Consequences of advance layoff notice for workers and firms

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Motivation

• Employment protection typically modelled as a “bad”
  ✓ Hampers job creation
  ✓ Inefficient allocation of resources

• But employment protection can be second-best policy
  ✓ by, e.g., providing insurance for workers (Pissarides, 2001)

• We focus on the effects of mandatory advance lay-off notice
  ✓ The upside is that it provides workers with time to adjust to a new situation (and full insurance)
  ✓ The downside is that it locks in workers in less productive activities
Advance notice periods

- Exist in practically all OECD countries
- Are relatively long in Sweden (OECD, 2008)
  ✓ SE: 3 months; FR: 2 months; DE: 1 month; IT: 2 months; EU(15): 1.8 months
  ✓ Sweden has no mandated severance pay
  ✓ (Numbers apply to white-collar workers with 4 yrs. of tenure)
- Are longer for white-collar than for blue-collar workers
- Pissarides (2001) concludes that private contracts may include notice
- Consistent with this conclusion, many collective agreements (even in the U.S.) feature advance notice (and severance pay)
Questions of interest

1. How does advance layoff notice affect subsequent labor market outcomes for workers?
   ✔ job mobility and exposure to non-employment
   ✔ subsequent wages and earnings

2. How do firms respond to increases in lay-off costs?
   ✔ WTP for a reduction in notice period (voluntary severance pay/ “golden hand-shake”)
   ✔ Longer notification periods may imply that fewer workers are laid-off
Institutions, data, identification

- Labor law stipulates that the length of the notification period varies discontinuously with tenure.
- In addition, many collective agreements in Sweden have age provisos that prolong notice periods further.
  - Typical formulation: Private-sector white-collar workers above age 55 get additional notice (when tenure $\geq 10$ yrs. they get additional 6 months of notice).
- Unique data on individuals notified of displacement (2005-15).
- Identification comes from the discontinuities implied by the tenure and age thresholds.
- Today, I focus on the age-55 discontinuity which applies to white-collar workers in the private sector (26% of total employment).
Preview of empirical results

• Longer notice period cause…
  1) Less job-to-job mobility
     ✓ Pr{remain in displacing firm} increases (during 1\textsuperscript{st} and 2\textsuperscript{nd} year)
     ✓ Pr{in other firm} decreases (during 1\textsuperscript{st} year)
  2) Less exposure to non-employment and unemployment
  3) Higher annual earnings (during 1 year post notice)
  4) Firms respond to longer notification by laying off fewer workers
  5) Severance pay is used to reduce notice periods
  6) Brunt of the earnings effect comes from severance pay and less exposure to non-employment
Institutional background

• An employer intending to displace five or more workers simultaneously must notify PES in advance
• A two-stage process: (i) intended # displaced workers is reported to the PES; (ii) a list of names of the displaced workers and their displacement dates must be submitted
• At stage (ii) we observed the identities of displaced workers and length of their notice periods
• Law specifies tenure thresholds
• Law is dispositive. More generous rules, from the worker point of view, can be agreed upon
• Many collective agreement include age rules (age 55)
• Union/firm bargain at displacement
Data

• The key data source: Displacement data
  ✓ (≥5 workers displaced simultaneously)
• These displacement data have been matched with a # population-wide registers held by Statistics Sweden
  ✓ Unemployment register
  ✓ Matched employer/employee data
  ✓ Wage data (stratified sample)
  ✓ Etc…
Characteristics of firms giving notice
(All displacements)

Table 4: Firm characteristics (Displacing firms, 2005-15)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm size (# employed)</td>
<td>158</td>
</tr>
<tr>
<td># notified (initial report)</td>
<td>20.2</td>
</tr>
<tr>
<td># notified (final report)</td>
<td>15.8</td>
</tr>
</tbody>
</table>

