

**Job reallocation and labour market adjustment: a proposal
to analyse linked employer-employee data for the UK***

Report for The Department of Trade and Industry

Alex Hijzen Richard Upward Peter Wright

Leverhulme Centre for Research in Globalisation and Economics Policy
School of Economics

University of Nottingham

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1 Introduction and summary

Our original application (Appendix A) proposed that we would examine the suitability of the Inter-Departmental Business Register (IDBR) for calculating comprehensive and up to date measures job creation and job destruction for the whole UK economy. We also proposed examining the feasibility of linking the IDBR to the New Earnings Survey (NES). This report summarises our findings from this exploratory project.

In summary:

1. The IDBR itself, as held by the ONS Business Data Lab at present, is not suitable for the construction of measures of job creation and destruction. However, the combined selected and non-selected samples from the Annual Business Inquiry has allowed us to achieve our first objective. We update the work of Barnes & Haskel (2001) by computing measures of job creation and destruction across all sectors from 1994-2002.
2. It is relatively straightforward to link individual workers in the NES to establishments in the Annual Respondents' Database (ARD), although the link is far from perfect. In more recent years approximately 80% of individuals in the NES can be linked. We update the work of Hildreth & Pudney (1998) and Haskel & Pereira (2002) by linking the most recent waves of the ARD and the NES.

The report is structured as follows. Section 2 describes the relevant data. In Section 3 we describe methods for calculating job creation and destruction in the whole UK economy, and reports some basic results from this exercise. In Section 4 we explain how individuals in the NES can be linked to establishments in the ARD using the IDBR as a link. In Section 5 we make some tentative comments and suggestions, and in Section 6 we discuss a possible research agenda for these linked datasets.

2 Data description

The New Earnings Survey (NES) is a random sample of 1% of employees who are part of the PAYE tax scheme. The last two digits of an individual's National Insurance number are used to select the sample, and so it can straightforwardly be linked across time to form the New Earnings Survey Panel Dataset (NESPD). Employers can be identified by an employer reference number (EMPREF).

The Inter-Departmental Business Register (IDBR) is a list of UK businesses maintained by the ONS. It is used for selecting the sample of businesses included in the Annual Business Inquiry. A comprehensive description of the IDBR can be found in the *Review of the Inter-*

Departmental Business Register (ONS 2001). The IDBR is (as far as we are aware) a “live” register which changes frequently. The Business Data Lab does *not* appear to have systematic snapshots of the IDBR going back through time. We have not been able to establish whether consistent snapshots of the IDBR are kept by another branch of ONS.

The IDBR linking file is a subset of the IDBR which contains the link between the PAYE reference number of each establishment and the employer reference number used in the NES. This file is only available in the BDL for 1997 and 2004. The precise source of the 1997 data is uncertain. As far as we are aware, this is the only means to match individuals directly in the NES with establishments in the ABI.¹

The Annual Business Inquiry is an annual survey of businesses which, since 1994, has been sampled from the IDBR. The “selected sample” of the ABI is a census of all large businesses employing 250 or more and a sample of smaller businesses. The “non-selected sample” are those businesses in the sampling frame which were not selected for the survey. See Jones (2000) for a detailed description.

The Annual Respondents’ Database contains the information from the ABI for each year.

3 Measuring job creation and destruction

Previous authors (see Davis, Haltiwanger & Schuh (1996) for example) have measured job creation as the sum of employment growth in establishments which increase employment, and job destruction as the sum of employment decline in establishments which reduce employment.²

Measuring job creation and destruction in the standard way does not require linked data on workers. In our proposal we suggested using the IDBR, which is intended to be a complete census of UK establishments, to calculate these job flows. However, the IDBR files which are available at ONS are not suitable for this task because they are only available in two years (1997 and 2004), and do not include measures of employment. Instead, we follow Barnes & Haskel (2001) and use the *selected* and the *unselected* enterprises from the ABI. Together the selected and unselected enterprises should comprise the great majority of enterprises in the IDBR from 1997 onwards. Before 1997 the selected and unselected enterprises represent

¹ Although it may be possible to use postcode and other identifying characteristics to perform the link.

² As has been noted, this understates job creation and destruction to the extent that expanding establishments lose workers and declining establishments hire workers. This issue has been addressed in work which uses linked employer-employee data e.g. Abowd, Corbel & Kramarz (1999).

only those enterprises in the IDBR from the manufacturing and construction sectors.

Table 1 lists the number of enterprises in each year of the ABI from 1994 onwards. 1994 is chosen as the starting year because this is the first year the ABI sample was drawn from the IDBR, and is therefore the first year we can link employer and employee information together (see Section 4).

	1994	1995	1996	1997	1998	1999	2000	2001	2002
Original sample size	343,446	348,686	335,926	1,483,489	1,555,568	1,641,523	1,669,442	1,682,803	1,694,702
Number of reporting units	343,446	348,686	335,926	1,483,489	1,555,568	1,641,523	1,669,442	1,682,803	1,694,702
Number of enterprises	342,019	347,392	334,724	1,481,788	1,553,879	1,639,726	1,667,578	1,681,004	1,692,949
Number of enterprises with a single reporting unit	341,567	346,974	334,358	1,481,264	1,553,273	1,639,059	1,666,913	1,680,367	1,692,350
% of enterprises with a single reporting unit	99.9%	99.9%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 1: Sample details of selected and unselected reporting units from ABI 1994–2002

The number of units increases in 1997 because of an increase in coverage in those years. Only construction and manufacturing were covered pre-1997. This table suggests that almost all reporting unit are single enterprises. Comparing the number of units with those reported from the IDBR for October 2000 (Office for National Statistics 2001, Table 1) we find that the selected and unselected reporting units comprise 87% of reporting units in the IDBR.

Job creation is defined as the increase in jobs in those enterprises which experience employment growth plus employment at new enterprises:

$$JC_t = \sum_{i \in S_t^+} (N_{it} - N_{it-1}) + \sum_{i \in E_t} N_{it}$$

where S_t^+ is the set of firms surviving from $t-1$ to t who experience an increase in employment, and E_t is the set of firms who enter from $t-1$ to t . Similarly, job destruction is defined as the change in employment in enterprises which experience employment decline plus the employment at $t-1$ of those firms which exit between $t-1$ and t :

$$JD_t = \sum_{i \in S_t^-} |N_{it} - N_{it-1}| + \sum_{i \in X_t} N_{it-1}$$

where S_t^- is the set of firms surviving from $t-1$ to t who experience a decrease in employment, and X_t is the set of firms who exit from $t-1$ to t .

A number of issues arise when computing these measures. First, some reporting units temporarily exit and re-enter the data. The table below shows the length of the “gap” between consecutive years for all reporting units between 1994 and 2002.

Year	Length of gap between t and $t-1$ (years)							
	1	2	3	4	5	6	7	8
1995	277,362	0	0	0	0	0	0	0
1996	292,851	6,165	0	0	0	0	0	0
1997	299,906	15,771	17,115	0	0	0	0	0
1998	1,302,677	1,062	1,194	949	0	0	0	0
1999	1,378,423	14,276	733	558	566	0	0	0
2000	1,451,993	2,912	1,252	228	202	206	0	0
2001	1,477,268	3,802	3,067	1,656	294	234	262	0
2002	1,487,292	4,002	2,233	1,279	750	122	137	100

Table 2: gaps in the ABI data series

For the vast majority of reporting units the gap is one year, indicating that this is very little attrition. However, for units with a gap of greater than one year we do not want to add their employment at the year before the “gap” to the count of job destruction, and nor do we want to add their employment in the year after the “gap” to the count of job creation. Instead we modify the measures of job flows by dividing by the number of years by the length of the gap, giving a measure of job creation or destruction averaged over several years.

