



Challenge #1

**BEING MORE  
PRODUCTIVE TO  
GROW BETTER**



## EXECUTIVE SUMMARY

- Since the advent of democracy, Spain has undergone a remarkable economic and social transformation. Our per-capita income has doubled, our employment rate has increased by more than 15 points and our companies have successfully integrated into international trade and finance networks. This has enabled us to jump on the bandwagon of European progress and consolidate our position as a modern, developed and globally competitive economy.
- Even so, Spain has not succeeded in substantially reducing the income gap between it and the most advanced economies in the EU. The main cause is low productivity, which affects practically all of our economic sectors. Some of the main reasons for this low productivity are the lower quality of our human capital, the deficit in innovation and technological integration of our companies, and the shortcomings of our regulatory framework.
- Low productivity is compromising the whole country's economic development and is strongly related to low wages, long working hours and many companies' lack of competitiveness.
- The demographic ageing that will take place in the coming decades could aggravate this situation. By mid-century, the Spanish population aged 16-64 is expected to shrink by 3.7 million to below 27 million (1996 levels). Without major changes, this contraction of the labour force could cause our future economy to stagnate. Between 2023 and 2050, Spain's GDP could grow between 0.3 and 1.1% per year - a far cry from the 2% of the period 1996-2019. This would distance us even further from the advanced countries of Europe and aggravate problems such as unemployment and inequality.
- To avoid this scenario, we will need to boost our productivity and, at the same time, increase our employment rate. It will be an arduous, but not impossible, task. In the last 30 years, countries such as Finland, Sweden, Denmark and Germany have succeeded in increasing their productivity by 50% without compromising job creation. If Spain is able to do the same, it could grow at average rates of 1.5% per year and greatly reduce the gap in per capita income that separates it from the European leaders, thus consolidating itself as one of the world's most prosperous economies.
- To achieve this, we will have to make a firm and decisive commitment to education - right from birth and throughout life; multiply our efforts in R&D; accelerate the digitalisation of our companies; take advantage of the opportunities of the green transition; reduce as far as possible the distortions created by administrative obstacles; and tackle the black economy. Only by doing this will we be able to create quality jobs, pay higher wages, reduce our vulnerability to crises and external competition, and ensure the maintenance of the welfare state without incurring chronic public deficits or mortgaging future generations' welfare.



## THE PAST: ACHIEVEMENTS

Over the last forty years, **Spain has undergone a remarkable transformation.** In a relatively short period of time, our country has successfully combined democratic normalisation with economic modernisation. This has enabled us to recover decades of backwardness and become a prosperous country with a key role in the European economy. In 1980, Spain's per capita income was barely 16,000 euros; today, it is 30,700 euros.<sup>1</sup>

This progress has been the result of a host of factors, such as international trends and scientific and technological advances, but also **the ambition of a society that was able to build consensus, make efforts and carry out far-reaching reforms in record time.**

**The Moncloa Pacts** (1977) were a first milestone on that road. They served to reduce some of the imbalances that Spain had been carrying with it for decades (runaway inflation and a high external deficit), lay the foundations of a modern, diversified economy, open up to the world, and began to build the fiscal system and welfare state that we enjoy today.<sup>2</sup>

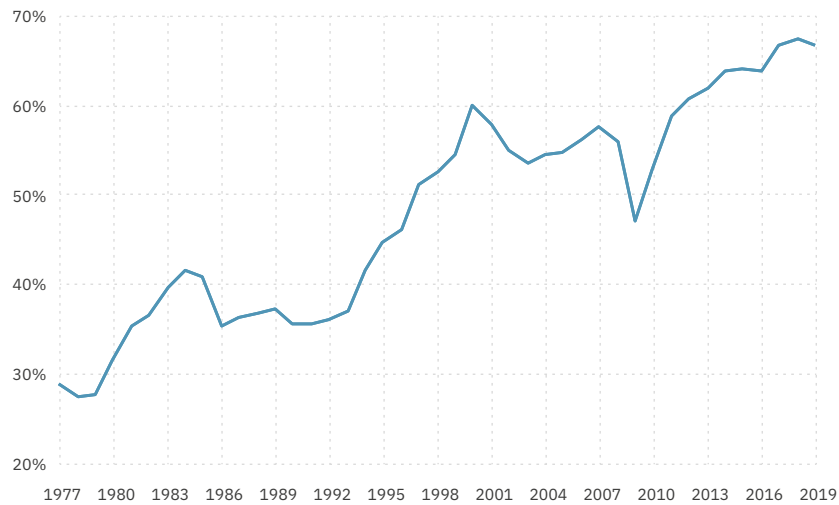
**Joining the European Union** (EU) in 1986 was a second major milestone in Spain's economic and social transformation. Joining the single market meant consolidating the country's openness, greatly expanding the markets where our companies could buy and sell their products. At the same time, it boosted competition and facilitated the progressive liberalisation of many sectors, in part due to the requirements of regulatory harmonisation established by the EU.<sup>3</sup> Furthermore, integrating into Europe enabled the expansion of tourism, foreign capital inflows and the receipt of structural and cohesion funds from the European Community. All these factors played a key role in the modernising of our production sector and the strengthening of our human capital.<sup>4</sup>

The third crucial milestone in Spain's economic development in the recent past was **joining the Economic and Monetary Union** (EMU) in 1998 and the subsequent **adoption of the euro.** Compliance with the convergence criteria helped build our country's economic stability and credibility. Inflation was reduced, public accounts were cleaned up, interest rates fell and exchange rates became more stable (the peseta had gone through repeated devaluations in previous years). This strengthened our trade relations and provided a stimulus for incoming foreign capital and the international expansion of our companies. Since then, the Spanish economy has continued to diversify its basket of exported products and services<sup>5</sup>, and has increased its presence in the markets of America, Asia and Africa,<sup>6</sup> with an growing number of companies expanding their business beyond our borders.<sup>7</sup>

**Today, the result of that historic effort is evident in most indicators available.** Between 1978 and 2019, Spain's trade openness rate has gone from 27% of GDP to over 67% [Fig. 1], surpassing neighbouring countries such as France, Italy and the United Kingdom. The process of financial internationalisation has been equally remarkable: in 1980, Spain's volume of foreign direct investment accounted for barely 2% of GDP; today, it represents 54%.<sup>8</sup>



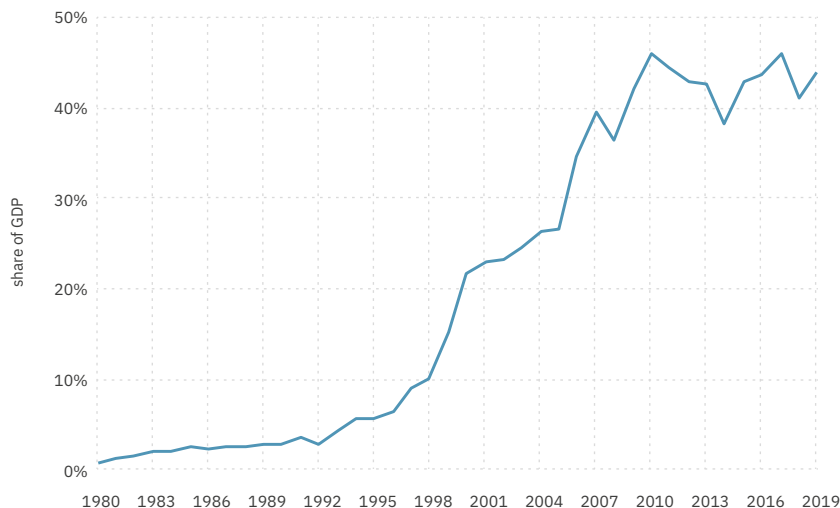
Fig. 1. Rate of trade openness in Spain



Source: Drafted by the authors based on AMECO data.<sup>9</sup>

**Spain's economy has successfully opened up to the world.** And the same has happened in the opposite direction: our companies have drastically increased their overseas investments<sup>10</sup> making us one of the world's nations with the largest stock of investment abroad. In relation to the size of our economy, the stock of Spanish foreign direct investment abroad has gone from being 0.8% in 1980 to over 43% in 2019 [Fig. 2].

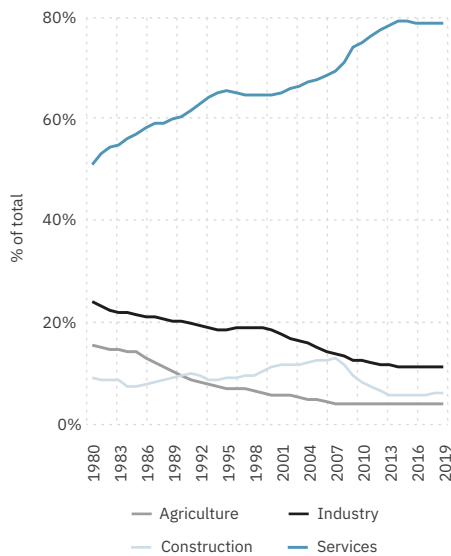
Fig. 2. Stock of Spanish foreign direct investment abroad



Source: Author's own, based on UNCTAD data.<sup>11</sup>

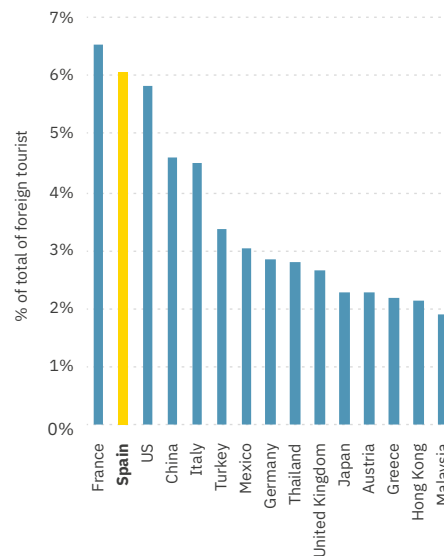
**The changes in our economic structure are a good reflection of modernisation.** In 1980, 15% of the employed population in Spain worked in the agricultural sector, a proportion that today is only 4%. Meanwhile, employment in the service sector has increased by almost 30 percentage points [Fig. 3], following the same trend described by the most advanced EU economies. Spain is a world leader in tourism, both in terms of visitor numbers<sup>12</sup> [Fig. 4] and in terms of the sector's competitiveness<sup>13</sup>. It also occupies a prominent position on a global scale in sectors such as construction,<sup>14</sup> automotive,<sup>15</sup> banking,<sup>16</sup> renewable energy generation,<sup>17</sup> agri-food<sup>18</sup> and fashion.<sup>19</sup>

Fig. 3. Employment by branch of activity in Spain



Source: Drafted by the authors based on data from AMECO.<sup>20</sup>

Fig. 4. Proportion of international tourism, 2018



Source: Drafted by the authors based on data from UNWTO.<sup>21</sup>

This transformation from a closed, interventionist economy to open and modern market economy has simultaneously been the cause and consequence of other improvements in those factors determining a country's development and prosperity in the medium and long term: human capital, employment, capital endowment (physical and technological), innovation and productivity.

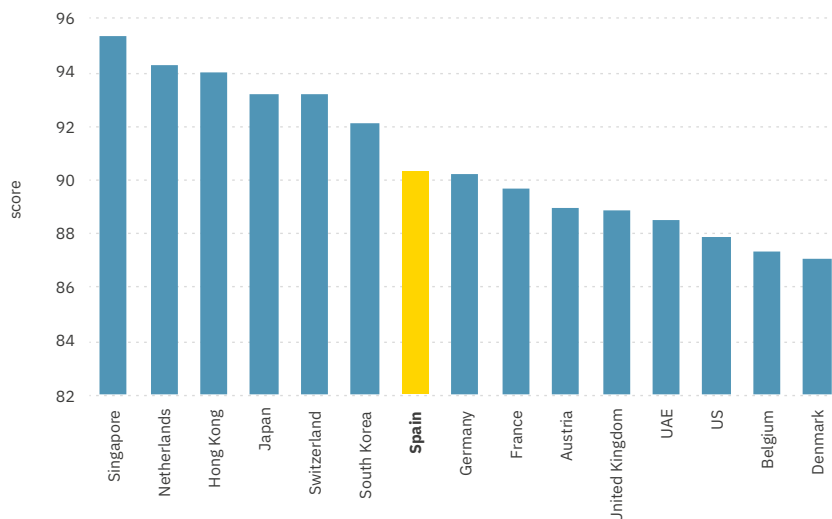
Regarding the former, progress has been more than remarkable [see chapters 2 and 3]. **Between 1980 and 2020, the education of the Spanish population has improved dramatically.** Average number of years spent in school has doubled,<sup>22</sup> the percentage of people with tertiary qualifications (university or Advanced Vocational Training) has risen from 7% to 36%,<sup>23</sup> and mastery of basic skills (reading and mathematics) has increased more than in any other European country, with the sole exception of Finland.<sup>24</sup>

Improvements in training, together with changes in the productive structure, have resulted in **a significant increase in the labour market insertion of the population**, with a rise in the employment rate of 15 points since 1980.<sup>25</sup> **The main protagonists in this process have been women**, whose employment rate has more than doubled over the last four decades. Changing roles, the growth of the service sector, the improvement of work-life balance and other social factors have allowed millions of women to join the labour market and thus put their talent to use. At the same time, there has been **a drastic reduction in the gender gap.**<sup>26</sup> Likewise, in this period, the country has managed to incorporate more than 2 million immigrants to the labour market, which is equivalent to a third of all employment generated since 1995.<sup>27</sup> The progressive increase in the employment rate has also been accompanied by a reduction in the hours worked per week: from almost 42.5 hours in 1980 to 37 in 2019.<sup>28</sup>

**Improvements in physical capital** (housing, infrastructure, machinery) **and technology** have also been significant. In four decades, Spain has managed to double the rate between capital and employment,<sup>29</sup> thanks not only to the expansion of residential construction but also to making investments in machinery and transport equipment by Spanish firms and by extending the infrastructure network, both physical and digital. In fact Spain has today the 7th best network

of land, port and air infrastructures in the world [Fig. 5], something that has been key both for the internalisation of its economy and for limiting territorial imbalances.<sup>30</sup>

**Fig. 5. Ranking of the best countries in terms of transport infrastructures**



Source: Authors' own, based on World Economic Forum data.<sup>31</sup>

In **the fields of science and innovation**, changes have also been significant. In 1978, Spain had no deep-rooted culture of scientific research, and its ecosystem of companies and institutions specialising in knowledge generation was small and weak. At that time, only a few companies made significant efforts in R&D, which were often diluted in a context dominated by imported technology and knowledge, and by activities of a traditional nature. Aware that science and innovation were essential for a global competition, our country launched a strong expansion of its research ecosystem,<sup>32</sup> both public and private (public research organisations, universities, technology centres, regional development agencies); it approved the first Science Law<sup>33</sup> and set up subsidy programmes for business R&D.<sup>34</sup> Although, as we will see below, there is still a long way to go on this front, progress has been remarkable. In 1985, the country devoted barely 0.5% of GDP to R&D expenditure, and applied for only 3 patents per million inhabitants; today, R&D expenditure is around 1.3% of GDP and patent applications are 36 per million inhabitants.<sup>35</sup>

Finally, it is worth mentioning **the modernisation of our business sector**. Advances in education and innovation, international competition and the new demands of the population were a catalyst for the creation of companies<sup>36</sup> and led to a change in business culture, characterised, up until then, by the scarcity of entrepreneurial initiatives and a reluctance to compete and engage in commercial activity.<sup>37</sup> Although small and medium-sized companies still predominate in Spain, in the last four decades hundreds of companies have managed to increase their size, improve their production and organisational processes, and design new goods and services. So much indeed that some have become world leaders in their fields. Today, the country has a critical mass of medium and large companies (in 1986, large companies generated only 8% of employment; while in 2018, they generated 31%<sup>38</sup>), with some of them being among the most competitive in their respective sectors,<sup>39</sup> and several brands among the most highly valued in the world.<sup>40</sup>

In short, **over the last four decades, Spain has undergone a remarkable economic and social transformation**. Improvements in human capital, innovation, infrastructure and the business sector have meant that the output generated by our country for each hour worked has increased



from 25 euros in 1980 to 42 in 2019,<sup>41</sup> while income per inhabitant has doubled [Fig. 6]. **This has enabled us to jump on the bandwagon of European progress and consolidate our status as a modern, developed and competitive economy on a global scale.**

**Fig. 6. Some indicators of Spain's economic and social progress**

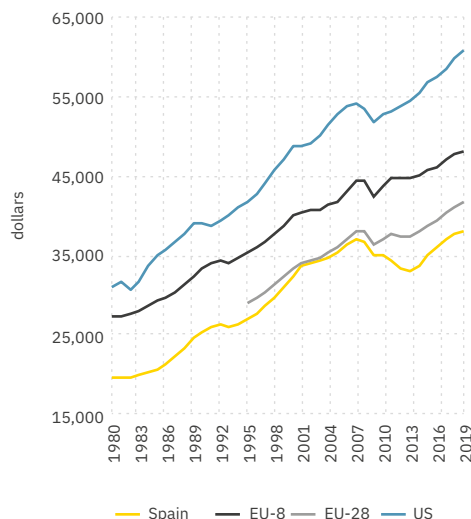
Period	GDP per capita (euros)	Employment rate	Population aged 25 to 64 with education higher than secondary education	Hours worked per week	Labour productivity (GDP per hour worked in euros)	Inflation (%)
1980-89	17,197	48%	-	41.4	29	10.3%
1990-99	22,139	50%	30%	40.6	35	4.2%
2000-10	28,235	63%	46%	39.6	37	3.0%
2010-19	28,353	60%	57%	38.0	41	1.2%
2019	30,720	65%	61%	37.5	42	0.7%

Source: Authors' own, based on AMECO, Eurostat and OECD data.<sup>42</sup>

## TODAY: ROUTES TO IMPROVEMENT

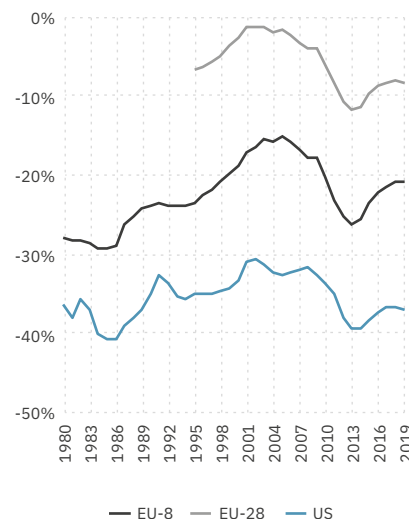
As we have seen, the economic and social changes that Spain has undergone over the last four decades have been of enormous significance. However, in many areas, these have been insufficient and incomplete. For this reason, **our country has not managed to substantially reduce the income gap it maintains with the EU average and the most advanced countries of the continent** (grouped here under the label "EU-8").<sup>43</sup> The crises of the 1980s and 90s were a setback for the convergence gains achieved in previous years. The recessions of 2008 and 2011 reversed the progress made since joining the euro, and the expansion that began in 2014 proved insufficient to make up lost ground. Thus, before the coronavirus pandemic hit our economy **in early 2020, Spain's per capita income was still far from that of the most developed countries in Europe** [Figs. 7 and 8].

Fig. 7. GDP per capita



Source: Author's own based on data from the OECD.<sup>44</sup>

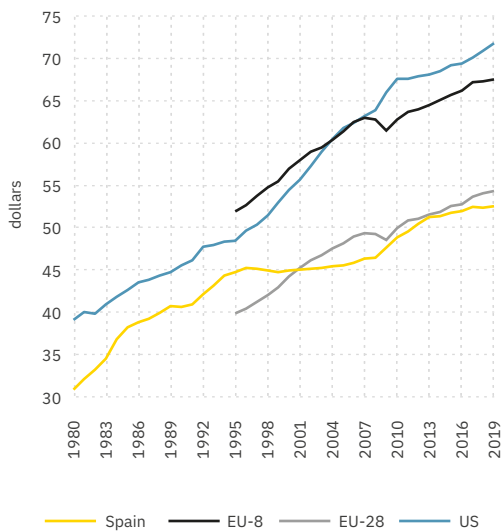
Fig. 8. Spain's GDP per capita vs the EU-28, EU-8 and USA.



Over the coming decades, our country will need to accelerate the modernisation of its economy to catch up with them. Doing so is not only possible and desirable, but essential to guarantee future prosperity and a strong welfare state.

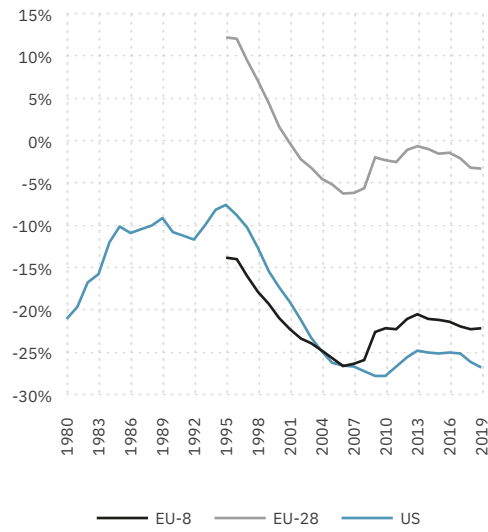
How can we do so? **What has prevented us from converging with our European partners? The key is low productivity.** In the EU-8 countries, the increase in per capita income has been achieved through a more efficient use of resources; in particular, through greater labour insertion, an improved training of the workforce, and more technologically advanced capital. In contrast, **in Spain, technological transformation<sup>46</sup> and improvements in human capital have been more moderate, employed people among the working population are still low, and output per hour worked (labour productivity) has grown considerably less** [Figs. 9 and 10].<sup>47</sup>

Fig. 9. Labour productivity levels



Source: Author's own based on data from the OECD.<sup>48</sup>

Fig. 10. Spain's productivity level vs the EU-28, EU-8 and USA.



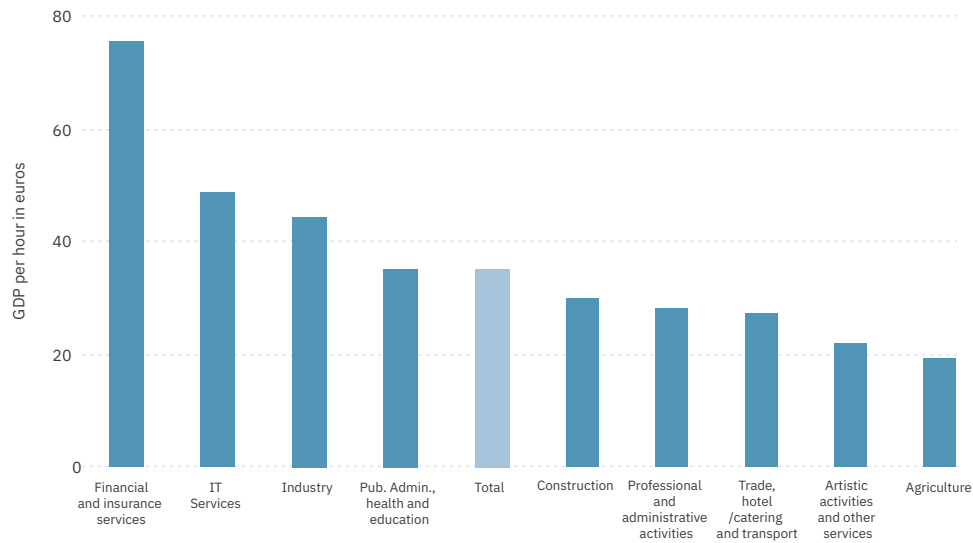
Source: Author's own based on data from the OECD.<sup>49</sup>

Paradoxically, in Spain the highest productivity growth rates were recorded during crises, when least efficient companies tend to disappear and least productive workers lose their jobs. In other words, **in Spain, labour productivity tends to grow more when employment is destroyed, whereas in the more advanced economies, employment grows as productivity grows.**<sup>50</sup>

**The reasons why our country has failed to register sustained productivity gains in recent decades are numerous and go beyond its sectoral structure.** In the public debate, weak productivity growth is often associated with the "excessive" size of sectors like tourism and construction. This diagnosis leads to a fatalistic dilemma that seems to limit our options to a choice between A) investing in sectors that are not very productive but generate a lot of employment, or B) sacrificing employment growth at the cost of higher productivity.

