

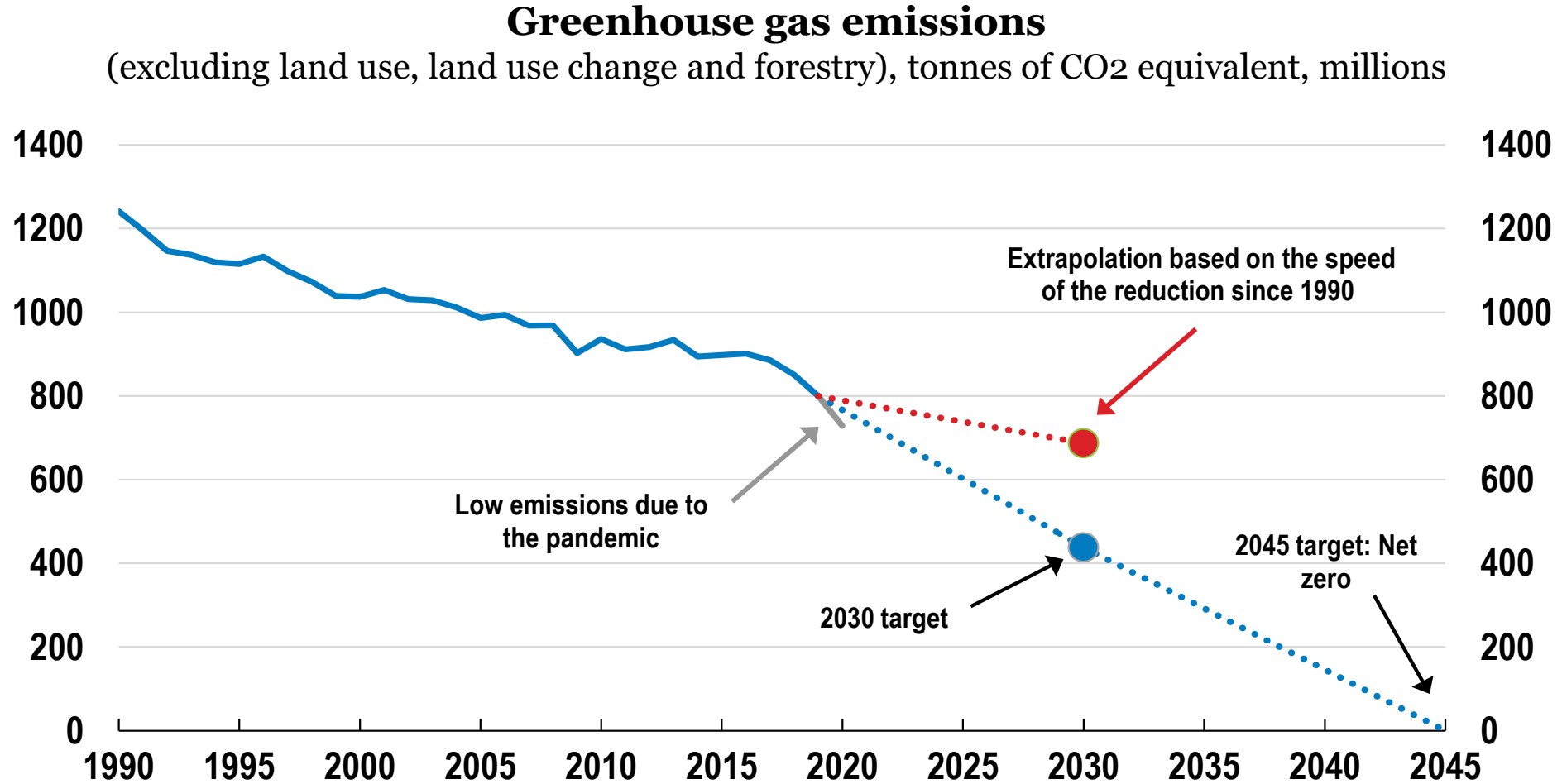


THE COST OF JOB LOSS IN CARBON-INTENSIVE SECTORS: EVIDENCE FROM GERMANY

Cesar Barreto, Robert Grundke and Zeev Krill



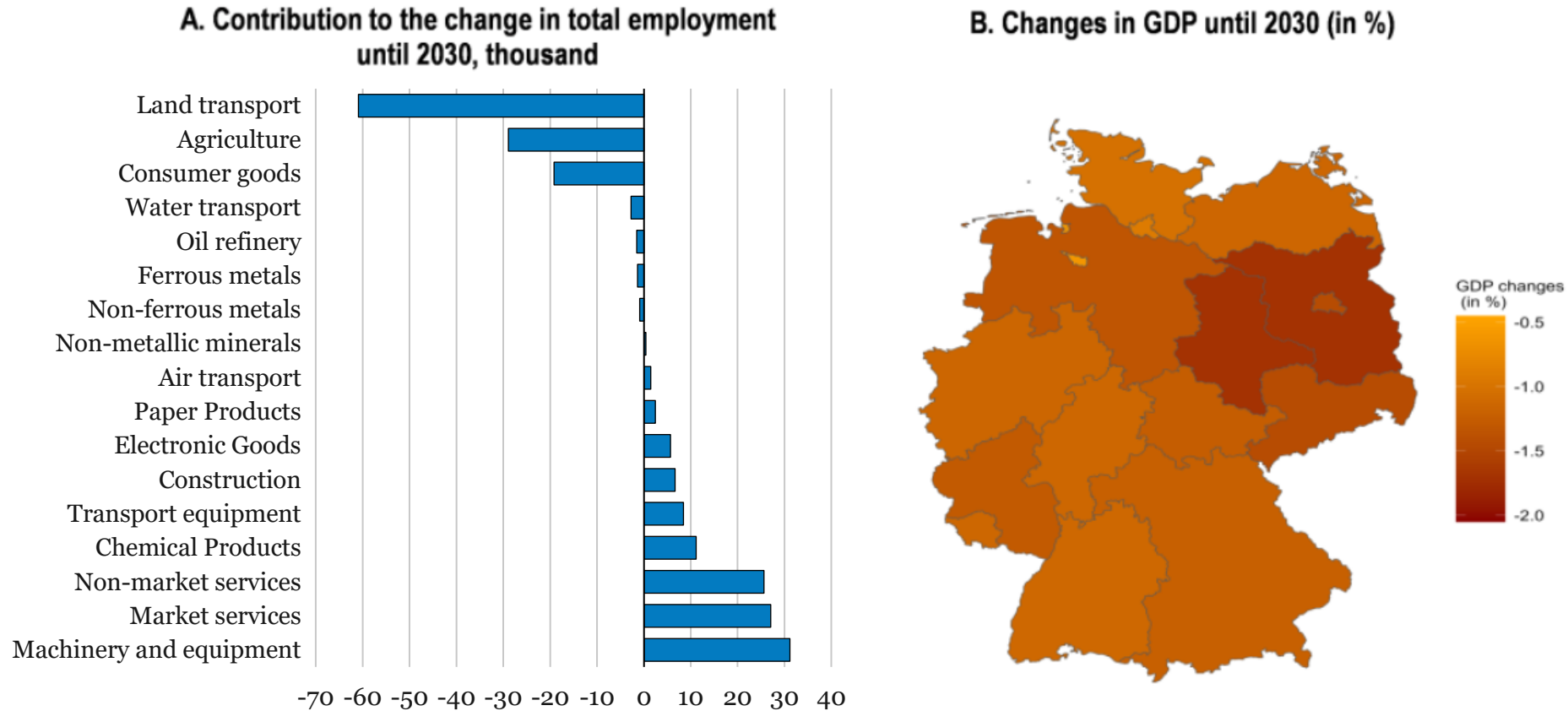
Germany has set ambitious emission reduction targets



Source: OECD calculations based on OECD Environment Statistics and Umweltbundesamt.



