Is it Bad to be Green in a Greying Firm? An Analysis of the Impact of Postponed Retirements on Younger Workers’ Wage Growth

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Acknowledgments

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Prior Research

- The lump of labor conjecture hypothesizes that earlier retirements among older workers create more job opportunities for younger individuals.

- Economic theory predicts this is false for the economy as a whole.

- Existing empirical evidence has found either no correlation or a positive correlation between having more older workers in the economy and the number of young workers employed in the economy.
  - Based on analysis of aggregate labor market data or workforce samples.
Using German administrative employment data for all workers within the same establishment we show gradual increases in pensionable age introduced in a 1992 reform had highly variable impacts across establishments because of pre-policy differences in worker age distributions.

This variation serves as the source of identification for examining the influence of delayed retirements on wage growth among their colleagues.

This use of micro data allows us to investigate if there are underlying trends missed by aggregate analysis.
Preview of Results

- We find some evidence of a negative impact of postponed retirements on wage growth of younger colleagues.

- When comparing the more “prime age workers” and the younger newer entrants into the labor force we find no difference in the level to which their wage growth is effected.

- Raises the possibility of substitutability in the production process.
Data

- Linked-Employer-Employee Data (LIAB) [cross-sectional model 2 1993-2010 (LIAB QM2 9310)] and a custom extract from the Employment History data (BeH) to capture pre-policy establishment age distributions.
- The data include all the workers in each establishment in a given year.
- Sample is based on all West German establishments with at least five employees that existed in 1990 and appear in the BeH data.
- The data is also restricted to full-time, regular employees working at their primary job who earn less than the social security threshold.
### Summary Statistics

**Table: Summary Statistics**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>share_{58}p_{jt}</td>
<td>4.41</td>
<td>3.21</td>
<td>15,027,568</td>
</tr>
<tr>
<td>Daily Wage</td>
<td>102.00</td>
<td>29.43</td>
<td>15,027,568</td>
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<tr>
<td>Wage Percent Change</td>
<td>12.4</td>
<td>15.5</td>
<td>15,027,568</td>
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</tbody>
</table>

- Number of Unique Firms: 13,912
- Number of Unique Individuals: 4,801,418
Before the 1992 Pension reform the official retirement age for men was 65

However, the effective retirement age before the 1992 reform was 58

Approximately 45% of men 59-years old self-identified as “retired”

Only 20% of new pension claimants were age 65
1992 German Pension Reform

- First major reform since 1975
- Binding for first workers by 1996.
- Fast and large increase in pensionable age relative to US reform.
- Minimal private retirement savings in these cohorts
Empirical Strategy: OLS

**OLS:** \( Y_{ijt} = \beta_1 \text{share58}_{jt} + \beta_2 X_{ijt} + u_t + \epsilon_{ijt} \)

- \( Y_{ijt} \): outcome of interest for individual \( i \) working in firm \( j \) in year \( t \)
  - Daily wage in Euros
  - Percent change in daily wage measured from year \( t-1 \) to year \( t \)

- \( \text{share58}_{jt} \): share of individuals in establishment \( j \) in year \( t \) at least 58 years old

- Controls: industry, inflows, outflows, firm size, schooling, gender, occupational group, experience, year of hire, and state
Is it Bad to be Green in a Greying Firm?

<table>
<thead>
<tr>
<th>Year</th>
<th>Age 57</th>
<th>Age 58</th>
<th>Age 59</th>
<th>Age 60</th>
<th>Age 61</th>
<th>Age 62</th>
<th>Age 63</th>
<th>Age 64</th>
<th>Age 65</th>
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<tbody>
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</tbody>
</table>
Shift-Share IV: Share

- Two potential sources of bias:
  - High ability younger workers may not apply to or may leave firms with a large share of older workers
  - Firms may have unobserved preferences in age distributions leading to endogeneity in the share of workers 58 and older

- Use the 1990 BeH data to construct a shift-share instrument

- Share: Pre-reform counts of workers in each cohort by sex in each of the establishments in our analytic sample.

- Shift: computed from the fitted values after estimating regressions for entries and exits using 1993-2010 data separately for each of 11 industry sectors by sex
Variation in Instrument: Employment Share Ratios

Energy/Water Supply

Trade/Food Service

Ratio of Establishment Employment Share to Industry Employment Share

Percent of Establishments

0 to 0.49
0.50 to 0.99
1.00 to 1.49
1.50+

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Variation in Instrument: Overall

Density

% of Employees in Gap between Old and New Pensionable Age
Results: Continuous Measures

Table: Impact of Older Colleagues on Wages

<table>
<thead>
<tr>
<th>Model</th>
<th>Wage* (1)</th>
<th>Wage % Change* (2)</th>
<th>Wage* (3)</th>
<th>Wage % Change* (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OLS</td>
<td>-0.324***</td>
<td>1.413***</td>
<td>0.000</td>
<td>-0.005***</td>
</tr>
<tr>
<td>IV</td>
<td>(0.077)</td>
<td>(0.374)</td>
<td>(0.000)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Mean</td>
<td>102.00</td>
<td>0.124</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>29.43</td>
<td>0.155</td>
<td></td>
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</tr>
<tr>
<td>N</td>
<td>15,027,568</td>
<td>15,027,568</td>
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</tr>
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</table>

* Standard errors, clustered at the establishment level, are in parentheses. The unit of observation is person-year. Each regression includes a set of establishment characteristics (industry, inflows, outflow, firmsize, state), individual characteristics (education, sex, occupation, experience) and year dummies as controls. The instrumental variable regressions are estimated by two-stage least squares. One star, two stars, and three stars denote statistical significance at the 10-, 5-, and 1-percent confidence levels, respectively.
Table: Estimated Impact of Share of Older Workers in the Industry

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<tr>
<th>Model</th>
<th>Wage* (1)</th>
<th>Wage % Change* (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OLS</td>
<td>-0.794*** (0.211)</td>
<td>-0.003 (0.002)</td>
</tr>
<tr>
<td>share58plsjt, Industry</td>
<td>102.00</td>
<td>0.124</td>
</tr>
<tr>
<td>Mean</td>
<td>29.43</td>
<td>0.155</td>
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Results: Binary Measures

All Ages

Percentage Point Change in Probability

-5% - 2.5% 0% 2.5% 5% 10%

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Results: Binary Measures

[Graph showing percentage point change in probability over age ranges for Over Age 40 and Under Age 40 categories.]
Conclusion

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- When comparing the more “prime age workers” and the younger newer entrants into the labor force we find no difference in the level to which their wage growth is effected.

- Raises the possibility of substitutability in the production process.