Can the decline of Spanish manufacturing be reversed?

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The crisis has exacerbated the ongoing deindustrialisation trend observed in Spain, further widening the gap relative to other OECD countries. Going forward, in order to maintain a solid manufacturing industry, Spain will need to reshape its industrial policy to take advantage of technological change and the digital transformation of this sector over the coming years.

The crisis has had a strong, negative impact on Spain´s manufacturing industry, arguably due in part to the severe adjustment in the construction sector. This scenario coincided with a profound change in the global structure of the manufacturing sector, with world manufacturing output shifting away from developed countries in favour of newly industrialized ones. Statistical evidence highlights that the deindustrialisation process in Spain has followed a similar path to that of other OECD countries, although intensifying since 2000. Overall, the decline of industrial production is expected to continue over the coming years, given the three main factors behind this phenomenon (structural change, foreign trade, and 'servitisation' of manufacturing) are anticipated to remain in place. In this context, there has been a renewed interest in industrial policy aimed at promotion of stable manufacturing jobs and specialization in sectors with high value added per unit of output. In both the U.S. and the EU, measures have been introduced to either directly support reindustrialisation goals, or backing policies defining vertical objectives, and therefore seeking to promote innovation in advanced manufacturing, or, in EU terminology, key enabling technologies. In Spain, the focus should be on slowing the country´s pace of deindustrialization relative to the OECD average through defining priorities in the manufacturing industry and devoting resources to technology, financing and training policies targeted to the sector.

The title of a recent report from the French Council of Economic Analysis, which advises the French Prime Minister on matters of economic interest, was quite telling: *No industry, no future?* The report's authors were three European economists, Lionel Fontagné, Pierre Mohnen and Gustram Wolff, who acknowledge that the answer to this question is far from simple and call for a redefinition of the concept of industry and industrial policy (Fontagné, Mohnen and Wolff, 2014). There has been a proliferation of reports of this kind in recent years, as the crisis

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has triggered renewed interest on the topic. The ongoing decline in industrial activity relative to services calls for a reassessment of the industrial sector and industrial policy in particular. As Rodrik (2010) highlights in his work *The Return of Industrial Policy,* there is a large group of countries and organisations setting out to change this type of policy´s direction. In this context, this article examines some of the recent trends in Spain's manufacturing sector.

Manufacturing during the crisis

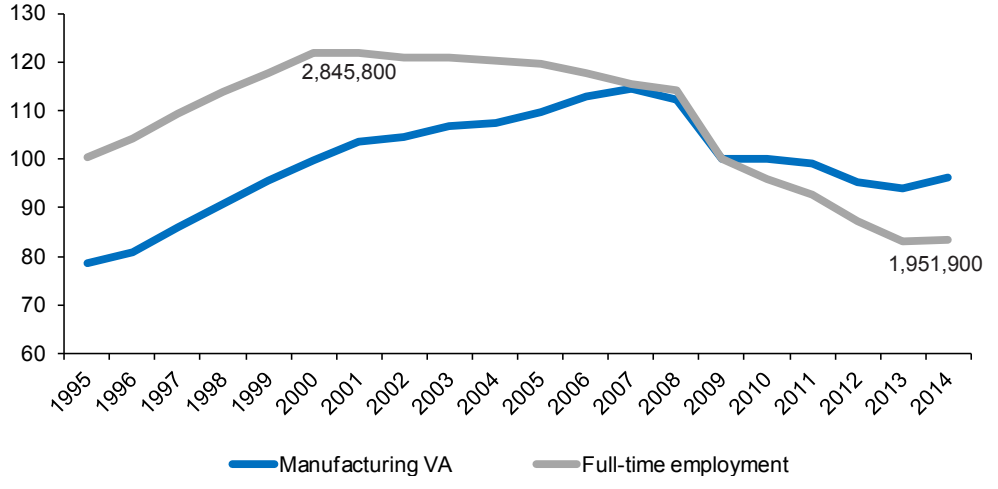
The manufacturing sector was the second hardest hit by the economic crisis in Spain, following the construction industry. Exhibit 1, which shows the real value added and employment series recently published by the National statistics institute (INE) national accounts (2010 base year), gives an idea of the scale of the crisis in the sector. Manufacturing activity slumped in 2009, with a drop in real value added of over 10%. Between 2007, when the previous cycle peaked, and 2013, full-time manufacturing employment shed 750,000 jobs. This reduction was equivalent to almost 30% of manufacturing employment existing in 2007.

