



European Foundation
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of Living and Working
Conditions

The tripartite EU Agency providing knowledge
to assist in the development of better social,
employment and work-related policies

Task profiles development in response to future jobs needs

Martina Bisello, Research Officer, Eurofound

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Outline of the talk

Part 1

- Recent employment shifts in the EU: the jobs-approach of the European Jobs Monitor (EJM)

Part 2

- Analysing the task content of jobs: the EJM framework of task indices

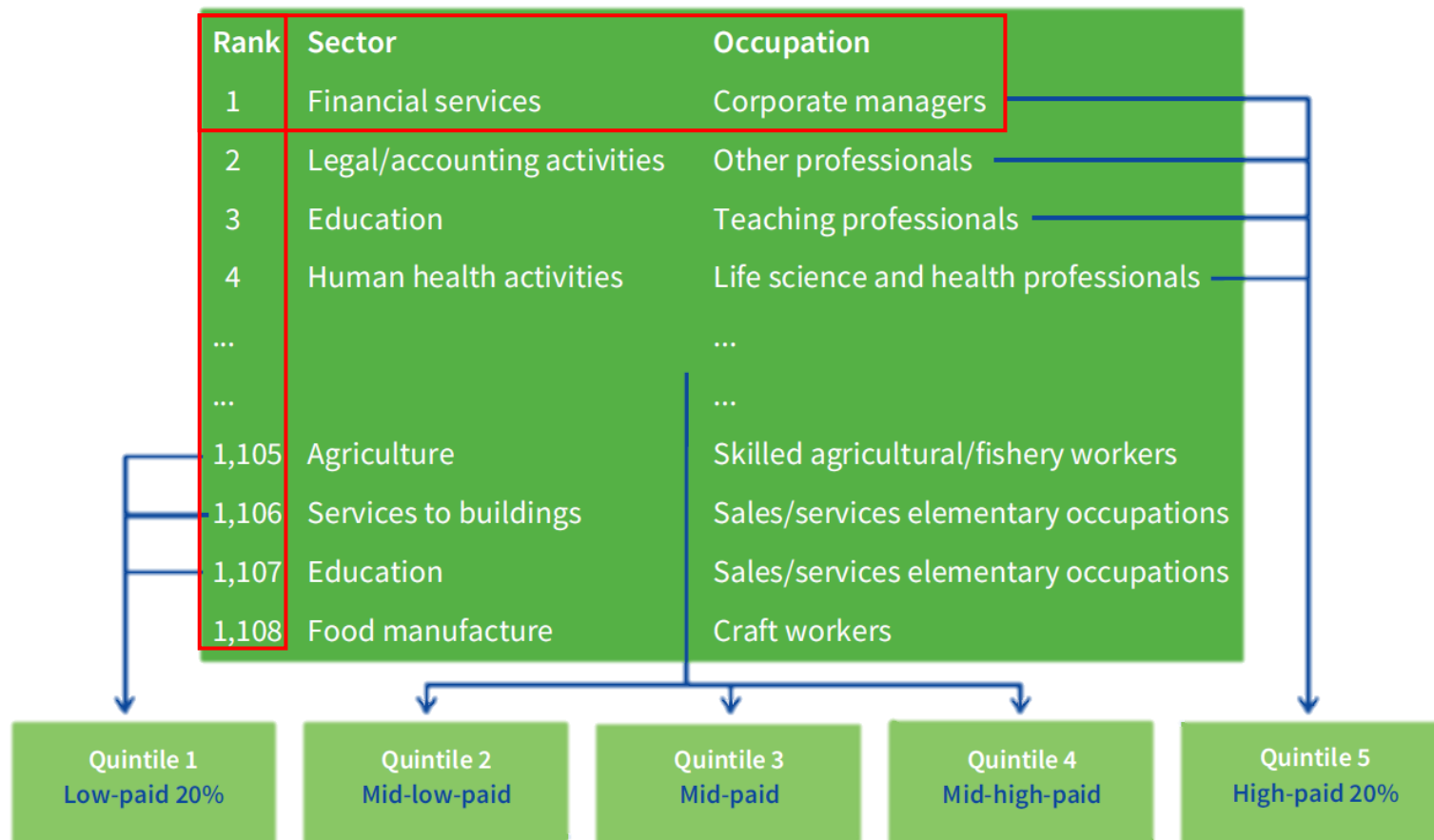
Part 3

- Future changes in the task structure: CEDEFOP forecast data plugged into the EJM framework (preliminary results)

