

JÃO CARLOS LOPES: THE CHARACTERISTICS AND REGIONAL DISTRIBUTION OF OLDER WORKERS IN PORTUGAL

1. Introduction

Population ageing has many consequences, some of which affect both the workforce and the labour market. Although population ageing is a nationwide phenomenon, it does not affect all parts of Portugal equally. The consequent change in the age composition of the workforce has implications in terms of productivity, labour costs and the suitability of management strategies. It is important to acknowledge regional differences in order to adapt policies and the management of firms accordingly.

There are significant and persistent differences in the regional composition of the workforce in Portugal, relating to its size, age composition, education level, industry specialisation and remuneration. In this study, we analyse these differences, seeking to identify the most noticeable changes occurring between 1989, 1999 and 2009.

Although, according to Eurostat data, the Portuguese population has been growing in size each year (except during the period from 2010 to 2011), the rise has mainly been concentrated in certain regions, such as Lisbon or the Algarve. This is a consequence of the natural balance of the population, as well as of migration flows (Caleiro, 2005). Despite the paucity of studies relating to the ageing of the Portuguese population from a regional perspective, attention has been given to some aspects of regional disparity in Portugal: development indices (Mourão, 2004), productivity and per capita income (Soukiazis and Antunes, 2004), health care (Santana, 2000), cohesion (Freitas et al., 2005), ageing and job creation (Ramos et al., 2012). In our study, we will focus on the composition of the workforce.

Although defining an older worker in terms of a particular age is an arbitrary matter, we identify older workers as being people aged 55 and over, which is in keeping with the criterion used in other studies (e.g. Denton and Spencer, 2009, Marshall and Ferrao, 2007, Auer and Fortuny, 2000).

Population ageing, together with the tendency for people to stop working later on in life, will give this group of workers a greater weight in the workforce. Differing age profiles across regions and across occupational sectors provide us with information about potential future work-force needs.

While pension reforms have been directed at increasing the labour supply of older workers, it is also necessary to consider the demand side, in order to promote an active ageing policy (European Commission, 2012, Gendron, 2011, Albuquerque and Lopes, 2010). The level of qualifications and skills that workers have is a characteristic that affects their retention in the labour market. Even if older workers do not want to retire, they are particularly at risk of unemployment. And older workers also have lower levels of education, on average. We analyse the evolution of the education level of older workers in Portugal, comparing it to that of younger workers.

Flexible work is a potential way of extending the working lives of older workers (Hollywood et al., 2008). In our study, we look at the rates of part-time employment among Portuguese workers.

We use the *Quadros de Pessoal* (Employment Records), a large database collected on an annual basis about Portuguese firms and their workers, provided by the Ministry of Solidarity and Social Security. These records cover people working in the private business sector (around 3.3 million workers, in 2009), excluding liberal professionals.

2. The main differences between younger and older workers

In this section, an analysis is made of the main differences between younger and older workers in Portugal, their evolution over time (1989, 1999 and 2009) and by gender, as well as by sector and various other dimensions: education level, part-time/full-time employment regimes, the size of the establishment where they work and their average labour compensation.

2.1. AGE STRUCTURE AND DYNAMICS OF OLDER AND YOUNGER MALE AND FEMALE WORKERS

The older workers (aged 55 or over) registered in the *Quadros de Pessoal* – 2009 (*QdP*) represent 10.57% of the total Portuguese workforce, or 330,538 workers out of a universe of 3,128,126 (see Table 1). This figure consists of 6.62% male workers and 3.95% female workers, and this gender bias is clearly more pronounced than it is among younger workers (48.9% male workers versus 40.57% female workers). As expected, the proportion of older workers diminishes significantly with age: 6.32% are in the sub-group of workers aged 55-59; 3.21% in the group of workers aged 60-64, and interestingly, although sometimes forgotten, 1.21% (or 32,586 workers) are aged above the legal retirement age of 65.

The ageing of the Portuguese workforce is a recent phenomenon in relative terms. Table 1 shows that the proportion of older workers fell slightly from 8.81% in 1989 to 8.22% in 1999. Over the whole decade, there was an overall increase of 19,976 workers and a growth rate of only 10.45%. On the other hand, there was a sizeable increase in the number of older workers between 1999 and 2009, both in absolute terms (119,937; +56.54%) and in relative terms (+2.35%) (see Table 2). This latter trend was mainly explained by the significant increase in older female workers (61,405 in absolute numbers, corresponding to a growth of 98.94% overall and a 1.53% growth in the relative weight of such workers among the Portuguese workforce as a whole). When analysed by sub-groups of older workers, it can be seen that there was also a slight increase in the first two sub-groups, and even an absolute fall in the number of workers in the oldest sub-group (-284 workers) between 1989 and 1999, as well as a significant increase in the number of workers in all sub-groups over the next decade.

Table 1. Age structure of the portuguese workforce – 1989; 1999; 2009

	1989		1999		2009	
	Fre.	%	Fre.	%	Fre.	%
Younger Workers: < 55	1.978.647	91.19	2.357.297	91.78	2.797.588	89.43
males	1.246.060	57.43	1.345.377	52.38	1.528.392	48.86
Females	732.587	33.76	1.011.920	39.40	1.269.196	40.57
Older Workers: 55 +	191.183	8.81	211.159	8.22	330.538	10.57
males	150.680	6.94	149.035	5.80	207.009	6.62
Females	40.503	1.87	62.124	2.42	123.529	3.95
55 - 59	107.058	4.93	119.397	4.65	197.693	6.32
60 - 64	60.051	2.77	67.972	2.65	100.259	3.21
65 +	24.074	1.11	23.790	0.93	32.586	1.04
Total	2.169.830	100,00	2.568.456	100,00	3.128.126	100,00

Table 2. Changes in age structure of portuguese labour force

	1989/1999			1999/2009		
	Δ Fre.	Δ Fre. %	Δ rel %	Δ Fre.	Δ Fre. %	Δ rel %
Younger Workers: < 55	378.650	19.14	0.59	440.291	18.68	-2.35
males	99.317	7.97	-5.05	183.015	13.60	-3.52
Females	279.333	38.13	5.64	257.276	25.42	1.18
Older Workers: 55 +	19.976	10.45	-0.59	119.379	56.54	2.35
males	-1.645	-1.09	-1.14	57.974	38.90	0.82
Females	21.621	53.38	0.55	61.405	98.84	1.53
55 - 59	12.339	11.53	-0.29	78.296	65.58	1.67
60 - 64	7.921	13.19	-0.12	32.287	47.50	0.56
65 +	-284	-1.18	-0.18	8.796	36.97	0.12
Total	398.626	18.37	0.00	559.670	21.79	0.00

Source: *Quadros de Pessoal* and authors' calculations

2.2. ANALYSIS BY SECTOR

An analysis of the distribution of older workers by sector in Portugal shows that, in 2009 (Table 3), these workers were concentrated in services, and thus in the most labour-intensive sectors: 25.8% in Other Services; 18.4% in Wholesale and Retail Trade; 12.2% in Construction; 8.1% in Hotels and Catering; 7.3% in Transport Services. The non-service sectors with the largest number of older workers was Manufacture of Fabricated Metal Products, Machinery and Equipment (with 5.2% of all older workers), followed by Food, Beverages and Tobacco (4%), Agriculture (3.7%), Textiles (3.6%), Wood and Cork (2.4%) and Non-Metallic Mineral Products (1.8%).

In 1999 and 1989 (Tables 4 and 5), the sector employing the highest proportion of older workers was Wholesale and Retail Trade, with 21.2% in 1999 and 18.6% in 1989, followed by Other Services, which showed a significant growth (rising from 11.5% in 1989 to 16.4% ten years later). Construction ranked third in all the years covered by our analysis (9.6% in 1989 and 10.9% in 1999). Transport, Storage and Communications dropped one position in the ranking (from 4th to 5th), with Hotels and Catering rising above this, mainly due to the latter's strong growth from 4.2% in 1989 to 6.7% in 1999, coupled with the already-mentioned figure of 8.1% in 2009.

It is important to note that the relatively small percentage of older workers in Agriculture is explained by the absence in this Database (*QdP*) of independent farmers. All the results for this sector, both regionally and for the country as a whole, must be interpreted with this caveat in mind. In fact, this sector has by far the oldest workforce of all, with around 20% of older workers in all the years covered (see Table 6). The second sector according to this criterion is Mining (15% in 2009; 11.4% in 1999 and 11.8% in 1988), followed by Basic Metal Industries (14.46%) and Electricity, Gas and Water (13.8%). This last sector has had a strange ageing process, recording a percentage of older workers of only 5.6% in 1999, a figure that was below the national average for that year (8.2%), and 14.7% in 1989, which was clearly above the average for that year (8.8%). Closing the list of the top five sectors of older workers in 2009 was Food, Beverages and Tobacco, with a percentage of 12.9%, slightly above the previous levels of around 11% in 1999 and 1989.

