Analysis of the Active Employer Enterprise Population in Portugal[28]

Elsa de Morais Sarmento[29]
Alcina Nunes[30]

This study provides a description of the population of active employer enterprises dynamics in Portugal, using an entrepreneurship dataset conceived from *Quadros de Pessoal* based on the Eurostat/OECD methodology "Manual on Business Demography Statistics", for the period 1987 to 2007. The main contribution of this analysis is to provide detailed disaggregated evidence of the employer enterprise population by firm dimension, region and main economic sectors, over a period of more than 20 years.

1. Introduction

1.1. Eurostat/OECD's Methodology

As entrepreneurship is a multifaceted and interdisciplinary concept, various definitions do co-exist and no single one has been generally agreed upon[31]. To achieve the goal proposed by the Entrepreneurship Indicators Programme (EIP), it was necessary to define a unique entrepreneurship concept that could capture all its essence and which could be applied empirically in a variety of international settings. Building on various theoretical contributions, the OECD (Ahmad and Seymour, 2008; Ahmad and Hoffman, 2008; Ahmad, 2006) adopted a single definition, which gathers three main components: (i) Entrepreneurs, those who seek to generate value, through the creation or expansion of economic activity by identifying and exploiting new products, processes or markets; (ii) Entrepreneurial Activity, which is the enterprising human action in pursuit of the generation of value through the creation or expansion of economic activity, and; (iii) Entrepreneurship, defined as the phenomenon associated with entrepreneurial activity.

The standard unit of measurement considered for entrepreneurial activities has the form of a "business". Our work follows this methodology and focuses on the analysis of entrepreneurial performance indicators of employer enterprises, applied to the *Quadros de Pessoal* dataset (Employment Administrative Records) of the Portuguese Ministry of Labour and Social Security, which is the main data source in Portugal, for the universe of employer enterprises. This is composed of all active enterprises with at least one paid employee during the period 1985 to 2007, which constitutes the so-called employer enterprise population.

2. Performance Indicators for Active Employer Enterprises

2.1. Active Employer Enterprises

The population of employer enterprises in Portugal has been growing steadily from 1985[32] to 2007 (Figure 1). The number of active employer enterprises went over the 300.000 threshold after 2003.

Based on the cycles of enterprise growth and birth, we can observe four main distinct periods, before 1989, 1990 to 1994, 1995 to 1999 and the period following the year 2000. In 2006, the rate of growth of employer enterprises has shown a sharp decrease, to 1,0% after a peak of 8,9% in 2005, the highest since 2001.

---

[28] This work reflects the opinions of the authors and not of the Ministry of Economics, Innovation and Development. Other usual disclaimers apply. The authors would like to thank Gabinete de Estratégia e Planeamento of the Portuguese Ministry of Labour and Social Security for the provision of the data.

[29] Departamento de Economia e Gestão, Universidade de Aveiro, Portugal. Ministério da Economia, da Inovação e do Desenvolvimento.

[30] Escola Superior de Tecnologia e Gestão do Instituto Politécnico de Bragança.

[31] Ahmad and Seymour (2008) provide a superficial review of extant definitions in Table 1. Consider also the concepts included in Audretsch´s review of entrepreneurship literature (2003).

[32] Although data is available since 1981, we did not measure entry before 1985 due to reliability issues.

Figure 1. Population of active employer enterprises, 1987–2007
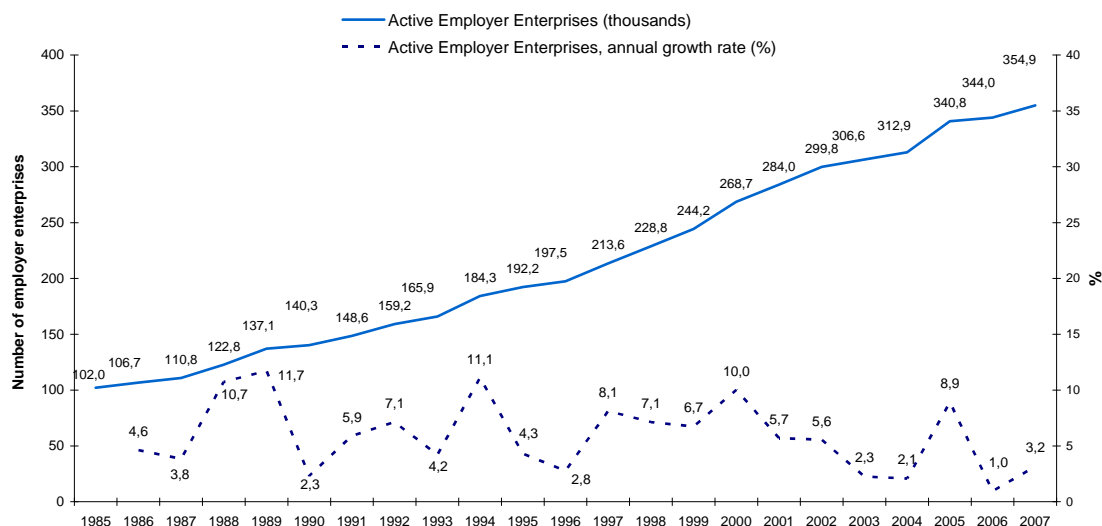
Source: Own calculations based on *Quadros de Pessoal*, GEP, Ministério do Trabalho e da Solidariedade Social.
Note: Employer Enteprises are enterprises which have at least one paid worker.

