

How is the Internet changing the labor market?

Evidence from telecommunications reforms in Europe*

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Scholars have argued that the internet—and the technologies associated with it—is contributing to an increasing polarization and “informalization” of the labor market. More specifically, they argue that information and communications technologies are skill-biased: they tend to complement skilled workers performing non-routine cognitive tasks, while they simultaneously tend to automate the jobs held by unskilled workers carrying out routine operations (see, for example, Acemoglu and Autor, 2011). These changes have been linked to labor market polarization as the share of middle-skill jobs shrinks and the number of both high-skilled and manual occupations increase. At the same time, the internet facilitates the rise of alternative work arrangements, in the form of telecommuting, online freelancing, the sharing economy, and multiple-job holding (Dettling, 2016; Katz and Krueger, 2016).

This paper exploits variations in the timing of telecommunications reforms across Europe to study how the expansion of the internet has been associated with changes in the labor market. These reforms, which are intended to increase the availability and affordability of the internet, have been linked with an increase in internet adoption internationally (Howard and Mazaheri, 2009). However, little is known about how telecommunications reforms have impacted labor markets across the world. Given that the internet remains unavailable to a majority of the world’s population (World Bank, 2016), a better understanding of the unintended consequences of telecommunications reforms is important for the design of policies to help smooth the disruptive effects of the internet in countries that have not yet experienced the digital revolution.

Given that the timing of the reforms is not necessarily exogenous, instead of estimating their causal effects we focus on the mechanisms by which they would affect the labor market. We thereby construct the following test for the hypothesis that telecommunications reforms have affected labor markets in Europe by fostering internet adoption. Using sector-level data, we first classify each sector of economic activity by its technological propensity to use the internet. Then, under the assumption that such sectoral internet dependence carries over from country to country, we compare several employment outcomes before and after the introduction of telecommunications reforms across sectors with different levels of internet dependence. By controlling for omitted factors that vary from country to country and years, we argue that if the internet is affecting the labor market, we should see greater effects among more internet-dependent sectors than in the rest of the economy.

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Using labor force surveys for 29 countries covering 19 years (1995-2013), we find that telecommunications reforms have been associated with significant changes in the European labor markets. More specifically, they have been accompanied by disproportionately higher employment creation and an increasing share of skilled workers among internet-intensive sectors. We also find evidence supporting the hypothesis that the internet is making labor markets more informal: Telecommunications reforms were associated with a disproportionately higher incidence of part-time work, multiple job-holding, and workers looking for a job in internet-intensive sectors. These results are robust to a number of alternative specifications. We also find that the reforms were accompanied by a disproportionately increasing share of non-routine cognitive occupations, telecommuting, and workers looking for a job among ICT intensive sectors. This latter set of results, however, was less robust to different specifications.

To our knowledge, this is the first paper to analyze the association between telecommunications reforms and a wide range of labor market changes. Our results highlight some of the unintended consequences of reforms aimed at fostering the adoption of new technologies. These trade-offs should be considered when evaluating policies aimed at accelerating the pace of technological change.

The remainder of this paper is structured as follows. Section 2 provides a brief discussion of the existing literature on the internet's impact on the labor market. Section 3 describes the methodology and datasets used. They include the European Labour Force Surveys and the database on telecommunications reforms of Howard and Mazaheri (2009). Section 4 presents the main results, while Section 5 describes the robustness checks. Section 6 concludes.