



PENSION NOTES

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STRUCTURAL CHANGES IN THE LABOR MARKET

Executive Summary

What structural changes are we observing in labor markets in the Latin American region and worldwide, in general? How will new technologies and automation affect employment? What are the consequences of these changes for social security and the pensions industry?

To answer these questions, FIAP invited two experts to its 17th International Seminar.¹, to share their points of view on these matters.

According to Mariano Bosch, there are two major trends affecting labor markets. First, the ongoing technological progress over the past two decades. Second, population aging, which translates into greater longevity, will have a direct impact on the dynamics of labor markets.

According to Andrea Repetto, technological change is associated with a change in the composition of employment: "routine" tasks (in which those with medium skills are employed) are the ones that are negatively affected by technological progress. This leads to a deterioration in the working conditions of less-skilled workers, who experience increased competition with the invasion of their space in the labor market by semi-skilled workers. Technological progress puts people who perform non-routine cognitive tasks at an advantage, since new technologies complement their skills, making them more productive. This phenomenon of change in the composition of employment has been labeled "the polarization of the labor market."

¹ All the presentations at this seminar are available online: <https://www.fiapinternacional.org/en/seminario/may-15-and-16-2019-17th-fiap-international-seminar-santiago-chile/>

Mariano Bosch points out that the convergence of aging and new technologies will have a significant impact on the composition of the labor market. For example, in the United States, the Bureau of Labor Statistics found that software application developers are the professionals with the fifth highest demand in the future, foreseeing the creation of slightly more than 255 thousand new jobs in this area between 2016 and 2026, which will obviously occur thanks to technological progress. The other jobs that will experience an explosive increase in demand are those related to the population aging trend: personal care assistants (more than 777 thousand new jobs), food preparation and service workers, nurses and housekeepers.

One of the consequences of technological progress is the creation of jobs via digital platforms, or the gig economy. Incorporated by companies such as Uber or Airbnb, this business environment operates by creating markets based on ratings and payment systems through applications. According to figures provided by the Minister of Labor, approximately 150 thousand workers (1.7% of total employment) are currently employed in this segment of the economy.

According to Andrea Repetto, a significant number of individuals making a living in the gig economy are workers whose income was decreasing prior to switching to this business environment. This can be interpreted to mean that these jobs enable mitigating previous labor income losses.

Furthermore, according to Bosch, there is a fairly broad spectrum of advantages generated by these platforms, in terms of improving productivity, increasing labor inclusion and increasing levels of formality within a national economy, offering countries a

means for digitalizing income that has historically been generated in cash, and helping to identify where transactions are occurring, thus enabling the collection of the corresponding taxes and social contributions.

Apart from the advantages generated by digital platforms, they also pose challenges. According to Mariano Bosch, the platform acts as a tax and contributions collector. Public policy makers should therefore bear in mind that it will be necessary to regulate the platforms to perform that role. The platforms, in turn, will have to accept this responsibility.

In Andrea Repetto's opinion, there is room for more decisive action in designing the regulatory framework of digital platforms:

1. This group of workers must be entitled to associate, in order to collectively negotiate the conditions under which they provide the services with the respective digital platform.
2. Workers must be guaranteed protection from possible discriminatory actions in hiring, dismissal and the definition of the terms under which they provide their services.

According to Mariano Bosch, the time is ripe for considering how new digital platforms can help the pensions sector provide better services to the workers involved. Ideally, digital platform workers should be able to allocate a percentage of the income derived from their work to an individually funded pension account or a traditional savings account.

Introduction

In order to broadly outline the structural changes in labor markets due to the effects of greater longevity of the population, the digitalization or automation of employment and the emergence of new technologies, FIAP included a panel of experts on structural changes in labor markets in its 17th International Seminar. This Pensions Note addresses the main aspects highlighted by two economists expert in the matter, Andrea Repetto,² and Mariano Bosch³. One aspect on which the two specialists agree, is that new technologies will bring about a change in the composition of employment (some jobs or trades will disappear, while new ones will begin to appear), with an increase in jobs via digital platforms, with all the benefits and challenges that implies.

² Andrea Repetto is an economist with a Master of Economics degree from the Catholic University of Chile, and a PhD in Economics from the Massachusetts Institute of Technology, MIT. She is an academic at the School of Government of the Adolfo Ibáñez University, and the director of its Center for Labor Policies and its Master in Economics program. She also chairs the Board of the "Superación de la Pobreza" Foundation (FSP). Her academic research focuses on the assessment of fiscal and social policies, the functioning of the labor market and the interaction between economics and psychology.

