instytut badań strukturalnych

Routine and ageing? The intergenerational divide in deroutinisation of jobs in Europe

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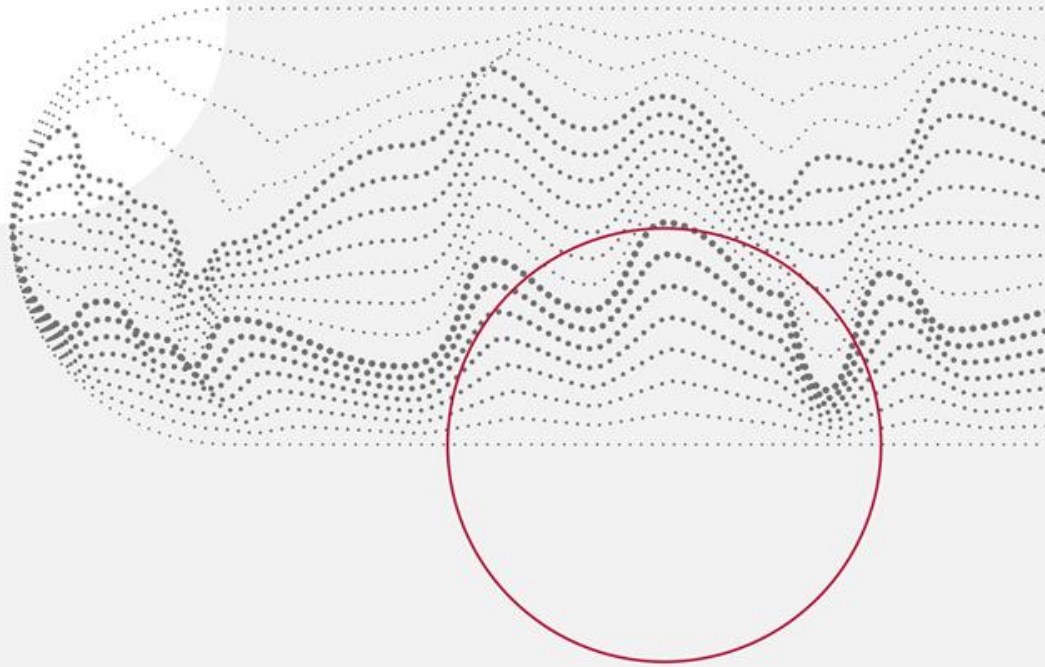
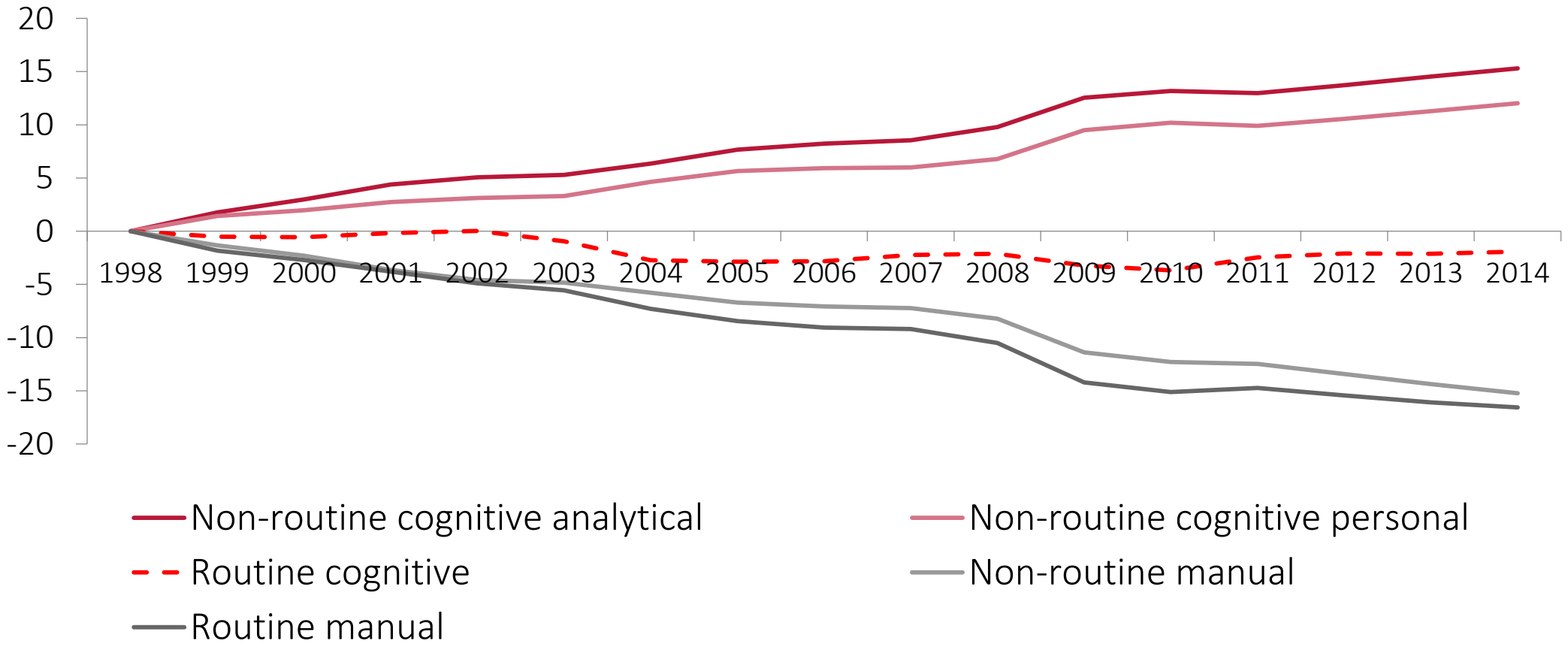


