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ON WHOM FALLS THE BURDEN

OF RESTRUCTURING ?

– Evidence from Finland***

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ABSTRACT: This study contains an empirical analysis of gross job and worker flows in the context of the great depression of the early 1990s. The novelty of the empirical implemention is to characterize gross job and worker flows in terms of education and experience of employees. This is an important extension of the literature on job creation and dest-ruction, because the influential tradition summarized by Davis, Haltiwanger and Schuh (1996) only takes into account firms' characteristics (such as age and size) in the analysis of gross job and worker flows. Also, the sectoral composition of the empirical study goes well beyond "manucentrism". Thus, the study includes a number of service sectors. The analysis indicates that in the case of the Finnish economy the inclusion of detailed establishment demography is not an essential part of the analysis of gross job and worker flows. The results reveal some interesting notions about the underlying dynamics of the great depression of the early 1990s. The slump of the early 1990s caused a restructuring of service sectors after the shakeup of manufacturing industries. The analysis of gross job and worker flows indicates that the employment of the less educated has relatively deteriorated throughout the period from 1989 to 1996 and especially so in manufacturing. High-educated have much lower propensity to loose jobs in the recession. But because of the high cyclicality of job creation, job reallocation is approximately at the same level for high-educated workers than for others, which contrasts with the findings in some other countries. The adjustment of labour demand at the establishment-level for the entire labour force in the recession period was tailored via decreasing hirings of workers rather than increasing separations of workers despite the rise in job destruction. The most likely explanation for this is the decrease in voluntary worker flow during the great depression of the 1990s. Also, the results indicate that employees with basic education only and the least experienced employees of the Finnish economy were the key categories of labour force which carried the heaviest burden of restructuring during the depression. In fact, the employment of the highly educated segment of the Finnish labour market decreased only in the years 1992 and 1993, while the employment deteriorated for five years 1990-1994 for employees with basic education only.

KEY WORDS: job flows, worker flows, education, experience, Finnish depression

JEL Classification: J63

TIIVISTELMÄ: Tutkimuksessa tarkastellaan työpaikka- ja työntekijävirtoja Suomen 1990-luvun syvän laman aikana. Tutkimuksessa luonnehditaan työpaikka- ja työntekijävirtoja työn-tekijöiden koulutuksen ja työkokemuksen avulla. Tarkastelu laajentaa olemassaolevaa kirjalli-suutta työpaikkojen syntymisestä ja häviämisestä (Davis, Haltiwanger ja Schuh 1996), koska ai-emmissa tutkimuksissa työpaikka- ja työntekijävirtoja on laskettu ainoastaan suhteessa yrityk-sen ominaisuuksiin (kuten ikä ja koko). Aineisto kattaa aiemmasta tutkimuksesta poiketen teh-dasteollisuuden ohella myös suuren joukon palvelualoja. Kirjallisuudessa käytetyllä yritysde-mografialla ei ole suurta vaikutusta työpaikka- ja työntekijävirtojen analyysiin Suomessa. Työ-paikka- ja työntekijävirtojen tarkastelu paljastaa sen, että palvelualoilla käynnistyi rakenne-muutos vasta teollisuuden jälkeen 1990-luvun alun syvässä lamassa. Tulosten mukaan hei-koimmin koulutetun työvoiman kysyntä oli heikkoa koko 1990-luvun, erityisesti teollisuudessa. Korkeimmin koulutetuilla oli pienempi todennäköisyys menettää työpaikkansa laman aikana.

Työpaikkojen vaihtuvuusaste on kuitenkin korkeimmin koulutetuilla työntekijöillä lähes yhtä suurta kuin muilla, mikä poikkeaa eräistä muista maista. Syynä tähän on uusien työpaikkojen syntymisen voimakas vaihtelu kasvukausien ja 1990-luvun alun syvän laman välillä. Kaikilla työntekijöillä ulosvirtaus toimipaikoista ei kasvanut merkittävästi laman aikana, vaikka työpaikat vähenivät etenkin heikoimmin koulutetuilla. Tätä selittänee vapaaehtoisen irtisanoutumisen väheneminen. Tulosten mukaan heikosti koulutetut ja nuoret työntekijät kantoivat suurimman taakan laman aikana tapahtuneesta rakennemuutoksesta. Työntekijöillä, joilla on ainoastaan peruskoulutus, työllisyyden nettomuutos oli negatiivinen peräti neljän vuoden ajan 1990-luvulla.

ASIASANAT: työpaikkavirrat, työntekijävirrat, koulutus, kokemus, Suomen lama

JEL luokitus: J63

YHTEENVETO

Rakennemuutos on olennainen osa suhdannevaihteluja. Joseph A. Schumpeter (1942) luonnehti taantumia "luovan tuhon" aikakausina. Näkemyksen mukaan voimakkaiden taantumien aikana tuotantorakenne muuttuu siten, että tuottavuudeltaan heikoimmat yritykset (ja toimipaikat) karsiutuvat pois konkurssien myötä, ja kansantalouden tuottavuus paranee pitkän aikavälin näkökulmasta. Työpaikkojen syntyminen ja häviäminen on puolestaan välttämätön edellytys rakennemuutoksen toiminnalle kansantaloudessa.

Tutkimuksessa luonnehditaan työpaikka- ja työntekijävirtoja koulutus- ja työkokemusryhmittäin, jolloin saadaan näkemys siitä, miten rakennemuutoksen taakka kohtaantui Suomessa 1990-luvun alun syvän laman aikana. Tutkimuksen tavoitteena on luonnehtia rakennemuutosta nimenomaan keskeisimmissä työntekijäryhmissä.

Tutkimuksessa hyödynnetään kattavaa toimipaikka-aineistoa, jossa seurataan samoja toimipaikkoja vuodesta 1987 vuoteen 1996 sekä otetaan mukaan uusia tutkimusajanjakson aikana syntyneitä toimipaikkoja. Kyseessä on kokonaistutkimus.

Keskeinen osa tutkimusta on toimipaikkojen demografinen analyysi, jossa on yritetty erottaa toisistaan toimipaikkojen epäaitoja syntymiä ja kuolemia aidoista toimipaikkatunnuksen muutoksista. Toimipaikkatunnuksen vaihtumista ei ole tarkastelussa pidetty aitona, jos yli 60 prosenttia jonkin toimipaikan työntekijöistä jatkaa toisessa toimipaikassa. Tutkimus osoittaa sen, että epäaitoja toimipaikkatunnuksen muutoksia on vähän aineistossa.

Tulosten mukaan työpaikkojen syntymisaste on korkeammalla tasolla ylemmän korkeakoulututkinnon hankkineille verrattuna ainoastaan peruskoulututkinnon hankkineisiin työntekijöihin teollisuuden toimipaikoilla. Työpanoksen kysynnän rakennemuutos on seurausta työntekijöille asetetun vaatimustason jatkuvasta noususta (sekä koulutetun työvoiman osuuden kasvusta). Työpaikkojen syntymisaste on myös erittäin matalalla tasolla ikääntyneille. Ikääntyneiden työmarkkinat ovat kirnuamisasteella tarkastellen "seisetilassa", koska nuorien työntekijöiden ylimääräinen vaihtuvuus on huomattavasti suurempaa kuin ikääntyneiden työntekijöiden.

Ainoastaan rakentamisessa työpaikkojen syntymisaste on ollut vuosina 1989-1996 keskimäärin korkeammalla tasolla heikoimmin koulutettujen joukossa verrattuna korkeimmin koulutettuihin työntekijöihin. Syynä tähän on se, että rakentamisessa työntekijöille ei tyypillisesti aseteta korkeata koulutusvaatimusta.

Suomessa tapahtuu paljon työpaikkojen vaihtuvuutta myös korkeimmin koulutettujen keskuudessa, mikä poikkeaa muista Pohjoismaista. Syynä tähän on uusien työpaikkojen syntymisen voimakas vaihtelu kasvukausien ja 1990-luvun alun syvän laman välillä. Vaihtelua selittää uusien työntekijöiden palkkauksen dramaattinen väheneminen laman aikana myös korkeimmin koulutetuilla. Työntekijöiden irtisanoutuminen/irtisanominen on sen sijaan enemmän työntekijän päätöksistä riippuvainen kuin työntekijöiden palkkaus. Vapaaehtoisen irtisanoutumisen vähenemisen vuoksi työntekijöiden poistuminen yrityksistä ei sen sijaan oleellisesti kasvanut laman aikana.

Merkittävä osa työpanoksen välittömästä sopeuttamisesta työpaikkojen vähentymisenä tapahtui 1990-luvun syvän laman aikana heikosti koulutettujen ja nuorten työntekijöiden keskuudessa. Heikoimmin koulutetuilla ja nuorilla työntekijöillä on vähiten toimipaikkakohtaista osaamista, joten heidän työpanostaan on suhteellisen vaivatonta sopeuttaa toimipaikan menekin mukaan. Työntekijöiden ylimääräinen vaihtuvuusaste myös supistui laman aikana sekä heikoimmin että korkeimmin koulutetuilla työntekijöillä, joten voidaan väittää, että lama "jäykisti" suomalaisia työmarkkinoita.

Työpaikkavirtojen perusteella näyttäisi myös siltä, että 1990-luvun lama jätti pysyviä jälkiä heikoimmin koulutettujen ja ikääntyneiden työllistymismahdollisuuksiin sekä kykyyn vaihtaa työpaikkaa. Erityisesti heikoimmin koulutetuilla tapahtunut vapaaehtoisen vaihtuvuuden lasku voi jättää myös pysyviä jälkiä työntekijöiden tulevaan palkkaprofiiliin, koska työpaikan vaihtaminen on tärkeä tekijä, joka auttaa työntekijää nostamaan palkkaansa työuransa aikana.

CONTENT

1. Introduction

The available microeconometric evidence based on the longitudinal linked employer-employee data sets strongly indicates that market economies are in a state of continuous turbulence. In fact, Joseph A. Schumpeter (1942) called this underlying process of capitalism by the illuminating expression "creative destruction". The view that recessions revitalize the economy was indeed prominent in pre-Keynesian economics (see, for example, De Long 1990). Of course, the flux of jobs and workers in the economy is closely tied to the evolution of firms.

In other words, according to the growing number of recent microeconometric studies, it is fair to say that the continuous reallocation and the reorganisation of scarce resources culminates in the function of labour markets, where the reallocation of resources takes the form of gross job flows (i.e. job creation and destruction), and gross worker flows (i.e. hirings and separations of workers).

In fact, the underlying worker flows of market economies are an essential part of the ongoing process of restructuring, where production factors are allocated away from contracting activities and into newly expanding ones (see, for example, Cabarello and Hammour 2000). This ongoing restructuring of market economies is a key to solid long-term economic growth, because technology – taken in its broadest sense – is more or less embodied in capital, in the experience of the labour force, and in the organization of production. Thus, the underlying magnitude of gross job and worker flows reflects the extent of "creative destruction" in market economies.

So, the dynamics of worker flows seem to be an interesting phenomena in the context of the introduction of information technology. In fact, Aaronson and Housinger (1999) find no serious evidence that the technology-displacement relationship disproportionately affects low-skilled or older workers. However, there is some U. S. evidence that less skilled and older workers are more likely to have difficulty finding a new job after being displaced from high-technology industries.

This study disaggregates gross job and worker flows by industry, experience and education of employees in the Finnish economy over the period 1988-1996. The period

includes the great depression of the early 1990s in Finland (see, for example, Honka-pohja & Koskela 1999). The great depression constitutes a kind of "natural experiment" for the analysis of gross job and flows during the period of violent business cycle fluctuations. The analysis is based on the casual notion that declines and rises in employment have not been evenly distributed across education and experience groups in Finland during the great depression of the 1990s.

Thus, it is interesting to ask: "Who were the actors of the underlying restructuring and reallocation of the Finnish economy during the great depression of the early 1990s?". This study gives an answer to this question in terms of education and experience of employees. The influential tradition on gross job and worker flows summarized by Davis, Haltiwanger and Schuh (1996) typically only takes into account only firms' characteristics (such as age and size) in the analysis of gross worker flows[1]. So, the calculation of gross worker flows with respect to various characteristics of employees can deliver some important information about the underlying structure and dynamics of restructuring during the years of extreme contraction in the Finnish economy.

This study comprises nine parts. As noted earlier, the novelty of the study is that its aim is to characterize gross job and worker flows in terms of education and experience of employees in the Finnish economy. Also, the sectoral composition of the study follows Ilmakunnas and Maliranta (2000), beyond narrow "manucentrism". Thus, the study includes a number of service sectors from 1988 to 1996. The first section of the study provides a brief snapshot of the "basic facts" of the recent emerging literature on job creation and destruction and gross worker flows. The second section of the study provides the applied measures of gross job and worker flows. The third section of the study articulates some main underlying properties of the linked employer-employee data. The fourth section of the study is an illustration of the imputed demographic analysis of underlying establishment dynamics of Finnish economy. The aim of the demographic analysis is to capture the effect of births and deaths of establishment into the investigation of gross job and worker flows. The fifth section of the study includes the empirical analysis of gross job flows (i.e. job creation and destruction) in the context of the great depression of the early 1990s. The sixth

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[1] Böckerman (1999) provides a pithy survey of the literature.

section of this study includes that same analysis for gross worker flows (i.e. hirings and separations of workers). The seventh section of this study is an elaboration of gross job and worker flows in terms of education of employees. The eight section of this study contains an analysis of gross job and worker flows in terms of experience of employees. The last section concludes.

2. The "Basic Facts" of the Literature

The emerging empirical literature on gross job and worker flows contains a number of so-called "basic facts". However, due to the limited availability of data, the available key empirical findings take as the reference point the (U.S.) manufacturing industries rather than all industries of the modern economies[2] (so-called "manucentrism").

The first basic fact concerns the magnitude of measured gross job flows. For example, using annual data on establishment dynamics, roughly 1 in 10 jobs are created and another 1 in 10 are destroyed each year in U. S. manufacturing industries. It has become clear that the gross flows are large relative to the employment change. In fact, this feature of underlying flows means that microeconometric studies using linked longitudinal employer-employee data sets shed some new light on the adjust-ment of labour input at the establishment-level of economies. Also, job reallocation is a large part of total worker reallocation. In fact, most studies indicate job reallocation is about half of the total gross worker reallocation.

The second basic fact of the literature on job creation and destruction is the dominant role of pure plant-specific and firm-specific factors in accounting for the largely observed magnitudes of gross worker flows (see, for example, Haltiwanger 1997). In other words, an idiosyncratic component is predominant and most of the excess reallocation is within narrowly defined sectors. This means that the restructuring bet-ween various sectors is only a small portion of the total reallocation of the economy (so-called "sectoral shifts").

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[2] Davis and Haltiwanger (1990), and Davis, Haltiwanger and Schuh (1996), and Davis and Halti-wanger (1999) provide a list of "basic facts" of the literature on reallocation with additional references.

The third fact is that most of the reallocation reflects the persistence of underlying employment changes. For example, Davis, Haltiwanger and Schuh (1996) report that about 20% of job destruction and 15% of job creation is accounted for by the entry and exit of firms in the case of the U. S. manufacturing industries. This feature of job creation and destruction means that to the extent that plant-level employment changes are persistent, they must be associated with long-term joblessness or worker reallocation across the population of plants.

In fact, a recent empirical investigation by Persson (1999) with Swedish data on manufacturing industries strongly indicates that the inclusion of the demography of firms is an essential part of the solid analysis of gross job and worker flows. In particular, the inclusion of the firm demography seems to be an important underlying factor for the observed level of gross job and worker flows. Of course, this observation is in line with the notion that births and deaths of firms are an important element of restructuring of the economies.