**Industry distribution**

<table>
<thead>
<tr>
<th>Industry</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>0.34</td>
</tr>
<tr>
<td>Construction</td>
<td>0.09</td>
</tr>
<tr>
<td>Retail trade</td>
<td>0.14</td>
</tr>
<tr>
<td>Transport</td>
<td>0.09</td>
</tr>
<tr>
<td>Non-Financial services</td>
<td>0.19</td>
</tr>
<tr>
<td>Health</td>
<td>0.05</td>
</tr>
<tr>
<td>Other</td>
<td>0.10</td>
</tr>
</tbody>
</table>
First-stage: Age-55 discontinuity

(focusing variable: age at notification)

+ 76 days
Age distribution (balancing)
## Instrument exogeneity
(Above threshold regressed on pre-det. covariates)

### Table 1: Overall Balancing

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings (t-1)</td>
<td>-0.0009</td>
<td>-0.0012</td>
<td>-0.0022</td>
<td>-0.0001</td>
</tr>
<tr>
<td></td>
<td>(0.0054)</td>
<td>(0.0057)</td>
<td>(0.0058)</td>
<td>(0.0033)</td>
</tr>
<tr>
<td>Female</td>
<td>0.0047</td>
<td>0.0041</td>
<td>0.0038</td>
<td>0.0004</td>
</tr>
<tr>
<td></td>
<td>(0.0051)</td>
<td>(0.0050)</td>
<td>(0.0052)</td>
<td>(0.0034)</td>
</tr>
<tr>
<td>Immigrant</td>
<td>-0.0119</td>
<td>-0.0113</td>
<td>-0.0111</td>
<td>-0.0066</td>
</tr>
<tr>
<td></td>
<td>(0.0101)</td>
<td>(0.0099)</td>
<td>(0.0099)</td>
<td>(0.0070)</td>
</tr>
<tr>
<td>Tenure</td>
<td>-0.0013</td>
<td>-0.0016</td>
<td>-0.0028</td>
<td>-0.0003</td>
</tr>
<tr>
<td></td>
<td>(0.0029)</td>
<td>(0.0030)</td>
<td>(0.0031)</td>
<td>(0.0018)</td>
</tr>
</tbody>
</table>

*Highest attained education*

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>-0.0180</td>
<td>-0.0151</td>
<td>-0.0127</td>
<td>-0.0054</td>
</tr>
<tr>
<td></td>
<td>(0.0227)</td>
<td>(0.0233)</td>
<td>(0.0231)</td>
<td>(0.0156)</td>
</tr>
<tr>
<td>High school</td>
<td>-0.0260</td>
<td>-0.0235</td>
<td>-0.0226</td>
<td>-0.0110</td>
</tr>
<tr>
<td></td>
<td>(0.0200)</td>
<td>(0.0205)</td>
<td>(0.0202)</td>
<td>(0.0128)</td>
</tr>
<tr>
<td>College</td>
<td>-0.0141</td>
<td>-0.0122</td>
<td>-0.0125</td>
<td>-0.0036</td>
</tr>
<tr>
<td></td>
<td>(0.0213)</td>
<td>(0.0212)</td>
<td>(0.0211)</td>
<td>(0.0138)</td>
</tr>
</tbody>
</table>

*Firm Characteristics*

<table>
<thead>
<tr>
<th></th>
<th>√</th>
<th>√</th>
<th>√</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polynomial order</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st degree</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>2nd degree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interacted w. threshold</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Month/Year FE</td>
<td>√</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| F-stat                  | 1.02      | 1.31      | 1.39      | 1.24      |
| p-val                   | 0.427     | 0.232     | 0.192     | 0.274     |
Overall earnings effect
(Age-55 treatment. Year after notification)

\[ + 49\text{kSEK} \]
Overall earnings effect
(age-55 treatment, RD-estimates at different times relative to notification)