## 3. Performance Indicators for Active Employer Enterprises by Size Class

Entrepreneurship is a multidimensional phenomenon, spanning different units of observation, ranging from the individual to the firm, the nation to the region and the total economy versus micro-economic sectors. We hereby start by characterising three of these dimensions, by region, economic sector and enterprise size class.

3.1. Performance Indicators for Active Employer Enterprises by Size Class

The vast majority of enterprises in OECD countries (OECD, 2000) and in the European Union (Storey, 1994; Eurostat, 2009) are small and medium enterprises (SMEs). SMEs are considered a key source of dynamism and innovation both in developed and emerging economies, thus making important contributions to job creation, economic growth and productivity (OECD, 2005). A look at the number of active enterprises by size class over time, highlights the increasing importance of small and medium (SME) sized enterprises in Portugal (Figure 2).

Figure 2. Population of active employer enterprise population, by size class
(Thousand enterprises and %)
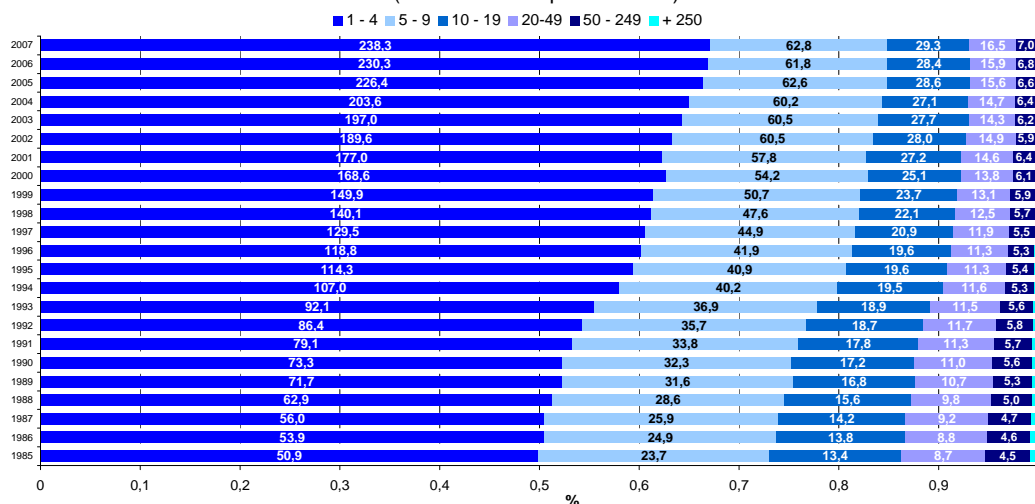
Source: Own calculations, based on Quadros de Pessoal, GEP, Ministério do Trabalho e da Solidariedade Social.

In most countries, the population of firms is dominated by small and micro units (Bartelsman et al., 2005; Bartelsman et al., 2004; Eurostat, 2009) where firms with less than ten employees represent around three quarters of the employer enterprise total population. Portugal does not seem to be an outlier. Since 1996, more than 60% of all employer enterprise firms in Portugal are micro firms[33], and more than 81% have fewer than 10 employees (Figure 3). There has been a clear tendency for small firms, with less than 10 employees, to increase its share in total population, throughout all the observed period (74% in 1986, 82% in 1997 and 85% in 2007). In 2007, 97,8% of the Portuguese enterprises employed less than 50 workers, compared to 95% in 1985.

Figure 3. Active employer enterprises, with less than 5 and less than 10 employees and share on total enterprise population (%)

Source: Own calculations based on Quadros de Pessoal GEP, MTSS
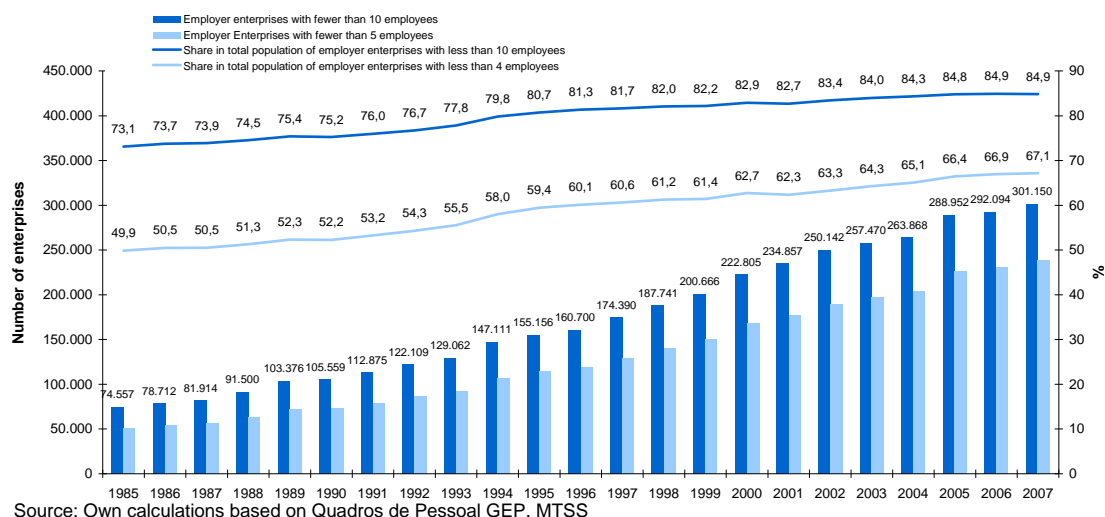
3.2. Performance indicators for active employer enterprises by region

