



ESPANET EUROPE 2019
Stockholm, 5-7 September

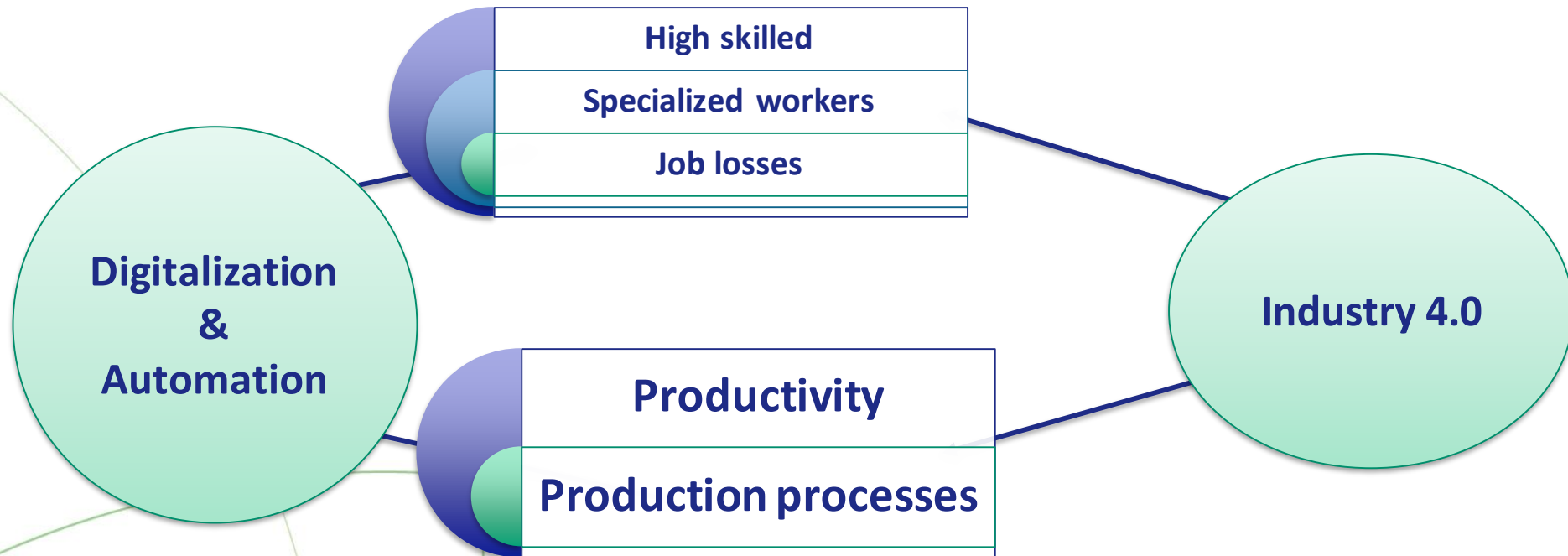
Industry 4.0. Autonomy and control at work: the Italian case

Francesca Bergamante, Tiziana Canal, Marco Marucci

THE EUROPEAN NETWORK FOR
SOCIAL POLICY ANALYSIS



- **THEORETICAL FRAMEWORK AND OBJECTIVE**
- **“AUTONOMY” AND “CONTROL” OVER TIME:**
 - **The elementary symptoms**
- **SUMMARY INDICATORS OF AUTONOMY AND CONTROL:**
 - **Methodology**
 - **Analysis**
- **CONCLUDING REMARKS**



- Reorganization processes related to technological development will lead to an **increase in the demand for qualified work** (Autor, 2015, 2019; Kiley, 1999)
- Knowledge and **human capital** become key factors to ensure the solidity and sustainability of enterprises (Tronti, 2015) → **Industry 4.0 Programmes**
- Use of knowledge and skills in human resources involves **production changes and reorganization of labour** (Sai, 2017).

What about the quality of work?

