

IBERIAN SECTORAL CHARACTERISATION AND DYNAMICS 2001-2019

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Abstract: We propose a characterisation of the regions, groups of regions and states of Iberia as a whole, as well as a comparison, using the appropriate methods, of recent dynamic evolution on these spatial scales with respect to the 2001-2019 period. Our key findings show that large disparities in production contrast with lower industry mix disparities at state level. The distribution of the sectoral structure across the regional areas proposed in this paper is quite similar, with the exception of the Basque-Navarre and Macaronesia areas. In terms of dynamics, we also concluded that disparities evolved steadily from 2001 to 2019 within the Iberian regions, areas and states.

Keywords: regional disparities, Iberian economy, dynamic evolution.

JEL Codes: O52, R11

1. Introduction

Based on the economic literature that we have reviewed, although some publications have addressed the Iberian regions together³, Gomis Porqueras and Garcilazo's *EU Structural and Cohesion Funds in Spain and Portugal: Is Regional and National Inequality Increasing*, for example, measures, ten years on from the adhesion of Spain and Portugal to the then European Community, the evolution of Iberian regional inequalities from a sectoral perspective in an attempt to gauge the effectiveness of the EU's structural and cohesion funds, whereas we have grouped the Iberian regions according to geographical, language and cultural factors.

Of course, we could have tried and tested any number of alternative clusterings. However, the particular approach that we adopt is perfectly logical and consistent, as discussed below.

On top of the fact that several decades have passed since the democratisation of Spain and Portugal (1976 and 1974) and their membership first of the European Communities (1986) and then of the European Union (1992), Andorra's Europeanness is a further example of and an incentive for a considerable, if not excessive, level of economic integration, which again endorses our original research approach.

Recent economic literature on regional disparities in the Iberian states can be classified according to whether it addresses Iberia as a whole or exclusively the regions of either

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Portugal or Spain². Some publications have dealt with the Iberian regions together³. In no case have we observed neighbouring regional areas being considered *en bloc*, a gap which we have tried to fill by developing a different innovation in this respect.

1.1 Objectives

The main objectives of this paper are twofold:

- 1) Characterise the regions, groups of regions and states in Iberia as a whole; in terms of GDP pc and sectoral.
- 2) Compare, applying appropriate techniques, the recent dynamic evolution on the different spatial scales.

1.2 Methodology

There are two times frames for our analysis. On the one hand, official regional statistical information, which we can use to characterise both regions, regional areas and states, is available for the relatively recent year of 2019. On the other hand, we have access to data for the recent reference period of 2001 to 2019, which we can use to conduct a dynamic comparison and achieve the other goal of our study.

In turn, the spatial framework is configured on the basis of different scales. Starting from the Iberian spatial universe, the first scale is the state level, where we differentiate between the Kingdom of Spain, the Portuguese Republic and, as a novelty in this study, the

² From the reviewed articles, we have identified different time periods (Silva, 2011; Serrano Martínez, , 2001); different regional, provincial-district and state spatial scales (Vázquez-Varela, Martínez-Navarro, 2020; Coimbra; Ramos, 2008; Serrano Martínez, 1987), different explained variables, such as economic growth, productivity or disposable income (Cuadrado Roura, Garrido Yserte & Mancha Navarro, 1999; Melchor-Ferrer, 2017 and 2020; Silva, 2011, Bracalente & Perugini, 2010; Ezcurra, 2010); analyses with different methodologies (Pachura, 2010), such as absolute or conditional convergence (Cuadrado Roura, Garrido Yserte & Mancha Navarro, 1998 and 1999; Viegas, 2003; Rodríguez López, et al., 2009), either by statistical procedures, spatial econometrics (Márquez & Lasarte, Domingues, 2014; Vázquez-Varela et al., 2020; Melchor-Ferrer, 2017; Ezcurra, 2004; Oliveira Soares, 2001) or clustering (Pachura, 2010; Melchor-Ferrer, 2017), and others that also consider EU regional state policy (López Frías, 2021; Lima da Silveira, 2020, Ezcurra, 2010; Gomis-Porqueras & Garcilaso, 2003) or even construct a synthetic development index (Holgado Molin,a et al., 2014; Mourao, 2004).

³ In the particular case of the publication *Regional Convergence and Productive Structure in Iberian Regions: A Spatial Approach* (2017), which adopts a different approach in terms of conditional convergence and longitudinal spatial econometric development, Melchor Ferrer calibrated the spill-overs and the different speeds of convergence towards differentiated stationary states for a near past period (2000-2014), depending on the population densities and the industry mix of the different Iberian regions at NUTS3 level. The generic clustering is exactly the same, but our analysis also calculates disparities on the basis of regional areas. More recently, Martinho et al. (2020) published *Transnational economic clusters: The case of the Iberian Peninsula*, reporting similar research considering the Kaldor model separately for the Spanish and Portuguese NUTS3 regions. This research enriches the economic literature on this specific matter from the viewpoint of spatial econometrics.

Principality of Andorra. The second scale corresponds to the different regional groupings or areas that we define and are discussed later (this is another original contribution of this research). Finally, the third scale is, evidently, made up of each and every one of the Iberian regions, which, unfortunately, often tend to be overlooked.

We configured the second scale by grouping regions into areas according to the geographical contiguity and the cultural identity of the regions, and the linguistic proximity of the official or co-official native languages that are spoken there. Below we detail the different areas grouping the different regions, namely:

- Galician-Portuguese area: Includes the Western areas of the Iberian Peninsula: the Spanish region of Galicia and the following Portuguese regions: Alentejo, Lisbon Metropolitan Area, Northern Region, Central Region, Algarve.
- Castile: Castile La Mancha, Castilla y León, Extremadura, Madrid Community, Cantabria, Asturias Principality, La Rioja.
- Levante: Andorra, Catalonia, Aragon, Valencia, Balearic Islands.
- Iberian Macaronesia: Madeira Autonomous Region, Canary Islands, Azores Autonomous Region.
- South: Murcia Region, Andalusia.
- Basque-Navarre area: Basque Country, Navarre CF, where CF means “Comunidad Foral” in Spanish (Chartered Community, in English).

1.3 Structure

To achieve the stated objectives, we develop our study based on a set of points that will be constantly analysed on the different spatial scales for cross reference and comparison.

Sections 2 and 3 report the Iberian characterisation and the analysis of inequalities at the most recent date for which information is available (2019). This summary characterisation will first be based on GDP pc and then analyse the inequalities of the "Industry-mix". Finally, section 4 will be devoted to dynamic analysis, over the period 2001-2019.

The baseline spatial analysis based on regions at NUTS2 level in Spain and Portugal is consistent with the European classification. It does not take into account the differential fact that the Spanish NUTS2 regions are economically and financial self-governing and have the respective political institutions, whereas Portugal offers only regional decentralisation. However, some authors⁴ point out that there are regional differences that do not match up with the territorial delimitations of the defined European statistical and administrative units. In this respect, research by María Manuela Loruenço Marqués, Joao Oliveira Soares and María Cristina V. Macedo da Cunha Coutinho⁵ brings to light four

⁴ Claudino, S. (2006). *Portugal peninsular e os desafios regionais*. Finisterra, 41(81). <https://doi.org/10.18055/Finis1464>

⁵ *Desigualdades Regionais em Portugal Continental: uma análise estatística multivariada*

different spatial clusters, pointing out the differences between the inland and coastal regions and between northern and southern Portugal, despite development along the Algarve coast.