Reaching ambitious climate targets would lead to heterogenous effects across sectors and regions



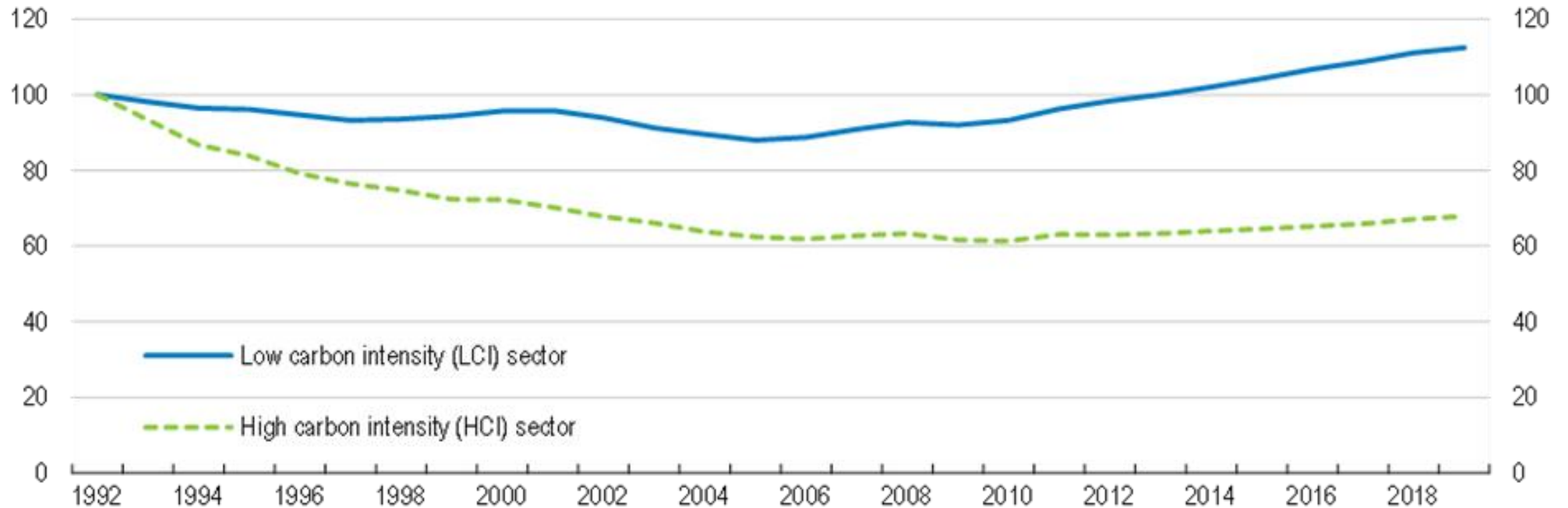
Note: The graphs show simulation results from a multi-county, multi-sector computable general equilibrium model which quantifies the effects of reaching EU Fit for 55 climate targets in 2030 compared to a benchmark scenario that assumes policies remain the same as in 2021.

Source: (Bickmann et al., forthcoming).



Germany has already experienced significant employment losses in high carbon-intensity sectors

Employment trends in high carbon-intensity (HCI) and low-carbon intensity sectors (LCI) in Germany (1993=100)



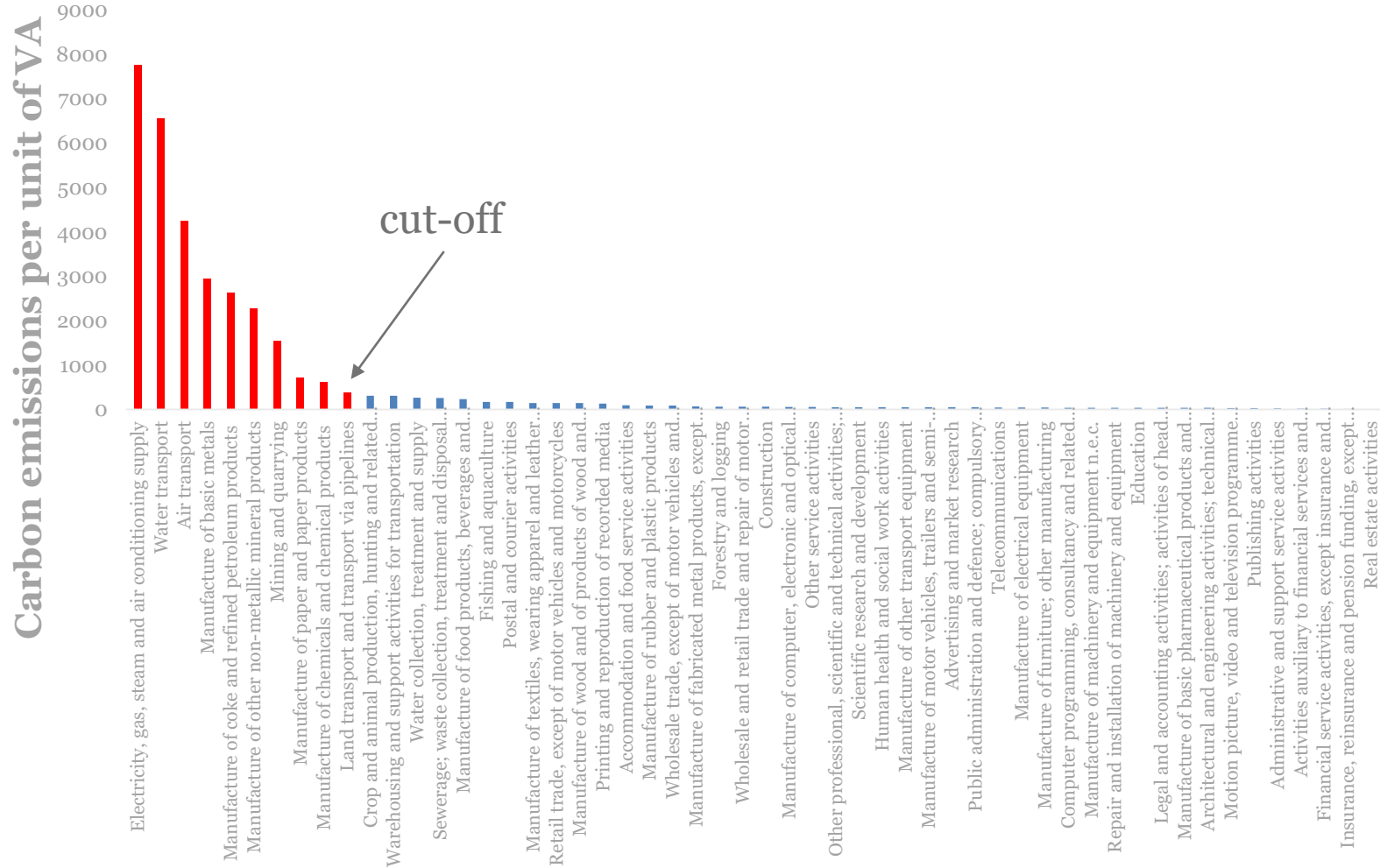


Research design

- We estimate job loss effects separately for workers displaced from High Carbon Intensity (HCI) sectors and from Low Carbon Intensity (LCI) sector
 - Contrast trajectories of similar displaced (treated) and non-displaced (control) workers before and after mass-layoff events.
 - To ensure comparability of treated and control workers, we match them based on pre-displacement characteristics.
 - Mass layoff: $\geq 30\%$ employment drop among establishments with at least 50 employees.
- Data: Integrated Employment Biographies (IEB), 10% random sample matched with establishment level information.



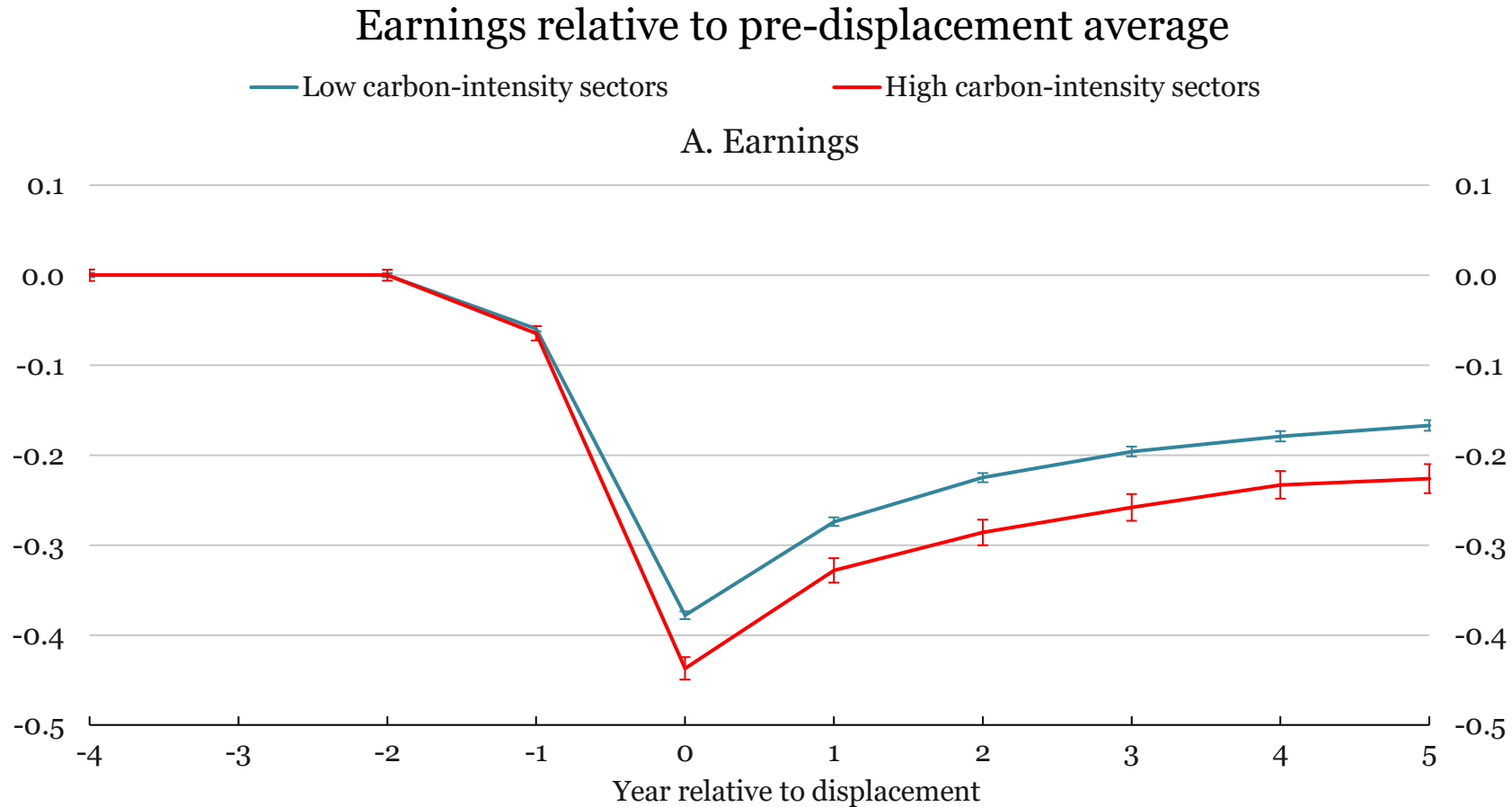
Defining the carbon intensity industries



