Orkestra

BASQUE INSTITUTE
OF COMPETITIVENESS
DEUSTO FOUNDATION

THE BASQUE COUNTRY COMPETITIVENESS REPORT 2019

DIAGNOSTIC ANALYSIS

Deusto

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The Basque Country Competitiveness Report 2019

Diagnostic Analysis

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The Basque Country Competitiveness Report 2019

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Access Competitiveness Observatory

Furthermore, updates of the different indicators presented in the Competitiveness Report can be consulted in real time via the Competitiveness Observatory. Analyses and related work can also be found. To access the observatory please click here:

www.orkestra.deusto.es/competitiveness-observatory

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Preface

The Basque Country is a territory that is open and interconnected with the world, and which has achieved a considerable level of wellbeing. Our environment has become a place of uncertainty and profound transformation, which is changing quickly. There are threats which may bring into doubt our level of competitiveness and wellbeing, but there are also opportunities which we must leverage to improve our future situation. A short-sighted dynamic could lead us to react to each challenge individually, overlooking the relationship between them and the need to seek sustainable systemic solutions.

Positioning ourselves in response to this reality is our individual responsibility and requires a level of complex, yet necessary, cooperation. As a research institute, Orkestra seeks to provide rigorous, data-based analyses to support making these decisions with the best information possible. Consistent with our mission, the Competitiveness Report is an assessment of the situation with regard to the factors affecting the competitiveness and wellbeing of the Basque Country. It has been published since the institute was created in 2006.

Beyond the periodic assessment, there are spheres and trends which require in-depth analysis. One of these spheres is based on the premise that territories which have skilled people are more competitive and achieve higher levels of wellbeing. In line with this, as a new feature this year, the Competitiveness Report for 2019 includes a topic-specific report on skills as a resource, both individual and collective, with which we must equip ourselves in upcoming years.

The debate around skills is a complex one, affecting individuals, firms, societal stakeholders, the education sector, public decision-makers and society as a whole. The Competitiveness Report 2019 *Are skills the panacea?* deals with this debate and provides analyses that help to tackle the structural changes on the way.

With these two reports, Orkestra seeks to serve as an agent of change, using research to make the Basque Country more competitive and boost socioeconomic development, thus fostering wellbeing among its citizens. Our commitment is to continue generating knowledge to tackle the challenges in our territory and contribute to the overall debate around competitiveness and socioeconomic development.

Lastly, I would like to highlight the work and commitment of everyone who forms part of and works with Orkestra. The institute would not be possible without our

sponsors, who accompany and support us, and provide support for this open initiative, which works for our society. We hope to live up to the trust placed in our efforts by socio-economic stakeholders and Basque society in general.

Iván Martén Uliarte
Chairman
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The Competitiveness Analysis has been prepared by a group of people[1] coordinated by Susana Franco. The entire Orkestra team was also involved in a variety of ways,[2] and we thank them for their collaboration throughout the entire process. We would also like extend our thanks for the contributions of the members of the Board of Directors and the Advisory Board, as well as Orkestra's sponsor institutions.

Calculation of the variables that form part of the Basque Country Competitiveness Observatory, on which this report is based, as well as preparation of other analyses in the same, was possible thanks to data provided by Eustat by means of purposeful and impartial exploitation of its databases at Orkestra's request. Our sincere thanks to Eustat for all the assistance provided. We also thank Sabi-Informa for its collaboration in providing data for other analyses in the report.

In addition, we would like to extend our thanks for the involvement of all the stakeholders who have participated and contributed to generating knowledge as part of the various projects carried by Orkestra in recent years.

Orkestra assumes full responsibility for any errors or omissions in the content of this report.

1 Mari Jose Aranguren, Megan Briggs, Patricia Canto, Aitziber Elola, Jorge Fernández, Susana Franco, Ibon Gil de San Vicente, Lorea Larrabeiti, Macarena Larrea, Edurne Magro, Asier Murciego, Mikel Navarro, Carla Peletier, Angélica María Rodríguez, Eduardo Sisti, Rakel Vázquez, James Wilson and Agustín Zubillaga.

2 https://www.orkestra.deusto.es/en/about-orkestra/team

Executive Summary

- The majority of the final outcome indicators for the Basque Country, both economic and social, have improved, and generally speaking, the region remains in a favourable position. This suggests the existence of a **balanced model of socioeconomic competitiveness** in line with what is referred to as **'competitiveness in solidarity'**.

- The Basque Country faces a major challenge related to **unemployment**, especially among the youngest segment of the population and those over the age of 55. To this we may add that in aspects such as temporary and part-time work, the quality of new employment contracts has not improved significantly with the recovery from the crisis.

- In determinants of competitiveness, the Basque Country is in a **good position with regard to business environment indicators** thanks to strong institutional quality, policies and strategies implemented, and individual training and education levels, among other aspects.

- In terms of **firm performance**, productivity and cost indicators show positive results. When looking at the financial aspect, firms have shown themselves to be risk-averse, they have continued to reduce their debt level and consolidate their equity. In innovation, they show relative strength in technological innovation (primarily process innovation), and weakness in non-technological innovation (organisational and marketing) as well as in the combination of the two types of innovation. Despite modest results in some innovation indicators, the strong performance of the Basque Country in the sales of new products indicator is noteworthy. We have also observed that there is a core group of firms, particularly industrial and larger firms, that engage in significant innovation activity.

- The last year saw a **consolidation of internationalisation** among Basque firms, with positive growth in their export levels, and an increase in both the average value of exports and the percentage of regular exporters. There has, however, been a decline in the number of exporters.

- There are several **global trends** (ageing, digitisation and automation of production processes, climate change, etc.) which pose serious **challenges for maintaining and improving levels of wellbeing**. To this must be added the fact that the **primarily socio-political uncertainties** – which nonetheless have an undeniable economic dimension and impact – of which the last competitiveness report warned, have not only been confirmed, but have even been accentuated. These include the greater likelihood that Brexit will take place and the possibility that no agreement will be made in this regard; the expansion of the trade wars initiated by Trump into other spheres such as foreign exchange and technology; and the instability in Latin America (Argentina, Brazil, Venezuela, Colombia, etc.). For this reason, more than ever, proactive policies are needed that foster adaptability, new pathways and the diversification of the economic structure.

- Taking advantage of the healthy financial situation and positive financial leverage of firms, **we should continue moving forward on driving innovation**, especially in such areas as the education and training of workers and improvements in the skill level of their positions, continue with restoring job quality, increase R&D and innovation activity at firms (especially non-technological), and consolidate the internationalisation of Basque business, both in the number of exporters and the volume of their exports.

1
Introduction

Analysing territorial competitiveness is important in order to identify and implement the most suitable policies to support socioeconomic development. Although it is firms and not territories which compete in global markets, the countries, regions and cities or towns where they are located supply many of the elements which influence their ability to compete. In fact, it is interaction between firms and their environment that generates innovation, wealth and, ultimately, wellbeing.[3] The aim of this competitiveness analysis of the Basque Country is to understand what determines the effectiveness of the firms located in the region to compete and generate economic and social value. Therefore, competitiveness is not an end to itself, but a means of generating wellbeing among the population and a key lever to achieve the Sustainable Development Goals set by the United Nations and adopted by the Basque Government.[4]

Competitiveness is a means of generating wellbeing among the population and a key lever to achieve the Sustainable Development Goals

The combination of the most important elements, both social and economic, is shown in Illustration 1, within the competitiveness framework which provides the structure for this competitiveness analysis. As we can see from the illustration, this framework is divided into four levels indicating the different factors which determine the territory's competitive performance.

At the top are the outcome indicators, which include the **overall goals** to be achieved in terms of citizen wellbeing. They include economic indicators, such as per capita income, as well as other, broader elements related to social cohesion.

Below this are the **intermediate performance indicators**. While these are not the overall goals to be achieved by the region, they are important to achieving the final outcomes. They comprise indicators related to employment, productivity, innovation and foreign trade.

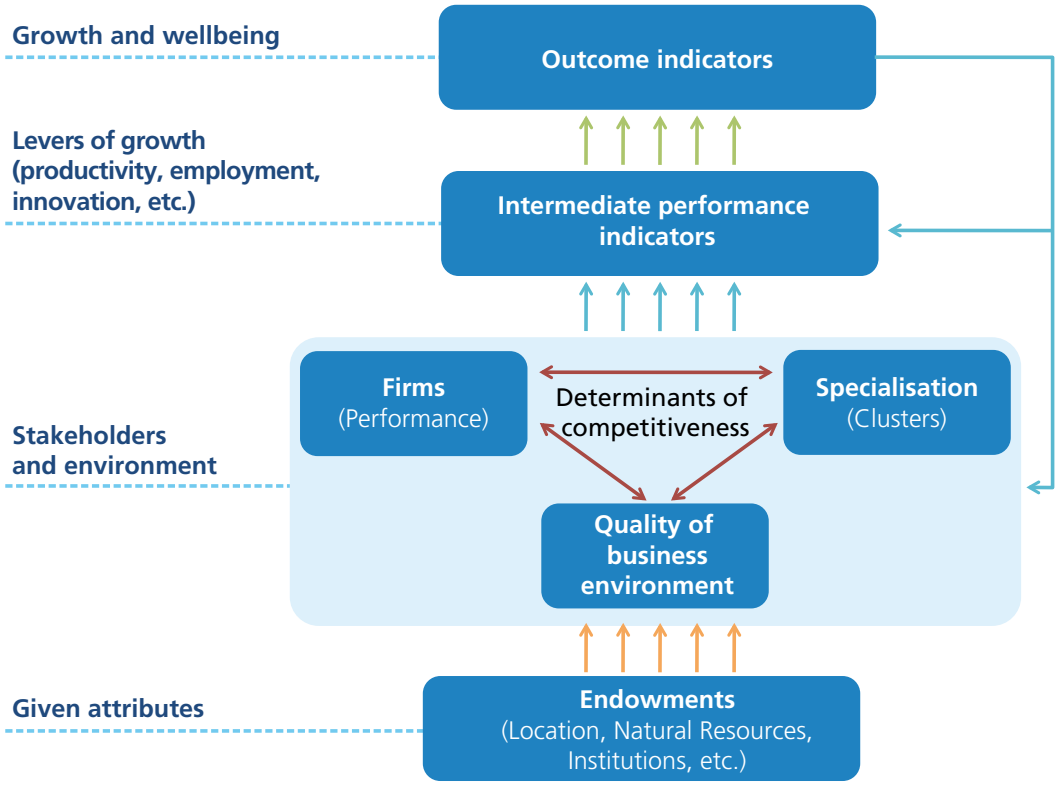
The third level is made up of the **determinants of competitiveness**, in other words, the elements that impact the results for the two previous levels. This level is particularly important because it is where policies can have a more obvious impact. The determinants are divided into three categories: firm performance, territory and cluster

[3] For a selection of recent analyses of these relationships, see Huggins, R. and Thompson, P. (Eds) (2017). *Handbook of Regions and Competitiveness: Contemporary Theories and Perspectives on Economic Development*. Cheltenham, UK: Edward Elgar.

[4] See: Basque Government (2018). *Agenda Euskadi Basque Country 2030*.

specialisation, and quality of the business environment. This last category comprises aspects relating to three of the axes on the Porter Diamond (1990)[5]: the quality of the territory's 'factors' of production, the existing 'demand' and the 'context for firm strategy and rivalry'.

IILLUSTRATION 1 Framework for regional competitiveness



Source: Compiled by authors.

And lastly, at the base of the framework, **endowments** refer to certain characteristics of the territory that have an impact on competitiveness, but which are more or less given, at least in the medium term (location of the territory, natural resources, size of the region, institutions, etc.). As these characteristics have been analysed in previous reports, they are not included in this report.

Beginning this year, the competitiveness framework explicitly includes an element which was implicit in previous years: despite being presented as a hierarchy, with lower levels that impact higher ones, the final competitiveness outcomes can produce a virtuous circle, feeding both intermediate performance indicators and determinants of competitiveness, given that, for example, the greater the wellbeing of those who live in a territory, the more they will be in a position to contribute to the competitiveness of firms and the more attractive the territory will be to both talent and capital. More wealth and earnings can also be allocated to public support programmes for R&D.

Final competitiveness outcomes can produce a virtuous circle, feeding both intermediate output indicators and determinants of competitiveness

The report is arranged in sections and subsections organised according to the logic of this framework. At the start of each section (or subsection), there will be

[5] Porter, M. E. (1990) *The Competitive Advantage of Nations*. London: The Macmillan Press.

a table showing the relative position of the Basque Country in comparison with: all 218 regions of the European Union (EU-28); the group made up of the Basque Country and 30 comparable regions with similar structural characteristics; and the 19 Spanish autonomous communities and cities. As we indicated in the 2018 Basque Country Competitiveness Report, the comparable regions have been identified using a methodology which is based on elements found at the base of the analytical framework and among the components of specialisation. Without necessarily being good or bad per se, they influence intermediate performance and final outcomes. They are also difficult to change in the short term, as they are natural characteristics or the result of long historical processes. Therefore, if the aim is to assess the results obtained by indicator and compare with regions whose knowledge may be transferrable, it makes sense to compare ourselves with regions that have similar characteristics.

The Basque Country is compared to EU-28 regions as a whole, the Spanish autonomous communities and cities, and 30 comparable regions with similar structural characteristics

These tables will show both the position of the Basque Country in the last year for which there are data at the regional level in Europe and the change in comparison with the previous year. The tables contain bubble charts, which show the regions positioned from worst to best, from left to right, with the largest bubble marking the position of the Basque Country. The values of the regions are represented in a line that shows its concentration. Therefore, a number of bubbles close together indicates that there may be a difference in the ranking, but the values for that indicator are very similar.

Although regions are the main focus of comparison, being considered more appropriate than countries (as national averages do not reveal territorial differences and regional competitiveness levels differ from those of countries), they have a couple of disadvantages: (i) there are no regionalised data published for certain indicators (for example, export data), and (ii) there is a greater delay in the most recent year available in the statistics published by Eurostat. For this reason, in some cases, for the comparative analysis of the Basque Country, we have used national data published by Eurostat (for Spain, Germany and the EU-28 group), and Eustat (Basque Statistics Office) data for the Basque Country, provided that they are available and calculated using a methodology comparable to that utilised by Eurostat. In addition to making it possible to learn about a more recent year, this also provides the opportunity to analyse evolving trends somewhat longer than the change occurring in the last year, which is the trend analysis that has taken priority in regional comparison.

As a summary, Table 1 shows the most recent value available for the Basque Country for each of the indicators analysed in the report, as well as the values for Spain, Germany, EU-28 and, when they are available, those for the comparable regions. Additionally, Table 2 includes the position occupied by the Basque Country in the comparative rankings with European, comparable and Spanish regions. Given the abovementioned delay in the availability of regional data, the years of comparison in this table will in some cases be earlier than those in Table 1. The analysis of these data will be broken down in subsequent sections.

TABLE 1 Values for competitiveness indicators

		Indicator	Most recent						1 year before					
			Year	Basque Country	EU-28	Comparable reg.	Spain	Germany	Year	Basque Country	EU-28	Comparable reg.	Spain	Germany
Outcomes		GDP per capita (PPP)	2018	38,688	30,935	—	28,498	37,956	2017	37,361	30,000	28,976	27,620	37,132
		Household disposable income per capita (PPP)	2016	20,100	16,552	17,818	15,313	21,480	2015	20,100	16,545	17,736	15,333	21,377
		Long-term unemployment (% lab. force)	2018	4.7	3.0	2.4	6.4	1.4	2017	5.5	3.4	2.8	7.7	1.6
		NEET rate (% pop. aged 15–24)	2018	8.7	10.5	10.0	12.5	5.9	2017	9.1	10.9	10.5	13.4	6.3
		Risk of poverty rate (% total pop.)	2017	9.7	16.9	14.5	21.6	16.1	2016	9.0	17.3	14.0	22.3	16.5
		Equivalent median income (PPP)	2017	20,996	16,909	—	15,508	21,250	2016	21,622	16,531	—	15,347	21,152
		Inability to face unexpected financial expenses (%)	2017	17.1	33.8	—	36.6	29.3	2016	17.8	36.4	—	38.7	30.0
		Inequality (S80/S20)	2017	5.1	5.1	—	6.6	4.5	2016	5.0	5.2	—	6.6	4.6
Intermediate performance	Employment	Employment rate (% pop. aged 15–64)	2018	66.7	68.6	70.6	62.6	76.0	2017	65.4	67.6	69.7	61.3	75.3
		Female employment rate (% pop. aged 15–64)	2018	63.0	63.3	66.6	57.0	72.1	2017	62.0	62.4	65.7	55.9	71.6
		Unemployment rate (% lab. force ≥ 15 y.o.)	2018	10.3	6.8	6.6	15.3	3.4	2017	11.3	7.6	7.2	17.2	3.7
		Youth unemployment rate (% lab. force aged 15–24)	2018	19.9	15.2	15.2	34.1	6.3	2017	20.4	16.8	16.4	38.3	6.8
		Self-employed and work in family firm (% working pop.)	2018	8.9	11.3	—	10.9	5.7	2017	9.3	11.4	—	11.3	5.8
		Employees with temporary contract (% total employees)	2018	25.85	14.20	—	26.80	12.50	2017	24.5	14.3	—	26.7	12.9
		Involuntary part-time work (% working pop.)	2018	8.50	5.03	—	8.11	2.71	2017	9.4	5.3	—	9.0	3.0
	Net migration	Relative net migration (% total pop.)	2017	0.37	0.23	0.47	0.35	0.51	2016	0.29	0.23	0.45	0.19	0.57
	Internationalisation	Exports (2007=100)	2018	135.1	140.0	—	158.1	137.1	2017	126.4	133.8	—	153.0	133.0
		Inward flow of foreign direct investment (% GDP)	2017	3.6	1.8	—	1.5	0.9	2016	2.8	3.2	—	1.6	0.5
		Outward flow of foreign direct investment (% GDP)	2017	2.6	2.5	—	3.1	2.2	2016	4.7	2.7	—	3.1	1.5
	Productivity	Apparent productivity per employee (thousands, PPP)	2018	90.2	66.4	—	66.8	70.2	2017	88.5	65.2	65.1	66.4	69.3
		Apparent productivity per employee (thousands, €)	2018	67.0	59.3	—	54.8	68.1	2017	65.7	58.3	—	54.2	66.7
	Innovation	PCT patents per million inhabitants	2015	212.7	402.3	410.5	152.3	874.0	2014	206.3	399.4	405.2	153.6	879.6
		Publications (WoS) per million inhabitants	2018	2,360	2,043	2,568	2,321	2,388	2017	2,381	2,158	2,672	2,363	2,490
		Publications in Q1 (% publications)	2018	60.4	53.3	57.8	57.2	53.4	2017	57.0	53.1	57.8	56.3	52.9
		Sales unchanged products (% total firms)	2017	80.9	—	—	—	—	2016	81.5	87.2	—	80.7	86.0
		Sales new-to-firm products (% total firms)	2017	10.5	—	—	—	—	2016	10.4	7.4	—	9.5	11.0
		Sales new-to-market products (% total firms)	2017	8.6	—	—	—	—	2016	8.1	5.4	—	9.8	3.0
		Sales unchanged products (% total innovators)	2017	71.6	—	—	—	—	2016	72.3	83.9	—	72.9	84.6

	Indicator	Most recent						1 year before					
		Year	Basque Country	EU-28	Comparable reg,	Spain	Germany	Year	Basque Country	EU-28	Comparable reg,	Spain	Germany
Determinants of competitiveness: Firm performance	Firm R&D personnel (% employment)	2017	1.43	0.78	—	0.51	1.07	2016	1.40	0.76	0.82	0.50	1.03
	Firm R&D expenditure (% GDP)	2017	1.39	1.36	—	0.66	2.09	2016	1.37	1.33	1.37	0.64	1.99
	PCT patent co-invention (4-year window) (% patents)	2015	65.5	69.8	67.1	66.2	71.8	2014	62.4	69.4	66.7	65.8	71.7
	PCT patents with foreign collaboration (4-year window) (% patents)	2015	5.7	10.8	11.1	9.7	9.1	2014	5.5	10.9	11.3	8.9	9.2
	% of innovative firms	2017	44.2	—	—	—	—	2016	44.1	50.6	—	36.9	63.7
	% of firms with technological innovation	2017	40.6	—	—	—	—	2016	39.4	39.5	—	22.7	50.0
	% of firms with product innovation	2017	24.9	—	—	—	—	2016	25.8	25.9	—	11.3	31.9
	% of firms with process innovation	2017	26.8	—	—	—	—	2016	26.8	24.9	—	14.8	27.4
	% of firms with non-technological innovation	2017	21.2	—	—	—	—	2016	21.8	36.6	—	28.0	46.9
	% of firms with organisational innovation	2017	17.5	—	—	—	—	2016	17.1	28.5	—	23.6	35.6
	% of firms with marketing innovation	2017	11.7	—	—	—	—	2016	11.3	22.9	—	15.6	31.7
	% of firms with technological and non-technological innovation	2017	39.8	—	—	—	—	2016	38.6	50.4	—	37.4	52.2
	% of firms that cooperate in innovation	2017	15.5	—	—	—	—	2016	13.1	12.8	—	7.3	10.1
	% of firms that cooperate in innovation with other EU countries	2017	7.3	—	—	—	—	2016	6.1	4.5	—	2.4	3.8
	Innovation expenditure (% turnover)	2017	2.2	—	—	—	—	2016	2.2	2.0	—	1.2	3.1
	Machinery expenditure (% turnover)	2017	0.4	—	—	—	—	2016	0.5	0.5	—	0.3	0.8
	Internal and external R&D expenditure (% turnover)	2017	1.6	—	—	—	—	2016	1.6	1.2	—	0.8	1.8
	Labour costs per employee (thousand €)	2018	39.3	37.1	—	32.7	43.0	2017	38.7	36.2	—	32.2	41.7
	Unit labour cost (%)	2018	58.6	62.5	—	59.7	63.1	2017	58.9	62.1	—	59.5	62.5
Determinants of competitiveness: Specialisation	Employment in high- and medium-high-tech manufacturing (% employment)	2018	8.5	5.8	5.6	4.1	9.9	2017	8.7	5.8	5.6	4.1	9.8
	Employment in knowledge-intensive services (% employment)	2018	37.7	40.3	42.7	35.8	40.7	2017	37.1	40.0	42.2	35.9	40.4
Determinants of competitiveness: Business environment	Human resources employed in science and technology (% total pop.)	2018	19.1	21.6	21.9	16.0	27.2	2017	18.8	21.1	21.4	15.6	26.8
	Population aged 25–64 with upper secondary or tertiary education (% pop. aged 25–64)	2018	71.8	78.1	75.6	60.2	86.6	2017	71.2	77.5	76.7	59.1	86.5
	Tertiary education students (% pop. aged 20–29)	2017	47.0	30.5	31.6	42.1	29.1	2016	45.7	30.5	31.0	40.6	28.5
	Overqualification index (%)	2018	1.51	0.84	0.94	1.29	0.66	2017	1.51	0.83	0.93	1.28	0.66
	Vocational education and training students (% pop. aged 15–19)	2017	58.2	49.6	47.8	45.7	44.2	2016	55.4	49.6	53.1	45.2	44.3
	Population enrolled in continuing education (% pop. aged 25–64)	2018	12.7	11.1	13.7	10.5	8.2	2017	13.2	10.9	15.5	9.9	8.4
	Public R&D personnel (% employment)	2017	0.59	0.59	—	0.51	0.62	2016	0.58	0.58	0.55	0.50	0.61
	Public R&D expenditure (% GDP)	2017	0.46	0.68	—	0.54	0.93	2016	0.45	0.69		0.55	0.93
	Total R&D personnel (% employment)	2017	2.02	1.39	—	1.16	1.68	2016	1.98	1.35	1.38	1.13	1.64
	Total R&D expenditure (% GDP)	2017	1.85	2.06	—	1.20	3.02	2016	1.81	2.04	—	1.19	2.92
	Publications with international cooperation (% publications)	2018	54.9	55.5	54.8	51.5	53.9	2017	52.8	52.7	52.1	50.0	51.7
	Publications with industry cooperation (% publications)	2018	1.76	3.85	4.09	2.90	5.07	2017	1.90	3.78	4.14	2.92	5.23
	Households with broadband access (% households)	2018	90.0	85.8	88.1	86.0	90.3	2017	88.0	84.3	85.5	83.0	91.7
	Individuals who make online purchases (total pop.)	2018	52.0	59.9	69.7	53.0	76.7	2017	48.0	57.8	68.7	50.0	74.8