In what concerns regional enterprise growth, the region of the Algarve shows the highest growth in active enterprises throughout the period (Table 1), reaching a peak of 20.711 active enterprises in 2007 (more 1.131 than in 2006). Although not being the region with the highest volatility, it shows considerable fluctuations in active employer enterprise growth over time (e.g. from 27.7% of growth in 1989 to a low of 2.6% in 1990).

Table 1. Annual average growth rate of active employer enterprises by NUT II

NUT II	1985 to 2007	1995 to 2000	2000 to 2007
Norte	6,2	7,1	4,4
Algarve	9,0	7,9	6,7
Centro	6,6	8,6	4,0
Lisboa	4,5	5,1	3,4
Alentejo	5,8	8,3	3,1
Açores	3,7	3,9	3,1
Madeira	6,4	7,1	4,4
Portugal	5,8	6,9	4,1

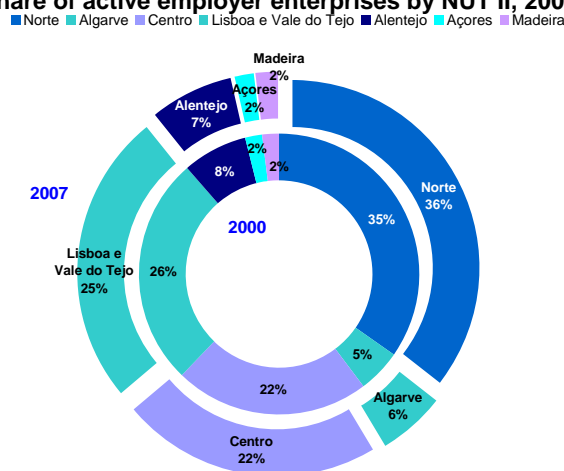Source: Own calculations based on Quadros de Pessoal, GEP, MTSS.

Norte and Madeira display the second greatest annual average growth in the total number of active employer enterprises from 2000 to 2007 (4,4%). However, Norte is characterised by the greatest regional volatility[34], particularly from 1993 to 1998. Despite having the greatest share of active enterprises (Figure 4) and the greatest amount of small enterprises in the country, the weight of small and medium firms is the

---

[33] Micro firms are enterprises with fewer than 5 employees.

[34] Norte shows the highest volatility of all regions, when measured through the standard deviation. In 2006, Norte displayed a negative rate of growth, despite having the highest growth in the country in 2005 (13,7%).

highest in Algarve (mainly due to services and construction sectors, especially from 2000 onwards) and Alentejo (mainly in services and agriculture and fishing sectors) (Table 2 and 4).

Figure 4. Share of active employer enterprises by NUT II, 2000 and 2007

Source: Own calculations based on *Quadros de Pessoal* , GEP, MTSS.

Centro has maintained a steady rhythm of enterprise growth, consequently its share in total number of enterprises in the country has been kept stable over time. Lisboa e Vale do Tejo has seen its share of enterprises slightly reduced in the total economy (-1 p.p.), from 2000 to 2007 (Figure 4). In the Açores and Madeira there is also an increasing number of active enterprises, although the Açores have lost their prominence in the total number of enterprises in the two archipelagos (60% of total archipelago's enterprises were located in Açores in 1985 and only 45,7% in 2007). The enterprise growth rate has been greater in Madeira than in Açores, throughout the period, except for the years 1996, 2001 and 2006.

This evidence points to an overall tendency to a decreasing rhythm of growth of the population of active employer enterprises in all NUT II regions, from 2001 onwards (Table 1).

The regional density of firms offers a contrast between the dynamics of firm and population growth. Density is thus calculated by the ratio of active enterprises over the region's active population, the former data is based on Statistics Portugal.

We observe that Alentejo has the highest enterprise density, followed by the Algarve (Figure 5). In the case of Alentejo, this startling fact is due to this region having the lowest active population growth at the NUTII level[35], below the country's average rate[36]. Its enterprise growth (despite being also below the country's average) manages to grow at a faster rate than its active population, thus accounting for the higher density portrayed in Figure 5.

Algarve, on the other hand, has had the highest active population growth in most of the years considered, and also some of the highest regional enterprise growth. Density in the Algarve has been steadily growing since 1998, as the enterprise growth rate is higher than active population's.

