

BUSINESS DEMOGRAPHY

NUT II - NORTE

Total of active employer enterprises

Size class (number of employees)	1987 - 2000		2001 - 2005		2005		2006		2007	
	Average number of enterprises	Growth rate	Average number of enterprises	Growth rate	Number of enterprises	Growth rate	Number of enterprises	Growth rate	Number of enterprises	Growth rate
Total	61 752	6,8	106 982	5,9	122 580	13,5	122 478	-0,1	126 428	3,2
1 - 4	33 896	8,7	67 535	8,4	81 482	18,2	81 542	0,1	84 419	3,5
5 - 9	13 424	5,8	20 833	2,0	21 704	4,2	21 409	-1,4	21 774	1,7
10 - 19	7 305	4,6	10 301	1,1	10 656	6,5	10 649	-0,1	10 970	3,0
20 - 49	4 648	3,1	5 737	1,4	6 027	6,0	6 136	1,8	6 425	4,7
50 - 249	2 170	1,5	2 331	1,1	2 461	4,2	2 482	0,9	2 573	3,7
≥ 250	309	-2,3	245	-1,2	250	5,9	260	4,0	267	2,7

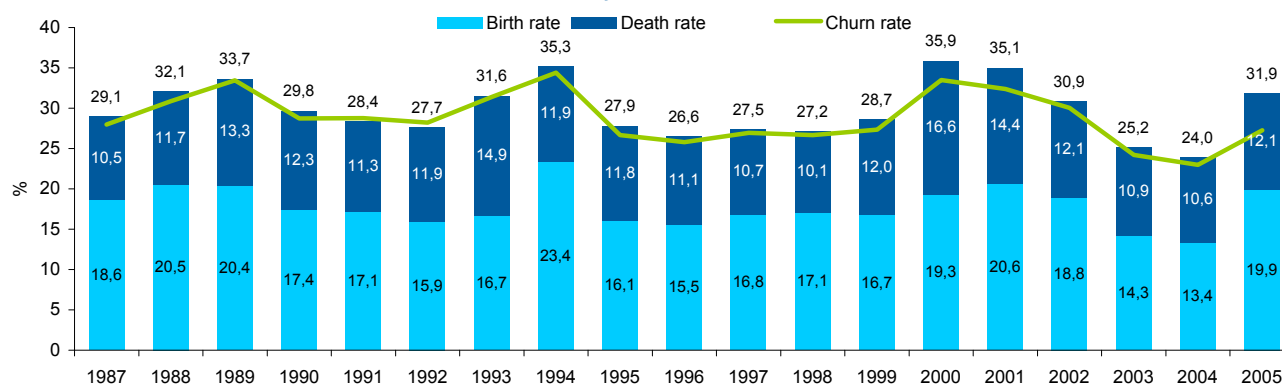
Note: Employer enterprises, according to the definition of the "Manual of Business Demography Statistics" (Eurostat/OECD, 2007), are those which employ at least one employee.

Births and Deaths

Size class (number of employees)	Births										Deaths									
	1987 - 2000		2001 - 2007		2005		2006		2007		1985 - 2000		2001 - 2005		2003		2004		2005	
	Average number	Birth rate (%)	Average number	Birth rate (%)	Nº	Birth rate (%)	Nº	Birth rate (%)	Nº	Birth rate (%)	Average number	Death rate (%)	Average number	Death rate (%)	Nº	Death rate (%)	Nº	Death rate (%)	Nº	Death rate (%)
Total	11 035	18,0	17 871	16,1	24 345	19,9	15 851	12,9	16 200	12,8	7 173	12,2	12 830	12,0	11 471	10,9	11 501	10,6	14 807	12,1
1 - 4	8 319	24,9	14 658	20,6	20 788	25,5	13 493	16,5	13 970	16,5	5 141	16,3	10 519	15,7	9 512	14,4	9 614	14,0	12 683	15,6
5 - 9	1 644	12,6	2 020	9,7	2 037	9,4	1 433	6,7	1 368	6,3	1 121	8,9	1 387	6,7	1 159	5,6	1 133	5,4	1 248	5,8
10 - 19	668	9,4	770	7,4	884	8,3	577	5,4	530	4,8	524	7,5	554	5,4	465	4,5	437	4,4	536	5,0
20 - 49	311	6,8	324	5,5	463	7,7	273	4,4	266	4,1	282	6,3	270	4,7	240	4,3	234	4,1	257	4,3
50 - 249	85	3,9	90	3,8	158	6,4	71	2,9	59	2,3	96	4,5	93	4,0	88	3,8	77	3,3	78	3,2
≥ 250	7	2,2	9	3,6	15	6,0	4	1,5	7	2,6	10	3,1	7	2,7	7	2,9	6	2,5	5	2,0