TABLE 2 Ranking of the Basque Country in competitiveness indicators

	Indicator		all European regions		comparable regions		Spanish aut. comm.	
		Year	Most recent	Δ	Most recent	Δ	Most recent	Δ
Outcomes	GDP per capita (PPP)	2017	28	2	4	1	1	1
	Household disposable income per capita (PPP)	2016	28	–1	6	0	1	0
	Long-term unemployment (% lab. force)	2018	167	–1	30	0	5	0
	NEET rate (% pop. aged 15–24)	2018	88	–4	12	1	2	0
	Risk of poverty rate (% total pop.)	2017	14	–3	2	–1	2	–1 –1
Intermediate performance	Employment rate (% pop. aged 15–64)	2018	135	–2	28	–2	7	0
	Female employment rate (% pop. aged 15–64)	2018	118	–2	27	–1	5	–1
	Unemployment rate (% lab. force ≥ 15 y.o.)	2018	165	3	28	1	2	0
	Youth unemployment rate (% lab. force aged 15–24)	2018	117	3	22	0	1	0
	Relative net migration (% total pop.)	2017	67	26	16	9	6	0
	Apparent productivity per employee (thousands, PPP)	2017	7	0	2	0	1	0
	PCT patents per million inhabitants	2015	97	2	28	1	4	0
	Publications (WoS) per million inhabitants	2018	77	3	21	1	7	0
	Publications in Q1 (% publications)	2018	14	27	2	13	3	1
Determinants of competitiveness: Firm performance	Firm R&D personnel (% employment)	2016	11	0	4	0	1	0
	Firm R&D expenditure (% GDP)	2016	44	–3	13	0	1	0
	PCT patent co-invention (4-year window) (% patents)	2015	107	15	20	2	6	2
	PCT patents with foreign collaboration (4-year window) (% patents)	2015	187	5	31	–1	16	–3
Determinants of competitiveness: Specialisation	Employment in high- and medium-high-tech manufacturing (% employment)	2018	33	1	4	0	2	0
	Employment in knowledge-intensive services (% employment)	2018	112	3	25	0	4	0
Determinants of competitiveness: Business environment	Human resources employed in science and technology (% total pop.)	2018	110	4	27	–1	2	0
	Population aged 25–64 with upper secondary or tertiary education (% pop. aged 25–64)	2018	153	1	27	1	2	0
	Tertiary education students (% pop. aged 20-29)	2017	22	4	3	–1	5	–1
	Overqualification index (%)	2018	200	0	30	0	18	0
	Vocational education and training students (% pop. aged 15-19)	2017	41	20	9	4	2	2
	Population enrolled in continuing education (% pop. aged 25–64)	2018	54	–5	13	–4	2	–1
	Public R&D personnel (% employment)	2016	75	3	14	0	8	1
	Public R&D expenditure (% GDP)	2016	110	4	22	–1	10	0
	Total R&D personnel (% employment)	2016	19	–4	4	–1	1	0
	Total R&D expenditure (% GDP)	2016	58	–5	13	0	1	0
	Publications with international cooperation (% publications)	2018	75	–8	17	–1	4	0
	Publications with industry cooperation (% publications)	2018	140	–13	30	1	8	0
	Households with broadband access (% households)	2018	49	11	14	3	4	–2
	Individuals that make online purchases (% total pop.)	2018	121	–1	31	0	9	2

2
Final outcomes

Table 3 summarises the position of the Basque Country with regard to final outcome indicators, those which measure social wellbeing targets. Consequently, this includes both purely economic performance and more social indicators of performance. The Basque Country continues to rank very well with regard to the GDP per capita indicator, moving up several positions compared to the previous year. The Basque Country also ranks very well in terms of household disposable income, an indicator which both the OECD and Eurostat[6] consider more appropriate for measuring the development of the population's level of wellbeing, as it rectifies some of the reasons why GDP, which measures what is produced within the territory, does not always have a favourable impact on wellbeing. There are several reasons for this: generating those products may have involved non-resident factors of production (both workers and capital) which divert part of the income generated; for solidarity reasons or others, some of the income may be transferred to other territories (to either other autonomous communities or to developing countries); or the government and firms may appropriate part of the income to reduce their debt level.

The Basque Country ranks very well with regard to the GDP per capita indicator

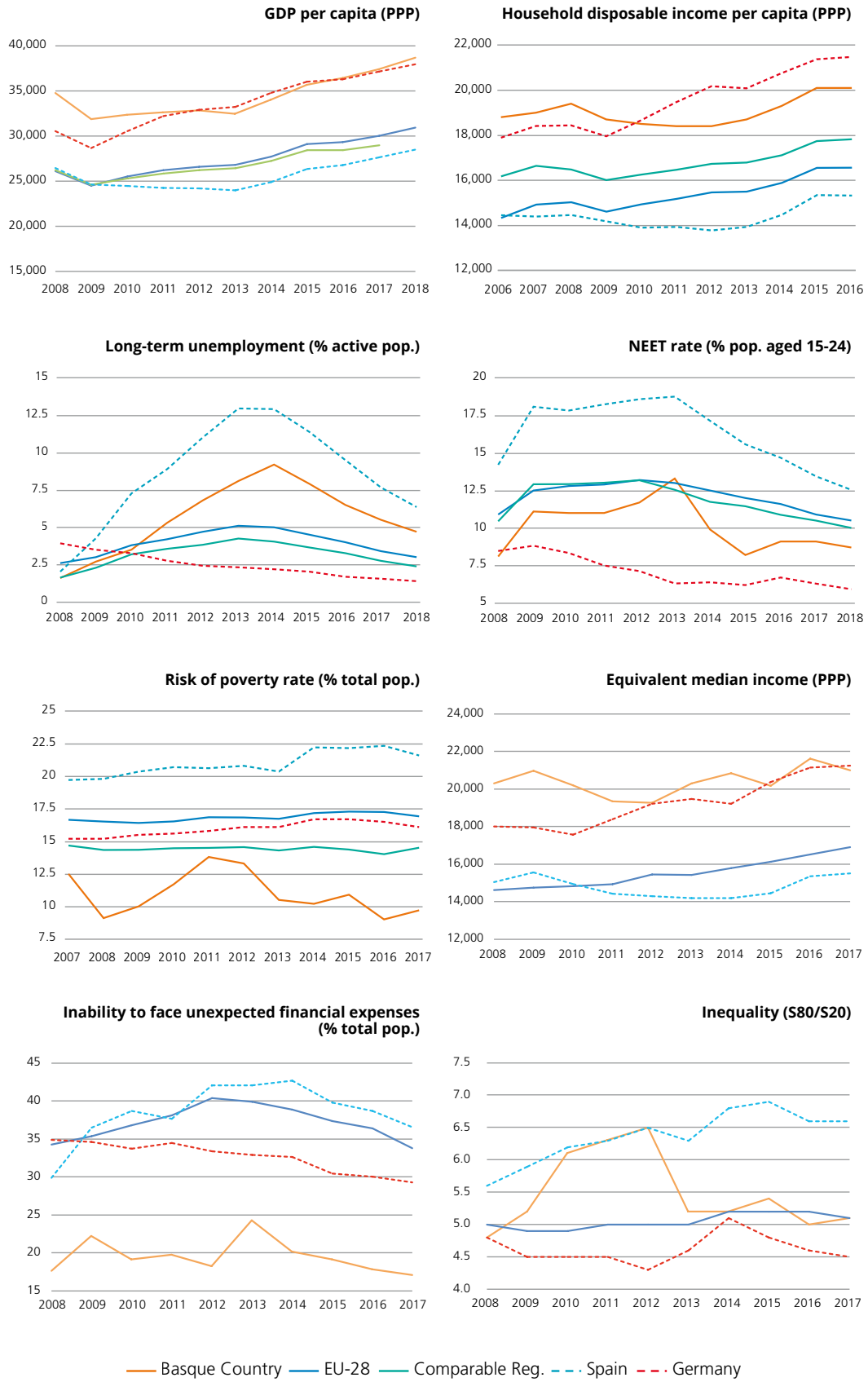
[6] On this subject, see the OECD publication *How's life? 2017: Measuring Well-being* or the Eurostat statistical annex SDG 10 – Reduced inequalities (statistical annex).

TABLE 3 Status of the Basque Country in terms of the final outcome indicators

Source: Eurostat and Eustat (Basque Statistics Office). Compiled by authors.

NB: Except when no data were available, the rankings have been compiled based on 218 European regions (in blue), the Basque Country and the group of 30 comparable regions (in green), and the 19 Spanish autonomous communities and cities (in red).

GRAPH 1 Variation in final outcome indicators



Source: Eurostat, Eustat (Basque Statistics Office), INE (Spanish National Statistics Institute) and Ameco. Compiled by authors.

Graph 1 shows the variation in the values for these indicators. Following the stagnation experienced by the Basque Country and Spain during the crisis, GDP per capita began to recover in both territories in 2014, something which had already taken place in the other territories under consideration. Strong performance in recent years has enabled Basque GDP per capita (in PPP terms) to exceed average levels in Germany. This had been the case before the crisis, but was cut short during this period due to Germany's stronger growth. Unfortunately, the data for household disposable income per capita (PPP) are older (2016). They show that all territories experienced stagnation in that year and that, although the Basque Country ranks better than the comparable regions, the EU-28 average and the Spanish average, the gap with Germany was greater than that seen in GDP per capita. It should be pointed out that the comparable regions are performing better than the European average in this indicator (which is not the case for GDP per capita). It will therefore be necessary to pay attention to trends in this indicator in the future. As a complement to this, further on in this section we discuss developments in median household income.

There is still evidence of the greater impact of the crisis on long-term unemployment in Spain and the Basque Country

As regards to indicators of a more social nature and beginning with the level of long-term unemployment, the Basque Country has performed much better than Spain and has been trending positively in absolute terms in recent years. However, it still ranks poorly in relative terms compared to Europe. As Graph 1 shows, this is due to the significant deterioration at the start of the crisis. Although it has made a recovery in absolute terms since 2015, it is still quite a bit higher than the average for the EU-28 and the comparable regions, and even more than Germany.

In contrast, in absolute terms, NEET (percentage of young people aged 15–24 who are not in education, employment or training, which is included as a final outcome indicator because it is an indication of what is most likely undesired employment among the youth population) rates are below the average for Europe, Spain and the comparable regions. This is positive because it indicates that young people are continuing their education in the event that they do not want to or cannot work. Even so, it is important to note that the Basque Country fell a few positions in the last year, due to the fact that, although the value for this indicator continued to drop, it did so to a lesser extent than in the other European regions.

Lastly, as regards to the indicators for which data are available at the regional level in Europe, it is worth mentioning that, despite the increase seen in the last year in absolute terms and dropping a few positions in the rankings, the Basque Country leads European regions in terms of lower poverty rates.

The analysis is rounded out with trends in several indicators that are not available for European regions as a whole, but which we do have for the Basque Country and the European countries. These make it possible to further explore some aspects of economic conditions among the population. The first of these, mentioned earlier, is equivalent to median disposable income (in PPP terms), which is calculated based on the Living Conditions Survey. This indicator standardises household data based on the number of equivalent units of consumption comprising them, taking into account the economies of scale that occur when mem-

bers of the household share the income.[7] Median income is a better representation of standard of living than average income, because if high-income groups have very high values, the average values may be quite a bit higher than the respective median values. In Graph 1 we can see that, unlike household disposable income per capita, equivalent median income increased in the Basque Country in 2016, then dropped slightly the following year. Even so, these values remain much higher than those for the EU-28 and Spain, and very close to those for Germany.

Another indicator which allows us to evaluate the wellbeing of the population and its vulnerability is the inability to face unexpected financial expenses, also computed using data from the Living Conditions Survey. The Basque Country has had very strong performance in this area, with percentages much lower than the other territories, even during the crisis period, and these have continued to drop since 2014.

Unlike Spain, the Basque Country has managed to return to low levels of inequality, comparable to its European neighbours

Lastly, as regards to income distribution, the S80/S20 index (which measures the ratio between the 20% of people with the highest equivalent per capita income in the income distribution and the 20% of people with the lowest income) indicates that, although inequality increased during the crisis, it has declined again since 2013, approaching the values for the EU-28 and Germany.

It is thus possible to conclude that in a favourable economic context, the majority of the final outcome indicators for the Basque Country have improved and that in general, the region remains in a favourable position in comparison with other territories. Unlike Spain, the Basque Country has managed to return to low levels of inequality, comparable with its European neighbours. However, in some indicators such as long-term unemployment, there is still evidence of the greater impact of the crisis on Spain and the Basque Country. The crisis left in its wake a group of people who have had difficulty re-joining the job market, and although that group has decreased, their numbers continue to be significant.

[7] For more details on calculations for this indicator, see the section on average and median income in the online INE (Spanish National Statistics Institute) publication 'Indicadores de Calidad de Vida' (Quality of Life Indicators).

3
Intermediate performance

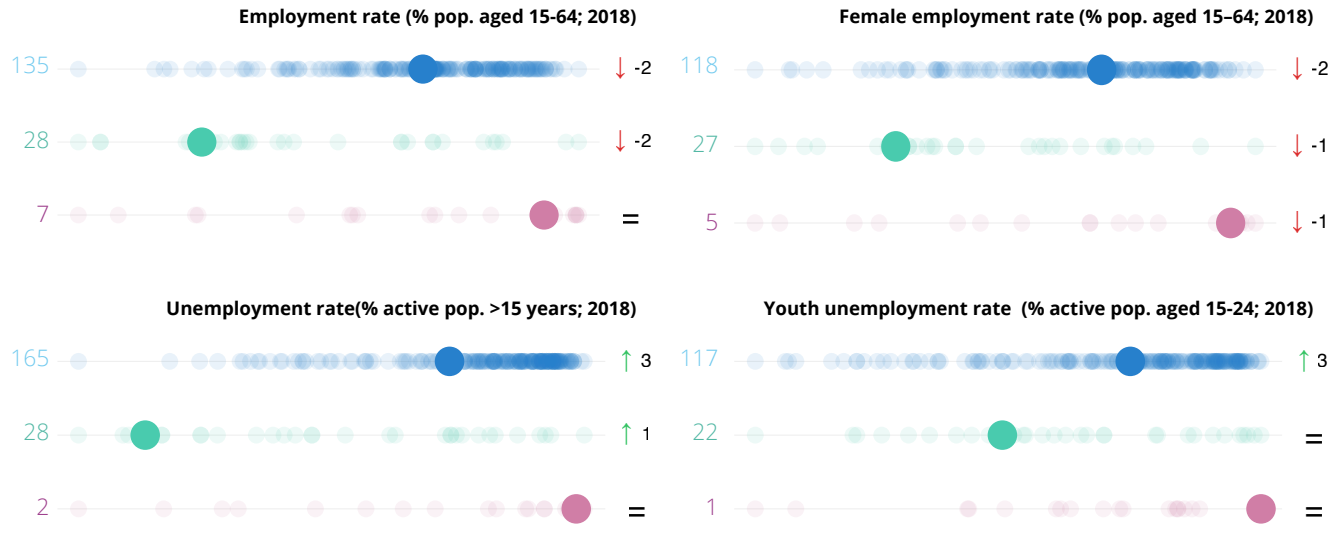
We will now discuss the intermediate performance indicators, those which contribute to achieving the final outcomes presented in the previous section. These indicators include elements related to employment and unemployment, productivity, net migration and innovation outcomes. The indicators are analysed in the following subsections, along with an additional analysis of certain indicators which are available for the Basque Country and as totals for Spain, Germany and the EU-28, but not for European regions as a group. Thus, in the first subsection we analyse the results in terms of trends in employment, as positive economic outcomes will only extend to the population as a whole if they are achieved by means of job creation and the resulting reduction in unemployment. If the economy is able to generate jobs, this will translate into a positive trend in net migration, as this is closely linked to the economic situation. Job creation will depend on firms being able to increase their foreign sales and will be reflected in flows of foreign direct investment. For this reason, internationalisation outcomes are also analysed in one of the subsections. These outcomes will in turn be the result of higher productivity, which depends on the results achieved in terms of innovation.

3.1 Employment and unemployment

Total and female employment rates in the Basque Country have shown positive growth in recent years, but there is still margin for improvement

Employment indicators have been trending positively in recent years, with a steady rise in both total and female employment rates (see Graph 2). The latter is lower than the total, but close to the European average. However, in both cases there is room for improvement. Values for the Basque Country, although higher than those for Spain, are lower than those of Germany and the comparable regions, and in the case of total employment, the European average. As a result, in Table 4 we can see that the Basque Country continues to rank in the middle in comparison with the European regions, low in comparison with the comparable regions, and middle-to-high in comparison with Spanish autonomous communities and cities.

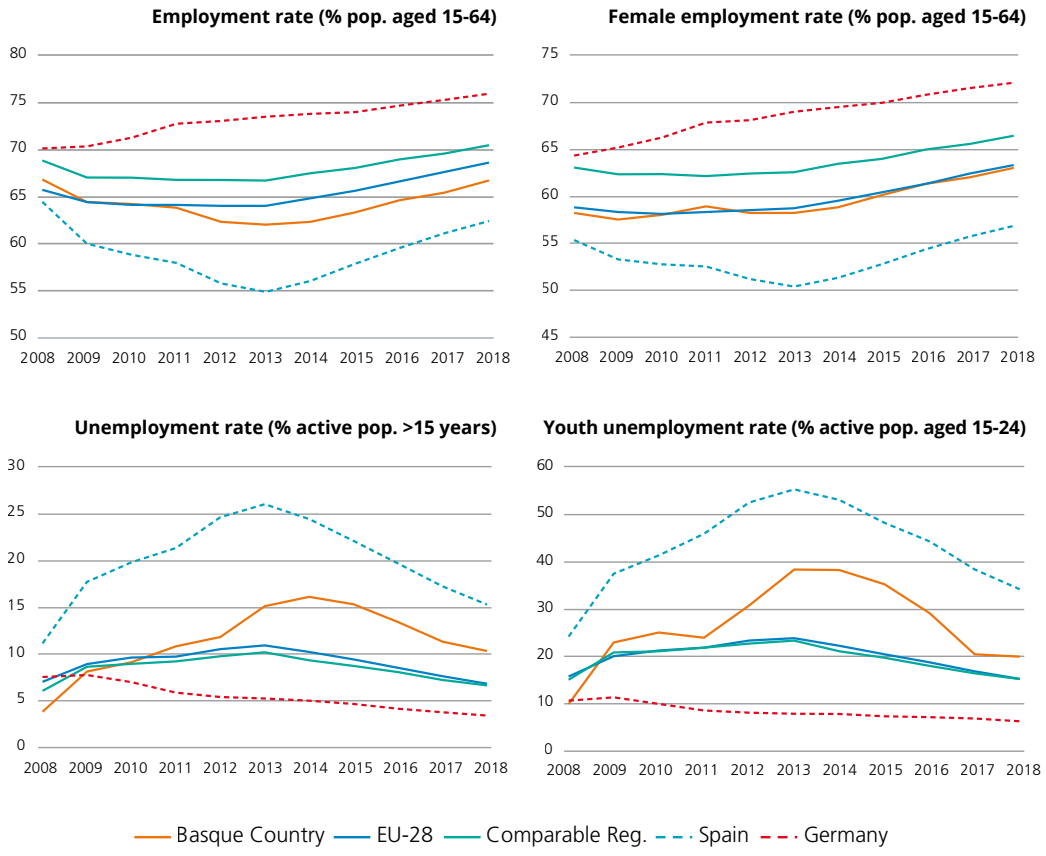
TABLE 4 Status of the Basque Country in terms of employment and unemployment indicators



Source: Eustat (Basque Statistics Office), Eurostat. Compiled by authors.

NB: Except when no data were available, the rankings have been compiled based on 218 European regions (in blue), the Basque Country and the group of 30 comparable regions (in green), and the 19 Spanish autonomous communities and cities (in red).

GRAPH 2 Variation in employment and unemployment indicators



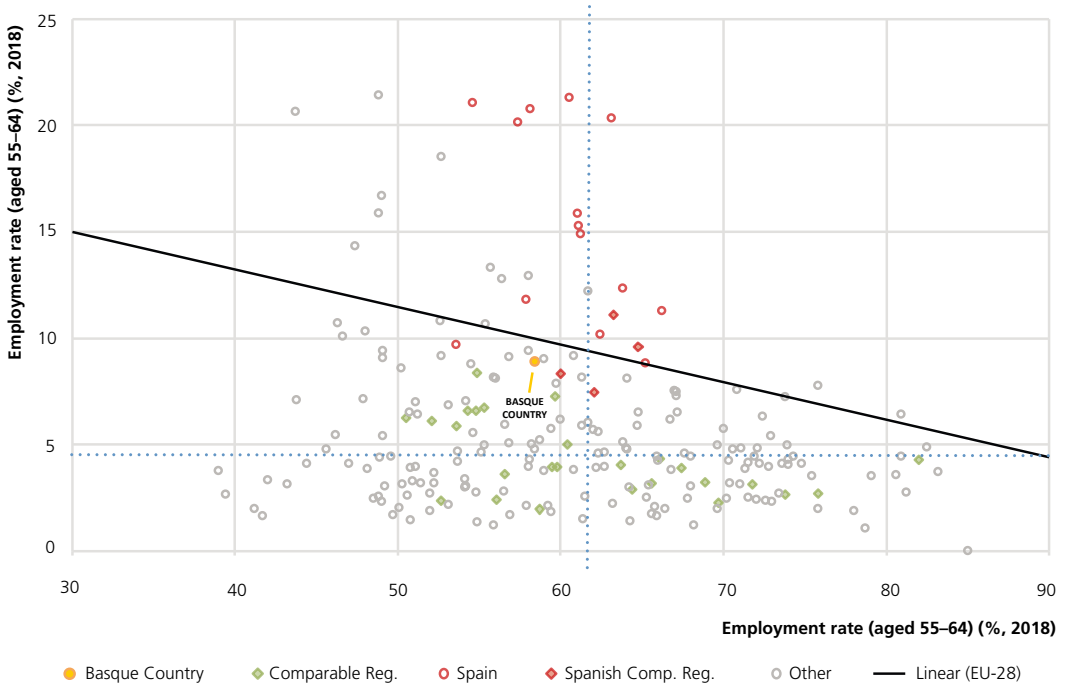
Source: Eustat (Basque Statistics Office), Eurostat. Compiled by authors.

Despite the fact that unemployment rates have been declining in recent years, the Basque Country ranks low in comparison with Europe

Higher employment depends both on increasing the labour force participation rate and on growing the percentage of the labour force in work. For this reason, it is of interest to analyse what is happening with unemployment rates. We present both the total unemployment rate and that which affects the youngest group of people, between the ages of 15 and 24 (which is almost double that of the population as a whole). In both cases, the Basque Country ranks low and even middle-to-low in comparison with European regions, low in the ranking with comparable regions, but in a good position within Spain. This is despite the fact that unemployment rates have been declining in recent years, although less sharply than in previous years.

Another segment of the population which receives less attention is persons over the age of 55, despite the fact that demographic pressure is making it increasingly more necessary for them to continue to hold jobs. However, they may have difficulty finding employment should they lose it. To give an understanding of the comparative position of this cohort of the population, Graph 3 shows labour force participation and unemployment rates. The blue lines on the graph represent the EU-28 average and we can thus see that the Basque Country has a combination of higher-than-average unemployment rates and lower labour force participation rates. Therefore, it is also necessary to focus on this group in order to prevent them from leaving the labour market and make it possible for them to remain employed in positions suited to their capabilities.

GRAPH 3 Labour force participation and unemployment rates (aged 55–64), (%, 2018)



Source: Eurostat.

And although it is important to create jobs, it is also necessary to analyse their quality. In this regard, Graph 4 shows trends in three indicators which measure job quality in the Basque Country, and in comparison with the EU-28 average, Spain and Germany. The first graph measures the percentage of self-employed

persons (business owners without employees or independent workers) and people who work in family businesses or firms within the working population. In both cases, these people's employment conditions are not usually comparable to those of employees. Thus, for example, García Perea and Román (2019)[8] point out that despite the introduction of the 'flat rate for self-employed workers' in payment of Social Security contributions, independent workers continue to lack the level of social protection generally enjoyed by employees. These authors likewise make reference to the fact that the percentage of workers who are not employees that choose to be own-account workers due to a lack of options is 26% in Spain, a figure which is higher only in three other EU countries.

In Graph 4 we can see a drop in the percentage of self-employed persons at the start of the crisis, as firms probably made a greater effort to retain internal employees, marking the beginning of the downturn in subcontracting of self-employed persons. However, in 2012 and 2013 there was a significant upturn in this indicator in both Spain and the Basque Country. This is because large companies turn to this resource when they have to downsize their employee positions, which then account for a smaller share of the total. When business activity and jobs begin to recover, employee positions (the option preferred by workers) begin to rise again and self-employed numbers stop growing. As a result, percentages having fallen back to 2010 levels. Levels in the Basque Country are below the Spanish and European averages but above Germany, where the proportion of employee positions is higher. A closer look at what is happening in other European countries reveals that the countries with the highest employment rates for non-employee positions are Greece and Italy, whereas those with the lowest rates are Germany, Austria and France. As García Perea and Román (2019) indicate, there thus appears to be a relationship between level of development and percentage of the population that are employees, although the trend appears to be that the percentage of employee positions is declining in most countries.