2 Production per capita

GDP per capita is an economic measure for comparing the status and level achieved by different territories. According to our calculations, the Iberian average GDP per capita is 25492 euros, ranging from such huge values as 36344 euros for the Principality of Andorra, to lower and more average values for Portugal and Spain (see Table 1).

We now analyse the different Iberian areas (see Table 1). The highest values are for the Basque-Navarre area, Levante and Castile. The Autonomous Community of Madrid has a large bearing on the values for Castile, and the high values of Catalonia and the Principality of Andorra, on Levante.

The figures for the other areas (South, Iberian Macaronesia or the Western Iberia (Galician region of Spain and the Portuguese regions) are lower, as shown in Table 1. The most developed region in the latter areas would be the Lisbon Metropolitan Area⁶.

Usually capital cities concentrate many activities in the Services sectors what contributes to increase its production per capita.

Guisan and Aguayo (2001) and (2022) have analysed several interregional econometric models of development in Europe and other areas, which show the positive and significant effect of Industrial production per capita, Tourism and special features of some regions (capital of a country, important harbour activities, financial centre, etc.).

The sum of Primary Sector and Industry per capita is usually important for its positive effect on other sectors. In year 2019 its value was 4590 in Spain, 3666 in Portugal and 2000 in Andorra. Andorra received positive impact from Tourism and Banking, activities. The intensity of foreign tourism is higher in Andorra with 512 hotel beds per 1000 inhabitants than in Spain (75) and Portugal (32).

Real value-added of Manufacturing diminished for the period 2010-2015 both in Spain (from 4521 to 3721) and Portugal (from 3468 to 3093), as consequence of the financial crisis of year 2008 and the austerity measures of that period, as seen in Guisán(2017) where there is a comparison with 132 countries. The values are yet low in comparison with Germany (6734 in year 2000 to 8183 in year 2015) and other developed countries.

⁶ As pointed out by Juan José Salvador Barrios in the article *Economic Integration and Regional Business Cycles: Evidence from the Iberian Regions*, a process of Iberian economic integration in the EU has been at work since 2000, and the key factors explaining the regional business cycles are the relative size of the regions and their sectoral composition and distribution rather than the border effect between neighbouring regions of the countries, leading to a greater and better alignment of the pattern of these cycles.

Table 1. GDP per capita by Iberian Areas and Regions. 2019 and by States.

IBERIAN REGIONS	GDP per capita	Surface area km2	Popula tion thousand	GDP millions €	Employ ment thousand
<i>Galician-Portuguese</i>	21477	118677	12480	268042	5519
Alentejo	19006	31605	705	13408	304
Lisbon Metropolitan Area	26971	3015	2846	76768	1275
Northern Area	17712	21286	3573	63279	1638
Central Area	18046	28199	2217	39999	1005
Algarve	23145	4997	439	10158	201
Galicia	23859	29575	2700	64430	1096
<i>Castile</i>	29163	244319	14067	410241	6167
Castile La Mancha	21043	79462	2035	42820	824
Castile and León	24834	94224	2408	59795	1004
Extremadura	19407	41635	1065	20677	387
Madrid, Community	36155	8028	6642	240130	3175
Cantabria	24392	5321	582	14187	245
Asturias, Principality	23249	10604	1022	23765	392
Rioja (La)	28276	5045	314	8867	141
<i>Levante</i>	28259	108548	15128	427491	6668
Andorra	36344	468	78	2818	45
Catalonia	31298	32113	7566	236814	3404
Aragon	28808	47720	1321	38044	591
Valencian Community	23320	23255	4975	116015	2066
Balearic Islands	28445	4992	1188	33799	562
<i>Iberian Macaronesia</i>	20972	10570.47	2704	56703	1109
Madeira, AR	19963	802	254	5069	120
Canary Islands	21371	7447	2207	47164	894
Azores AR	18403	2322	243	4469	95
<i>South</i>	20000	98914	9915	198221	3702
Murcia Region	21749	11314	1488	32356	609
Andalusia	19682	87600	8427	165865	3093
<i>Basque-Navarre</i>	33761	17625	2828	95470	1221
Basque Country	34206	7234	2178	74496	933
Navarre, CF	32270	10391	650	20974	288
IBERIAN TOTAL	25492	598654	57122	1456167	24385
States					
Spain	26518	505960	46768	1240199	19703
Portugal	20741	92225.61	10277	213151	4638
Andorra	36344	468	78	2818	45
IBERIAN TOTAL	25492	598654	57122	1456167	24385

Source: INE Spain, INE Portugal, Departament d'Estadística d'Andorra and own elaboration. Note: AR is Autonomous Region, CF is “Comunidad Foral” in Spanish, or Chartered Community in English. R

The average GDP per capita by area, in Euros, was as follows:

1) Galician-Portuguese 21477. 2) Castile 29163, 3) Levante 28259. 4) Iberian Macaronesia 20972. 5) South 20000. 6) Basque-Navarre 33761,

The regions with the GDP per capita higher than the area average, or than the Iberian average, are: In area 1) Lisbon Metropolitan, Galicia and Algarve. In area 2) Madrid and Rioja (La). In area 3) Andorra, Catalonia, Aragon and Balearic Islands. In area 4) Canary Islands. In area 5) Murcia. In area 6) Basque Country and Navarre.

3. Sectoral characterisation.

Table 2 presents sectoral features of the Iberian regions, being S1=Primary Sector, S2=Industry, S3= Construction, S4=Social and Community Services: included in: Section O (public administration and defence and compulsory social security, Section P (education) and Section Q (human health and social work activities). S5=other services (commerce, hostelry, transport, communication, financial and other ones).

Table 2. Sectoral characterisation of gross value added in the Iberian regions, areas and states. 2019 (million €)

<i>Regions</i>	Total	S1	S2	S3	S4	S5
Galicia	58438	2929	10659	4443	10873	29534
Asturias, P.	21555	304	4243	1601	4201	11206
Cantabria	12868	201	2677	962	2495	6533
Basque Country	67568	462	16429	4946	11636	34095
Navarre, C.F.	19023	670	5898	1155	2974	8326
La Rioja	8042	569	2097	497	1387	3492
Aragon	34506	2029	7475	2245	6534	16223
Madrid Com.	217798	195	22912	11167	32596	150928
Castile and León	54234	2821	10836	3706	11574	25297
Castile La Mancha	38838	3782	7556	2776	8029	16695
Extremadura	18754	1760	2566	1456	4890	8082
Catalonia	214791	2311	41304	11935	33381	125860
Valencian Com.	105226	2227	19871	7530	18287	57311
Balearic Islands	30656	161.60	1750	2514.10	4612	21617
Andalusia	150440	9901	17795	10734	32819	79191
Murcia Region	29347	1531	5416	2006	5762	14632
Canary Islands	42778	694	2651	2766	8582	28083
Andorra	2530	15	141	188	360	1825
Northern (Pt)	54733	766	14570	2835	9797	26764
Algarve	8875	350	460	437	1418	6208
Central (Pt)	34597	1193	8960	1539	6919	15983
Lisbon	66400	259	6367	2124	12184	45464
Alentejo	11597	1310	2469	429	2412	4976
Azores	3865	342	267	153	1131	1971
Madeira	4420	81	277	236	1177	2649
TOTAL	1311883	36865	215650	80383	236034	742949