For a more uniform comparison, two years at similar points in the cycle should be taken as the reference, for instance 1995 and 2014. In both these years, there was a slight recovery in manufacturing employment, as it began the climb out of the trough of the two preceding recessions. If we compare the level of full-time employment in each of the two years, the drop affected 400,000 jobs, around 20% of the existing total in 1995. This figure is also indicative of the intensity of the crisis in the manufacturing industry in recent years.

The scale of the industrial crisis Spain has suffered becomes even more apparent when comparing changes in the sector with those at the EU level. Taking the industrial production index data Eurostat publishes on all EU countries as a reference, Spain's index at end-2014 was 30% lower than in 2007. In the eurozone countries, the drop was 7%, and many countries had a higher level of output than in 2007 (Germany, for example, is up 5% relative to its 2007 level). In

Exhibit 1

Evolution of employment and real value added indices of manufacturing. Spain 1995-2014 (2010=100)



Note: Figures reported correspond to the total number of full time employees in years 2000 and 2014.
Source: Spanish national accounts (2010 base year).

the EU as a whole, only Greece and Malta lag behind Spain in terms of how their manufacturing industry has performed.

The Central Business register´s (DIRCE in its Spanish initials) records of company data shed additional light on the situation in the industrial sector. Data show the number of manufacturing firms to have declined by almost 30%, with the severest impact being among firms with 10 to 49 employees. The European Commission (2014a) highlights that of the EU's larger countries, Spain has suffered the worst destruction of manufacturing firms, with losses exceeding those in other peripheral countries, such as Portugal and Italy.

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All the data, including output, employment, and the number of firms, are indicative of a significant loss of productive fabric in the manufacturing sector. The scale of the deterioration has been much greater than the EU average. Although the factors behind the sector's worse performance in Spain have not been fully explained, the severe adjustment in the construction sector, which generates substantial demand for manufactured goods, arguably contributed to the drop in manufacturing output (Tiana, 2012).

Data from 2014 and the first quarter of 2015 show a significant trend change in the sector. 2014 was the first year since the onset of the crisis in which manufacturing output and employment registered positive growth. Moreover, somewhat exceptionally, the sector's growth of 2.3% exceeded the 1.4% growth of the economy as a whole. The strong performance is due in part to the low level of manufacturing output in recent years, but is nevertheless significant in the context of the last fifteen years. Since 2000, manufacturing has consistently grown more slowly than the economy as a whole, making 2014 a year of exceptional performance in a historical context.

Despite the strong performance of manufacturing over the last year and a half, the sector's long-term trend remains worrisome. Spain has continuously slid down the rankings of the world's largest manufacturers. In 1990, Spain was ranked 9th for its share of the world's manufacturing output, and in 2010 it was 14th, having been overtaken during this period by Brazil, South Korea, India, Russia, Mexico and Indonesia (see OECD, 2013).

These shifts in the world rankings reflect major changes taking place in the global distribution of activity over the last few decades. Since 1970, the EU has lost 15 percentage points of its share of world manufacturing output, the U.S. has reduced its relative share by 7 percentage points, while the newly industrialised countries (Brazil, Russia, India, China, South Africa, Indonesia, and Turkey)

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have increased their share by 20 points, and these trends accelerated over the period 2000-2014. The situation in Spain forms part of this overall trend: in 1970, it produced 2.3% of world manufacturing output, and its share has now dropped to 1.7% (see Fariñas, Martín Marcos and Velázquez, 2015).

Therefore, there exist two overlapping phenomena. On the one hand, the 2008-2009 global crisis had a strong, negative impact on Spanish manufacturing output, employment, and business demography. And on the other, this impact coincided with a profound change in the global structure of the sector in favour of newly industrialized countries, which has been particularly intense since 2000.