Table 3 summarises the raw measures of job creation and destruction for the years 1994–2002. We would stress that these measures are preliminary only and require more work to verify their accuracy.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	no. of units	total emp	pos	neg	entrants	Exits	jc1	jc2	jd1	jd2
1994	343,446	5,446,361	0	0	343,446	40,721	0	5,446,361	0	0
1995	348,686	5,682,198	87,247	38,541	71,324	37,739	743,908	705,205	-518,271	-446,176
1996	335,926	5,282,648	45,612	33,046	36,910	33,581	282,816	371,429	-408,686	-437,659
1997	1,483,489	17,289,769	53,293	37,214	1,150,697	162,878	593,864	12,116,763	-547,908	-405,011
1998	1,555,568	19,761,743	145,370	108,374	249,686	169,887	1,703,693	3,116,805	-836,077	-1,371,194
1999	1,641,523	20,753,322	189,251	114,980	246,967	183,491	1,717,509	1,905,665	-1,021,456	-1,586,149
2000	1,669,442	20,774,442	191,428	123,658	212,649	188,172	1,792,923	1,322,140	-1,061,307	-2,101,121
2001	1,682,802	21,656,971	298,315	229,813	196,215	195,510	2,498,153	1,577,278	-1,471,478	-1,717,496
2002	1,694,702	21,866,118	184,357	177,752	198,787	1,694,702	1,759,287	1,594,071	-1,346,196	-2,044,633

Table 3: raw job creation and destruction estimates 1994–2002

The table should be read as follows. The first column gives the total number of reporting units in each year of the data. These are the same as row (1) of Table 1. The sum of employment in those units is given in the second column. The number of reporting units which experienced an increase in employment is the “pos” column, while the number who

experienced a fall is the “neg” column. These are the samples S_t^+ and S_t^- respectively. The columns labelled “entrants” and “exits” give the number of units which entered in that year or which will exit before the following year. These are the samples E_t and X_t respectively. The column “jc1” gives the number of jobs created in surviving establishments, while “jc2” gives the number of jobs created in establishments which were not in the sample in the previous year. These are the samples $\sum_{i \in S_t^+} (N_{it} - N_{it-1})$ and $\sum_{i \in E_t} N_{it}$ respectively. Finally we have their job destruction equivalents, labelled “jd1” and “jd2”, which are

$\sum_{i \in S_t^-} |N_{it} - N_{it-1}|$ and $\sum_{i \in X_t} N_{it-1}$ respectively. Note that the number of jobs destroyed by exiting establishments is the number of individuals in those establishments in the previous year.

In 1994 the number of jobs created in “new” establishments is equal to total employment just because we happen to start counting in this year. Similarly, the number of exiting establishments is all establishments in 2002. These numbers should be ignored.

The correction for “gaps” in the data can have a significant effect on the estimate of employment change year-on-year. The raw estimate of employment change is just column (2) first-differenced, and does not account for units which temporarily exit and then re-enter the data. The sum of columns (7)-(10) accounts for these gaps at the level of the establishment by dividing employment change by the length of the gap. This requires further investigation.

Table 4 computes the above measures of job flows as a proportion of total employment in each year, and the measures of entry and exit as a proportion of all units in each year.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	jc1	jc2	jd1	jd2	Pos	neg	entrants	exits
1995	13.1%	12.4%	-9.1%	-7.9%	25.0%	11.1%	20.5%	10.8%
1996	5.4%	7.0%	-7.7%	-8.3%	13.6%	9.8%	11.0%	10.0%
1997								
1998	8.6%	15.8%	-4.2%	-6.9%	9.3%	7.0%	16.1%	10.9%
1999	8.3%	9.2%	-4.9%	-7.6%	11.5%	7.0%	15.0%	11.2%
2000	8.6%	6.4%	-5.1%	-10.1%	11.5%	7.4%	12.7%	11.3%
2001	11.5%	7.3%	-6.8%	-7.9%	17.7%	13.7%	11.7%	11.6%
2002	8.0%	7.3%	-6.2%	-9.4%	10.9%	10.5%	11.7%	

Table 4: Job flows as a proportion of all jobs

Note that these figures are not computed for 1994 (when we start counting) and 1997 (when the scope of the data increased enormously).

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Column 1 shows that job creation in existing units is between 5.4% and 13.1% of total employment in that year, while job destruction in existing units is between 4.2% and 9.1%. Job creation by entrants is higher than that of surviving firms in 1994–1999, but is lower in 2000–2001 (columns 1 and 2). In almost every year more job destruction is accounted for by exit than by establishments shrinking (columns 3 and 4). About 10% of establishments disappear each year (column 8). It appears that in 1995 there was a much higher rate of establishment growth (25% reporting an increase in employment) and a much higher rate of establishment entry. This requires further investigation.

Table 4 illustrates the feasibility of computing job flow rates using the ABI. For example, the rates calculated in the above tables would allow us to analyse how job flows vary across geographical regions, industrial sectors and firm size. We can do this across most of the service sector as well as manufacturing; previous estimates for the UK — see Barnes & Haskel (2001) — compute this only for manufacturing. Appendix B contains additional estimates of job creation and job destruction by region and industry.

Our measures of job flows can also be linked to the NES data on individual workers (either at the firm level or some more aggregated level) to see how job reallocation impacts on the wages and employment of workers

4 Linking the NES to the ABI using the IDBR linking file

4.1 The NES-IDBR link

There are currently two IDBR linking files held at the BDL, one for 1997 and one for 2004. The linking contain one row per PAYE reference number (PAYEREF). A PAYE reference number should be unique to an enterprise over time, but in practice may be re-used. Each PAYE reference number is matched to an enterprise reference number (ENTREF). The linking files should comprise the “universe” of enterprises.

	1997	2004
Number of observations	2,543,158	1,742,894
Number of unique PAYE references	2,543,158	1,742,894
Number of unique enterprise references	2,069,297	1,149,834

Table 5: IDBR linking file sample sizes

Table 5 shows that some enterprises share several PAYE reference numbers. Presumably this is because PAYEREF varies across some lower level of aggregation (local unit/reporting unit). Comparing Table 5 with Table 1, we see that in 1997 the ABI selected and unselected files comprised 1,481,788 enterprises, while the linking file contains 2,069,297 unique enterprise references. In 2004 however, there appear to be far fewer unique enterprise reference numbers in the linking file. This fall in the number of enterprises seems unlikely to be genuine, though we cannot identify the cause. The lack of documentation regarding the linking file is a cause for concern, since the accuracy of the linking process depends on the accuracy of this file.

The NES itself also contains the PAYEREF variable, although not for the year 1997, where it seems to have been deleted. (PAYEREF is also missing for a varying number of individuals in all the other years.) In addition, we only have the linking file for 1997 and 2004. Therefore we can only match across years (e.g. 1998 NES to 1997 linking file). There may therefore be some individuals in the NES for whom we cannot find an enterprise in the linking file. There are three possible reasons for this

1. An enterprise which existed in the year of the linking file may not exist in the year of the NES. For example, a firm which existed in 1997 may not exist in 1998 (firm exit). Or a firm which did not exist in 1997 may exist in 1998 (firm entry).
2. The enterprise reference number may change over time.
3. The PAYE reference number may change over time.

