Technequality

Understanding the relation between technological innovations and social inequality

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Maastricht University
School of Business and Economics

ROA

Database automation risks (D1.1) - Fieldwork

- Estimates of automation risks heavily rely on engineering bottlenecks and automatability of tasks (e.g., Frey & Osborne, 2017; Nedelkoska & Quintini, 2018).

- Our approach:
  - Ask 'experts'
  - Account for factors that influence the actual adoption of technologies
  - Assess increasing importance of tasks

- October 2019 → questionnaire to gather country-specific automation risk assessments for ISCO occupations

  Experts: firm owners (34%), managers (28%) HR professionals (5%), other (33%)

- Online survey by Kantar Public:
  - 8 Countries (CZ, DE, GB, ES, FR, NO, EE, NL)
  - Panel of professionals in commercial and non-profit sector in decision-making positions
  - All sectors and company sizes
  - Minimum target by country: 100
  - Total: 2,328 assessments provided by 868 'experts'

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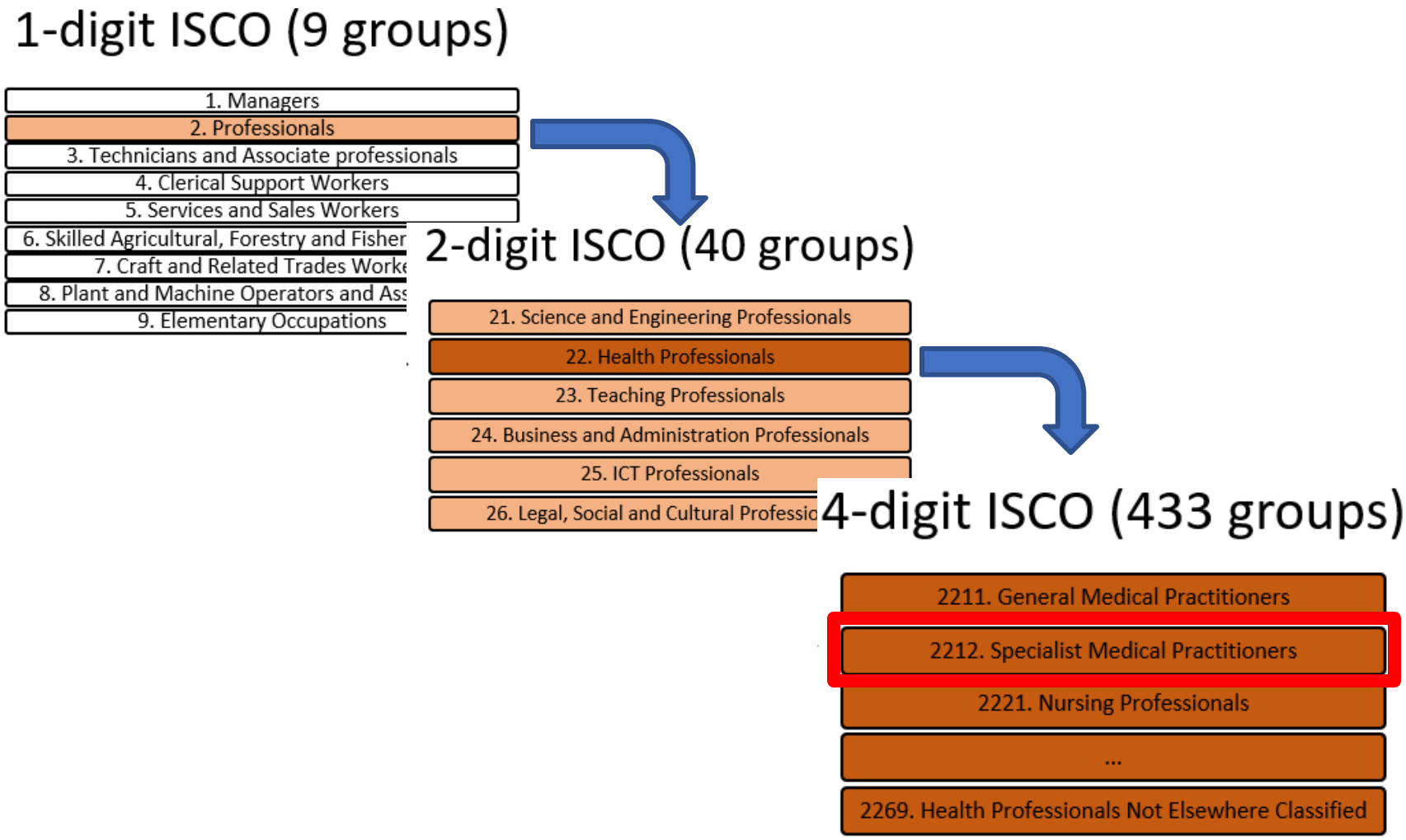
Database automation risks - Survey Design