The process of Spain´s deindustrialisation

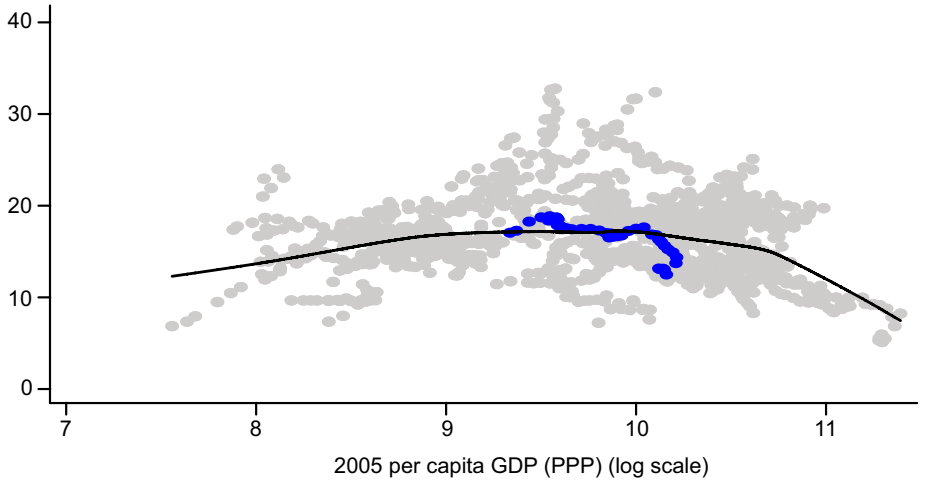
This section looks at changes in manufacturing's share of GDP in the most developed countries. In relative terms, manufacturing has declined over the last few decades as a share of GDP and employment, in a process that has come to be termed deindustrialisation (Rowthorn and Ramaswamy, 1997). This process has also emerged prematurely in developing countries in recent years (Rodrik, 2015).

In Spain, manufacturing came to account for 22% of employment and around 30% of GDP in nominal terms in the first half of the 1970s. Since then, its share of economic activity has declined continuously. According to National Accounts data (base year 2010), in 2013, manufacturing represented 13% of GDP at basic prices and employed around 2 million people, 12% of the total workforce. Is this decline in line with the pattern observed in other OECD countries or does Spain have specific features that set it apart from its peers?

Economic literature has analysed the phenomenon of deindustrialisation in the context of the process of structural transformation that accompanies economic growth. The literature has described an inverted U-curve relationship between the relative weight of the sector and countries' per capita income levels. The relative importance of the sector grows in the early stages of development until it reaches a peak after which its share of economic activity descends (McKinsey Global Institute, 2012 and Sposi and Grossman, 2014).

Exhibit 2

Ratio of share of real manufacturing value added to per capita GDP in OECD countries, 1970-2013



Note: Values for Spain in blue.

Source: The authors, based on United Nations, National Accounts Main Aggregates Database.

Exhibit 2 represents the paths of the OECD countries over the period 1970 to 2013. The set of grey points represents the OECD countries. The black line is the approximate average based on an estimator that smooths out the average value of the point cloud. The blue points represent the path followed by Spain. The variable used to measure manufacturing's relative share is the sector's value added relative to GDP (both in real terms).[3] The main features of this exercise can be summarised as follows:

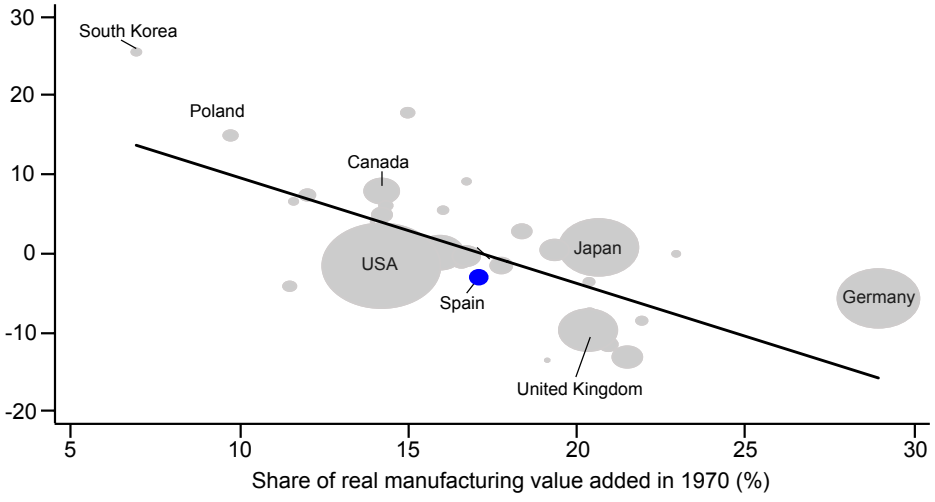
- The average path follows an inverted U-curve.
- Spain has followed a path tracking the OECD average very closely.
- Throughout most of the period, Spain has been on the downward part of the curve, with its industry losing weight in relative terms. Since around 2000, there was a widening divergence, indicating that Spain, bearing in mind its per capita income, is deindustrialising faster than the OECD-country average.