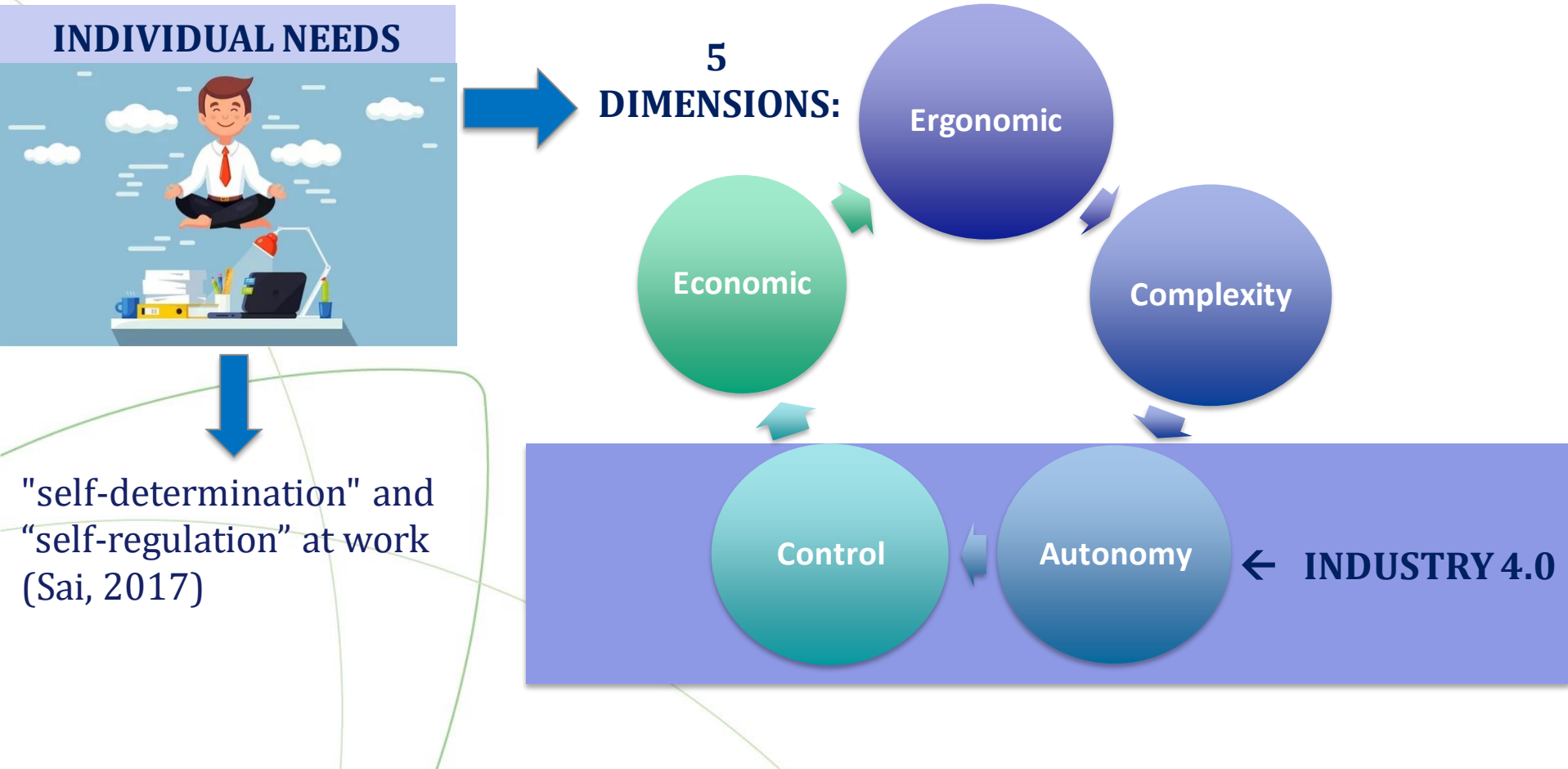
Use of technology is an input in the cognitive professional activities often associated with **higher autonomy and control at work**



We need to monitor in which way technological changes impact on **organizational models**, on the **work processes** and on the **quality of work**



In Italy a conceptual framework started between the late '70s and early '80s
Luciano Gallino and Michele La Rosa



Research questions:

- How the dimensions of **autonomy** and **control** have changed over time?
- Which **types of workers** were most affected by this trend?
- How (and which) **technologies impact** on these two dimensions?