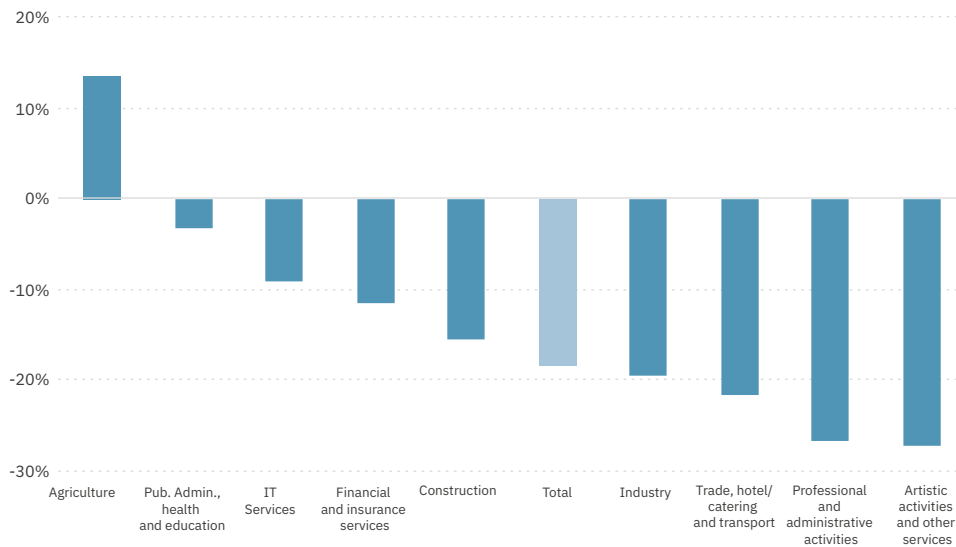
However, this is a false dilemma. **Productive specialisation has contributed to the long-run trend of low productivity, but it is not the sole nor the main explanatory factor.** This is evidenced by the fact that most of our industries, including manufacturing, financial services and IT show lower levels and have recorded lower productivity growth than those of the EU-8, since 1995 [Figs. 11 and 12].<sup>51</sup>

**Fig. 11. Labour productivity levels in Spain by branch of activity (average 1995-2019)**



Source: Authors' own, based on Eurostat data.<sup>52</sup>

**Fig. 12. Spain's productivity gaps vs EU-8 by branch of activity (average 1995-2019)**



Source: Authors' own, based on Eurostat data.<sup>53</sup>

**All the above-mentioned means that the problem of Spain's low productivity is not exclusive of any particular sector. Rather, it affects practically the whole of its productive system, and derives from five-cross-cutting factors that limit its efficiency.** In order to guarantee Spain's progress between now and 2050, we must understand those factors in all their complexity and take advantage of the lessons and opportunities provided by the current crisis to undertake a profound modernisation of our economy.

## I. Human capital

**Human capital**, understood as a population's set of skills and attributes, **is one of the factors that most influences a country's prosperity**. There is ample empirical evidence showing that a better skilled population is strongly associated with higher levels of economic growth, more innovation, stronger institutions, greater capacity to assimilate knowledge and technological advances, and higher productivity.<sup>54</sup> Similarly, better human capital is linked to higher levels of employment, health, civic participation, political stability, and even greater rationalisation of energy consumption and natural resources,<sup>55</sup> essential factors for prosperous, inclusive and sustainable growth.

The educational progress made by our country in the last decades have been remarkable. Even so, **Spain still has a lower level of human capital than the most advanced countries around us**.<sup>56</sup> The high rate of school dropouts, the low level of learning at all stages, the fact that 48% of the working population aged 25 to 64 does not have vocational training or a university degree, and the low level of implementation of lifelong learning [see chapters 2 and 3] are significant shortcomings limiting improvements in our employment rate and productivity.

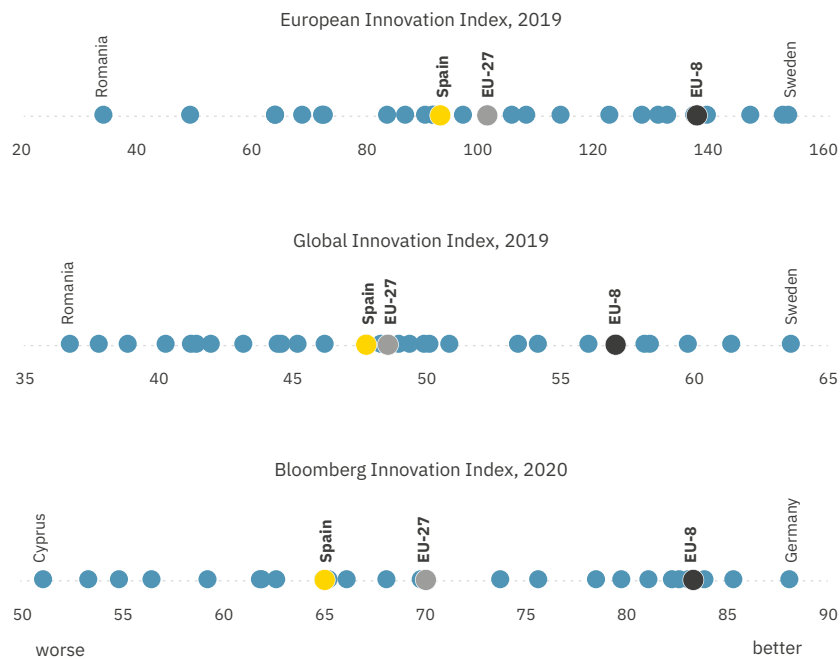
The development of **managerial, business leadership and human resource management**, especially in smaller and family businesses, is also an area in which our country shows room for improvement. According to the latest available data, in Spain, almost 40% of the self-employed and 36% of employers have a low level of education, compared to 12% of the EU-8.<sup>57</sup>

## II. Innovative capacity

**Along with the improvement of human capital, innovation is one of the main tools that advanced economies have to achieve a sustained increase in their productivity**. The development of new ideas enables a country to do more with fewer resources (human and natural) and to continue to grow even as its working-age population shrinks. The strategy of manufacturing or implementing intellectual property products that other countries have created may have made sense in the past, but it is not any longer a valid way to generate prosperity or catch up with more advanced economies.

Over the last few decades, **Spain has greatly strengthened its capacity to innovate**. It has done so by improving its human resources, expanding its technological infrastructures and by achieving a greater dynamism in knowledge-intensive sectors and companies.<sup>58</sup> Despite this, Spain still is below the EU-27 average in most innovation rankings [Fig. 13].

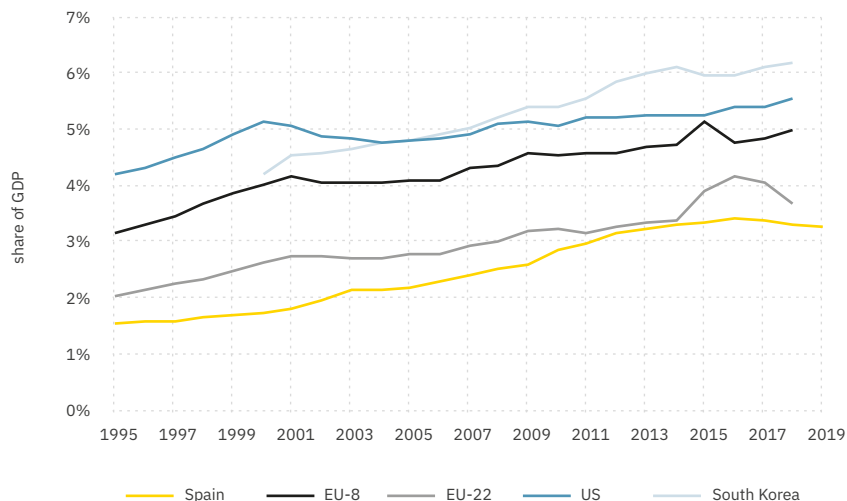
**Fig. 13. The EU's most innovative countries**



Source: Authors' own, based on the *Bloomberg Innovation Index*, *European Innovation Scoreboard* and the *Global Innovation Index*.<sup>59</sup>

Spain invests considerably less in intellectual property<sup>60</sup> than the EU-8 [Fig. 14], spends practically the same proportion of its GDP on R&D as countries in lower income (such as Portugal), and patents less than it should, given the size of its economy.<sup>61</sup>

**Fig. 14. Investment in intellectual property**

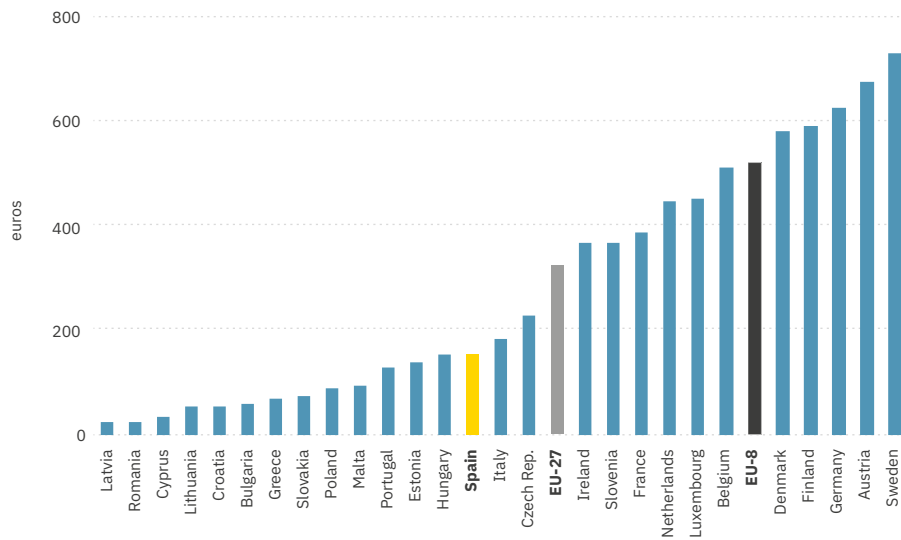


Source: Authors' own, based on OECD data.<sup>62</sup>

**A large part of our innovation deficit is concentrated in the business sector.** Data reveal that Spanish companies invest less in R&D than their European counterparts [Fig. 15], are less innovative, generate less employment in sectors in high added value (such as those with a high technological level or those intensive in knowledge),<sup>63</sup> and create products with a lower degree of complexity.<sup>64</sup>



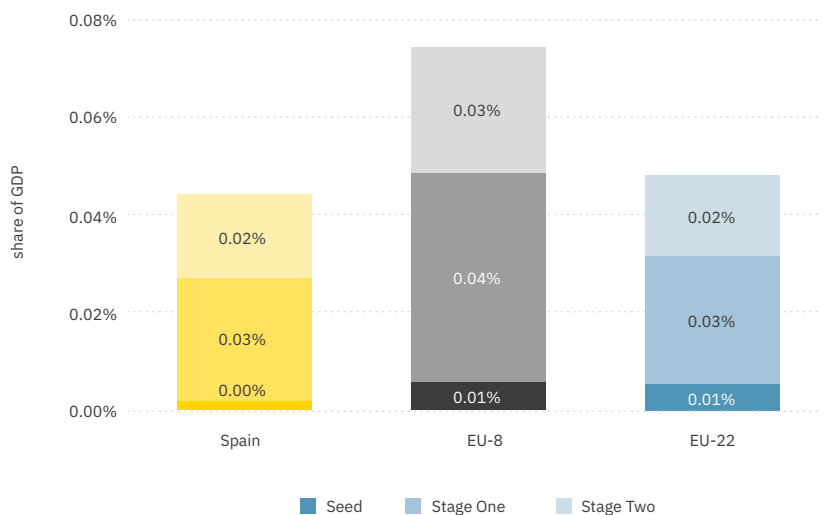
Fig. 15. R&D investment per capita by the private sector (average 2010-19)



Source: Authors' own, based on Eurostat data.<sup>65</sup>

Several factors explain this low level of innovation: 1) the predominance of small and medium-sized enterprises; 2) the lower relative weight of innovation-intensive sectors (such as technology);<sup>66</sup> 3) the limited connection between research in universities and companies; and 4) and the difficulty that Spanish companies have to access to financing tools such as bonds, stocks, and venture capital. The latter is a critical handicap for innovation, as it precludes start-ups from being born but also firmly-established businesses from scaling up, because they cannot finance any expansion [Fig. 16].

Fig. 16. Venture capital investment by stage of funding, 2019

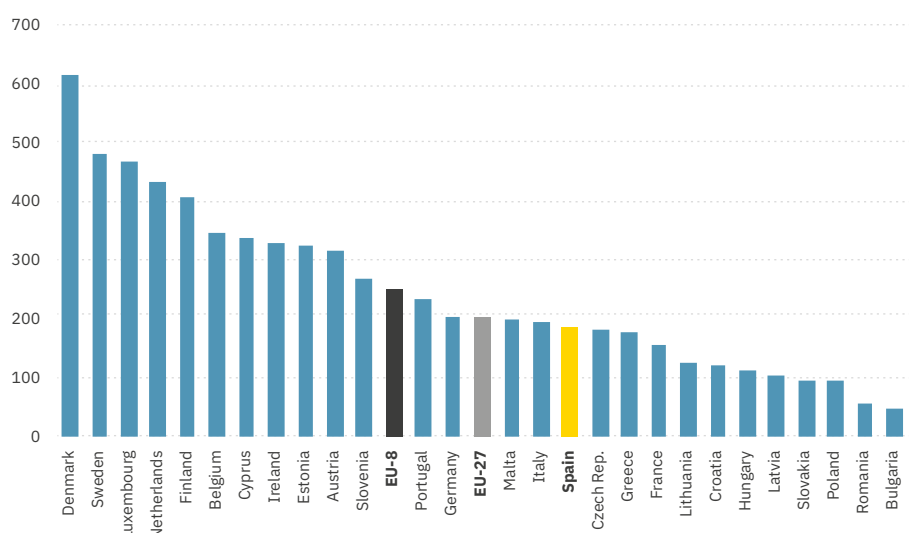


Source: Drafted by the authors based on data from OCDE.<sup>67</sup>

**The public administration also contributes to the low levels of innovation.** In Spain, state aid for R&D is limited, involves too much bureaucracy<sup>68</sup> and often lacks a coherent and long-term strategic vision. Moreover, it is frequently biased towards lending, which tends to make access difficult and discourages demand among start-ups and younger companies. The result is that a large part of the aid is wasted and a significant proportion is not implemented. In fact, in 2019, 49% of state funding for R&D was not executed.<sup>69</sup> These inefficiencies in the use of aid mean a loss of resources that could be invested in R&D and contribute to increase the productivity,<sup>70</sup> as the role of the public sector as a facilitator of private innovation is key.<sup>71</sup>

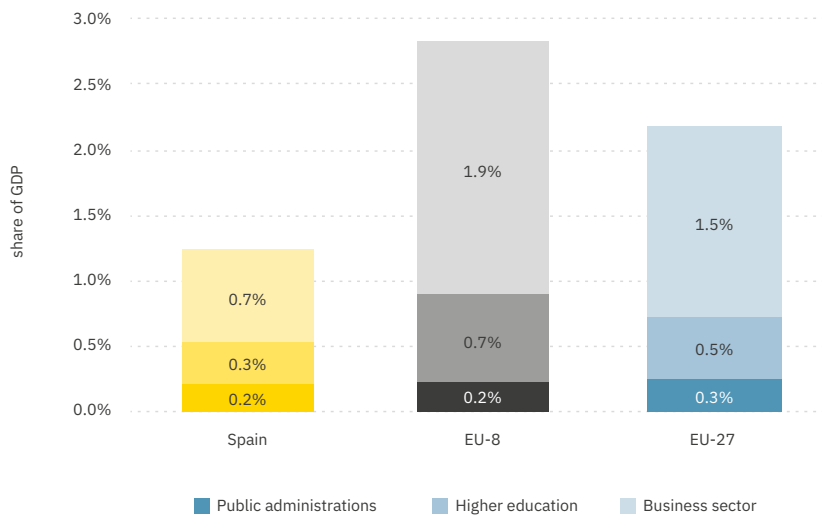
Finally, we should mention **the situation of research and higher education institution.** Although there have been improvements, Spanish universities still present levels of research [Fig. 17], innovation is crucial [Fig. 18]. Scientific-technical transfer,<sup>72</sup> and company creation rates (spin-offs)<sup>73</sup> that are lower than those of Europe's most advanced countries.

**Fig. 17. Number of citations of academic articles per 100,000 population, 2019**



Source: Authors' own, based on Eurostat and Scimago<sup>74</sup>

Fig. 18. R&D expenditure, 2019

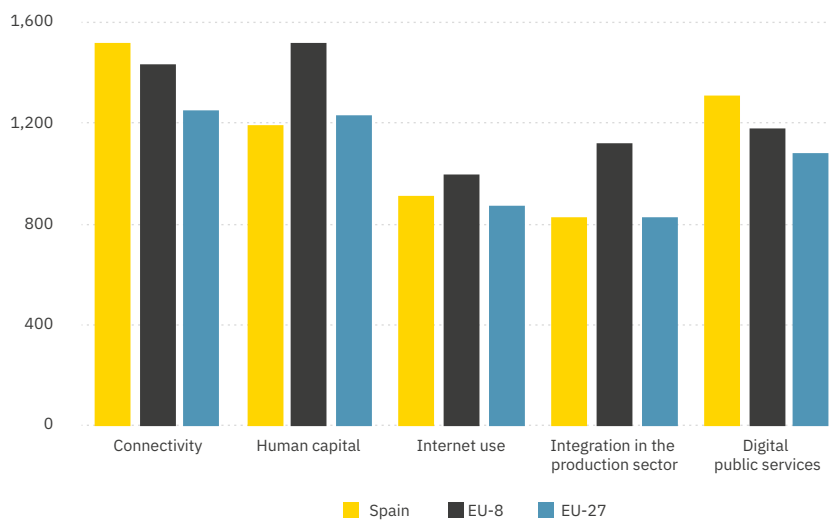


Source: Authors' own, based on Eurostat data.<sup>75</sup>

### III. Technological implementation in the business sector

Along with human capital and innovation, **technology is the other key factor in making an economy more productive**. Over the last two decades, Spain has made great progress in technological take-up. As a result, it now ranks 11th in the EU's *Digital Economy and Society Index*, standing out in terms of digital public services (rank 2 out of 28), connectivity (rank 5) and internet use (rank 11). However, in regard to aspects that are relevant for productivity growth, such as the availability of digital skills among the population (rank 16) and the integration of digital technology within business (rank 13), the margin for improvement is still considerable [Fig. 19].

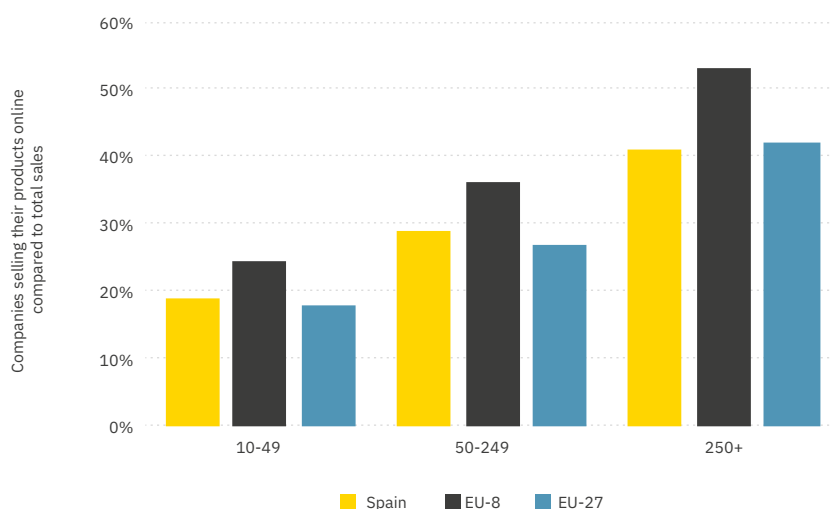
Fig. 19. Digital Economy and Society Index, EU, 2020



Source: Authors' own, based on European Commission data.<sup>76</sup>

New technologies are spreading at an ever faster rate between countries, a speed not yet matched among companies, many of which are not yet exploiting their potential.<sup>77</sup> This is a global trend also observed in Spain: before the pandemic, only 11% of our companies used Big Data (compared to 15% in the EU-8),<sup>78</sup> barely 20% of our SMEs used e-commerce to sell their products (compared to 26% in the EU-8) [Fig. 20], and only 8% of the employed population teleworked (compared to 27% in the EU-8).<sup>79</sup>

**Fig. 20. E-commerce use by business size, based on number of employees, 2019**



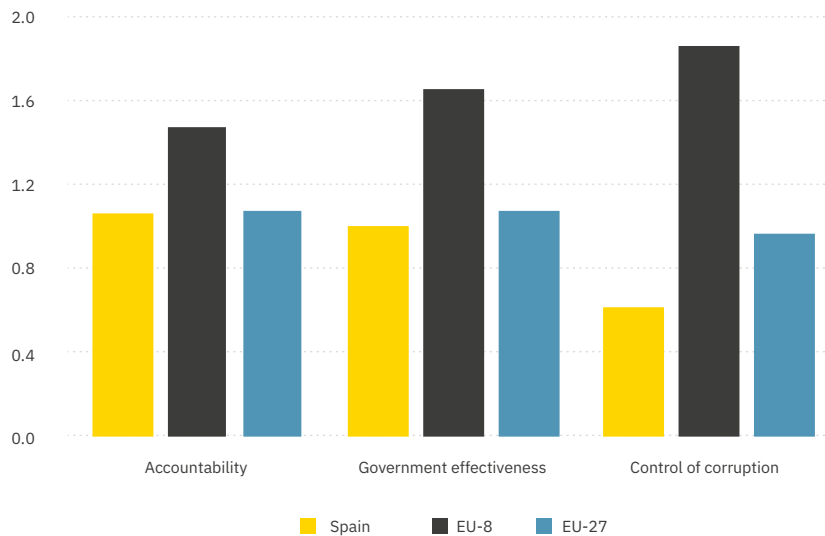
Source: Authors' own, based on Eurostat data.<sup>80</sup>

#### IV. Institutional and regulatory framework

**Productivity developments are also conditioned by the quality of the institutional framework and by regulation.** Given equivalent resources, some societies manage to innovate and operate faster than others because they have more agile and efficient institutions. The quality of bureaucracy, the enforcement of contracts and the credibility of political commitments help to reach the full potential of innovation and labour, contributing to a more efficient economy and raising productivity. Similarly, lower barriers of entrance into any sector or territory help to foster innovation and entrepreneurship, increase competition, and raise the quality of the goods and services produced.<sup>81</sup>

Our country has greatly advanced on these fronts. **Spain has greatly advance on these fronts. In fact, today it appears in all rankings as a fully-fledge state, with freedoms and rights as extensive as those enjoyed by France or Canada.**<sup>82</sup> However, we still have room for improvement in key areas such as accountability, control over corruption and government effectiveness [Fig. 21], where our results are less favourable than those of our European neighbours.

Fig. 21. Quality of the institutional framework, 2018



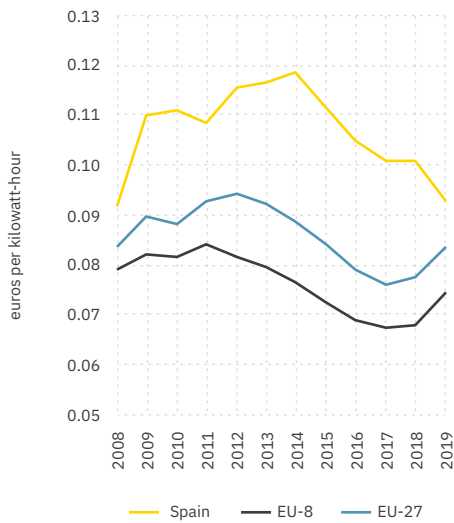
Source: Authors' own, based on World Bank data.<sup>83</sup>

In terms of regulations, the reforms carried out in recent years have helped to increase competition<sup>84</sup> and reduce market fragmentation.<sup>85</sup> Despite this, there are still **legal and administrative obstacles that hinder innovation and business growth**.<sup>86</sup> These include certain restrictions on starting a business,<sup>87</sup> entry barriers in the services sector,<sup>88</sup> different administrative requirements to set up a company in various territorial administrations, regulations linked to business size,<sup>89</sup> and relatively inefficient insolvency procedures.<sup>90</sup>

**Productivity progress has also been constrained by labour regulations** [see chapters 3 and 7]. On the one hand, the current design of temporary contracts, which facilitates their widespread use for jobs of an indefinite nature, has contributed to increasing temporary and precarious employment, discouraging the training of the employed population. On the other hand, some inefficient active employment policies have limited the rates of unemployed people finding a job, increasing long-term unemployment and preventing a large portion of our workforce from getting into work.<sup>91</sup>

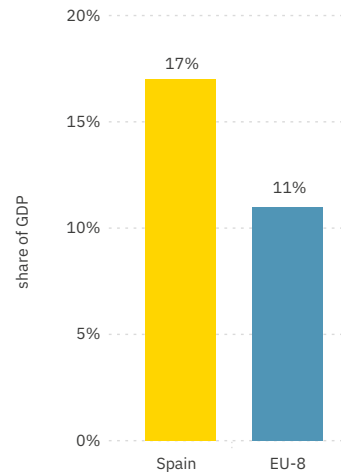
Similarly, Spain's efficiency is hindered by higher **energy costs** than those faced by high energy costs Fig. 22]; by some **features of the public procurement system**, which tend to benefit consolidated companies over newly created ones;<sup>92</sup> and by the high rate of **informal economy activities** [Fig. 23], which generates inefficiencies in the allocation of resources, limits business growth, and restricts innovation and investment in human capital.<sup>93</sup>

**Fig. 22. Electricity prices for businesses**



Source: Drafted by the authors based on data from Eurostat.<sup>94</sup>

**Fig. 23. Black economy, 2017**



Source: Authors' own, based on Medina and Schneider.<sup>95</sup>

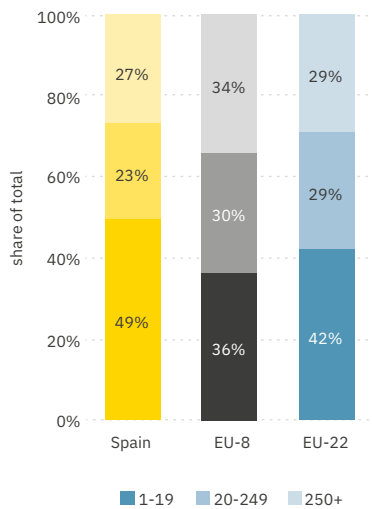
## V. Functioning of the business sector

The last key factor in understanding Spain's low level of productivity is the peculiarities of our business sector,<sup>96</sup> largely derived from the four core factors mentioned thus far (human capital, innovation, technology and regulatory framework). These peculiarities include: the high presence of small companies and the scarcity of medium-sized companies [Fig. 24], the small size of newly created companies, especially in the services sector,<sup>97</sup> and Spanish SMEs' low level of productivity [Fig. 25]. This business dynamic has been reinforced by the fact that capital has not always been directed to the most efficient companies that have the highest growth potential,<sup>98</sup> especially in the years leading up to the 2008 crisis.<sup>99</sup>

This smaller business size is a handicap to our businesses expanding internationally and acquiring new practices at the forefront of knowledge (around 5% of SMEs sell their goods abroad, compared to 62% of large companies<sup>100</sup>). Moreover, it also limits the development of new ideas and products and hinders the advance of productivity.

