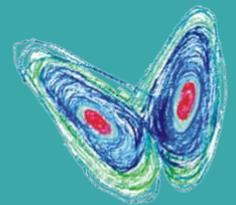
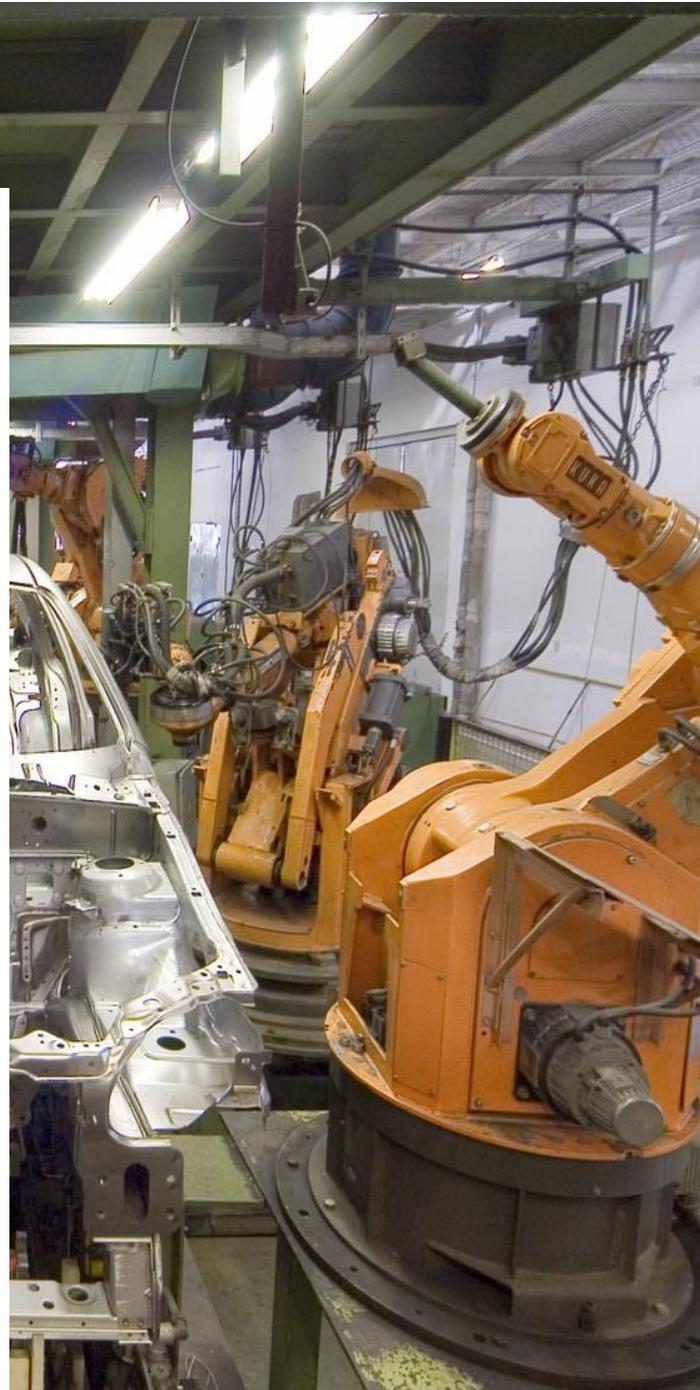


The Future of Jobs: *Is Latin America Ready for the Technological Tsunami?*

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IMAGO
GLOBAL GRASSROOTS

The pace of technological innovation is accelerating geometrically and it seems that we are rapidly reaching the world of the Jetsons. Cars that do not need drivers, robots that obey our orders and turn on the music we want to listen to or order the food we want to eat. Google has just released hearing aids that allow for simultaneous translation. Uber and the Brazilian firm, Embraer, signed an agreement for the development of electric powered cars. In the [warehouses of Alibaba](#), the largest Chinese retail company in the world, most of the work is done by robots, replacing 70% of the staff. Sophia became the first [humanoid robot in the world with recognized citizenship](#), in Saudi Arabia. It is a robot capable of imitating more than 60 gestures and human expressions, it was designed to express emotions and empathy, and to interact and hold a conversation.

