



**LABORatorio R. Revelli  
Centre for Employment Studies**

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# The Unemployment Route to Versatility

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In this paper we document a common sense idea: When an individual is searching for a new job, the longer it takes the more s/he will be available to adapt her/his skills, often with a worsening in status and/or wage. We used a dataset of administrative source, containing a sample of individuals' working careers in the private sector, in Italy, years 1985-1996. We do not observe directly the search activity of individuals: What we observe is the re-entry time elapsing from the separation from a job spell, to the association to a new one. The information collected about the job spells, however, is quite rich, and allows a thorough analysis of the main features of job changes.

If we do not take into account re-entry times into dependent work, the inter-industry mobility we report is relatively limited, even at high levels of disaggregation. Still (roughly) 50% of job changes occurs within the same 3-digit Ateco sectors, and without changing skill/status. If we condition on re-entry times, we find a positive effect on the probabilities of changing sector in the first months of the search, while for longer re-entry times, and of worsening the working status and wage.

Keywords: Job matching; Job changes; Re-entry times; Inter sectoral mobility; Wage dynamics; Linked employer-employee datasets.

## ***Introduction***

The mobility of workers between sectors is of interest under several respects. To the trade economist, the flexibility in the reallocation of labour force is a key factor for an economy to adapt to external disturbances and maintain its competitiveness (Grossman and Shapiro, 1982). To the labour economist, the eventual attritions in the inter industry movements will end up in a higher frictional unemployment (Lucas and Prescott, 1974), implying a positive relation between inter-sectoral mobility and unemployment fluctuations, as in Lilien (1982). Moreover, the mobility between sectors is associated with many important features of individuals working careers. High worker flows between sectors, for instance, can signal the “thickness” of a labour market, and its capability of efficiently match workers with suitable jobs. On the other hand, when the outflow of workers from an industry is not voluntary, a change in occupation can involve the waste of firm and industry-specific human capital accumulated. Workers then can suffer wage losses, as they are no more rewarded for their now redundant skills (Neal, 1995).

The relevance of the topic has today been pointed out in the debate on the consequences of the globalisation of economic activity. The adjustments implied by globalisation are seen as responsible for more frequent reallocations of labour across sectors and occupations, and consequently they are among the “suspects” for the high unemployment in countries trading with low-wage economies, and for the (relative) deterioration in the position of less skilled workers (Greenaway and Nelson, 2000).

The interest notwithstanding, the inter-sectoral mobility of workers have been given a relatively little attention in the literature. Theoretical and empirical studies on labour mobility, in fact, focussed mostly on firms and workers characteristics to explain hazard rates out and into a job, or the duration of the unemployment spell. A seminal work of Parnes (1954), introduced explicitly the topic of labour mobility “complexity”. In his terminology, “simple” job shifts occur when workers change employers but continue doing the same type of work, while “complex” ones occur when they also change task. In his contribution, he pointed out that complex job changes are more common among young workers, who are engaged both in a greater number of job changes, and in a larger quota of complex ones. Neal (1999) recovered Parnes’ distinction to study complex job changes among young workers, and found some empirical results supporting a two-stage model of job search. Workers search for a career first, and once a career match has been found they search over firms. Thus, complex job changes will occur early in the individuals working life, while mature workers will more probably search over jobs within the same career, and less cross industry flows will be observed. Indeed, he reports for the US that over half of the job changes made by young men involve both a movement across sectors and a change in occupation.

The view that inter-sectoral mobility is due more to job-worker mismatches than to sectoral shocks has been originally put forth by Jovanovic and Moffit (1990), and more recently by Greenaway *et al.* (2000). It is widely documented that a large share of job creation and destruction occurs within narrowly defined industries, and the same can be said of job changes. The driving force of worker flows, than, are firms and workers

idiosyncratic differences, and demand shocks that impact on sectors differentially will generate a net flow between sectors only *via* a wage effect: An unfavourable shock in a sector will cause a decrease in the wage the firms are willing to pay, workers who were previously happy with their match will seek jobs in expanding sectors, and inflows into the declining sector become less appealing.

Indeed, the mismatch between firm and worker can end up in dynamics all but smooth. When there are wage rigidities and/or the demand shock is huge, firms may not be able to reduce the wage and opt for the lay off of workers. In large firms the adjustment may take place in “big chunks”. When the market structure is characterised by a large number of small firms, the share of job destruction attributable to firm closures is relevant, too. For a worker, moreover, the transitions to a different industry/occupation can plainly be a second-best choice caused by a prolonged permanence in unemployment in presence of liquidity constraints, and not a first step of the search for the best career.

In this paper, we focus on the relations between working careers and sector changes. The overall impact of the causal links above mentioned on workers, in fact, is not clear cut. The passage to an expanding sector, the experience of a match with a different career, the offer of transferable skills acquired in previous experience to other industries labour markets, are all factors that would bring a potential benefit to the worker. The waste of industry-specific skills, the bad signal content of an involuntary separation, to face stressed labour market conditions, are all factors going in the opposite direction.