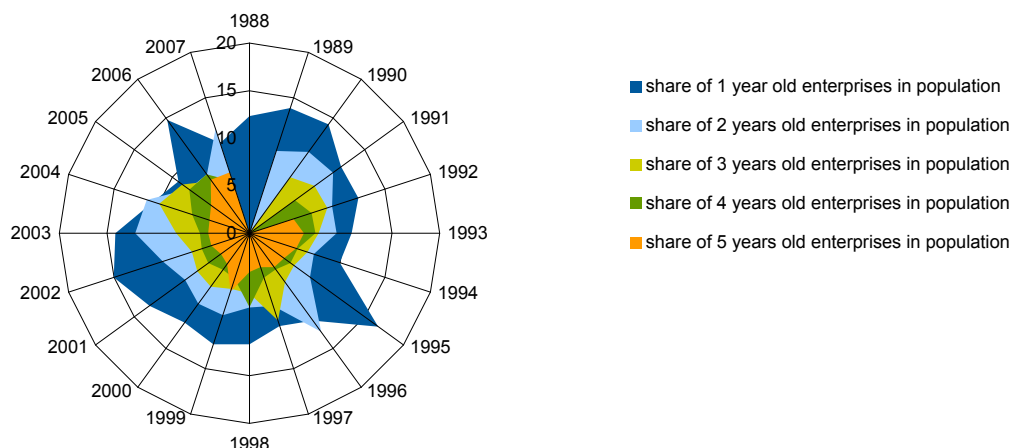
Note: Birth and death rates are composed by a numerator given by the number of total births and deaths, respectively, and by a denominator given by the total number of active employer enterprises in the reference period. The birth of an employer enterprise occurs when it starts its activity. It does not include entries into the population due to mergers and acquisitions, restructuring of enterprises or the reactivation of dormant units within a period of more than 2 years. This population is also composed of enterprises that although existed in previous years, were below the one employee threshold. Deaths occur due to the dissolution of the combination of production factors. They don't include exits from the population due to mergers, take-overs, break-ups or restructuring of enterprises. An enterprise death is counted only if it is not reactivated within 2 years.

Churn dynamics, 1987-2005



Note: The sum of all births and deaths of employer enterprises are at the top of the bars, and correspond to the churn rate.

Share of 1-5 years old enterprises in total population (%)