Exhibit 3 gives more details over the differences between countries, comparing the initial level of relative share and the variation in that share between 1970 and 2013. The area of the circle representing each country is proportional to the size of its manufacturing sector relative to the OECD total. The relationship between the two variables is negative: countries with a larger initial share of manufacturing lose more of their share, and countries with a smaller initial share lose less or even gain share. However, beyond this negative relationship, which is to be expected, some interesting differences between countries emerge. These include:

- The countries that have increased their share of manufacturing include Korea (18%), a large group of countries from Eastern Europe

Exhibit 3

Relationship between share of manufacturing value added in 1970 and its change over the period 1970-2013 in OECD countries (value added in real terms)



Source: The authors, based on United Nations, National Accounts Main Aggregates Database.

[3] Employment is most often used to measure the sector's relative share. This is the case in Fariñas, Martín-Marcos and Velázquez (2015) and the result obtained is very similar.

(Poland, Hungary, the Czech Republic, etc.) and a small group of countries including Canada (8%), Turkey (7%), Ireland (7%), Finland (6%), Sweden (5%) and Japan (1%).

- All the other countries have seen a reduction in their manufacturing sector's share. Spain's manufacturing sector has contracted more (-4%) than would be expected given its initial level (it lies below the straight line indicating the average). This pattern confirms what Exhibit 2 shows, namely that Spain's trajectory has represented a more intense deindustrialisation than the OECD country average.

- In terms of the intensity of its deindustrialisation, Germany may be seen as the counterpoint to Spain. Like Spain, its manufacturing sector's share has dropped (-6%), but it remains above the average. That is to say, its deindustrialisation, given its starting point, is less intense in relative terms with respect to the average.

The findings referred to above reveal a measure of non-uniformity in the intensity of the processes of deindustrialisation in Spain when compared with the OECD country average.

To confirm whether the trajectories of Spain and the OECD countries as a group diverge after 2000, Exhibit 4 shows these trajectories since 1970 (also including the EU-28). As can be seen from the exhibit, since 2000, Spain has been on a much steeper path of deindustrialisation than the OECD countries as a whole. This is, therefore, confirming the conclusions drawn from the previous statistical analyses.

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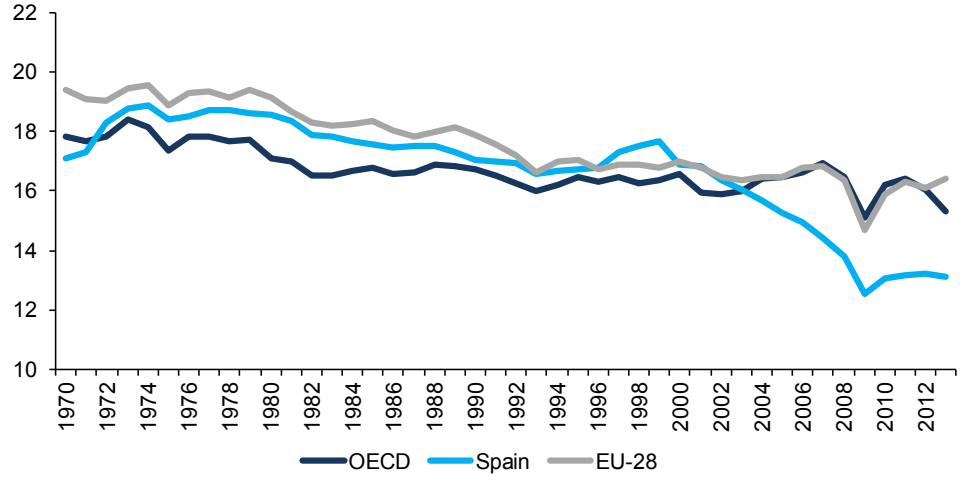
Three factors stand out in the explanation of the process of deindustrialisation. Firstly, industry's declining share of GDP is being driven by rising relative productivity. This factor has been widely reported in literature (Rowthorn and Ramaswamy,