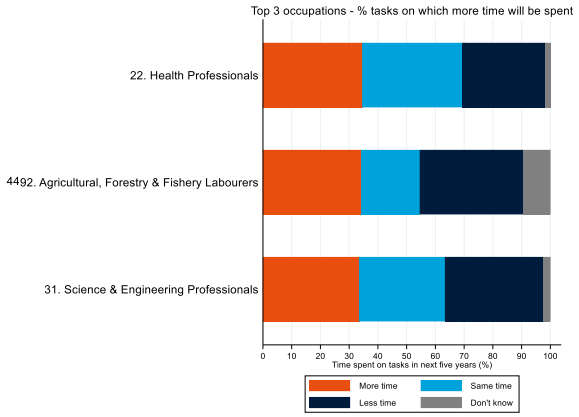
Database automation risks - Survey Design

Based on the most recent technological developments (e.g., in the fields of robotics, computerization, machine learning), could you indicate how much time workers will spend on the following tasks for the occupation of **Specialist Medical Practitioners** in the next five years?

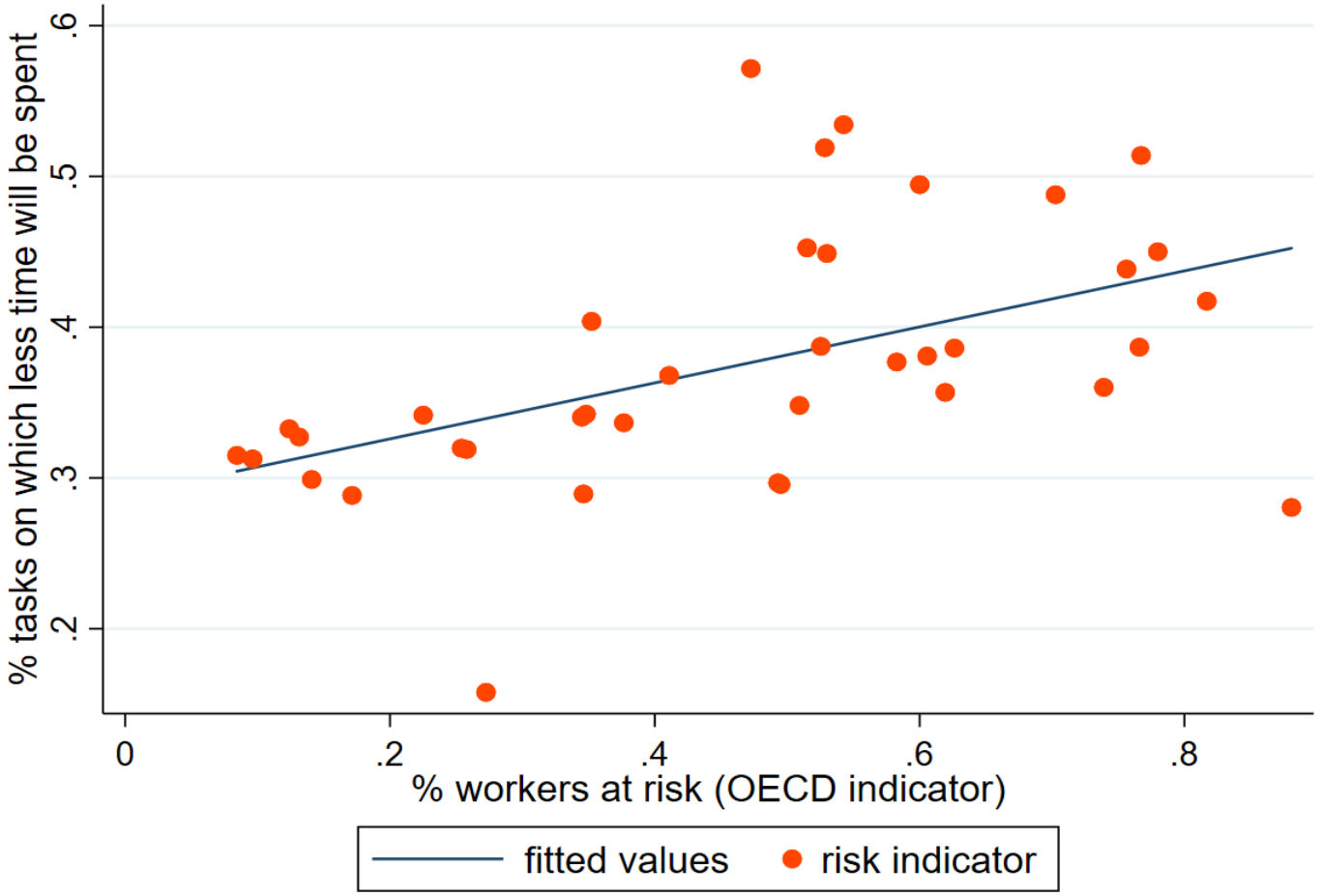
Please take into account factors that influence the actual adoption of technologies when providing your answer (i.e., the price of technologies; the design of the organisation, production processes and supply chains; legal constraints; and cultural expectations).