Table 3. Structure of sectors by age groups – 2009

	Younger W.		Older W.		55-59		60-64		65 +		Total	
	Fre.	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%
A - Agriculture	51,317	1.85	12,021	3.68	6,329	3.24	3,974	4.00	1,718	5.33	63,338	2.04
B - Mining	10,217	0.37	1,803	0.55	1,097	0.56	549	0.55	157	0.49	12,020	0.39
C1 - Food, beverages, tob.	88,956	3.21	13,113	4.01	7,919	4.05	3,996	4.03	1,198	3.71	102,069	3.29
C2 - Textiles	163,590	5.90	11,668	3.57	8,316	4.26	2,738	2.76	614	1.90	175,258	5.65
C3 - Wood, cork	56,105	2.02	7,672	2.35	4,875	2.50	2,217	2.23	580	1.80	63,777	2.06
C4 - Paper, publishing	37,662	1.36	4,436	1.36	2,846	1.46	1,227	1.24	363	1.13	42,098	1.36
C5 - Chemicals	36,975	1.33	4,909	1.50	3,200	1.64	1,347	1.36	362	1.12	41,884	1.35
C6 - Non-metallic Mineral Prod.	40,244	1.45	5,828	1.78	3,720	1.90	1,718	1.73	390	1.21	46,072	1.49
C7 - Base Metals	7,782	0.28	1,315	0.40	880	0.45	357	0.36	78	0.24	9,097	0.29
C8 - Fab. Metal Prod., Mach., Eq.	143,717	5.18	17,011	5.21	10,672	5.46	4,981	5.02	1,358	4.21	160,728	5.18
C9 - Other manufacturing ind.	5,510	0.20	540	0.17	369	0.19	150	0.15	21	0.07	6,050	0.20
D - Electricity, gas, water	19,617	0.71	3,127	0.96	2,293	1.17	685	0.69	149	0.46	22,744	0.73
E - Construction	328,153	11.83	39,779	12.17	24,347	12.47	11,873	11.96	3,559	11.03	367,932	11.87
F - Trade, repair of motor vehicles	565,038	20.37	60,025	18.37	33,821	17.32	19,165	19.31	7,039	21.82	625,063	20.16
G - Restaurants and hotels	209,097	7.54	26,386	8.07	15,721	8.05	8,330	8.39	2,335	7.24	235,483	7.59
H - Transport, storage, comunicat.	182,905	6.59	23,856	7.30	14,882	7.62	7,103	7.16	1,871	5.80	206,761	6.67
I - Financial services	84,216	3.04	8,896	2.72	6,003	3.07	2,281	2.30	612	1.90	93,112	3.00
J - Other services	742,688	26.78	84,430	25.83	48,005	24.58	26,568	26.77	9,857	30.55	827,118	26.68
Total	2,773,789	100.0	326,815	100.0	195,295	100.0	99,259	100.0	32,261	100.0	3,100,604	100.0

Source: *Quadros de Pessoal* and authors' calculations.

Table 4. Structure of sectors by age groups – 1999

	Younger W.		Older W.		55-59		60-64		65 +		Total	
	Fre.	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%
A - Agriculture	41,125	1.74	10,058	4.76	4,245	3.56	4,062	5.98	1,751	7.36	51,183	1.99
B - Mining	13,042	0.55	1,678	0.79	818	0.69	678	1.00	182	0.77	14,720	0.57
C1 - Food, beverages, tob.	81,781	3.47	9,659	4.57	5,367	4.50	3,167	4.66	1,125	4.73	91,440	3.56
C2 - Textiles	283,082	12.01	12,282	5.82	7,628	6.39	3,692	5.43	962	4.04	295,364	11.50
C3 - Wood, cork	40,196	1.71	4,668	2.21	2,437	2.04	1,721	2.53	510	2.14	44,864	1.75
C4 - Paper, publishing	43,061	1.83	4,185	1.98	2,535	2.12	1,206	1.77	444	1.87	47,246	1.84
C5 - Chemichals	38,251	1.62	4,118	1.95	2,553	2.14	1,204	1.77	361	1.52	42,369	1.65
C6 - Non-metallic Mineral Prod.	61,939	2.63	6,349	3.01	3,646	3.05	2,118	3.12	585	2.46	68,288	2.66
C7 - Base Metals	9,217	0.39	1,094	0.52	711	0.60	325	0.48	58	0.24	10,311	0.40
C8 - Fab. Metal Prod., Mach., Eq.	189,591	8.04	13,283	6.29	8,409	7.04	3,703	5.45	1,171	4.92	202,874	7.90
C9 - Other manufacturing ind.	47,909	2.03	3,877	1.84	2,115	1.77	1,382	2.03	380	1.60	51,786	2.02
D - Electricity, gas, water	16,280	0.69	971	0.46	723	0.61	203	0.30	45	0.19	17,251	0.67
E - Construction	247,678	10.51	22,956	10.87	12,190	10.21	8,386	12.34	2,380	10.00	270,634	10.54
F - Trade, repair of motor vehicles	485,810	20.61	44,652	21.15	23,499	19.68	14,952	22.00	6,201	26.07	530,462	20.65
G - Restaurants and hotels	160,217	6.80	14,006	6.63	8,042	6.74	4,580	6.74	1,384	5.82	174,223	6.78
H - Transport, storage, comunicat.	135,385	5.74	16,033	7.59	11,043	9.25	4,116	6.06	874	3.67	151,418	5.90
I - Financial services	80,442	3.41	6,279	2.97	4,740	3.97	1,288	1.89	251	1.06	86,721	3.38
J - Other services	380,063	16.12	34,582	16.38	18,332	15.35	11,129	16.37	5,121	21.53	414,645	16.14
Total	2,355,069	100.0	210,730	100.0	119,033	100.0	67,912	100.0	23,785	100.0	2,565,799	100.0

Table 5. Structure of sectors by age groups – 1989

	Younger W.		Older W.		55-59		60-64		65 +		Total	
	Fre.	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%
A - Agriculture	44,599	2.25	11,418	5.97	5,685	5.31	4,278	7.12	1,455	6.04	56,017	2.58
B - Mining	14,122	0.71	1,878	0.98	1,045	0.98	654	1.09	179	0.74	16,000	0.74
C1 - Food, beverages, tob.	92,337	4.67	11,394	5.96	6,162	5.76	3,773	6.28	1,459	6.06	103,731	4.78
C2 - Textiles	346,438	17.51	15,566	8.14	9,206	8.60	4,827	8.04	1,533	6.37	362,004	16.68
C3 - Wood, cork	79,093	4.00	6,873	3.59	3,902	3.64	2,324	3.87	647	2.69	85,966	3.96
C4 - Paper, publishing	45,286	2.29	4,464	2.33	2,583	2.41	1,295	2.16	586	2.43	49,750	2.29
C5 - Chemichals	59,531	3.01	6,553	3.43	4,005	3.74	1,948	3.24	600	2.49	66,084	3.05
C6 - Non-metallic Mineral Prod.	60,693	3.07	5,794	3.03	3,471	3.24	1,824	3.04	499	2.07	66,487	3.06
C7 - Base Metals	19,489	0.98	2,024	1.06	1,284	1.20	609	1.01	131	0.54	21,513	0.99
C8 - Fab. Metal Prod., Mach., Eq.	180,158	9.11	13,573	7.10	8,380	7.83	3,944	6.57	1,249	5.19	193,731	8.93
C9 - Other manufacturing ind.	10,703	0.54	934	0.49	502	0.47	293	0.49	139	0.58	11,637	0.54
D - Electricity, gas, water	22,213	1.12	3,840	2.01	2,347	2.19	1,309	2.18	184	0.76	26,053	1.20
E - Construction	171,557	8.67	18,386	9.62	10,593	9.89	6,073	10.11	1,720	7.14	189,943	8.75
F - Trade, repair of motor vehicles	314,952	15.92	35,470	18.55	17,855	16.68	11,060	18.42	6,555	27.23	350,422	16.15
G - Restaurants and hotels	101,776	5.14	7,956	4.16	4,352	4.07	2,504	4.17	1,100	4.57	109,732	5.06
H - Transport, storage, comunicat.	132,451	6.69	17,448	9.13	10,946	10.22	5,157	8.59	1,345	5.59	149,899	6.91
I - Financial services	76,340	3.86	5,584	2.92	3,813	3.56	1,462	2.43	309	1.28	81,924	3.78
J - Other services	206,852	10.45	22,019	11.52	10,923	10.20	6,714	11.18	4,382	18.20	228,871	10.55
Total	1,978,647	100.0	191,183	100.0	107,058	100.0	60,051	100.0	24,074	100.0	2,169,830	100.0

Source: *Quadros de Pessoal* and authors' calculations.

Table 6. Structure of age groups by sector (values in %)

	1989					1999					2009				
	Y. W.	O. W.	55-59	60-64	65+	Y. W.	O. W.	55-59	60-64	65+	Y. W.	O. W.	55-59	60-64	65+
A - Agriculture	79.62	20.38	10.15	7.64	2.60	80.35	19.65	8.29	7.94	3.42	81.02	18.98	9.99	6.27	2.71
B - Mining	88.26	11.74	6.53	4.09	1.12	88.60	11.40	5.56	4.61	1.24	85.00	15.00	9.13	4.57	1.31
C1 - Food, beverages, tob.	89.02	10.98	5.94	3.64	1.41	89.44	10.56	5.87	3.46	1.23	87.15	12.85	7.76	3.91	1.17
C2 - Textiles	95.70	4.30	2.54	1.33	0.42	95.84	4.16	2.58	1.25	0.33	93.34	6.66	4.75	1.56	0.35
C3 - Wood, cork	92.00	8.00	4.54	2.70	0.75	89.60	10.40	5.43	3.84	1.14	87.97	12.03	7.64	3.48	0.91
C4 - Paper, publishing	91.03	8.97	5.19	2.60	1.18	91.14	8.86	5.37	2.55	0.94	89.46	10.54	6.76	2.91	0.86
C5 - Chemicals	90.08	9.92	6.06	2.95	0.91	90.28	9.72	6.03	2.84	0.85	88.28	11.72	7.64	3.22	0.86
C6 - Non-metallic Mineral Prod.	91.29	8.71	5.22	2.74	0.75	90.70	9.30	5.34	3.10	0.86	87.35	12.65	8.07	3.73	0.85
C7 - Base Metals	90.59	9.41	5.97	2.83	0.61	89.39	10.61	6.90	3.15	0.56	85.54	14.46	9.67	3.92	0.86
C8 - Fab. Metal Prod., Mach., Eq.	92.99	7.01	4.33	2.04	0.64	93.45	6.55	4.14	1.83	0.58	89.42	10.58	6.64	3.10	0.84
C9 - Other manufacturing ind.	91.97	8.03	4.31	2.52	1.19	92.51	7.49	4.08	2.67	0.73	91.07	8.93	6.10	2.48	0.35
D - Electricity, gas, water	85.26	14.74	9.01	5.02	0.71	94.37	5.63	4.19	1.18	0.26	86.25	13.75	10.08	3.01	0.66
E - Construction	90.32	9.68	5.58	3.20	0.91	91.52	8.48	4.50	3.10	0.88	89.19	10.81	6.62	3.23	0.97
F - Trade, repair of motor vehicles	89.88	10.12	5.10	3.16	1.87	91.58	8.42	4.43	2.82	1.17	90.40	9.60	5.41	3.07	1.13
G - Restaurants and hotels	92.75	7.25	3.97	2.28	1.00	91.96	8.04	4.62	2.63	0.79	88.79	11.21	6.68	3.54	0.99
H - Transport, storage, comunicat.	88.36	11.64	7.30	3.44	0.90	89.41	10.59	7.29	2.72	0.58	88.46	11.54	7.20	3.44	0.90
I - Financial services	93.18	6.82	4.65	1.78	0.38	92.76	7.24	5.47	1.49	0.29	90.45	9.55	6.45	2.45	0.66
J - Other services	90.38	9.62	4.77	2.93	1.91	91.66	8.34	4.42	2.68	1.24	89.79	10.21	5.80	3.21	1.19
Total	91.19	8.81	4.93	2.77	1.11	91.78	8.22	4.65	2.65	0.93	89.46	10.54	6.30	3.20	1.04

