

HOW DOES TECHNOLOGICAL CHANGE REALLY IMPACT JOBS AND WORKERS?

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BACKGROUND TO THE DEBATE

In recent years dramatic predictions about the potential impacts of technological change on the labour market have been made. An often-reported finding comes from a study by Frey and Osborne (2013, 2017)², who argued that close to half of jobs in advanced economies are susceptible to replacement by machines. In 2018, a similar study by Ireland's Expert Group for Future Skills Needs predicted that technological change could lead to a loss of 46,000 jobs by 2023. However, the approaches adopted in these studies have been criticised for taking an over-simplistic view of the impacts of automation that fails to recognise important differences in tasks and job-skill requirements within occupations. Recent studies that account for this generate much lower estimates of potential employment loss. For Ireland, a recent study found that the share of employees in occupations predicted to be at risk of being "fully automated" using the Frey and Osborne approach fell by just 2 percentage points between 2013 and 2018 from 39% to 37%.³

METHODS AND FINDINGS

A criticism of the existing literature is that it often ignores the positive impacts of new technologies. For instance, new technologies may allow workers to concentrate on tasks that require greater skills, thereby raising job productivity levels. In this study, we used novel data from the European Skills and Jobs Survey that allows us to study the impact of technological change on workers in the EU. To our knowledge, it constitutes a first attempt to obtain direct insight into the impacts of new technologies on the actual content of jobs based on worker survey responses. Some of the main findings of the study include:

¹ McGuinness, S., Pouliakas, K. & Redmond, P. "Skills-displacing technological change and within-job reallocation effects on tasks and skills: Challenging technological alarmism?", published in the *Economics of Innovation and New Technology*. Available online <https://www.tandfonline.com/doi/abs/10.1080/10438599.2021.1919517>

² Frey, C. and Osborne, M. (2017). "The future of employment: how susceptible are jobs to computerisation", *Technological Forecasting & Social Change*, Vol. 114 (2017), pp. 254–280. The original 2013 version of the study was published as an Oxford University working paper https://sep4u.gr/wp-content/uploads/The_Future_of_Employment_ox_2013.pdf.

³ <https://www.cedefop.europa.eu/en/publications-and-resources/publications/5579>

- Based on the survey responses of workers, we identify workers prone to technological change as those that have been affected by changing workplace technologies in the past and who expect that some of their skills will become outdated in the next five years. These workers are the focus of our study. The share of workers whose jobs are reported to be prone to this type of technological change is low, considering some of the findings of existing research that has spurred much technological alarmism in recent years. We find that just 16 percent of EU employees are in jobs prone to technological change by our measure.
- Employees in jobs impacted by technological change tend to have higher levels of education and are more likely to have been promoted by their current employer, compared to workers whose jobs are unaffected. In addition, they are more likely to work in larger organisations and in roles that involve teamwork and non-routine tasks.
- Overall, the evidence confirms that the introduction of new technologies is associated with greater on-the-job training and upskilling of workers and that this outweighs any reduction in job-skill requirements brought about by new technologies. Related to this, we find that employees subject to new technologies tend to report that their jobs become more complex, compared to employees unaffected by technological change.
- We also investigate the link between technological change and various job quality measures. We find some evidence of higher wage levels among workers in jobs impacted by technological change.

IMPLICATIONS FOR POLICY

While we confirm many positive workplace impacts, we also found that employees affected by technological change experience greater job insecurity. This is perhaps unsurprising given the uncertainty involved when working in dynamic workplace environments, coupled with claims made in the media and policy debates. This highlights a need for policies that appropriately inform individuals about the effects of technology on jobs, including the potential benefits in terms of skills enhancement and increased productivity. Policies should also emphasise the critical role of lifelong learning for adapting to technological innovation.

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