A secular shift away from manual work towards cognitive work and from routine tasks towards non-routine tasks

Task content intensities in the EU (average for 26 countries), 1998-2014



Task is not a skill – it is a unit of work activity that produces output

Particular occupations involve various amounts of each of five tasks

Non-routine cognitive (analytical and personal)	Routine cognitive	Manual (routine and non-routine)
• Managers • IT specialists • Architects • Engineers	• Bookkeepers • Tellers • Office clerks • Salespersons	• Assemblers • Toolmakers • Drivers • Farmers

Tasks help to understand how the nature of work changes, but the age dimension of task content changes is under-researched

- Deroutinisation was found in many empirical studies
- Routine-biased technical change and off-shoring are believed to be driving it
- But is there any intergenerational divide in the deroutinisation of jobs?
- Are routine occupations ageing faster?
- Do the routine workers face a higher unemployment risk?
- If so, are there differences by age and over time?

How do we measure the task content of jobs?

EU-LFS data for 12 EU countries in 1998-2014, 3-digit ISCO occupations

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O*NET data – editions 2003 and 2014

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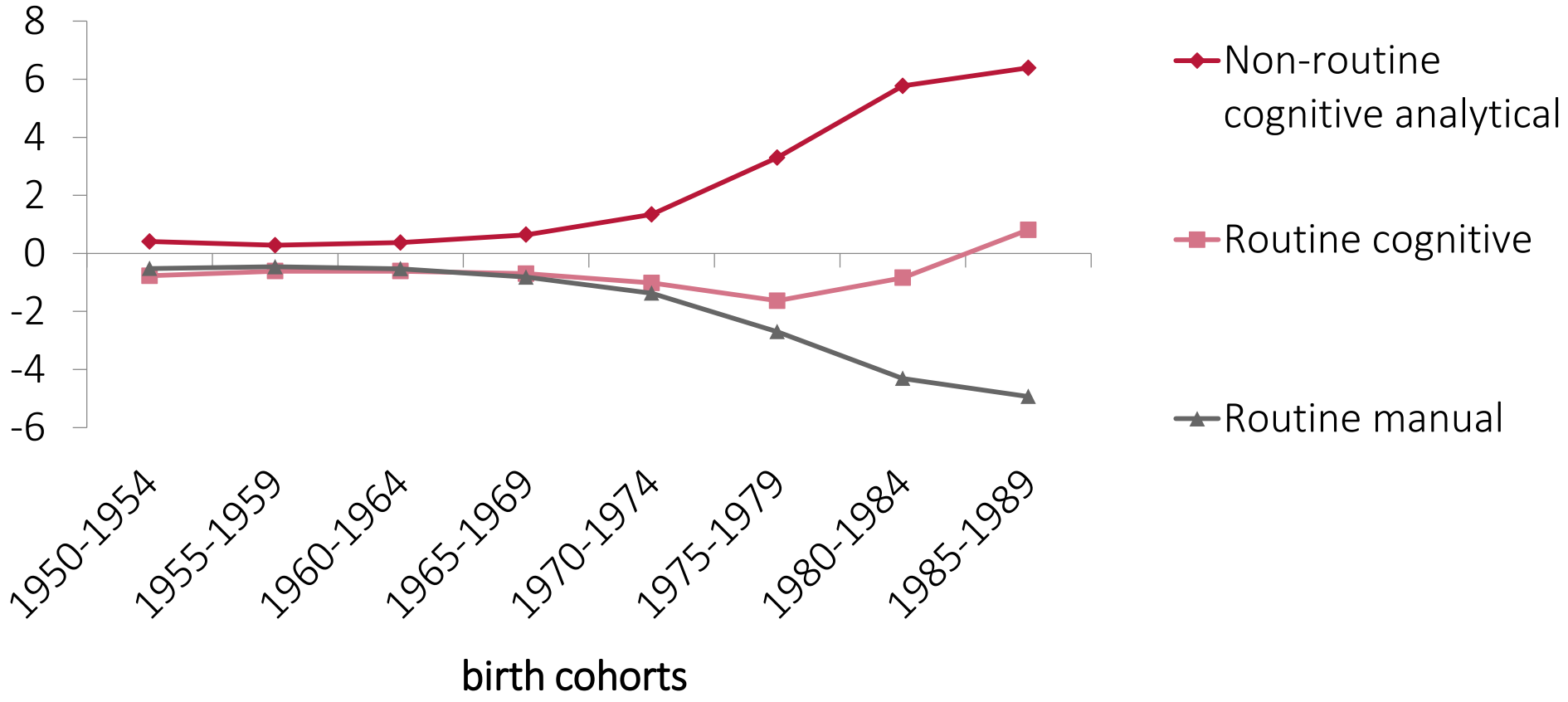
5 annual country-level task content measures Autor & Acemoglu (2011)

Deroutinisation occurred much faster among workers born 1970-1989 than among workers born 1950-1969

Task intensities changes by cohorts - panel estimates of linear time-trend coefficients, 12 EU countries in 1998-2014



How has the age structure of routine-intensive jobs changed?

- Jobs rich in routine tasks are often rich in non-routine ones too
  so let's have a synthetic measure

- Autor & Dorn (2009) – index of routine-task intensity (RTI)