On the other hand, since 1989, the “youngest” sector in Portugal has been Textiles, starting in that same year with only 4.3% of its workforce aged 55 and over, a figure that fell to 4.2% in 1999 and then rose to 6.7% in 2009. As is well known, this sector has been the one that is most representative of the overall trend towards de-industrialisation in Portugal (Lopes et al., 2011), particularly after the beginning of Economic and Monetary Union, in 1999. Starting with 362,000 workers in 1989 (16.7%), the Textiles sector witnessed a decline to 295,300 workers in 1999 (11.5%) and then to 175,200 workers in 2009 (5.6%). The other side of this coin is the strong growth in services, particularly Other Services (Rental, Business, Health and Education), Wholesale and Retail Trade (by far the largest individual sector in Portugal, representing 20% of the *QdP* workforce), Hotels and Catering, and Transport and Financial Services, as well as the Construction sector. Today, all these sectors have the largest number of older workers in absolute terms, as expected, but their relative ageing is close to the national average (slightly above average in three of these sectors – Transport, Hotels and Catering and Construction – and below average in the others).

When analysing the situation by sub-groups, it is worth mentioning the high incidence of the two oldest groups of older workers (60-64 and 65 and over) in Agriculture, and the almost insignificant percentage of older workers in the Textiles sectors, just to mention the two most extreme cases.

2.3. EDUCATION LEVELS

One of the main structural problems of the Portuguese economy, and of society at large, is the low education level of the workforce (Alves et al., 2010), and the results obtained in this paper confirm this stylised fact. Generally speaking, almost two thirds of all workers registered in the *QdP* – 2009 have at most a basic education (Level I), around one quarter have secondary education or a Bachelor’s degree (Level II) and only 12.5% (Level III) a Licenciateship or higher degree (0.76% have a Master’s degree, 0.2% have PhDs). These numbers do, however, represent a significant improvement on the extremely low levels of two decades earlier (89%, 8.4%, and 2.5% for Levels I, II and III, respectively) and show reasonable progress in comparison with the numbers of a decade ago (76%, 19%, 5%) (see Table 7).

This general advance in education levels in Portugal is consistent and does in fact explain the persistence of a large divide

between younger and older workers, as far as educational achievement is concerned. In 2009, the percentage of older workers with only a basic education was 82%, which was very close to the national average in 1989. On the other hand, “only” 60.6% of younger workers had a Level I education. The differences between these age groups are also significant for Level II (25% versus 11%) and Level III (13.5% versus 6.5%), and they are expected to persist for some time to come.

Table 7. Education level of younger and older workers in Portugal – 2009; 1999; 1989

2009	Younger W.		Older W.		55-59		60-64		65 +		Total	
	Fre	%	Fre	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%
< Basic	26,411	0.94	9,796	2.96	4,992	2.53	3,261	3.25	1,543	4.74	36,207	1.16
Basic	1,658,240	59.27	262,471	79.41	157,698	79.77	80,523	80.31	24,250	74.42	1,920,711	61.40
Secondary	644,524	23.04	29,361	8.88	18,586	9.40	8,000	7.98	2,775	8.52	673,885	21.54
Pos-Secondary	11,622	0.42	965	0.29	510	0.26	289	0.29	166	0.51	12,587	0.40
Bachelor	60,639	2.17	5,354	1.62	3,037	1.54	1,612	1.61	705	2.16	65,993	2.11
Licentiate	348,345	12.45	19,021	5.75	10,843	5.48	5,574	5.56	2,604	7.99	367,366	11.74
MSc	22,390	0.80	1,526	0.46	866	0.44	458	0.46	202	0.62	23,916	0.76
PhD	5,341	0.19	793	0.24	386	0.20	231	0.23	176	0.54	6,134	0.20
Unknown	20,076	0.72	1,251	0.38	775	0.39	311	0.31	165	0.51	21,327	0.68
Total	2,797,588	100.0	330,538	100.0	197,693	100.0	100,259	100.0	32,586	100.0	3,128,126	100.0

1999	Younger W.		Older W.		55-59		60-64		65 +		Total	
	Fre	%	Fre	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%
< Basic	34,272	1.51	17,437	8.49	6,839	5.88	8,122	12.24	2,476	10.85	51,709	2.09
Basic - 1st	770,585	33.95	127,112	61.88	73,092	62.87	41,167	62.06	12,853	56.32	897,697	36.27
Basic - 2nd	538,125	23.71	19,070	9.28	11,689	10.05	5,486	8.27	1,895	8.30	557,195	22.51
Basic - 3rd	381,413	16.81	20,896	10.17	12,812	11.02	5,596	8.44	2,488	10.90	402,309	16.26
Secondary	407,641	17.96	11,089	5.40	6,660	5.73	2,963	4.47	1,466	6.42	418,730	16.92
Bachelor	25,511	1.12	1,293	0.63	714	0.61	394	0.59	185	0.81	26,804	1.08
Licentiate	60,076	2.65	4,217	2.05	2,214	1.90	1,178	1.78	825	3.61	64,293	2.60
Unknown	51,876	2.29	4,303	2.09	2,236	1.92	1,433	2.16	634	2.78	56,179	2.27
Total	2,269,499	100.0	205,417	100.0	116,256	100.0	66,339	100.0	22,822	100.0	2,474,916	100.0

(continuation)

1989	Younger W.		Older W.		55-59		60-64		65 +		Total	
	Fre	%	Fre	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%
< Basic	89,781	4.54	40,268	21.06	22,059	20.60	14,335	23.87	3,874	16.09	130,049	5.99
Basic - 1st	990,085	50.04	98,028	51.27	57,075	53.31	29,717	49.49	11,236	46.67	1,088,113	50.15
Basic - 2nd	344,211	17.40	11,554	6.04	6,574	6.14	3,429	5.71	1,551	6.44	355,765	16.40
Basic - 3rd	255,397	12.91	18,079	9.46	9,905	9.25	5,329	8.87	2,845	11.82	273,476	12.60
Secondary	144,250	7.29	5,670	2.97	2,843	2.66	1,704	2.84	1,123	4.66	149,920	6.91
Bachelor	14,857	0.75	1,370	0.72	701	0.65	430	0.72	239	0.99	16,227	0.75
Licentiate	46,709	2.36	6,180	3.23	2,662	2.49	1,898	3.16	1,620	6.73	52,889	2.44
Unknown	93,357	4.72	10,034	5.25	5,239	4.89	3,209	5.34	1,586	6.59	103,391	4.76
Total	1,978,647	100.0	191,183	100.0	107,058	100.0	60,051	100.0	24,074	100.0	2,169,830	100.0

Source: *Quadros de Pessoal* and authors' calculations.

An interesting fact worth mentioning here is that the last group of older workers tends to be the more educated, confirming the idea that one of the factors contributing to an active ageing process is having a better education. For example, in 2009, the percentage of people aged 65 and over that had a Master's degree was higher than it was in the other sub- groups of older workers, and the percentage of those with a PhD was even higher than in the group of

younger workers.

2.4. WORKING-TIME REGIME

The labour market in Portugal is considered to be relatively rigid (Alexandre et al., 2010), and this assessment is confirmed by the small proportion of workers who are employed on a part-time basis: 5.74% in 2009 (see Table 8). Although there is a larger proportion of older part-time workers (7.3% versus 5.6%), this difference is very small, and a significant value is only found in the case of the last sub- group of older workers (14.7%). This is one of the potential ways of promoting active ageing, if appropriate measures are taken. Unfortunately, there are no figures available for this variable in the *QdP* for 1999 and 1989.

2.5. SIZE OF ESTABLISHMENT

The Portuguese economy is populated mainly by small and very small enterprises, and so it is not surprising that almost two thirds of all workers belong to micro (0-9 workers) and small (10-49) establishments, 22% work in medium- size firms (50-249 workers) and only 14.4% in large ones (250+ workers). These numbers relate to 2009 (Table 9), and in that year the proportion of older workers in micro-establishments was higher (38.4%) than that of younger ones (32.1%), although it was lower in all of the other classes for the size of establishment. This tendency is reinforced by the results for the different age sub-groups, with the proportion of workers aged 60-64 and 65+ working in micro establishments (41% and 45.6%, respectively) being quite significant. For example, only 8% of workers aged 65 and over are employed by large companies (2,605 out of 32,586).