- Carbon intensity sectors: top two deciles of average intensity in the years 2000-2016
- Cover **81%** of total CO₂ emissions and **7.1%** of total employment during this period.



Displaced high carbon intensity workers suffer lasting and significant reductions in earnings

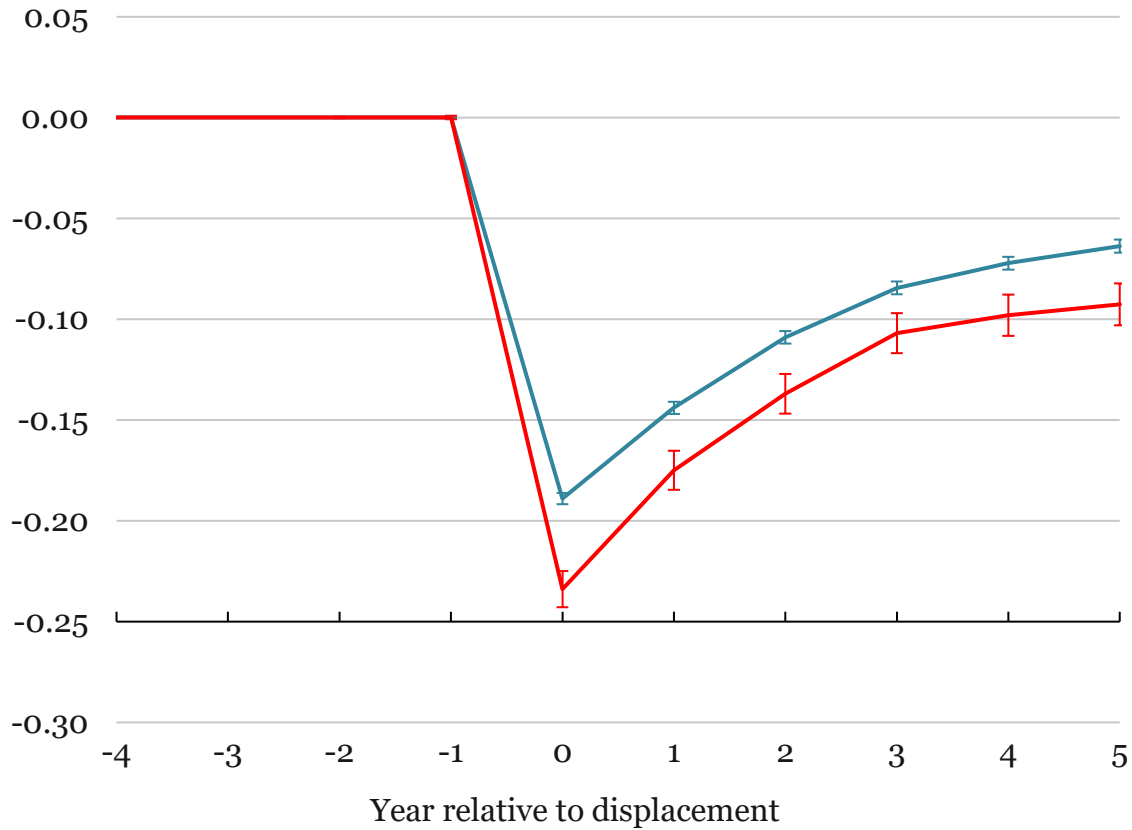


Source: Barreto, Grundke and Krill (forthcoming).