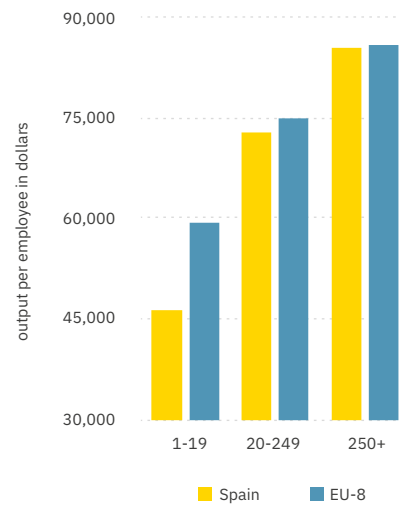


**Fig. 24. Distribution of employment by size of enterprise (number of employees), 2014 or latest available data**



Source: Author's own based on data from the OECD.<sup>101</sup>

**Fig. 25. Labour productivity by size of enterprise (number of employees), 2014 or latest available data**



Source: Author's own based on data from the OECD.<sup>102</sup>

### The Spanish economy's vicious circle

As can be seen, Spain's low productivity growth goes beyond the particular weight that a given sector may have in terms of GDP. **There are structural dysfunctionalities that interact and feed back on each other, limiting the whole country's potential development.** The lower quality of human capital, the inefficiencies of the labour market, the bureaucratic obstacles and the scarcity of financial tools hinder the implementation of innovation projects and the growth of the most efficient companies. This, in turn, causes the production sector to shift towards lower value-added activities where the demand for human capital is also lower than in more advanced countries, thus reducing the incentives for the population to train. In the long run, this results in an educational deficit that hinders R&D and hampers the growth of enterprises.<sup>103</sup>

**This vicious circle**, from which just a group of medium-sized and large companies willing to export have escaped, **has prevented Spain from reaping sustained productivity gains and has increased its vulnerability to crises and foreign competition.** Our economic cycles suffer more accentuated downturns than those of the average European country. And, although expansions are also more accentuated, these do not always last long enough to recover all the lost ground. Job destruction has usually been the adjusting variable when demand falls, with painful implications for household incomes, inequality and public accounts.

We have witnessed the same phenomenon several times in the past. However, it does not have to happen again in the future. As we shall see below, **the crisis caused by the Covid-19 pandemic is a huge challenge. But it is also a unique opportunity to solve the problems we have highlighted, and to lay the foundations for sustained productivity growth and bring Spain's per capita income closer to that of the most advanced EU countries by 2050.**

## THE FUTURE: POSSIBLE DESTINATIONS

### The short term: the coronavirus crisis

The coronavirus pandemic has caused the largest drop in global activity in decades – far exceeding the Great Recession of 2008. **Our country has been one of the most affected in Europe - for two reasons: First, the structural factors already mentioned,** which are manifested, among other things, in lower teleworking rates, a relatively small percentage of companies operating digitally and greater stress on business financing due to the predominance of SMEs. **Second, because of the high proportion of sectors most vulnerable to the pandemic** (commerce, hotels, catering and transport) **in the economy**, accounting for around 21% of GDP compared to 17% in the EU-8.<sup>104</sup>

In 2020, Spain lost 11% of its GDP.<sup>105</sup> By 2021, it is expected to recover much of this fall, although it will still register higher levels of unemployment, deficit and public debt than before the crisis.<sup>106</sup> The impact is, in any case, asymmetrical. So far, the downturn has affected mostly demand and employment in hotel and catering services, transport and leisure services, and construction, whereas agriculture, health services and education have experienced increases in activity.<sup>107</sup> The differences in labour productivity have been equally significant,<sup>108</sup> rising in the least affected sectors (thanks to the adoption of innovations such as teleworking and flexible working hours) and declining in those where hygiene measures and safety protocols still add extra hindrances.

### The medium and long term: opportunities for better growth

It is hard to ascertain when the crisis will end. Most international and national agencies predict that **Spain will return to pre-pandemic levels of activity by 2023**, although European funds could accelerate this recovery.<sup>109</sup> However, uncertainty is still high. To start with, we do not know for sure when the pandemic will end: whether there will be more virulent strains, whether new vaccines will be needed, or how long it will take for the world's population to become immune. Nor do we know the consequences of the economic crisis: whether the current standstill on private spending expectations will last, the capacity of the sectors least affected by the pandemic to absorb employment, the effectiveness the measures adopted at domestic and European level, and the evolution of the global economic cycle. Finally, we do not know what geopolitical effects the pandemic will have in the medium term. For example, whether or not it will fuel the rift between China and the United States, whether value chains will be reshored, or whether the EU will emerge stronger or weaker.

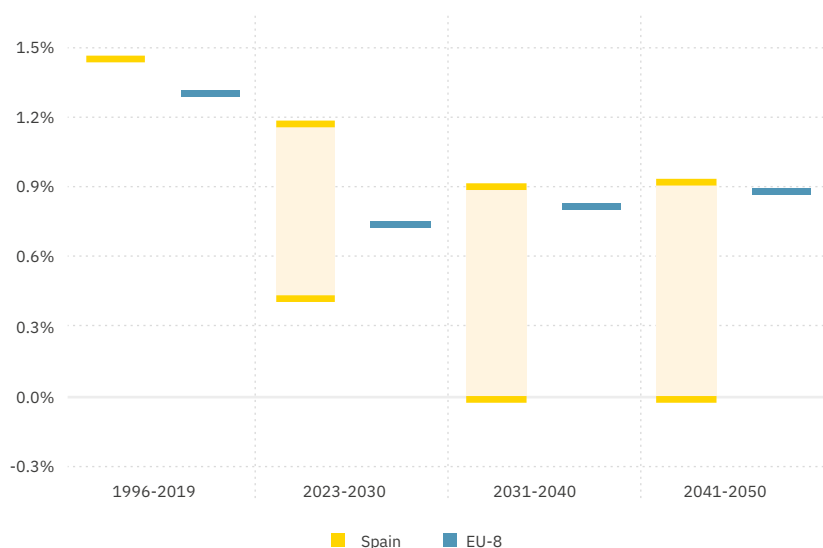
Be that as it may, in this labyrinth of uncertainties there emerges a certainty shared by experts and the citizenry as a whole that should be used as a star to guide our next steps: Spain must

take advantage of the current situation to implement pending reforms and lay the foundations for prosperous, environmentally friendly and socially inclusive economic growth. Furthermore, the European recovery funds give us the potential to do so with a medium and long-term commitment. **If at the start of this new decade we are capable of building the necessary consensus and to implementing far-reaching changes that correct the structural shortcomings identified, Spain will be able to adopt a new path for growth and approach the EU's most advanced economies by the middle of the century.**

**One of the best ways to achieve this is to increase our productivity.** Unlike in the recent past, **we are not going to be able to rely on demographics for growth in the coming decades.** Most forecasts suggest that population ageing will result in a severe reduction in our labour force, even if the migration balance we saw in the last two decades is maintained. Specifically, it is estimated that **the Spanish population aged 16 to 64 could fall by 3.7 million people between now and 2050,**<sup>110</sup> dropping below 27 million (1996 levels). This means that, by the middle of this century, there could be almost 4 million fewer people in Spain working, generating wealth and paying taxes.

Due to this demographic effect alone, the country would go from growing at rates of 2% (average for the period 1996-2018) to 1%.<sup>111</sup> **On top of that,**<sup>112</sup> **should productivity growth be similar to that observed over the last few decades, then our economic growth could be even lower: with an average of between 0.3% and 1.1% the period 2023-50.**<sup>113</sup> The advance in per capita income would be of a similar order [Fig. 26], something that would distance us from the most advanced countries in Europe.<sup>114</sup>

**Fig. 26. Projected ranges for per capita GDP growth (annual average)**



Source: Authors' own, based on Eurostat and Aum, Koh and Santaeuilàlia-Llopis data.<sup>115</sup>

In fact, this is the prognosis of most available international studies, which, under similar premises, predict a moderate gradual loss of economic impact for our country in the coming decades [Fig. 27].

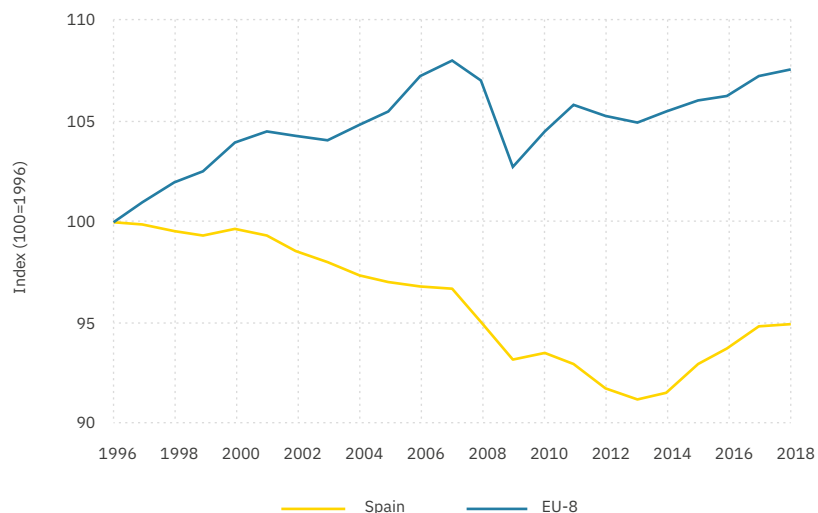
Fig. 27. Spain's position based on the size of its economy (volume of GDP)

Report and year of publication	Number of countries in the ranking	Spain's position							Projected change
		2010	2014	2016	2018	2050	2060	2070	
CEPII, 2012 <sup>116</sup>	147	10				14			↓
PWC, 2015 <sup>117</sup>	32		16			26			↓
European Commission, 2018 <sup>118</sup>	27			4				3	↑
OECD, 2018 <sup>119</sup>	45				12		16		↓

Source: Authors' own based on the studies mentioned above.<sup>120</sup>

Avoiding this fate does, of course, lie in our hands. **Spain has the potential to become one of the most advanced economies in the EU.** To achieve this, we will have to make a firm commitment to **improving the training of our human capital, redoubling our efforts in R&D and entrepreneurship**, placing technology-based innovation at the centre of our economic and social organisation; **accelerating the digital transformation of our production sector, and reducing as far as possible any disruptions generated by administrative and regulatory burdens** in investment and procurement decisions. In short, we will have to increase the efficiency with which we operate, acting on the core causes that explain our low productivity and which economists have called "total factor productivity" (TFP)<sup>121</sup> [Fig. 28].

Fig. 28. Total factor productivity



Source: Authors' own, based on Aum, Koh and Santaeuàlia-Llopis.<sup>122</sup>

All this will have to be done whilst **increasing our employment rate, bringing it closer to our neighbour's average** [see chapter 7] and progressively reducing the gender gap.<sup>123</sup> **Increasing productivity and employment are two goals that should go hand in hand.** If a company is able to generate more and more output for every hour its employees work, it will have more incentives to pay them progressively higher salaries, train them and keep them on staff when there is a

temporary drop in activity. Improved working conditions will translate into higher spending by the population and, therefore, an increase in recruitment to meet this growing demand.

**It is a difficult task, but not impossible.** Spain has already carried out economic transformations of this magnitude in the past, such as during the transition to democracy and joining the EU. **In our immediate environment, there are several countries which, over the last 30 years, have raised their productivity level by 50% without compromising their employment rates [Fig. 29].**

**Fig. 29. Labour productivity gains and change in employment rates between 1989 and 2019 in leading European countries**

Country	Increase in employment productivity (%)	Increase in employment rate (percentage points)	Employment (% , latest data available)
Finland	68	2	74
Sweden	62	0	80
Denmark	56	0	76
Germany	51	14	78
France	46	7	65

Source: Author's own based on data from the OECD.<sup>124</sup>

If Spain were to do the same over the next three decades, **its GDP could grow at average annual rates of 1.5%, which would allow it to close its per capita income gap with the EU-8 [Fig. 30].**

**Fig. 30. Spain's GDP per capita and the EU-8 under various long-run scenarios**

	What-if scenarios	GDP per capita (constant euros, PPP 2015)		Spain's GDP per capita gap vis-à-vis the EU-8
		Spain	EU-8	
1995	Observed	21,819	28,459	-23%
2019	Observed	30,720	38,762	-21%
2050	Baseline (lower limit of the range)	31,461	49,627	-37%
	Baseline (upper limit of the range)	40,743	49,627	-18%
	Strong convergence in labour productivity	44,664	49,627	-10%

Source: Authors' own, based on Aum, Koh and Santaeuilàlia-Llopis.<sup>125</sup>

**Productivity growth** is therefore not just a number. It is the **basis for creating stable, quality** employment, and ensures higher wages without compromising the competitiveness of our companies. It is also the way to **achieve a solid welfare state** that reduces inequality without incurring chronic public deficits, and the only way **to reduce our country's fragility when faced with episodes of economic crisis** such as the current one.

### The impact of megatrends on the quest for productivity

In the coming decades, Spain will, together with all of Europe and a large part of the world's developed countries, experience the profound effects of three megatrends: **demographic ageing, digital transformation and green transition**. The first of these is inevitable and will happen on its own, while the pace and impact of the digital and green transformations will largely depend on decisions taken at national level. The three megatrends will bring significant challenges, but also huge opportunities that, if well harnessed, could help us to greatly increase our efficiency.

**Demographic ageing** will have a direct impact on our workforce: by 2050, 1 in 3 people will be 65 or older, compared to 1 in 5 today.<sup>126</sup> It will also affect labour productivity,<sup>127</sup> as people's physical, numerical and new technology skills, as well as entrepreneurial and innovative spirit, tend to decline with age.<sup>128</sup> However, the experience and skills developed over a lifetime can be an invaluable asset. By strengthening the transfer of this senior knowledge to younger generations, promoting the mix of different age profiles within the same company and encouraging "active ageing",<sup>129</sup> **the negative effects of demographic ageing on productivity could be significantly mitigated** [see chapter 7].<sup>130</sup> Furthermore, better aligning the employment cycle to increased life expectancy will allow people who are currently withdrawing prematurely from the labour market to remain active, thereby also helping to raise the employment rate in the economy [see chapter 5]. The integration of new technologies into the production sector will be key to this, as it will help older generations to participate more and better in the country's economic and social life.

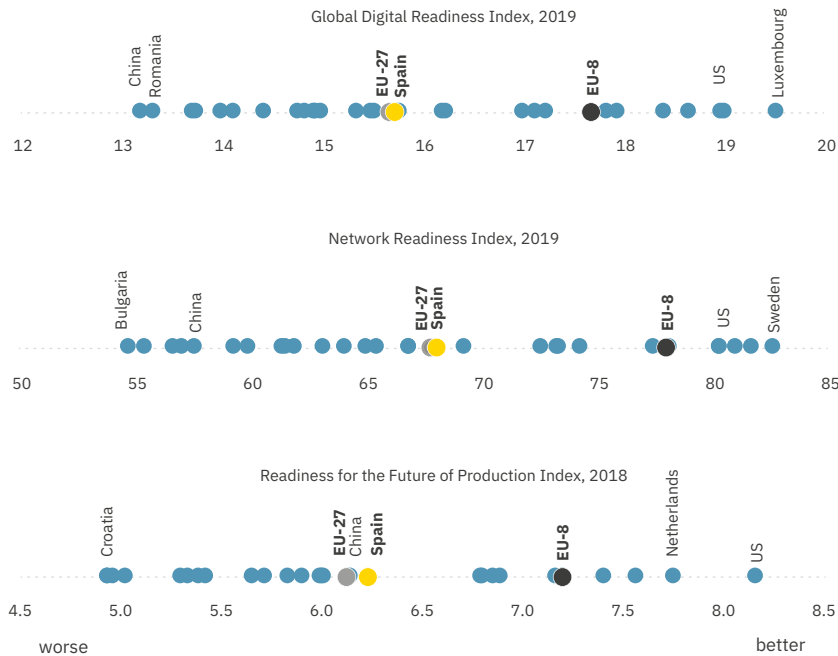
**The consolidation of a longer-lived society will also be a source of business and employment opportunities for many of Spain's economic sectors.** The so-called silver economy (which is associated with the needs of the elderly) will transform the supply of health and care services, commerce, tourism, leisure and mobility, among other activities, and will stimulate growth in many areas.<sup>131</sup>

**Digital transformation** is another megatrend that will mark our future and which must be harnessed as a fundamental way to achieve significant productivity gains between now and 2050.<sup>132</sup> Spain has one of the best connectivity infrastructures in the EU;<sup>133</sup> it has made a firm commitment to 5G and is well positioned in the race for artificial intelligence.<sup>134</sup> In addition, there are several public programmes underway, such as the *Strategy for Science, Technology and Innovation*, or the *Agenda Digital Spain 2025*, with European recovery funds being an important source of funding for this purpose.



For these and other reasons, international indices that measure economies' readiness to profit from digital transformation in the near future place Spain in an intermediate position at global level, slightly above the EU-27 average [Fig. 31].

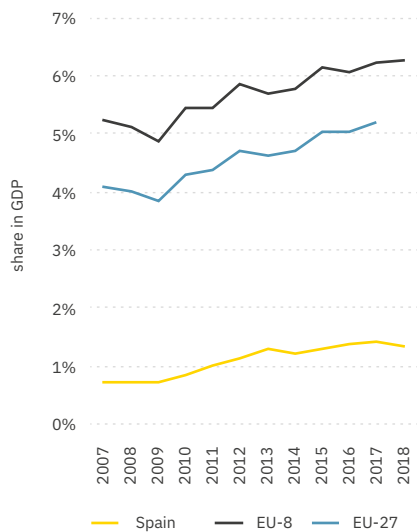
**Fig. 31. Indices of readiness for the digital revolution**



Source: Author's own, based on data from Cisco, *Portulans Institute* and World Economic Forum<sup>125</sup>

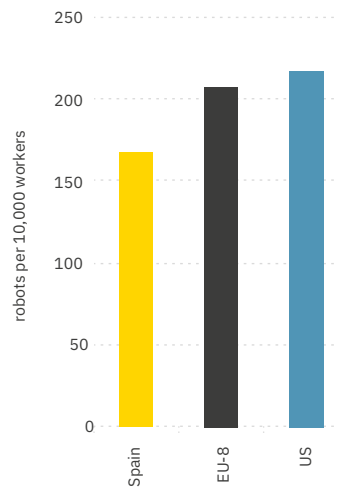
Of course, this does not mean that we should be satisfied with a "medium-high" performance in regard to technological transformation. **Spain must aspire to compete with the most advanced countries in this area and reduce the gap between it and the EU-8 countries.** To do so, we will have to improve our workforce's digital skills, intensify the digitalisation of our business sector (especially SMEs) and public administrations, substantially increase our efforts in innovation, and increase our specialisation in technology- and knowledge-intensive goods and services<sup>136</sup> [Fig. 32].<sup>137</sup> Similarly, we will need to encourage the incorporation of robots into the productive system [Fig. 33], something that will help considerably to increase the productivity of our companies<sup>138</sup> and which, contrary to what might be believed, **need not lead to an increase in unemployment**<sup>139</sup> [see chapter 7].

Fig. 32. Exports of high-tech goods



Source: Drafted by the authors based on data from Eurostat.<sup>140</sup>

Fig. 33. Robot density in manufacturing industry, 2018



Source: Author's own, based on data from the International Federation of Robotics.<sup>141</sup>

The third megatrend that will most transform our production system between now and 2050 will be **the green transition**. For a country like ours, moving towards a low-carbon and resource-efficient economy is an immense challenge, but also an unprecedented opportunity. **Spain is one of the European states with the greatest potential for taking advantage of renewable energies**, thanks to our natural availability of resources (sun, wind, biomass and lithium), the existence of a research and business ecosystem with knowledge in this field, and the presence of leading global companies in the renewables sector.<sup>142</sup> Moreover, the ecological transition could be a great opportunity for Spain because **substantial improvements in energy efficiency** can significantly change the forms of investment and result in significant productivity gains.<sup>143</sup>

Therefore, **both the decarbonisation process and the drive towards the circular economy can lead to a substantial reduction in imported fossil fuel** (in other words, less dependence on foreign energy), **lower electricity prices**, and higher financial savings due to a more rational use of resources. All of this will greatly benefit productivity and competitiveness in our business sector.<sup>144</sup>

From a sector perspective, changes in the way we produce and consume will mean that all activities will need to be adapted or reinvented in order to thrive under the new sustainability paradigm. Demand for certain goods and services will undoubtedly fall, but demand for others will rise sharply. For example, we will consume less food of animal origin and travel less by private car, but we will instead consume more organic food and car-sharing increase. The key therefore is to ensure that our public institutions and our companies adapt as soon as possible to the new framework and adjust their production and business models to compete in a circular economy that is neutral in regard to emissions and less intensive in the use of natural resources. To do so, Spain will have to resolve a series of pending challenges that could limit its performance in the green transition; this explains why the latest index of the World Economic Forum<sup>145</sup> places our country in the 16th position in the EU-27 in "preparing for the transition to a secure, sustainable and affordable energy future". The lack of human capital, the characteristics of our business sector and the low investment in energy innovation (among the lowest in the EU)<sup>146</sup> are some of them.

These obstacles are substantial, and so will be the cost of transition that most sectors within our economy will have to assume, **but overall the balance is expected to be enormously positive**.<sup>147</sup> In fact, reducing energy intensity and increasing the penetration of renewable energies may be key to achieving our long-term per-capita income target<sup>148</sup> and raising the employment rate. Estimates by the Department for Ecological Transition and Demographic Challenge state that, with the measures included in *Spain's Integrated National Energy and Climate Plan* (PNIEC) until 2030 and the *Long-Term Decarbonisation Strategy* (ELP) up until 2050, **the net increase in employment could be as high as 250,000 people per year and the GDP level almost 2% higher than the trend scenario in 2050**.<sup>149</sup> Other studies for European countries,<sup>150</sup> including Spain, foresee similar gains [see chapter 4].

### The great opportunity

As we can see, the demographic, technological, social and environmental changes that will take place in the coming decades will represent a challenge, but also an opportunity for modernisation and great prosperity for Spain. **It is essential, therefore, that our country does not miss this train.** We must take advantage of the particular situation generated by the pandemic and the megatrends that will occur in the coming years to develop **a productive system governed by innovation and knowledge**, capable of attracting foreign talent and investment, and competing in a global economy marked by technological transformation and environmental sustainability. Only in this way will we succeed in generating wealth, creating quality employment and guaranteeing the maintenance of the welfare state in the long term. **The time is now. There will never be another opportunity such as this.**

**How should we go about it?** Some measures are proposed on the following pages.

## WHAT NEEDS TO BE DONE TO ENSURE PROSPERITY

**Between now and 2050, Spain will need to develop a modern and competitive growth pattern to guarantee its long-term economic prosperity** and the viability of its welfare state. **To do so, we will have to boost productivity and expand labour participation rates to levels similar to those of the EU's most advanced countries.**

**This must be the guiding ambition of our national efforts for decades to come.**

To achieve this, it is essential that, in the coming years, Spaniards use social dialogue to reach a consensus on **a dashboard of quantifiable indicators and a list of specific goals** that will enable us to monitor the progress made and guide the ambition of the reforms. Here are some suggestions which follow the principles outlined in the Introduction to this *Strategy*:

**Goal 1.** Reduce the per-capita income gap between Spain and the EU-8 to 10% by 2050.

**Goal 2.** Raise the economy's labour productivity by 2050 to bring us closer to the levels of the EU-8 countries.

**Goal 3.** Increase the employment rate from 62% to 80% (the current levels seen in the most advanced economies of Europe) by the middle of the century.

**Goal 4.** Encourage private R&D so that, along with the boost to public R&D, by 2030 we approach the target of 3% of GDP (currently 1.3%) for total expenditure as recommended by the European Commission for 2020.<sup>154</sup> Between 2030 and 2050, R&D efforts should be stepped up so that Spain becomes a European leader in this field (investment-to-GDP ratios of at least 4%).

**Goal 5.** Increase the average size of Spain's companies, to match the EU-8 average by 2050.

**Goal 6.** Reduce the weight of the informal economy to levels at least similar to those of the most developed EU countries by 2050.

