

Industry is dead! Long live industry!

On 2 January 1956, *Time* magazine named Harlow Curtice, CEO of General Motors, its Person of the Year. At 62, Curtice had spent the last 42 years working at General Motors, the leading car and truck manufacturer of the time that employed almost 600,000 workers and whose sector (manufacturing) accounted for approximately 30% of employment and GDP in the US. Almost 50 years later, in 2010, Mark Zuckerberg, 25 and founder of Facebook, at that time with fewer than 3,000 employees,¹ was the person chosen. Rather than a mere anecdote, these covers illustrate industry's loss of importance in favour of services in advanced economies since the second half of the 20th century.² As is explained in the articles «Industry as the crux of transformation: past, present and future» and «The new industrial policy: challenges and opportunities» in this Dossier, there exists a social concern that the deindustrialisation of the advanced economies might impoverish their societies and there are differences of opinions as to whether reindustrialisation should be encouraged. However, this article argues that such a transformation is the result of structural factors and, contrary to appearances, is actually encouraging greater integration between industry and services.

As of today, 12% of the US' GDP is produced by manufacturing while professional and financial services and those related to information, education and healthcare, as a whole, account for 45% of GDP (this share was around 20% in the 1950s). This structural change can also be seen in a loss of employment in industry in favour of services. However, deindustrialisation does not result in fewer manufactured goods being produced: quite the opposite since, as shown by the second graph, the volume of manufactured goods produced is at an all-time high.

The fact that jobs are being lost in the industrial sector at the same time as a peak in manufacturing production reflects one of the structural factors behind the deindustrialisation process: growth in productivity is faster in industry than in services. This gap between productivity growth rates is pushing down the relative price of manufactured goods compared with services, resulting in a readjustment of the economic structure. On the one hand it generates incentives to consume more manufactured goods (which are relatively cheap) and fewer services (relatively expensive) but, on the other hand, the fall in the price of manufactured goods increases our purchasing power and allows us to consume more manufactured goods and also more services. Deindustrialisation occurs when the second effect is more dominant and the services sector needs to hire more workers to meet the rise in demand (while the greater productivity of the industrial sector allows it to meet this demand with fewer workers).³ Moreover, in advanced economies this effect is amplified by the tendency for the consumption of services to increase as societies become wealthier (for example due to the ageing population, which results in a higher demand for healthcare services) and by globalisation (playing a leading role in the development of manufacturing industry in China), which helps to increase the competitiveness of manufacturing firms by offshoring part of the production process.

The advances being made in automation lie behind industry's faster growth in productivity. To mechanise the production of a good or service we need to describe the production process using a list of instructions that are standardised, well-defined and performed repeatedly, and this is much easier to do in manufacturing than in services. For example, all the pianos from an assembly line have the same size, the same number of keys, etc., but each concert in which a piece by Mozart is performed is unique and unrepeatable. Given that automation benefits industry to a greater extent, technological improvements encourage manufacturing firms to replace those workers who carry out repetitive tasks and follow well-defined rules.

1. Facebook currently employs almost 15,000 workers.

2. Deindustrialisation is characterised by manufacturing firms losing their share of total employment and, to a lesser extent, their share of total manufacturing value. Rodrik, D. (2015), «Premature Deindustrialization», NBER Working Paper, No. 20935 states that this process can also be seen in emerging economies.

3. Growth in manufacturing demand is a reflection of the rise in real production observed in the second graph. Note that this is compatible with a reduction in manufacturing firms' share of the value compared with the total value-added of the economy.

Time Magazine Person of the Year



1956

2010

Note: The faces of Harlow Curtice, CEO of General Motors, and Mark Zuckerberg, founder of Facebook, were on the cover of *Time* magazine as its Person of the Year in 1956 and 2010, respectively, illustrating industry's loss of importance in favour of services in advanced economies since the second half of the 20th century.

Source: CaixaBank Research, from a General Motors archive (Harlow Curtice) and Shutterstock (Mark Zuckerberg).