Job quality in the Basque Country did not improve during the period of recovery from the crisis

As regards to stability in terms of contracts, we find that although below the Spanish average, the percentage of temporary contracts is much higher than in Germany and the European average. And even more concerning, unlike what is happening in those territories, where these percentages remained relatively stable throughout the period under consideration, in the Basque Country, it has been increasing steadily since 2014.

Lastly, with respect to degree of dedication (full-time or part-time), we find that from 2009 to 2014 there was a sharp increase in involuntary part-time jobs (that is, those with a part-time contract who state that this is because they cannot find a full-time job). This is so common that in the last few years, almost 12% of people in work in the Basque Country found themselves in that situation. Since then, this percentage has dropped to 8.5%, although it is still some way from the European average (5%) and even further from that of Germany (2.7%).

[8] García Perea, P. and Román, C. (2019). 'Caracterización del empleo no asalariado en España desde una perspectiva europea'. Boletín Económico (Jun).

GRAPH 4 Job quality

Source: Eurostat and INE (Spanish National Statistics Institute). Compiled by authors.

NB: The self-employed data for Germany and the EU-28 includes members of cooperatives, as these data are not disaggregated at the European level.

3.2 Net migration

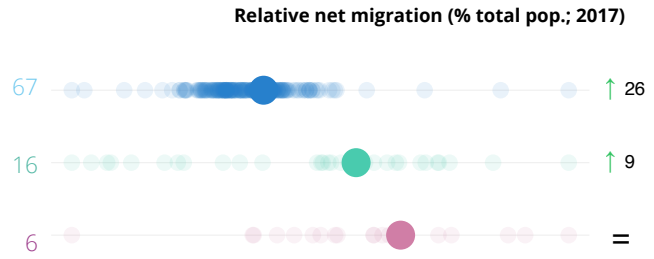
Net migration is included as an intermediate performance indicator because a competitive territory creates jobs that attract more people than the number of those who leave it, although there are exceptional socio-political factors which may distort the territory's pull effect in its migration balance. Thus, for example, many regions of Greece and Southern Italy are reporting very high migration balances as a result of restrictions on the freedom of movement of persons which are being established within the EU for socio-political reasons. If these restrictions didn't exist, those immigrants would leave for other countries. In Table 5 we can see that the Basque Country ranks in the middle among the European regions as a whole and that the majority of the comparable regions have more favourable migration balances. Graph 5 shows the trend for this indicator, which in the Basque Country fell during the early years of the crisis,[9] becoming negative only after 2012 and bottom-

[9] In previous competitiveness reports, we saw that in the early years the migration balance was negative, in part due to people originating from the Basque Country moving abroad and in part because of the foreign population returning to their countries of origin. However, the overall balance remained positive because more people arrived from the rest of Spain than those who moved there.

ing out in 2013. After that point, it began to climb again, returning to positive numbers in 2015. Trends in other territories have varied, but in the last two years for those regions that have available data (2016 and 2017), the migration balances of all the territories under consideration were closer, with the Basque Country and Spain reporting slightly higher values than the European average and lower than Germany.

Since 2015, the Basque Country's migration balance has been positive, reaching levels slightly above the European average

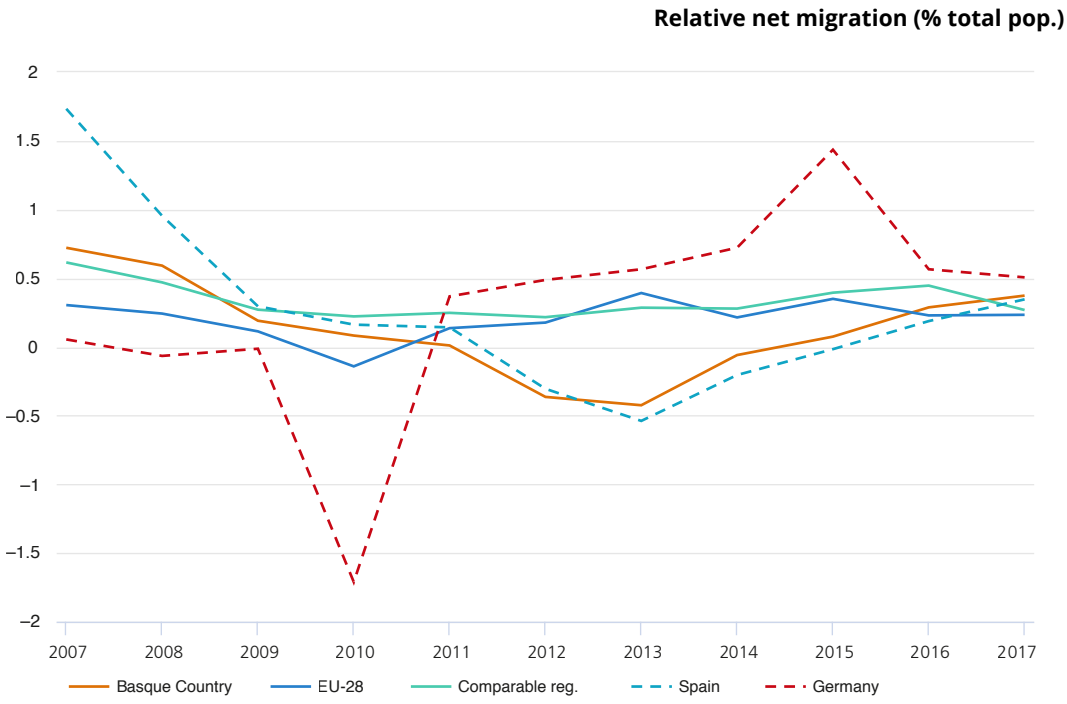
TABLE 5 Status of the Basque Country in terms of net migration indicators



Source: Eurostat. Compiled by authors.

NB: Except when no data were available, the rankings have been compiled based on 218 European regions (in blue), the Basque Country and the group of 30 comparable regions (in green), and the 19 Spanish autonomous communities and cities (in red).

GRAPH 5 Variation in net migration indicators



Source: Eurostat. Compiled by authors.

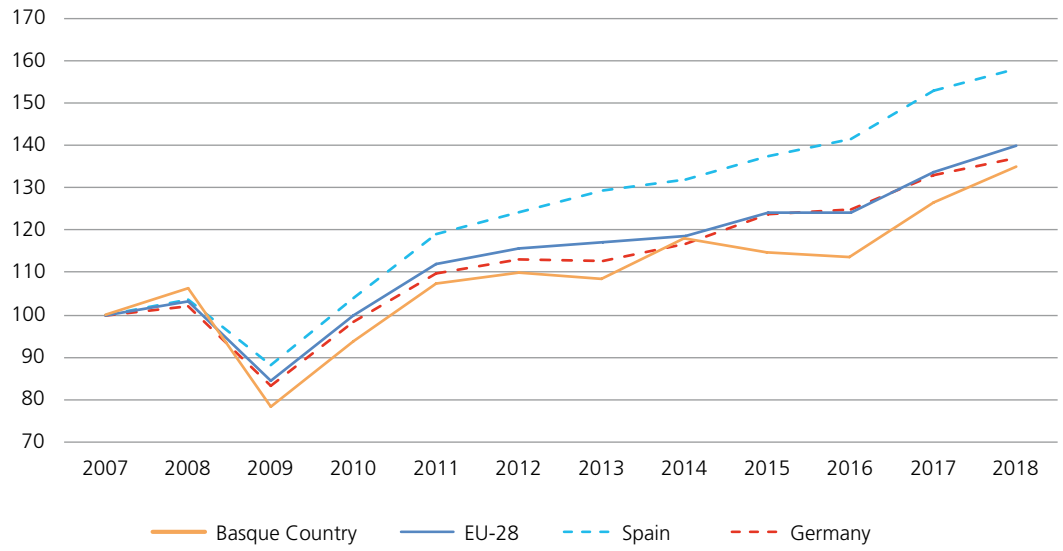
3.3 Internationalisation

3.3.1 Trade in goods

In 2017 and 2018, the Basque Country reported greater growth in the value of exports, due in part to the petroleum refining industry

Graph 6 shows the trend in Basque exports, in comparison with other territories. Here we can see that the effects of the crisis were overcome beginning in 2009, such that by 2011 Basque exports had returned to pre-crisis levels. Throughout the period, Basque exports followed a similar trend to that of the other territories considered, but they grew more slowly than those of the rest for the period as a whole. However, as was the case in 2017, in 2018 that the Basque Country saw the highest growth in export value (6.8%). This is partially due to the higher growth seen in exports of the oil refining sector within total Basque exports for 2017 and 2018.

GRAPH 6 Variation in export value, valued in euros (2007 = 100)



Source: Unctad and Eustat (Basque Statistics Office).

Analysis of Table 6 allows us to consider the performance of Basque exporters in comparison with those in Spain. In 2018 we see a change in the trend of increases in the number of exporters in recent years, falling 1.5% in comparison with 2017. With regard to that year, this drop constitutes a smaller proportion of Basque exporters out of total Spanish exporters (7.8%) and out of all Basque firms with employees (21.4%). However, it should be noted that the percentage of Basque firms as a whole represented by Basque exporters is greater than that of Spanish exporters in relation to Spanish firms as a whole (21.4% compared to 13.7%).

The number of Basque exporters declined in 2018, but the number of regular exporters and the average value of exports per firm increased

What is more, despite a drop in the Basque export base, the value of the region's exports was higher in 2018 than in the previous year (topping 25 billion euros), as was the average value of exports per firm, which in contrast, decreased in Spain. Another positive element is that the percentage of regular exporters (that is, those that have exported over the last four successive years) was up 3.6% in the last year, thus returning to the growth trend which commenced in 2012 and which was cut short in 2017. In the case of Spain, however, this declined.

In both territories, firms exporting less than €50,000 account for 81% of all exporters (Basque and Spanish) and just 0.2% of export value. In terms of cumulative export percentage, however, there are significant differences. While in the Basque Country, the top 25 firms by export volume represent 45% of exports and the top 1,000 account for 97%, in Spain the top 25 account for 24% and the top 1,000, 68%. This highlights the higher level of corporate concentration among exporters in the Basque Country.

The Basque Country shows a greater concentration of business exports than Spain as a whole

TABLE 6 Profile of Basque exporters compared to Spanish

		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Indicators linked to the number of exporters	No. of export firms	6,837	7,171	7,162	7,479	11,399	13,180	13,547	13,923	14,461	14,831	16,145	15,906
	% of Spanish firms	7.0	7.1	6.7	6.8	9.3	9.6	9.0	9.4	9.8	10.0	10.0	7.8
	% of total firms with employees		8.5	8.7	9.3	14.7	17.3	17.6	18.6	19.6	19.5	22.3	21.4
	% of firms with over €50,000 in exports	40.6	40.4	37.3	37.9	25.3	23.3	22.8	22.6	21.0	20.7	19.5	19.0
	% of Spanish firms with over €50,000 in exports	7.8	8.2	7.9	8.1	8.0	8.1	7.9	8.0	7.9	8.0	8.2	7.9
	% of regular exporters, Basque Country	37.5	35.6	38.2	36.4	23.0	20.4	21.7	31.6	32.2	32.8	30.8	31.9
	% of regular exporters, Spain	40.2	39.1	36.5	35.4	30.3	27.9	27.2	31.0	32.4	33.5	31.3	25.4
Indicators linked to export value	Value of exports, Basque Country (million €)	19,072	20,279	14,942	17,875	20,487	20,971	20,631	22,501	21,866	21,615	24,109	25,473
	Value of exports, Basque Country (% of Spain)	10.3	10.7	9.3	9.6	9.5	9.3	8.7	9.4	8.8	8.4	8.7	8.9
	Average value of exports per firm, Basque Country (thousand €)	2,790	2,828	2,086	2,390	1,797	1,591	1,523	1,616	1,512	1,457	1,493	1,601
	Average value of exports per firm, Spain (thousand €)	1,899	1,866	1,486	1,708	1,748	1,644	1,560	1,627	1,695	1,725	1,711	1,396
	% of exports, firms with over €50,000 in exports	99.8	99.8	99.7	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8
	% of exports, 5 largest, Basque Country	23	23	22	21	23	23	21	24	23	25	26	26
	% of exports, 25 largest, Basque Country	43	42	39	43	43	43	41	44	43	44	45	45
	% of exports, 5 largest, Spain	11	10	11	10	9	10	10	10	10	11	11	10
	% of exports, 25 largest, Spain	25	24	23	23	23	24	25	25	25	25	25	24
	% of export value, regular exporters, Basque Country	92	92	93	91	93	92	93	91	93	94	96	95
	% of export value, regular exporters, Spain	90	90	92	91	91	91	92	93	93	94	95	95

Source: ICEX (Spanish Institute for Foreign Trade) and INE (Spanish National Statistics Institute). Compiled by authors.

In order to try to make a more detailed estimate of certain aspects of the major exporters in the Basque Country, we have taken the 25 largest by export volume according to the SABI database. It should be pointed out that this selection of firms does not coincide with that mentioned above in Table 6, which is taken

from the ICEX (Spanish Institute for Foreign Trade). Thus, in the case of SABI, the exports of firms operating in the Basque Country (and which therefore export from the Basque Country) but headquartered elsewhere, are not counted (the case of firms such as Mercedes and Michelin). By contrast, the exports of Basque firms made from their plants situated outside this autonomous community *are* credited to the Basque Country. Furthermore, it is possible that some Basque firms are not included in SABI (for example, cooperatives) or they do not appear as exporters because their export figures are not known.

Taking these elements into account, the territorial analysis of the 25 Basque firms with the highest volume of exports presented in Appendix 1 shows that the majority of them are located in Bizkaia (60%). In the group of Basque exporters contained in SABI, this location also dominates, but by less than 50%. Therefore, territorial concentration increases as we consider firms with higher levels of exports. In terms of jobs, we also find certain particular features among the leading exporters. They are mainly large firms with 500 or more employees (SMEs represent 32%), while the largest firms only represent 4% of total Basque exporters, compared to 92% by SMEs. The economic activities of the 25 largest exporters in the Basque Country are concentrated in metallurgy and motor vehicle manufacturing, and they all have a volume of exports in excess of 160 million euros (20% of them over €500 million). Exports as a percentage of average sales are close to 72% for these large exporters, whereas they represent less than 42% for all other firms.

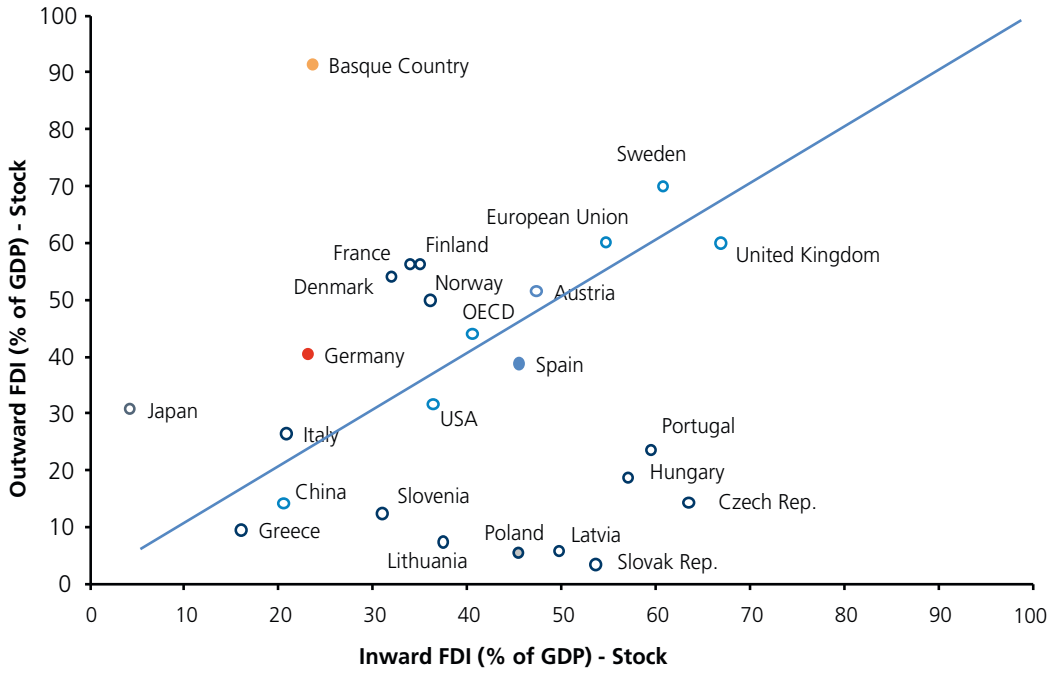
3.3.2 Foreign direct investment

Foreign direct investment (FDI) is made up of those transactions by means of which a direct investor acquires or increases their interest in a firm resident in another country (firm receiving the direct investment or, hereinafter, firm with direct investment) such that they may exert effective influence in the management of that firm. Indicators of inward and outward foreign direct investment are associated with such aspects as the attractiveness of a territory for doing business, accessing its knowledge and/or high-level innovation system, market, inputs, etc. In this context, we analyse indicators of inward and outward investment capital, distinguishing between stock level and flow within these.

In terms of stock of foreign direct investment, outward capital flows for the Basque Country are much higher than inward flows

In relation to FDI stock, from Graph 7 we can see that, as generally is the case in advanced economies, the Basque Country has much higher values in terms of outward FDI (capital of Basque investors abroad) than inward. However, this could also be interpreted as a sign of barriers of a different type (for example, the cooperative nature of most of its business fabric, which hinders its acquisition by foreign capital) or even – according to Dunning's eclectic theory, which includes the conditions which must exist for that direct investment to take place – fewer location benefits in the Basque economy to attract this capital. Whatever it may be, the Basque Country appears to be in line with such advanced economies as Germany, Japan and Korea, characterised by a high degree of specialisation in manufacturing and a relatively small stock of foreign direct investment captured from abroad. The high values of outward stock are therefore a reflection of investments and rollouts by Basque firms abroad.

GRAPH 7 Inward and outward FDI stock (% of GDP, 2018)



Source: Ministry of Economy, Industry and Competitiveness, foreign investment bulletins. UNCTAD. DataInvex. Eustat (Basque Statistics Office). Compiled by authors.

NB: Beyond the graph there are several OECD countries with a stock of inward and outward capital above 100% (Belgium, Ireland, Luxembourg, Netherlands and Switzerland).

The analysis of the stock is supplemented by trends in FDI flows. From Table 7 it is clear that FDI began to flow into the Basque Country to a greater extent from 2013, surpassing the values for Spain and Germany almost every year, and the European average most years. By 2016 and 2017, inward flows had reached an absolute level higher than those prior to the crisis. As regards the trend in outward FDI flows, before the Basque economy received the second great pounding in the crisis in 2011, outward FDI flows were holding up better than in the other economies. However, between 2011 and 2015, outward FDI from the Basque Country stayed at very low levels, before recovering after 2015 and generally moving into a position above other territories.[10]

The Basque Country's inward and outward flows of foreign direct investment are, in general, above the European average

[10] It should be borne in mind that some of the fluctuations in FDI flows originate in financial sector investments.

TABLE 7 Foreign direct investment (% of GDP)

		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Inward flow of FDI (% GDP)	EU-28	4.6	1.6	2.3	2.1	2.4	2.8	1.9	1.4	3.1	3.2	1.8
	Germany	2.3	0.2	0.7	1.9	1.8	0.8	0.4	0.1	1.0	0.5	0.9
	Spain	4.3	4.7	0.7	2.8	1.9	1.9	2.7	1.8	1.6	1.6	1.5
	Basque Country	2.3	0.5	0.2	0.3	0.8	0.7	1.7	2.1	1.2	2.8	3.6
Outward flow of FDI (% GDP)	EU-28	6.8	3.9	2.1	2.7	2.7	2.4	1.9	1.2	3.7	2.7	2.5
	Germany	4.9	1.9	2.0	3.7	2.1	1.8	1.1	2.6	3.2	1.5	2.2
	Spain	9.3	4.6	0.9	2.6	2.8	–0.3	0.9	2.5	4.2	3.1	3.1
	Basque Country	42.4	7.1	2.3	3.2	8.1	0.7	2.0	1.1	0.7	4.7	2.6

Source: Ministry of Economy, Industry and Competitiveness, foreign investment bulletins. UNCTAD. DataInvex. Eustat (Basque Statistics Office). Compiled by authors.

The percentage of Basque firms with shareholdings abroad is greater than those which are affiliates

Other indicators of the internationalisation level of the local productive fabric relate to the shareholding interest held by local firms in foreign firms, and the interest of foreign-owned companies in local firms, information which obtained from the SABI database. In the first case, Table 8 shows that shareholdings in firms abroad held by both Basque firms and those from the rest of Spain have been increasing in recent years, and this figure is higher in the case of Basque firms of all sizes. Shareholdings in local firms held by foreign shareholders have also increased, but are lower in the Basque case than in Spain. This means that the percentage of Basque firms with shareholdings abroad is greater than those which are affiliates, with the opposite being true for Spanish firms of every size in 2017.

TABLE 8 Firms with foreign shareholders

% of active firms with affiliates abroad

		Employee band			
		<50	50-249	>249	Total
Rest of Spain	2008	0.4	9.1	30.4	0.7
	2011	0.5	11.7	32.8	0.9
	2013	0.6	12.9	29.7	1.0
	2017	0.9	14.7	32.4	1.3
Basque Country	2008	0.7	16.0	34.7	1.5
	2011	0.9	19.7	37.2	1.7
	2013	0.9	19.1	35.1	1.7
	2017	1.2	22.1	38.5	1.9

% of active firms with foreign shareholders

		Employee band			
		<50	50-249	>249	Total
Rest of Spain	2008	0.7	8.7	24.7	1.0
	2011	0.8	10.3	24.6	1.1
	2013	1.0	12.4	25.3	1.3
	2017	1.4	15.6	31.9	1.8
Basque Country	2008	0.7	10.5	18.6	1.2
	2011	0.7	10.3	15.2	1.1
	2013	0.9	10.5	17.6	1.3
	2017	1.2	15.0	23.1	1.7

Source: SABI-Informa. Compiled by authors.

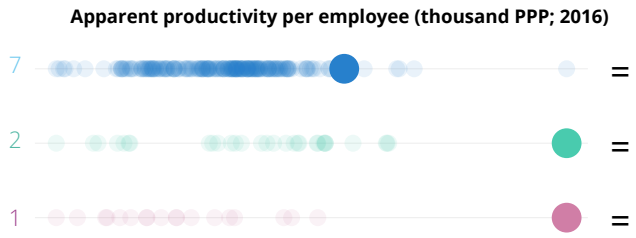
3.4 Productivity

The results achieved in terms of productivity constitute another intermediate performance indicator, as improving this area is a requirement in order to be competitive. Table 9 and Graph 8 present the comparative position and trend in apparent produc-

tivity per employee in purchasing power parity terms. Basque productivity remains at the top of all the rankings considered, with much higher values than the rest of the territories and steadily increasing values. However, the picture would be different if the analysis were conducted based on hours worked rather than per worker because, as we will see in section 4.1.3, the number of average hours worked is higher in the Basque Country than in other territories. Furthermore, unlike that of other territories, here it has increased in recent years.

Apparent productivity of labour values for the Basque Country are much higher than in the other territories, and have increased steadily

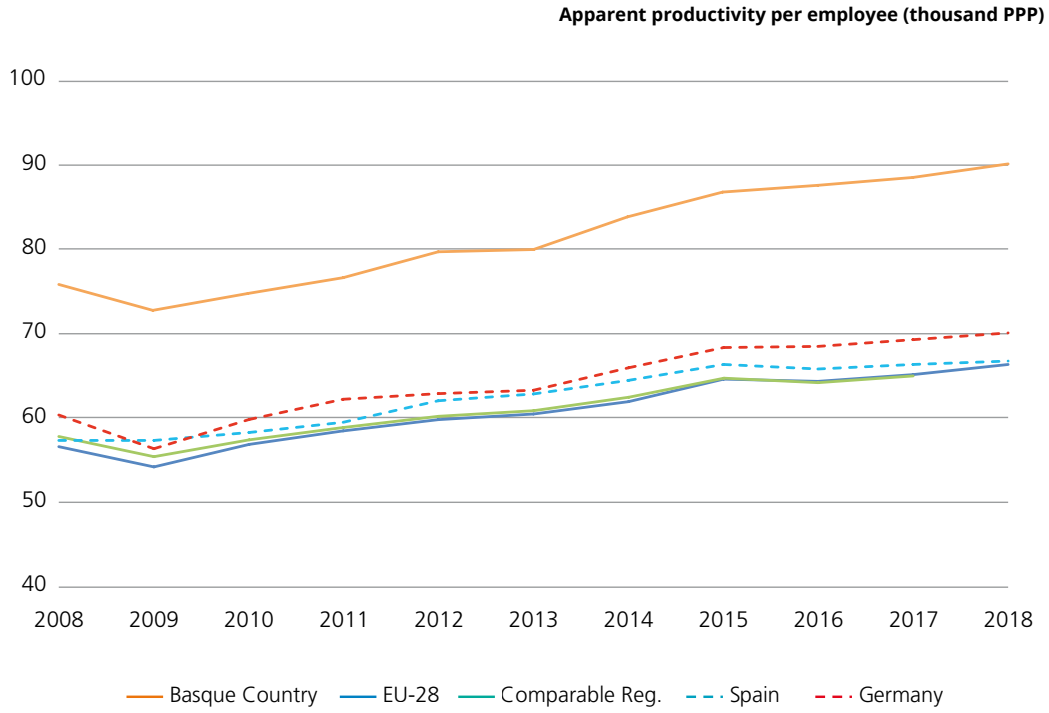
TABLE 9 Status of the Basque Country in terms of productivity indicators



Source: Eustat (Basque Statistics Office), Eurostat. Compiled by authors.