Regions by area						
<i>Galician-Portuguese</i>	234642	6808.96	43487	11809	43604	128932
Alentejo	11597	1310.53	2469	429	2412	4976
Lisbon Metropolitan	66400	258.96	6367	2124	12184	45464
Northern Region	54733	766.26	14570	2835	9797	26764
Central Region	34597	1193.60	8960	1539	6919	15983
Algarve	8875	350.59	460	437	1418	6208
Galicia	58438	2929	10659	4443	10873	29534
<i>Castile</i>	372089	9632	52887	22165	65172	222233
Castile La Mancha	38838	3782	7556	2776	8029	16695
Castile and León	54234	2821	10836	3706	11574	25297
Extremadura	18754	1760	2566	1456	4890	8082
Madrid Com.	217798	195	22912	11167	32596	150928
Cantabria	12868	201	2677	962	2495	6533
Asturias P	21555	304	4243	1601	4201	11206
La Rioja	8042	569	2097	497	1387	3492
<i>Levante</i>	387709	6743	70541	24412	63174	222836
Andorra	2530.	14.73	141	188	360	1825
Catalonia	214791	2311	41304	11935	33381	125860
Aragon	34506	2029	7475	2245	6534	16223
Valencian Com.	105226	2227	19871	7530	18287	57311
Balearic Islands	30656	162	1750	2514.	4612	21617
<i>Iberian Macaronesia</i>	51064	1117	3195	3155	10891	32703
Madeira A.R.	4420	81	276	236	1177	2649
Canary Islands	42778	695	2651	2766	8582	28083
Azores A.R.	3865	342	267	153	1131	1971
<i>South</i>	179787	11432	23211	12740	38581	93823
Murcia Region	29347	1531	5416	2006	5762	14632
Andalusia	150440	9901	17795	10734	32819	79191
<i>Basque-Navarre</i>	86591	1132	22327	6101	14610	42421
Basque Country	67568	462	16429	4946	11636	34095
Navarre, C.F.	19023	670	5898	1155	2974	8326
TOTAL	1311883	36865	215649	80383	236034	742949
Areas						
Galician-Portuguese	234642	6808	43487	11809.27	43604.85	128932.04
Castile	372089	9632	52887	22165	65172	222233
Levante	387709	6743	70541	24412.58	63174.8	222836.94
Iberian Macaronesia	51064	1117	3195	3155.97	10891.40	32703.91
South	179787	11432	23211	12740	38581	93823
Basque-Navarre	86591	1132	22327	6101	14610	42421
TOTAL	1311883	36865	215649	80383	236034	742949
States						
Spain	112486	32548	182135	72439	200633	637105
Portugal	184490	4302	33372	7756	35040	104018
Andorra	2530	15	141	188	360	1825
TOTAL	1311883	36865	215649	80383	236034	742949

Source: INE Spain, INE Portugal, Departament d'Estadística d'Andorra and own elaboration. Note: S1=Agriculture, S2=Industry. S3=Buildng, S4= Social and Community Services. Services 1: P.A., D. & C.S.S., E. & H.H & S.W. According to the NACE REV. 2 classification, this column covers the following sections: Section O (public administration and defence and compulsory social security, Section P (education) and Section Q (human health and social work activities). S5=Other services.

For the sectoral characterisation, we tabulated the statistical information on the gross value added (GVA) of the different Iberian regions and states, again grouped according to the different Iberian areas already defined and used throughout this article. We consider, in principle, three main productive sectors: primary sector, secondary sector and tertiary sector. However, given the specificity of production in the Iberian states, the latter two have each been subdivided into two. Thus, the secondary sector is divided into industry and construction, whereas the tertiary sector is divided into public services and other services that make up the macro sector.

Indeed, most of the total of more than one million three hundred thousand million euros generated by the three states corresponds to the Spanish state, which is the state with the largest percentage surface area and population. Only 14.06% corresponds to Portugal and 0.19% to the Principality of Andorra. This general redistributive trend between the different states holds for almost all productive sectors, although it is even more unbalanced in the case of the construction sector, which is a very Spanish sector (see Table 3).

Table 3. Distribution of Iberian sectoral gross value added by regions, areas and states. 2019 (% in the total Iberian Value-Added of each sector)

Regions	Total	S1	S2	S3	S4	S5
Galicia	4.45	7.95	4.94	5.53	4.61	3.98
Asturias, P	1.64	0.82	1.97	1.99	1.78	1.51
Cantabria	0.98	0.55	1.24	1.20	1.06	0.88
Basque Country	5.15	1.25	7.62	6.15	4.93	4.59
Navarre CF	1.45	1.82	2.73	1.44	1.26	1.12
Rioja (La)	0.61	1.54	0.97	0.62	0.59	0.47
Aragon	2.63	5.50	3.47	2.79	2.77	2.18
Madrid Community	16.60	0.53	10.62	13.89	13.81	20.31
Castile and León	4.13	7.65	5.02	4.61	4.90	3.40
Castile La Mancha	2.96	10.26	3.50	3.45	3.40	2.25
Extremadura	1.43	4.77	1.19	1.81	2.07	1.09
Catalonia	16.37	6.27	19.15	14.85	14.14	16.94
Valencian Community	8.02	6.04	9.21	9.37	7.75	7.71
Balearic Islands	2.34	0.44	0.81	3.13	1.95	2.91
Andalusia	11.47	26.86	8.25	13.35	13.90	10.66
Murcia Region	2.24	4.15	2.51	2.50	2.44	1.97
Canary Islands	3.26	1.88	1.23	3.44	3.64	3.78
Andorra	0.19	0.04	0.07	0.23	0.15	0.25
Northern Region	4.17	2.08	6.76	3.53	4.15	3.60
Algarve	0.68	0.95	0.21	0.54	0.60	0.84
Central Region	2.64	3.24	4.16	1.92	2.93	2.15
Lisbon	5.06	0.70	2.95	2.64	5.16	6.12
Alentejo	0.88	3.55	1.14	0.53	1.02	0.67
Azores AR	0.29	0.93	0.12	0.19	0.48	0.27
Madeira AR	0.34	0.22	0.13	0.29	0.50	0.36
Total	100.0	100	100	100	100	100