Exhibit 4

Trend in share of manufacturing value added as a ratio of total value added (real terms). 1970-2013



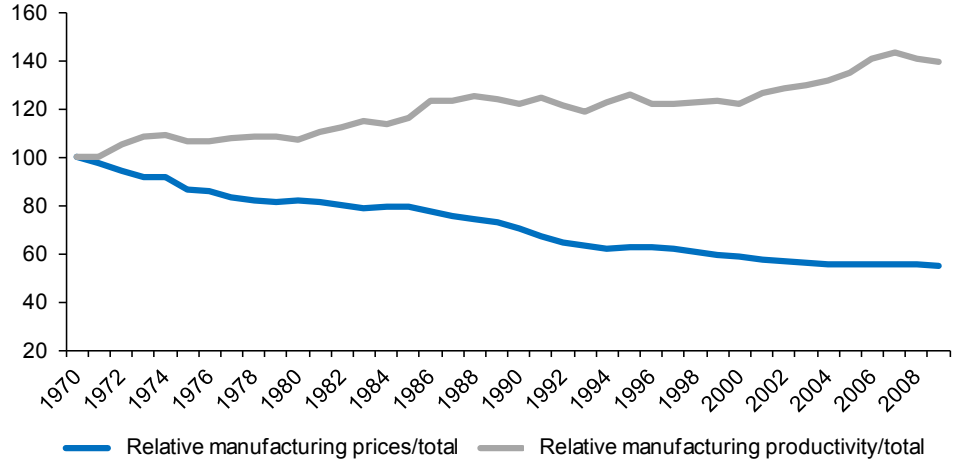
Source: The authors, based on United Nations, National Accounts Main Aggregates Database.

1997; Lawrence and Edwards, 2013; Veugelers, 2013) and could be identified with the process of structural change that accompanies economic growth and the composition of productive activity. The faster productivity growth in industry than in other sectors makes it likely that relative prices fall over the long term (see Lawrence and Edwards, 2013 for a more detailed analysis of this association). If demand for goods does not increase relative to services, as has been the case in recent years, the inevitable consequence is that the manufacturing industry's share of economic activity will shrink, in terms of both employment and output. Exhibit 5 shows how relative productivity and relative prices of the Spanish manufacturing sector have progressed over the long-term. The data confirms the upward trend in productivity and falling relative prices.

Secondly, foreign trade (Lawrence and Edwards, 2013 and Veugelers, 2013) has also been highlighted as another factor in industry's loss of relative weight. If domestic demand is increasingly met from imports, the activity of the sector based in the domestic market will be gradually eroded. This is, however, a more controversial factor and the object of the discussion alluded to above. The article by Autor, Dorn and Hanson (2013) has lent empirical support to this hypothesis. These authors analyse the impact of Chinese imports on the structure of productive specialisation in 741 metropolitan areas in the U.S., which have relatively uniform labour markets. Their findings suggest that imports from China over the period 1990-2007 were a significant factor in the loss of manufacturing jobs, explaining 25% of the drop in manufacturing employment. This finding should be interpreted as a partial equilibrium analysis. It does not, therefore, indicate how much additional manufacturing employment there would be in the absence of Chinese imports. Nevertheless, the study establishes a quantitatively significant link between the observed reduction in manufacturing employment and the penetration of Chinese imports. In the U.S., this has often been linked to the phenomenon of "offshoring," whereby business activities are relocated to China. It is worth noting that a similar study by Donoso, Martín and Minondo (2014) exists for Spain, which examines manufactured imports from China, using information disaggregated by provinces, and obtains very similar findings.

Exhibit 5

Relative productivity and relative prices of manufactured goods in Spain (1970-2009; index 1970=100)



Source: The authors, based on EU KLEMS Growth and Productivity Accounts.

