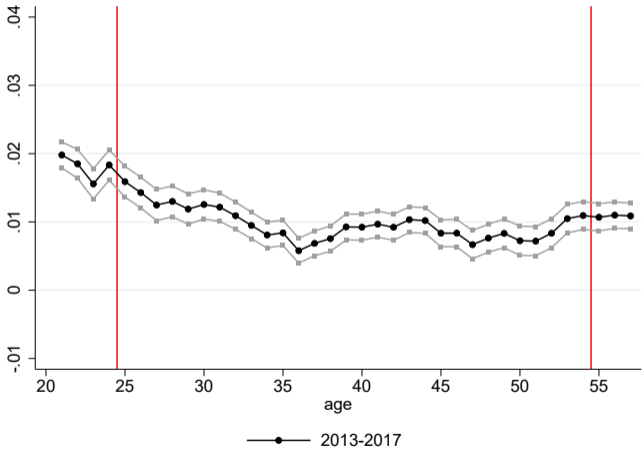
Private Sector Employment Rate By Age



Private Sector Employment Rate By Age



Private Sector Employment Rate By Age—Placebo: Elementary Occupations



Private Sector Employment Rate By Age—Placebo: Public Sector