³ Mariano Bosch has a PhD in Economics from the London School of Economics. He currently serves as Principal Specialist and pension coordinator in the Labor Market and Social Security Division of the Inter-American Development Bank (IDB). Since he joined the Bank in 2011, he has led research projects in the area of labor markets, pensions and welfare policies. Before joining the Bank, he worked as a consultant at the World Bank and as a professor at the University of Alicante. He has published several articles in the area of labor markets and development in prestigious journals such as the American Journal, Applied Economics, Journal of Development Economics, World Bank Economic Review Labor Economics, Economics & Human Biology and Social Science & Medicine.

I. Employment, automation and new technologies

According to Andrea Repetto, we are currently experiencing the fourth industrial revolution, characterized by an acceleration in technological progress. What effects does it have on employment? According to the expert, whenever technological evolution accelerates, voices concerned about the effects on employment are raised. However, it has been observed that in one revolution after another, aggregate employment does not recede.

What does occur with technological change is that the composition of employment is modified: some jobs and trades disappear, while new ones begin to appear, depending on the substitution or complementarity between a specific type of work and new technologies. For example, robots can be designed to perform the same tasks as workers, or to support those workers and thus increase their productivity.

Four task classification categories

According to Repetto, the literature classifies the tasks that a worker can

perform into four categories (see Figure 1). The first one includes routine manual tasks. These are usually jobs or trades that require low or medium skills. These are typically production line jobs.

Workers employed in areas requiring routine cognitive tasks, in turn, work in administrative jobs requiring medium skills. Examples of these are bank cashiers and some office jobs.

Non-routine tasks that require mostly manual skills are provided by low-skilled workers. These tasks require adaptation to changing situations, such as in kindergartens, where young children are educated, in nursing homes for the elderly, who require health care, or in the tasks performed by a security guard. In all these cases, tasks are contextual and therefore more difficult to classify on a computer.

Finally, tasks classified as non-routine cognitive work, often require higher skills. The following table shows the jobs that require problem-solving capabilities, intuition, creativity and the ability to negotiate and persuade, among others.

Figure 1

	Manual	Cognitive
Routine	Low/medium classification (production line)	Medium classification (office tasks)
Non-routine	Low classification (care)	High classification (problem resolution, creativity, persuasion)

Source: Repetto (2019).

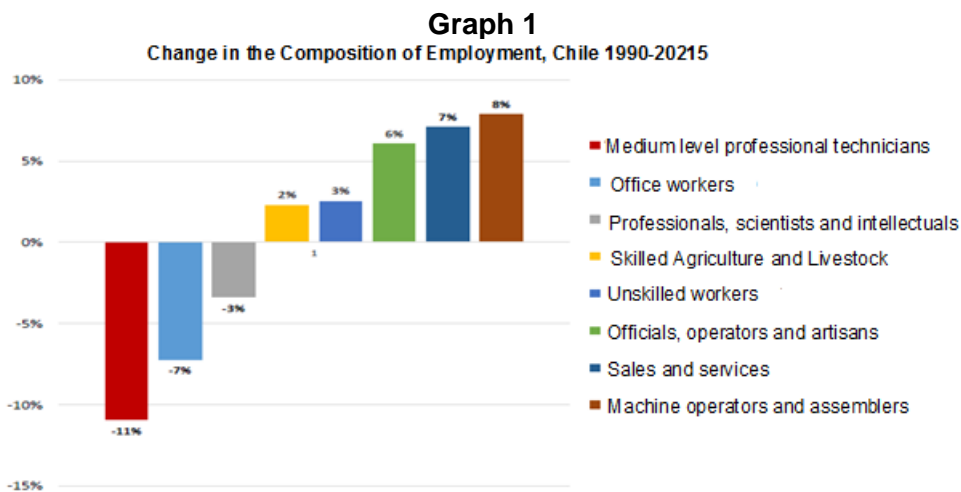
The academic literature shows that "routine" tasks are the ones that are negatively affected by current technological progress. Medium-skilled workers are employed to do these jobs. Given their skills, and as their jobs lose relevance, they have no other option than to seek employment in sectors requiring lower skills. This, in turn, leads to a deterioration in the working conditions of less-skilled workers, because although the jobs they perform are not easy to "routinize," they experience increased competition due to the invasion of their space in the labor market by semi-skilled workers. Finally, people engaged in non-routine cognitive tasks are at an advantage, since the new technologies complement their skills, making them more productive. This phenomenon of change in the composition of employment has been labeled "**the polarization of the labor market.**"

Some studies have attempted to estimate the segment of jobs that would be at risk due to automation, based on these categories. The projections of this research show that between 9% and 47% of jobs in the United States are more than 70% likely to be replaced due to technological

progress, which demonstrates the uncertainty that exists regarding the future of existing jobs. A central problem is that these studies attempt to predict the future based on current technological capabilities, forgetting that much of what we can do today could not have been predicted five or 10 years ago.

What has happened in Chile?