Table of indicators and targets

Indicators	Place	Average 2015-19 or latest data available*	Targets		
			2030	2040	2050
1 Gap in per capita income with the EU-8 <sup>152</sup>	Spain	-22%	-18%	-15%	-10%
2 Labour productivity levels (constant euros, PPP 2015) <sup>153</sup>	Spain	42	46	53	63
	EU-27	43	–	–	–
	EU-8	53	–	–	–
3 Employment rate <sup>154</sup>	Spain	62%	68%	72%	80% <sup>155</sup>
	EU-27	68%	–	–	–
	EU-8	73%	–	–	–
4 Total R&D expenditure (% of GDP) <sup>156</sup>	Spain	1.2%	3.0% <sup>157</sup>	3.5%	4.0%
	EU-27	2.2%	–	–	–
	EU-8	2.8%	–	–	–
5 Firms by size (by % of employment) <sup>158</sup>  Large (+250 employees) Medium (20-249) Small (1-19)	Spain	31%*	32%	33%	35%
		23%*	25%	28%	30%
		45%*	42%	38%	35%
	EU-27	33%*	–	–	–
		28%*	–	–	–
		39%*	–	–	–
	EU-8	36%*	–	–	–
		29%*	–	–	–
		35%*	–	–	–
6 Shadow economy (% of GDP) <sup>159</sup>	Spain	20%	15%	12%	10%
	EU-27	17%	–	–	–
	EU-8	11%	–	–	–

To achieve these goals, Spain will have to undertake **profound reforms and launch ambitious initiatives** on at least the following fronts:

### Front 1: Improve the contribution of human capital.

As long as Spain continues to have a poorly educated population, little can be achieved. **Improving the quality of human capital to match that of the most advanced EU countries should be our top priority in the coming years.** This will require reducing school dropout rates, improving learning achievement at primary, secondary and tertiary levels, and creating an integrated system of effective **lifelong learning**, as explained in Chapters 2 and 3 of this *Strategy*.

### Front 2: Solve the deficiencies of our labour market

In order to have a competitive economy, it will be essential to improve the functioning of the labour market. The unemployment rate and unwanted temporary employment will need to be reduced, and the rate of employment increased considerably, especially among groups in which

we currently have the greatest gap with the EU-8 countries: women, young people, and the over-55s [see chapter 7]

### Front 3: Encourage innovation

We must boost innovation and, in particular, R&D investment. Furthermore, we must do so **in a sustained manner over time** (reducing the effects of the economic cycle on the volume of funding), considering the net benefits of public initiatives in the medium and long term,<sup>160</sup> **and providing the necessary incentives to encourage increased investment in private R&D**, where Spain has a greater deficit.<sup>161</sup> To this end, we propose:

- Appropriately structuring the investment aid schemes granted by the public administration to allocate resources efficiently, by means of: 1) an ex-ante and ex-post evaluation of the economic-financial situation of companies receiving the support; 2) an increase in direct aid whenever necessary for the success of the project; 3) improved market conditions for subsidised loans; 4) simplified procedures for accessing investment aid and loans, as well as greater transparency on their granting; and 5) an ex-post assessment of the effectiveness of such aid.
- Improving the system of multilevel governance in the field of innovation, with the primary goal of coordinating the country's innovation initiatives from a new holistic perspective<sup>162</sup> and orienting them towards strategic missions that take advantage of emerging areas of opportunity (detecting new markets), in line with the EU's agreed aims. In this regard, the synergies between the range of R&D, innovation, entrepreneurship and digitalisation policies and bodies will need to be strengthened, taking advantage of the opportunities offered by public-private consortia. In particular, public procurement can be key to developing technology and innovation solutions that help meet the specific goals of each mission.
- Strengthening scientific and technological research in universities and its transfer to the productive network. To achieve this, the resources that the Spanish university system allocates to research will need to be increased considerably; to place value on participation in R&D projects in the academic career; to reduce in number and increase in power the Research Results Transfer Offices (OTRIs); the creation of spin-offs and university start-ups increased; and the creation of consortiums between universities, research centres, the private sector and public administrations encouraged, with their own legal status.
- Increasing funding and establishing an appropriate incentive system to encourage the development of internationally renowned centres of excellence, which facilitate the return and retention of national talent, as well as the attraction of foreign talent.<sup>163</sup> These centres should also focus on disseminating knowledge to society as a whole, with special emphasis on the younger population, through advertising and audiovisual announcements, mentoring programmes and courses to promote scientific thought.<sup>164</sup>
- Promoting the creation of a network of innovation hubs in economic sectors where niches in the market with potential for growth and international development have been identified, following the European initiative of the European Research Area (ERA) hubs.<sup>165</sup> These hubs can be used to focus public support for R&D, align the different instruments

for promoting innovation (public procurement, regulation, support and financing for companies), and identify opportunities for growth and expansion to other sectors, regions, and countries (internationalisation process). In this regard, studies into the potential for business growth among SMEs, based on quantitative information at a granular level, could be useful.<sup>166</sup>

#### **Front 4: Encourage and facilitate the adoption of technology**

We must make progress on the digital transformation of the economy - and, in particular, the business sector. The proposed measures reinforce some of the main programmes set out in the *Digital Spain Agenda 2025*.<sup>167</sup>

- Design and implement a comprehensive plan to support digital transformation, adapted to the needs of each sector and business size, with a special focus on the self-employed (subsidies for the purchase of equipment or training pathways for digital skills according to needs).
- Relaunch investment in digital infrastructures<sup>168</sup> (fibre network, 5G technology, smart motorways, access to digitalisation for core strategic sectors - health, education, energy).
- Reduce the uncertainty associated with digitalisation (regulation) and cybersecurity issues. European measures in these two areas should be adopted across the country.
- Create a comprehensive digital platform for the administrative management of SMEs and the self-employed, which coordinates and streamlines the procedures required by the public administration for obtaining grants, subsidies and tenders.
- Encourage the use of robots in manufacturing. This will help increase productivity and create new jobs.

#### **Front 5: Improve business dynamics**

To generate efficiency gains, increase the creation of stable employment and increase the openness of the economy, we will need to encourage the creation and growth of companies until the business sector is on a par with that of the EU-8 countries. To do so, the following is suggested:

- Encourage SMEs and the self-employed to access technological innovations, by setting up public institutes that specialise in providing knowledge, technology and innovation transfer, with the aim of boosting business growth. The German experience of Fraunhofer<sup>169</sup> is an excellent example of public-private collaboration in this field (German companies of all sizes regularly set up projects with Fraunhofer and its institutes when tackling technological challenges related to improving the quality of their products). Other countries such as Taiwan (ITRI),<sup>170</sup> South Korea (ETRI)<sup>171</sup> and the Netherlands (TNO)<sup>172</sup> have also benefited from similar structures. In Spain, Tecnalia is an interesting point of reference.<sup>173</sup>
- Launch a sponsorship and collaboration programme between large and medium-sized companies that is aimed at transferring knowledge on business management and best practice, as well as the joint development of new products and services. The larger

company, with its experience in business management and human resources, and their strategy and planning in the process of opening new markets, will help the medium-sized company to adopt this knowledge and these skills. Once medium-sized companies acquire these practices, it will be easier to extend them to smaller companies, thereby, through synergies and collaboration agreements, leading to their growth. Setting up trusted environments is fundamental for these programmes to be effective. It is therefore advisable to do so sequentially: large companies → medium-sized companies → micro-SMEs

- Encourage the development of alternatives to banks for business financing, with a special focus on venture capital investment in strategic areas in order to facilitate the development of projects during their initial stages as well as during their growth and expansion phases. The aim would be to raise the share of this funding to EU-8 levels by 2050. To this end, the creation of a public-private National Venture Capital Fund is proposed, the public capital funding of which will serve as a lever for attracting private capital. This will generate a sufficiently high critical mass of financing to cover large-scale projects. An interesting initiative in this area is the “Green Tech” incubator launched by France in 2016 which follows the philosophy outlined above and provides early funding to startups that deliver green innovations.<sup>174</sup>

#### **Front 6: Monitor the impact of public policies on improving the country's productivity and employment**

Regardless of the measures adopted, in this area and others, their assessment before, during and afterwards is decisive. In order to carry out this assessment and accountability process, it is proposed that an autonomous independent **Productivity and Employment Committee** be set up to pick up any deviation from the established goals (monitoring); recommend the adoption of corrective measures; and facilitate the alignment of legislative proposals with medium and long-term goals. The creation of this committee is in line with the 2016 European Council recommendation for the formation of National Productivity Committees (NPCs) by EU Member States,<sup>175</sup> something that several countries have already done.<sup>176</sup>

#### **Front 7: Modernise the public sector**

Productivity is not just a matter for the private sector: public administrations must also drastically improve the efficiency and agility of their processes, reducing response times in procedures, **establishing monitoring and evaluation requirements for the quality of public services and policies**, and improving the use of funds granted by the EU [see front 9], among other things. To this end, we propose the following:

- Institutionalise a culture of public policy evaluation (use of resources and effectiveness of measures) and accountability among all administrations, following the example of countries such as the United Kingdom<sup>177</sup> and the Netherlands.<sup>178</sup>
- Complete the digitalisation of public administrations,<sup>179</sup> so that practically all procedures can be carried out remotely, standardising digital access systems in all administrations, while maintaining face-to-face services where required.<sup>180</sup>
- Reduce complexity and response times in bureaucratic procedures and formalities.
- Expand the number, quality and accessibility of public databases and incorporate the



use of new technologies such as artificial intelligence so that the information handled by public administrations can be used by public institutions, companies and universities for analysing, designing and evaluating policies and services. Examples of these include real-time data on the evolution of the jobs market, information about the cost of medical interventions and full statistics on social services provided. An interesting example is the OPAL project in France.<sup>181</sup>

- Adapt the systems for entering the civil service, by reforming the content and nature of the current selection tests to ensure that candidates' knowledge, skills and track record match current needs.
- Strengthen the training of civil servants to improve their digital literacy and use of new technologies their knowledge of leadership and human resource management, and their skills in the internal monitoring and evaluation of public policies. Requalification plans should be addressed that ensure ongoing aligning of knowledge and skills to the needs of the administration.
- Encourage performance appraisal of public employees, strengthening productivity measurement and incentive systems, and increasing flexibility to attract talent from outside public administrations and retain existing talent.

## Front 8: Reduce the size of the black economy

**Improving human capital [see front 1], increasing rates of entering the jobs market [see front 2] and modernising the public sector [see front 7] are decisive factors in reducing the black economy.** Thus, a more educated workforce and a jobs market capable of incorporating excluded groups (especially young people) tend to be associated with lower levels of underground economy.<sup>182</sup> Similarly, a more digitalised public administration, with automated procedures and fewer administrative obstacles, also acts as an incentive to join the formal sector.

There are also specific measures aimed at reducing tax fraud<sup>183</sup> and strengthening social awareness that are equally important. Among them, we highlight the following:

- Strengthen the tax administration's resources dedicated to inspection. According to the Tax Authority's efficiency index, for every euro invested in the agency in 2018, more than 11 euros were collected in the fight against fraud.<sup>184</sup> However, compared to the EU-27 average, Spain has a lower proportion of employees engaged in inspection and verification functions.<sup>185</sup>
- Improve coordination between Spain's National Tax Authority (AEAT) and the regional tax authorities,<sup>186</sup> as well as between AEAT and the Labour and Social Security Inspectorate. For example, the fragmentation of information between departments should be reduced and the sharing of available resources should be encouraged.<sup>187</sup>
- Promote the use of new technologies for inspection functions among the tax authorities. Artificial intelligence or the use of massive data open a range of possibilities to facilitate the tasks of the tax authorities. A successful example in this field is the virtual assistant that was introduced in 2017, automatically resolving frequently asked questions and freeing up resources.<sup>188</sup>

- Strengthen communication and awareness-raising campaigns. Development of marketing strategies and campaigns with direct reference to the use of tax resources, segmented by profile together with evaluation strategies to ascertain their impact.<sup>189</sup> On this, it would be important to focus efforts on the youngest (future taxpayers) and on long-term measures aimed at changing values and behaviours.<sup>190</sup> Modernising the Tax and Civic Education Portal (PECT)<sup>191</sup> could be a first step in this direction.

### **Front 9: Maximise the use of European funds, applying a proactive and long-term vision**

European funds are a fundamental source of financing that have contributed to modernising the production network and social makeup of our country. However, they have often been implemented inefficiently and not always with a long-term vision. The current recovery funds<sup>192</sup> are a unique opportunity to carry out the structural reforms that Spain needs in the coming decades. In order to maximise their impact, we recommend following five guiding principles when allocating and implementing them:

- Realism. It is easy to dream of a Spain at the forefront of quantum computing, Industry 4.0 and artificial intelligence. However, historical experience reveals how difficult it is substantially to transform a country's productive structure in a short period of time, or to catch up with competitors who have been investing in the development of certain technologies for decades. It is important, therefore, to be realistic and take a clinical approach when investing in strategies to be undertaken.
- Cross-sector approach. It is not a matter of focusing on a number of economic sectors (to the detriment of others), but of using the funds to correct the structural weaknesses that are holding back the productivity of the economy as a whole and of each of its sectors, and to do so on the basis of exploring new areas of opportunity, mostly related to existing production structures that need to be transformed (diversification, modernisation or transition). The economy's ability to adapt (resilience) needs to improve, and to do so from a cross-sector perspective across the entire productive system, following strategies of smart specialisation, in line with EU recommendations.<sup>193</sup> Indeed, the Atlas of Economic Complexity ranks Spain as the country with the greatest potential in the world to start manufacturing and exporting increasingly complex goods. That is to say, the current composition of our production provides us with the necessary know-how in many fields to acquire a comparative advantage in more sophisticated goods. What we must do is to overcome the bottlenecks that prevent us from making the leap.<sup>194</sup>
- Public-private collaboration. The private sector must play an important role, with priority being given to projects launched by companies with a competitive advantage in each area, in which the public sector and smaller companies also participate.
- Efficiency of execution. Up until the end of 2020, the executed expenditure of the European Structural and Investment Funds (ESIF) for the period 2014-20 was 35% in Spain (among the lowest in the EU), while for the EU-8 it was 57%.<sup>195</sup> It is important to iron out the administrative bottlenecks that delay the application and implementation of funds, and to assess the implementation capacity of projects when allocating them.
- Anticipation. Although it is impossible to anticipate the future with certainty, this Strategy publication identifies several sources of demand that are likely to grow over the next few decades in the wake of megatrends such as demographic ageing, technological

transformation and the green transition. These include, for example:

- Increased demand in physical and mental health and care, which will bring growth opportunities in areas such as medicine, pharmaceuticals and biotechnology; safe food and preventive healthy habits; diversified and collaborative social and health care services for companionship and care; psychological assistance; connectivity of remote services and home care automation, among others [see chapters 5 and 9].
- Increasing training needs, which will result in a significant growth in the education sector and in adult requalification [see chapters 2 and 3].
- The green transition, which will generate a host of opportunities in sectors such as mobility, logistics and distribution; building construction and refurbishment; clean energy generation, distribution, and storage; production of recycled and recyclable goods; healthy and environmentally friendly food, tourism and sustainable leisure [see chapter 4].
- Digitalisation, which, whilst it will destroy jobs, will create just as many new ones in virtually every sector of our economy, from agriculture to finance [see chapter 7].

**By adopting these and other measures, our country could close the gap in productivity and per capita income that currently separates it from the EU-8 and consolidate its position as one of the most prosperous and advanced countries in Europe.**

## CHALLENGE 1: BEING MORE PRODUCTIVE TO GROW BETTER

<sup>1</sup> Per capita income is expressed as the ratio of GDP (in constant 2015 euros and in Purchasing Power Parity, PPP) to total population. PPP makes it possible to compare income levels between countries, taking into account differences in the cost of living. For further details, see: AMECO. *Gross domestic product at 2015 reference levels per head of population [RVGDP]*. [https://ec.europa.eu/economy\\_finance/ameco/user/serie/SelectSerie.cfm](https://ec.europa.eu/economy_finance/ameco/user/serie/SelectSerie.cfm); Eurostat. *GDP and main components (output, expenditure and income) [nama\_10\_gdp]*; *Population on 1 January by age and sex [demo\_pjan]*; y *Purchasing power parities (PPPs), price level indices and real expenditures for ESA 2010 aggregates [prc\_ppp\_ind]*. <https://ec.europa.eu/eurostat/data/database>; and OCDE. "Purchasing power parities." OECD, <https://data.oecd.org/conversion/purchasing-power-parities-ppp.htm>.

<sup>2</sup> The 1977-78 tax laws laid the foundations for a progressive tax system, with the creation of personal income tax and corporate income tax; they made it possible to increase public revenue over GDP by over 10 percentage points in just a decade (this ratio was below 30% in 1978, while in 1988 it was around 40%), and concrete measures to control tax fraud were reintroduced for the first time. The higher revenues allowed for an increase in social spending, which translated into substantial progress in the coverage of essential public services such as education and health, unemployment protection and pensions. Moreover, the reform of the financial system undertaken in these years involved the introduction of greater competition within the sector, the progressive liberalisation of interest rates, the strengthening of the role of the Banco de España as the central bank controlling liquidity and the cost of money, and the establishment of a rigorous monetary policy that was truly effective as a stabilising economic policy. For further details, see: Official State Gazette. *Ley 50/1977, de 14 de noviembre, sobre medidas urgentes de reforma fiscal*. Madrid, 1977. <https://www.boe.es/boe/dias/1977/11/16/pdfs/A24945-24951.pdf>; Official State Gazette. *Ley 44/1978, de 8 de septiembre, del Impuesto sobre la Renta de las Personas Físicas*. Madrid, 1978. <https://www.boe.es/boe/dias/1978/09/11/pdfs/A21191-21199.pdf>; Official State Gazette. *Ley 61/1978, de 27 de diciembre, del Impuesto sobre Sociedades*. Madrid, 1978. <https://www.boe.es/boe/dias/1978/12/30/pdfs/A29429-29437.pdf>; Cabrera, Mercedes. "Los Pactos de la Moncloa: acuerdos políticos frente a la crisis." *Historia y Política: Ideas, procesos y movimientos sociales*, n.º 26, 2011. <https://recyt.fecyt.es/index.php/Hyp/article/view/41325>; Comín, Francisco. "La fiscalidad del Estado del Bienestar frente a la fiscalidad del Franquismo (1940-2016)." 2017. [https://www.aehe.es/wp-content/uploads/2016/01/201709\\_Francisco-Comin.pdf](https://www.aehe.es/wp-content/uploads/2016/01/201709_Francisco-Comin.pdf); and Malo de Molina, José Luis. "Una visión macroeconómica de los veinticinco años de la vigencia de la Constitución española." *Banco de España, Documentos Ocasionales*, n.º 307, 2003. <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSeriadas/DocumentosOcasionales/03/Fic/do0307.pdf>.

<sup>3</sup> Malo de Molina, José Luis. "Una visión macroeconómica de los veinticinco años de la vigencia de la Constitución española." *Banco de España, Documentos Ocasionales*, n.º 307, 2003. <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSeriadas/DocumentosOcasionales/03/Fic/do0307.pdf>.

<sup>4</sup> Beyond the economic and social effects of Spain's integration into the EU, it is worth highlighting the considerable volume of transfers, both current and capital, received in the framework of the receipt of structural and cohesion funds (e.g. ERDF, CAP). For example, in 2000, Spain's net financial balance with the EU was positive by 0.8% of GDP, a similar percentage to that of the early 1990s (the balance was 0.9% in the period 1992-1994) and somewhat lower than in the middle years of that decade, when it was close to 1.5% (1995-97). For further details, see: Jordán Galduf, Josep María. "Balance de la integración de España en la Unión Europea." *ICE*, n.º 811, 2003. <http://www.revistasice.com/index.php/ICE/article/view/573/573>; and Requeijo González, Jaime. "La internacionalización de la economía española." *ICE*, n.º 811, 2003. <http://www.revistasice.com/index.php/ICE/article/view/572/572>.

<sup>5</sup> For example, non-tourist services now account for 19% of total Spanish exports. For further details, see: Álvarez López, María Elisa, and Josefa Vega Crespo. "La fortaleza competitiva de la economía española." *Estudios de economía aplicada* 35, n.º 1, 2017. <https://dialnet.unirioja.es/servlet/articulo?codigo=5798826>; INE. *Contabilidad nacional trimestral de España: principales agregados (CNTR). Resultados. GDP at market prices*. [https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica\\_C&cid=1254736177057&menu=sultados&idp=1254735576581](https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736177057&menu=sultados&idp=1254735576581); and Department of Economic Affairs and Digital Transformation. *Macroeconomic indicators and reports. 50 Comercio Exterior. Total y por Grupos de Utilización (GU)*. [http://serviciosede.mineco.gob.es/indeco/BDSICE/Busquedas/busquedas\\_new.aspx](http://serviciosede.mineco.gob.es/indeco/BDSICE/Busquedas/busquedas_new.aspx).

<sup>6</sup> As far as exports of goods are concerned, although the EU continues to be Spain's main trading partner (accounting for 60% of total sales), in the last two decades there has been an increase in the participation of non-European markets such as Asia, Africa and the USA. UU. In terms of tourism services, the origin of foreign tourists has also diversified over the last twenty years. The main source markets (Germany, the UK and France) accounted for 62% of the total in 2001, while in 2019 their share had fallen to 48%. This has been the result of stronger growth in other countries such as the USA or Russia. For further details, see: INE. *Estadística de movimientos turísticos en frontera. Frontur*. [https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica\\_C&cid=1254736176996&menu=ultiDatos&idp=1254735576863](https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736176996&menu=ultiDatos&idp=1254735576863); and Department of Economic Affairs and Digital Transformation. *Macroeconomic indicators and reports. 50 Comercio Exterior. Total y por Grupos de Utilización (GU); y 53 Comercio Exterior: Exportaciones por Países*. [http://serviciosede.mineco.gob.es/indeco/BDSICE/Busquedas/busquedas\\_new.aspx](http://serviciosede.mineco.gob.es/indeco/BDSICE/Busquedas/busquedas_new.aspx); Department of Industry, Trade and Tourism. *Estadísticas de demanda turística. Movimientos turísticos en frontera (Frontur)*. <http://estadisticas.tourspain.es/es-ES/turismobase/Paginas/default.aspx>; Myro, Rafael. "La diversificación de los mercados de exportación de las empresas españolas." *Comité de Reflexión sobre Internacionalización*, Nota técnica 8, 2020. [https://clubexportadores.org/wp-content/uploads/pdf/documentos/notas-comite-reflexion/nt\\_diversificacion\\_mercados\\_may20.pdf](https://clubexportadores.org/wp-content/uploads/pdf/documentos/notas-comite-reflexion/nt_diversificacion_mercados_may20.pdf); OCDE. *OECD Economic Surveys: Spain 2018*. Paris: OECD Publishing. 2019. [https://doi.org/10.1787/eco\\_surveys-esp-2018-en](https://doi.org/10.1787/eco_surveys-esp-2018-en); Gutiérrez Chacón,

Eduardo, and César Martín Machuca. "Exporting Spanish Firms. Stylized facts and trends." *Banco de España, Documentos Ocasionales*, n.º 1903, 2019. <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSerias/DocumentosOcasionales/19/Files/do1903e.pdf>. On the internationalisation of companies, see: Santiso Guimaras, Javier. "La internacionalización de las empresas españolas: hitos y retos." *ICE, La Internacionalización de la Empresa Española*, n.º 839, 2007. <http://www.revistasice.com/index.php/ICE/article/view/1100/1100>.

<sup>7</sup> Gutiérrez Chacón, Eduardo, and César Martín Machuca. "Exporting Spanish Firms. Stylized facts and trends." *Banco de España, Documentos Ocasionales*, n.º. 1903, 2019. <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSerias/DocumentosOcasionales/19/Files/do1903e.pdf>.

<sup>8</sup> Spain went from receiving foreign direct investment inflows of less than 1% of GDP per year in the late 1970s to inflows of more than 4% in some years of the 2000s. Thus, the volume (*stock*) of foreign direct investment from abroad represented 0.7% of the world total in 1980, while in 2019 it reached 2.1%, representing, between 2002 and 2011, more than 3% of the world total. For further details, see: UNCTADSTAT. *Foreign direct investment: Inward and outward flows and stock, annual*. [https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS\\_ChosenLang=en](https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS_ChosenLang=en).

<sup>9</sup> The trade openness rate is defined as the ratio between the volume of exports and imports of a country and its level of production (GDP). It measures a country's degree of external openness, i.e. how much it trades with the rest of the world. For further details, see: AMECO. *Imports of goods and services at current prices (National accounts) [UMGS]; Gross domestic product at current prices [UVGD]; y Exports of goods and services at current prices (National accounts) [UXGS]*. [https://ec.europa.eu/economy\\_finance/ameco/user/serie/SelectSerie.cfm](https://ec.europa.eu/economy_finance/ameco/user/serie/SelectSerie.cfm).

<sup>10</sup> Santiso Guimaras, Javier. "La internacionalización de las empresas españolas: hitos y retos." *ICE, La Internacionalización de la Empresa Española*, n.º 839, 2007. <http://www.revistasice.com/index.php/ICE/article/view/1100/1100>.

<sup>11</sup> UNCTADSTAT. *Foreign direct investment: Inward and outward flows and stock, annual*. [https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS\\_ChosenLang=en](https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS_ChosenLang=en).