Regions by area						
<i>Galician-Portuguese</i>	17.89	18.47	20.17	14.69	18.47	17.35
Alentejo	0.88	3.55	1.14	0.53	1.02	0.67
Lisbon Metropolitan Area	5.06	0.70	2.95	2.64	5.16	6.12
Northern Region	4.17	2.08	6.76	3.53	4.15	3.60
Central Region	2.64	3.24	4.16	1.92	2.93	2.15
Algarve	0.68	0.95	0.21	0.54	0.60	0.84
Galia	4.45	7.95	4.94	5.53	4.61	3.98
<i>Castile</i>	28.36	26.13	24.52	27.57	27.61	29.91
Castile La Mancha	2.96	10.26	3.50	3.45	3.40	2.25
Castile and León	4.13	7.65	5.02	4.61	4.90	3.40
Extremadura	1.43	4.77	1.19	1.81	2.07	1.09
Madrid Community	16.60	0.53	10.62	13.89	13.81	20.31
Cantabria	0.98	0.55	1.24	1.20	1.06	0.88
Asturias Principality	1.64	0.82	1.97	1.99	1.78	1.51
La Rioja	0.61	1.54	0.97	0.62	0.59	0.47
<i>Levante</i>	29.55	18.29	32.71	30.37	26.77	29.99
Andorra	0.19	0.04	0.07	0.23	0.15	0.25
Catalonia	16.37	6.27	19.15	14.85	14.14	16.94
Aragon	2.63	5.50	3.47	2.79	2.77	2.18
Valencian Community	8.02	6.04	9.21	9.37	7.75	7.71
Balearic Islands	2.34	0.44	0.81	3.13	1.95	2.91
<i>Iberian Macaronesia</i>	3.89	3.03	1.48	3.93	4.61	4.40
Madeira AR	0.34	0.22	0.13	0.29	0.50	0.36
Canary Islands	3.26	1.88	1.23	3.44	3.64	3.78
Azores AR	0.29	0.93	0.12	0.19	0.48	0.27
<i>South</i>	13.70	31.01	10.76	15.85	16.35	12.63
Region of Murcia	2.24	4.15	2.51	2.50	2.44	1.97
Andalusia	11.47	26.86	8.25	13.35	13.90	10.66
<i>Basque-Navarre</i>	6.60	3.07	10.35	7.59	6.19	5.71
Basque Country	5.15	1.25	7.62	6.15	4.93	4.59
Navarre CF	1.45	1.82	2.73	1.44	1.26	1.12
Total	100.0	100	100	100	100	100
Areas						
Galician-Portuguese	17.89	18.47	20.17	14.69	18.47	17.35
Castile	28.36	26.13	24.52	27.57	27.61	29.91
Levante	29.55	18.29	32.71	30.37	26.77	29.99
Iberian Macaronesia	3.89	3.03	1.48	3.93	4.61	4.40
South	13.70	31.01	10.76	15.85	16.35	12.63
Basque-Navarre	6.60	3.07	10.35	7.59	6.19	5.71
Total	100.0	100	100	100	100	100
States						
Spain	85.74	88.29	84.46	90.12	85.00	85.75
Portugal	14.06	11.67	15.48	9.65	14.85	14.00
Andorra	0.19	0.04	0.07	0.23	0.15	0.25
Total	100.0	100	100	100	100	100

Source: INE Spain, INE Portugal, Departament d'Estadística d'Andorra and own elaboration.

Listed in decreasing order, the autonomous communities and regions that contribute most to total Iberian GVA are as follows: Madrid, Catalonia (with a 33% share between the two), Andalusia, Valencia, the Basque Country and Lisbon (which together account for 61% of the total). If we also consider Galicia, the Northern region and Castile La Mancha, we will have accounted for 73% of the total, less the 37% share of the other Iberian regions.

The autonomous communities of Andalusia, Castile La Mancha, Galicia, Castile and León, Catalonia, Valencia, Aragon, Extremadura and Murcia have, in this order, the largest shares of the primary sector. Together, they account for 79% of the total GVA of the Iberian primary sector. Andalusia has by far the largest share at 26.85% of total GVA.

On the other hand, we should acknowledge that the following regions, listed in decreasing order, are responsible for GVA generation by Iberian industry: Catalonia (19.15%), well ahead of Madrid, Valencia, Andalusia, the Basque Country, the Northern Region, Castile and León, Galicia and the Central Region, which together account for 75.73% of total GVA.

Construction should be located mainly in regions such as Catalonia, Madrid and Andalusia, which together account for 42% of total GVA. By adding Valencia, the Basque Country, Galicia and Castile La Mancha, we account for 67.72% of the total. If we also aggregate the shares of Northern Portugal and Castile La Mancha, we will have reached 74.69%, that is, just nine regions account for three-quarters of total GVA.

Public administrations and other overwhelmingly public, possibly with some private, services such as defence, education, health, social services, etc., are found above all in Catalonia, Madrid and Andalusia (which, together, account for almost 42% of GVA). By adding the Valencian Community and the Lisbon Metropolitan Area, we could account for 54.76% of the whole. Suffice it to aggregate other autonomous communities and regions with smaller, albeit substantial shares, namely the Basque Country, Castile La Mancha and Northern Portugal, to account for 72.35% of the GVA generated by public services.

Finally, the other services and sectors are to be found preferably in Madrid, Catalonia, Andalusia and Valencia (which represent 55.62% of GVA), but also in Lisbon, the Basque Country, Galicia, the Canary Islands and Northern Portugal, with 77.69% of total GVA being concentrated in these nine regions.

Looking at the results by area, we find that the main areas generating gross value added are Levante and Castile, accounting for almost 60% of total gross value added. If we break down these results by productive sector, we notice that the main drivers of gross value added in the primary sector are the South and Castile, although the Levante and Galician-Portuguese areas together account for more than a third of the total gross value added.

Industry, on the other hand, is concentrated in Levante, Castile and the Galician-Portuguese area, with the South and Basque-Navarre areas accounting for only 21%, split more or less equally. In terms of Industrial value-added per capita, the Basque-Navarre region has high values.

Gross value added by construction is generated by Levante and Castile, accounting for almost 60% of the total, the South and the Galician-Portuguese area, accounting for a similar share of almost a third of GVA as a whole.

The sectors related to the provision of mostly (albeit not exclusively) public services generate a higher percentage of gross value added in Castile and Levante, followed by the Galician-Portuguese area and the South.

Finally, the other services are also to be found in Levante and Castile, representing 60% of total GVA, while the South and the Galician-Portuguese areas together add up to a percentage similar to each of the above areas (equal to 29.98%).

Table 4 shows our calculations of the sectoral structures of GVA for the different Iberian regions, areas and states. The sectoral structure of GVA for Spain and Portugal is quite similar, whereas the Principality of Andorra differs from the above two states in this respect, as it has a very strong service sector that generates almost all of its value added. However, its construction sector is, despite its small surface area, proportionally, more important than its primary sector and industry as compared with Spain and Portugal.

Table 4. Sectoral structure of gross value added by Iberian regions, areas and states. 2019 (% of sectors on each region)

IBERIAN REGIONS	Total	S1	S2	S3	S4	S5
Galicia	100	5.01	18.24	7.60	18.61	50.54
Asturias	100	1.41	19.68	7.43	19.49	51.99
Cantabria	100	1.56	20.80	7.48	19.39	50.77
Basque Country	100	0.68	24.31	7.32	17.22	50.46
Chartered Community of Navarre	100	3.52	31	6.07	15.63	43.77
La Rioja	100	7.08	26.08	6.18	17.25	43.42
Aragon	100	5.88	21.66	6.51	18.94	47.02
Community of Madrid	100	0.09	10.52	5.13	14.97	69.30
Castile and León	100	5.20	19.98	6.83	21.34	46.64
Castile La Mancha	100	9.74	19.46	7.15	20.67	42.99
Extremadura	100	9.38	13.68	7.76	26.07	43.09
Catalonia	100	1.08	19.23	5.56	15.54	58.60
Valencian Community	100	2.12	18.88	7.16	17.38	54.46
Balearic Islands	100	0.53	5.71	8.20	15.05	70.52
Andalusia	100	6.58	11.83	7.14	21.82	52.64
Region of Murcia	100	5.22	18.46	6.84	19.63	49.86
Canary Islands	100	1.62	6.20	6.47	20.06	65.65
Andorra	100	0.58	5.58	7.45	14.23	72.16
Northern Region	100	1.40	26.62	5.18	17.90	48.90
Algarve	100	3.95	5.19	4.93	15.98	69.95
Central Region	100	3.45	25.90	4.45	20	46.20
Lisbon	100	0.39	9.59	3.20	18.35	68.47
Alentejo	100	11.30	21.29	3.70	20.80	42.91
Azores	100	8.84	6.92	3.97	29.27	51
Madeira	100	1.83	6.26	5.35	26.63	59.93

