



# **ATAS**

## *Proceedings*

### **CRESCIMENTO E PERFORMANCE DAS EMPRESAS: UMA PERSPETIVA REGIONAL, INSTITUCIONAL E POLÍTICA**

*Firm performance and growth: a regional, institutional and policy  
perspective*

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## CRESCIMENTO E PERFORMANCE DAS EMPRESAS: UMA PERSPETIVA REGIONAL, INSTITUCIONAL E POLÍTICA

Quando confrontados com preocupações crescentes sobre o crescimento económico, o desemprego e a própria criação de emprego, os decisores políticos optam frequentemente por direcionar os seus esforços para a criação de novas empresas e o fortalecimento das condições de funcionamento do restante tecido empresarial, de forma a conservar a competitividade nos mercados globais.

É indubitável que a melhoria do potencial económico de qualquer região passa por um ambiente de negócios onde as empresas possam prosperar.

De modo a fortalecer e diversificar a economia, os decisores políticos e líderes locais necessitam de estar cientes das características e dos determinantes do desempenho e do crescimento das suas empresas, particularmente relevantes para as empresas de menor dimensão. Deste modo, a compreensão das características do crescimento empresarial e do seu contributo para o crescimento económico, torna-se cada vez mais pertinente para a formulação de políticas de estímulo adequadas.

Existem um conjunto de características regionais e institucionais relativas à estrutura socioeconómica de uma região, que podem contribuir de modo significativo para explicar os diferenciais, não só de criação de novas empresas, bem como de desempenho e crescimento. Estes incluem, nomeadamente, fatores do lado da procura, da oferta e aspetos relacionados com medidas de política, que contemplam mais concretamente não só aspetos regionais, institucionais e políticos, mas que se estendem à qualidade do mercado de trabalho local, clima de negócios, internacionalização e capacidade de inovação.

No atual contexto de abrandamento económico, a relevância de abordar destes temas torna-se assim mais pertinente do que nunca.

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## PROFILING HIGH-GROWTH ENTERPRISES IN PORTUGAL

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**Abstract.** This paper describes employer enterprise dynamics in Portugal for high-growth and gazelle enterprises for the period 1990-2007, using the methodology by Eurostat/OECD. It discusses stylized facts related to performance and employment by size, region and sector, to a detail which has not been previously considered, uncovering potential business areas of growth which are of prime importance for the country's economic growth and development. Two parallel perspectives are provided, by turnover and by employment. We also provide a comparison between Portuguese firms and some of their European counterparts. This contrast highlights differences in performance related to underlying national framework conditions, and specifically to the regulatory and cultural environment in which Portuguese firms operate, which seems to be instrumental to the understanding of their poorer performance.

**Keywords:** Firm Demography, Framework Conditions, Gazelles, High-growth firms, Portugal

**Resumo.** Este artigo descreve a dinâmica de empresas portuguesas de elevado crescimento e de gazelas, para o período 1990-2007, utilizando a metodologia do Eurostat/OCDE. Foram também adoptadas duas perspectivas diferentes para o apuramento destas empresas, a perspectiva do volume de negócios e por outro lado, do emprego. Ao longo do estudo, abordam-se alguns fatos estilizados relacionados com o desempenho e volume de emprego destas empresas, desagregados com um nível detalhe considerável, por região, dimensão e sector de actividade, relevando alguns sectores de negócios com maior potencial de crescimento que são de suma importância para o crescimento económico do país e do desenvolvimento. Fornecemos igualmente uma comparação entre as empresas portuguesas e algumas das suas congéneres europeias. Este contraste evidencia algumas diferenças, como um mais fraco desempenho, associado às “framework conditions” existentes a nível nacional, designadamente que diz respeito ao ambiente regulatório e cultural que estas empresas enfrentam.

**Palavras-chave:** Demografia Empresarial, Framework conditions, Gazelas, Empresas de Elevado Crescimento, Portugal

### 1. INTRODUCTION

The emergence and proportion of high-growth and gazelle firms provides a clear indication of how well individual countries are laying the foundations for growth among new and existing businesses. These high-growth firms are known to play an important role in job creation, fostering innovative behaviour, enhancing productivity and are key players in economic growth (OECD, 2002). During the last decade, high-growth firms have attracted considerable attention from researchers, policy-makers and more recently also from practitioners.

The Portuguese economy experienced a process of structural transformation during the latter part of the twentieth century, which culminated in rapid economic expansion in the second half of the 1990s, followed by a deceleration of economic growth since 2001, contributing to a considerable creative destruction of industries, which has consequently impacted on firm dynamics. The emergence of high-growth firms can be a statement of the capacity of the country to deliver the right conditions for producing dynamic and rapidly growing firms.

This paper characterises Portuguese high-growth and gazelle employer enterprises for the period 1990-2007 and discusses performance and employment, by size, region and sector. Two parallel perspectives are provided, defined by a turnover and an employment criteria.

No internationally accepted definition exists of what constitutes a high-growth firm (Herenkson and Johansson, 2008, 2009). The literature offers several definitions inspired by the work of David Birch (1987). We will use the methodology by Eurostat and OECD (2007), which has been internationally accepted and used widely in the business demography field (OECD, 2008 and 2009).

This paper is organised as follows. The next section intent is to describe the data and methodology applied to our data. Once the main features regarding the dynamics of high-growth and gazelle firms in Portugal are introduced, concerning their distribution, employment and size (section 3), a sectoral and regional disaggregation is provided in sections 4 and 5, respectively. In the following section, we offer a brief note on high-growth and gazelles' firm survival, which is then followed by international data comparisons between Portuguese firms and its European counterparts. This comparison enables to explore the differences in national framework conditions in section 7 and conclude that the regulatory environment in which Portuguese firms operate seem to be instrumental to the explanation of their poorer performance. Finally, section 8 offers concluding remarks.

## 2. DATA AND METHODOLOGY

The main data source in Portugal for the universe of employer enterprises (enterprises with more than one employee) is *Quadros de Pessoal*. This annual mandatory survey, conducted by the Portuguese Ministry of Labour and Social Security<sup>16</sup>, provides a rich and comprehensive matched employer-employee-establishment dataset. According to the registrars of the Portuguese Social Security, it is composed of all active enterprises with at least one paid employee during the period 1985 to 2009.

The database obtained from the cleaning of *Quadros de Pessoal*, adheres to the Eurostat and OECD methodology "Manual on Business Demography Statistics" (Eurostat/OECD, 2007).

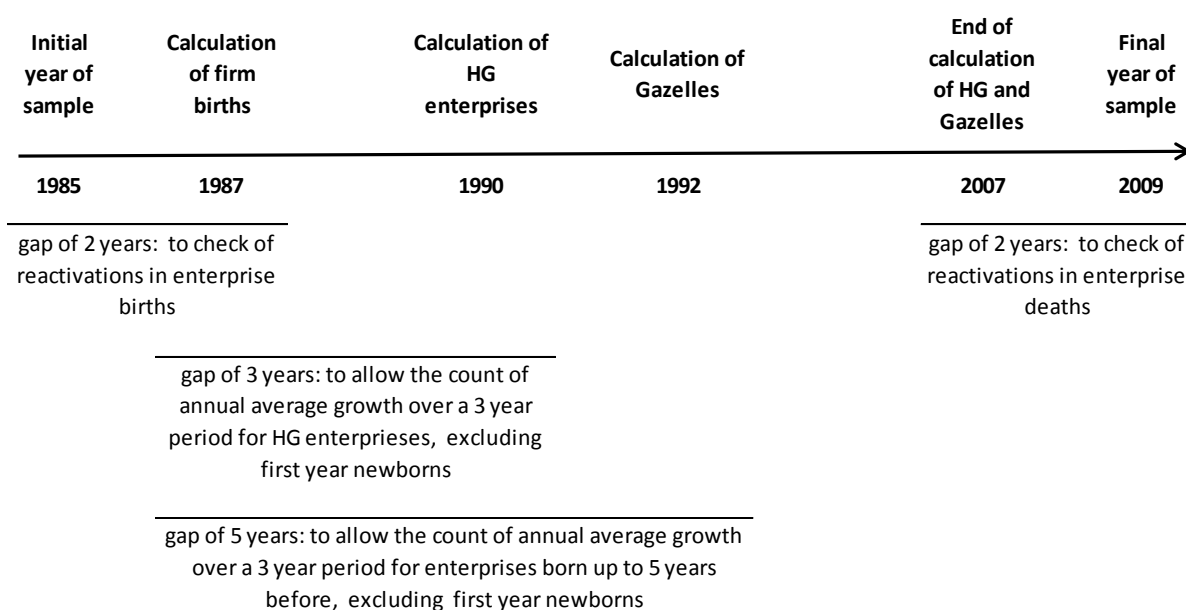
Experience has shown that the scope and methodology of business demography statistics have a significant impact on results (Eurostat, 2008). The Eurostat/OECD (2007) methodology is being widely (e.g. OECD, 2008, 2009; Eurostat, 2008; NESTA, 2009a and 2009b) used and allows for easier international comparisons within Europe, but also with the US. It focuses on employer enterprises, which are an important source of job creation. The derived dataset from the application of this methodology consists of an annual average of 215.903 active employer enterprises, with an annual average of 36.803 births and 23.743 enterprise deaths over the period 1985-2007.

Although the dataset covers the period 1985 to 2009, two years at the beginning and end of the period are lost due to the application of the Eurostat/OECD's (2007) methodology, when calculating enterprise births<sup>17</sup> and deaths<sup>18</sup>. It is recommended looking two years into the past from the reference period, to check for reactivations, before enterprise births are actually considered (Eurostat/OECD, 2007). Thus, births were only calculated from 1987 onwards, instead of 1985, the starting year of the dataset (Figure 1).

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<sup>17</sup> According to the Eurostat and OECD definition, the core measure of births reflects the concept of employer enterprise birth. It corresponds to the birth of an enterprise with at least one employee. This population consists of enterprise births that have at least one employee in the birth year and of enterprises that existed before the year in consideration, but were below the threshold of one employee. A birth occurs when an enterprise starts activity. Births do not include entries into the population which result from break-ups, spit-offs, mergers, restructuring of enterprises or reactivations of units which are dormant within a period of two years. Births do not include reactivations of units which are dormant within a period of two years. Thus, this population consists of enterprises that have at least one paid employee in its birth year and also of enterprises that, despite existing before the year in consideration, were below the one employee threshold. An employer enterprise birth is thus counted in the dataset as a birth of an employer enterprise after it recruits its first employee, while complying with the above mentioned requisites.

<sup>18</sup> A death can occur because the enterprise ceases to trade or because it shrinks below the one employee threshold. The Eurostat/OECD (2007) manual recommends waiting for two years after the reference period to allow for reactivations, before deaths are calculated. Deaths do not include exits from the population due to mergers, take-overs, break-ups or restructuring of a set of enterprises. Moreover, deaths do not include exits from a sub-population if it results from a change of activity.



**Figure 1:** The application of the methodology and the timings required for the calculation of high-growth and gazelle firms

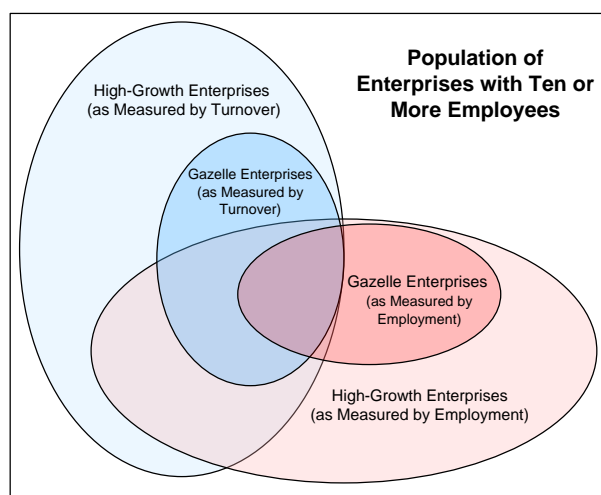
Source: Own elaboration.

A high-growth enterprise is any employer enterprise with 10 or more employees in the beginning of the observation period, with average annualised growth greater than 20% per annum, over a three year period. Growth can be measured according to two distinct definitions, either by the number of employees or by turnover (Figure 2).

Given the time period of the dataset, the calculation of the number of high-growth firms was only possible after 1990, 3 years after 1987, where enterprise births could start being calculated. To fully comply with the methodology, growth rates have to be always identified from the same base population, thus excluding enterprises born in the first year from the growth measurement. Consequently, the data on high-growth enterprises should be cleaned so as to remove firms that were born in year  $t-3$  (in our case, 1987), when measuring growth from  $t-3$  to  $t$ .

Gazelle enterprises are a subset of high-growth enterprises. Gazelles, measured by employment (or turnover), are all employer enterprises employing at least 10 employees in the beginning of the 3 years period, which have been employers for a period up to 5 years, with an annual average growth in employment (or turnover) greater than or equal to 20%, over a 3 year period. In other words, they reflect high-growth enterprises born 5 years or less before the end of the 3 year observation period. Moreover, the data on gazelles should also be cleaned by removing firms that were born in year  $t-5$ , when measuring growth from  $t-5$  to  $t$ .

A size threshold of 10 employees, for both turnover and employment, is set at the start of the observation period, to avoid the small size class bias contained in the above definition of high-growth and gazelles (Figure 2). In setting the employment threshold, the methodology needed to balance two competing criteria. If the threshold was set too low, it would cause a disproportionate number of small enterprises appearing in the statistics, but on the other hand, would reduce disclosure problems related to the statistical confidentiality of the microdata. If it was set too high, disclosure problems could increase, in particular for smaller economies where large enterprises are less numerous than smaller sized ones.



