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The impact of job displacement on earnings of workers in high-emission industries in Canada

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As Canada and various other countries from the Organisation for Economic Co-operation and Development (OECD) transition towards a net-zero greenhouse gas (GHG) emission economy, there may be concerns about the implications on the jobs and, hence, the earnings of workers employed in GHG-intensive industries. To shed light on this issue, the OECD (2024a, 2024b) examined the impact of job displacement on the earnings trajectories of workers using matched employer–employee data across 14 OECD countries: Canada, Australia, Austria, Denmark, Estonia, Finland, Germany, Hungary, the Netherlands, Norway, Portugal, Spain, France and Sweden. The study, which Statistics Canada participated in, considered workers displaced from mass layoffs over the 2005-to-2013 period and their economic outcomes six years later. The study defined mass layoffs as a reduction in employment by at least 30% within a given enterprise. The analysis distinguished workers in “high-emission” industries from those in other industries and compared the earnings trajectories of displaced workers with those of their non-displaced counterparts with similar characteristics. The sample was restricted to paid workers aged 18 to 50 with at least two years of tenure before being laid off from enterprises in the commercial sector with at least 30 employees. The effect of job displacement on annual earnings was estimated using an event study model that accounted for differences in worker characteristics. The outcome of interest was annual earnings relative to pre-displacement earnings two years prior to job displacement. The Canadian Employer–Employee Dynamics Database was used for Canada, and these data classify industries according to the North American Industry Classification System. For international comparability, this classification system was converted to the International Standard Industrial Classification (ISIC) system.

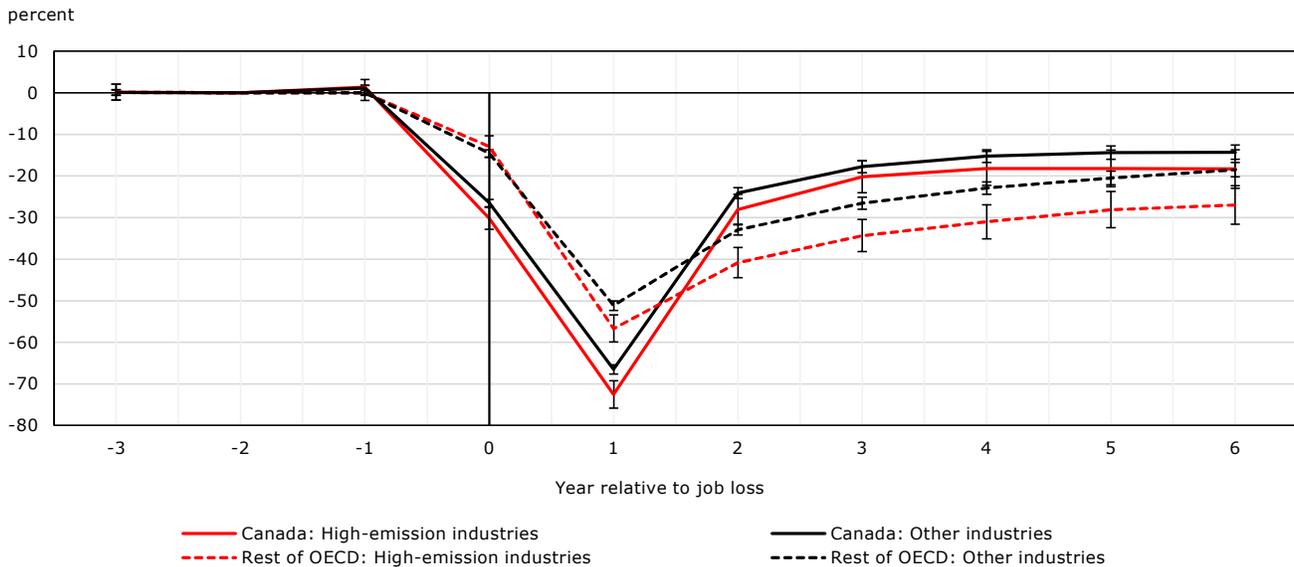
The OECD (2024b) classified high-emission industries based on Eurostat data from 2009 to 2020 for 27 European Union countries, as well as the United Kingdom, Norway, Iceland and Switzerland, using the two-digit ISIC system.¹ GHG emission intensity within an industry was measured by carbon dioxide equivalent units per unit of value added, excluding any supply chain linkage. An industry was classified as high-emission if it ranked in the top 20% of the average GHG intensity distribution in at least 10 of the 31 countries. Agriculture was excluded from the analyses because mass layoffs in agriculture are more likely related to seasonal rather than structural adjustments in employment. The sewerage and waste-collection industry was excluded from the list of high-emission industries entirely, since it is considered a critical industry for the net-zero transition (OECD, 2024b). High-emission industries represented approximately 10% of employment in Canada from 2001 to 2019.