	Workers will not perform this task any longer	Workers will spend less time on this task	Workers will spend the same amount of time on this task	Workers will spend more time on this task	I don't know
(a) Performing surgery of a general nature					
(b) providing information to patients … about preventive measures, treatment …					
…					

Database automation risks - Results



Database automation risks - Results



Policy Brief #1

Integrates findings from:

1. Scenarios for the impact of intelligent automation on work (D1.2)
   - Thought experiment based on literature
   - 8 scenarios for impact of technology based on 3 key variables:

     1-speed of innovation, 2-speed of adoption, 3-impact on tasks.
2. Labour market forecasting scenario's for automation risks (D1.4)

https://technequality-project.eu/files/d71fd-policybrief1v20pdf

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Scenarios for the Future of Work - Overview

Potential future scenarios	Variables shaping the impact of automation on work					
	speed of innovation		speed of adoption		impact on job tasks	
	gradual	boom	slow	fast	mostly augmenting	mostly substitution
scenario 1 acute disruption						
scenario 2 incremental automation						
scenario 3 delayed disruption						
scenario 4 slow substitution						
scenario 5 abrupt volatility						
scenario 6 controlled adjustment						
scenario 7 delayed substitution						
scenario 8 gradual substitution						

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Table 1: Scenario assumptions

Factor	Scenario assumptions
Automation risk to occupations	1. High[7] 2. Medium 3. Low
Speed of adoption of automating technologies	Linear trajectory. Full adoption by: 1. 2035 2. 2055 3. 2075
Economic and socio-political barriers to their adoption	1. No employment protection. 2. Employment protection

Source: Heald, Smith and Fouarge (2019)

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     1-automation risk, 2-speed of adaptation, 3-barriers to adoption
   - +3 scenarios for low/med/high automation risk, and
     speed of adoption depends on relative wages,
     EPL is regional barrier to adoption.

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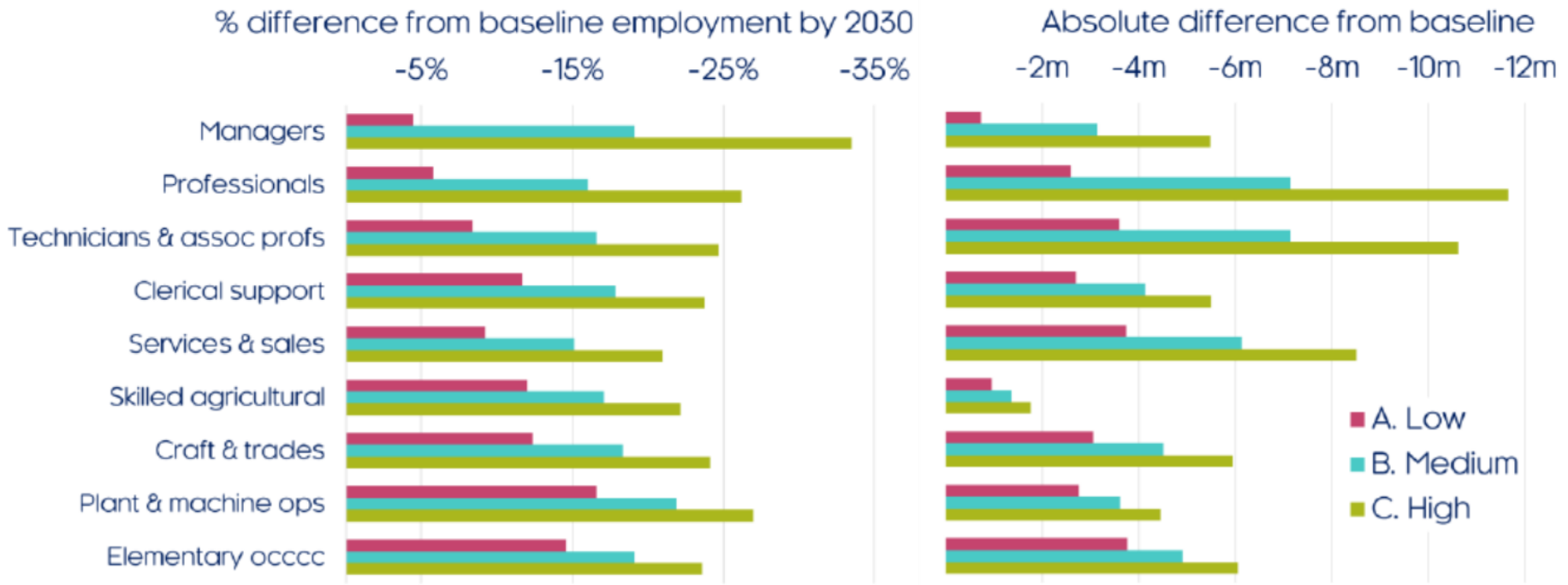
Figure 1: Additional scenario results (% difference from baseline by 2030 in EU-28 employment by ISCO-08 occupation)



