The anatomy of employment growth in the Portuguese firms[1]

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Abstract

This paper considers the process of job creation and destruction and, at the same time, the process of allocating workers to those jobs through the accession and separation of employees. It takes advantage of a unique matched employer-employee dataset, identifying over 30 million monthly-jobs over the period 2000 to 2007 in the Portuguese economy. Our results point to the existence of a clear reallocation process, both in annual and quarterly terms. The rate of job creation fluctuated at around 14 per cent and job destruction at around 12 per cent. Quarterly rates, which characterize short-term fluctuations, stood at around 6 per cent between 2001 and 2006. These job flows have assoicated a significant degree of churning, as simultaneous hirings and separations are observed in both expanding firms and in firms reducing employment. On average, to create a job in an expanding firm there are two hirings and one separation. Symmetrically, in firms reducing employment, the loss of a job is made up of two separations and one hiring. Of interest to other economies, in particular European ones, this adjustment occurs in a context where employment protection legislation poses considerable limits to the ability of firms to adjust the level of employment to economic conditions (in particular, regular employment).

Keywords: Job flows; Worker flows; Hirings; Separations; Polarization
JEL Codes: J21; J63

The worker does not know in detail the nature of the job which he is obtaining nor does he know his own capacities. Nevertheless [the "try and try again" process of advancing to a better position] is the principal method by which workers at the present time improve their condition on their own initiative [Slichter, 1919, p. 218]

1. Introduction

This paper considers the process of job creation and destruction and, at the same time, the process of allocating workers to those jobs through the accession and separation of employees. It takes advantage of a unique matched employer-employee dataset, identifying over 30 million monthly-jobs over the period 2000 to 2007 in the Portuguese economy. We focus on the existing differences in the intensity of hiring and separation of employees in expanding firms (those that expanded employment) and in contracting firms (those that reduced their level of employment). The sectoral differences in this process will also be analyzed, as well as the role of the age of workers, their salary level, the type of contract (temporary or permanent) in the process of adjusting employment and enterprise size.

The interest in the calculation of these flows increased substantially following the work by Steven Davis and John Haltiwanger since the end of the 80's, and of which Davis and Haltianger (1999) is an excellent summary. Since then there has been abundant studies on a number of countries summarized in OECD (1994). Recently, this literature has evolved to include a macroeconomic perspective, of which the work by Hall (2005), Shimer (2007), and Petrongolo and Pissarides (2008) are examples.

This article is at the crossroads of several strands of the economic literature. In particular, we contribute to the description of the behavior of firms facing the decision of recruiting heterogeneous workers, in a context of heterogeneous market conditions and in the presence of institutional constraints that influence the relative cost of the different contractual arrangements available in the economy. The theoretical basis for the existence of a continuous flow of hires and separations in the same firm can be found in the work of Jovanovic (1972), Katz and Gibbons (1991) or Topel and Ward (1992). The existence of shocks in the allocation of labor is the main theoretical motivation to explain the simultaneous existence of creation and destruction of jobs. Additionally, it is recognized that the labor market works with imperfect information, whether it is because of asymmetries in information, as in Gibbons and Katz (1991), or because of the heterogeneity on employee-employer matches that are formed in this economy, as in Jovanovic (1979) or Topel and Ward (1992) (i.e., the existence of a productive feature associated with a specific match, which implies that the same worker has different productivity in different companies and that the same job is not equally productive, regardless of the employee hired to the match). These factors are behind the simultaneous existence of hirings and separations of workers, and explain the fact that multiple hirings and separations are used to obtain a certain level of employment creation and destruction.

It is not possible to test all the results and hypotheses derived from the literature presented above. However, these results can still characterize, in a detailed way, the degree of intensity of the adjustment of employment that takes place in Portuguese companies. Of interest to other economies, in particular European ones, this adjustment occurs in a context where employment

protection legislation poses considerable limits to the ability of firms to adjust the level of employment to economic conditions (in particular, regular employment). These limitations change profoundly the relative price of employment adjustments, for example, among different types of contracts, and thus have an impact on the welfare in the economy that can be quite significant. Blanchard and Landier (2002) argue that the potential benefits may not exceed the potential costs of the coexistence of contracts with different degrees of flexibility. In this study, we identify some traces in the functioning of the Portuguese economy similar to those presented in their work and thus raise questions about the efficiency of the labor market functioning in Portugal[2].