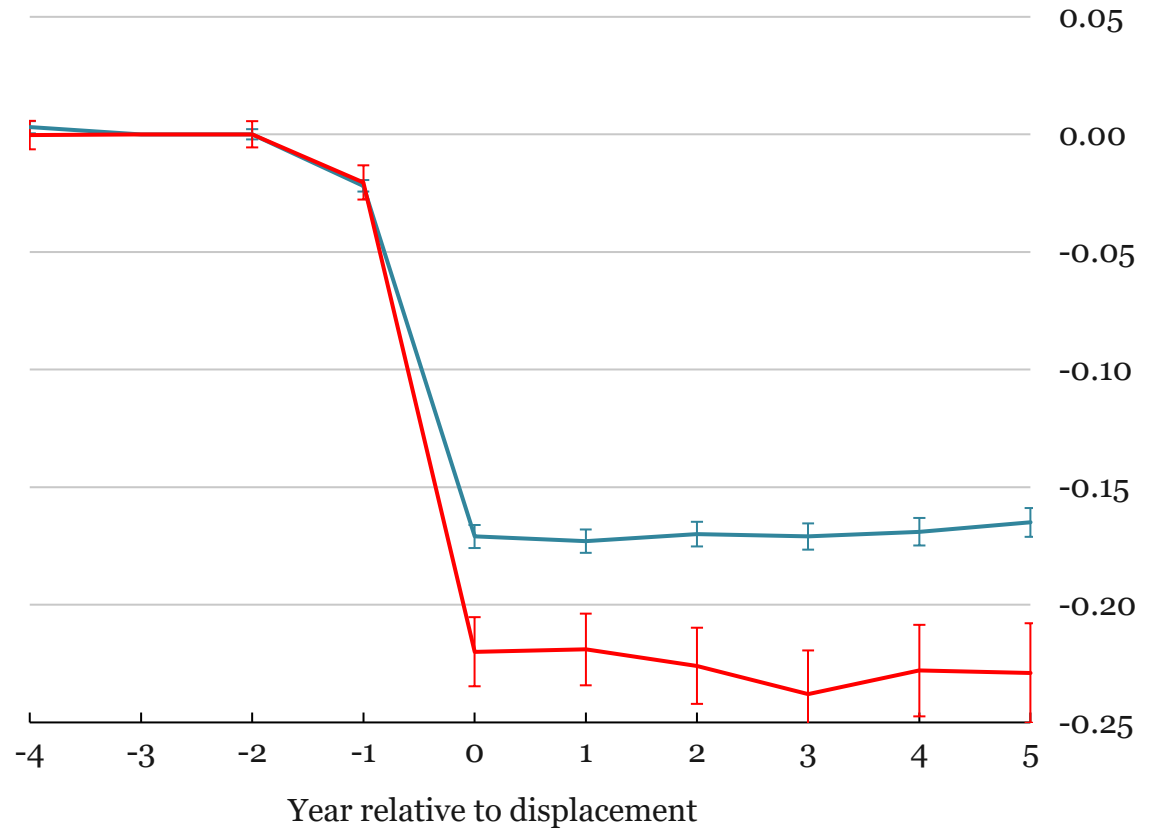


... driven mainly by lower wages

B. Employment

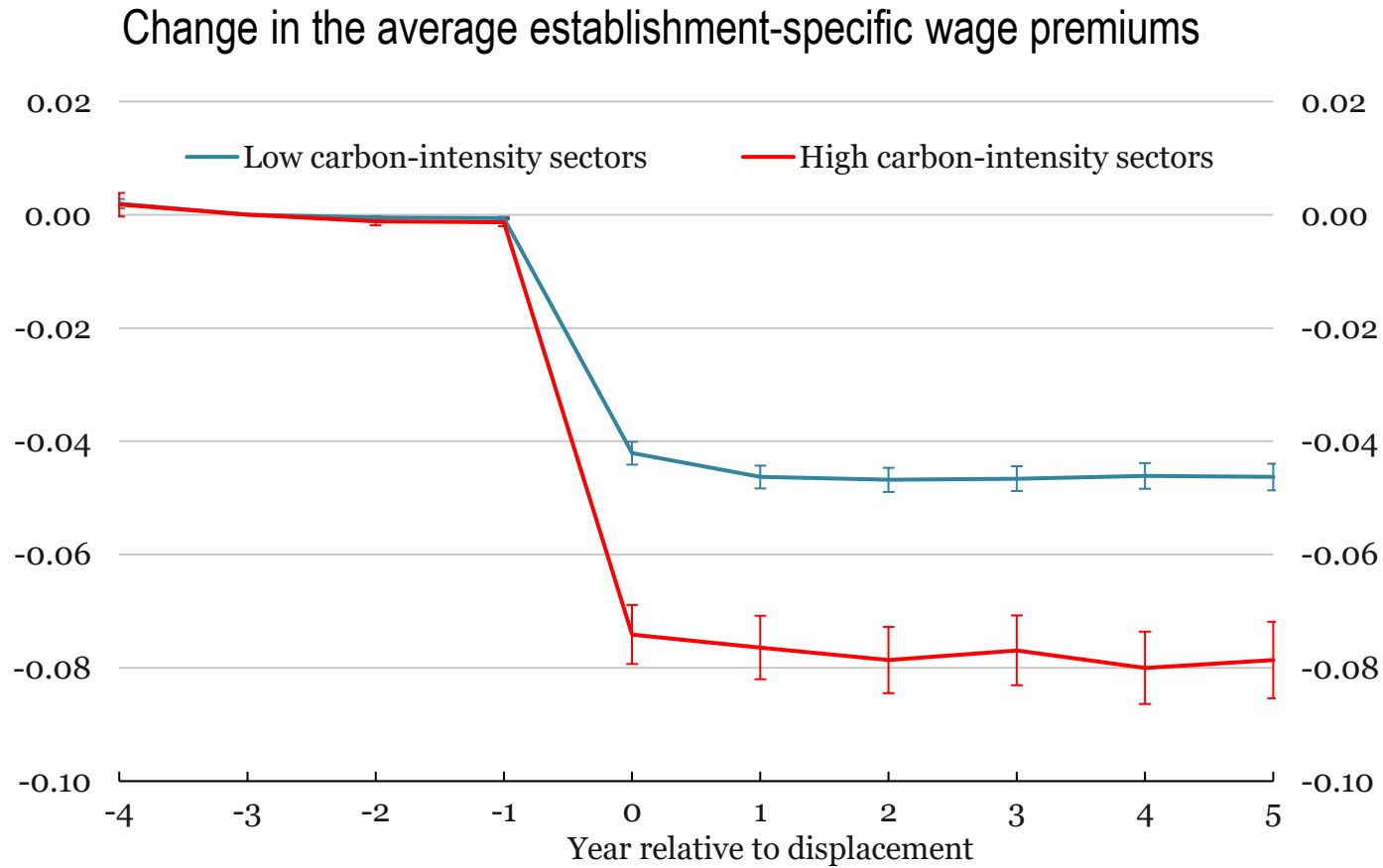


C. Daily wages





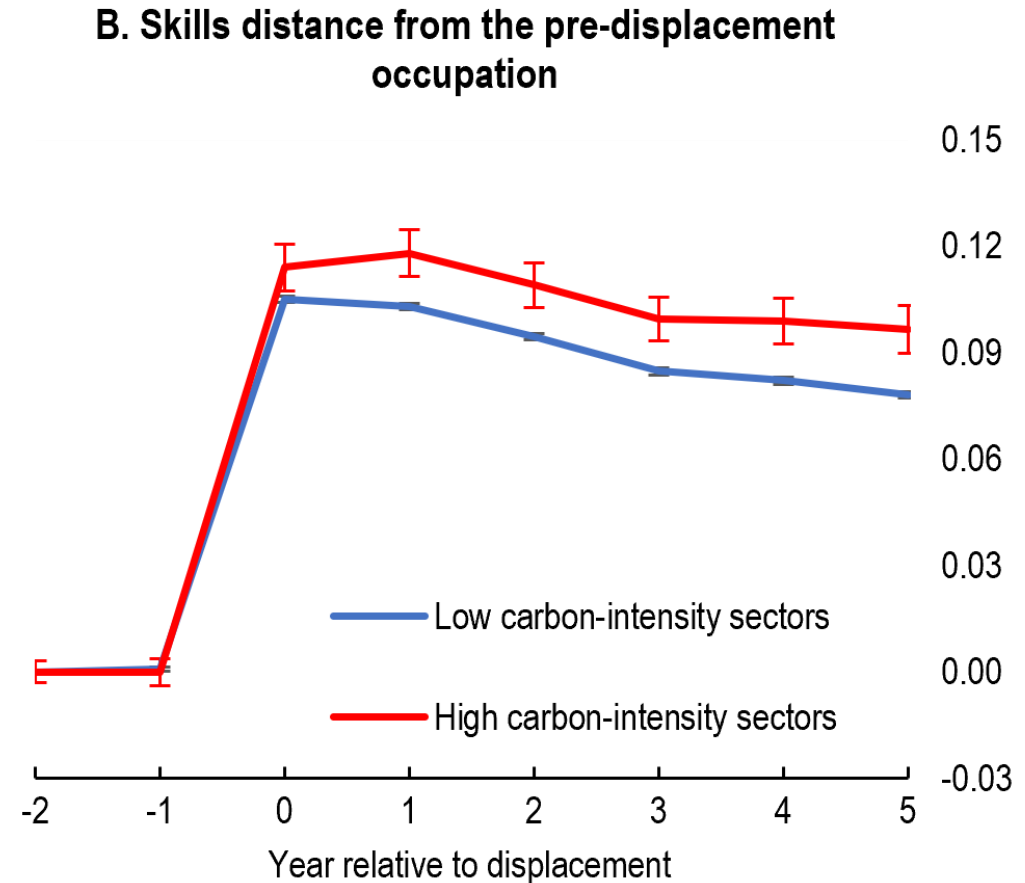
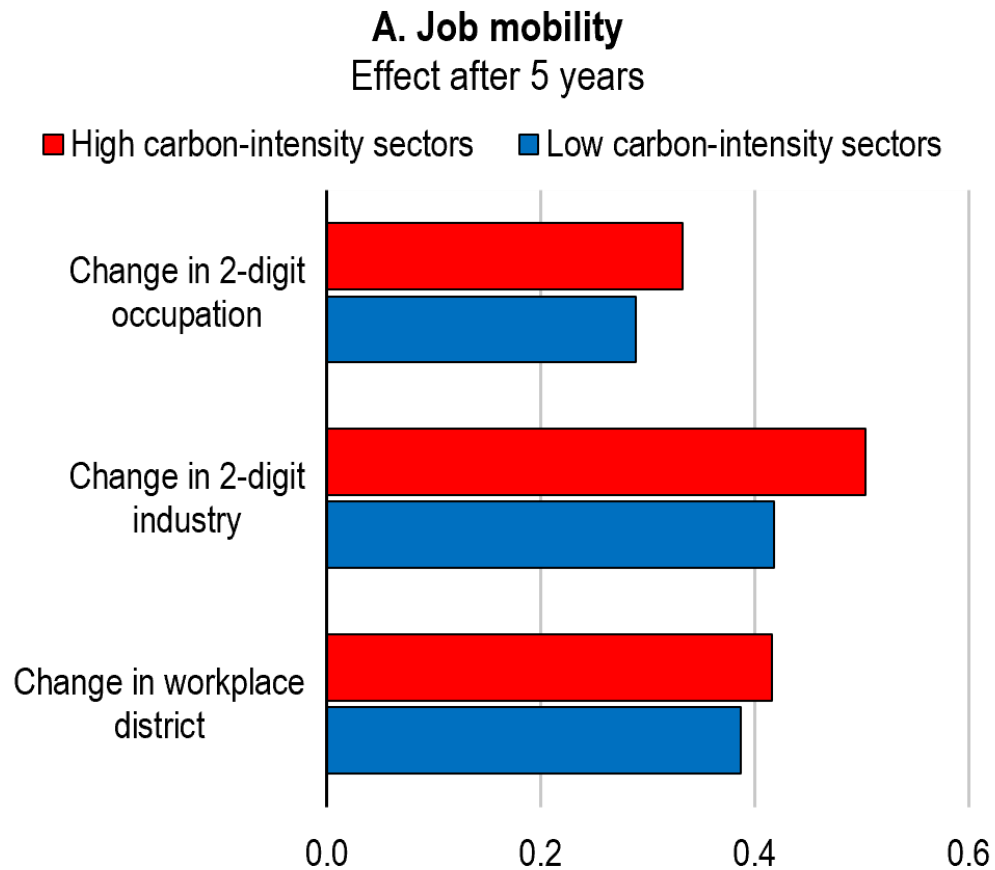
Displaced high carbon intensity workers suffer a more significant reduction in the establishment wage premiums



Note: The establishment wage premiums are calculated by estimating two-way AKM fixed effects for the period 1992-2020, as in Abowd et al. (1999_[18]) and Card et al. (2013_[19]).



