

## JOB CREATION AND DESTRUCTION IN PORTUGAL\*

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*The fundamental impulse that keeps the capitalist engine in motion comes from the new consumers' goods, the new methods of production or transportation, the new markets... [The process] incessantly revolutionizes from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism.*

Schumpeter, 1942

### 1. INTRODUCTION

In the Portuguese economy, in each quarter of the year, 24 per cent of firms are net creators of jobs while 26 per cent shed labour.<sup>1</sup> The remaining 50 per cent make no change to the size of their work force, though they often modify their structure. The evolution of net employment in the Portuguese economy is related to a process of job creation and destruction, affecting at any one time 125 thousand companies employing 2.1 million workers.

Labour market statistics show that constant job creation and destruction fits in with the Schumpeter definition of economic growth. From the microeconomic point of view, this process is characterised by the search for a perfect match between worker and firm, in a process which could be simply defined as trial and error. As employment is reallocated, with creation and destruction often happening in one firm at the same time, so economic productivity is boosted. The best worker/company matches will last over time, while the less successful will cease, to be replaced by others which will tend to be more productive (Jovanovic, 1979 and Aghion and Howitt, 1992).

The search for a job is therefore one of the most important investments that people make in the labour market, mainly when they are out of work, but also when they are in a job and looking to move. The same happens with companies, for which filling a vacancy is one of their priorities. On both sides – supply and demand – the main aim is to make the process as efficient as possible.

In this article we look at just one side of this equation, that relating to the enterprise, even though this means leaving one important aspect untouched. Indeed, as firms take on new workers, others leave (either because they are made redundant or they choose to leave). In any three-month period in Portugal, 9.5 per cent of those in employment began work less than three months earlier and 9.2 per cent leave an employer, either to move to another job or to inactivity. Quarterly flows of workers therefore in-

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(1) Excluding firms that employ only one work and that decide to maintain that same level of employment.

volve 18.7 per cent of the country's employment level.

There is quite clearly a major reallocation process, both annual and quarterly terms. This is well attested by the number of contractual arrangements set up in the past few years: between January 2000 and June 2007 more than 10.7 million individual relationships (understood as a contractual tie between an employer and a worker) were recorded in the country's social security service. Five million people were involved in this process. Of these, 2.1 million workers had only one employer and 2.7 million had jobs that lasted less than the median duration, 13 months.

The rate of job creation fluctuated at around 14 per cent and job destruction at around 12 per cent. These rates have been falling over time, a situation visible in other developed economies. Quarterly rates, which picture short-term fluctuations, stood at around 6 per cent between 2001 and 2006. It is important to highlight the impact of new companies on the job creation process (35 per cent of the total) and of firms that exited the market as part of the process of job destruction (40 per cent of the total). In international terms, the annual rates are close to those observed in other European countries. However, in quarterly figures for the US and New Zealand, two countries with job protection way below the level in Portugal, the figures come in at around one percentage point (p.p.) higher.

High rates of job creation and destruction are visible across the sectors, but construction and services are higher than manufacturing. The distribution of the rates of employment variation measured at company level shows that there is a significant concentration of gross employment flows in a relatively small number of companies, where there are very high levels of expansion and contraction. This concentration is smaller in services than in manufacturing, given the greater flexibility in the first of these sectors.

Small firms play a significant part in the creation and destruction process, although in net terms it is the large firms that contribute most to job creation. There is a higher creation/destruction rate in firms with lower paid workers (where specific human capital is less important). In these firms, the rates are more than twice what they are in companies with higher salaries, and the former play an essential role in the job creation process. In manufacturing, there is even a significant loss of employment in firms where average salaries are in the higher quintiles.

Finally, it should be pointed out that there is a reduction in net creation of employment as firms age, a situation which reflects the theories of company life cycles. There is also no evidence of regional employment mismatch, since in the period under review (1996-2005) there is a net growth of employment in the 7 regions of Portugal that are analysed.

These results illustrate the enormous heterogeneity in the employment reallocation process. Market conditions have a considerable impact on the determination of these employment flows. Entry conditions, namely, the initial smaller dimension, and the initial internal flexibility (e.g., insipient internal labour markets), often associated with learning new technologies, has an important impact on the determination of employment flows.

In addition, the institutional framework has a major impact on certain aspects of mobility in the labour market (Antunes and Centeno, 2007). In a recent article, Haltiwanger *et al.* (2006) study the relation between regulations in the goods and labour markets and employment flows. The empirical results of an analysis that covers several countries suggest that job protection legislation reduces the rate of reallocation of labour, mainly in sectors that require more frequent adjustments in labour. These results are fundamentally in line with those detailed in this article regarding Portugal. For example, a comparison with the US shows that the main difference in rates of job reallocation is in the services sector, which is the sector where adjustments are more frequent.

## 2. JOB CREATION AND CREATIVE DESTRUCTION

Labour market efficiency should be measured by its capacity for adjustment and the creation of new jobs that are more productive than those destroyed. These adjustment processes, involving both sides of the equation, frequently occur at the same time in a specific firm.

The capacity for firms to adjust their level of employment and its structure therefore constitute an element fundamental to their productivity. In the same way, the capacity for workers to adapt to these developments is one of the crucial factors for their success in the labour market. Labour market efficiency is the result of an adequate matching of what both workers and firms want. The Schumpeterian vision of the way modern economies work has recently been formalised in a number of macroeconomic models, such as the economic growth model put forward by Aghion and Howitt (1992). Here, endogenous innovation generates creative destruction and economic growth, while in the *vintage* capital models of Caballero and Hammour (1994), the role of firm exits and entries is highlighted as a way of adopting new technologies.

From a microeconomic point of view, the importance of reallocation in the labour market is based on the concept of “employment as an experience good”, as defined by Jovanovich (1979). In this context, new jobs have an unknown quality, which is revealed over time as the jobs are “experienced”. As a result, the good jobs survive and the bad jobs disappear. This form of adjustment has important consequences for the way the labour market works, as shown by Topel and Ward (1992), Farber (1999), and Arozamena and Centeno (2006).

When analysing the way the labour market works, we should always bear in mind that its capacity for adjustment is boosted, and therefore also limited, by the level of competition existing in the markets of goods and services. In the presence of competitive product markets, productivity growth, which translates into higher salaries and more employment, is obtained mainly by low productivity firms being replaced by more highly productive ones. In tandem there is the replacement of low productivity jobs in existing firms by more efficient jobs. In this way, it is crucial to guarantee the existence of a competitive environment in markets that use “labour” as a productive factor, but also to reflect this environment in the competitive activity of firms in the labour market.

Two factors – changes in the way economies are developing on a global scale, and the opening up of markets – have bolstered the calls for greater flexibility in market organisations and, inevitably, in the labour market. When the economic environment in Portugal changed, due to the integration in the euro area, there came an increased need to have a labour market capable of withstanding shocks and economic fluctuations.

The process of job creation and destruction witnessed in today’s labour market can be measured by the activities of firms operating in it. Labour law protects jobs directly through restrictions on the capacity of employers to sever a tie. One example of this is that the law sets out specific conditions, economic and otherwise, in which severance is possible. In addition, in most European nations, direct financial costs are entailed, for example through compensation and procedural costs, this latter by making it compulsory to announce redundancies beforehand.

In most of Europe, job protection cuts in as the response of governments to protect workers in the face of the possibility of losing their jobs. Inevitably, however, restrictions on how companies can destroy jobs impacts on their ability to create new ones. The results, in all cases, are three-fold: fewer creation/destruction flows in employment, the maintenance of inefficient, non-productive jobs and a lower capacity in the economy for reallocation of available resources.

In Lazear (1990), there is an important contribution to the discussion on the impact of different aspects of job protection legislation on the level of employment. The legislation covering compulsory redundancy compensation does not have a real impact (for example on the level of employment), since the company can minimise the effects of severance pay by (hypothetically) imposing a transfer fee on the employee at the start of the contract or else by lowering the initial salary. In practice, given the difficulty of using the transfer fee in the context of workers' financial constraints, the biggest impact of the legislation results in lower salaries throughout the professional career.

The interaction of the various elements in the job protection system has been described in Bertola and Rogerson (1997). Fewer job flows resulting from job protection can be offset by turnover, a factor which is made easier for the employer by the generosity of the unemployment insurance system or other forms of wage compression used in the welfare state. The work of Bertola and Rogerson can be seen in conceptual terms as a way of bringing the two systems of protection into an articulate whole.

These findings imply that there will be lower rates of job creation/destruction in countries with more rigid labour laws. However, in most of such countries, the law itself introduces ways of making the market more flexible and these over time generate polarization and a dual labour market, where two groups co-exist: one, with protection and lower creation/destruction rates and another which feels almost all the impact of short term economic adjustments. The second of these is considerably exposed and has high but inefficient job creation/destruction rates.

The wealth of evidence collated in Davis and Haltiwanger (1999) points to three main determinants in the reallocation of employment in an economy: the sectoral distribution of employment and the size and age of the firms. In general, the services sector has higher rates of job reallocation, while the manufacturing sector displays a wide range of job creation/destruction scenarios. Economies with a greater proportion of services will therefore tend to have higher creation/destruction rates. Such rates are also lower for larger firms and older firms. Any comparison between countries should therefore bear in mind the different situation regarding all three elements outlined above.

### 3. DATA

There are two statistical sources available for an analysis of job creation and destruction in the Portuguese economy. This means that the results can be cross-checked for validation and also, more importantly, it is possible to look at different angles of the whole job creation/destruction process. The statistical sources are the *Quadros de Pessoal* (QP) collected by the Office of Strategy and Planning in the Ministry of Labour and Social Solidarity (GEP/MTSS) and the database for the records of wages available through the Social Security Structure (BDRSS), collected by the Ministry's Institute of Information Technology.