**Figure 2:** Conceptualisation of the population of High-growth and Gazelles by turnover and employment criteria in the subset of enterprises with more than 10 employees  
 Source: Own elaboration.

The employment measurement of high-growth and gazelle firms is generally preferred and is more widely used (NESTA, 2009a; NESTA, 2011; NESTA, 2009b; OECD, 2002), as employment is a real variable, whereas turnover is a nominal variable, influenced by local and national economic factors like inflation and the structure of a country’s fiscal system. Moreover, in our data, the turnover criteria show higher volatility than employment, when we account for both enterprises and employment in high-growth and gazelles. According to the OECD (2011), there are also greater discrepancies among countries when the turnover definition is used, particularly at the sectoral level.

As referred, the dataset has been cleaned complying fully to the Eurostat/OECD (2007) methodology. Thus, we tried to identify and exclude mergers and acquisitions, when known, from the dataset. Thus, most of the growth reported here is mainly firm organic growth (growth through new appointments in a firm) and not to acquired growth (growth through acquisitions and/or mergers).

Lastly, only employer enterprises classified in sectors from sections A to Q of the Portuguese Economic Classification of Economic Activities (CAE-Rev.2.1) were considered for the purposes of this research.

### 3. PROFILING OF HIGH-GROWTH AND GAZELLES IN PORTUGAL

Before proceeding into a more detailed analysis of performance, it is useful to review some of the main characteristics of the population of high-growth and gazelles along this period. We will start by approaching its representativeness in overall employer enterprise population, according to both employment and turnover criteria for the calculation.

#### 3.1 Overview of the data on high-growth and gazelles

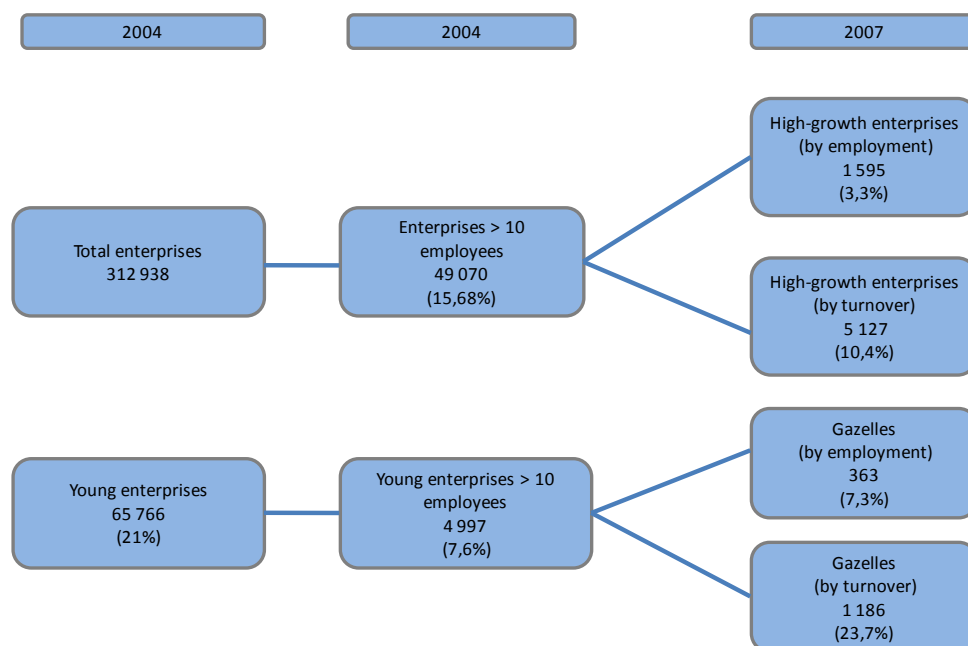
In 1985, employer enterprises with over 10 employees represented 27% of the total population and had 85,2% of all employment. In 2007, these shares dropped to 15,1% of all firms and 72,2% of all workers (the share on employment decreased relatively more).

The application of the Eurostat/OECD (2007) methodology for the calculation of the amount of high-growth and gazelle firms in any given year is exemplified in Figure 3, where the final year of 2007, is set as an example. Of the total amount of employer enterprises active in 2004 (312.938), 3 years before the calculation year (2007), 49.070 (16%) employed more than 10 employees. From this subset, there is a further selection of enterprises having an annual average growth of 20% over a 3 year period (2004-2007), either by employment or by turnover. For the determination of Gazelles,



departing from the initial enterprise population, we isolate firms born five years or less before the end of the 3 year observation period (2002-2007). From that subset, a further selection step takes place, whereby only young enterprises with over 10 employees remain. From this group, we apply the growth criteria in employment and turnover to obtain the final count for Gazelles.

Tables 1 and 2 summarise the results obtained for high-growth and gazelles and their employment, according to both criteria employment and turnover criteria. In the 17 year period, ranging from 1990 to 2007, Portuguese high-growth firms and gazelles by turnover decreased both in number and employment (Table 1). However, when measured by employment, its number and employment increased for both High-growth and Gazelles. Employment in high-growth firms, by employment, was in fact the sole to register an increase in the share in total population, between 1990 and 2007 (7,4% to 7,6%).



**Figure 3:** High-growth Enterprises and Gazelles, outlook for 2007

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

In 1990, there were 8.557 high-growth firms by turnover and 1.453 according to the employment criteria (24,6% and 4,2% of the enterprises with over 10 employees, respectively). By 2007, the number of high-growth firms by turnover decreased 40% (to 9,5% of the population considered), while those by employment definition, increased around 10% (to 3% of the population).

The number of gazelles by turnover is also higher than when measured by employment. In 1992, reported gazelles were 1.726 and 420, by turnover and employment, respectively. Gazelles by turnover also faced a considerable decrease relatively to 2007 (-31%), although not as high as high-growth firms, as well as Gazelles by employment definition, which decreased by around 14%.

Gazelles (employment definition) represent 23% of high-growth firms in 2007 and 34% in 1992.

**Table 1:** High-growth enterprises, employment and turnover definition (number and % in employer enterprises with more than 10 employees)



	High-growth (employment definition)				High-growth (turnover definition)			
	Enterprises		Employment		Enterprises		Employment	
	Number	%	Number	%	Number	%	Number	%
1990	1.453	4,2	134.331	7,4	8.557	24,6	532.866	26,9
1991	1.370	3,8	132.390	7,2	7.885	22,1	488.411	24,4
1992	1.231	3,3	110.471	6,0	7.556	20,4	513.731	25,4
1993	1.007	2,7	92.613	5,3	6.405	17,4	384.010	19,6
1994	1.017	2,7	108.766	6,4	5.177	13,9	325.282	16,6
1995	948	2,6	108.433	6,3	4.412	11,9	275.119	13,9
1996	1.043	2,8	118.724	7,0	3.880	10,5	245.748	12,5
1997	1.171	3,0	139.456	7,9	4.586	11,7	256.267	12,4
1998	1.387	3,4	164.941	8,9	5.150	12,5	330.966	15,2
1999	1.466	3,4	191.704	10,0	5.422	12,4	335.700	14,8
2000	1.623	3,5	196.627	9,9	5.737	12,5	316.615	13,4
2001	1.827	3,7	207.052	9,9	5.894	12,0	327.354	13,1
2002	1.640	3,3	165.879	8,2	5.723	11,5	303.128	12,4
2003	1.370	2,8	142.951	7,0	4.878	9,9	286.725	11,6
2004	1.308	2,7	152.610	7,3	4.271	8,7	268.591	10,6
2005	1.339	2,6	135.622	6,2	4.858	9,4	248.396	9,2
2006	1.463	2,8	159.660	7,2	5.079	9,8	261.463	9,6
2007	1.595	3,0	175.259	7,6	5.127	9,5	280.861	10,0

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

**Table 2:** Gazelles, employment and turnover definition (number and % in employer enterprises with more than 10 employees)

	Gazelles (employment definition)				Gazelles (turnover definition)			
	Enterprises		Employment		Enterprises		Employment	
	Number	%	Number	%	Number	%	Number	%
1990								
1991								
1992	420	1,1	28.512	1,6	1.726	4,7	68.619	3,39
1993	336	0,9	22.192	1,3	1.574	4,3	68.493	3,49
1994	342	0,9	31.866	1,9	1.254	3,4	52.413	2,68
1995	267	0,7	28.090	1,6	963	2,6	45.871	2,32
1996	286	0,8	28.592	1,7	836	2,3	38.320	1,94
1997	286	0,7	27.422	1,6	1.011	2,6	40.845	1,97
1998	412	1,0	42.642	2,3	1.353	3,3	67.788	3,12
1999	433	1,0	50.533	2,6	1.392	3,2	68.871	3,04
2000	345	0,8	35.210	1,8	1.211	2,6	49.951	2,11
2001	402	0,8	41.039	2,0	1.272	2,6	55.166	2,22
2002	390	0,8	31.686	1,6	1.402	2,8	63.360	2,59
2003	335	0,7	32.778	1,6	1.310	2,7	55.722	2,25
2004	365	0,7	37.154	1,8	1.336	2,7	57.261	2,25
2005	394	0,8	33.996	1,5	1.918	3,7	64.403	2,39
2006	407	0,8	28.080	1,3	1.532	3,0	46.280	1,70
2007	363	0,7	33.998	1,5	1.186	2,2	46.968	1,67

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

The difference between the two measurement criteria, employment and turnover for high-growth enterprises, shortens over time (Figures 4 and 5), as the proportion of firms' turnover meet the share of employment and possibly gets more in line with that of the remaining firms with more than 10 employees, hinting at a possible decrease of turnover by employee and profitability in high-growth firms over time. %. For Gazelles, it also happens, to a lesser extent for employment, but it is not so clear in terms of the convergence between the two criteria for the number. Over the period, the proportion of Gazelles by employment is kept around 30% of that by turnover.

In 1990, the share of high-growth according to employment criteria was 17% of those accounted with the turnover criteria, whereas in 2007 this share increased to 31%. Put differently, in 2007,

there were relatively more high-growth firms accounted by the employment criteria than 17 years ago, although this is due to a particular rise of its number in 2007 (and not verified for the previous years). Its share on the population of firms with more than 10 employees has however decreased when compared with 1990 (3%), although keeping a somehow stable performance since 2003. The fact that the growth in contracting employees might accompany the growth in turnover more closely than in the past has still to be looked at in this research<sup>19</sup>.

While the decreasing share of high-growth firms (turnover definition) in the population is sustained throughout the whole period (24,6% to 9,5%), (Figure 7), the pattern of high-growth firms by employment shows considerable variation over time (Figure 6).

The worst performing period is the aftermath of the 1993 crisis where economic conditions deteriorated severely, due to a widespread international economic crisis and speculative currency attacks within the European Monetary System. In 1993, Portugal's GDP growth was negative. Firms with over fifty employees were particularly hit (Sarmiento and Nunes, 2012a).

In the following year, the overall rate of growth in the number of employer enterprise firms was the highest of all the 1987-2007 period, in particular for the size class of over 250 employees, coinciding with the start of the second community support framework (QCAII). However, the amount of firms verifying such an amount of growth as required either to be considered a high-growth or gazelle kept on decreasing until 1995 (by the employment definition) and 1996 (by the turnover definition). In fact, 1995 is the only year where the number of high-growth dropped below the 4.000 threshold and gazelles below 1.000. It is precisely 3 years after the peak of the crisis in 1993. That is, during the following 3 years, many firms could not add up an annualised average growth of 20% (in employment and in turnover) and thus classify in these categories. Gazelles are in a similar circumstance, but they seem to perform the worst during the three year period of 1994 to 1996, dropping below 300 according to the employment criteria.

During the last half of the 1990s, general economic conditions were more favourable, and Portugal experienced a period of economic growth. High-growth firms, as well as gazelles, showed a sustained growth path in both number and amount of employees. The start of the millennium brought about a period of economic deterioration which contributed to the slowdown in Portuguese domestic demand, leading to a sharp deceleration of activity. The readjustment process of balance sheets among households and firms in order to correct economic imbalances was partly related to general cyclical developments in the European economy but also to downward adjustment of expenditure patterns, bringing spending more in line with incomes and revenues. Although this coincided largely to what has happening in the European Union (EU) economy at large, the amplitude of the downsizing was more pronounced in Portugal. Noticeably, the number of high-growth firms started to decrease after 2001, as they were not able to sustain such a rhythm of growth (a high-firm in 2001 had to sustain 20% growth p.a. from 1999-2001), and most probably could have been excluded due to not complying with the growth requirement following 2000. In terms of employment, this is revealed only after 2002, perhaps because in 2000 firms had not yet adjustment employment to the new macroeconomic conditions.

### 3.2 Employment

A number of studies maintain that high-growth firms account for a disproportionately large part of net job creation (Schreyer, 2000; OECD, 2002; NESTA, 2009a and 2009b). It is also well documented in the literature the disproportionate contribution of young and small firms to the generation of employment and earnings, to productivity growth and thus to overall wealth creation (Storey, 1994; Birch *et al.*, 1995; Acs and Mueller, 2008; Praag and Versloot, 2008; Henrekson and Johanson, 2010).

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<sup>19</sup> Some evidence has pointed out that growth is first consummated in terms of turnover and only later on feeds into employment (from the nominal to the real side the economy). From the visible fluctuations of our data, we have no account of that phenomenon, but it is an issue worth looking at in subsequent work.

In this section, we will approach high-growth and gazelle employment, making use of an array of indicators, common to these types of studies.

For the count of job creation several distinctions have to be made, namely flows of gross job creations and losses must be distinguished from net job creation (the difference between job gains and job losses). Although obtaining net job creation is commonly the target, information on gross flows can also be of interest to policy, as simultaneous job creation and destruction shows evidence of labour market churning, which is part of the dynamic process of market adjustment.