The fourth basic fact is the concentration and lumpiness of underlying employment movements. For example, using Dutch data, Hamermesh, Hassink and Van Ours (1994) found that many firms kept the total number of jobs constant over a two-year period but no firm kept the identity of its employees constant. This is a clear sign of underlying reorganization at the firm-level. Of course, these are kind of important conclusions that are impossible to deliver with aggregate information on (net) employment changes within economies.

The fifth basic fact is about the distinct cyclicality of job creation and destruction. In the case of U. S. manufacturing, a noteworthy feature of plant-level data is the relatively volatile nature of job destruction. In particular, job destruction is more responsive to changes in activity than is the rate of job creation (see, for example, Davis, Haltiwanger and Schuch 1996; Hall 1999). In particular, job creation can be less sensitive to cyclical downturns as hiring costs may decrease in a recessionary period (Nickell 1999). Firing restrictions may instead lead job destruction to be concentrated in recessionary periods. There are a number of other studies on the underlying cyclical features of gross job and worker flows (see, for example, Schuh & Triest 1998). The results in non-manufacturing as well as in Europe in all industries are rather for pro-

cyclical pattern of job reallocation. Arai and Heyman (1998) find that job real-
location in small manufacturing establishments is significantly pro-cyclical, but most-
ly acyclical for the entire private sector of the Swedish economy, while Anderson
(1999) finds some evidence of a counter-cyclical pattern in Sweden. In Denmark Al-
baek and Sorensen (1998) find job reallocation to be pro-cyclical.

Albaek and Sorensen (1998), and Bingley, Eriksson, Westergård-Nielsen and Wer-
watz (1999) determined that the evidence that job reallocation is countercyclical is
fragile in light of the Danish evidence. The available sample period of the panel data
sets for many European countries is, on the other hand, quite short, which means that
a definite conclusion about the relative volatility of job creation and destruction is
hard to reach with existing data sets.

The sixth fact is that gross job flows indicate some systematic differences by under-
lying plant characteristics. In particular, the most important stylized fact is that the
excess reallocation rate decreases in the size and age of the firm in the case of U. S.
manufacturing industries. The systematic differences by plant characteristics are also
found in a number of other countries. This applies to Europe. For example, Nocke
(1994) has found basically the same patterns of size and age in terms of excess re-
allocation for French job flows. However, Haltiwanger and Krizan (1999, 93) stress
that the dominance of idiosyncratic factors serves as an important caution for attribu-
ting net growth to plants classified by any observable plant characteristics.

The list of these "basic facts" in the literature on gross job and worker flows reflects
the underlying feature that the analysis of employee characteristics (such as education
and experience) in terms of these measures is almost a neglected issue. Thus, this stu-
dy aims to provide some fundamental insights into gross job and worker flows in
terms of the education and experience of employees during the great depression of the
1990s.

3. The Applied Measures of Gross Job and Worker Flows

The gross flows of jobs and workers are measured as the number of jobs created or destructed or workers moving in and out of establishments (hirings and separations of workers). Let $JC_{(i, t)}$ denote the number of new jobs (if new jobs are created) and $H_{(i, t)}$ the number of workers at the establishment at time t who did not work at the establishment at time $t-1$. $JD_{(i, t)}$ is respectively the number of lost jobs (if jobs are lost) and $S_{(i, t)}$ the number of workers at the establishment at time $t-1$ who do not work at the establishment at time t. X is the average of employment in group g in periods $t-1$ and t. These conventions mean the job creation, job destruction, hiring and sepa-ration rates for a given group of workforce can be defined as follows:

(1) $JCR_{(g, t)} = \Sigma \, (JC_{(i, t)} \, / \, (X_{(g, t)})$

(2) $JDR_{(g, t)} = \Sigma \, (JD_{(i, t)} \, / \, (X_{(g, t)})$

(3) $HRR_{(g, t)} = \Sigma \, (H_{(i, t)} \, / \, (X_{(g, t)})$

(4) $SRR_{(g, t)} = \Sigma \, (S_{(i, t)} \, / \, (X_{(g, t)})$

Following Burgess, Lane and Stevens (1994), the job reallocation rate (JRR) and the worker flow rate (WFR) are, respectively, the sum of job creation and destruction and hiring and separation rates. This means that total worker reallocation is induced by underlying establishment-level heterogeneity, i.e. gross job flows and by matching heterogeneity in excess of establishment heterogeneity, often refered to as "churning". The matching behaviour of employees can relate to job seeking or to life-cycle motives, e. g. inflow into the labour force from the educational system and outflow from the labour force because of retirements (Andersson 1999, 15). Thus, the relation between worker flows, (gross) reallocation rate, and changes in employment $NET_{(g, t)}$ can be stated as follows:

(5) $WFR_{(g, t)} > JRR_{(g, t)} > NET_{(g, t)}$

Excess job reallocation rate (EJR) equals (gross) job reallocation minus the absolute value of the employment change ($NET_{(g, t)}=JCR_{(g, t)} - JDR_{(g, t)}$):

(6) $EJR_{(g, t)} = JRR_{(g, t)} - | NET_{(g, t)} |$

This means that excess job reallocation is an index of simultaneous job creation and destruction ("structural change") in the economy. Thus, it is also a natural measure of heterogeneity in the plant-level employment outcome among plants.

The so-called churning rate is the difference between gross worker flows and gross job flows. Thus, the churning rate can be defined as:

(7) $CHR_{(g, t)} = \Sigma ([HRR_{(g, t)} + SRR_{(g, t)}] - [JCR_{(g, t)} + JDR_{(g, t)}])$

In fact, the churning rate can also be called "excess worker turnover rate" for obvious reasons. These definitions mean that the churning rate ties worker flows and job flows together and, therefore, constitutes a coherent picture of the underlying dynamics of labour demand adjustment at the establishment-level of Finnish economy during the great depression of the 1990s.

4. Data

The Nordic countries along with Finland seem to have many advantages for the use of linked employer-employee data compared to other nations (see, for example, Il-makunnas, Maliranta & Vainiomäki 1999, 5). In particular, the size of the country is quite small, making it possible to form various registers, which cover the entire population of establishments and employees. This means that the linking process of the registers and other data sets is, at least in principle, quite manageable.

This study uses a longitudinal data-set of all employees and plants in the industries studied over the period 1988-1996. Employment Statistics cover information on employment status in the second week of December for the entire population[3]. The pub-

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[3] Kyyrä (1999) provides a documentation of the data sets.

lic sector is excluded from the analysis due to the fact that the whole concept of an establishment (or a firm) is typically not relevant in the provision of public services. A unique feature of the panel data of employees is that it is possible to link the employment statistics to the large sample of firms' financial statements by establishment codes, but the calculation of gross job and worker flows does not require the inclusion of financial statements. Hence, the study examines gross job and worker flows at the establishment level contrast to in a firm-level analysis. The linked employee-employer data of this study is amended by several available registers held by Statistics Finland[4], especially Business Registers in the use of demographic analysis of underlying establishment dynamics.

Employment Statistics allow us a way to measure gross job and worker flow with respect to various characteristics of employees, the most interesting of which are education and experience. The earlier literature is rather sparce in this respect. However, Persson (1999) has provided these kind of measures of gross job and worker flows for Sweden. In fact, Persson (1999, 21) observes that the rate of job creation for the least educated group is lower compared to the other groups from 1986-1995. The recent study by Persson (1999) covers only the manufacturing sector of the Swedish economy. The influential tradition influential summarized by Davis, Haltiwanger and Schuh (1996), typically does not also take into account firms' characteristics (such as age and size) in the analysis of gross job and worker flows. Of course, this feature is reflected in the earlier list of "basic facts" of the literature.

The measures of underlying job creation and destruction, and worker flows of the Finnish economy in various education and experience groups of employees are calculated for four main industries of the economy. The sectors of the empirical investigation into gross job and worker flows are defined as follows: (i) manufac-turing, (ii) construction, (iii) trade, and (iv) business services. However, the calcu-lation of underlying gross job and worker flows naturally requires the setup of a base year. This means that, for example, in the case of manufacturing, the measures of gross job and worker flows are calculated from 1989 to 1996.

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[4] Ilmakunnas, Maliranta and Vainiomäki (1999, 5-10) provide a detailed illustration of linkage procedures in the case of Finnish manufacturing industries.

The industry code of an establishment was set to be the code where the majority of workers are situated over the period from 1988 to 1996. The education of an employee was chosen to be the maximum of his/her education code from 1988 to 1996.

Also, some new variables were computed to meet the needs of further analysis. In particular, the general work experience of an employee depends on education as follows (see, for example, Vainiomäki 1998, 64)[5]: work experience = age of an employee − x, where $x = 9$ for primary education, $x = 11$ for vocational degree, < 3 years (education level 3), 12 for vocational degree, general programs, education level 4), 14 for bachelor's degree, lower (education level 5), 15 for bachelor's degree, higher (education level 6), 17 for master's degree (education level 7) and 19 for senior research, planning (education level 8). The education code was reduced to four classes following Vainiomäki (1998, 60); basic education only, vocational degrees, lower university and non-university degrees, and higher university degrees.

The calculated general work experience was also reduced to the classification system that contains only four groups as education code. The applied classification system with respect to work experience was chosen as follows: The employees that have on average less than 5 years of work experience belong to class 1. This class aims to capture young people, who have just entered the labour market. Employees that have, on average, from 5 to 10 years of work experience belong to class 2. Employees with, on average, 10 to 25 years of work experience belong to class 3. Employees that have, on average, over 25 years of work experience belong to class 4. This class aims to capture the senior workers. It is important to note that the above computed measure of work experience does not capture the firm-specific experience of employees.

There were originally 23 861 856 observations over the period from 1988 to 1997, and 21 534 266 observations after eliminating employer-years that have an inconsistent plant code in some years or missing variables. After dropping the year 1997 due to lack of plant codes, we end up with 19 618 318 observations.

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[5]   Also, Piekkola, Hohti and Ilmakunnas (1999) apply these same definitions of work experience.

5. The Demographic Analysis of Underlying Establishment Dynamics

This study includes a demographic analysis to define underlying births and deaths of establishments in the Finnish economy. In the register of establishments, the unique identity number remains unchanged, when two of the following criteria are unchanged: (i) the ownership, (ii) the geographical location, and (iii) the activity. Also, the above criteria may be more loosely applied to smaller establishments. It is not always possible to distinguish between real births or deaths and "articifial births and deaths" from mergers.

Following the method by Baldwin, Dupuy and Penner (1992), Persson (1999), and as applied by Mustaniemi (1997) for the population of Finnish enterprises, we consider birth and death as a mere transfer of establisment when

$$N_{i,j}/N_i > 0.6 \text{ and } N_{i,j}/N_j > 0.6$$

where $N_{i,j}$ is the number of persons employed at establishment i in the first year and at establishment j in the following year. N_i is the number of persons employed at establishment i, and N_j at the establishment j. If $N_{i,j}/N_i > 0.6$ and $N_{i,j}/N_j < 0.6$ the establishment(s) has merged to become a larger establishment, referred to as an arti-fical birth. If $N_{i,j}/N_i < 0.6$ and $N_{i,j}/N_j > 0.6$ the single establishment(s) has dispersed to (smaller) establishment(s), referred to as artifical death.

In the demographic analysis we find that there are 108 669 different identity numbers from 1988 onwards and 401 729 combinations of establishments where at least one employee is moved from one establishment to another. In these establishments there are 187 040 out of 5 340 024, or about 3.5 percent of employees, that shift plants (in the years the employee either leaves or enters the plant). Hence, from the 401 729 combination of establishments, 15 042 occur in a way that the joint share of employees exceeds 60 percent of the personnel in the firm, where employees are leaving (artificial birth) and 16 763 occur in a way that the joint share of employees exceeds 60 percent of the personnel in firm, where employees are entering (articifial death). A mere transfer takes place in 6169 occasions. Figure 1 illustrates artificial births, deaths

and transfers of establishments in the Finnish economy. These numbers are shown as a percentage of total job reallocation. The denominator is divided by two, since removing an artificial occurrence eliminates both an establishment birth and death.

Fig. 1. Artificial plant births, deaths and transfers of Finnish economy as a percentage of job reallocation / 2.
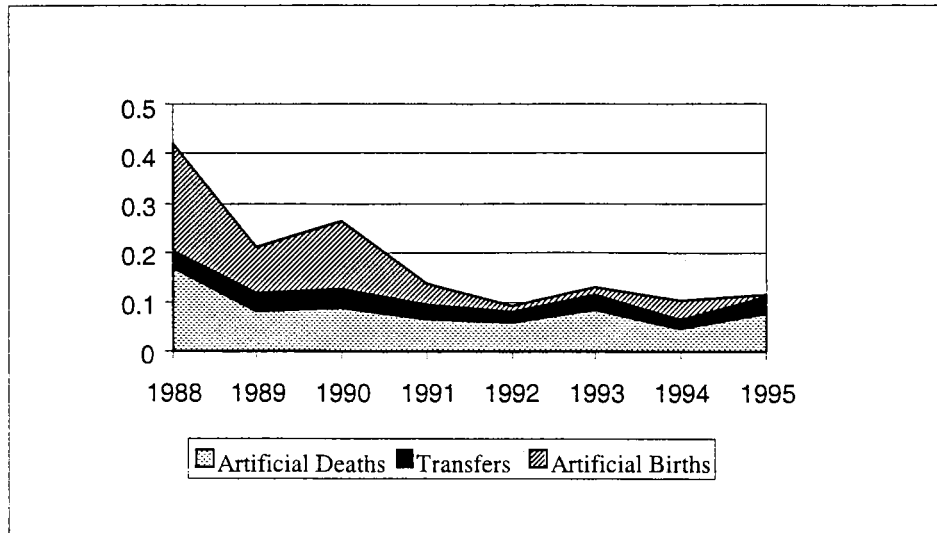
An interesting feature of the imputed demography of establishments is that the number of artificial establishment births/deaths have substantially declined over the period from 1988 to 1995. Also, there appears to be particularly large industry differences (thus, the number of articifial births and deaths seems to be at the higher level within non-manufacturing industries of Finnish economy). We can see that the total effect of artificial births and deaths on job reallocation never exceeds 0.5 per-cent. Thus, the inclusion of establishment demography is not an essential part of the analysis of gross job and worker flows in the case of Finnish economy. This result substantially differs from the results found by Persson (1999) in Sweden. In her study, especially small establishments turned out to be significant cause for artificial births or deaths.

6.   Gross Job Flows (i. e. Job Creation and Destruction)

The following figure indicates employment changes on average in the four Finnish industries considered: manufacturing, construction, trade, and business services. The calculation of employment is based on two-year averages, because the number of employees of an establishment in Employment Statistics is reported at the end of the year.