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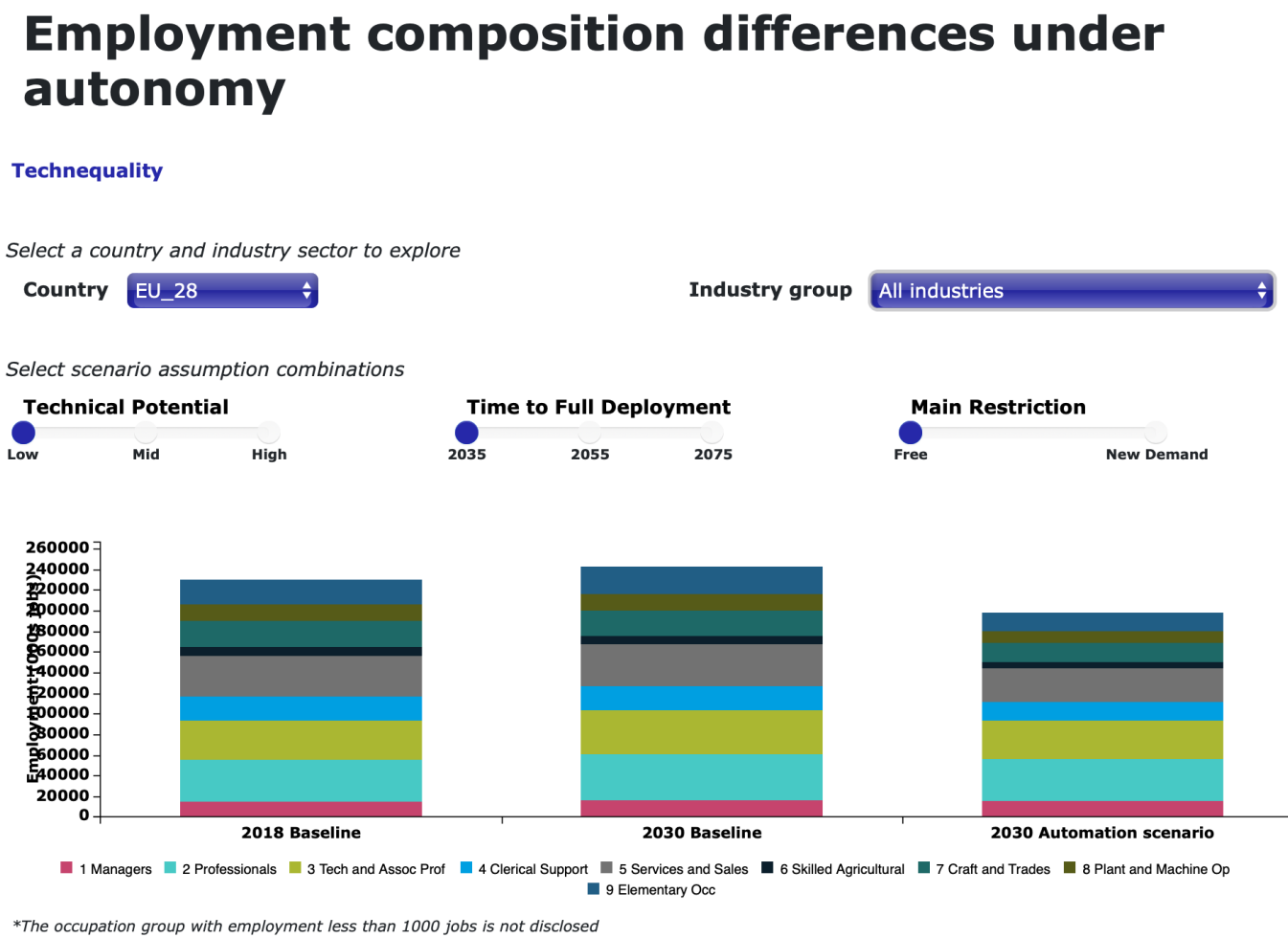
Total of 21 scenario's → [web app]