1. Recent employment shifts: A jobs-based approach

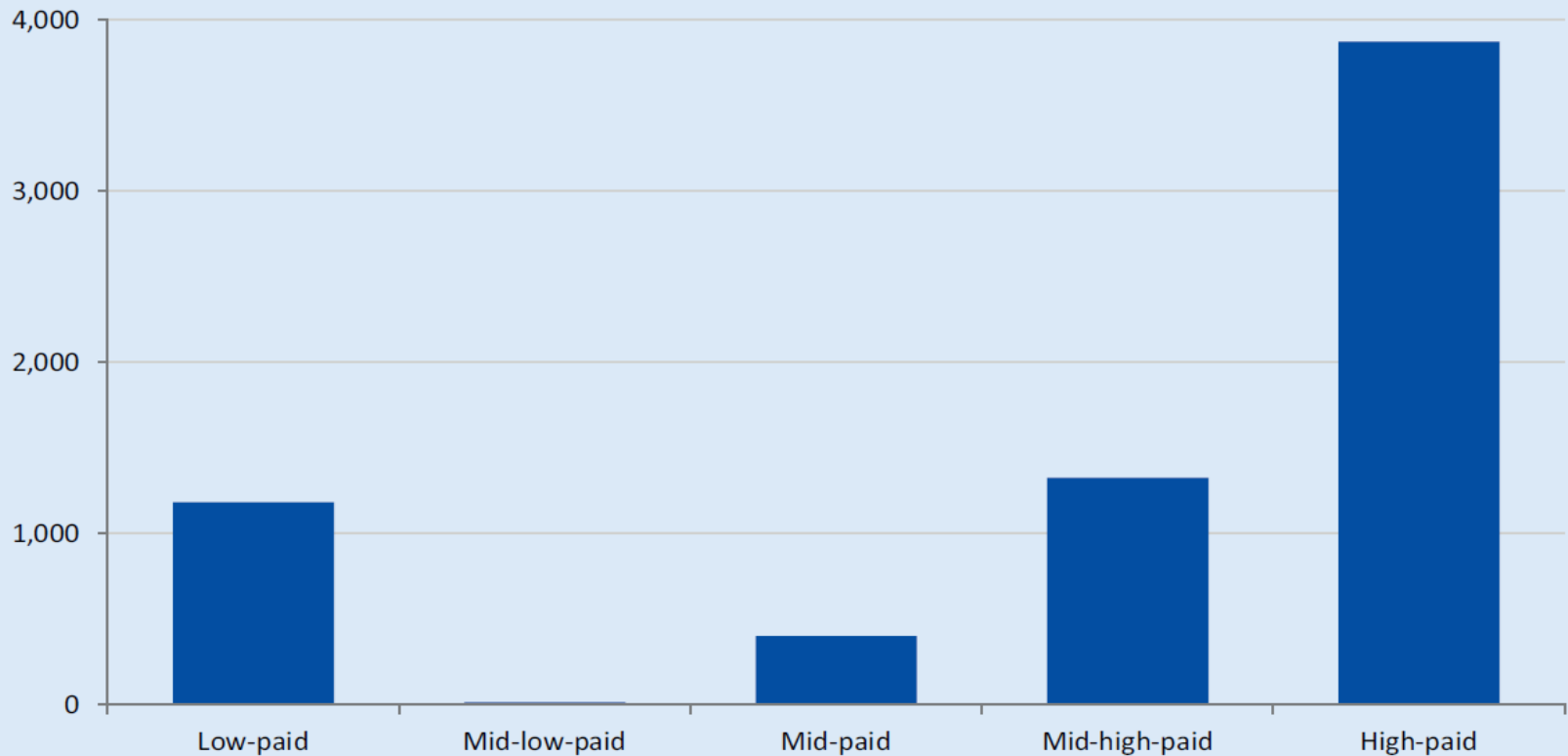
Jobs-based approach: methodology

Example of job rankings and quintile assignments



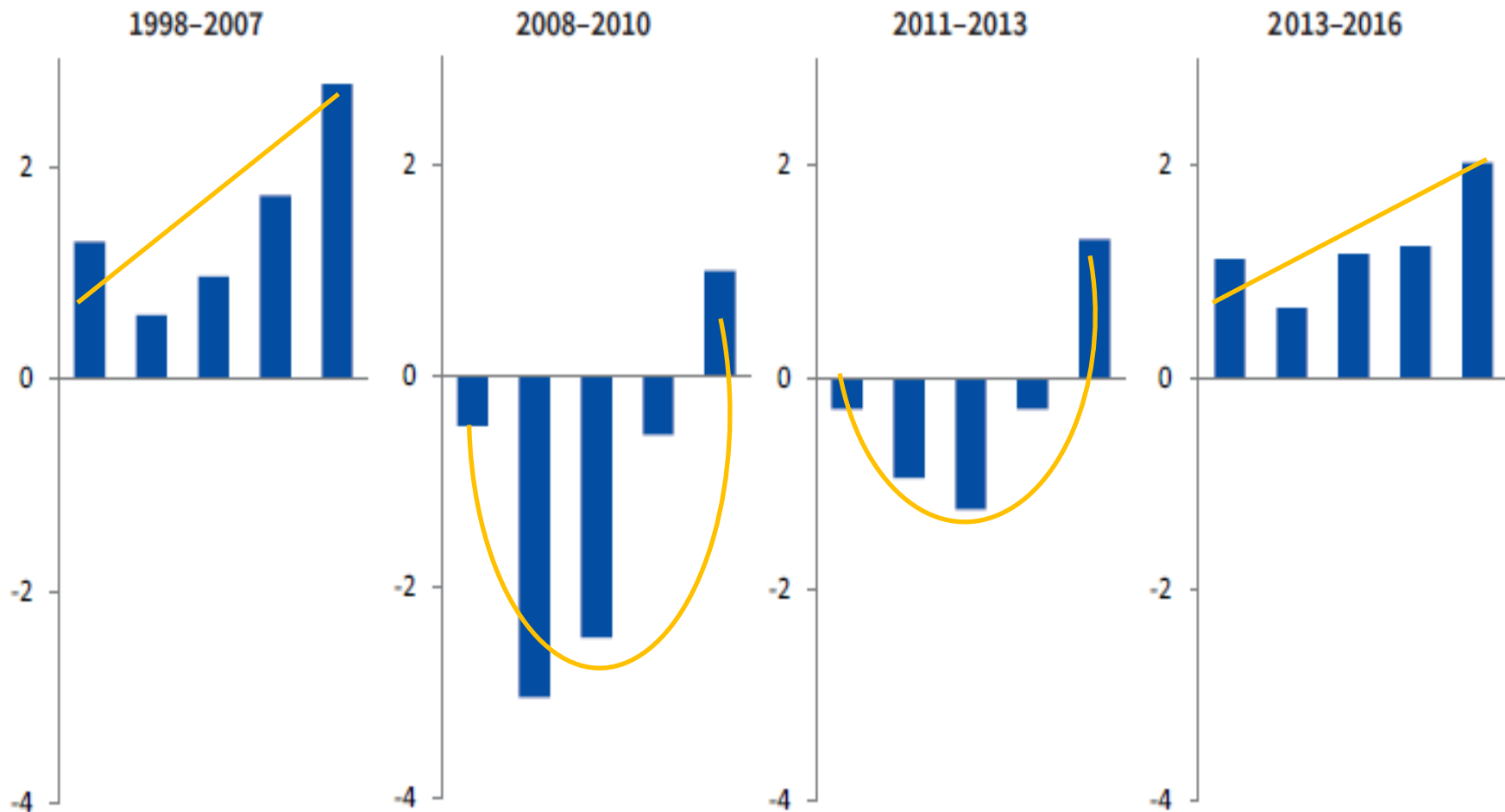
Net employment changes by wage quintile

EU, 2011-2016



Note: EU27 (Luxembourg data omitted); Q2 data in each year.
Source: EU-LFS (authors' calculations)

Employment shifts in the EU, 1998-2016



Upgrading and polarising employment shifts

- Upgrading: the pattern is a more or less linear improvement in the employment structure.
 - **skill-biased** technological change increases the demand for skilled labour at the expense of less-skilled labour.
- Polarisation: employment growth is weakest in the middle and relatively stronger at top and bottom.
 - **routine-biased** technological change complements those with higher skills, but substitutes those performing routine job tasks, more easily machine-replaceable (predominant in mid-paid jobs).