AREAS						
Galician-Portuguese	100	2.90	18.53	5.03	18.58	54.95
Alentejo	100	11.30	21.29	3.70	20.80	42.91
Lisbon Metropolitan Area	100	0.39	9.59	3.20	18.35	68.47
Northern Region	100	1.40	26.62	5.18	17.90	48.90
Central Region	100	3.45	25.90	4.45	20	46.20
Algarve	100	3.95	5.19	4.93	15.98	69.95
Galicia	100	5.01	18.24	7.60	18.61	50.54
Castile	100	2.59	14.21	5.96	17.52	59.73
Castile La Mancha	100	9.74	19.46	7.15	20.67	42.99
Castile and León	100	5.20	19.98	6.83	21.34	46.64
Extremadura	100	9.38	13.68	7.76	26.07	43.09
Community of Madrid	100	0.09	10.52	5.13	14.97	69.30
Cantabria	100	1.56	20.80	7.48	19.39	50.77
Principality of Asturias	100	1.41	19.68	7.43	19.49	51.99
La Rioja	100	7.08	26.08	6.18	17.25	43.42
Levante	100	1.74	18.19	6.30	16.29	57.48
Andorra	100	0.58	5.58	7.45	14.23	72.16
Catalonia	100	1.08	19.23	5.56	15.54	58.60
Aragon	100	5.88	21.66	6.51	18.94	47.02
Valencian Community	100	2.12	18.88	7.16	17.38	54.46
Balearic Islands	100	0.53	5.71	8.20	15.05	70.52
Iberian Macaronesia	100	2.19	6.26	6.18	21.33	64.04
A. R. of Madeira	100	1.83	6.26	5.35	26.63	59.93
Canary Islands	100	1.62	6.20	6.47	20.06	65.65
A. R. of the Azores	100	8.84	6.92	3.97	29.27	51
South	100	6.36	12.91	7.09	21.46	52.19
Region of Murcia	100	5.22	18.46	6.84	19.63	49.86
Andalusia	100	6.58	11.83	7.14	21.82	52.64
Basque-Navarre	100	1.31	25.78	7.05	16.87	48.99
Basque Country	100	0.68	24.31	7.32	17.22	50.46
Chartered Community of Navarre	100	3.52	31	6.07	15.63	43.77
TOTALS	100	2.81	16.44	6.13	17.99	56.63
AREAS						
Galician-Portuguese	100	2.90	18.53	5.03	18.58	54.95
Castile	100	2.59	14.21	5.96	17.52	59.73
Levante	100	1.74	18.19	6.30	16.29	57.48
Iberian Macaronesia	100	2.19	6.26	6.18	21.33	64.04
South	100	6.36	12.91	7.09	21.46	52.19
Basque-Navarre	100	1.31	25.78	7.05	16.87	48.99
TOTAL IBERIAN AREAS	100	2.81	16.44	6.13	17.99	56.63
STATES						
Spain	100	2.89	16.19	6.44	17.84	56.64
Portugal	100	2.33	18.09	4.20	18.99	56.38
Andorra	100	0.58	5.58	7.45	14.23	72.16
TOTAL STATES	100	2.81	16.44	6.13	17.99	56.63

Source: INE Spain, INE Portugal, Departament d'Estadística d'Andorra and own elaboration.

For the comparative analysis of the sectoral structures of the different Iberian areas, we created an Euclidean distance matrix, which is, of course, a symmetric matrix whose diagonal is zero since the distance of the sectoral structure of any area with respect to itself is obviously null.

The results that we have inferred for each area with respect to the total are as follows:

1. The areas whose sectoral structure is closest to that of the Galician-Portuguese area are in the following order: Levante, Castile, South and Basque-Navarre.
2. The areas whose sectoral structure is closest to that of Castile are in the following order: Levante, Galician-Portuguese, South and Macaronesia.
3. The Levante area is closer to the Galician-Portuguese and Castile areas and further removed from the South, Basque-Navarre and Macaronesia areas.
4. The Macaronesia area is very unlike the others, being relatively closer to Castile and furthest away from the Basque-Navarre area, whereas all the others are quite far removed.
5. The South has a sectoral structure in common with only two areas, namely the Galician-Portuguese area and the Castile area, whereas the other three are quite dissimilar.
6. Finally, the sectoral structure of the Basque-Navarre area is again quite distant from the most of the other areas, bearing only a slight resemblance to the Galician-Portuguese area and being nothing like Macaronesia.
7. The areas whose sectoral structure is most like the average for the whole of Iberia are, in the following order: Levante (0.56), Galician-Portuguese (0.59), Castile (0.77) and South (1.55), while the areas whose structure bears less resemblance to the Iberian average are the Basque-Navarre area and Macaronesia.

We leave to the reader a more detailed calibration and observation by regions within the above areas based on the information listed in Table 4.

Table 5. Euclidean distance matrix between the sectoral structures of GVA of the Iberian areas.

AREAS	Galician-Portuguese	Castile	Levante	Iberian Macaronesia	South	Basque-Navarre	Iberian Total
Galician-Portuguese	000	1.3203	0.7665	3.1163	1.5961	1.9758	0.5927
Castile	1.3203	000	0.9642	1.9666	1.8931	3.1773	0.7700
Levante	0.7665	0.9642	000	2.9065	2.0449	2.2864	0.5604
Iberian Macaronesia	3.1163	1.9666	2.9065	000	2.8504	5.0171	2.6084
South	1.5961	1.8931	2.0449	2.8504	000	2.9834	1.5199
Basque-Navarre	1.9758	3.1773	2.2864	5.0171	2.9834	000	2.4504
IBERIAN TOTAL	0.5927	0.7700	0.5604	2.6084	1.5199	2.4504	000

Source: Own elaboration, based on data sourced from INE Spain, INE Portugal and the Andorran Department of Statistics.

4. Dynamic analysis

Table 6 shows the main results of a dynamic analysis between 2001 (early 21st century) and 2019 for a set of inequality indicators. In principle, we measure the match between the unit distributions of GDP and surface area⁷ and their variation over the study period on the basis of the indicator I_Y . This year-over-year indicator is decomposed into a set of sub-indicators of inequality between different variables and the surface area distribution, namely, I_P , between population and surface area; $I_{E/P}$, between employment rate and surface area, and $I_{Y/E}$, between productivity and surface area. Finally, $2H(S)$ measures twice the surface area entropy. Unless the territorial redistributions change over time, surface area entropy will be unchanged, and its variation, ultimately, has no effect on any of the spatial scales of analysis (regions, areas and states).

Table 6. Dynamic analysis by Iberian regions, areas and states.

REGIONAL	I_P	$I_{E/P}$	$I_{Y/E}$	$2H(S)$	I_Y
2001	0.1915	-1.1322	-1.1417	2.3314	0.2490
2019	0.2105	-1.1508	-1.1319	2.3314	0.2592
Δ	0.0189	-0.0186	098	000	0.0102
AREAS	I_P	$I_{E/P}$	$I_{Y/E}$	$2H(S)$	I_Y
2001	0.0319	-0.6298	-0.6440	1.2757	0.0339
2019	0.0336	-0.6383	-0.6392	1.2757	0.0317
Δ	017	-086	047	000	-022
STATES	I_P	$I_{E/P}$	$I_{Y/E}$	$2H(S)$	I_Y
2001	031	-0.1846	-0.1969	0.3786	003
2019	011	-0.1883	-0.1912	0.3786	003
Δ	-020	-037	057	000	000

Source: INE Spain, INE Portugal, Departament d'Estadística d'Andorra and own elaboration.