NB: Except when no data were available, the rankings have been compiled based on 218 European regions (in blue), the Basque Country and the group of 30 comparable regions (in green), and the 19 Spanish autonomous communities and cities (in red).

GRAPH 8 Variation in productivity indicators

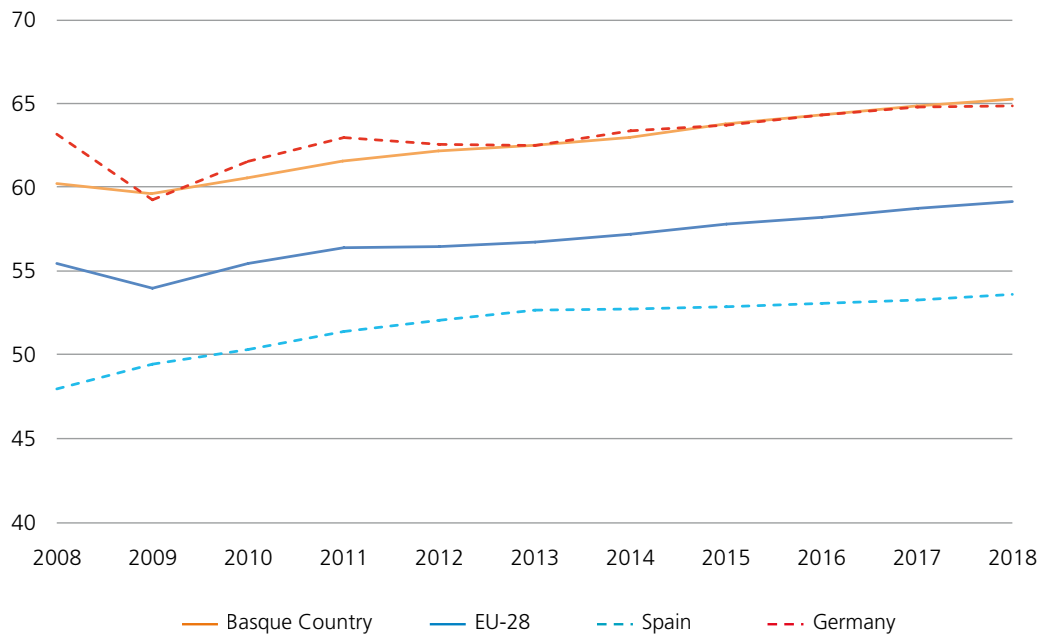


Source: Eustat (Basque Statistics Office), Eurostat. Compiled by authors.

Measuring data in PPP terms has the disadvantage of applying national average values, without taking price differences in different regions into account. As a result, in the case of the Basque Country (where prices are higher) this may lead to an overvaluation of productivity. For this reason, the analysis is supplemented with productivity values (measured as the coefficient between GVA and the number of people in work) in constant terms (see Graph 9). Measuring in euros corrects for overvaluation in output measurement, and measuring in constant terms counteracts the effects of inflation. In this case, we can also see that Basque productivity has been increasing at very similar rates to the German average, far above the European average and even further above Spain. One positive aspect is that even though some years ago, increases in productivity were primarily due to production remaining steady and job cuts, in recent years, it has been accompanied by net increases in employment. This will be discussed in greater depth in section 4.1.3, where, in analysing the trend in labour costs, we also analyse their relationship to productivity. It will also be seen that another element which explains the higher productivity of the Basque Country is its industrial specialisation, as this sector has higher productivity than in other sectors.

In recent years, increased productivity has been accompanied by a net increase in jobs

GRAPH 9 Apparent productivity per employee (thousand € constant 2015), 2008–2018



Source: Eurostat and Eustat (Basque Statistics Office). Compiled by authors.

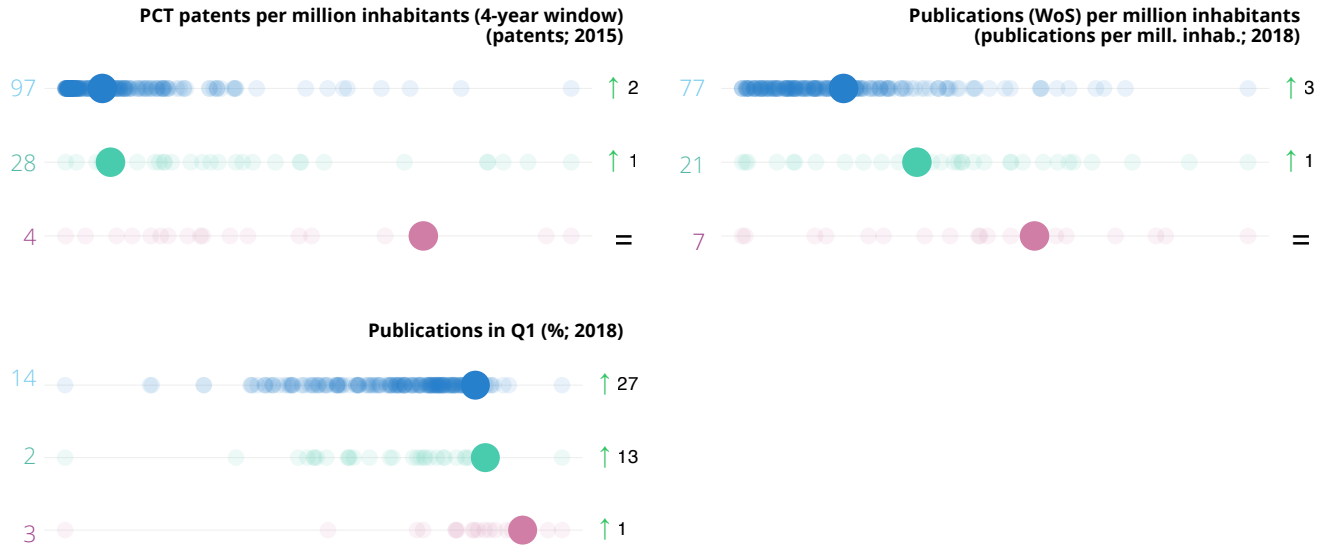
3.5 Innovation

One of the most commonly used indicators for measuring technological output is patents per million inhabitants, despite the limitations it presents (for example, not all industries use patents as a way to protect their innovations to the same extent, nor does everything that is patented turn out to be exploited commercially or take the form of a true innovation). This is an indicator which the

OECD has not updated since last year and for which, due to the delays which occur in publishing data on patent applications and these being associated with their priority date, data are only available up to 2015. As indicated in last year's report, the Basque Country's ranking in this indicator stands out as positive when compared to the Spanish autonomous communities and cities, but it is in an intermediate position with regard to European regions as a whole, and the Basque Country ranks close to the bottom among comparable regions, a considerable distance from the German level (internationally, the most notable country for this indicator), as well as from the EU-28 average.

The Basque Country ranks low in the patents per million inhabitants indicator, some distance from the European average

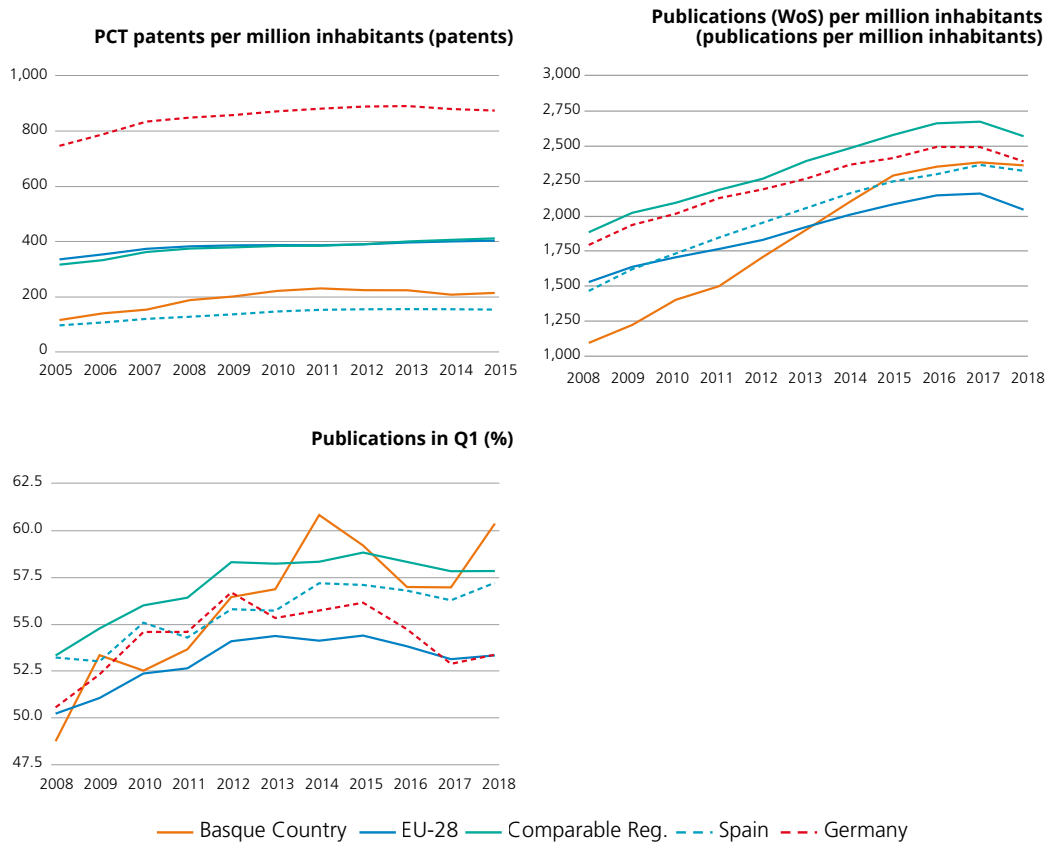
TABLE 10 Status of the Basque Country in terms of innovation indicators



Source: OECD REGPAT and InCites. Compiled by authors.

NB: Except when no data were available, the rankings have been compiled based on 218 European regions (in blue), the Basque Country and the group of 30 comparable regions (in green), and the 19 Spanish autonomous communities and cities (in red).

GRAPH 10 Variation in innovation indicators

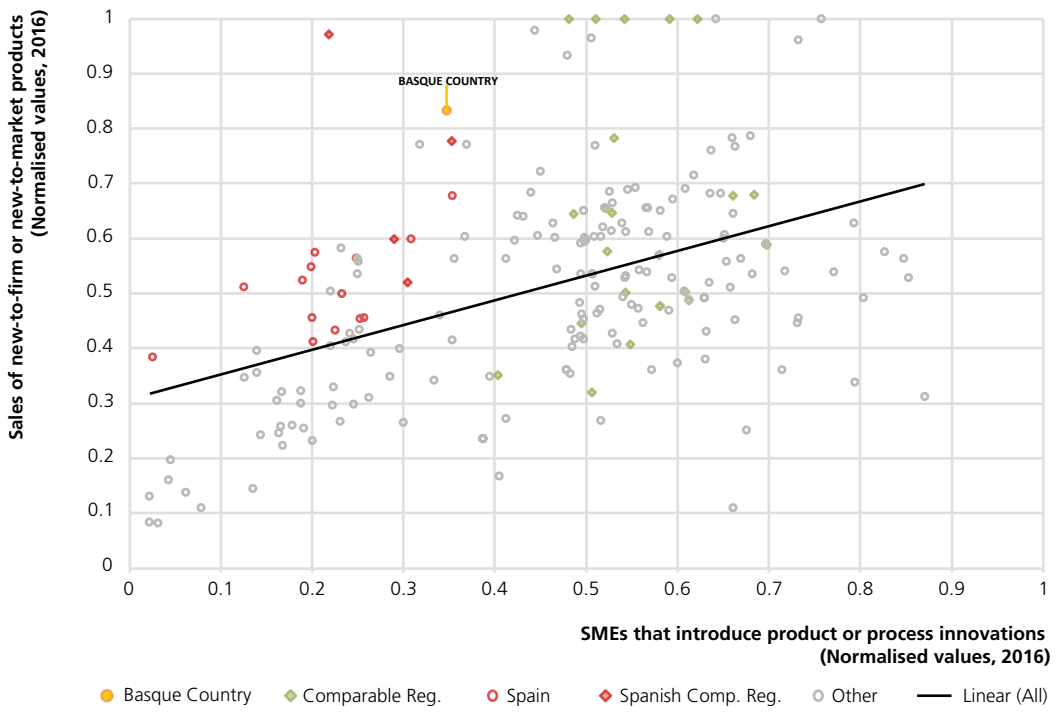


Source: OECD REGPAT and InCites. Compiled by authors.

The Basque Country's position in the ranking for scientific output is clearly higher than that for patents

In the science world, innovation output can also be measured using publications per capita indexed in the Web of Science (considered to be high quality in the academic sphere). This is a new indicator incorporated into the Competitiveness Observatory by Orkestra using InCites as a data source. Doing so makes it possible to obtain more recent estimates than those produced by Leiden University for the 2019 Regional Innovation Scoreboard (RIS). In this we see that, comparatively, the Basque Country's position in the ranking in terms of scientific output (primarily dependent on the research activity of universities and research centres) is clearly better than in patents (primarily dependent on the research activity of firms and technology centres). This is the result of the strong commitment of the Basque Country, starting in the first decade of the century, to reverse the weakness of its scientific system, compared to other advanced economies. Thus, the growth of publications in the Basque Country was very high until 2015, when it topped the Spanish average, and since then, it has been growing at a similar rate to that of other comparable territories. One area in which Basque publications stand out positively is the indicator that measures the percentage of publications in journals with the greatest impact (those in the first quartile in terms of their impact factor). The Basque Country ranks very high in this indicator, indicating that there is an effort to publish in journals with the greatest impact.

GRAPH 11 Index of innovative companies compared to sales of new-to-firm or new-to-market products (normalised values, 2016)



Source: Regional Innovation Scoreboard with data from the Community Innovation Survey 2016.

The 2019 RIS was published recently. This publication calculates a compound indicator which combines output indicators and input indicators. The resulting typology may turn out to find similarity between regions that have very disparate performance, including in the same group regions with good and with mediocre results for innovation input with others that report the opposite performance, achieving good results despite not having invested as much. For this reason, as on previous occasions, instead of considering this compound indicator, we have reviewed the indicators used in order to incorporate those we consider most relevant into this analysis, including them in the appropriate section. Some of the indicators overlap with those that already form part of the framework, while others have been calculated specifically for that report, for example, through express requests from the Community Innovation Survey, as they are not available at the regional level in Eurostat. One of these indicators used to measure innovation performance is the percentage of sales that come from new-to-firm or new-to-market products, as this makes it possible to analyse to what extent innovation translates into higher sales. Unlike the patent indicator, which is in reality an indicator of the success of an invention process, frequently linked to R&D activities, but not necessarily to innovation, the sales of new products indicator more properly reflects that innovation has taken place and has reached the marketplace, also without necessarily having anything to do with prior R&D activities (as that sale of a new product may be due to an activity as prosaic as the purchase of a new machine). In Graph 11 we can see the very notable performance with regard to this indicator, much higher than might be expected if we consider the modest result in terms of the percentage of SMEs introducing product or process innovations, although the Basque Country stands out among Spanish regions in the latter indicator.

The Basque Country has performed notably well in percentage of sales from new-to-firm or new-to-market products

TABLE 11 Sales from all firms with 10 or more employees, according to their degree of product novelty (Basque Country, 2014–17; remainder, 2016)

		Basque Country 2014	Basque Country 2015	Basque Country 2016	Basque Country 2017	Spain	EU-28	Germany
Sales unchanged products (% of total firms)	Total	85.1	81.0	81.5	80.9	80.7	87.2	86.0
	Industry	83.7	78.5	76.8	76.8	72.2	82.3	81.0
	Services	87.8	85.7	90.0	89.1	89.2	91.1	91.5
	Small	92.1	88.4	92.0	89.4	95.9	92.2	95.2
	Medium	79.4	79.6	80.5	80.0	88.3	89.9	92.2
	Large	82.3	73.4	69.1	71.6	70.7	84.4	82.6
Sales new-to-firm products (% of total firms)	Total	9.5	10.3	10.4	10.5	9.5	7.4	11.0
	Industry	10.1	11.0	13.1	12.3	11.5	10.1	14.8
	Services	8.3	8.9	5.6	7.0	7.5	5.3	6.9
	Small	6.2	6.6	5.0	7.6	2.7	4.5	4.2
	Medium	11.7	12.4	13.9	12.8	7.8	5.8	6.4
	Large	11.2	12.4	12.8	11.2	13.1	9.1	13.5
Sales new-to-market products (% of total firms)	Total	5.4	8.7	8.1	8.6	9.8	5.4	3.0
	Industry	6.2	10.5	10.2	11.0	16.3	7.6	4.2
	Services	3.9	5.4	4.4	3.9	3.3	3.6	1.6
	Small	1.7	5.0	3.0	3.0	1.3	3.3	0.6
	Medium	8.8	8.0	5.6	7.2	3.9	4.3	1.4
	Large	6.5	14.2	18.1	17.2	16.2	6.5	3.9
Sales unchanged products (% of total innovators)	Total	76.8	72.0	72.3	71.6	72.9	83.9	84.6
	Industry	78.3	72.5	70.7	71.1	65.7	79.2	79.7
	Services	72.0	70.7	77.6	73.5	82.5	88.2	90.3
	Small	80.8	74.1	79.4	73.9	89.2	86.7	91.9
	Medium	69.2	69.8	73.1	71.7	81.6	86.0	90.9
	Large	80.5	72.7	67.8	70.4	67.2	82.6	82.2

Source: Eustat (Basque Statistics Office) and Eurostat.

The level of novelty of the products sold by Basque firms is particularly noteworthy in the industrial sector and for large firms

This analysis can be rounded out with a more detailed study of the Innovation Survey published by Eustat (Basque Statistics Office). Although it is necessary to take some methodological differences into account (which are discussed below in section 4.1.1), Table 11 shows that the percentage of sales corresponding to products which have not undergone changes is usually very large in the economy (in any event, over 80% for all firms, and over 70% for innovative firms). Additionally, this percentage is higher in services than in industry, and in small firms than in the largest ones. Those differences are also all the more marked when the comparison focuses on products with a more radical degree of innovation: those which are new to the market, and not just to the firm. In the comparison by territory, the Basque Country has shown some improvement in the degree of innovation in its products, ranking on the same level as Spain and ahead of the average for the EU and for Germany. The improvement is even greater if we focus solely on the group of innovative firms, for which the Basque Country shows a lower percentage of sales from unchanged products. The Basque Country's improvement has taken place particularly in industrial and larger firms although Basque SMEs also show improved innovative behaviour when compared to the other territories. What is more, we find that progress in the percentage of sales due to innovative products has been greater in the new-to-market category than just new-to-firm.

Unlike approaches to measuring innovation based on the use of a wide battery of indicators, which are largely based on innovation surveys, the traditional approach most used in economics to measure innovation is that pioneered by Nobel Prize winner Solow in the mid-20th century. Utilising what is known as growth accounting, this author proposed measuring innovation using total factor productivity (TFP).

In the topic report that accompanies this analytical report as part of the competitiveness report for this year, we have performed a growth accounting estimate for the Basque Country, using a methodology similar to that employed by *The Conference Board* for a wide range of countries. From the results of this, shown in Table 12, it is possible to conclude that TFP is beginning to recover following a sharp downturn early in the crisis. However, current growth rates are lower than those achieved during the 2001–2007 period and would be even lower still if they were compared with those achieved in the final decades of the last century. As TCB (2019)[11] and the OECD (2019)[12] warn, mature economies are facing low growth in productivity and standard of living. Amid this grim outlook (which is of particular concern for the USA), the Basque Country is close to the EU-28 average and clearly above that of Spain.

In the contribution of total factor productivity to productivity growth, the Basque Country is at around the EU-28 average

TABLE 12 Contribution of total factor productivity (TFP) to growth of the apparent productivity of labour

	2001-2007	2008-2012	2013-2018
Basque Country	0.42	–0.57	0.21
Spain	–0.87	–1.08	0.11
Germany	0.38	–0.55	0.36
EU-28	0.25	–1.06	0.25
USA	0.83	0.07	–0.07

Source: Compiled by authors based on data from Eustat (Basque Statistics Institute), IVIE (Valencian Institute of Economic Research), Alberdi (2015)[13] and The Conference Board.

3.6 Summary of intermediate performance indicators

In line with previous reports, the analysis of innovation as an intermediate performance indicator reveals the existence of certain weaknesses, especially as regards to patents, where the Basque Country ranks near the bottom among comparable regions. However, another set of indicators demonstrate that efforts made in recent years are bearing fruit. Highlights include firstly, strong performance in terms of scientific output, and secondly, the level of novelty of products sold by Basque firms.

Apparent productivity of labour, an indicator which must improve in order to be competitive, remains above that of comparable territories and is increasing stead-

[11] OECD (2019). OECD Compendium of Productivity Indicators 2019. OECD Publishing, Paris.
[12] The Conference Board (2019). The Conference Board Productivity Brief 2019.
[13] Alberdi-Larizgoitia, A. (2015). Indizea. Informe para Innobasque 2015. Innovación, capital intangible y productividad de la economía vasca 1995-2012. Vitoria-Gasteiz, Spain: Ekonomiaz.perea.

ily. In recent years, this productivity has also been accompanied by a net increase in jobs. One element which could partially explain this higher productivity in the Basque Country is its specialisation in the industrial sector, as productivity levels for this sector are clearly higher than those of the other sectors (and the economy as a whole).

The Basque economy has also seen positive growth in its export levels, although this has been due to trends in certain sectors. Until 2016, Basque exports followed a similar trend to those of the other territories considered, but with lower growth rates, whereas in 2017 and 2018, it was the Basque Country which saw the highest growth in export value, partially due to higher growth by oil refining exports. Basque exports also show significant dependence on a small number of firms, where a high percentage of all exports are concentrated. Among the remaining exporters, their number had been trending very positively in recent years, but decreased in the last year, which has resulted in an increase in the average value of exports per firm. However, one particularly positive item is the upswing in regular exporters.

All of this has translated into job creation, positive growth for employment rates, and immigrants once again coming to the Basque Country. Nonetheless, there is still considerable margin for improvement in different aspects related to jobs. Firstly, total and female employment rates still remain low in relation to comparable regions. Secondly, the quality of new employment contracts did not improve during the period of recovery from the crisis. This is reflected in the high percentage of temporary contracts – which have also been steadily increasing since 2014, unlike in other territories – the higher level of involuntary part-time employment than in the other territories analysed, and high unemployment rates, especially among young people and persons over the age of 55.

4
Determinants of competitiveness

The determinants of competitiveness are the most critical elements of the theoretical framework presented in Illustration 1, as they are the factors which affect the performance of a territory in terms of the outcomes (final and intermediate) analysed in the previous sections. Additionally, whereas public policies cannot usually directly impact outcome indicators,[14] it is however possible to reinforce the factors which underpin these results.

Public policies do not usually have a direct impact on performance indicators, but they do have a direct impact on the determinants of competitiveness

The theoretical framework identifies three groups of determinants of competitiveness: those associated with firm performance; those associated with the structure of clusters and groupings of related activities in the economy; and those associated with the business environment in general. Although it would be possible to think of many potentially interesting elements in each one of these groups, the available information is normally limited for the European regions as a whole. The aim of this section is to focus the analysis on certain aspects which are particularly significant and for which there exist available data for the regional comparison, and accompany them with other analyses specific to the Basque Country in which the comparison is made not with regional, but national data, then present an overview in order to learn how the Basque Country ranks in comparison with these other regions.