Figure 1 shows the evolution of the relevance of some specific jobs or trades in the composition of employment over a 25-year period (1990-2015), based on CASEN surveys. As can be seen, the category of professional technicians with medium skills has dropped considerably (-11%), followed by office jobs (-7%) and professionals, scientists and intellectuals (-3%).



Source: Repetto (2019).

Other jobs or trades, on the other hand, have expanded, as is the case of machine operators and assembly-line workers (8%), jobs and trades that employ unskilled workers (7%) and officials, operators and artisans (6%).

Apart from these predictions and the changes that have occurred in the Chilean labor market, according to Repetto, we need to ask ourselves whether the technological revolution has really arrived in Chile. Why? First of all, one would expect to see an impact on national productivity, but this has not occurred. On the contrary, the total productivity of factors (that part of the growth of the economy that is not explained by changes in the amount of capital and / or labor) has not expanded significantly in Chile in decades, which can be explained by the following factors:

1. The skills of Chilean workers are still insufficient to satisfy the demands of new technologies, with significant shortcomings, compared to more developed countries.
2. Salaries in Chile are relatively low, and automation would therefore not be as advantageous as in other countries.
3. Small and Medium-Sized Enterprises (SMEs) have little capacity for adapting to these changes, either due to a lack of the necessary skills, or financial constraints.
4. There is an infrastructure deficit. For example, while the cost of broadband is relatively high, the quality of the service provided is questionable.

The four factors mentioned above imply that there are limits on the speed with which the fourth industrial revolution has arrived in Chile. This, according to Repetto, is problematic for the advancement of productivity, but leaves time to address the education of the workforce, so that workers

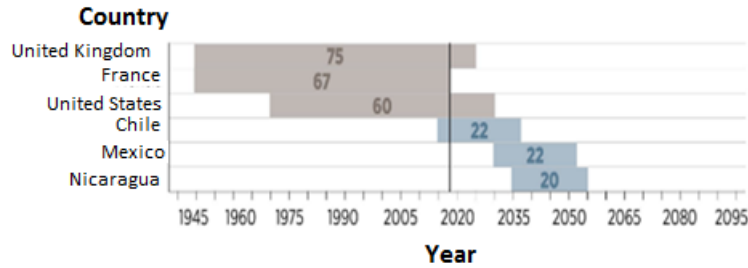
of different skill levels can benefit from technological progress.

II. The other trend that must not be ignored: population aging

According to Mariano Bosch, Latin America and the Caribbean are experiencing an extraordinary rate of aging, materializing at a speed that exceeds previously observed trends in Europe and other regions. Figure 2 provides an explanation of this phenomenon. The bars represent the period of time in which the country in question - which initially has a population of senior citizens representing 10% of its population - becomes a country that has a population of senior citizens representing 20% of the total population. One can see that it took the United Kingdom 75 years to complete the transition process. On the other hand, one can see that Chile, Mexico and Nicaragua will take less than 25 years (one third of the time it took the United Kingdom) to experience this stage of their respective population aging processes.

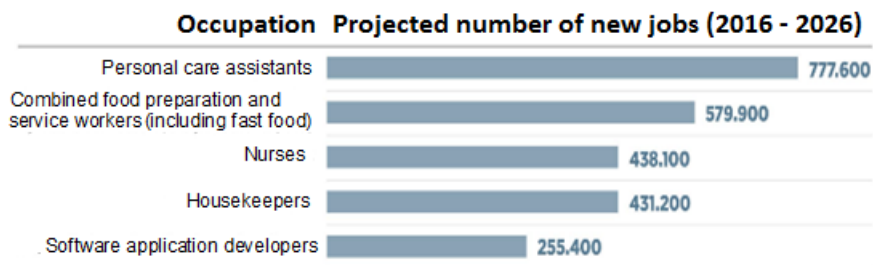
The convergence of aging and new technologies will have a significant impact on the composition of the labor market. For example, in the United States the Bureau of Labor Statistics found that software application developers are the professionals with the fifth highest demand in the future, foreseeing the creation of slightly more than 255 thousand new jobs in this area between 2016 and 2026 (see Graph 3), which will obviously occur thanks to technological progress. The more favorable positioning of the other four jobs on the list (housekeepers, nurses, personal care assistants and workers involved in combined food preparation and service tasks), however, is due to the other trend: population aging. Thus, jobs and trades related to the greater longevity trend will experience a tremendous increase in terms of their respective levels of labor demand.

Graph 2
Latin America and the Caribbean will age relatively faster than other regions



Source: Bosch (2019).

Graph 3.
What will happen to jobs in the future?



Source: Bosch (2019).

III. A consequence of technological Progress: jobs via digital platforms (gig economy)

The gig economy is a business environment based on sole projects or tasks for which workers are hired, usually in the digital market, to work on demand. Incorporated by companies such as Uber or Airbnb, this gig economy operates by creating markets based on ratings and payment systems through applications.

