The University of
Nottingham

research paper series

Globalisation and Labour Markets

Research Paper 2007/01

Job creation, job destruction and the role of small firms:
firm-level evidence for the UK

by

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Abstract

Evidence on job creation and destruction for the UK is still limited compared to that available from other countries. What evidence there is refers almost entirely to the manufacturing sector, with the most recent figures referring to the 1980s. There are therefore no recent estimates for the great majority of firms in the UK. In this paper we use firm-level data from 1997–2005 to calculate job creation and destruction rates for almost all sectors, including services. We show that firms in the service sector exhibit much higher rates of job creation *and* slightly higher rates of job destruction. One-third of new jobs are created by the entry of new firms, while half of lost jobs are destroyed by the exit of firms. "Small" firms (those with fewer than 100 employees) account for a disproportionately large fraction of job creation and destruction relative to their share of employment. This finding is robust to the definition of firm size used.

Outline

1. *Introduction*
2. *Data*
3. *Methodology*
4. *Job reallocation in the UK 1997–2005*
5. *The role of firm size*
6. *Conclusions*

Non-Technical Summary

How many jobs are created and destroyed each year in the UK? Perhaps surprisingly, evidence on this issue for the UK is rather limited compared to that available from other countries. It is an important question partly because the reallocation of jobs has direct consequences on workers, who must move from those jobs which disappear to the new jobs which are constantly appearing. In this paper we use a comprehensive database of UK firms to measure the total numbers of jobs created and detroyed from 1997–2005. Unlike previous measures, we include firms in the service sector as well as in manufacturing, and we include measures of firm entry and exit.

Over the period in question, approximately 53,000 jobs were created and approximately 51,000 destroyed *each week*. The service sector accounts for 80% of this turnover, creating about 44,000 jobs per week and destroying about 40,000. The entry of new firms accounts for about 40% of job creation, while the exit of firms accounts for almost exactly 50% of all jobs destroyed. "Small" firms (those with fewer than 100 employees) account for a disproportionately large fraction of job creation and destruction relative to their share of employment.

1 Introduction

Evidence on job reallocation for the UK is still limited compared to that available from other countries. Estimates are either restricted to the manufacturing sector, or are based on samples which exclude firm entry and exit, or are out of date. Those estimates which are available also tend to vary rather widely. Having reliable measures of job reallocation is important for several reasons. First, worker movements associated with job reallocation are more likely to be involuntary than other movements and may therefore involve considerable adjustment costs to individuals concerned. Second, the focus on job flows sits well with the theoretical models of the labour market based on search costs.[1] Third, high rates of simultaneous job creation and destruction within narrowly defined industries are at odds with the conventional view of groups of homogeneous firms, and lends supports to more recent models of heterogeneous firms — see for example Melitz (2003) and Bernard, Redding, and Schott (Forthcoming).

A particularly important issue in the measurement of job reallocation is the contribution of "small" and "large" firms in the creation of new jobs. Davis, Haltiwanger, and Schuh (1993) (DHS) claim that, in contrast to the conventional wisdom, it is large and not small firms that account for the bulk of job creation and destruction. They argue that the conventional view that small firms contribute disproportionately to job creation is based on a statistical fallacy and an incorrect interpretation of the data. This claim has however been disputed (see, for example Davidsson, Lindmark, and Olofsson (1998)), and this important policy issue is not clearly resolved for the UK.

This paper contributes to the existing literature in two ways. First, we provide a detailed recent account of job reallocation in the United Kingdom for the period 1997–2005 for both the manufacturing and the service sectors. We compare both the average and the distribution of job creation and destruction rates between manufacturing and services. Second, we measure the relationship between job reallocation and firm size in the UK.

Section 2 describes the data we use and Section 3 describes the measures that will be used to document job creation and destruction. Our results on overall job reallocation are presented in Section 4. In Section 5 we describe the role of firm size in explaining job turnover. Section 6 concludes.

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[1] See, *inter alia*, Mortensen and Pissarides (1994) and Pissarides (2000) for an overview.

2   Data

The data we use to calculate job reallocation rates come from the *Inter-Departmental Business Register* (IDBR). The IDBR is a live register of all businesses in the UK, held by the Office for National Statistics since 1994. This register is based on inputs from two main sources: Customs and Excise (VAT registered businesses) and the Inland Revenue (PAYE registered businesses). Enterprises which are not registered for VAT, and who do not operate the PAYE scheme are not included in the register. However, the Office of National Statistics (ONS 2001) believes that the IDBR covers about 99% of business activity in the UK, and it is used by them as the key sampling frame for UK Business Statistics. Because the IDBR is a live register, we use annual "snapshots" which form the new *Business Structure Database* (BSD) (ONS 2006), which contains data for each year from 1997 onwards.

The unit of analysis on which we focus is an *enterprise*. An enterprise is defined as the "smallest combination of legal units that is an organisational unit producing goods and services, which benefits from a certain degree of autonomy ..." (ONS 2001). Within the BSD each enterprise is allocated a unique reference number, with the BSD being designed to maintain the integrity of the enterprise. We exclude enterprises which are coded as inactive. This allows us to track enterprise entry, exit and employment over time.

The resulting dataset comprises between 1.5–1.7 million annual observations on enterprises from 1997 to 2005. Table 1 reports the number of enterprises in each year, their total and average employment, plus information on entry and exit. The firms in our sample report an employment of 18.673 million in 2003. This is approximately 90% of the private sector workforce in the UK.[2]

3   Methodology

In this paper we follow the basic methodology introduced by DHS to measure job turnover. Employment growth in enterprise i between $t-1$ and t is given by:

$$g_{it} = \frac{(N_{it} - N_{it-1})}{\frac{1}{2}(N_{it} + N_{it-1})} \tag{1}$$

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[2]Black, Richardson, and Herbert (2004, Table 4) estimate a total of 24.646 million private sector jobs less 3.798 million self-employed. The remaining private sector employee jobs are in education and health services, which we have excluded.

Dividing by average employment ensures that g is constrained between -2 and 2 in the presence of entry and exit.