The data were all analysed in anonymous format and there is no possibility that the information published here could lead to identification of any individual or firm.

#### 3.1. *Quadros de Pessoal*

QP are administrative data collected annually (in October of each year) by the GEP/MTSS. It brings together the data on all Portuguese firms employing at least one worker, although it leaves out public administration, organisations that employ temporary rural workers and domestic help. The coverage makes it practically a census, and as such it provides an extremely important source for a microeconomic analysis of employment in Portugal. The information allows for firms to be studied over time,

along with their establishments and labour force.

The specific analysis of employment turnover based on the figures in the *QP* was developed through a system for longitudinal analysis, more specifically the longitudinal information system to monitor the development of firms (o *Sistema de Informação de Acompanhamento das Trajectórias de Empresas e Estabelecimentos - SILATEE*).

The main figure for volume of employment used to calculate flows is the total number of people in a firm's service<sup>2</sup> at a specific time.

The analysis covers the period between 1995 and 2005, this last being the final year for which figures are available. For 1995, the information covers some 192 thousand firms employing around 2.2 million people. For 2005, the figures are around 340 thousand companies employing almost 3 million people.

Incoming and outgoing firms on the *SILATEE* database in theory account for the creation of new companies and the closure of others. However, even though the data is tantamount to a census, the *QP* do not always picture a longitudinal path for existing firms. From the information available for the period prior to this analysis, it was not possible to monitor 12 per cent of companies in 1995. These are considered to be "temporarily absent" from the database, to the extent that they do not figure on the *QP* for that period, though they are to be found there later. It should be noted, however, that this figure falls to half the total in 2004. The information for 2005 does not contain any "temporarily absent" companies, since no data are available for 2006. From this standpoint, it was taken that all companies not on the database in 2005 were closed. Figures for closures in that year are therefore overstated.

### 3.2. Database on wages from Social Security service (*BDRSS*)

The *BDRSS* is also administrative data, with monthly records which are permanently updated. Therefore, it constitutes a highly important source of information on short-term labour market movements.

Social Security information has come to be used ever more frequently in various countries where studies for the labour market are being carried out. These studies cover mobility and wage determination (see, for example, the work on job creation/destruction cited throughout this article). The information derives from statements of salaries subject to mandatory contribution for the Portuguese social security system and as such its reliability is, *a priori*, higher than any other available information on the labour market.

The *BDRSS* information used in this study covers the period from March 2000 to March 2007. It serves as a basis for a record for all the worker/employer matches for which at least one month of contributions is lodged at the Social Security, with the worker registered as being on the payroll. For each of these matches, a record was made of the information relating to the first and last month for which there is a salary stipulated, along with the number of months in the period when a salary was paid.

For around 75 per cent of jobs recorded here, there are no interruptions in the salary stream, so there was deemed to be one labour relationship. The remaining cases may have corresponded to a seamless working relationship within one contractual agreement but this had to be verified. Given that these cases are scattered and difficult to identify, all cases where there was only a one-month interruption in salary were not considered contractual interruptions.

(2) By people in a firm's service is meant all those who at that moment had work in the firm, however long it lasted, with the conditions being as follows: those with an employment contract and receiving a salary on the basis of it; those connected to the firm but without an employment contract and therefore not in receipt of a regular pay for time worked or supplied (for example owner-managers, unpaid family members, and staff working at cooperatives); those with a contract at another firm/organisation but paid direct by the firm where they actually work; those from the categories above away at the time, whether on holiday, or because of labour disputes, vocational training, sickness or accident from work.

For the remaining cases (interruptions of more than one month), the additional information in various databases was used to identify the justification for the interruption. These were the Records of Payment Equivalents, the Unemployment Records, the Record of Temporary Inability to Work, the Pension Qualification Records and the Additional Welfare Benefit Records. The criterion adopted for regarding a labour relationship as continuous was as follows: whenever there was a period when unemployment benefit was received, or any other subsidy not corresponding to a temporary inability to work (such as maternity or paternity leave or sickness), this was considered an actual break in a labour/contractual relationship; in the cases where the additional information was not conclusive, the decision was taken to consider the labour relationship as on-going, so as not to generate spurious labour market flows. Such situations covered 7 per cent of the total. The exhaustive search through the available databases made it possible to categorise the overwhelming majority of periods of absence from salary receipt situations described above.

These decisions, along with the fact that the database covers actual social security financial contributions, mean that the reported figures for job creation/destruction are lower bounds of the actual values.

#### 4. CONCEPTS

In any study of job creation/destruction, there is a series of fundamental concepts based on the pioneering work of Davis, Haltiwanger and Schuh (1993). The concepts below are from this seminal work, the aim being to keep within the traditional framework and allow for international comparisons using the findings set out here.

**Job creation** – Job creation at time  $t$  equals employment gains summed over all firms that expand or start up between  $t$  and  $t-1$ .

**Job destruction** – Job destruction at time  $t$  equals employment losses summed over all firms that contract or shut down between  $t$  and  $t-1$ .

**Net job creation** – Net employment change at time  $t$  is the difference between employment at time  $t$  and  $t-1$ .

**Job reallocation** – Job reallocation at time  $t$  is the sum of all employment gains and losses that occur between  $t$  and  $t-1$ .

To convert these measures into rates, divide the flows by the average level of employment in the periods  $t$  and  $t-1$ . Davis, Haltiwanger and Schuh (1996) discuss the technical advantages of this measurement against traditional growth rates. For example, for those firms that did not exist at  $t-1$ , growth rates could not be calculated, while in the definition used in this article, they assumed value 2 (and for the case of firms closing down at time  $t$  the destruction rate is -2).

It should be noted that these ways of measuring job creation/destruction fail to take into account two important components in the reallocation process. Firstly, there is no assessment of the effects of changes in the composition of employment within any one company. For example, net zero variations may be associated with the creation and destruction of the same number of jobs (with a concomitant flow of workers) without this being reflected in the measurement defined above. Secondly, the measurements are made at fixed intervals and, therefore, calculations will not reflect job reallocation reverted within that time interval. In both cases, the measurements underestimate the total job reallocation. The databases used do allow worker flows to be analysed, though this degree of detail will be tackled in future research.

Firm size is an important characteristic in the job creation/destruction process. Size, however, relates



to the point when the assessment was made. Firms that enter the market may be measured prior to starting business, and will be classified as small (size zero) but if the measurement is taken during the setup period, they may come into any of the size categories. The conclusions of an analysis can therefore be influenced by the way measurement is carried out. In this study, the following categories of companies ( $N_t$ ) are used:

- i) **Current average:**  $(N_t + N_{t-1})/2$ . This uses the period when change in employment occurs to define the company size. Expansion or shrinkage will therefore affect the definition of size.
- ii) **Previous average:**  $(N_{t-1} + N_{t-2})/2$ . This defines the size of the company in periods before the variation in employment. This measurement is subject to the mean regression fallacy (Friedman 1992).
- iii) **Average of the period:**  $(N_1 + \dots + N_T)/T$ . This defines the size of the company on the basis of average size during the period analysed. This, like the first, also depends on the expansion or shrinkage of employment.

The limitations on these alternative definitions have been widely discussed in the literature (Davis, Haltiwanger and Schuh (1996) and Davidsson, Lindmark and Olofsson (1998). See Hijzen, Upward and Wright (2007) for a summary).

## 5. JOB CREATION AND DESTRUCTION: OVERVIEW

There are many factors that influence how job creation/destruction is seen and one that is specifically important is the question of how often the measurement is made, given the way in which the labour market has been described. From this point of view, the *BDRSS* database can be seen as a fundamental tool in an analysis of the labour market in Portugal, since it is an all-embracing figure issued at monthly intervals. It is, however, rarely used, and this means that comparisons with other widely used databases are advisable. Particular attention is therefore given here to the comparison with the figures in the *QP*, where calculations should, a priori, be very similar.

### 5.1. Annual rates of job creation and destruction: *QP* and *BDRSS*

Job creation/destruction rates for Portugal since 1995 are high and comparable with those recorded in other developed countries. Similar values are obtained from an analysis of the period that the two databases have in common (2001-2005), which gives an added validation to their use. Average job creation rates differ by 0.2 per cent, standing at 13.9 per cent in the *BDRSS* and 13.7 per cent in the *QP*. Job destruction rates also differ slightly, at 12 per cent in the first and 12.4 per cent in the second (Table 1). In terms of profile, the two databases also show similar trends in the way job creation and destruction move: in the 2001-2005 period the rate of job creation fall continuously, and the highest rates of job destruction occur in 2002 and 2003, followed by a slowdown.