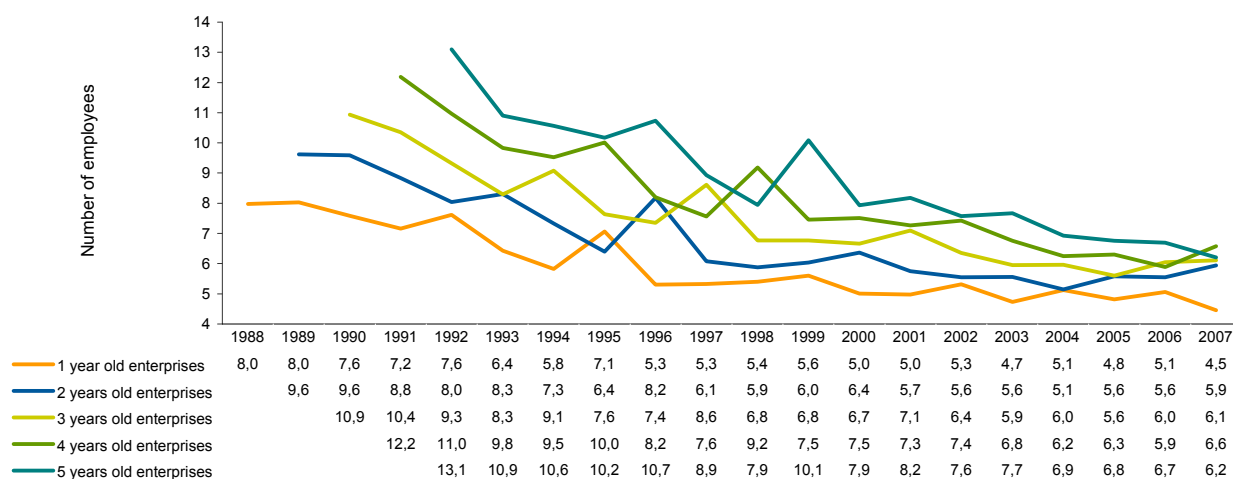


Source: GEE, based on E. de Moraes Sarmento and A. Nunes, "Entrepreneurship Performance Indicators for active employer enterprises in Portugal", Temas Económicos nº 9, Ministério da Economia, da Inovação e do Desenvolvimento, based on Quadros de Pessoal, GEP, MTSS.

Age and survival, outlook for 2007

Active In 2007	Total Enterprises 126 428 (100%)	Enterprises < 10 employees 106 193 (84,0%)	Enterprises ≥ 10 employees 20 235 (16,0%)
Born in 2006	1st year survivors 12 586 (10,0 %)	1st year survivors 11 522 (10,9%)	1st year survivors 1 064 (5,3%)
Born in 2005	2nd year survivors 14 656 (11,6%)	2nd year survivors 13 036 (12,3%)	2nd year survivors 1 620 (8,0%)
Born in 2004	3rd year survivors 8 071(6,4%)	3rd year survivors 7 175(6,8%)	3rd year survivors 896 (4,4%)
Born in 2003	4th year survivors 7 282(5,8%)	4th year survivors 6 419 (6,0%)	4th year survivors 863 (4,3%)
Born in 2002	5th year survivors 8 530 (6,8%)	5th year survivors 7 469 (7,0%)	5th year survivors 1 061 (5,2%)

Average firm size (number of employees)



Probability of Survival

(for enterprises born in the years below)

Years of survival	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
1	87,3%	84,7%	86,8%	87,0%	85,7%	81,5%	87,3%	85,6%	85,9%	87,1%	88,3%	85,9%	79,6%	82,2%	87,1%	87,3%	86,7%	85,7%
2	75,9%	75,0%	77,4%	77,2%	72,7%	72,8%	77,9%	76,8%	76,2%	77,6%	77,1%	70,0%	66,6%	71,3%	77,5%	77,9%	76,9%	
3	67,6%	67,7%	69,3%	67,1%	65,6%	64,8%	70,7%	69,2%	68,7%	68,3%	64,1%	59,6%	58,4%	62,7%	69,7%	69,9%		
4	62,0%	61,4%	61,3%	61,2%	59,7%	59,4%	64,9%	63,9%	61,7%	57,5%	55,1%	53,0%	52,6%	56,6%	63,2%			
5	56,8%	54,6%	56,1%	56,4%	55,6%	55,0%	59,7%	57,9%	52,9%	50,2%	49,7%	48,0%	47,6%	51,4%				
6	51,7%	50,8%	52,1%	52,7%	51,9%	51,4%	54,9%	50,5%	46,6%	45,2%	45,6%	43,9%	43,4%					
7	48,0%	46,8%	48,8%	49,4%	48,5%	47,0%	48,5%	45,2%	43,0%	41,6%	41,7%	39,9%						
8	44,2%	43,9%	45,8%	46,1%	44,8%	41,1%	43,4%	41,6%	40,0%	38,4%								
9	41,7%	41,3%	43,2%	42,5%	39,8%	37,2%	40,3%	38,9%	37,1%	35,5%								
10	39,3%	39,3%	39,5%	37,7%	36,0%	34,7%	38,0%	36,0%	34,4%									
11	36,9%	36,6%	35,1%	34,1%	33,5%	32,4%	35,4%	33,5%										
12	34,3%	32,7%	31,8%	31,8%	31,6%	30,3%	33,5%											
13	30,8%	29,6%	29,5%	29,8%	29,7%	28,0%												
14	28,5%	27,6%	27,8%	27,9%	28,0%													
15	26,7%	26,4%	26,1%															
16	25,2%	24,6%	24,4%															
17	23,7%	23,3%																
18	22,4%																	

Note: The non parametric Kaplan-Meier estimator was applied according to the following formula: $\hat{S}(t) = \prod_{j:t_j \leq t} \left(\frac{n_j - d_j}{n_j} \right)$
The probabilities relate to the enterprises ("cohorts") born in the above years mentioned.