Tables 7.1 to 8.2 show the values of Inequality indices with respect to surface area: population, productivity, occupation, entropy and income. for years 2001 and 2019

The indicators includes in tables 7.1 for year 2001 and 8.1 for year 2019 are:

S_j (1)	P_j (2)	Y_j (3)	E_x (4)	E_x/P_j (5)	Y_j/E_j 8,9	S_j/Y_j (7)	$\log(S_j/P_j)$ (8)	$\log(S_j/E_j/P_j)$ (9)
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⁷ As always, our calculations differentiate between both Iberian regions, areas and states.

⁸ The finding regarding the east-west clusters in terms of labour productivity, highlighted by Melchor Ferrer in *Determinants of labour productivity growth in Spanish and Portuguese regions: a spatial shift-share approach* (2020), corresponds to the geographical location of our Levante, Castile and Basque-Navarre areas as opposed to the other three areas. Productivity is found to be higher in these three central-eastern areas than in the respective western areas.

⁹ As indicated by Silva in *Portugal and Spain: catching up and falling behind. A comparative analysis of productivity trends and their causes, 1980-2007* (2011), it has been found that the labour productivity of the Iberian states is in the process of catching up with average European labour productivity, where, as our figures show, the Portuguese state is still lagging behind.

Table 7.1. Indicators (1) to (9) in year 2001

REGIONS (2001)									
Alentejo	0.05	0.02	0.01	0.02	1.01	0.73	4.73	(8)	(9)
Lisbon Metropolitan	0.01	0.05	0.06	0.06	1.24	0.98	0.08	0.54	-1.28
Northern Region	0.04	0.07	0.05	0.08	1.15	0.57	0.76	-0.99	-2.39
Central Region	0.05	0.05	0.03	0.05	1.12	0.59	1.51	-0.31	-1.51
Algarve	0.01	0.01	0.01	0.01	1.14	0.76	1.27	0	-1.38
Galicia	0.05	0.05	0.04	0.05	0.91	0.89	1.14	0.04	-2.13
Castile La Mancha	0.13	0.03	0.03	0.03	0.86	0.95	4.69	-0.03	-1.27
Castile and León	0.16	0.05	0.05	0.04	0.89	1.06	3.46	0.58	-0.81
Extremadura	0.07	0.02	0.01	0.02	0.80	0.83	5.05	0.51	-0.75
Community of Madrid	0.01	0.11	0.15	0.12	1.09	1.28	0.09	0.52	-1.06
Cantabria	0.01	0.01	0.01	0.01	0.97	1.02	0.86	-0.90	-1.91
Principality of Asturias	0.02	0.02	0.02	0.02	0.84	1.05	0.96	-0.07	-2.04
La Rioja	0.01	0.01	0.01	0.01	1.01	1.15	1.34	-0.07	-1.68
Andorra	0	0	0	0	1.34	1.15	0.39	0.19	-2.08
Catalonia	0.05	0.12	0.16	0.14	1.09	1.18	0.34	-0.22	-3.23
Aragon	0.08	0.02	0.03	0.02	0.99	1.10	3.09	-0.37	-1.31
Valencian Community	0.04	0.08	0.08	0.08	0.99	1.02	0.47	0.53	-1.09
Balearic Islands	0.01	0.02	0.02	0.02	1.16	1.12	0.39	-0.32	-1.41
Madeira AR	0	0	0	0.01	1.06	0.67	0.40	-0.30	-2.14
Canary Islands	0.01	0.03	0.03	0.03	1	1.03	0.37	-0.55	-2.90
Azores AR	0	0	0	0	0.97	0.69	1.23	-0.43	-1.90
Murcia Region	0.02	0.02	0.02	0.02	0.94	0.93	0.92	-0.08	-2.40
Andalusia	0.15	0.14	0.11	0.11	0.79	0.98	1.30	-0.09	-1.70
Basque Country	0.01	0.04	0.05	0.04	1.03	1.23	0.23	0.01	-0.73
Navarre CF	0.02	0.01	0.01	0.01	1.08	1.21	1.22	-0.53	-1.93
IBERIAN TOTAL	1	1	1	1	1	1		0.20	-1.79
AREAS	Sj	Pj	Yj	Ex	Ex/Pj		Sj/Yj		
Galician-Portuguese	0.20	0.24	0.20	0.27	1.10	0.74	1	-0.09	-0.75
Castile	0.41	0.25	0.27	0.24	0.97	1.14	1.50	0.22	-0.37
Levante	0.18	0.25	0.29	0.26	1.05	1.11	0.63	-0.14	-0.76
Iberian Macaronesia	0.02	0.04	0.04	0.04	1	0.95	0.44	-0.38	-1.75
South	0.17	0.17	0.13	0.14	0.81	0.98	1.25	-0.01	-0.69
Basque-Navarre	0.03	0.05	0.07	0.05	1.04	1.23	0.44	-0.25	-1.55
IBERIAN TOTAL	1	1	1	1	1	1			
STATES	Sj	Pj	Yj	Ex	Ex/Pj		Sj/Yj		
Spain	0.85	0.80	0.84	0.77	0.96	1.09	1.01	0.02	-0.06
Portugal	0.15	0.20	0.16	0.23	1.15	0.71	0.95	-0.11	-0.87
Andorra	0	0	0	0	1.34	1.15	0.39	-0.22	-3.23
IBERIAN TOTAL	1	1	1	1	1	1			

The indicators (10) to (17), in tables 7.2, for year 2001, and 8.2, for year 2019, are:

log(Sj/Yj/Ej) (10)	Sj * log(Sj) (11)	log (Sj/Yj) (12)	Ip (13)	I E/P (14)	I Y/E (15)	2H(S) (16)	Iy (17)
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Table 7.2 Inequality indices with respect to surface area: population, productivity, occupation, entropy and income. 2001. Indicators (10 to 17)

IBERIAN REGIONS (2001)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Alentejo	-1.14	-0.07	0.68	0.03	-0.07	-0.06	0.13	0.04
Lisbon Metropolitan Area	-2.29	-0.01	-1.08	0	-0.01	-0.01	0.02	-0.01
Northern Region	-1.20	-0.05	-0.12	-0.01	-0.05	-0.04	0.10	0
Central Region	-1.10	-0.06	0.18	0	-0.06	-0.05	0.13	0.01
Algarve	-1.96	-0.02	0.11	0	-0.02	-0.02	0.03	0
Galicia	-1.26	-0.06	0.06	0	-0.06	-0.06	0.13	0
Castile La Mancha	-0.86	-0.12	0.67	0.08	-0.11	-0.11	0.23	0.09
Castile and León	-0.83	-0.13	0.54	0.08	-0.12	-0.13	0.25	0.08
Extremadura	-1.08	-0.08	0.70	0.04	-0.07	-0.08	0.16	0.05
Community of Madrid	-1.98	-0.03	-1.05	-0.01	-0.03	-0.03	0.05	-0.01
Cantabria	-2.06	-0.02	-0.06	0	-0.02	-0.02	0.04	0
Principality of Asturias	-1.77	-0.03	-0.02	0	-0.03	-0.03	0.06	0
La Rioja	-2.13	-0.02	0.13	0	-0.02	-0.02	0.03	0
Andorra	-3.17	0	-0.41	0	0	0	0	0
Catalonia	-1.34	-0.07	-0.47	-0.02	-0.07	-0.07	0.14	-0.03
Aragon	-1.14	-0.09	0.49	0.04	-0.09	-0.09	0.18	0.04
Valencian Community	-1.42	-0.05	-0.32	-0.01	-0.05	-0.06	0.11	-0.01
Balearic Islands	-2.13	-0.02	-0.41	0	-0.02	-0.02	0.03	0
A.R. of Madeira	-2.70	0	-0.40	0	0	0	0.01	0
Canary Islands	-1.92	-0.02	-0.44	-0.01	-0.02	-0.02	0.05	-0.01
A.R. of Azores	-2.25	-0.01	0.09	0	-0.01	-0.01	0.02	0
Region of Murcia	-1.69	-0.03	-0.04	0	-0.03	-0.03	0.07	0
Andalusia	-0.83	-0.12	0.12	0	-0.11	-0.12	0.24	0.02
Basque Country	-2.01	-0.02	-0.64	-0.01	-0.02	-0.02	0.05	-0.01
Chartered Community of Navarre	-1.84	-0.03	0.09	0	-0.03	-0.03	0.06	0
IBERIAN TOTAL				0.19	-1.13	-1.14	2.33	0.25
AREAS								
Galician-Portuguese	-0.57	-0.14	0	-0.02	-0.15	-0.11	0.28	0
Castile	-0.45	-0.16	0.18	0.09	-0.15	-0.18	0.32	0.07
Levante	-0.79	-0.13	-0.20	-0.02	-0.14	-0.14	0.27	-0.04
Iberian Macaronesia	-1.73	-0.03	-0.36	-0.01	-0.03	-0.03	0.06	-0.01
South	-0.77	-0.13	0.10	0	-0.11	-0.13	0.26	0.02
Basque-Navarre	-1.62	-0.05	-0.35	-0.01	-0.05	-0.05	0.09	-0.01
IBERIAN TOTAL				0.03	-0.63	####	1.28	0.03
STATES								
Spain	-0.11	-0.06	0	0.02	-0.05	-0.09	0.12	0
Portugal	-0.66	-0.13	-0.02	-0.02	-0.13	-0.10	0.25	0
Andorra	-3.17	0	-0.41	0	0	0	0	0
IBERIAN TOTAL				0	-0.18	####	0.38	0