The *QP* figures are available for a longer period and if they are split according to the economic cycle – accelerating growth up to 2001 and then slowdown – it can be seen that job creation rates follow a clear path in line with the economic cycle, while job destruction rates rose during the recent slump. For the period 1996-2001, the job creation rate is 14.9 per cent and the destruction rate is 10.8 per cent, leading to a net rise of 4.1 per cent in employment. After 2001, the net figure for job creation fell steeply to 0.4 per cent as a result of the fall on the creation side and a rise, albeit less marked, on the destruction side. It is interesting to note that the poor state of the economy has had a greater impact on the capacity to create new jobs than on the number of jobs destroyed. In developed economies, the typical situa-

Table 1

ANNUAL RATES OF JOB FLOWS 1996 – 2006								
Year	BDRSS				QP			
	Job creation rate	Job destruction rate	Net job creation rate	Job reallocation rate	Job creation rate	Job destruction rate	Net job creation rate	Job reallocation rate
1996	-	-	-	-	12.4	10.5	1.9	22.9
1997	-	-	-	-	14.2	9.8	4.5	24.0
1998	-	-	-	-	14.8	10.3	4.4	25.1
1999	-	-	-	-	14.3	10.5	3.8	24.8
2000	-	-	-	-	16.3	11.4	4.9	27.6
2001	17.1	9.7	7.4	26.7	17.4	12.3	5.1	29.6
2002	15.6	13.2	2.5	28.8	14.6	13.4	1.3	28.0
2003	13.1	13.3	-0.1	26.4	11.7	13.1	-1.4	24.8
2004	12.1	12.3	-0.1	24.4	11.8	11.8	-0.1	23.6
2005	11.5	11.6	-0.1	23.0	13.1	11.4	1.7	24.4
2006	11.3	11.1	0.2	22.5	-	-	-	-
Average								
Period	13.5	11.8	1.6	25.3	14.1	11.4	2.6	25.5
2001-2005	13.9	12.0	1.9	25.9	13.7	12.4	1.3	26.1
Standard deviation								
Period	2.4	1.4	3.0	2.4	1.9	1.2	2.3	2.2
2001-2005	2.4	1.5	3.3	2.2	2.4	0.8	2.5	2.6

Sources: BDRSS (2000-2006); SILATEE (1995-2005). Authors' calculations.

tion is that the process of job reallocation (both inevitable and desirable) leads to a net average rise on the creation side and Portugal is no exception. The 10-year period 1996-2005 shows an average 2.6 per cent rate of net job creation.

## 5.2. Quarterly creation and destruction rates on the BDRSS

There are inter-annual fluctuations in the job creation process, which become clearer at higher frequencies, but that are not captured in the annual adjustment of employment. In particular, there is a marked matching process through trial and error involving individual workers and companies, generating greater inter-annual fluctuations: companies lay off workers whose productivity is lower than expected and workers accept job offers from companies where their qualifications make a better match. Quarterly figures also capture other aspects of the fluctuations, which are smoothed out over the year.

Between March 2001 and March 2007, the volume of workers in employment rose from 2,911,763 to 2,955,841 (Table 2). This represents a gain of 44,078 jobs, but the figures hide the process whereby jobs are created and destroyed to reach this figure. In fact, over this period, new companies and those expanding created 3,704,081 new jobs, with 3,660,003 jobs destroyed as companies contracted or closed.<sup>3</sup>

In terms of the average volume of employment in two consecutive periods, job creation and destruction rates come in at a sizeable percentage of total employment: on average, 5.3 per cent of jobs in each quarter are new jobs, and 5.1 per cent of existing jobs from the previous quarter are destroyed (Table 2).

(3) As already mentioned in Section 4, the net increase in employment may involve hiring and severance of more than one worker for a given vacancy, so these numbers underestimate to a considerable extent the total number of labour relationships actually created and destroyed during this period.



Table 2

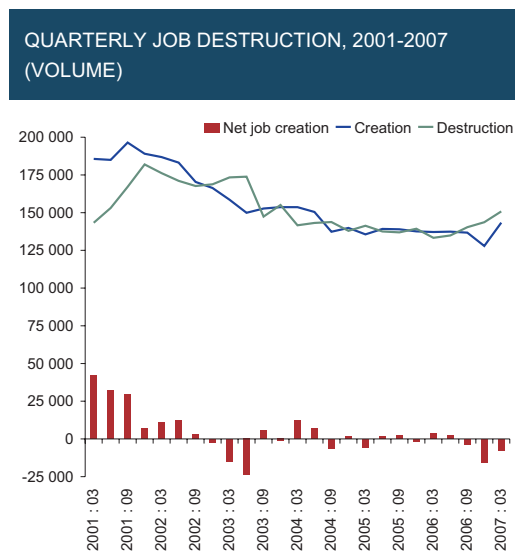
Year : Month	Volume				Rate			
	Total	Job	Job	Net job	Job	Job	Net job	Job
	employment	creation	destruction	creation	creation	destruction	creation	reallocation
2001 : 03	2 911 763	211 382	162 041	49 341	7.3	5.6	1.7	12.9
2001 : 06	2 975 957	191 702	127 508	64 194	6.5	4.3	2.2	10.8
2001 : 09	2 980 608	172 697	168 046	4 651	5.8	5.6	0.2	11.4
2001 : 12	2 972 000	178 979	187 587	- 8 608	6.0	6.3	-0.3	12.3
2002 : 03	2 985 130	212 311	199 181	13 130	7.1	6.7	0.4	13.8
2002 : 06	3 033 072	190 324	142 382	47 942	6.3	4.7	1.6	11.1
2002 : 09	3 013 779	149 666	168 959	- 19 293	5.0	5.6	-0.6	10.5
2002 : 12	2 997 156	157 379	174 002	- 16 623	5.2	5.8	-0.6	11.0
2003 : 03	2 981 162	179 563	195 557	- 15 994	6.0	6.5	-0.5	12.5
2003 : 06	2 993 268	156 693	144 587	12 106	5.2	4.8	0.4	10.1
2003 : 09	2 977 990	133 908	149 186	- 15 278	4.5	5.0	-0.5	9.5
2003 : 12	2 963 687	145 188	159 491	- 14 303	4.9	5.4	-0.5	10.3
2004 : 03	2 977 724	173 499	159 462	14 037	5.8	5.4	0.5	11.2
2004 : 06	3 016 933	158 235	119 026	39 209	5.3	4.0	1.3	9.3
2004 : 09	2 991 113	120 330	146 150	- 25 820	4.0	4.9	-0.9	8.9
2004 : 12	2 981 033	131 668	141 748	- 10 080	4.4	4.7	-0.3	9.2
2005 : 03	2 975 115	152 817	158 735	- 5 918	5.1	5.3	-0.2	10.5
2005 : 06	3 008 260	147 388	114 243	33 145	4.9	3.8	1.1	8.7
2005 : 09	2 990 062	121 587	139 785	- 18 198	4.1	4.7	-0.6	8.7
2005 : 12	2 976 249	129 020	142 833	- 13 813	4.3	4.8	-0.5	9.1
2006 : 03	2 981 057	154 445	149 637	4 808	5.2	5.0	0.2	10.2
2006 : 06	3 015 160	146 073	111 970	34 103	4.9	3.7	1.1	8.6
2006 : 09	2 991 211	119 643	143 592	- 23 949	4.0	4.8	-0.8	8.8
2006 : 12	2 963 515	119 504	147 200	- 27 696	4.0	4.9	-0.9	9.0
2007 : 03	2 955 841	161 462	169 136	- 7 674	5.5	5.7	-0.3	11.2
Average	2 984 354	156 619	152 882	3 737	5.3	5.1	0.1	10.4
Total (2001:06-2007:03)		3 704 081	3 660 003	44 078				
Standard deviation	23 839	27 117	22 632	26 619	0.9	0.8	0.9	1.5

Sources: BDRSS (2000-2007). Authors' calculations.

It should be noted that these volumes show a big seasonal influence. The first quarter of any year shows a major job reallocation process. The third quarter is the period least used by firms to reallocate their workers. This pattern of activity in job creation/destruction is also visible in the intra-annual evolution of the unemployment rate, which has a similar seasonal pattern; the periods of greater reallocation are those when the unemployment rate adjusted for seasonal influences is lower than the unadjusted figure.

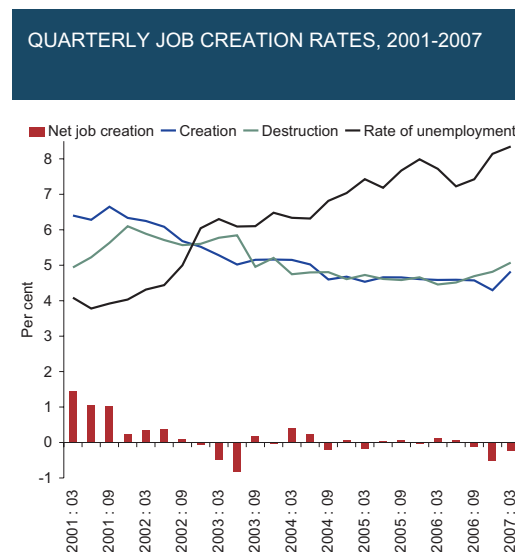
There is an interesting stylised fact, typical of developed economies: the increase in the unemployment rate in recent years has been associated fundamentally with a slowdown in job creation rates, since the job destruction rate has in fact fallen, even if only slightly (Chart 2). This goes against the commonly held opinion that globalisation has led to an increase in unemployment as it causes jobs to be destroyed. In terms of economic policies, these observations suggest that the emphasis should be on worker protection rather than on job protection and on providing better conditions for job creation: the existing legislation, which conditions strongly job destruction, is not only inefficient (it does not stop the destruction), but it is also ineffective (it cuts down the creative process of efficient reallocation of resources).

Chart 1



Sources: BDRSS (2001-2007). Authors' calculations.

Chart 2



Sources: BDRSS; INE Employment survey (2001-2007). Authors' calculations.

## 6. THE CREATIVE PROCESS UNDER THE MICROSCOPE

An analysis of the labour market clearly gains from having statistical information that illustrates how job reallocation occurs. Various factors are important in the analytical process: the size of the firms, their age, their geographical spread, and the heterogeneity of reallocation by degree of average salaries in the firms. These factors are the subject of this section.