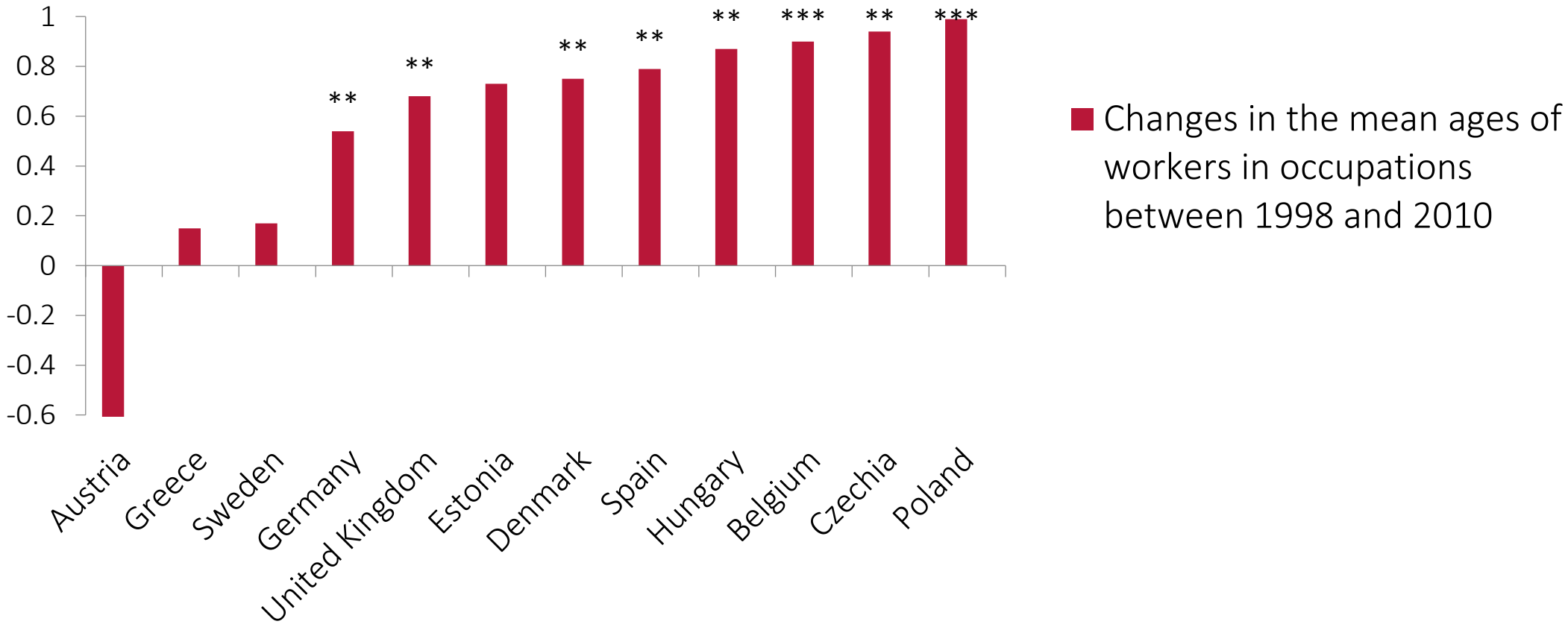
- RTI ↗ with relative importance of routine tasks,
  ↘ with relative importance of non-routine tasks

$$\forall_{i \in occupations} RTI_i = \ln(RC + RM) - \ln(NRCA + NRCP)$$

- RTI based on 1998 country-specific task structures, ≈100 occupations per country

European workforce was ageing more quickly in occupations that were initially more routine-intensive