<sup>12</sup> Spain is, together with France and the USA, depending on the year of reference, among the top three countries in the world in terms of the number of foreign tourists per year. For further details, refer to: UNWTO. *Total international arrivals*. <https://www.unwto.org/statistic/basic-tourism-statistics>.

<sup>13</sup> World Economic Forum *The Travel & Tourism Competitiveness Report 2019: Travel and Tourism at a Tipping Point*. Geneva, 2019. [http://www3.weforum.org/docs/WEF\\_TTCR\\_2019.pdf](http://www3.weforum.org/docs/WEF_TTCR_2019.pdf).

<sup>14</sup> Engineering News-Record. "ENR's 2019 Top 250 International Contractors." Engineering News-Record, <https://www.enr.com/toplists/2019-Top-250-International-Contractors-1>.

<sup>15</sup> Spain is the second largest car producing country in the EU after Germany. See: International Organization of Motor Vehicle Manufacturers. "2019 Production Statistics." International Organization of Motor Vehicle Manufacturers, <https://www.oica.net/category/production-statistics/2019-statistics/>.

<sup>16</sup> Ali, Zarmina. "The world's 100 largest banks, 2020." S&P Global Market Intelligence, <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/the-world-s-100-largest-banks-2020-57854079..>

<sup>17</sup> International Renewable Energy Agency. *Electricity capacity (MW) Total Renewable Energy*. <https://www.irena.org/Statistics/View-Data-by-Topic/Capacity-and-Generation/Statistics-Time-Series>.

<sup>18</sup> The agri-food sector, which includes agriculture, livestock, forestry and fishing, food, beverages and tobacco, is one of the most representative sectors of the Spanish economy, both for its contribution to GDP and employment (around 6% in both cases) and, above all, for its international projection (exports from the sector account for 16% of our total exports of goods and 3.4% of the world total). For further details, see: García Grande, M. Josefa, and José María López Morales. "Contribución de la agroalimentación española al comercio mundial: evolución y factores explicativos." *Revista Española de Estudios Agrosociales y Pesqueros*, n.º 243, 2016. [https://www.mapa.gob.es/ministerio/pags/Biblioteca/Revistas/pdf\\_REEAP%2FPdf\\_REEAP\\_r243\\_15\\_44.pdf](https://www.mapa.gob.es/ministerio/pags/Biblioteca/Revistas/pdf_REEAP%2FPdf_REEAP_r243_15_44.pdf).

<sup>19</sup> World Integrated Trade Solution. *Textiles and Clothing Exports by country in US\$ Thousand 2018*. [https://wits.worldbank.org/CountryProfile/en/Country/WLD/Year/LTST/TradeFlow/Export/Partner/by-country/Product/50-63\\_TextCloth#](https://wits.worldbank.org/CountryProfile/en/Country/WLD/Year/LTST/TradeFlow/Export/Partner/by-country/Product/50-63_TextCloth#).

<sup>20</sup> For further details, see: AMECO. *Employment, persons: agriculture, forestry and fishery products (National accounts) [NET1]; Employment, persons: industry excluding building and construction (National accounts) (NET2); Employment, persons: building and construction (National accounts) (NET4); and Employment, persons: services (National accounts) (NET5)*. [https://ec.europa.eu/economy\\_finance/ameco/user/serie/SelectSerie.cfm](https://ec.europa.eu/economy_finance/ameco/user/serie/SelectSerie.cfm).

<sup>21</sup> UNWTO. *Inbound tourism: arrivals. Total arrivals*. <https://www.unwto.org/statistic/basic-tourism-statistics>.

<sup>22</sup> The average number of years of schooling increased from 5.5 in 1980 to 10 in 2020. For further details, refer to: De la Fuente, Ángel, and Rafael Doménech. "El nivel educativo de la población en España y sus regiones: 1960-2011." *Investigaciones Regionales – Journal of Regional Research* 34, 2016. [https://old.aecr.org/images/ImatgesArticles/2016/5/04\\_DELAFUENTE.pdf](https://old.aecr.org/images/ImatgesArticles/2016/5/04_DELAFUENTE.pdf); and United Nations Development Programme. *Mean years of schooling (years)*. <http://hdr.undp.org/en/data>.

<sup>23</sup> The 1980 figure is from De la Fuente and Doménech, while the 2019 figure is from Eurostat. For further details, see: De la Fuente, Ángel, and Rafael Doménech. "El nivel educativo de la población en España y sus regiones: 1960-2011." *Investigaciones Regionales – Journal of Regional Research* 34, 2016. [https://old.aecr.org/images/ImatgesArticles/2016/5/04\\_DELAFUENTE.pdf](https://old.aecr.org/images/ImatgesArticles/2016/5/04_DELAFUENTE.pdf); and Eurostat. *Population by educational attainment level, sex and age (%) [edat\_lfs\_9903]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>24</sup> Data from the Programa para la Evaluación Internacional de las Competencias de la población Adulta (PIAAC, *Programme for the International Assessment of Adult Competencies*) show that Spain is, together with South Korea and Finland, the OECD country where the differences in reading comprehension and mathematics between the young population (16-24 years) and the older population (55-65 years)

are most significant. This suggests the importance of the gains in basic skills registered by the Spanish population in recent decades. For further details, see: OCDE. *The OECD Skills Outlook 2013. First results from the Survey of Adults Skills. Figure 3.2 (L)*. Paris: OECD Publishing, 2015. [https://www.oecd.org/skills/piaac/Skills%20volume%201%20\(eng\)--full%20v12--eBook%20\(04%2011%202013\).pdf](https://www.oecd.org/skills/piaac/Skills%20volume%201%20(eng)--full%20v12--eBook%20(04%2011%202013).pdf).

<sup>25</sup> In 1980, only 50% of the Spanish active population was employed; whereas in 2019, the employment rate was 65%. See: Eurostat. *Employment by sex, age and citizenship (1 000) [lfsa\_egan]*; y *Population on 1 January by age and sex [demo\_pjan]*. <https://ec.europa.eu/eurostat/data/database>; and OCDE. *Historical population and Annual Labour Force Statistics summary tables*. <https://stats.oecd.org/>.

<sup>26</sup> The United Nations Gender Inequality Index has halved between 1995 and 2018, ranking Spain in a more favourable position than the EU-27. On the other hand, the percentage of women in Parliament has risen from 30% of the total in 2003 to over 40% in 2019, a much higher proportion than in the EU-27. In addition, the gender pay gap has also fallen over the last decades from 20% in 2002 to 12% in 2018. For further details, see: Eurostat. *Gender pay gap in unadjusted form [sdg\_05\_20]*; and *Seats held by women in national parliaments and governments (source: EIGE) [sdg\_05\_50]*. <https://ec.europa.eu/eurostat/data/database>; and United Nations. *Gender Inequality Index (GII)*. <http://hdr.undp.org/en/data>.

<sup>27</sup> Foreign workers in Spain increased from 103,000 (1% of the total employed) in 1995 to 2,300,000 (12% of the total employed) in 2019. This increase accounted for 32% of all net employment created between 1995 and 2019. For further details, see: Eurostat. *Employment by sex, age and citizenship (1 000) [lfsa\_egan]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>28</sup> Eurostat. *Average number of usual weekly hours of work in main job, by sex, professional status, full-time/part-time and occupation (hours) [lfsa\_ewhuis]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>29</sup> Refer to: Banco de España. *Indicadores estructurales de la economía española y de la UE*. Madrid, 2020. [https://www.bde.es/webbde/es/estadis/infoest/si\\_1\\_4.pdf](https://www.bde.es/webbde/es/estadis/infoest/si_1_4.pdf); and Serrano, Lorenzo, et al. (coords). *Acumulación y productividad del capital en España y sus comunidades autónomas en el siglo XXI*. Fundación BBVA, 2017. [https://www.fbbva.es/wp-content/uploads/2017/05/dat/DE\\_2017\\_Ivie\\_Inf\\_Stock\\_1964-2014.pdf](https://www.fbbva.es/wp-content/uploads/2017/05/dat/DE_2017_Ivie_Inf_Stock_1964-2014.pdf).

<sup>30</sup> In 2018, Spain had 15,585 kilometres of dual carriageway or motorway, ranking fifth in the world. Moreover, it is the second country in the world with the most kilometres of high-speed trains after China. For further details, see: International Union of Railways. *High speed lines in the world*. 2020. [https://uic.org/IMG/pdf/20200227\\_high\\_speed\\_lines\\_in\\_the\\_world.pdf](https://uic.org/IMG/pdf/20200227_high_speed_lines_in_the_world.pdf); and UNECE. *Total length of motorways*. <https://w3.unece.org/PXWeb/en>.

<sup>31</sup> According to the *Global Competitiveness Index 4.0* of 2019, Spain is the seventh world power in terms of supply and quality of transport infrastructures. For further details, see: World Economic Forum. *The Global Competitiveness Report 2019*. Geneva, 2019. [http://www3.weforum.org/docs/WEF\\_TheGlobalCompetitivenessReport2019.pdf](http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf).

<sup>32</sup> COTEC. *El sistema español de innovación. Diagnostics and recommendations. Libro Blanco*. Madrid, 1998. [http://personales.upv.es/jgil/libro\\_blanco.pdf](http://personales.upv.es/jgil/libro_blanco.pdf).

<sup>33</sup> Official State Gazette. *Ley 13/1986, de 14 de abril, de Fomento y Coordinación General de la Investigación Científica y Técnica*. Madrid, 1986. <https://www.boe.es/boe/dias/1986/04/18/pdfs/A13767-13771.pdf>.

<sup>34</sup> Buesa Blanco, Mikel. "Ciencia y tecnología en la España democrática: la formación de un Sistema Nacional de Innovación." *ICE*, n.º 811, 2003. <http://www.revistasice.com/index.php/ICE/article/view/580/580>.

<sup>35</sup> Banco de España. *Indicadores estructurales de la economía española y de la UE*. Madrid, 2020. [https://www.bde.es/webbde/es/estadis/infoest/si\\_1\\_4.pdf](https://www.bde.es/webbde/es/estadis/infoest/si_1_4.pdf).

<sup>36</sup> The number of companies in Spain was 1.8 million in 1986 and 2.5 million in 1998, while at the beginning of 2019 it reached 3.4 million. For further details, see: Carreras, Albert and Xavier Tafunell (coords). *Estadísticas históricas de España: siglos XIX-XX*. Fundación BBVA, 2005. [https://www.fbbva.es/wp-content/uploads/2017/05/dat/DE\\_2006\\_estadisticas\\_historicas.pdf](https://www.fbbva.es/wp-content/uploads/2017/05/dat/DE_2006_estadisticas_historicas.pdf); and INE. *Explotación estadística del directorio central de empresas. DIRCE*. [https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica\\_C&cid=1254736160707&menu=ultiDatos&idp=1254735576550](https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736160707&menu=ultiDatos&idp=1254735576550).

<sup>37</sup> García Delgado, José Luis. "Economía en democracia en España: Los rasgos distintivos de un cuarto de siglo." *ICE*, n.º 811, 2003. <http://www.revistasice.com/index.php/ICE/article/view/569/569>.

<sup>38</sup> In the mid-1980s, Spain had a business structure with an overwhelming predominance of SMEs (employing more than 92% of the employed population). Almost forty years later, SMEs still account for a high proportion of employment, but large enterprises now account for 31% of total employment. For further details, see: Carreras, Albert and Xavier Tafunell (coords). *Estadísticas históricas de España: siglos XIX-XX*. Fundación BBVA, 2005. [https://www.fbbva.es/wp-content/uploads/2017/05/dat/DE\\_2006\\_estadisticas\\_historicas.pdf](https://www.fbbva.es/wp-content/uploads/2017/05/dat/DE_2006_estadisticas_historicas.pdf); and Eurostat. *Persons employed in the non-financial business economy by size class of employment [tin00148]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>39</sup> Forbes. "Global 2000: The World's Largest Public Companies." Forbes, <https://www.forbes.com/global2000/#6a5a01d4335d>.

<sup>40</sup> Forbes. "The World's Most Valuable Brands." Forbes, <https://www.forbes.com/the-worlds-most-valuable-brands/#4bd886c5119c>.

<sup>41</sup> Labour productivity is defined as the ratio of GDP (in constant 2015 euros and adjusted for purchasing power differences) to total hours worked. For further details, see: Eurostat. *GDP and main components (output, expenditure and income) [nama\_10\_gdp]*; *Employment by A\*10 industry breakdowns [nama\_10\_a10\_e]*; y *Purchasing power parities (PPPs), price level indices and real expenditures for ESA 2010 aggregates [prc\_ppp\_ind]*. <https://ec.europa.eu/eurostat/data/database>; and OCDE. *Level of GDP per capita and productivity*. <https://stats.oecd.org/>.

<sup>42</sup> Per capita income is expressed in euros at constant 2015 prices and adjusted for differences in purchasing power. The total employment rate is defined as the ratio of total employed persons to the population aged 16-64. Labour productivity is defined as the ratio of GDP (in constant 2015 euros and adjusted for purchasing power differences) to total hours worked. For further details, see: AMECO. *National consumer price index (All-items) [ZCPIN]*. [https://ec.europa.eu/economy\\_finance/ameco/user/serie/SelectSerie.cfm](https://ec.europa.eu/economy_finance/ameco/user/serie/SelectSerie.cfm); Eurostat. *Employment by sex, age*



and citizenship (1 000) [lfsa\_egan]; Employment by A\*10 industry breakdowns [nama\_10\_a10\_e]; GDP and main components (output, expenditure and income) [nama\_10\_gdp]; Population by educational attainment level, sex and age (%) - main indicators [edat\_lfse\_03]; Population on 1 January by age and sex [demo\_pjan]; Average number of usual weekly hours of work in main job, by sex, professional status, full-time/part-time and occupation (hours) [lfsa\_ewhuis] y Purchasing power parities (PPPs), price level indices and real expenditures for ESA 2010 aggregates [prc\_ppp\_ind]. <https://ec.europa.eu/eurostat/data/database>; and OCDE. *Annual Labour Force Statistics summary tables; Historical population; y Level of GDP per capita and productivity.* <https://stats.oecd.org/>.

<sup>43</sup> For further details on the construction of the EU-8, see the *Apunte metodológico* número I.

<sup>44</sup> GDP per capita is defined as the ratio of GDP (in constant 2015 dollars and adjusted for purchasing power differences) to total population. The EU-8 is constructed as the weighted average of the values of the individual countries, with population being the reference for the calculation of weights. The EU-28 is the aggregate indicator reported by the OECD. For further details, see: OCDE. *Level of GDP per capita and productivity.* <https://stats.oecd.org/>; and OCDE. "Purchasing power parities." OECD, <https://data.oecd.org/conversion/purchasing-power-parities-ppp.htm>.

<sup>45</sup> The EU-8 is constructed as the weighted average of the values of the individual countries, with population being the reference for the calculation of weights. The EU-28 is the aggregate indicator reported by the OECD. For further details, see: OCDE. *Level of GDP per capita and productivity.* <https://stats.oecd.org/>.

<sup>46</sup> Over the last decades, there has been a significant increase in investment in ICT tangible assets (information and communication technologies) and intangible assets (software, R&D and others). However, in the total capital stock of our country, investments related to technological development continue to have a relatively low weight. Thus, the stock of technological capital, calculated on the basis of the accumulation of R&D expenditure according to the permanent inventory methodology, as a percentage of GDP is currently 42% of the EU average in Spain. For further details, see: Banco de España. *Indicadores estructurales de la economía española y de la UE.* Madrid, 2020. [https://www.bde.es/webbde/es/estadis/infoest/si\\_1\\_4.pdf](https://www.bde.es/webbde/es/estadis/infoest/si_1_4.pdf); and Serrano, Lorenzo, *et al.* (coords). *Acumulación y productividad del capital en España y sus comunidades autónomas en el siglo XXI.* Fundación BBVA, 2017. [https://www.fbbva.es/wp-content/uploads/2017/05/dat/DE\\_2017\\_Ivie\\_Inf\\_Stock\\_1964-2014.pdf](https://www.fbbva.es/wp-content/uploads/2017/05/dat/DE_2017_Ivie_Inf_Stock_1964-2014.pdf).

<sup>47</sup> See the *Apunte metodológico* number IV.

<sup>48</sup> Labour productivity is defined as the ratio of GDP (in constant 2015 dollars and adjusted for purchasing power differences) to total hours worked. The EU-8 is constructed as the weighted average of the values of the individual countries, with total hours worked being the reference for the calculation of weights. The EU-28 is the aggregate indicator reported by the OECD. For further details, see: OCDE. *Level of GDP per capita and productivity.* <https://stats.oecd.org/>; and OCDE. "Purchasing power parities." OECD, <https://data.oecd.org/conversion/purchasing-power-parities-ppp.htm>.

<sup>49</sup> The EU-8 is constructed as the weighted average of the values of the

individual countries, with total hours worked being the reference for the calculation of weights. The EU-28 is the aggregate indicator reported by the OECD. For further details, see: OCDE. *Level of GDP per capita and productivity.* <https://stats.oecd.org/>.

<sup>50</sup> Lower labour productivity growth is a source of competitiveness loss for the country. This is reflected in the historical evolution of unit labour costs: an increase in wages that is not supported by productivity gains ends up translating into higher relative prices compared to competing countries and, therefore, a lower degree of external competitiveness. For further details, see: Eurostat. *Labour productivity and unit labour costs [nama\_10\_lp\_ulc].* <https://ec.europa.eu/eurostat/data/database>.

<sup>51</sup> Two simple exercises suggest that productive specialisation, biased towards construction and real estate services from the mid-1990s until 2007 and tourism services in recent years, has contributed to Spain's secular trend of low productivity, but that it has not been the only or the main explanatory factor. For the period 1995-2019, average productivity growth would have been only slightly higher than observed if Spain had maintained the 1995 production structure unchanged. Differences in growth would be minimal if, since 1995, Spain were to replicate the sectoral weights of the EU-8, although the level of productivity would have been somewhat higher. A similar conclusion is drawn by Cuadrado, Moral-Benito, and Solera. For the period 2000-16, Spain had lower productivity levels than the European benchmark countries in most activity sectors (only in 4 of the 23 sectors analysed is our productivity level higher), with the differences in the services sector being particularly significant. For further details, refer to: Andrés, Javier, *et al.* "Creación de empleo en España: ¿Cambio en el modelo productivo, reformar del mercado de trabajo, o ambos?" In *La reforma del mercado de trabajo.* Madrid: Funcas, *Papeles de Economía Española*, n.º 124, 2010. 28-46. [https://www.funcas.es/wp-content/uploads/Migracion/Articulos/FUNCAS\\_PEE/124art04.pdf](https://www.funcas.es/wp-content/uploads/Migracion/Articulos/FUNCAS_PEE/124art04.pdf); Cuadrado, Pilar, Enrique Moral-Benito, and Irune Solera. "A sectoral anatomy of the Spanish productivity puzzle." *Banco de España, Documentos Ocasionales*, n.º 2006, 2020. <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSeridas/DocumentosOcasionales/20/Files/do2006e.pdf>; and Eurostat. *Employment by A\*10 industry breakdowns [nama\_10\_a10\_e]; Gross value added and income by A\*10 industry breakdowns [nama\_10\_a10]; y Purchasing power parities (PPPs), price level indices and real expenditures for ESA 2010 aggregates [prc\_ppp\_ind].* <https://ec.europa.eu/eurostat/data/database>.

<sup>52</sup> Data in constant 2015 prices and adjusted for purchasing power differences. The graph does not include real estate services, whose labour productivity has been 442 euros per hour between 1995 and 2019. For further details, see: Eurostat. *Employment by A\*10 industry breakdowns [nama\_10\_a10\_e]; Gross value added and income by A\*10 industry breakdowns [nama\_10\_a10]; and Purchasing power parities (PPPs), price level indices and real expenditures for ESA 2010 aggregates [prc\_ppp\_ind].* <https://ec.europa.eu/eurostat/data/database>.

<sup>53</sup> Data in constant 2015 prices and adjusted for purchasing power differences. The EU-8 is constructed as the simple average of the values of the individual countries. The graph does not include real estate services, whose (positive) productivity gap has been 9% between 1995 and 2019. For further details, see: Eurostat. *Employment by A\*10 industry breakdowns [nama\_10\_a10\_e]; Gross value added and income by A\*10 industry breakdowns [nama\_10\_a10]; y Purchasing power parities (PPPs), price level indices and real expenditures for ESA 2010*

aggregates [prc\_ppp\_ind]. <https://ec.europa.eu/eurostat/data/database>.

<sup>54</sup> As Hanushek and Woessmann argue, good education leads to greater economic progress, and is one of the key determinants of a country's long-term economic growth: a 100-point improvement in the Programme for International Student Assessment (PISA) (a standard deviation) is associated with an average annual growth rate of GDP per capita for the countries included in PISA that is two percentage points higher from the 1960s to the present. For further details, see: Acemoglu, Daron, and James A. Robinson. *Why Nations Fail*. New York: Penguin Random House, 2012; Benhabib, Jess, and Mark M. Spiegel. "The Role of Human Capital in Economic Development Evidence from Aggregate Cross-Country Data." *Journal of Monetary Economics* 34, n.º 2, 1994. [https://doi.org/10.1016/0304-3932\(94\)90047-7](https://doi.org/10.1016/0304-3932(94)90047-7); Goldin, Claudia D. "Human Capital." In Claude Diebolt and Michael Hauptert (eds.). *Handbook of Cliometrics*. Berlin: Springer-Verlag, 2016. 55–86; Hanushek, Eric A., and Ludger Woessmann. "The economics of international differences in educational achievement." *Handbook of the Economics of Education* 3, 2011. <https://doi.org/10.1016/B978-0-444-53429-3.00002-8>; Hanushek, Eric A., and Ludger Woessmann. "Do better schools lead to more growth? Cognitive skills, economic outcomes, and causation." *Journal of Economic Growth* 17, 2012. <https://link.springer.com/article/10.1007/s10887-012-9081-x>; Lenihan, Helena, Helen McGuirk, and Kevin R Murphy. "Driving Innovation: Public Policy and Human Capital." *Research Policy* 48, n.º 9, 2019. <https://doi.org/10.1016/j.respol.2019.04.015>; Mankiw, N. Gregory, David Romer, and David N. Weil. "A Contribution to the Empirics of Economic Growth." *The Quarterly Journal of Economics* 107, n.º 2, 1992. <https://doi.org/10.3386/w3541>; Rossi, Federico. "Human Capital and Macroeconomic Development: A Review of the Evidence." *The World Bank Research Observer* 35, n.º 2, 2020. <http://documents1.worldbank.org/curated/en/406251542645775821/pdf/WPS8650.pdf>; Teixeira, Aurora, and Natércia Fortuna. "Human Capital, R&D, Trade, and Long-Run Productivity. Testing the Technological Absorption Hypothesis for the Portuguese Economy, 1960–2001." *Research Policy* 39, n.º 3, 2019. <https://doi.org/10.1016/j.respol.2010.01.009>; and Wößmann, Ludger. "Specifying Human Capital." *Journal of Economic Surveys* 17, n.º 3, 2003. <https://doi.org/10.1111/1467-6419.00195>.

<sup>55</sup> For further details, see: Aizer, Anna, and Joseph J. Doyle. "Juvenile Incarceration, Human Capital, and Future Crime: Evidence from Randomly Assigned Judges." *The Quarterly Journal of Economics* 130, n.º 2, 2015. <https://doi.org/10.1093/qje/qjv003>; Brain, Keeley. "Human Capital: How What You Know Shapes Your Life." *OECD Insights*, Paris: OECD Publishing, 2007. <https://doi.org/10.1787/9789264029095-en>; Sianesi, Barbara, and John Van Reenen. "The Returns to Education: Macroeconomics." *Journal of Economic Surveys* 17, n.º 2, 2003. <https://doi.org/10.1111/1467-6419.00192>; and Yao, Yao, et al. "Human Capital and Energy Consumption: Evidence from OECD Countries." *Energy Economics* 84, 2019. <https://doi.org/10.1016/j.eneco.2019.104534>.

<sup>56</sup> OCDE. *Getting Skills Right: Spain*. Paris: OECD Publishing, 2018. <https://doi.org/10.1787/9789264282346-en>.

<sup>57</sup> Spain has a deficit in good business practices compared to neighbouring European countries. Good business practices include aspects of work organisation (teamwork, autonomy, task discretion, mentoring, job rotation, implementation of new learning practices) and management (employee involvement, incentive payments, training practices and flexible working hours). In Spain, 23% of

workplaces are considered to have good organisational practices, while for the EU-8 this number rises to 34% (with figures from 2015).

For further details, see: Eurostat. *Self-employment by sex, age and educational attainment level*. [https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsa\\_esgaed&lang=en](https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsa_esgaed&lang=en); and OCDE. "Distribution of High-Performance Work Practices across jobs in selected countries: Distribution of jobs by HPWP index score." *OCDE Employment Outlook 2016*. Paris: OECD Publishing, 2016. <https://doi.org/10.1787/empl-outlook-2016-graph35-en>.