Table 8. Working time regime of younger and older workers in Portugal – 2009

	Younger Workers		Older Workers		55-59		60-64		65 +		Total	
	Fre	%	Fre	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%
Full time	2.475.282	94,44	258.056	92,66	161.345	93,99	75.884	92,05	20.827	85,34	2.733.338	94,26
Part time	145.853	5,56	20.443	7,34	10.308	6,01	6.557	7,95	3.578	14,66	166.296	5,74
Total	2.621.135	100,00	278.499	100,00	171.653	100,00	82.441	100,00	24.405	100,00	2.899.634	100,00

Source: *Quadros de Pessoal* and authors' calculations.

Table 9. Younger and older workers, by establishments size – 2009

	Younger Workers		Older Workers		55-59		60-64		65 +		Total	
	Fre	%	Fre	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%
Micro	897.392	32,08	126.767	38,35	70.787	35,81	41.155	41,05	14.825	45,49	1.024.159	32,74
Small	865.775	30,95	98.779	29,88	58.892	29,79	29.724	29,65	10.163	31,19	964.554	30,83
Medium	624.584	22,33	65.490	19,81	41.767	21,13	18.730	18,68	4.993	15,32	690.074	22,06
Large	409.837	14,65	39.502	11,95	26.247	13,28	10.650	10,62	2.605	7,99	449.339	14,36
Total	2.797.588	100,00	330.538	100,00	197.693	100,00	100.259	100,00	32.586	100,00	3.128.126	100,00

Source: *Quadros de Pessoal* and authors' calculations.

An interesting empirical fact relating to the evolution in the average size of Portuguese firms is that in 1989 and 1999 the proportion of workers employed by micro establishments was smaller than in 2009 (20.2% and 29.8%). This trend is associated with the strong tertiarisation (and consequent de-industrialisation) of the Portuguese economy mentioned earlier, and it is a matter of serious concern affecting both younger and older workers. As a matter of fact, two decades ago more than 20% of workers were employed by large establishments, a figure that is significantly higher than today and represents almost twice as many people in the case of older workers.

2.6. AVERAGE LABOUR COMPENSATION

Considering only the 3,128,126 workers registered in the *Quadros de Pessoal*, the average monthly remuneration in Portugal was € 929.4 in 2009, € 624.6 in 1999 and € 259.2 in 1989, all expressed in current prices (see Table 10). We calculate the labour remunerations by adding together the base salary, subsidies, bonuses and overtime pay.

The average labour compensation of older workers in 2009 was € 942.4, slightly higher (1.6%) than the € 927.9 of the younger workers, meaning that, on average, the tenure effect is more important than the education effect. The average hourly remuneration of older workers is much higher than that of younger workers (16.5%, or € 7.7 versus € 6.6) as older people work fewer hours on average (see Table 11). These relative wage advantages of older workers were also to be noted in 1989 and 1999.

3. Regional differences in the workforce

One of the most representative indicators of the regional differences in the workforce is the proportion of older workers to be found among the total number of workers in each region (see Table 12). In fact, for almost all regions, there are significant differences between these regional proportions and the national average in the years studied. Applying a one-proportion z-test to these differences (for details about this test, see Newbold et al., 2013), only in the Azores in 1989 and the Centro region in 1999 was the z value lower than 2.326, the critical value at a 1% significance level, above which the null hypothesis of equality of proportions is rejected (see Table 13).

Table 10. Average monthly remuneration by age group

	Younger Workers		Older Workers		Total	
	Value	%	Value	%	Value	%
1989	258,765	99,82	264,132	101,89	259,238	100,00
1999	624,193	99,93	629,310	100,75	624,613	100,00
2009	927,877	99,83	942,435	101,40	929,415	100,00

Source: *Quadros de Pessoal* and authors' calculations.

Table 11. Average hourly remuneration by age group

	Younger Workers		Older Workers		Total	
	Value	%	Value	%	Value	%
1989	1,752	98,11	2,134	119,53	1,786	100,00
1999	4,512	98,41	5,404	117,86	4,585	100,00
2009	6,631	98,28	7,728	114,54	6,747	100,00

Source: *Quadros de Pessoal* and authors' calculations.

Table 12. Age structure of workers by NUTS II

	Younger Workers		Older Workers		55-59		60-64		65 +		nuts Total	
	Fre.	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%
2009												
Norte	973.003	90,99	96.375	9,01	61.565	5,76	27.324	2,56	7.486	0,70	1.069.378	100
Algarve	126.644	87,80	17.593	12,20	9.531	6,61	5.934	4,11	2.128	1,48	144.237	100
Centro	555.268	88,99	68.676	11,01	41.417	6,64	20.919	3,35	6.340	1,02	623.944	100
Lisboa	866.736	88,41	113.616	11,59	65.249	6,66	35.558	3,63	12.809	1,31	980.352	100
Alentejo	157.139	86,88	23.731	13,12	13.326	7,37	7.578	4,19	2.827	1,56	180.870	100

(continuation)

	Younger Workers		Older Workers		55-59		60-64		65 +		nuts Total	
	Fre.	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%
2009												
Açores	54.038	92,88	4.145	7,12	2.608	4,48	1.139	1,96	398	0,68	58.183	100
Madeira	62.683	91,18	6.064	8,82	3.734	5,43	1.739	2,53	591	0,86	68.747	100
Estrangeiro	2.077	86,00	338	14,00	263	10,89	68	2,82	7	0,29	2.415	100
Total by	2.797.588	89,43	330.538	10,57	197.693	6,32	100.259	3,21	32.586	1,04	3.128.126	100

	Younger Workers		Older Workers		55-59		60-64		65 +		nuts Total	
	Fre.	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%
1999												
Norte	877.864	93,77	58.362	6,23	33.879	3,62	18.697	2,00	5.786	0,62	936.226	100
Algarve	81.830	89,72	9.381	10,28	5.108	5,60	3.156	3,46	1.117	1,22	91.211	100
Centro	470.766	91,78	42.172	8,22	23.742	4,63	13.885	2,71	4.545	0,89	512.938	100
Lisboa	712.148	90,17	77.622	9,83	44.804	5,67	23.802	3,01	9.016	1,14	789.770	100
Alentejo	128.028	87,93	17.582	12,07	8.561	5,88	6.512	4,47	2.509	1,72	145.610	100
Açores	37.856	93,77	2.516	6,23	1.363	3,38	761	1,88	392	0,97	40.372	100
Madeira	47.960	93,22	3.490	6,78	1.914	3,72	1.151	2,24	425	0,83	51.450	100
Estrangeiro	845	96,13	34	3,87	26	2,96	8	0,91	0	0,00	879	100
Total by	2.357.297	91,78	211.159	8,22	119.397	4,64	67.972	2,64	23.790	0,93	2.568.456	100

	Younger Workers		Older Workers		55-59		60-64		65 +		nuts Total	
	Fre.	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%	Fre.	%
1989												
Norte	766.314	93,29	55.093	6,71	31.208	3,80	17.366	2,11	6.519	0,79	821.407	100
Algarve	59.031	89,46	6.954	10,54	3.664	5,55	2.326	3,53	964	1,46	65.985	100
Centro	360.843	91,64	32.934	8,36	19.030	4,83	10.039	2,55	3.865	0,98	393.777	100
Lisboa	628.890	89,77	71.647	10,23	40.325	5,76	21.831	3,12	9.491	1,35	700.537	100
Alentejo	100.992	84,91	17.946	15,09	9.507	7,99	6.344	5,33	2.095	1,76	118.938	100
Açores	29.947	91,58	2.752	8,42	1.366	4,18	865	2,65	521	1,59	32.699	100
Madeira	31.777	89,37	3.781	10,63	1.914	5,38	1.257	3,54	610	1,72	35.558	100
Estrangeiro	853	91,82	76	8,18	44	4,74	23	2,48	9	0,97	929	100
Total by	1.978.647	91,19	191.183	8,81	107.058	4,93	60.051	2,77	24.074	1,11	2.169.830	100

Source: *Quadros de Pessoal* and authors' calculations.

Table 13. One-proportion Z-test results

	1989	1999	2009
Norte	17,390	17,480	15,752
Algarve	4,692	6,501	7,032
Centro	2,656	0,003	3,750
Lisboa	12,363	14,564	11,183
Alentejo	27,363	16,619	12,777
Açores	0,665	3,245	7,224
Madeira	3,640	2,763	4,432

Source: *Quadros de Pessoal* and authors' calculations.

A particular region may exhibit a relatively old composition for its workforce because individuals of higher age categories tend to work more or because the region's residents are older. In Table 14, we present the proportion of individuals aged 55 and over that are employed in each NUTS II region. We do not show the corresponding proportions for NUTS III regions, but the respective calculations were made and the differences are even more glaring: the proportions range from 4.3% in Alto Trás-os-Montes to 15.1% in Grande Lisboa!

Table 14. Proportion of individuals 55+ that are employed, by NUTII

	residents	Older	Old Wor./
2009	no.	no.	%
Norte	1023079	96375	9,42%
Algarve	134954	17593	13,04%
Centro	774384	68676	8,87%
Lisboa	861615	113616	13,19%
Alentejo	263822	23731	9,00%
Açores	54021	4145	7,67%
Madeira	55856	6064	10,86%
Portugal	3436011	330200	9,61%

Source: *Quadros de Pessoal* and authors' calculations.

3.1. THE NORTE REGION

The Norte region is the one with most workers: 34.19% of all workers were to be found in this region in 2009. In 2009, this region still had one of the youngest age structures for the workforce, being superseded only by the islands: older workers here account for 9% of all workers, whereas the national average is 10.6%. However, 20 years earlier, it had had the youngest age structure of all (Table 12). Tâmega, the NUTS III region with the youngest workforce structure is located in the Norte region. Of the NUTS III regions that belong to the Norte region, only Alto Trás-os-Montes has an age structure that is slightly older than the national average. Nevertheless, Alto Trás-os-Montes is the Portuguese region with the lowest proportion of individuals aged 55 and over in employment (4.3%).¹ At the other extreme, Grande Porto has the third highest proportion in Portugal (11.5%).