Methodology:

Analysis of a set of "elementary symptoms" and of two composite indicators related to "autonomy" and "control" dimensions

Data: **Inapp - Quality of Work Survey** (sample survey) launched in 2002 and carried out in **2006, 2010 and 2015**

*Inapp conduces the QW-survey and operationalizes the dimensions according to Gallino and La Rosa approach and taking the cue from the **Eurofound - European Working Condition Survey (EWCS)***


AUTONOMY OF WORKERS




Increase (slowly) of repetitive/routine tasks
especially for temporary contracts,
women and less educated



More chance to choose/change order of tasks and duties
(who cannot choose decline from 45% in 2006 to about 30% in 2015)



The direct supervision has not decreased
especially for women and small companies (in Italy we record an historic rigidity
in self-determination of work schedules)



Decrease of workers who can choose or change “work intensity” and pace:
(before 2010 following market demand - after 2010 following performance
target and direct supervisor)

more automation and flexibility → more supervising ?

CONTROL ON WORK

General increase in the possibility for workers to choose strategies to be adopted and the objectives to be pursued
(from 25.3% in 2006 to 42.2% in 2015)



Increase of workers who declare to coordinate one or more colleagues
(more responsibilities → Industry 4.0 & Supervising model?)

less participation during the economic crisis, defined as chances to choose strategies and goals (2010 wave)

Decrease the share of workers having the possibility to plan their activities and to change work techniques and methods (in 2015 = 26,8%)

Methodology:

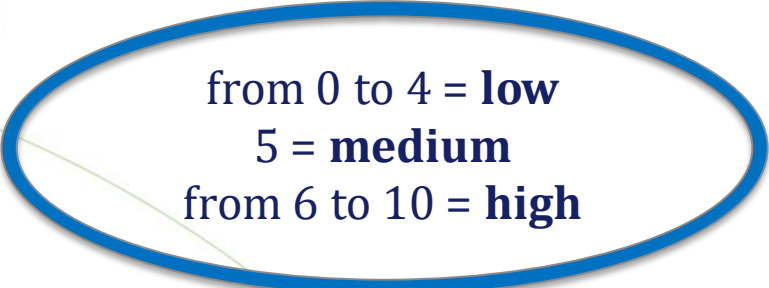
single variables are dichotomized by assigning to different responses a value equal to 1 in the cases of more autonomy and more control and zero in the other cases.



The algebraic sum of the elementary symptoms generates the **two composite indicators assuming values from 0 to 10**.