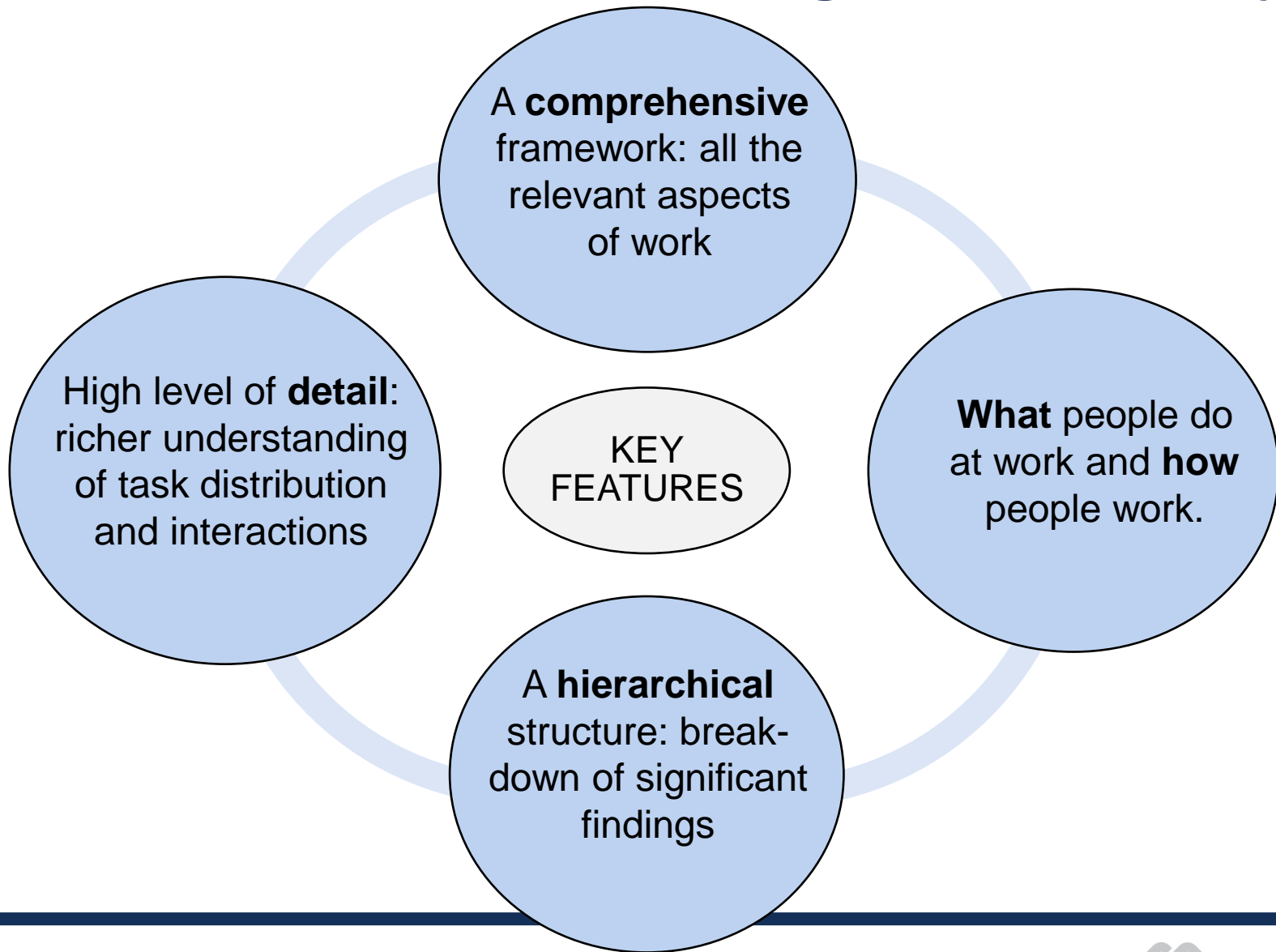


Importance of the TASK CONTENT of jobs
to understand the effect of technological
change on employment



2. The task content of jobs: European Jobs Monitor (EJM) task framework

EJM framework for measuring tasks across jobs



The task breakdown in the EJM

A. In terms of the content:

1. **Physical tasks:** aimed at the physical manipulation and transformation of material things:
 - a. *Strength*
 - b. *Dexterity*

2. **Intellectual tasks:** aimed at the manipulation and transformation of information and the active resolution of complex problems:
 - a. *Information processing:*
 - I. Literacy:
 - i. Business
 - ii. Technical
 - iii. Humanities
 - II. Numeracy:
 - i. Accounting
 - ii. Analytic
 - b. *Problem solving:*
 - I. Information gathering and evaluation of complex information.
 - II. Creativity and resolution.

3. **Social tasks:** whose primary aim is the interaction with other people:
 - a. *Serving/attending*
 - b. *Teaching/training/coaching*
 - c. *Selling/influencing*
 - d. *Managing/coordinating*

B. In terms of the methods and tools of work:

1. **Methods:** forms of work organisation used in performing the tasks:
 - a. *Autonomy*
 - b. *Teamwork*
 - c. *Routine*
 - I. *Repetitiveness*
 - II. *Standardization*
2. **Tools:** type of technology used at work:
 - a. *Machines* (excluding ICT)
 - b. *Information and communication technologies.*
 - I. Basic ICT
 - II. Programming

Mapping sources to elements in the task model

	EWCS	PIAAC	ONET		
			Work activities	Abilities	Skills
In terms of the object of work/task:					
1. Physical: Manipulation and transformation of things	x			x	
a. Strength	x			x	
b. Dexterity				x	
2. Intellectual: Manipulation and transformation of ideas	x	x		x	
a. Information-processing: Processing of codified information		x		x	
i. Literacy: Processing of verbal information		x		x	
- Business		x			
- Technical		x			
- Humanities		x			
ii. Numeracy: Processing of numerical information		x		x	
- Accounting		x			
- Analytic		x			
b. Problem-solving: Finding solutions to complex/new issues	x	x		x	
i. Information-gathering and evaluation	x	x		x	
ii. Creativity: finding a solution	x			x	
3. Social: Interacting with other people		x	x		x
- Serving/attending			x		
- Selling/persuading		x	x		x
- Teaching/coaching		x	x		x
- Managing/coordinating		x	x		
In terms of the methods and tools used in the work/task					
1. Work organisation					
a. Autonomy: Self-direction and latitude	x	x			
b. Teamwork: Working in small groups	x				
c. Routine: Repetitiveness and standardisation of the task	x				
i. Repetitiveness	x				
ii. Standardisation	x				
2. Technology					
a. Operation of mechanical machinery and tools (non-ICT)	x		x		x
b. Operation of ICT	x	x	x		
- Basic IT		x			
- Programming		x			x