In theory, if the NES and the linking file come from the same year then this should not be a problem. We cannot tell this until we have access to the NES for 2004.

Table 6 shows the number of observations for each year in the NES. Before linking we drop workers in the NES who have a missing PAYEREF, and repeated NI numbers.

	<i>Total number of observations</i>	<i>Valid PAYE reference number</i>	<i>Unique NI number</i>
1994	166,622	143,356	140,675
1995	162,053	162,053	159,956
1996	163,810	163,428	160,572
1997	154,069	0	0
1998	161,612	N/A ³	158,815
1999	161,954	160,125	157,302
2000	159,111	108,497	107,179
2001	161,516	161,503	155,411
2002	162,806	162,719	156,761

Table 6: New Earnings Survey samples

Comparing the rows for 1998 and 2000 with those reported in Haskel & Pereira (2002a, Table 1) our raw sample has 2.3% more observations in 1998 and 25% *fewer* observations in 2000. We have no explanation for the large discrepancy in 2000. We have very similar numbers of observations with missing PAYE reference numbers compared to Haskel & Pereira in both years. Table 7 summarises the result of matching for the NES with the IDBR linking files.

	1994	1995	1996	1997	1998	1999	2000	2001	2002
1 NES total sample size	140,675	159,956	160,572	0	158,815	157,302	107,179	155,411	156,761
2 No match to either link file	60,863	43,478	24,529	–	20,692	20,045	1,041	124	322
3 Match to 1997 only	15,890	16,967	16,212	–	12,018	9,910	3,655	5,906	6,235
4 Match to 2004 only	0	0	0	–	0	0	0	N/A	3,388
5 Match to both, same enterprise number	60,001	92,707	111,671	–	117,944	119,179	97,116	140,708	138,604
6 Match to both, different enterprise number	3,921	6,804	8,160	–	8,161	8,168	5,367	8,671	8,212
% successful matches	56.7%	72.8%	84.7%	–	87.0%	87.3%	99.0%	99.9%	99.8%

Table 7: matching the NES and the IDBR linking files

Note the lack of any matched data for 1997, because the PAYE reference number is missing in every case for this year.

Row (1) gives the starting sample size for each wave of the NES (see Table 6).

Row (2) shows the number of individuals in the NES who do not match any enterprises in either the 1997 or the 2004 linking file. Before 2000 there are a surprising number of these.

³ The number of individuals without a valid PAYE reference number in this year is < 10, and we are not permitted to report this information.

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It seems very unlikely that this is all due to firm entry and exit. The most likely explanation is that the PAYE reference number has changed.

Row (3) show those workers in the NES who only match to the 1997 linking file. This implies either that these workers work for an enterprise which did not exist in 2004, or that one of the reference numbers has changed. The number of these workers generally declines from 1995 onwards, which is sensible.

Row (4) shows the number of workers who match only to the 2004 linking file. It is odd that there are *no* matches to the 2004 linking file before 2001, and we have found no satisfactory explanation for this.

Row (5) gives the number of workers who match to both linking files and where the enterprise reference number is the same. Reassuringly, this is a large proportion of all NES workers, ranging from 42% in 1994 to about 90% in 2000 onwards. A further 5% are matched to both linking files, but with a different enterprise reference number (Row 6). This is consistent with the possibility that the same enterprises changed their enterprise reference number over time.

4.2 The NES-ABI link

Once the link to the IDBR has been achieved, it is possible to link data on enterprises from the ABI. Our interest at the moment is to link the maximum possible number of enterprises, and so we use both the selected and the unselected enterprises from the ABI, as shown in Table 1.

The NES-IDBR link is at the level of the enterprise, rather than the reporting unit. At this stage we cannot link to reporting units or local units. We therefore arbitrarily select the first reporting unit of each enterprise. Since the number of multiple reporting unit enterprises is so tiny (see Table 1), this will make little difference.

We now merge the NES/IDBR data to the ABI data, with the following results.

	1994	1995	1996	1998	1999	2000	2001	2002
NES total sample size	140,675	159,956	160,572	158,815	157,302	107,179	155,411	156,761
No match to either link file	110,332	115,477	110,878	45,719	44,835	23,766	28,404	27,409
Match to 1997 only	6,670	8,132	7,788	11,683	9,564	3,699	5,498	3,778
Match to 2004 only	391	567	593	462	571	252	845	7,401
Match to both, same enterprise number	22,669	34,863	40,385	96,831	98,743	77,027	116,445	114,838
Match to both, different enterprise number	613	917	928	4,120	3,589	2,435	4,219	3,335
Proportion of successful matches	21.6%	27.8%	30.9%	71.2%	71.5%	77.8%	81.7%	82.5%

Table 8: The NES-ABI link

Comparing the proportion of successful matches with the proportion of successful matches in the NES-IDBR link shows the number of lost matches.

Comparing again with Haskel & Pereira (Table 1), we have a total of 108,514 matches in 1998 (using the 1997 linking file), compared to 106,763. In 2000 the comparison is 80,726 compared with 116,511. Although Haskel & Pereira do use a slightly different method, it is worrying that there is such a large discrepancy in 2000. This appears to be because they started with a much larger NES file.

5 Some questions and suggestions

1. Is the IDBR available consistently through time? If not, a regular and consistent snapshot of the IDBR should be made. We understand that such snapshots *are* indeed available to DTI. These data should be made available to users of the BDL.
2. It is still unclear to us exactly how the linking file is constructed. Is there any documentation which explains the construction and the source of the IDBR linking file? This would be invaluable to researchers attempting to link the NES and the ABI. It is vital that in future, any linking files are constructed transparently and with appropriate documentation.
3. Although the BDL has access to only two linking files, files for other years have clearly existed. Hildreth & Pudney (1994) make use of linking files for 1994 and 1995. If these files are still in existence they would be extremely useful.
4. How accurate are the estimates of employment for small businesses which we use for the construction of job creation and destruction rates? If small businesses are not sampled frequently, job flow rates will be systematically underestimated for these firms.
5. Why does the number of individuals with a valid PAYE reference number in the NES vary so much over time? What explains the lack of any valid reference numbers in 1997?
6. There appear to be more than one version of many of the datasets used. For example, Haskel & Pereira (2002) appear to use a different NES sample. Ideally, all researchers should have access to the same (definitive) raw data. The BDL offers an excellent opportunity to achieve this, and we think this could be a major benefit.
7. The BDL also offers the potential to access data from authorised sites away from ONS offices in London and Newport. For researchers in the regions this offers large benefits. Government departments which wish to make use of academic expertise would also benefit.

6 Conclusion and future research possibilities

1. This project was intended to assess the feasibility of measuring job flows, and of linking data on workers and firms for the whole UK economy. In general we feel that both of these objectives are feasible, although many caveats remain.
2. Various consistency checks are vital to ensure that these results are accurate. For example, one should compare the recorded industry or geographical location of the reporting unit as coded in the NES and the ABI. Unfortunately in the limited time

available we were not able to perform these checks. Any results should therefore be treated with extreme caution.