1. The list of high-emission industries comprises mostly energy-producing sectors, manufacturing, transport services, and mining and quarrying (see Figure 3.1 of OECD [2024b] for a complete list of high-emission industries). A key limitation of this approach is that it does not account for the potential expansion of some subsectors, such as renewable energy and electrified land transport (e.g., electric vehicles), because of a lack of detailed cross-country data on GHG emissions across subsectors.

Displaced workers in Canada fared worse economically in the year following mass layoffs but started to recover faster than some of their Organisation for Economic Co-operation and Development counterparts

In the year following mass layoffs, the annual earnings of displaced workers from high-emission industries in Canada declined by 73% relative to pre-displacement earnings (Chart 1).² The relative annual earnings of displaced workers from other industries declined by 67% in the year following job loss. The comparable rates for the other OECD countries considered in this study were 57% for high-emission industries and 51% in other industries. However, the recovery rate of annual earnings in Canada to their pre-displacement level was faster than that of their selected OECD counterparts. In the second year following mass layoffs, the annual earnings of displaced workers in Canada were 24% to 28% lower relative to pre-displacement earnings, while they were 33% to 41% lower in other selected OECD countries.

Chart 1
Percentage change in real annual earnings of laid-off workers within high-emission and other industries relative to their real annual earnings two years before job loss



Notes: OECD = Organisation for Economic Co-operation and Development. The sample of OECD countries includes Canada, Australia, Austria, Denmark, Estonia, Finland, Germany, Hungary, the Netherlands, Norway, Portugal, Spain, France and Sweden. The classification of high-emission industries is based on Eurostat data from 2009 to 2020 for 27 European Union countries, as well as the United Kingdom, Norway, Iceland and Switzerland. In this study, a mass layoff is defined as the reduction of employment in a firm by at least 30%. The vertical lines indicate the 95% confidence interval.

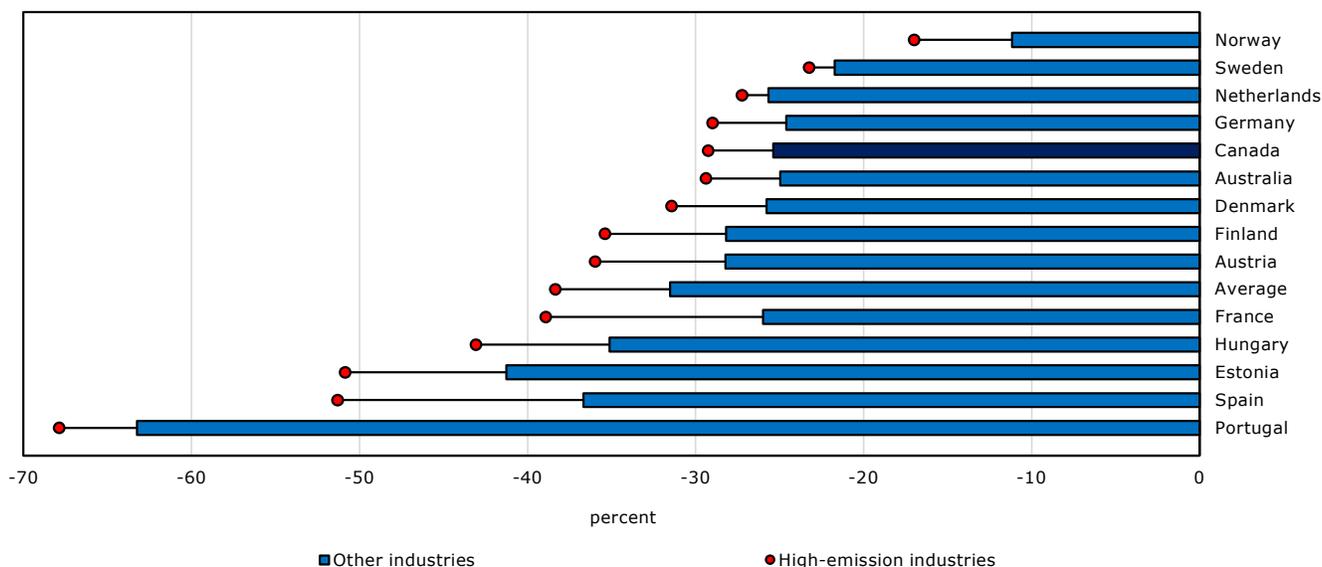
Sources: Statistics Canada, Canadian Employer–Employee Dynamics Database, 2001 to 2019; and custom tabulations from *OECD Employment Outlook 2024: The Net-Zero Transition and the Labour Market*.