<sup>58</sup> According to the *European Innovation Scoreboard*, between 2012 and 2019, Spain has improved its innovation capacity. It has done so both in absolute terms and relative to the EU average, mainly due to a better endowment of its human capital, the spread of broadband and more dynamic start-ups. In the *Innovation Output Indicator*, our country stands out for having increased the share of employment in fast-growing firms in innovative sectors between 2013 and 2019. For further details, refer to: European Commission. "European Innovation Index scoreboard 2020." European Commission, [https://ec.europa.eu/growth/industry/policy/innovation/scoreboards\\_en](https://ec.europa.eu/growth/industry/policy/innovation/scoreboards_en); and Vértesy, Dániel, and Giacomo Damioli. "The innovation output indicator 2019." *JRC Technical Report*, n.º 119969, 2020. <https://op.europa.eu/en/publication-detail/-/publication/2c349428-8443-11ea-bf12-01aa75ed71a1>.

<sup>59</sup> The EU-8 and EU-27 are constructed as the simple average of the values of the individual countries. For further details, see: Bloomberg. "Innovation Index." Bloomberg, <https://www.bloomberg.com/news/articles/2020-01-18/germany-breaks-korea-s-six-year-streak-as-most-innovative-nation>; European Commission. "European Innovation Index scoreboard 2020." European Commission, [https://ec.europa.eu/growth/industry/policy/innovation/scoreboards\\_en](https://ec.europa.eu/growth/industry/policy/innovation/scoreboards_en); and Cornell University, INSEAD, and World Intellectual Property Organization. *Global Innovation Index 2019: Creating Healthy Lives-The Future of Medical Innovation*. Geneva, 2019. <https://www.wipo.int/publications/es/details.jsp?id=4434>.

<sup>60</sup> Spending on the production of intellectual property includes spending on R&D and software, among other components. If only R&D investment is taken into account, Spain's expenditure in 2019 was also below the target set by the European Commission for 2020 (1.3% of GDP compared to the 3% target). For further details, see: Eurostat. *Intramural R&D expenditure (GERD) by sectors of performance [rd\_e\_gerdtot]*. <https://ec.europa.eu/eurostat/data/database>; and OCDE. *Gross domestic product (GDP)*; and *Capital formation by activity ISIC rev4*. <https://stats.oecd.org/>.

<sup>61</sup> Spain made, on average per year, 33 patent applications per million inhabitants between 2006 and 2017. For the same period, this number amounted to 223 for the EU-8 and 113 for the EU-28. Although the gap remains wide, there has been significant progress in this field in recent years. In 2019, Spain made 1,887 patent applications, compared to 1,471 in 2014. For further details, see: European Patent Office. "Patent Index 2019." European Patent Office, <https://www.epo.org/about-us/annual-reports-statistics/statistics/2019.html>; and Eurostat. *Patent applications to the European patent office (EPO) by priority year [tsc00009]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>62</sup> The EU-8 and EU-22 are constructed as the simple average of the values of the individual countries. The EU-22 consists of the EU-27 member countries that are also members of the OECD. This excludes Bulgaria, Croatia, Cyprus, Malta and Romania. For further details, see:



OCDE. *Gross domestic product (GDP)*; and *Capital formation by activity ISIC rev4*. <https://stats.oecd.org/>.

<sup>63</sup> Flachenecker, Florian, *et al.* “High Growth Enterprises: demographics, finance & policy measures - Factsheet Spain. Annex 4.8 to the JRC technical report.” *Comisión Europea JRC*, 2020. <https://doi.org/10.2760/34219>.

<sup>64</sup> The Atlas of Complexity is a project created in 2011 by Harvard and MIT, and is based on the idea that a country's economic success lies in its ability to produce an ever-widening range of goods (*diversification*) and, at the same time, increasingly complex products that few economies produce (*ubiquity*). Thus, the greater the economic complexity of a country, the higher its long-term income level can be and the lower its vulnerability to economic cycles. Refer to: Atlas of Economic Complexity. “Country & Product Complexity Rankings.” Atlas of Economic Complexity, <https://atlas.cid.harvard.edu/rankings>.

<sup>65</sup> Data in euros, adjusted for purchasing power differences. The EU-8 is constructed as the simple average of the values of the individual reported countries, and the EU-27 is the aggregate indicator reported by Eurostat. For further details, see: European Commission. *Science, Research and Innovation Performance of the EU 2020: A fair, green and digital Europe*. Luxembourg: Publication Office of the European Union, 2020. <https://ec.europa.eu/research/srip/interactive/>; and Eurostat. *Intramural R&D expenditure (GERD) by sectors of performance [rd\_e\_gerdtot]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>66</sup> The ICT (information and communication technologies) services sector in Spain represents 3.6% of the total gross value added in 2019, compared to the EU-8 average of 5.2%. Refer to: Eurostat. *Gross value added and income by A\*10 industry breakdowns [nama\_10\_a10]*. [https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama\\_10\\_a10&lang=en](https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama_10_a10&lang=en).

<sup>67</sup> The three stages of risk capital financing are the following: 1) seed (the initial funding to test a new idea), 2) first stage (expenses associated with marketing and developing the product in its early stages) and 3) second stage (the company is already selling the product, but is not yet making a profit). The EU-8 and EU-27 are constructed as the simple average of the values of the individual countries. The EU-27 consists of the EU-27 member countries that are also members of the OECD. This excludes Bulgaria, Croatia, Cyprus, Malta and Romania. For further details, see: OCDE. *Venture capital investments*. <https://stats.oecd.org/>.

<sup>68</sup> Haugh, David, *et al.* “Fostering innovative business investment in Spain.” *OECD Economics Department Working Papers*, n.º 1387, Paris: OECD Publishing, 2017. <https://doi.org/10.1787/f957c2cc-en>.

<sup>69</sup> COTEC. “El gasto financiero lastró un año más en 2019 la ejecución del presupuesto estatal para I+D+i.” COTEC. <https://cotec.es/el-gasto-financiero-lastro-un-ano-mas-en-2019-la-ejecucion-del-presupuesto-estatal-para-idi/>.

<sup>70</sup> Ducal, Juan, and Raül Santaaulàlia-Llopis. “On the Inefficiency of R&D Subsidies.” *Barcelona GSE Working Paper Series*, on the press.

<sup>71</sup> Alsina Burgués, Victòria, and Eduardo González de Molina. “La colaboración público-privada como vector de innovación: casos de éxito en España.” *Revista Vasca de Gestión de Personas y Organizaciones Públicas*, n.º Extra 3, 2019. [https://www.ivap.euskadi.eus/contenidos/informacion/especial\\_3\\_revvgp/en\\_def/Alsina%20%20Gonzalez%20122\\_139.pdf](https://www.ivap.euskadi.eus/contenidos/informacion/especial_3_revvgp/en_def/Alsina%20%20Gonzalez%20122_139.pdf).

<sup>72</sup> See, among others: Fundación Alternativas. *Informe sobre la Ciencia y la Tecnología en España*. Madrid, 2017. <https://www.fundacionalternativas.org/las-publicaciones/informes/informe-sobre-la-ciencia-y-la-tecnologia-en-espana>; and Fundación Conocimiento y Desarrollo. *Informe CYD 2019*. Barcelona, 2020. <https://www.fundacioncyd.org/publicaciones-cyd/informe-cyd-2019/>.

<sup>73</sup> According to Kollmann *et al.*, the *startups* founded by universities accounted for 1% of the total in Spain in 2016, far behind some of the EU-8 countries: Germany (13%), Finland (11%), Austria (9%), France (7%) and Belgium (6%); but also from other EU countries such as Italy (14%), Portugal (9%) or Greece (6%). In addition, it is worth noting that in recent years, the creation of *startups* from Spanish universities has fallen from levels that were already very low. For example, 77 *spin-offs* were created in 2018, the lowest number observed between 2007-18. Lack of funding and poor links with the business world are the main factors explaining this behaviour. For further details, see: Fundación Conocimiento y Desarrollo. *Informe CYD 2019*. Barcelona, 2020. <https://www.fundacioncyd.org/publicaciones-cyd/informe-cyd-2019/>; and Kollmann, Tobias, *et al.* “European Startup Monitor 2016.” *European Startup Monitor*, 2016. [http://europeanstartupmonitor.com/fileadmin/esm\\_2016/report/ESM\\_2016.pdf](http://europeanstartupmonitor.com/fileadmin/esm_2016/report/ESM_2016.pdf).

<sup>74</sup> The EU-8 and EU-27 are constructed as the weighted average of the values of the individual countries, with population being the reference for the calculation of weights. For further details, see: Eurostat. *Population on 1 January by age and sex [demo\_pjan]*. <https://ec.europa.eu/eurostat/data/database>; and Scimago Journal & Country Rank. *Published documents*. <https://www.scimagojr.com/countryrank.php?year=2019>.

<sup>75</sup> Total R&D expenditure includes expenditure by the General Government, higher education, the business sector and non-profit institutions. For this purpose, expenditure by non-profit institutions is not included, given their relatively low importance. The EU-8 is constructed as the simple average of the values of the individual reported countries, and the EU-27 is the aggregate indicator reported by Eurostat. See: Eurostat. *Intramural R&D expenditure (GERD) by sectors of performance [rd\_e\_gerdtot]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>76</sup> The EU-8 is constructed as the simple average of the values of the individual countries, and the EU-27 is the aggregate indicator reported by the European Commission. For further details, see: European Commission. *The Digital Economy and Society Index (DESI), 2020 Spain*. Luxembourg: Publication Office of the European Union, 2020. [https://administracionelectronica.gob.es/pae\\_Home/dam/jcr:7995e8b9-a135-4268-8a0a-1581fba1c537/DESI2020-SPAIN-ENG.pdf](https://administracionelectronica.gob.es/pae_Home/dam/jcr:7995e8b9-a135-4268-8a0a-1581fba1c537/DESI2020-SPAIN-ENG.pdf).

<sup>77</sup> Andrews, Dan, Chiara Criscuolo, and Peter N. Gal. “The Best versus the Rest: The Global Productivity Slowdown, Divergence across Firms and the Role of Public Policy.” *OECD Productivity Working Papers*, n.º 5, Paris: OECD Publishing, 2016. <https://doi.org/10.1787/63629cc9-en>.

<sup>78</sup> The EU-8 is constructed as the simple average of the values of the individual countries. Data from 2018. For further details, see: Eurostat. *Big data analysis [isoc\_eb\_bd]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>79</sup> A person is considered to telework if they do so on a regular or occasional basis. The EU-8 is constructed as the simple average of

the values of the individual countries. Data from 2019 for employed persons aged 15-64. For further details, see: Eurostat. *Employed persons working from home as a percentage of the total employment, by sex, age and professional status (%) [lfsa\_ehomp]*. <https://ec.europa.eu/eurostat/data/database>; and Milasi, Santo, Ignacio González-Vázquez, and Enrique Fernández-Macías “Telework in the EU before and after the COVID-19: where we were, where we head to.” *JRC Science for Policy Briefs*, n.º 120845, 2020. [https://ec.europa.eu/jrc/sites/jrcsh/files/jrc120945\\_policy\\_brief\\_-\\_covid\\_and\\_telework\\_final.pdf](https://ec.europa.eu/jrc/sites/jrcsh/files/jrc120945_policy_brief_-_covid_and_telework_final.pdf).

<sup>80</sup> The EU-8 is constructed as the simple average of the values of the individual countries, and the EU-27 is the aggregate indicator reported by Eurostat. For further details, see: Eurostat. *E-commerce sales [isoc\_ec\_eseln2]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>81</sup> For further details, see: Mora-Sanguinetti, Juan S., and Andrés Fuentes. “An analysis of productivity performance in Spain before and during the crisis: Exploring the role of institutions.” *OECD Economics Department Working Papers*, n.º 973, Paris: OECD Publishing, 2012. <https://www.oecd-ilibrary.org/docserver/5k9777lqshs5-en.pdf?expires=1606146179&id=id&accname=guest&checksum=61D7F70D1C3EF66F0DEA173C9B302973>; Rodrik, Dani, Arvind Subramanian, and Francesco Trebbi. “Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development.” *Journal of Economic Growth* 9, n.º 2, 2004. <https://www.jstor.org/stable/40212696>; and Rodríguez-Pose, Andrés, and Roberto Ganau. “Institutions and the Productivity Challenge for European Regions.” *European economy discussion paper* 116, European Commission, 2019. [https://ec.europa.eu/info/sites/info/files/economy-finance/dp116\\_en.pdf](https://ec.europa.eu/info/sites/info/files/economy-finance/dp116_en.pdf).

<sup>82</sup> World Justice Project. “Rule of Law Index.” World Justice Project, <https://worldjusticeproject.org/rule-of-law-index/global>.

<sup>83</sup> The EU-8 and EU-27 are constructed as the simple average of the values of the individual countries. For further details, see: World Bank. *Worldwide Governance Indicators*. <https://databank.worldbank.org/source/worldwide-governance-indicators>.

<sup>84</sup> Partly as a result of these developments, Spain has improved significantly in the OECD’s market regulation index (1998-2013) to levels similar to those of the EU-8 in 2018. For further details, see: OCDE. “Indicators of Product Market Regulation.” OECD, <https://www.oecd.org/economy/reform/indicators-of-product-market-regulation/>.

<sup>85</sup> For example, the *Ley del Mercado Único* of 2013. See: Official State Gazette. *Ley 20/2013, de 9 de diciembre, de garantía de la unidad de mercado*. Madrid, 2013. <https://www.boe.es/boe/dias/2013/12/10/dfs/BOE-A-2013-12888.pdf>.

<sup>86</sup> Inefficiencies in the allocation of capital across companies tend to be greater in sectors where regulatory hurdles are more significant. For further details, see: García-Santana, Manuel, *et al.* “Growing like Spain: 1995-2007.” *International Economic Review* 61, n.º 1, 2019. <https://doi.org/10.1111/iere.12427>.

<sup>87</sup> According to the *Doing Business 2020* ranking prepared by the World Bank, Spain has restrictions for starting a business, obtaining a building permit, registering property or resolving insolvency that are still higher than those of the EU-8 countries. Refer to: World Bank. “Ease of Doing Business Rankings.” World Bank. <https://www.doingbusiness.org/en/rankings>.

<sup>88</sup> Spain has higher barriers to competition in the main branches of the services sector than the EU-8 and EU-22 average. The EU-22 consists of the EU-27 member countries that are also members of the OECD. This excludes Bulgaria, Croatia, Cyprus, Malta and Romania. For further details, see: Alonso-Borrego, César. “Firm behavior, market deregulation and productivity in Spain.” *Banco de España, Documentos de trabajo*, n.º 1035, 2010. <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSerias/DocumentosTrabajo/10/Fic/dt1035e.pdf>; y OCDE. “Indicators of Product Market Regulation.” OECD, <https://www.oecd.org/economy/reform/indicators-of-product-market-regulation/>.

<sup>89</sup> There are labour or tax regulations aimed at favouring SMEs but which, de facto, discourage their growth when they exceed a certain threshold, as they entail, among other things, the obligation of an external audit, a greater probability of tax inspection or lower bonuses in social security payments. For further details, see: Almunia, Miguel, and David López-Rodríguez. “Under the Radar: The Effects of Monitoring Firms on Tax Compliance.” *American Economic Journal*, 2018. <https://doi.org/10.1257/pol.20160229>; and Fariñas, José Carlos, and Elena Huergo. “Demografía empresarial en España: tendencias y regularidades.” *FEDEA, Estudios sobre la Economía Española*, n.º 2015/24, 2015. <http://documentos.fedea.net/pubs/eee/eee2015-24.pdf>.

<sup>90</sup> García-Posada Gómez, Miguel. “Análisis de los procedimientos de insolvencia en España en el contexto de la crisis del COVID-19: los concursos de acreedores, los preconcursos y la moratoria concursal.” *Banco de España, Documentos Ocasionales*, n.º 2029, 2020. <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSerias/DocumentosOcasionales/20/Fich/do2029.pdf>.

<sup>91</sup> In addition, among the regulatory aspects that affect the Spanish labour market and that limit, to a greater or lesser extent, the progress of productivity, the following should be noted: 1) the differences in termination costs between temporary and permanent contracts; 2) the low penalties for the fraudulent use of temporary contracts; and 3) the fact that collective bargaining does not always guarantee the link between wages and productivity. For further details, see chapter 7.

<sup>92</sup> In the results of the *Single Market Scoreboard* for 2019, the lower relative weight of tenders, the low rate of publication of contract notices or the requirements for bidding companies, which discourage the participation of start-ups, are some of the elements that deserve to be highlighted. For further details, see: European Commission. “Single Market Scoreboard 2019.” European Commission, [https://ec.europa.eu/internal\\_market/scoreboard/performance\\_per\\_policy\\_area/public\\_procurement/index\\_en.htm](https://ec.europa.eu/internal_market/scoreboard/performance_per_policy_area/public_procurement/index_en.htm).

<sup>93</sup> Although it constitutes a relevant source of income and work for many people in those countries where it has a high weight, informality tends to be associated with lower economic growth, reflecting relevant inefficiencies that affect the economy as a whole. The costs associated with informality are wide-ranging and include labour market distortions, lower public revenues, poorer provision of public goods, restricted access to finance for households and firms, and lower innovation and business productivity. For further details, see: Kelmanson, Ben, *et al.* “Explaining the Shadow Economy in Europe: Size, Causes and Policy Options.” *IMF Working Paper*, n.º 19/278, 2019. <https://www.imf.org/en/Publications/WP/Issues/2019/12/13/Explaining-the-Shadow-Economy-in-Europe-Size-Causes-and-Policy-Options-48821>.

<sup>94</sup> The EU-8 and EU-27 are constructed as the simple average of the values of the individual countries. For further details, see: Eurostat. *Electricity prices by type of user [ten00117]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>95</sup> The EU-8 is constructed as the simple average of the values of the individual countries. For further details, see: Medina, Leandro, and Friedrich Schneider. "Shadow Economies Around the World: What Did We Learn Over the Last 20 Years?" *IMF Working Papers*, n.º 18/17, 2018. <https://www.imf.org/en/Publications/WP/Issues/2018/01/25/Shadow-Economies-Around-the-World-What-Did-We-Learn-Over-the-Last-20-Years-45583>.

<sup>96</sup> Banco de España. "La dinámica empresarial en España: características, determinantes e implicaciones." In Banco de España. *Informe anual 2015*. Madrid, 2016. 109-138.

<sup>97</sup> *Ibid.*

<sup>98</sup> This could partly explain the relatively higher percentage of companies operating on the verge of non-viability in our country. Companies on the verge of non-viability are defined as companies with a low ratio of operating income to interest expense, suggesting that they do not earn enough profit to repay bank loans. In Spain, between 2014 and 2016, 11% of companies in industry and 10% in services, on average, were operating in this situation, compared to 7% and 5% in Germany, Sweden, Finland and France. For further details, see: McGowan, Müge Adalet, Dan Andrews, and Valentine Millot. "The Walking Dead?: Zombie Firms and Productivity Performance in OECD Countries." *OECD Economics Department Working Papers*, n.º 1372, 2017. <https://doi.org/10.1787/180d80ad-en>.

<sup>99</sup> Between 1995 and 2007, inefficiencies in capital allocation were exacerbated by the low interest rate environment and abundant liquidity (in those years, capital flowed to a greater extent to inefficient companies operating even in oversupplied sectors). In fact, if these favourable financing conditions had been properly exploited, Spain's productivity growth would have reached 2% per year, which would have placed our country among the most productive in the OECD. However, during the last decade, coinciding with the restructuring in the banking sector, the increase in the self-financing capacity of companies (higher savings) and the loss of weight of financing-intensive sectors such as construction, a certain favourable selection has been observed in the allocation of capital, with an improvement in the flow of financing towards more productive and healthy companies. For further details, see: Fu, Chenxu, and Enrique Moral-Benito. "The evolution of Spanish total factor productivity since the global financial crisis." *Banco de España, Documentos Ocasionales*, n.º 1808, 2018. <http://dx.doi.org/10.2139/ssrn.3272737>; García-Santana, Manuel, *et al.* "Growing like Spain: 1995-2007." *International Economic Review* 61, n.º 1, 2019. <https://doi.org/10.1111/iere.12427>; Gopinath, Gita, *et al.* "Capital Allocation and Productivity in South Europe." *The Quarterly Journal of Economics* 132, n.º 4, 2017. <https://doi.org/10.1093/qje/qjx024>; Haugh, David, *et al.* "Fostering innovative business investment in Spain." *OECD Economics Department Working Papers*, n.º 1387, Paris: OECD Publishing, 2017. <https://doi.org/10.1787/f957c2cc-en>; and Moral-Benito, Enrique. "The microeconomic origins of the Spanish boom." *Banco de España, Documentos Ocasionales*, n.º 1805, 2018. <http://dx.doi.org/10.2139/ssrn.3176999>.

<sup>100</sup> SMEs exporting goods for less than 1 million euros per year are

considered. It is worth mentioning that the difference between the percentage of small and medium-sized enterprises exporting is significant, as is the case in other European economies. For further details, see: Gutiérrez Chacón, Eduardo, and César Martín Machuca. "Exporting Spanish Firms. Stylized facts and trends." *Banco de España, Documentos Ocasionales*, n.º. 1903, 2019. <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSerias/DocumentosOcasionales/19/Files/do1903e.pdf>; and Falk, Martin, *et al.* *Drivers of SME Internationalisation Implications for firm growth and competitiveness*. Luxembourg: Publication Office of the European Union, 2014. <https://op.europa.eu/en/publication-detail/-/publication/d09de1b2-6ee0-4d0a-95b1-3c7dc40f8fec/language-en/format-PDF/source-search>.

<sup>101</sup> The EU-8 and EU-22 are constructed as the simple average of the values of the individual countries. The EU-22 consists of the EU-27 member countries that are also members of the OECD, which excludes Bulgaria, Croatia, Cyprus, Malta and Romania. Lithuania is also not included due to lack of data availability. For further details, see: OCDE. *OECD Economic Surveys: Spain 2018, Fig. 37*. [https://doi.org/10.1787/eco\\_surveys-esp-2018-en](https://doi.org/10.1787/eco_surveys-esp-2018-en).

<sup>102</sup> Data in constant prices, adjusted for differences in purchasing power. Data from 2014 or latest available year. The EU-8 is constructed as the simple average of the values of the individual countries. For further details, see: OCDE. *OECD Economic Surveys: Spain 2018, Fig. 37*. [https://doi.org/10.1787/eco\\_surveys-esp-2018-en](https://doi.org/10.1787/eco_surveys-esp-2018-en).

<sup>103</sup> For further details on the relationship between human capital and technology adoption, see: Cuadrado, Pilar, Enrique Moral-Benito, and Irune Solera. "A sectoral anatomy of the Spanish productivity puzzle." *Banco de España, Documentos Ocasionales*, n.º 2006, 2020. <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSerias/DocumentosOcasionales/20/Files/do2006e.pdf>.

<sup>104</sup> Data are the average for the period 2015-19. The EU-8 is constructed as the simple average of the values of the individual countries. See: Eurostat. *Gross value added and income by A\*10 industry breakdowns [nama\_10\_a10]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>105</sup> INE. *Contabilidad nacional trimestral de España: principales agregados*. Madrid: Nota de prensa, 2021. <https://www.ine.es/daco/daco42/daco4214/cntr0420.pdf>.

<sup>106</sup> For further details, see: Banco de España. "Proyecciones macroeconómicas." Banco de España, [https://www.bde.es/bde/es/areas/analisis-economi/analisis-economi/proyecciones-mac/Proyecciones\\_macroeconomicas.html](https://www.bde.es/bde/es/areas/analisis-economi/analisis-economi/proyecciones-mac/Proyecciones_macroeconomicas.html); European Commission. *Statistical Annex. European Economic Forecast. Autumn 2020*. Brussels, 2020. [https://ec.europa.eu/info/sites/info/files/economy-finance/ecfin\\_forecast\\_autumn\\_2020\\_statistical-annex\\_en.pdf](https://ec.europa.eu/info/sites/info/files/economy-finance/ecfin_forecast_autumn_2020_statistical-annex_en.pdf); International Monetary Fund. *Spain 2020 Article IV Consultation*. Washington, D.C., 2020. <https://www.imf.org/en/Publications/CR/Issues/2020/11/12/Spain-2020-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-Executive-49883>; FUNCAS. *Panel de previsiones de la economía española. Marzo 2021*. Madrid, 2021. <https://www.funcas.es/wp-content/uploads/2021/03/PP2103.pdf>; OCDE. *OECD Economic Outlook, Volume 2020 Issue 2*. Paris: OECD Publishing, 2020. <https://doi.org/10.1787/39a88ab1-en>; and Department of Economic Affairs and Digital Transformation. Madrid, 2021. <https://www.lamoncloa.gob.es/serviciosdeprensa/notasprensa/asuntos-economicos/>

Documents/2021/090421-Presentaci%C3%B3n\_previsiones\_macro.pdf.

<sup>107</sup> INE. *Contabilidad nacional trimestral de España: principales agregados* Madrid: Nota de prensa, 2021. <https://www.ine.es/daco/daco42/daco4214/cntr0420.pdf>.

<sup>108</sup> International Monetary Fund. *World Economic Outlook Update, June 2020: A crisis like no other, an uncertain recovery*. Washington, D.C.: IMF, 2020. <https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020>.

