A Tale of Comprehensive Labor Market Reforms
Evidence from the Italian Jobs Act

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The Italian Jobs Act

- Italian jobs act 2015 concerns two main policies
- **Temporary hiring subsidy** introduced in January 2015
  - (Almost) All new contracts on an open ended basis were eligible to a reduction in social security contributions up to a cap of 8060 euros per year
- **Graded Security on new contracts**
  - All open ended contracts between 7 March 2015 and September 2018 (Constitutional Court ruling) subject to graded security (severance increasing with tenure)
    - Reinstatement clause for unjust dismissal for new hires for firms above 15 employees was (largely) abolished
    - No substantial changes in employment protection for firms below 15 employees
    - Firms passing the threshold subject to graded security for all their workers
    - Dignity Decree increased slope and cap on severance, but accepted tenure profile
From Reinstatement to Graded Security

**Figura:** The Jobs Act Graded Security Contract

- **Severance Months**
  - 4
  - 2
- **Years of Tenure**
  - 2
  - 12
  - 18

- Economic, Disciplinary Unfair
- Out of Court Procedure
Timing of Key Policy Changes

1) Further liberalization of fixed term contract
2) Hiring Subsidy
3) Graded Security: New Contract, Reduced Hiring Subsidy
Motivation and the Italian job market

What did we expect from the Jobs Act?

The Dataset

Descriptive Analysis:
  - Job Flows
  - Mobility Measures
  - Threshold Passing

First difference regressions with matched employer employee data:
  1. Regressions on open ended and fixed-termhirings
  2. Regressions on transformations at the firm level
  3. Regressions on firings at the firm level

Evidence on perverse effects of marginal (flow) reforms
Literature

- Early research on Jobs Act
  - Viviano and Sestito (2018). Look at job creation and gross hirings. 6% due to graded security and 25% to hiring subsidy;
  - Leonardi, Nannicini (2016) use “dichiarazioni obbligatorie”

- Threshold effects and variable EPL
  - Garibaldi, Pacelli and Borgarello (2004). Firm mobility around the threshold falls
  - Schivardi Torrini (2008)
  - Boeri et al. (2008), Scarpetta et al. (2016)

- Academic and Policy Research on graded security
  - France (Cahuc et al. 2012); Spain (Bentolila, Dolado et al.); Italy (Boeri and Garibaldi, 2008)
  - Graded Security (Blanchard Tirole, 2008); Boeri Garibaldi and Moen (2016)
item Graded security at the firm level (below 15 employees)
What did we expect? A simple model

The key equations that describe the hiring and firing margins read

\[
\begin{align*}
R_o - \omega &= -\frac{\lambda}{r+\lambda} \int_{R_d}^{X} (1 - F(z)) \, dz + \lambda S - (r + \lambda) H(\omega); \quad \text{Hiring Margin} \\
R_d - \omega &= -\frac{\lambda}{r+\lambda} \int_{R_d}^{X} (1 - F(z)) \, dz - rS; \quad \text{Firing Margin}
\end{align*}
\]

where \( \omega \) is the fixed wage, \( r \) is the pure interest rate, and \( \lambda \) is the arrival rate of job specific idiosyncratic shocks, and \( S \) is the firing tax (affected by the JA).

\[
\begin{align*}
Hir &= \alpha [1 - F(R_o)] \\
Fir &= \lambda F(R_d)
\end{align*}
\]
Effect of the hiring subsidy (and GS contract)
Summarizing theoretical predictions

- Small firms should experience increase in hirings; no effect on firings.
- Larger firms effects on both margins.
- Relative magnitude of the effects on hiring in small and large is empirical matter
- Allowing for fixed-term contracts, two effects at work
  1. \textit{Substitution effect} : Hiring subsidy + GS contract induce substitution of fixed-term with open ended contracts
  2. \textit{Option value effect} : Fixed-term used as probationary period.
- The option value effect is likely to be lower in small firms, and the substitution larger. Thus less hirings on FT contracts in small firms.
Results: What we will learn about graded security?

