Labour market dynamics and new technologies

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A debate coming from far away

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- A great part of inventions (new improved machineries) was considered to be the outcome of workmen efforts to find out more effective ways to perform their job
- In the XIX century (1st IR) the Luddite movement drew attention to the nexus between new technologies and employment dynamics
- Ricardo and Marx elaborated a former systematic account of such nexus, within their theoretical framework.

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Two main hypotheses

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- *Substitution hypothesis*
- New technologies make existing competences obsolete.
- Workers' tasks in production replaced by machineries

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- *Compensation hypothesis*
- Classical approach: the introduction of new technologies engenders a number of dynamics that can counterbalance the initial *labour saving* impact of process innovations

Compensation mechanisms

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- New products: birth of entirely new economic branches where additional jobs can be created

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- New technologies may be able to perform tasks usually carried out by workers
- Labour market dynamics: changing relative prices
- *Labour* vs. *capital saving* technologies (Hicks, 1932)
- Labour saving technologies as a response to upward shifts of wages

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Skill-biased technological change

- ICT revolution
- Which effect prevails? Mixed results

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- A shift in the theoretical perspective: the displacement effect does not concern all kinds of jobs
- Some jobs are displaced, other jobs are created: complementary skills

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- Skill-biased technological change hypothesis: ICT revolution detrimental to low-skilled workers
- Increased demand for high-skilled workers (educational attainement)

Routines and tasks

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- Studying the impact of new digital technologies
- Another shift in the theoretical framing of the problem

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- Empirical evidence: job polarization
- observed faster growth of labor demand for high- and low-skill jobs relative to occupations in the middle of the wage spectrum

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- Another shift in the theoretical framing of the problem
- Empirical evidence: job polarization
- observed faster growth of labor demand for high- and low-skill jobs relative to occupations in the middle of the wage spectrum
- reflection of capital-labor substitution due to the increased efficiency of automated processes in carrying out particular work tasks accompanied by falling prices of computing power

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- Proxying the skills and competences associated to different occupations (Autor, Levy and Murnane, 2003)
- Distinction betweek routine, manual and abstract tasks

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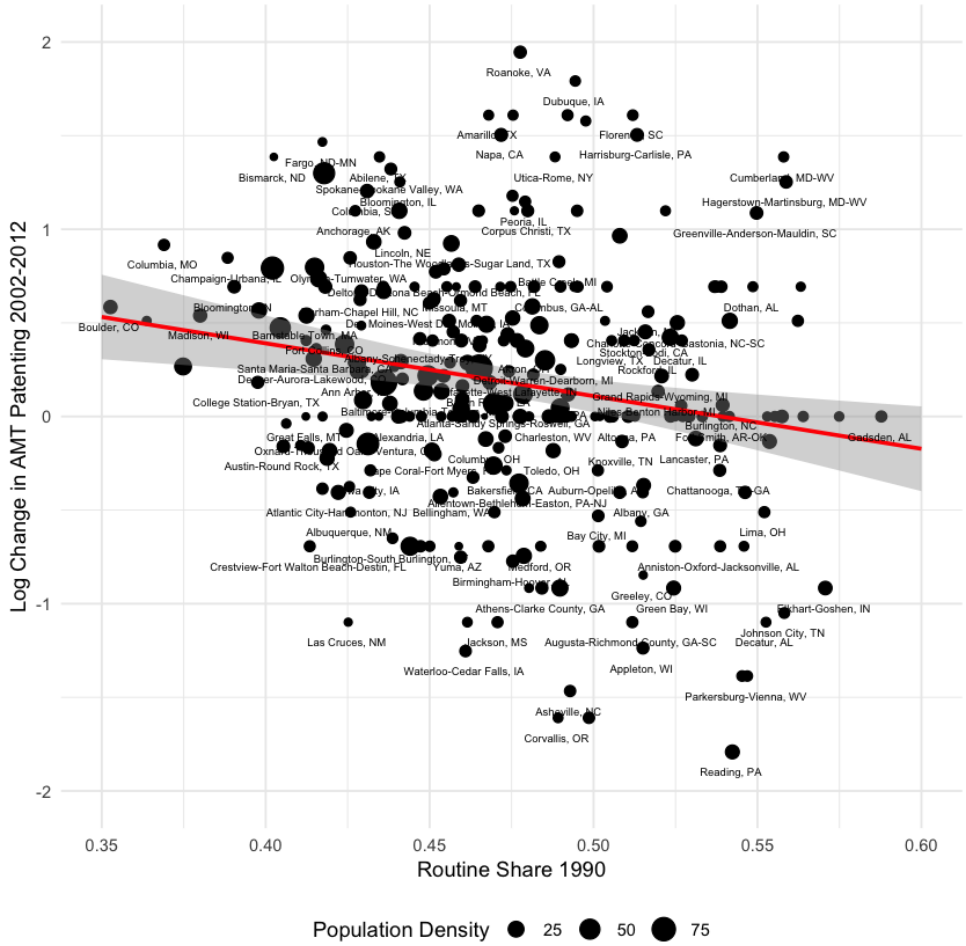
- Distinction betweek routine, manual and abstract tasks
- Evidence on the contractionary impacts of international trade and of technology on employment, especially in manufacturing industries.

Reversing the argument (I)



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Reversing the argument (I)

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- blue-collar type work tasks, and the attending skills, are essential for productivity and innovation (a bit in line with Adam Smith…)
- Innovation emerges not only from R&D (Rosenberg, 1976)
- at the core of blue-collar work is a type of technical labour that stands at the interface between engineering and manufacturing, and consists in tacit skills heavily reliant on experience of translating the requirements of each group for the other (Barley, 1996; Barley and Bechky, 1994).
- Preliminary evidence of a reverse effect

Other dynamics

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- Positive effects of labour mobility: learning by hiring
- labor mobility favors the flow of knowledge across competing firms, leading to a more balanced distribution of innovation capabilities
- Negative effects of labour mobility: learning by doing hypothesis
- Outflow of accumulated competences and tacit knowledge relevant to innovation dynamics
- Evidence of negative effects of workers turnover rate

Conclusions

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- The relationship between new technologies and employment are not univocal
- Combined positive and negative effects

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- Give me a one-handed economist! (cit.)
- The relationship between new technologies and employment are not univocal
- Combined positive and negative effects
- Policymakers should focus on both of them, supporting positive dynamics and mitigating the negative ones
- Vocational traing, lifelong learning, etc. are crucial

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Thank you for your attention!

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