Fig. 2. The percentage change of employment for the population of employees with basic education, vocational degree, lower university and higher university level.
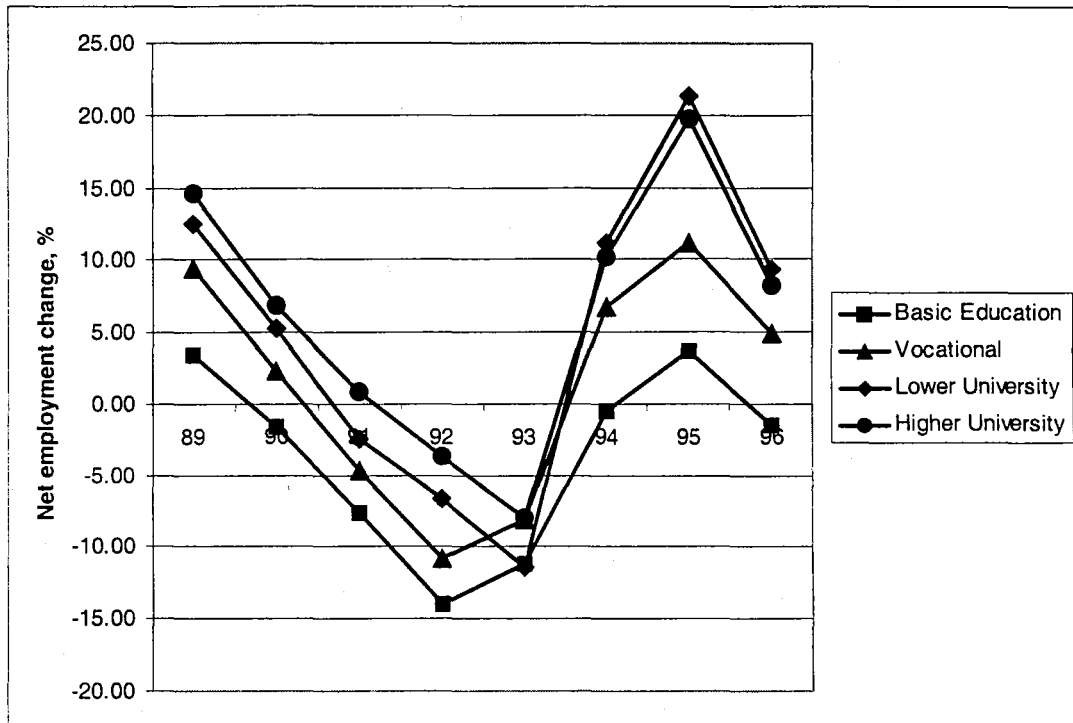
Figure 2 shows that the highly educated experienced a relatively lower decrease in employment, while employment decreased up to 15 percent for those with basic education only. In fact, employment decreased only in the years 1992 and 1993, while employment deteriorated for five years 1990-1994 for employees with basic education. However, the fluctuation of job reallocation among the highly educated employees is not lower than for others from 1989 to 1996.

Table 1 indicates that the underlying cyclical fluctuations are large and the job dest-
ruction rate was higher in the recession period of the early 1990s, thus following the
stylized facts observed elsewhere (see the fifth "basic fact" in the earlier section of
this study). The empirical evidence (Tables 1-9) also indicates that gross job flows in
the Finnish economy exhibit quite a large variation in different industries (see, e. g. Il-
makunnas & Maliranta 2000). This feature of gross job flows is a reflection of the dif-
ferent kind of cyclical adjustment to the great depression of the 1990s. The slump of
the early 1990s caused a restructuring of service sectors after the shakeup of ma-
nufacturing industries.

Manufacturing industries experienced negative demand shock, including the collapse
of trade with the former Soviet Union, already at the beginning of the great depression
of the early 1990s. Hence, the job destruction rate remained high, at around 16 –19
percent over the whole period from 1989 to 1993. Manufacturing recovered from the
end of 1992 onwards (not first in terms of employment) while non-manufacturing was
more severely hit by the recession with the job destruction rate rising by more than 20
percent until 1995. Also, the results indicate that within construction the job destruc-
tion rate exceeded 40 % from 1991 to 1993. Thus, construction was the hardest hit
industry in terms of job destruction during the great depression of the 1990s.

The excess reallocation rate measures the gross job flow heterogeneity of establish-
ments. The results indicate that it is a positive number across all sectors and catego-
ries of the labour force elaborated in this study. Thus, the gross flows are large rela-
tive to employment changes. Hence, the first "basic fact" of the emerging literature on
job creation and destruction according to which gross flows are large also holds with
the Finnish economy in terms of the education and experience of employees.

Also, we observe that births and deaths account for a large fraction of job creation and
destruction, which is also in line with a "basic fact" of the literature (available upon
request). In manufacturing, plant births and deaths account for about 20 percent of job
reallocation and in other industries around for 30 percent. These figures are close to
the average of 25 percent found in other countries.

We can see that, despite the severity of the economic slump, job reallocation is almost acyclical in all the industries examined in this study. The reason for this feature is the sharp decline in job creation during the great depression of the 1990s. However, the gross reallocation rate has been countercyclical in construction. This is shown as a positive correlation between the employment rate and job reallocation (last columns), although any definite conclusions cannot be drawn given the short time span in the study (last column in Tables 1-9). Hence, the overheated labour market at the end of 80s and the relatively rapid rise in employment after the recession exceeds in importance the rise in job destruction in the recessionary period. It is not shown the in tables, but the correlation appears less positive in continuing plants in manufacturing industries. The firing and hiring restrictions of the labour market are one plausible reason why the countercyclical pattern is more apparent in continuing firms despite the firm closures in the depth of the recession and in manufacturing industries of the Finnish economy.

7.   Gross Worker Flows (i.e. Hirings and Separations of Workers)

Hirings and the separations of employees are an important issue during the years of the great depression of the early 1990s. Namely, labour demand by firms can be adjusted downwards at the establishment-level either by reducing hirings (i. e. worker inflow) or by increasing separations (i. e. worker outflow).

Ilmakunnas and Maliranta (2000) conclude that the volatility of the hiring rate has been stronger than the volatility of the separation rate during the great depression of the early 1990s in Finland. This observation is in line with a recent study using French establishment-level data by Abowd, Corbel and Kramarz (1999), which concludes that the adjustment of employment is made primarily by reducing hiring, not by changing the separation rates[6]. However, this conclusion on the importance of hiring rate adjustment during the great depression does not necessarily hold at all education and experience levels of the Finnish labour force. The following table presents some agg-

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[6]   Also, Holm, Sinko and Tossavainen (1999) simulate a numerical search equilibrium model of Finnish labour markets in order to pin down the key determinants of structural unemployment, where job crea-tion and destruction are endogenously determined from the dynamic optimising behaviour of firms and workers.

regate information on the gross worker flows obtained for manufacturing industries in the related studies.

Table 1. **Gross worker flows for manufacturing industries (Source: Persson 1999; Ilmakunnas & Mali-ranta 2000).**

Manufacturing	1989	1990	1991	1992	1993	1994	1995	1996
Böckerman & Piekkola								
HRR	0.30	0.24	0.14	0.15	0.15	0.23	0.21	0.19
SRR	0.29	0.24	0.26	0.24	0.20	0.18	0.18	0.18
WFR	0.59	0.49	0.41	0.39	0.35	0.41	0.39	0.37
Ilmakunnas & Maliranta								
HRR	0.29	0.23	0.13	0.14	0.15	0.2	..	..
SRR	0.27	0.23	0.24	0.21	0.19	0.15	..	..
WFR	0.56	0.46	0.37	0.35	0.34	0.35	..	..
Persson (Sweden)								
HRR	0.23	0.20	0.13	0.12	0.13	0.19	0.19	..
SRR	0.24	0.24	0.19	0.23	0.22	0.14	0.15	..
WFR	0.47	0.44	0.32	0.35	0.35	0.33	0.34	..

The measures of gross worker flows are as follows: "hrr" refers to worker hiring rate, "srr" refers to worker separation rate, "wfr" refers to (gross) worker reallocation rate (wfr=hrr+srr).

We obtain a gross worker flow rate of 0.42 for manufacturing industries and from 0.59 in trade to 0.89 in construction in other sectors of the Finnish economy. Hence, 42 percent of employees in manufacturing or 89 percent in construction experience a hiring or a separation during a one-year period. The worker flow rates match those obtained by Ilmakunnas and Maliranta (2000) for manufacturing industries despite the inclusion of a demographic analysis of gross job and worker flows (see Table 10).

The gross worker flows are also close to the approximately 50 percent figures obtained for Sweden in Persson (1999), where the self-employeed are also considered, or in Danish establishments by Albaek and Sörensen (1998). Burgess, Lane and Stevens (1996) obtain a quartely worker reallocation rate of 24 percent in the state of Maryland that exceeds these figures. Arai and Heyman (1998) argue that the large figures are explained by temporary workers and jobs that are often switched due to the cyclical adjustment of labour demand. In their study, the figures for permanent jobs are around 25 percent.

It is apparent, as found by Ilmakunnas and Maliranta (2000), that the timing of the great depression of the early 1990s was quite similar, leading to a halving of hiring,

but to no apparent increase in separations in the deepest depression over the period from 1992 to 1994. Separations have stayed at a permanently lower rate since then. We can see that the improvement in employment from 1994 onwards relates to a decrease in both job destruction and separations. In none of the industries is there a particular rise in job creation or hirings relative to the pre-depression period.

8. Gross Job and Worker Flows by Education of Employees

As stated earlier, employees are divided into four categories: basic education only, vocational degree, lower university degree (bachelor degree), and higher university degree (master degree). The following elaboration of gross job flows and worker flows is focused on the first education group of employees ("least educated") and on the last education group of employees ("highly educated)[7]. Also, the elaboration of the results is further focused on Finnish manufacturing industries.

A recent study by Persson (1999) indicates that in Swedish manufacturing job creation is lowest for the uneducated in 1986-1995, and this structural feature holds for Finland in the case of manufacturing industries. From Figure 4, the job destruction rate of the less educated is on average 3 to 5 percentage points higher than that of the highly educated. From figure 3 the job creation rate of the highly educated is, at the same time, 5 to 6 percentage points higher. The rate of job creation is higher for the highly educated segment of the Finnish labour market especially in manufacturing industries.

We can also see that the job reallocation rate is not lower for the highly educated than for the rest of labour force. In manufacturing, for example, the job reallocation rate for the highly educated is 27 percent and 23 percent for least educated. This is opposite to that found in other Nordic countries, see Graversen (2000), and can be explained by the high job creation rates of the high educated.

Further, we can see that job creation of the highly educated adjusted to the recession, while job destruction played a more important role for employees with basic education. The highly educated experienced a strong positive correlation between the em-

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[7] The tables include all results.

ployment rate and job reallocation, also in manufacturing. The violent fluctuations in job creation rate are behind this feature. The reallocation rate for the least educated is, instead, countercyclical in trade and acyclical in construction. This observation is roughly in line with what Ilmakunnas and Maliranta (2000) found for job flows of high- and low-salary employees in the Finnish economy.

One reason that the differences in job creation and reallocation are smaller outside manufacturing is that the highly educated represent a higher fraction of labour force and, hence, represent relatively lower positions. Also, the skill requirements may not have risen so much in non-manufacturing industries compared to manufacturing in-dustries. In the case of construction, the average job creation rate is even slightly higher for employees with basic education. One explanation for this is the typically high cyclicality of jobs and related high job mobility of the low educated (see also the relatively high churning rate in Figure 14).

Finally, there was a sharp decline in the excess reallocation rate of the less educated during the great depression of the 1990s[8] (Figure 6). Thus, the magnitude of "struc-tural change" halted during the great depression of the 1990s. The cyclical variation of the excess reallocation of the highly educated is instead much lower, while the magnitude is on average high. One explanation for this feature is the greater variation of skills and occupations among the highly educated segment of the Finnish economy: there existed a large number of plants that also increased the educated labour force in the recession period.

The results do not seem to be fully in line with the common belief that education forms a kind of "shield" against unemployment in Finland. Thus, job reallocation is noticeable among the highly educated and the job creation rate is rather sensitive to cyclical fluctuations. Second, the excess reallocation rate is large and there is greater heterogeneity in the adjustment to cyclical downturns. We can conclude that (i) the highly educated have much lower propensity to lose jobs in the recession period, (ii) the recession period was shorter, and (iii) throughout the period net job creation has been higher among employees with university degrees.

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[8] Ilmakunnas and Maliranta (2000) obtain the same result concerning the fluctuations of the excess reallocation rate of the Finnish economy.

The hiring rates for the highly educated and other segments of the Finnish labour force also differ. The underlying structural hiring rate is higher for employees with a higher university education compared to those with only a basic education. However, the results indicate that business services exhibit fairly similar mobility irrespective of the education level of employees. Surprisingly, employees with a basic education experienced an increase in hiring in 1994, the year in which unemployment reached a peak of 16%. One reason can be that worker mobility was raised with a low permanent increase in jobs, as for the highly educated segment of the Finnish labour market.

The adjustment of labour demand in terms of the education and experience of employees reveals some interesting features. A typical feature in all education groups seems to be that during the great depression of the 1990s there was indeed a decline in the hiring rate and a small decline in the separation rate. Also, this observation is in line with a recent study by Ilmakunnas and Maliranta (2000). The highly educated segment of labour force experienced a relatively lower decrease in separations. One plausible reason is better job opportunities also in the recessionary period of the Finnish economy. This is despite the increasing job destruction rates in all industries during the great depression of the 1990s (although the magnitude was lower in manufacturing industries). Subsequently, during the export-led economic recovery, there was first a rise in the hiring rate among the least educated employees (Fig. 11). This should be contrasted with the rising job creation of educated employees and steadily lower job creation for the uneducated. This indicates increasing worker mobility without permanent increase in jobs for the uneducated.

Finally, the churning rate appears to be higher for the highly educated in manufac-turing (see Fig. 14), but is roughly similar for all education groups in the other three industries of this study. This differs from Ilmakunnas and Maliranta (2000) as regards high- and low-wage plants. They find that churning is somewhat lower in high-wage than in low-wage plants. Thus, in the case of the Finnish economy, there appears to be no major influence of high education on reducing voluntary mobility of workers under the severe recession. The churning even exceeds those of other groups in manufac-turing industries. One possible explanation for the somewhat contradictory result to that obtained in Ilmakunnas and Maliranta (2000) is that the extension in the schoo-ling years of an employee gives an experience-related premium that is not firm-specific by nature.

9. Gross Job and Worker Flows by Experience of Employees

The following elaboration of gross job flows and worker flows of Finnish economy is focused on the first experience group of employees, less than 5 years of experience ("least experienced"), and on the last experience group of employees, more than 25 years of experience ("most experienced")[9]. Also, the elaboration of the results is further focused on manufacturing industries of Finnish economy.

The most important conclusions (for manufacturing industries) can be summarized as follows. There are extremely strong signs of a secular decline in demand for employees with the longest experience and especially so in manufacturing (work experience 25 years or more, see Fig. 7). Contrary to the least experienced, job destruction through plant closings did not increase during the recessionary period. The adverse employment prospect has continued throughout the whole 90s and has not been phenomenon of the recession only. The volatility of job creation and destruction is higher among the least experienced employees. The job destruction rate reached highest level during the early phase of the slump of the early 1990s among the least experienced employees (Fig. 8). This feature can be a reflection of "first in, first out".

The excess reallocation rate of the most experienced and churning of the least experienced declined during the great depression of the 1990s (Figures 10 and 18). Thus, the magnitude of "structural change" halted during the great depression of the 1990s among the most experienced employees, while voluntary mobility declined for the least experienced. In the recession period, the rise in demand for the least experienced employees in some establishments could be satisfied without a large rise in voluntary work switchs.

The adjustment in terms of hirings and separations was mixed among aged employees with more than 25 years of general experience during the great depression of the 1990s. There was indeed a sharp rise in the separation rate among the most experienced employees. The hiring rate, instead, seems to be high especially for the employees with the lowest degree of general work experience.

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[9] As earlier, the tables include all results.