Source: INE Spain, INE Portugal, Departament d'Estadística d'Andorra and own elaboration.

Table 8.1. Inequality indices with respect to surface area: population, productivity, occupation, entropy and income. 2019. Indicators (1) to (9).

REGIONS (2019)	Sj	Pj	Yj	Ex	Ex/Pj	Yj/Ej	Sj/Yj	(8)	(9)
Alentejo	0.05	0.01	0.01	0.01	1.01	0.74	5.73	0.63	-1.28
Lisbon Metropolitan	0.01	0.05	0.05	0.05	1.05	1.01	0.10	-1	-2.32
Northern Region	0.04	0.06	0.04	0.07	1.07	0.65	0.82	-0.25	-1.48
Central Region	0.05	0.04	0.03	0.04	1.06	0.67	1.71	0.08	-1.35
Algarve	0.01	0.01	0.01	0.01	1.07	0.85	1.20	0.04	-2.11
Galicia	0.05	0.05	0.04	0.04	0.95	0.98	1.12	0.02	-1.28
Castile La Mancha	0.13	0.04	0.03	0.03	0.95	0.87	4.51	0.57	-0.85
Castile and León	0.16	0.04	0.04	0.04	0.98	1	3.83	0.57	-0.79
Extremadura	0.07	0.02	0.01	0.02	0.85	0.89	4.90	0.57	-1.09
Madrid Com.	0.01	0.12	0.16	0.13	1.12	1.27	0.08	-0.94	-1.92
Cantabria	0.01	0.01	0.01	0.01	0.99	0.97	0.91	-0.06	-2.04
Asturias, Principality	0.02	0.02	0.02	0.02	0.90	1.02	1.09	0	-1.71
La Rioja	0.01	0.01	0.01	0.01	1.05	1.06	1.38	0.19	-2.10
Andorra	0	0	0	0	1.35	1.05	0.40	-0.24	-3.24
Catalonia	0.05	0.13	0.16	0.14	1.05	1.17	0.33	-0.39	-1.29
Aragon	0.08	0.02	0.03	0.02	1.05	1.08	3.05	0.54	-1.12
Valencian Com.	0.04	0.09	0.08	0.08	0.97	0.94	0.49	-0.35	-1.40
Balearic Islands	0.01	0.02	0.02	0.02	1.11	1.01	0.36	-0.40	-2.12
Madeira AR	0	0	0	0	1.11	0.71	0.38	-0.52	-2.92
Canary Islands	0.01	0.04	0.03	0.04	0.95	0.88	0.38	-0.49	-1.88
Azores AR	0	0	0	0	0.92	0.79	1.26	-0.04	-2.37
Murcia Region	0.02	0.03	0.02	0.02	0.96	0.89	0.85	-0.14	-1.71
Andalusia	0.15	0.15	0.11	0.13	0.86	0.90	1.28	0	-0.77
Basque Country	0.01	0.04	0.05	0.04	1	1.34	0.24	-0.50	-1.92
Navarre CF	0.02	0.01	0.01	0.01	1.04	1.22	1.21	0.18	-1.78
TOTAL	1	1	1	1	1	1	1		
AREAS	Sj	Pj	Yj	Ex	Ex/Pj	Yj/Ej	Sj/Yj		
Galician-Portuguese area	0.20	0.22	0.18	0.23	1.04	0.81	1.08	-0.04	-0.72
Castile	0.41	0.25	0.28	0.25	1.03	1.11	1.45	0.22	-0.40
Levante Area	0.18	0.26	0.29	0.27	1.03	1.07	0.62	-0.16	-0.76
Iberian Macaronesia	0.02	0.05	0.04	0.05	0.96	0.86	0.45	-0.43	-1.74
South	0.17	0.17	0.14	0.15	0.87	0.90	1.21	-0.02	-0.72
Basque Country-Navarre	0.03	0.05	0.07	0.05	1.01	1.31	0.45	-0.23	-1.54
IBERIAN TOTAL	1	1	1	1	1	1			
STATES	Sj	Pj	Yj	Ex	Ex/Pj	Yj/Ej	Sj/Yj		
Spain	0.85	0.82	0.85	0.81	0.99	1.05	0.99	0.01	-0.07
Portugal	0.15	0.18	0.15	0.19	1.06	0.77	1.05	-0.07	-0.84
Andorra	0	0	0	0	1.35	1.05	0.40	-0.24	-3.24
IBERIAN TOTAL	1	1	1	1	1	1			