In order to aggregate employment growth across enterprises we define a weight:

$$w_{it} = \frac{(N_{it} + N_{it-1})}{\sum_{i \in \mathcal{E}_{jt}}(N_{it} + N_{it-1})} \tag{2}$$

where $\mathcal{E}_{jt}$ is the set of enterprises in group j at time t or $t-1$.[3] In the analysis, a "group" j could be a sector, region, firm size category and so on. The rate of job creation, JC_{jt}, within any group can then be calculated by taking the sum of employment-weighted employment growth for positive values of g_{it}:

$$JC_{jt} = \sum_{i \in \mathcal{E}_{jt}, g>0} w_{it} g_{it} \tag{3}$$

Conversely, the rate of job destruction JD_{jt} in group j is given by the sum of the employment-weighted growth in employment for negative values of g_{it}:

$$JD_{jt} = \sum_{i \in \mathcal{E}_{jt}, g<0} w_{it}|g_{it}| \tag{4}$$

JC_{jt} can be further broken down into that which arises because firms grow and that due to firm entry. Likewise, JD_{jt} can be broken down into that due to continuing firms losing employment and that due to firm exit.

Note that, in common with the rest of the literature, this measure based on enterprise employment ignores two potentially important parts of job reallocation. The first is job reallocation which occurs *within* enterprises because we do not measure all inflows and outflows into each firm, only their total employment.[4] Even within firms, gross flows are unlikely to equal net employment change. For example, firms may change the composition of their workforce, or they may reallocate jobs across separate production units. The second is job reallocation which occurs between $t-1$ and t but which is not captured by changes in N_{it}. For example, a firm which creates a job and destroys a job between $t-1$ and t is recorded has having zero job reallocation. For both these reasons, our measures are therefore underestimates of total job reallocation.

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[3] $\mathcal{E}_{jt}$ therefore includes enterprises which disappear and enter between $t-1$ and t.

[4] The use of linked employer-employee data offers the possibility of measuring these within-enterprise flows. See Abowd, Corbel, and Kramarz (1999) for example.

The gross job reallocation rate JR_{jt} is defined as $JC_{jt} + JD_{jt}$. Gross job reallocation can be thought of as the "maximum" number of worker movements needed to adjust to changes in employment opportunities across enterprises. It is the maximum in the sense that it counts workers both when they lose their jobs as a result of job destruction and also when they move to a job which is created. In contrast, the minimum amount of worker reallocation for a given rate of job reallocation is given the net reallocation rate (or the net employment growth rate):

$$NR_{jt} = JC_{jt} - JD_{jt}, \tag{5}$$

while the rate of excess reallocation in group j is the difference between the gross and net rates of job reallocation:

$$XR_{jt} = JR_{jt} - NR_{jt}. \tag{6}$$

4   Job reallocation in the UK 1997–2005

Table 2 reports the aggregate job creation and destruction rates for manufacturing, services and the economy as a whole. In manufacturing the job creation rate averages 11% per year, while job destruction is -13.5%. These relative magnitudes reflect the continuing decline in manufacturing employment over this period. Both creation and destruction rates are higher in services, at 16.4% and -14.8% respectively, illustrating that a sector which is growing does not necessarily have low rates of job destruction.

In overall terms these rates amount to approximately 53,000 jobs being created and 51,000 being destroyed *each week*, with the service sector accounting for about 80% of this turnover.

The fourth column of Table 2 (net reallocation rates) confirms that in most years manufacturing was shrinking, while services were expanding in almost every year. The difference in the growth rates of the two sectors is largely due to differences in the job creation rate rather than job destruction.

In Table 3 we break down total job creation rates into that caused by enterprise growth and enterprise entry, and job destruction rates into that caused by decline and exit. The entry of new firms account for about 40% of job creation, while the exit of firms accounts for almost exactly 50% of all jobs destroyed, with a slightly higher proportion of job reallocation in services due to enterprise entry and exit.

To put our results in perspective, Figure 1 compares these results with previous estimates that have been obtained for the UK. The closest comparison to our figures are provided by Barnes

Figure 1: Comparison of UK estimates of job reallocation rates

Notes
(1) All estimates are based on manufacturing except where stated
(2) Konings and Blanchflower & Burgess estimates exclude plant entry and exit
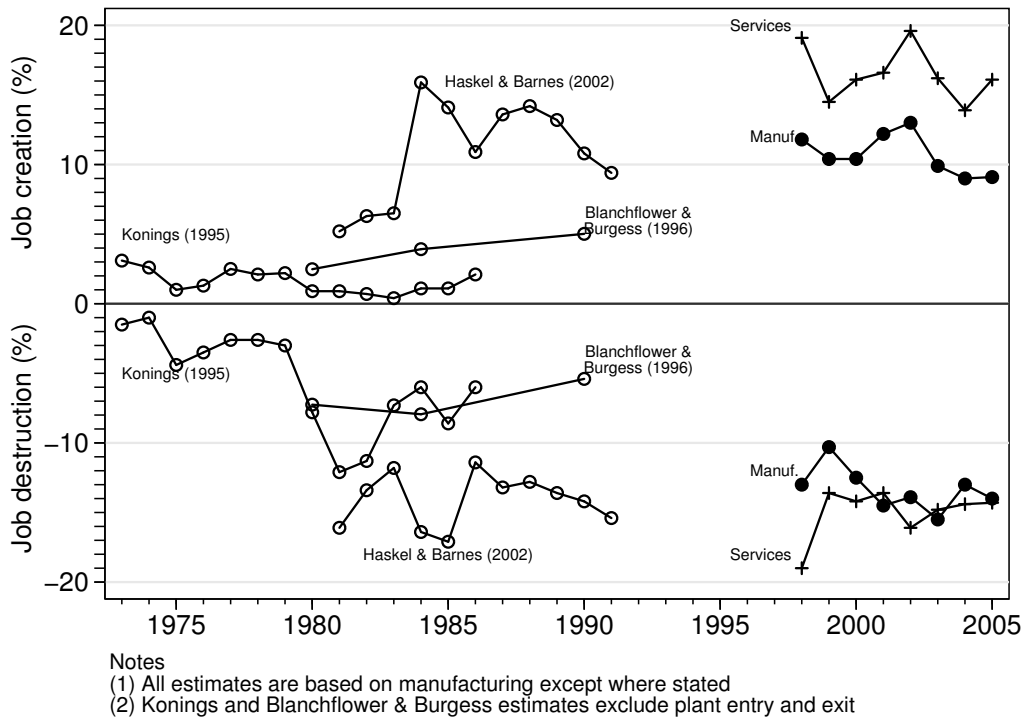
and Haskel (2002) who examine UK manufacturing plants from 1981-1990. However, their estimates are based on "establishments"[5], and we would therefore expect their estimates to be higher because they will also capture some job reallocation within enterprises if enterprises have multiple establishments. The fact that their estimates are *not* noticeably higher suggests either that (a) job turnover has increased since the early 1990s; (b) within-firm job reallocation is relatively unimportant; or (c) "establishments" in their study correspond closely to our notion of enterprises.