Thirdly, there is a final set of factors, including manufacturing firms outsourcing activities to services firms and the 'servitisation' of manufacturing firms that increasingly perform service activities. These factors, which are related to profound organisational changes in manufacturing, and with changes in its nature, also help explain some of the loss in its relative importance. As regards outsourcing, this is a process that has been emerging for some time, and affects a wide range of services, from cleaning and security, to the subcontracting of IT systems. To the extent that this phenomenon of subcontracting services in the form of intermediate consumption represents a growing share of total output (Falk and Jarrocinska, 2010), it reduces industrial value added and the size of the sector.

The second element that needs to be included in this organisational change category is the growing 'servitisation' of manufacturing firms. Manufacturing companies produce an increasing quantity of services. The boundary between manufacturing and services is becoming blurred, and in extreme cases, firms whose main activity was manufacturing have become services companies because services account for over 50% of the company's value chain. A recent study of the process of deindustrialisation in Denmark finds that half of the country's loss of manufacturing as a share of GDP is explained by this 'servitisation' process, whereby some companies come to produce more services than manufacturing output (Bernard, Smeets and Warzynski, 2014).

It is not easy to measure the contribution of these three factors –structural change, foreign trade, and outsourcing and the switch to services– to deindustrialisation. Fariñas, Martín Marcos and Velázquez (2015) have performed a correlation analysis to confirm some of the foregoing interpretations. Their findings are summarised below.

At the sector level, a negative correlation is observed between productivity growth (in deviations from the manufacturing industry mean) and the change in the relative share of employment: the manufacturing sub-sectors in which productivity has risen most are those in which the relative share of employment has fallen most. At the same time, the sub-sectors that have increased their share of final demand most (approximated by apparent consumption) are those which have also increased their relative share of employment. The sign of these two correlations is therefore consistent with the explanation of structural change. As mentioned, this explanation is based on the idea that the fastest productivity growth, combined with relatively unfavourable demand trends for industrial goods, lead to deindustrialisation or loss of the sector's relative share. Although correlation does not imply causality, in this case the sign of the correlation is consistent with the explanation and therefore supports its validity. Evidence has also been obtained on the role of foreign trade in explaining deindustrialisation. The sectors with the biggest increase in the penetration of imports relative to apparent consumption and in which the ratio of imports/exports has risen furthest, are those sectors whose relative share of employment has suffered the biggest decline. These correlations are therefore also consistent with foreign trade being an explanatory factor.

In the case of the explanation emphasising outsourcing and the switch to services, it has not been possible to conduct a sector-by-sector correlation analysis.

In short, structural change is a reflection of how basic variables, such as the sector's relative productivity, prices, and relative demand, behave. This factor explains a large portion of the phenomenon of deindustrialisation and is likely to continue to erode manufacturing's relative share of GDP and employment. Also, the extent to which domestic demand is met from imports will be another factor that remains active while globalisation continues. Lastly, outsourcing of service activities and 'servitisation' are phenomena

that are not only unlikely to reverse, but are likely to intensify in the future. It is foreseeable that deindustrialisation, understood as manufacturing's loss of relative weight among economic activities as a whole, will continue over the coming years.

Structural change, foreign trade, and organizational changes such as 'servitisation' and the outsourcing of service activities explain a large portion of deindustrialization observed today and are likely to continue over the coming years.

The return of industrial policy

The Great Recession of 2008-2009 triggered a return to, and a certain revitalisation, of industrial policy. The crisis has led to renewed interest in industry and manufacturing in particular. The sector's decline in many countries has encouraged the idea of developing policies to promote stable manufacturing jobs and specialisation in sectors with high value added per unit of output.

Rodrik (2010) writes explicitly about the "return of industrial policy." Stiglitz, Lin and Monga (2013) point to the need to "rejuvenate industrial policy" and cite numerous examples of countries that have changed policy direction in this area. Through its Committee on Industry, Innovation and Entrepreneurship, the OECD has recently fostered discussion on the evaluation of industrial policies, dealing in depth with the methodological problems associated with this evaluation (Warwick and Nolan, 2014). This section reviews some of these initiatives and discusses Spain's position, drawing in part from the work of Fariñas (2015).

The U.S. has made some significant changes to its industrial policy in recent years. In his 2012 State of the Union address, President Barack Obama said that his "agenda for the economic recovery began with manufacturing" and went on to propose a series of measures aiming to promote the relocation of manufacturing activities back to the U.S. Offshoring of manufacturing has been intense in the U.S., and it has been proposed that tax relief be withdrawn from companies that outsource jobs abroad and that companies relocating their production in the U.S. be given financial support.