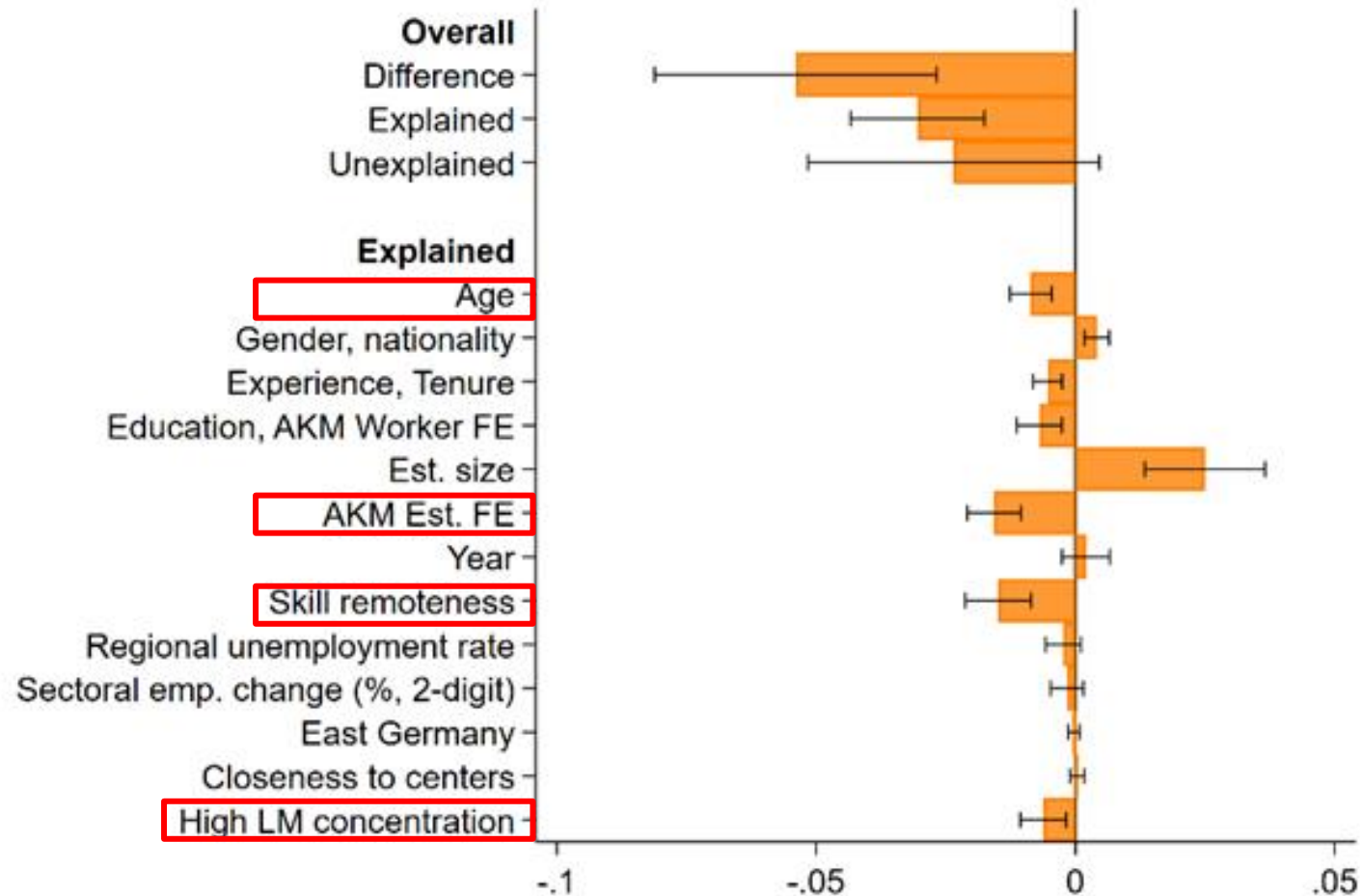
Displaced high carbon intensity workers are more likely to switch occupation, sector and workplace district after displacement



Note: Panel A shows the effect of job loss on the probability to change 2-digit occupations, 2-digit sectors and workplace district at event time $k=5$. Panel B shows the effect of job loss on the skill distance from the pre-displacement occupation. Skill distance was measured as task distance according to Gathmann & Schönberg (2010). It equals zero for occupations which use identical skill sets and unity for occupations that are completely different in their skill sets.

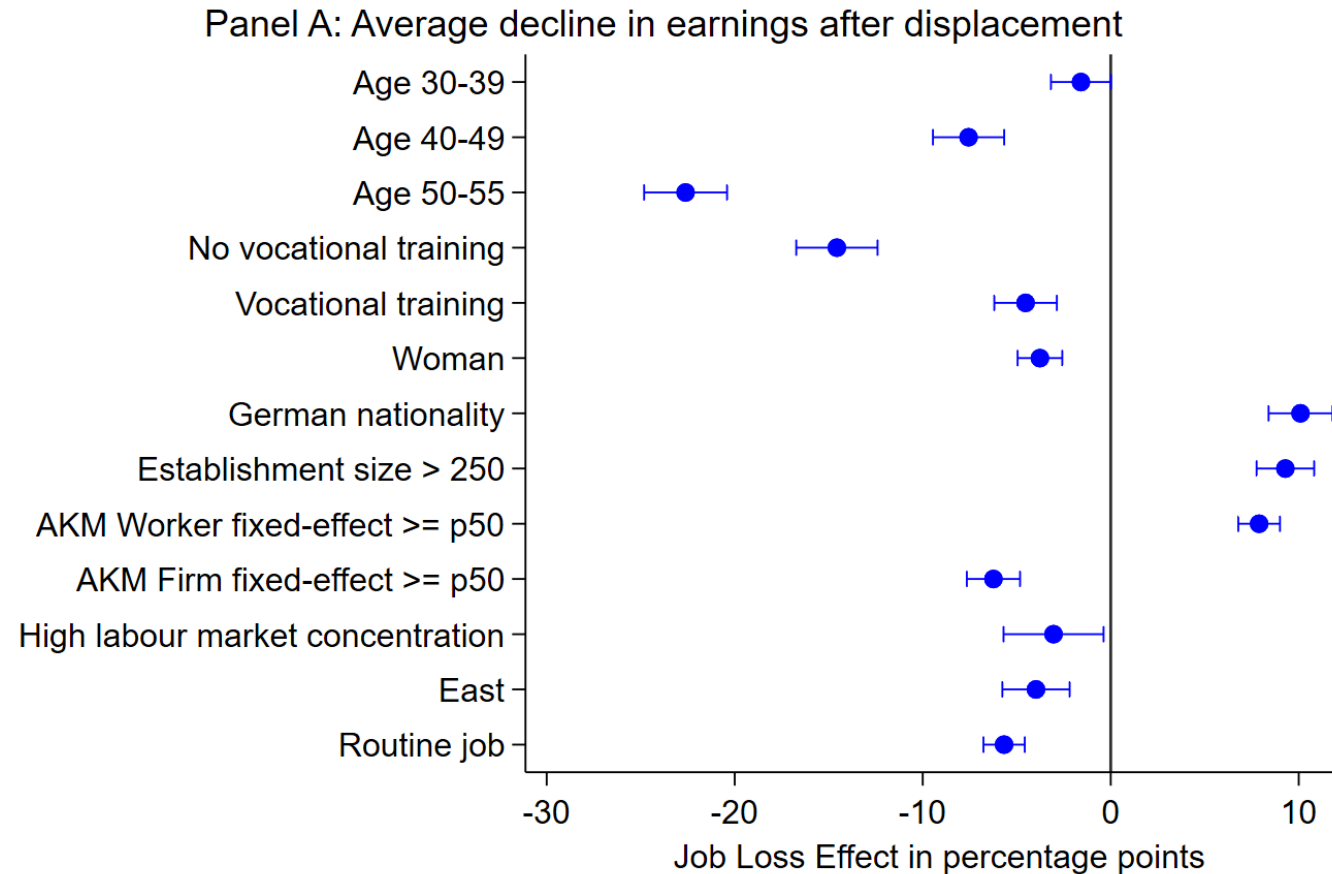


An older workforce, higher skill-distances, labour market concentration and losses in firm wage premia predominantly explain the gap.