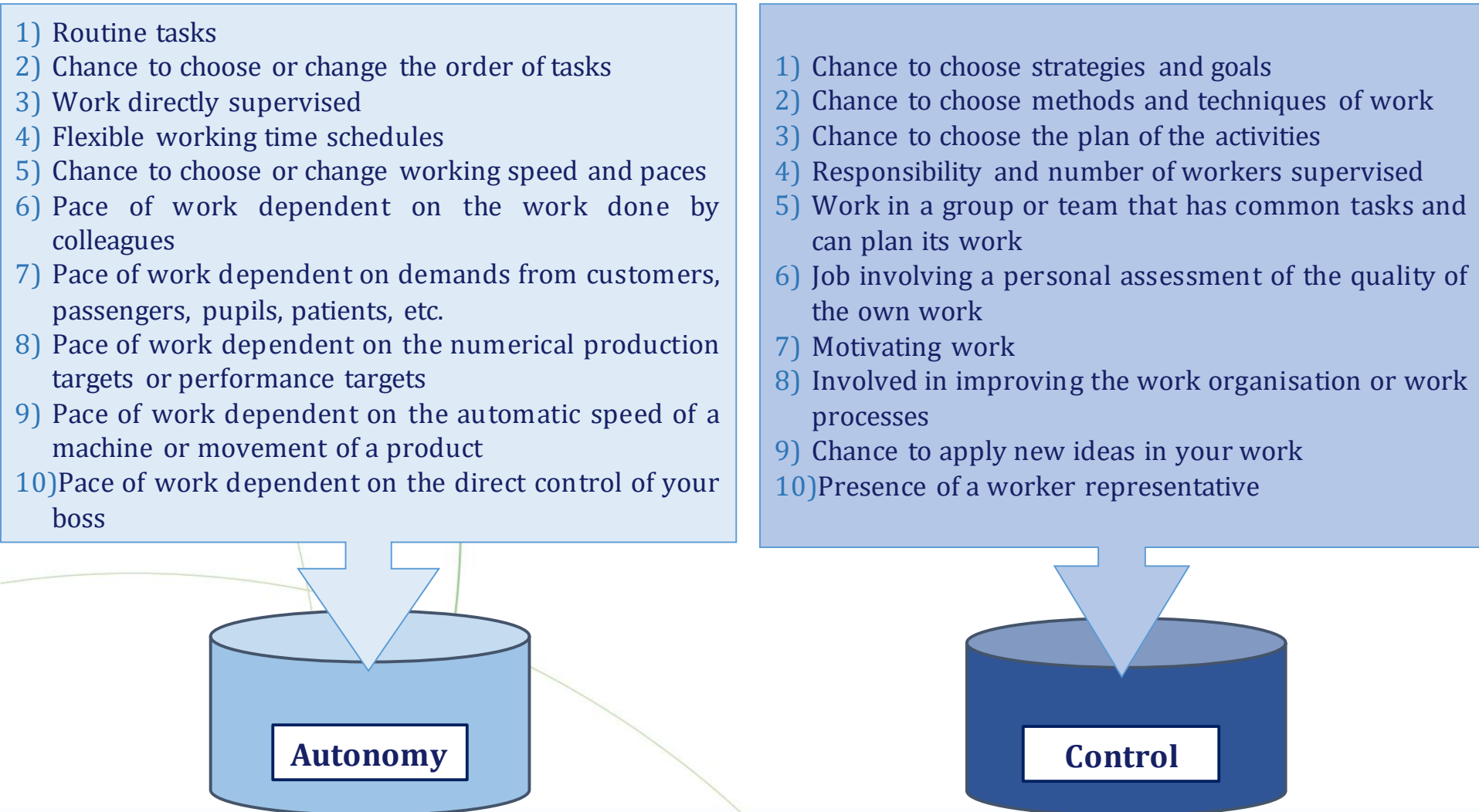


For a better understanding of the indicators and to compare them with some variables representing workers characteristics and their job (age, gender, profession, sector, etc.), the **two indicators are reclassified in three levels**:

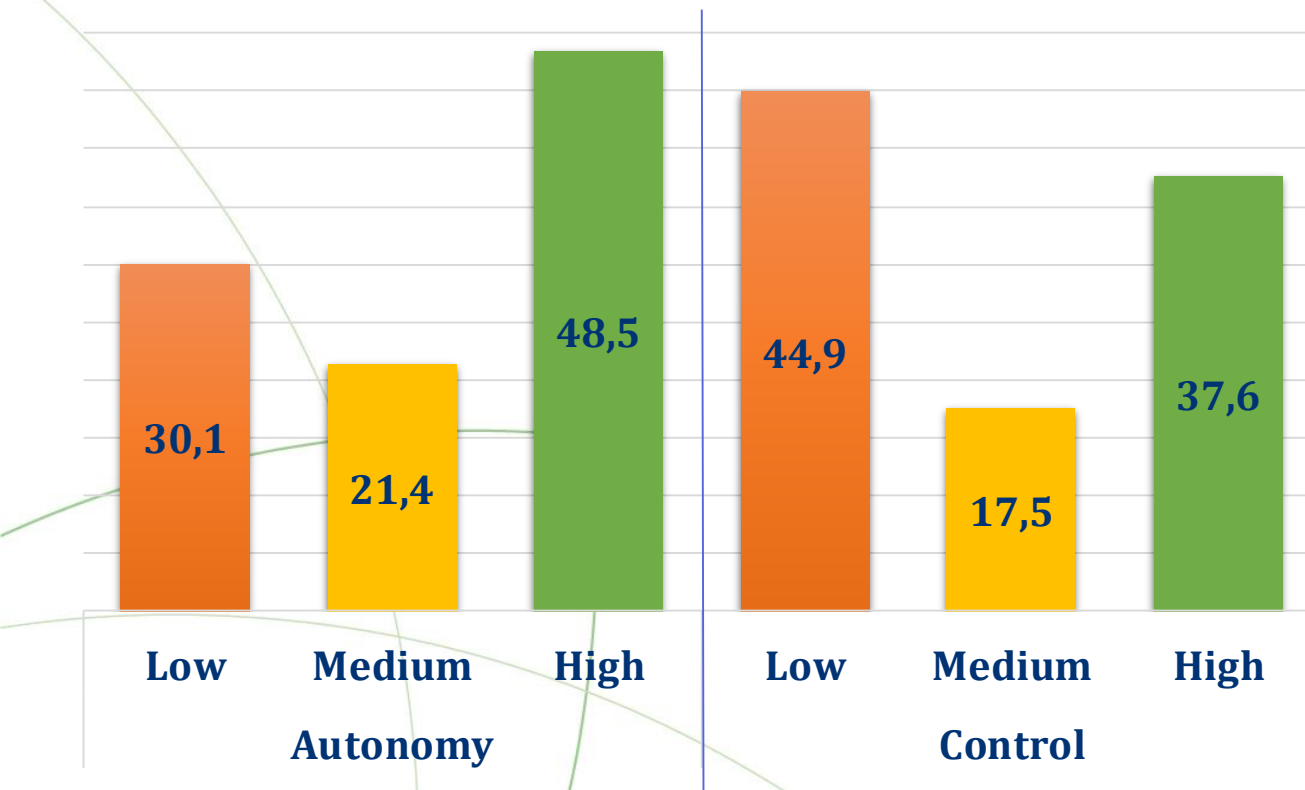


from 0 to 4 = **low**
5 = **medium**
from 6 to 10 = **high**

Elementary symptoms and comprehensive indicators

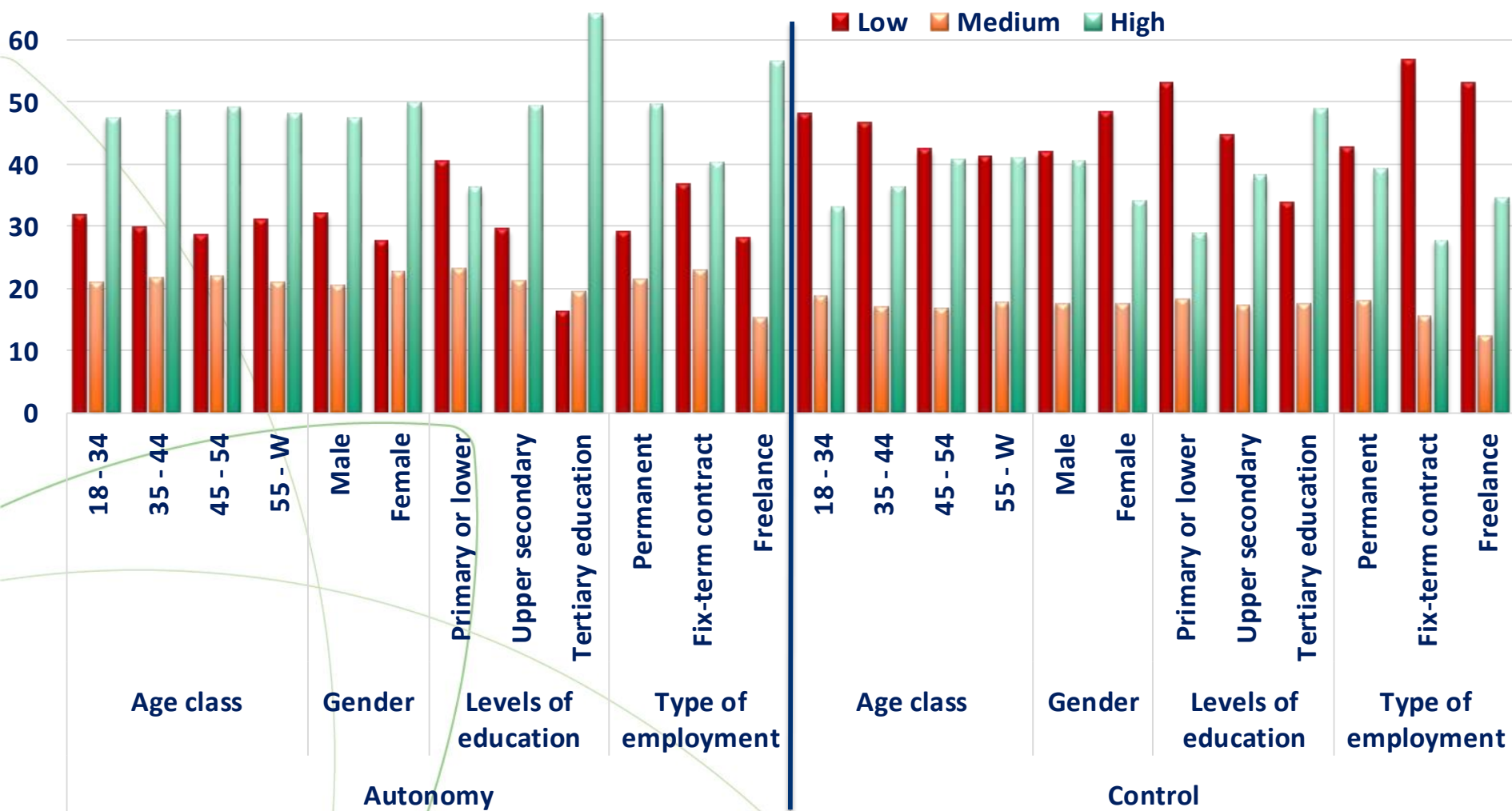