The most important conclusions (for manufacturing industries) can be summarized as follows. The underlying structural rate of hiring is low among the most experienced employees (Fig. 15). Also, the worker reallocation rate is one half of that of unexperienced employees. There is some evidence that worker reallocation is counter-cyclical given the negative correlation with the hiring rate[10]. One explanation of this feature of gross worker flows is the shift to voluntary retirement schemes, shown as an increase in separation rates. Also, there was no decline in the churning rate among the most experienced employees during the great slump of the early 1990s. A puzzling feature of the worker flows is that, among the least experienced employees, the separation rate is lower than among the most experienced employees of the Finnish economy (Fig. 16). However, the higher volatility of separation among the least experienced employees is in line with common sense, because as stressed by Manning (1998), the continuous switch of jobs is an essential element in the rise of the wage profile of an employee.

Also, employment adjusts rapidly to cyclical fluctuations. The churning rate has systematically declined over the period in all industries (see, Tables 15-18 and Fig. 18). Among the most experienced employees the churning rate has again risen after the recession, although not fully to the pre-recession (boom) level. One plausible explanation is that voluntary hirings and separations have permanently remained at a lower level after the recession. This may reflect the worsened labour market position of the least experienced employees. Also, it is possible that in the recession new plants were destroyed and employees with little experience were allocated more to older plants, where churning is lower, at least in some countries (see, for example, Lane, Isaac and Stevens 1996).

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[10] There were some problems with computing the measures of gross worker flows for 1989 in terms of experience of employees. The worker flow rate should be bounded [0, 2].

Fig. 3. The job creation rate for the population of employees with basic education only and for the population of employees with higher university degrees within manufacturing industries. "JCR1" refers to the establishment-level measure of the job creation rate for employees with basic education only and "JCR4" refers to the establishment-level measure of the job creation rate for employees with higher university education.

Fig. 4. The job destruction rate for the population of employees with basic education only and for the population of employees with higher university degrees within manufacturing industries. "JDR1" refers to the establishment-level measure of the job destruction rate for employees with basic education only and "JDR4" refers to the establishment-level measure of the job destruction rate for employees with higher university education.
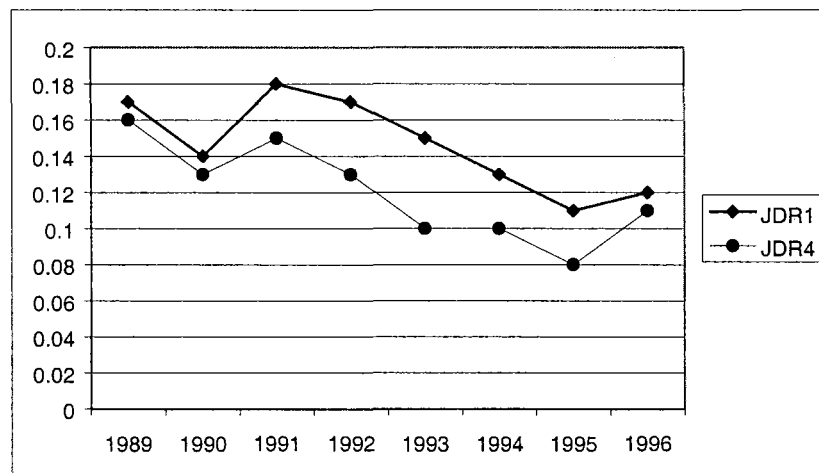
Fig. 5. The job reallocation rate for the population of employees with basic education only and for the population of employees with higher university degrees within manufacturing industries. "JRR1" refers to the establishment-level measure of the job reallocation rate for employees with basic education only and "JRR4" refers to the establishment-level measure of the job reallocation rate for employees with higher university education.
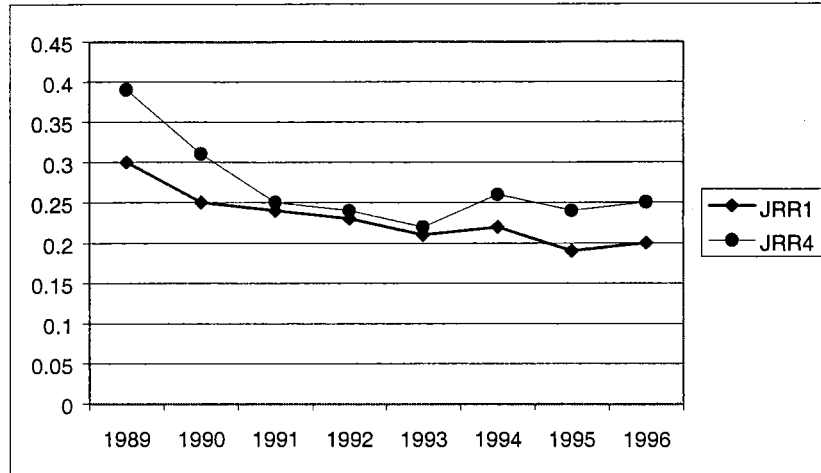
Fig. 6. The excess job reallocation rate for the population of employees with basic education only and for the population of employees with higher university degrees within manufacturing industries. "EJR1" refers to the establishment-level measure of the job reallocation rate for employees with basic education only and "EJR4" refers to the the establishment-level measure of the excess job reallocation rate for employees with higher university education.

Fig. 7. The job creation rate among the least experienced employees and among the most experienced employees within manufacturing industries. "JCRTK1" refers to the establishment-level measure of the job creation rate for the least experienced employees and "JCRTK4" refers to the establishment-level measure of the job creation for the most experienced employees.
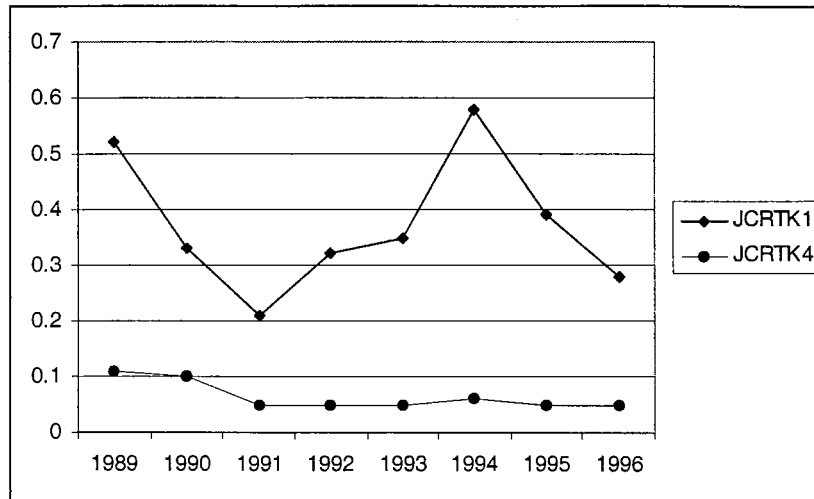
Fig. 8. The job destruction rate among the least experienced employees and among the most experienced employees within manufacturing industries. "JDRTK1" refers to the establishment-level measure of the job destruction rate for the least experienced employees and "JDRTK4" refers to the establishment-level measure of the job destruction rate for the most experienced employees.
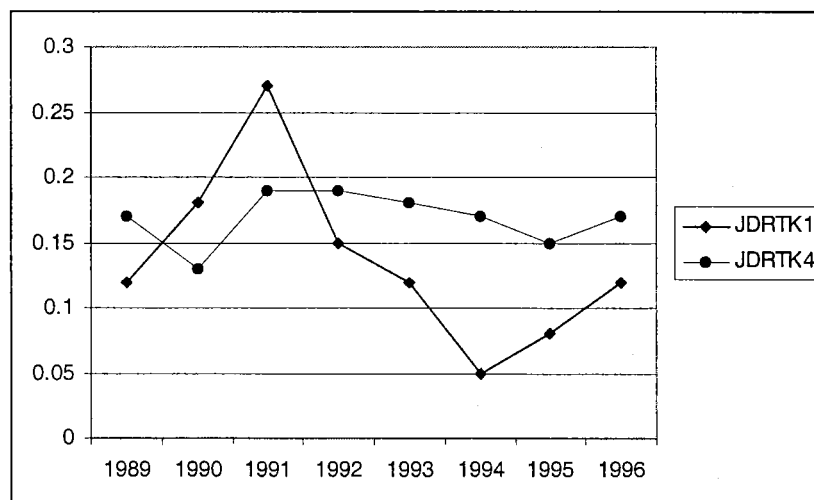
Fig. 9. The job reallocation rate among the least experienced employees and among the most experienced employees within manufacturing industries. "JRRTK1" refers to the establishment-level measure of the job reallocation rate for the least experienced employees and "JRRTK4" refers to the establishment-level measure of the job reallocation rate for the most experienced employees.
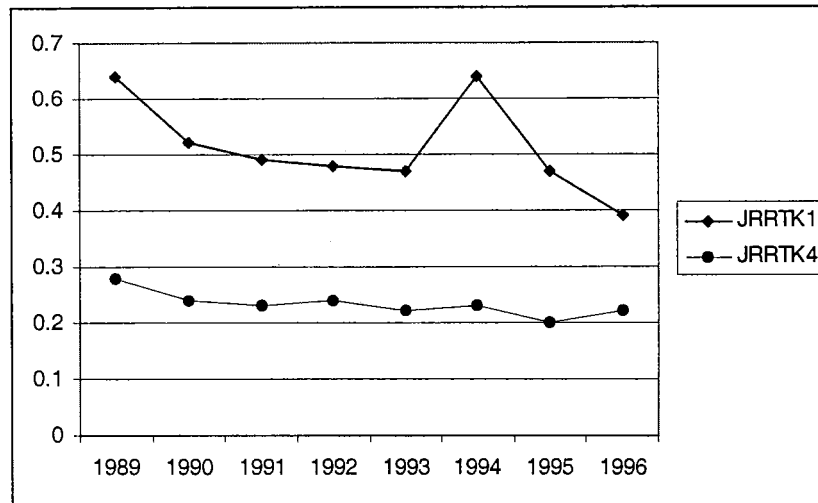
Fig. 10. The excess job reallocation rate among the least experienced employees and among the most experienced employees within manufacturing industries. "JRRTK1" refers to the establishment-level measure of the excess job reallocation rate for the least experienced employees and "JRRTK4" refers to the establishment-level measure of the excess job reallocation rate for the most experienced employees.
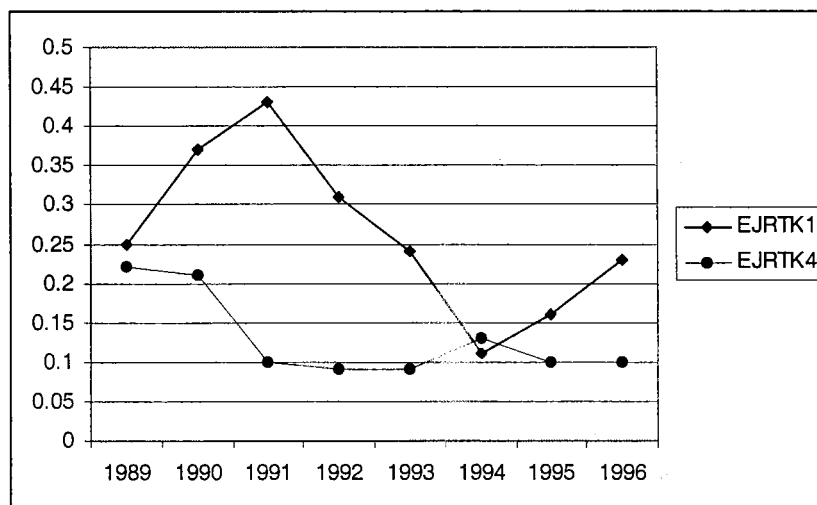
Fig. 11. The hiring rate for the population of employees with basic education only and for the population of employees with higher university degrees within manufacturing industries. "HRR1" refers to the establishment-level measure of the hiring rate for employees with basic education only and "HRR4" refers to the establishment-level measure of the hiring rate for employees with higher university education.
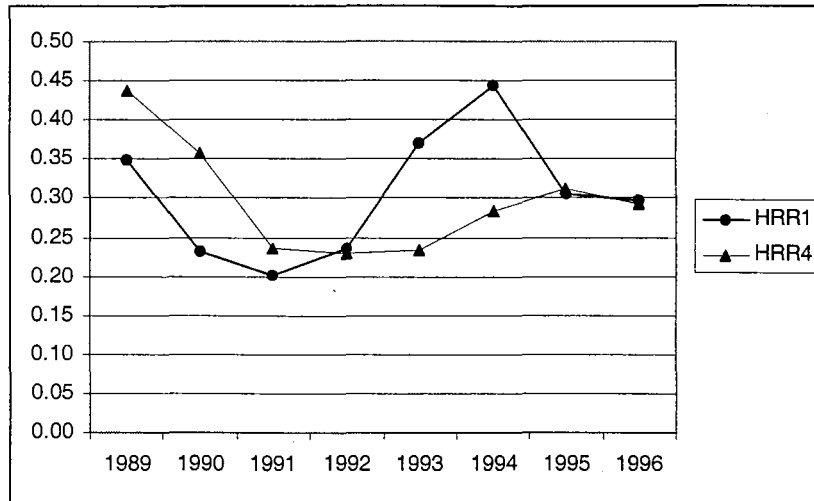
Fig. 12. The separation rate for the population of employees with basic education only and for the population of employees with higher university degrees within manufacturing industries. SRR1" refers to the establishment-level measure of the separation rate for employees with basic education only and "SRR4" refers to the establishment-level measure of the separation rate for employees with higher university education.
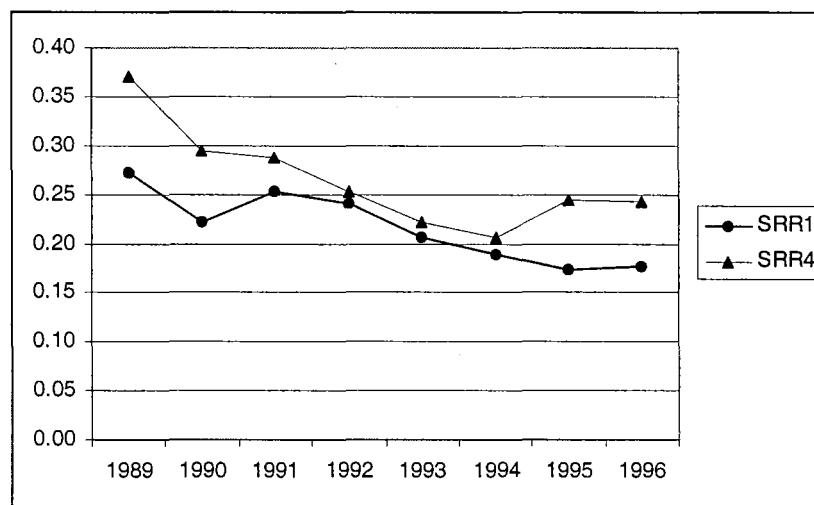
Fig. 13. The worker flow rate for the population of employees with basic education only and for the population of employees with higher university degrees within manufacturing industries. "WFR1" refers to the establishment-level measure of the worker flow rate for employees with basic education only and "WFR4" refers to the establishment-level measure of the worker flow rate for employees with higher university education.
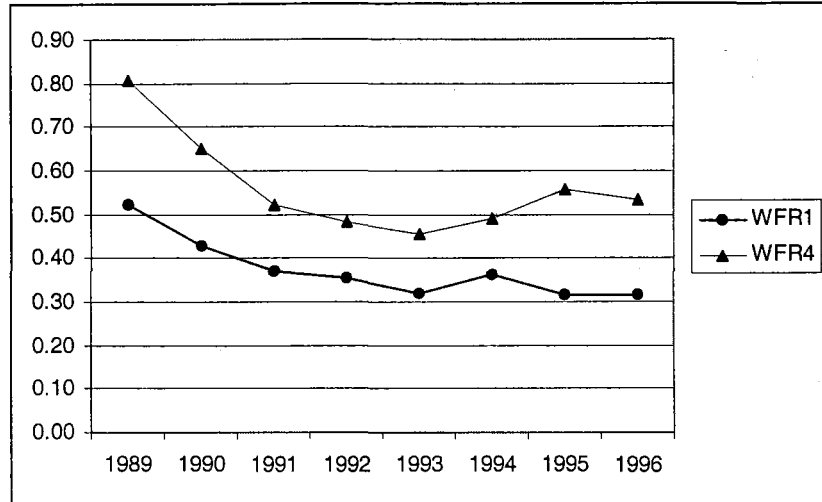
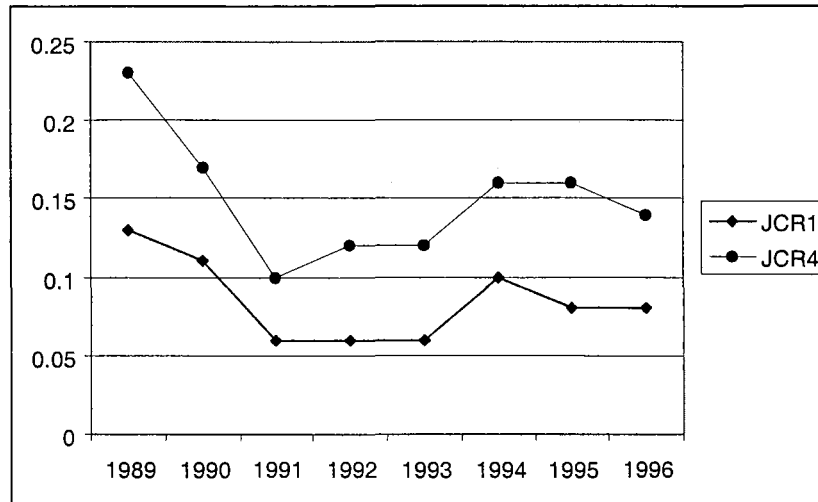**Fig. 14. The churning rate for the population of employees with basic education only and for the population of employees with higher university degrees within manufacturing industries. "CHR1" refers to the establishment-level measure of the churning rate for employees with basic education only and "CHR4" refers to the establishment-level measure of the churning rate for employees with higher university education.**
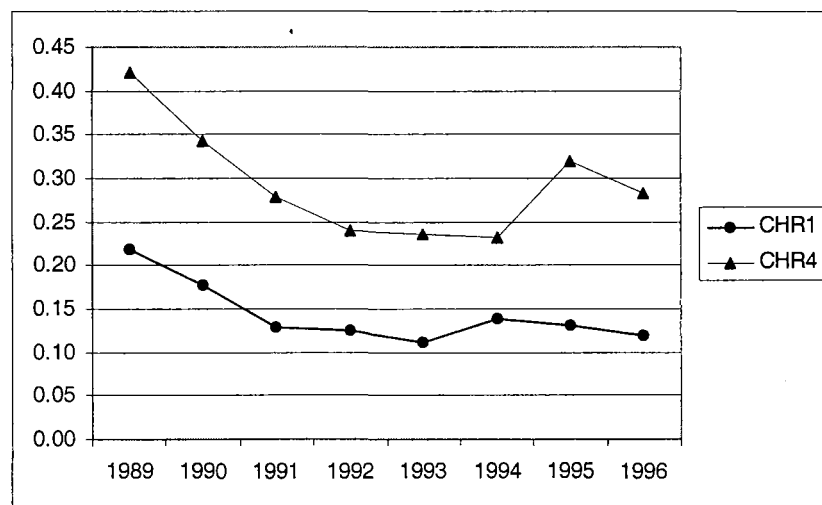
Fig. 15. The hiring rate for the least experienced employees and for the most experienced employees within manufacturing industries. "HHRTK1" refers to the establishment-level measure of the hiring rate for the least experienced employees and "HRRTK4" refers to the establishment-level measure of the hiring rate for most experienced employees.
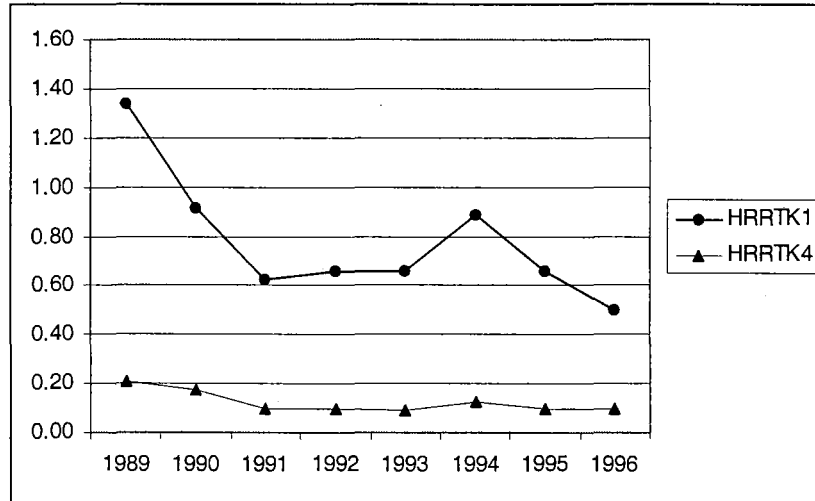
Fig. 16. The separation rate for the least experienced employees and for the most experienced employees within manufacturing industries. "SRRTK1" refers to the establishment-level measure of the separation rate for the least experienced employees and "SRRTK4" refers to the establishment-level measure of the separation rate for most experienced employees.
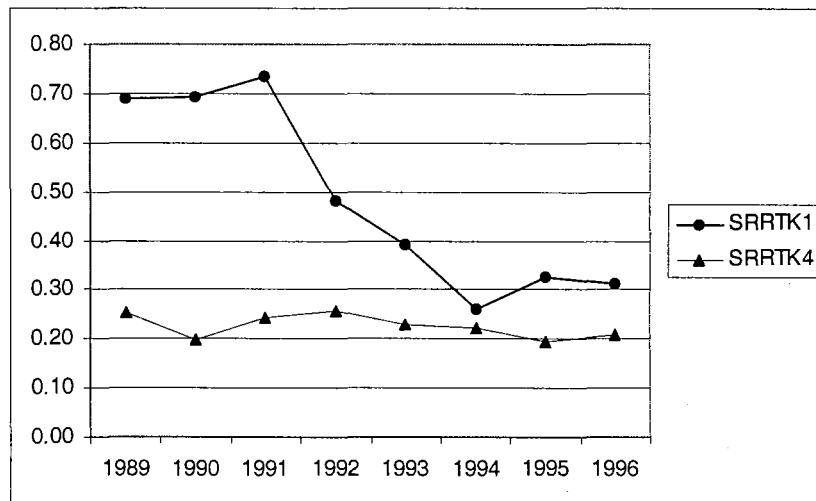
Fig. 17. The worker flow rate for the least experienced employees and for the most experienced employees within manufacturing industries. "WFRTK1" refers to the establishment-level measure of the worker flow rate for the least experienced employees and "WFRTK4" refers to the establishment-level measure of the worker flow rate for most experienced employees.
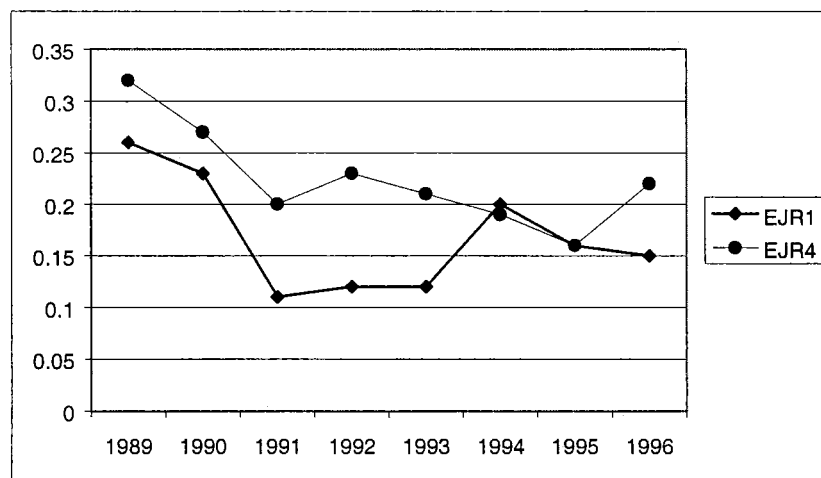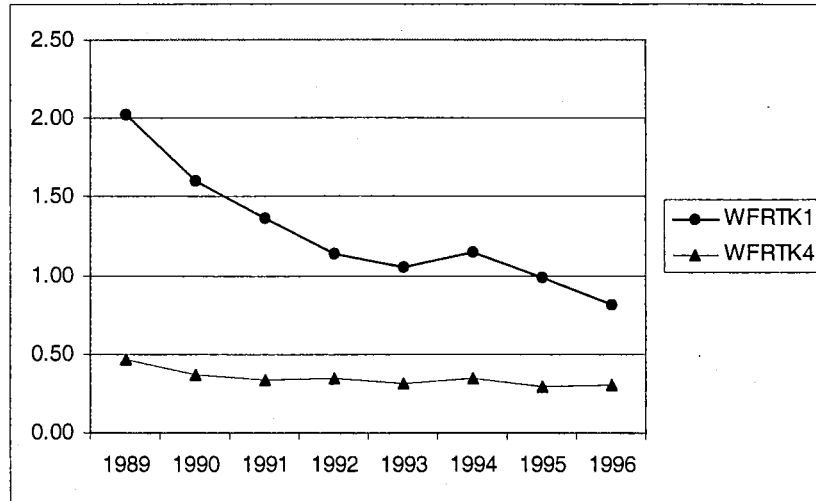