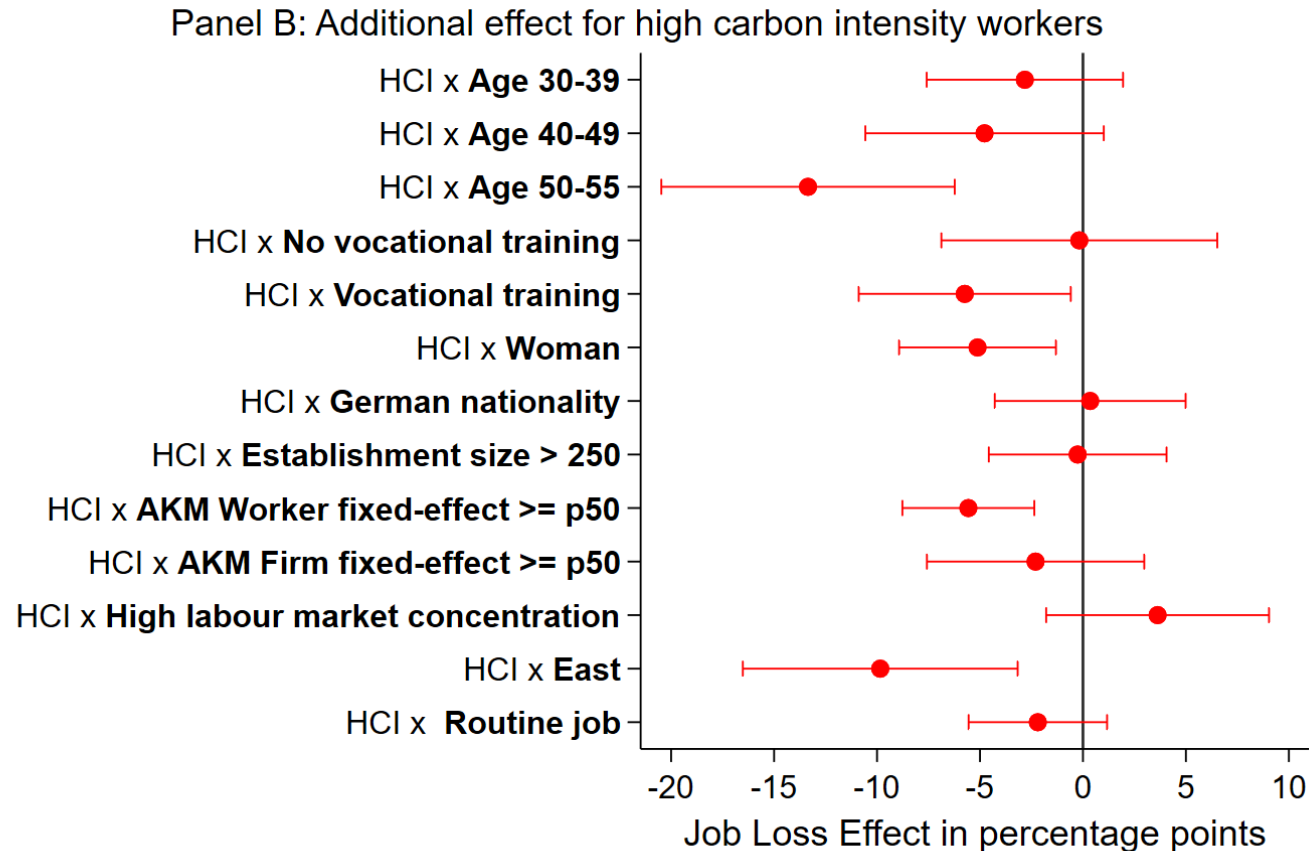
Earnings losses after displacement are very heterogeneous



Note: Point estimates refer to changes in relative earnings in case of involuntary displacement. Horizontal bars indicate the estimated 95% confidence interval based on standard errors clustered at the district level. The base groups are the age group 20-29 years, having an academic degree, being male, from West Germany, without the German nationality, in an establishment with less than 250 employees, in a non-routine occupation and below the sample median AKM worker and firm FE. High labour market concentration is defined as an HHI larger than 0.15 in the corresponding labour market. A routine job is defined as an occupation with main occupation task component as routine-manual or routine-cognitive.




Older, low-skilled, and female workers as well as those in East Germany experience steeper earning losses in high-carbon intensity sectors



Note: Point estimates refer to changes in relative earnings in case of involuntary displacement. Horizontal bars indicate the estimated 95% confidence interval based on standard errors clustered at the district level. The base groups are the age group 20-29 years, having an academic degree, being male, from West Germany, without the German nationality, in an establishment with less than 250 employees, in a non-routine occupation and below the sample median AKM worker and firm FE. High labour market concentration is defined as an HHI larger than 0.15 in the corresponding labour market. A routine job is defined as an occupation with main occupation task component as routine-manual or routine-cognitive. // Page 13



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Job displacement in high-pollution sectors: Implications for the green transition

César Barreto (OECD), Alexander Hijzen (OECD), Stefano Lombardi (VATT), Benjamin Lochner (IAB), Balázs Muraközy (University of Liverpool), Jonas Fluchtmann (OECD)

CEE Webinar: Labour market and social implications of the green transition

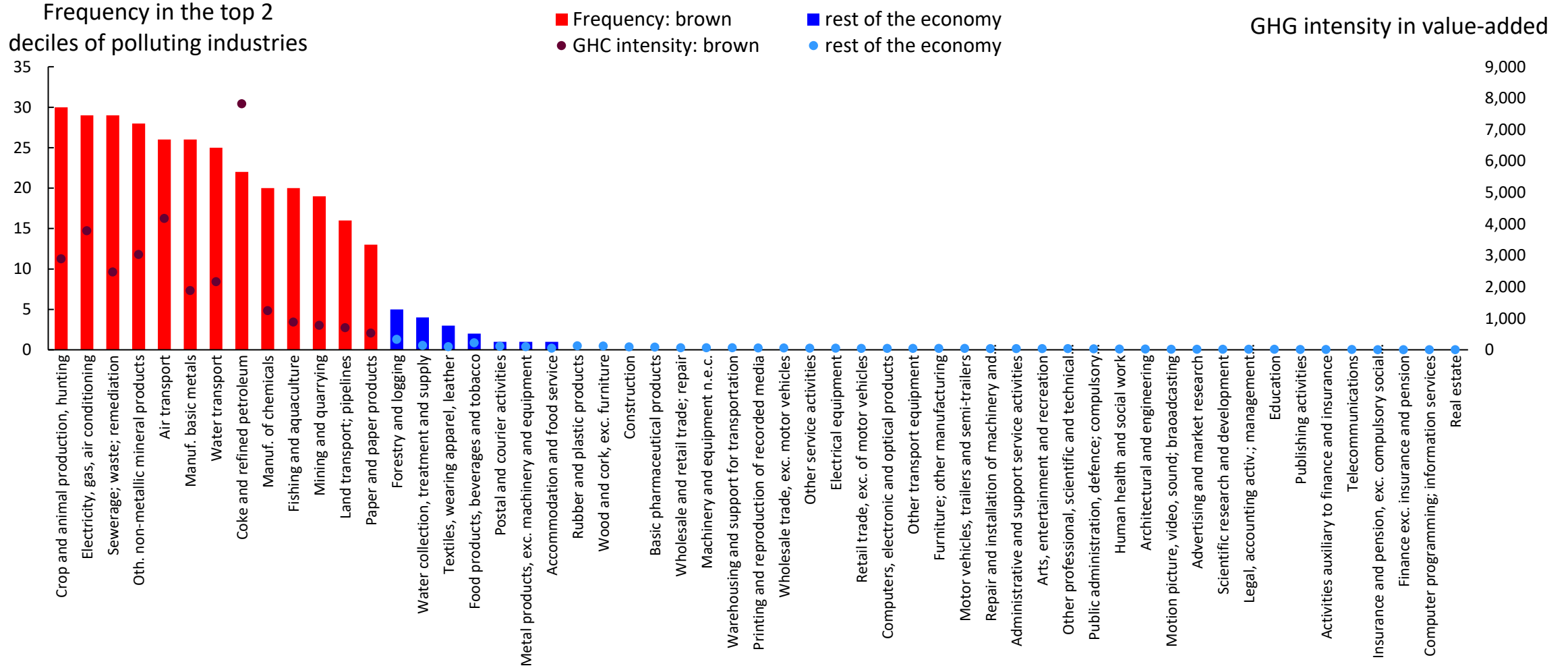
7 November 2023

Preliminary

Objective, approach and preliminary results

- Provide comprehensive cross-country evidence on the cost of job displacement from greenhouse-gas (GHG) intensive industries
 - Do the cost of job displacement in GHG intensive industries differ from those of in other industries?
 - Do the cost of job displacement in GHG intensive industries differ across countries?
- Estimate the cost of job displacement separately for workers displaced from GHG-intensive and those of other industries
 - Compare outcomes of displaced workers with those of non-displaced workers
 - Ensure that displaced and non-displaced workers are comparable through matching
- Effective policies are needed to support workers who are displaced from GHG-intensive industries
 - Earnings losses are consistently larger within countries due to larger (firm)-related wage losses
 - Earnings losses are larger in countries where it is more difficult to find a new job after displacement