Secondly, in net job creation, measures are needed which reflect the aggregate level, but also the relative importance of firm characteristics, and the role played by groups of firms, as net job creation may differ substantially across levels and collections of firms. For instance, even though total employment may decrease, certain groups of firms (e.g. large ones) may enjoy net job growth. One of the most common measures is net job creation rates for different firm characteristics, notably different size classes to account for the contribution of small and large firms.

Thirdly, net job creation rates are percentage ratios relating net job gains to the total number employees<sup>20</sup>. However, a large job creation rate does not necessarily mean a large absolute contribution to the total number of net jobs created<sup>21</sup>. Thus, a size class with a small share of initial employment but on the other hand which displays a high net job creation rate, may still have a minor impact on overall job creation, whereas a size class that accounts for a large share of employment may contribute more substantially to overall net job creation, even with a small rate of net job creation.

It might be useful to consider more in detail the way in which high-growth firms are measured in the methodology we adopted. In this paper, we are not measuring job creation in 3 year spans and thus accounting for employment growth that each single firm had from its first to its third year of growth. Clearly, this count will most often be positive and large, as the best performing firms are being measured precisely during the periods they perform the best, leading to the conclusion that high-growth firms are responsible for a much greater share in employment than in the total amount of enterprises.

In our methodology, as reported in the methodology section, firms have to comply with a 3 year annualised average growth (in either employment or turnover) of 20%, in order to be classified as a high-growth and this type of measurement is repeated each year. After being classified as a high-growth in a given year, if in the following year that particular firm does not add up to that amount of annualised growth in the previous 3 years, it is removed from the group of high-growth firms. When a given firm leaves this “group”, it takes away its employees, representing a kind of “job destruction”, which will only be cancelled out if newly incoming high-growth firms that same year bring along an equivalent amount of employees. Thus, net job creation might be negative in a given year, if the amount of employment of excluded high-growth firms (that are not able to sustain that amount of averaged growth that year) is greater than the amount of employment of incoming firms (that were included that year in the new count of high-growth firms). It can also happen if the outgoing firms are on average larger employers than incoming firms. So net job creation results from the combination of the quantity of firms entering and leaving this group of firms each year, with the amount of employment they bring along. Thus, with such an indicator as net job creation, we can have periods of negative job creation, whereby there is an outflow of high-growth firms with a larger average employment than the group of incoming firms.

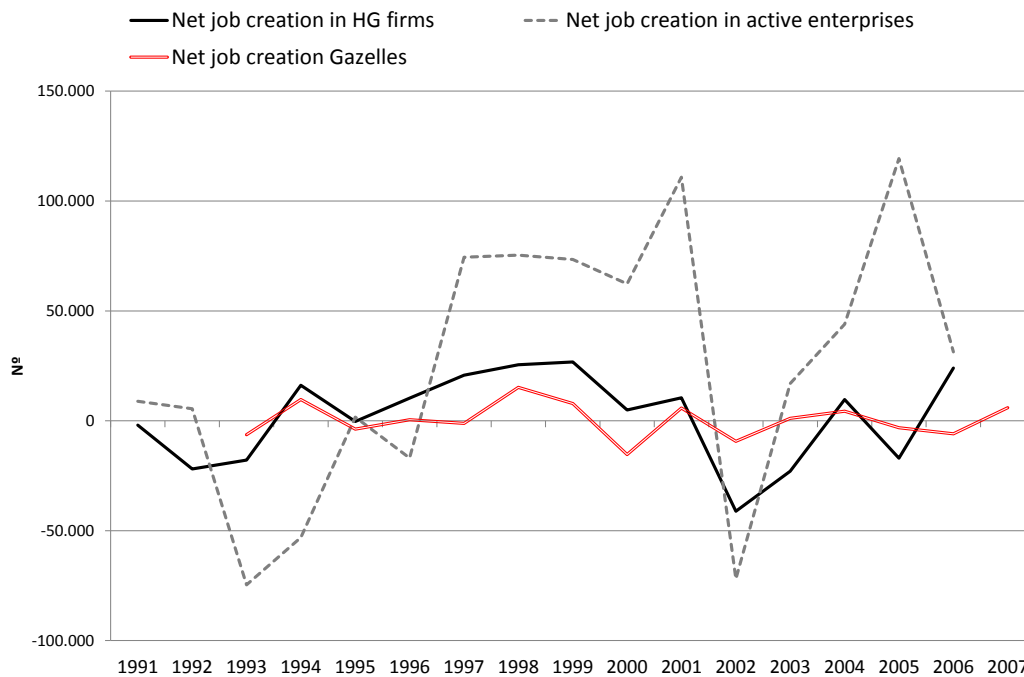
The debate concerning whether it is the rapid growth of a few firms, or the entry of many new firms, that generates employment growth is still being fuelled by new evidence for high-growth firms (Storey, 1994; Davidsson and Delmar, 2006). Henrekson and Johanson (2010) point to a complementarity between these two views, in the framework of gazelles, where employment in the average new firm is as important as the net job contribution of these firms.

<sup>20</sup> In our case, in employer enterprises with more than 10 employees.

<sup>21</sup> As absolute contributions are the product of net job creation rates and the share that a category occupies in total employment.

In Figure 4, we portray net job creation in high-growth and gazelle firms (by employment definition) as compared to that of total economy. We observe it accompanies the major cycles of total economy, but its peaks are more softened, especially for gazelles that seem to suffer from a smaller volatility. Between 1996 and 2001, high-growth net job creation was 98.619 jobs (379.479 for total economy), in comparison to the net destruction 47.392 jobs in the period comprehended between 2002 and 2006 (139.681 for total economy).

In this study we do not provide an account of job creation rates as considered in other publications. The type of calculation of net job creation rates provided by research such as FORA and NESTA's (2008) and NESTA (2009a and 2009b) can be misleading, also given the conclusions and the kind of policy advice they provide. High-growth firms are said to be responsible for most of the job creation in an economy. But this is fact happens due to the way job creation is measured. These studies measure job creation within 3 year spells, accounting for job creation growth as the measurement between the first and third year of this spell for firms which were already selected precisely because they were already growing. It is then that obvious that job creation has to be positive as no job destruction is accounted for when they leave the group of high-growth firms, and substantial, especially if they are composed by large firms.



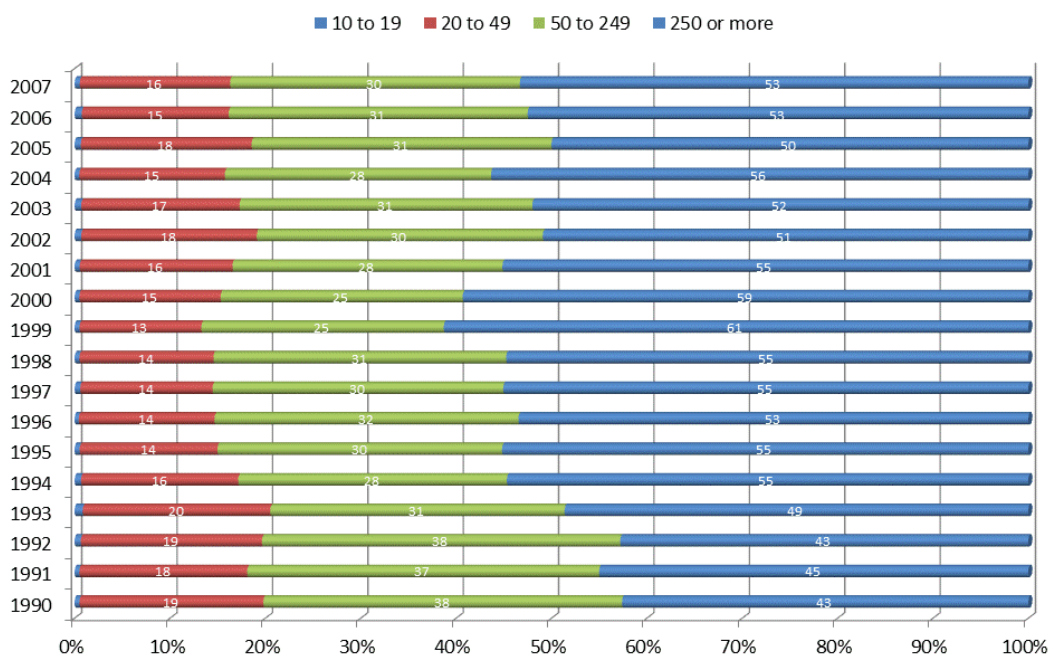
**Figure 4:** Net job creation in high-growth firms and gazelles (employment definition) and in active enterprises with over 10 employees (nº), 1991-2007

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

Note: Job creation here is given by net job creation (difference between job gains and job losses) in any given year.

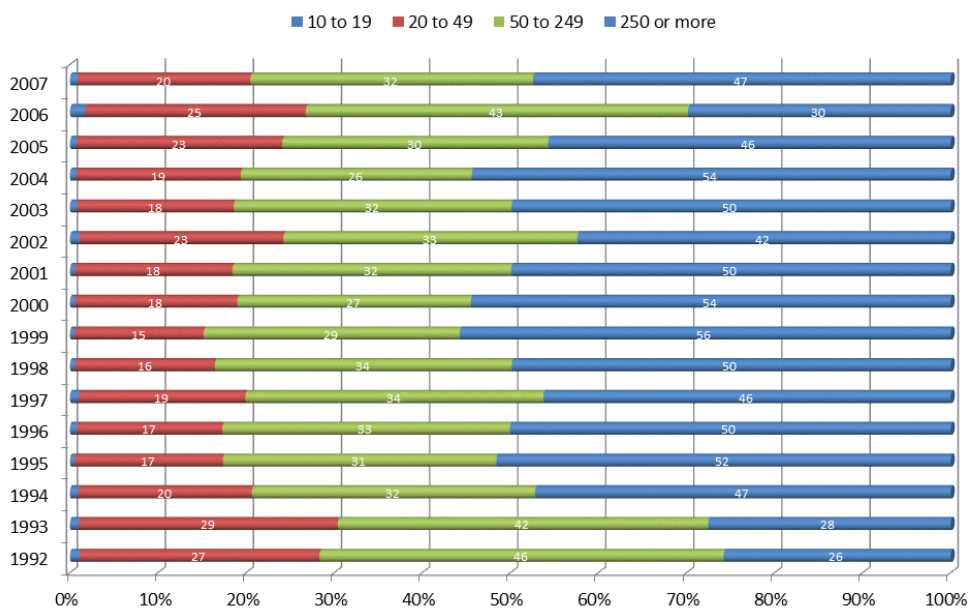
Large high-growth firms generate more than half of employment, on average throughout the period, whereas firms from the 20-49 size class only have a share of 16% (Figure 5). We can observe that high-growth enterprises with 20-49 and 50-249 employees tend to decrease their share in total high-growth employment to large firms (+10 p.p. from 1990 to 2007).

Gazelles' distribution of employment among different size classes portray a larger volatility over time (Figure 6). Firms in the largest size class have over 50% of employment in most years, but they only average 45% over the period. However, gazelles' employment in the 50-249 and 20-49 size class in particular, is relatively larger than that of high-growth firms'.



**Figure 5:** Share of high-growth employment in high-growth enterprises (employment definition), by size class

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.



**Figure 6:** Share of employment in gazelles (employment definition), by size class

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.



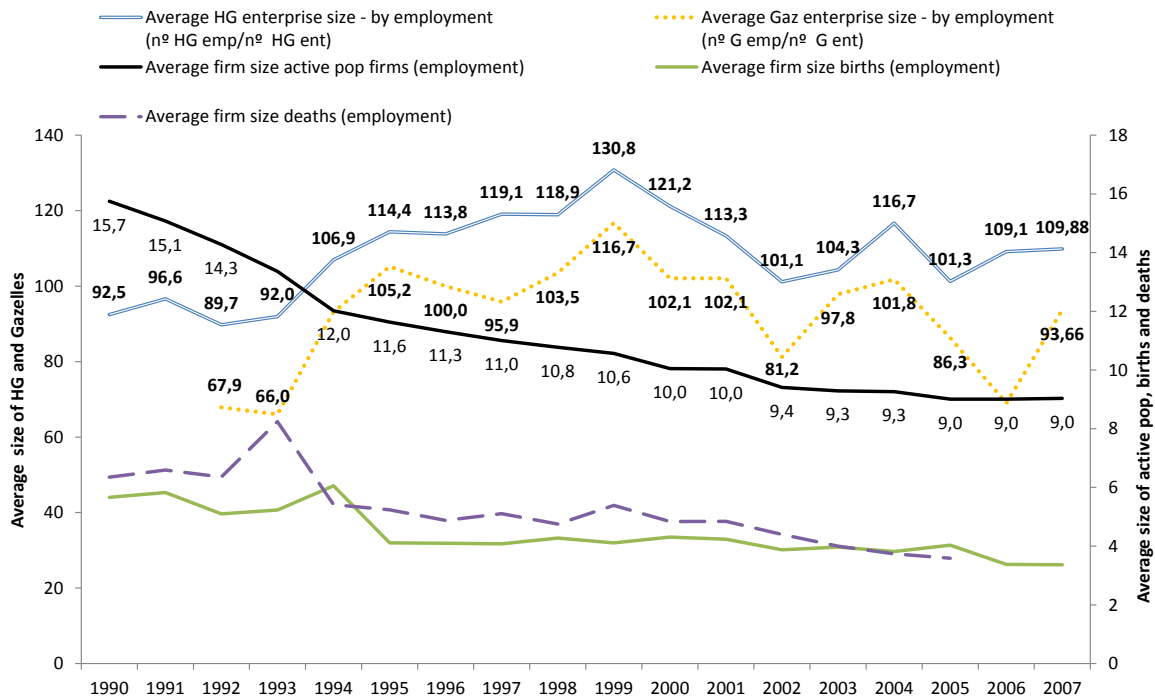
### 3.3 Firm dimension

During the last twenty years, Portugal has experienced a growing number of smaller sized enterprises and a decrease of firm size across all main sectors, for both observed entrants and exiters in the market (Sarmento and Nunes, 2012b). Although the increasing predominance of small firms in the enterprise population is not unique to Portugal (Eurostat, 2009; OECD, 2008; Cabral, 2007; Bartelsman *et al.*, 2005), the country presents sharp evidence of what can be roughly called as a smaller firm dominance “trend”. In fact, this is observed for enterprise births and deaths, for all regions, broad sectors and most size classes (Sarmento and Nunes, 2012b). The combination of firm demography factors, such as the smaller nascent firms, with structural effects, such as a service sector dominance (whose firms have a smaller average size than manufacturing), has caused an overall decline in average firm size, reflecting the influence of specialization effects towards industries with a smaller efficient scale, but particularly of within sector effects. Sarmento and Nunes (2012b) shift-share decomposition of the determinants of firm size reveal that within sector effects have played a more important role in explaining differences in firm size across the period 1995-2006 in Portugal. Even controlling for sectoral specialisation, intrinsic characteristics of sectors seem to be a fundamental determinant of its size structure.