Despite starting from a very low initial point, the rise in education levels was clearly visible in this region over the two decades under consideration here: the proportion of workers with only a basic education level fell from 92.8% to 82.8% and then to 69.4% (Table 15). The proportion of workers with the highest education level rose from 1.57% to 3.7% and then to 10.53%. The education level of workers in the Norte region is significantly lower than in the Lisbon region. The Tâmega NUTS III region, in particular, is the Portuguese region with the lowest levels of education: it has the lowest proportion of workers with Level III education and the highest proportion of workers with Level I education. In the Norte region, the NUTS III region with the highest levels of education is Grande Porto. This is the only NUTS III region in the Norte region that has better education levels than the national average.

The average education level of younger workers (67.81% with only a Level I education in 2009) is considerably higher than that of the older workers (85.18% with only a Level I education in 2009, see Table 15). In 1989, the situation was completely different: 92.68% of younger workers had only a Level I education, compared with 94.21% for older workers. Conversely, in 1989, the percentage of workers with a Level III education was slightly higher in the case of older workers (2.54%) than in the case of younger workers (1.5%). The numbers were very similar for both groups in 1999: 3.45% for older workers as against 3.72% for younger workers. And finally, in 2009, the difference clearly favoured younger workers: 5.47% for older workers compared to 11.04% for younger workers.

Although part-time work is not very expressive in Portugal, in 2009 Grande Porto exhibited the second highest proportion of workers employed under this regime, coming only after Grande Lisboa (Table 16).

In 2009, the sectors where the proportion of older workers in the Norte region was above the national average were: Textiles, Wood and Cork, Paper and Publishing, Basic Metal Industries, Metal Products, Machinery and Equipment, and Construction. In 1989, the workforce employed in Construction was younger than the national average, but this situation changed. Conversely, Electricity, Gas and Water employed more older workers in relative terms, but then became a younger sector (Table 17).

The Norte region had the lowest wage levels for all years of observation (Table 18). Alto Trás-os-Montes and Tâmega were the two NUTS III regions from the Norte region with the lowest average labour compensations. In 2009, there were only two other NUTS III regions with lower remunerations in Portugal. Tâmega had the lowest average labour compensations in Portugal in both 1989 and 1999 (60% and 65%, respectively, of the national average for hourly remunerations, and 63% of the average monthly remunerations in both cases), but, in 1989, Alto Trás-os-Montes had the third highest average labour compensations in the Norte region (85.27% of the national average for monthly remunerations). By 1999, however, the remunerations of workers in the Alto Trás-os-Montes region had already fallen quite considerably in relative terms.

3.2. THE ALGARVE REGION

The Algarve region is the smallest NUTS II region in continental Portugal. It has the second oldest workforce – 12.2% of its workers were aged 55 or older, whereas the national average was 10.57%, in 2009 (Table 12). This is due mainly to the larger proportions of workers over 60 years of age and less to the proportion of workers aged between 55 and 60. In terms of the age composition of its workforce, the relative position of the region remained almost the same throughout the period under analysis, except that in 1989 Madeira had an even older workforce. The fact that the workforce is relatively old is also a consequence of the large proportion of individuals aged 55 and over that are in employment: 13%, the second highest rate in Portugal.

In 1989, the education level of the Algarve workforce was the second highest in Portugal, after Lisbon, due particularly to the education level of its younger workers. However, this situation also changed. Specifically, the proportion of workers with a higher education level grew much more rapidly in other regions, such as the Norte and the Centro, than in the Algarve (Table 15).

Only 5% of older workers in the Algarve work part-time, which is about the same rate as for younger workers (Table 16).

Hotels and Catering is undoubtedly the most important sector in this region (Table 17). More than 20% of the Algarve's older workers are employed there, and the proportion of older workers (compared with younger workers) in this industry rose from 8.4% in 1989 to 9.7% in 1999, and then to 13.5% in 2009. Wholesale and Retail Trade and Construction represent two other sectors that employ large proportions of the Algarve's older workers: 17.26% and 15.72%, respectively, in 2009 (Table 17). In the Algarve, in 1989, the proportion of workers in the Construction industry aged 55 and over was 12.74%, while in Wholesale and Retail Trade it was 8.92%. The figures were not very different in 2009: 13.10% for Construction and 9.42% for Trade. The group of Other Services also has some importance in the Algarve, due to the inclusion of Real Estate and Rental Services, here. In 2009, the only NUTS III region with more workers in the Real Estate and Rental sector was Grande Lisboa. In 1989, Grande Porto had many more workers in this industry: 15.6% as compared to 5.6% for the Algarve. If one focuses only on older workers, Grande Porto still had more workers than the Algarve in this activity area in 2009, although this figure was only slightly higher.

The average remuneration in the Algarve is 88.92% of the national average, and the situation is worse for older workers: their average remuneration is 80.49% of the average level of remuneration for the Portuguese as a whole (Table 18). The situation seems to improve slightly when hourly remunerations are considered: the figures are 90.5% of the national average for all workers in the Algarve and 81.42% for older workers, respectively. But, in truth, older workers in this NUTS II region now appear as the worst

3.3. THE CENTRO REGION

This is the third largest NUTS II region in terms of its number of workers (Table 12). In 2009, the only NUTS III regions belonging to the Centro region that had a workforce younger than the national average were Dão Lafões and Pinhal Litoral. In 1989, there were 7 NUTS III regions with workforces that were younger than the national average. Several NUTS III regions have small proportions of individuals aged 55 and over in employment, but there are also regions where

the reverse is true: Pinhal Litoral (11.8%), Baixo Vouga (10.5%) and Oeste (10.4%).

In 2009, the sectors in the Centro region with proportions of older workers that were larger than the national average were: Non-Metallic Mineral Products, Metal Products, Machinery and Equipment, Basic Metal Industries, Chemicals, Wholesale and Retail Trade, and Agriculture and Mining (Table 17). More than half of the workers involved in the production of Non-Metallic Mineral Products in Portugal are located in the Centro region. This is true for both younger and older workers. 32% of older workers in Portugal and 29% of all workers that are employed in the Basic Metal industries are to be found in the Centro region.

31% of older workers and 32% of all workers employed in the mining industry are also to be found here.

The education levels of workers in the Centro region are lower than the national average (Table 15). This is true for both the older workers and the younger workers. Baixo Mondego, the NUTS III region in which Coimbra is located, is the exception. Nevertheless, the education level of workers, especially younger workers, has risen significantly since 1989. For example, the proportion of younger workers with a Level 3 education in the Baixo Vouga region was 1.53% in 1989, and 12.1% in 2009. In Dão Lafões, it was 1.14% in 1989 and 12.19% in 2009. Such an improvement is not found in the case of older workers.

In the Centro region, the proportion of older workers working part-time is slightly higher than the proportion of younger workers working part-time, although both figures are below what is an already low national average (Table 16). Baixo Mondego is the NUTS III region where the level of recourse to part-time working schedules is above the national average, particularly in the case of older workers. In Beira Interior Sul, this situation only applies to younger workers.

The Centro region is the one where older workers are paid least. Based on monthly remunerations, it can be seen that, on average, younger workers earn more than older workers, but the opposite happens when calculations are based on hourly remunerations (Table 19). If we consider only hourly remunerations, then the Centro region's older workers are not as badly paid as the Algarve's older workers. When all workers are taken together, the Centro region is the region with the second lowest hourly remunerations paid in Portugal. Of course, if the Algarve is seen as a NUTS III region, then there are many other regions that exhibit lower hourly remunerations for their older workers.

The lowest average remunerations in Portugal are to be found in the Pinhal Interior Sul region, amounting to only 69.5% of the national average for younger workers, and 61.28% of the national average for older workers. The situation was totally different in 1989: younger workers in this region earned 81.28% of the national average, while older workers earned 94.92%! In 1999, the situation was already beginning to draw closer to that of 2009. Again based on hourly remunerations, the workers in the Pinhal Interior Norte region are the worst paid, because of the low wages received by younger workers (Table 18).

3.4. THE LISBON REGION

Lisbon is the country's second largest region in terms of its number of workers, only being superseded by the Norte region (see Table 12). It is by far the region with the largest proportion of older workers, whichever of the three years under consideration here is looked at. In 2009, 34.37% of the older workers employed in Portuguese firms, and 39.31% of workers aged 65 and over, worked in the Lisbon region.

The Lisbon NUTS II region contains only two NUTS III regions, and these are very different from one another. The workforce in Grande Lisboa is almost five times the size of the workforce in the Península de Setúbal. Although both regions have larger proportions of older workers than the national average, the Península de Setúbal has the higher proportion of older workers. In 1989, it was the other way round.

Grande Lisboa is the Portuguese NUTS III region with the highest proportion of individuals aged 55 and over in employment (15.1%), contrasting with a significantly lower proportion in the Peninsula de Setúbal (8.2%).

It is clear that workers are more highly educated in the Lisbon region (Table 15). This statement is true for both younger and older workers. But it is the Grande Lisboa region that makes the difference: here, 21.35% of younger workers and 10.83% of older workers are highly educated. In the Península de Setúbal, the percentages are 11.45% and 5.32% respectively. The proportion of workers in the Grande Lisboa region with only a Level I education or lower is 45.96% in the case of younger workers and 74.23% in the case of older workers, whereas these figures are 57.94% and 82.55%

respectively in the Península de Setúbal. These differentials between the two NUTS III regions were already visible in 1989. Just as in the rest of the country, education levels have risen substantially since then.

Lisbon is the region where there are most workers employed on a part-time basis: 7.59% of younger workers and 10.16% of older workers (Table 16). This is particularly evident in the case of Grande Lisboa, because in the Península de Setúbal the proportion of part-time workers is lower, especially in the case of older workers.

The industries that provide most jobs for older workers in the Lisbon region are Financial Services, Other Manufacturing Industries, Transport Services, Other Services (include Real Estate and Rental Services). Some industries have reduced their proportions of older workers since 1989: Construction, Metal Products, Machinery and Equipment, Basic Metal Industries, Non-Metallic Minerals, Chemicals, Wood and Cork, and Mining (Table 17).

