

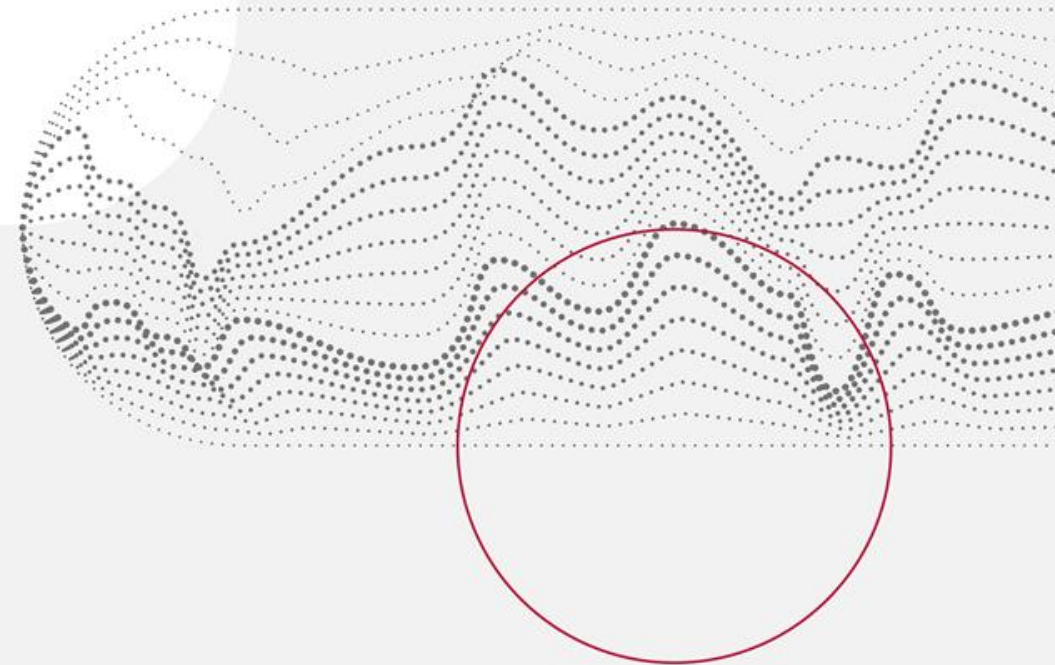
Routine and ageing? The intergenerational divide in deroutinisation of jobs in Europe

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What do we know already?



- Deroutinisation = shift from routine to non-routine jobs/tasks
- Deroutinisation was found in many empirical studies (Autor et al. 2003, Goos et al. 2010, Acemoglu & Autor, 2011)
- Routine-biased technical change and off-shoring are believed to be driving it
- Tasks help to understand how the nature of work changes

Main questions we ask



Age dimension is so far under-researched (except Autor & Dorn, 2009, for the US)

- Is there any intergenerational divide in the deroutinisation of jobs?
- Are routine occupations ageing faster?
- Do routine workers face a higher unemployment risk?
- If so, are there differences by age and over time?

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How do we measure the task content of jobs?



EU-LFS data for 12 EU
countries in 1998-2015,
3-digit ISCO occupations

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O*NET data – editions
2003 and 2014

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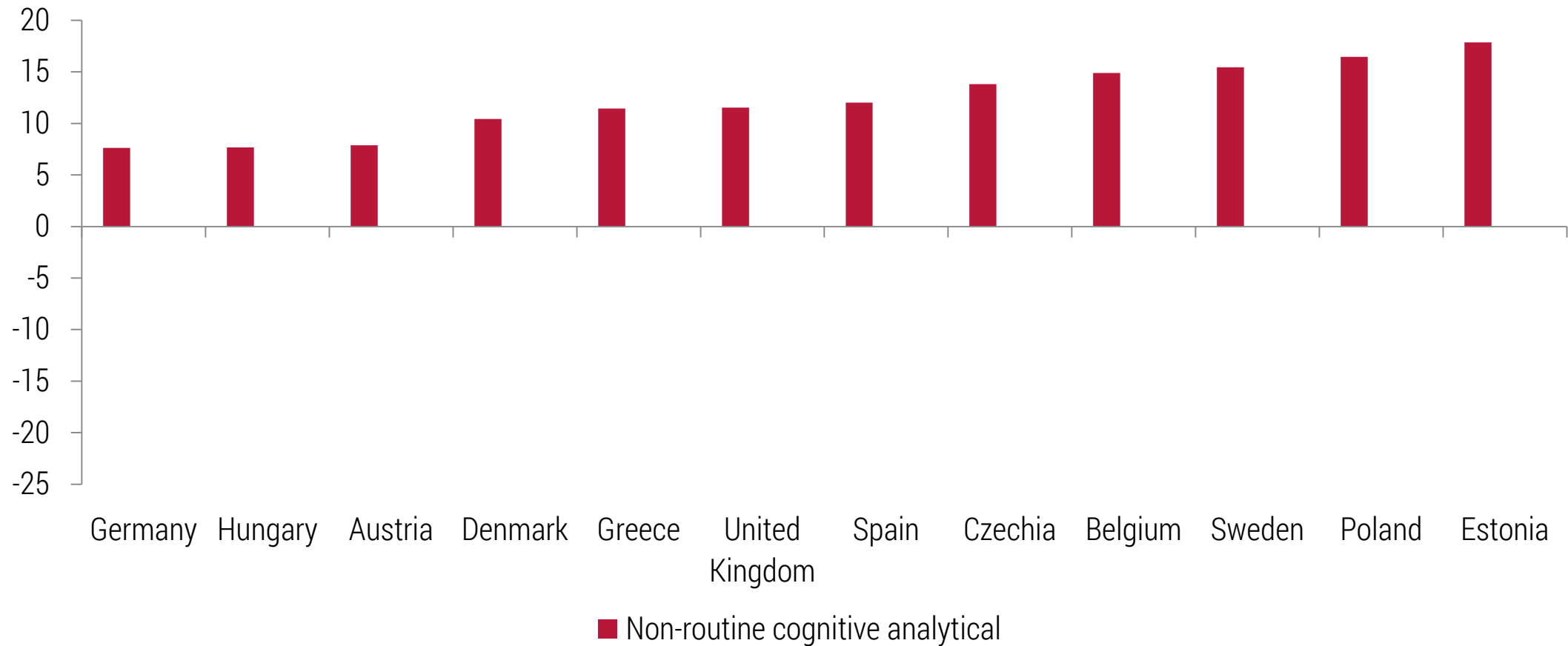
O*NET data – editions 2003 and 2014