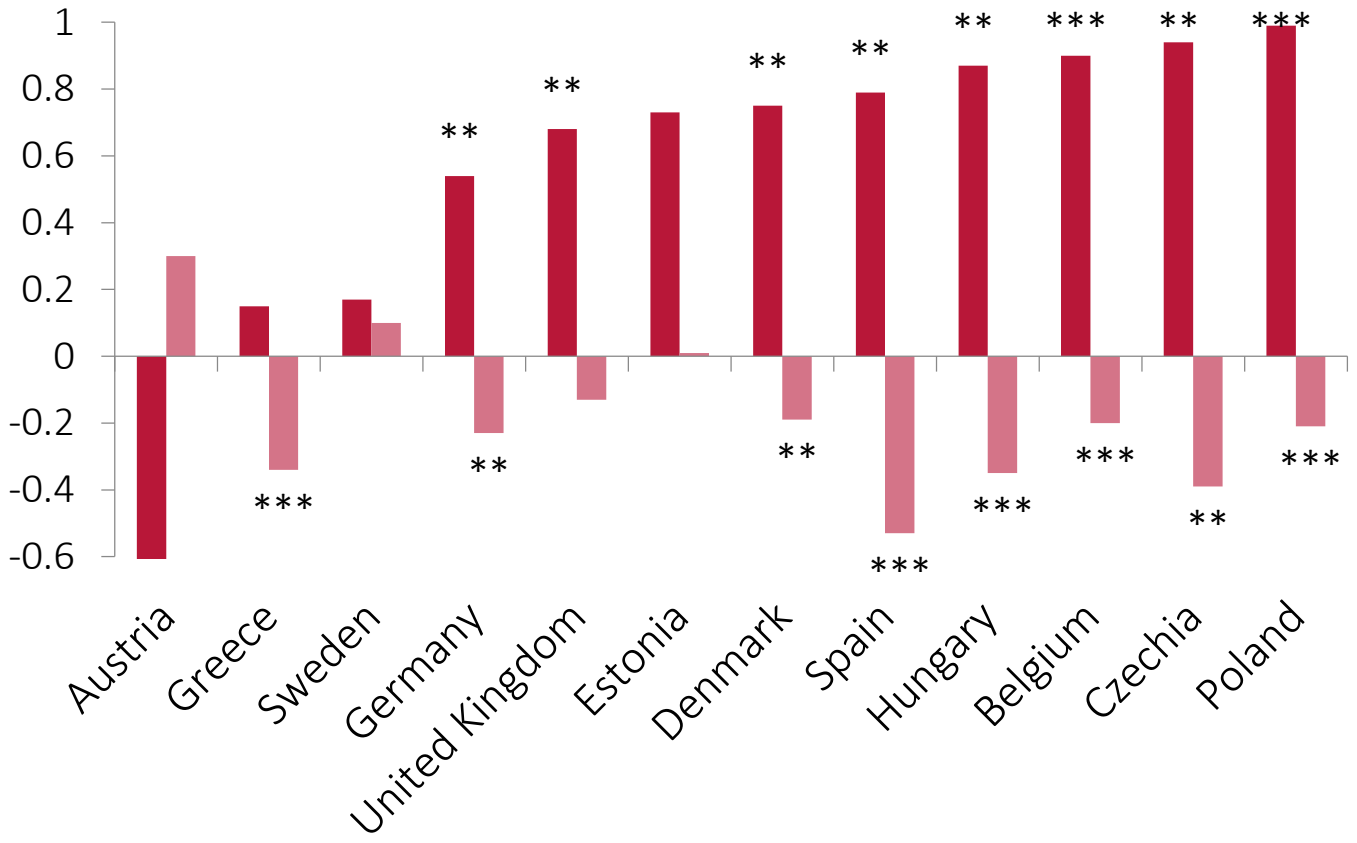
The estimated effect of the initial (1998) routine task intensity of occupations on changes in age structures by 2010



*** p<0.01, ** p<0.05, * p<0.1.

As the share of young workers in the more routine-intensive occupations was declining

The estimated effect of the initial routine task intensity of occupations in 1998 on changes in age structures by 2010



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Deroutinisation may lift the risk of unemployment among routine workers

- In 6 out of 12 countries, the occupation-specific unemployment rates increased significantly stronger in more routine intensive occupations