The data used in this article have significant advantages over other sources of information commonly used for the calculation of these indicators. The use of Social Security data, with a monthly periodicity, ensures that it covers all salaried workers. These characteristics are unique and unrepeatable in any of the other sources of information about the Portuguese labor market. Additionally, we used Quadros de Pessoal, with an annual periodicity. The great advantage of the Social Security data is the availability of information on an intra-annual periodicity, while still allowing us to consider detailed information from individuals and firms and their evolution over time.

Our results point to the existence of a clear reallocation process, both in annual and quarterly terms. 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 characterize short-term fluctuations, stood at around 6 per cent between 2001 and 2006. These job flows have assoicated a significant degree of churning, as simultaneous hirings and separations are observed in both expanding firms and in firms reducing employment. On average, to create a job in an expanding firm there are two hirings and one separation. Symmetrically, in firms reducing employment, the loss of a job is made up of two separations and one hiring.

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, the quarterly figures for the US and New Zealand, two countries with significantly lower job protection, are around one percentage point (p.p.) higher.

High rates of job creation and destruction are visible across the sectors, but construction and services have higher rates 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 low 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.

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[2] A more general model of the impact of legislation protecting employment in welfare is found in Blanchard and Portugal (2001).

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 labor markets), often associated with learning new technologies, has an important impact on the determination of employment flows.

This paper focuses on aspects of mobility of employment. However, a natural complement for future analysis will be the consideration of the pattern of wages associated with this process and the pattern of production and productivity of businesses. These issues are part of a research agenda that is important to pursue.

2. 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 labor 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.

2.1. 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 labor 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 Establecimentos - SILATEE).

The main figure for volume of employment used to calculate flows is the total number of people in a firm's service[3] 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

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[3] 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 labor disputes, vocational training, sickness or accident from work.

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.

2.2. 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 labor market movements.
Social Security information has come to be used ever more frequently in various countries where studies for the labor 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 labor 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 labor 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.

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 labor 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 labor/contractual relationship; in the cases where the additional information was not conclusive, the decision was taken to consider the labor relationship as on-going, so as not to generate spurious labor 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.

3. 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.

Hirings – Number of hires during the reference time period.

Separations – Number of separations during the reference time period.

Workers flows – The sum of hires and separations in a given period of time.

To convert these measures into rates, we divide the flows by the average level of employment in 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.

4. GENERAL INDICATORS OF EMPLOYMENT TURNOVER

The relationship between the flow of jobs and workers is not easy to describe, since many competing reasons for the existence of rotation of workers in enterprises. Indeed, several studies show that the behavior of micro enterprises is rather complex (see, for example, Hamermesh, Hassink and van Ours (1996). Companies that reduce their level of employment also hire new workers and companies undergoing expansion also redundant workers.

Clearly, the pattern of employment will always be higher than the flows of workers. The process of redeployment beyond what would be necessary to increase or decrease the level of employment, that is what happens to excess flows of employment, is linked to the revaluation of the quality of a job (understood as a par-employee company) whether it is the employer, and that results in the simultaneous existence of hiring and firing, or by employee, and that results in the existence of voluntary departures and subsequent replacement of the worker.

This process of mobility must be understood as an investment decision, which must be considered permanently by comparing the costs of change of partner in the labor market with the benefits of future earnings (Jovanovic, 1979). Thus, the existence of flows of workers over flows of employment should be understood as essential for the functioning of the labor market and ensures that the individual progress as referred Slichert and has been identified in many empirical studies (and Topel and Ward, 1992, for example).

Table 1 presents the rates of job creation and destruction and the rates of hiring and separation of workers per year. The figures presented are based on annual observations of the stock of employment at a fixed point in time, in this case March.