High-growth and gazelle firms have kept an average size significantly higher than the average employer enterprise in Portugal, whose size decreased consistently over time, from 16 employees in 1990 to 9 in 2007 (Figure 7).

In the aftermath of the 1993 economic crisis, the average high-growth and gazelle firms still managed to increase in size up to 1999 (92 to 131 and 66 to 117 employees, respectively). But this was not sustained when the macroeconomic conditions deteriorated during the following years. From 2000, the slowdown in overall business demography dynamics in Portugal is rather compelling (Sarmento and Nunes, 2012a) and this also shows in gazelle and high-growth dynamics and average size evolution over the period.

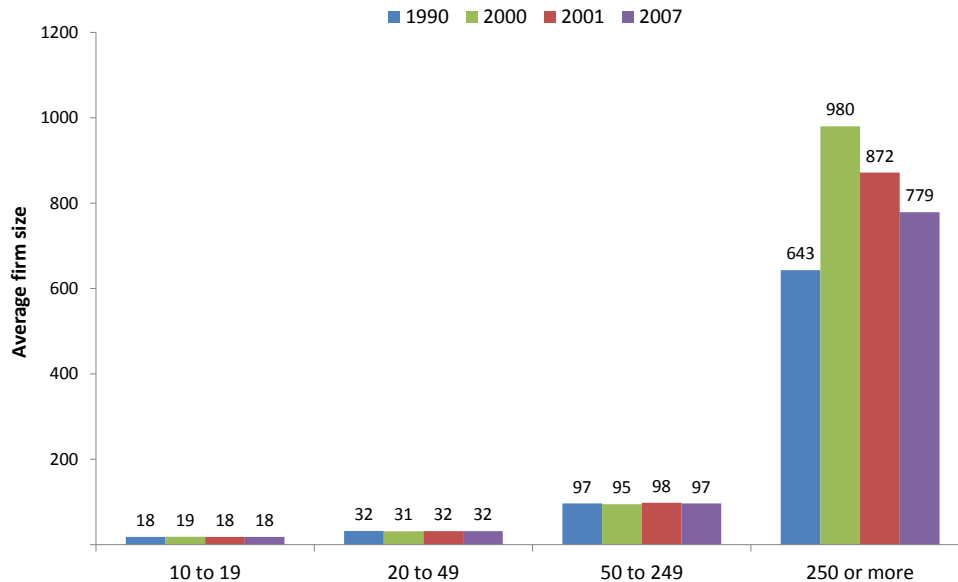
Notwithstanding the unfavourable economic conditions during the 2000s, a high-growth firm averaged 110 employees and a gazelle 94 in 2007, a higher size than at the start of the 1990s. The average high-growth firm is also larger than a gazelle by 18 employees, on average, throughout the period.



**Figure 7: Average firm size of high-growth and gazelle firms (employment definition) and total active population, births and deaths of employer enterprises**

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

According to Figure 8, there is little variation in the share of high-growth firms by firm size, except for the largest size class, where firm size seems to have been decreasing since 2000.

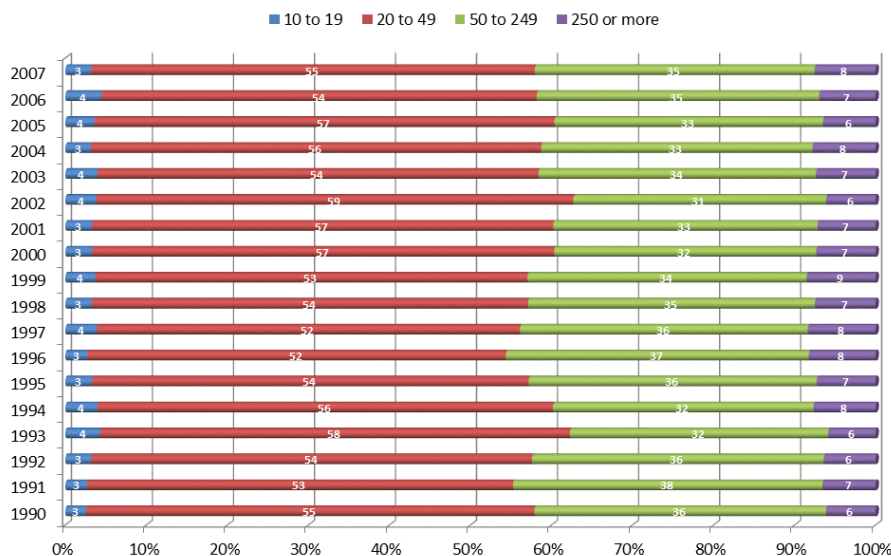


**Figure 8: Average firm size of high-growth enterprises (employment definition) by size class**

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

Three-fifths (58%) of high-growth firms (employment definition) employed fewer than 50 employees on average during the period, with 3% employing between 10 and 19 people (Figure 9). More than half of high-growth firms (employment definition) belong to the 20-49 size class, whereas only 7% (on average over the period) are large firms.

When we calculate the proportion of high-growth firms in each employment size category we find very little variation over time, beyond some small fluctuations related to the business cycle (it peaks in 2000 and decreases from then on). The same happens with gazelles though the variance is greater in the greatest size class (+250). There is therefore little variation in the share of high-growth firms by firm size.

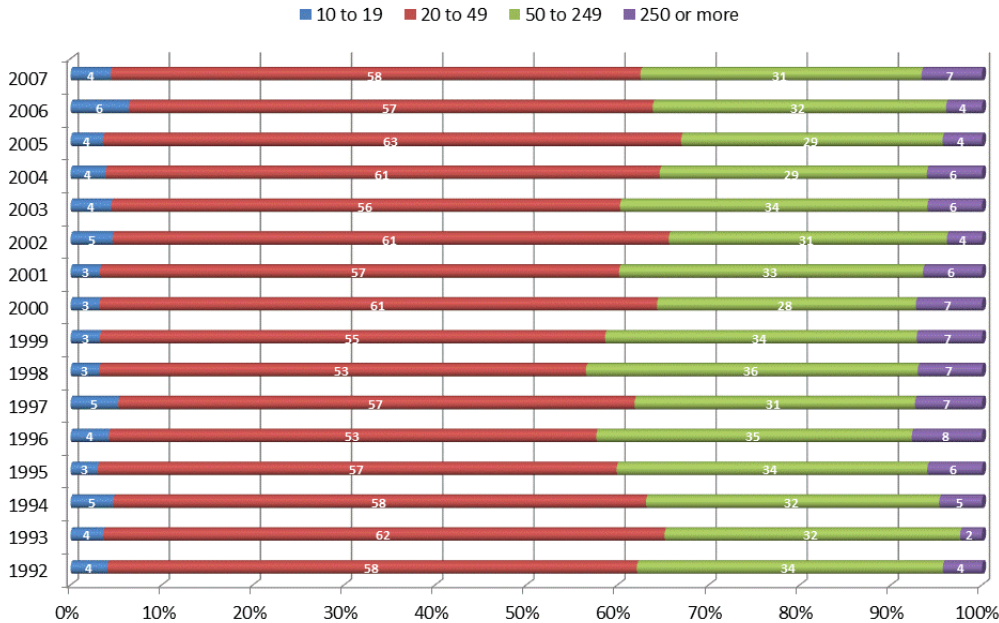




**Figure 9: Share of high-growth enterprises (employment definition), by size class**

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

Similarly to high-growth, the majority of gazelles are SMEs, belonging to the 20 to 49 employees size class. A smaller share though, 6% on average throughout the period, are large firms. The composition of size-classes for gazelles is also stable over time (Figure 10).



**Figure 10: Share of Gazelles (employment definition), by size class**

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

Enterprises in general exhibit large heterogeneity in size, industry affiliation and realized growth performance. In the following sections, we will approach these dimensions for high-growth and gazelle firms.

#### 4. HIGH-GROWTH AND GAZELLES BY INDUSTRY AFFILIATION

In Portugal, the industrial structure is still segmented and characterized by a large primary sector, despite the existence of a number of modern productive sectors. The country still exhibits a considerable dichotomy between a minority of small scale modern activities, which are highly productive and a majority of low skill and low productivity sectors. There is also substantial degree of heterogeneity between firms, even within the same sectors (OECD, 2010; Sarmiento and Nunes, 2012b).

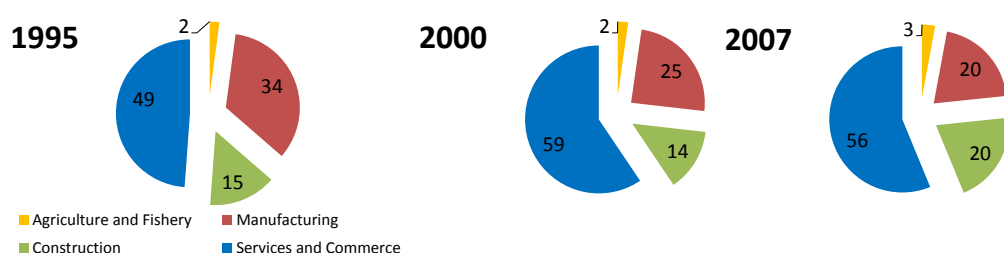
Over the period 1987-2007, industrial structure has evolved towards the reinforcement of the service sector in the economy and the decline of the manufacturing sector. According to *Quadros de Pessoal* dataset, the service sector leads both in the number, share of employer enterprises and employment, mainly after 2001. In 2006, the service sector was responsible for 72% of all new ventures. Moreover, 62% of total employment was generated by start-ups in services, which is higher than service sector's share in total employment (Sarmiento and Nunes, 2012a).

As seen before, the application of the two different measurement definitions (employment and turnover) for the calculation of high-growth and gazelle firms often leads to different results and a note should be specifically made on the sectoral approach. Services tend to be, by their own nature, more prevalent if considered according to the employment criteria, as they are relatively more

labour intensive, whereas manufacturing tends to be more enhanced when considered through the perspective of the turnover definition.

In Portugal, high-growth firms and gazelles are emerging considerably more in service and commerce sectors. In Figures 11 and 12, where they are portrayed according to the employment criteria, we observe a clear shift in the distribution of high-growth firms over the period of analysis, away from manufacturing (34% in 1995, down to 20% in 2007) to services and commerce (49% in 1995 up to 56% in 2007), as well as construction (15% in 1995, up to 20% in 2007). A similar pattern is observed for gazelles, although the drop in manufacturing sector is higher, it decreases by almost a half in 13 years (42% in 1995 to 20% in 2007). A significant number of high-growth firms in Portugal operate in the construction sector, which has been particularly hit by variations in the business cycle.

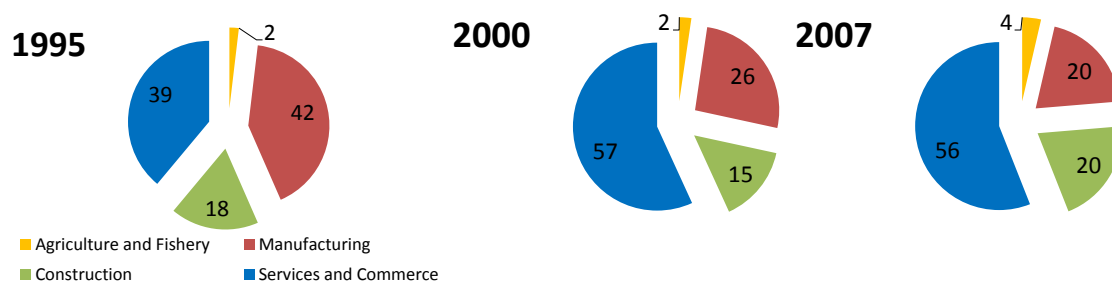
This sectoral rebalancing reflects trends already existing for the overall population of employer enterprises (Sarmiento and Nunes, 2012a) and are not totally new to other European countries, even if at a lesser extent.



**Figure 11:** Share of high-growth enterprises (employment definition), %

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

Note: One letter level of the statistical classification, NACE, Rev. 2.1.