The Lisbon region is the region where workers earn the highest remunerations, on average, in Portugal (Table 18). This statement applies to both older and younger workers, but, on average, older workers earn slightly higher monthly remunerations than younger workers. The reverse was true in 1989 and in 1999. As far as hourly remunerations are concerned, older workers earned substantially more during all the time periods (Table 19). If we take only the Península de Setúbal region into account, remunerations are lower, and older workers earn less, on average, than younger workers. The difference in remunerations between the two NUTS III regions has widened considerably since 1989.

3.5. THE ALENTEJO REGION

The Alentejo is the region with the largest proportion of older workers (Table 12). All NUTS III regions in the Alentejo have workforces with more than 12.5% older workers, when the national average is 10.57%, and the youngest regions have less than 8%. The NUTS III region with most older workers in Portugal – 14.38% – is Alentejo Litoral, followed by Alto Alentejo – 13.63% – and by Alentejo Central – 13.26%. Except in the case of Alentejo Litoral, the proportion of older workers was even higher in these regions, in 1989. Alentejo Litoral is also the NUTS III region of the Alentejo with the highest proportion of individuals aged over 55 in employment (10.2%).

The education level of older workers in this region is the lowest in Portugal (Table 15): only 3.78% in the Alentejo have a Level III education, while 88.41% have only a Level I education. 95.9% of younger workers and 94% of older workers work full-time in the Alentejo (Table 16). Between 36% and 39% of older workers in the Alentejo work in Agriculture. Mining and Food, Beverages and Tobacco are the other main industries (Table 17).

Although the hourly remuneration of workers in the Alentejo is below the national average, the older workers are more penalised in comparison with those of the same age in the other regions (Table 18). However, this difference used to be greater and has narrowed since 1989.

3.6. THE AZORES REGION

The Azores is the smallest and youngest NUTS II region in Portugal, as far as its workforce is concerned (Table 12). Together with Tâmega, in the Norte region, it is also the youngest NUTS III region: in 2009, only 7.12% of its workforce were older workers, compared to the national average of 10.57%. The percentage of workers aged 60 and over was 2.64%. In 1989, there was a larger proportion of workers aged 60 and over (4.24%), but, by 1999, this figure had already fallen to 2.86%.

The average education level of the workforce is the lowest of all the NUTS II regions (Table 15). This is particularly noticeable in the segment of younger workers: 71.16% of younger workers have a Level I education – compared to 60.64% for Portugal – and only 8.98% have a Level III education, compared to 13.54% for Portugal as a whole.

The proportion of older workers in the region who work part-time is 8.49%, a figure that is higher than the national average, and the percentage of younger workers is 5.54%, which is similar to the national average (Table 16).

Most older workers are employed in the Wholesale and Retail Trade, Construction, and Transports and Communications sectors (Table 17). The sizeable share enjoyed by the Manufacture of Food Products, Beverages and Tobacco in 1989 has been considerably declined. It fell from the employment of 20.49% of older workers in the Azores to 14.47% in 1999, and 8.83% in 2009. This decline matched the fall in the total number of workers in this industry in the Azores.

Although it is below the national average, the Azores is ranked as the third NUTS II region where workers earn most, although not in hourly terms (Table 18). In 2009, older workers received higher monthly remunerations than younger

workers, something which did not happen in 1989 or in 1999. Older workers always earned more per hour than younger workers during the period under analysis.

3.7. THE MADEIRA REGION

Madeira is the second smallest NUTS II region in Portugal, and the second youngest, as far as its workforce is concerned (Table 12). The proportion of younger workers has increased in Madeira since 1989: it rose from 89.37% in that year to 91.18%, in 2009. It is the NUTS III region with the sixth highest proportion of younger workers, despite the fact that 10.9% of individuals aged 55 and over are in employment.

The average education level of the workers in Madeira is below the national average (Table 15). However, the education level of older workers is one of the highest in Portugal. It is still below the national average, because this value is greatly influenced by the numbers of older workers in the regions with the three largest cities.

The proportions of part-time workers are below the national average, for both younger and older workers (Table 16) and the most important industries are Hotels and Catering and Wholesale and Retail Trade (Table 17). The workforce of Hotels and Catering, in particular, has aged considerably since 1989. In that year, this sector employed 12.75% of older workers and 18.37% of all workers. In 2009, it employed 19.01% of older workers and 17.6% of all workers.

Average remunerations in Madeira are some of the highest in Portugal: as a NUTS II region, its remunerations are only lower than those in the Lisbon region (Table 18); as a NUTS III region, its remunerations are only lower than those in the Grande Lisboa, Alentejo Litoral and Grande Porto regions. In 1989, the main differences were that average monthly remunerations in Madeira were lower than those in the Península de Setúbal and in the Algarve, and higher than those in the Grande Porto region. In 1999, average monthly remunerations in the Grande Porto region had already caught up with those in Madeira. During the whole period, older workers earned more than younger workers, in both monthly and hourly terms.

Table 15. Education levels by region NUTS II

2009	Younger Workers				Older Workers				Total Workers			
	Level i	Level ii	Level iii	Total	Level i	Level ii	Level iii	Total	Level i	Level ii	Level iii	Total
Norte	67,81	21,15	11,04	100	85,18	9,35	5,47	100	69,38	20,09	10,53	100
Algarve	62,24	28,01	9,75	100	84,63	11,16	4,22	100	65,00	25,93	9,07	100
Centro	64,65	24,12	11,23	100	88,08	8,01	3,91	100	67,24	22,34	10,42	100
Lisboa	47,94	32,34	19,72	100	75,66	14,46	9,88	100	51,17	30,26	18,58	100
Alentejo	65,03	25,34	9,62	100	88,41	7,81	3,78	100	68,11	23,03	8,85	100
Acores	71,16	19,86	8,98	100	84,42	9,86	5,72	100	72,11	19,14	8,75	100
Madeira	65,06	25,80	9,14	100	83,77	10,67	5,56	100	66,71	24,47	8,82	100
Total	60,64	25,82	13,54	100	82,68	10,84	6,48	100	62,98	24,23	12,79	100

1999	Younger Workers				Older Workers				Total Workers			
	Level i	Level ii	Level iii	Total	Level i	Level ii	Level iii	Total	Level i	Level ii	Level iii	Total
Norte	82,28	14,00	3,72	100	91,01	5,54	3,45	100	82,83	13,47	3,70	100
Algarve	74,67	21,93	3,40	100	92,08	5,38	2,53	100	76,48	20,21	3,31	100
Centro	79,22	16,31	4,48	100	92,67	4,07	3,26	100	80,33	15,29	4,38	100

(continuation)

1999	Younger Workers				Older Workers				Total Workers			
	Level i	Level ii	Level iii	Total	Level i	Level ii	Level iii	Total	Level i	Level ii	Level iii	Total
Lisboa	64,77	27,79	7,45	100	85,97	8,27	5,77	100	66,90	25,82	7,28	100
Alentejo	78,39	17,40	4,21	100	94,10	2,99	2,92	100	80,31	15,64	4,05	100
Açores	80,38	15,64	3,98	100	89,34	6,09	4,58	100	80,94	15,05	4,02	100
Madeira	80,07	18,58	1,35	100	91,86	6,47	1,67	100	80,87	17,76	1,37	100
Total	75,98	19,09	4,93	100	89,82	6,03	4,15	100	77,13	18,00	4,87	100

1989	Younger Workers				Older Workers				Total Workers			
	Level i	Level ii	Level iii	Total	Level i	Level ii	Level iii	Total	Level i	Level ii	Level iii	Total
Norte	92,68	5,82	1,50	100	94,21	3,25	2,54	100	92,78	5,65	1,57	100
Algarve	87,63	10,74	1,63	100	95,68	2,80	1,52	100	88,48	9,90	1,62	100
Centro	92,22	6,40	1,38	100	95,29	2,55	2,16	100	92,48	6,07	1,45	100
Lisboa	82,47	12,87	4,65	100	88,80	5,69	5,51	100	83,12	12,14	4,74	100
Alentejo	91,69	6,92	1,39	100	97,26	1,54	1,20	100	92,53	6,11	1,36	100
Açores	89,99	8,68	1,32	100	48,65	50,05	1,30	100	90,23	8,35	1,42	100
Madeira	90,33	8,16	1,50	100	56,28	42,59	1,12	100	90,83	7,63	1,54	100
Total	89,09	8,44	2,47	100	90,35	6,33	3,32	100	89,40	8,04	2,56	100

Source: *Quadros de Pessoal* and authors' calculations.

Table 16. Working Time regime of young and older workers in Portugal: NUTS II - 2009

	Younger Workers			Older Workers			Total Workers		
	Full Time	Part Time	Total	Full Time	Part Time	Total	Full Time	Part Time	Total
Norte	95,80	4,92	100	93,73	6,27	100	94,97	5,03	100
Algarve	94,91	5,09	100	94,97	5,03	100	94,91	5,09	100
Centro	95,82	4,18	100	94,80	5,20	100	95,72	4,28	100
Lisboa	92,41	7,59	100	89,84	10,16	100	92,14	7,86	100
Alentejo	95,90	4,10	100	94,00	6,00	100	95,66	4,34	100
Açores	94,46	5,54	100	91,51	8,49	100	94,26	5,74	100
Madeira	95,80	4,20	100	94,12	5,88	100	95,66	4,34	100
Total	94,43	5,57	100	92,65	7,35	100	94,26	5,74	100

Source: *Quadros de Pessoal* and authors' calculations.