Task profile of 4 specific jobs



EU15, 2014 EU-LFS data as weights

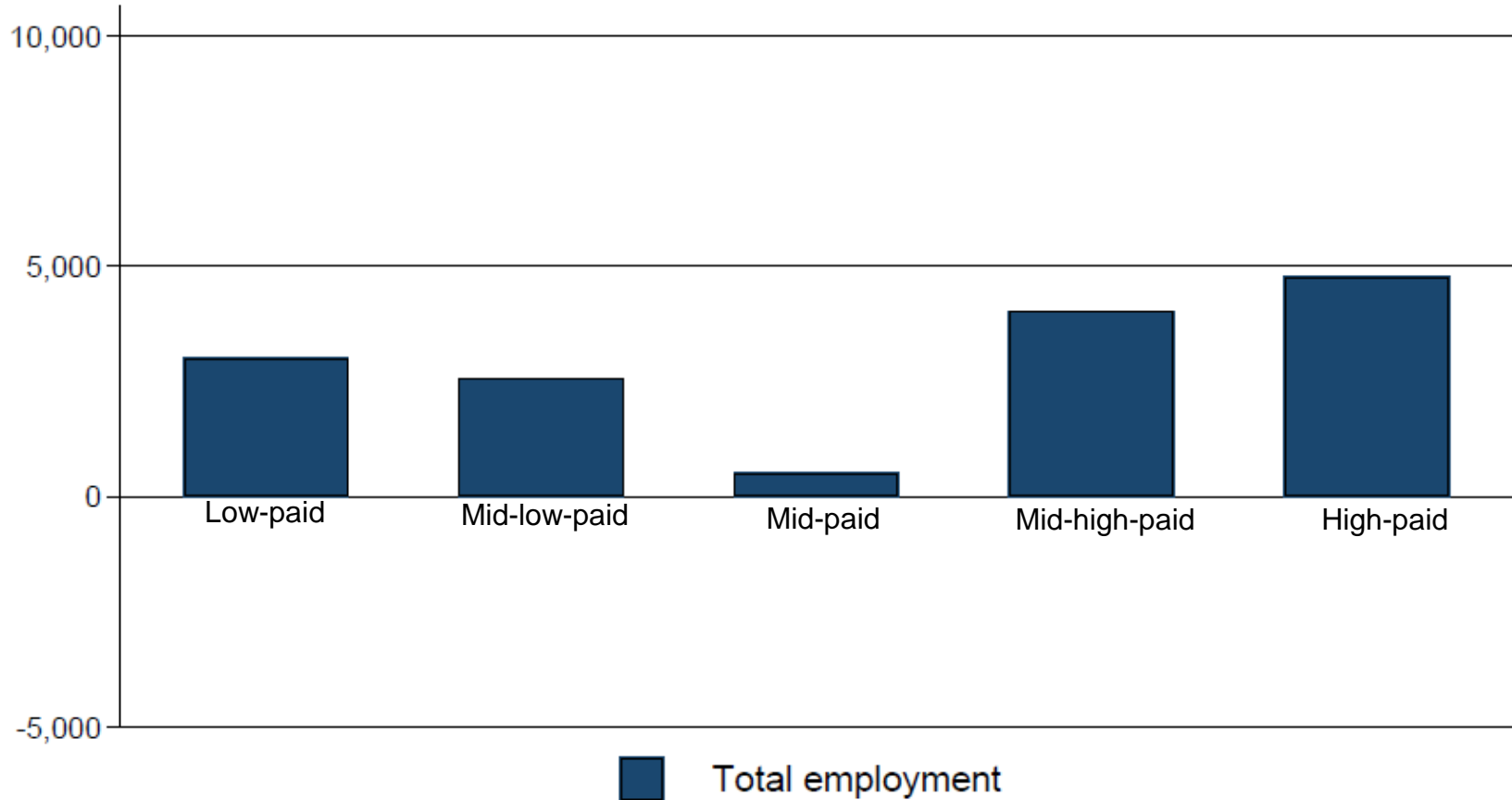
Fewer routine jobs but more routine work

- In the digital age the share of routine jobs is decreasing because of a higher risk of automation.
- But a great paradox emerges: while routine jobs are shrinking in relative terms, **work is generally becoming more repetitive and standardised** over time (EWCS, 2000-2010).
- Interestingly, managers, professionals and clerical occupations are among the occupational groups that reported the largest increases in the levels of standardisation.
 - Computer use is routinising work by allowing a tighter control and monitor of labour process?
 - Performance benchmarking and quality management systems are imposing more standards to comply with?

