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The Labor Market Implications of Technological and Employment Changes

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Technological advances have been driving changes in the organization and patterns of production around the globe. Yet, this phenomenon's effect on labor markets is not entirely clear. There are two overarching positions in the academic debate. One holds that technological advances will lead to the exclusion of certain groups of workers and the other that new opportunities and jobs will be created.

The globalization of technological skills produces a marked segmentation between firms and countries. Unequal distribution and use of new technologies without significant changes in each country's basic institutions might lead to discontinuities in a hypothetical convergence towards development. The non-standard employment arrangements resulting from the use of these new technologies pose challenges for the labor relations and working conditions that will develop in the coming years. This document presents an overview of the most significant changes that have occurred in the realm of production and the transformations taking place, or likely to take place, in work both now and in the future.

Many authors hold that we are in the midst of the fourth industrial revolution, with new technologies and means of production and distribution. The phenomenon of big data is significant due to its ability to increase fragmentation of the production process, facilitating remote supervision and incentivizing delocalization of value chains. Artificial intelligence capable of imitating certain human cognitive processes is already being applied in certain phases of production and commercialization, such as, for instance, e-commerce platforms. An increase in the use of sensors, meanwhile, makes it possible to measure the external context in its totality, a factor that—like the implementation of 3D printing in more and more industries—is crucial to the automation of production processes. Intelligent factories where industrial processes are more flexible can do away with large inventory by means of a production process that, thanks to small batches, is more and more finely tuned to demand.

These technological changes have meant an increase in non-standard employment arrangements, chiefly in relation to alterations in the length of the workday, job stability and duration, and contract modality. Such non-standard employment arrangements are associated with indirect labor and own account workers who are, nonetheless, economically depending on the hiring firm.

In many cases, the companies seem to act as mere intermediaries between consumers and service providers. What is really underway, however, is a process of flexibilization where workers' rights are taken away. Workers run the risk of being denied the right to form a union and to collective bargaining, whether because the labor relation is not contemplated by the law or because they are rarely at the workplace itself, which complicates joining a union.

New information technologies, then, imply novel and complex forms of work (*crowdwork*, app-based work, the gig economy, the on-demand economy, the sharing economy, and others) hard to place in traditional categories. Many of these labor arrangements are not regulated, which means that there are not yet norms protecting those who supply goods and services on digital platforms.

In Argentina, digitally based companies like Uber are expanding rapidly, which is causing a series of problems, such as judicial insecurity, that affect both inspection and regulation. Serious debate is taking place in the region on how new forms of employment impact the quality of new types of jobs—a topic of great dispute among the actors involved. There is no consensus on whether these precarious employment arrangements are a first step in a process that leads to better quality jobs—a sort of trial period that ultimately yields steady permanent employment—or whether they will further segment the labor market in a scenario where workers with permanent contracts enjoy better pay and working conditions than temporary workers performing similar tasks.

Regarding technological change's effect on the types of tasks required by different occupations, a number of studies have emphasized the fact that repetitive jobs and routine tasks are the ones most susceptible to automation. Workers who perform complex and non-routine tasks requiring cognitive capabilities still have a competitive advantage.

Unions face particular challenges in dealing with the changes taking place on the global labor market, and it is essential that workers' organizations be able to reach consensus on how to adapt to these multiple transformations. They must rethink and debate the traditional paradigm of collective bargaining, focusing on the place where a labor relation takes place rather than on a specific employer or sector. Social dialogue will undoubtedly prove central to reaching an agreement on how to ensure decent working conditions.

Employers, meanwhile, must face the challenge of new forms of work, the polarization of skills, and the adjustment of judicial and institutional frameworks, and of frameworks for social protection, if they want to harness technological tools for innovation and greater competitiveness. Companies may require the support of states through programs and subsidies that facilitate transitions without having a negative impact on employment levels. It is also essential that the educational system adjust to new labor market demands by gearing its efforts towards new forms of production and new capabilities like, for instance, creativity.

Though technological transformation is a worldwide phenomenon, its timeframe varies with the institutional and productive context of each country in what evolutionist authors call "path dependence." Other difficulties must be considered as well, such as the legal and ethical problems at stake in the introduction of new technologies and cultural differences affecting the organization of work. Local studies have shown that the region is not exempt from technological change. Empirical evidence indicates that the last twenty years have witnessed a transfer from manual to cognitive tasks, which means that occupations are changing and, with them, the types of capacities required.

This study examines the changes in occupations and employment in the industrial structure in Argentina on the basis of the dynamic revealed by companies participating in the Encuesta Nacional de Dinámica del Empleo y la Innovación [National Survey on Employment Dynamics and Innovation, INDEI] for the year 2015, regarding specifically the creation, destruction, and reconversion of occupational structures.

The evidence suggests that technological change is disruptive to Argentine industry's occupational structure. Local analyses, in accordance with international studies, show that workers with higher levels of cognitive capabilities are more likely to hold jobs. Notwithstanding—and in keeping with the perhaps counterintuitive hypotheses of evolutionist economists—the employment dynamic in the short term is positive for most productive activities and for companies that incorporate innovation.

While the future is uncertain, the issues central to analyzing the impact of new technologies on the world of work entail understanding the tie between new technologies, innovation, and employment and identifying the forces and mechanisms that both destroy and create jobs. These changes in the labor market require a transformation in labor regulations to prevent the precarization of work and employment arrangements. Reform to key labor market institutions, the public sector, and the relevant social actors (chiefly unions and business organizations) is required as well. Finally, education is

fundamental to being able to enjoy all the advantages of technological transformation. Education must not fall behind in the technology race. If it does, technological progress could end up worsening current inequalities.

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