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

Non-routine cognitive tasks increased in all European countries



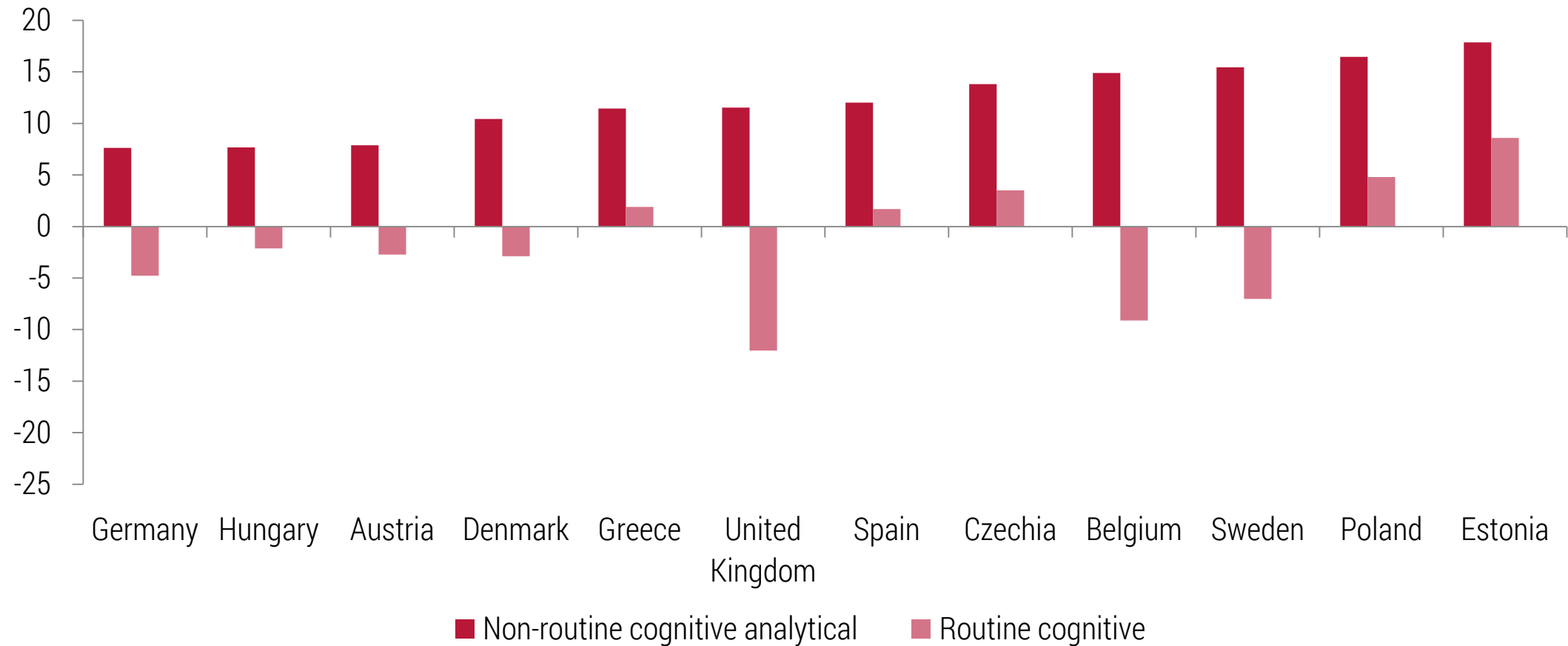
Change in the task content intensity by country, 1998-2015



Routine cognitive tasks declined in the Western European countries but increased in several CEE countries