Fig. 18. The churning rate among the least experienced employees and among the most experienced employees within manufacturing industries. "CHRTK1" refers to the establishment-level measure of the churning rate for the least experienced employees and "CHRTK4" refers to the establishment-level measure of the churning for the most experienced employees.
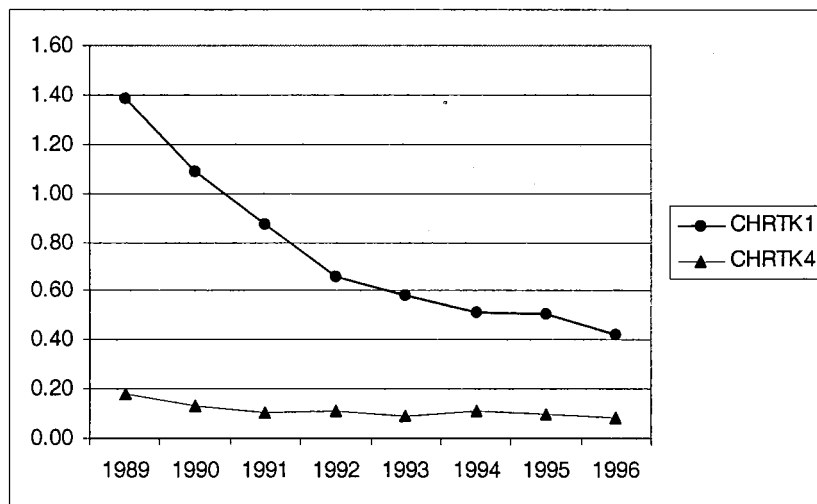
10. Conclusions

The novelty of the empirical implemention is that the aim of this study is to characterize gross job and worker flows in terms of education and experience of employees. This is an important extension of the literature on job creation and destruction, because the influential tradition summarized by Davis, Haltiwanger and Schuh (1996) takes into account only firms' characteristics (such as age and size) in the analysis of gross job and worker flows.

The results indicate that the inclusion of detailed establishment demography is not an essential part of the analysis of gross job and worker flows in the case of the Finnish economy. This substantially differs from the results found by Persson (1999) in Sweden. In her study, especially small establishments turned out to be a significant cause for artificial births or deaths. The low rate of artificial births and deaths of Finnish establishment-level data is most likely a reflection of the high-quality of Employment Statistics compiled by Statistics Finland.

The most important conclusions about the underlying establishment-level adjustment of the Finnish labour market in terms of education and experience of employees can be summarized as follows:

• The measures of gross job flows reveal some interesting notions about the underlying dynamics of the great depression of the early 1990s. Also, in terms of gross job and worker flows, the slump of the early 1990s caused a restructuring of service sectors after the shakeup of manufacturing industries in the Finnish economy.

• The analysis of gross job and worker flows indicates that it can safely be concluded that the highly educated segment of the Finnish labour force suffered less from the great depression of the early 1990s. For example, the rate of job creation was much higher among employees with higher university education during the years of depression. However, the results indicate that job reallocation is still procyclical due to the strong demand for high-educated labour in the boom periods before and after the recession. Also, compared to the other Nordic countries, the rate of reallocation is intensive in Finland among the highly educated segment of labour force.

• Also, there are strong signs of a secular decline in demand for employees with the most experience (i.e. employees with 25 years of experience or more) and for employees with basic education only. This is a reflection of the fact that the skill requirements of employees has risen due to the continuous technological changes.

• The job destruction rate reached its highest level during the early phase of the slump of the early 1990s among the least experienced employees of the Finnish economy. This feature can be a reflection of "first in, first out". Also, construction was the hardest hit sector in terms of job destruction.

• Aged employees in the Finnish economy have suffered from adverse employment conditions throughout the period from 1989 to 1996. Thus, the underlying structural rate of job creation for most experienced employees is indeed very low compared to the least experienced employees of the Finnish economy. Also, the labour market of aged employees is almost "stagnant" in terms of its churning rate. This feature may be due to the high risk of unemployment among the most experienced employees of the Finnish economy.

• Also, the analysis of gross job and worker flows indicates that there is no overwhelming evidence for the view that the reallocation rate has been countercyclical in Finland from 1989 to 1996. This is due to the sharp decline in the job creation rate during the great depression of the 1990s.

• Thus, the results indicate that the employees with basic education only and the least experienced employees of the Finnish economy were the key categories of the labour force which experienced an intensive period of restructuring during the great depression of the 1990s. Thus, they carried the heaviest burden of the great slump of the 1990s. For example, the rate of employment change was negative among employees with basic education only for four years during the great slump of the 1990s.

• There is evidence for the view that the great depression of the 1990s has left permanent marks on the labour market outcomes of the population of aged employees (i.e. the extremely low rate of job creation despite the recovery of the Finnish econo-my)

and the employees with basic education only (i.e. the low churning rate). The low level of churning among employees with basic education only can tilt the wage profile of these employees downwards, because as stressed by Manning (1998), the continuous switch of jobs is an essential element in the rise of the wage profile of an employee.

• The analysis of worker flows completes the picture of underlying restructuring of the Finnish economy during the great depression of the 1990s. The adjustment of labour demand at the establishment-level was tailored via a decrease in hirings rather than an increase in separations of workers. This implies a drastic fall in voluntary separations during the great slump of the early 1990s.

