

## Automation: a race we are not devoting enough effort to

Automation, along with digitalisation, represents one of the biggest changes to advanced countries' production structures in the coming years. Recent experience has also shown that automation and digitalisation make economic activity more resilient in disruptive contexts such as the present.<sup>1</sup>

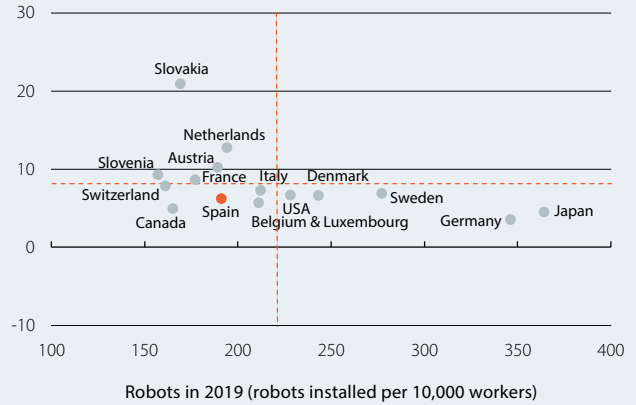
The new wave of automation – with increasingly skilled, smarter, cheaper and more digitally connected robots – is essential to the success of Industry 4.0.<sup>2</sup> In this field, the International Federation of Robotics (IFR) provides statistics on the number of robots installed for every 10,000 workers in the manufacturing sector in a large number of countries, giving us an idea of where Spain currently stands and how it is progressing.

In its latest report, the IFR states that Spain has a density of 191 robots, placing it above both the global average (113) and the European average (114). However, this figure is still well below that of major advanced countries, such as Germany (346) or the US (228), and a far cry from the pioneers in the field (Singapore, 918; Korea, 855; and Japan, 364).<sup>3</sup> In fact, if we take a more appropriate selection of advanced countries to compare against, we see that not only is Spain slightly below the average but it is also far from closing the gap with these countries, since its growth rate is also slightly below the average (see chart).

In industries that are important in terms of size for our economy, such as the agri-food sector, there has been considerable growth in the use of robots over the past decade. More specifically, the agri-food sector has gone from having around 40 robots per 10,000 workers in 2007 to around 100. However, this increase is no match for the efforts of countries such as Italy, which has gone from being at the tail end of Europe, with a density of 20 robots in 2007, to being at the forefront in the automation of the agri-food sector alongside the Netherlands, with a density of 180 robots in 2017.

The automotive industry also stands out, as it is the most highly automated of all the manufacturing sectors. In this sector, the use of robots has remained virtually constant

**Robot density in the manufacturing sector \***  
Composite annual growth for 2015-2019 (%)



**Notes:** \* Selection of countries, mainly advanced ones. We exclude South Korea, Singapore and China, as their level and/or growth rate is well above the average for the standard of most advanced countries. Korea and Singapore have a density of around 900 and China's growth rate is around 300%. The horizontal and vertical lines correspond to the average for the selection of countries.

**Source:** CaixaBank Research, based on data from the International Federation of Robotics.

in Spain over the last decade, at around 750 robots per 10,000 workers. In contrast, the German and US automotive industries have intensified their degree of automation: whereas in 2007 they had a density similar to Spain's, by 2017 they already had around 1,250 robots per 10,000 workers.<sup>4</sup>

In short, the Spanish economy shows similar degrees of automation to those of our main international competitors. However, the speed of growth in this field in recent years is insufficient to catch up with the most cutting-edge economies. At the gates of the new industrial revolution, Spain will have to do more in its process of automation if it wants to be in good shape within Industry 4.0.

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1. This article focuses on automation. For an analysis more focused on the digitalisation of the Spanish economy, see the Dossier «[Digitalisation and European funds: a winning pair](#)» in the MR03/2021.

2. Industry 4.0, a concept still under development, refers to a new way of organising production resources, centred around smart factories and hyper-connectivity.

3. Unsurprisingly, estimates name Korea, Japan and the city-state of Singapore as the countries that are expected to have the oldest population in a few decades.

4. See R. Anderton *et al.* (2020). «Virtually everywhere? Digitalisation and the euro area and EU economies». ECB Occasional Paper Series, December.