3. A good deal of work remains in examining the data at different levels of aggregation. As noted, the link described above was carried out at the level of the *enterprise*, rather than the reporting unit. Ideally we would then like to be able to disaggregate the linked data to the level of the local unit. Whether this matters or not depends on how many enterprises have multiple local units. We have experimented with linking the NES data directly to the SNUL files using the reported postcode, but we have not yet been able to compare these results with those from the link described above. Local units may prove to be important when it comes to the calculation of job creation and destruction rates. Further work in this area is essential.
4. There are many unresolved questions relating to the origins of the data held at the BDL (see Section 5).
5. We anticipate that the introduction of the BDL will ensure that future deposits of data will be consistent.
6. Ideally, “best practice” for the linking process and for the calculation of job flows should be developed. It is very unsatisfactory that, at present, different researchers are using different unverified methods for calculations.
7. As we have stressed, the results reported here are very preliminary.

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Appendix A: proposal

Application for Seed Funding: ONS matched data base of business microdata

DEPARTMENT OF TRADE AND INDUSTRY

COMMERCIAL-IN-CONFIDENCE

THIS APPLICATION FORM MUST BE RECEIVED BY NOON 30. JUNE 2004

1. Contact details for principle or lead author*

Name	Email	Telephone	Postal address
Peter Wright	Peter.wright@nottingham.ac.uk	0115 9515470	School of Economics, University of Nottingham, NG7 2RD

2. Proposed authors/contributors*

Name	Title/Position	Institution
Dr Peter Wright	Senior Lecturer in Economics	University of Nottingham
Dr Richard Upward	Senior Lecturer in Economics	University of Nottingham
Dr Alexander Hijzen	Research Fellow	University of Nottingham

3. Title and short abstract of proposed paper

Title: Job reallocation and labour market adjustment: A proposal to analyse linked employer-employee data for the UK

Abstract: Our initial work would focus on the IDBR, and examine its suitability for the calculation of job creation and job destruction rates in both manufacturing and service industries. We are interested in assessing where new jobs are created and where old jobs are destroyed, both from a geographical and industrial viewpoint.

We would then wish to examine the feasibility of linking the IDBR job reallocation rates to the NESPD. This is with a view to evaluating the impact that changes in the rate of job creation and job destruction have on individual workers. For example: How does job reallocation impact on the wages of workers, both those that remain in the firm and those that leave? How does increased job destruction affect the employment prospects of those workers displaced from the firm?

4. Which of the ONS data sets do you intend to use?

Inter Departmental Business Register (IDBR) and the New Earnings Survey Panel Dataset (NESPD).

5. Do you propose to add a dataset to the matched database? If yes, which?

Contingent on the suitability of the data, a dataset of job creation and job destruction rates will be created. This will be in a form which can be matched either to individual workers in the NESPD, or at an industry level to other firm or worker datasets.

6. How do you think your proposal adds value to the relevant DTI work objectives?⁴

The data created will allow contributions to be made to the evidence base in 3 ways:

- It will allow a better understanding of how companies work in terms of job creation and job destruction decisions.
- It will increase the knowledge of both the manufacturing and especially the service sector, and how they compare and contrast.
- It will permit evaluation of the impact of job creation and job destruction on workers employment opportunities.

These contributions relate closely to the cross-cutting areas that are described in the DTI research strategy.

7. What other potential issues would your proposal raise and how do you intend to address them?

We anticipate that there are two key issues which may arise:

- The suitability of the IDBR as a means of constructing a true panel.
- Issues of confidentiality as a result of linking two data sources.

In both case we will liaise closely with officials from the BDL Virtual Data Lab to ensure maintenance of confidentiality and to advise on potential solutions.

8. What is the potential for outside funding for future work resulting from this proposal?

The seed grant would be used to assess the viability of using the matched IDBR-NES data to investigate the extent, causes and consequences of job creation and job destruction. A case for extended funding would be made to the ESRC and other funding institutions in light of this, and with the approval of the DTI.

9. Optional: Does this proposal cover any of the areas in DTI's research strategy?

See section 6.

10. Have you received, applied for, or intend to apply for funding or other assistance for this research from any other source?

Dr Hijzen has received an ESRC CASE Scholarship to examine the impact of job creation/destruction on labour market outcomes. He would be willing to devote the research time resulting from this award to this project, should it reach fruition.

⁴ For the DTI work objectives see: [DTI business plan](#)

11. Is there any other information you wish to provide?

Two of the authors have considerable experience in using the NESPD, and have published widely in the areas of labour reallocation and microeconometrics.

Any seed grant money would be used to finance travel of Dr Hijzen from Nottingham to London in order to use the BDL Virtual Data Lab.