Since the IDBR also contains information at the local unit (plant) level, we repeated our calculations at this lower level of aggregation. We find that job creation rates are about 7 percentage points higher and job destruction rates about 6 percentage points higher when measured at the local unit level. This implies that about one-third of job creation and destruction is accounted for by local units. However, in the analysis that follows we continue to focus on job reallocation at the enterprise level, since the IDBR is designed to maintain the integrity of the enterprise rather than the local unit.[6]

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[5]The lowest unit within the business able to complete a survey form.

[6]Changes in employment and firm structure may therefore be less accurately recorded at the local unit level (ONS 2001).

Blanchflower and Burgess (1996) calculate job creation and destruction over approximately the same time period as Barnes and Haskel (2002). However, they use a relatively small sample of establishments derived from the Workplace Industrial Relations Surveys and, although they include both manufacturing and services, they are unable to calculate job reallocation as a result of establishment entry and exit. This explains why their estimates are much lower than those we calculate. Konings (1995) uses an even smaller sample of manufacturing firms drawn from EXSTAT/DATASTREAM covering the period 1972–1986. Again he cannot include entry and exit and, as a consequence, computes relatively low rates of job creation and job destruction.

A final series of papers (Gallagher, Daly, and Thomason 1990, Daly, Campbell, Robson, and Gallagher 1991, Gallagher and Robson 1995) compute job reallocation rates for various periods in the 1980s. However these use the commercial Dun & Bradstreet database which, as the OECD (1994) notes, has several important drawbacks for the purpose of calculating job reallocation rates.[7] We do not therefore present these estimates in Figure 1.

4.1   The distribution of employment growth

We have seen in Tables 2 and 3 that firms in the service sector have similar rates of job destruction and slightly higher rates of job creation than those in manufacturing. These average differences might however disguise differences in the *distribution* of employment growth across sectors. To investigate this, Figure 2 plots the cumulative distribution of employment growth g_{it} (unweighted and weighted) separately for manufacturing and services.

Both figures tell a similar story. The distribution of job destruction rates ($g < 0$) is almost identical across manufacturing and services, with the fraction of g accounted for by firm exit ($g = -2$) also being similar. A slightly higher proportion of manufacturing firms has zero growth ($g = 0$), and this difference causes the fraction of growing firms to be larger in services for all positive values of g. Weighting by employment reduces the proportion of firms with $g = 0$, indicating that large firms are less likely to have static employment.

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[7]*Inter alia*, they argue that "data for openings and closures are particularly weak ... Employment data are missing for about 12 per cent of establishments, while employment totals are missing for about 13 per cent of firms ... The coverage of small service sector firms is incomplete." (p.108)

(a) Unweighted   *(b) Weighted*
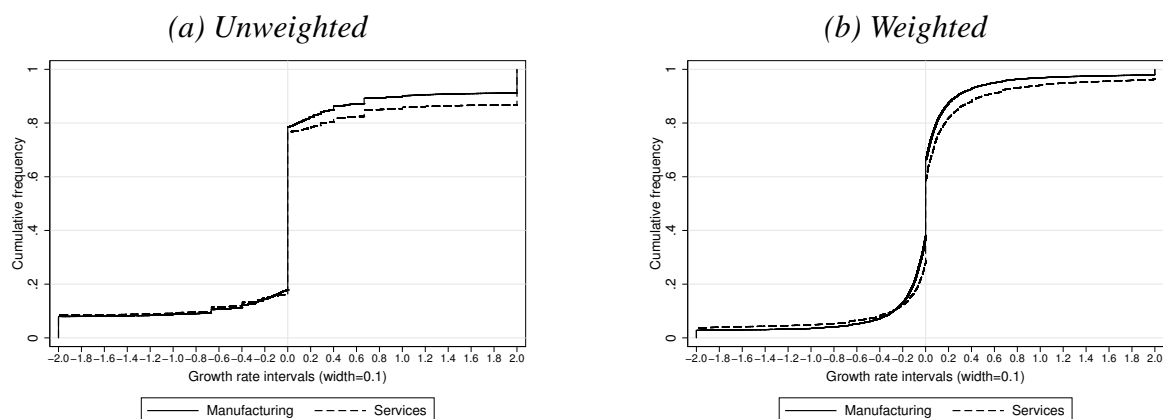
Figure 2: Cumulative distribution of employment growth 1997-2005

4.2 Job reallocation by industry

Table 4 documents average job reallocation rates broken down by 2-digit SIC 1992 industry. To help interpret these results, Figure 3 plots job creation and destruction rates against each other, with the largest twenty industries being labelled with their SIC code (see Table 4). The size of each dot reflects the employment level in each industry by employment. Note that industries lying in the North East corner are those which exhibit "high turnover" (with both high levels of job creation and high levels of job destruction), while those in the North West corner are "high growth" (with higher levels of job creation than destruction).

Several points should be noted from the figure. First, the importance of service sector employment relative to manufacturing employment can be seen. Moreover, almost all of the industries in the service sector are growing, and almost all manufacturing industries are shrinking. Important fast-growing industries include Computer and Related (72), Real Estate (70), Other Business Activities (74), Hotels and Restaurants (55) and Retail Trade (52). Secondly, it is striking that there is a strong *positive* correlation between job creation and destruction, and this correlation is much stronger in the expanding service sector.[8] Because of this, the correlation between net reallocation (or employment growth) and job creation or destruction is very weak, with some of the fastest growing industries having high rates of job destruction. Note that three service sector industries which have not expanded over this period are in the financial sector: Financial Intermediation (65), Insurance (66) and Auxiliary financial activities (67). Table 4 demonstrates that all of these sectors have experienced a large net exit of

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[8] $\rho = 0.8987$, p-value 0.000 for services, $\rho = 0.1773$, p-value 0.000 in manufacturing (correlations weighted by employment).