Table 8.2. Indicators (10) to (17) in year 2019

REGIONS (2019)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Alentejo	-1.15	-0.07	0.76	0.03	-0.07	-0.06	0.13	0.04
Lisbon MA	-2.30	-0.01	-1.02	-0.01	-0.01	-0.01	0.02	-0.01
Northern Region	-1.26	-0.05	-0.09	-0.01	-0.05	-0.04	0.10	0
Central Region	-1.15	-0.06	0.23	0	-0.06	-0.05	0.13	0.01
Algarve	-2.01	-0.02	0.08	0	-0.02	-0.02	0.03	0
Galicia	-1.30	-0.06	0.05	0	-0.06	-0.06	0.13	0
Castile La Mancha	-0.82	-0.12	0.65	0.08	-0.11	-0.11	0.23	0.09
Castile and León	-0.80	-0.13	0.58	0.09	-0.12	-0.13	0.25	0.09
Extremadura	-1.11	-0.08	0.69	0.04	-0.08	-0.08	0.16	0.05
Madrid Com.	-1.98	-0.03	-1.09	-0.01	-0.03	-0.03	0.05	-0.01
Cantabria	-2.04	-0.02	-0.04	0	-0.02	-0.02	0.04	0
Asturias, P.	-1.76	-0.03	0.04	0	-0.03	-0.03	0.06	0
Rioja (La)	-2.10	-0.02	0.14	0	-0.02	-0.02	0.03	0
Andorra	-3.13	0	-0.39	0	0	0	0	0
Catalonia	-1.34	-0.07	-0.48	-0.02	-0.07	-0.07	0.14	-0.03
Aragon	-1.13	-0.09	0.48	0.04	-0.09	-0.09	0.18	0.04
Valencian Com.	-1.38	-0.05	-0.31	-0.01	-0.05	-0.05	0.11	-0.01
Balearic Islands	-2.08	-0.02	-0.44	0	-0.02	-0.02	0.03	0
Madeira AR	-2.72	0	-0.42	0	0	0	0.01	0
Canary Islands	-1.85	-0.02	-0.42	-0.01	-0.02	-0.02	0.05	-0.01
Azores AR	-2.31	-0.01	0.10	0	-0.01	-0.01	0.02	0
Murcia Region	-1.67	-0.03	-0.07	0	-0.03	-0.03	0.07	0
Andalusia	-0.79	-0.12	0.11	0	-0.11	-0.12	0.24	0.02
Basque Country	-2.04	-0.02	-0.63	-0.01	-0.02	-0.02	0.05	-0.01
Navarre CF	-1.85	-0.03	0.08	0	-0.03	-0.03	0.06	0
TOTAL				0.21	-1.15	###	2.33	0.26
AREAS								
Galician-Portuguese	-0.61	-0.14	0.03	-0.01	-0.14	-0.12	0.28	0.01
Castile	-0.44	-0.16	0.16	0.09	-0.16	-0.18	0.32	0.07
Levante Area	-0.77	-0.13	-0.21	-0.03	-0.14	-0.14	0.27	-0.04
Iberian Macaronesia	-1.69	-0.03	-0.34	-0.01	-0.03	-0.03	0.06	-0.01
South	-0.73	-0.13	0.08	0	-0.12	-0.12	0.26	0.01
Basque Country-Navarre	-1.65	-0.05	-0.35	-0.01	-0.05	-0.05	0.09	-0.01
TOTAL				0.03	###	###	1.28	0.03
STATES								
Spain	-0.10	-0.06	0	0.01	-0.06	-0.08	0.12	0
Portugal	-0.70	-0.13	0.02	-0.01	-0.13	-0.11	0.25	0
Andorra	-3.13	0	-0.39	0	0	0	0	0
TOTAL		-0.19		0	###	###	0.38	0

Source: INE Spain, INE Portugal, Departament d'Estadística d'Andorra and own elaboration.

As we have seen, for both regions and especially for areas and states, the inequalities between income and surface area distribution are small or very small, resulting in a complete match between rather asymmetric distributions, and the variation over the

analysed period of nearly 20 years is negligible. Of the positive or negative incremental effects that shape and configure this variation, we highlight a systematic, albeit slight, negative input for the so-called employment rate effect, as opposed to positive inputs from both the population effect and the productivity effect, except at state level, where it is ever so slightly negative. These results confirm that the redistributions of these variables are very stable with respect to the surface area redistribution, being, however, asymmetric and constant throughout the period under analysis.

8. Conclusions

Based on the objectives of this research, our conclusions will serve, firstly, to characterise the Iberian regions, areas and states and, secondly, to compare the dynamic evolution over the period 2001-2019.

Taking into account that GDP per capita is an economic measure to gauge the status and level reached by different territories, we can conclude from our calculations that, at 25492 Euros, the average Iberian GDP per capita contrasts with values as high as 36,344 euros per capita for the Principality of Andorra and lower, values for Portugal and Spain. Nevertheless, although the gap between Spain and Portugal narrowed throughout the 20th and early 21st centuries, Spain's GDP per capita is still higher than Portugal's.

The empirical evidence, as Seen in Guisan(2017) and other studies,As shows that the increase of real Value Added per capita in Construction and Services depend mainly on the sum of Valued Added of Primary Sector and Industry and also on Foreign Tourism. Andorra has lower Value Added per capital than Portugal and Spain in the sum of Primary Sector and Industry, but has a much higher intensity of Tourism with around 512 hotel beds per one thousand inhabitants, while Spain has 75 and Portugal 32.

The cumulative growth of trade between the two states and greater Iberian integration within Europe have not been sufficient to level out their economic conditions. Looking at the areas considered in our research, we can conclude that the Basque-Navarre, Levante and Castile areas have the highest GDP per capita. Castile is influenced, above all, by the Community of Madrid, and Levante by the high values of Catalonia (the Principality of Andorra has little weight in the area as it amounts only for 0.6% of the GDP of this area. The GDP per capita of the other areas (South, Iberian Macaronesia or Galician-Portuguese) is lower, as shown in Table 16, the Lisbon Metropolitan Area being the most highly developed region within these areas.

The total relative redundancy indicator within the analysis of the intra-group and inter-group inequalities between the GDP per capita of the regional groupings that we designed denotes that the GDP per capita of the different areas is very similar, since the value is close to zero (0765). We decomposed this relative redundancy into intra-group (or intra-area) and inter-group (or inter-area) components, which account for the disparities within each area or between the different areas, respectively. According to the results, the intra-area

disparity is greater than the inter-area disparity, although they are low and there is very little difference between the two¹⁰.

The three Iberian states generate a GVA worth 1,300 billion euros, of which Spain has the majority share, accounting for 85.74%, compared to Portugal's 14.06% and barely 0.19% for the Principality of Andorra. This percentage distribution is more or less the same across all the major sectors and the difference is even sharper in the construction sector. The share of the services sector is around 75%, except for the Principality of Andorra, where, thanks to the country's financial services, it amounts to 86.39%. The share of the primary sector drops to around 2.5%, led again by the Principality of Andorra, whose stake is no more than 0.58%. Finally, although the secondary sector still has a share of around 22% in both Spain and Portugal, it again accounts for a relatively smaller portion in the Principality of Andorra at 13.08%. In Spain and Portugal it is important to increase industrial production per capita due to its positive effects on production, employment and real wages in other sectors, particularly in Services.

After calculating the Euclidean distance matrix between the sectoral distributions of GVA for the different regional groupings within our research, our main conclusion is that the sectoral structure of all the areas is quite similar, except for the Basque-Navarre and Macaronesia areas, due to the weight of tourism in the tertiary sector in the archipelagos of Iberian Macaronesia and industry's overwhelming relative share in the Basque-Navarre sectoral structure¹¹.

Finally, the dynamic analysis of the period between 2001 and 2019 yielded results for the indicators of inequality, which compare the surface area distribution structure on the different scales with population, employment rate, productivity and income, as well as any increments over the period. The main findings are as follows:

- The inequality between income distribution and surface distribution by area and by state is negligible and is more or less unchanged over the period under study.
- The population distribution has had a positive, albeit negligible, influence on the status and evolution of these small inequalities, whereas the impact of the productivity and employment distributions was negative, but again unimportant, both by area and by state.
- Looking at the figures, we find that all these correlation calibrators between surface area and population, productivity and employment distributions are highly stable.

Finally, it is, of course, important to understand that the institutional and administrative map has a bearing, as does the asymmetry of the individual distribution of each variable in the territory.

¹⁰ Intra-group Theil redundancy index = 0.00426 and inter-group Theil redundancy index = 0.00339.

¹¹ See Table 23.

These results by area should also be compared in terms not only of production but also of income, facilitated by recent research published by Pedro Ramos and Carla Coimbra(2022).

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