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Understanding robot adoption in local labour markets D1.5

- Local market = at least NUTS3 level (but NUTS2 for France and Italy)
- 2007 is the main cut-off year to avoid the Great Recession shock.
- Empirical strategies: based on ”Robot and Jobs: Evidence from US Labor Market” (Acemoglu & Restrepo, 2020)

Country	Long Diff.	Spatial unit	N. of obs.
Denmark	1994-2007	Municipality	99
Finland	1993-2007	Sub-region	70
France	1990-2006	NUTS2	22
Germany	1995-2007	District	402
Italy	2001-2011	NUTS2	19
Spain	1991-2011	NUTS3	52
Sweden	1993-2007	Local area	100
U.K.	1991-2007	Local authority district	352

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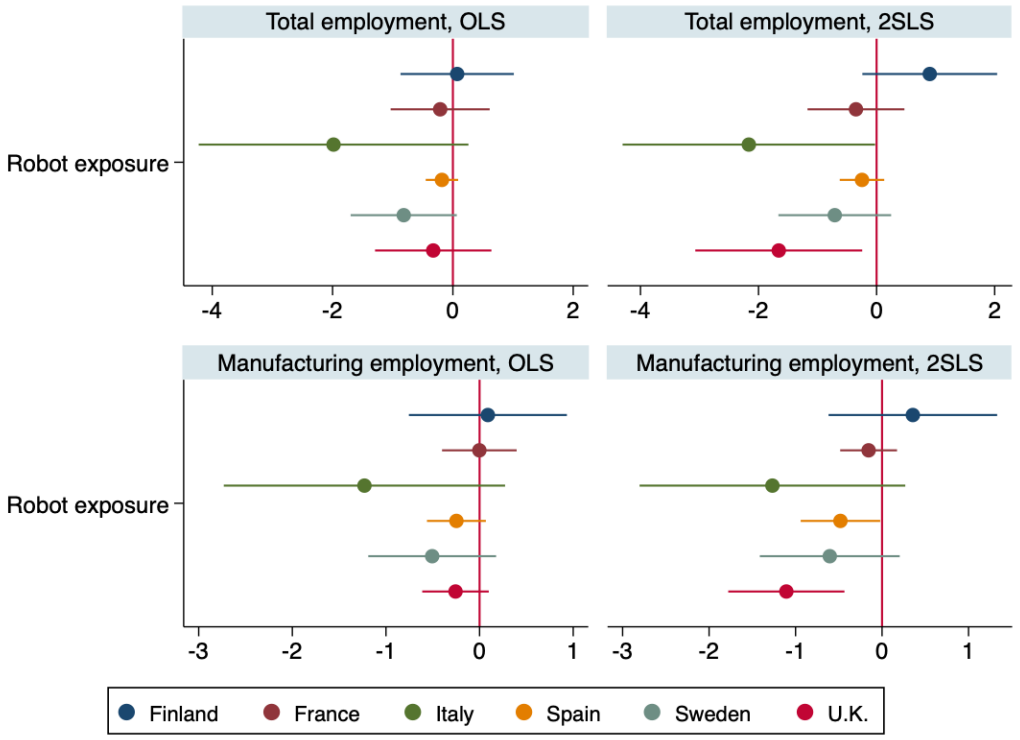
The impacts of robot exposure

- The implementation of industrial robots has general displacement effects on local labour market though not significant across selective countries, except Finland
- More jobs lost in the manufacturing sector
- 2SLS estimates share similar pattern as baseline OLS results



Note: Regressed with demographic and industrial controls as well as regional fixed effects

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