- Increase in overall *Mobility*
  1. Increase in the number of firms passing the threshold
  2. Increase in scalar measure of mobility
  3. Increase in measure of job reallocation (job creation and destruction)

- Large increase in *Open ended hirings*
  1. Larger increase in small firms
  2. Increase in transformations from fixed term contract to open ended contract, (both through inside hiring and outside hiring) also larger in small firms
  3. Hiring subsidy effect dominates the effect of the GS contract

- Very limited effect on *Fixed-term hirings* fixed-term hiring

- Increase in *firing* per firm (both overall firing as well as unjust firing) concentrated in large firms
Moreover

- Small firms more responsive on hiring margin
- Small firms reduce fixed-term hires
- Workers formerly protected by the reinstatement clause (art. 18) are less likely to switch job relative to other workers.
The Data

- **Firm selection:**
  - all private firms that between January 2013 and December 2016 hit the band 10-20 employees are selected.
  - approximately 240,000 firms observed each month (time span 48 months)

- **Worker Selection**
  - All workers employed in those firms are observed monthly between 2013 and 2016
  - Approximately 6.2 millions different workers are observed over the 3 years (48 months) time span
  - More than 250 million of records
Mobility Analysis: Threshold and Firm Size

- Beyond firm anagraphics (province, city, sector, birth date, death, sector, etc.) we observe at firm level monthly total employees, part time employees, overall wage
  - *Inps* calculate also “firm labor force” (forza aziendale), a full time equivalent measure that we use for threshold effects (include both fixed term and open ended).
  - *legislation, i*) open ended measured at the full time equivalent  
    - iii) average fixed term employees in the last 24 months weighted by their duration
- Threshold is not observed easily. Forza aziendale compiled by Inps is a reasonable proxy
Mobility Analysis (I): Threshold Passing
Mobility Analysis (II): Transition Matrices

- We take as state $s_t$ the firm size at time $t$. We consider $s_t \in \{\leq 11, 12, \ldots, 19, \geq 20\}$. $s_{it}$ is size for firm $i$ at time $t$.
- The transition $M_t$ records simply the probability of changing size $s_{it}$ to size $s_{i,t+12}$

$$s_{t+12} = M_t s_t$$

We obtain a scalar measure of mobility as the trace measure:

$$\text{Trace Measure} = 1 - \frac{m - \text{Tr}(M)}{m - 1}$$

where $\text{Tr}(M)$ is the trace of $M$ and $m$ is the number of states.
Mobility Analysis (II) Shorrock Index

Shorrock Yearly Mobility index by Month

Year-Month

13m12 14m12 15m3 15m12 16m12

shorrock2

.72 .73 .74 .75 .76 .77
Descriptive Analysis (III): Net and Gross Yearly Flows
Mobility Analysis: Summary

- Overall Mobility increases
- Increase in number of firms passing the 15 employees threshold
- Increase in overall mobility across size cells
- Net job creation increases substantially in the period of the jobs act
- Gross job reallocation (creation plus destruction) increases substantially
Empirical Strategy

- We select all hirings since January 2014. Jobs that started before are not considered.
- We observe whether the hiring is temporary of fixed term.
- We also observe whether the worker was previously employed fixed term (in the previous month).
- We then collapse the hirings at the firm level and consider each variable at the firm level on a per worker basis (hiring per worker).
- We do the same also for the firings.
- Definition of small and large firms: small firms employ between 9 and 12 employees in the second semester of 2014. Large firms employ between 16 and 19 employees in the second semester of 2014.
- Firm size is measured through the full time equivalent definition provided by Inps.
Open ended hires: jobs

Total Hires on open ended

Total Hires on open ended Basis in large and small

Total Hires on Open Ended, Large Firms
Total Hires on Open Ended, Small Firms
Open ended hires: firms

Total Number of Firms Hiring on open ended Basis

Total Number of Firms Hiring in large and small firms

- Total Number of Firms Hiring, Large
- Total Number of Firms Hiring, Small
Transformations of Fixed Term Contracts

Total Transformation on Open Ended basis:

Transformation Share on Open ended basis
Total Firings
Regression Analysis

We run regressions with a simple fixed effect regression with monthly dummies

\[ Y_{it} = \alpha_i + \delta_t + \epsilon_{it} \]  

(4)

where \( \alpha_i \) is firm fixed effect and \( \epsilon_{it} \) is the error term. The inspection of \( \delta_t \) complements the above descriptive analysis taking into account of time-invariant firm-specific characteristics.
Open ended hirings

**Figura:** Single Difference: Time Dummies in New Open Ended Hires

![Graph showing time dummies in new open ended hires](image)
Fixed-term hirings

Figura: Single Difference: Time Dummies in Fixed-term Hires
Figura: Single Difference: Time Dummies in Transformations
Firings in Small and Large Firms: Time Dummies