Table B1: Job flows by GB regions

year	region	N	sel_emp	pos	neg	entrants	exits	jc1	jc2	jd1	jd2
1994	Greater London	39,272	202,288	0	0	39,272	6,098		202,288		
1995	Greater London	39,583	238,345	7,272	4,278	10,186	5,662	25,813	53,294	-19,148	-22,426
1996	Greater London	39,017	225,150	5,178	3,898	6,159	5,012	13,808	20,764	-17,101	-24,045
1997	Greater London	262,394	3,468,029	5,938	4,819	223,553	32,198	45,628	3,030,778	-50,665	-20,979
1998	Greater London	275,786	4,160,664	26,553	21,044	49,752	33,863	412,025	526,301	-167,797	-262,045
1999	Greater London	297,763	4,506,514	32,599	21,297	56,338	39,363	372,537	515,999	-156,976	-246,087
2000	Greater London	299,966	4,630,682	32,086	23,790	44,047	39,710	340,864	353,587	-190,053	-568,629
2001	Greater London	301,088	4,683,997	50,885	37,773	41,517	40,418	509,885	319,698	-248,106	-290,290
2002	Greater London	301,209	4,792,238	33,174	29,565	40,665	301,209	407,427	306,633	-279,142	-318,059
1994	South East	79,588	1,229,528	0	0	79,588	9,311		1,229,528		
1995	South East	81,886	1,479,737	17,977	9,018	16,045	8,372	162,828	231,227	-119,561	-166,326
1996	South East	77,664	1,230,366	10,718	8,357	8,437	7,557	62,771	102,812	-96,977	-92,233
1997	South East	336,089	3,612,625	11,883	8,352	260,220	35,261	100,819	2,650,261	-112,452	-99,346
1998	South East	356,048	4,268,035	34,408	23,362	57,531	36,940	372,050	603,599	-167,499	-248,220
1999	South East	379,078	4,722,875	43,892	25,147	57,892	40,706	383,324	553,617	-190,754	-568,629
2000	South East	388,531	4,803,967	45,245	27,571	49,882	42,633	394,221	292,317	-237,654	-431,795
2001	South East	393,541	4,976,701	69,396	48,985	46,068	45,624	581,350	375,104	-356,295	-342,752
2002	South East	396,158	5,158,711	41,556	41,744	46,064	396,158	397,601	276,870	-275,749	-483,111
1994	East Anglia	14,842	187,791	0	0	14,842	1,528		187,791		
1995	East Anglia	14,887	214,303	3,360	1,502	2,664	1,358	27,542	18,839	-17,976	-12,589
1996	East Anglia	14,317	207,785	1,915	1,405	1,333	1,289	6,903	11,019	-15,832	-16,306
1997	East Anglia	58,375	555,435	2,273	1,415	43,963	5,891	22,107	341,932	-16,534	-12,021
1998	East Anglia	60,855	623,091	5,705	3,826	8,870	5,892	43,300	82,408	-25,028	-36,857
1999	East Anglia	63,946	656,253	7,638	4,133	8,429	6,259	48,629	48,495	-23,656	-37,683
2000	East Anglia	65,556	681,222	7,859	4,550	7,666	6,562	48,717	36,511	-24,471	-44,763
2001	East Anglia	66,249	718,782	12,439	8,428	6,885	6,732	79,074	50,734	-42,347	-56,204
2002	East Anglia	67,612	743,306	7,240	7,453	7,514	67,612	46,206	69,049	-38,694	-40,474
1994	South West	32,151	425,388	0	0	32,151	3,674		425,388		
1995	South West	32,052	434,065	7,323	3,129	5,805	3,370	52,453	40,883	-45,071	-28,166
1996	South West	31,091	423,424	4,519	3,139	3,126	2,826	21,989	27,061	-33,312	-35,793
1997	South West	130,998	1,247,580	4,728	3,140	100,174	13,913	47,509	819,521	-42,776	-22,101
1998	South West	138,519	1,544,808	12,519	8,848	22,491	14,287	120,037	262,352	-57,039	-92,802
1999	South West	146,242	1,604,031	17,472	9,628	20,345	15,472	112,507	169,849	-84,850	-140,817
2000	South West	149,904	1,679,131	18,199	10,546	18,592	15,822	141,447	86,737	-73,377	-161,321
2001	South West	152,037	1,731,141	27,807	19,862	16,999	16,841	215,007	113,548	-108,112	-126,015
2002	South West	153,155	1,776,172	16,686	16,812	16,672	153,155	124,521	137,666	-99,908	-171,234
1994	West Midlands	36,782	700,961	0	0	36,782	4,051		700,961		
1995	West Midlands	37,356	745,579	10,492	4,599	7,236	3,778	94,626	70,357	-78,933	-39,950
1996	West Midlands	36,091	734,267	4,656	3,342	3,608	3,377	45,423	45,970	-47,898	-52,207
1997	West Midlands	126,705	1,698,919	5,925	4,066	90,968	13,479	77,662	972,163	-57,643	-39,969
1998	West Midlands	132,669	2,116,073	12,294	9,027	20,651	14,273	155,221	306,902	-77,247	-148,220
1999	West Midlands	138,683	2,053,020	16,131	9,735	19,488	14,995	137,706	89,498	-121,911	-119,124
2000	West Midlands	140,202	2,119,590	16,309	10,575	16,513	14,982	149,854	181,309	-99,277	-221,681
2001	West Midlands	141,147	2,096,294	26,004	20,207	15,412	15,540	201,156	152,028	-133,575	-167,770
2002	West Midlands	142,517	2,100,600	15,732	15,220	16,041	142,517	145,592	118,468	-126,545	-161,019
1994	East Midlands	28,308	553,719	0	0	28,308	3,023		553,719		
1995	East Midlands	28,694	580,131	7,920	3,188	5,519	2,923	72,518	52,716	-43,703	-32,592
1996	East Midlands	27,757	558,929	3,800	2,558	2,856	2,671	24,273	38,297	-34,116	-52,578
1997	East Midlands	101,949	1,157,650	4,653	3,173	74,377	10,675	50,385	643,447	-46,300	-37,171
1998	East Midlands	107,233	1,419,843	10,156	7,355	16,476	11,564	110,839	220,513	-52,690	-77,735
1999	East Midlands	111,543	1,430,771	13,218	7,721	15,244	12,080	99,535	93,921	-94,748	-115,577
2000	East Midlands	113,053	1,420,301	13,564	8,157	13,369	12,141	124,791	80,927	-62,806	-106,557
2001	East Midlands	114,049	1,479,373	20,601	15,931	12,679	12,356	144,852	93,556	-85,555	-123,111
2002	East Midlands	116,016	1,577,734	12,631	12,075	13,530	116,016	105,978	120,364	-77,045	-183,047
1994	Yorks. & Humberside	28,220	527,423	0	0	28,220	3,195		527,423		
1995	Yorks. & Humberside	28,414	596,239	8,160	3,309	5,678	2,820	74,472	54,849	-45,375	-38,790
1996	Yorks. & Humberside	27,664	578,450	3,580	2,533	2,882	2,716	31,267	27,290	-35,153	-35,856
1997	Yorks. & Humberside	110,646	1,515,134	4,615	3,055	83,122	11,967	59,270	937,177	-60,205	-33,872
1998	Yorks. & Humberside	114,599	1,663,580	10,299	8,019	16,882	12,154	114,927	273,236	-58,414	-87,644
1999	Yorks. & Humberside	118,964	1,696,291	13,779	8,614	15,799	12,759	122,667	93,537	-78,783	-127,389
2000	Yorks. & Humberside	120,382	1,678,549	13,812	9,002	14,149	13,111	119,060	75,877	-93,220	-109,003
2001	Yorks. & Humberside	120,556	1,701,188	22,005	17,599	12,853	12,590	170,185	77,796	-108,660	-106,166
2002	Yorks. & Humberside	122,626	1,738,243	13,489	12,749	13,911	122,626	122,232	102,254	-86,606	-121,180
1994	North West	33,172	620,128	0	0	33,172	3,792		620,128		
1995	North West	33,937	707,900	9,793	3,816	7,313	3,799	86,519	69,166	-54,688	-36,547
1996	North West	32,385	669,415	4,612	3,060	3,263	3,335	26,594	40,444	-48,959	-44,063
1997	North West	141,636	1,735,818	5,388	3,805	109,476	15,880	66,992	1,079,116	-61,520	-63,559
1998	North West	147,809	2,122,483	13,644	10,339	23,530	16,939	156,376	331,400	-81,260	-129,891
1999	North West	155,006	2,288,916	18,040	11,311	23,321	17,233	192,759	133,340	-99,819	-190,399
2000	North West	157,158	2,396,400	17,006	11,695	19,570	18,253	221,559	108,447	-114,053	-209,624
2001	North West	158,468	2,425,783	27,916	23,215	18,848	20,436	250,412	162,538	-163,464	-190,933
2002	North West	157,367	2,494,954	17,010	16,109	18,564	157,367	176,651	215,758	-156,056	-225,404
1994	North	12,226	309,621	0	0	12,226	1,483		309,621		