Source: GEE, based on A. Nunes and E. de Morais Sarmento, "Análise comparativa de sobrevivência: o caso da região Norte", *Proceedings of the Portuguese Regional Development Association* (2010) and E. Sarmento and A. Nunes, "Entrepreneurship Performance Indicators for active employer enterprises in Portugal", *Temas Económicos* n° 9, Ministério da Economia, da Inovação e do Desenvolvimento, based on Pessoal, GEP, MTSS.

Employment

Employment in active employer enterprises

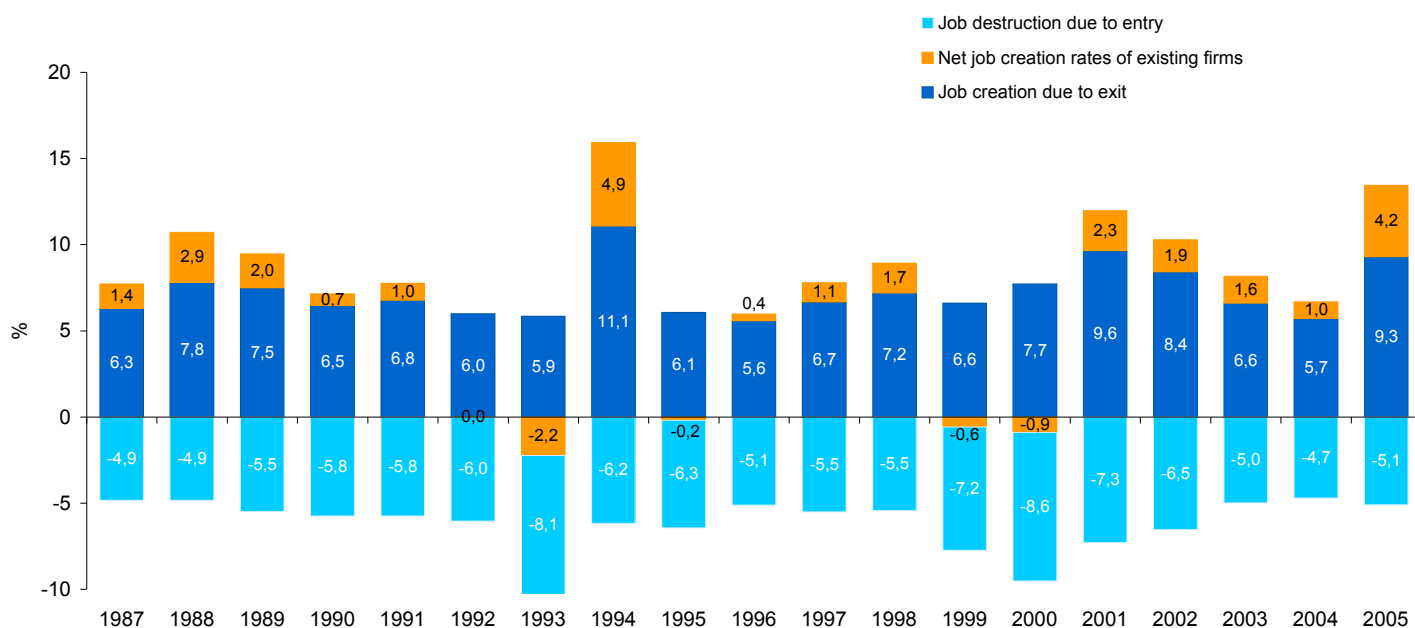
Size class (number of employees)	1987 - 2000		2001 - 2005		2005		2006		2007	
	Average number of employees	Growth rate	Average number of employees	Growth rate	Number of employees	Growth rate	Number of employees	Growth rate	Number of employees	Growth rate
Total	808 818	2,5	970 039	1,6	1 027 170	13,0	1 036 410	0,9	1 075 069	3,7
1 - 4	78 244	8,3	142 607	6,2	163 787	4,1	163 178	-0,4	168 272	3,1
5 - 9	87 368	6,2	135 425	2,0	141 027	6,6	138 886	-1,5	141 260	1,7
10 - 19	97 805	4,8	137 195	1,1	142 137	6,1	142 000	-0,1	146 674	3,3
20 - 49	140 356	3,3	171 958	1,4	180 516	4,7	183 547	1,7	192 106	4,7
50 - 249	209 130	1,2	219 322	1,0	231 227	7,6	233 786	1,1	242 480	3,7
≥ 250	195 915	-1,7	163 533	-1,1	168 476	6,9	175 013	3,9	184 277	5,3