“Golden handshake”? (voluntary severance pay)
Unpacking the earnings effect

- The treatment effect of longer notification on total earnings over some fixed time horizon (say $T = 2$ years)

$$\Delta y = \Delta SP + \Delta (w_0 l_0) + \Delta (w_1 l_1)$$

- Where $w_0$ ($w_1$) is the wage paid in the old (new) job and $l_0$ ($l_1$) is the duration of the old (new) job (over the time horizon)

- Rewrite using $\Delta w_0 = 0$ and $T = NE + l_0 + l_1$ where $NE$ denotes non-employment

$$\frac{\Delta y}{w_0} = \frac{\Delta SP}{w_0} - \frac{w_0 - w_1}{w_0} \frac{\Delta l_1}{\text{dur. new job}} - \frac{\Delta NE}{\text{non-employment dur.}} + \frac{\Delta w_1}{w_0} \frac{l_1}{\text{wage effect}}$$

- Start by looking at the employment outcomes
Pr(at notifying firm)
(RD-estimates at different times relative to notification)

No action after \( \approx 20 \) months
\textbf{Pr(at new firm)}

(RD-estimates at different times relative to notification)

No action after \(\approx 12\) months
Pr(non-employed)
(RD-estimates at different times relative to notification)

No action after \( \approx 20 \) months
## Duration in various employment states

(2 year horizon)

<table>
<thead>
<tr>
<th></th>
<th>(1) At firm</th>
<th>(2) Other firm</th>
<th>(3) Non-employed</th>
<th>(4) Unemployed</th>
<th>(5) Out of LF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long NT</td>
<td>1.600***</td>
<td>-0.772*</td>
<td>-0.828***</td>
<td>-0.593**</td>
<td>-0.235</td>
</tr>
<tr>
<td></td>
<td>(0.358)</td>
<td>(0.447)</td>
<td>(0.309)</td>
<td>(0.250)</td>
<td>(0.157)</td>
</tr>
<tr>
<td>Control mean</td>
<td>8.228***</td>
<td>11.600***</td>
<td>4.159***</td>
<td>3.392***</td>
<td>0.767***</td>
</tr>
<tr>
<td></td>
<td>(0.297)</td>
<td>(0.401)</td>
<td>(0.264)</td>
<td>(0.187)</td>
<td>(0.124)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.035</td>
<td>0.024</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>No. of Clusters</td>
<td>72</td>
<td>72</td>
<td>72</td>
<td>72</td>
<td>72</td>
</tr>
<tr>
<td>N</td>
<td>6699</td>
<td>6699</td>
<td>6699</td>
<td>6699</td>
<td>6699</td>
</tr>
</tbody>
</table>
Summary: Employment outcomes

• Longer notification periods
  ✓ Prolong the duration at the notifying firm (+1.60 months)
  ✓ Delay the move to a new firm (-0.77 months)
  ✓ And imply less exposure to non-employment (-0.83 months)

• After ≈20 months, no differential effects on employment outcomes across treatment groups
  ✓ The longer-run Pr(notifying firm) is 7 ppt.
  ✓ The longer-run Pr(non-employed) around 16 ppt.
  ✓ The longer run Pr(new firm) around 77 ppt.

• We can look at wages in the first new firm within 2 years w/o worrying about differential selection across treatment groups
Wage effects – Effect on wages in the first new job
(Difference relative to t-1 to improve precision)

Table 1: FULL-TIME EQUIVALENT WAGES IN NEW JOB

<table>
<thead>
<tr>
<th></th>
<th>(1) Δ Contracted Wage</th>
<th>(2) Δ ln(Contracted Wage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long NT</td>
<td>584.045</td>
<td>0.022**</td>
</tr>
<tr>
<td></td>
<td>(716.283)</td>
<td>(0.011)</td>
</tr>
<tr>
<td>Control mean</td>
<td>-1612.198**</td>
<td>-0.057***</td>
</tr>
<tr>
<td></td>
<td>(619.414)</td>
<td>(0.009)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.002</td>
<td>0.005</td>
</tr>
<tr>
<td>No. of Clusters</td>
<td>72</td>
<td>72</td>
</tr>
<tr>
<td>N</td>
<td>2714</td>
<td>2714</td>
</tr>
</tbody>
</table>