In Lisbon, active population grows above the economy's average but enterprise growth is below the country´s average for most years, which accounts for this region's record of the lowest average enterprise density. The two Archipelagos show an enterprise density below the country's average throughout the period. Madeira has managed to outpace Acores's enterprise density from 2003.

---

[35] Alentejo has had a negative active population growth rate since 2005 (Statistics Portugal).

[36] Except for years 2002 and 2003.

Figure 5. Density of active employer enterprises, by NUT II region
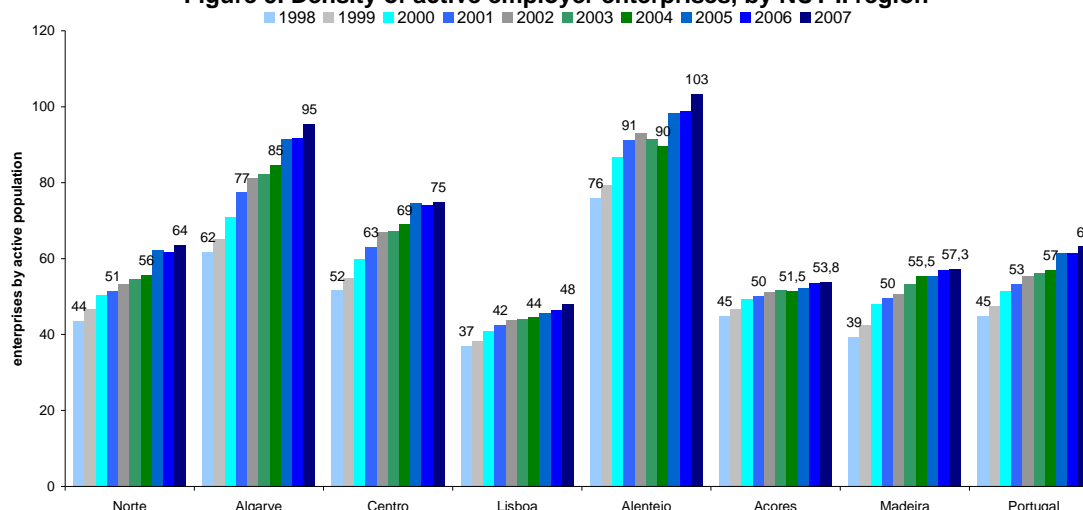
Source: Own calculations based on Quadros de Pessoal, GEP, MTSS and Statistics Portugal for average population.
Note: Density is the ratio of the number of enterprises over active population

By combining the regional with the size class dimension, we may also observe the predominance of small firms in most regions at the NUT II level (Table 2) in particular in the Algarve (in 2007, 67,7% of enterprises had fewer than 20 employees, which corresponds to 58,4% of the region's employment), the Açores (69,2% share of firms and 42% of employment), and the Alentejo (66,7% share of firms and 54,9% of employment). Even when firms with fewer with less than 50 employees are considered, the Algarve and the Alentejo are still the regions with the highest share of small enterprises in 2007.

Table 2. Share of active employer enterprises with fewer than 20 employees in total number of enterprises by NUT II region (%)

Regions	Enterprise share of size Class of fewer than 20 employees												
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Norte	46,9	47,4	47,4	48,3	49,4	49,4	49,9	51,3	52,8	55,1	56,4	57,1	57,6
Algarve	52,8	53,4	53,9	54,7	58,2	58,4	60,6	62,0	63,8	65,7	67,0	67,0	67,7
Centro	49,3	50,4	50,5	51,2	52,4	52,2	53,7	54,9	56,2	59,1	60,6	61,4	61,8
Lisboa	51,0	51,2	51,3	51,6	52,3	52,1	53,1	53,8	54,8	57,7	59,1	59,9	60,2
Alentejo	52,9	54,8	54,7	57,1	58,6	58,5	59,7	60,2	61,9	63,6	65,3	65,1	66,7
Açores	66,6	66,2	66,4	66,4	65,2	64,5	64,9	64,8	63,8	65,1	67,6	68,4	68,2
Madeira	47,4	48,4	47,8	49,4	50,3	52,2	53,9	55,3	55,1	57,6	57,6	57,8	57,7
Portugal	49,9	50,5	50,5	51,3	52,3	52,2	53,2	54,3	55,5	58,0	59,4	60,1	60,6

Source: Own calculations based on Quadros de Pessoal, GEP, MTSS.

Table 3. Share of employment in active employer enterprises with fewer than 20 employees in total regional employment by NUT II region (%)

Regions	Employment share of size class 1 to 19 employees												
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Norte	34,7	35,2	36,2	37,5	38,6	40,4	41,0	43,2	43,3	43,0	43,5	42,8	42,4
Algarve	58,2	59,4	60,3	59,9	59,7	60,0	59,6	62,2	61,1	60,8	60,5	59,5	58,4
Centro	41,4	42,4	43,3	44,1	45,4	46,6	47,3	50,5	50,7	49,5	49,8	49,4	49,1
Lisboa	27,9	28,7	28,9	28,6	28,8	29,2	29,1	30,9	30,5	29,6	28,9	28,6	28,4
Alentejo	55,5	54,7	54,5	55,2	55,4	57,0	56,4	58,2	57,5	54,6	55,5	54,2	54,9
Açores	47,8	46,8	47,4	44,7	45,3	44,2	43,4	43,5	44,5	42,9	43,3	44,3	42,0
Madeira	39,2	37,7	38,4	39,5	41,0	42,9	42,5	42,0	42,1	42,0	42,5	43,2	43,2
Portugal	35,1	35,9	36,6	37,1	37,9	39,0	39,3	41,6	41,5	40,7	40,8	40,2	39,9

Source: Own calculations based on Quadros de Pessoal, GEP, MTSS.