Job creation and destruction

Size class (thousands of employees)	Creation										Destruction									
	1987 - 2000		2001 - 2007		2005		2006		2007		1985 - 2000		2001 - 2005		2003		2004		2005	
	Average number	Birth rate (%)	Average number	Birth rate (%)	Nº	Birth rate (%)	Nº	Birth rate (%)	Nº	Birth rate (%)	Average number	Death rate (%)	Average number	Death rate (%)	Nº	Death rate (%)	Nº	Death rate (%)	Nº	Death rate (%)
Total	56,4	7,0	70,7	7,1	95,3	9,3	54,6	5,3	55,3	5,1	47,7	6,0	55,6	5,7	47,8	5,0	45,4	4,7	52,5	5,1
1 - 4	17,0	22,0	25,8	17,5	33,5	20,5	22,2	13,6	23,0	13,7	10,4	14,3	18,4	13,0	16,5	11,7	16,4	11,3	20,4	12,4
5 - 9	10,5	12,4	12,9	9,5	12,9	9,2	9,1	6,5	8,7	6,1	7,2	8,8	8,8	6,6	7,3	5,4	7,3	5,4	8,0	5,7
10 - 19	8,8	9,2	10,2	7,3	11,8	8,3	7,7	5,4	7,0	4,8	6,9	7,4	7,3	5,3	6,2	4,5	5,7	4,3	7,0	5,0
20 - 49	9,1	6,6	9,4	5,3	13,7	7,6	7,8	4,3	7,8	4,1	8,3	6,2	8,0	4,7	7,2	4,3	7,0	4,1	7,4	4,1
50 - 249	7,4	3,5	8,1	3,6	14,8	6,4	6,1	2,6	5,2	2,1	8,7	4,2	8,3	3,8	7,9	3,7	6,3	2,9	6,7	2,9
≥ 250	3,6	1,9	4,4	2,7	8,5	5,1	1,7	1,0	3,7	2,0	6,1	3,2	4,7	2,9	2,6	1,7	2,7	1,7	3,0	1,8

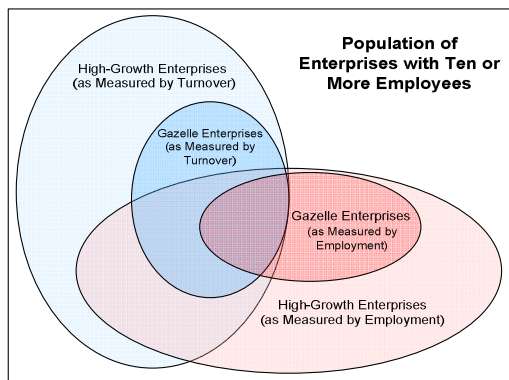
Note: Birth and Death rates are ratios composed by a numerator that corresponds to the total number of employees in employer enterprises that enter and exit the market yearly, respectively, and by a denominator that corresponds to the total of employment in active employer enterprises (according to the methodology of the "Manual on Business Demographic Statistics", Eurostat/OECD, 2007).

Net employment growth and its components (1987 - 2005)



Source: GEE, based on E. de Moraes Sarmiento and A. Nunes, "Entrepreneurship Performance Indicators for active employer enterprises in Portugal", Temas Económicos nº 9, Ministério da Economia, da Inovação e do Desenvolvimento, based on Quadros de Pessoal, GEP, MTSS.