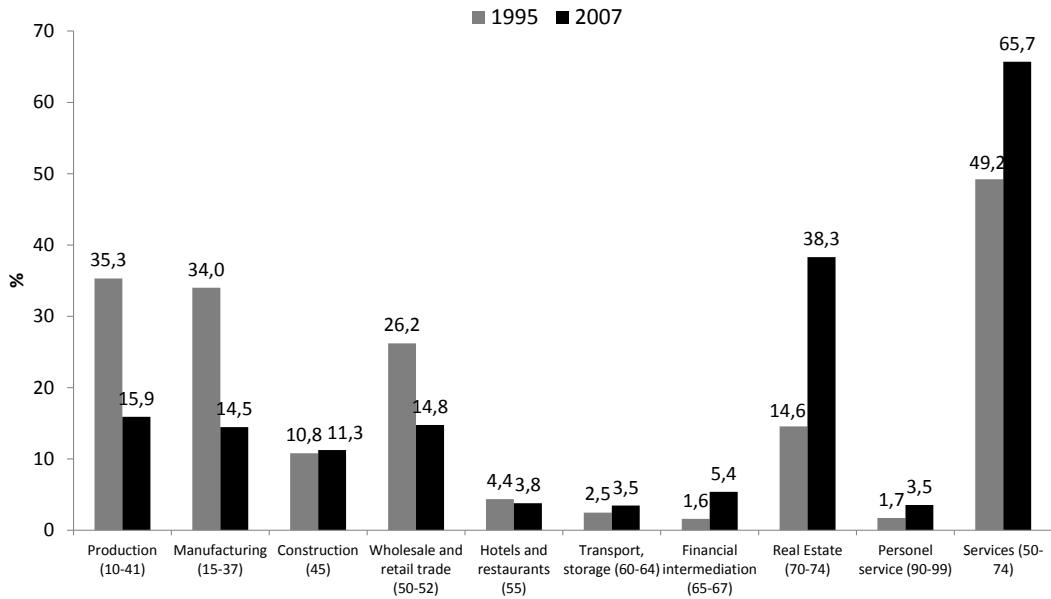
**Figure 12:** Share of Gazelle Enterprises (employment definition), %

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

Note: One letter level of the statistical classification, NACE, Rev. 2.1.

Comparing sectoral employment in 1995<sup>22</sup> and 2007 in detail, we observe that general high-growth firms' employment in production activities, such as agriculture and manufacturing decrease their share in employment, construction increases slightly (11,3% in 2007) and services in general, and real estate in particular, increase considerably (49,2% to 65,7% and 14,6% to 38,3% from 1995 to 2007, respectively). Financial services, which only represented 1,6% of total employment in 1995 increased more than threefold to 5,4%, by 2007 (Figure 13).

<sup>22</sup> In analyzing the sector dimension, we only take into account the period from 1995 to 2007. This has to do with the start of European System of Accounts (ESA) in 1995 and to compatibility issues introduced by the new Portuguese Classification of Economic Activities Revision 3, implemented in 2007.



**Figure 13:** Sector decomposition of employment in high-growth firms (by employment)

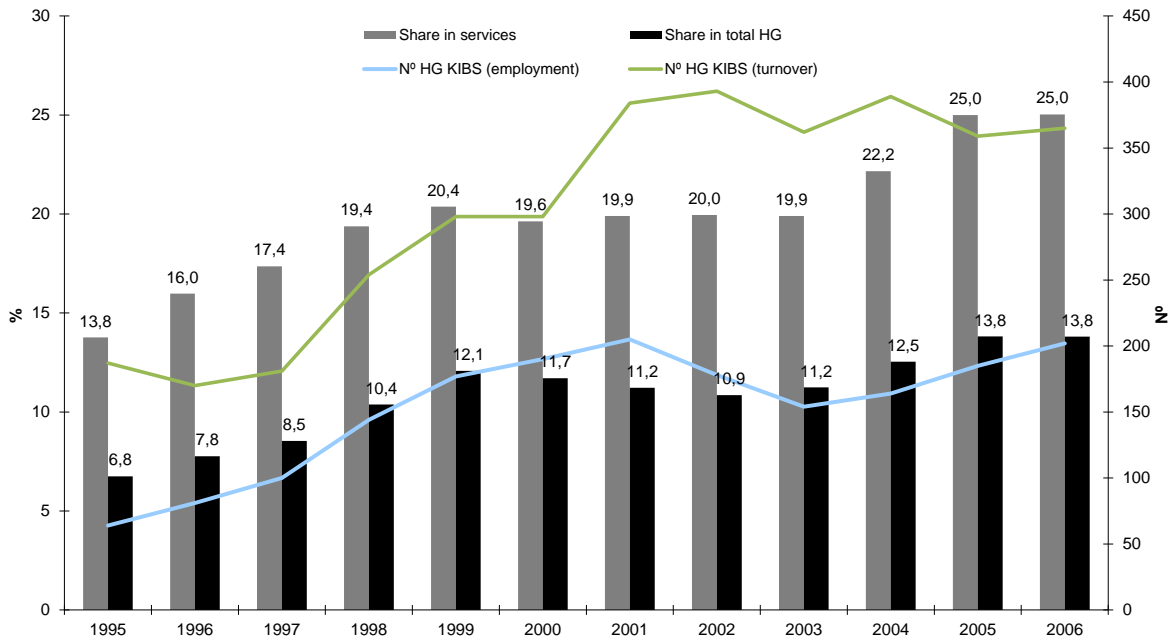
Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

#### 4.1. Knowledge Intensive Business Services

Knowledge Intensive Business Services (KIBS) are a subset of business services which have in general displayed more rapid and sustained growth rates than those of other economic sectors (Mamede *et al.*, 2007; Arundel *et al.*, 2007). Based on a larger contribution of services to the economy, KIBS are likely to become one of the main factors of potential growth within the European Union (EU). Its economic weight has been increasing in many countries (EC, 2007) and its role in value added, employment and even trade has therefore come under scrutiny from national authorities. Its importance grows as they become increasingly influential sources for the generation of new knowledge, the performance of organisations that are their clients and for the dynamism of the whole economy. But KIBS<sup>23</sup> have attracted policy interest not only because of its rapid rates of growth, but mostly because they are a highly innovative sub-sector within services, especially due to its role as inductors of innovation of firms in other sectors and as facilitators of the innovation process in the economy (Kubota, 2009; Arundel *et al.*, 2007; Howells, 2006; Hertog, 2000; Hargadon, 1998; Miles *et al.*, 1995). KIBS are also considered to contribute positively to the increase in productivity (Katsoulacos and Tsounis, 2000), through their three main interaction functions, as facilitators, carriers and sources (Kubota, 2009). Furthermore, their almost symbiotic relationship with client firms, often converts them into co-producers of innovation (Hertog, 2000).

Despite their higher growth and better survival performance, most knowledge-based firms in Portugal do not qualify either as high-growth or gazelles. High-growth KIBS firms are less than 2% of total KIBS (by turnover) and less than 1,2% (employment definition). Gazelle KIBS present more volatility throughout time and correspond to a lower amount of total KIBS (below 1% over the period 1995 to 2006 in both turnover and employment terms).

23 KIBS firms may show similar innovation patterns with manufacturing firms. This is supported by the fact that the R&D intensity of this type of services is above the average of manufacturing companies (EC, 2007).

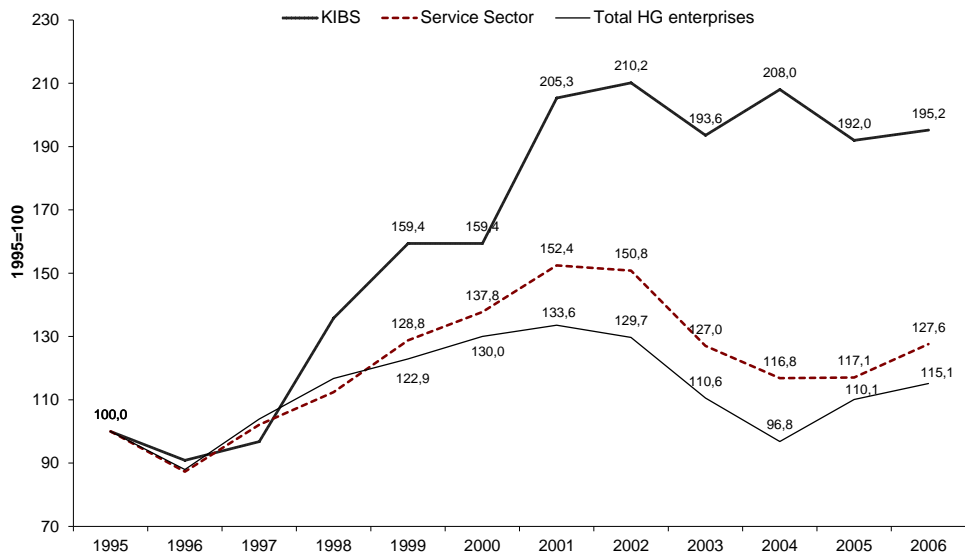


**Figure 14:** High-growth KIBS share in total high-growth and services firms (%), and number measured by employment and by turnover

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

Note: KIBS are defined as NACE 72 to 74.

Still, evidence points to the more prevalent emergence of high-growth firms in knowledge-intensive sectors than at both the broad service sector, showing a widening gap over time, particularly in terms of turnover (Figures 15 and 16).

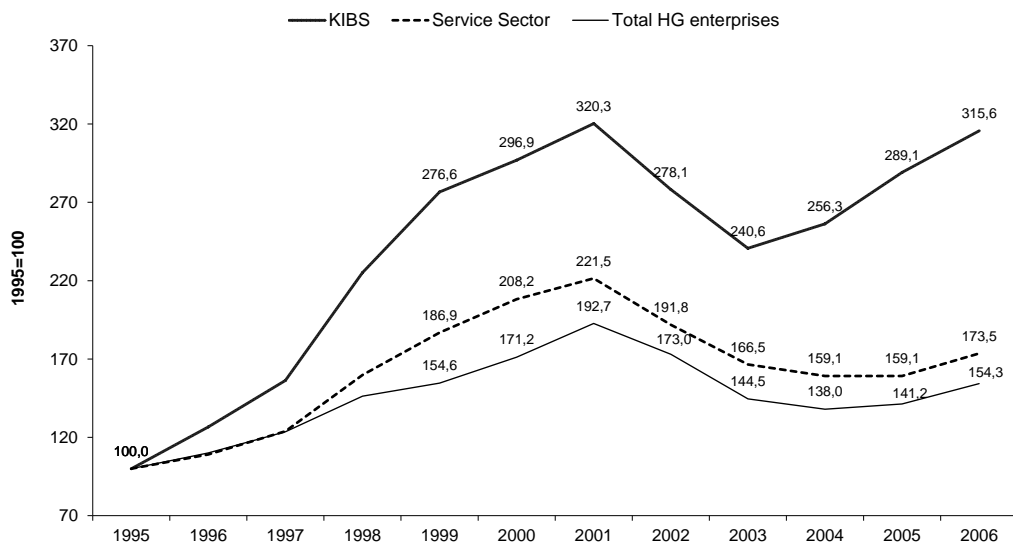


**Figure 15:** Growth of high-growth employer enterprises (turnover definition), disaggregated into KIBS, service sector and total high-growth enterprises (1995=100)

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

Note: KIBS are defined as NACE 72 to 74.

This analysis also reveals that knowledge-intensive high-growth firms have been performing better than both the broad service sector and the overall population of high-growth enterprises in terms of the rate of growth of employment and number of firms (Figures 16 and 17).

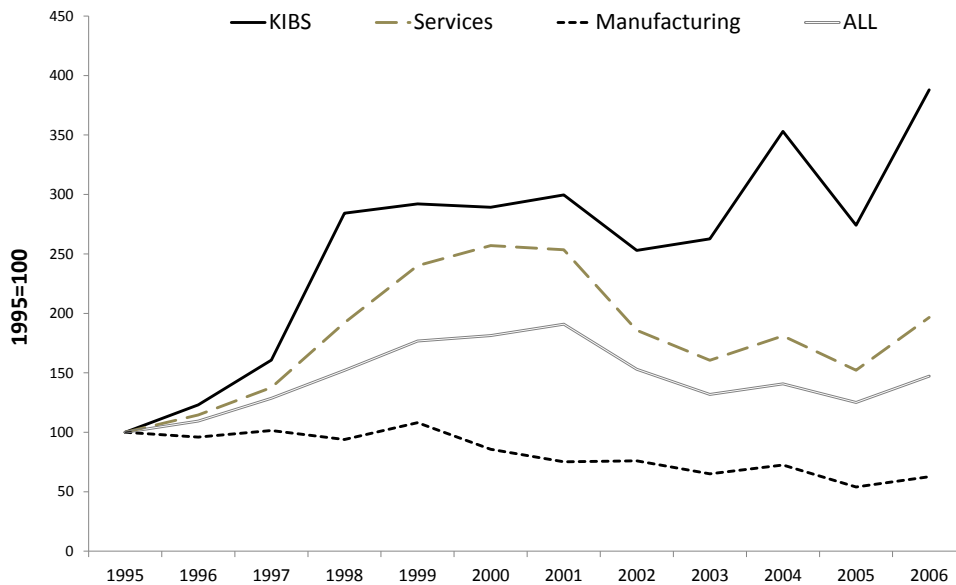


**Figure 16:** Growth of high-growth employer enterprises (employment definition), disaggregated into KIBS, service sector and total high-growth enterprises (1995=100)

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

Note: KIBS are defined as NACE 72 to 74.

When comparing employment in KIBS with other sectors over time, we again verify its better faster growth rate, especially relatively to manufacturing, which shows a sustained decrease over time.