According to figures provided by the Minister of Labor in an interview with CNN in February 2019, approximately 150,000 workers are currently employed in this segment of the economy, representing 1.7% of national employment.

Other countries have made efforts to formulate more accurate estimates. For example, the *Bureau of Labor Statistics* in the United States conducted a specific study in 2017, which showed that 1% of the employed population works through digital platforms. Just over half of them are men, 64% are between the ages of 25 and 54, 23% are older than 54, 82% have a full-time position, and 41% have completed higher education. This group is therefore different from the average American workforce.

The benefits of jobs via digital platforms

According to Andrea Repetto, a significant number of individuals making a living in the gig economy are workers whose income was decreasing prior to switching to this business environment. This can be

interpreted to mean that these jobs enable mitigating previous labor income losses.

Furthermore, according to Bosch, there is a fairly broad spectrum of advantages generated by these platforms, in terms of:

1. Improving productivity.
2. Increasing labor inclusion and the levels of formality within a national economy.
3. Offering countries, a way to digitalize income that has historically been generated in cash.
4. Helping to determine where transactions are occurring, thus enabling the collection of the corresponding taxes and social contributions.

Digital platforms have the potential to become a very useful tool to foster the growth of the formal sector (i.e., through their ability to convert informal work into formal work).

The challenges imposed by jobs via digital platforms

According to Andrea Repetto, from a public policy standpoint, classifying workers within the classical categories of the labor laws has been a problem. At first glance, one could classify gig job workers as dependent workers; i.e., the platform acts as an employer, because it is the party that determines prices and imposes contractual conditions, among others.

On the other hand, these individuals can be described as independent workers: the worker is the owner of the equipment and tools used to perform the tasks involved, assumes the costs of maintenance, repair, replacement and use, and decides his schedules and the duration of his working hours, and these decisions are not controlled by the company. He is also fully entitled to generate income through more than one platform at a time.

When considering the above, it is easy to understand why there has been a significant level of controversy in different economies regarding how to regulate these jobs. For example, the Supreme Court of the United Kingdom, the Court of Appeals of Paris and the Supreme Court of the State of California have ruled that they are dependent workers. But a judge in the Philadelphia district has recently determined that the segment comprises independent contractors.

According to Mariano Bosch, given the fact that all workers are exposed to the same risks, it is illogical to have a regulatory framework that only covers the formal sector of the labor market. Hence, it is absolutely clear that the State has an important role to play, in terms of defining the tax parameters applied to independent workers and their enrollment in pension systems. Digital platforms also have a central role to play in this scenario. Basically, the platform acts as a tax and contributions collector. Public policy makers should therefore bear in mind that it will be necessary to regulate the platforms to perform that role. The platforms, in turn, will have to accept this responsibility.

In Chile, the labor reform that was recently submitted to the Senate, defines this group of workers as independent. It requires them to issue a fee slip, with the platform withholding the corresponding taxes and social security contributions.

In Repetto's opinion, there is room for more decisive action in designing the regulatory framework of digital platforms:

1. This group of workers must be entitled to associate to collectively negotiate the conditions under which they provide the services with the respective digital platform. Likewise, the platforms could use their negotiating capacity in the insurance market to obtain better conditions for the workers (for example, in the automobile insurance market).

2. Workers must be guaranteed protection from possible discriminatory actions in hiring, dismissal and the definition of the terms under which they provide their services.

According to Mariano Bosch, one must also bear in mind matters related to precarious working conditions, disconnection from friends and family and monopolization when dealing with digital platforms.

The precarious nature of a totally unregulated job is evident. It is very easy for a company to dictate the contractual terms, such as the price of a service, in an unregulated scenario. In these circumstances, shifts can be extended from eight to fifteen hours. In this regard, the disconnection from friends and family that a worker may experience in these conditions can be quite considerable, since it is not difficult to imagine a set of circumstances in which a worker loses the opportunity to interact with his family members and circle of friends, especially if he is behind the wheel doing deliveries or sitting in front of a computer for more than 12 hours per day. Finally, if governments do not start regulating digital platforms, one would obviously expect this to lead to the formation of monopolies.

Digital platforms and the pension sector

According to Mariano Bosch, the time is ripe for considering how new digital platforms can help the pensions sector provide better services to the workers involved. Ideally, digital platform workers should be able to allocate a percentage of the income derived from their work to an individually funded pension account or a traditional savings account.

A drastic change is needed within the pension sector and the AFPs if society is serious about creating durable and economically viable solutions for the new forms of work being developed. This change will have to address more than the segment

of workers operating within the digital platforms, and face up to the new series of challenges generated by the existence of so many independent workers.

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