4.1 Firm performance

Under firm performance, we will be analysing various elements, starting with innovation inputs, which are more directly related to the innovation outcomes described in the previous section, and for which there are available data at the regional level in Europe. Next we describe the economic and financial performance of firms to understand how they have dealt with their debt and the results they have achieved in terms of profitability. Lastly, we analyse trends in labour costs.

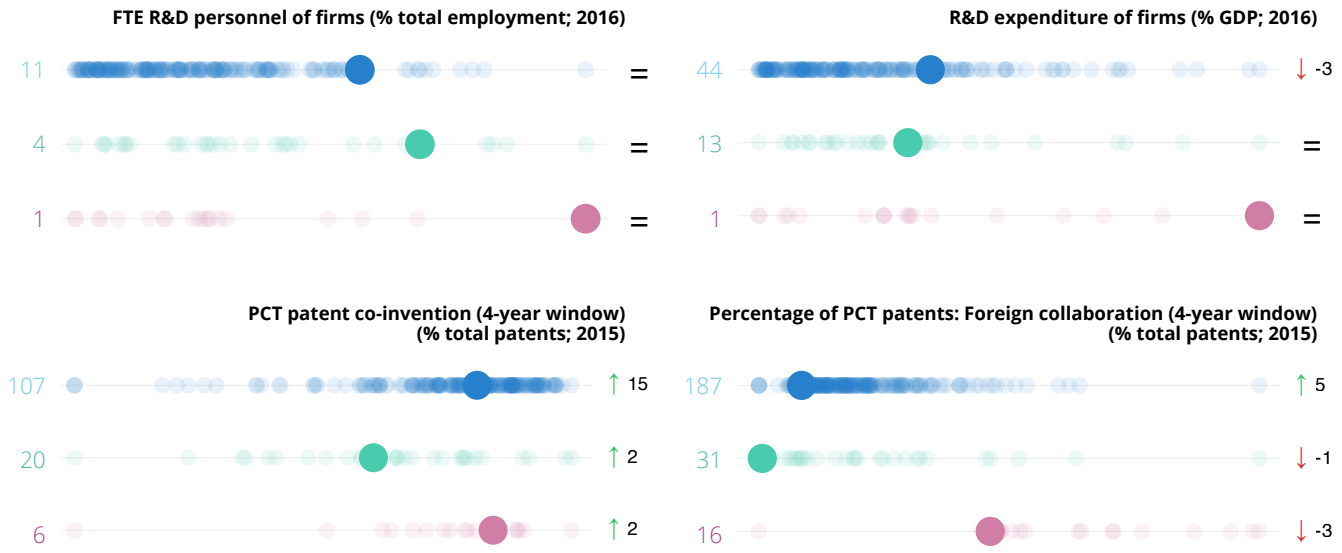
4.1.1 Innovation inputs

As we can see in Table 13, the firm performance indicators available at a regional level are very limited and are limited to performance relating to R&D, on both per-

[14] Among the outcome indicators considered, disposable income per capita and equivalent median income are in fact directly influenced by the effect of valuation and transfers.

sonnel and expenditure, as well as the weight of patent applications by firms within all patent applications by regional stakeholders. Additionally, although not exclusively related to the realm of business, this section includes performance with regard to patent co-invention.

TABLE 13 Status of the Basque Country in terms of the firm performance indicators



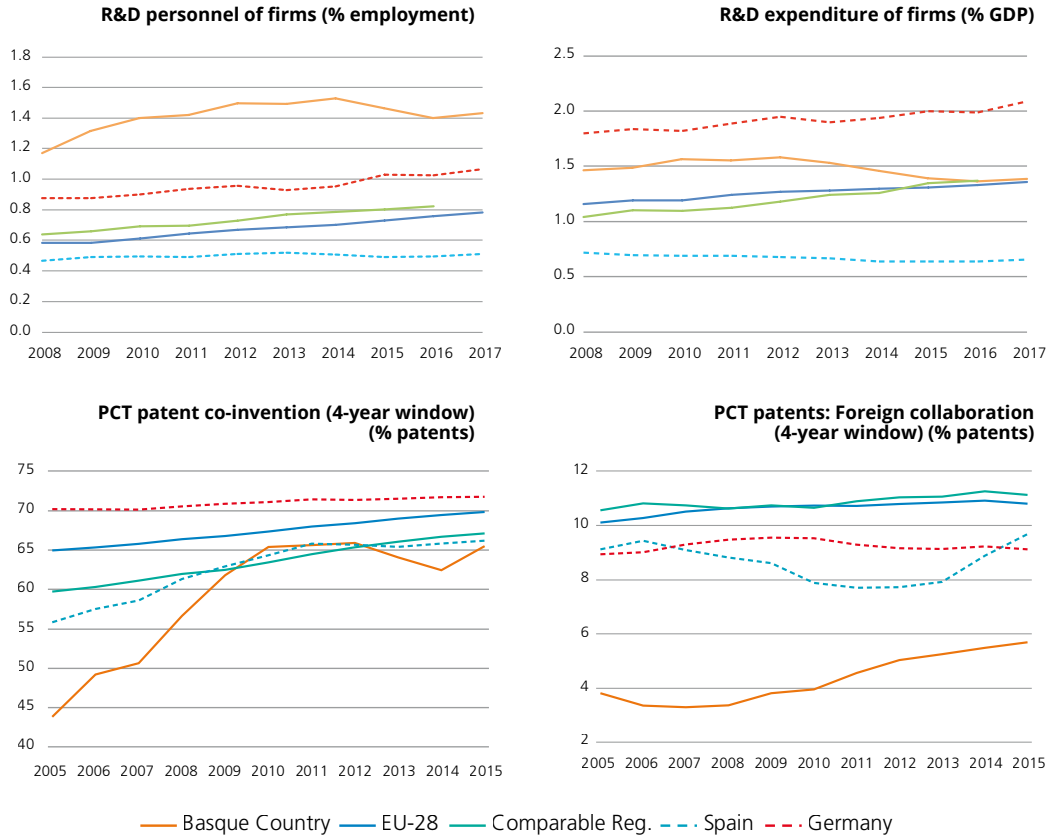
Source: Eurostat, Eustat (Basque Statistics Office) and OECD REGPAT. Compiled by authors.

NB: Except when no data were available, the rankings have been compiled based on 218 European regions (in blue), the Basque Country and the group of 30 comparable regions (in green), and the 19 Spanish autonomous communities and cities (in red).

The Basque Country is in a strong position in the ranking for both business R&D personnel and expenditure, although expenditure has stagnated in recent years and is a considerable distance behind Germany

As regards to performance in the area of R&D, the Basque Country ranks very well in all areas, both personnel and expenditure. As mentioned in previous reports, this aspect requires clarification, because it is necessary to take into account that these figures include R&D personnel and expenditure at technology centres and CRCs, meaning that the comparison is slightly distorted. Even so, as we can see in Graph 12, expenditure levels are quite a bit lower than the German average. What is comparable is the trend in the value of these indicators. In the case of the R&D personnel indicator, which had dropped in 2015 and 2016, it went up again in 2017, which is also the case of the European average and in Germany. Business R&D expenditure, however, stagnated in the last two years, and with the decline in previous years, it is now on par with the EU-28 average, above the value for Spain, but a considerable distance from Germany, which has followed an upward trend in recent years.

GRAPH 12 Variation in firm performance indicators



Source: Eurostat, Eustat (Basque Statistics Office) and OECD REGPAT. Compiled by authors.

As last year's competitiveness report showed, with regard to indicators related to patents, the Basque Country is not as well positioned, in middle to low positions in the rankings. This is also reflected in the trend graphs, where we can see that the levels of patent co-invention and patents with foreign collaboration (which reflect the ability to take advantage of knowledge located abroad, overcoming the limitations of being based solely on own knowledge) are lower than other territories in recent years. However, it is worth noting the positive trend in the most recent year available (which, in the case of patents is 2015). This upward trend is not seen in the percentage of patent applications by firms, which dropped in that last year.

The percentage of enterprises with 10 or more employees that do some type of innovation is lower than in other comparable territories, especially among smaller firms

To better understand business performance in terms of innovation, the comparative data at the regional level are supplemented by analysis of the innovation survey conducted by Eustat (Basque Statistics Office), whose results are compared with data for Spain, Germany and the EU-28 average as published by Eurostat. Table 14 shows that a little over 44% of enterprises with 10 or more employees carry out some sort of innovation. This percentage, although higher than Spain for firms (37%), is lower than that of the EU (51%) and Germany (64%). The Basque Country faces a significant challenge in this respect. Given that innovation performance is different in industry and services, and also depending on firm size, the data have been broken down based on these characteristics. We find that the disadvantage in comparison with the EU-28 and Germany appears in both industry and services, but is especially concentrated in small firms. How-

ever, although large and medium-sized firms do not reach German levels, the percentage of innovative Basque firms is above the EU average.

TABLE 14 Percentages of firms with 10 or more employees that innovate, by type of innovation (Basque Country, 2017; remainder, 2016)

		Basque Country 2017	Spain	EU-28	Germany
% innovators	Total	44	37	51	64
	Industry	47	39	52	69
	Services	41	35	49	59
	Small	39	32	46	58
	Medium	68	56	63	78
	Large	83	75	77	91
% with technological innovation	Total	41	23	39	50
	Industry	45	27	43	57
	Services	36	19	36	44
	Small	35	18	35	45
	Medium	66	42	51	62
	Large	83	48	50	62
% with product innovation	Total	25	11	26	32
	Industry	26	14	28	38
	Services	24	9	24	26
	Small	21	8	23	27
	Medium	43	25	35	41
	Large	59	44	51	63
% with process innovation	Total	27	15	25	27
	Industry	29	18	28	31
	Services	24	12	22	24
	Small	23	11	22	22
	Medium	42	29	34	37
	Large	63	50	50	60
% with non-technological innovation	Total	21	28	37	47
	Industry	20	27	36	48
	Services	23	29	37	46
	Small	19	25	33	41
	Medium	31	40	46	60
	Large	52	58	60	73
% with organisational innovation	Total	18	24	28	36
	Industry	16	22	27	36
	Services	20	25	30	35
	Small	15	20	25	31
	Medium	26	36	37	47
	Large	49	52	51	60
% with marketing innovation	Total	12	16	23	32
	Industry	9	15	22	31
	Services	15	16	24	32
	Small	11	14	21	28
	Medium	16	21	28	38
	Large	20	35	40	53
% with technological and non-technological innovation	Total	40	37	50	52
	Industry	36	42	51	51
	Services	44	34	50	53
	Small	38	32	48	48
	Medium	43	48	55	58
	Large	63	64	65	68

Source: Eustat (Basque Statistics Office), Eurostat.

NB: The percentages are calculated out of total firms with 10 or more employees, except for the last box (% with technological and non-technological innovation), which is calculated out of all innovative firms.

Moving on to the analysis by type of innovation, technological innovation is also higher among industrial firms than among those in services, and higher among larger firms than smaller ones. The Basque Country ranks better in terms of this type of innovation: its rate is almost double that of Spain, tops that of the EU-28, and is closing in on Germany. Ratios of technological innovators in the Basque Country are particularly high in larger firms, where they even top German rates. The relative strength of the Basque Country in technological innovation rests primarily on process innovation (in which even small Basque firms surpass German ones in percentage of innovation) and its position is weaker in product innovation (a type of innovation more closely linked to greater autonomy and decision-making power at firms).

The relative strength of the Basque Country in technological innovation lies primarily in process innovation, including among small firms

In non-technological innovation, service firms usually report percentages of innovation greater than or equal to industrial ones (Germany being the exception to this rule). The Basque Country makes a poorer showing than the other territories subject to comparison (including Spain), especially for medium-sized firms, and most of all, small firms. Additionally, this weakness of Basque firms in non-technological innovation can be found in both organisational and marketing innovation.

Lastly, the literature has shown that significant competitive advantage derives from combining different types of innovation. In this regard, the bottom box of Table 14 shows that Basque firms are ahead of Spanish ones (except for industrial firms), but behind the EU and Germany.

The Basque Country has scope for improvement in non-technological innovation and in the ability to combine technological and non-technological innovation

Table 15 shows that the Basque Country has developed a considerable culture of cooperation on technological innovation. Consequently, in this area it ranks ahead of not only Spain, but also the EU-28 and Germany, for all firm types. However, small firms, which are those that would need it the most, engage in this to a lesser extent than do large ones. What is more, although the majority of cooperation on technological innovation takes place with partners from the same country, Basque firms (especially those in services) are more open to cooperation with other EU countries than are firms in Spain and Germany, and the EU average.

TABLE 15 Percentages of firms with 10 or more employees that cooperate in technological innovation (Basque Country, 2014–17; remainder, 2016)

		Basque Country 2014	Basque Country 2015	Basque Country 2016	Basque Country 2017	Spain	EU-28	Germany
% that cooperate	Total	14.8	15.1	13.1	15.5	7.3	12.8	10.1
	Industry	14.1	13.6	12.2	14.7	8.8	13.0	13.3
	Services	15.5	17.0	14.1	16.3	6.0	12.7	7.2
	Small	10.9	11.0	8.0	11.1	4.7	10.2	6.2
	Medium	29.6	31.5	34.0	33.1	15.8	19.2	16.5
	Large	60.0	55.0	52.9	52.0	36.7	37.6	39.9
% that cooperate with other EU countries	Total	6.0	6.2	6.1	7.3	2.4	4.5	3.8
	Industry	5.3	4.9	5.0	4.7	2.9	5.2	5.1
	Services	6.9	7.9	7.4	10.3	1.9	3.8	2.6
	Small	3.6	4.0	3.3	4.6	1.1	2.7	1.7
	Medium	14.4	13.5	17.1	17.5	5.8	8.0	6.3
	Large	40.0	41.0	35.3	36.7	20.6	23.8	24.8

Source: Eustat (Basque Statistics Office) and Eurostat.

NB: The Eustat indicator only takes cooperation with partners in other EU countries into account, while the EU survey also includes those in EFTA countries and EU partner countries.

Lastly, the intensity of innovation expenditure in the Basque Country is significant: double that of Spain and higher than the EU average, although it lags behind Germany. Unlike in other places, in the Basque Country it is higher in the services sector than in industry, due to the significant weight of bodies such as technology centres and separate company R&D units in Basque services. Furthermore, it is generally large firms that allocate a higher percentage of their turnover to innovation expenditure. However, in the Basque Country medium-sized firms account for a larger share than large ones, due to the numbers reported by that segment for a good portion of the bodies mentioned above. By type of expenditure, acquisition of machinery and equipment requires the least differentiating capabilities of firms and can be most easily copied by competitors. For this reason, it is usually more accessible for small firms, despite the fact that these are usually less capital-intensive in nature. However, this is not the case with Spanish and Basque firms. As regards to innovation expenditure on R&D (both internally and contracted out to other firms), the Basque Country stands out quite positively, even almost catching up with Germany. The difference between the Basque and German models is that in the Basque Country, the highest rates are found among service and mid-sized firms, due to the numbers reported by bodies such as technology centres and business R&D units in that category.

The intensity of innovation expenditure and innovation expenditure on R&D stands out as quite positive in the Basque Country

TABLE 16 Innovation expenditure of firms with 10 or more employees (% of turnover; Basque Country, 2014–17; remainder, 2016)

		Basque Country 2014	Basque Country 2015	Basque Country 2016	Basque Country 2017	Spain	EU-28	Germany
Innovation expenditure	Total	2.16	2.25	2.24	2.25	1.17	2.01	3.11
	Industry	1.82	1.82	1.88	2.05	1.23	3.04	4.75
	Services	2.81	3.04	2.89	2.63	1.12	1.19	1.31
	Small	1.28	1.58	1.63	1.33	0.70	1.48	1.66
	Medium	2.71	2.56	2.43	2.60	0.87	1.33	1.29
	Large	2.69	2.74	2.78	2.95	1.52	2.49	3.90
Machinery expenditure	Total	0.39	0.44	0.48	0.42	0.26	0.50	0.77
	Industry	0.49	0.48	0.50	0.53	0.26	0.77	1.02
	Services	0.22	0.38	0.44	0.19	0.26	0.28	0.50
	Small	0.16	0.19	0.35	0.17	0.14	0.52	0.78
	Medium	0.16	0.25	0.26	0.32	0.12	0.39	0.43
	Large	0.94	0.99	0.93	0.85	0.38	0.54	0.87
Internal and external R&D expenditure	Total	1.65	1.66	1.62	1.64	0.75	1.24	1.78
	Industry	1.25	1.29	1.31	1.39	0.85	1.92	2.98
	Services	2.42	2.35	2.18	2.13	0.66	0.68	0.47
	Small	1.07	1.28	1.16	1.06	0.51	0.73	0.58
	Medium	2.43	2.19	2.07	2.17	0.68	0.77	0.60
	Large	1.57	1.53	1.63	1.70	0.89	1.61	2.34

Source: Eustat (Basque Statistics Office) and Eurostat.

BOX 1 Firm digitisation

Another aspect of note as regards to business performance is the digitisation of firms, which is a broader process than simply incorporating technology and has an impact on their competitiveness and sustainability. According to the digital maturity study of 427 Basque SMEs, their capabilities are increasing in the ability to identify, detect and build digital growth opportunities, demonstrating that they are preparing themselves for the years to come. Therefore, firms have been progressively incorporating digitisation as a lever for growth into their corporate strategies. However, we can observe certain limitations as regards to leadership that views digitisation as a competitive advantage beyond mere technology, as well as in the digital empowerment of employees.

Although firms are increasingly more aware of the importance of digital channels, there are still only limited experiences of an advanced presence in new digital markets. Digitisation processes are primarily being carried out without agile frameworks and methodologies, which could be suitable for this type of digital transformation process. Basque firms have mainly continued to incorporate technology into existing processes, but they are not yet tackling innovation in their business models on a mass scale. For this reason, thus far they have been focusing primarily on improving security conditions, customer relations or the services they provide, as well as marketing and advertising. They are currently planning activities aimed at training their workforce, improving sales and analysing products and services. However, around 40% of firms have not even planned actions to analyse products and services, deliver and/or develop new products, retrain their workforce or better understand their customers. Given the complexity of digital transformation, it is necessary to overcome the low levels of collaboration among SMEs, increasing collaborations with third parties, so that open digital innovation will provide them with better conditions in which to compete.

Source: Zubillaga Rego, A., Aramburu Goya, N., Lorenzo Ochoa, O., North, K. and Peletier Espiga, C. (2019), 'Madurez digital de la PYME vasca', *Cuadernos Orkestra* 56/2019.

4.1.2 Firm finance

The economic and financial performance of firms is an essential analytical dimension for examining the strengths and weaknesses of a territory. Indebtedness indicators, for example, reflect the tendency to assume risks or conditions that restrict access to business finance. Business profitability indicators are indicative of the capacity for growth, survival and adaptation in the changing business environment. Consequently, the existence of firms with appropriate levels of debt and profitability has a significant impact on territorial competitiveness.

The existence of firms with appropriate levels of debt and profitability has a significant impact on territorial competitiveness

The aim of this section is to describe and update the salient features of the economic and financial situation of Basque businesses. To this end, we consider their economic and financial situation in comparative terms within the Spanish and European context.

Within the Spanish context, various studies produced by Orkestra[15] have identified certain characteristic patterns among Basque firms, such as adequate capi-

[15] Díaz, A., Gil de San Vicente, I., Murciego, A., Sisti, E. and Vivanco, D. (2016). 'Informe económico-financiero de la empresa vasca'. Cuadernos Orkestra 2016/20, December; Garciandía Tellería, F. and Aguirre Zubizarreta, O. (2009). *Informe económico-financiero de la empresa vasca. Una visión sectorial por segmentos de tamaño empresarial*. Bilbao: Orkestra; Navarro, M. (2015). *Análisis económico-financiero comparado de la empresa vasca. Cuadernos del Informe de Competitividad del País Vasco 2015: Transformación productiva en la práctica*. Bilbao: Publicaciones Universidad de Deusto.

talisation, a lesser propensity to use external finance, and moderate profitability levels in comparison with the rest of Spanish firms. The updated data for 2017 year-end closing show that Basque firms have increased the weight of their equity and reduced the weight of their financial debt. This process, which has also taken place in Spain as a whole, makes firms stronger. In contrast, although profitability has seen positive growth since 2013, it has not returned to pre-crisis levels in the Basque Country, whereas this has already happened in Spain. Lastly, thanks to the decrease in the levels and cost of debt, Basque firms have increased their capacity to manage their debt and the financing costs they bear. Additionally, Basque firms had a higher return on assets (ROA) than the cost of debt in 2017. As a result, finding themselves with positive financial leverage, they could increase the firm's financial return through debt-financed investment policies, as well as fostering more economic activity and jobs.

Despite having positive financial leverage, generally speaking, Basque firms have had risk-averse financial strategies

For the European comparison, Table 17 shows the variation in different indicators related to the percentage share of the main balance sheet items, income statement items and profitability and indebtedness indicators. Firstly, it is important to note that among Basque firms we are still seeing an upward trend in the share of equity in the balance sheet, whereas in the aggregate benchmark countries, we can identify a slight tendency to increase their leverage. As regards to financial debt, the Basque Country ranks considerably below the EU and trending downward, and it has a higher level of commercial debt.

Secondly, in the last two years, the weight of earnings before interest and taxes (EBIT) has followed a similar trend to the EU. That is to say, the Basque Country is operating with similar profit-margin ratios. For its part, net income in the Basque Country has followed a similar pattern to the EU, although at a slightly lower level. This leads us to infer the existence of relatively weaker financial performance by Basque business.

Thirdly, following the crisis, the overall ROA of Basque firms is seeing a recovery, although it still remains below that reported by the aggregate benchmark group. This result appears to be mainly influenced by the profitability of financial assets (return on financial assets), as the profitability level of their operating assets (operating ROA) is similar to that of the benchmark European countries, the latter being the indicator that would better reflect the competitiveness of production activity carried out in the territory.

Basque firms demonstrate a lower capacity to obtain profits from operations in other territories, especially as regards to financial assets

Lastly, analysing trends in indebtedness indicators such as the debt/EBIT ratio reveals the impact of the lower relative profitability of Basque firms. As regards to covering costs deriving from financial obligations using operating earnings and financial income, Basque business is in a similar situation to Europe. In turn, the trend in apparent cost of debt is downward, reflecting the drop in interest rates (the product of EU monetary policy). And in the case of the Basque economy, it is slightly below the European benchmark.

TABLE 17 Main indicators of economic and financial position

		Basque Country (1)				Europe (2)			
		2008	2013	2016	2017	2008	2013	2016	2017
Balance sheet	Equity	37.1	45.3	45.2	49.8	32.5	34.9	36.4	34.8
	Financial debt	39.8	34.7	34.3	31.2	40.1	40.4	39.7	38.2
	Commercial debt	20.9	18.3	18.9	17.7	16.0	14.2	13.3	12.9
Profit and loss statement	EBIT	5.2	2.9	4.0	4.2	3.8	3.1	4.3	4.2
	Financing costs	3.9	2.7	2.1	1.0	2.4	1.7	1.5	1.3
	Net income	3.3	1.1	2.8	3.0	2.4	2.2	3.4	3.5
Profitability	Total ROA	4.0	2.3	3.2	3.3	4.1	3.2	3.9	4.1
	Operating ROA	5.9	3.6	5.2	6.0	5.9	4.7	5.8	6.1
	Return on financial assets	5.6	2.6	2.5	2.1	7.7	5.7	4.9	4.9
Debt level	Debt / EBIT	15.9	24.2	17.4	15.4	17.6	23.6	16.6	16.0
	Fin. costs / (EBIT+FinInc)	0.5	0.7	0.4	0.2	0.4	0.4	0.3	0.2
	Cost of debt	4.8	3.3	2.5	2.3	4.4	3.3	2.7	2.6

Source: (1) SABI-Informa Database; (2) Bank for the Accounts of Companies Harmonised (BACH) project.