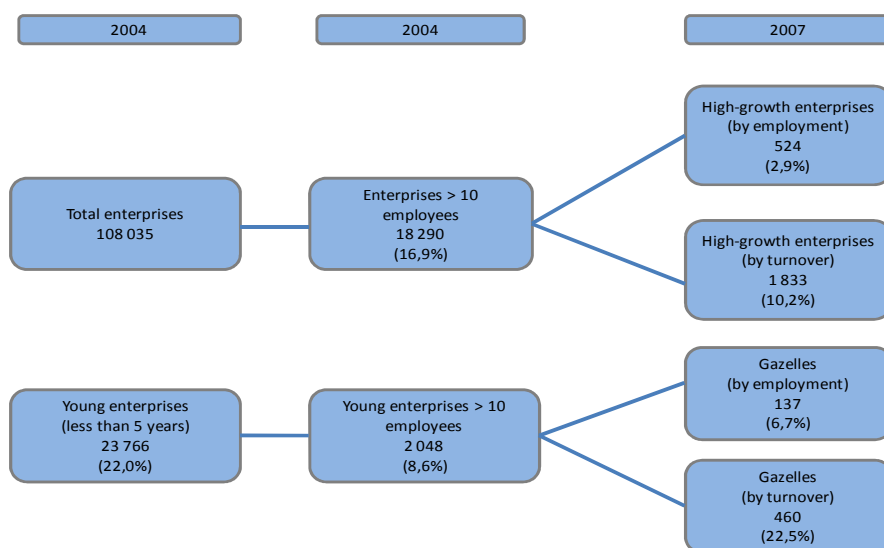
High-Growth Enterprises and Gazelles



A **High-growth enterprise** is an enterprise with average annualised growth greater than 20% per annum, over a three year period. Growth can be measured by the number of employees or by turnover.

Gazelles are high growth enterprises that are up to 5 years old.

High Growth Enterprises and Gazelles, outlook for 2007



High Growth Enterprises and Gazelles, by employment

Year	High growth enterprises				Gazelles			
	Enterprises		Employees		Enterprises		Employees	
	Nº	Weight in the population with at least 10 employees (%)	Nº	Weight in the population with at least 10 employees (%)	Nº	Weight in the population with at least 10 employees (%)	Nº	Weight in the population with at least 10 employees (%)
1990	503	3,71	44.433	6,58				
1991	451	3,23	41.455	6,21				
1992	446	3,11	38.836	5,81	192	1,34	12.632	1,89
1993	316	2,27	27.221	4,33	124	0,89	7.253	1,15
1994	320	2,19	31.268	5,00	125	0,86	12.317	1,97
1995	315	2,15	32.390	5,17	103	0,70	10.918	1,74
1996	346	2,45	35.579	5,87	107	0,76	9.684	1,60
1997	396	2,55	49.889	6,73	105	0,68	6.949	0,94
1998	428	2,64	50.646	7,68	141	0,87	10.780	1,64
1999	422	2,47	56.290	8,25	147	0,86	12.169	1,78
2000	454	2,54	64.541	9,41	106	0,59	8.797	1,28
2001	491	2,65	66.442	9,43	120	0,65	10.502	1,49
2002	434	2,36	44.177	6,56	121	0,66	6.426	0,95
2003	345	1,87	29.521	4,35	92	0,50	7.203	1,06
2004	410	2,24	42.608	6,26	122	0,67	6.740	0,99
2005	415	2,14	28.158	3,90	137	0,71	7.880	1,09
2006	470	2,41	33.644	4,58	161	0,82	9.658	1,32
2007	524	2,59	47.059	5,04	137	0,68	8.714	0,93

Source: GEE, based on E. de Moraes Sarmiento and A. Nunes, "Entrepreneurship Performance Indicators for active employer enterprises in Portugal", Temas Económicos nº 9, Ministério da Economia, da Inovação e do Desenvolvimento, based on Quadros de Pessoal, GEP, MTSS, according to "Manual of Business Demography Statistics", Eurostat/OCDE (2007).

METHODOLOGY

These results are based on the application of the “Manual of Business Demography Statistics” (Eurostat/OCCE, 2007) to the dataset called *Quadros do Pessoal*, from the *Gabinete de Planeamento e Estratégia* of the Portuguese Ministry of Labour and Social Security.

This analysis describes employer enterprises business dynamics from 1985 to 2007, considering firm longevity, survival, size, employment and the group of gazelles and high growth firms.

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.