<sup>109</sup> Data published before 10 April 2021. For further details, see: Banco de España. "Proyecciones macroeconómicas." Banco de España, [https://www.bde.es/bde/es/areas/analisis-economi/analisis-economi/proyecciones-mac/Proyecciones\\_macroeconomicas.html](https://www.bde.es/bde/es/areas/analisis-economi/analisis-economi/proyecciones-mac/Proyecciones_macroeconomicas.html); European Commission. *Statistical Annex. European Economic Forecast. Winter 2021*. Bruselas, 2021. [https://ec.europa.eu/info/sites/info/files/economy-finance/ecfin\\_forecast\\_winter\\_2021\\_statistical\\_annex\\_en.pdf](https://ec.europa.eu/info/sites/info/files/economy-finance/ecfin_forecast_winter_2021_statistical_annex_en.pdf); International Monetary Fund. *World Economic Outlook Update, January 2021*. Washington, D.C., 2021. <https://www.imf.org/en/Publications/WEO/Issues/2021/01/26/2021-world-economic-outlook-update>; FUNCAS. *Panel de previsiones de la economía española. Marzo 2021*. Madrid, 2021. <https://www.funcas.es/wp-content/uploads/2021/03/PP2103.pdf>; Government of Spain. *Recovery, Transformation and Resilience Plan*. Madrid, 2021. <https://www.lamoncloa.gob.es/presidente/actividades/Documents/2021/130421-%20Plan%20de%20recuperacion%2C%20Transformacion%20y%20Resiliencia.pdf>; OCDE. *Strengthening the recovery: The need for speed*. Paris: OECD Publishing, 2021. <https://www.oecd-ilibrary.org/docserver/34bfd999-en.pdf?expires=1616078435&id=id&accname=guest&checksum=B2EBA592160E1F8EA1D6612AEC99C142>; and Department of Economic Affairs and Digital Transformation. Madrid, 2021. [https://www.lamoncloa.gob.es/serviciosdeprensa/notasprensa/asuntos-economicos/Documents/2021/090421-Presentaci%C3%B3n\\_previsiones\\_macro.pdf](https://www.lamoncloa.gob.es/serviciosdeprensa/notasprensa/asuntos-economicos/Documents/2021/090421-Presentaci%C3%B3n_previsiones_macro.pdf).

<sup>110</sup> These population forecasts are based on the demographic projections made by Eurostat in its baseline scenario (latest available). This scenario envisages a net migration balance of 191,000 people on average between 2021 and 2050, in line with that observed between 2002 and 2018. For further details, see: Eurostat. *Population on 1st January by age, sex and type of projection [proj\_19np]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>111</sup> See the *Apunte metodológico* number IIII.

<sup>112</sup> A larger inflow of immigrants could contain the fall in the working-age population, but would not by itself prevent a scenario of low economic growth. If, instead of taking Eurostat's base scenario as a reference, the "higher immigration" scenario offered by the same institution is considered (it assumes an increase of 62,000 people in the net migration balance for the period 2023-50 with respect to the base scenario and a fall of 1.9 million in the working-age population), Spain's real GDP would grow, on average, by 0.1% more over the same period. For further details, refer to the *Apunte metodológico* número III. For further details on the data sources, see: Eurostat. *Assumptions for net migration by age, sex and type of projection [proj\_19nanmig]; Emigration by age and sex [migr\_emi2]; e Immigration by age and sex [migr\_imm8]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>113</sup> The ranges projected for per capita income in Spain are established according to the periods used to calculate the trends in the variables that determine per capita income. We are referring to the employment rate, hours worked per employed person, human capital, the capital stock (both physical and intangible) and productivity. The lower limit considers the period 1996-2018, while the upper limit covers the years 2010-18. For further details, refer to the *Apunte metodológico* número V. For more information on data sources, see: Aum, Sangmin, Dongya Koh, and Raül Santaeulàlia-Llopis. "Growth facts with intellectual property products: an exploration of 31 OECD new national accounts." *Barcelona GSE Working Paper Series*, n.º 1029, 2018. [https://www.barcelonagse.eu/sites/default/files/working\\_paper\\_pdfs/1029\\_0.pdf](https://www.barcelonagse.eu/sites/default/files/working_paper_pdfs/1029_0.pdf); and Eurostat. *Employment by sex, age and citizenship (1 000) [lfsa\_egan]; Population on 1 January by age and sex [demo\_pjan]; and Population on 1st January by age, sex and type of projection [proj\_19np]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>114</sup> In the case of the EU-8, the analysis carried out, taking the period 1996-2018 for the trend calculation, shows an average GDP per capita growth in the order of 0.8%, above the mid-point of the projected range for Spain. The difference with Spain lies, above all, in a more favourable outlook for total factor productivity (progressive growth in the EU-8 in the recent past as opposed to falls in the Spanish case). The construction of the trends for the EU-8 varies according to the typology of the variables included in the growth accounting exercise.

<sup>115</sup> For further details, refer to: Aum, Sangmin, Dongya Koh, and Raül Santaeulàlia-Llopis. "Growth facts with intellectual property products: an exploration of 31 OECD new national accounts." *Barcelona GSE Working Paper Series*, n.º 1029, 2018. [https://www.barcelonagse.eu/sites/default/files/working\\_paper\\_pdfs/1029\\_0.pdf](https://www.barcelonagse.eu/sites/default/files/working_paper_pdfs/1029_0.pdf); and Eurostat. *Employment by sex, age and citizenship (1 000) [lfsa\_egan]; Population on 1 January by age and sex [demo\_pjan]; and Population on 1st January by age, sex and type of projection [proj\_19np]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>116</sup> Fouré, Jean, Agnès Bénassy-Quéré, and Lionel Fontagné. "The Great Shift: Macroeconomic projections for the world economy at the 2050 horizon." *Centre d'Études Prospectives et d'Informations Internationales (CEPII) Working Paper*, n.º 2010-27, 2012. [http://projects.mcrit.com/foresightlibrary/attachments/The\\_Great\\_Shift\\_Macroeconomic\\_projections\\_for\\_the\\_world\\_economy\\_at\\_2050\\_horizon.pdf](http://projects.mcrit.com/foresightlibrary/attachments/The_Great_Shift_Macroeconomic_projections_for_the_world_economy_at_2050_horizon.pdf). Fouré, Jean, Agnès Bénassy-Quéré, and Lionel Fontagné. "The Great Shift: Macroeconomic projections for the world economy at the 2050 horizon." *Centre d'Études Prospectives et d'Informations Internationales (CEPII) Working Paper*, n.º 2010-27, 2012. [http://projects.mcrit.com/foresightlibrary/attachments/The\\_Great\\_Shift\\_Macroeconomic\\_projections\\_for\\_the\\_world\\_economy\\_at\\_2050\\_horizon.pdf](http://projects.mcrit.com/foresightlibrary/attachments/The_Great_Shift_Macroeconomic_projections_for_the_world_economy_at_2050_horizon.pdf).

<sup>117</sup> PriceWaterhouseCoopers. *The World in 2050, Will the shift in global economic power continue?* 2015. <https://www.pwc.com/gx/en/issues/the-economy/assets/world-in-2050-february-2015.pdf>. PriceWaterhouseCoopers. *The World in 2050, Will the shift in global economic power continue?* 2015. <https://www.pwc.com/gx/en/issues/the-economy/assets/world-in-2050-february-2015.pdf>.

<sup>118</sup> European Commission *The 2018 Ageing Report: Economic and Budgetary Projections for the EU Member States (2016-2070)*. Luxembourg: Publications Office of the European Union, 2018. <https://doi.org/10.2765/615631>. European Commission. *The 2018 Ageing*



Report: Economic and Budgetary Projections for the EU Member States (2016-2070). Luxembourg: Publications Office of the European Union, 2018. <https://doi.org/10.2765/615631>.

<sup>119</sup> Guillemette, Yvan, and David Turner. "The Long View: Scenarios for the World Economy to 2060." *OECD Economic Policy Papers*, n.º 22, Paris: OECD Publishing, 2018. <https://doi.org/10.1787/b4f4e03e-en>. Guillemette, Yvan, and David Turner. "The Long View: Scenarios for the World Economy to 2060." *OECD Economic Policy Papers*, n.º 22, Paris: OECD Publishing, 2018. <https://doi.org/10.1787/b4f4e03e-en>.

<sup>120</sup> For the construction of the ranking, real GDP has been used as a reference variable. In the case of the European Commission, it is expressed in 2015 euros, adjusted for purchasing power differences; in that of the *Centre d'Études Prospectives et d'Informations Internationales*, in 2005 dollars; for PriceWaterhouseCoopers in 2014 dollars; and for the OECD, in 2010 dollars. In addition, in the case of the European Commission, the average annual GDP growth between 2016 and 2070 set out in the report is applied to the value of real GDP in 2016. In the case of the OECD, only real GDP per capita growth between 2018 and 2060 is detailed, and therefore data from the World Bank (2018 GDP in 2010 dollars) and the United Nations (population in 2020 and 2060) are used for the transformation to real GDP. For further details, see: World Bank. *GDP per capita (constant 2010 US\$)*. <https://data.worldbank.org/indicator/NY.GDP.PCAP.KD>; European Commission. *The 2018 Ageing Report: Economic and Budgetary Projections for the EU Member States (2016-2070)*. Luxembourg: Publications Office of the European Union, 2018. <https://doi.org/10.2765/615631>; Eurostat. *Gross domestic product at market prices [TECO0001]*. <https://ec.europa.eu/eurostat/data/database>; Fouré, Jean, Agnès Bénassy-Quéré, and Lionel Fontagné. "The Great Shift: Macroeconomic projections for the world economy at the 2050 horizon." *Centre d'Études Prospectives et d'Informations Internationales (CEPII) Working Paper*, n.º 2010-27, 2012. [http://projects.mcrit.com/foresightlibrary/attachments/The\\_Great\\_Shift\\_Macroeconomic\\_projections\\_for\\_the\\_world\\_economy\\_at\\_2050\\_horizon.pdf](http://projects.mcrit.com/foresightlibrary/attachments/The_Great_Shift_Macroeconomic_projections_for_the_world_economy_at_2050_horizon.pdf); Guillemette, Yvan, and David Turner. "The Long View: Scenarios for the World Economy to 2060." *OECD Economic Policy Papers*, n.º 22, Paris: OECD Publishing, 2018. <https://doi.org/10.1787/b4f4e03e-en>; United Nations. *World Population Prospects 2019*. <https://population.un.org/wpp/Download/Probabilistic/Population/>; and PriceWaterhouseCoopers. *The World in 2050, Will the shift in global economic power continue?* 2015. <https://www.pwc.com/gx/en/issues/the-economy/assets/world-in-2050-february-2015.pdf>.

<sup>121</sup> Total factor productivity or TFP is the difference between the growth rate of production and the growth rate of the production factors (labour and capital), each weighted by its weight. It approximates the degree of efficiency in the use of the factors of production available to an economy.

<sup>122</sup> The same evolution presented for the TFP of Spain can also be found in Fu and Moral-Benito, as well as in Prados de la Escosura and Rosés. Other sources such as the OECD or AMECO show a similar evolution, albeit with a more moderate reduction between 1995 and 2013. The construction of the EU-8 varies according to the typology of variables included in the growth accounting exercise. For further details, see the *Apunte metodológico* número V. For more data and ideas: AMECO. *Total factor productivity [ZVGDF]*. [https://ec.europa.eu/economy\\_finance/ameco/user/serie/SelectSerie.cfm](https://ec.europa.eu/economy_finance/ameco/user/serie/SelectSerie.cfm); Aum, Sangmin, Dongya Koh, and Raül Santaeulàlia-Llopis. "Growth facts with intellectual property products: an exploration of 31 OECD new national accounts."

*Barcelona GSE Working Paper Series*, n.º 1029, 2018. [https://www.barcelonagse.eu/sites/default/files/working\\_paper\\_pdfs/1029\\_0.pdf](https://www.barcelonagse.eu/sites/default/files/working_paper_pdfs/1029_0.pdf); Fu, Chenxu, and Enrique Moral-Benito. "The evolution of Spanish total factor productivity since the global financial crisis." *Banco de España, Documentos Ocasionales*, n.º 1808, 2018. <http://dx.doi.org/10.2139/ssrn.3176999>. *Level of GDP per capita and productivity*. <https://stats.oecd.org/>; and Prados de la Escosura, Leandro, and Joan Rosés. "Accounting for growth in Spain, 1850-2019." *CEPR Discussion paper*, n.º 15380. 2020. [https://frdelpino.es/investigacion/wp-content/uploads/2020/10/LPE-JRR-Accounting\\_for\\_Growth\\_in\\_Spain\\_1850-2019-CEPR\\_dp\\_15380-1.pdf](https://frdelpino.es/investigacion/wp-content/uploads/2020/10/LPE-JRR-Accounting_for_Growth_in_Spain_1850-2019-CEPR_dp_15380-1.pdf).

<sup>123</sup> According to IMF estimates, for a country with a female employment rate similar to Spain's, closing the gender gap in employment could raise the level of GDP by 15-20% thanks, in part, to an increase in productivity. For further details, refer to: Dabla-Norris, Era, and Kalpana Kochhar. "Closing the Gender Gap". *IMF*, 2019, <https://www.imf.org/external/pubs/ft/fandd/2019/03/pdf/fd0319.pdf>; and Ostry, Jonathan David, et al. "Economic Gains from Gender Inclusion: New Mechanisms, New Evidence." *IMF Staff Discussion Note*, 2018. <https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2018/10/09/Economic-Gains-From-Gender-Inclusion-New-Mechanisms-New-Evidence-45543>.

<sup>124</sup> The increase in the employment rate is between 1988 and 2018 (latest year available). For further details, see: OCDE. *Level of GDP per capita and productivity; and Annual Labour Force Statistics summary tables*. <https://stats.oecd.org/>.

<sup>125</sup> For Spain, the lower limit of the projected range for 2050 is the result of extrapolating into the future the trends observed between 1996 and 2018 for the variables that determine per capita income. In the case of the upper limit of the range, this is the one that results from establishing 2010-18 as the time period for the calculation of these trends. For the EU-8, the per capita income figure for 2050 is obtained by extrapolating the trends between 1996-2018 to the income determinants. For further details, refer to: Aum, Sangmin, Dongya Koh, and Raül Santaeulàlia-Llopis. "Growth facts with intellectual property products: an exploration of 31 OECD new national accounts." *Barcelona GSE Working Paper Series*, n.º 1029, 2018. [https://www.barcelonagse.eu/sites/default/files/working\\_paper\\_pdfs/1029\\_0.pdf](https://www.barcelonagse.eu/sites/default/files/working_paper_pdfs/1029_0.pdf); and Eurostat. *Employment by sex, age and citizenship (1 000) [lfsa\_egan]; Population on 1 January by age and sex [demo\_pjan]; y Population on 1st January by age, sex and type of projection [proj\_19np]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>126</sup> Eurostat. *Population on 1st January by age, sex and type of projection [proj\_19np]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>127</sup> In Europe, demographic ageing could reduce total factor productivity growth by 0.2 percentage points per year for the next two decades. This effect could be greater in countries such as Spain, where ageing will be particularly pronounced. See: Aiyar, Shekhar, Christian Ebeke, and Xiaobo Shao. "The Impact of Workforce Aging on European Productivity." *IMF Working Papers*, n.º 16/238, 2016. <https://www.imf.org/external/pubs/ft/wp/2016/wp16238.pdf>. For a more extensive discussion of the effects of ageing on productivity, see: Batsaikhan, Uuriintuya and Bruegel. "Embracing the silver economy." *Bruegel Blog Post*, [https://www.bruegel.org/2017/04/embracing-the-silver-economy/?utm\\_content=buffer16162&utm\\_medium=social&utm\\_source=twitter.com&utm\\_campaign=buffer+\(bruegel\)](https://www.bruegel.org/2017/04/embracing-the-silver-economy/?utm_content=buffer16162&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer+(bruegel)).

<sup>128</sup> For further details, see: Anghel, Brindusa, and Aitor Lacuesta. “Envejecimiento, productividad y situación laboral.” *Banco de España, Artículos Analíticos, Boletín Económico*, n.º 1/2020, 2020. <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/InformesBoletinesRevistas/ArticulosAnaliticos/20/T1/descargar/Fich/be2001-art2.pdf>; and Azoulay, Pierre, et al. “Age and High-Growth Entrepreneurship.” *American Economic Review: Insights* 2, n.º 1, 2020. <https://doi.org/10.1257/aeri.20180582>.

<sup>129</sup> WHO. *Active Ageing: A Policy Framework*. Madrid, 2002. [https://apps.who.int/iris/bitstream/handle/10665/67215/WHO\\_NMH\\_NPH\\_02.8.pdf;jsessionid=4D28776C9CD99A8C68187D85164FBDE8?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/67215/WHO_NMH_NPH_02.8.pdf;jsessionid=4D28776C9CD99A8C68187D85164FBDE8?sequence=1).

<sup>130</sup> WHO *World Report on Ageing and Health*. Geneva, 2015. [https://apps.who.int/iris/bitstream/handle/10665/186463/9789240694811\\_eng.pdf;jsessionid=4D697B6C455F69CB1A17C03DD5E6357B?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/186463/9789240694811_eng.pdf;jsessionid=4D697B6C455F69CB1A17C03DD5E6357B?sequence=1).

<sup>131</sup> Technopolis and Oxford Economics for the Directorate-General of Communications Networks, Content & Technology and of the European Commission. *The Silver Economy Study*. 2018. <https://doi.org/10.2759/685036>.

<sup>132</sup> For example, several studies suggest that the development of Artificial Intelligence could generate significant productivity gains and raise the GDP level of Southern European countries by 1% by 2030. For further details, see: Bughin, Jacques, et al. “Notes from the AI frontier – Modeling the impact of AI on the world economy.” *McKinsey Global Institute, Discussion Paper*, 2018. <https://www.mckinsey.com/~/media/McKinsey/Featured%20Insights/Artificial%20Intelligence/Notes%20from%20the%20frontier%20Modeling%20the%20impact%20of%20AI%20on%20the%20world%20economy/MGI-Notes-from-the-AI-frontier-Modeling-the-impact-of-AI-on-the-world-economy-September-2018.ashx>; and PricewaterhouseCoopers. *The macroeconomic impact of artificial intelligence*. 2018. <https://www.pwc.co.uk/economic-services/assets/macro-economic-impact-of-ai-technical-report-feb-18.pdf>.

<sup>133</sup> European Commission. *The Digital Economy and Society Index (DESI)*, 2020 Spain. Luxembourg: Publication Office of the European Union, 2020. [https://administracionelectronica.gob.es/pae\\_Home/dam/jcr:7995e8b9-a135-4268-8a0a-1581fba1c537/DESI2020-SPAIN-ENG.pdf](https://administracionelectronica.gob.es/pae_Home/dam/jcr:7995e8b9-a135-4268-8a0a-1581fba1c537/DESI2020-SPAIN-ENG.pdf).

<sup>134</sup> Spain ranks 15th out of 54 in the *Global IA Index 2019* prepared by Tortoise Media. The European funds (component 16 “National Artificial Intelligence Strategy” of the Recovery, Transformation and Resilience Plan project) also aim at boosting its development over the coming years. For further details, see: Government of Spain. *Recovery, Transformation and Resilience Plan*. Madrid, 2021. <https://www.lamoncloa.gob.es/presidente/actividades/Documents/2021/130421-%20Plan%20de%20recuperacion%2C%20Transformacion%20y%20Resiliencia.pdf>; and Tortoise Media. “The Global AI Index 2019.” Tortoise Media, <https://www.tortoisemedia.com/intelligence/ai/>.

<sup>135</sup> The EU-8 and EU-27 are constructed as the simple average of the values of the individual countries. The *Cisco Global Digital Readiness Index ranking* of 2019 places Spain in 25th position out of 121, the *Readiness for the Future of Production Report* 2018 ranks Spain 29th out of 100 and the *The Network Readiness Index* of 2019 at 26 out of 141. Similar estimates are provided by Kuruczleki et al. For further

details, see: Cisco. *Cisco Global Digital Readiness Index 2019*. San Jose, 2020. [https://www.cisco.com/c/dam/en\\_us/about/csr/reports/global-digital-readiness-index.pdf](https://www.cisco.com/c/dam/en_us/about/csr/reports/global-digital-readiness-index.pdf); Kuruczleki, Éva, et al. “The Readiness of the European Union to Embrace the Fourth Industrial Revolution.” *Management* 11, n.º 4, 2016. [http://www.fm-kp.si/zalozba/ISSN/1854-4231/11\\_327-347.pdf](http://www.fm-kp.si/zalozba/ISSN/1854-4231/11_327-347.pdf); Portulans Institute. *The Network Readiness Index*. Washington D.C., 2019. <https://networkreadinessindex.org/wp-content/uploads/2020/03/The-Network-Readiness-Index-2019-New-version-March-2020.pdf>; and World Economic Forum *Readiness for the Future of Production Report 2018*. Geneva, 2018 [http://www3.weforum.org/docs/FOP\\_Readiness\\_Report\\_2018.pdf](http://www3.weforum.org/docs/FOP_Readiness_Report_2018.pdf).

<sup>136</sup> The production of manufacturing goods with medium-high technological content accounted for 4% of employment in Spain in 2019, as compared to 5% on average in the EU-8. The difference is wider in the case of knowledge-intensive services: while in Spain they account for 36% of total employment, in the EU-8 this figure rises to 46%. See: Eurostat. *Employment in high and medium-high technology manufacturing sectors and knowledge-intensive service sectors [tsc00011]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>137</sup> Haskel, Jonathan, and Stian Westlake. *Capitalism without Capital: The Rise of the Intangible Economy*. Princeton: Princeton University Press, 2018.

<sup>138</sup> On this question, see, among others: Graetz, Georg, and Guy Michaels. “Robots at Work.” *Review of Economics and Statistics* 100, n.º 5, 2018. [https://doi.org/10.1162/rest\\_a\\_00754](https://doi.org/10.1162/rest_a_00754); and Jungmittag, Andre, and Annarosa Pesole. “The impact of robots on labour productivity: A panel data approach covering 9 industries and 12 countries.” *JRC Working Papers Series on Labour, Education and Technology*, n.º 118044, 2019. <https://ec.europa.eu/jrc/sites/jrcsh/files/jrc118044.pdf>.

<sup>139</sup> For example, Klenert, Fernández-Macías, and Antón find that, in Europe between 1995 and 2015, one additional robot per 1,000 workers was associated with a 0.6% increase in total employment. Similarly, Koch, Manuylov, and Smolka show that, in Spain, manufacturing firms that adopted robots between 1990 and 1998 experienced strong productivity gains and, thanks to them, increased their employment by 10%. Other studies find a similar effect in neighbouring countries. In Italy, results indicate that, on average, the adoption of robots in manufacturing did not negatively affect employment. See: Klenert, David, Enrique Fernández-Macías, and José-Ignacio Antón. “Do robots really destroy jobs? Evidence from Europe.” *JRC Working Papers Series on Labour, Education and Technology*, n.º 118393, 2020. <https://ec.europa.eu/jrc/sites/jrcsh/files/jrc118393.pdf>; Koch, Michael, Ilya Manuylov, and Marcel Smolka. “Robots and firms.” *CESifo Working Papers*, n.º 7608, 2019. [https://www.ifo.de/DocDL/cesifo1\\_wp7608.pdf](https://www.ifo.de/DocDL/cesifo1_wp7608.pdf); and Dottori, Davide. “Robots and employment: Evidence from Italy.” *Questioni di Economia e Finanza*, n.º 572, 2020. <https://www.sipotra.it/wp-content/uploads/2020/09/Robots-and-employment-evidence-from-Italy.pdf>.

<sup>140</sup> The EU-8 is constructed as the weighted average of the values of the individual countries, with GDP being the reference for the calculation of weights, and the EU-27 from the aggregate indicators reported by Eurostat. For further details, see: Eurostat. *GDP and main components (output, expenditure and income) [nama\_10\_gdp]*; y *High-tech trade by high-tech group of products [htec\_trd\_group4]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>141</sup> The EU-8 and EU-27 is constructed as the simple average of the values of the individual countries. For further details, see: International Federation of Robotics. “Welcome to the IFR Press Conference.” International Federation of Robotics, <https://ifr.org/downloads/press2018/IFR%20World%20Robotics%20Presentation%20-%2018%20Sept%202019.pdf>.

<sup>142</sup> Refer to: Global Wind Energy Council. “Wind turbine sizes keep growing as industry consolidation continues.” Global Wind Energy Council, <https://gwec.net/wind-turbine-sizes-keep-growing-as-industry-consolidation-continues/>; and Schmela, Michael. *EU Market Europe For Solar Power 2019 - 2023*. Solar Power Europe, 2019. [https://www.solarpowereurope.org/wp-content/uploads/2019/12/SolarPower-Europe\\_EU-Market-Outlook-for-Solar-Power-2019-2023\\_.pdf?cf\\_id=5387](https://www.solarpowereurope.org/wp-content/uploads/2019/12/SolarPower-Europe_EU-Market-Outlook-for-Solar-Power-2019-2023_.pdf?cf_id=5387).

<sup>143</sup> Díaz, Antonia, Gustavo A. Marrero, and Luis A. Puch. “Cambio climático, crecimiento económico y el papel de las tecnologías energéticas.” In Javier Andrés (coord.). *Economic Growth*. Madrid: Funcas, Papeles de Economía Española, n.º 164, 2019. 120-133. <https://www.funcas.es/wp-content/uploads/2020/08/PEE164art09.pdf>.