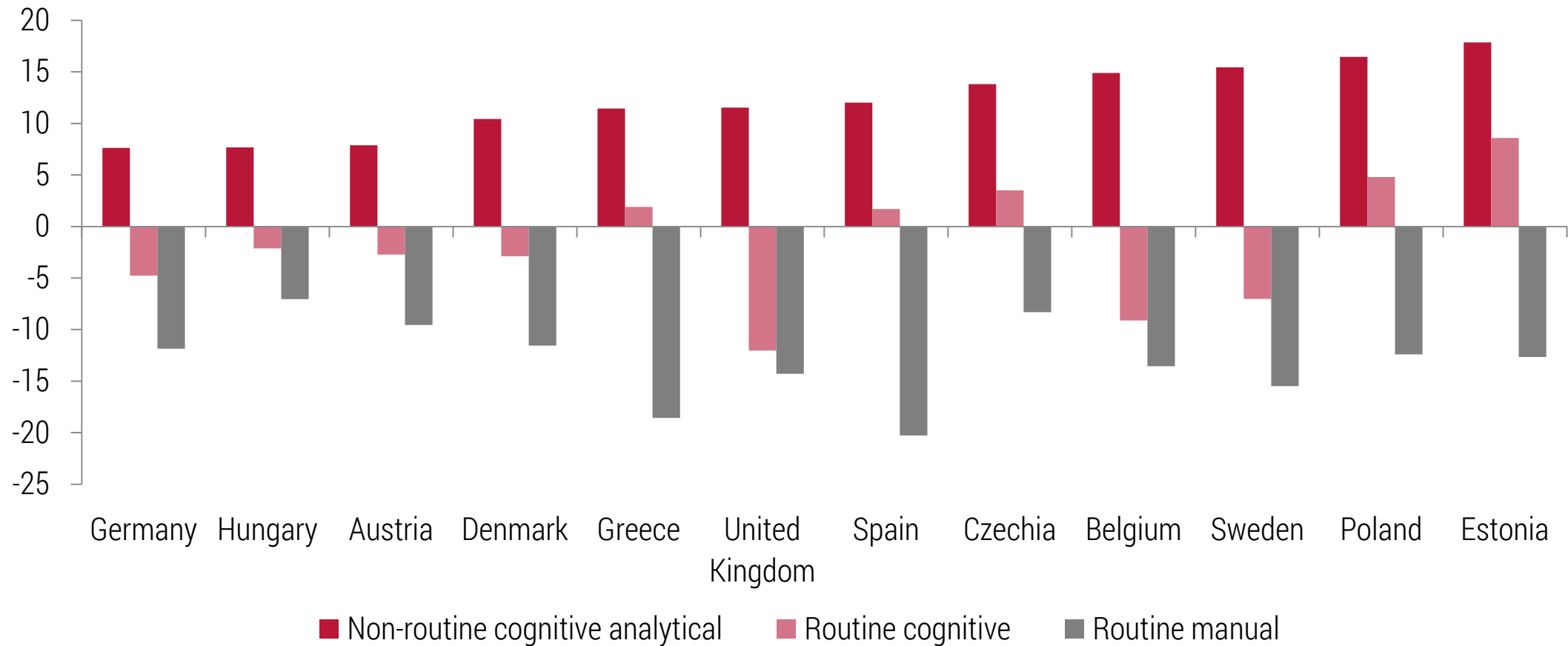
Change in the task content intensity by country, 1998-2015



Manual tasks, especially routine ones, shrank in all European countries



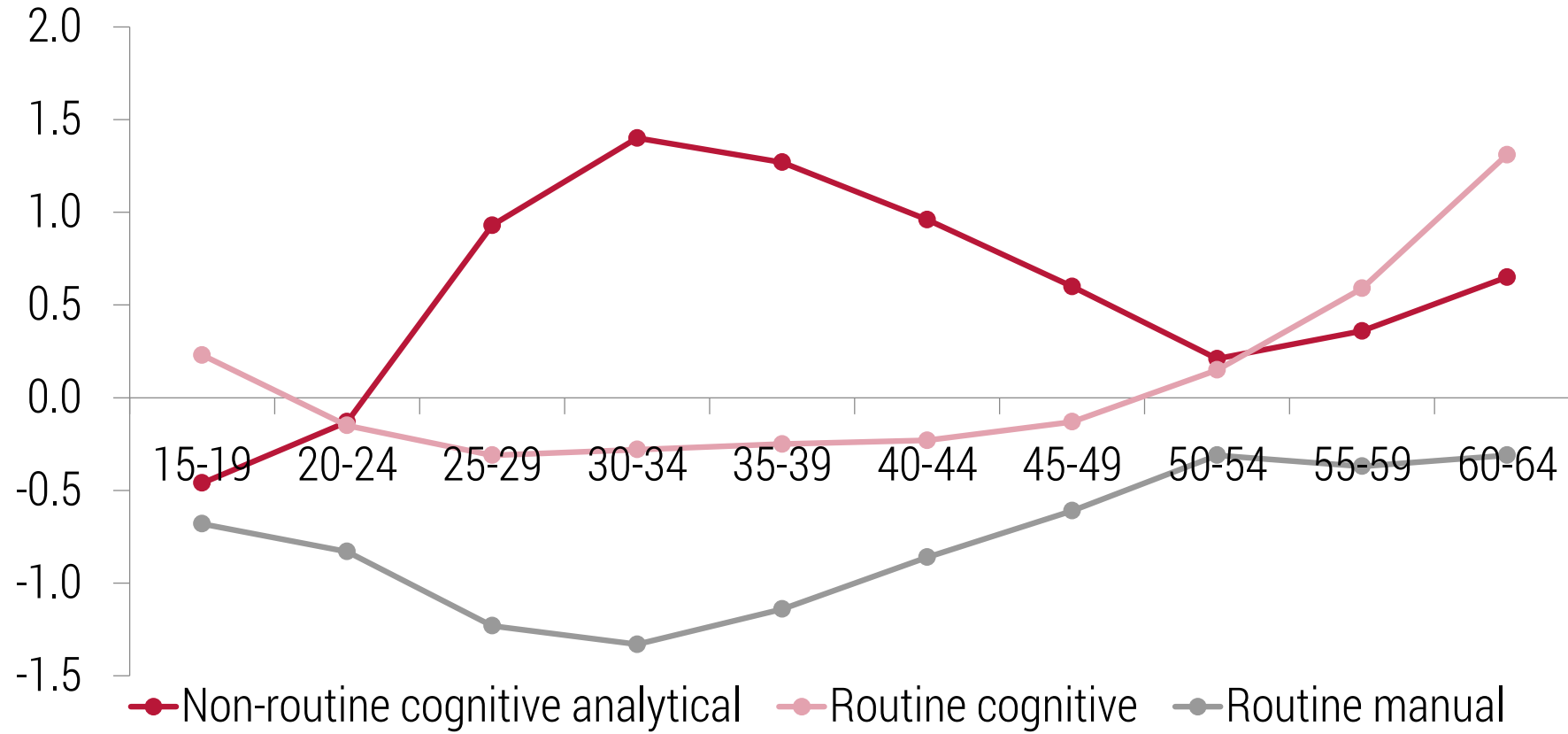
Change in the task content intensity by country, 1998-2015