2. This means that relative to the pre-displacement earnings ratio (1.00) of a non-displaced worker from a high-emission industry, their displaced counterpart’s earnings ratio would be 0.27 in the year following layoffs—a 73% decline. In absolute terms, real earnings loss in the year following layoffs was \$40,800 (constant 2015 dollars) in high-emission industries, compared with \$27,900 in other industries. The larger absolute earnings loss in high-emission industries might be partially explained by the fact that earnings in high-emission industries tend to be higher than in other industries.

Displaced workers from high-emission industries fared worse economically than their counterparts from other industries, but this gap was not as prevalent in Canada relative to the other Organisation for Economic Co-operation and Development countries

Over a six-year period following mass layoffs, the annual earnings of displaced workers in Canada from high-emission industries declined by 29%, on average, relative to pre-displacement earnings (Chart 2). Displaced workers from other industries earned 25% less relative to their pre-displacement earnings. This compares with selected OECD country averages of 38% for high-emission industries and 32% for other industries. The differences in the financial cost of job displacement across countries could reflect, to some extent, differences in opportunities of displaced workers to find new jobs. For example, in Canada, most workers displaced from the coal mining industry over the 1995-to-2015 period found paid employment in the same industry or in a service industry in the year following job loss (Chen and Morissette, 2020).

Chart 2
Average percentage change in real annual earnings of laid-off workers relative to their real annual earnings two years before job loss, over a six-year period following mass layoffs



Notes: The classification of high-emission industries is based on Eurostat data from 2009 to 2020 for 27 European Union countries, as well as the United Kingdom, Norway, Iceland and Switzerland. In this study, a mass layoff is defined as the reduction of employment in a firm by at least 30%. Pre-displacement earnings refer to annual earnings two years before job loss.

Sources: Statistics Canada, Canadian Employer–Employee Dynamics Database, 2001 to 2019; and custom tabulations from *OECD Employment Outlook 2024: The Net-Zero Transition and the Labour Market*.

Conclusion

The transition to a net-zero GHG economy may have implications for jobs and earnings for workers in GHG-intensive industries. The OECD (2024a, 2024b) suggests that displaced workers in high-emission industries fare worse economically than their counterparts from other industries. This gap is not as prevalent in Canada compared with some other OECD countries. Generally, displaced workers in Canada saw a relatively larger decline in their earnings in the year following mass layoffs compared with some of their OECD counterparts, but earnings started to recover to their pre-displacement levels faster in Canada. Nonetheless, the fact that displaced workers from high-emission industries were more likely to experience negative economic shocks than their non-displaced counterparts is an important finding, which can help inform policies surrounding career planning and transition.

While job displacement in high-emission industries can lead to substantial and persistent earnings declines, the financial consequences of job loss are not uniform across displaced workers, since some may end up earning more than they did before losing their job (Chen and Morissette, 2020).

The net-zero transition could indirectly affect jobs beyond those in high-emission industries. This is because some jobs outside high-emission industries still serve as intermediaries to those industries by producing goods and services for them. A reduction in demand for those goods and services could have downstream effects outside high-emission industries. The net-zero transition could also help create new jobs. Whether displaced workers from high-emission industries can transition to new jobs can be a focus of future research.

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