Employers distribution among summary indicators of autonomy and control Year 2015 (%)



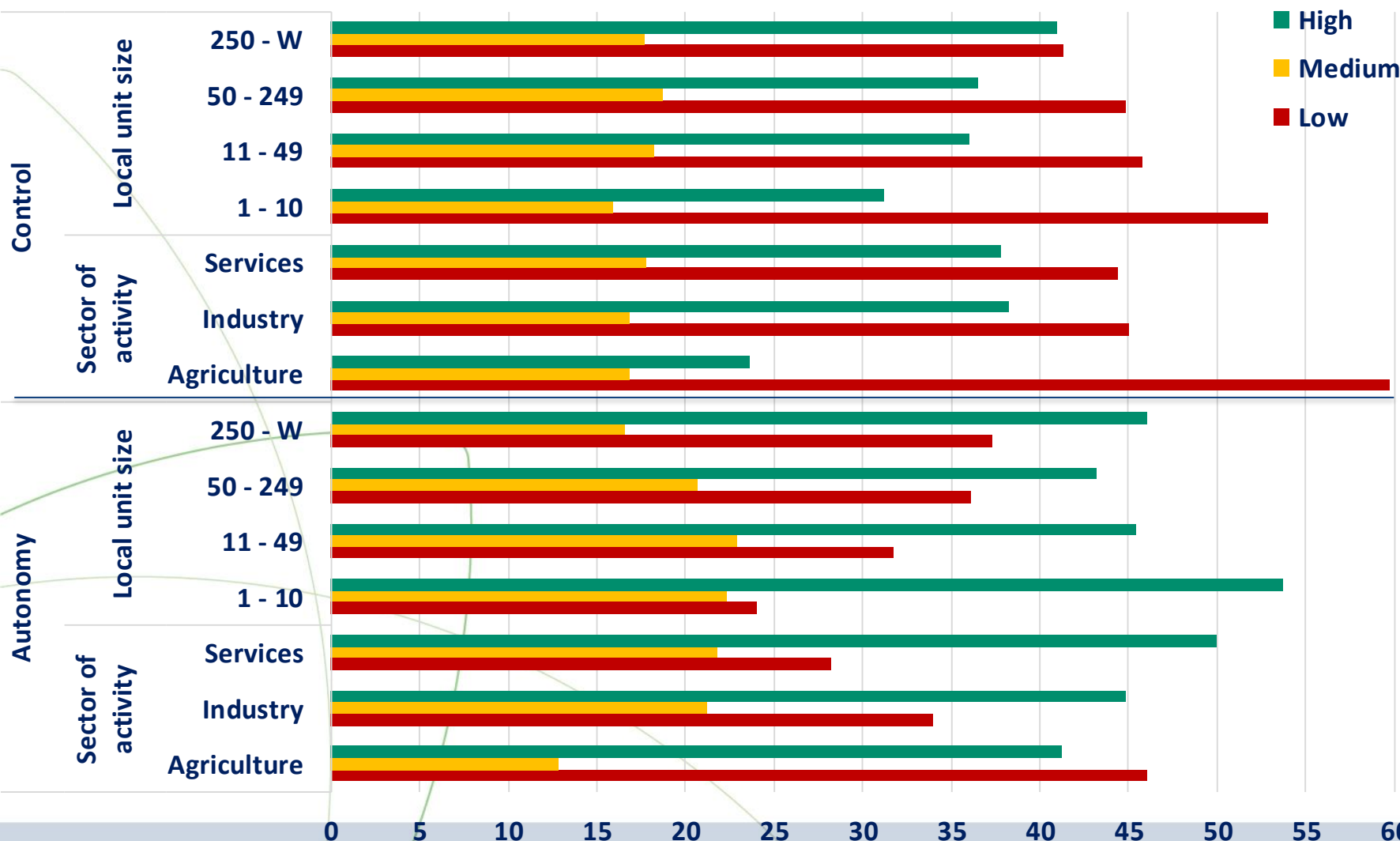
High and medium autonomy levels have a higher concentration than the corresponding levels relating to control