[Table 1 here]

At the end of the sample period the creation and destruction rates were quite similar, standing at around 12 per cent. Thus, every year, expanding firms created 12 jobs per each existing 100 jobs and, similarly, 12 jobs were destroyed in firms reducing their employment level. As a consequence net job creation was almost nil. However, this process of job creation and destruction was accompanied by a significant degree of churning, as workers flows were much higher than job flows. In both cases, workers flows were more double those of job flows.

This is easier to gauge from Table 2, where we separate firms by their employment growth activity, as firms with net creation, firms with net destruction and firms with employment stability.

[Table 2 here]

There we can see that firms increasing their employment level hire two workers and separate from one worker for each net job created. Excessive rotation corresponds to 70 per cent of the job creation rate, i.e., to generate 100 jobs these firms hire 170 workers. The activity of firms destroying jobs is also marked by a significant churning of workers. The degree of churning is, however slightly smaller; to destroy 100 jobs firms separate from 160 workers.

It is interesting to note that firms not engaged in employment growth or decline have also a high degree of hires and separations, on average they hire and separate from 10 per cent of their workforce.

There is a clear distinction in terms of hiring and separation intensities between firms with net creation and destruction of employment. Firms expanding their employment destroy a much

smaller share of jobs than firms reducing their employment (and vice-versa for the hiring activity). This is contrast with the results in Abowd et al (1999) for France, but it should be associated with the differences in the samples used; we have all firms in the Portuguese economy, whereas Abowd et al sample includes only larger firms, that typically have a much stronger churning activity.

5. THE CREATIVE PROCESS UNDER THE MICROSCOPE

An analysis of the labor 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.

5.1. Decomposition: expansion, new entrants, contraction, closures

The process of job creation can be decomposed into firms that expand their labor 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 1 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.

[Chart 1 here]

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 labor 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 shocks before having recourse to labor 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 1. 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

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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 2 and 3 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 1).

[Charts 2 and 3 here]

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.

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).

5.2. 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 labor and help to explain the persistent salary gap between sectors.

In sectoral terms, the data reflect the tertiarisation of the Portuguese economy (Table 3). 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.

[Table 3 here]

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 4 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.

[Table 4 here]

5.3. Firm size[4]

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 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 5 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.

[Table 5 here]

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

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[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).

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 6 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 here]

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 7). 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.

[Table 7 here]

Charts 4 and 5 show the dynamics of job reallocation in smaller companies, using QP data. Chart 4 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 destruction falls more markedly than job creation.

[Charts 4 and 5 here]

Micro enterprises come into and leave the market very quickly and that in itself justifies the high job reallocation 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 5. 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.

6.5. Average salary levels[5]

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

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[5] This section uses the annual data of the QP.

better salaries. In the absence of a direct measurement of productivity, Table 8 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.

[Table 8 here]

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 8, 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 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.[6]

Chart 6 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.

[Chart 6 here]

7. INTERNATIONAL COMPARISONS

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[6] 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-distortionary income effect, is greater for those with higher income prior to unemployment.

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 7). The difference in rates between the two countries was therefore to the order of 1 p.p..

[Chart 7 here]

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.

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, 2006). 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 and services and 8.5 and 15.1 in job creation. In both cases, the figures for Portugal are slightly lower.[7]

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. CONCLUSION

This article analyzes job creation and destruction and worker flows in firms operating in Portugal. This process forms the basis for adjusting the size of the work force to market

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[7] The UK figures include construction in services, so the figures for Portugal have been recomputed to take this into account.

conditions and is crucial for an efficient functioning of the labor market. If firms' employment adjustment capacity is hampered, the economy may suffer serious consequences in efficiency and productivity terms.

The level of the job creation and destruction rates in Portugal is comparable to that of other developed economies, as is the cyclical pattern and the slowdown observed lately. However, as in other developed economies, job reallocation figures 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 simultaneously the creation of many positions and the elimination of existing functions.