Average contracted wage = 29 kSEK
0.584/29=0.02
Firms responses I

- Notice periods are of course costly for firms; negative cash-flow if the job is not sufficiently productive.
- Workers are forgoing unemployment benefits by staying in an activity which is not sufficiently productive.
- Is there an upfront (severance) payment that firms are willing to make to avoid the notice period, which is also acceptable to workers?
Identifying severance pay in the data

- Problem: we observe earnings at the annual level
- Any severance payment from the firm to the worker gets watered out with regular wage payments
- As a descriptive exercise – focus on separations occurring in January
- For such separations: Payments from the firm to the worker = Severance pay + max 1 month of regular wage payments
Monthly earnings around separation

Sub sample: Separation in January

Extra (severance) payment of (180-30) kSEK on average
Identifying severance pay in the data

- What about the extra severance pay accruing to treated workers?
- Would like to use all separations (not just January)
- We measure Severance Pay as excess earnings in the year of separation relative to the previous year
Severance Pay

Normalized age at notification (months)

Severance Pay (1000 SEK)

b = 23854.6** (11416.64)
Decomposition of earnings effect

• The treatment effect of on total earnings over 2 years

\[
\frac{\Delta y}{w_0} = \frac{\Delta SP}{w_0} - \frac{w_0 - w_1}{w_0} \Delta l_1 - \frac{\Delta NE}{w_0} + \frac{\Delta w_1}{w_0} l_1
\]

Total earnings  severance pay  dur. new job  non-employment dur.  wage effect

• Insert estimates

\[
\frac{48.7}{33} \approx \frac{23.9}{33} - \frac{33.0 - 30.4}{33} \times (-0.77) - \frac{(-0.83)}{33} + \frac{0.6}{33} \times 11.2
\]

Total earnings  severance pay  dur. new job  non-employment dur.  wage effect

• 46% of the earnings effect due to a reduction in non-employment
• 40% due to increase in severance pay
• 11% wage effect
Firm responses II

• Advance notice makes it more costly to lay-off workers
• How do firms respond to increases in such costs?

• Rules pertaining to # notified (initial report)
  ✓ If $5 \leq \#\text{notified} \leq 25 \rightarrow$ All workers get at least 2 months notification
  ✓ If $25 < \#\text{notified} \leq 100 \rightarrow$ All workers get at least 4 months notification
  ✓ If $100 < \#\text{notified} \rightarrow$ All workers get at least 6 months notification

• Displacements involving around 100 workers very rarely occur
• Instead we look at bunching at the 25 threshold
Excess bunching by firms

Counterfactual density obtained by fitting a ninth-order polynomial + round-number fixed effects (separately for 5,15 etc and 10,20 etc)
**Firm responses II**

- Increasing the number of notified workers from 25 to 26, would increase notification costs by 100%/worker.
- Excess bunching at the 25 threshold is 50%.
- Elasticity of # notified workers w.r.t. notification cost is 0.5.
- Probably a lower-bound estimate since monitoring of this particular rule is lax.
- A lot more remains to be done on the firm side.
- Estimate effect on
  - firm revenue and
  - workforce composition.
Summary (so far)

• Longer notice period cause…

1) Less job-to-job mobility
   ✓ Pr{remain in displacing firm} increases (during 1st and 2nd year)
   ✓ Pr{in other firm} decreases (during 1st year)

2) Less exposure to non-employment and unemployment

3) Higher annual earnings (during 1 year post notice)

4) Firms respond to longer notification by laying off fewer workers

5) Voluntary severance pay is used to reduce notice periods

6) Brunt of the earnings effect comes from severance pay and less exposure to non-employment (some evidence suggesting increase in match quality)