3.3. Performance Indicators for Active Employer Enterprises by Sector

The increasing presence of small firms in Portugal is considerable and visible throughout all broad economic sectors, both in terms of the number of enterprises and the number of employees (Table 4). During the period of 1995 to 2007, 92,5% of total enterprises in the economy employed fewer than 20 workers, with all sectors but manufacturing (81,5%), having a share over 90%.

Table 4. Share of enterprises with fewer than 20 employees, in the total population of firms and in total employment[37]

(Enterprises with fewer than 20 employees as a % of sector's total)

	Enterprises					Employment				
	Total economy	Agriculture and Fishing	Manufacturing	Services	Construction	Total economy	Agriculture and Fishing	Manufacturing	Services	Construction
1995-2007	92,5%	96,5%	81,5%	94,7%	92,9%	39,1%	67,2%	25,1%	42,9%	52,1%
1995-1999	91,5%	95,6%	79,6%	94,6%	92,2%	36,6%	61,7%	22,5%	43,8%	46,5%
2000-2007	92,9%	96,9%	82,6%	94,8%	93,1%	40,4%	70,0%	26,8%	42,5%	54,4%

Source: Own calculations based on Quadros de Pessoal, GEP, MTSS.

From the first (1995-1999) to second sub-period (2000-2007), the number of small enterprises rises in all sectors. Manufacturing displays the highest increase in this size class, above the total economy's, indicating a faster reduction in enterprise size (Table 6).

In line with the literature, the employment share of small firms is lower than its share in the total number of firms (Table 4). In parallel to enterprise behaviour, the share of employment in enterprises with fewer than 20 employees also rises in all sectors of activity, except in services.

From 1995 to 2007, small firms with fewer than 20 workers employed 39,1% of the total workforce in the dataset (Table 4). It is in the "Agriculture and Fishing" and in the "Construction" sector that small firms account for the largest share of employment.

This is not only influenced by the level of economic activity[38], but also by the dynamics of entry and exit in the market and by the industry structure, where an economy with a growing service sector and a declining influence of the manufacturing sector, such as Portugal, is more likely to display a growing share of both SMEs and of SME´s in total employment.

The growing importance of the service[39] sector and the decline of the manufacturing sector are clearly observable from Figure 8. The service sector leads in the number and share of active employer enterprises, especially after 2001 and particularly in terms of its share of employment[40] (60,3% in 2006), but holds the lowest average firm size of the three main sectors (8,4 average employees per firm during 1995 to 2007, Table 6). It displays a tendency to reinforce its importance in the Portuguese economy, as indicated by the figure below.

Figure 6. Share of enterprises and employees in total economy in the service and manufacturing sector, 1995-2006
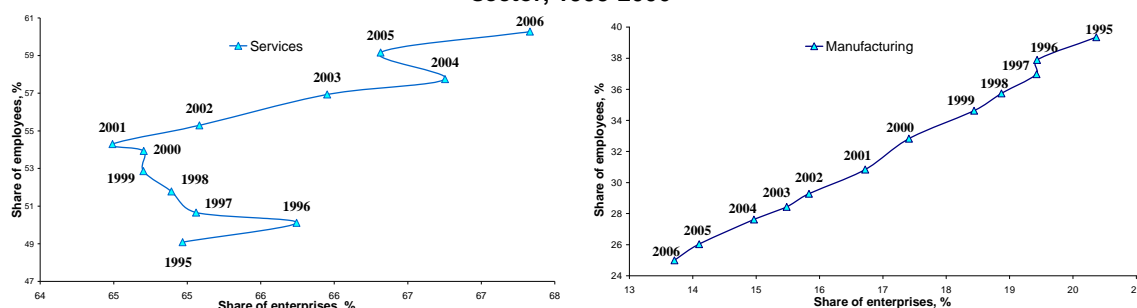
Source: Own calculations based on *Quadros de Pessoal* , GEP, MTSS.

---

[37] Sections A to P of ISIC Revision 3 were considered for the total economy. Data is only considered after 1995 due to the start of European System of Accounts of 1995, and up to 2006 due to the problems of compatibility with Classification of Economic Activities Revision 3, introduced in 2007.

[38] The economic cycle highly correlates with enterprise births and deaths cycles. In different regression models we have found that GDP is consistently a statistically significant variable.

[39] In most OECD countries, the service sector accounts for more than 60% of value added and employment (Ahn, 2001).