The overall evidence collected, in the context of the distinct protection for those on fixed- and on permanent-term contracts, leads to a strong polarization of the Portuguese labor market, with the requirement to adjust falling on one (small but growing) part of the market. The loss of welfare 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 labor 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. With the challenges of an ever more integrated economy, the most adequate response to the growing polarization and dynamism of the labor market is to abandon the current model of job protection in favor a model based on protecting the worker.

These indicators are shared by the labor markets of many developed economies. In France, Denmark and the United Kingdom there is evidence of the existence of large flows of jobs and workers. The level of these flows is still lower than that seen in the U.S.. The evolution of the labor market in countries with high employment protection has been characterized by an increasing use of more flexible contractual forms rather than permanent contracts, which are difficult to terminate. In a situation where businesses need larger degrees of flexibility, reflected in the existence of high levels of excess rotation, the burden imposed on workers more exposed to this rotation may have consequences for the overall welfare and generate phenomena of polarization similar to those that have been observed in some advanced economies. The indicators obtained for Portugal are an example of this polarization process.

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Table 1 - Rates of Creation/Destruction of jobs and Hiring and Separation per 100 employees

	Employment		Workers		
Ano	Rate of job creation	Rate of job destruction	Hiring rate	Separation rate	Net employment change
2001	17.1	9.7	30.6	23.3	7.4
2002	15.6	13.2	29.4	26.9	2.5
2003	13.1	13.3	25.7	25.8	-0.1
2004	12.1	12.3	23.9	24.0	-0.1
2005	11.5	11.6	23.3	23.4	-0.1
2006	11.3	11.1	23.5	23.3	0.2

Source: BDRSSS (2000-2007).

Note: The ratios are computed for all firms in the economy.

Table 2 - Rates of Creation/Destruction of jobs and Hiring and Separation by firm employment growth categories per 100 employees

Employment growth category	Year	Rate of job creation (1)	Hiring rate (2)	Separation rate (3)	Rate of job destruction (4)
Firms with net creation	2001	23.6	39.1	15.5	-
	2002	21.8	38.6	16.7	-
	2003	21.4	37.3	15.9	-
	2004	20.8	36.4	15.6	-
	2005	19.9	35.3	15.5	-
	2006	19.1	35.4	16.3	-
	Average	**21.1**	**37.0**	**15.9**	**-**
Firms with net destruction	2001	-	13.2	33.4	20.2
	2002	-	13.3	33.3	20.0
	2003	-	11.4	31.6	20.2
	2004	-	10.3	29.3	19.1
	2005	-	10.7	28.5	17.8
	2006	-	10.6	28.4	17.8
	Average	**-**	**11.6**	**30.8**	**19.2**
Firms with employment stability	2001	-	11.9	11.9	-
	2002	-	11.9	11.9	-
	2003	-	11.0	11.0	-
	2004	-	9.8	9.8	-
	2005	-	9.2	9.2	-
	2006	-	9.0	9.0	-
	Average	**-**	**10.5**	**10.5**	**-**

Fontes: BDRSSS (2000-2007). Cálculos dos autores.
Note: Excludes entry and exit of firms. The ratios are computed relative to the firms within each growth category.

Chart 1

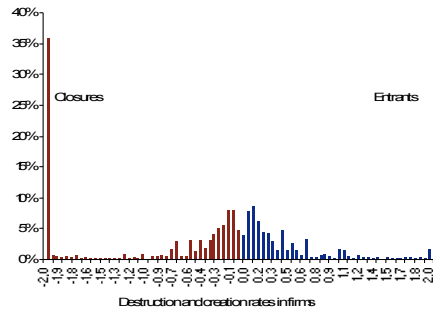**Distribution of Rates of Job Creation and Destruction**

Chart 2

Distribution of Rates of Job Creation and Destruction
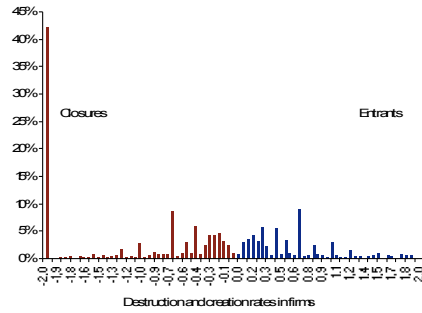**Manufacturing**