MAIN DEFINITIONS

Enterprise¹: Represents the smaller combination of legal units that produces goods or services with certain autonomy of decision, particularly with respect to the allocation of its current resources. An enterprise might have one or more than one activity in one or more than one location. An enterprise may be represented only by one legal entity.

Employer enterprises: Enterprises from the active population of enterprises with at least one paid employee.

Employer enterprise births: 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.

Birth rate: Number of births as a percentage of the population of active enterprises.

Death rate: Death rate of a given reference period (usually one calendar year) is the number of deaths as a percentage of the population of active enterprises. . 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. Therefore, a death can occur because the enterprise ceases to trade or because it shrinks below the one employee threshold. The Eurostat/OECD manual recommends waiting for two years after the reference period to allow for reactivations, before deaths are calculated.

Survival probability: The survivor function reports the probability of a firm of surviving beyond time t (the moment of observation), that is the probability that there is no failure event (a “death”) prior to t . The function is equal to one at time $t=0$ and decreases towards zero as time (t) goes to infinity. Considering T a non-negative variable, denoting the time to a failure event (“death”), in this case given by the time taken by an enterprise to exit the market from the moment of entry, the survivor function is thus represented by:

$$S(t) = 1 - F(t) = \Pr(T > t)$$

With $F(t) = \Pr(T \leq t)$ being the cumulative distribution function.

To estimate the survivor function, $S(t)$, that is the probability of survival past time t or, equivalently, the probability of failure after t , the non-parametric Kaplan-Meier estimator was applied. For a dataset with observed failure times, t_1, \dots, t_k , where k is the number of distinct failure times observed in the data, the Kaplan-Meier estimate at any time t is given by:

¹ European Council Regulation (EEC), n°. 696/93, Section III A of 15.03.1993.

$$\hat{S}(t) = \prod_{j|t_j \leq t} \left(\frac{n_j - d_j}{n_j} \right)$$

Where n_j is the number of enterprises at risk at time t_j and d_j is the number of failures at time t_j . The product is done for all the failure periods, departing from time t .

High growth enterprises: Enterprises with average annualised growth greater than 20% per annum, over a three year period. Growth can be measured by the number of employees or by turnover.

Gazelles: All enterprises up to 5 years old with average annualised growth greater than 20% per annum, over a three years period. Gazelles by turnovers or employment are all employer enterprises that during a period of at least 5 years have had an annual average growth in terms of turnover or employment greater than or equal to 20 % per year, during the last 3 years, which employ at least 10 employees in the beginning of the 3 years period.

REFERENCES

Eurostat/OCDE (2007), "Eurostat-OECD Manual on Business Demography Statistics", available at: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-RA-07-010/EN/KS-RA-07-010-EN.PDF

OCDE (2007), "A Framework for Addressing and Measuring Entrepreneurship", Entrepreneurship Indicators Steering Group, available at: <http://www.oecd.org/dataoecd/21/51/39629644.pdf>

OECD/Eurostat (2009), "Measuring Entrepreneurship, A Collection of Indicators, 2009 Edition", OECD/Eurostat Entrepreneurship Indicators Programme, Statistics Directorate, available at: <http://www.oecd.org/statistics/measuringentrepreneurship>

Nunes, A. and E. de Morais Sarmiento, "Análise comparativa de sobrevivência: o caso da região Norte", *Proceedings of the Congress of the Portuguese Regional Development Association* (2010).

Nunes, A. and E. de Morais Sarmiento, "Survival dynamics in Portugal, a regional perspective", Livro de Actas da [European Regional Science Association](#).

Sarmiento, E. de Morais and A. Nunes, "Entrepreneurship Performance Indicators for active employer enterprises in Portugal", Temas Económicos nº 9, [Ministério da Economia, da Inovação e do Desenvolvimento](#), based on Quadros de Pessoal, GEP, MTSS.

Sarmiento, E. de Morais and A. Nunes, "Entrepreneurship Performance Indicators", based on Quadros de Pessoal, GEP, Ministério do Trabalho e da Solidariedade Social, presented at the *Workshop from NIPE "Economic Analysis using Linked Employer and Employee Data"*, Universidade do Minho, Portugal.

¹ European Council Regulation (EEC), nº. 696/93, Section III A of 15.03.1993.