[40] By 2002, the share of the service sector amounted to about 70% of total value added in most OECD economies, and this has been increasing considerably over time (OECD, 2005).

Turning to annual average growth rates, at a more disaggregated level, we observe clear disparities among the Portuguese main sectors (Table 5). All broad sectors, except Agriculture and Fishing, show a decrease in their annual average growth rates from the first to the second sub-period (2001-2006).

The service sector shows more dynamism in most sectors at one letter level of the CEA[41], when compared to manufacturing.

During the first sub period[42] (1995-2000), one of the most dynamic sectors has been "Construction", which displays after 2001, a slowdown in enterprise annual average growth (2,0%). On the other hand, the broad manufacturing sector displays decreasing annual average growth rates from 1995 to 2006 (1,7%), mainly in the sub-sectors "Mining and quarrying" and "Manufacturing", a tendency enhanced after 2001 (1,8% and -0,1%, respectively).

Table 5. Annual average growth of active employer enterprises by sector at one letter level of the Classification of Economic Activities, Rev. 2.1 and by broad sectors (%)

Sectors	1995-2006	1995-2000	2001-2006
Agriculture, farming of animals, hunting and forestry	7,6	5,6	10,2
Fishing	15,5	1,4	34,1
Mining and quarrying	1,5	3,5	-1,8
Manufacturing	1,7	3,6	-0,1
Production of electricity, of gas and of water supply	8,6	7,5	8,4
Construction	7,9	13,1	2,0
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	3,6	4,7	2,5
Hotels and restaurants	4,8	6,4	3,5
Transport, storage and communication	9,4	11,3	6,4
Financial intermediation	7,0	7,4	6,5
Real estate, renting and business activities	10,6	12,9	8,5
Public administration and defence; compulsory social security	22,7	4,6	46,0
Education	7,6	6,7	8,7
Health and social work	8,7	10,6	7,1
Other community, social and personal service activities	8,5	8,5	8,8
Total	5,4	5,5	3,9
Agriculture and Fishing	7,9	5,5	11,2
Manufacturing	1,7	3,6	-0,1
Services	5,8	6,8	4,8
Construction	7,9	13,1	2,0

Source: Own calculations based on *Quadros de Pessoal* , GEP, MTSS.

3.3.1. Firm Size

Firm size, summarised by average size and dispersion have an important sectoral component.

The increase of small firms in Portugal is also related to the declining average firm size, which is extended to all broad sectors of the economy, particularly to the manufacturing sector. While average size of manufacturing firms still is at least twice as large than services (Table 6), it tends to decrease faster between the two sub-periods than in the remaining sectors (from 20,8 average employees during 1995-2000 to 17,4 after 2000).

The construction sector, which lived through an expansion period, both in terms of share of enterprises and employment between 1995 and 2000, shows a marked decline after 2003 in terms of enterprises, employment share, and average size.

---

[41] Classification of Economic Activities (CEA).

[42] This disaggregation is only provided after 1995 due to the start of SEC 95, and up to 2006 due to the problems of compatibility with CAE Rev. 3 after 2007.

Table 6. Average firm size by broad sectors and periods
(Number of employees)

	Total economy	**Agriculture and Fishing**	**Manufacturing**	**Services**	**Construction**
1995-2007	10,0	4,9	18,9	8,4	8,9
1995-2000	10,9	5,5	20,8	8,6	9,5
2000-2007	9,4	4,5	17,4	8,3	8,3

Source: Own calculations based on Quadros de Pessoal, GEP, MTSS.

According to Table 7, the sectors with the largest standard deviation of size are "Electricity, gas and water supply" because of its heavily regulation and legal monopolies (although it is highly reduced during 2000-2007), "Financial activities", "Public Administration, Defence and Social Security", "Fishing" and "Education". The less dispersed sectors are "Gross and retail commerce" and "Hotels and restaurants". Manufacturing standard deviation is twice as large as total deviation, in line with other countries (Bartelsman et al., 2005). The standard deviation of firm size increases in the Service and in the "Agriculture and Fishing" sectors during 2000 to 2007 when compared to the whole period from 1995 to 2007.

To account for effects of size in dispersion rates, we have also computed the coefficient of variation. The dispersion is now highly reduced, with most sectors presenting a higher coefficient of variation than the country's average. Overall dispersion, given by the standard deviation and coefficient of variation is reduced for the last 7 years, except for the Service and "Agriculture and Fishing" sector.

