



***Cambiamenti organizzativi,
gestione delle risorse umane, relazioni industriali
e propensione all'innovazione***

**PERCHÈ LA
PRODUTTIVITÀ IN ITALIA
È COSÌ BASSA?**

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Gruppo di ricerca:

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Agenda

-  Research questions
-  Background literature
-  Research context
-  Datasets
-  Variables
-  Methodology and results
-  Summing up
-  Conclusions
-  Publications



1. Research questions



Which factors of the institutional setting (industrial relations system and contractual flexibility instruments) **affect the firm's innovative activities** (technological innovation, organizational changes, ICT and training policies)?



Which are the relations between the several components of the **innovation activities and the firm economic performance** (labor productivity)? Focus on **complementarities** among innovation activities



2. Background literature (I)

Industrial Relations and Flexibility → Innovative Performance

- **Institutional approach to innovation**
(Coriat, Weinstein 2002)
- **Unions/Industrial relations and innovation activities: positive/negative impact**
(Boheim, Booth 2004; Blundell, Griffith, Van Reenen 1999; Menezes-Filho, Van Reenen 2003; Metcalf 2003)
- **Flexibilities and innovation activities: positive/negative impact**
(Arulampalam, Booth 1998; Michie, Sheehan 2003; Arvanitis 2005)



2. Background literature (II)

**Innovation activities → Economic Performance
(labour productivity)**

- **Organizational changes and economic performance: positive impact**
(Cappelli, Neumark 2001; Zwick 2004, 2005; Arvanitis 2005; Black, Lynch 2001; Janod, Saint Martin 2004)
- **Technological innovation, ICT and economic performance: positive impact**
(Mairesse 1995; Morrison 1997; Bartel, Ichniowski, Shaw 2005)
- **Training and economic performance: positive impact**
(Black, Lynch 1995; 1996; Dearden, Reed, Van Reenen 2000; Zwick 2005; Conti 2005)

3. Research context

- Local production systems of **Emilia-Romagna**



- Data on **SMEs** from
- surveys (managers and trade union delegates)
 - balance sheets

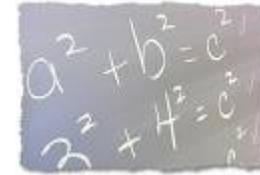
Firm level data on **union delegates/management relations**

4. Datasets



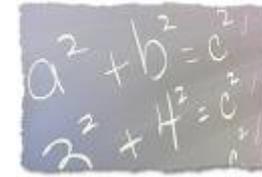
- Mainly **manufacturing** firms with at least **20 employees** located in the provinces of Emilia-Romagna (Bologna, **Reggio Emilia**, Modena, Ferrara)
- **Questionnaires** administered in **1998** (BO), **2002** (RE), **2003** (FE), **2005** (RE, FE), **2007** (MO), **2008** (FE) and allowed us to collect information over many years (1998 →)
- The overall number of firms is **representative of the LPS**
- The interviews were conducted on the basis of a **representative sample of the firm population**
- The % of **respondents** varies between **75% and 65%** of the samples
- **Balance sheets data** available before and after the interview data (1995-2006) (RE)

5. Variables



Structural characteristics and control variables	Sector, size, firm typology, social responsibility, delocalization, strategy pursued, product markets, international openness, labor force composition (gender, skill, education, labor contracts), past economic performance, etc.
Balance sheets data	Labor productivity, profitability of the firm, labor cost, tangible and intangible investments (economic and patrimonial accounts)
Organizational changes	Organizational work practices, individual and collective rewards, in/out-sourcing, delocalization, off-shore policy, relations among firms, changes in worker conditions
Technological innovations	Innovation input and innovation output (R&D, R&D expenditure, collaborations among firms, product, process, incremental, radical, quality control innovations)