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Figure 3: Job reallocation rates by industry

Largest 20 industries labelled with SIC code: see Table 5
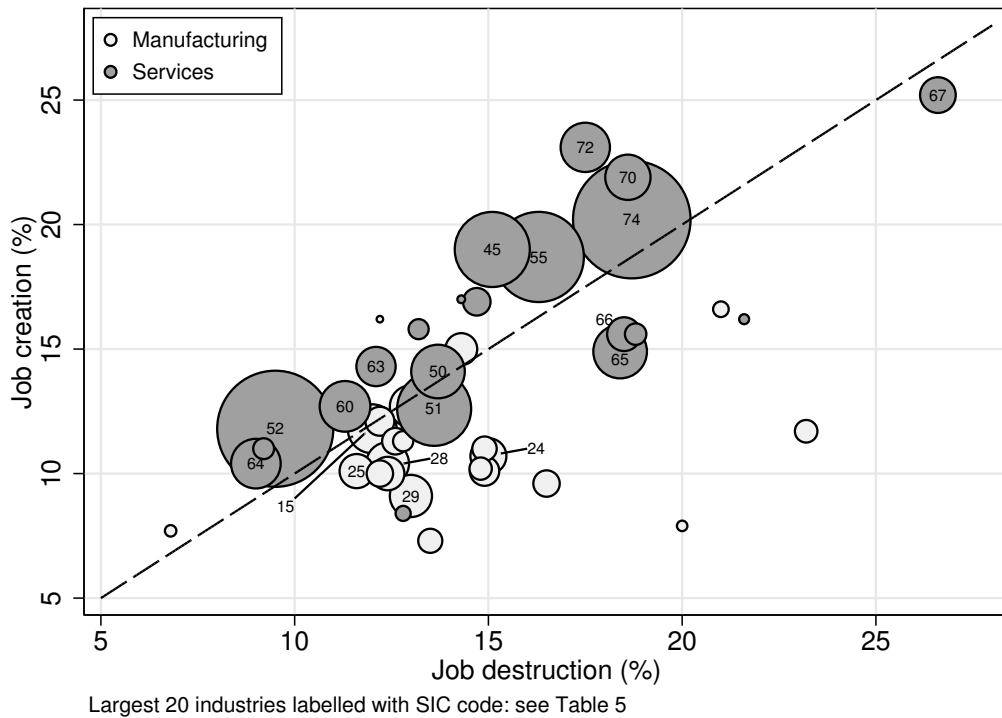
enterprises.[9]

Thirdly, gross job reallocation shows much less variability in manufacturing, with most manufacturing industries being tightly clustered in Figure 3. The figure also emphasises that employment decline in manufacturing is driven mainly by differences in job destruction rates rather than job creation. The most significant industries in manufacturing in terms of employment are Chemicals (24), Machinery (29), Metal products (28), Rubber and Plastics (25) and Food (15), all of which, apart from the last, have experienced significant employment falls.

4.3 Job reallocation by region

Table 5 documents average job turnover by region. As before, it is instructive to plot JC and JD rates for each region against each other, the results of which are presented in Figure 4.

The regional differences between manufacturing and services are striking. All regions experienced employment growth in services and employment decline in manufacturing. Again, it is

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[9]SIC 65, for example, lost 290,000 jobs due to enterprise exit over the period 1998–2005 but gained only 91,000 jobs due to enterprise entry.

Figure 4: Job reallocation rates by region
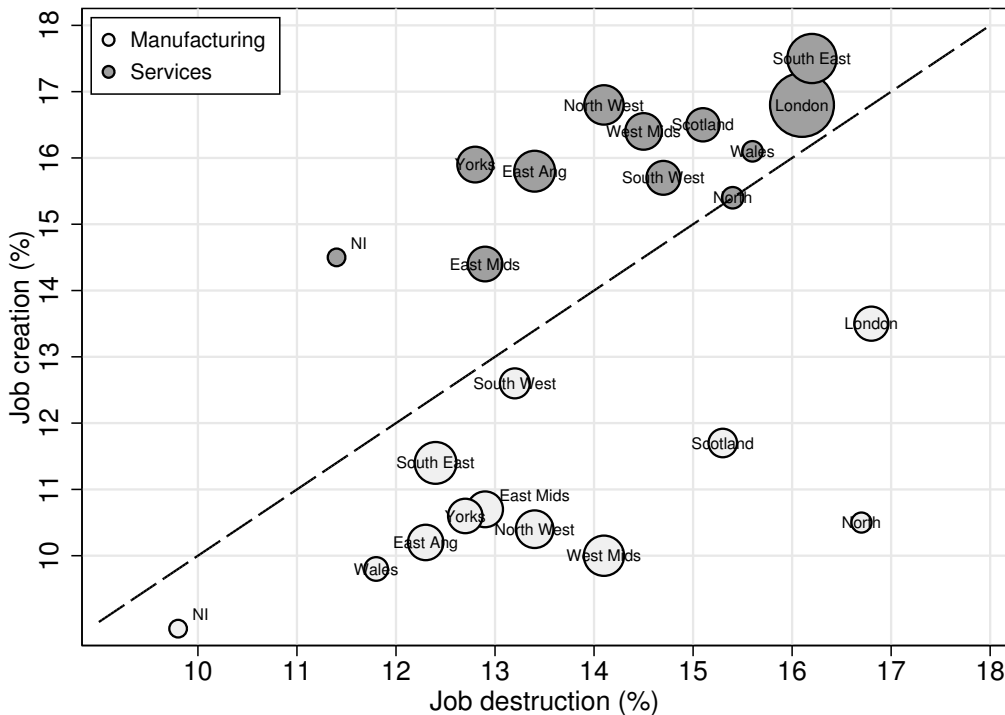
also clear that gross job reallocation is considerably lower in manufacturing in most regions, the exceptions being London, Scotland and the North, which have experienced high job destruction rates. Manufacturing industries declined fastest in the North and the West Midlands, while service industries expanded fastest in the North West, Yorkshire and Northern Ireland. London and the South East have the highest gross job reallocation rates. As with the pattern across industries, there is a strong positive association between job creation and destruction, and very little association between job creation and net employment growth.

5   The Role of Firm Size

As was noted in the introduction, it is often claimed that small firms contribute disproportionately to the creation of new jobs. In the UK, for example, Daly, Campbell, Robson, and Gallagher (1991) claim that firms employing fewer than 10 people were responsible for about half of all net job creation in the late 1980s, despite employing only about 20% of the workforce. Could a differing distribution of firm sizes explain the different rates of job creation between and within the manufacturing and service sectors? For instance, Table 1 documents

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that firms in services are, on average, half as large as those in manufacturing. This is what we investigate in this section.