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Table 1. The gross job flows of Finnish economy (including all education and experience groups). The measures are for all establishments (i. e. including continuing establishment and the population of establishment that have faced a birth or/and a death during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
JCR	0.16	0.12	0.06	0.08	0.08	0.15	0.12	0.10	0.11	0.03	0.84
JDR	0.16	0.13	0.19	0.16	0.13	0.10	0.08	0.10	0.13	0.04	-0.73
JRR	0.31	0.26	0.25	0.24	0.21	0.24	0.20	0.20	0.24	0.04	0.23
EJR	0.30	0.25	0.14	0.16	0.16	0.21	0.16	0.20	0.20	0.06	0.49
CONSTRUCTION											
JCR	0.27	0.17	0.08	0.12	0.25	0.47	0.30	0.24	0.24	0.12	0.83
JDR	0.20	0.26	0.44	0.42	0.42	0.37	0.27	0.20	0.32	0.10	-0.81
JRR	0.47	0.43	0.52	0.54	0.67	0.84	0.57	0.44	0.56	0.14	0.07
EJR	0.35	0.34	0.24	0.26	0.39	0.86	0.52	0.39	0.42	0.20	0.40
TRADE											
JCR	0.20	0.16	0.12	0.12	0.11	0.15	0.15	0.14	0.14	0.03	0.89
JDR	0.16	0.18	0.22	0.20	0.21	0.23	0.12	0.13	0.18	0.04	-0.90
JRR	0.36	0.34	0.33	0.32	0.32	0.38	0.27	0.27	0.32	0.04	-0.11
EJR	0.30	0.32	0.25	0.22	0.22	0.39	0.24	0.26	0.28	0.06	-0.25
BUSINESS SERVICES											
JCR	0.25	0.19	0.15	0.13	0.19	0.34	0.20	0.19	0.21	0.07	0.93
JDR	0.15	0.17	0.22	0.21	0.29	0.18	0.13	0.15	0.19	0.05	-0.77
JRR	0.40	0.36	0.37	0.34	0.47	0.53	0.34	0.34	0.39	0.07	0.54
EJR	0.26	0.33	0.30	0.26	0.32	0.39	0.23	0.28	0.29	0.05	-0.47

The measures of gross job flows are as follows: "jcr" refers to job creation rate, "jdr" refers to job destruction rate, "jrr" refers to (gross) job reallocation rate (jrr=jdr+jcr) and "ejr" refers to excess reallocation rate (job reallocation minus the absolute value of the net employment change). "avg" refers to the average and "std" refers to the standard deviation of the applied measures of gross job and worker flows. "cor" refers to the correlation coefficient with respect to the difference between job creation and destruction rates (the net rate of change of the employment).

Table 2. The gross job flows for education group 1. The measures are for all establishments (i. e. including continuing establishment and the population of establishment that have faced a birth or/and a death during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
JCR1	0.13	0.11	0.06	0.06	0.06	0.10	0.08	0.08	0.08	0.03	0.84
JDR1	0.17	0.14	0.18	0.17	0.15	0.13	0.11	0.12	0.15	0.03	-0.53
JRR1	0.30	0.25	0.24	0.23	0.21	0.22	0.19	0.20	0.23	0.03	0.41
EJR1	0.26	0.23	0.11	0.12	0.12	0.20	0.16	0.15	0.17	0.05	0.84
CONSTRUCTION											
JCR1	0.25	0.16	0.07	0.11	0.29	0.42	0.30	0.23	0.23	0.11	0.72
JDR1	0.22	0.24	0.45	0.42	0.43	0.45	0.30	0.21	0.34	0.10	-0.76
JRR1	0.47	0.40	0.53	0.53	0.72	0.87	0.59	0.44	0.57	0.15	-0.06
EJR1	0.43	0.32	0.14	0.22	0.59	0.84	0.59	0.42	0.44	0.21	0.51
TRADE											
JCR1	0.17	0.14	0.10	0.10	0.09	0.11	0.12	0.13	0.12	0.02	0.80
JDR1	0.17	0.19	0.21	0.20	0.20	0.29	0.14	0.14	0.19	0.04	-0.91
JRR1	0.34	0.32	0.31	0.30	0.29	0.40	0.26	0.27	0.31	0.04	-0.40
EJR1	0.34	0.28	0.20	0.20	0.19	0.22	0.23	0.25	0.24	0.05	0.66
BUSINESS SERVICES											
JCR1	0.25	0.18	0.15	0.12	0.16	0.32	0.20	0.18	0.19	0.06	0.93
JDR1	0.16	0.19	0.22	0.21	0.28	0.21	0.14	0.17	0.20	0.04	-0.75
JRR1	0.41	0.37	0.37	0.33	0.44	0.53	0.34	0.35	0.39	0.06	0.57
EJR1	0.33	0.36	0.30	0.25	0.32	0.43	0.28	0.34	0.32	0.05	0.21

The measures of gross job flows are as follows: "jcr" refers to job creation rate, "jdr" refers to job destruction rate, "jrr" refers to (gross) job reallocation rate (jrr=jdr+jcr) and "ejr" refers to excess reallocation rate (job reallocation minus the absolute value of the net employment change). "avg" refers to the average and "std" refers to the standard deviation of the applied measures of gross job and worker flows. "cor" refers to the correlation coefficient with respect to the difference between job creation and destruction rates (the net rate of change of the employment).

Table 3. The gross job flows for education group 2. The measures are for all estabish-ments (i. e. including continuing establishment and the population of establishment that have faced a birth or/and a death during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
JCR2	0.17	0.13	0.07	0.09	0.09	0.17	0.13	0.11	0.12	0.03	0.88
JDR2	0.15	0.13	0.19	0.15	0.12	0.09	0.08	0.10	0.13	0.03	-0.78
JRR2	0.31	0.26	0.26	0.24	0.21	0.26	0.21	0.21	0.25	0.03	0.28
EJR2	0.30	0.26	0.14	0.18	0.18	0.18	0.16	0.20	0.20	0.05	0.43
CONSTRUCTION											
JCR2	0.29	0.19	0.09	0.13	0.25	0.48	0.31	0.25	0.25	0.11	0.87
JDR2	0.19	0.26	0.43	0.40	0.40	0.35	0.27	0.19	0.31	0.09	-0.82
JRR2	0.48	0.45	0.52	0.53	0.64	0.82	0.57	0.44	0.56	0.12	0.15
EJR2	0.39	0.39	0.18	0.26	0.49	0.69	0.53	0.39	0.42	0.15	0.59
TRADE											
JCR2	0.22	0.18	0.13	0.13	0.13	0.18	0.17	0.16	0.16	0.03	0.92
JDR2	0.16	0.18	0.22	0.20	0.20	0.21	0.13	0.13	0.18	0.03	-0.89
JRR2	0.38	0.36	0.35	0.33	0.33	0.39	0.30	0.29	0.34	0.03	0.16
EJR2	0.32	0.36	0.26	0.26	0.26	0.36	0.25	0.27	0.29	0.04	0.04
BUSINESS SERVICES											
JCR2	0.24	0.20	0.15	0.14	0.18	0.35	0.21	0.20	0.21	0.06	0.95
JDR2	0.15	0.17	0.22	0.20	0.27	0.18	0.14	0.15	0.19	0.04	-0.78
JRR2	0.40	0.37	0.37	0.34	0.45	0.53	0.34	0.35	0.39	0.06	0.66
EJR2	0.31	0.35	0.30	0.28	0.36	0.36	0.27	0.30	0.32	0.03	-0.34

The measures of gross job flows are as follows: "jcr" refers to job creation rate, "jdr" refers to job dest-ruction rate, "jrr" refers to (gross) job reallocation rate (jrr=jdr+jcr) and "ejr" refers to excess reallo-cation rate (job reallocation minus the absolute value of the net employment change). "avg" refers to the average and "std" refers to the standard deviation of the applied measures of gross job and worker flows. "cor" refers to the correlation coefficient with respect to the difference between job creation and destruction rates (the net rate of change of the employment).

Table 4. The gross job flows for education group 3. The measures are for all estabish-ments (i. e. including continuing establishment and the population of establishment that have faced a birth or/and a death during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
JCR3	0.21	0.17	0.09	0.12	0.12	0.19	0.17	0.15	0.15	0.04	0.40
JDR3	0.17	0.14	0.18	0.14	0.11	0.09	0.09	0.10	0.13	0.03	-0.92
JRR3	0.38	0.31	0.27	0.26	0.23	0.28	0.26	0.25	0.28	0.04	-0.26
EJR3	0.34	0.29	0.18	0.24	0.22	0.19	0.18	0.20	0.23	0.05	-0.39
CONSTRUCTION											
JCR3	0.27	0.22	0.10	0.14	0.18	0.33	0.27	0.21	0.22	0.07	0.78
JDR3	0.22	0.16	0.34	0.30	0.32	0.30	0.22	0.17	0.25	0.07	-0.69
JRR3	0.49	0.38	0.44	0.44	0.50	0.63	0.49	0.38	0.47	0.08	0.27
EJR3	0.43	0.32	0.21	0.29	0.36	0.59	0.43	0.33	0.37	0.11	0.69
TRADE											
JCR3	0.22	0.17	0.15	0.14	0.13	0.16	0.16	0.15	0.16	0.03	0.44
JDR3	0.15	0.16	0.19	0.16	0.16	0.15	0.11	0.13	0.15	0.02	-0.93
JRR3	0.37	0.33	0.34	0.30	0.29	0.30	0.27	0.28	0.31	0.03	-0.15
EJR3	0.30	0.33	0.31	0.28	0.25	0.29	0.22	0.26	0.28	0.03	-0.58
BUSINESS SERVICES											
JCR3	0.25	0.19	0.17	0.13	0.21	0.29	0.21	0.21	0.21	0.05	0.66
JDR3	0.14	0.15	0.21	0.23	0.25	0.17	0.13	0.14	0.18	0.04	-0.81
JRR3	0.39	0.34	0.37	0.36	0.46	0.46	0.34	0.35	0.38	0.05	0.09
EJR3	0.28	0.30	0.33	0.26	0.42	0.35	0.25	0.28	0.31	0.05	-0.72

The measures of gross job flows are as follows: "jcr" refers to job creation rate, "jdr" refers to job dest-ruction rate, "jrr" refers to (gross) job reallocation rate (jrr=jdr+jcr) and "ejr" refers to excess reallo-cation rate (job reallocation minus the absolute value of the net employment change). "avg" refers to the average and "std" refers to the standard deviation of the applied measures of gross job and worker flows. "cor" refers to the correlation coefficient with respect to the difference between job creation and destruction rates (the net rate of change of the employment).

Table 5. The gross job flows for education group 4. The measures are for all establishments (i. e. including continuing establishment and the population of establishment that have faced a birth or/and a death during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
JCR4	0.23	0.17	0.10	0.12	0.12	0.16	0.16	0.14	0.15	0.04	0.82
JDR4	0.16	0.13	0.15	0.13	0.10	0.10	0.08	0.11	0.12	0.02	-0.12
JRR4	0.39	0.31	0.25	0.24	0.22	0.26	0.24	0.25	0.27	0.05	0.55
EJR4	0.32	0.27	0.20	0.23	0.21	0.19	0.16	0.22	0.22	0.05	0.32
CONSTRUCTION											
JCR4	0.25	0.24	0.17	0.14	0.17	0.24	0.31	0.15	0.21	0.06	0.83
JDR4	0.31	0.19	0.37	0.21	0.31	0.35	0.22	0.15	0.26	0.08	-0.63
JRR4	0.56	0.42	0.54	0.35	0.49	0.59	0.53	0.30	0.47	0.10	0.32
EJR4	0.50	0.37	0.33	0.28	0.35	0.49	0.44	0.30	0.38	0.08	0.32
TRADE											
JCR4	0.23	0.17	0.15	0.13	0.12	0.14	0.16	0.14	0.16	0.03	0.96
JDR4	0.16	0.15	0.18	0.15	0.16	0.17	0.12	0.15	0.15	0.02	-0.61
JRR4	0.39	0.32	0.33	0.28	0.28	0.31	0.28	0.29	0.31	0.04	0.78
EJR4	0.32	0.31	0.31	0.27	0.25	0.29	0.24	0.28	0.28	0.03	-0.07
BUSINESS SERVICES											
JCR4	0.26	0.20	0.17	0.13	0.25	0.25	0.18	0.19	0.20	0.04	0.91
JDR4	0.13	0.16	0.17	0.18	0.22	0.16	0.12	0.13	0.16	0.03	-0.58
JRR4	0.38	0.36	0.34	0.31	0.46	0.41	0.30	0.31	0.36	0.05	0.60
EJR4	0.25	0.32	0.34	0.26	0.43	0.33	0.24	0.26	0.30	0.06	-0.26

The measures of gross job flows are as follows: "jcr" refers to job creation rate, "jdr" refers to job destruction rate, "jrr" refers to (gross) job reallocation rate (jrr=jdr+jcr) and "ejr" refers to excess reallocation rate (job reallocation minus the absolute value of the net employment change). "avg" refers to the average and "std" refers to the standard deviation of the applied measures of gross job and worker flows. "cor" refers to the correlation coefficient with respect to the difference between job creation and destruction rates (the net rate of change of the employment).

Table 6. The gross job flows for experience group 1. The measures are for all estalishments (i. e. including continuing establishment and the population of establishment that have faced a birth or/and a death during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
JCRTK1	0.52	0.33	0.21	0.32	0.35	0.58	0.39	0.28	0.37	0.96	0.96
JDRTK1	0.12	0.18	0.27	0.15	0.12	0.05	0.08	0.12	0.14	0.14	-0.88
JRRTK1	0.64	0.52	0.49	0.48	0.47	0.64	0.47	0.39	0.51	0.51	0.65
EJRTK1	0.25	0.37	0.43	0.31	0.24	0.11	0.16	0.23	0.26	-0.86	-0.86
CONSTRUCTION											
JCRTK1	0.60	0.33	0.24	0.22	0.35	0.61	0.40	0.39	0.39	0.98	0.98
JDRTK1	0.18	0.26	0.42	0.42	0.37	0.23	0.25	0.24	0.30	0.29	-0.94
JRRTK1	0.78	0.59	0.66	0.64	0.73	0.84	0.66	0.63	0.69	0.70	0.65
EJRTK1	0.35	0.51	0.49	0.44	0.71	0.47	0.51	0.48	0.50	-0.38	-0.38
TRADE											
JCRTK1	0.49	0.37	0.23	0.22	0.21	0.38	0.34	0.31	0.32	0.99	0.99
JDRTK1	0.11	0.17	0.22	0.20	0.21	0.13	0.13	0.15	0.16	0.16	-0.89
JRRTK1	0.60	0.54	0.45	0.42	0.43	0.51	0.47	0.46	0.48	0.52	0.95
EJRTK1	0.23	0.34	0.43	0.40	0.42	0.26	0.25	0.29	0.33	-0.89	-0.89
BUSINESS SERVICES											
JCRTK1	0.50	0.36	0.34	0.22	0.30	0.60	0.39	0.37	0.38	0.99	0.99
JDRTK1	0.13	0.22	0.23	0.23	0.23	0.11	0.14	0.16	0.18	0.17	-0.88
JRRTK1	0.64	0.58	0.56	0.45	0.53	0.71	0.52	0.54	0.57	0.60	0.93
EJRTK1	0.27	0.45	0.45	0.44	0.46	0.22	0.27	0.32	0.36	-0.87	-0.87

The measures of gross job flows are as follows: "jcr" refers to job creation rate, "jdr" refers to job destruction rate, "jrr" refers to (gross) job reallocation rate (jrr=jdr+jcr) and "ejr" refers to excess reallocation rate (job reallocation minus the absolute value of the net employment change). "avg" refers to the average and "std" refers to the standard deviation of the applied measures of gross job and worker flows. "cor" refers to the correlation coefficient with respect to the difference between job creation and destruction rates (the net rate of change of the employment).