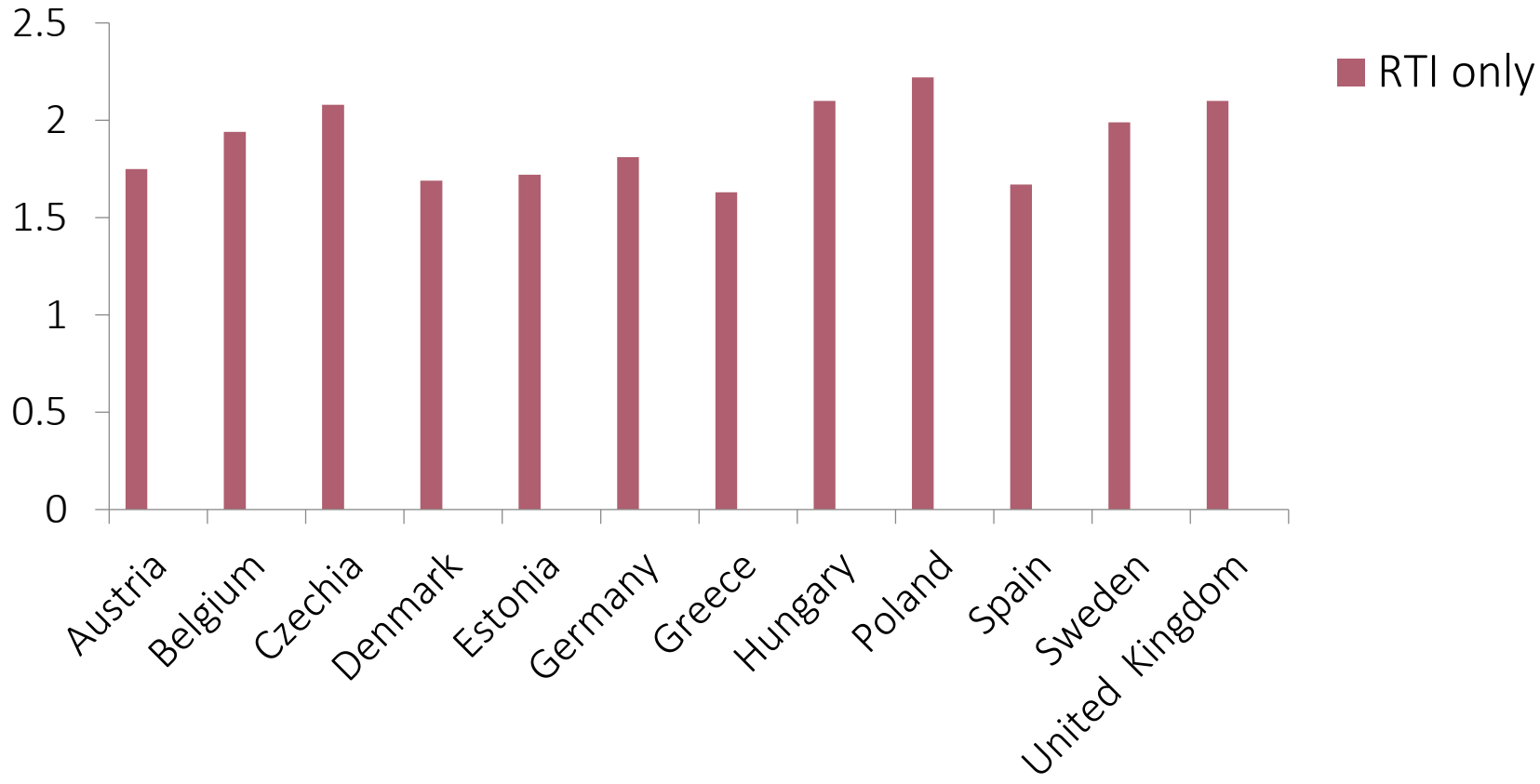
- Is there a relationship at the individual level?

- Are there differences by age and over time?

- Country-specific logit models for the probability of being unemployed (accounting for changes over time, individual, workplace and regional variables)