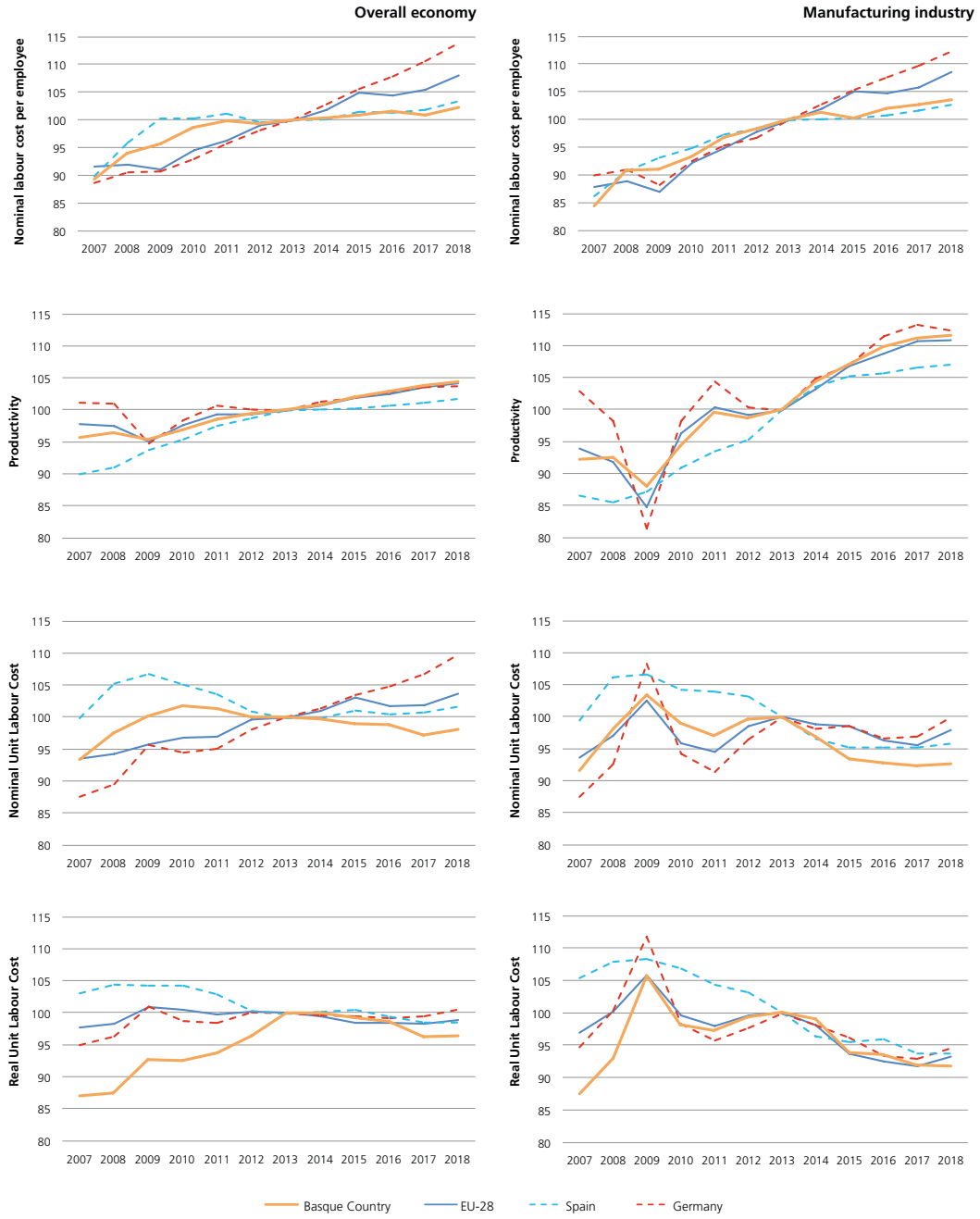
In short, in the last four years, conditions in the macroeconomic environment have been beneficial for the financial development of the fabric of Basque business. However, despite 'enjoying' a situation of cheap money and high liquidity, firms continue to show little predisposition to contract debt. Consequently, there thus remains a slight tendency towards deleveraging. For their part, the operating profit reported by Basque firms is similar to that reported by benchmark countries.

4.1.3 Labour costs

Labour costs continue to be a key determining factor of economic competitiveness due to their potential impact on the development of the general price index (inflation) and on foreign trade. As indicated in previous competitiveness reports prepared by Orkestra, labour costs do not represent an exclusive indicator of competitiveness, but rather interpretation of their variation and their effects must be analysed alongside other indicators. Thus, factors such as public intervention, the institutional framework of the labour market, and/or the level of commercial and financial integration of an economy, among other things, are other underlying factors of the balance between salary pressure and productivity.

The aim of this section is to update, from a comparative international perspective, the analysis of the trends in labour costs in the Basque economy, and its significant manufacturing industry, which is very open to international competition. To this end, Graph 13 shows the trends in the different indicators broken down in this analysis.

GRAPH 13 Variation in labour cost per employee, real productivity, unit labour cost and real unit labour cost



Source: Eustat (Basque Statistics Office) and Eurostat. Compiled by authors.

Basque firms remain in a strong position in terms of productivity and labour costs

As regards to labour costs per employee (LCE), both the Spanish and Basque economies experienced a downturn as a result of the crisis somewhat later than the other European economies, but more intensely at a later point. In the last year, we can see an upturn in LCE in all territories, something which had already been ongoing in Germany. Even so, in comparison with its 2013 position, the Basque Country continues to report lower values than those of the other territories, both for the economy as a whole and for the manufacturing industry.

Concerning productivity, we are again detecting the effects of the downturns in the Spanish labour market, such as staff reductions and the disappearance of

lower value-added jobs. Consequently, there is evidence of a pronounced recovery in the productivity indicator. Beginning in 2013, we see a similar trajectory in productivity growth in the EU-28, Germany and the Basque Country, while in Spain, progress in productivity stalled until 2015, when it began to gain momentum again. In the manufacturing industry, the effects are magnified in comparison with the economy as a whole, and productivity grew at a more pronounced rate in the EU-28, Germany and the Basque Country starting in 2013. However, in the last year, productivity has maintained almost the same level as in the previous year.

The Basque and Spanish economies began an extended process of competitive improvement in unit labour costs (NULC) in 2010.[16] This trend in falling NULC halted and even reversed slightly in 2018. In the manufacturing industry, variability is more marked in comparison with that seen in the economy as a whole. After 2013, the Basque Country reported better competitive improvement in relation to the three benchmark territories. Until 2015, Spain matched the Basque Country in this improvement, then improvement slowed in Spain. During the last two years, the EU-28 and Germany have experienced a pattern of growth. The improvement in the competitiveness of NULC has been somewhat offset by appreciation in the nominal effective exchange rate of Spain compared to developed countries, which rose slightly between 2015 and 2018.[17]

And as regards to real unit labour costs (RULC),[18] the reduction taking place in the Basque Country is even greater, creating favourable conditions for business margins to recover.

There has been an improvement in competitiveness in the Basque Country in terms of unit labour costs (NULC) and especially in real unit labour costs (RULC)

As a result of all this, in Table 18 we can see two noteworthy characteristics in 2018: the high correlation between LCE and productivity, and the differences in ULC between the economy as a whole and the manufacturing industry. The first characteristic is explained by the fact that high productivity means high salaries, which in turn drive the search for greater innovation and the replacement of workers with capital. As regards apparent productivity of labour for the economy as a whole, it is possible to identify two groups: Germany and the Basque Country at a similar and higher level, and the EU-28 and Spain at a lower level. Despite everything, the ULC column gives a low value for the Basque economy due to the combination of relatively lower LCE and high productivity. By contrast, in the manufacturing industry, which has higher LCE and productivity levels than the economy as a whole, the Basque Country has higher relative ULC than the other areas, which is the result of lower relative productivity. In turn, given the manufacturing and industrial specialisation of the Basque economy, the greater productivity found in this sector partially explains the higher level of productivity in the economy as a whole.

[16] NULC are calculated based on the nominal variation in both labour costs per employee and productivity. Economists consider NULC to be the most suitable indicator of changes in labour costs for analysing the impact of labour costs on foreign competitiveness.

[17] If in 2017 the base was 100.0, in 2015 it was 99.3 and in 2018 it was 101.2.

[18] Change in RULC makes it possible to determine to what extent firms are able to transfer changes in NULC to their prices (so that RULC are reduced and business margins increase) or the opposite (when RULC increase and business margins decline). Therefore, variation in RULC is the most suitable indicator to reflect the influence of changes in labour costs on business profitability.

TABLE 18 Labour cost per employee (LCE) and productivity, and unit labour costs (ULC) (2018)

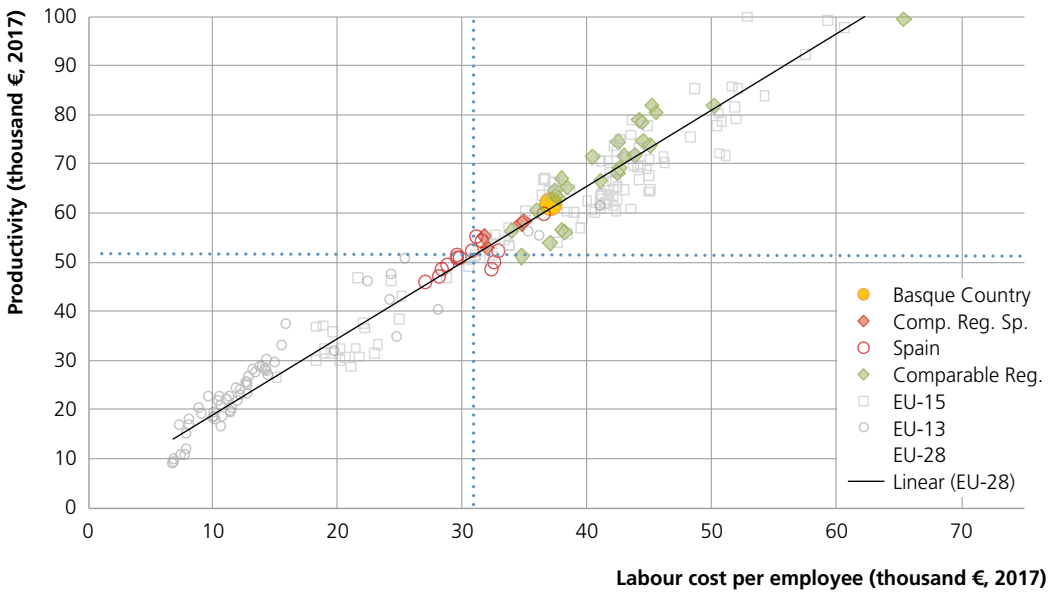
	Overall economy			Manufacturing industry		
	Labour cost per employee (thousand €)	Productivity per employee (thousand €)	Unit labour cost (%)	Labour cost per employee (thousand €)	Productivity per employee (thousand €)	Unit labour cost (%)
EU-28	37.1	59.3	62.5	40.8	69.9	58.4
Spain	32.7	54.8	59.7	38.4	70.2	54.8
Germany	43.0	68.1	63.1	56.5	91.0	62.1
Basque Country	39.3	67.0	58.6	46.2	72.1	64.0

Source: Eustat (Basque Statistics Office) and Eurostat. Compiled by authors.

In the manufacturing industry, the Basque Country has unit labour costs (ULC) below the average for the EU-28 regions and the majority of its comparable foreign regions

The trend analysis is supplemented by the regional comparison, which is shown in Graph 14 for the economy as a whole and in Graph 15 for the manufacturing industry. This confirms the result of the comparison between the Basque economy as a whole and the averages for countries, with the additional information that the majority of comparable foreign regions exceed the Basque Country in LCE and in productivity, but also in ULC, and that, in comparison with comparable Spanish regions, the Basque Country tops all of them in LCE and productivity. But the most interesting thing is that, as regards to the manufacturing industry, the Basque Country manages to have ULC below the average for the EU-28 regions and all of its comparable foreign regions (except for two). In other words, the regional comparison does not appear to confirm the disadvantage which the comparison with countries seemed to show for the Basque manufacturing industry.

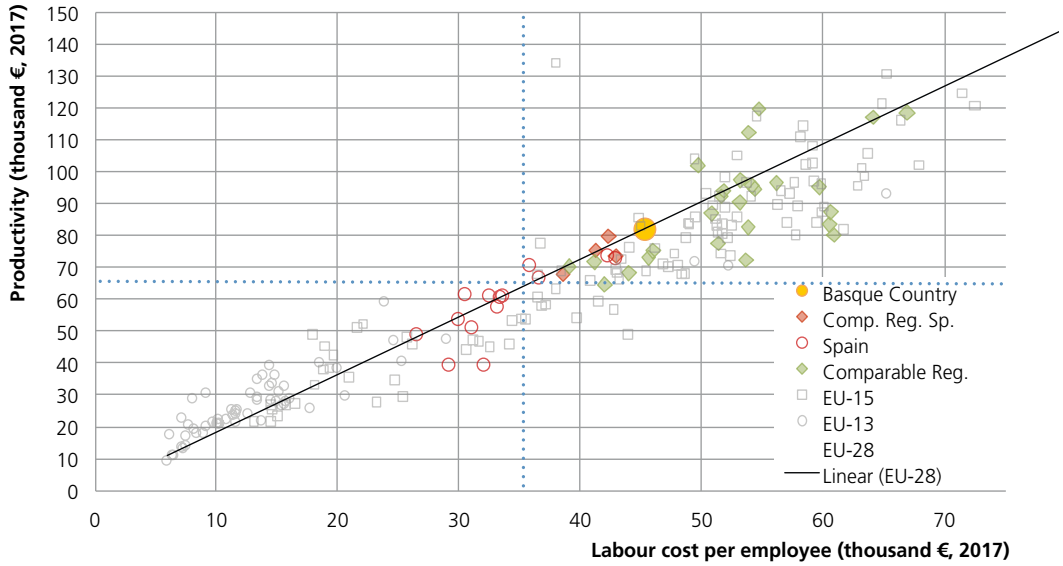
GRAPH 14 Labour cost per employee and productivity (GVA per employee) for the economy of the EU-28 regions as a whole (2017 or closest year)



Source: Eustat (Basque Statistics Office) and Eurostat. Compiled by authors.

NB: There are three regions which are not included in this graph, as their productivity is above 100.

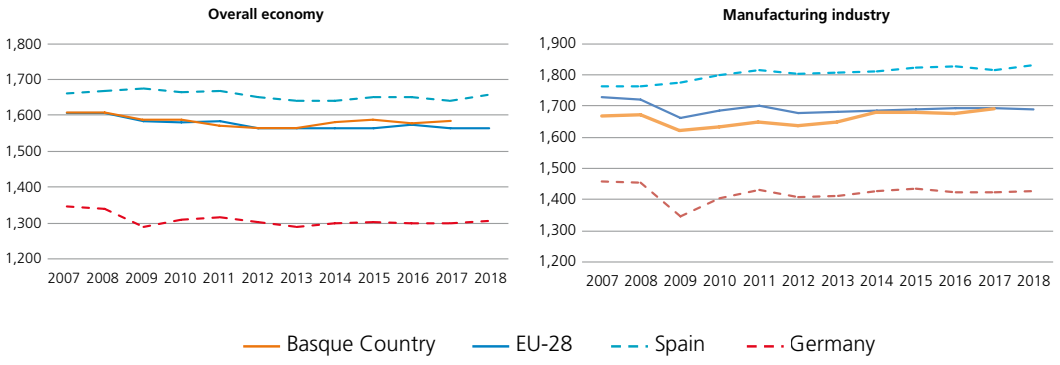
GRAPH 15 Labour cost per employee and productivity (GVA per employee) for the manufacturing industry in the EU-28 regions (2017 or closest year)



Source: Eustat (Basque Statistics Office) and Eurostat. Compiled by authors.

The labour cost analyses conducted thus far have been calculated in relation to working personnel, but they could also have been calculated in relation to hours worked. This would have an impact on calculations of LCE and productivity levels, as the average annual hours of work per employee varies significantly from one place to another. Graph 16 shows how the average number of hours worked per year by an employee has varied.

GRAPH 16 Average number of hours worked a year per employed person



Source: Eustat (Basque Statistics Office) and Eurostat. Compiled by authors.

Two salient aspects can be identified in the graph. First, the number of hours worked per operator in the manufacturing industry exceeds that of the economy as a whole in all countries. Second, we can see that Germany clearly stands out for its lower number of hours of work, while Spain is the country reporting the highest annual averages for hours worked.

Unlike in most countries, in the Basque economy as a whole, since 2014, there appears to be a slight upward trend in the number of hours worked per person employed

From the perspective of trends, the performance of the economy as a whole is somewhat different from the manufacturing industry. In the economy as a whole, we see a slight downward trend in the number of hours worked in most countries. The exception is in fact the Basque Country, where since 2014, with the economic recovery, there appears to be a slight upward trend in the number of hours worked per operator. In the manufacturing industry, the drop was more pronounced during the crisis in the EU-28, Germany and the Basque Country, while in Spain, the (slight) trend was an increase in the average number of hours worked.

4.1.4 Summary of firm performance indicators

From the analysis of the firm performance indicators it is possible to conclude that Basque firms remain in a good position in terms of productivity and labour costs. Although it slowed somewhat in the last year, we see a pronounced recovery in productivity, especially in the manufacturing industry. In terms of labour costs per employee (LCE), the Basque Country is still reporting lower values than those for Germany, although higher than the average for Spain and the EU-28 as a whole. From the combination of the two indicators, we can see an improvement in competitiveness in the Basque Country in terms of unit labour costs (NULC) and especially in real unit labour costs (RULC), which supports the recovery of business profit margins.

Generally speaking, firms have had risk-averse financial strategies. They have continued to reduce debt and consolidate their equity, making it more sound. Additionally, Basque firms had a higher return on assets (ROA) than the cost of debt in 2017, thus finding themselves with positive financial leverage. Although the overall ROA of Basque firms is showing a recovery, Basque firms demonstrate a lesser capacity to obtain profits from activity in other territories, especially as regards to financial assets (return on financial assets). The profitability level of their operating assets (operating ROA) is similar to that of the benchmark European countries, the latter being the indicator that would best reflect the competitiveness of production activity carried out in the territory.

We do not see big changes in firm performance in aspects related to innovation in comparison with earlier years in the recovery from the crisis. The percentage of enterprises (10 or more employees) with some type of innovation is lower than in other comparable territories, in both industry and services, although the lag is particularly concentrated in smaller firms. However, we find considerable differences between the performance of firms in technological innovation and non-technological innovation. The Basque Country is better positioned in technological innovation, with particularly high rates of technological innovation at larger firms, to which is added the development of a considerable culture of cooperation. The relative strength of the Basque Country in technological innovation lies primarily in process innovation, including among small firms. However, the Basque Country makes a poorer showing in non-technological innovation, both organisational and marketing, especially among medium-sized firms, and most of all, small ones. Lastly, with the ability to combine technological and non-technological innovation being an important source of competitive advantage, Basque firms also have room for improvement in this area, as they lag behind the EU and Germany.

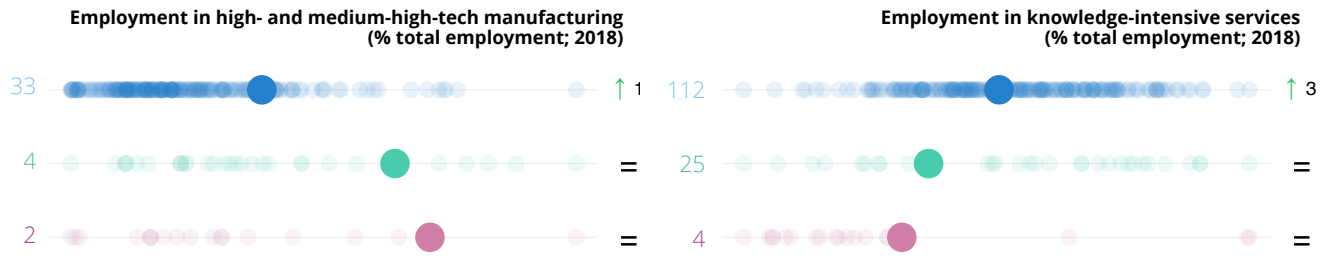
However, it appears that since the recovery, Basque business is maintaining the status quo and adopting a conservative profile in its efforts and types of innovation, as well as its financial strategy. Despite the preceding, or thanks to it, Basque firms are managing to maintain good competitive capacity in terms of productivity and costs.

4.2 Specialisation

The comparative specialisation indicators in Table 19 focus on two groups of activities which are considered especially important: high- and medium-high-tech manufacturing and knowledge-intensive services. The Basque Country continues to have one of the highest proportions of employment in high- and medium-high-tech manufacturing in Europe, Spain and the group of comparable regions. Although the value dropped slightly in the last year, the trend graphs show that in recent years, employment levels in high- and medium-high-tech manufacturing have been above the European average and the average for the comparable regions, as well as Spain. However, the position with regard to knowledge-intensive services is not as favourable. This indicator is trending upward, but the Basque Country still falls in the middle of the ranking in comparison with European regions and low in relation to the comparable regions. Although it is above Spain, it remains below the average for Germany, Europe and the comparable regions.

The Basque Country continues to rank well in employment in high- and medium-high-tech manufacturing, but its position is still not as strong as regards to knowledge-intensive services

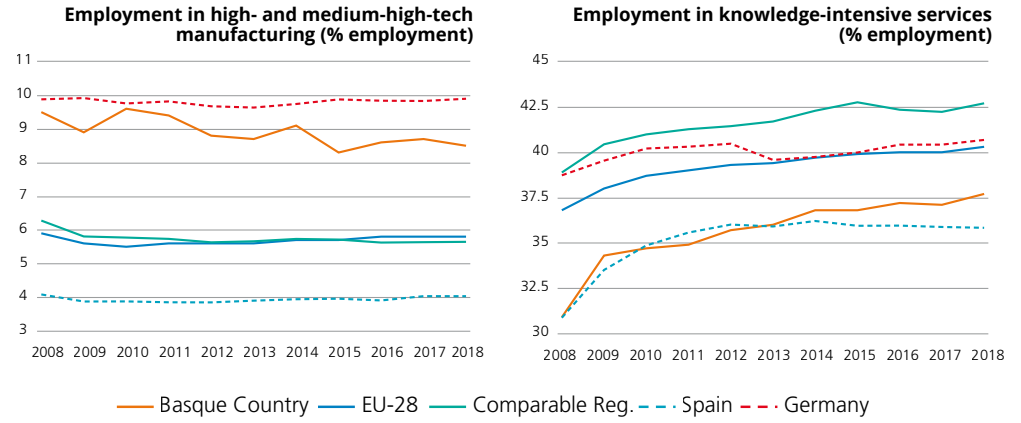
TABLE 19 Status of the Basque Country in terms of specialisation indicators



Source: Eurostat and Eustat (Basque Statistics Office). Compiled by authors.

NB: Except when no data were available, the rankings have been compiled based on 218 European regions (in blue), the Basque Country and the group of 30 comparable regions (in green), and the 19 Spanish autonomous communities and cities (in red).

GRAPH 17 Variation in specialisation indicators



Source: Eurostat. Compiled by authors.

In comparison with the EU-28, the Basque Country is notable for its larger share of publications in the physical sciences and in engineering and technology, and smaller share in life sciences and in health, pre-med and medicine

The comparative analysis of specialisation is supplemented below by a detailed analysis of scientific (measured in publications), technological (through an analysis of patents) and commercial/economic specialisation (focused on exports). This makes it possible to determine the territory's different fields of specialisation. Having a more detailed understanding of these areas helps reveal the existence of strengths to support smart specialisation strategies and detect possible inadequacies that would be necessary to mitigate or offset.

4.2.1 Scientific specialisation

The InCites database makes it possible to analyse publications on the Web of Science (WoS) by scientific domain.[19] Table 20 allows us to see that while the two domains that accounted for the largest number of publications in the EU-28 for the 2015–2018 period are life sciences; and health, pre-med and medicine (with approximately 25% of all publications in each one), in the Basque Country, the two domains with the highest volume of publications are physical sciences; and engineering and technology (with 26% and 23%, respectively).

TABLE 20 WoS publications by scientific domain (2015–2018)

		Arts and humanities	Health, pre-med and medicine	Engineering and technology	Life sciences	Physical sciences	Social sciences
Percentage distribution	Basque Country	2.3	17.7	23.2	22.5	26.1	8.1
	Spanish Comp. Reg.	2.1	30.7	14.3	29.6	16.5	6.8
	Spain	3.0	24.6	17.7	27.6	18.9	8.3
	EU-28	3.8	24.8	18.5	25.4	17.8	9.8
	Germany	2.3	23.5	18.3	26.4	22.3	7.3
Specialisation index (EU-28 = 100)	Basque Country	62	71	125	89	147	83
	Spanish Comp. Reg.	55	124	77	117	93	69
	Spain	79	99	95	109	106	85
	EU-28	100	100	100	100	100	100
	Germany	61	95	99	104	125	75

Source: InCites. Compiled by authors.

NB: The specialisation index of each territory compares the share of publications in each domain with the European average.

[19] A publication can be classified in more than one scientific domain if its subject encompasses more than one field.

The Basque Country has considerable rates of specialisation compared to the EU-28 in physical sciences (147) and engineering and technology, whereas it has an underspecialisation in all other domains. In fact, the comparable Spanish regions have precisely the opposite specialisation profile to the Basque Country: they are specialised in health, pre-med and medicine and in life sciences, and underspecialised in engineering and technology and in the physical sciences.