Autonomy and control by some characteristics of the worker, Year 2015 (%)



Autonomy and control: the key determinants

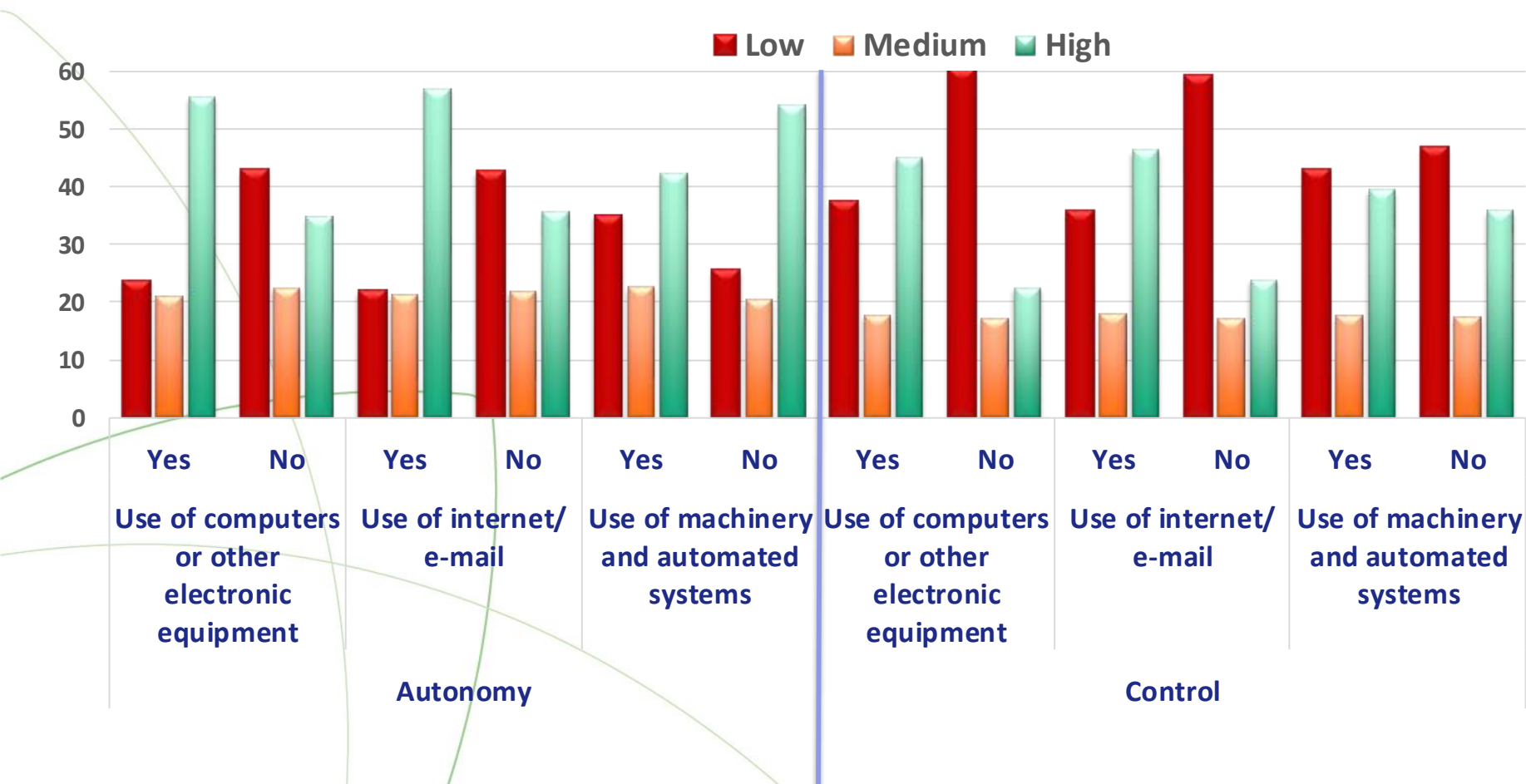
Autonomy and control by characteristics of the enterprises in which the worker is employed, Year 2015 (%)