1995 North	12,457	336,295	3,732	1,397	2,719	1,376	35,978	33,030	-28,754	-22,303
1996 North	11,897	317,938	1,598	1,090	1,243	1,139	9,509	18,019	-22,047	-26,061
1997 North	52,414	676,704	1,967	1,290	40,441	5,691	37,597	369,239	-32,125	-12,982
1998 North	54,208	816,861	5,088	3,964	8,305	5,754	55,561	152,999	-43,736	-44,285
1999 North	56,678	849,541	6,595	4,065	7,646	6,213	60,128	53,098	-37,887	-53,308
2000 North	57,213	879,220	6,566	4,417	6,801	6,224	69,863	37,869	-41,550	-78,103
2001 North	57,084	884,917	10,606	9,183	5,851	5,905	100,165	57,230	-59,512	-55,469
2002 North	58,338	906,742	6,621	6,194	6,832	58,338	58,272	73,921	-48,273	-87,205
1994 Wales	15,646	234,206	0	0	15,646	1,978		234,206		
1995 Wales	15,602	267,616	4,021	1,603	3,060	1,709	35,348	26,211	-23,532	-16,151
1996 Wales	15,080	259,251	2,110	1,524	1,559	1,507	10,701	12,943	-17,198	-21,826
1997 Wales	60,189	605,081	2,374	1,491	45,396	6,482	31,968	344,407	-16,702	-23,486
1998 Wales	61,921	677,076	5,499	4,500	9,057	6,673	48,532	87,387	-26,750	-43,250
1999 Wales	64,225	775,333	7,303	4,712	8,156	6,735	58,360	116,874	-30,104	-39,887
2000 Wales	64,875	792,418	7,650	4,754	7,249	6,787	48,605	46,901	-36,151	-60,971
2001 Wales	65,175	805,541	11,315	10,206	6,824	7,028	76,096	49,196	-52,059	-78,212
2002 Wales	65,448	764,690	7,510	7,976	6,661	65,448	50,308	34,276	-56,986	-68,289
1994 Scotland	23,239	455,308	0	0	23,239	2,588		455,308		
1995 Scotland	23,818	528,164	7,197	2,702	5,099	2,572	75,811	54,633	-41,530	-30,336
1996 Scotland	22,963	515,332	2,926	2,140	2,444	2,152	29,580	26,810	-40,096	-36,691
1997 Scotland	102,092	1,421,771	3,549	2,608	79,005	11,439	53,929	928,688	-50,988	-39,525
1998 Scotland	105,921	1,720,389	9,205	8,090	16,141	11,548	114,826	269,708	-78,618	-200,211
1999 Scotland	109,395	1,755,926	12,584	8,617	14,309	11,676	129,358	237,437	-83,968	-160,249
2000 Scotland	112,602	1,794,083	13,132	8,601	14,811	11,947	133,942	121,658	-88,695	-108,674
2001 Scotland	113,408	1,870,750	19,341	18,424	12,279	12,040	169,972	125,850	-113,793	-180,574
2002 Scotland	114,256	1,857,361	12,708	11,855	12,333	114,256	124,497	138,812	-101,193	-185,611

Table B2: Job flows by industry

year	industry (1992 SIC Divisions)	N	sel_emp	pos	neg	entrants	exits	jc1	jc2	jd1	jd2
1994	C Mining & quarrying	1,065	84,615	0	0	1,065	139	0	84,615	0	0
1995		1,002	48,353	317	173	275	113	11,131	4,553	-4,008	-1,301
1996		1,046	51,587	193	124	154	120	2,890	3,763	-2,777	-4,778
1997		1,562	83,290	206	214	613	223	6,195	36,316	-6,661	-4,478
1998		1,477	88,051	244	205	188	259	11,277	4,584	-5,216	-5,936
1999		1,563	86,965	243	193	318	299	7,334	3,184	-6,997	-6,784
2000		1,453	89,157	187	193	191	208	9,182	6,678	-7,476	-11,223
2001		1,539	83,612	265	221	264	274	5,913	7,743	-20,270	-10,816
2002		1,548	79,134	231	179	218	218	1,548	5,690	4,973	-10,883
1994	DA Manufacturing of food, drinks and tobacc	9,152	529,032	0	0	9,152	1,272	0	529,032	0	0
1995		8,152	579,004	2,566	1,152	2,124	1,052	71,931	47,024	-45,247	-40,934
1996		7,704	546,112	1,254	705	1,081	774	31,140	37,147	-48,446	-59,711
1997		7,766	534,316	1,476	1,314	970	838	62,928	31,318	-43,042	-23,932
1998		7,713	546,808	1,396	991	627	814	38,837	29,516	-25,950	-41,298
1999		7,582	538,809	1,414	965	728	868	38,710	20,471	-24,461	-33,235
2000		7,351	559,817	1,230	893	671	702	40,127	37,980	-27,884	-54,554
2001		7,190	539,995	1,758	1,550	543	734	47,995	13,967	-32,250	-47,446
2002		7,026	513,704	1,218	1,067	542	7,026	31,232	21,872	-37,819	-39,514
1994	DB Textiles	13,576	327,996	0	0	13,576	2,325	0	327,996	0	0
1995		14,359	377,082	4,449	1,765	4,082	2,319	44,342	35,023	-23,238	-26,076
1996		14,361	370,101	2,014	1,202	2,228	2,099	18,106	17,885	-19,679	-29,193
1997		14,192	372,049	2,058	1,954	2,111	2,233	31,307	29,040	-29,376	-35,241
1998		13,509	356,790	1,848	1,410	1,631	2,183	21,585	20,250	-16,486	-34,830
1999		12,649	326,151	1,765	1,674	1,452	1,859	18,206	14,533	-26,510	-38,713
2000		11,803	281,481	1,719	1,468	1,140	1,744	11,138	10,563	-21,966	-35,523
2001		11,039	241,335	2,315	2,700	1,018	1,558	15,125	8,457	-26,229	-29,704
2002		10,387	208,730	1,312	1,547	918	10,387	8,255	8,009	-17,770	-26,429
1994	DC Leather	1,655	55,630	0	0	1,655	244	0	55,630	0	0
1995		1,518	51,717	489	243	291	206	4,975	2,409	-10,289	-6,140
1996		1,431	48,917	162	178	136	198	1,453	4,516	-1,615	-6,182
1997		1,290	41,868	188	179	109	176	2,692	3,036	-6,128	-5,753
1998		1,195	38,439	164	146	76	177	1,917	2,035	-1,984	-3,932
1999		1,099	32,891	126	160	78	128	1,447	653	-2,253	-5,308
2000		1,023	27,548	117	152	54	123	1,028	666	-1,916	-1,887
2001		957	22,443	150	238	62	111	816	254	-4,332	-1,143
2002		886	19,172	111	143	43	886	904	360	-1,877	-1,504
1994	DD Wood	6,865	70,130	0	0	6,865	658	0	70,130	0	0
1995		7,959	91,803	3,077	989	1,211	686	17,940	8,903	-5,185	-5,242
1996		8,111	87,230	1,041	472	610	586	3,499	3,571	-4,669	-6,349
1997		8,226	84,013	853	665	581	662	5,967	3,561	-6,646	-4,376
1998		8,241	87,839	764	553	566	695	5,832	2,021	-2,848	-6,918
1999		8,215	81,659	906	540	667	648	4,420	2,159	-4,359	-4,650
2000		11,351	91,063	904	565	3,635	983	4,818	12,096	-3,396	-4,158
2001		11,345	98,894	2,404	1,631	913	984	13,033	3,291	-5,934	-4,932
2002		11,148	101,600	1,267	992	672	11,148	6,688	5,868	-3,587	-9,001
1994	DE Paper	28,307	437,278	0	0	28,307	3,093	0	437,278	0	0
1995		29,347	527,443	9,114	3,132	6,431	3,027	83,960	47,583	-24,785	-26,788
1996		30,515	510,703	3,509	1,813	4,376	2,929	22,498	28,344	-32,741	-39,875
1997		31,733	509,816	3,673	2,871	4,452	3,266	46,342	36,092	-35,014	-38,093
1998		32,078	498,640	3,385	2,274	3,525	3,478	31,704	17,798	-23,184	-27,769
1999		32,462	504,986	3,908	2,364	3,745	3,428	34,751	18,684	-21,546	-39,624
2000		32,216	510,461	3,495	2,451	3,267	3,220	43,877	18,760	-20,721	-50,817
2001		32,130	492,955	6,558	5,122	3,045	3,440	48,821	16,925	-30,956	-29,521
2002		31,936	499,459	3,452	3,208	3,108	31,936	33,328	28,711	-24,178	-43,750
1994	DF Fuel	216	31,360	0	0	216	24	0	31,360	0	0
1995		432	35,728	78	43	237	49	3,473	3,237	-1,465	-811
1996		286	34,090	19	20	33	40	491	1,501	-2,476	-794
1997		256	33,067	35	32	39	24	381	3,814	-3,409	-5,574
1998		250	29,344	27	42	23	25	468	1,598	-2,041	-641
1999		246	29,060	29	28	31	29	713	71	-275	-416
2000		240	28,654	32	26	24	27	930	532	-1,374	-845
2001		228	28,148	49	55	19	33	4,363	758	-1,654	-3,825
2002		209	29,338	42	19	16	209	4,129	403	-327	-2,058
1994	DG Chemicals	3,753	278,390	0	0	3,753	390	0	278,390	0	0
1995		4,455	303,788	1,399	645	1,395	460	28,221	35,286	-26,006	-20,062
1996		4,088	298,064	488	353	494	371	15,388	19,552	-20,466	-27,238
1997		4,062	301,217	811	532	507	371	25,193	28,723	-24,503	-28,959
1998		3,973	291,167	659	485	325	450	24,460	12,633	-16,535	-17,218
1999		3,944	281,469	645	527	401	393	15,021	9,322	-17,734	-11,991
2000		3,868	282,597	583	515	322	446	23,654	12,507	-18,599	-20,179
2001		3,782	298,109	1,022	729	338	432	28,469	25,030	-18,850	-36,912
2002		3,728	289,035	569	561	328	3,728	17,357	21,052	-16,509	-34,334
1994	DH Rubber & plastics	5,543	224,430	0	0	5,543	441	0	224,430	0	0
1995		6,744	251,708	2,866	1,208	1,321	585	30,445	18,043	-15,818	-9,261
1996		6,894	244,692	719	642	616	505	5,692	12,905	-14,458	-14,913
1997		7,058	256,694	1,358	907	520	550	28,492	13,450	-16,201	-13,299
1998		7,036	266,680	1,017	719	407	637	20,125	11,794	-10,629	-14,771
1999		6,883	263,644	999	759	409	518	16,960	9,748	-10,755	-18,171
2000		6,814	258,688	963	786	341	546	14,234	10,785	-12,609	-24,153
2001		6,794	247,000	2,117	1,435	373	580	22,840	6,825	-17,871	-18,214