<sup>144</sup> Renewable energy generation costs have fallen dramatically over the last decade. Future energy efficiency gains could substantially raise productivity in the industry. The reduction of production costs associated with the promotion of the circular economy would also contribute to the improvement of business productivity. For further details, see: International Energy Agency. *Multiple Benefits of Energy Efficiency*. Paris, 2019. <https://www.iea.org/reports/multiple-benefits-of-energy-efficiency/productivity>; International Renewable Energy Agency. *Renewable Power Generation Costs in 2019*. Abu Dhabi, 2020. [https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Jun/IRENA\\_Power\\_Generation\\_Costs\\_2019.pdf](https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Jun/IRENA_Power_Generation_Costs_2019.pdf); and Department for Ecological Transition and Demographic Challenge. *Circular Economy Strategy España Circular 2030*. Madrid, 2020. [https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/economia-circular/espanacircular2030\\_def1\\_tcm30-509532.PDF](https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/economia-circular/espanacircular2030_def1_tcm30-509532.PDF).

<sup>145</sup> World Economic Forum. *Fostering Effective Energy Transition 2020 edition*. Geneva, 2020. [http://www3.weforum.org/docs/WEF\\_Fostering\\_Effective\\_Energy\\_Transition\\_2020\\_Edition.pdf](http://www3.weforum.org/docs/WEF_Fostering_Effective_Energy_Transition_2020_Edition.pdf).

<sup>146</sup> Spain invested 3 euros per capita in 2018, compared to 9 euros per capita in the EU-27. For further details, refer to: Eurostat. *Total GBAORD by NABS 2007 socio-economic objectives 2018 [gba\_nabsfin07]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>147</sup> González-Enguino, Mikel, *et al.* “Análisis de impacto del Plan Nacional Integrado de Energía y Clima (PNIEC) 2021-30 de España.” In María José Sanz, and Mikel González-Enguino (eds.). *Transition to a decarbonised economy*. Madrid: Funcas, Papeles de Economía Española, n.º 163, 2020. 9-22. [https://www.funcas.es/wp-content/uploads/Migracion/Articulos/FUNCAS\\_PEE/163art04.pdf](https://www.funcas.es/wp-content/uploads/Migracion/Articulos/FUNCAS_PEE/163art04.pdf).

<sup>148</sup> Díaz, Antonia, Gustavo A. Marrero, Luis A. Puch, and Jesús Rodríguez. “Economic growth, energy intensity and the energy mix.” *Universidad Carlos III de Madrid, Working Paper*, n.º 2019-10, 2019. <https://e-archivo.uc3m.es/bitstream/handle/10016/28461/we1910.pdf?sequence=1>.

<sup>149</sup> See: Department for Ecological Transition and Demographic

Challenge *Impacto económico, de empleo, social y sobre la salud pública del Plan Nacional Integrado de Energía y Clima 2021-2030*. Madrid, 2020. [https://www.miteco.gob.es/images/es/informesocioeconomicopniecconpleto\\_tcm30-508411.pdf](https://www.miteco.gob.es/images/es/informesocioeconomicopniecconpleto_tcm30-508411.pdf); and Department for Ecological Transition and Demographic Challenge. *Long Term Decarbonisation Strategy Anexos*. Madrid, 2020. [https://www.miteco.gob.es/es/prensa/anexoelp2050\\_tcm30-516147.pdf](https://www.miteco.gob.es/es/prensa/anexoelp2050_tcm30-516147.pdf).

<sup>150</sup> Eurofound estimates that Spain's GDP and employment would increase by more than 1% and 0.8%, respectively, compared to a baseline scenario, in 2030. See: Eurofound. *Energy scenario: Employment implications of the Paris Climate Agreement*. Luxembourg: Publications Office of the European Union, 2019. [https://www.eurofound.europa.eu/sites/default/files/ef\\_publication/field\\_ef\\_document/fomeef18003en.pdf](https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/fomeef18003en.pdf).

<sup>151</sup> European Commission. *Europe 2020: A European strategy for smart, sustainable and inclusive growth*. Brussels: European Commission, 2020. <https://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>.

<sup>152</sup> The income per capita gap measures the relative differences in GDP per capita between Spain and the EU-8. GDP per capita is defined as the ratio of GDP (in constant 2015 euros and adjusted for purchasing power differences) to total population. The EU-8 is constructed as the weighted average of the values of the individual countries, with population being the reference for the calculation of weights. For further details, see: Eurostat. *GDP and main components (output, expenditure and income) [nama\_10\_gdp]; Population on 1 January by age and sex [demo\_pjan]; y Purchasing power parities (PPPs), price level indices and real expenditures for ESA 2010 aggregates [prc\_ppp\_ind]*. <https://ec.europa.eu/eurostat/data/database>. The income per capita gap measures the relative differences in GDP per capita between Spain and the EU-8. GDP per capita is defined as the ratio of GDP (in constant 2015 euros and adjusted for purchasing power differences) to total population. The EU-8 is constructed as the weighted average of the values of the individual countries, with population being the reference for the calculation of weights. For further details, see: Eurostat. *GDP and main components (output, expenditure and income) [nama\_10\_gdp]; Population on 1 January by age and sex [demo\_pjan]; y Purchasing power parities (PPPs), price level indices and real expenditures for ESA 2010 aggregates [prc\_ppp\_ind]*. <https://ec.europa.eu/eurostat/data/database>.

<sup>153</sup> Labour productivity is defined as the ratio of GDP (in constant 2015 euros and adjusted for purchasing power differences) to total hours worked. The EU-8 is constructed as the weighted average of the values of the individual countries, with total hours worked being the reference for the calculation of weights. The EU-27 is calculated on the basis of the aggregate indicators reported by Eurostat. For further details, see: Eurostat. *GDP and main components (output, expenditure and income) [nama\_10\_gdp]; Employment by A\*10 industry breakdowns [nama\_10\_a10\_e]; y Purchasing power parities (PPPs), price level indices and real expenditures for ESA 2010 aggregates [prc\_ppp\_ind]*. <https://ec.europa.eu/eurostat/data/database>. Labour productivity is defined as the ratio of GDP (in constant 2015 euros and adjusted for purchasing power differences) to total hours worked. The EU-8 is constructed as the weighted average of the values of the individual countries, with total hours worked being the reference for the calculation of weights. The

EU-27 is calculated on the basis of the aggregate indicators reported by Eurostat. For further details, see: Eurostat. GDP and main components (output, expenditure and income) [nama\_10\_gdp]; Employment by A\*10 industry breakdowns [nama\_10\_a10\_e]; y Purchasing power parities (PPPs), price level indices and real expenditures for ESA 2010 aggregates [prc\_ppp\_ind]. <https://ec.europa.eu/eurostat/data/database>.

<sup>154</sup> The total employment rate is defined as the ratio of total employed persons to the population aged 16-64. The EU-8 is constructed as the weighted average of the values of the individual countries, with working aged 16-64 population being the reference for the calculation of weights. The EU-27 is constructed from the aggregates reported by Eurostat. For further details, see: Eurostat. *Employment by sex, age and citizenship (1 000)* [lfsa\_egan]; y *Population on 1 January by age and sex* [demo\_pjan]. <https://ec.europa.eu/eurostat/data/database>. The total employment rate is defined as the ratio of total employed persons to the population aged 16-64. The EU-8 is constructed as the weighted average of the values of the individual countries, with working age population being the reference for the calculation of weights. The EU-27 is constructed from the aggregates reported by Eurostat. For further details, see: Eurostat. *Employment by sex, age and citizenship (1 000)* [lfsa\_egan]; y *Population on 1 January by age and sex* [demo\_pjan]. <https://ec.europa.eu/eurostat/data/database>

<sup>155</sup> It should be noted that among the headline targets of the EU 2020 strategy, 75% of men and women aged 20-64 should be in employment. In 2019, this employment rate for Spain was 74% for men and 62% for women, below the target and far from the EU-27 average. (79% and 67% respectively). For further details, see: European Commission. Europe 2020: <https://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>; and INE. Tasas de empleo según niveles de educación. Brecha de género [https://www.ine.es/ss/Satellite?L=es\\_ES&c=INESeccion\\_C&cid=1259925461647&p=1254735110672&pagename=ProductosYServicios/PYSLayout&param1=PYSDetalle&param3=1259924822888](https://www.ine.es/ss/Satellite?L=es_ES&c=INESeccion_C&cid=1259925461647&p=1254735110672&pagename=ProductosYServicios/PYSLayout&param1=PYSDetalle&param3=1259924822888).

<sup>156</sup> Total R&D expenditure includes expenditure by the General Government, higher education, the business sector and non-profit institutions. In the case of Spain, R&D expenditure by General Government and higher education represents 0.5% of GDP for the period 2015-19, i.e. about 45% of the country's total R&D expenditure. In the case of the EU-27, expenditure by general government and higher education accounts for 0.7% of GDP, i.e. 34% of aggregate R&D expenditure, while in the EU-8 these proportions are 0.9% and 32% respectively. The EU-8 is constructed as the simple average of the values of the individual reported countries, and the EU-27 is the aggregate indicator reported by Eurostat. For further details, see: Eurostat. *Intramural R&D expenditure (GERD) by sectors of performance* [rd\_e\_gerdtot]. <https://ec.europa.eu/eurostat/data/database>.

<sup>157</sup> The 2020 European Strategy sets an R&D investment target of 3% of GDP. For further details, see: European Commission. *Europe 2020: A European strategy for smart, sustainable and inclusive growth*. Brussels: European Commission, 2020. <https://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>. The 2020 European Strategy sets an R&D investment target of 3% of GDP. For further details, see: European Commission. *Europe 2020: A European*

strategy for smart, sustainable and inclusive growth. Brussels: Comisión Europea, 2020. <https://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>.

<sup>158</sup> The EU-8 is constructed as the simple average of the values of the individual countries, and the EU-27 is the aggregate indicator reported by Eurostat. The EU-8 does not include Denmark due to lack of data availability. The latest available data for Spain is from 2018, and for the EU-8 it is from 2016, 2017 or 2018, depending on the country. For further details, see: Eurostat. *Persons employed in the non-financial business economy by size class of employment* [tin00148]. <https://ec.europa.eu/eurostat/data/database>. The EU-8 is constructed as the simple average of the values of the individual countries, and the EU-27 is the aggregate indicator reported by Eurostat. The EU-8 does not include Denmark due to lack of data availability. The latest available data for Spain is from 2018, while for the EU-8 and EU-27 it is from 2017. For further details, see: Eurostat. *Persons employed in the non-financial business economy by size class of employment* [tin00148]. <https://ec.europa.eu/eurostat/data/database>.

<sup>159</sup> The EU-8 and EU-27 are constructed as the simple average of the values of the individual countries. The latest data available is from 2017. For further details, see: Medina, Leandro, and Friedrich Schneider. "Shadow Economies Around the World: What Did We Learn Over the Last 20 Years?" *IMF Working Papers*, n.º 18/17, 2018. <https://www.imf.org/en/Publications/WP/Issues/2018/01/25/Shadow-Economies-Around-the-World-What-Did-We-Learn-Over-the-Last-20-Years-45583>. The EU-8 and the EU-27 are constructed as the simple average of the values of the individual countries. The latest data available is from 2017. For further details, see: Medina, Leandro, and Friedrich Schneider. "Shadow Economies Around the World: What Did We Learn Over the Last 20 Years?" *IMF Working Papers*, n.º 18/17, 2018. <https://www.imf.org/en/Publications/WP/Issues/2018/01/25/Shadow-Economies-Around-the-World-What-Did-We-Learn-Over-the-Last-20-Years-45583>.

<sup>160</sup> Bloom, Nicholas, John Van Reenen, y Heidi Williams. "A Toolkit of Policies to Promote Innovation." *Journal of Economic Perspectives* 33, n.º 3, 2019. <https://doi.org/10.1257/jep.33.3.163>.

<sup>161</sup> To this end, the implementation of the *Science and Innovation Shock Plan* and the investments foreseen in the "Recovery, Transformation and Resilience Plan" (component 17 "Institutional reform and strengthening of the capacities of the national science, technology and innovation system") could constitute a short-term boost, as could the development of the *Spanish Science, Technology and Innovation Strategy 2021-2027*. For further details, refer to: Government of Spain. *Science and Innovation Shock Plan Hacia una economía basada en el conocimiento*. Madrid, 2020. [https://www.ciencia.gob.es/stfls/MICINN/Ministerio/FICHEROS/Plan\\_de\\_choque\\_para\\_la\\_Ciencia\\_y\\_la\\_Innovacion.pdf](https://www.ciencia.gob.es/stfls/MICINN/Ministerio/FICHEROS/Plan_de_choque_para_la_Ciencia_y_la_Innovacion.pdf); Government of Spain. *Recovery, Transformation and Resilience Plan*. Madrid, 2021. <https://www.lamoncloa.gob.es/presidente/actividades/Documents/2021/130421-%20Plan%20de%20recuperacion%2C%20Transformacion%20y%20Resiliencia.pdf>; and Department of Science and Innovation. *Strategy Spanish Science, Technology and Innovation 2021-2027*. Madrid, 2020. <https://www.ciencia.gob.es/stfls/MICINN/Ministerio/FICHEROS/EECTI-2021-2027.pdf>.

<sup>162</sup> Edquist, Charles. "Towards a holistic innovation policy: Can the Swedish National Innovation Council (NIC) be a role model?" *Research Policy* 48, n.º 4, 2019. <https://doi.org/10.1016/j.respol.2018.10.008>.



<sup>163</sup> In this respect, the Centro de Excelencia "Severo Ochoa" and the Unidades de Excelencia "María de Maeztu" are particularly noteworthy. For further details, see: Department of Science and Innovation. "Apoyo y acreditación de Centros de Excelencia «Severo Ochoa» y a Unidades de Excelencia «María de Maeztu»." Department of Science and Innovation, <https://www.ciencia.gob.es/portal/site/MICINN/menuitem.7eeac5cd345b4f34f09dfd1001432ea0/?vgnnextoid=cba733a6368c2310VgnVCM1000001d04140aRCRD>.

<sup>164</sup> Bell, Alex, et al. "Who Becomes an Inventor in America? The Importance of Exposure to Innovation." *The Quarterly Journal of Economics* 134, n.º 2, 2019. <https://doi.org/10.1093/qje/qjy028>.

<sup>165</sup> European Commission. "European research area (ERA)." European Commission, [https://ec.europa.eu/info/research-and-innovation/strategy/era\\_en#:~:text=The%20European%20Research%20Area%20\(ERA\)%20is%20the%20ambition%20to%20create,and%20technology%20across%20the%20EU.&text=ERA%20was%20launched%20in%202000,revitalise%20it%20began%20in%202018](https://ec.europa.eu/info/research-and-innovation/strategy/era_en#:~:text=The%20European%20Research%20Area%20(ERA)%20is%20the%20ambition%20to%20create,and%20technology%20across%20the%20EU.&text=ERA%20was%20launched%20in%202000,revitalise%20it%20began%20in%202018).

<sup>166</sup> Some examples of venture capital investment experiences. For further details, refer to: Tresmares Capital. "Plataforma de financiación independiente." Tresmares Capital, <https://www.tresmarescapital.com/filosofia/#%20>.

<sup>167</sup> In the particular case of SMEs, the draft of the "Recovery, Transformation and Resilience Plan" dedicates in its component 13 "Boosting SMEs" almost 5 billion euros, of which a significant part is expected to be devoted to their digitalisation and to boosting their growth. See: Government of Spain. *Recovery, Transformation and Resilience Plan*. Madrid, 2021. <https://www.lamoncloa.gob.es/presidente/actividades/Documents/2021/130421-%20Plan%20de%20Recuperacion%2C%20Transformacion%20y%20Resiliencia.pdf>.

<sup>168</sup> The draft "Recovery, Transformation and Resilience Plan" devotes in its component 15 "Digital connectivity, boosting cybersecurity and 5G deployment" almost 4 billion euros to improving telecommunications infrastructure (ultrafast broadband, 5G network deployment) and digital connectivity. See: *Ibid*.

<sup>169</sup> Fraunhofer-Gesellschaft, <https://www.fraunhofer.de/en.html>.

<sup>170</sup> Industrial Technology Research Institute (ITRI), <https://www.itri.org.tw/english/>.

<sup>171</sup> Electronics and Telecommunications Research Institute (ETRI), <https://www.etri.re.kr/eng/main/main.etri>.

<sup>172</sup> TNO innovation for life, <https://www.tno.nl/en/>.

<sup>173</sup> Tecnalía, <https://www.tecnalia.com/>.

<sup>174</sup> The "Green Tech" incubator provides funding to selected startups of 150,000 euros in the pre-seed phase, and of up to 500,000 additional euros for those showing the best results. For further details, see: Linares, Pedro, and Marta Suárez-Varela. "Cómo usar los fondos europeos para acelerar la transición ecológica." *EsadeEcPol-Center for Economic Policy*, n.º 5, 2021. <https://www.esade.edu/ecpol/es/publicaciones/fondos-europeos-transicion-ecologica/>; and Ministère de la Transition Écologique. "La Greentech innovation." Ministère de la Transition Écologique, <https://www.ecologie.gouv.fr/greentech-innovation>.

<sup>175</sup> For further details, see: Lacuesta, Aitor, and Patrocinio Tello. "Los comités nacionales de productividad." *Banco de España, Boletín*

*Económico*, 2016. <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/InformesBoletinesRevistas/BoletinEconomico/descargar/16/nov/fich/be1611-art4.pdf>; and Renda, Andrea, and Sean Dougherty. "Pro-Productivity Institutions: Learning from National Experience." *OECD Education Working Papers*, n.º 7, Paris: OECD Publishing, 2017. <https://doi.org/10.1787/d1615666-en>.

<sup>176</sup> European Commission. "National Productivity Boards." European Commission, [https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/national-productivity-boards\\_en](https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/national-productivity-boards_en).

<sup>177</sup> Institute for Fiscal Studies, <https://www.ifs.org.uk/>.

<sup>178</sup> CPB Netherlands Bureau for Economic Policy Analysis, <https://www.cpb.nl/en>.

<sup>179</sup> The draft of the "Recovery, Transformation and Resilience Plan" devotes, in its component 11 "Modernisation of Public Administrations", around 2,000 million euros to projects for the digitalisation of the General State Administration and the digital transformation and modernisation of territorial public administrations. See: Government of Spain. *Recovery, Transformation and Resilience Plan*. Madrid, 2021. <https://www.lamoncloa.gob.es/presidente/actividades/Documents/2021/130421-%20Plan%20de%20recuperacion%2C%20Transformacion%20y%20Resiliencia.pdf>.

<sup>180</sup> A representative example is the digitalisation process carried out by the Tax Agency.

<sup>181</sup> Agence Française de Développement. "Proyecto OPAL: El Big Data al Servicio del Desarrollo." Agence Française de Développement, <https://www.afd.fr/es/actualites/proyecto-opal-el-big-data-al-servicio-del-desarrollo>

<sup>182</sup> International Labour Organization, and OECD. *Tackling vulnerability in the informal economy*. Development Centre Studies, Paris: OECD Publishing, 2019. <https://doi.org/10.1787/939b7bcd-en>.

<sup>183</sup> Tax Agency. *Plan Estratégico de la Agencia Tributaria 2020-2023*. Madrid, 2020. [https://www.agenciatributaria.es/static\\_files/AEAT/Contenidos\\_Comunes/La\\_Agencia\\_Tributaria/Planificacion/PlanEstrategico2020\\_2023/PlanEstrategico2020.pdf](https://www.agenciatributaria.es/static_files/AEAT/Contenidos_Comunes/La_Agencia_Tributaria/Planificacion/PlanEstrategico2020_2023/PlanEstrategico2020.pdf).

<sup>184</sup> The efficiency index is defined as the ratio between the amount collected for the fight against tax and customs fraud and the amount of the Tax Agency's annual budget. The latter includes the cost of all the functions carried out by the Tax Agency, all of which contribute to fulfilling its mission of ensuring the correct application of the State tax and customs system. The results show that this rate has doubled in the last decade, from 5.7 euros in 2008 to 11.1 euros in 2018. For further details, see: Tax Agency. *Memoria 2018. Cuadro 16: Efficiency index* Madrid, 2018. [https://www.agenciatributaria.es/AEAT.internet/Inicio/La\\_Agencia\\_Tributaria/Memorias\\_y\\_estadisticas\\_tributarias/Memorias/Memorias\\_de\\_la\\_Agencia\\_Tributaria/\\_Ayuda\\_Memoria\\_2018/\\_Ayuda\\_Memoria\\_2018.html](https://www.agenciatributaria.es/AEAT.internet/Inicio/La_Agencia_Tributaria/Memorias_y_estadisticas_tributarias/Memorias/Memorias_de_la_Agencia_Tributaria/_Ayuda_Memoria_2018/_Ayuda_Memoria_2018.html)

<sup>185</sup> According to 2009 data, in Spain there were 1,928 citizens for every tax agency employee, compared to 875 in the EU-8 and 896 in the EU-27. For further details, see: Onrubia, Jorge. "La reforma de la administración tributaria: mitos y realidades." In Durán, José María, and Alejandro Esteller Moré (dirs.) *Por una verdadera reforma fiscal*. Madrid: Ariel Economía, 2013.

<sup>186</sup> Onrubia, Jorge. "La administración tributaria en España: diagnóstico y propuestas de reforma." In Durán, José María, and Alejandro Esteller Moré (dirs.) *De nuestros impuestos y su administración*. Barcelona: Economía UB, 2015.

<sup>187</sup> Department of Finance. *Informe de la comisión de expertos para la revisión del modelo de financiación autonómica*. Madrid, 2017. [https://www.hacienda.gob.es/CDI/sist%20financiacion%20y%20deuda/informacionccaa/informe\\_final\\_comision\\_reforma\\_sfa.pdf](https://www.hacienda.gob.es/CDI/sist%20financiacion%20y%20deuda/informacionccaa/informe_final_comision_reforma_sfa.pdf).

<sup>188</sup> OCDE. *Tax Administration 2019. Comparative Information on OECD and Other Advanced and Emerging Economies*. Paris: OECD Publishing, 2019. <http://www.oecd.org/ctp/administration/tax-administration-23077727.htm>.

<sup>189</sup> Some interesting experiences in neighbouring countries include letters encouraging compliance (UK), assessment of knowledge and attitudes towards taxation among young people (Canada) or simplification of administrative procedures (Denmark). For other social measures to improve citizens' tax compliance, see: Goenaga Ruiz de Zuazu, María. "¿Qué hacer para combatir la economía sumergida y el fraude fiscal en España?: una perspectiva social." In Santiago Lago Peñas (dir.). *Black economy and tax fraud in Spain: ¿qué sabemos? ¿qué podemos hacer?* Madrid: Funcas, 2018. 119-145. <https://www.funcas.es/libro/economia-sumergida-y-fraude-fiscal-en-espana-que-sabemos-que-podemos-hacer-junio-2018/>.

<sup>190</sup> For example, avoiding short-term actions such as tax amnesties, which, although they do return tax revenues to the country in the short term, can have pernicious effects on tax morale in the medium and long term. For further details, see: Goenaga Ruiz de Zuazu, María. "¿Qué hacer para combatir la economía sumergida y el fraude fiscal en España?: una perspectiva social." In Santiago Lago Peñas (dir.). *Economía sumergida y fraude fiscal en España: ¿qué sabemos? ¿qué podemos hacer?* Madrid: Funcas, 2018. 119-145. <https://www.funcas.es/libro/economia-sumergida-y-fraude-fiscal-en-espana-que-sabemos-que-podemos-hacer-junio-2018/>.

<sup>191</sup> Tax Agency. "Tax and Civic Education Portal (PECT)" Tax Agency. [https://www.agenciatributaria.es/AEAT.educacion/InformacionEducacion\\_es\\_ES.html](https://www.agenciatributaria.es/AEAT.educacion/InformacionEducacion_es_ES.html).

<sup>192</sup> European Commission. *The EU budget powering the recovery plan for Europe*. Brussels, 2020. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2020%3A442%3AFIN>.

<sup>193</sup> For example, in an economy where tourism is a relevant sector, the development of new ICT applications, either to increase service efficiency or to improve the tourism offer, can become a smart specialisation if the new activity attracts sufficient resources and allows competitive advantages to be created. See: European Commission. 2014. [https://ec.europa.eu/regional\\_policy/sources/docgener/informat/2014/smart\\_specialisation\\_es.pdf](https://ec.europa.eu/regional_policy/sources/docgener/informat/2014/smart_specialisation_es.pdf); and Halleux, Vivienne. "Especialización inteligente: el concepto y su aplicación a la política de cohesión de la UE." *Servicio de Estudios del Parlamento Europeo*, n.º 573.912, 2016. [https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/573912/EPRS\\_BRI\(2016\)573912\\_ES.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/573912/EPRS_BRI(2016)573912_ES.pdf).

<sup>194</sup> The Atlas recommends Spain to follow a "*parsimonious Industrial Policy Approach: limited opportunities require addressing bottlenecks, to help jump short distances, into related products.*" In other words, Spain has many opportunities at a very "short distance" and to take advantage

of them it only needs to remove the bottlenecks that prevent it from "making the leap" to products with greater added value. See: Atlas of Economic Complexity, <https://atlas.cid.harvard.edu/>.

<sup>195</sup> European Structural and Investment Funds. ESIF 2014-2020: ESIF 2014-2020: *Financial implementation (total cost) by Country*. European Commission, 2020. <https://cohesiondata.ec.europa.eu/stories/s/Information-maps-tracking-progress-in-investment-a/wjiv-jyr9>.