Higher routine intensity was associated with higher risk of unemployment

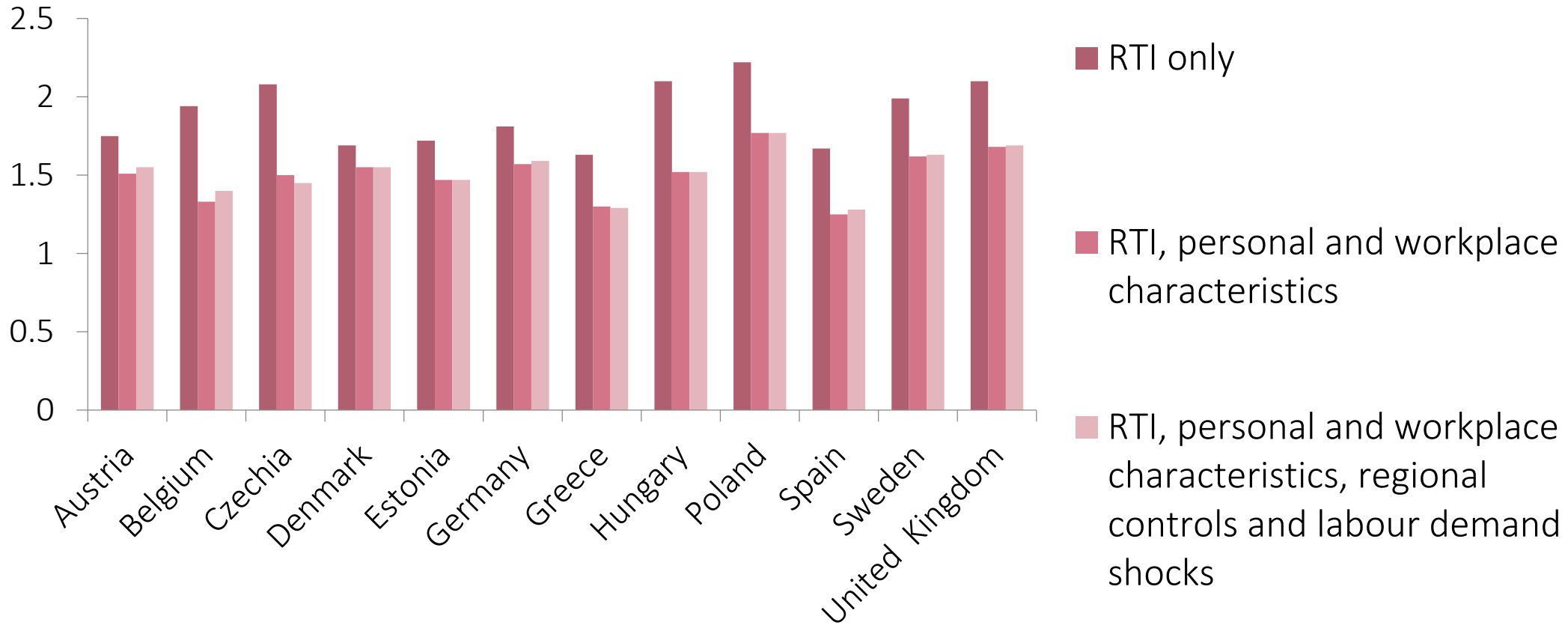
The estimated effect of the routine task intensity on unemployment risk – odds ratios from country specific models



Logit regressions at individual level. Standard errors clustered at occupation level. All effects significant at 0.01.

Also when we control for personal and workplace characteristics, regional controls and labour demand shocks