Defining greenhouse-gas (GHG) emission-intensive sectors



Linked employer-employee data

	Name	Earnings data source	Sample structure	Time coverage
Austria	AMS-BMASK Arbeitsmarktdatenbank	Social security administration	Universe	2000-2019
Estonia	Data from the Tax and Customs Board Register	Tax administration	Universe	2003-2019
Finland	FOLK employment data from Statistics Finland, Employer Payroll Report from Tax Administration	Tax administration	Universe	2000-2019
Germany	Integrierte Erwerbsbiographien (IEB)	Social security administration	Universe	2000-2019
Hungary	ADMIN II - Panel of administrative data (OEP, ONYF, NAV, NMH, OH)	Social security administration	50% random sample of workers	2003-2017
Portugal	Quadros de Pessoal	Mandatory employer survey	Universe	2002-2019
Spain	Muestra Continua de Vidas Laborales con Datos Fiscales (MCVL-CDF)	Social security and tax administration	4% random sample of workers	2006-2019
France	Panel DADS	Social security administration	1/12 % random sample of workers	2002-2019

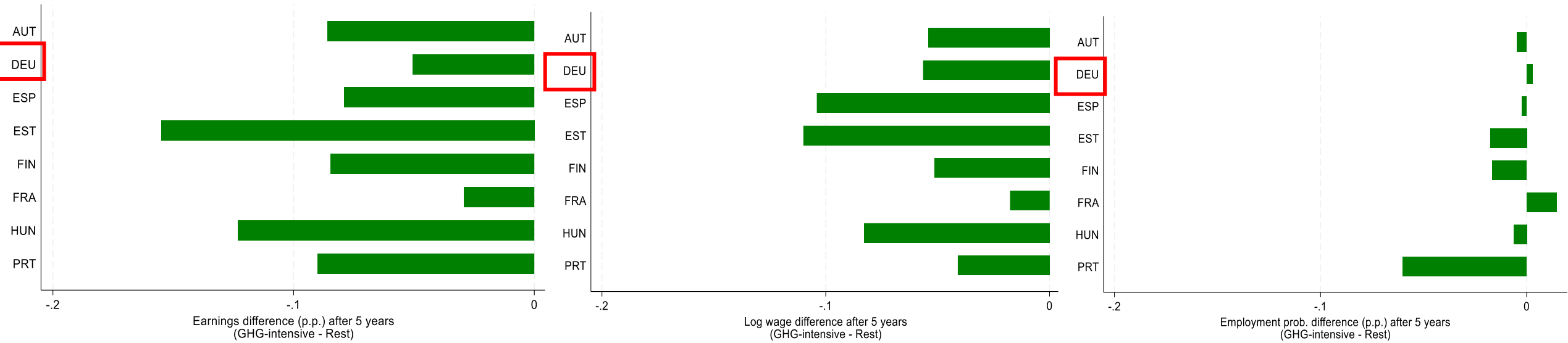
Displaced workers from GHG intensive industries suffer larger earnings and wage losses in all countries

Differences in the effects of displacement between GHG intensive industries and other industries five years after displacement by country, p.p.

Panel A. Earnings

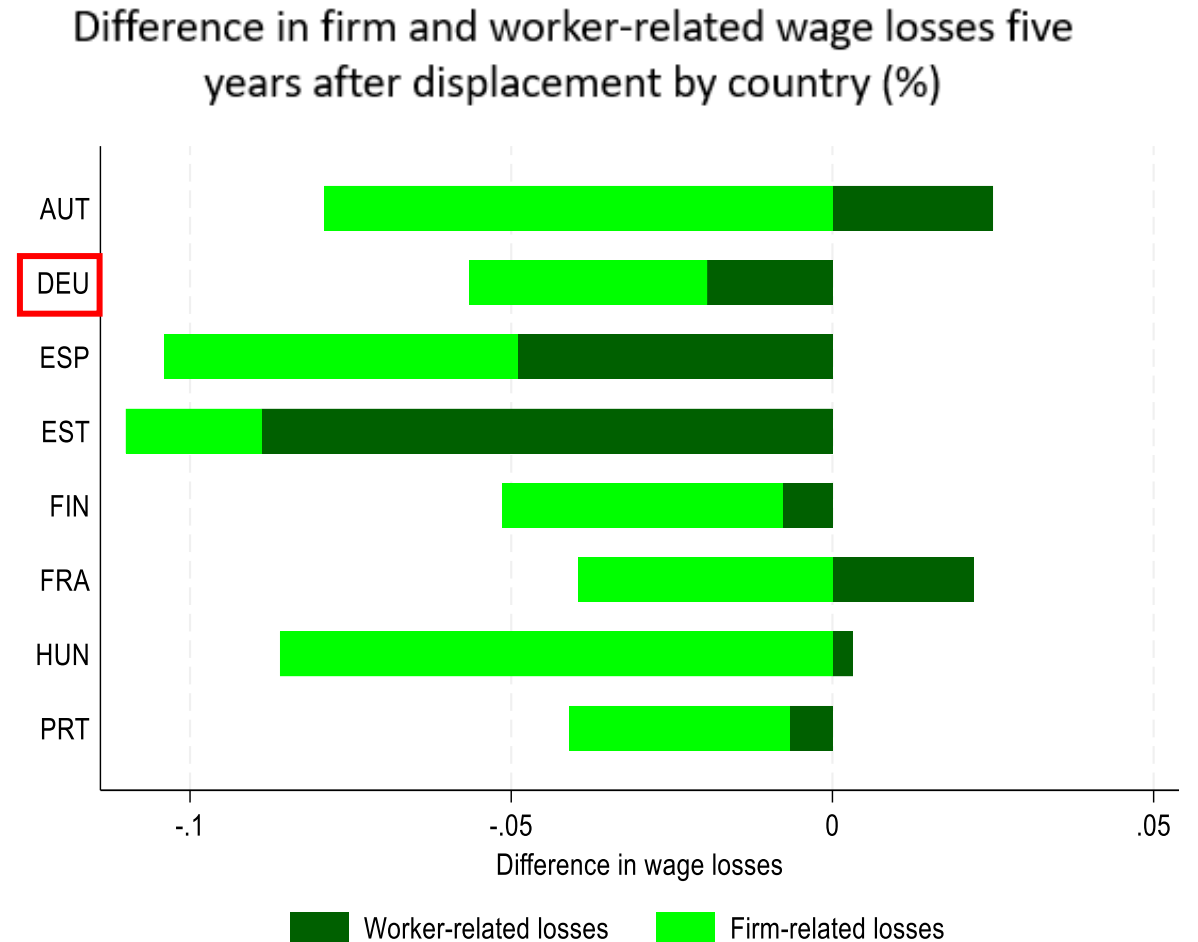
Panel B. Log wage

Panel C. Employment probability



Could wage insurance be part of the answer?

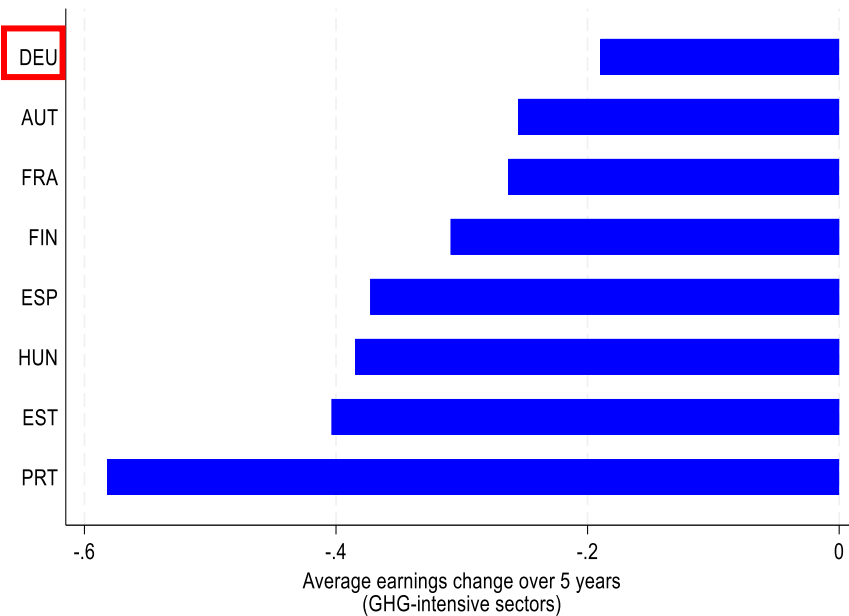
- Wage losses tend to be firm-related rather than worker-related
 - Suggests that workers in GHG-intensive industries are displaced from high-paying jobs
- Wage insurance seeks to mitigate firm-related wage losses, while strengthening job search incentives
 - US evidence: can pay for itself by reducing unemployment duration (Hyman et al, 2023)
 - Effects of German *Entgeltsicherung* unclear, mostly because of low-take up
 - Can build support for climate-change mitigation policies and limit concerns over job loss
 - Potential equity concerns over selective support for previously high-paid workers