Chart 3
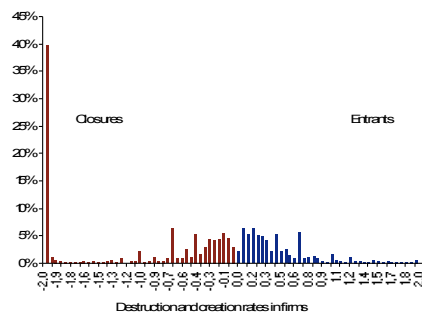
Distribution of Rates of Job Creation and Destruction
Services

Table 3

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	5	4,7	0,3	15	6,6	8,4	6,9	5,9	1
2001 : 06	10,6	6,3	4,4	3,9	4,1	-0,2	12	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	0,4
2002 : 03	9,3	10,6	-1,3	5,3	5,3	-0,1	11,3	9,6	1,7	7	6,5	0,5
2002 : 06	10,2	7,2	3	3,7	4	-0,4	9,3	7,7	1,6	6,7	4,3	2,4
2002 : 09	8,8	9,2	-0,4	3	4,1	-1	7,2	8,6	-1,3	5	5,4	-0,3
2002 : 12	7,8	11,5	-3,7	3	4,4	-1,4	6,7	8,7	-2	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	6	-0,1
2003 : 06	9,7	7,7	2	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	2,6	3,6	-1	6,5	7,5	-1	4,6	4,9	-0,3
2003 : 12	7	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	2,5	3,5	-1	6,8	6,6	0,3	6	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	6,9	-0,9	5	4,5	0,5
2005 : 03	6,5	8,6	-2	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	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	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
2006 : 09	6,8	9,7	-2,9	2,7	3,5	-0,8	6,4	7,4	-1	4	4,6	-0,5
2006 : 12	6	10,2	-4,2	2,6	4	-1,5	6,4	7	-0,7	4,1	4,7	-0,5
2007 : 03	6,9	10,9	-4	4	4,8	-0,8	9,7	8	1,7	5,4	5,4	0,1
Average	8	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

Sources: BDRSS (2000-2007). Calculations by the authors.

Table 4

AVERAGE ANNUAL JOB FLOWS PER SECTOR (CAE 2 DIGITS), 2001 – 2006

Classification of economic activities (CAE 2 digits)		Rate			
Code	Designation	Job creation	Job destruction	Net job creation	Job reallocation
AA	Agriculture	16,1	15,9	0,2	32
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	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	-3,2	18,8
DJ	Metallurgical products	9,9	10,6	-0,7	20,4
DK	Machines and machine tools	7,9	8	-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	-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
KK	Property	19	11,8	7,2	30,8

Sources: BDRSS (2000-2007). Calculations by the authors.

Note: Somes sectors are omited due to their small dimension or reduced coverage from the Social Security (for example, for being covered by alternative sistems)

Table 5

AVERAGE RATES OF JOB FLOWS PER COMPANY SIZE, 2001:03 – 2007:03

Size	Creation			Destruction			Net Creation
	Total	Expansion	Entry	Total	Contraction	Exit	
Average for the period							
0-4	9,2	4,8	4,3	9,1	5	4,1	0,1
5-9	7	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
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). Calculations by the authors.

Table 6

		Creation			Destruction		
PROPORTIONS OF AVERAGE QUARTERLY JOB FLOWS BY FIRM SIZE, 2001:03 – 2007:03							

Size	Percentage of total employment	Creation			Destruction		
		Total	Expansion	Entry	Total	Contraction	Exit
Average for the period							
0-4	17	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	8,2	2,7	7,2	8,3	3,6
250-499	7	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). Calculations by the authors.