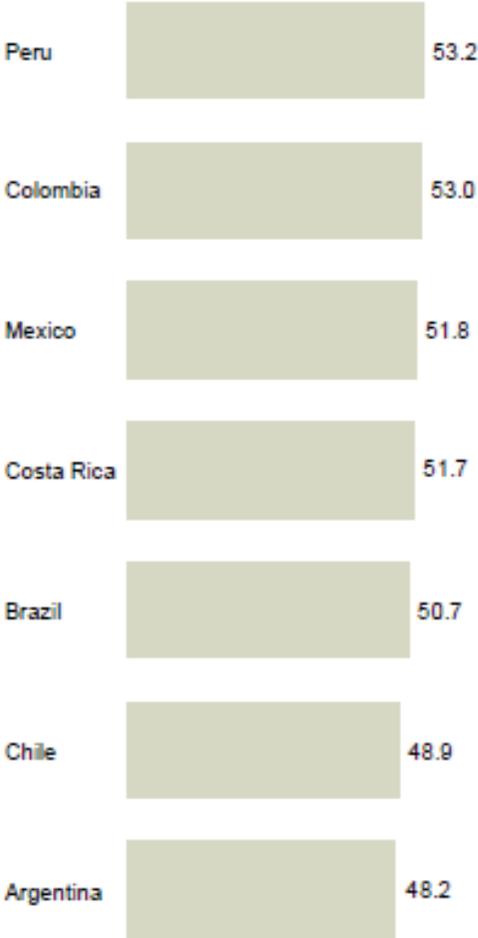
The technological revolution [will have an impact 3000 times greater](#) than the industrial revolution. This opens up endless possibilities, but it is also an earthquake that will shake up the labor market. This earthquake, which we are already living, will bring sequels, say a Tsunami, which will change the nature of work as we know it. We know this from the experience of the industrial revolution. If the industrial revolution was an earthquake of a 5-degree magnitude, this technological revolution that we are experiencing is at least a 10. In the period of industrialization great benefits were generated for society through improvements in the quality of life and productivity, greater efficiency and comfort. However, there were large costs generated by these changes, including lower income in the agricultural sector, unemployment and an increase in the inequality between the countryside and the city.

The second machine age, as defined by MIT, is disrupting the labor market through its impact on the type of jobs, wages and skills required. This is the Tsunami that comes after the earthquake. On the one hand there are workers who can be replaced by robots, this will happen especially in those tasks that are repetitive and can be automated. In Latin America, [half the time of workers in the region could be automated](#), with greater proportions in manufacturing, tourism and agriculture (figure 1). On the other hand, there are the new jobs that will be created, such as those that did not exist until very recently: social networks managers, engineers for the development of cars without driver, Uber drivers, analyst of big data, drone operators, virtual reality film makers, among others.

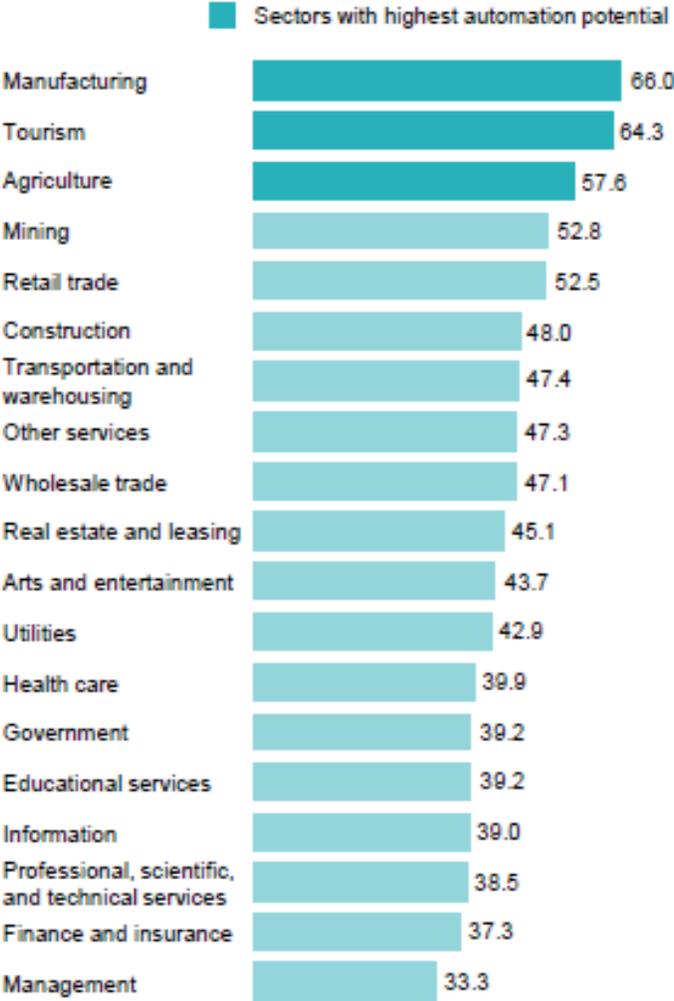
Close to half of workers' time can be automated in Latin America—with even higher shares in manufacturing, tourism, and agriculture