**Figure 17:** Growth of employment in high-growth employer enterprises (employment definition), disaggregated into KIBS, service and manufacturing sector and total high-growth enterprises (1995=100)

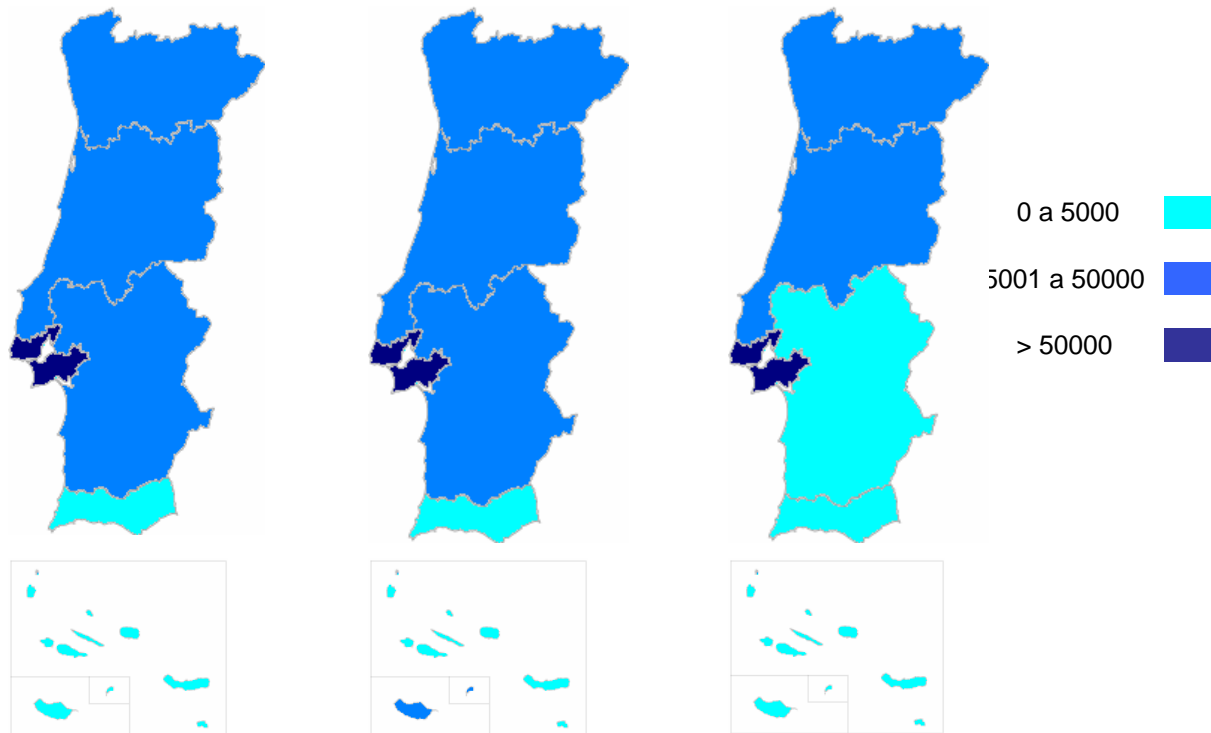
Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

Note: KIBS are defined as NACE 72 to 74.

## 5. REGIONAL OUTLOOK

In this section, we will examine the regional distribution of high-growth and gazelle enterprises by NUT II regions.

We find high-growth firms in every region of Portugal, but to different degrees. In absolute terms, the region which concentrates over 46% of high-growth firms in 2007 (by both criteria), is the capital region of Lisbon. Over time, both high-growth and gazelles have become more concentrated in the Lisbon area, becoming less represented in almost every Portuguese NUT II region, in particular in Centro, Algarve, and Alentejo (Figures 19 and 20). This contrast becomes sharper when the employment definition is used. The north/south dichotomy seems to have widened over time (Figure 18).



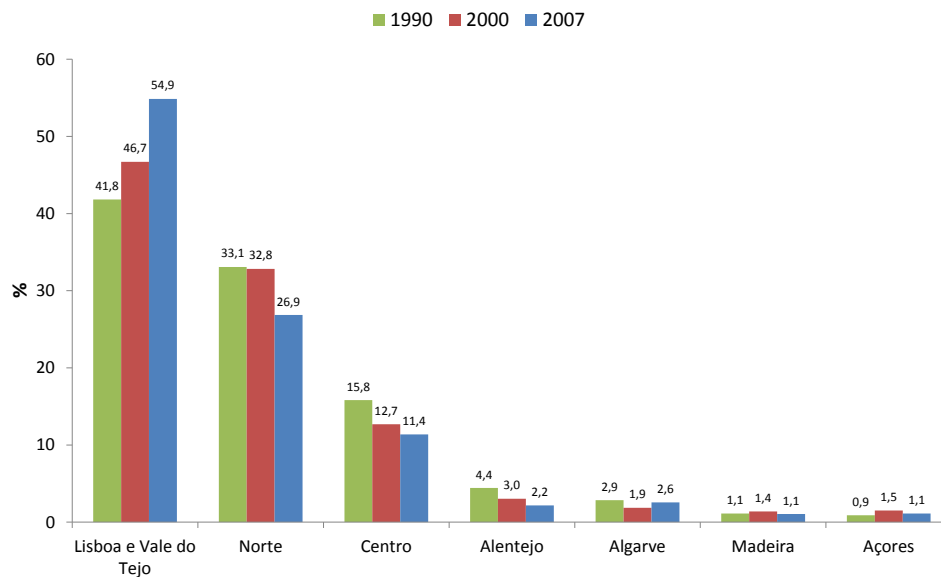
**Figure 18:** Number of employees in high-growth firms according to the employment criteria, by NUTII (1997, 2004 e 2007)

Source: Own elaboration.

In 1990, the share of high-growth firms in the NUT II region of Lisbon, according to the employment definition (41,8%) was close, though smaller, of that accounted for with the turnover criteria (42,2%). After 17 years, this gap widens substantially and the high-growth count with the employment definition is now 8,5 p.p. larger, indicating that in Lisbon there are comparatively more firms growing faster in employment than in turnover. This might be caused by increasing specialisation in services, which causes high-growth firms to become relatively more employment intensive. Lisbon concentrates various public sector administrations and is particularly intensive in services such as financial and real estate activities. Furthermore, we must have caution in interpreting these results, as this might also be due substantially to the fact that a considerable amount of firms' headquarters are located in the Lisbon area.

On the other hand, the loss of prevalence of high-growth firms in the Norte region is quite clear. In 1990, 33% of high-growth firms (by employment) and a greater amount by turnover (35,8%), emerged in this region due to the predominance of manufacturing activities (the turnover definition tends to heighten the manufacturing sector). In 2007, after 17 years, Norte had lost 6,2 p.p. of its high-growth firms according to the employment criteria, and more in terms of turnover (-6,6 p.p.),

ending up with a total share of 27% and 29,2% (Figures 19 and 20). More peripheral regions, such as the Archipelagos of Madeira and Açores, have not experienced significant changes in the share of high-growth firms between 1990 and 2007 when accounted to the employment definition, although with the turnover criteria they both increase their high-growth share by 1,2 p.p..



**Figure 19:** Distribution of high-growth firms (employment criteria) by NUTII regions

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

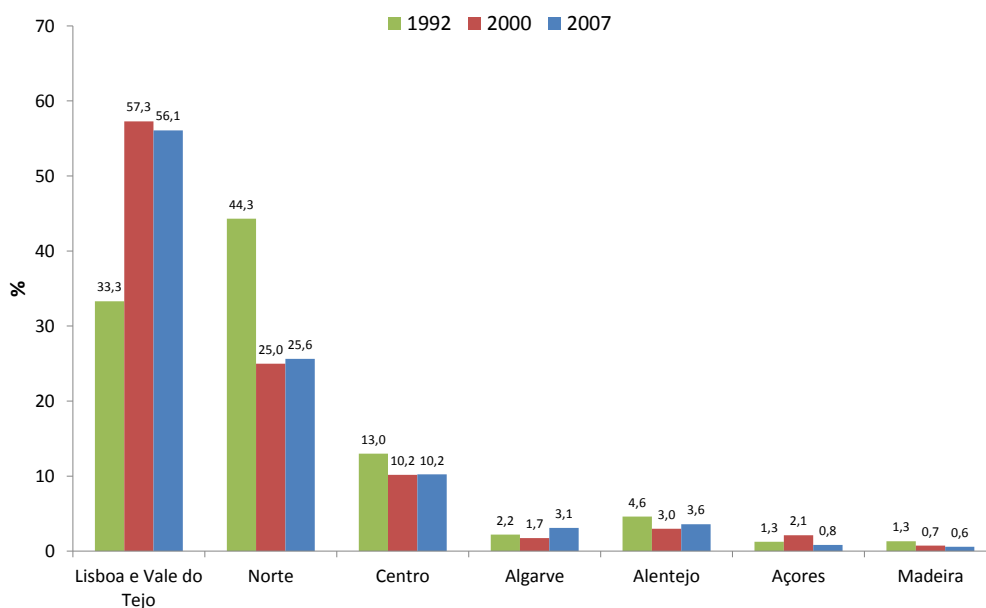
Now turning to gazelles, an immediately visible fact is that Norte lost the prevalence as the region with most gazelles in the country at the start of the 1990s (Figure 21). In 1992, Norte had 44,3% of gazelles according to employment definition and 52,3% according to the turnover.

By 2000, this share reduced to a quarter, by the employment criteria, and to 35,2%, according to the turnover definition. After EU's accession in 1986, the manufacturing sector, in which Norte is specialised, was severely affected by the restructuring of many firms. By 2007, there are signs of a slight recovery in this regions quota of gazelles.

Another aspect worth highlighting is that the share lost by the Norte, seems to have moved south, to the Lisbon area, where the share of the employment criteria surpasses that of turnover, indicating a higher concentration of services in this region (56,1% by employment and 39,3% by turnover, a 16,8 p.p. of difference, twice as much as in high-growth firms).

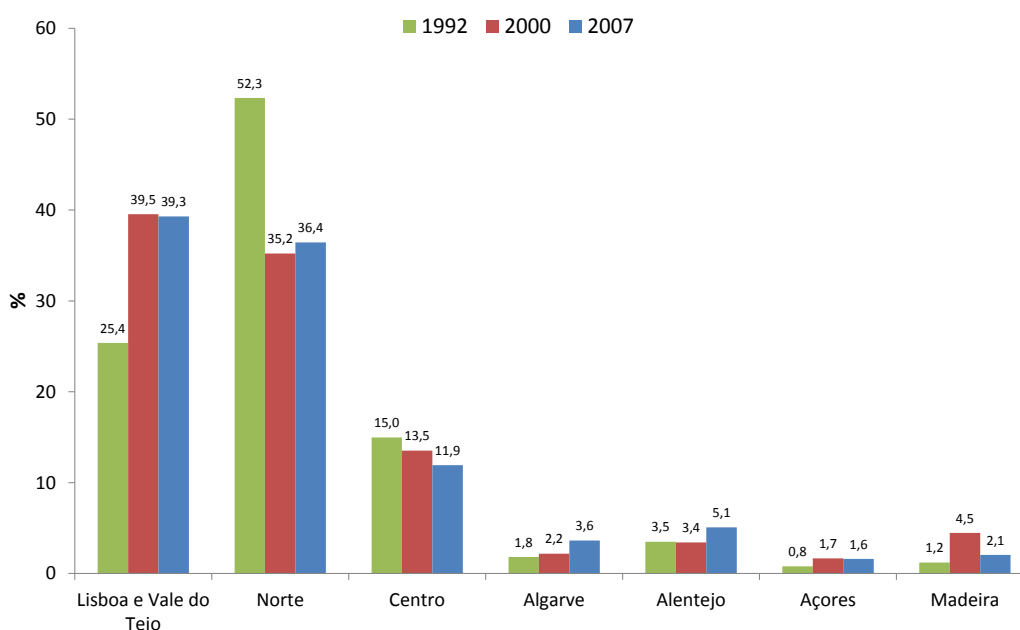
Algarve is the sole region that manages to recover slightly its share of gazelles in 2007 (2,6%, by employment), whereas Centro faces loses throughout the period.