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Further Regressions: Single Difference

We run specifications with time dummies, time trends, and interactions with a dummy capturing small firms.

\[ Y_{it} = \alpha_i + \beta_2 tS_i + \delta_t + \gamma_2 S_i \times JAN, 15_t + \eta H_{it} + \epsilon_{it} \] (5)

where \( S_i \) is a dummy variable for small firms, and \( S_i \times JAN, 15_t \) is the main interaction variable of interest. The coefficient \( \gamma_2 \) captures the interaction between the JA and small firms as of January 2015. An alternative specification is estimated with firm-specific time trends in lieu of the group-specific time trend

\[ Y_{it} = \alpha_i + \beta_i t + \delta_t + \gamma_2 S_i \times JAN, 15_t + \eta H_{it} + \epsilon_{it} \] (6)

where \( \beta_i \) is the coefficient of the time trend of firm \( i \), while \( \gamma_2 \) is the group-specific effect of the JA on small firms. Finally we run equations including placebo dummies covering periods before the JA, i.e.:

\[ Y_{it} = \alpha_i + \delta_t + \beta_2 tS_i + \sum_{t=1}^{T} \gamma_t S_i \times \delta_t + \eta H_{it} + \epsilon_{it} \] (7)
# First difference regression: Open ended hires

**Tabella:** Regressions of Difference Across Time: Open Ended Hires

<table>
<thead>
<tr>
<th>ESTIMATED COEFFICIENTS</th>
<th>Firm Fixed Effect</th>
<th>Firm Specific Trend</th>
<th>Firms with No Incentive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Model 1</td>
<td>(2) Model 2</td>
<td></td>
</tr>
<tr>
<td>$\beta_1$ (January 2015 onward)</td>
<td>0.0536*** (0.0030)</td>
<td>-0.0441*** (0.0040)</td>
<td>0.0712*** (0.0065)</td>
</tr>
<tr>
<td>$\beta_2$ (March 2015 onward)</td>
<td>-0.0194*** (0.0032)</td>
<td>0.0214*** (0.0032)</td>
<td>-0.0171*** (0.0065)</td>
</tr>
<tr>
<td>$\beta_3$ (January 2016 onward)</td>
<td>-0.0279*** (0.0031)</td>
<td>0.0106*** (0.0033)</td>
<td>0.0163*** (0.0012)</td>
</tr>
<tr>
<td>$\gamma$ (Subsidized hires)</td>
<td>. 0.0134*** (0.0003)</td>
<td>. (0.0003)</td>
<td>. (0.0004)</td>
</tr>
</tbody>
</table>

|                  | (3) Model 3       | (4) Model 4         |                         |
| Time Dummies     | Yes               | Yes                |                         |
| Firm FE          | Yes               | Yes                |                         |
| Firm Specific Trend | No                | No                 |                         |
| Observations     | 2,900,159         | 2,900,159          | 1,248,091               |
| R-squared        | 0.0042            | 0.149              | 0.0017                  |
| Number of id     | 62467             | 62467              | 26601                   |

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Perverse effects of Marginal Reforms

- We focus now on individual behavior
- What are the incentive of switching between jobs with graded security?
- There are two effects at work
  1. More labor demand from firms and thus more incentives to move
  2. Yet, workers under the previous EPL regime (with art. 18) fewer incentives to change jobs
- Which of the two effects will dominate?
Empirical strategy

- We take all individuals with a open ended contract
- Treated individuals are those individuals who are hired with a open ended contract before March 2015 that are working in firms above 15 employees
- Control are other workers hired with open ended contracts in smaller firms
Job to job transitions in treated and control firms

b to Job on open ended: workers with old protection (treated) and other workers (controls)

Year-Month

13m12 14m12 15m3 15m12 16m12

workers with old protection workers without old protection
Diff in Diff estimates in Control and Treated Jobs/Firms
Conclusions

- **Mobility** increased overall in the aftermath of graded security (threshold passing, mobility and job reallocation measures)
- **Open ended** hiring per firm increased mainly because of hiring subsidy
- Increase in transformations of fixed term contract in open ended contracts
- No visible effect on hires in **fixed-term** contracts
- **Firing** per firm increase concentrated on large firms
- Role of GS more visible on the firing margin
- **Job to job transitions** reduced among individuals protected by the old rules.
- Problem for flow reforms: may reduce labor reallocation