5. Variables



Training	Training coverage, training modalities, specific competences (informatics, economics and law, technical, interpersonal relationship), advantages from training
ICT	ICT adoption in communication, in production and in the management of internal activities and external relations
Industrial relations	Formal and informal relations: bilateral technical commissions (BTC), second level bargaining, managers and trade unions behaviours Management/Union interaction on changes, firm issues, flexibilities; union density, BTC activity, intensity of firm level bargaining
Flexibility	Coverage of contractual flexibility, conversion of flexible contracts in long-lasting ones, changes in labor flexibility (wage, temporal, functional, organizational flexibilities)

6. Methodology ... (I)

**Industrial Relations
and Flexibility** → **Innovative Performance**

$$\begin{aligned} \text{Innovations} = & \beta_{0i} + \\ & + \beta_{1i} [\text{structural variables}] + \beta_{2i} [\text{industrial relations variables}] + \\ & + \beta_{3i} [\text{flexibility variables}] + \beta_{4i} [\text{past economic performances}] + \\ & + \varepsilon_i \end{aligned}$$

6. ... and results (I)

<i>Dependent Variables</i> <i>(LPS Reggio Emilia)</i>	<i>INNO_TECH</i>	<i>INNO_ORG</i>	<i>INNO_TRAIN</i>	<i>INNO ICT</i>
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Specifications differ only in (1) Only Union Density
terms of industrial (2) Union Density + All the other industrial relations variables
relations variables used

Structural Variables

Size Dummy
(20-99 emp.)

Negative relation in specification (1)
Not significant in specification (2)

Industrial Relations

Union density

Negative relation only in specification (1)
Not significant in specification (2)

Industrial relations:

Union
delegates/management
relations

Positive relations when significant



6. ... and results (I)

Dependent Variable *INNO_TECH* *INNO_ORG* *INNO_TRAIN* *INNO_ICT*

*Specifications differ only
in terms of industrial
relations variables*

(1) Only Union Density
(2) Union Density + All the other industrial relations variables

Flexibilities

Short term contracts Not significant in both the specifications

Internal flexibilities:
wage, temporal,
functional, organizational

Positive relations when significant in both the specifications

Past Performance Variables

Productivity,
Profitability, Labor Cost

Positive relations when significant in both the specifications
(labur cost with negative sign for INNO_TECH)

6. Methodology ... (II)

Innovation activities → **Economic Performance
(labour productivity)**

$$\begin{aligned} \text{Labour Productivity} &= \beta_{0i} + \\ &+ \beta_{1i} [\text{structural variables}] + \beta_{2i} [\text{technological innovations}] + \\ &+ \beta_{3i} [\text{organizational innovation}] + \beta_{4i} [\text{training}] + \beta_{5i} [\text{ICT}] \\ &+ \varepsilon_i \end{aligned}$$



6. ... and results (II)

Dependent Variable:
Labor productivity

Structural Variables

Size Dummies Not significant in all the specification

Training

Positive relations when significant
Specific training aspects with the strongest robustness: overall training, coverage of training activities and competences to which training is addressed

Technological Innovations

Positive relations when significant
Specific technological innovation aspects with the strongest robustness:
overall technological innovation, innovation output more effective than innovation input

Organizational Innovations

Positive relations when significant
Specific organizational innovation aspects with the strongest robustness:
overall organizational change, reward system



6. ... and results (II)

Dependent Variable:
Labor productivity

ICT (2SLS for the ICT covariates because endogenous)

INNO_ ICT
(predicted values)

Positive relations when significant

ICT supporting the
production;
ICT supporting the
production *ICT for
communication

Not significant

Innovation Interactions

INNO_TECH * INNO_ORG

Positive relations when significant
Evidence of synergies (complementarities) among
innovation practices

INNO_TECH * INNO_ ICT



7. Summing up (I)

- Positive relations between **cooperative industrial relations** and **innovation** activities: training and organizational changes show the strongest linkages with industrial relations
- **Internal flexibilities** are positively related to **innovation activities**; contractual flexibility (short term contracts) does not influence innovation activities