Table 7. The gross job flows for experience group 2. The measures are for all establishments (i. e. including continuing establishment and the population of establishment that have faced a birth or/and a death during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
JCRTK2	0.24	0.16	0.09	0.11	0.11	0.18	0.14	0.11	0.14	0.05	0.90
JDRTK2	0.15	0.15	0.21	0.15	0.12	0.08	0.08	0.10	0.13	0.04	-0.62
JRRTK2	0.39	0.31	0.29	0.26	0.23	0.26	0.22	0.22	0.27	0.05	0.52
EJRTK2	0.31	0.31	0.17	0.22	0.22	0.17	0.17	0.21	0.22	0.05	0.21
CONSTRUCTION											
JCRTK2	0.34	0.23	0.10	0.14	0.26	0.41	0.28	0.25	0.25	0.09	0.93
JDRTK2	0.20	0.27	0.45	0.40	0.39	0.33	0.25	0.20	0.31	0.09	-0.91
JRRTK2	0.54	0.50	0.55	0.54	0.65	0.74	0.53	0.45	0.56	0.09	0.16
EJRTK2	0.40	0.45	0.20	0.29	0.53	0.66	0.50	0.39	0.43	0.13	0.35
TRADE											
JCRTK2	0.27	0.20	0.15	0.14	0.13	0.17	0.16	0.15	0.17	0.04	0.95
JDRTK2	0.17	0.20	0.24	0.21	0.21	0.19	0.14	0.14	0.19	0.03	-0.75
JRRTK2	0.44	0.40	0.38	0.36	0.34	0.36	0.30	0.29	0.36	0.04	0.65
EJRTK2	0.34	0.40	0.29	0.29	0.26	0.34	0.28	0.28	0.31	0.04	0.04
BUSINESS SERVICES											
JCRTK2	0.32	0.23	0.17	0.15	0.19	0.32	0.19	0.20	0.22	0.06	0.94
JDRTK2	0.17	0.18	0.23	0.22	0.28	0.16	0.13	0.15	0.19	0.05	-0.71
JRRTK2	0.48	0.41	0.40	0.37	0.47	0.48	0.33	0.35	0.41	0.06	0.72
EJRTK2	0.34	0.36	0.34	0.30	0.37	0.32	0.27	0.30	0.32	0.03	-0.50

The measures of gross job flows are as follows: "jcr" refers to job creation rate, "jdr" refers to job destruction rate, "jrr" refers to (gross) job reallocation rate (jrr=jdr+jcr) and "ejr" refers to excess reallocation rate (job reallocation minus the absolute value of the net employment change). "avg" refers to the average and "std" refers to the standard deviation of the applied measures of gross job and worker flows. In addition, "cor" refers to the correlation coefficient with respect to net employment change. "cor" refers to the correlation with respect to the difference between job creation and destruction rates (the net rate of change of the employment).

Table 8. The gross job flows for experience group 3. The measures are for all establishments (i. e. including continuing establishment and the population of establishment that have faced a birth or/and a death during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
JCRTK3	0.14	0.12	0.06	0.07	0.07	0.11	0.09	0.08	0.09	0.03	0.74
JDRTK3	0.16	0.13	0.16	0.14	0.11	0.10	0.08	0.09	0.12	0.03	-0.45
JRRTK3	0.30	0.25	0.23	0.21	0.19	0.21	0.17	0.17	0.22	0.04	0.28
EJRTK3	0.29	0.24	0.13	0.15	0.15	0.20	0.16	0.16	0.18	0.05	0.65
CONSTRUCTION											
JCRTK3	0.27	0.18	0.08	0.12	0.26	0.46	0.30	0.22	0.23	0.11	0.81
JDRTK3	0.20	0.23	0.40	0.37	0.37	0.38	0.27	0.18	0.30	0.08	-0.70
JRRTK3	0.47	0.41	0.48	0.49	0.63	0.83	0.57	0.40	0.54	0.13	0.19
EJRTK3	0.41	0.36	0.15	0.25	0.52	0.75	0.54	0.36	0.42	0.18	0.62
TRADE											
JCRTK3	0.18	0.14	0.11	0.11	0.11	0.12	0.12	0.10	0.13	0.02	0.74
JDRTK3	0.17	0.18	0.20	0.18	0.18	0.24	0.12	0.13	0.17	0.04	-0.77
JRRTK3	0.35	0.32	0.31	0.29	0.29	0.36	0.24	0.23	0.30	0.04	-0.05
EJRTK3	0.33	0.29	0.22	0.22	0.22	0.25	0.24	0.21	0.25	0.04	0.54
BUSINESS SERVICES											
JCRTK3	0.22	0.17	0.14	0.12	0.19	0.29	0.18	0.16	0.18	0.05	0.90
JDRTK3	0.15	0.17	0.20	0.20	0.25	0.20	0.12	0.15	0.18	0.04	-0.66
JRRTK3	0.37	0.34	0.34	0.32	0.44	0.49	0.31	0.31	0.37	0.06	0.50
EJRTK3	0.31	0.34	0.27	0.25	0.38	0.40	0.25	0.29	0.31	0.05	-0.04

The measures of gross job flows are as follows: "jcr" refers to job creation rate, "jdr" refers to job destruction rate, "jrr" refers to (gross) job reallocation rate (jrr=jdr+jcr) and "ejr" refers to excess reallocation rate (job reallocation minus the absolute value of the net employment change). "avg" refers to the average and "std" refers to the standard deviation of the applied measures of gross job and worker flows. "cor" refers to the correlation coefficient with respect to the difference between job creation and destruction rates (the net rate of change of the employment).

Table 9. The gross job flows for experience group 4. The measures are for all establishments (i. e. including continuing establishment and the population of establishment that have faced a birth or/and a death during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
JCRTK4	0.11	0.10	0.05	0.05	0.05	0.06	0.05	0.05	0.07	0.03	0.64
JDRTK4	0.17	0.13	0.19	0.19	0.18	0.17	0.15	0.17	0.17	0.02	-0.34
JRRTK4	0.28	0.24	0.23	0.24	0.22	0.23	0.20	0.22	0.23	0.02	0.50
EJRTK4	0.22	0.21	0.10	0.09	0.09	0.13	0.10	0.10	0.13	0.05	0.64
CONSTRUCTION											
JCRTK4	0.20	0.14	0.05	0.09	0.23	0.30	0.26	0.15	0.18	0.08	0.62
JDRTK4	0.22	0.22	0.42	0.41	0.45	0.49	0.31	0.21	0.34	0.11	0.48
JRRTK4	0.42	0.35	0.47	0.50	0.67	0.79	0.57	0.37	0.52	0.14	0.77
EJRTK4	0.40	0.27	0.09	0.18	0.45	0.60	0.52	0.30	0.35	0.16	0.81
TRADE											
JCRTK4	0.12	0.11	0.08	0.07	0.07	0.07	0.06	0.05	0.08	0.02	0.19
JDRTK4	0.17	0.17	0.19	0.19	0.20	0.34	0.16	0.16	0.20	0.06	0.25
JRRTK4	0.30	0.28	0.27	0.27	0.26	0.41	0.22	0.21	0.28	0.06	0.36
EJRTK4	0.25	0.22	0.16	0.15	0.14	0.14	0.12	0.11	0.16	0.05	0.24
BUSINESS SERVICES											
JCRTK4	0.17	0.14	0.12	0.10	0.16	0.23	0.13	0.12	0.15	0.04	-0.76
JDRTK4	0.15	0.17	0.19	0.20	0.26	0.26	0.17	0.17	0.20	0.04	0.60
JRRTK4	0.32	0.31	0.32	0.31	0.42	0.48	0.30	0.29	0.34	0.07	-0.38
EJRTK4	0.29	0.29	0.25	0.20	0.32	0.46	0.26	0.23	0.29	0.07	0.17

The measures of gross job flows are as follows: "jcr" refers to job creation rate, "jdr" refers to job destruction rate, "jrr" refers to (gross) job reallocation rate (jrr=jdr+jcr) and "ejr" refers to excess reallocation rate (job reallocation minus the absolute value of the net employment change). "avg" refers to the average and "std" refers to the standard deviation of the applied measures of gross job and worker flows. "cor" refers to the correlation coefficient with respect to the difference between job creation and destruction rates (the net rate of change of the employment).

Table 10. The gross worker flows for Finnish economy (including all education and experience groups). The measures are for all establishments.

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
HRR	0.30	0.24	0.14	0.15	0.15	0.23	0.21	0.19	0.20	0.05	0.73
SRR	0.29	0.24	0.26	0.24	0.20	0.18	0.18	0.18	0.22	0.04	-0.46
WFR	0.59	0.49	0.41	0.39	0.35	0.41	0.39	0.37	0.42	0.07	0.26
CHR	0.27	0.23	0.15	0.15	0.14	0.17	0.19	0.17	0.19	0.04	0.48
CONSTRUCTION											
HRR	0.51	0.37	0.22	0.26	0.39	0.62	0.49	0.41	0.41	0.12	0.90
SRR	0.41	0.44	0.56	0.57	0.55	0.54	0.44	0.34	0.48	0.08	-0.74
WFR	0.92	0.81	0.79	0.83	0.94	1.15	0.93	0.75	0.89	0.12	0.43
CHR	0.45	0.38	0.27	0.29	0.27	0.32	0.35	0.32	0.33	0.06	0.67
TRADE											
HRR	0.37	0.33	0.24	0.21	0.21	0.28	0.29	0.28	0.28	0.05	0.77
SRR	0.35	0.33	0.32	0.31	0.30	0.36	0.25	0.25	0.31	0.04	-0.46
WFR	0.72	0.66	0.56	0.52	0.51	0.64	0.55	0.53	0.59	0.07	0.32
CHR	0.37	0.32	0.23	0.20	0.19	0.26	0.27	0.25	0.26	0.06	0.71
BUSINESS SERVICES											
HRR	0.46	0.40	0.30	0.25	0.30	0.52	0.38	0.37	0.37	0.08	0.92
SRR	0.37	0.37	0.35	0.36	0.46	0.31	0.30	0.31	0.35	0.05	-0.73
WFR	0.83	0.76	0.65	0.61	0.76	0.83	0.68	0.68	0.73	0.08	0.53
CHR	0.43	0.40	0.28	0.27	0.29	0.31	0.35	0.33	0.33	0.06	0.47

The measures of gross worker flows are as follows: "hrr" refers to worker hiring rate, "srr" refers to worker separation rate, "wfr" refers to (gross) worker reallocation rate (wfr=hrr+srr), "chr" refers to churning rate and "cor" refers to the correlation coefficient with respect to hiring rate less separation rate. "avg" refers to the average and "std" refers to the standard deviation of the applied measures of gross job and worker flows.

Table 11. The gross worker flows for education group 1. The measures are for all establishments (i. e. including continuing establishment and the population of establishment that have faced a birth or/and a death during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
HRR1	0.25	0.21	0.12	0.12	0.11	0.17	0.14	0.14	0.16	0.05	0.73
SRR1	0.27	0.22	0.25	0.24	0.21	0.19	0.17	0.18	0.22	0.03	-0.39
WFR1	0.52	0.43	0.37	0.36	0.32	0.36	0.32	0.31	0.37	0.07	0.31
CHR1	0.22	0.18	0.13	0.13	0.11	0.14	0.13	0.12	0.14	0.03	0.52
CONSTRUCTION											
HRR1	0.48	0.34	0.20	0.25	0.44	0.65	0.51	0.43	0.41	0.14	0.81
SRR1	0.41	0.44	0.59	0.62	0.60	0.66	0.49	0.38	0.52	0.10	-0.61
WFR1	0.88	0.78	0.80	0.86	1.04	1.31	1.00	0.80	0.93	0.17	0.28
CHR1	0.41	0.38	0.27	0.33	0.32	0.44	0.41	0.36	0.37	0.05	0.83
TRADE											
HRR1	0.31	0.28	0.20	0.17	0.16	0.22	0.23	0.23	0.22	0.05	0.63
SRR1	0.33	0.30	0.30	0.30	0.29	0.41	0.24	0.23	0.30	0.05	-0.71
WFR1	0.65	0.58	0.49	0.47	0.45	0.63	0.47	0.46	0.53	0.08	-0.10
CHR1	0.31	0.26	0.19	0.17	0.16	0.23	0.21	0.19	0.22	0.05	0.38
BUSINESS SERVICES											
HRR1	0.48	0.41	0.31	0.26	0.29	0.57	0.41	0.37	0.39	0.10	0.93
SRR1	0.39	0.41	0.39	0.40	0.51	0.38	0.34	0.36	0.40	0.05	-0.70
WFR1	0.87	0.83	0.70	0.66	0.80	0.95	0.75	0.72	0.79	0.09	0.62
CHR1	0.46	0.46	0.33	0.33	0.36	0.42	0.40	0.38	0.39	0.05	0.69

The measures of gross worker flows are as follows: "hrr" refers to worker hiring rate, "srr" refers to worker separation rate, "wfr" refers to (gross) worker reallocation rate (wfr=hrr+srr), "chr" refers to churning rate rate and "cor" refers to the correlation coefficient with respect to hiring rate less separation rate. "avg" refers to the average and "std" refers to the standard deviation of the applied measures of gross job and worker flows.

Table 12. The gross worker flows for education group 2. The measures are for all establishments (i. e. including continuing establishment and the population of establishment that have faced a birth or/and a death during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
HRR2	0.32	0.25	0.15	0.16	0.16	0.25	0.22	0.20	0.21	0.05	0.71
SRR2	0.30	0.25	0.27	0.23	0.19	0.17	0.18	0.18	0.22	0.04	-0.49
WFR2	0.61	0.50	0.42	0.39	0.35	0.43	0.40	0.38	0.44	0.08	0.22
CHR2	0.30	0.24	0.16	0.15	0.14	0.17	0.19	0.17	0.19	0.05	0.33
CONSTRUCTION											
HRR2	0.54	0.40	0.24	0.27	0.39	0.67	0.50	0.43	0.43	0.13	0.92
SRR2	0.42	0.45	0.57	0.59	0.56	0.52	0.44	0.35	0.49	0.08	-0.75
WFR2	0.97	0.85	0.81	0.86	0.96	1.19	0.95	0.78	0.92	0.12	0.52
CHR2	0.49	0.40	0.29	0.33	0.31	0.37	0.38	0.34	0.36	0.06	0.67
TRADE											
HRR2	0.42	0.36	0.27	0.23	0.23	0.32	0.33	0.31	0.31	0.06	0.80
SRR2	0.37	0.35	0.34	0.33	0.32	0.35	0.26	0.26	0.32	0.04	-0.35
WFR2	0.79	0.71	0.61	0.56	0.55	0.67	0.59	0.57	0.63	0.08	0.44
CHR2	0.42	0.35	0.26	0.22	0.22	0.28	0.29	0.27	0.29	0.06	0.69
BUSINESS SERVICES											
HRR2	0.47	0.41	0.30	0.27	0.30	0.56	0.40	0.39	0.39	0.09	0.93
SRR2	0.39	0.38	0.36	0.36	0.48	0.31	0.32	0.33	0.37	0.05	-0.76
WFR2	0.86	0.79	0.67	0.63	0.78	0.88	0.72	0.72	0.75	0.08	0.58
CHR2	0.46	0.42	0.30	0.29	0.33	0.34	0.38	0.37	0.36	0.05	0.44

The measures of gross worker flows are as follows: "hrr" refers to worker hiring rate, "srr" refers to worker separation rate, "wfr" refers to (gross) worker reallocation rate (wfr=hrr+srr), "chr" refers to churning rate rate and "cor" refers to the correlation coefficient with respect to hiring rate less separation rate. "avg" refers to the average and "std" refers to the standard deviation of the applied measures of gross job and worker flows.