Deroutinisation occurred much faster among prime-age workers than among older/younger workers



Task intensity changes by age groups - panel estimates of linear time-trend coefficients, 12 EU countries in 1998-2015



From here on I will use the routine task intensity (RTI, Autor & Dorn, 2009)



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

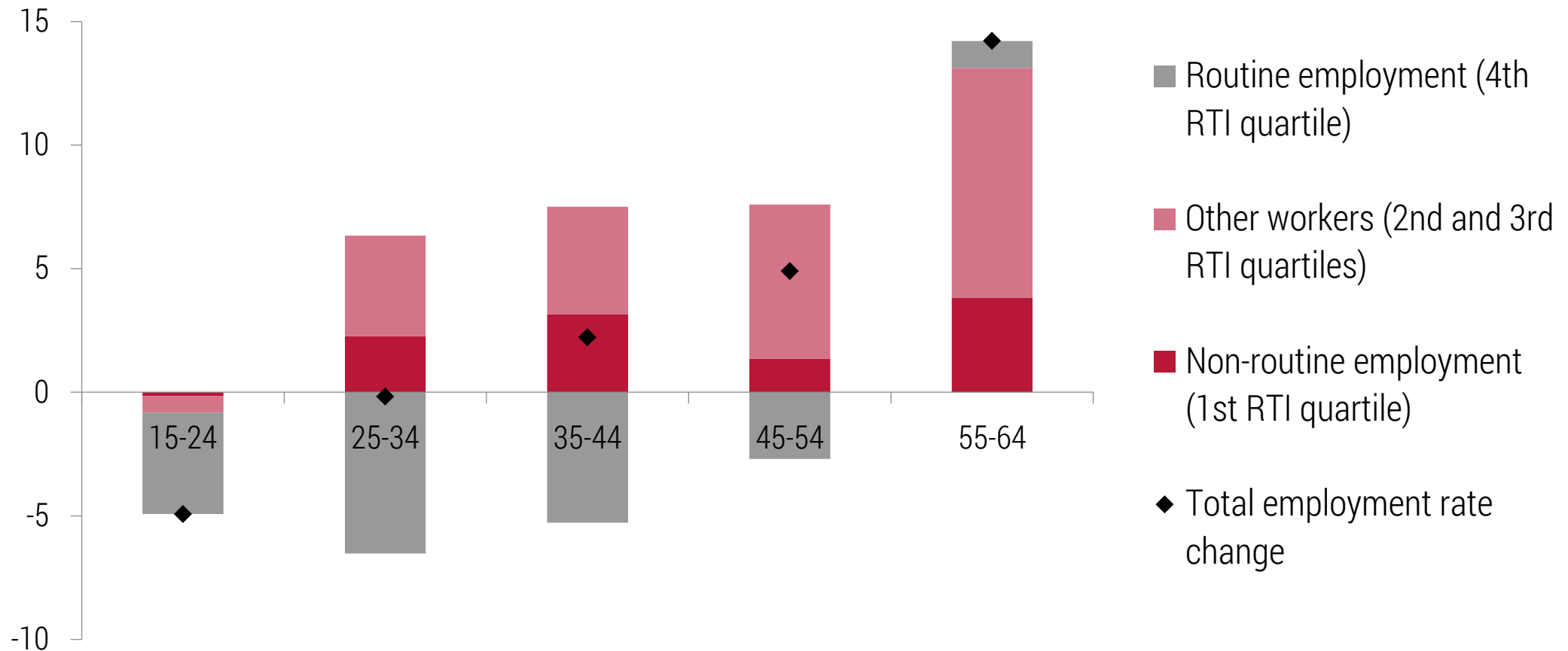
$$\forall i \in \text{occupations} RTI_i = \ln(RC + RM) - \ln(NRCA + NRCP)$$

- For each country, the pooled (1998-2015) distribution of RTI defines:
 - Non-routine workers – 25% of individuals with the lowest RTI
 - Routine workers – 25% of individuals with the highest RTI

Older workers (aged 55-64) were the only group that recorded increasing employment rate of routine workers