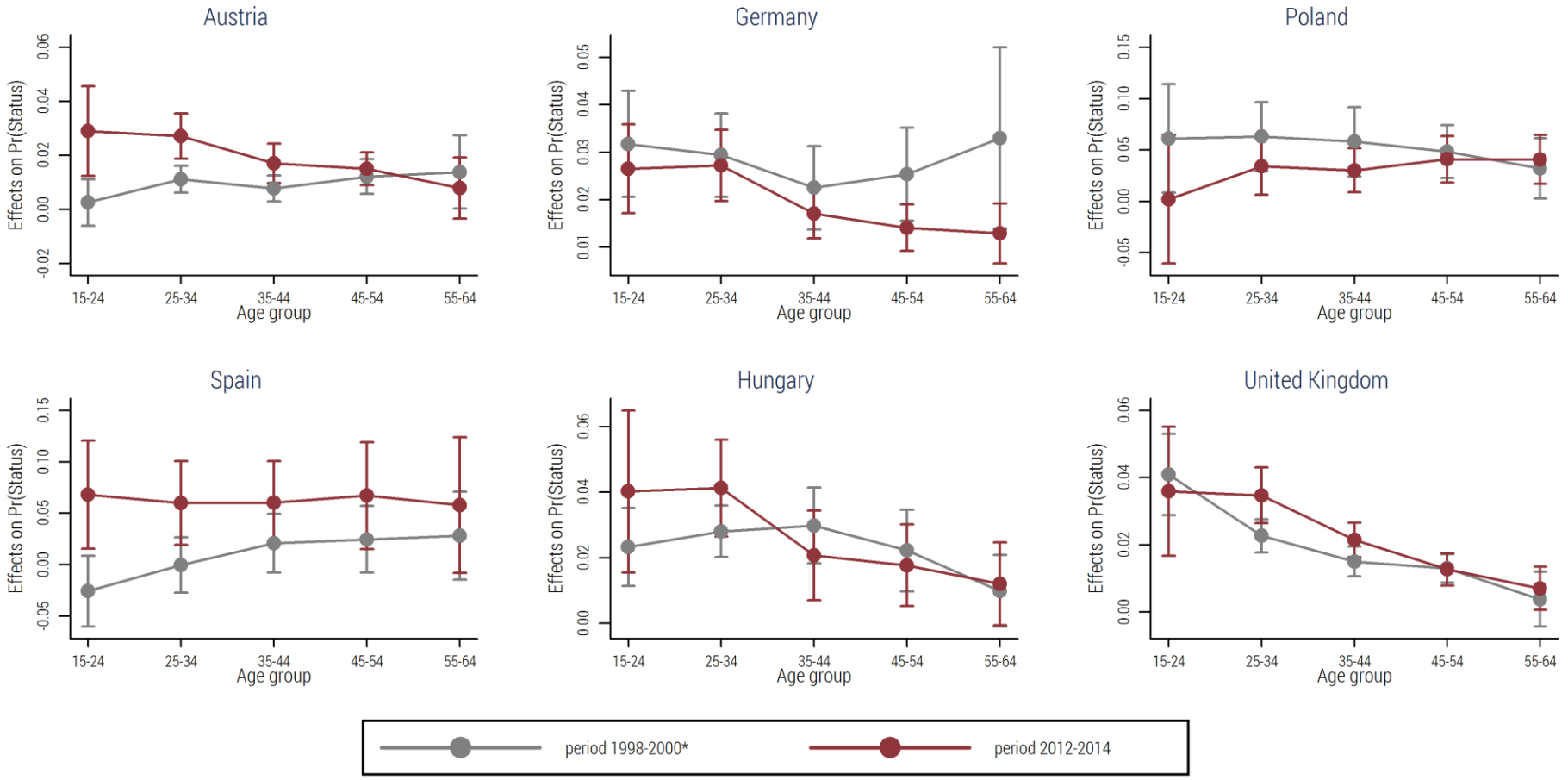
The estimated effect of the routine task intensity on unemployment risk – odds ratios from country specific models



Logit regressions at individual level. Standard errors clustered at occupation level. All effects significant at 0.01.

The relationship between routine task intensity and unemployment risk increased over time, especially for workers aged between 15 and 34

The marginal effects of the routine task intensity (RTI) on the unemployment risk, by age



Logit regressions at individual level. Standard errors clustered at occupation level.

What do tasks tell about intergenerational differences in jobs

- Widespread shift from manual to cognitive work
  and routine cognitive tasks decline in richer (EU15) countries

- Younger cohorts experience this change stronger than older cohorts

- Routine-intensive occupations:
  - Age faster because of declining share of young workers
  - Create higher unemployment risk for the young and prime-aged

- Routine jobs likely to ↘ as ICT stock ↗ and technology prices ↘

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Thanks for listening

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