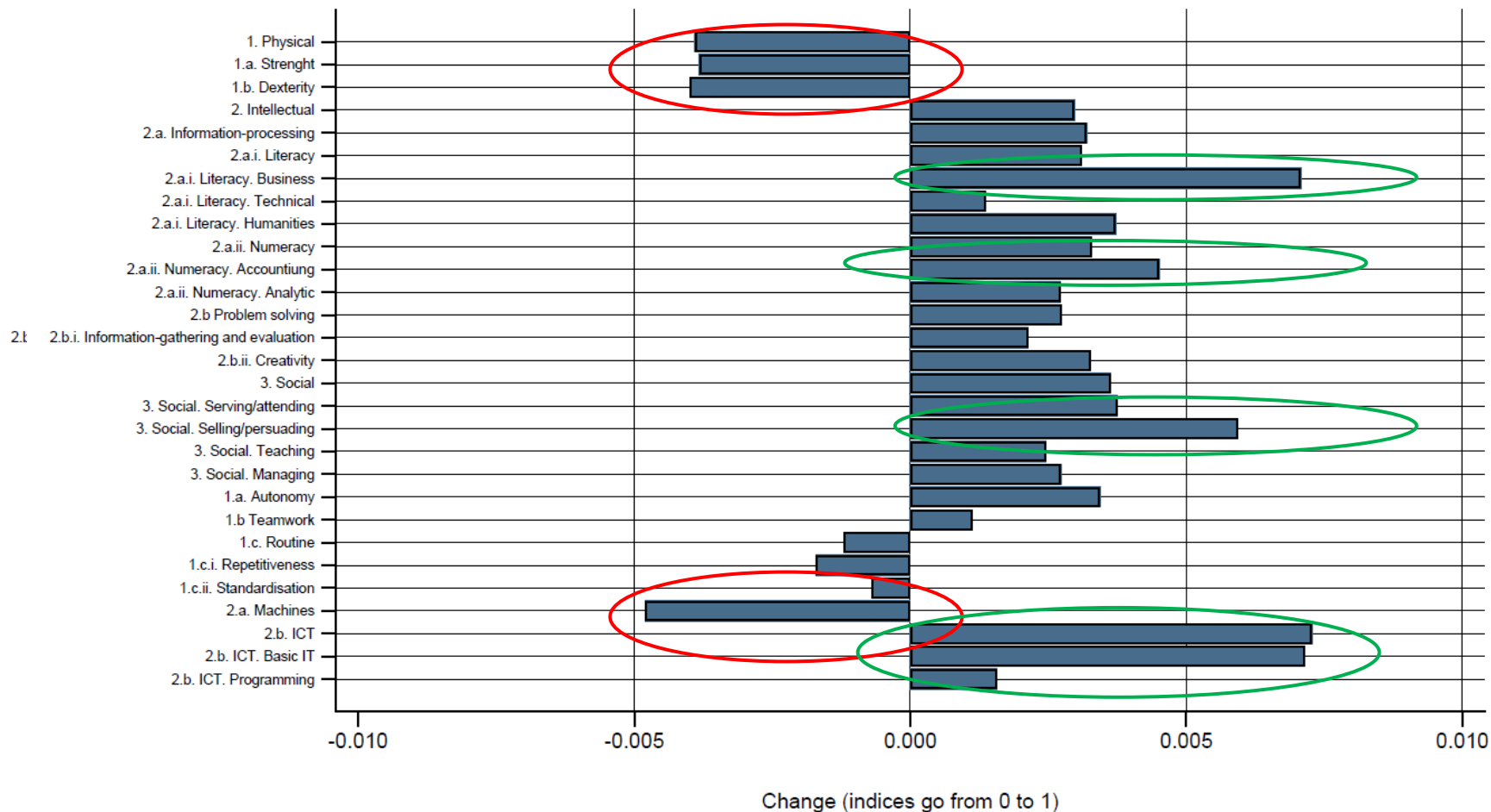
3. The CEDEFOP skills forecasting baseline scenario plugged into the EJM framework.