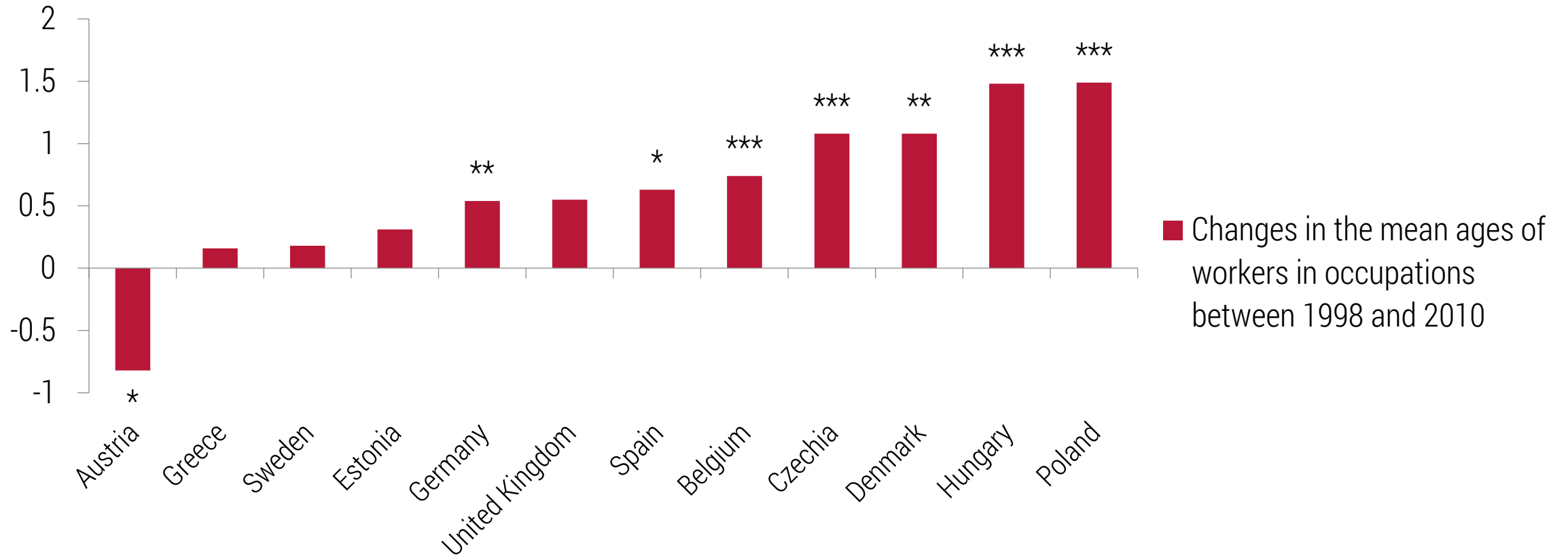
Changes in employment rates of routine and non-routine workers, between 1998-2000 and 2013-2015, average for 12 EU countries (in pp.)