Table 13. The gross worker flows for education group 3. The measures are for all establishments (i. e. including continuing establishment and the population of establishment that have faced a birth or/and a death during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
HRR3	0.44	0.35	0.21	0.23	0.23	0.32	0.31	0.28	0.30	0.07	0.62
SRR3	0.39	0.32	0.32	0.26	0.23	0.20	0.23	0.22	0.27	0.06	-0.35
WFR3	0.82	0.68	0.53	0.49	0.46	0.52	0.54	0.50	0.57	0.11	0.20
CHR3	0.44	0.37	0.25	0.22	0.23	0.24	0.28	0.25	0.29	0.07	0.21
CONSTRUCTION											
HRR3	0.62	0.46	0.28	0.29	0.35	0.61	0.49	0.41	0.44	0.12	0.90
SRR3	0.47	0.44	0.55	0.50	0.56	0.51	0.40	0.33	0.47	0.07	-0.67
WFR3	1.09	0.90	0.83	0.80	0.91	1.12	0.89	0.74	0.91	0.13	0.49
CHR3	0.60	0.52	0.39	0.36	0.41	0.49	0.40	0.37	0.44	0.08	0.58
TRADE											
HRR3	0.49	0.43	0.34	0.29	0.28	0.35	0.35	0.32	0.36	0.07	0.60
SRR3	0.43	0.41	0.41	0.36	0.35	0.32	0.29	0.28	0.36	0.05	-0.31
WFR3	0.91	0.85	0.76	0.66	0.64	0.67	0.64	0.59	0.71	0.11	0.21
CHR3	0.54	0.51	0.42	0.36	0.35	0.37	0.37	0.32	0.40	0.08	0.31
BUSINESS SERVICES											
HRR3	0.46	0.40	0.30	0.24	0.35	0.53	0.38	0.37	0.38	0.09	0.87
SRR3	0.37	0.34	0.35	0.37	0.49	0.30	0.28	0.28	0.35	0.06	-0.75
WFR3	0.83	0.74	0.65	0.61	0.84	0.83	0.66	0.66	0.73	0.09	0.29
CHR3	0.45	0.40	0.28	0.25	0.38	0.37	0.32	0.31	0.34	0.06	0.40

The measures of gross worker flows are as follows: "hrr" refers to worker hiring rate, "srr" refers to worker separation rate, "wfr" refers to (gross) worker reallocation rate (wfr=hrr+srr), "chr" refers to churning rate rate and "cor" refers to the correlation coefficient with respect to hiring rate less separation rate. "avg" refers to the average and "std" refers to the standard deviation of the applied measures of gross job and worker flows.

Table 14. The gross worker flows for education group 4. The measures are for all establishments (i. e. including continuing establishment and the population of establishment that have faced a birth or/and a death during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
HRR4	0.44	0.36	0.24	0.23	0.23	0.28	0.31	0.29	0.30	0.07	0.69
SRR4	0.37	0.29	0.29	0.25	0.22	0.21	0.24	0.24	0.27	0.05	0.03
WFR4	0.81	0.65	0.52	0.48	0.45	0.49	0.56	0.53	0.56	0.11	0.44
CHR4	0.42	0.34	0.28	0.24	0.24	0.23	0.32	0.28	0.29	0.06	0.42
CONSTRUCTION											
HRR4	0.71	0.50	0.35	0.32	0.28	0.45	0.52	0.31	0.43	0.14	0.75
SRR4	0.61	0.52	0.60	0.46	0.50	0.57	0.40	0.31	0.49	0.09	-0.29
WFR4	1.32	1.01	0.94	0.77	0.77	1.02	0.92	0.62	0.92	0.20	0.38
CHR4	0.75	0.59	0.41	0.42	0.29	0.42	0.39	0.32	0.45	0.14	0.51
TRADE											
HRR4	0.56	0.45	0.36	0.30	0.28	0.35	0.35	0.30	0.37	0.09	0.81
SRR4	0.49	0.45	0.41	0.36	0.35	0.41	0.32	0.32	0.39	0.06	0.39
WFR4	1.05	0.90	0.77	0.66	0.63	0.76	0.67	0.62	0.76	0.14	0.67
CHR4	0.66	0.58	0.44	0.37	0.35	0.45	0.39	0.33	0.45	0.11	0.68
BUSINESS SERVICES											
HRR4	0.51	0.40	0.31	0.24	0.37	0.45	0.34	0.34	0.37	0.08	0.84
SRR4	0.36	0.35	0.31	0.32	0.41	0.30	0.27	0.27	0.32	0.04	-0.28
WFR4	0.87	0.75	0.62	0.56	0.77	0.75	0.61	0.61	0.69	0.10	0.54
CHR4	0.49	0.39	0.27	0.25	0.31	0.34	0.31	0.29	0.33	0.07	0.69

The measures of gross worker flows are as follows: "hrr" refers to worker hiring rate, "srr" refers to worker separation rate, "wfr" refers to (gross) worker reallocation rate (wfr=hrr+srr), "chr" refers to churning rate rate and "cor" refers to the correlation coefficient with respect to hiring rate less separation rate. "avg" refers to the average and "std" refers to the standard deviation of the applied measures of gross job and worker flows.

Table 15. Gross worker flows for experience group 1. The measure are for all establishments (i. e. including continuing establishments and the population of establishments that have faced a birth or/and a during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
HRRTK1	1.33	0.91	0.62	0.66	0.66	0.89	0.66	0.50	0.78	0.26	0.72
SRRTK1	0.69	0.69	0.74	0.48	0.39	0.26	0.32	0.31	0.49	0.19	-0.31
WFRTK1	2.02	1.60	1.36	1.14	1.05	1.15	0.98	0.81	1.26	0.39	0.33
CHRTK1	1.38	1.09	0.87	0.66	0.58	0.51	0.51	0.42	0.75	0.34	0.19
CONSTRUCTION											
HRRTK1	1.51	1.03	0.82	0.71	0.91	1.50	0.94	0.83	1.03	0.31	0.89
SRRTK1	0.74	0.99	1.15	1.06	1.06	0.62	0.64	0.54	0.85	0.24	-0.81
WFRTK1	2.25	2.02	1.97	1.77	1.97	2.12	1.58	1.36	1.88	0.29	0.27
CHRTK1	1.48	1.43	1.31	1.13	1.25	1.28	0.93	0.73	1.19	0.25	0.08
TRADE											
HRRTK1	1.40	1.02	0.68	0.53	0.55	0.81	0.74	0.64	0.80	0.29	0.92
SRRTK1	0.68	0.70	0.63	0.55	0.55	0.44	0.43	0.41	0.55	0.12	0.18
WFRTK1	2.08	1.72	1.31	1.09	1.10	1.25	1.17	1.05	1.35	0.37	0.78
CHRTK1	1.48	1.19	0.86	0.66	0.67	0.74	0.70	0.59	0.86	0.31	0.74
BUSINESS SERVICES											
HRRTK1	1.34	1.03	0.82	0.61	0.70	1.14	0.83	0.75	0.90	0.25	0.84
SRRTK1	0.78	0.79	0.70	0.63	0.67	0.39	0.51	0.48	0.62	0.15	-0.39
WFRTK1	2.13	1.81	1.52	1.24	1.37	1.52	1.34	1.24	1.52	0.31	0.49
CHRTK1	1.49	1.23	0.95	0.79	0.84	0.81	0.81	0.70	0.95	0.27	0.29

The measures of gross worker flows are as follows: "hrr" refers to worker hiring rate, "srr" refers to worker separation rate, "wfr" refers to (gross) worker reallocation rate (wfr=hrr+srr) and "chr" refers to churning rate.

Table 16. Gross worker flows for experience group 2. The measure are for all establishments (i. e. including continuing establishments and the population of establishments that have faced a birth or/and a during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
HRRTK2	0.47	0.35	0.20	0.20	0.20	0.28	0.24	0.21	0.27	0.10	0.60
SRRTK2	0.38	0.34	0.33	0.26	0.22	0.18	0.19	0.19	0.26	0.08	-0.23
WFRTK2	0.85	0.68	0.52	0.46	0.42	0.46	0.43	0.39	0.53	0.16	0.25
CHRTK2	0.46	0.37	0.23	0.20	0.18	0.20	0.21	0.18	0.25	0.10	0.30
CONSTRUCTION											
HRRTK2	0.67	0.48	0.28	0.31	0.43	0.69	0.51	0.46	0.48	0.15	0.91
SRRTK2	0.50	0.54	0.66	0.66	0.61	0.55	0.45	0.36	0.54	0.10	-0.80
WFRTK2	1.17	1.02	0.94	0.96	1.04	1.23	0.97	0.82	1.02	0.13	0.39
CHRTK2	0.63	0.52	0.39	0.42	0.39	0.49	0.44	0.37	0.46	0.09	0.52
TRADE											
HRRTK2	0.56	0.45	0.32	0.26	0.25	0.32	0.32	0.29	0.35	0.11	0.71
SRRTK2	0.47	0.44	0.41	0.37	0.36	0.34	0.28	0.26	0.37	0.07	0.01
WFRTK2	1.04	0.89	0.73	0.64	0.61	0.66	0.60	0.55	0.71	0.17	0.45
CHRTK2	0.60	0.49	0.34	0.28	0.27	0.30	0.30	0.26	0.35	0.12	0.56
BUSINESS SERVICES											
HRRTK2	0.62	0.50	0.35	0.29	0.31	0.55	0.39	0.38	0.42	0.12	0.85
SRRTK2	0.48	0.44	0.42	0.40	0.50	0.30	0.33	0.32	0.40	0.07	-0.53
WFRTK2	1.10	0.94	0.76	0.70	0.81	0.85	0.72	0.69	0.82	0.14	0.44
CHRTK2	0.61	0.53	0.37	0.32	0.34	0.37	0.39	0.34	0.41	0.10	0.48

The measures of gross worker flows are as follows: "hrr" refers to worker hiring rate, "srr" refers to worker separation rate, "wfr" refers to (gross) worker reallocation rate (wfr=hrr+srr) and "chr" refers to churning rate.

Table 17. Gross worker flows for experience group 3. The measure are for all establishments (i. e. including continuing establishments and the population of establishments that have faced a birth or/and a during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
HRRTK3	0.26	0.21	0.12	0.13	0.12	0.17	0.15	0.13	0.16	0.05	0.49
SRRTK3	0.27	0.21	0.23	0.20	0.16	0.16	0.14	0.14	0.19	0.05	-0.38
WFRTK3	0.53	0.42	0.35	0.33	0.29	0.33	0.29	0.27	0.35	0.09	0.07
CHRTK3	0.23	0.18	0.12	0.12	0.10	0.12	0.12	0.10	0.14	0.04	0.19
CONSTRUCTION											
HRRTK3	0.49	0.35	0.21	0.25	0.39	0.63	0.48	0.38	0.40	0.13	0.86
SRRTK3	0.40	0.42	0.54	0.54	0.52	0.56	0.43	0.32	0.47	0.09	-0.58
WFRTK3	0.89	0.77	0.75	0.79	0.92	1.19	0.91	0.70	0.86	0.15	0.43
CHRTK3	0.42	0.36	0.27	0.29	0.29	0.35	0.34	0.30	0.33	0.05	0.71
TRADE											
HRRTK3	0.32	0.28	0.21	0.18	0.18	0.22	0.21	0.18	0.22	0.05	0.42
SRRTK3	0.33	0.29	0.29	0.28	0.26	0.34	0.20	0.19	0.27	0.06	-0.54
WFRTK3	0.65	0.57	0.49	0.46	0.44	0.56	0.40	0.37	0.49	0.09	-0.09
CHRTK3	0.30	0.24	0.18	0.16	0.15	0.20	0.17	0.14	0.19	0.05	0.26
BUSINESS SERVICES											
HRRTK3	0.40	0.34	0.25	0.22	0.28	0.47	0.31	0.29	0.32	0.08	0.85
SRRTK3	0.34	0.33	0.32	0.32	0.42	0.31	0.25	0.26	0.32	0.05	-0.58
WFRTK3	0.74	0.67	0.57	0.54	0.71	0.78	0.57	0.55	0.64	0.09	0.40
CHRTK3	0.37	0.33	0.23	0.22	0.26	0.28	0.26	0.25	0.27	0.05	0.46

The measures of gross worker flows are as follows: "hrr" refers to worker hiring rate, "srr" refers to worker separation rate, "wfr" refers to (gross) worker reallocation rate (wfr=hrr+srr) and "chr" refers to churning rate.

Table 18. Gross worker flows for experience group 4. The measure are for all establishments (i. e. including continuing establishments and the population of establishments that have faced a birth or/and a during the period of the data).

	1989	1990	1991	1992	1993	1994	1995	1996	AVG	STD	COR
MANUFACTURING											
HRRTK4	0.21	0.18	0.10	0.09	0.09	0.12	0.10	0.10	0.12	0.04	0.87
SRRTK4	0.25	0.20	0.24	0.25	0.23	0.22	0.20	0.21	0.22	0.02	-0.40
WFRTK4	0.46	0.37	0.34	0.35	0.32	0.34	0.29	0.30	0.35	0.05	0.55
CHRTK4	0.18	0.13	0.11	0.11	0.09	0.11	0.10	0.08	0.11	0.03	0.63
CONSTRUCTION											
HRRTK4	0.40	0.28	0.15	0.21	0.35	0.60	0.46	0.33	0.35	0.14	0.64
SRRTK4	0.38	0.37	0.54	0.58	0.63	0.72	0.49	0.39	0.51	0.13	-0.53
WFRTK4	0.77	0.66	0.70	0.79	0.98	1.31	0.95	0.72	0.86	0.22	0.11
CHRTK4	0.36	0.30	0.23	0.29	0.31	0.52	0.38	0.36	0.34	0.09	0.57
TRADE											
HRRTK4	0.23	0.21	0.15	0.13	0.12	0.15	0.13	0.12	0.15	0.04	0.44
SRRTK4	0.30	0.26	0.26	0.28	0.28	0.46	0.23	0.23	0.29	0.07	-0.86
WFRTK4	0.53	0.47	0.41	0.41	0.41	0.61	0.37	0.34	0.44	0.09	-0.51
CHRTK4	0.23	0.18	0.14	0.14	0.14	0.20	0.15	0.13	0.16	0.04	-0.05
BUSINESS SERVICES											
HRRTK4	0.33	0.30	0.24	0.19	0.26	0.48	0.26	0.23	0.29	0.09	0.72
SRRTK4	0.30	0.32	0.30	0.34	0.53	0.38	0.30	0.31	0.35	0.08	-0.62
WFRTK4	0.63	0.62	0.54	0.53	0.79	0.86	0.57	0.54	0.64	0.13	0.12
CHRTK4	0.31	0.31	0.22	0.23	0.37	0.38	0.27	0.25	0.29	0.06	0.11

The measures of gross worker flows are as follows: "hrr" refers to worker hiring rate, "srr" refers to worker separation rate, "wfr" refers to (gross) worker reallocation rate (wfr=hrr+srr) and "chr" refers to churning rate.

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