These measures were fleshed out in President Obama´s 2013 State of the Union address with a broader industrial policy framework, consisting of the creation of a network of institutes to promote innovation and advanced manufacturing (National Network for Manufacturing Innovation). With public and private participation, and the support of the federal budget, this initiative aims to promote innovation in advanced manufacturing by setting up 45 institutes over the next few years, each focused on a different technology and manufacturing activity (for more details see the Advanced Manufacturing Portal: http://www.manufacturing.gov/welcome.html).

The above initiatives have no recent precedents in the U.S. and resulted in the passing of the Revitalize American Manufacturing and Innovation Act in December 2014. This law sanctions an approach to industrial policy that represents a 180 degree turn in the design of policies of this type in the United States.

There have also recently been changes in the direction of industrial policy in the EU. If we look back to the 1990s and the 2000s, which takes into account the period in which the Lisbon Agenda was in force, European industrial policy has been a perfect example of what has been called the "integrated horizontal approach" (Vives, 2013). However, in 2012, the European Commission document COM2012-582 described a new industrial policy model that began from the premise that: "Europe needs to reverse the declining role of industry in Europe for the 21st century. This is the only way to deliver sustainable growth." The communication defines the goal of "reindustrialising Europe" and quantifies it by

stating the need to increase manufacturing "from its current level of around 16% of GDP to as much as 20% by 2020." The Commission insists on its traditional horizontal approach with the customary instruments linked to the "single market, SME-support policies, competition policy, and research." However, it changes direction by identifying objectives closer to a vertical industrial policy and calls to: "focus investment and innovation on six priority action lines: advanced manufacturing technologies, key enabling technologies, bio-based products, sustainable industrial and construction policy and raw materials, clean vehicles, and smart grids."

Through the current president of the Commission, the EU has renewed this reindustrialising approach with the presentation of its policy guidelines to the European Parliament in July 2014, insisting on the objective of increasing the relative weight of industry in 2020 to 20%.

Although perhaps not as radical as that in the U.S., this is a substantial change, and the goal of reindustrialisation will be pursued through horizontal policies, of which the Commission highlights three. The first driver will be innovation policy, targeting R&D funding. The Horizon 2020 Programme will devote 80 billion euros to innovation on key enabling technologies, among others.

The second driver comprises access-to-finance policies. These are an essential part of the toolkit with which to achieve the industrial policy objectives. Financing is a key issue, particularly for SMEs, which are more dependent than large firms on bank finance. The crisis has fragmented the internal bank lending market, such that Spanish firms pay interest rates 2-3 points higher than SMEs in core eurozone countries.

The third driver to which the Commission gives priority in its 2020 Agenda is improving the education and professional training systems. The mismatch between the skills supply and the professional skills the labour market demands is one of the main difficulties industry faces in the EU. Moreover, this situation is set to persist over the years ahead, as technological progress will stimulate demand for specific skills and training.

In Spain, in July 2014, the Ministry of Industry, Energy and Tourism presented an Agenda for strengthening industry in Spain, which subscribes to the idea that industry needs to "increase its share of GDP," but unlike the European Commission, it does not quantify the target. The Agenda has a long list of measures, with 97 actions in the horizontal policies area (R&D, internationalisation support, SMEs, etc.). These measures are not quantified in terms of resources, rather the Agenda only states that 745 million euros will be set aside in 2015 for loans for reindustrialisation and to stimulate industrial competitiveness. Thus, until the General Secretariat for Industry prepares a progress report on the Agenda's measures, the precise scope of the measures and their degree of fulfilment remain unknown.

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One major difference between the document defining the Spanish government's policy and that defining the EU's industrial policy is that, unlike document COM(2012) 582, the Spanish Agenda does not formulate any sectoral or priority technology objectives.

Recap of some of the changes in manufacturing

This final section takes stock of the points addressed and provides some additional thoughts on the changes taking place in the manufacturing sector.

The Great Recession has had a strong, negative impact on the Spanish manufacturing industry's output, employment, and business demography. If we compare 2014 and 1995, two very similar years in terms of their position in the economic cycle, in terms of employment, manufacturing has lost almost 20% of its productive fabric.