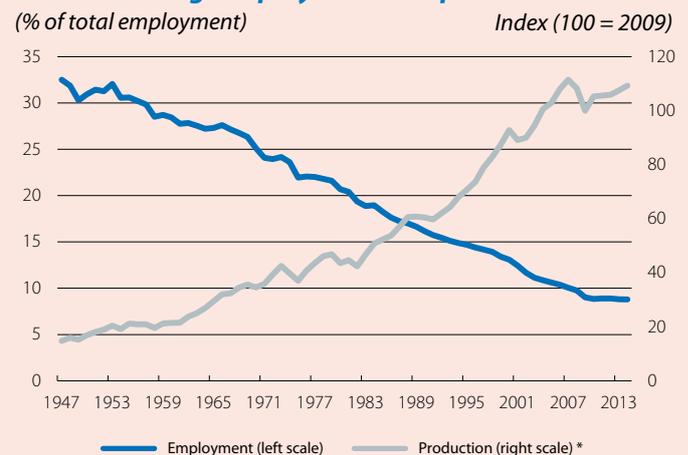
Nevertheless, the automation of production processes does not eliminate the demand for a skilled industrial workforce: for example, although a number of robots may be capable of transforming basic materials into a car, specialists are still required to design the vehicle and market it. In other words deindustrialisation does not only consist of replacing manufacturing with services but also leads to company requirements being redefined. This is illustrated in the third graph which shows how the services sector has become an increasingly important supplier and client for the manufacturing sector. Traditional manufacturing companies are abandoning the stage of goods production (through outsourcing) and are no longer registered as manufacturers in the official statistics but they are keeping the stages of pre-production (R&D, design, engineering) and post-production (sales strategy, marketing, logistics), which is actually where there is more value-added.⁴ One example of this kind of company is Apple, famous for its mobile devices and computers: Apple is responsible for designing, developing and marketing its products but outsources production to companies such as Foxconn, employing a significant degree of automation and mostly manufacturing outside the US. Other companies have remained in the manufacturing sector but complement their traditional production of goods with the provision of services, what is known as the servitisation of manufacturing.⁵ The aforementioned structural factors encourage manufacturing firms to produce services as they help to boost customer loyalty (e.g. through marketing or corporate social responsibility campaigns), differentiate products (such as the iOS operating system, only available for iPhones) and ensure a more stable source of income (for example, with an average life in excess of 10 years, cars offer a more regular income through maintenance and repair services than through sales).

As we already discussed in a previous Dossier,⁶ automation provides the chance to enrich the whole of society and involves a reorientation of the nature of work. In this article we have seen that, perhaps somewhat paradoxically, the increase in productivity taking place at the same time as deindustrialisation is increasing the importance of services and transforming industry towards a servitisation of manufacturing. The advances being made in automation are on a par with the improvements in knowledge and technology and are forcing us to break moulds. Although, in 1776, in reference to manufacturing firms and services, Adam Smith⁷ wrote: «A man grows rich by employing a multitude of manufacturers; he grows poor by maintaining a multitude of menial servants», today the reality is that automation is amplifying the value-added offered by services for the production process. Deindustrialisation therefore entails a reorganisation of the production structure to allow workers to specialise in those tasks in which the human factor comes to the fore, such as creativity and personal interaction, also within industry itself (engineers, managers, publicists, etc.).

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Manufacturing: employment and production



Note: * Chain-linked index at constant prices.

Source: CaixaBank Research, based on data from the Bureau of Labor Statistics and the Bureau of Economic Analysis.

4. See Bernard, A. B. and Fort, T. C. (2013), «Factoryless Goods Producers in the US», NBER Working Paper No. 19396.

5. See Crozet, M. and Milet, J. (2014), «The Servitization of French Manufacturing Firms», CEPII Working Paper No. 2014-10.

6. See the articles in the Dossier «New technologies and the labour market» in MR02/2016.

7. See Smith, A. (1776), «An Inquiry into the Nature and Causes of the Wealth of Nations», book 2, chapter 3.