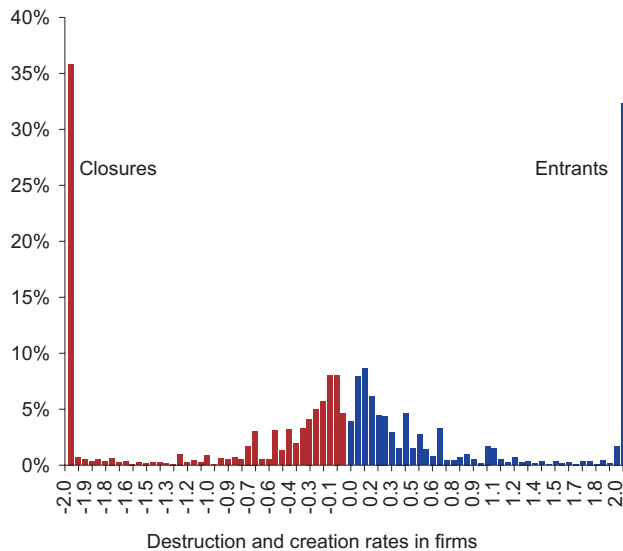
### 6.1. Decomposition: expansion, new entrants, contraction, closures

The process of job creation can be decomposed into firms that expand their labour force and new firms, while the job destruction process can be broken down similarly into those that contract and those that close down. New entries and closures are the two extremes on the distribution rates relating to employment growth. They should be seen in terms of the process whereby new capital is incorporated and obsolete capital is destroyed. This is in line with the view of economic growth in *vintage* capital models. The remaining points on the distribution also provide useful pointers: they give us a more complete view of the Schumpeterian process of creative destruction – new technologies and new consumer needs – and they give us the means to analyse the impact of adjustment costs in companies as they react to aggregate and one-off shocks.

Chart 3 shows the distribution in the rates of job variation at firm level for 2006. The bars furthest to the left and to the right correspond respectively to those companies that entered the market and those that closed down.

One of the most important facts that this chart illustrates is the considerable concentration of job reallocation in a relatively small number of firms, which tend to make considerable adjustments to their labour force, a fact that is in line with the findings of Davis and Haltiwanger (1999) and Foote (1998). This behaviour runs counter to the possible existence of quadratic adjustment costs, which would lead to smoother changes and would tend to support an explanation based on the existence of fixed adjustment costs and the use of policies with bands of inaction, *i.e.* that companies withstand a succession of

Chart 3

**DISTRIBUTION OF JOB CREATION AND DESTRUCTION RATES, 2006**


Sources: BDRSS (2001-2007). Authors' calculations.

Note: The left (right) of the chart shows the percentage of total employment destroyed (created) based on firms that contracted (expanded) their work force by less than 5 per cent, 5-10 per cent and so on in 5 p.p. intervals.

shocks before having recourse to labour force adjustments. Adjustments such as this, when they happen, are huge (Foote (1998)).

It should also be emphasised that the creative dynamism associated with the advent of new firms is similar to the dynamism of closure. During the period 2001-2006, new firms accounted on average for 35 per cent of job creation while companies closing accounted for 40 per cent of job destruction. This small difference is more than offset by the dynamism of expanding companies. These firms are more efficient and for that very reason they are in a better position to ensure their continuity and increase the number of jobs, as well as providing better conditions for their workers, who can get better salaries in return for higher productivity.

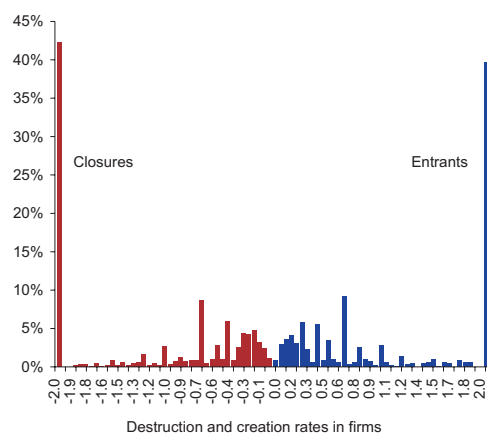
Fixed adjustment costs may explain the behaviour of companies in terms of job adjustment policies, illustrated in Chart 3. This would seem to have a different impact in sectors with different degrees of internal flexibility. With this in mind, a separate analysis was undertaken of firms in manufacturing and in services. The first is typically associated with higher adjustment costs and it should therefore have more concentrated creation and destruction rates.

Charts 4 and 5 confirm this notion. Adjustments in manufacturing are more abrupt (more closures and bigger variations in employment, a picture also reflected on the job creation side). For the economy as a whole, job destruction in firms where there is more than a 20 per cent fall in their level of employment accounts for 77.3 per cent of total job destruction, in manufacturing this percentage is 84.3 per cent and in services 78.3 (Chart 3).

The importance and the size of job creation/destruction flows in companies raises considerable doubts about the validity of aggregate analysis by sector. Models based on a representative employer tend to smooth out the behaviour of firms as very heterogeneous patterns are aggregated.

**Chart 4**

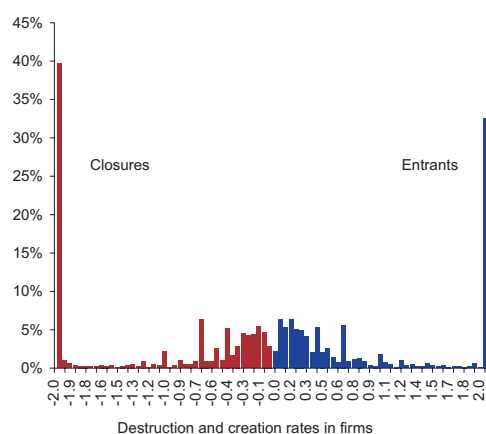
**DISTRIBUTION OF JOB CREATION AND DESTRUCTION RATES**  
Manufacturing, 2006



Sources: BDRSS (2001-2007). Authors' calculations.

**Chart 5**

**DISTRIBUTION OF JOB CREATION AND DESTRUCTION RATES**  
Services, 2006



Sources: BDRSS (2001-2007). Authors' calculations.

**Table 3**

**PERCENTAGE OF JOB CREATION AND DESTRUCTION BY RATES, 2006**

Sector	Rates of destruction in firms			Rates of creation in firms		
	[-2,-1)	[-1,-0.2]	[-0.2, 0)	(0, 0.2]	(0.2, 1]	(1, 2]
Total of the economy	42.6	26.1	31.3	31.1	28.3	40.6
Manufacturing	49.4	35.0	15.7	14.8	37.4	47.9
Services	46.9	31.4	21.7	25.3	35.4	39.2
Manufacturing						
US	32.9	44.0	23.1	30.7	45.1	24.2
Denmark	45.9	33.7	20.4	23.4	37.4	39.1

Sources: BDRSS (2000-2007). Authors' calculations. Davis *et al.* (1996) for the US and Albæk and Sorensen (1998) for Denmark.

The importance and the concentration of major job creation/destruction flows create adjustment problems for workers and for the geographical areas in which the flows occur. These difficulties do not only occur in the destruction processes, where there are more acute problems for the worker looking for a new job, but they also have an effect on the job creation process, since they can lead to mass emigration and a scarcity of basic infrastructures needed to attract new people (schools, hospitals and so on).

**6.2. Sectoral heterogeneity**

An analysis of rates of job creation and destruction between sectors is another way of identifying the existence of idiosyncratic effects at sectoral level in the job creation/destruction process. In the construction industry, there are quarterly job creation rates that are two to three times higher than in manufacturing, which in its turn is slightly lower than in the services sector. The figures for destruction are slightly lower in all sectors.

The high rates of reallocation visible in most sectors and subsectors suggest that job flows are associated with intensive adjustments in each sector, rather than transfer between sectors. This phenomenon is important for an understanding of the impact of shocks in each sector on such variables as productivity and unemployment. These differences are also influenced by the role played by human resources management in each sector. This depends, for instance, on the importance given to human capital and the rate of mutually agreed severance versus lay offs. Ultimately, all these sectoral features have an impact on the equilibrium salary, which reflects the risk of losing a job (and then having to find another) along with the return on investment in the human capital of labour and help to explain the persistent salary gap between sectors.

In sectoral terms, the data reflect the tertiarisation of the Portuguese economy (Table 4). Quarterly job creation rates in services are higher than in manufacturing, though, contrary to expectations, destruction rates in manufacturing are lower than in services. The net loss of employment in manufacturing stems therefore from a lower job creation capacity. The restructuring process that the Portuguese economy is undergoing is affecting above all the job creation capacity of manufacturing where, since June 2001, there has been a negative net job creation.

Services, on the other hand, in spite of a slowdown, continue to provide a positive contribution to job creation. The primary and mining sectors together, like the construction industry, show higher and more volatile job creation and destruction rates. During the period between March 2001 and March 2007, construction had a positive effect on employment (a net creation rate of 0.6 per cent) and the other sectors came in negative (a net creation rate of -0.7 per cent).

Overall, the figures illustrate an important feature of the net job creation process: it is not necessarily the sector with lower job destruction rates that grows in net terms. In fact, jobs are created and destroyed persistently in a process which seems to be related to renovation of the productive structure: companies that are technologically inadequate are being replaced by more productive enterprises better fitted to face the new economic demands.

The heterogeneity visible in the sectors described above is even more visible when sub-sectors are analysed. Table 5 uses annual data and breaks down the information into two-digits classification of economic activity (CAE). A number of facts can be highlighted from this. Firstly, the rates of job destruction are higher in the textiles and leather industry (CAE code *DB* and *DC*) with annual figures at around 13 per cent. In the sub-sectors of manufacturing industry, with few exceptions, there are average annual job destruction figures above the job creation rates. As already mentioned, construction has the highest rates for job creation and destruction, at around 21 and 17 per cent respectively. The services sub-sectors show positive net job creation figures but also have higher rates for both creation and destruction.