It is worth noting at this juncture that the above claim is not without controversy. Davis, Haltiwanger, and Schuh (1993, 1996) find that for manufacturing plants in the U.S., job creation *and* job destruction rates are substantially higher for small plants. But large plants dominate the creation and destruction of jobs simply because they account for the great majority of manufacturing employment. Overall, DHS find no systematic relationship between plant size and net employment growth. Finally, they note that jobs created in larger plants tend to last longer. DHS reconcile their results by identifying three methodological problems which they claim causes problems for the conventional wisdom. The first is the "size distribution fallacy." They argue that changes in the share of employment by firm size are misleading because over time firms can change their size. A big firm which shrinks, and which is reclassified into a small firm, will apparently contribute to small firm job creation. However, all of the studies considered here use longitudinal data on firms or plants, and so this criticism does not apply. In addition, it is not obvious that this problem will tend to bias the results towards small firms, since small firms also get bigger.

The second problem is in the reporting of the share of net rather than gross job creation. Consider an economy which has a small increase in the total number of jobs. Any group of firms which is growing will apparently contribute a very large "share" (probably in excess of 100%) of total net job creation. However, this group of firms may or may not have created a large number of jobs in gross terms. DHS therefore recommend reporting gross job creation rates. Once again, however, there seems no reason why this problem should bias results in favour of small firms in particular.

The third problem is the familiar "regression fallacy" (Friedman 1992). Measurement error or transitory fluctuations of employment implies that firms classified as small at t are more likely to have experienced a negative fluctuation in that year, while firms classified as large are more likely to have experienced a positive fluctuation. Thus between t and $t + 1$ small firms are more likely to grow, and large firms to shrink. One possible solution to this problem is to use average firm size over the entire sample period to categorise firms, rather than initial firm size. DHS (1993, Table 2) show that this can have a large effect on estimates of gross and net job creation rates by firm size.

However, others including Baldwin and Picot (1995), Gallagher and Robson (1995) and Davidsson, Lindmark, and Olofsson (1998) have suggested that these methodological problems are probably of little consequence, and that small firms do indeed contribute dispropor-

tionately to the creation of new jobs. Davidsson, Lindmark, and Olofsson (1998) dismiss the first two problems because they do not necessarily impart a bias in any particular direction. They also argue that the proposed solution to the "regression fallacy" (using average firm size rather than initial firm size) is problematic because growth or decline over the sample period inevitably affects average size, unless all changes in size are transitory fluctuations or the result of measurement error. Instead, Baldwin and Picot (1995) therefore suggest using average size over some period *before* the current year.

We investigate these issues in Tables 6 and 7, with table 8 providing some summary statistics in which we classify "small" firms as those employing less than 100. Several points are worthy of note. First, small firms employ a substantial proportion of the workforce: between 43% and 53% of all workers. DHS argue that large firms are important because they account for the bulk of employment, but this is not the case in the UK.[10]

Secondly, following Baldwin and Picot (1995) we investigate the relationship between firm size and job turnover using three different measures of firm size:

1. *Initial firm size* classifies firms by their employment in period 1 (1997). Firms which do not exist in 1997 therefore automatically fall into the smallest firm size category and any entry is ascribed to firms in this group by definition. This is likely to suffer from the regression to the mean fallacy.

2. *Average current year firm size* classifies firms by their average size over the period of employment change: $(N_t + N_{t-1})/2$. This measure suffers from the fact that growth or decline affects the measure of size used, because it includes current size.

3. *Average previous year firm size* classifies firms by their average size *before* measuring the change in employment: $(N_{t-1} + N_{t-2})/2$.

In Tables 6, 7 and 8 we also split job creation into "Growth" and "Entry", and job destruction into "Decline" and "Exit". This is important because it can be rather misleading to look at total job creation rates by firm size, simply because firms which enter must by definition have zero employment before they enter. Therefore, by definition, all jobs created by new entrants are classified as occurring in small firms.

Note that the apparent significance of small firms in job reallocation does depend on the measure used. Using initial firm size does indeed seem to inflate the importance of small

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[10]This is partly because DHS are studying manufacturing plants only, which are larger on average. But even in manufacturing, small firms in the UK account for 35%-45% of employment.

firms: by this measure small firms account for 72% of job creation and 60% of job destruction. As noted, this is partly because new entrants are by definition classified as small and so 100% of entry is by small firms. However, even if we focus only on job creation in existing firms, small firms account for a greater proportion of job creation than large firms (57%). If we use *average current year firm size* small firms account for 49% of creation and 49% of destruction. Our preferred measure (for the reasons outlined above), *average previous year firm size*, suggests that small firms account for 67% of job creation and 48% of job destruction. In short, small firms account for a greater proportion of job creation than their employment share, whatever measure is used, and a slightly greater proportion of job destruction. However, much of the difference in job creation rates is due to the classification of entrants as small firms.

6 Conclusion

Using a newly available data source, we have provided the first comprehensive estimates of job reallocation across all private sector firms in the UK. Our estimates are also the first to look explicitly at enterprises rather than statistical units or establishments. One might argue that changes in employment at the firm level (as opposed to changes at plant level) are more likely to correspond to genuine economic consequences for workers in terms of job displacement and job finding rates. Over the period in question, approximately 53,000 jobs were created and approximately 51,000 destroyed *each week*. The service sector accounts for 80% of this turnover, creating about 44,000 jobs per week and destroying about 40,000. The entry of new firms accounts for about 40% of job creation, while the exit of firms accounts for almost exactly 50% of all jobs destroyed. Despite being an expanding sector, job destruction *rates* are actually slightly higher, on average, in services. Of course, job creation rates in services must therefore be correspondingly higher. Indeed there is a strong positive association between job creation and destruction rates in services. This correlation is much weaker in manufacturing: it appears that the decline of manufacturing industries is strongly associated with the job destruction rate. Finally, we find that small firms account for between 70% and 50% of jobs created and between 60% and 50% of jobs destroyed. The contribution of small firms to job reallocation is therefore greater than their share of employment, whatever measure of firm size is used.