Table 7. Within industry standard deviation and coefficient of variation of firm size

	Within industry standard deviation of firm size (as a ratio to country sectoral average)				Within industry coefficient of variation of firm size (as a ratio to country sectoral average)			
	Country average 1995-2007	**Ratio to country sectoral averages**	**Country average 2000-2007**	**Ratio to country sectoral averages**	**Country average 1995-2007**	**Ratio to country sectoral averages**	**Country average 2000-2007**	**Ratio to country sectoral averages**
Agriculture, farming of animals, hunting and foresty	0,64	0,68	0,59	1,37	0,14	1,50	0,14	3,05
Fishing	6,20	6,60	3,84	8,91	0,40	4,24	0,33	7,25
Mining and quarrying	0,97	1,03	0,71	1,65	0,06	0,69	0,05	1,07
Manufacturing	2,03	2,16	0,86	1,99	0,11	1,16	0,05	1,08
Production of electricity, of gas and of water supply	66,02	70,30	26,09	60,59	0,45	4,84	0,26	5,73
Construction	0,91	0,97	0,36	0,85	0,10	1,10	0,04	0,96
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	0,21	0,23	0,24	0,55	0,03	0,35	0,04	0,79
Hotels and restaurants	0,24	0,25	0,28	0,65	0,04	0,42	0,05	1,03
Transport, storage and communication	4,92	5,24	2,02	4,68	0,30	3,22	0,16	3,41
Financial intermediation	14,81	15,78	6,13	14,24	0,28	2,97	0,14	3,10
Real estate, renting and business activities	0,58	0,61	0,63	1,47	0,06	0,60	0,06	1,34
Public administration and defence; compulsory social security	7,90	8,41	8,18	19,00	0,37	4,00	0,33	7,21
Education	1,71	1,82	1,44	3,34	0,10	1,09	0,09	1,99
Health and social work	0,81	0,86	0,86	1,99	0,07	0,75	0,07	1,57
Other community, social and personal service activities	0,24	0,25	0,23	0,54	0,04	0,40	0,04	0,79
Agriculture and Fishing	0,71	0,76	0,60	1,39	0,15	1,56	0,13	2,90
Manufacturing	2,09	2,22	0,87	2,03	0,11	1,18	0,05	1,09
Services	0,35	0,37	0,37	0,86	0,04	0,44	0,04	0,97
Construction	0,91	0,97	0,36	0,85	0,10	1,10	0,04	0,96
TOTAL	0,94		0,43		0,09		0,05	

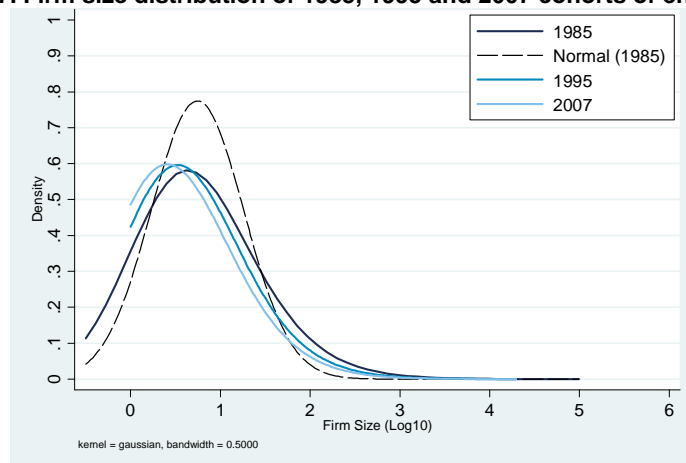Source: Own calculations based on *Quadros de Pessoal* , GEP, MTSS.

4. Firm Size Distribution

There is a considerably large amount of evidence that the number of micro and small sized firms have been increasing relative to medium and large scale enterprises (Schaper et al., 2008; Storey, 1996; Loveman and Sengerberger, 1991; OECD, 2005; OECD, 2000) and also of the shift in the firm size distribution towards smaller production units, which has been occurring since the 1970s, after years of dominance of economies of scale in production (Ribeiro, 2007). Given the evolution of employer enterprises by size class, illustrated in the previous sections, we should expect these dynamics to have considerable impact in Portugal.

In order to assess if the increasing presence of smaller firms is indeed affecting the composition of the population of firms, an analysis of the size distribution of employer enterprises was considered. Following Cabral and Mata (2003), we analysed the firm size distribution for our subset of firms based on *Quadros de Pessoal*[43]. On the one hand, we have found a firm size distribution skewed[44] to the right, with a distinct shape from the Normal distribution, in line with Cabral and Mata's (2003) results. On the other, we observe that this distribution is not stable over time (Figure 7), showing an increasing prevalence of smaller firms in the population of employer enterprises. The whole firm size distribution has indeed been shifting to the smallest size classes, where smaller units are increasingly prevalent in the population.

Figure 7. Firm size distribution of 1985, 1995 and 2007 cohorts of enterprises

Source: Own calculations based on *Quadros de Pessoal*, GEP, MTSS.

5. Main Conclusions

The population of active employer enterprises has been growing steadily in Portugal over more than 20 years, especially due to the contribution of smaller sized firms. We can identify four distinct periods, based on the growth rates and on the cycles of enterprise births, before 1989, from 1990 to 1994, 1995 to 1999 and after 2000. A decreasing rhythm of enterprise growth emerges after 2001, visible throughout all broad sectors and regions.

The increasing predominance of small and medium sized firms is clearly observable, in line with what seems to be a general tendency in other developed countries. In 2007, 98% of the Portuguese enterprises present in *Quadros de Pessoal*, employed less than 50 workers. This is due to both structural effects, such as the increasing dominance of the service sector in the economy, in terms of the number of enterprises and employees, and the gradual decrease of average firm size in all broad sectors.