Employment change by job-wage quintile in the EU 2016 – 2030, in thousands

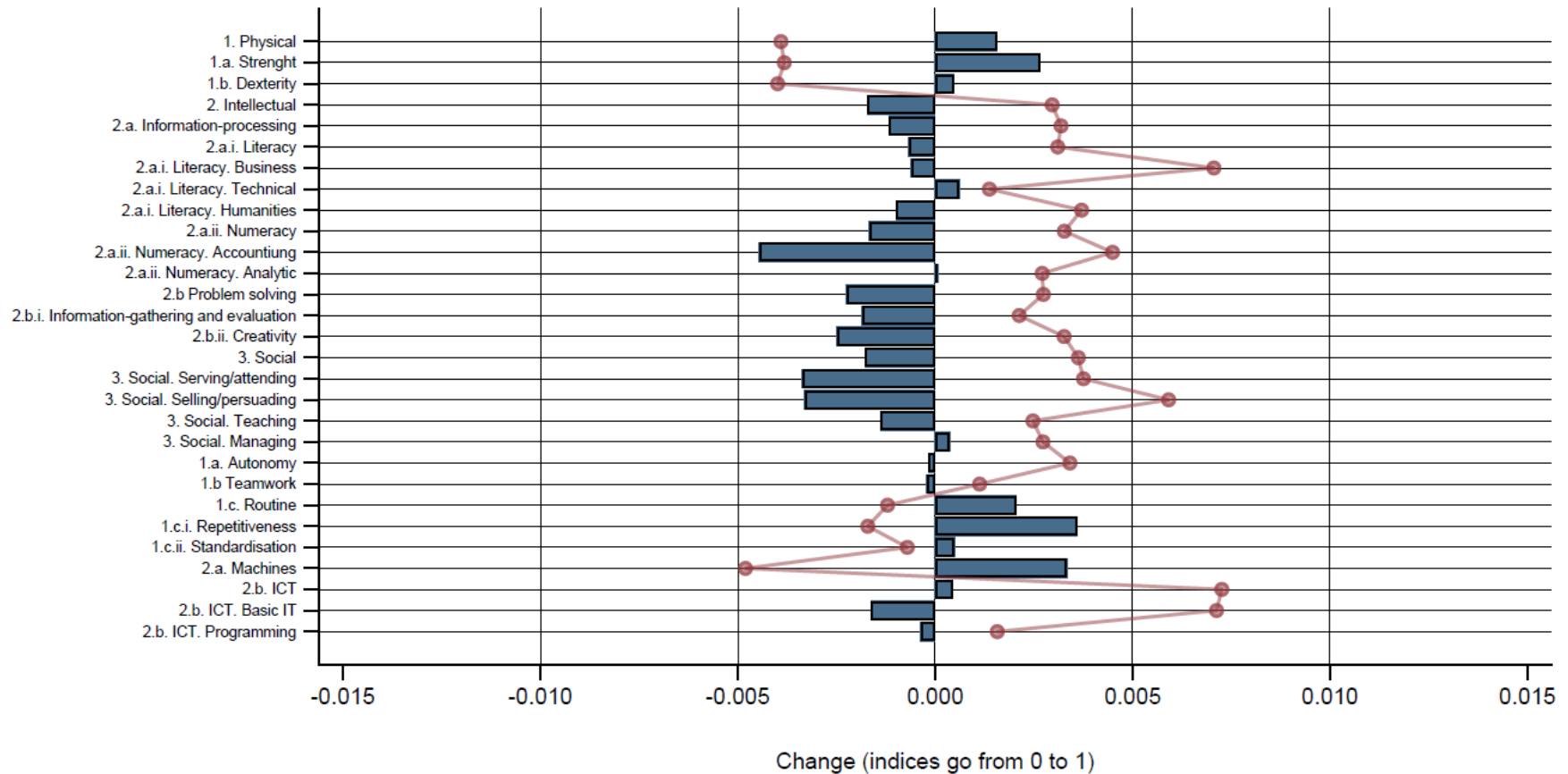
Total



Change in the task profile (2016 – 2030), EU

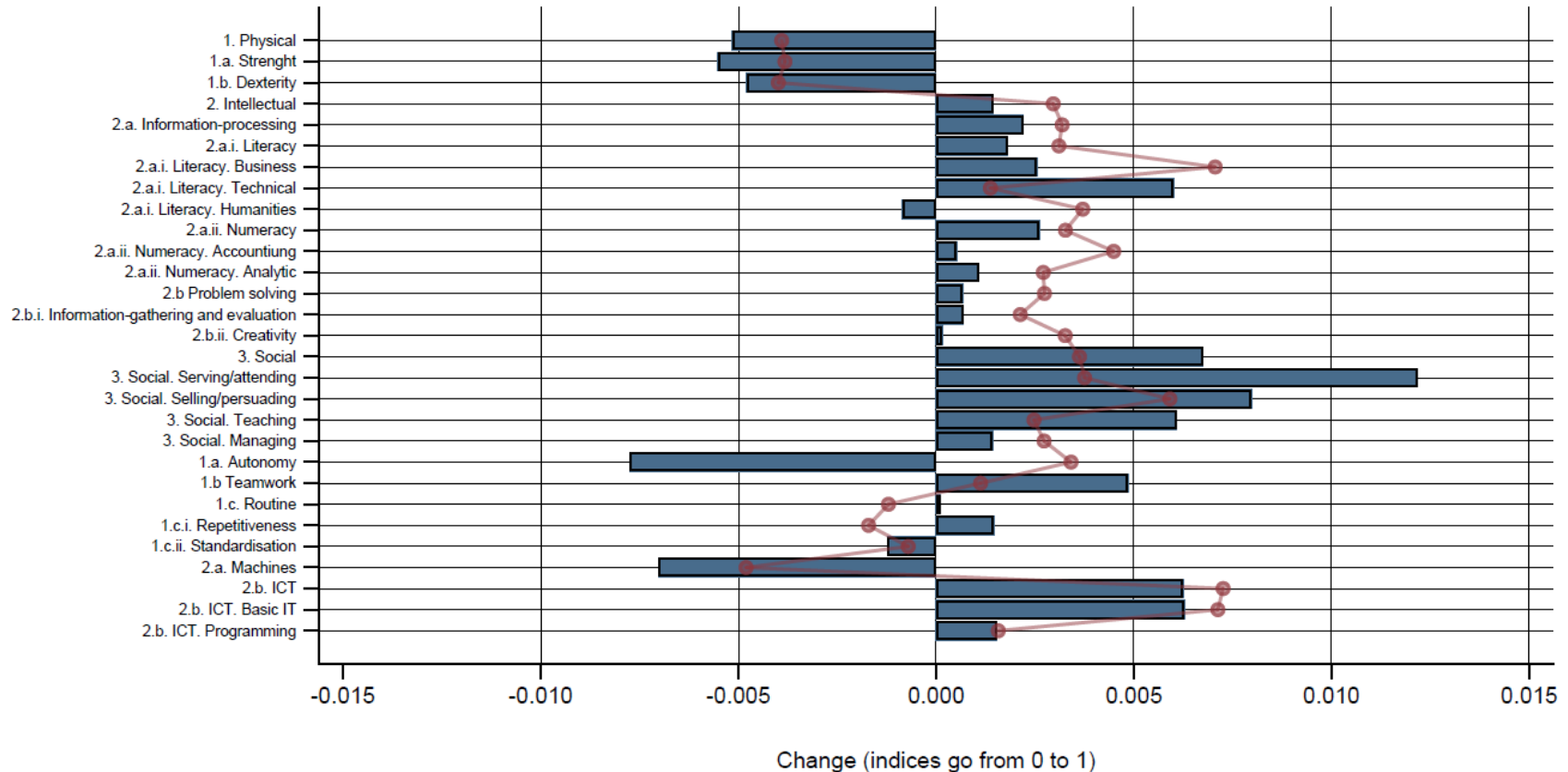


Change in task profile in the EU in the 1st job-wage quintile (2016 – 2030)