### 6.3. Firm size<sup>4</sup>

One of the features of the entrepreneurial structure of the Portuguese economy is the large number of small firms. Defining firm size in terms of the average number of persons working in a firm between 1994 and 2005, the *QP* figures show that 3 out of every 4 firms have less than 5 employees. However, the biggest amount of employment is to be found in companies with between 10 and 49 staff, even though these only account for 10 per cent of existing firms.

In the job creation/destruction process, the size of the firm may play an important part. Bigger firms

(4) The findings presented in this section use the average volume of work in the period to classify companies according to their size (see Section 4). Calculations based on other definitions can be consulted in Centeno, Machado and Novo (2008).

Table 4

## QUARTERLY JOB FLOWS BY SECTOR, 2001 – 2007

Year : Month	Agriculture, Fisheries and Mining			Manufacturing			Construction			Services		
	Job creation	Job destruction	Net job creation	Job creation	Job destruction	Net job creation	Job creation	Job destruction	Net job creation	Job creation	Job destruction	Net job creation
2001 : 03	9.5	7.6	2.0	5.0	4.7	0.3	15.0	6.6	8.4	6.9	5.9	1.0
2001 : 06	10.6	6.3	4.4	3.9	4.1	-0.2	12.0	7.3	4.7	6.5	3.9	2.6
2001 : 09	7.9	8.4	-0.5	4.2	4.8	-0.5	11.2	8.9	2.4	5.5	5.4	0.1
2001 : 12	7.3	11.6	-4.3	3.6	5.2	-1.5	9.7	8.3	1.4	6.4	6.0	0.4
2002 : 03	9.3	10.6	-1.3	5.3	5.3	-0.1	11.3	9.6	1.7	7.0	6.5	0.5
2002 : 06	10.2	7.2	3.0	3.7	4.0	-0.4	9.3	7.7	1.6	6.7	4.3	2.4
2002 : 09	8.8	9.2	-0.4	3.0	4.1	-1.0	7.2	8.6	-1.3	5.0	5.4	-0.3
2002 : 12	7.8	11.5	-3.7	3.0	4.4	-1.4	6.7	8.7	-2.0	5.6	5.4	0.2
2003 : 03	10.9	9.3	1.6	3.9	4.8	-0.9	9.7	9.9	-0.2	6.0	6.0	-0.1
2003 : 06	9.7	7.7	2.0	2.9	3.8	-0.9	7.1	7.7	-0.7	5.7	4.1	1.5
2003 : 09	8.1	9.1	-1.0	2.6	3.6	-1.0	6.5	7.5	-1.0	4.6	4.9	-0.3
2003 : 12	7.0	9.8	-2.8	2.6	3.9	-1.3	6.7	7.7	-1.1	5.6	5.2	0.3
2004 : 03	8.4	7.8	0.6	3.9	4.2	-0.3	8.8	7.1	1.8	6.1	5.4	0.6
2004 : 06	8.6	6.6	2.0	2.5	3.5	-1.0	6.8	6.6	0.3	6.0	3.6	2.4
2004 : 09	6.3	7.7	-1.5	2.5	3.6	-1.1	6.1	7.3	-1.2	4.2	4.8	-0.6
2004 : 12	6.7	9.5	-2.8	2.3	3.7	-1.4	6.0	6.9	-0.9	5.0	4.5	0.5
2005 : 03	6.5	8.6	-2.0	3.4	4.5	-1.2	8.4	7.4	1.1	5.4	5.2	0.2
2005 : 06	8.6	6.4	2.3	2.6	3.6	-1.1	7.1	6.5	0.7	5.4	3.3	2.1
2005 : 09	6.3	7.6	-1.3	2.6	3.6	-1.0	6.5	6.7	-0.2	4.2	4.6	-0.4
2005 : 12	6.1	8.7	-2.6	2.4	3.8	-1.4	6.1	6.8	-0.7	4.8	4.5	0.3
2006 : 03	6.5	8.8	-2.4	3.8	3.8	0.0	9.2	7.3	1.8	5.1	4.7	0.4
2006 : 06	9.3	6.6	2.7	2.9	3.2	-0.3	6.7	7.2	-0.4	5.1	3.2	2.0
2006 : 09	6.8	9.7	-2.9	2.7	3.5	-0.8	6.4	7.4	-1.0	4.0	4.6	-0.5
2006 : 12	6.0	10.2	-4.2	2.6	4.0	-1.5	6.4	7.0	-0.7	4.1	4.7	-0.5
2007 : 03	6.9	10.9	-4.0	4.0	4.8	-0.8	9.7	8.0	1.7	5.4	5.4	0.1
Average	8.0	8.7	-0.7	3.3	4.1	-0.8	8.3	7.6	0.6	5.4	4.8	0.6
Standard deviation	1.5	1.6	2.6	0.8	0.6	0.5	2.3	0.9	2.2	0.9	0.8	1.0

Sources: BDRSS (2000-2007). Authors' calculations.

Table 5

Classification of economic activities (CAE 2 digits)		Rate			
		Job creation	Job destruction	Net job creation	Job reallocation
Code	Designation				
AA	Agriculture	16.1	15.9	0.2	32.0
BB	Fishing	15.3	20.4	-5.1	35.7
CA	Energy production	17.6	18.5	-0.9	36.1
CB	Mining	10.3	11.5	-1.2	21.8
DA	Food and beverage	8.9	8.7	0.2	17.6
DB	Textiles	8.5	13.6	-5.1	22.1
DC	Leather goods	8.4	13.3	-4.9	21.7
DD	Wood and cork	9.8	11.8	-2.0	21.6
DE	Paper, pulp and printing	8.1	10.5	-2.3	18.6
DF	Oil related	3.8	6.7	-2.9	10.4
DG	Chemical and synthetic fibre production	6.5	7.2	-0.7	13.7
DH	Rubber and plastics	8.1	6.2	1.9	14.2
DI	Other non-metal mining	7.8	11.0	-3.2	18.8
DJ	Metallurgical products	9.9	10.6	-0.7	20.4
DK	Machines and machine tools	7.9	8.0	-0.1	15.9
DL	Electrical and optical equipment	8.9	11.3	-2.5	20.2
DM	Transport equipment production	7.9	10.4	-2.4	18.3
DN	Furniture, jewellery, recycling and others	9.4	11.0	-1.6	20.3
EE	Electricity production and distribution	7.1	8.5	-1.3	15.6
FF	Construction	21.1	17.2	3.8	38.3
GG	Wholesale and retail	12.1	11.3	0.8	23.5
HH	Lodging, restaurants	15.1	11.5	3.6	26.6
II	Transport	12.8	11.2	1.6	24.0
KK	Property	19.0	11.8	7.2	30.8

Sources: BDRSS (2000-2007). Authors' calculations.

Note: Some sectors are omitted due to their small size or lack of cover in the Social Security system (for example those that are covered by a different system).

tend to find it easier to react to economic shocks without adjusting their level of employment, but any adjustments that may occur in their productive process have a larger impact on the economy.

Table 6 shows the average quarterly rates for job creation and destruction decomposed into firm size (7 groups), covering the period March 2001 to March 2007. The creation/destruction rates fall monotonically with the size of the firm.

The decomposition in job creation between expansion and new entrants confirms the close relationship between job creation and size. The rates resulting from companies coming into the market are substantially higher for micro enterprises, a fact that can be explained by company life cycle (since firms tend to start on the small size) and by the preponderance of small firms in the country. In the process of job destruction, the split between firms contracting and those closing down shows a similar pattern: if large companies disappear from the market, their regional impact may reach the media, but their closure results in a job destruction figure that is clearly lower than that for small firms.

Table 7 complements the information on rates of job creation and destruction by indicating the proportion of each group of firms in total job creation and destruction. It is clear that smaller companies not only have the biggest rates for job creation and destruction but are also those which contribute most to the total process of job reallocation in the economy. Firms with less than 50 workers, for example, account for around three-quarters of creation and only slightly less than three-quarters of job destruction, a figure well above their importance in the total employment of the economy.



Table 6

AVERAGE RATES OF JOB FLOWS PER COMPANY SIZE, 2001:03 – 2007:03							
Size	Creation			Destruction			Net Creation
	Total	Expansion	Entrant	Total	Contraction	Closure	
Average for the period							
0-4	9.2	4.8	4.3	9.1	5.0	4.1	0.1
5-9	7.0	5.5	1.5	6.7	5.2	1.5	0.3
10-49	5.5	4.7	0.8	5.2	4.3	0.9	0.3
50-99	3.9	3.5	0.4	3.8	3.3	0.5	0.1
100-249	3.2	2.9	0.3	3.3	2.8	0.4	0.0
250-499	3.6	3.3	0.3	3.4	2.9	0.5	0.1
≥ 500	2.7	2.5	0.2	2.4	2.2	0.2	0.3

Sources: BDRSS (2000-2006). Authors' calculations.

Table 7

PROPORTIONS OF AVERAGE QUARTERLY JOB FLOWS BY FIRM SIZE, 2001:03 – 2007:03							
Size	Percentage of total employment	Creation			Destruction		
		Total	Expansion	Creation	Total	Contraction	Closure
Average for the period							
0-4	17.0	29.6	20.5	60.4	30.7	22.5	57.3
5-9	10.8	14.3	14.6	13.1	14.2	14.8	12.1
10-49	27.1	28.3	31.7	16.5	27.9	30.9	17.9
50-99	10.6	7.8	9.2	3.2	7.9	9.1	4.1
100-249	11.3	7.0	8.2	2.7	7.2	8.3	3.6
250-499	7.0	4.7	5.7	1.5	4.6	5.3	2.3
≥ 500	16.2	8.4	10.1	2.5	7.5	9.1	2.7
Average for the period							
< 50	54.9	72.1	66.8	90.1	72.8	68.2	87.3

Sources: BDRSS (2000-2007). Authors' calculations.