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



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

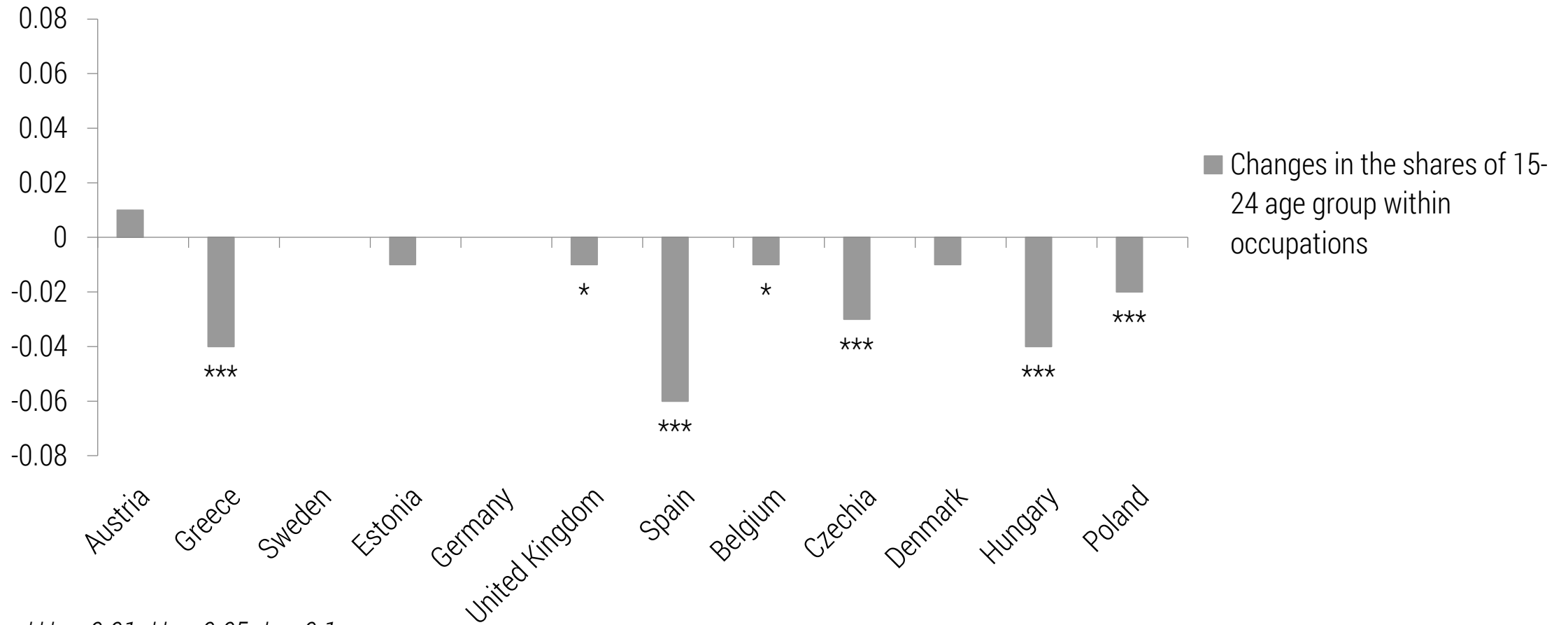


*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

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

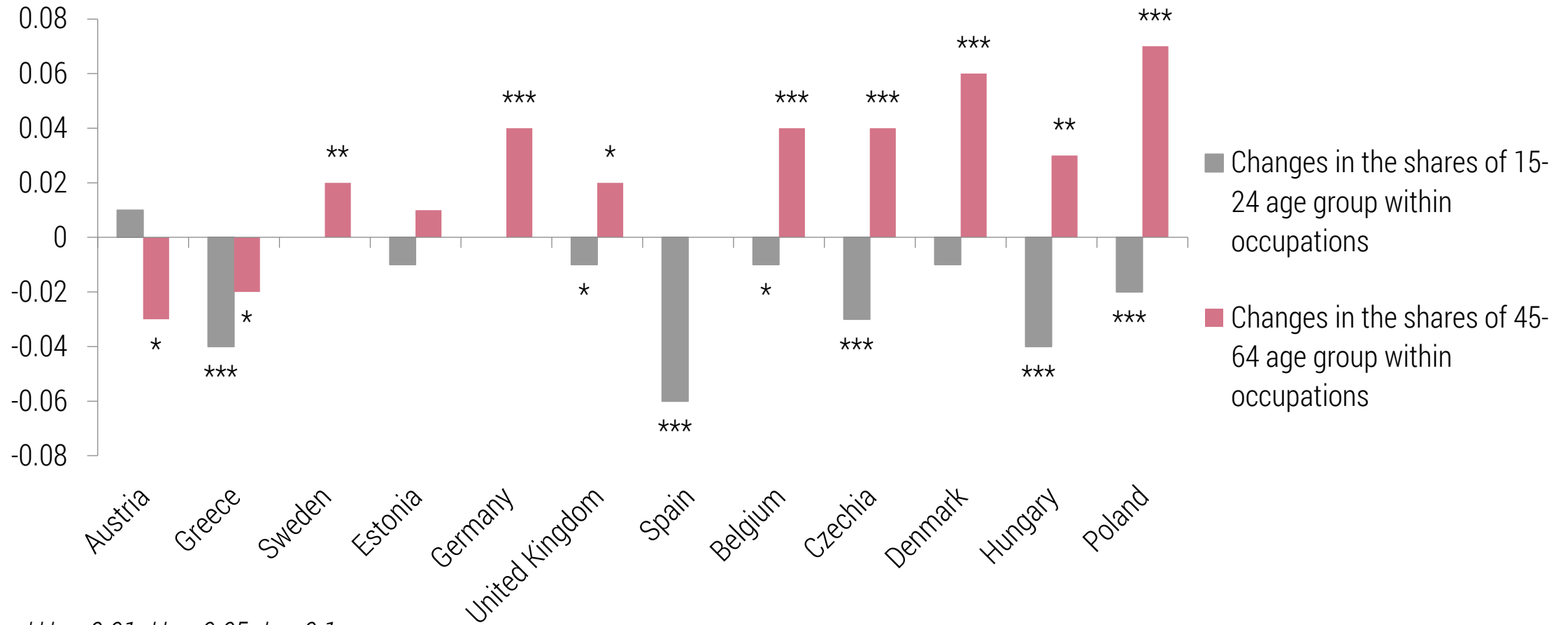


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And the share of the oldest workers was increasing



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 increase the risk of unemployment among routine workers