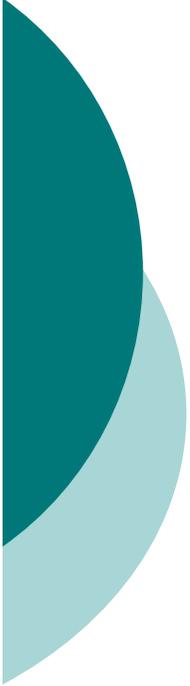
7. Summing up (II)

- **Innovations** can be **ranked** in terms of their significant **relations with productivity**: 1) training activities; 2) technological innovation; 3) organizational innovation; 4) ICT
- **Training activities** show the strongest relations **with labor productivity**: increasing importance of human capital in economies where knowledge is one of the main sources of competitive advantage
- **ICT** show the weakest relations **with labor productivity**: lacking of integration with other innovation aspects



8. Conclusions

- **Firm size** weakly significant for **innovations** and no significant for **labor productivity**
- Strong evidence of “**complementarities**” between **innovation activities**
- Combining the results of the analysis we can state that **cooperative aspects of the industrial relations** system work as indirect drivers of higher **productivity**
- **Small firm size**, at the margin, plays a **negative role** as indirect linkage to performance through innovations



8. Conclusions

- Fostering the diffusion of **a production “model”** jointly based on:
 - (1) union-delegates/management cooperative relations
 - (2) innovation intensity and complementarities of innovation practicesshould be of primary interest for **policy makers** because of the positive nexus, indirect and direct respectively, the two aspects have with productivity



9. Publications in Journals (from 2004)

- Antonioli D., Mazzanti M., Pini P., Tortia, in *Economia Politica*, 2004
- Antonioli D., Pini P., in *Istituzioni e Sviluppo Economico*, 2004
- Mazzanti M., Pini P., Tortia E., in *Rivista di Politica Economica*, 2004

- Antonioli D., Pini P., in *Quaderni di Rassegna Sindacale*, 2005
- Bianchi A., Pini P., in *Istituzioni e Sviluppo Economico*, 2005
- Delsoldato L., Pini P., in *Economia e società regionale*, 2005
- Guidetti G., Mazzanti M., in *Reflets et perspectives de la vie économique*, 2005
- Mazzanti M., Zoboli R., in *Economia Politica*, 2005
- Pini P., Santangelo G., in *Economics of Innovation and New Technology*, 2005

- Mazzanti M., Pini P., Tortia E., in *Journal of Socio-Economics*, 2006

- Antonioli D., in *Economia e società regionale*, 2007
- Guidetti G., Mazzanti M., in *Human Resource Management Journal*, 2007
- Guidetti G., Mazzanti M., in *Journal of Socio-Economics*, 2007
- Mazzanti M., Montresor S., Pini P., in *Innovation: Management, Policy & Practice*, 2007
- Mazzanti M., Montresor S., Pini P., in *The ICFAI Journal of Industrial Economics*, 2007

- Antonioli D., in *Economia Politica*, 2008
- Antonioli D., Mazzanti M., Pini P., in *Economics and Industrial Democracy*, 2008
- Guidetti G., Mancinelli S., Mazzanti M., in *The ICFAI Journal of Applied Economics*, 2008
- Guidetti G., Mazzanti M., in *International Journal of Human Resources Development and Management*, 2008
- Mancinelli S., Mazzanti M., in *Annales of Regional Science*, 2008
- Mancinelli S., Mazzanti M., in *The ICFAI Journal of Industrial Economics*, 2008
- Mazzanti M., Montresor S., Pini P., in *Entrepreneurship and Regional Development*, 2008
- Mazzanti M., Zoboli R., in *Environmental Science*, 2008
- Mazzanti M., Zoboli R., in *International Review of Applied Economics*, 2008