Smaller firms may well show reallocation rates significantly higher but the net rates are close to those of other companies. There is, in fact, no pattern that can be drawn between firm size and the net rate of job creation. Between 2001 and 2007, the relative importance of large firms for the net creation of employment is above its proportion of total employment, a fact that runs counter to the idea that the net creation of jobs is fundamentally associated with small companies.

It is possible to decompose the process even more by checking firm size against the sector (Table 8). In the services sector, there are around 2 p.p. higher rates of job creation than in manufacturing and destruction rates are also higher, though only by 0.5 p.p. The most relevant fact in Table 8 is the greater creative dynamics in the services sector, above all in the rate of job creation in bigger companies, in contrast to the net job destruction in the biggest firms in the manufacturing sector.

Charts 6 and 7 show the dynamics of job reallocation in smaller companies, using *QP* data. Chart 6 suggests that companies with three people in their service are those which on average have reallocated a larger number of jobs. As a firm grows, the creation/destruction rate falls rapidly, but job de-

Table 8

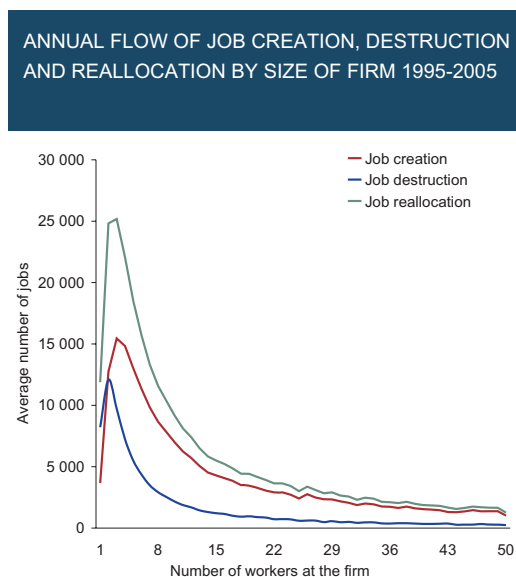
Size	Creation						Destruction					
	Total		Expansion		Creation		Total		Contraction		Closure	
	M <sup>(a)</sup>	Sv <sup>(b)</sup>	M <sup>(a)</sup>	Sv <sup>(b)</sup>	M <sup>(a)</sup>	Sv <sup>(b)</sup>	M <sup>(a)</sup>	Sv <sup>(b)</sup>	M <sup>(a)</sup>	Sv <sup>(b)</sup>	M <sup>(a)</sup>	Sv <sup>(b)</sup>
	Average for the period											
0-4	7.5	8.6	4.3	4.6	3.2	4.1	8.5	8.3	4.9	4.6	3.6	3.6
5-9	5.7	6.3	4.2	5.1	1.5	1.2	6.1	5.7	4.4	4.7	1.7	1.0
10-49	3.7	5.6	3.0	4.9	0.7	0.7	4.2	5.0	3.3	4.2	1.0	0.8
50-99	2.4	4.5	2.1	4.0	0.3	0.5	3.3	3.7	2.7	3.3	0.6	0.5
100-249	2.1	4.0	1.8	3.6	0.3	0.3	2.9	3.5	2.5	3.0	0.4	0.5
250-499	2.0	4.7	1.7	4.3	0.2	0.4	2.8	3.7	2.6	3.1	0.3	0.7
≥ 500	1.3	3.2	1.2	3.0	0.1	0.2	2.4	2.3	2.2	2.1	0.2	0.2

Sources: BDRSS (2000-2007), Authors' calculations.  
Notes: (a) M – Manufacturing, (b) Sv – Services.

struction falls more markedly than job creation.

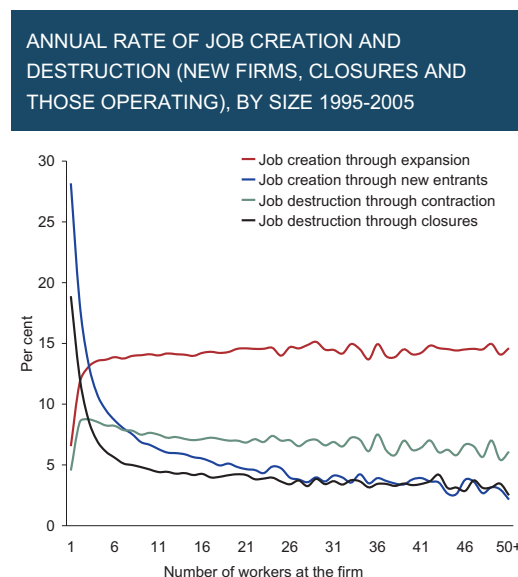
Micro enterprises come into and leave the market very quickly and that in itself justifies the high job re-allocation level in most firms of this size. The high level of job creation and destruction in companies that enter and exit the market stands out in contrast with the low level in firms which are expanding or contracting. This can be seen clearly in Chart 7. As opposed to this, more than 70 per cent of employment created and destroyed by medium-sized and large companies stems from the job expansion/contraction strategies of those companies that remain in the market.

Chart 6



Sources: SILATEE (1995-2005), Authors' calculations.

Chart 7



Sources: SILATEE (1995-2005), Authors' calculations.

### 6.4. The Regional perspective<sup>5</sup>

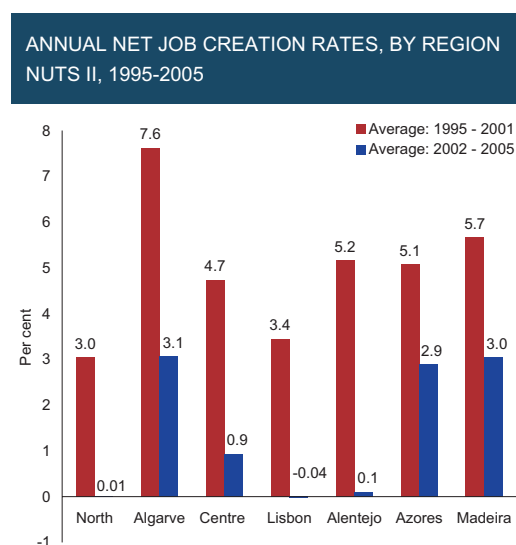
The regional perspective associated with job reallocation is important for an interpretation of possible problems related to matching supply in geographical terms. If major and persistent regional differences in the net creation of jobs are observed, there must be internal migration flows to level unemployment rates, or the existence of flexible salaries that lead to a match in the net flows of job creation between the regions.

A regional analysis of the job creation/destruction flows over the longer period covering 1995 to 2005 points to positive net job creation, relatively stable, over most regions in the country up to 2001 (Chart 8). From that year on, the rate of net job creation becomes virtually nil in those regions where there are most workers (Lisbon, the North and the Centre). The autonomous regions and the Algarve have positive net job creation rates for the most critical period, from 2002 to 2005, with figures of around 3 per cent. The Algarve stands out with a major increase in job creation in 2001, mainly in the construction sector.

As opposed to the northern part of the country, where there has been a modest rate of job creation (with an average of 2 per cent over the period under review), the south has seen a net figure on average of almost 6 per cent. And the south has also seen a larger job reallocation process. In average terms, the Algarve has witnessed an annual job creation rate of 19 per cent and the Alentejo 17 per cent, with job destruction in both regions at around 13 per cent.

Net job creation in the north and in the Algarve may well be at opposite poles, but in terms of jobs stemming from new companies and destruction from those closing, the picture is structurally similar, as can be seen from Table 9. In Lisbon, the job dynamics stem mainly from expansion and contraction, with more than 65 per cent of jobs created in this region coming from expansion and a similar proportion coming from contraction. This scenario also stems from the fact that the average size of Lisbon companies is greater.

Chart 8



Source: SILATEE (1995-2005).

(5) This section is based exclusively on annual data from the *Quadros de Pessoal*.

Table 9

JOB CREATION AND DESTRUCTION: RATES AND DISTRIBUTION BY REGION NUTS II, 1995-2005								
Regions (NUTS II)	Annual rates (%)				Distribution (%)			
	Job creation		Job destruction		Job creation		Job destruction	
	Entrant	Expansion	Closure	Contraction	Entrant	Expansion	Closure	Contraction
North	6.3	7.7	5.4	6.7	45.1	54.9	44.6	55.4
Algarve	8.8	10.3	5.5	7.8	46.2	53.8	41.2	58.8
Centre	6.0	8.0	4.2	6.5	42.7	57.3	39.5	60.5
Lisbon	4.6	8.8	3.8	7.4	34.3	65.7	34.0	66.0
Alentejo	7.2	9.6	5.1	8.6	43.1	56.9	37.4	62.6
Azores	5.2	9.7	3.9	6.9	35.1	64.9	36.4	63.6
Madeira	6.7	9.0	4.3	6.9	42.7	57.3	38.7	61.3

Source: SILATEE (1995-2005).

At a regional level, there is no visible problem related to a persistent net fall in jobs that can be associated to problems of adjustment to the volume of work on offer. There may well be a wide range of experience in the regions in sectoral terms, with the Algarve seeing a higher rate of job creation in construction and services; but the fall in manufacturing jobs has been common to most regions and the regional differences in unemployment figures may well be associated with the size of shocks in certain specific areas.

### 6.5. Average salary levels<sup>6</sup>

The job creation/destruction process is a phenomenon that follows certain economic principles pertaining to market economies, whatever the existing judicial and legal framework. In competitive environments, firms and workers are constantly involved in the search for more productive matches, which not only permit companies to survive but also provide workers with better salaries. In the absence of a direct measurement of productivity, Table 10 makes an approximation through the average level of wages in firms. From this a calculation can be made of the job creation/destruction rates per quintile of salaries.