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Tables

Table 1: BSD sample 1997–2005

	Enterprise Groups	Enterprises	Entrants	Exiters	Total Emp.	Average Emp.
(a) Manufacturing						
1997	175,981	185,567	185,567		4,553,210	24.54
1998	181,177	190,341	23,587	19,945	4,465,573	23.46
1999	176,487	187,453	17,675	20,176	4,400,078	23.47
2000	169,213	179,414	17,475	25,536	4,289,629	23.91
2001	169,036	178,763	16,647	17,508	4,166,083	23.31
2002	166,237	176,339	16,607	19,268	4,091,449	23.20
2003	162,560	171,948	15,599	20,197	3,784,164	22.01
2004	159,063	167,751	17,079	21,196	3,613,489	21.54
2005	153,988	162,474	15,159	20,496	3,429,259	21.11
(b) Services						
1997	1,299,921	1,335,524	1,335,524		13,077,481	9.79
1998	1,376,309	1,408,836	241,172	166,728	13,118,331	9.31
1999	1,407,525	1,446,701	198,494	161,016	13,311,974	9.20
2000	1,410,390	1,447,997	205,293	203,975	13,595,314	9.39
2001	1,435,424	1,473,496	200,853	175,144	14,044,974	9.53
2002	1,444,716	1,488,182	204,921	189,998	14,596,743	9.81
2003	1,457,674	1,501,157	212,430	199,248	14,889,702	9.92
2004	1,509,479	1,552,147	263,900	212,990	14,837,375	9.56
2005	1,542,620	1,588,514	256,840	220,413	15,129,013	9.52
(c) Total						
1997	1,475,902	1,521,091	1,521,091		17,630,691	11.59
1998	1,557,486	1,599,177	264,759	186,673	17,583,904	11.00
1999	1,584,012	1,634,154	216,169	181,192	17,712,052	10.84
2000	1,579,603	1,627,411	222,768	229,511	17,884,943	10.99
2001	1,604,460	1,652,259	217,500	192,652	18,211,057	11.02
2002	1,610,953	1,664,521	221,528	209,266	18,688,192	11.23
2003	1,620,234	1,673,105	228,029	219,445	18,673,866	11.16
2004	1,668,542	1,719,898	280,979	234,186	18,450,864	10.73
2005	1,696,608	1,750,988	271,999	240,909	18,558,272	10.60

Table 2: Job creation and destruction rates, 1998–2005

	JC_t	JD_t	JR_t	NR_t	XR_t
(a) Manufacturing					
1998	0.118	−0.130	0.248	−0.013	0.235
1999	0.104	−0.103	0.206	0.001	0.205
2000	0.104	−0.125	0.230	−0.021	0.209
2001	0.122	−0.145	0.267	−0.023	0.244
2002	0.130	−0.139	0.269	−0.009	0.261
2003	0.099	−0.155	0.254	−0.055	0.199
2004	0.090	−0.130	0.220	−0.041	0.179
2005	0.091	−0.140	0.232	−0.049	0.183
Average	0.110	−0.135	0.245	−0.025	0.220
(b) Services					
1998	0.191	−0.190	0.381	0.001	0.380
1999	0.145	−0.136	0.281	0.009	0.271
2000	0.161	−0.142	0.303	0.020	0.283
2001	0.166	−0.136	0.302	0.031	0.272
2002	0.196	−0.161	0.357	0.036	0.321
2003	0.162	−0.148	0.309	0.014	0.295
2004	0.139	−0.144	0.284	−0.005	0.279
2005	0.161	−0.143	0.304	0.019	0.286
Average	0.164	−0.148	0.312	0.015	0.296
(c) Total					
1998	0.172	−0.175	0.347	−0.003	0.344
1999	0.135	−0.127	0.262	0.007	0.255
2000	0.147	−0.138	0.285	0.010	0.275
2001	0.156	−0.138	0.294	0.018	0.276
2002	0.182	−0.156	0.337	0.026	0.311
2003	0.148	−0.149	0.298	−0.001	0.297
2004	0.129	−0.142	0.271	−0.012	0.259
2005	0.148	−0.142	0.290	0.006	0.285
Average	0.152	−0.145	0.297	0.006	0.291

Table 3: Job reallocation: component parts

| | JC_t | | | JD_t | | |
	Total	Growth	Entrants	Total	Decline	Exit
(a) Manufacturing						
1998	0.118	0.078	0.039	−0.130	−0.078	−0.052
1999	0.104	0.072	0.032	−0.103	−0.051	−0.051
2000	0.104	0.067	0.038	−0.125	−0.062	−0.063
2001	0.122	0.076	0.046	−0.145	−0.084	−0.060
2002	0.130	0.096	0.035	−0.139	−0.085	−0.054
2003	0.099	0.067	0.032	−0.155	−0.084	−0.071
2004	0.090	0.060	0.029	−0.130	−0.063	−0.067
2005	0.091	0.066	0.026	−0.140	−0.070	−0.070
Average	0.110	0.074	0.036	−0.135	−0.073	−0.062
(b) Services						
1998	0.191	0.113	0.078	−0.190	−0.103	−0.087
1999	0.145	0.089	0.056	−0.136	−0.055	−0.080
2000	0.161	0.105	0.056	−0.142	−0.063	−0.079
2001	0.166	0.104	0.062	−0.136	−0.072	−0.064
2002	0.196	0.137	0.059	−0.161	−0.090	−0.070
2003	0.162	0.108	0.053	−0.148	−0.074	−0.073
2004	0.139	0.082	0.057	−0.144	−0.065	−0.080
2005	0.161	0.104	0.058	−0.143	−0.061	−0.082
Average	0.164	0.104	0.059	−0.148	−0.072	−0.076
(c) Total						
1998	0.172	0.104	0.068	−0.175	−0.097	−0.078
1999	0.135	0.084	0.050	−0.127	−0.054	−0.073
2000	0.147	0.095	0.052	−0.138	−0.063	−0.075
2001	0.156	0.098	0.058	−0.138	−0.075	−0.063
2002	0.182	0.128	0.054	−0.156	−0.089	−0.067
2003	0.148	0.100	0.049	−0.149	−0.076	−0.073
2004	0.129	0.078	0.052	−0.142	−0.064	−0.077
2005	0.148	0.096	0.052	−0.142	−0.063	−0.079
Average	0.152	0.098	0.054	−0.145	−0.072	−0.073