2002		6,737	240,660	975	891	385	6,737	13,678	9,634	-14,316	-18,167
1994	DI Non-metallic minerals	3,631	153,566	0	0	3,631	359	0	153,566	0	0
1995		4,958	174,715	1,911	833	1,101	527	21,298	17,994	-19,547	-9,582
1996		4,671	161,780	519	401	622	415	9,680	4,610	-11,366	-13,918
1997		4,937	166,007	753	577	616	456	17,489	15,009	-12,380	-13,446
1998		4,963	156,773	682	439	489	521	10,748	3,094	-6,935	-8,399
1999		5,082	149,842	722	552	601	524	9,615	5,751	-9,472	-11,469
2000		5,045	135,751	663	530	519	507	6,895	4,663	-10,596	-6,721
2001		5,098	144,056	1,276	868	509	517	13,937	7,488	-9,601	-13,384
2002		5,051	133,168	772	632	447	5,051	7,187	2,664	-9,556	-8,202
1994	DJ Basic and fabricated metals	29,570	515,761	0	0	29,570	2,423	0	515,761	0	0
1995		31,121	587,803	11,430	4,514	5,772	2,417	79,986	51,267	-40,196	-29,519
1996		30,775	559,658	3,263	2,189	2,596	2,065	16,508	22,226	-31,982	-29,326
1997		31,295	558,450	4,443	2,998	2,508	2,107	52,055	22,376	-37,797	-31,606
1998		31,621	551,841	3,550	2,484	2,245	2,555	30,308	13,604	-23,012	-21,539
1999		31,739	562,292	3,942	2,690	2,599	3,446	42,306	16,208	-25,311	-31,464
2000		30,197	540,165	3,376	2,729	2,163	2,535	38,985	20,671	-30,770	-64,641
2001		29,778	510,612	7,504	5,490	1,993	2,509	51,293	18,425	-33,400	-43,703
2002		29,275	480,658	3,707	3,115	1,861	29,275	21,194	19,776	-33,510	-46,050
1994	DK Machinery NEC	12,492	417,210	0	0	12,492	989	0	417,210	0	0
1995		15,233	463,987	5,100	2,514	3,672	1,064	54,235	44,002	-42,089	-19,691
1996		13,466	416,214	1,037	1,085	1,109	862	9,798	18,691	-27,344	-25,515
1997		14,076	424,033	2,226	1,501	1,161	1,045	43,810	28,833	-37,494	-19,538
1998		13,959	419,343	1,640	1,289	636	1,171	26,085	8,931	-20,789	-21,978
1999		13,939	410,641	1,652	1,369	955	1,255	22,906	10,985	-19,194	-24,797
2000		13,559	406,743	1,402	1,460	614	1,212	18,345	23,692	-26,526	-40,087
2001		13,284	382,947	3,288	2,595	655	1,281	31,453	10,986	-24,834	-28,576
2002		12,860	362,599	1,472	1,594	631	12,860	15,159	20,951	-26,356	-33,730
1994	DL Electrical and optical equipment	15,207	521,469	0	0	15,207	1,617	0	521,469	0	0
1995		17,375	590,677	4,635	2,216	5,661	1,693	63,348	69,376	-44,152	-31,608
1996		15,218	548,765	1,783	1,114	1,702	1,214	19,190	35,395	-43,850	-37,132
1997		16,060	603,025	2,436	1,681	1,943	1,499	64,955	76,970	-48,452	-65,222
1998		15,774	554,548	1,958	1,487	1,062	1,586	41,092	21,733	-29,722	-25,609
1999		16,366	564,229	2,060	1,490	1,828	2,048	38,291	30,220	-34,074	-37,105
2000		15,827	539,874	1,821	1,619	1,178	1,944	34,971	20,392	-44,102	-46,064
2001		15,590	547,335	3,791	2,771	1,249	1,960	61,875	22,298	-38,067	-43,827
2002		15,352	481,634	1,790	1,928	1,127	15,352	25,405	14,355	-65,740	-43,220
1994	DM Transport equipment	4,222	432,303	0	0	4,222	459	0	432,303	0	0
1995		6,741	431,158	1,671	854	2,959	661	30,467	35,476	-59,431	-19,768
1996		5,040	425,072	512	387	629	451	28,823	22,972	-22,430	-25,614
1997		5,488	421,518	880	663	930	590	41,245	19,413	-43,873	-16,909
1998		5,396	428,245	804	586	434	528	27,718	17,554	-16,181	-18,178
1999		5,770	419,045	839	541	980	673	38,670	14,065	-38,758	-31,191
2000		5,614	453,123	751	598	496	699	24,603	76,544	-19,817	-54,640
2001		5,527	420,586	1,289	1,030	504	690	25,991	19,366	-26,191	-28,478
2002		5,487	438,603	763	761	494	5,487	24,510	29,570	-30,859	-62,256
1994	DN Manufacturing NEC	18,737	195,954	0	0	18,737	2,266	0	195,954	0	0
1995		17,943	222,545	3,989	1,785	4,948	2,139	29,717	27,853	-13,844	-13,483
1996		18,004	215,890	2,855	1,268	2,928	1,942	10,970	14,040	-11,425	-15,955
1997		18,965	230,260	2,739	1,759	3,044	1,993	25,029	19,805	-13,697	-14,672
1998		19,347	228,560	2,565	1,632	2,623	2,135	17,285	11,134	-9,581	-13,929
1999		19,881	233,803	3,136	1,827	2,820	2,141	17,936	12,750	-10,102	-17,425
2000		19,992	230,206	2,877	1,774	2,398	2,020	15,483	11,326	-10,707	-13,598
2001		19,607	231,846	4,096	3,333	1,775	2,110	22,403	9,544	-13,562	-17,140
2002		19,396	225,777	2,759	2,160	1,889	19,396	16,684	7,907	-11,720	-14,723
1994	E Electricity, gas and water	161	245,373	0	0	161	20	0	245,373	0	0
1995		238	328,545	38	40	114	38	3,542	98,283	-18,495	-103,582
1996		254	196,380	20	39	96	33	982	64,268	-21,667	-10,788
1997		303	160,512	42	55	86	41	8,478	12,586	-46,140	-11,024
1998		306	150,433	59	46	57	52	4,389	9,349	-14,237	-5,786
1999		312	149,119	79	34	60	45	13,280	1,846	-1,808	-11,763
2000		253	136,920	48	46	47	29	5,343	4,766	-10,503	-3,954
2001		321	148,533	61	57	78	44	8,266	18,021	-13,096	-19,274
2002		407	141,557	67	62	108	407	10,766	21,223	-19,947	-19,781
1994	F Construction	189,294	925,864	0	0	189,294	24,002	0	925,864	0	0
1995		181,109	1,062,318	34,118	16,435	29,730	20,703	164,897	158,893	-124,476	-82,328
1996		174,062	1,005,052	26,224	21,054	17,500	18,977	85,713	60,043	-91,299	-90,378
1997		172,330	997,898	16,711	13,125	21,918	17,728	100,158	98,362	-100,326	-72,889
1998		172,883	1,084,930	18,441	9,930	20,209	18,553	154,565	59,727	-48,508	-81,379
1999		180,920	1,153,826	23,988	11,715	26,469	18,062	127,237	69,086	-61,932	-77,270
2000		183,234	1,196,120	36,444	13,259	20,543	18,770	136,941	58,151	-70,600	-81,276
2001		184,985	1,324,918	42,001	18,111	19,936	18,974	214,263	75,672	-81,961	-96,614
2002		187,064	1,303,318	21,107	40,678	20,749	187,064	120,112	58,706	-108,259	-94,611
1997	G Wholesale & retail trade	372,266	3,879,601	6,037	3,032	356,089	40,349	13,088	3,743,815	-11,847	0
1998		394,806	4,476,991	33,561	24,991	62,229	43,115	345,811	385,740	-138,339	-346,114
1999		395,606	4,594,080	43,466	26,738	43,899	42,882	352,639	276,655	-171,399	-353,304
2000		395,989	4,625,256	41,191	24,204	43,371	41,148	356,514	200,007	-164,110	-349,738
2001		389,192	4,732,153	68,149	54,365	33,619	40,913	483,884	210,739	-253,099	-344,200
2002		382,872	4,688,519	40,195	31,314	33,617	382,872	332,708	158,260	-179,502	-252,783
1997	H Hotels & restaurants	107,265	1,410,728	235	86	106,699	18,432	667	1,405,370	-383	0
1998		92,478	1,490,050	8,655	16,949	13,947	13,996	157,024	89,475	-63,110	-131,208
1999		111,307	1,695,961	15,709	13,477	23,222	17,014	132,398	169,742	-58,637	-143,867
2000		113,645	1,749,814	14,564	14,967	19,406	17,070	150,464	141,581	-100,502	-180,128
2001		115,850	1,791,776	19,212	27,406	19,019	17,633	192,386	161,325	-136,885	-222,928