The findings show that the biggest job creation and destruction rates relate to firms where the average wage is in the lower quintiles. These firms, in fact, also account most for net job creation; net rates go down in parallel with the quintiles. This result is not surprising if we see wages as reflecting the productive skills of the workers: the more productive the worker, the higher the wage paid and the less likely they are to give up a job, not only because of its quality but because of the difficulty there would be in getting another. In specific terms, this difference is particularly visible in the part played in these rates by new firms arriving and others closing: the arrival of firms with lower salaries contribute five times more to the rate of job creation at this level of income than the arrival of firms with higher average wages.

The differences in the creation and destruction rates in terms of wage differentials are not surprising, given the arguments already laid out. The same, in fact, happens in the US (Table 10, last two columns). Looking at the rates for manufacturing, however, the ratio of average annual creation in firms with “very low” wages to those with “very high” wages is bigger in Portugal, standing at 2.7 as against

(6) This section uses the annual data of the QP.

Table 10

## ANNUAL JOB FLOWS BY QUINTILE OF THE AVERAGE SALARY IN THE FIRM, 1996 – 2005

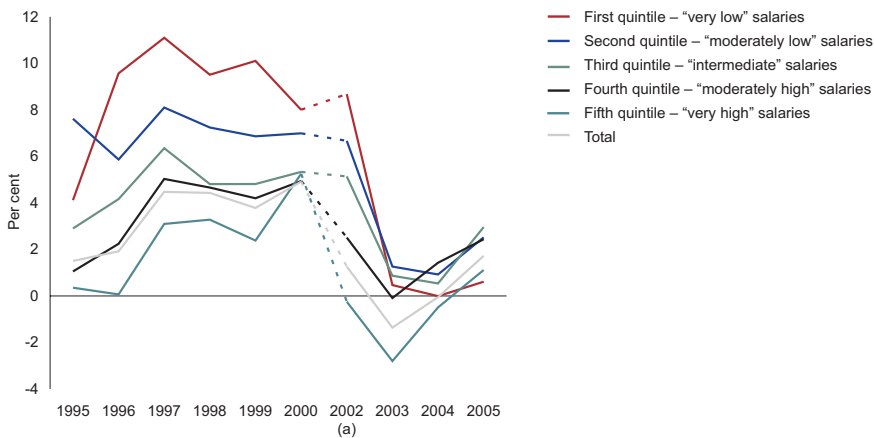
Quintiles of the average salary	Job creation			Job destruction			Net job creation	Job reallocation	US (1973-1988)	
	Entrant	Expansion	Total	Closure	Contraction	Total			Creation	Destruction
Total in the economy										
Very low	15.1	8.6	23.7	9.8	8.3	18.1	5.7	41.8	-	-
Moderately low	9.7	9.6	19.3	6.8	7.3	14.2	5.1	33.4	-	-
Intermediate	6.9	9.4	16.3	5.4	7.2	12.6	3.7	29.0	-	-
Moderately high	4.1	9.0	13.1	3.5	6.8	10.3	2.8	23.4	-	-
Very high	3.0	7.3	10.3	2.7	6.5	9.2	1.1	19.5	-	-
Manufacturing										
Very low	12.1	7.9	20.0	10.3	7.5	17.8	2.2	37.8	12.5	13.3
Moderately low	6.8	7.3	14.1	7.3	6.4	13.7	0.4	27.8	10.4	10.4
Intermediate	4.2	6.1	10.3	5.4	6.1	11.5	-1.2	21.8	9.2	9.5
Moderately high	2.3	5.6	7.9	3.5	6.4	9.9	-2.0	17.7	7.0	8.3
Very high	2.2	5.2	7.5	2.6	6.7	9.3	-1.8	16.7	6.4	9.0

Source: SILATEE (1995-2005); Davis *et al.* (1996) for the US.

Notes: The average salary was calculated for the set of TCO, full time and fully paid. The information relating to salaries is not available for 2001, so that year is not used for the analysis. Job creation and destruction for 2001 is however included. For those firms that closed in 2002, the quintiles refer to the 2000 figure. Average salaries in the first quintile are designated "Very low", the second quintile "Moderately low" and so on.

Chart 9

## ANNUAL NET JOB CREATION RATES BY QUINTILE AVERAGE SALARIES IN FIRMS, 1996-2005



Sources: SILATEE (1995-2005). Authors' calculations.

Note: (a) With salary figures for 2001 unavailable, so that year is not used for the analysis. Job creation and destruction for 2001 is however included. For those firms that closed in 2002, the quintiles refer to the 2000 figure.

2.0. The same is true for destruction, though the difference is smaller, with 1.9 in Portugal and 1.5 in the US. The periods used are in fact not the same, which limits the comparison, but even so, it is likely that part of the difference is due to the greater polarization of the Portuguese economy. The greater protection given to workers on contracts with no fixed term leads to a larger and less efficient turnover of workers with fixed term contracts. These are over-represented in the “very low” wage group (Portugal, 1999).

In short, these data suggest: (i) lower income is related to greater job volatility, but also to higher net job creation rates; (ii) existing policies to protect jobs have failed to protect those on lower income (greater destruction rates) and this situation can also be imputed to the workers themselves, causing more turnover as they look for better jobs; and (iii) as a corollary, new policies geared to job protection should focus on these income brackets.<sup>7</sup>

Chart 9 illustrates how wage quintiles moved between 1995 and 2005. A salient fact here is that every firm reacted to the change in the economic cycle, with lower job creation rates after 2001. In fact, those firms with higher average wages even came in with negative figures (job destruction) after 2001. And firms with lower wages (the first quintile – average wage less than 410 euros in 2005) shift from being the most dynamic to the least, at the bottom of the list of firms that create jobs. Although not depicted, these changes are related to the lower rates of job creation in new firms and in tandem, to a rise in the rate of job destruction through the closure of this type of firm.

## 6.6. The age of the firm<sup>8</sup>

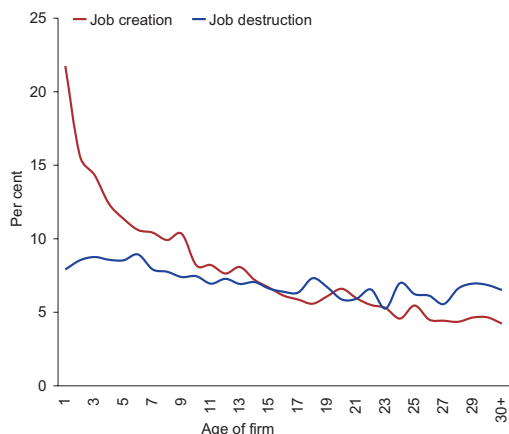
The age of the firm is the indicator normally used to analyse the life cycle dynamics of the employer. Theoretical models of selection effects at the firm level (Jovanovic, 1982) point to major adjustments in younger firms and, as better quality firms survive, the job reallocation rates are likely to fall. This be-

(7) There should be articulation between legislation to protect workers and unemployment legislation. In the analysis of Centeno and Novo (2007) relating to the extension of unemployment benefit in July 1999, this becomes clear. The authors conclude that extending the benefit, measured by the non-distortional income effect, is greater for those with higher income prior to unemployment.

(8) This section uses the annual date of the QP.

**Chart 10**

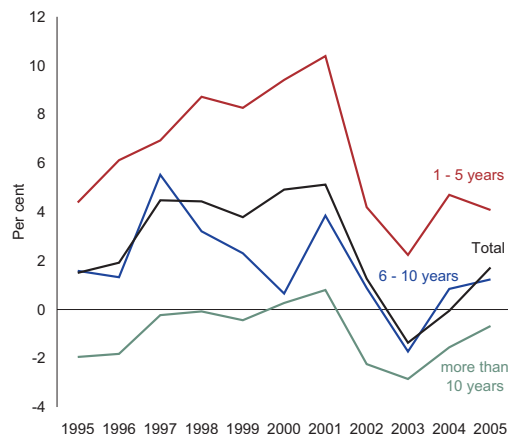
**ANNUAL JOB CREATION AND DESTRUCTION BY AGE OF FIRM, 1995-2005**



Sources: SILATEE (1995-2005). Authors' calculations.

**Chart 11**

**RATE OF NET JOB CREATION BY FIRM AGE BRACKET, 1995-2005**



Sources: SILATEE (1995-2005). Authors' calculations.

behaviour is quite clear in the findings for the Portuguese economy. In average terms, during the 1995-2005 period, job reallocation is inversely related to the age of the firm (Chart 10). Even excluding the entry year, the process of job creation is considerably higher than job destruction in the early stage.

There is clearly a decreasing trend, smoother on the job destruction side, as firms continue operations. The positive job dynamism lasts until the company has been in the market for 15 years, although the rate slows down.

This pattern of growth over the life cycle is in line with the findings of Jovanovic (1982) on the selection effects of companies. Firms tend to grow in the initial stages since they usually start undersized. At this stage, many firms disappear (as a result of the selection process) and those that survive reach a steady size. Later, the destruction rate tends to be greater than the creation rate, as firms with out-of-date technology drop out of the market.

An analysis of the whole period (1995-2005) in terms of net job creation per age of firm (Chart 11) shows a similar pattern to the total employment dynamics already analysed. As can be seen in the previous chart, the differences in behaviour between the first two age brackets stems from the larger job creation of younger firms, since there is no notable difference between the two brackets in terms of job destruction.

This behaviour is consistent with international evidence (Davis and Haltiwanger (1999)).

## 7. INTERNATIONAL COMPARISONS

In the international field, the figures for job creation and destruction are similar in the vast majority of developed countries, with sectoral analysis also showing no discrepancy.