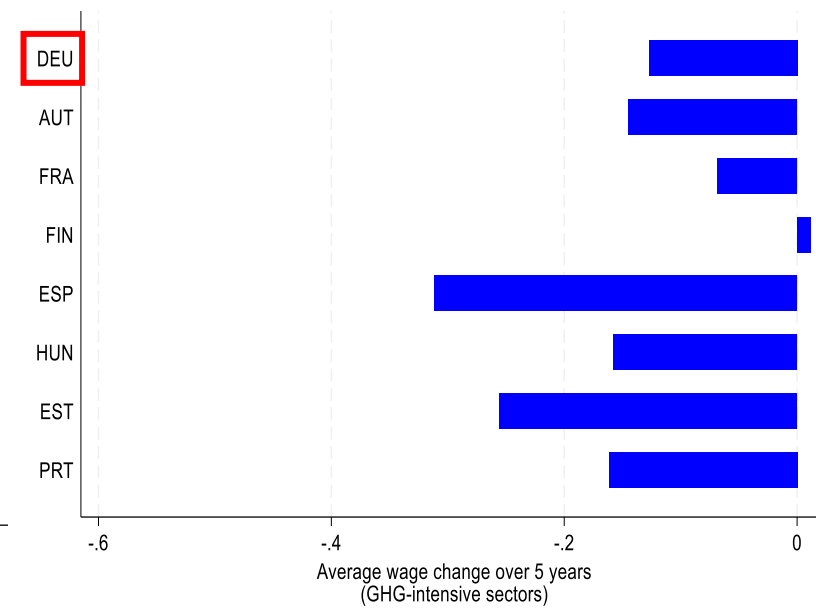
Country differences in the costs of displacement relate to differences in the extent of both joblessness and wage losses

Average difference in outcomes for workers displaced from GHG-intensive sectors during the first five years after displacement by country

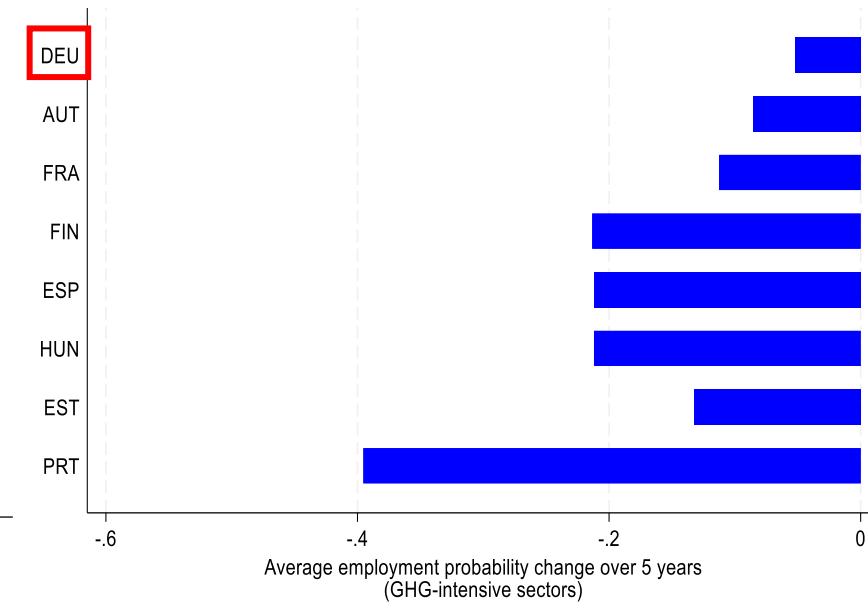
Panel A. Earnings



Panel B. Log Wage

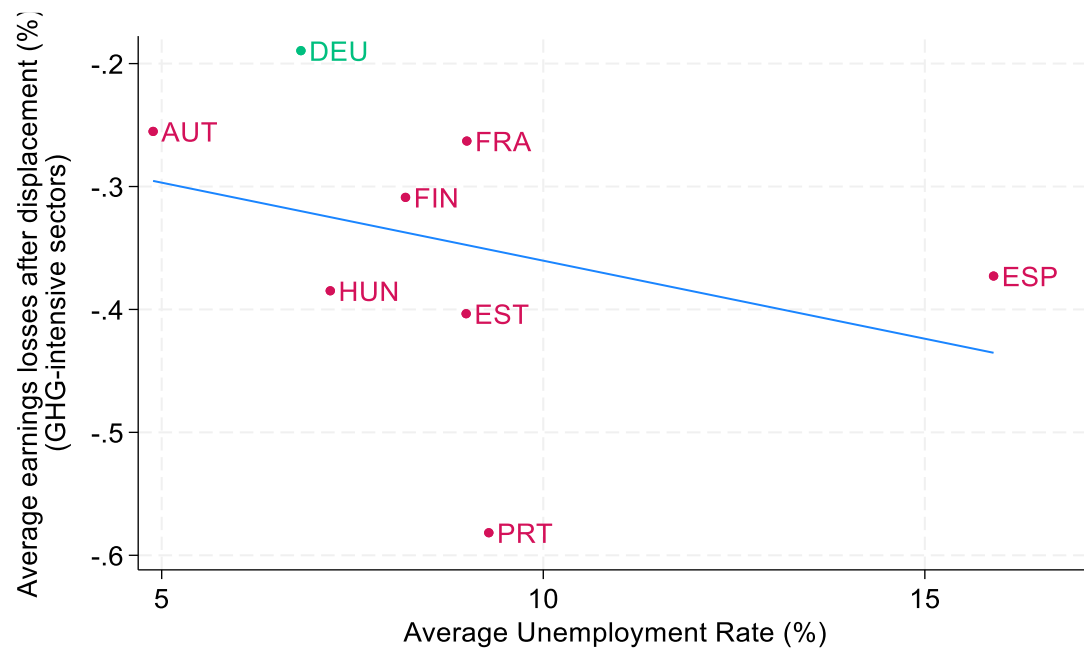


Panel C. Employment probability

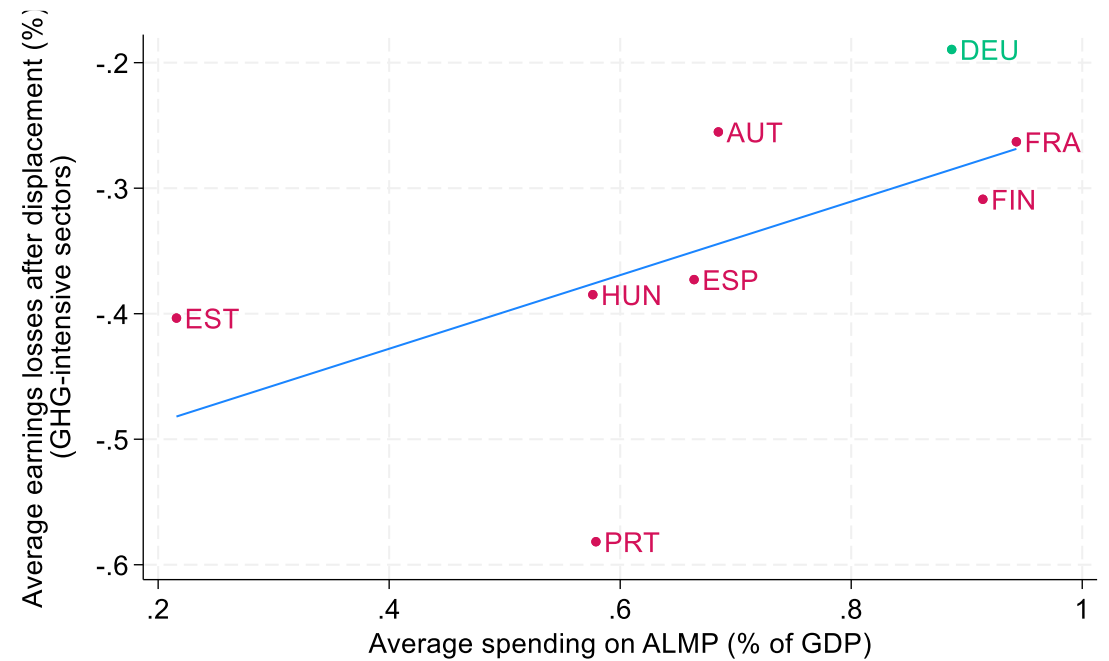


What explains cross-country differences in the cost of job displacement?

Panel A. Typically lower in countries with low unemployment rates (e.g. Germany)



Panel B. Well-funded and efficient active labour market policies are likely to be important



Supporting displaced workers from GHG-intensive industries and building support for the green transition

- **Income-support systems** crucial for compensating displaced workers from GHG intensive industries for their loss in earnings
- **Activation policies and life-long learning systems** are key for supporting the transition of displaced workers from GHG intensive industries to new jobs
- **Place-based policies** to support GHG-intensive regions need to be complemented with policies to promote **geographical mobility**