Norte is the region with the highest number of births and share of enterprises in the country, while Algarve is the region with the highest growth in active enterprises and rate of birth in Portugal, where firms are created with the smallest average size.

Portugal is increasingly a service-based economy, where the service sector has occupied the pole position in enterprise creation since 2003. Overall dispersion of firm size has decreased for the total economy,

---

[43] We applied a nonparametric estimation method, a gaussian kernel density smoother with a bandwidth of 0,5 to the logartithm of firm size to test if firm size (expressed as the log of the employment of the firm) distribution is stable and approximately lognormal for the population of active enterprises. It is important to keep in mind that the type of distribution depends heavily on the data source considered (Cabral, 2007).

[44] It has long been noted that the distribution of firms is skewed (Ijiri and Simon, 1977; Klette and Kortum, 2004; Cabral, 2007; Schaper et al., 2008), in particular when the whole population of firms is considered and the data did not result from a random sample taken from the total population, but until recently these conclusions were drawn essentially from the study of specific industries or sectors, focusing in shorter periods of time. More recently, the availability of large micro data sets for many industrialized countries allowed to uncovered that firm sizes are likely to be distributed as a Pareto distribution, instead of a log-normal (Axtell 2001, Gaffeo et al. 2003).

during 2000 to 2007 compared to the period 1995-2007, but has risen in the Service and "Agriculture and Fishing" sectors.

Over a period of more than 20 years, we observe an overall decrease in the average size of employer enterprises in Portugal, which is extended to all broad sectors, NUT II regions and entrants in the market (Sarmento and Nunes, 2010). The growth of the small sector is not only connected to the reduction in average firm size but also to the shift in the size distribution of firms. We verify that total firm size distribution is right skewed and that it has been shifting to the smallest size classes over time.

BIBLIOGRAPHY

Ahmad, N. (2006) "A Proposed Framework for Business Demography Statistics." OECD Statistics Working Papers 2006/3.

Ahmad, N. and A. Hoffman (2008). "A Framework for Addressing and Measuring Entrepreneurship", OECD Statistics Working Paper 2008/2.

Ahmad, N. and R. G. Seymour (2008). "Defining Entrepreneurial Activity: Definitions Supporting Frameworks for Data Collection." OECD Statistics Working Paper.

Ahn, S. (2001), "Firm dynamics and Productivity Growth: a review of micro evidence from OECD countries", OECD Economics Department Working Paper n. 297, Paris.

Axtell, R.L. (2001), "Zipf Distribution of U.S. Firm Sizes", Science 293:5536, pp. 1818-1820.

Bartelsman, E.J., S. Scarpetta, and F. Schivardi, (2005), "Comparative Analysis of Firm Demographics and Survival: Evidence from Micro-level Sources in OECD Countries", Industrial and Corporate Change, 14(3): 365–391.

Bartelsman, E.J., J. Haltiwanger, and S. Scarpetta, (2004), "Microeconomic Evidence of Creative Destruction in Industrial and Developing Countries", The World Bank Policy Research Working Paper Series 3464.

Cabral, L. (2007), "Small firms in Portugal: A selective Survey of Stylized Facts, Economic Analysis and Policy Implementation". Portuguese Economic Journal, 6(1): 65-88.

Cabral, L. and J. Mata (2003), "On the evolution of the firm size distribution: facts and theory", The American Economic Review, 93(4): 1075 - 1090.

Eurostat (2009), "Business Demography: employment and survival", Statistics in focus, 70/2009.

Eurostat/OECD (2007), "Eurostat/OECD Manual on Business Demography Statistics".

Gaffeo E., Gallegati M. and A. Palestrini (2003), On the Size Distribution of Firms. Additional Evidence from the G7 Countries, Physica A, 324:117-123.

Ijiri, Y. and H. A. Simon (1977), "Skew Distributions ans the Sizes of Business Firms", North-Holland.

OECD (2000), "OECD Small and medium enterprise outlook", Paris.

OECD (2005), "The 2005 OECD SME and Entrepreneurship Outlook", Paris.

OECD/Eurostat (2009), "Measuring Entrepreneurship A Collection of Indicators, 2009 Edition", OECD/Eurostat Entrepreneurship Indicators Programme.

Ribeiro, E. P. (2007) "The Dynamics of Firm Size Distribution", Brazilian Review of Econometrics, Vol. 27, nº 2.

Sarmento, E. de Morais e A. Nunes (2010), "Entrepreneurship performance indicators for active employer enterprises in Portugal", Temas Económicos nº 9, Gabinete de Estratégia e Estudos, Ministério da Economia, da Inovação e do Desenvolvimento.

Scarpetta, S., P. Hemmings, T. Tressel and J. Woo (2002), "The role of policy and institutions for productivity and firm dynamics", OECD Economics Department Working Papers, n. 329.

Schaper, M. Dana. L. P., R. Anderson, P. W. Moroz (2008), "Distribution of firms by size: observations and evidence from selected countries", International Journal of Entrepreneurship and Innovation Management, Vol. 8, n. 6, 2008.

Storey, D. ed. (1994), "Understanding the small business sector", Thomson Learning.