During the last US recession in 2001 and 2002, the average quarterly job creation rate stood at 7.5 per cent, with the job destruction rate slightly higher (Davis, Faberman and Haltiwanger, 2006). It was during this period that Portugal showed the first signs of a shift in the economic cycle. Job creation figures



stood at slightly more than 6 per cent and job destruction marginally below (Chart 12). The difference in rates between the two countries was therefore to the order of 1 p.p..

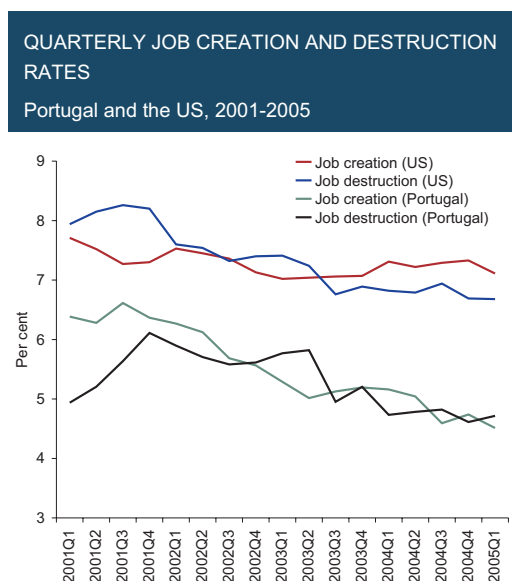
As previously noted, the average rates for job creation and destruction in Portugal for 2001 to 2007 were 5.3 and 5.1 per cent respectively, *i.e.*, 1.9 p.p. lower than in the US. This difference is overstated, however, since the two economies were not at exactly the same point in the economic cycle and the data for Portugal relate to a less expansive stage than in the US. If the figures are corrected for the economic cycle, the job creation and destruction rates will move closer, since the creation rate tends to rise in periods of economic expansion.

An international comparison of the quarterly creation and destruction rates is limited by the scarcity of data available for other countries. However, there are more details available in annual terms and some of the examples of rates are shown in Table 11.<sup>9</sup> Higher rates, as might be expected, are seen in New Zealand, Denmark and the United Kingdom, with most countries standing at around 12 to 13 per cent. The rates in Portugal, therefore, are not very different from most other countries.

In sectoral terms, the figures for Portugal are similar to other economies, both in quarterly and in annual terms. For example, for the 1990 to 2003 period, the North American economy shows average quarterly job creation rates in manufacturing at 4.9 per cent, with job destruction at 5.3 per cent (Davis, Faberman and Haltiwanger, 2005). In a more recent period in Portugal, these rates are 3.3 and 4.1 per cent for the same sector but the creation rate is more acutely affected by the economic cycle. In the service sector, the creation and destruction rates in the US stand at around 6.5 per cent, while the figure for Portugal is 5.4 per cent for creation and 4.8 per cent for destruction. The biggest difference is found in the construction sector, where the rates for Portugal are 6 p.p. below the US.

The figures for the United Kingdom, over a period more closely comparable with Portugal (1997 to 2005), stand at 13.5 per cent for job destruction in manufacturing and 14.8 per cent in services, with the respective figures for job creation standing at 11 and 16.4 per cent (Hijzen, Upward and Wright, 2007). The averages for Portugal are 11.2 and 11.9 for annual rates of job destruction in manufacturing

**Chart 12**



Sources: BDRSS (2001-2007). Authors' calculations; Davis *et al.* (2006).

(9) Detailed extrapolations cannot be made, since there are differences in terms of source, and the periods and sectors do not always coincide.

Table 11

AVERAGE ANNUAL JOB CREATION AND DESTRUCTION AS A PERCENTAGE OF TOTAL EMPLOYMENT												
	Canada	Denmark	Finland	France	Germany	Italy	New Zealand	Sweden	UK	US	Portugal	Portugal
	1983-1991	1983-1989	1986-1991	1991-1996	1983-1990	1984-1992	1987-1992	1985-1992	1998-2005	1984-1991	2001-2006	1995-2005
											<i>BDRSS</i>	<i>QP</i>
Job creation	14.5	16.0	10.4	10.2	9.0	12.3	15.7	14.5	15.2	13.0	13.3	14.0
New firms	3.2	6.1	3.9	4.0	2.5	3.9	7.4	6.5	5.4	8.4	4.6	5.6
Expansion	11.2	9.9	6.5	6.2	6.5	8.4	8.3	8.0	9.8	4.6	8.7	8.4
Job destruction	11.9	13.8	12.0	10.3	7.5	11.1	19.8	14.6	14.5	10.4	11.8	11.4
Closures	3.1	5.0	3.4	3.7	1.9	3.8	8.5	5.0	7.3	7.3	4.7	4.4
Contractions	8.8	8.8	8.7	6.6	5.6	7.3	11.3	9.6	7.2	3.1	7.1	7.0
Net job variation	2.6	2.2	-1.6	-0.1	1.5	1.3	-4.1	-0.1	0.7	2.6	1.6	2.6
Net entrants	0.2	1.1	0.5	0.3	0.5	0.2	-1.1	1.5	-1.9	1.1	4.0	1.2
Net expansion	2.4	1.1	-2.1	-0.4	0.9	1.1	-3.0	-1.6	2.6	1.5	1.6	1.4
Job turnover	26.3	29.8	22.4	20.5	16.5	23.4	35.5	29.1	29.7	23.4	25.1	25.4
Employment in the baseline period ('000s)	7 034	1 447	1 308	12 778	1 635	8 381	828	2 306	18 154	85 824	2 969	2 455
Unemployment rate (%)*	9.5	7.5	3.4	11.3	7.6	11.1	7.5	2.5	5.2	6.3	5.8	6.2

Source: OECD (1994); France, R. Duhautois, *op. Ci*; United Kingdom, Hijzen *et al, op. cit.*; \* Labour Force Statistics, OECD.

Note: Net entrants = New firms - Closures. Net expansion = Expansions - Contractions

[Data's description](#)

**Canada:** Small Business and Special Surveys Divisions, based on tax information from all employers at the firm level. Underestimates employment in small workplaces.

**Denmark:** Integrated database for Labour Market Research – excludes the public sector. Longitudinal file of individuals and establishments.

**Finland:** Enterprise data supplemented by annual establishment surveys. Firms must have operated 6 months and have a minimum turnover of 45000FMK in 1991.

**France:** Register of establishments excluding public sector but coverage uneven because major enterprises excluded.

**Germany:** Collected by Social Insurance Scheme notification procedure. Excludes those < 15 hours/week or employed short periods or with wage below a set minimum.

**Italy:** Uses firm level social security contribution data. Excludes public sector firms. Delays in processing data affect counts, particularly for small firms.

**New Zealand:** Business Demography Database at the level of the activity unit which approximates an establishment. Part-timers = half a full-time position.

**Sweden:** From Database Statistics on Regional Employment longitudinally for individuals and establishments.

**UK:** Dun and Bradstreet for firms. Coverage incomplete for small firms - 1985-1987 excludes firms with less than 5 employees. Problem of delays in processing data.

**US:** Establishment and Employment Microdata file and the Establishment and Longitudinal Microdata file. Covers all domestic business establishments with > 1 employee.

**Portugal – I/SS:** Firm level administrative data.

**Portugal – QP:** Firm level data from Ministry's data, *Quadros de Pessoal*.

and services and 8.5 and 15.1 in job creation. In both cases, the figures for Portugal are slightly lower.<sup>10</sup>

In terms of international comparisons, it is also clear that firm closures are slightly higher than in other countries in relative terms. For France, for example, as reported in Duhautois (2002), the proportion of new firms in the job creation figures stands at around 35 per cent, with 37 per cent for closures. This may be due to the rigidity of existing legislation, which makes it difficult for firms to adjust more smoothly their productive capacity to market conditions. Closures are a last resort, used more frequently than in other economies. Albæk and Sorensen (1998), give similar figures for manufacturing in Denmark.

## 8. CONCLUSIONS

This article analyses job creation and destruction in firms operating in Portugal. This process forms the basis for adjusting the size of the work force to market conditions and is crucial for an efficient functioning of the labour market. If firms are hampered in terms of competitive adjustment, the economy may suffer serious consequences in efficiency and productivity.

Job creation and destruction rates in Portugal are little different from other developed economies, with a cyclical pattern and decreasing rates that are both common to such economies. However, as in other developed economies, the numbers shown for job reallocation understate the turnover of workers who go through the same job. In other words, when creating a job, the firm will typically experiment (by hiring and laying off) more than one worker. So the net creation of one job implies the creation of many jobs with existing functions eliminated at the same time. An assessment of this issue should be made in future research.

The overall evidence collected, in the context of the existing protection for those on no fixed term contracts, leads to a strong polarization in the Portuguese labour market, with the requirement to adjust falling on one (small but growing) part of the market. The loss of well-being related to this polarization is considerable and it translates into a great feeling of insecurity when compared to employment in other western countries, where there is greater job protection (Postel-Vinay and Saint-Martin, 2004 and OECD, 2006). Given the low flexibility that exists in such countries, the insecurity stems from the long duration of unemployment and the inefficient co-existence of various forms of labour contracts, accentuating the asymmetry in the turnover rates between workers with different types of contract.

The existing model of job protection is unable to counter the Schumpeterian process of creative destruction and with the challenges of an ever more integrated economy, the most adequate response to the growing polarization and dynamism of the labour market is the creation of a model based on protecting the worker rather than, as at present, one based on protecting the job.

(10) The UK figures include construction in services, so the figures for Portugal have been recomputed to take this into account.

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