Table 4: Job creation and destruction rates by industry

	SIC 92	JC_t	JD_t	JR_t	NR_t	XR_t
15	Food and beverages	0.118	−0.120	0.239	−0.002	0.236
16	Tobacco	0.162	−0.122	0.284	0.039	0.244
17	Textiles	0.096	−0.165	0.261	−0.069	0.192
18	Wearing apparel	0.117	−0.232	0.348	−0.115	0.234
19	Leather	0.079	−0.200	0.279	−0.120	0.158
20	Wood	0.113	−0.128	0.241	−0.015	0.226
21	Pulp and paper	0.102	−0.148	0.250	−0.046	0.204
22	Publishing and printing	0.127	−0.130	0.257	−0.003	0.253
23	Coke and petroleum	0.077	−0.068	0.146	0.009	0.136
24	Chemicals	0.107	−0.150	0.257	−0.042	0.215
25	Rubber and plastic	0.101	−0.116	0.217	−0.014	0.203
26	Non-metallic mineral products	0.100	−0.122	0.223	−0.022	0.201
27	Basic metal products	0.073	−0.135	0.207	−0.062	0.146
28	Fabricated metal products	0.104	−0.124	0.228	−0.020	0.208
29	Machinery and equip.	0.091	−0.130	0.220	−0.039	0.182
30	Office machinery and computers	0.166	−0.210	0.376	−0.044	0.332
31	Other electrical machinery	0.101	−0.149	0.250	−0.048	0.202
32	Radio and television equip.	0.110	−0.149	0.259	−0.039	0.220
33	Medical and optical equip.	0.113	−0.126	0.239	−0.013	0.226
34	Motor vehicles	0.100	−0.124	0.224	−0.024	0.199
35	Other transport equip.	0.121	−0.122	0.242	−0.001	0.241
36	Furniture and other manuf.	0.150	−0.143	0.293	0.008	0.285
37	Recycling	0.170	−0.143	0.314	0.027	0.287
40	Electricity and gas distrib.	0.156	−0.188	0.345	−0.032	0.313
41	Water distrib.	0.084	−0.128	0.212	−0.044	0.168
45	Construction	0.190	−0.151	0.341	0.039	0.302
50	Retail automotive trades	0.141	−0.137	0.278	0.004	0.274
51	Wholesale trade	0.126	−0.136	0.262	−0.011	0.252
52	Retail trade	0.118	−0.095	0.212	0.023	0.189
55	Hotels and restaurants	0.187	−0.163	0.350	0.024	0.326
60	Land transport	0.127	−0.113	0.240	0.013	0.226
61	Water transport	0.162	−0.216	0.378	−0.054	0.324
62	Air transport	0.110	−0.092	0.202	0.018	0.184
63	Auxiliary transport activities	0.143	−0.121	0.264	0.022	0.242
64	Post and telecommunications	0.104	−0.090	0.194	0.014	0.181
65	Financial intermediation	0.149	−0.184	0.333	−0.035	0.298
66	Insurance and pension funding	0.156	−0.185	0.341	−0.028	0.313
67	Auxiliary finance activities	0.252	−0.266	0.518	−0.015	0.503
70	Real estate	0.219	−0.186	0.405	0.033	0.371
71	Renting of machinery and equip.	0.169	−0.147	0.316	0.021	0.295
72	Computer and related	0.231	−0.175	0.407	0.056	0.351
73	Research and Development	0.158	−0.132	0.289	0.026	0.264
74	Other business activities	0.202	−0.187	0.389	0.015	0.373
	Average	0.152	−0.145	0.297	0.006	0.291

Table 5: Job creation and destruction rates by region

Region	JC_t	JD_t	JR_t	NR_t	XR_t
(a) Manufacturing					
Greater London	0.135	−0.168	0.303	−0.033	0.270
South East	0.114	−0.124	0.239	−0.010	0.229
East Anglia	0.102	−0.123	0.224	−0.021	0.203
South West	0.126	−0.132	0.258	−0.007	0.251
West Midlands	0.100	−0.141	0.241	−0.041	0.201
East Midlands	0.107	−0.129	0.236	−0.022	0.214
Yorks. & Humberside	0.106	−0.127	0.233	−0.021	0.212
North West	0.104	−0.134	0.238	−0.030	0.208
North	0.105	−0.167	0.272	−0.062	0.210
Wales	0.098	−0.118	0.216	−0.019	0.197
Scotland	0.117	−0.153	0.270	−0.036	0.234
Northern Ireland	0.089	−0.098	0.187	−0.008	0.179
Average	0.110	−0.136	0.246	−0.025	0.221
(b) Services					
Greater London	0.168	−0.161	0.329	0.007	0.322
South East	0.175	−0.162	0.337	0.013	0.325
East Anglia	0.158	−0.134	0.292	0.024	0.268
South West	0.157	−0.147	0.304	0.010	0.294
West Midlands	0.164	−0.145	0.309	0.020	0.290
East Midlands	0.144	−0.129	0.273	0.015	0.258
Yorks. & Humberside	0.159	−0.128	0.287	0.031	0.256
North West	0.168	−0.141	0.309	0.027	0.282
North	0.154	−0.154	0.308	0.000	0.308
Wales	0.161	−0.156	0.317	0.005	0.312
Scotland	0.165	−0.151	0.317	0.014	0.303
Northern Ireland	0.145	−0.114	0.259	0.030	0.229
Average	0.164	−0.149	0.312	0.015	0.297
(c) Total					
Greater London	0.165	−0.162	0.327	0.003	0.323
South East	0.162	−0.154	0.316	0.008	0.308
East Anglia	0.146	−0.132	0.277	0.014	0.263
South West	0.150	−0.144	0.293	0.006	0.287
West Midlands	0.144	−0.144	0.288	0.001	0.287
East Midlands	0.133	−0.129	0.262	0.004	0.258
Yorks. & Humberside	0.145	−0.128	0.273	0.017	0.255
North West	0.151	−0.139	0.290	0.012	0.278
North	0.142	−0.157	0.299	−0.015	0.283
Wales	0.140	−0.143	0.283	−0.003	0.280
Scotland	0.155	−0.152	0.306	0.003	0.303
Northern Ireland	0.129	−0.110	0.239	0.020	0.219
Average	0.152	−0.146	0.298	0.006	0.292