In general, the scientific specialisation profile of the Basque Country appears to be quite in keeping with the main strategic priorities of its RIS3. For priorities such as advanced manufacturing and energy, engineering and technology and physical sciences capabilities are more significant than life sciences and health, pre-med and medicine. The same cannot be said of the other strategic priorities, biosciences/health (or even the food opportunity niche). But the latter are supported by a much less developed economic reality than advanced manufacturing and energy. What is more, in terms of trends, we can detect a decrease in underspecialisation. As regards to the underspecialisation in social sciences, to the extent that this domain has a strong relationship with non-technological innovation and it is in this type of innovation where the Basque Country lags behind the EU-28 most obviously, it seems clear that this sphere should be the focus of greater stimulus and prioritisation by Basque science policies.

Scientific specialisation in the Basque Country seems to be aligned with the production system and the priority sectors identified in the RIS3

4.2.2 Technological specialisation

Given that no new patent data have been published since the previous competitiveness report was released, it has not been possible to update this analysis. Therefore, we highlight here the conclusions presented in the report: the Basque Country is particularly specialised in mechanical engineering and other industries (especially the fields of furniture and civil engineering), and to a rather lesser extent, in chemicals. The greatest underspecialisation (when compared to the European average) is in electronic engineering, with a weakness in patents linked to ICT. This offers a window of opportunity given the importance Industry 4.0 will take on in the future to foster advanced manufacturing and opportunity niches such as the creative industries.

As regards to the branches of the economy for which patents are sought, those linked to metals are particularly noteworthy, especially machinery as well as metallurgy and metal products. The greatest underspecialisation is found in electrical equipment and IT services, which may also be an obstacle to developing the Industry 4.0 strategy.

4.2.3 Economic specialisation

In this section we will be analysing the economic specialisation of the Basque Country based on foreign trade data. The data have been divided into 19 branches of activity, which have in turn been grouped based on their technological level, economic use of the goods, level of growth, and technical and economic characteristics.

As shown in Table 21, Basque exports have a significant degree of concentration in four industries: motor vehicles (24%), metallurgy and basic metals (23%), machinery and equipment (14%), and refined petroleum products (8%). The speciali-

The risks deriving from the high degree of concentration of Basque exports in four branches are somewhat mitigated by the region's indices of comparative advantage in these four sectors

sation indexes for these four branches are also high. The resulting risks are significant, given the considerable link between the first three, which largely form part of the same value chains, and the fact that the fourth is highly subject to energy price volatility and foreign oil supply. Be that as it may, it should be noted that between 2008 and 2018, the degree of export concentration dropped considerably, primarily due to the declining share of metallurgy and metal products exports. Additionally, as we will see below when analysing relative balance of trade, the severity of this concentration is less because in these four sectors with the largest share of exports, the Basque Country has strongly positive comparative advantage rates.

The Basque Country primarily exports medium-tech products and those with medium demand growth, intermediate goods and consumer durables, from economies of scale-intensive branches. In contrast, it has hardly any high-tech and high demand growth exports, or from the science and technology-intensive branches. Of the three major manufacturing branches which are classified as high-tech, the Basque Country's greatest weaknesses are in pharmaceuticals, followed by electronics and IT, with aeronautics having relatively fewer weaknesses. In addition, the Basque Country's percentage of consumer goods exports is very low. This makes the Basque economy highly sensitive to the economic cycle, which may explain why Basque exports are more affected in times of crisis, and why, in contrast, in 2018, a time of relative growth in the economy of advanced countries, its exports are also showing stronger growth.

As regards to specialisation, in addition to the four branches discussed, there are several industries that are also notable for having a positive specialisation: non-metallic industry (from exports of glass, cement, refractory ceramics, abrasive products and non-metallic mineral products), wood, paper and printing (primarily due to pulp, paper and paperboard), and rubber and plastics (primarily due to rubber). And although there is no specialisation at the branch level, if we drop down to the sub-branch level, railway equipment. It should also be noted that the industries in which the Basque Country is underspecialised include some closely linked to the strategic priorities and areas of opportunity included in the Basque RIS3: pharmaceuticals (biosciences/health strategy); computer and electronic products, and electrical materials and equipment (advanced manufacturing/Industry 4.0 strategy); and food (area of opportunity of the same name).

TABLE 21 Analysis of export specialisation

					Relative balance of trade		
		Percentage distribution (2018)	Specialisation index (2018)	Perc. of variation, value 2008–2018 (P.P.)	Relative balance of trade (2008)	Relative balance of trade (2013)	Relative balance of trade (2018)
Industries	Agriculture and fishing	0.4	15	0.0	–69.7	–62.6	–76.6
	Extractive Industries	0.6	37	0.4	–98.8	–98.5	–94.6
	Food, beverages and tobacco	3.5	47	0.6	–6.3	25.7	12.4
	Textiles, apparel, leather and footwear	0.5	10	–0.3	–37.9	–40.7	–45.2
	Wood, paper and printing	2.9	108	0.3	7.8	21.7	16.5
	Manufacturing of coke and refined petroleum products	8.3	221	0.2	–9.2	3.4	71.8
	Chemicals	3.8	42	1.4	–25.2	–35.8	–20.8
	Pharmaceutical products	0.2	3	0.1	–59.7	–11.7	–16.6
	Rubber and plastics	5.9	181	–0.4	47.5	55.1	47.5
	Non-metallic industry	1.8	133	0.1	36.0	46.7	38.8
	Metallurgy and metal products	22.6	259	–7.0	19.5	29.7	19.1
	Computer and electronic products	1.2	14	0.4	–55.5	–32.8	–20.6
	Electrical materials and equipment	4.3	81	–1.3	16.2	31.6	14.8
	Machinery and equipment	13.6	125	–0.5	36.7	48.8	36.3
	Motor vehicles	24.0	188	6.2	51.1	64.0	56.8
	Other transport equipment	3.6	84	0.1	40.4	60.7	34.1
	Furniture	0.4	38	–0.1	13.3	17.1	11.2
	Other manufactured goods	0.5	17	0.0	–16.9	–17.4	–19.3
	Energy, water, services and unclassified	1.8	93	–0.6	–47.8	–50.1	–19.7
Technological level	High	2.7	13	0.0	–13.0	–3.2	–4.6
	Medium-high	49.7	119	6.6	32.1	39.1	35.0
	Medium-low	39.6	208	–7.2	16.5	28.9	33.0
	Low	8.0	42	0.6	–6.3	13.8	5.2
Economic use of goods	Consumer goods	5.4	22	–0.7	–9.7	13.6	–0.5
	Consumer durables	24.7	182	6.4	51.1	64.0	56.8
	Intermediate goods	51.4	128	–5.5	11.6	19.9	22.5
	Capital goods	18.5	88	–0.3	33.8	47.6	32.7
Level of growth	High	7.1	28	–1.3	5.2	19.3	6.6
	Medium-high	44.8	126	7.8	34.9	40.3	37.5
	Medium-low	43.4	174	–7.1	16.0	28.0	30.8
	Low	4.6	33	0.5	–15.9	11.8	0.2
Technical and economic characteristics	Resource-intensive	18.1	105	1.5	–8.5	11.6	32.2
	Labour-intensive	9.0	106	–0.8	22.6	33.4	22.6
	Economies of scale-intensive	51.8	139	1.1	29.7	36.0	32.4
	Science and technology-intensive	2.3	14	–0.2	14.1	3.5	3.4
	Differentiation-intensive	18.8	88	–1.7	24.4	41.4	27.8
Levers of competitiveness	Global innovation for local markets	51.0	97	6.2	32.4	40.4	34.5
	Regional processing	18.2	123	–0.3	29.1	43.2	32.4
	Energy- and natural resource-intensive	28.1	198	–6.0	7.8	16.8	28.1
	Global technology / innovators	1.2	13	0.5	–55.5	–32.8	–20.6
	Labour-intensive products	1.5	16	–0.3	–22.4	–24.8	–25.8

Source: Eurostat, United Nations, Comtrade Database and Directorate-General for Taxation. Compiled by authors.

The groups of activity in which the Basque Country specialises strongly coincide with those that had the highest exports. Also noteworthy is the significant under-specialisation in high-tech and high demand growth, science and technology-intensive branches (that is, those which open up more windows of opportunity and are less affected by competition from emerging countries), as well as consumer goods producers. This, as indicated above, makes the Basque economy more sensitive to the economic cycle. It is for this reason that we are unable to categorise the Basque Country's industry specialisation profile as entirely satisfactory.

The groups of activity in which the Basque Country exports the most and is the most specialised make it more sensitive to the economic cycle

Analysis of relative balance of trade,[20] a more advanced indicator of comparative advantage than specialisation indices, confirms that the four industries in the Basque Country which have the highest exports and which have a specialisation index over 100% also have large positive relative balances of trade. Therefore, from the perspective of competitiveness, they have considerable strengths. As regards to the specialisation indexes, analysis of the relative balance of trade indicates that some branches in which the Basque Country does not have a significant specialisation (or was even underspecialised) have positive trade balances. This is the case of electrical materials and equipment (highly important for Industry 4.0) and other transport equipment. Lastly, confirming what the specialisation analysis might suggest, in wood, paper and printing, the Basque Country continues to report a considerable positive relative balance of trade.

And from the perspective of groups of activity, we see the same tendency: in addition to confirming the strengths demonstrated by the specialisation index analysis, the capital goods, differentiation-intensive and science and technology-intensive branches also have a positive balance of trade, all of them being attractive from a competitive point of view. We also find advantages in other, more vulnerable, types of activities: resource- and labour-intensive industries (which include manufacture of metal products). The underspecialisation (with a negative relative balance of trade) in the high-tech group is also confirmed.

The greater transformation of the structure of Basque exports between 2013 and 2018 can be explained by both proactive and reactive behaviours

As analysts indicate, development does not only consist of how much the product grows, but also how the composition of what is produced is transformed. In the previous section, we analysed how much Basque exports have grown, in comparison with those of other territories. Here we offer a brief analysis of how the export structure has changed, based on the structural change index for exports (see Table 22). During the 2008–2018 period, there were two clear phases of Basque exports. Between 2008 and 2013, the structure of Basque exports changed less, and what change did occur was reactive in nature (sector adjustment in response to declining demand). Between 2013 and 2018, in contrast, the structure of Basque exports changed more than that of the other economies. Behind this, it is possible to observe both reactive (recovery of markets lost during the previous phase) and proactive (development of new activities and markets) behaviours.

TABLE 22 Index of structural change in exports

	Basque Country	Comparable Reg.	Spain	Germany	EU-28
Index of structural change 2008–13	16.3	14.5	13.9	9.8	8.4
Index of structural change 2013–18	21.6	6.2	9.3	7.0	8.1
Index of structural change 2008–18	20.1	14.2	13.1	12.4	11.5

Source: Eurostat, United Nations, Comtrade Database and Directorate-General for Taxation. Compiled by authors.

In general, if we look at the transformation over the entire period in the Basque Country (see Table 21), we see growth in consumer durables and in medium-to-high-tech and medium-to-high demand growth industries, as well as global innovation

[20] The relative balance of trade index, also known as the Balassa index, is calculated as the difference between the value of exports and imports in a given branch and is relativised by the sum of the exports and imports in that same branch.

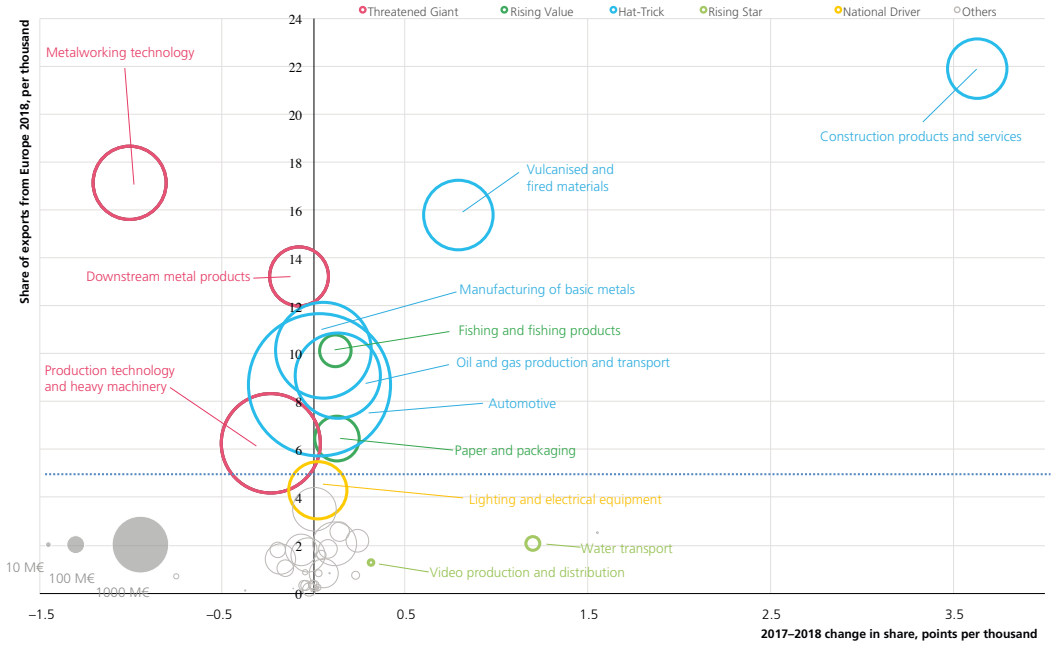
for local markets. While on the whole this is positive, the significant underspecialisation in high-tech and high demand growth, and science and technology-intensive branches remains uncorrected. There has also been a downturn in differentiation-intensive industries. Metallurgy and metal products is the branch that lost the most exports, whereas motor vehicles made the most progress (despite a decline during the 2008–2013 period).

BOX 2 Index of structural change in exports

An alternative way to analyse export specialisation is by grouping exports into clusters, following the methodology which groups economic activities based on patterns of co-location of employment, input–output links and links between occupations (see Delgado et al., 2016[21]). This gives us 51 clusters that group together different activities, which can also be used to classify exports by means of a conversion table.

Graph 18 shows trends in Basque export clusters for the years 2017 and 2018. Given that the 2018 figures for global exports are not yet complete, Basque exports are given as a share of exports originating in Europe as a whole.

GRAPH 18 Map of export clusters



Source: Agencia Tributaria (Spanish Tax Agency) and United Nations, Comtrade. Compiled by authors.

The 'business services' cluster is outside the graph, as it does not represent any type and because its value is beyond the x-axis (change in share).

These clusters can be grouped based on the typology developed by Orkestra, which classifies clusters according to their importance (share of Basque exports, represented by the size of the circle), their competitive position (share of exports originating in Europe, position on the vertical axis) and dynamism (increase in the share of exports, position on the horizontal axis). The combination of these three characteristics yields the typology laid out in Table 23. Because of their importance in Basque exports, these clusters and the underlying areas of economic activity warrant particular attention in order to implement suitable policies for their development.

[21] Delgado, M., Porter, M.E. and Stern, S. (2016). 'Defining clusters of related industries', *Journal of Economic Geography*, v.16, pp. 1–38

TABLE 23 Export cluster typology for the Basque Country

Type	Important	Competitive	Dynamic	Definition	Clusters	Most prominent activities
Hat-trick	✓	✓	✓	Well ranked in all three indicators	Automotive	Increase in both manufacturing of motor vehicle and manufacturing of other pumps and compressors. But slight drop in other components, parts and accessories for motor vehicles.
					Manufacturing of basic metals	Increase in manufacturing share of basic iron and steel and ferro-alloys; and of cold drawing, rolling and wire drawing; and production of copper, lead, zinc and tin.
					Oil and gas production and transport	Particularly due to the increase in the share of refined petroleum products.
					Vulcanised and fired materials	Increase in the manufacturing share of rubber tyres and tubes, and increase in the manufacturing of refractory ceramic goods and hollow glass. But a slight decrease in the manufacturing, shaping and processing of flat and hollow glass.
					Construction products and services	Particularly due to the increase in the share of steel tubes, pipes, hollow profiles and related fittings.
Threatened giant	✓	✓		Represents a significant share of the Basque Country's exports and its share of exports is considerably higher than the other clusters in the Basque Country, but its position may be threatened by the fact that it is not among the most dynamic.	Production technology and heavy machinery	Considerable increase in the share of other taps and valves and of lifting and handling equipment. But a decrease in the share of railway locomotives and rolling stock and in machinery for the food, beverages and tobacco industry.
					Metalworking technology	Considerable decrease in the manufacturing share of machine tools for metalworking and in tool manufacturing, but slight increase in bolts and screw products.
					Downstream metal products	Decrease in the manufacturing share of other metal products and light metal containers and packaging. But increase in locks and iron fittings, and in weapons and ammunition.
National driver	✓		✓	Although its percentage of exports is not among the largest in the Basque Country, it has a significant share of total exports and its share is growing.	Lighting and electrical equipment	Increase in the manufacturing share of electric motors, generators and transformers, and electricity distribution and control apparatus, but decrease in other electronic and electric wires and cables.
Rising value		✓	✓	Although its percentage of the Basque Country's exports is not significant, its share of exports is considerably higher than the other clusters in the Basque Country and its share is increasing.	Paper and packaging	Particularly due to the high share and slight increase in paper and paperboard manufacturing.
					Fishing and fishing products	Increase in the share of fish, crustacean and mollusc processing, but decrease in the manufacturing shares of fish preserving and marine fishing.
Threatened driver	✓			Although its percentage of exports is not among the largest in the Basque Country, its share of total exports is significant. However, this position may be threatened by the fact that it is not among the most dynamic.	—	
Threatened value		✓		Although its percentage of the Basque Country's exports is not significant, its share of exports is considerably higher than the other clusters in the Basque Country, but its position may be threatened by the fact that it is not among the most dynamic.	—	
Rising star			✓	Its share of Basque exports and overall share are not yet significant, but its dynamism in the past year makes it worth monitoring.	Water transport	Increase in the share of shipbuilding and construction of floating structures.
					Video production and distribution	Motion picture and video production activities.

Source: Agencia Tributaria (Spanish Tax Agency) and United Nations, Comtrade. Compiled by authors.

4.2.4 Summary of specialisation indicators

The Basque Country continues to have one of the highest proportions of employment in high- and medium-high-tech manufacturing in Europe. In the area of knowledge-intensive services, its position is not as favourable, although it is trending upward. Exports are concentrated especially in four branches of activity, in which the degree of concentration has declined. Additionally, the concentration is less serious because these are sectors in which the Basque Country has highly positive indices of comparative advantage.

The Basque Country primarily exports medium-tech products and those with medium demand growth, intermediate goods and consumer durables, from economies of scale-intensive branches. In contrast, it has hardly any high-tech exports or high demand growth exports, or from the science and technology-intensive branches. In addition, the Basque Country's percentage of consumer goods exports is very low, making the Basque economy more sensitive to the economic cycle.

Scientific specialisation seems to be aligned with the production system and the priority sectors identified in the RIS3, especially advanced manufacturing and energy. This is not the case of biosciences/health (or even the food opportunity niche), in which these activities have a less developed reality.

4.3 Business environment

The business environment is key to creating the conditions necessary to allow firms to increase their productivity and compete effectively in international markets. In this section, we analyse various spheres. The first group of indicators refers to aspects related to the labour resources available in the territory. The second group deals with the innovation environment, as regards to public expenditure on innovation and personnel, and the collaboration taking places in the academic sphere to analyse whether foreign collaboration may be helping to bring in knowledge from abroad and if there are jointly authored publications in the academic and industrial world which may help to transfer scientific knowledge to business. Lastly, the final group relates to the digitisation environment of the economy.

4.3.1 Labour resources

The Basque Country ranks low in human resources employed in science and technology in comparison with the comparable regions

We thus begin with an analysis of labour resources (its status and change compared to the previous year are set out in Table 24, with variation shown in Graph 19). In human resources employed in science and technology, the Basque Country is in a strong position in comparison with the autonomous communities and cities, intermediate when compared with the European regions as a whole, and a low position compared to the comparable regions. In recent years, the values for this indicator have been improving, but this is also true of other territories. The Basque Country has ranked below the average for Europe and the comparable regions since 2011, and is some distance from Germany.

When we consider the entire population between the ages of 25 and 64, we find that after the customary age for formal education is reached, the education level

The Basque Country's weaker position in terms of training and education level for the population aged 25–64 is explained by lower levels among the highest age bands and a smaller percentage of the population with mid-level studies

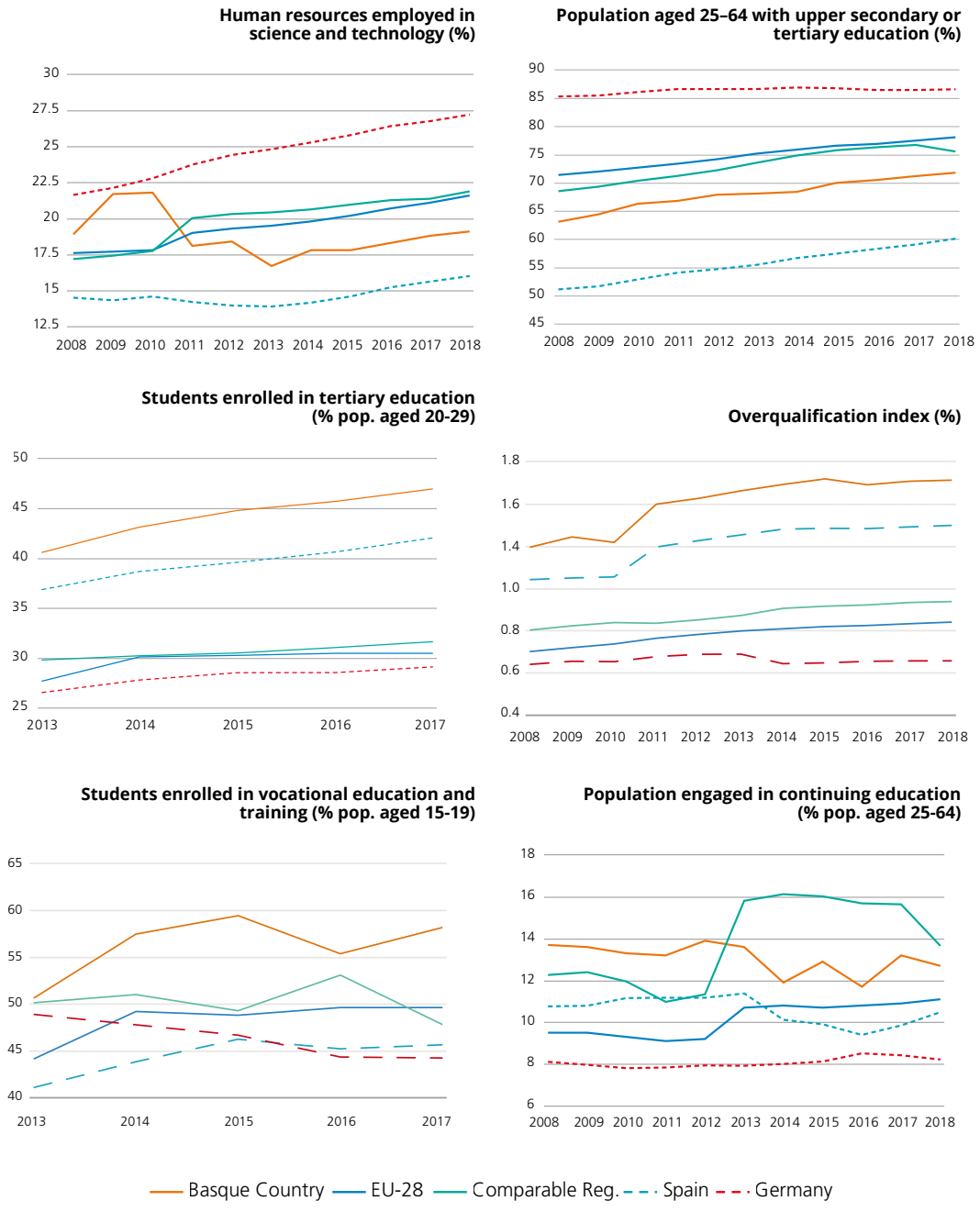
fluctuates very little from one year to the next, increasing slightly because the younger generation joining the cohort have more education than the elderly people leaving it. Given that the highest age bands have the worst level of education (compared to other European regions, and especially the comparable regions, due to the low percentage of upper secondary education), this is one of the business environment indicators in which the Basque Country has the weakest position, in comparison with both the European regions and the comparable regions, although it ranks very well within Spain. Apart from the generational issue, this is due to the fact that the percentage of the population with med-level studies (upper secondary) is low, unlike countries such as Germany, where they constitute a very significant portion of the population. Inadequacies in the highest age bands are offset by the education levels of younger people in terms of tertiary education (although less so in upper secondary education). Thus, the Basque Country continues to rank high in the three groups considered, and above all among the territories considered in the trend graph and indicator for students in tertiary education.

TABLE 24 Status of the Basque Country in terms of human resources indicators

Source: Eustat (Basque Statistics Office) and Eurostat. Compiled by authors.