**Figure 20:** Distribution of gazelles (employment criteria) by NUTII regions

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

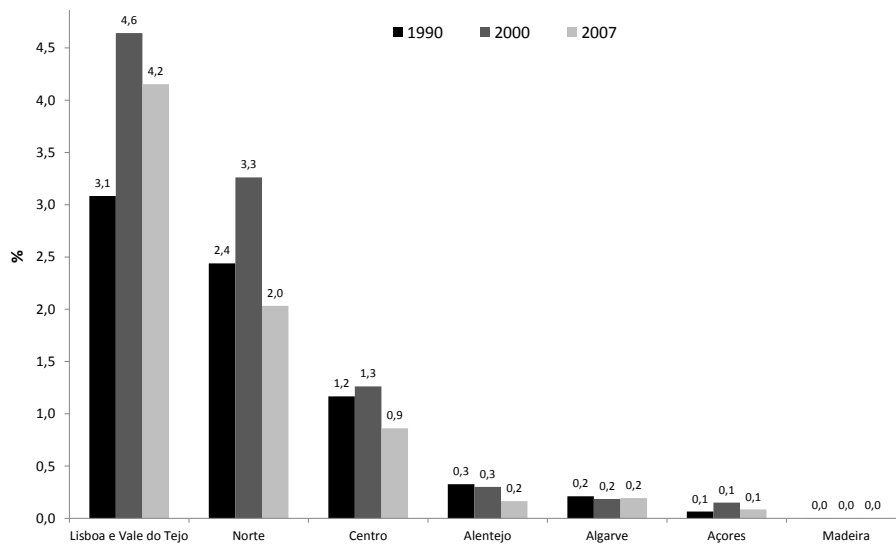


**Figure 21:** Distribution of gazelles (turnover criteria) by NUTII regions

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

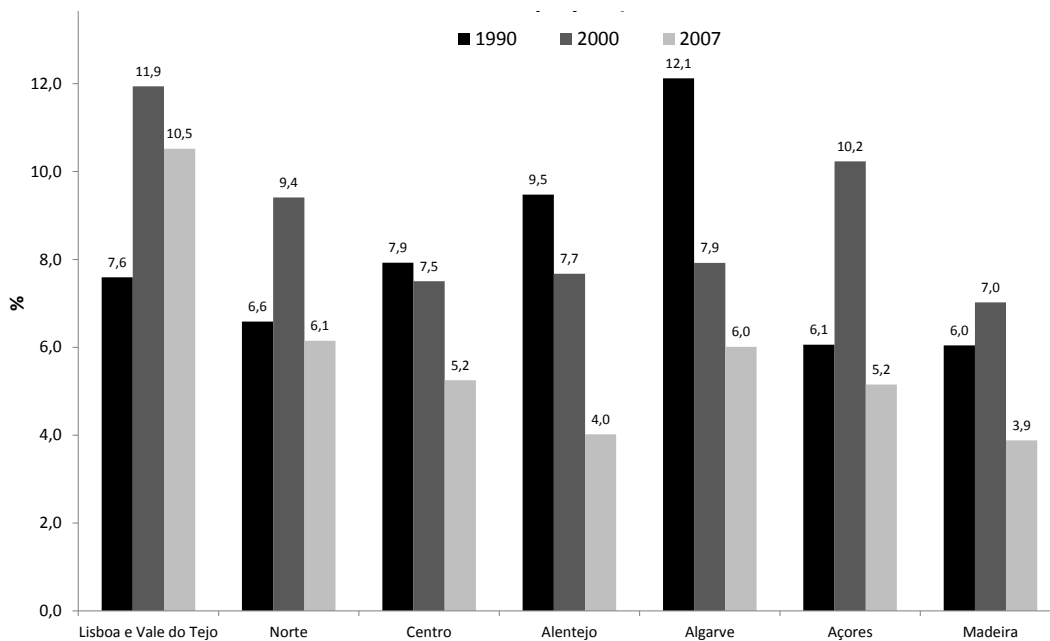
The perspective of high-growth and gazelle's importance on regional employment also confirms the loss of importance of these types of firms for all regions, except that of Lisbon (Figures 22 and 23). Within the region's employment, Lisbon displays a higher proportion of high-growth firms' in 2007 (10,5%) than it had in 1990 (7,6%). Norte ended up a smaller share of high-growth employment in the region in 2007 (6,6% in 1990 to 6,1%). Comparing 2007 shares, employment in high-growth firms in Lisbon (10,5%) is almost twice as much as that verified in Norte (6,1%) and in the Algarve (6%). On the other hand, in all other regions, high-growth firms' share of regional employment has reduced by almost a half of its share in 1990 (Algarve, -6,1 p.p.; Açores, -5 p.p.; Madeira, -2,1 p.p.; Alentejo, -5,5 p.p.; Centro, -2,7 p.p.).

Gazelles' employment representativeness is less than 1% of total employment in all regions in 2007. Considering its share in regional employment is increases slightly, but is still quite modest in every region, not overcoming 2,1% in 2007.



**Figure 22:** Distribution of high-growth employment (employment definition) in total employment in enterprises with over 10 employees by NUT II regions

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.



**Figure 23:** Distribution of high-growth employment (employment definition) in regional employment (enterprises with over 10 employees) by NUT II regions

Source: Own calculations, based on "Quadros de Pessoal", GEP, Ministério do Trabalho e da Solidariedade Social and the OECD/Eurostat's (2007) methodology.

## 6. A NOTE ON SURVIVAL OF HIGH-GROWTH FIRMS AND GAZELLES

Portuguese firms suffer from survival problems, particularly when compared to their European counterparts, which is also a reflection of the enduring lack of competitiveness of the Portuguese economy. This has been often been associated with the growth of the small sector, the decreasing

average size of employer enterprises and the servicisation of the economy (Sarmiento and Nunes, 2012a and 2012b).

In Portugal, the estimated median duration of a new born enterprise lies between 5 and 6 years (Nunes and Sarmiento, 2012), while in other countries, such as the US, UK, Germany, Italy, and Spain the maximum of the unconditional hazard function is reached before the sixth year (Wagner, 1994; Audretsch *et al.*, 1999; Bartelsman *et al.*, 2005 ; Bhattacharjee, 2005 ; López-Garcia and Puente, 2006). It is noticeable that Portuguese firms keep on failing for a longer period, before the hazard rate<sup>24</sup> starts declining.

Firm's size has been found of extreme importance in determining the probability of survival of Portuguese firms (Geroski *et al.*, 2010; Mata and Portugal, 1994). There is a significant relationship between size and chance of survival particularly for new start-ups, who face the greatest uncertainty regarding market conditions and for firms in the service sector. Moreover, at the sectoral level firms in the construction sector exhibit the highest risk of failure, while firms in the service sector display the highest survival rates (Nunes and Sarmiento, 2012).

A full scale survival analysis for Portuguese high-growth firms has not been conducted yet. But for Spanish high-growth firms, there is evidence that being a start-up increases the probability of fast growth, as well as for firms with initial higher relative wages and debt ratio, up to a certain point (López-Garcia and Puente, 2011).

However, the work conducted by the Bank of Portugal (BP, 2010), using a dataset known as *Central de Balanços*, which also complies with the Eurostat/OECDs (2007) methodology, shed some light on survival issues. Its dataset comprehends 380.000 non-financial societies in 2009, where 87% of firms in are micro-firms<sup>25</sup> (84% in 2000), 99,7% are SME's<sup>26</sup> and 0,3% are large firms, responsible for 28% of employment and 41% of turnover. Around 11% of all firms are high-growth firms over the period (10% in 2009 and 13% in 2000).

According to the Bank of Portugal's data, around a quarter of high-growth firms and gazelles "died" during the period 2000 to 2009. They find that the share of high-growth firms ceasing activity over the period decreases substantially as firm's size increase (Table 3). By economic sector, the highest records of firms "closure"<sup>27</sup> occurred in Commerce and secondly in the Manufacturing sector, while the sector of Electricity and Water records the lowest closure rates.

**Table 3:** Share of high-growth and gazelles closed during 2000-2009 by dimension, district, juridical nature and sector

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24 The hazard rate measures the rate at which risk (in this case of a firms' closure) is accumulated and can vary from zero (no risk at all) to infinity.

25 According to the Commission Recommendation 2003/361/EC of 6 May 2003 (Official Journal L124 of 20.05.2003), a microenterprise is defined as an enterprise which employs fewer than 10 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 2 million.

26 This definition includes micro-firms.

27 Firms that have left the dataset.

		Structure	High-Growth	Gazelles
<b>Total Universe of non financial firms</b>			23,8%	25,8%
<b>By dimension</b>	Microfirms	83,6%	23,6%	26,5%
	SMEs	16,2%	20,0%	21,9%
	Large firms	0,2%	14,6%	18,8%
<b>By district</b>	Lisbon	29,7%	25,9%	28,2%
	Porto	17,4%	24,6%	26,3%
	Other locations	52,9%	22,4%	24,3%
<b>By juridical nature</b>	Limited liability companies	94,3%	23,6%	25,5%
	Public limited companies	3,1%	17,7%	21,2%
	Other	2,6%	38,9%	43,9%
<b>By sector</b>	Agriculture and Fisheries	2,7%	19,1%	22,2%
	Manufacturing	13,7%	26,6%	28,9%
	Electricity and Water	0,3%	12,7%	14,7%
	Construction	14,8%	23,2%	25,5%
	Commerce	28,4%	28,4%	30,2%
	Other Services	40,1%	20,3%	21,8%

Source: Banco de Portugal (2010), based on *Central de Balanços* database and the Eurostat/OECD's (2007) methodology.

Bank of Portugal (2010) also looked into what was the maximum dimension attained by those enterprises, using the data for high-growth or gazelles firms that survived throughout 1991 to 2009<sup>28</sup> (Table X).

Most microfirms maintained its dimension throughout their lifetime (86% of high-growth and 88% of gazelles) with a minority of firms reaching the status of SMEs (13,6% of high-growth and 12,2% of Gazelles). This growth is associated, according to the Bank of Portugal, to short-run factors associated with the business cycle, which do not grant an "organic" growth. They also mention that some firms' closing down are due to acquisitions, although they are residual given the total amount of firms. From the 87% microfirms in the dataset, only 10 grew into large firms between 2000 and 2009 (Table 4).

These results demonstrate that enjoying high growth does not necessarily grant better survival prospects in Portugal. Gazelles seem more prone to dying than high-growth enterprises, hinting at rapid growth, based on short-run factors not granting either longevity or sustained growth. Further work is still needs to be conducted to approach survival determinants for Portuguese high-growth firms and gazelles.

**Table 4:** Maximum size attained by high-growth firms and gazelles throughout their life

Microfirms: 1991-2009



Dimension	HG firms	Gazelles
<b>Microfirms</b>	86,4%	87,8%
<b>SMEs</b>	13,6%	12,2%
<b>Large firms</b>	0,0%	0,0%

Source: Banco de Portugal (2010), based on *Central de Balanços* database and the Eurostat/OECD's (2007) methodology.

## 7. INTERNATIONAL COMPARISONS

<sup>28</sup> Bank of Portugal (2010), used the data of all high-growth or gazelles that were classified as such during some period of their lives, between 1991 and 2009.

There is a considerable lack of internationally comparable data on high-growth firms, thus limited research exists as to how Portuguese high-growth firms compares to other countries. However, recent developments at the OECD, the academic community and government level, have made important advancements (OECD, 2008 and 2009; Bravo-Biosca, 2011; NESTA, 2009a and 2009b).

One of the first papers cross-comparing high-growth firms across countries has been that of Hoffman and Jung (2006), who looked at 17 countries during three year periods, ending between 1999 and 2001, using Bureau van Dijk's Amadeus and Orbis database. These authors use a high-growth definition which is comparable to that of the OECD/Eurostat<sup>29</sup> (2007). In trying to harmonise the data among different countries, they only considered firms between 15 and 200 employees.

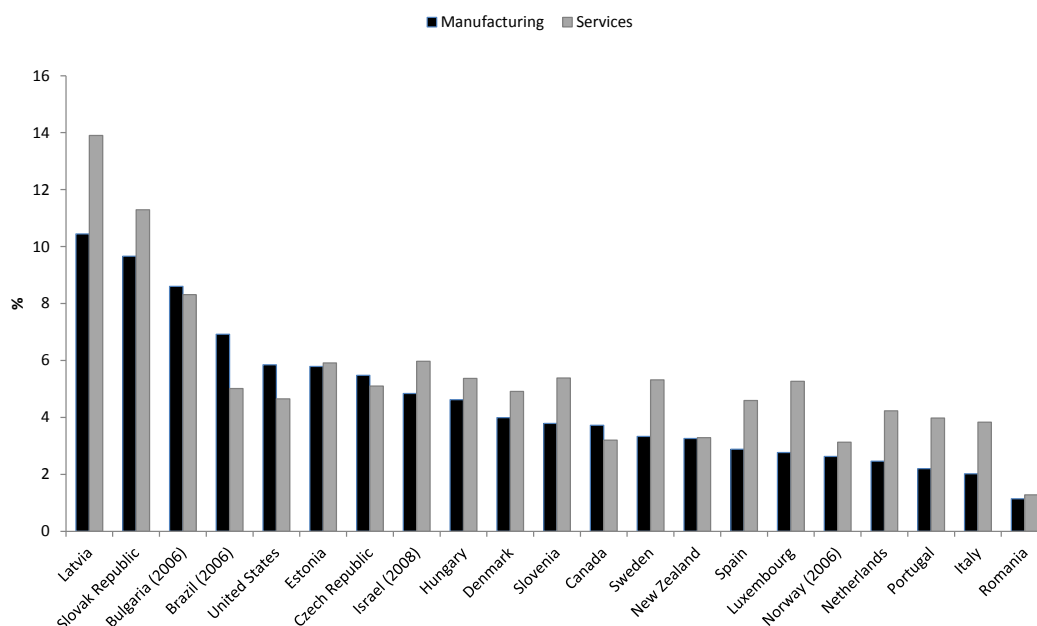
According to Hoffman and Junge's (2006) research, Portugal has relatively few high-growth start-ups relatively to other countries. In 2001, among 17 countries, Portugal is ranked as the 16<sup>th</sup> with the highest proportion of high-growth firms by turnover and 9<sup>th</sup> by employment.

The OECD Business Demography Statistics provides data on business demography that complies with the Eurostat/OECD (2007) methodology for high-growth firms only. Due to data breaks and methodological changes in the official business statistical series published by Statistics Portugal<sup>30</sup> (INE) and the requirements of the Eurostat/OECD (2007) methodology, data is only provided from 2007.

High-growth enterprises represent for most countries a small share of the total population, typically between 3,5% and 6%, when measured by employment growth (OECD, 2011). There are greater discrepancies among countries when the turnover criteria is used, which can in some cases overcome 20% of the population of firms.

For most countries, the usage of these different measurement criteria also brings about differences among sectors. When measured by employment criteria, high-growth firms are more predominant in services, but when measured by turnover their prevalence is higher in manufacturing.

Portugal seems to rank slightly higher with the turnover than with the employment definition, as confirmed as well by our data, highlighting its relatively small-sized enterprise fabric. In 2007, Portugal ranked 14<sup>th</sup> in the share of high-growth enterprises in manufacturing and 12<sup>th</sup> in services (turnover definition), among 16 countries, while according to the employment definition it ranked 19<sup>th</sup> in manufacturing and 16<sup>th</sup> in services, among 21 countries (Figure 24).