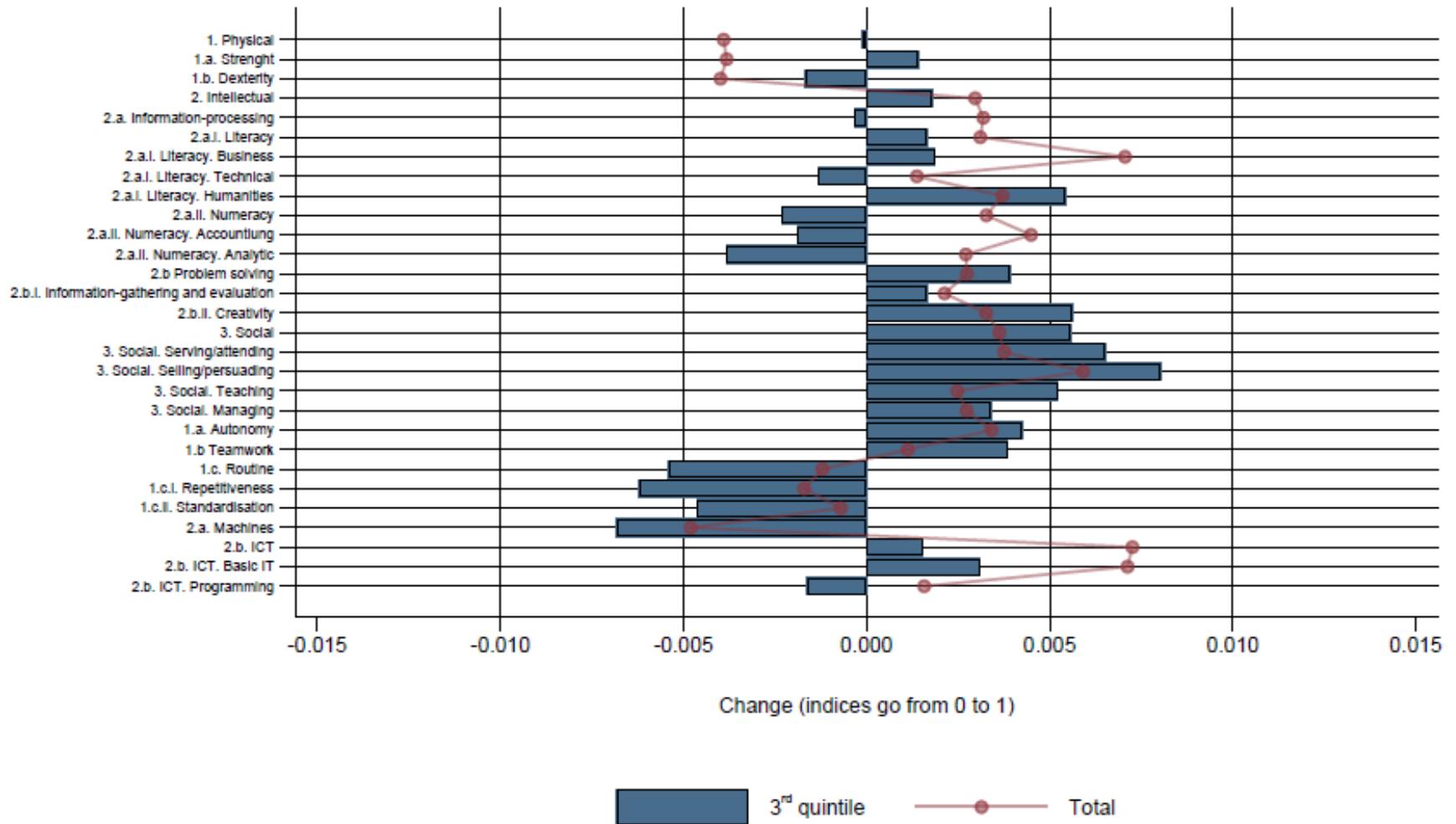
1st quintile
 ● Total

Change in task profile in the EU in the 2nd job-wage quintile (2016 – 2030)