NB: Except when no data were available, the rankings have been compiled based on 218 European regions (in blue), the Basque Country and the group of 30 comparable regions (in green), and the 19 Spanish autonomous communities and cities (in red).

GRAPH 19 Variation in human resources indicators



Source: Eustat (Basque Statistics Office) and Eurostat. Compiled by authors.

Strong performance in terms of the population that has completed tertiary education is offset by the overqualification index, which has been defined as the ratio between the population with tertiary education and the population employed in the most skilled occupations (directors and managers, science and intellectual professionals, and mid-level engineers and professionals). This is without a doubt the indicator in which the Basque Country has the weakest position, with the highest overqualification indices at the European level. This is an indication that, despite efforts being made in the area of education and training, the region is not generating enough jobs that require those levels of qualifications. For ex-

Strong performance in tertiary education is offset by high levels of overqualification and high youth unemployment rates, including among those with tertiary education

ample, this is in line with the high youth unemployment rates, including those with tertiary education, and is closely related to the challenge around skills discussed in this year's topic report.

Turning our gaze to another student enrolment indicator, the Basque Country's position in terms of vocational education and training is a little weaker than in tertiary education (except in comparison with the autonomous communities and cities), but it made gains in the last year. The trend graph shows that this change in the ranking is linked to an increase in the value for the indicator, which offsets the drop in the previous year. It is worth noting that the indicator remains higher than that of all the others considered, and quite a bit higher than the German average, a benchmark country in terms of vocational education and training.

As regards to the population engaged in continuing education, which is necessary to continue acquiring skills, in the case of the Basque Country, we are seeing a more volatile annual change than in other territories, alternating between increases and decreases. In the last year, the value of the indicator fell, and this caused it to drop a few positions in the rankings, although it is still in a strong position among European regions as a whole and in the middle within the group of comparable regions.[22]

4.3.2 Public innovation inputs

The figures for R&D personnel are positive, but those for expenditure are less so, a considerable distance from those for Germany

The second group of business environment indicators measures R&D capacity, both public (government and universities) and total. In other words, they also include those for the business sector, already described in the analysis of firm performance. Both are included to account for the possible distortion produced by computing the R&D investment for technology centres and CRCs as private. This explains why the relative positions in public R&D expenditure and personnel are lower than the total. Table 25 shows the position in the ranking for 2016, the last year for which there are comparable data for the European regions. However, Graph 20 incorporates data for 2017, a year in which we see a slight improvement in the values for both personnel and public and total expenditure. Total R&D personnel figures are considerably higher than the Spanish, European and even German averages, highlighting the positive levels in terms of human resources allocated to R&D. The same cannot be said of expenditure, which has been below the European average and a considerable distance from German levels since 2013.

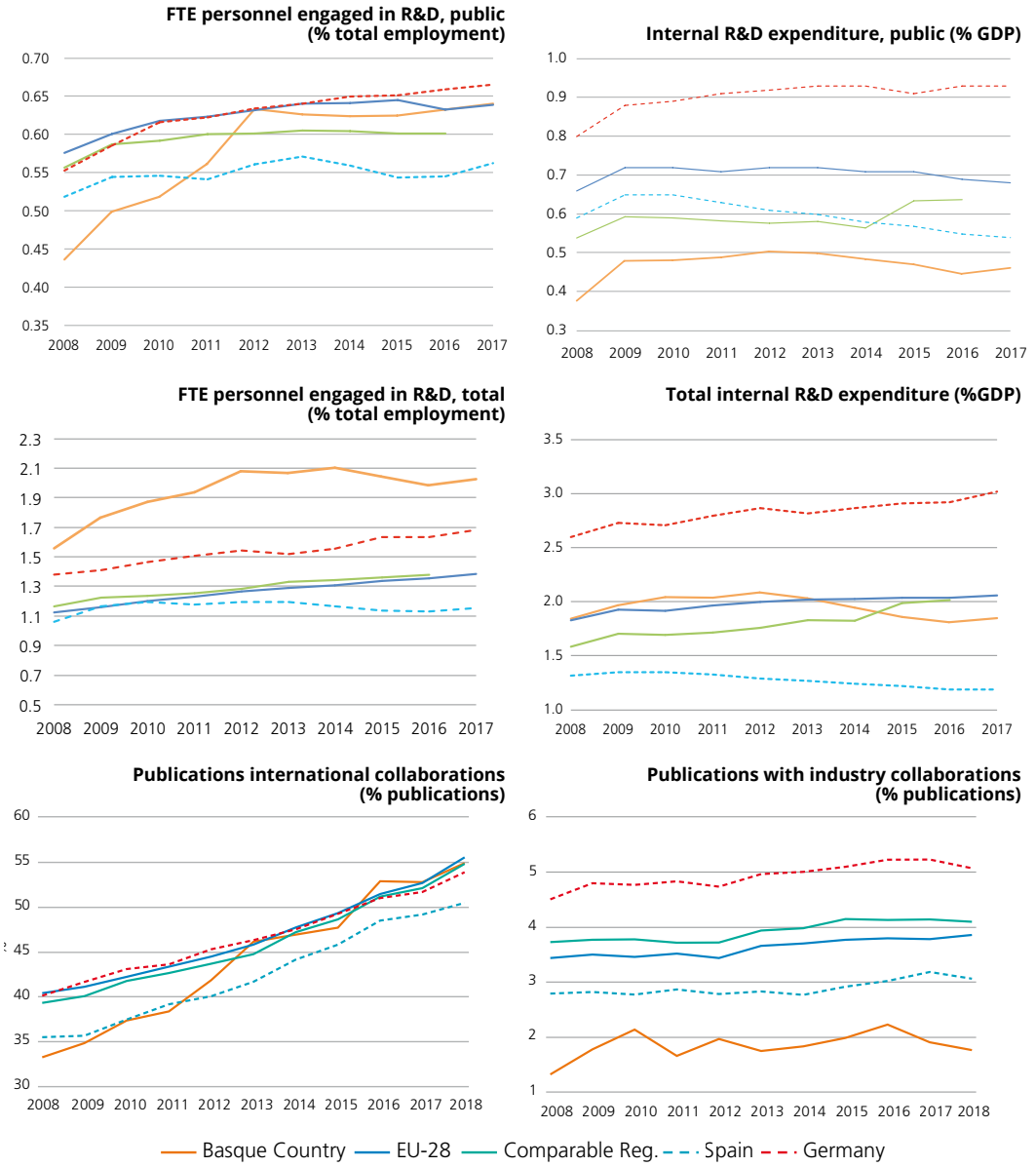
[22] The jump seen in Graph 19 in 2013 for comparable regions is due to a change in methodology in how this variable is calculated in the French regions, many of which are part of the benchmark group.

TABLE 25 Status of the Basque Country in terms of public innovation inputs

Source: Eustat (Basque Statistics Office), Eurostat and Incites. Compiled by authors.

NB: Except when no data were available, the rankings have been compiled based on 218 European regions (in blue), the Basque Country and the group of 30 comparable regions (in green), and the 19 Spanish autonomous communities and cities (in red).

GRAPH 20 Variation in public innovation input indicators



Source: Eustat (Basque Statistics Office), Eurostat and Incites. Compiled by authors.

The strong position in comparison with comparable regions and the positive trend in scientific publications in collaboration with foreign centres contrasts with collaboration with industry, where there is ample margin for improvement

Be that as it may, the increase in R&D expenditure seen in the Basque Country in 2017 closes the gap with the European average, but not with Germany, which increased R&D expenditure to an even greater extent. It is therefore necessary to consolidate this change in trend with regard to expenditure in order to create the conditions to show stronger performance in innovations which, due to the greater complexity of their knowledge base, are more difficult for competitors to replicate.

In line with the indicators on scientific publications presented above, in this report we have introduced several indicators which seek to measure whether scientific publications are being produced in collaboration with research centres abroad. The indicator calculated to determine this (percentage of publications with co-authorship at research centres abroad) shows positive growth, situating the Basque Country in a middle-to-high position among European regions as a whole, middle in comparison with the comparable regions and good when compared with the Spanish autonomous

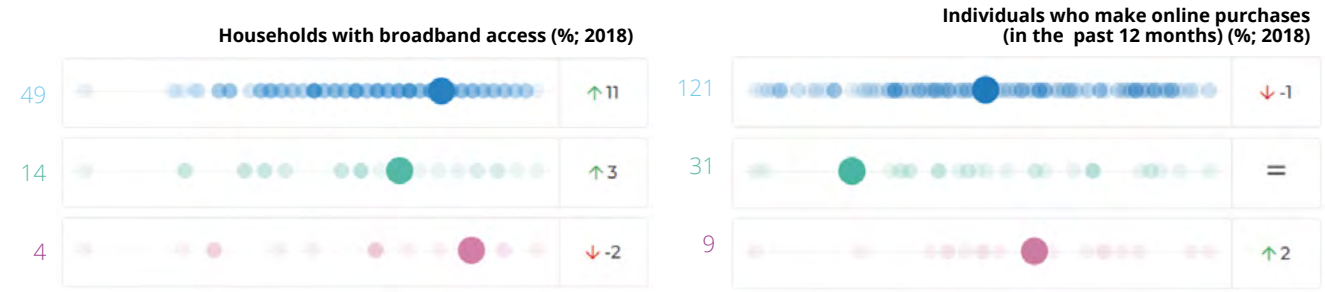
communities and cities. However, the situation is not as promising when we look at the indicator for publications in collaboration with industry. This indicator reveals ample margin for improvement, having fallen in recent years, and may constitute a path to facilitating the transfer of knowledge between the academic and business spheres.

4.3.3 Digitisation

Table 26 includes two indicators related to Internet use as proxies for the sophistication of demand. The households with broadband access indicator increased significantly in the last year, as it had done in previous years, especially beginning in 2016, when it moved past the level of the Spanish and European averages. In 2017, it also topped the comparable regions and in 2018 it is on a par with Germany. Consequently, in 2018 the Basque Country ranks high in comparison with the average for Europe and the autonomous communities and cities, and in the middle within the group of comparable regions. This was made possible due to the rollout of infrastructure. Not only does broadband now reach almost all households, but they are also signing up to a greater extent than in previous years. This contrasts with the indicator for online shopping, in which the Basque Country remains in the lower part of the ranking among European regions, at the bottom among comparable regions, and in an intermediate position within Spain. Box 2 discusses some other aspects of the digitisation of the Basque economy and society.

The Basque Country's strong position in the households with broadband access indicator contrasts with a weaker position in the online shopping indicator

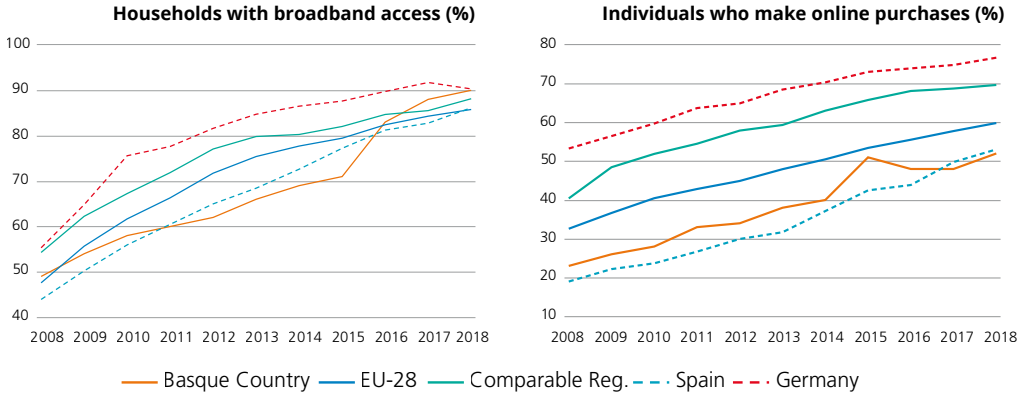
TABLE 26 Status of the Basque Country in terms of digitisation indicators



Source: Eustat (Basque Statistics Office), Eurostat. Compiled by authors.

NB: Except when no data were available, the rankings have been compiled based on 218 European regions (in blue), the Basque Country and the group of 30 comparable regions (in green), and the 19 Spanish autonomous communities and cities (in red).

GRAPH 21 Variation in digitisation indicators



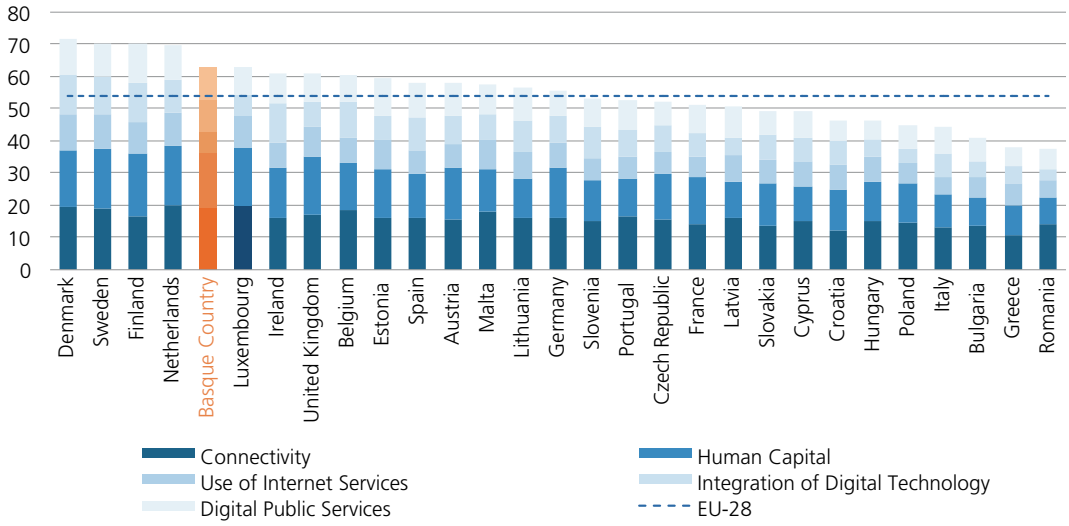
Source: Eustat (Basque Statistics Office), Eurostat. Compiled by authors.

BOX 3 Principal conclusions of the DESI report on the Basque Country

In line with the business environment indicators, Orkestra has prepared a report on the digitisation of the Basque economy and society, measured by means of the DESI indicator. As data are not available for the European regions, the comparison is with countries. It should therefore be remembered that within these countries there are significant differences which disappear when we look at the national average.

In 2018, according to this indicator, the Basque Country continued to make progress on digitisation, moving up one position from the previous year, into fifth place, behind the Scandinavian countries. The positive situation in the Basque County rests on four of the five pillars that comprise the index: advanced connectivity, human capital, integration of digital technology by businesses, and the development of digital public services. In contrast, use of Internet services by households remains a barrier to the full digitisation of Basque society.

GRAPH 22 Digital Economy and Society Index, DESI 2018



On the other hand, the progress made in almost every dimension, subdimension and indicator has not made it possible to move up the ranking in comparison with other countries, an unambiguous sign that digitisation occupies an important place in all of their agendas.

This indicator has made it possible to confirm some of the main levers for producing a digital Basque Country, as well as the main barriers. Noteworthy among the first group is digitisation by businesses, connectivity infrastructure elements for digital networks, and the existence of advanced skills in the society and economy of the Basque Country. In contrast, utilising channels for e-commerce, the use of digital services that involve financial transactions, and the relative price of broadband are still in need of improvement. Therefore, they require continued close attention.

Source: Zubillaga Rego, A. y Peletier Espiga, C. (2019) Economía y sociedad digitales en el País Vasco 2018. Cuadernos de Orkestra 2019/50.

BOX 4 Energy context

The energy sector is a key element of territorial competitiveness, due both to the weight of the industry itself in generating jobs and wealth, and to the impact of energy, as an input, on the other sectors. This box deals with different aspects which help to understand this context.

In 2017, Basque industry accounted for 39% of the territory's energy consumption, just behind transport (40%). This percentage, which is only comparable to the figure for Finland (44%) and close to that for Sweden (35%), Belgium (34%) and Austria (34%), is primarily due to the Basque economy's specialisation in the industrial sector. Additionally, Basque industry has specialised in energy-intensive sectors such as: iron and steel and pipe manufacturing, cement, glass, paper, basic chemicals, and refining, as well as other industries such as wood and rubber.

The energy cost context faced by Basque industry is not especially favourable, both because the price of energy has increased in recent years and due to the comparison with energy prices in other European countries. Thus, the wholesale marginal cost of natural gas in the Iberian market is consistently higher than natural gas prices in other surrounding markets. This is due primarily to the Iberian gas system's considerable exposure to liquefied natural gas prices and its vulnerability to supply shortages (e.g., at times of high demand for natural gas in the winter and summer), given the relatively low interconnection capacity with the rest of continental Europe. In general, the price of natural gas for industrial consumption is indexed to the price at the most liquid hub in Europe (TTF), with a high mark-up that takes the particular features of the Iberian gas system into account. The resulting final prices for industrial consumption, once grid access charges and taxes are added, are above the EU average.

In the case of electricity, taking Eurostat data as a benchmark, we find that electricity prices in Spain for industrial consumption are around average EU values for all consumption bands, with higher prices for consumers with consumption below 20 GWh/year. The share of the wholesale price of electricity in the final price of electricity in Spain is higher than that found in other European markets, reflecting the exposure of the marginal cost of the Iberian electricity system to fossil fuel prices, despite the relatively high weight of renewable energies (plus nuclear energy) in the electricity mix. Only in the case of oil and petroleum products are prices for final consumption in Spain generally lower than the EU average, due to less fiscal pressure.

However, it is significant that the Basque economy has lower energy intensity (ratio of energy consumption to gross domestic product, GDP) than the average for the Spanish economy and the European average, thus making it more efficient.

For their part, the share of renewable energies in gross final consumption of energy is below the Spanish and European averages, despite having industry associated with the development of this type of energy (wind, biomass and even solar).

4.3.4 Summary of business environment indicators

In the analysis of business environment indicators, we first analysed a set of indicators related to human resources. We can see that the Basque Country ranks low in human resources employed in science and technology in comparison with the comparable regions. The Basque Country is in a weaker position in terms of the training and education level for the population aged 25–64, largely due to poor performance

in training and education among the highest age bands. Strong performance in tertiary education is offset by high levels of overqualification and high youth unemployment rates, including those with tertiary education.

Secondly, as regards to R&D, the figures for R&D personnel are positive, but those for expenditure are less so, a considerable distance from those for Germany. In scientific publications in collaboration with foreign facilities, we find positive growth and an average situation in comparison with the comparable regions. However, the Basque Country's position is not as strong in collaboration with industry, which has dropped in recent years, with ample margin for improvement.

Lastly, as proxies for the sophistication of demand related to Internet use, the Basque Country ranks well in the households with broadband access indicator, but its position is weaker in terms of online shopping.

5
Conclusions

There has been an improvement in the majority of the final outcome indicators for the Basque Country, both economic and social. Generally speaking, the region remains in a favourable position, ranking in the first quartile among European regions in both income and poverty rate. Some indicators of inequality and vulnerability – such as 'median income', 'ability to face unexpected financial expenses' and 'poverty rate' – show very positive results. This, combined with strong economic performance, suggests the existence of a **balanced model of socioeconomic competitiveness** in line with what is referred to as **'competitiveness in solidarity'**.

In the report, we have identified a **major challenge** related to **unemployment**, as there is still evidence of the greater impact of the crisis in Spain and the Basque Country, especially among the youngest segment of the population and those over the age of 55. This demands continued efforts to ensure that unemployment among this group does not result in social exclusion, utilising different measures to promote training and education activities for this group, more personalised monitoring of their situation, tax incentives for hiring them, and the continuation of anti-exclusion social policies. In addition, the quality of new employment contracts has not improved significantly along with the recovery from the crisis. In view of this, it is important to continue efforts to foster **job quality**, not only in terms of pay, but also in aspects such as temporary or part-time work, and promoting career pathways that facilitate professional and personal development, so that all people in work can achieve satisfactory levels of wellbeing and the Basque Country can carry on making improvements in social cohesion indicators.

In comparison with other European regions, the Basque Country is in a **good position with regard to business environment indicators** thanks to strong institutional quality, policies and strategies implemented, as well as individual training and education levels, among other aspects.

In terms of firm performance, **productivity and cost** indicators show **positive** results. When looking at the financial aspect, firms have shown themselves to be **risk-averse**, they have continued to reduce their debt level and consolidate their equity. In innovation, firms are showing relative **strength in technological innovation** (primarily process innovation), and **weakness in non-technological innovation** (organisational and marketing) as well as in the combination of the two types of innovation. In general, it appears that Basque firms are sticking to the status quo and adopting

a conservative profile in their financial strategy and type of innovation. However, despite modest results some innovation indicators, the **strong performance of the Basque Country in the sales of new products indicator** is noteworthy. We have also observed that there is a **core group of firms**, particularly industrial and larger firms, **that engage in significant innovation activity**. It would be of interest to analyse in greater depth the strategies these firms are following and promote policies so that firms with worse innovation indicators, especially small firms, can learn from them.

The awareness-raising phase around challenges in the Basque Country regarding innovation has been extensive, and in recent years we have seen a flourishing of different programmes that are exploring the best ways to face these challenges. A report prepared by an Orkestra team (Aranguren et al., 2019[23]) highlights the growing and increasingly more widespread awareness among all stakeholders of the need to move forward – alongside traditional forms of R&D-based innovation – on other, softer forms of innovation and targeting SMEs. Programmes like Tkgune, Hazinnova, the task forces on new business models created in most of the steering groups for Basque RIS3, and promotion of advanced services to firms driven by the Bilbao RIS3 strategy are examples of this. But examples such as the determined commitment undertaken by the Basque Country in the first decade of this century (creating the CRCs, the BERCs, Ikerbasque, etc.), which sought to correct the current shortfall in science, whose results we are now beginning to detect, demonstrate that the effects of these commitments take a while before they are clearly visible. It is therefore necessary to persevere in such efforts and monitor the impact these programmes are having on promoting innovation in upcoming years.

The last year saw a **consolidation of internationalisation** among Basque firms, with positive growth in their export levels, and an increase in the 'average value of exports' and 'percentage of regular exporters'. However, there has been a decline in the 'number of exporters'. In the dilemma between opting to increase the percentage of exporters or increasing the export volume of each firm, the second option appears to be more effective in the short term. As there is margin for improvement in this second area, it should be given priority in policy, while at the same time working on the traction which firms with an established export base can lend to firms taking their first steps in opening up to foreign markets.

In short, Orkestra's 2019 report shows that Basque competitiveness has improved in numerous areas and is producing positive outcomes for its citizens in terms of wellbeing. However, the report also identifies some areas for improvement in several intermediate outcomes and determinants of competitiveness, which are key to establishing sustainable foundations for wellbeing. Additionally, as the topic-specific competitiveness report for this year discusses in detail, there are several **global trends** (ageing, digitisation and automation of production processes, climate change, etc.) which pose serious **challenges for maintaining and improving levels of wellbeing**. To this must be added the fact that the **primarily socio-political uncertainties** – which nonetheless have an undeniable economic dimension and impact – of which the last competitiveness report warned, have not only been confirmed, but have even been accentuated. To the greater likelihood that Brexit will take place, we

[23] Aranguren, M.J., Magro, E., Morgan, K., Navarro, M. and Wilson, J. (2019). Playing the Long Game: Experimenting Smart Specialisation in the Basque Country 2016–2019 (forthcoming)

can add the possibility that no agreement will be made in this regard, with the incredible disruption this may cause. The trade wars initiated by Trump have expanded into other spheres: foreign exchange (with competitive devaluation), technology, etc. Instability in Latin America (Argentina, Brazil, Venezuela, Colombia, etc.), a key geo-economic area for our firms, is reaching worrying levels. For this reason, more than ever, we need **proactive policies that foster adaptability, new pathways and the diversification of the economic structure**. Therefore, taking advantage of the healthy financial situation and positive financial leverage of firms, we should particularly **continue moving forward on driving innovation**, especially in such areas as the education and training of workers and improvements in the skill level of their positions, continue with restoring job quality, increase R&D and innovation activity at firms (especially non-technological), and consolidate the internationalisation of Basque business, both in the number of exporters and the volume of their exports.

Okestra's annual diagnosis of competitiveness reflects a favourable evolution in the autonomous community of the Basque Country. The main indicators, both economic and social, have improved in the last year and the Basque Country remains among the main European regions in terms of income and poverty rate. This suggests the existence of a balanced model of socio-economic competitiveness in line with what is known as "competitiveness and solidarity".

However, there are important challenges to be faced in the near future to further improve economic and social progress. The challenges differ, but they are not unrelated. It is therefore necessary to look at their relationship and find sustainable, systemic solutions.

In this Report, Orkestra presents a rigorous analysis, based on the most recent data available, to help address decision-making processes by employing the best possible information in an environment of profound change and uncertainty.

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