Source: own calculations based on INAPP-QdL

Autonomy and control: the key determinants


Autonomy and control by use of technologies, Year 2015 (%)






The analysis of the **elementary symptoms** (historical trends) of autonomy and control highlights a scenario with

- **continuing transformations** that influenced the ability of workers to affect the performance of their work activities as well as those of the company.
- In general, the **years of the crisis seem to be a break point** between a starting period (2006) in which workers were polarized between high and low levels in autonomy and control and a final period (2015) in which a higher concentration is observed into intermediate levels.



The analysis of the **composite indicators** (2015) pointed out how some characteristics are still qualifying workers as more disadvantaged in their degree of autonomy and control:

- **Young people, women and workers with fixed-term contracts are the categories most penalized.** This confirms the well-known segmentation of the Italian labour market.



New trends are emerging in the relationship between autonomy, control and use of new technologies. **The impact of technologies is non-neutral for the working life:** the **use of computer** equipment or software is associated with high levels of autonomy and control, while **automation** affects both indicators negatively.

- Autor D. (2015). Why are there still so many jobs? The history and future of workplace automation. *The Journal of Economic Perspectives*, n.3, 2015, pp. 3-30.
- Canal T., Gualtieri V. (2018). Dentro il lavoro: qualità del lavoro, pratiche organizzative e risultati d'impresa. *Etica ed economia* (en linea).
- Centra M., Curtarelli M. e Gualtieri V. (2013). La 'via italiana' alla qualità del lavoro e il contributo dell'ISFOL. En Gualtieri V. (Ed.), *Le dimensioni della qualità del lavoro. I risultati della III indagine Isfol sulla qualità del lavoro. I libri del Fondo Sociale Europeo*, Roma: Isfol.
- Gallino L. (1983). *Informatica e qualità del lavoro*. Einaudi: Torino.
- Gallino L. (1978). *Dizionario di sociologia*, alla voce "sociologia del lavoro", pp. 390-400, Torino: Utet.
- Gualtieri V. (Ed.) (2016), *La qualità del lavoro durante la crisi economica: alcuni approfondimenti. I Libri del Fondo Sociale Europeo*, Roma: Isfol.
- Gualtieri V. Ed.). *Le dimensioni della qualità del lavoro. I risultati della III Indagine Isfol sulla qualità del lavoro. I Libri del Fondo Sociale Europeo*, Roma: Isfol.
- Kiley M. T. (1999). The Supply of Skilled Labour and Skill-Biased Technological Progress. *The Economic Journal*, 109 (458), p.708-724.
- La Rosa M. (1983). *Qualità della vita, qualità del lavoro*. Milano: Franco Angeli.
- La Rosa M. (1998). Il problema della qualità del lavoro. En La Rosa M. (Ed.). *Il lavoro nella sociologia*. Roma: Carocci.
- La Rosa M. (2000). *Dalla sicurezza alla qualità del lavoro*. Osservatorio Isfol, n. 2-3, Roma: Isfol.
- OECD (2017). *Skills strategy diagnostic report: Italy*. OECD.
- Sai M. (2017). *Industria 4.0: innovazione digitale e organizzazione del lavoro*. Quaderni di Rassegna Sindacale, n. 3 - 2017.

Francesca Bergamante – f.bergamante@inapp.org

Tiziana Canal – t.canal@inapp.org

Marco Marucci – m.marucci@inapp.org



INAPP - Istituto Nazionale per l'Analisi delle Politiche Pubbliche
Corso d'Italia, 33 - 00198 Roma - tel. +39.06.85447.1 - www.inapp.org