% of total full-time-equivalent time, 2016

FTEs technically feasible for automation in Latin America



FTEs technically feasible for automation, by sector



SOURCE: McKinsey Global Institute Automation Database; McKinsey Global Institute analysis

Figure 1

Those jobs that require creativity, social and non-cognitive skills will be difficult to replace. Similarly, there will be greater demand for everything that is inherently human, which demands personal interaction and social intelligence such as the care of sick people, negotiation processes or persuasion. The so-called "soft skills" will be highly desirable in the training of new professionals.

New technologies also generate changes in the characteristics of new jobs. There is greater flexibility in terms of time and the type of employment. AirBnB, for example, has thousands of self-employed workers. The geographical distances will be less and less important, with the use of virtual platforms to facilitate the connection between collaborators or the hiring of professionals around the world through platforms such as upwork or fiverr. Even traditional means of payment today present alternatives that we could not have imagined possible such as [electronic money which is already being used in 19 countries](#) in Latin America, especially successful in El Salvador, Honduras and Paraguay.

In sum, we expect to see a polarized labor market. There will be demand for people with high specialization and knowledge. There will also be demand for manual labor with low wages. The challenge, both for the public and the private sector, are the people who are in the middle, where their routine work will be easily replaced by robots and artificial intelligence. This includes tellers, translators, lawyers, accountants, etc.

The positive effects and opportunities that this technological tsunami may generate for the region will depend to a large extent on our ability to respond, anticipate and prepare for a reality which is already here. Adapt or die.

Preparing for this Tsunami

What can we learn from Asia?

Latin America's capacity for forecasting and long term planning has been weak, and it diminishes our ability to generate the changes required to face this technological earthquake and prepare for the tsunami that is coming in the labor market. Perhaps one of the flaws is precisely our planning horizon. While we continue talking about the

Latin American decade, Asia is thinking about how to reach the maximum potential of the "Asian century".

The Asian Development Bank published a [study on the vision of Asia to 2050](#), with the objective of taking actions to maintain the momentum for the next 40 years, adapting to a changing global economic environment. The pessimistic scenario of the publication, which seeks to generate a call to the leaders of the region to act, is for Asia to follow the Latin American path of the last 30 years, the middle income trap. They see Latin America as not very dynamic, with low levels of investment, modest increases in productivity, shyness to carry out long-term projects, excessive inequality and lack of pragmatism in its debates about the [role of the State and the market, where ideology predominates](#). They point out that the intangible assets for the future of the Asian region include: the ability of its leaders to focus on the long term, the commitment to modernize governments and their institutions, the ability of their citizens to think in a pragmatic and non-ideological way, and the strength of regional integration. A clear illustration of the different time horizon is that the [long-term document of Latin America](#) was published in 2016 for the next 15 years, Asia did it for a horizon of 40 years and it includes inter-generational actions. ⁸ This contrast of vision, and of ambition, has translated into great differences in productivity and growth.

The main challenge of our region continues to be increasing its productivity levels, which directly affects its growth rates. Compared with other developing regions, Latin America had the worst economic performance in the last 15 years, measured by the GDP growth rate. It reached barely 2.9%, while the average of developing regions was 5.6%, in China 9.4% and in Southeast Asia 6.7%. The decomposition of growth shows us that technology has played a key role. While 86% of Asia's productivity comes from technological changes, in Latin America this contribution is only 22%.

In fact, between 2000 and 2015 in developing economies, productivity grew at 3.9% per year and GDP per capita increased by 4.2%; During the same period [in Latin America](#), growth was only 0.6% and 1.6% respectively. Figure 2 shows how the productivity gap between Latin America and Asia continues to grow. There is no time to lose.

