The Effect of Minimum Wages on Firm-Financed Apprenticeship Training

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Motivation
- The minimum wage is a popular labor market policy implemented worldwide.
- Wage and employment effects have been studied extensively.
- Little is known about minimum wage effects on job training of youths and apprenticeship training.

Research Question
- What is the effect of a minimum wage introduction on firm-provided apprenticeship training?

Apprenticeship System
- Demand for apprenticeships and number of school graduates.
- Apprenticeship pay has been determined separately by collective bargaining.
- Apprentices spend 3–4 days working in firms and 1–2 days in publicly financed vocational schools.
- Firms are granted the right to train and are monitored by chambers of commerce.
- Apprentices are assessed by chambers of commerce and take centralized exams.
- Apprenticeship training is costly for firms, e.g., 4,700 euros direct net costs per bricklayer apprentice a year (Beicht et al. 2004).

Data & Identification
- Identification
  - Difference-in-differences
  - Treatment group: construction sub-sectors with minimum wage
  - Control group: pool of several control groups
- Data
  - 50% random sample of the IAB Establishment History Panel (BHP)
  - Administrative firm-level data, 1993–1999
- Estimation
  - Firm fixed effects estimation (firm i, year t): $y_{it} = \alpha + \delta D_t + \beta X_{it-1} + \xi_i + \psi_t + \epsilon_{it}$
  - $Y_{it}$: Worker flows:
    1. Indicator whether firm started to train new apprentices
    2. Number of new apprentices
    $D_t$: 1 for firms of the construction sector from 1997 onwards = 0 otherwise
    $X_{it-1}$: Vector of firm level covariates in t − 1 (firm size, median daily pay rate, age structure, share of females, qualification structure, share of part-time workers)
    $Z_{it}$: Vector of the number school leavers by school type and federal state of the firm in t and t − 1
    $\eta_i$: year indicators, $\psi_t$: firm indicators, $\epsilon_{it}$: error term

Graphical Evidence

Results

<table>
<thead>
<tr>
<th>Estimation Sample</th>
<th>Training new apprentices</th>
<th>No. of new apprentices</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>0.234</td>
<td>0.378</td>
<td>57,695</td>
</tr>
<tr>
<td>West</td>
<td>0.119</td>
<td>0.382</td>
<td>6,756</td>
</tr>
</tbody>
</table>

Minimum Wage in Construction
- • Declaration: 12.11.1996
- • Implementation: 01.01.1997

Control Group
- Pool of manufacturing sub-sectors
  - Selection criteria of control sub-sectors:
    1. Similarity index between treatment and potential control sub-sectors including the outcomes and sectoral employment growth rates in the pre-treatment period (similar to IAB, RWI, ISG 2011)
    2. Placebo regressions
    3. Graphical inspection of common trend plots
- East Germany
  - 5 sub-sectors
    - e.g. manufacture of sand-lime brick, concrete and mortar, ..
- West Germany
  - 6 sub-sectors
    - e.g. quarrying, cutting, shaping and finishing of stone, ..

Conclusion
- The minimum wage introduction in the construction sector decreased firm-financed apprenticeship training in the east where the minimum wage bite was considerably high, but hardly affected firms in the west where the minimum wage bite was low.
- Training incidence decreased by about 4.3 percentage points (19.8 %) on average in the east, but did not decrease in the west.
- The number of newly trained apprentices declined by about 0.259 apprentices per firm (18.3 %) in the east and by about 0.03 apprentices per firm (8.4 %) in the west.

Potential mechanisms
- The cost shock due to the minimum wage introduction may leave little scope for firms to invest in apprentices who themselves are a cost factor during their training period.
- Firms may train fewer apprentices in expectation of increased labor costs after taking over apprentices.

Outlook
- Synthetic control method
- Effect heterogeneity (e.g., firm size)
- Alternative standard errors