OECD countries are undergoing a process of deindustrialisation, understood to be the loss of the relative importance of the manufacturing industry, in terms of both employment and value added. If this is compared with countries' per capita income, the average pattern of deindustrialisation follows an inverted U-curve. This process is basically a reflection of how basic variables, such as the sector's relative productivity, its prices, and relative demand, behave. This behaviour will persist and is likely to continue to shrink the sector's share of GDP and employment. The fact that imports are meeting a growing share of domestic demand is another factor driving deindustrialization. And thirdly, the outsourcing of certain services and the increasing tendency towards 'servitisation' among manufacturing firms are also contributing to manufacturing's loss of relative importance.

Over the period 1970-2013 as a whole, Spain's deindustrialisation followed a similar path to the OECD country average. However, a growing gap between Spain and the pattern for the OECD countries opened up, with Spain experiencing more intense deindustrialisation since the early 2000s. This phenomenon may be seen in the trajectory followed by both employment and value added in the sector.

The decline in industrial production will continue over the coming years, because the factors responsible will continue to be in place, particularly the structural change associated with the manufacturing industry's productivity and relative demand. The decline will affect high and low technology sectors equally. To illustrate this point, the electronics industry's loss of share in the EU is a sign that technological sophistication *per se* is insufficient protection against deindustrialisation (Veuglers, 2013). The loss of employment will affect lower skilled jobs in particular. Even in low-tech sectors, such as footwear or clothing, new jobs tend to be concentrated in activities demanding high skill levels. Deindustrialisation is a phenomenon that affects all manufacturing sectors, and those activities with least value-added per unit produced within each sector most.

The interplay between services and industry will be a key feature of future trends in manufacturing. The pursuit of higher value-added in industry is closely correlated with growing 'servitisation' (Veugelers, 2013). This is a two-way process, with many manufacturing sectors increasingly buying and selling services, while many services companies, by making intensive use of ICTs, are increasingly organising themselves as manufacturers (De Backer, Desnoyers-James and Moussiegt, 2015). The boundary between manufacturing and services is increasingly blurred, making setting goals for each type of activity separately ever more difficult.

In recent years, there has been a turnaround in how industrial policy is regarded, with a renewed interest or a "return" to industrial policy, as Dani Rodrik put it. In both the U.S. and the EU, measures have been introduced to either directly support reindustrialisation goals, or backing policies defining vertical objectives, and therefore seeking to promote innovation in what is termed advanced manufacturing or, in EU terminology, key enabling technologies. In short, this is an industrial policy that seeks to target its impact on innovations able to generate greater technological externalities.

To maintain a solid manufacturing industry, Spain needs to apply more active industrial policies that follow the trend set in other countries. To do so, it should define priorities in the manufacturing industry and devote more resources to technology, financing and training policies targeting the sector. This new industrial policy should be embedded in a reinterpretation of the changing role of manufacturing in the economic system, above all

in terms of the relationship between manufacturing and services, and should be less concerned with reindustrialisation targets, which as this article has discussed, are extremely difficult to achieve.

The answer to the question of whether Spain can be reindustialised is no. It is not possible to reindustrialise Spain in the sense of increasing the role of manufacturing as a share of GDP again. Efforts should be devoted to promoting the development of new activities linked to technological change taking place in the sector. Spain needs to slow its deindustrialisation so it is no longer outpacing the OECD average. This is more important than setting unattainable reindustrialisation goals.

Spain's industrial policy execution has moved away from the model defined by the EU. The biggest sign of this is Spain's widening divergence in terms of the intensity of resources dedicated to innovation. Innovation policies are undoubtedly the key to the EU's new industrial policy. Nevertheless, the intensity of R&D spending in 2013 was 1.2%, with a drop of two tenths from the peak reached in 2010. Moreover, Spain has reduced its R&D spending target to 2% of GDP by 2020, against an EU target of 3%. With these targets, over the next five years, the gap between Spain and the rest of the EU will widen (European Commission, 2014b) and Spain's relative deindustrialisation is likely to increase.

Lastly, it is worth noting that digitisation will affect manufacturing more intensely over the years ahead. This effect will operate in three directions. Firstly, new production technology will be created in the sector. Secondly, it will allow new materials and products to be developed, and thirdly, it will enable the development of new business models linked to new relations with customers and supplier networks. All together this constitutes a good opportunity for the sector, which Spain should grasp.

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