The long-term vision of Asia would seem to be even more ambitious for the following years. They aspire to go from a model of "equalizing" developed countries to one where [they become the global benchmark](#), with breakthrough actions in science and technology. What is the long-term vision of Latin America?

FIGURE 16. TOTAL FACTOR PRODUCTIVITY (TFP) IN LATIN AMERICA AND EAST ASIA

Source: Santiago Levy and Norbert Schady (2010). "Latin America's Next Challenge: Social Policy Reform." Washington, DC, Inter-American Development Bank. Mimeographed document.

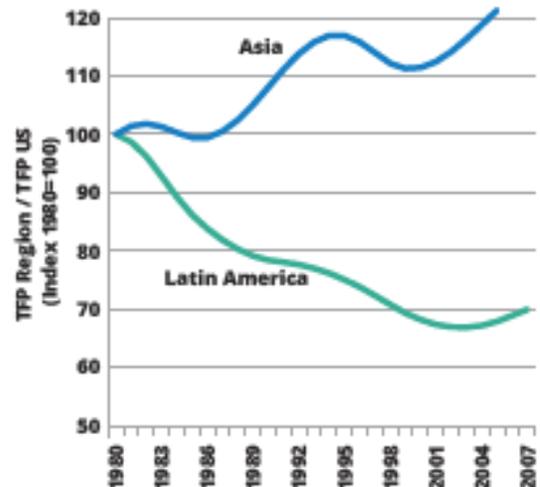


Figure 2

Education is Latin America's Best Bet

Education is the main instrument to face the challenges of the region, including the increase of productivity. Human talent and the knowledge economy open up an infinite number of possibilities for the region that can be exploited by generating the right conditions. We are just facing the first battles, well behind other developing regions. Our young people are at a disadvantage. Although the last 15 years there is an increase in enrollment, [31% of young people have not completed high school](#) and are not studying.¹¹ Even attending, and in the best of cases completing the studies, is insufficient due to the low quality of education. If we compare the results of the PISA tests, the countries of Latin America are in the bottom third, while the Asian countries are in the first places (figure 3).

It is striking, for example, that Korea has the [same number of students enrolled in universities](#) in the United States than Latin America has, with 10 times less population than our region. The curricula in Asia are constantly looking to educate their citizens to face the challenges of modern society, with an emphasis on science and technology. Since elementary school, mathematics and science have been the main focus of Korea, Japan, Hong Kong and Singapore. These countries were always placed in the highest

rank in math and science tests and are early precursors to the famous [STEM](#) (Science, Technology, Engineering and Mathematics).

STEM was considered for a long time as the great objective to prepare for the labor market of the future. But the speed of technological change and the progress in the learning capacity of artificial intelligence, such as Google Brain, suggest that the type of work that will be relevant in the future is different to what was expected when STEM was created.

A recent study by Harvard University shows that workers with both social and technical competences, not only technical ones, in the highest demand in the labor market and their income per hour has increased the most. In the United States between 1980 and 2012, jobs that require high social interaction have increased their participation in the labor market by 12 percentage points, while those intensive jobs in mathematics, but less social, - including several of the STEM occupations-, have reduced its participation by 3 percentage points in the same period. The importance of social competencies is already evident.

New categories of work, unprecedented, will be necessary around essentially human qualities, reinforcing the trend of recent years. These include coaches for artificial intelligence (empathy), translators / interpreters between the technological world and human users, ombudsman to uphold the norms of human values and morals. But also art and solidarity are going to be central, because they are not replaceable by artificial intelligence. That is where the possibility is presented for Latin America to leapfrog ahead of Asia, into the future.

We can start by using the imagination of Borges, Cortázar, García Márquez, to imagine a future that is unpredictable from here but that we know is closer than we thought. Latin America not only has the advantage of a creative tradition, but it also has great strength in terms of social capital and the capacity for warm empathy that will be needed more than ever in the world of the Jetsons.

We think that this is an issue of vital importance for the future of Latin America and that we are against the clock. The technological earthquake is already here and we have little time to prepare for the Tsunami that is about to hit the labor market. We think that this is a great opportunity for the technological transformation to be an ally for the productive

takeoff of Latin America. We do not have the solutions. Those require imagination and debate. But with this article we want to invite you to a conversation on this subject, hoping that the young people contribute in an important way. The future is now!