Table 7

AVERAGE QUARTERLY JOB FLOWS PER SIZE OF FIRM AND SECTOR, 2001:03 – 2007:03

Size	Creation						Destruction					
	Total		Expansion		Entry		Total		Contraction		Exit	
	M [a]	Sv [b]	M [a]	Sv [b]	M [a]	Sv [b]	M [a]	Sv [b]	M [a]	Sv [b]	M [a]	Sv [b]
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
10-49	3,7	5,6	3	4,9	0,7	0,7	4,2	5	3,3	4,2	1	0,8
50-99	2,4	4,5	2,1	4	0,3	0,5	3,3	3,7	2,7	3,3	0,6	0,5
100-249	2,1	4	1,8	3,6	0,3	0,3	2,9	3,5	2,5	3	0,4	0,5
250-499	2	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	0,1	0,2	2,4	2,3	2,2	2,1	0,2	0,2

Sources: BDRSS (2000-2007). Calculations by the authors.
Note: [a] M- Manufacturing [b] Sv- Services
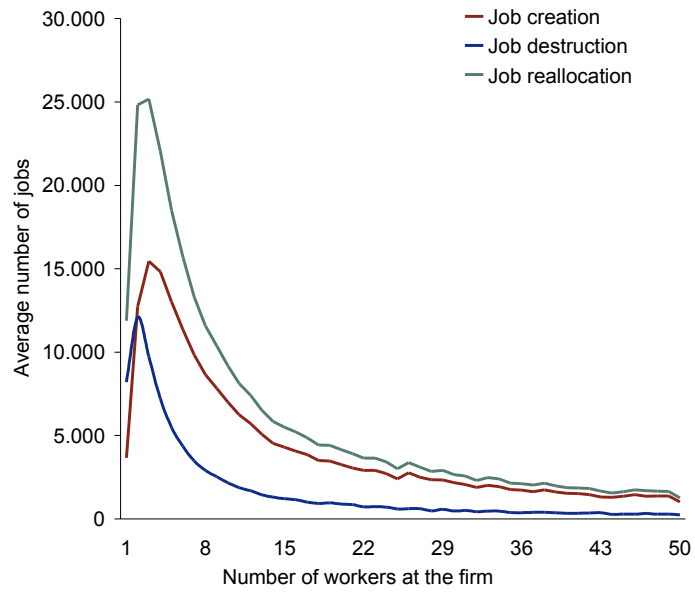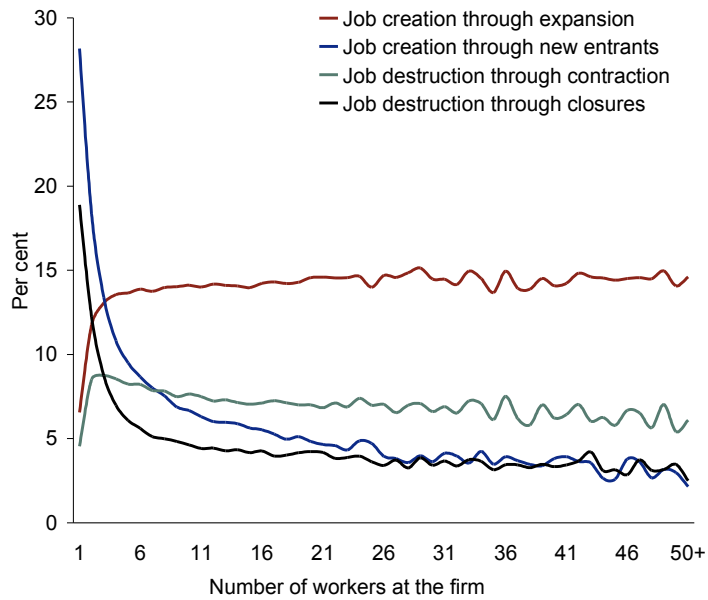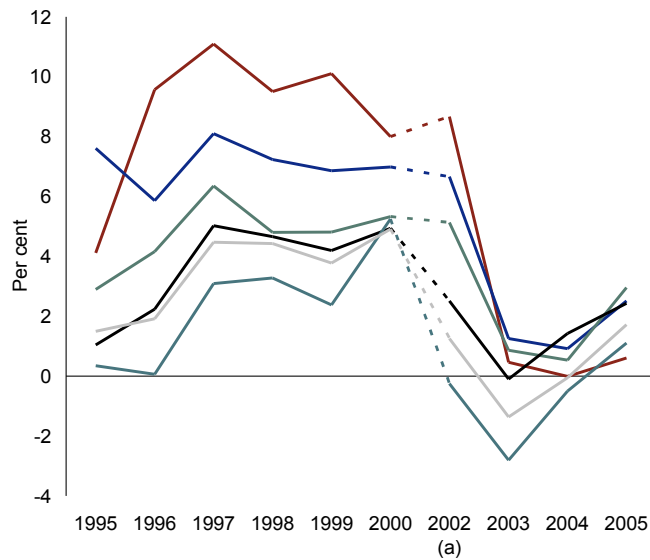
Chart 4

