Reforming the Apprenticeship Contract In Italy
A natural experiment

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1. Introduction

- **Youth**: difficult to integrate in the labour market

- **Apprenticeship** in Italy: in 2013 4% of all the employees (20% for < 29 years)

1. **Vocational training**

2. **Lower remuneration & hiring subsidy**: 2/3 of SSC (≈ full in small firms)

- **Very expensive**: 32% of all active labour market policies. Few impact evaluations

- **On individual transition to open-end contracts**:
1. The apprenticeship reform: Law 30/2003

- **Contrasting results also due to the different apprenticeship regimes?**

<table>
<thead>
<tr>
<th></th>
<th>Before reform</th>
<th>After reform</th>
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</thead>
<tbody>
<tr>
<td><strong>Age eligibility</strong></td>
<td>&lt; 25</td>
<td>&lt; 30</td>
</tr>
<tr>
<td><strong>Training</strong></td>
<td>External authorities</td>
<td>External and Internal</td>
</tr>
<tr>
<td><strong>Length</strong></td>
<td>1.5 - 4 (5) years</td>
<td>usually 2.75-4.5 years (set by CBAs)</td>
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<tr>
<td><strong>Lower remuneration</strong></td>
<td>Set by sector CBAs</td>
<td>Minimum wage to the CBAs</td>
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- Internal training: more difficult to verify **employers’ compliance**
- Also **noncompliance** of **external authorities** due to scarce resources
- In 2004, 25% apprentices in training & 17% completed the compulsory 120 hours
- Important to understand effects on-the-job: **main training approach** today
2. Economic theory: expected effects

- **Minimum wage** should ↓ hiring and ↓ churning behaviour
- **On-the-job training**
  - Enhance firm-specific human capital $\uparrow F'(L^p)$: $\uparrow$ hiring $\downarrow$ churning
- **External training** might enhance general-human capital and employability in other firms
- **Compliance** with the training: employers < regional authorities?
2. Economic theory: expected effects

• **Minimum wage** should ↓ hiring and ↓ churning behaviour

• **On-the-job training**
  
  – Enhance firm-specific human capital  \( \uparrow F'(L^p) \):  \( \uparrow \) hiring ↓ churning

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• **Compliance** with the training: employers < regional authorities?
2. Identification Strategy

• Method of implementations:
  – Regional Laws
  – Specific sector CBAs
  – Pilot tests
• Dual system of apprenticeship regime between 2005 and 2011
• Firms cannot decide regime to use

1. Preliminary analyses on self-selection - LFS:
   A. Differences in regional labour market characteristics 2000-2003
      I. Only difference is % apprentices
   B. Δ migration & commuting to/from implementing regions (DiD)
2. Identification Strategy

2. Average Treatment effects on the Treated apprentices (ATT):
   A. Future transitions to employment statuses: new versus old regime
   B. CBPS weighting estimator on a large set of observables
   C. Administrative data (INPS)

3. Intention-to-Treat on the eligible youth (ITT):
   A. Youth employment, transition from non-empl. & contract diffusion
   B. DiD
   C. LFS data
3. ATT: transition from apprenticeship

- **Inflow sample** of 18,000 apprentices in 2007
- Followed with a monthly frequency for the following **five years** after hiring
- **ATT**: reformed apprenticeship compared to the old one (10,758 treated)
- Weighting estimator controlling for differences in 117 **observable** characteristics
  - **Full history** in salaried private sector employment, collaborators & unemployment
  - **Last job characteristics** (type of contract, reason for termination, salary, tenure...)
  - **Hiring information** (26 sector dummies, firm dimension, seasonal apprenticeship...)
- Standard Inverse Probability Weighting estimator (IPW):

\[
\text{ATT} = \frac{1}{N_1} \sum_{i}^{N} D_i Y_i - \frac{1}{N_0} \sum_{i}^{N} \left( \frac{\hat{P}_i(X)}{1 - \hat{P}_i(X)} \right) \left( \frac{1}{N_0} \sum_{i} \hat{P}_i(X) \ast (1 - D_i) \right) (1 - D_i) Y_i
\]
3. Covariate Balancing Propensity Score

- CBPS proposed by Imai and Ratkovic (2014)
- Misspecifying the PS model can provide weights unable to balance the covariates, which might bias the ATT
- The CBPS corrects for small misspecification and estimate $\hat{P}_i(X)$ maximizing both the log-likelihood and the balancing of the X
- Several robustness tests
3. Wage & Heterogenous effects

- **Minimum wage** is binding: +18%
- In 5 years: % $\Delta$ **cumulated remuneration** > % $\Delta$ **full-time working days**: + 8% wage
- Effect on transformation mostly on firms with more than 10 employees
- Ineffective in small
- **Possible reasons**
  1) low internal training capability
  2) higher incentive to churn
3. Apprenticeship vs other temporary – CBPS

- Inflow sample other temporary contracts: 25,000 controls
- Apprentices: lower wage at hiring (-15%/-31%). Small differences 5 years later
4. Intention-to-Treat: eligibility effect

- **LFS data** on the period 2004q1-2011q1
- **DiD**: on regional implementation. Placebo OK
- Few clusters (regions): wild cluster bootstrap-t

1. **Insignificant** effect on the employment rate:
   - ATT on apprentices not large enough?

2. **Transition from non-employment** (1 year before) to salaried private sector
   - aged 25-29: +14.2% - expected due to large hiring subsidy

3. **Contract diffusion**:
   - aged 25-29: ↑ apprenticeship ↓ temporary
5. Conclusion

- High substitution between flexible contracts: in line with Cappellari et al. (2012)
- ↑ transition from non-employment on new eligible
- Firm-specific human capital & minimum wage floor effective:
- ↓ early drop-out (-11%) and ↑ transformation (+28.6%) of apprentices
- Smaller firms absorb 2/3 of the hired apprentices. Need to:
  - find other solutions to boost conversions
  - reassess the merit of the higher tax reduction
Thank you for the attention!
5. Discussion: ATT > ITT

1) **Lack of power:** ATT not large enough

2) **Substitution effect:** spillovers on other youth

3) **Identification strategy limitations:** Downward biased ITT
   - Partial treatment on control regions due to activation by CBAs

4) **Limits of the LFS:** Downward biased ITT
   - LFS shows fewer apprentices w.r.t. administrative data
   - 9.2% vs 19.5% in 2010
% non-employed 1, 2, 3 or 4 months after the exit

Month of exit

1 month 2 months 3 months 4 months