Table 17. Industries' older workers by region

	norte	centro	Lisboa	alentejo	algarve	madeira	açores	Total by sector
	%	%	%	%	%	%	%	%
A – Agriculture	2,71	4,05	1,06	18,90	4,57	0,93	5,07	3,68
B – Mining	0,59	0,83	0,11	1,71	0,64	0,48	0,29	0,55
C1 – Food, beverages, tob.	3,92	5,52	2,64	6,80	2,24	5,22	8,84	4,01
C2 – Textiles	9,04	3,28	0,55	0,48	0,17	0,99	0,24	3,57
C3 – Wood, cork	4,27	3,27	0,65	1,75	0,84	1,12	0,89	2,35
C4 – Paper, publishing	1,51	1,46	1,55	0,52	0,47	0,55	0,80	1,36
C5 – Chemichals	1,56	2,05	1,42	1,60	0,24	0,23	0,07	1,50

(continuation)

	norte	centro	Lisboa	alentejo	algarve	madeira	açores	Total by sector
2009	%	%	%	%	%	%	%	%
C6 – Non metallic Mineral Prod.	1,24	4,44	0,90	1,29	1,31	0,51	1,38	1,78
C7 – Base Metal s	0,71	0,62	0,19	0,03	0,00	0,02	0,00	0,40
C8 – Fab. metal prod. mach., eq.	7,20	6,94	3,66	4,29	1,19	1,19	1,06	5,21
C9 – Other manuf. Ind.	0,07	0,09	0,25	0,16	0,52	0,15	0,02	0,17
D – Electricity, gas, water	1,00	0,95	0,82	0,88	1,16	2,26	1,50	0,96
E – Construction	13,64	12,71	10,10	9,86	15,76	13,84	13,99	12,17
F – Trade, repair motor vehic.	18,53	19,77	17,78	16,75	17,31	19,56	20,95	18,37
G – Restaurants hotels	5,18	5,64	9,35	5,82	24,76	19,05	6,91	8,07
H – Transport, storage, comunic.	5,82	6,22	9,96	4,32	4,61	10,41	11,33	7,30
I – Financial services	2,29	1,57	4,17	1,96	1,08	2,33	4,62	2,72
J – Other services	20,74	20,59	34,87	22,87	23,13	21,16	22,02	25,83
Total	100	100	100	100	100	100	100	100

	norte	centro	Lisboa	alentejo	algarve	madeira	açores	Total by sector
1999	%	%	%	%	%	%	%	%
A – Agriculture	1,65	4,42	1,45	29,95	7,11	0,92	6,52	4,77
B – Mining	0,71	0,89	0,27	3,15	1,00	0,60	0,44	0,80
C1 – Food, beverages, tob.	4,55	5,61	3,05	7,70	4,29	4,70	14,47	4,58
C2 – Textiles	14,73	5,61	1,30	1,01	0,16	3,64	0,60	5,83
C3 – Wood, cork	3,18	3,75	0,81	1,92	1,84	1,46	1,91	2,22
C4 – Paper, publishing	2,20	2,02	2,37	0,51	0,79	0,97	0,76	1,99
C5 -Chemichals	1,99	2,37	2,31	0,78	0,29	0,20	0,08	1,95
C6 – Non metallic Mineral Prod.	1,81	7,95	1,70	2,14	1,95	1,15	1,19	3,01
C7 – Base Metal s	1,08	0,51	0,31	0,06	0,00	0,03	0,00	0,52
C8 – Fab. metal prod. mach., eq.	7,98	8,51	5,23	4,21	1,77	2,01	0,99	6,30
C9 – Other manuf. Ind.	4,20	1,84	0,74	0,29	0,19	0,37	0,28	1,84
D – Electricity, gas, water	0,37	0,25	0,62	0,23	0,23	2,26	1,07	0,46
E – Construction	10,76	11,41	10,80	9,07	11,99	15,02	10,50	10,89
F – Trade, repair motor vehic.	20,24	20,93	22,87	16,92	19,92	23,47	27,59	21,19
G – Restaurants hotels	4,06	4,69	7,38	4,74	24,91	19,20	4,69	6,65
H – Transport, storage, comunic.	6,23	6,32	10,13	4,31	5,72	9,06	11,53	7,61
I – Financial services	2,57	1,83	4,53	1,45	1,40	2,15	1,71	2,98
J – Other services	11,69	11,11	24,14	11,57	16,43	12,78	15,67	16,41
Total	100	100	100	100	100	100	100	100

	norte	centro	Lisboa	alentejo	algarve	madeira	açores	Total by sector
1989	%	%	%	%	%	%	%	%
A – Agriculture	1,27	5,43	1,44	38,86	9,53	1,53	7,38	5,97
B – Mining	0,62	1,09	0,45	4,06	1,16	0,66	0,22	0,97
C1 – Food, beverages, tob.	5,81	6,93	4,32	8,25	6,50	8,36	20,49	5,96
C2 – Textiles	19,62	8,28	2,05	0,91	0,13	9,79	0,55	8,15
C3 – Wood, cork	5,42	5,46	1,78	2,74	2,93	1,64	2,18	3,60
C4 – Paper, publishing	2,32	3,59	2,52	0,49	0,50	1,22	1,20	2,34

(continuation)

	norte	centro	Lisboa	alentejo	algarve	madeira	açores	Total by sector
1989	%	%	%	%	%	%	%	%
C5 – Chemichals	3,09	2,95	4,92	1,44	0,59	0,63	1,24	3,43
C6 – Non metallic Mineral Prod.	1,52	7,92	2,45	1,78	2,80	1,16	1,38	3,03
C7 – Base Metal s	1,46	1,35	1,06	0,11	0,03	0,00	0,00	1,06
C8 – Fab. metal prod. mach., eq.	8,33	8,87	7,60	2,33	1,70	1,40	1,05	7,10
C9 – Other manuf. Ind.	1,13	0,19	0,33	0,02	0,09	0,00	0,18	0,49
D – Electricity, gas, water	2,69	2,39	1,58	1,18	1,25	2,38	1,82	2,01
E – Construction	8,34	8,35	10,94	6,94	16,90	13,49	8,21	9,60
F – Trade, repair motor vehic.	17,70	16,06	21,40	13,31	16,74	24,01	23,07	18,56
G – Restaurants hotels	2,39	2,58	4,70	2,52	20,22	12,75	2,98	4,16
H – Transp. storage, comunic.	7,75	8,81	11,16	6,12	7,82	7,11	13,37	9,13
I – Financial services	2,34	1,92	4,35	1,44	1,91	1,88	2,83	2,92
J – Other services	8,19	7,83	16,96	7,51	9,19	11,95	11,85	11,52
Total	100	100	100	100	100	100	100	100

Source: *Quadros de Pessoal* and authors' calculations

Note: The observations with no information about the industry were removed.

Table 18. Regional relative position of labour remunerations of age groups, NUTS II and NUTS III

	1989			1999			2009		
	Younger	Older	Total by nuts iii	Younger	Older	Total by nuts iii	Younger	Older	Total by nuts iii
	%	%	%	%	%	%	%	%	%
NORTE	82,46 (84,85)	92,94 (89,01)	82,93 (85,10)	83,96 (83,91)	90,67 (86,44)	84,13 (84,05)	86,76 (85,78)	89,43 (88,33)	86,82 (85,99)
Minho Lima	80,59	87,70	80,98	76,47	82,35	76,50	82,96	78,21	82,22
Cávado	69,79	83,68	69,90	74,80	80,29	74,56	83,12	80,54	82,50
Ave	70,98	77,92	70,76	72,18	80,77	72,17	76,88	82,96	76,99
Grande Porto	97,45	104,39	98,05	101,20	106,01	101,53	100,38	104,46	100,83
Tâmega	60,58	69,51	60,47	65,55	63,17	64,92	72,03	68,36	71,32
Entre Douro e Vouga	70,60	69,24	70,06	79,11	76,27	78,70	82,93	83,06	82,89
Douro	86,84	88,33	87,04	77,27	75,47	77,07	81,14	72,74	80,10
Alto Trás-os-Montes	84,84	85,89	85,04	75,89	72,73	75,51	76,33	68,03	75,33
ALGARVE/ Algarve	105,37 (103,70)	85,26 (90,99)	103,23 (102,38)	94,16 (93,95)	79,89 (81,66)	92,81 (92,69)	91,69 (90,09)	81,42 (80,49)	90,50 (88,92)
CENTRO	85,62 (88,53)	85,01 (87,96)	85,47 (88,48)	85,35 (85,63)	81,63 (81,41)	84,99 (85,28)	88,60 (88,51)	81,92 (80,18)	87,82 (87,59)
Baixo Vouga	87,74	87,69	87,52	87,64	84,72	87,30	90,52	84,79	89,83
Baixo Mondego	95,37	93,22	95,33	94,52	90,56	94,18	95,37	92,87	95,12
Pinhal Litoral	87,61	83,44	86,87	92,69	92,62	92,60	96,39	85,48	95,06
Pinhal Interior Norte	72,86	74,19	72,59	71,50	66,14	70,89	74,07	65,03	72,98
Dão Lafões	75,88	78,44	75,85	79,51	72,31	78,78	87,63	72,84	85,85
Pinhal Interior Sul	83,21	98,07	84,84	74,14	63,36	73,12	74,48	63,06	73,08
Serra da Estrela	74,77	79,27	74,85	70,13	86,32	71,65	74,66	92,41	77,45
Beira Interior Norte	85,29	82,28	84,93	75,43	75,22	75,32	77,81	77,51	77,82
Beira Interior Sul	86,60	73,43	85,26	78,93	71,01	78,26	78,71	74,74	78,38

(continuation)