Chart 5

Chart 6
Taxas anuais de criação líquida de emprego por quintis das remunerações médias das empresas, 1995-2005


Sources: SILATEE (1995-2005). Calculation by the authors.

Note: (a) Due to the salary earn information is not available for 2001, this year doesn not reflect in the evolutionary analysis. Though the job creation and destruction considers 2001. The quintiles atribution to the companies that closed in 2002, refers to its 2000 quintile. The black line is the average for the economy; the remaining lines follow the order of the quintiles, starting at the 1st quintile at the top of the chart to the 5th quintile at the bottom.

Chart 7

Trimestral Job Creation and Destruction Rates
Portugal vs US, 2001 – 2005
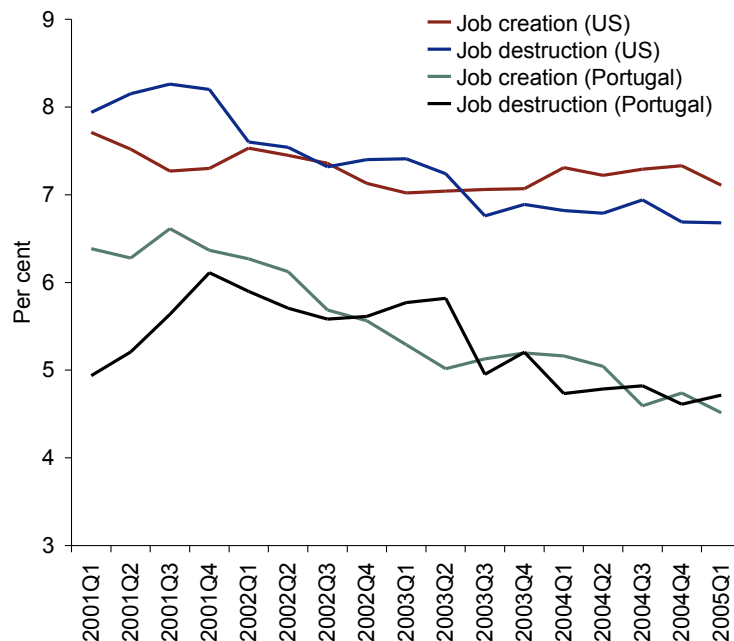
Source: BDRSS (2001-2007). Calculations by the authors; Davis *et al.*(2006).

Table 8

Quintiles of the average salary	Job creation			Job destruction			Net job creation	Job reallocation	US (1973-1988)	
	Entry	Expansion	Total	Exit	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	-	-
Moderately high	4,1	9	13,1	3,5	6,8	10,3	2,8	23,4	-	-
Very high	3	7,3	10,3	2,7	6,5	9,2	1,1	19,5	-	-
Manufacturing										
Very low	12,1	7,9	20	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	17,7	7	8,3
Very high	2,2	5,2	7,5	2,6	6,7	9,3	-1,8	16,7	6,4	9

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

Notes: The average salary was determined only for the set of TCO in full time and with complet wage. Due to the salary earn information is not available for 2001, this year doesn not apear in the evolutionary analisys. Though the job creation and destruction considers 2001. The quintiles atribution to the companies that closed in 2002, referes to its 2000 quintile. The average salary on the first . quintile are designated by Moderatly Low , and so forth.