2002		119,387	1,747,043	16,294	17,448	20,432	119,387	171,763	117,810	-115,076	-173,097
1997	I Transport, storage and communication	73,293	1,246,688	368	195	72,068	8,448	1,443	1,234,887	-917	0
1998		74,606	1,420,467	7,132	4,183	9,929	8,919	140,455	88,631	-48,841	-101,167
1999		76,803	1,655,142	9,243	4,563	11,046	9,433	115,581	269,875	-54,993	-57,914
2000		77,599	1,716,432	9,086	5,009	10,124	9,112	110,555	41,047	-42,087	-280,787
2001		78,740	1,584,185	13,900	9,475	9,845	9,447	163,280	66,206	-78,614	-67,284
2002		79,484	1,566,783	9,035	6,939	9,615	79,484	98,465	50,040	-132,571	-75,427
1997	K Real Estate, Renting and Business activities	401,855	3,054,487	4,833	2,575	386,926	42,684	13,550	2,948,903	-22,614	0
1998		435,631	3,546,323	38,536	25,350	76,075	47,175	390,907	270,404	-204,682	-257,690
1999		489,314	3,748,797	47,389	28,146	100,164	56,743	410,636	263,701	-212,240	-277,604
2000		513,669	3,883,073	45,820	34,468	79,651	65,199	392,802	256,652	-249,093	-285,132
2001		528,222	4,100,208	76,801	55,687	76,849	69,509	599,052	238,936	-346,913	-283,047
2002		541,796	4,345,895	52,207	43,429	78,071	541,796	418,748	340,443	-296,891	-389,173
1997	M Education	13,116	777,578	45	18	12,999	1,144	227	775,917	-106	0
1998		17,292	2,398,019	2,376	1,596	5,358	1,569	51,588	1,607,643	-35,372	-17,563
1999		17,860	2,745,499	3,732	1,971	2,302	2,557	94,036	498,522	-130,776	-179,411
2000		16,778	3,018,032	3,415	1,696	1,976	1,585	167,675	243,591	-72,575	-334,632
2001		17,134	2,924,179	4,618	2,618	1,991	1,535	162,911	259,151	-108,836	-175,183
2002		18,086	3,253,161	3,514	1,968	2,386	18,086	165,275	317,573	-68,330	-400,019
1997	N Health & social work	32,955	736,034	151	25	32,662	3,134	427	732,464	-66	0
1998		36,723	908,762	3,543	2,480	7,219	3,348	63,450	158,857	-31,706	-85,991
1999		35,353	965,710	5,398	3,146	2,051	2,793	66,890	114,370	-28,403	-108,111
2000		35,015	909,915	5,122	2,759	2,087	3,056	76,647	38,106	-40,536	-81,665
2001		34,475	979,715	10,947	7,089	2,217	3,321	127,580	59,945	-49,803	-80,009
2002		33,878	1,063,522	4,803	3,328	2,400	33,878	81,928	112,225	-36,571	-106,406
1997	O Other community, social and personal activi	143,140	811,631	736	256	141,146	14,885	1,746	796,703	-834	0
1998		164,311	1,113,894	12,364	8,107	39,806	15,946	86,067	268,700	-41,192	-81,351
1999		166,626	1,145,829	17,861	9,510	20,142	15,704	97,527	73,064	-49,469	-64,562
2000		166,904	1,204,217	15,618	11,491	18,429	15,286	107,713	69,950	-52,841	-74,698
2001		169,007	1,242,612	24,703	25,206	18,497	16,308	149,049	73,290	-97,199	-71,335
2002		169,578	1,271,371	16,484	13,667	18,020	169,578	91,598	76,057	-67,026	-91,399