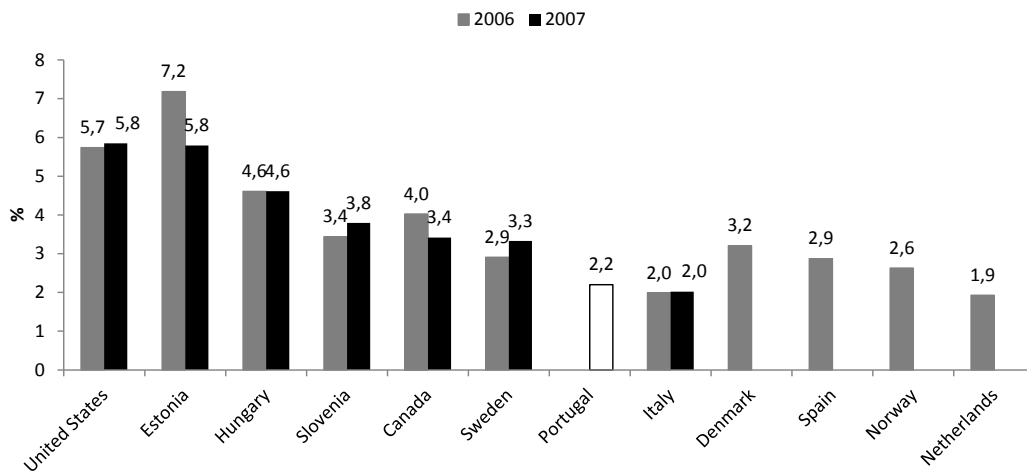
29 According to Hoffman and Junge (2006), a high-growth firm is reported as a firm with a growth rate (in either employment or turnover) higher than 60% in the period from t to t+2. Moreover, they require a positive growth in both time periods of at least 20%.

30 Namely the introduction of Informação Empresarial Simplificada.

**Figure 24:** Share of high-growth enterprises (employment definition) in 2007

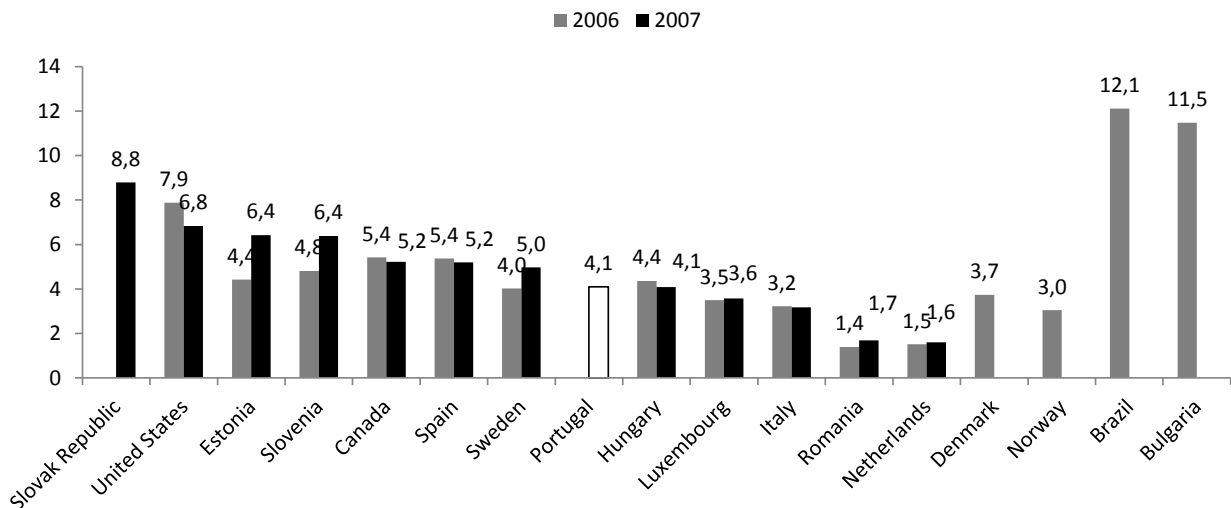
Source: OECD (2011).

Considering solely total industry without the construction sector (employment definition), we observe that Portugal displays a smaller amount (2,2%) of high-growth firms in 2007 than most countries, except that for Italy and eventually the Netherlands (Figure 25). However, considering construction in isolation, we observe that the share increases to 4,1% (Figure 26), indicating greater dynamics of employment growth in this sector, above the Services' sector (4%). In fact, having a higher share of high-growth firms in construction than in total industry except construction is a common feature to most countries during these two year period, namely in the US, Slovenia, Canada, Spain, Sweden, Italy, Denmark and Norway.



**Figure 25:** Share of high-growth firms (employment definition) in total active population of employer enterprises, total industry except construction (NACE 10-41), ranked by 2007

Source: OECD SDBS - Business Demography Statistics.



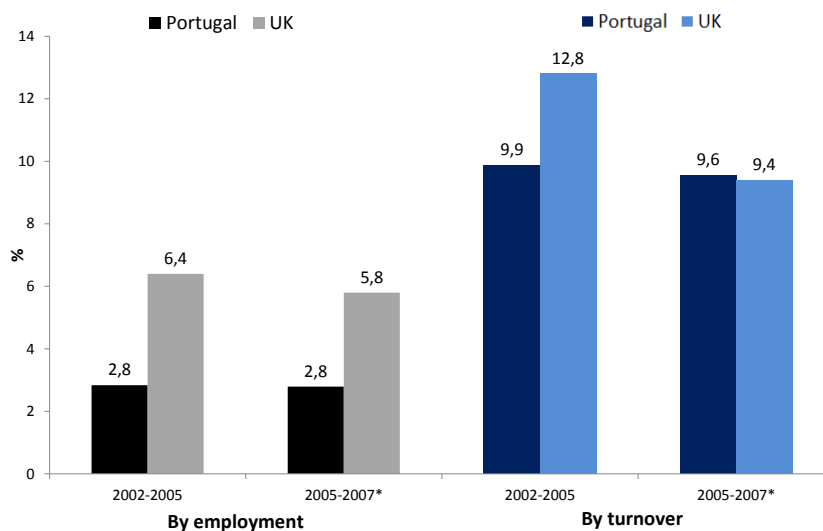
**Figure 26:** Share of high-growth firms (employment definition) in total active population of employer enterprises, construction (NACE 45), ranked by 2007

Source: OECD SDBS - Business Demography Statistics.

We not turn to the comparison of Portugal and the UK (NESTA, 2009a and 200b). In the UK, high-growth firms accounted for 6,4% of the total population of UK firms during 2002-2005 and 5,8%

during 2005 and 2008. In particular during the period 2002-2005, the UK had one of the largest shares of high-growth firms among OECD economies (NESTA, 2009b).

Considering the period 2002-2005, the number of high-growth firms in the UK are twice as much as in Portugal when accounted with the employment criteria, but when accounted by turnover definition, Portugal has 87% of the number of high-growth firms of the UK<sup>31</sup> (Figure 27). By comparing the UK period 2005-2008 with the period 2005-2007, there is also evidence that only around half that share was generated in Portugal<sup>32</sup>, according to the employment definition. Yet again, this underlines the relative small average size of Portuguese firms, which is particularly observed when the employment definition is used for international comparisons.



**Figure 27:** Share of high-growth firms in Portugal and in the UK

Source: Own calculations, based on "Quadros de Pessoal", GEP/MTSS for Portugal and NESTA (2009b), based on OECD/Eurostat's (2007) methodology.

Note: \* For the UK the period is 2005-2008.

The average high-growth company in the UK tripled its employment over each three-year periods, 2002-2005 and 2005-2008 (2009a). Given the differences in the way employment is accounted for in our paper and in NESTA's research (NESTA, 2009a and 2009b), as we do not calculate employment growth for the same cohort in three year spells, we are only able to fully compare the year 2005.

In 2005, UK high-growth firms generated 11,6% of total employment, compared to 4,4% of their Portuguese counterparts. This not only shows that high-growth firms are relatively more abundant in the UK, but hints at the possibility of UK high-growth firms being larger than the Portuguese.

In fact, the enterprise fabric in the UK is quite distinct from that of Portugal. For a start, the number of large firms in the UK is amongst the highest in Europe, comparable to the US, when adjustments are made to reflect variations in size of the economies (BERR, 2008, p. 15).

In trying to confirm these size discrepancies, we not turn to the analysis of average high-growth firm size in 2005. In Portugal, they averaged 101 employees, while in the UK they employed more than twice this amount (235 employees).

Table 5 compares average size of firms in year 2005 and 2008 (end of period) for the UK and 2005 and 2007 for Portugal, according to size class. Despite the different size disaggregation for the largest size classes, it is clear that for all size classes, UK firms display more than twice the size of Portuguese

31 There is a sharp decrease in the turnover measurement for high-growth firms during the second period, 2005-2008, in the UK (NESTA 2009b).

32 Data for Portugal for the second period refers to 2005-2007 while UK data refers to 2005-2008.



firms. Even comparing within the (larger) size class for Portuguese firms of 50-250 employees with the 50-99 of UK firms, we notice that UK firms are three times larger in 2005 and twice as much when the last years of Table 5 are compared (2007 for Portugal and 2008 for the UK). This difference tends to widen as we move on to the largest size classes, where the size discrepancy gets enlarged.

**Table 5:** Average firm size (employment definition) by size class, in Portugal and in the UK

	UK			Portugal	
	Average size in 2005 (end 3 year period)	Average size in 2008 (end 3 year period)		Average size in 2005	Average size in 2007
<b>10-19</b>	46	42	<b>10 to 19</b>	18	18
<b>20-49</b>	130	92	<b>20 to 49</b>	32	32
<b>50-99</b>	323	197	<b>50 to 249</b>	96	97
<b>100-249</b>	541	465			
<b>+500</b>	3.251	2.684	<b>+250</b>	779	779
<b>All HG firms</b>	235	171	<b>All HG firms</b>	101	110

Source: Own calculations, based on "Quadros de Pessoal", GEP/MTSS for Portugal and NESTA (2009b), based on OECD/Eurostat's (2007) methodology.

## 8. CONCLUSIONS

The contributions of this paper to the literature is three-fold: firstly, it focuses on the profiling of high-growth and gazelle firms to a detail which has not been previously considered. The analysis carried out in this study is based on a comprehensive dataset which provides the platform for uncovering features of these firms which have not been examined to such a detail before.

The results show that in 2007, only 9,5% of all Portuguese employer enterprises (with more than ten employees) have a turnover that is in line with that of high-growth firms. If instead of turnover, we consider the growth in the number of employees, then the percentage of high-growth firms drops by 6,5p.p. to just 3 %. In addition, firms that can be classified as gazelles constitute only 2,2% of the total number of Portuguese employer enterprises if turnover is the criteria considered and 0,7% if we focus on employment growth. These percentages are significantly lower than at the beginning of the period considered in this study. In 1985, 24,6% were high-growth firms, of which 3,7% were gazelles according to turnover and 4,2% and 1,1% respectively if we take into account employment growth instead.

The analysis also provides evidence of a narrowing gap between the two measurement criteria, the ratio of high-growth firms according to turnover to the respective employment. A similar pattern has been observed for gazelle firms, indicating that more firms are now growing faster in employment than in turnover.

Most high impact firms are SMEs, but it is the largest size class firms, over 250 employees, that accounts for most employment creation.

This research also provides evidence of significant differences of high-growth firms across regions, with more than half concentrated around the area of Lisbon and a quarter in the North. Over the years, a pattern emerges whereby more and more high-growth firms become concentrated around the Lisbon area.

It should also be noted that there has been an important shift in the distribution of both high-growth firms over the period of analysis, away from manufacturing to services and commerce, as well as construction. A similar pattern is observed for firms classified as gazelles.

High-growth firms are not a homogeneous group of firms. Firm's growth differences in Portugal go beyond high-growth firms and are deeply rooted in the structure of Portuguese entrepreneurial fabric. High-growth is a stage in the development of firms with potential and ambition to grow.

Secondly, by establishing a comparison between Portuguese high-growth and gazelle firms and their European counterparts, we highlight fragilities in performance and assesses the role of framework conditions, particularly in the context of the current economic, social and financial climate.

Portugal produces less high-growth firms than most European countries. This lower ability to generate high-growth firms in Portugal raises concerns about the incapacity to generate such a track of growth, highlighting the laggard growth dynamism across the Portuguese entrepreneurial fabric.

The small size of these industries hinders growth and particularly survival in globalised markets. These have also been considered to be partly a reflection of the country's substantial educational gap (OECD, 2010). However, wider barriers to growth need to be removed in Portugal. This relates to addressing a whole array of structural factors that lay deep in the bottom of the country's culture and education. Entrepreneurial culture needs to be targeted with long term structural policies, so as to foster a more risk-taking individual attitude towards business.

Thirdly, we conclude that the sort of overreaching structural problems the country faces means that policies should not be confined to specific kinds of firms, even if high-growth. This means addressing a whole range of framework conditions underlying overall firms' poor performance in terms of growth and survival.

Portugal still "remains one of the poorest OECD countries" (OECD, 2010, p. 9). The country is in need of policies which are effective at delivering productivity growth. In the short to medium term, there seems to be significant margins to increase productivity, if efficient firms are encouraged to entry the market, while inefficient firms are forced out, in particular in the services sector.

Policies need to be more focused in providing the platform for entrepreneurial activities to thrive, particularly in those sectors earmarked as pivotal to economic growth. In practice, policymakers could assist in the process of firm creation and growth, by reducing red tape and bureaucracy, working with financial institutions towards easing access to credit and improving labour and product regulations. More generally, policymakers should contribute to the establishment of an environment which is appealing to venture capitalists and business angels, and which can be ultimately regarded as conducive to investing in the country.

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