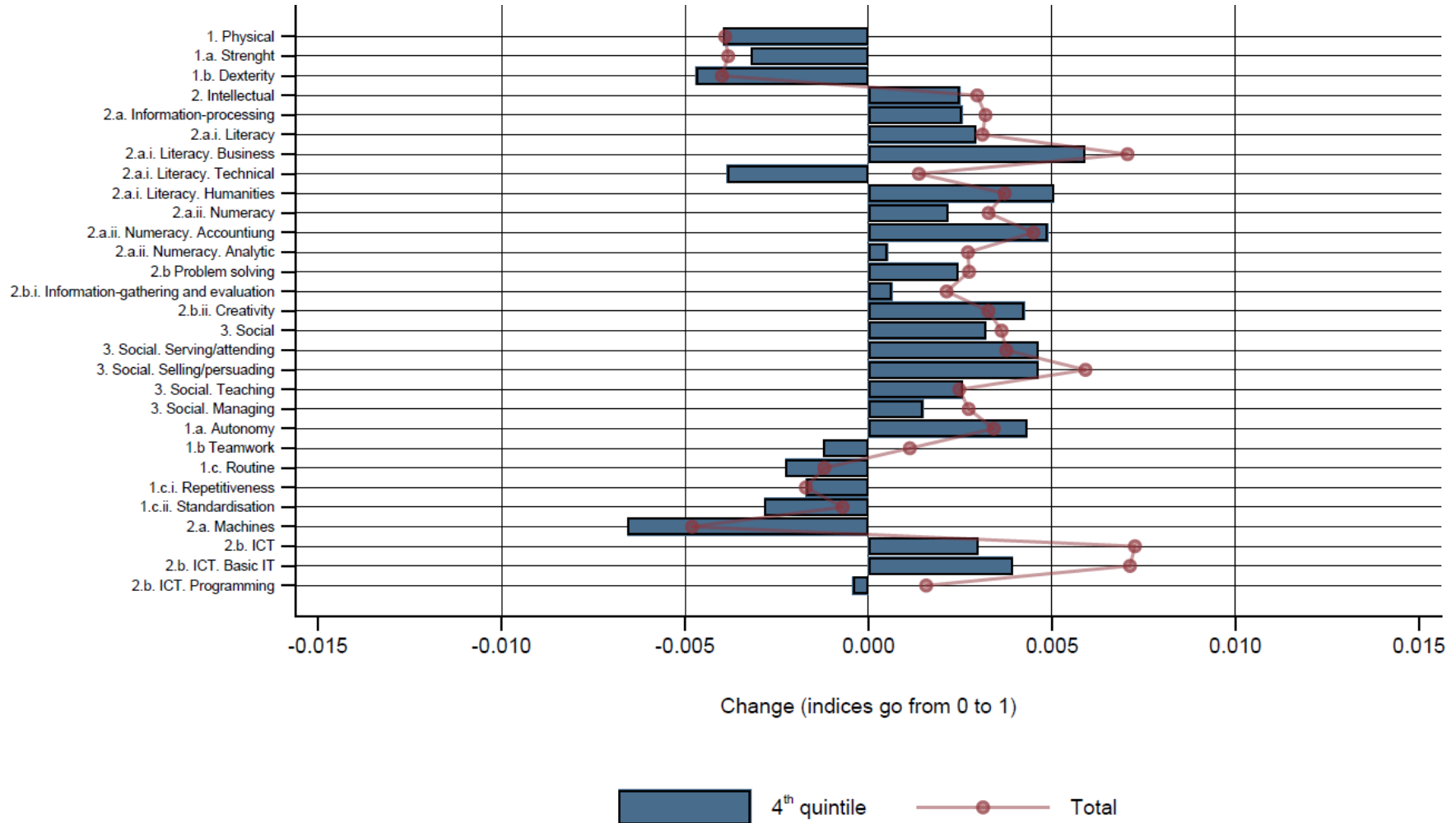


2nd quintile
 ● Total

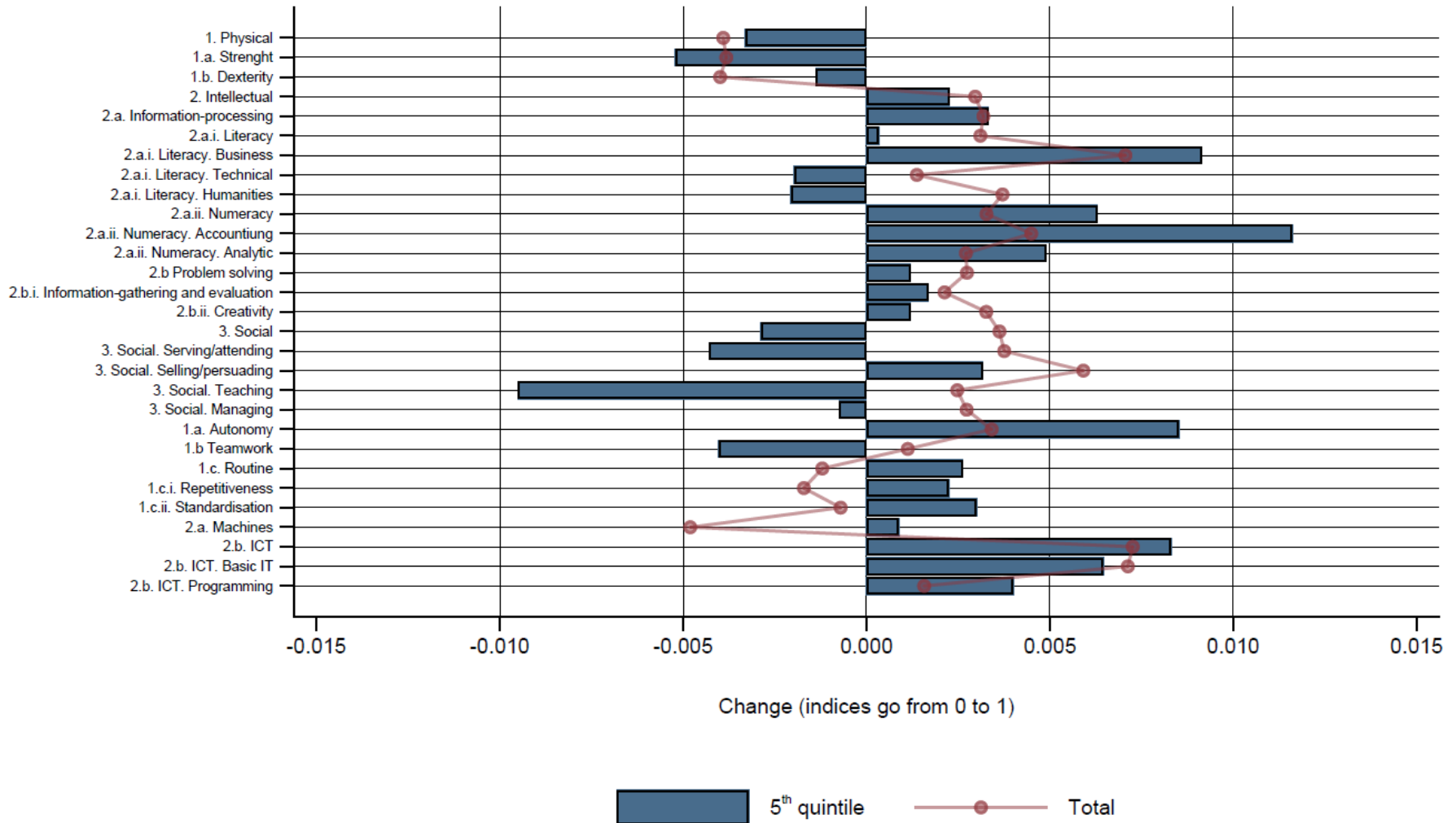
Change in task profile in the EU in the 3rd job-wage quintile (2016 – 2030)



Change in task profile in the EU in the 4th job-wage quintile (2016 – 2030)



Change in task indices in the EU in the 5th job-wage quintile (2016 – 2030)



Concluding remarks

- When predicting what jobs may be more at risk of automation in the long term, one has to consider that:
 - The task intensity can change over time;
 - Each job is characterised by a particular combination of tasks.
- A deeper understanding of the distribution of tasks in industries/occupations and how it differs depending on various socio-demographic characteristics would allow to:
 - answer the policy questions of how well does the education and training of citizens meets and matches required skills in their jobs;
 - ensure good labour market and social outcomes.

Forthcoming

1. Presentation of final CEDFOP Skills Forecast 8th June, BXL

2. Other scenarios in the Pilot Project the Future of Manufacturing in Europe (FOME) - 2018Q4.

- Implementation of the Paris Agreement on Climate Change
- USA Protectionism - severe disruption in NAFTA and USA-China trade
- Technology 1: Extreme automation
- Technology 2: Digitisation and servitisation, (supply chain effects)
- Technology 3: With focus on alternative developments in wage & working time

FOME Project Leader: Donald.Storrie@eurofound.europa.eu

Available resources

Full dataset of task indicators and methodological paper can be downloaded here:
<https://www.eurofound.europa.eu/observatories/emcc/european-jobs-monitor>

What do Europeans do at work? A task-based analysis: European Jobs Monitor 2016



The European Jobs Monitor 2016 looks at 2011 Q2–2015 Q2 employment shifts at Member State and aggregate EU level. A 'jobs-based' approach is used to describe employment shifts quantitatively (how many jobs were created or destroyed) and qualitatively (what kinds of jobs). It also introduces a new set of indicators on the task content, methods and tools used at work. Derived from international databases on work and occupations, these indicators give a detailed account of what Europeans do at work and how they do it. They also provide valuable new insights on the structural differences and recent evolution of European labour markets, as well as a better understanding of labour input in the production process and the changing nature of skills required. An annex documents the [Methodology of the construction of task indices for the European Jobs Monitor \(767KB PDF\)](#). An executive summary is available - see Related content.

For researchers interested in using the [set of indicators on task content, methods and tools at work developed for and described in this report](#), the following [compressed folder \(902KB ZIP\)](#) is made available. Please acknowledge source in any publication using this data as follows: 'Source: *European Jobs Monitor Task Indicator dataset, Eurofound 2016*'.



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Thank you for your attention!

mbs@eurofound.europa.eu