Table 6: Job creation and destruction rates by firm size

	Total emp.	JC_t			JD_t		
		Total	Growth	Entry	Total	Decline	Exit
(a) Initial firm size (N_1)							
0-19	7,395,099	0.243	0.110	0.133	−0.178	−0.072	−0.106
20-49	1,353,802	0.090	0.090	0.000	−0.116	−0.056	−0.060
50-99	917,851	0.093	0.093	0.000	−0.127	−0.067	−0.060
100-249	1,301,406	0.100	0.100	0.000	−0.139	−0.076	−0.063
250-499	1,000,828	0.099	0.099	0.000	−0.138	−0.079	−0.059
500-999	995,534	0.100	0.100	0.000	−0.138	−0.079	−0.059
1000-2499	1,287,437	0.100	0.100	0.000	−0.128	−0.077	−0.051
2500-4999	899,075	0.093	0.093	0.000	−0.140	−0.083	−0.056
≥5000	3,069,364	0.071	0.071	0.000	−0.101	−0.070	−0.031
Total	18,220,394	0.152	0.098	0.054	−0.145	−0.072	−0.073
(b) Average current year firm size $(N_t + N_{t-1})/2$							
0-19	5,928,472	0.190	0.078	0.113	−0.180	−0.059	−0.121
20-49	1,768,289	0.139	0.098	0.041	−0.134	−0.064	−0.070
50-99	1,272,095	0.150	0.106	0.044	−0.154	−0.079	−0.075
100-249	1,709,672	0.152	0.112	0.040	−0.161	−0.089	−0.073
250-499	1,313,852	0.150	0.114	0.036	−0.165	−0.094	−0.071
500-999	1,292,246	0.147	0.111	0.036	−0.159	−0.091	−0.068
1000-2499	1,691,736	0.153	0.120	0.033	−0.154	−0.093	−0.061
2500-4999	1,254,004	0.135	0.110	0.025	−0.132	−0.084	−0.047
≥5000	4,592,941	0.113	0.096	0.017	−0.087	−0.062	−0.025
Total	20,823,307	0.152	0.098	0.054	−0.145	−0.072	−0.073
(c) Average previous year firm size $(N_{t-1} + N_{t-2})/2$							
0-19	6,894,486	0.269	0.108	0.161	−0.147	−0.051	−0.096
20-49	1,724,902	0.099	0.099	0.000	−0.137	−0.064	−0.074
50-99	1,225,976	0.099	0.099	0.000	−0.155	−0.078	−0.077
100-249	1,651,401	0.104	0.104	0.000	−0.163	−0.088	−0.075
250-499	1,277,245	0.108	0.108	0.000	−0.165	−0.092	−0.074
500-999	1,250,274	0.101	0.101	0.000	−0.165	−0.095	−0.070
1000-2499	1,651,602	0.101	0.101	0.000	−0.155	−0.090	−0.064
2500-4999	1,222,476	0.097	0.097	0.000	−0.143	−0.088	−0.055
≥5000	4,464,846	0.069	0.069	0.000	−0.102	−0.062	−0.040
Total	21,363,208	0.149	0.097	0.052	−0.141	−0.069	−0.072

Table 7: Proportions of job creation and destruction by firm size

	Share of	Share of JC_t			Share of JD_t		
	emp.	Total	Growth	Entry	Total	Decline	Exit
(a) Initial firm size (N_1)							
0-19	40.59%	65.05%	45.72%	100.00%	49.76%	40.62%	58.83%
20-49	7.43%	4.40%	6.83%	0.00%	5.92%	5.75%	6.09%
50-99	5.04%	3.08%	4.78%	0.00%	4.41%	4.67%	4.16%
100-249	7.14%	4.72%	7.33%	0.00%	6.84%	7.53%	6.16%
250-499	5.49%	3.59%	5.58%	0.00%	5.22%	5.97%	4.48%
500-999	5.46%	3.61%	5.60%	0.00%	5.20%	5.99%	4.43%
1000-2499	7.07%	4.65%	7.22%	0.00%	6.24%	7.52%	4.98%
2500-4999	4.93%	3.01%	4.68%	0.00%	4.74%	5.68%	3.81%
≥5000	16.85%	7.89%	12.25%	0.00%	11.65%	16.27%	7.07%
(b) Average current year firm size ($N_t + N_{t-1}/2$)							
0-19	28.47%	35.73%	22.62%	59.45%	23.35%	23.35%	47.19%
20-49	8.49%	7.77%	8.52%	6.42%	7.52%	7.52%	8.19%
50-99	6.11%	6.06%	6.65%	4.99%	6.70%	6.70%	6.28%
100-249	8.21%	8.22%	9.41%	6.07%	10.10%	10.10%	8.16%
250-499	6.31%	6.25%	7.36%	4.24%	8.21%	8.21%	6.14%
500-999	6.21%	6.00%	7.04%	4.11%	7.80%	7.80%	5.79%
1000-2499	8.12%	8.19%	9.94%	5.03%	10.45%	10.45%	6.81%
2500-4999	6.02%	5.36%	6.80%	2.75%	7.02%	7.02%	3.90%
≥5000	22.06%	16.42%	21.65%	6.94%	18.85%	18.85%	7.53%
(c) Average previous year firm size ($N_{t-1} + N_{t-2}/2$)							
0-19	32.27%	58.38%	35.99%	100.00%	23.93%	23.93%	43.00%
20-49	8.07%	5.40%	8.30%	0.00%	7.43%	7.43%	8.26%
50-99	5.74%	3.80%	5.85%	0.00%	6.45%	6.45%	6.13%
100-249	7.73%	5.40%	8.30%	0.00%	9.88%	9.88%	8.05%
250-499	5.98%	4.34%	6.68%	0.00%	7.96%	7.96%	6.08%
500-999	5.85%	3.98%	6.12%	0.00%	8.06%	8.06%	5.68%
1000-2499	7.73%	5.25%	8.07%	0.00%	10.11%	10.11%	6.89%
2500-4999	5.72%	3.73%	5.74%	0.00%	7.32%	7.32%	4.36%
≥5000	20.90%	9.72%	14.95%	0.00%	18.87%	18.87%	11.54%

Table 8: Share of job turnover by small firms (employment < 100)

	Share	JC_t			JD_t		
	of emp.	Total	Growth	Entry	Total	Decline	Exit
Initial firm size	53.05%	72.53%	57.34%	100.00%	60.10%	51.04%	69.08%
Current year average	43.07%	49.56%	37.79%	70.85%	49.66%	37.57%	61.66%
Previous year average	46.09%	67.58%	50.13%	100.00%	47.82%	37.81%	57.39%