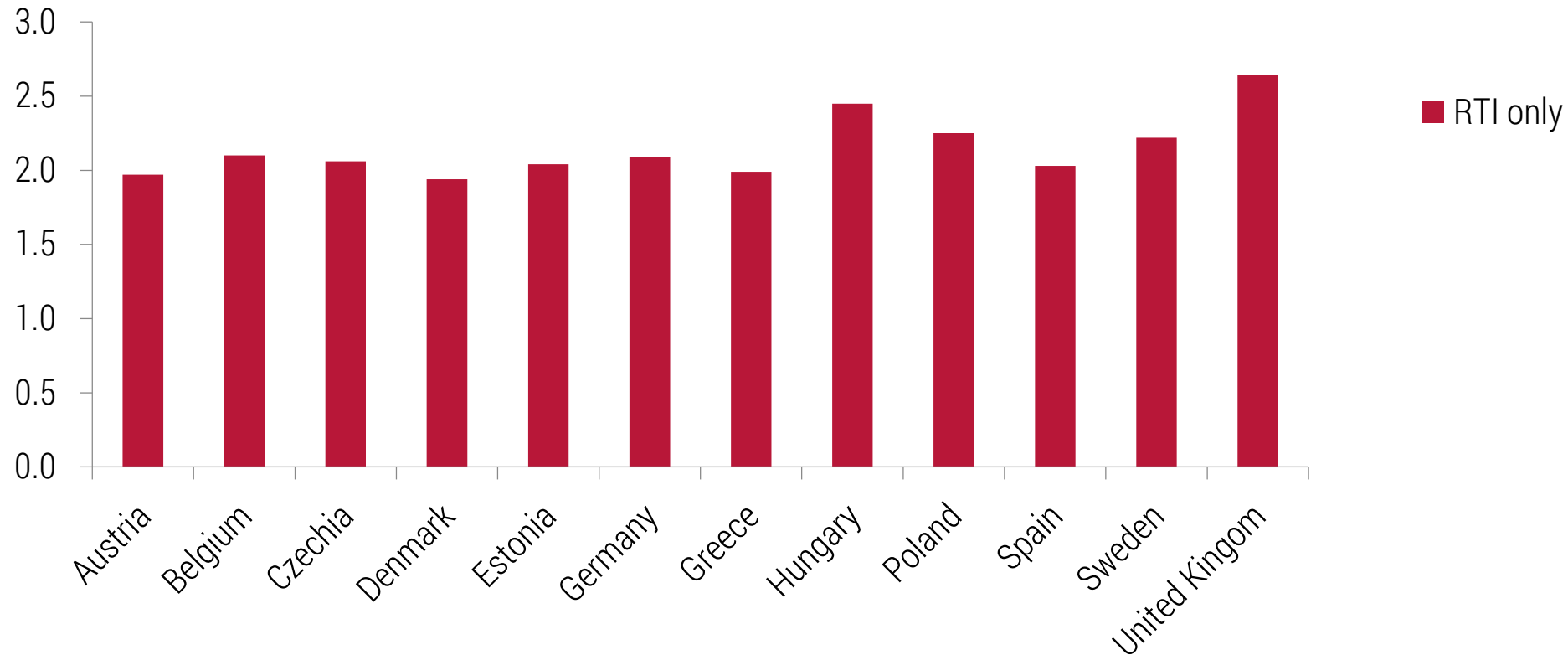


- Are routine workers more likely to be unemployed?
- Are there differences by age and over time?
- Country-specific logit models for the probability of being unemployed (accounting for changes over time, individual, workplace and regional variables)

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

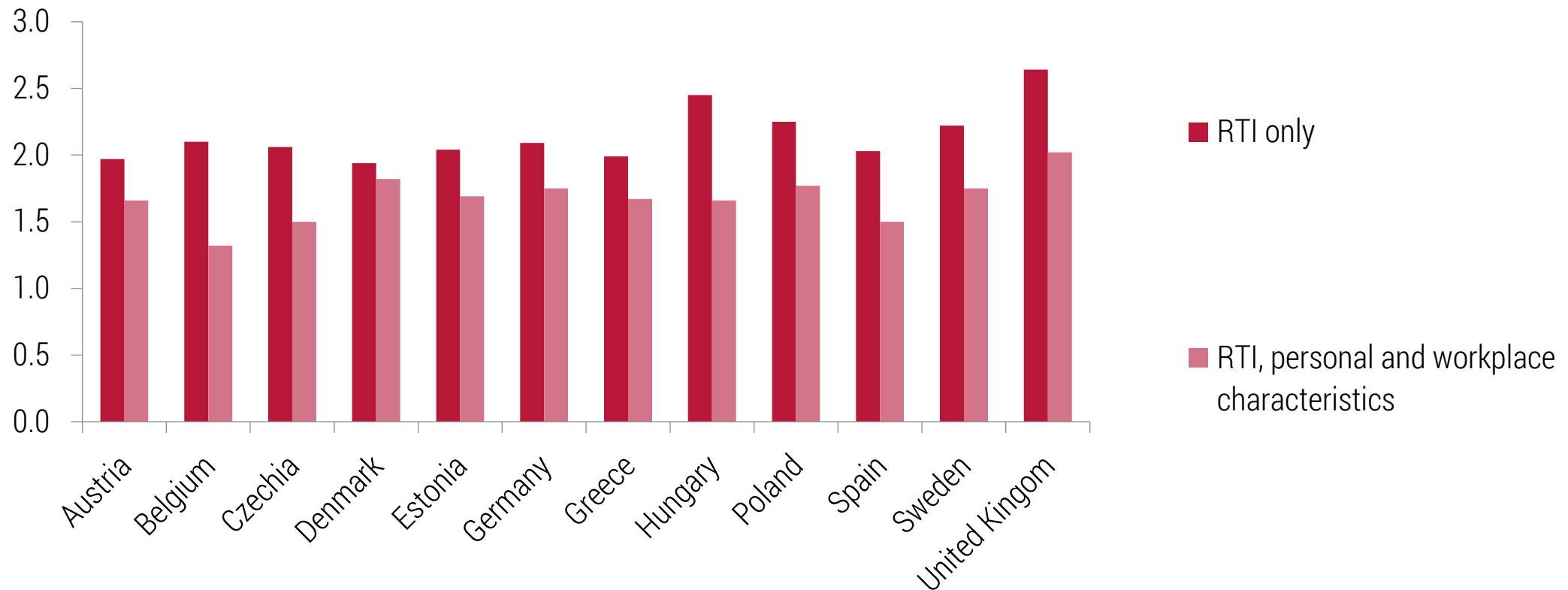


Logit regressions at individual level. Standard errors clustered at occupation level. All effects significant at 0.01.