	1989			1999			2009		
	Younger	Older	Total by nuts iii	Younger	Older	Total by nuts iii	Younger	Older	Total by nuts iii
	%	%	%	%	%	%	%	%	%
Cova da Beira	70,92	75,84	71,13	73,43	75,26	73,47	75,54	72,29	75,24
Oeste	85,41	81,22	84,89	84,91	76,75	84,14	86,84	82,62	86,43
Médio Tejo	89,22	88,09	89,65	85,92	81,78	85,72	89,13	81,25	88,26
LISBOA	130,80 (125,90)	122,39 (121,20)	130,17 (125,45)	132,21 (132,11)	124,99 (125,57)	131,79 (131,68)	125,38 (126,85)	124,42 (127,16)	125,46 (126,90)
Grande Lisboa	135,55	127,03	134,95	137,75	131,03	137,42	130,01	130,09	130,22
Península de Setúbal	106,26	95,46	105,17	104,10	90,96	102,88	101,19	95,50	100,65
ALENTEJO	89,96 (91,64)	68,72 (77,44)	87,34 (89,58)	90,85 (90,35)	73,29 (78,36)	89,04 (88,92)	90,12 (90,05)	84,50 (84,95)	89,65 (89,40)
Alentejo Litoral	111,57	81,37	107,79	106,23	80,67	103,41	100,25	101,46	101,07
Alto Alentejo	86,08	66,37	83,63	85,40	71,03	83,00	84,41	78,39	83,89
Alentejo Central	90,25	66,27	86,93	85,51	69,82	83,88	87,63	89,83	88,35
Baixo Alentejo	86,49	61,75	83,03	90,34	66,06	87,53	91,55	74,99	89,46
Lezíria do Tejo	84,95	72,52	83,76	92,34	78,27	91,01	89,37	79,93	88,30
AÇORES/ Açores	109,14 (101,87)	95,08 (83,67)	107,63 (100,30)	86,89 (91,43)	87,21 (86,54)	86,58 (91,11)	88,60 (90,89)	101,04 (99,74)	89,12 (90,74)
MADEIRA/ Madeira	94,35 (100,42)	86,46 (99,25)	93,71 (100,33)	94,75 (100,03)	97,78 (104,66)	94,73 (100,34)	97,00 (98,27)	102,19 (102,66)	97,25 (98,64)
Total by Age Group	100	100	100	100	100	100	100	100	100

Source: *Quadros de Pessoal* and authors' calculations.

Note: The values express the proportions of hourly remunerations, except those that are in brackets, which express the proportions of monthly remunerations.

Table 19. Comparison of labour remunerations of age groups, BY region NUTS II and NUTS III

	1989			1999			2009		
	Younger	Older	Total by nuts iii	Younger	Older	Total by nuts iii	Younger	Older	Total by nuts iii
	%	%	%	%	%	%	%	%	%
NORTE	97,56 (99,53)	133,95 (106,57)	100	98,20 (99,76)	127,03 (103,62)	100	98,22 (99,59)	117,98 (104,15)	100
Minho Lima	97,64	129,44	100	98,37	126,86	100	99,16	108,96	100
Cávado	97,96	143,09	100	98,71	126,91	100	99,01	111,81	100
Ave	98,41	131,62	100	98,41	131,90	100	98,14	123,42	100
Grande Porto	97,52	127,26	100	98,08	123,06	100	97,84	118,67	100
Tâmega	98,29	137,38	100	99,36	114,68	100	99,25	109,77	100
Entre Douro e Vouga	98,87	118,13	100	98,92	114,21	100	98,33	114,77	100
Douro	97,88	121,30	100	98,66	115,42	100	99,55	104,01	100
Alto Trás-os-Montes	97,89	120,72	100	98,89	113,51	100	99,59	103,43	100
ALGARVE/ Algarve	100,15 (101,11)	98,73 (90,56)	100	99,83 (101,29)	101,45 (88,77)	100	99,58 (101,14)	103,05 (91,78)	100
CENTRO	98,28 (99,88)	118,88 (101,29)	100	98,82 (100,34)	113,20 (96,19)	100	99,15 (100,89)	106,84 (92,82)	100
Baixo Vouga	98,36	119,76	100	98,79	114,38	100	99,04	108,11	100
Baixo Mondego	98,15	116,87	100	98,75	113,33	100	98,55	111,84	100

(continuation)

	1989			1999			2009		
	Younger	Older	Total by nuts iii	Younger	Older	Total by nuts iii	Younger	Older	Total by nuts iii
	%	%	%	%	%	%	%	%	%
Pinhal Litoral	98,95	114,80	100	98,50	117,88	100	99,65	102,99	100
Pinhal Interior Norte	98,48	122,17	100	99,25	109,96	100	99,75	102,07	100
Dão Lafões	98,16	123,61	100	99,31	108,18	100	100,31	97,18	100
Pinhal Interior Sul	96,23	138,17	100	99,78	102,13	100	100,16	98,84	100
Serra da Estrela	98,01	126,59	100	96,32	142,00	100	94,74	136,67	100
Beira Interior Norte	98,52	115,80	100	98,54	117,70	100	98,27	114,08	100
Beira Interior Sul	99,65	102,94	100	99,25	106,95	100	98,70	109,23	100
Cova da Beira	97,83	127,44	100	98,35	120,73	100	98,67	110,05	100
Oeste	98,72	114,36	100	99,29	107,50	100	98,76	109,49	100
Médio Tejo	97,64	117,44	100	98,63	112,44	100	99,25	105,43	100
LISBOA	98,59 (100,18)	112,39 (98,44)	100	98,72 (100,26)	111,78 (97,61)	100	98,22 (99,79)	113,58 (101,61)	100
Grande Lisboa	98,55	112,51	100	98,63	112,37	100	98,13	114,43	100
Península de Setúbal	99,13	108,49	100	99,57	104,20	100	98,81	108,68	100
ALENTEJO	101,06 (102,12)	94,05 (88,08)	100	100,41 (101,54)	97,01 (88,79)	100	98,80 (100,55)	107,96 (96,35)	100
Alentejo Litoral	101,56	90,23	100	101,08	91,93	100	97,48	114,98	100
Alto Alentejo	100,98	94,86	100	100,05	99,66	100	98,89	107,02	100
Alentejo Central	101,86	91,12	100	100,31	98,09	100	97,48	116,46	100
Baixo Alentejo	102,21	88,89	100	101,56	88,95	100	100,58	96,01	100
Lezíria do Tejo	99,50	103,49	100	99,83	101,36	100	99,47	103,68	100
AÇORES/ Açores	99,49 (101,38)	105,59 (85,00)	100	98,76 (100,29)	118,72 (95,70)	100	97,71 (99,19)	129,85 (110,55)	100
MADEIRA/ Madeira	98,78 (99,91)	110,28 (100,79)	100	98,42 (99,63)	121,65 (105,10)	100	98,03 (99,46)	120,35 (105,53)	100
Total by Age Group	100	119,53 (101,89)	100	98,40 (99,93)	117,85 (100,75)	100	98,28 (99,83)	114,54 (101,40)	100

Source: *Quadros de Pessoal* and authors' calculations.

Note: The values express the proportions of hourly remunerations, except those that are in brackets, that express the proportions of monthly remunerations.

4. Conclusion

Population ageing is changing the age structure of the Portuguese workforce. This paper quantifies the evolution of the total number and relative share of older workers between 1989 and 2009. Among the older workers – taken as those aged over 54 – we individualize three age sub-groups (55-59; 60-64; 65+).

In 2009, the proportion of older workers in Portugal was 10.57%. The increased employment of older people is usually viewed as desirable for two reasons. Firstly, it is supposed to increase the well-being of older people by encouraging an active ageing process. Secondly, it helps to offset the negative economic effects not only of the demographic trend associated with the budgetary pressure deriving from the payment of pensions, but also of the future labour shortages resulting from the higher rates of labour market entry for young workers than of labour market exit for older workers. One measure that may help retain older workers in the labour market is the wider spread of part-time employment

arrangements; these are currently used only by a surprisingly small proportion of older workers (around 7%).

Population ageing does not necessarily affect the various regions in the same way. We pay particular attention to the regional distribution of older workers at the level of both NUTS II (7 regions) and NUTS III (30 regions). We identify significant differences among them: for example between the “older” region of the Alentejo and the “younger” Norte region. The regions with those demographic structures of workers that are most distinct from the national average are precisely these two regions. The Centro region is the region with the age structure that is closest to the national average. From our study, it is clear that the Grande Lisboa region occupies a prominent position, with the highest remunerations, the most educated workers, the highest proportion of part-time workers and the largest percentage of individuals aged 55 and over that are still in employment.

Strategies designed to deal with labour ageing should take these differences into account. Measures to retain older workers in the labour market are most needed in those regions that have the smallest proportions of individuals aged 55 and over still in employment.

Gender and sectoral distributions are also important, both at the national and the regional level. Older workers in Portugal are mainly male and, relatively speaking, work mostly in Agriculture (20.4%), Electricity, Gas and Water (14.7%), Mining (11.7%), Transport Services (11.6%), and Food, Beverages and Tobacco (11%). Textiles is the sector with the smallest proportion of older workers (4.3%). But, in absolute terms, older workers are to be found concentrated in the Services sectors, given the strong tertiarisation (and de-industrialisation) of the Portuguese economy in the last decade, as well as in the Construction sector, as is generally well known.

It was also confirmed that, on average, older workers are far less educated than younger ones, but tend to be better paid, particularly as far as hourly remunerations are concerned, a fact that must be due to seniority wages. This is usually pointed out as a major reason why firms prefer to employ younger workers. Looking at monthly remunerations, the older workers in the Algarve, Centro and Alentejo regions earn less on average than younger workers.

A curious exception as far as educational attainments is concerned is the relatively high proportion of older workers from the oldest age sub-group (65+) who have a postgraduate degree (Master’s Degree and PhD), revealing an important reason why people remain active in work at older ages.

Finally, it is worth mentioning that older workers tend to be employed in establishments that are small in size, particularly micro establishments (0-9 workers) and small enterprises (10-49 workers). But the small scale of most production units in Portugal is a general characteristic of the national economy.

All these results, and others, were obtained using the *Quadros de Pessoal* database of the Ministry of Solidarity and Social Security. These employment records cover the people working in the private business sector (around 3.3 million workers, in 2009), excluding liberal professionals. It would be very interesting to also study these latter workers, as well as Public Sector employees, since this would help to deepen the economic and social analysis of this important group of workers, namely older people.

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