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



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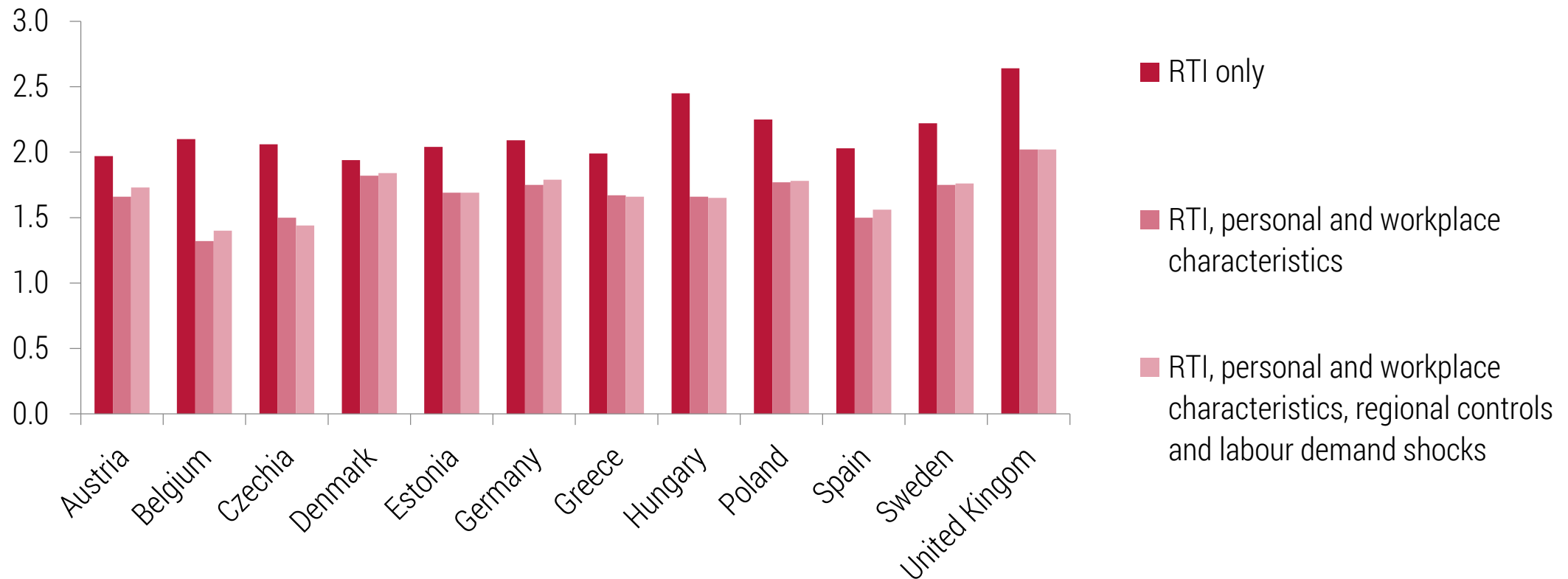


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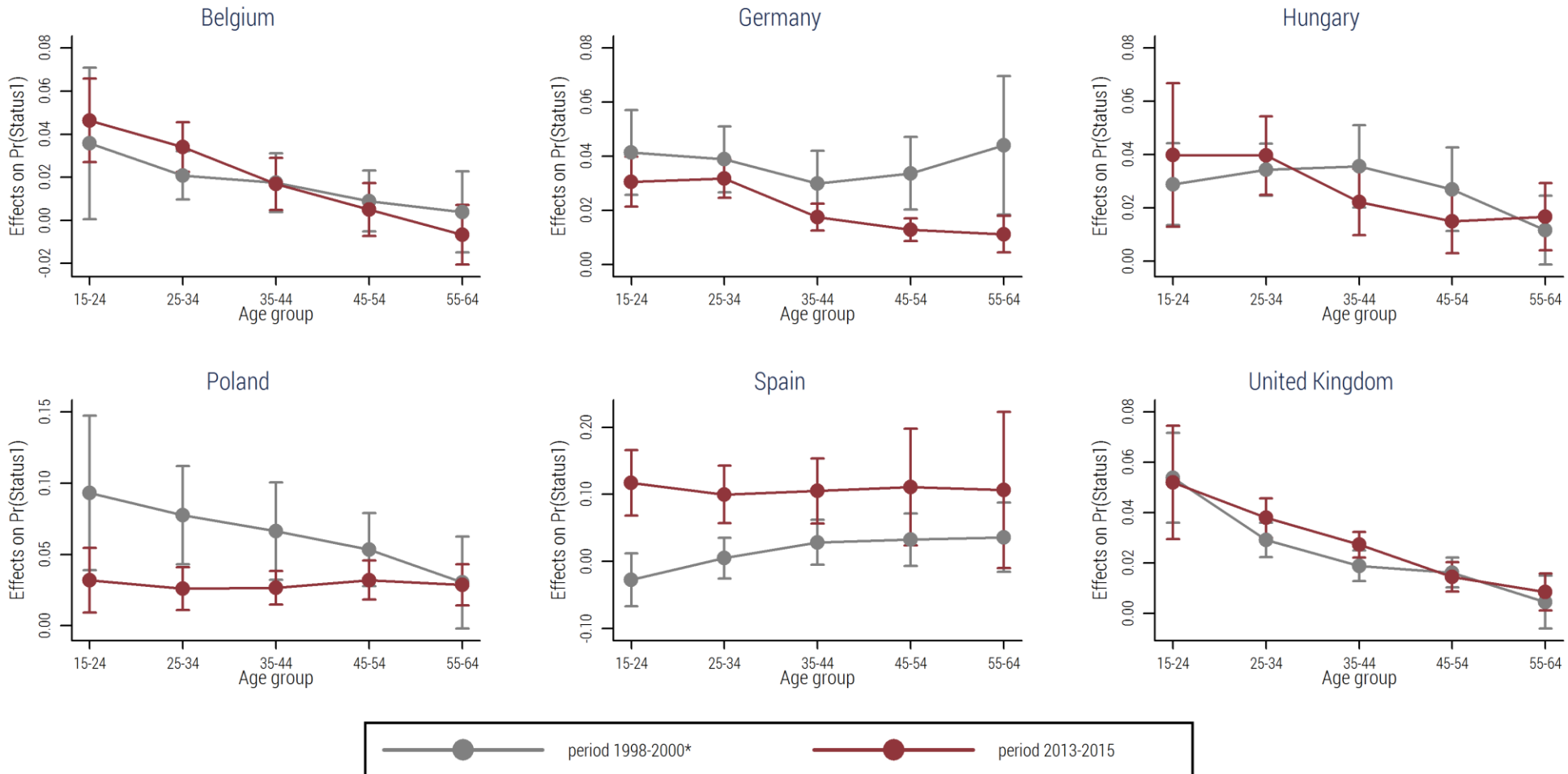


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The relationship between routine task intensity and unemployment probability is declining with age



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 more strongly 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 \searrow as ICT stock \nearrow and technology prices \searrow

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Thanks for listening

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