Some evidence on this topic has recently been produced for UK and USA. Elliott and Lindley (2001), using data from the UK *Quarterly Labour Force Survey*, explore the consequences of within and between industries adjustment on individual wages and the transition into and out of unemployment. They find evidence that between industry movers receive a lower wage ex-post than both within industry movers and those who have not moved at all, suggesting that workers who change industry suffer a wage loss as a consequence of a loss in industry-specific human capital, mostly for manual workers. They also find that it is not always those with the lowest qualifications that are less mobile between industries. The latter conclusion is coherent with Moscarini and Vella (2000), who study a multi-sector search-matching model, where mobility across sectors/occupations is negatively related with skill specialization, and positively related with depressed labour market condition. They tested their prediction on a cohort of US *National Longitudinal Survey of Youth*, and find additional evidence that in depressed labour markets workers cannot afford to be very selective and actually switch more often between sector. They do not distinguish between job-to-job transitions that occur directly or through an unemployment spell, since in their model the force of individual comparative advantages applies equally to both.

The unemployment spell, however, seems to play an important role for between industries movements. Haynes *et al.* (2000) compare data on US and UK to test the “smooth adjustment hypothesis”, which states that intra-industry reallocations are less costly than inter-industry ones. They find that workers employed in declining sectors

are more mobile in both countries, and that individuals are more likely to switch sector the longer they are unemployed.

These findings are coherent with the common-sense idea that when an individual is searching for a new job, the longer it takes the more s/he will be available to adapt her/his skills, often with a worsening in status and/or wage. In this paper we produce some evidence on this topic for Italy, using a dataset of individuals' working careers in the private sector, years 1985-1996. In next section we describe the data set used. In the following we report the empirics we produced. In the final section we summarize our findings, and briefly discuss the main directions that are opened for further research.

### ***The Data***

In this section we describe the main characteristics of the database we used. Further details can be found in Filippi *et al.* (2002).

### **The universe**

Our database is fed from the administrative records of firms and of workers collected by Inps, the Italian Social Security Administration. Once a year, Italian employers are required to fill a form for each person on payroll, summarising relevant information for the computation of retirement benefits. On a monthly basis, in addition, they have to submit forms with information relative to the total stock of workers and the wages paid, together with some other information about the firm itself, such as the economic activity and the date of constitution.

The presence in the archives of a specific firm then is determined by its obligations towards the public social security system. The most important case is represented by the contributions to the retirement benefits fund, which applies to all private manual and non-manual employees. Because of the existence of other compulsory contributions, other groups of workers and firms are recorded. For instance, managers and banks employees have separate pension funds, but they must contribute to the unemployment and sickness funds. As a consequence, the archive includes all private firms in the industrial and service sectors with at least one employee; services and other activities connected with agriculture are included. The central administration of the State is entirely absent from the archive; mail services, state school teachers, administration of justice, army and government agencies are not included. Certain categories of public employees are however observed, the most important cases being those of the National Health Service and the local government. Besides private firms, other subsets of firms are registered in the archive: companies owned or controlled by the State, public utilities (water, electricity, energy supply, municipal transportation), port authorities, pools (or consortiums) of firms and/or local governments.

Apart from services offered directly by the central administration of the State, then, a complete coverage is granted for dependent employment in the industrial and service sectors: In the Nineties they accounted for about 45% of Italian workers.

### **Employee data**

For each employee and calendar year various information are available, among which the place of work, the list of months for which wages or salaries were paid, the number of weeks and days s/he actually worked, the date of closure of the relationship with the

current employer, the wage/salary received, and the type of occupation (apprentice, manual worker, non-manual worker, manager) and labour relationship (full time, part time, fixed-term or open ended).

As regards the income recorded, we can say the following. As a general rule, social security contributions apply to the entire wage/salary paid by the employer, including supplements (in excess of those paid the Social Security Institutes) due by the employer in case of disease, work accident and maternity. More precisely, social security contributions apply to the sum of

- i) what the worker receives while actually supplying labour, including overtime, night shift and holidays work bonuses as well as certain non monetary benefits like meals;
- ii) the supplements due by the employer.

These compensations and the corresponding “work days” (or “insured days”) are the basic variables with which we can measure workers’ earnings.

On the contrary, social security contributions are not charged on wage supplements due by Inps or by Inail (the National Institute for the Insurance of Work Accidents), in case of sickness, maternity, work accidents or temporary layoffs. These supplements are not included in the wage bill and the relevant days are not added to the count of insured days.

As a consequence of wage supplements paid directly by Inps, actual income may be higher than the recorded compensation. As official statistics are confined to average compensations at the firm level and they are restricted to very large firms, no accurate estimate is available of measurement errors due to the presence of this kind of benefits.

### **Employer data**

For each employer and month, the following data are recorded: firm’s location, dates of enrolment and eventual cancellation; the code of the main economic activity; monthly number of employees in the firm, by occupation; monthly wage bill, by occupation.

Economic activity is coded according to the Istat (National Institute of Statistics) 1971 Census classification. The social security (4 digit) codes can be converted to the 1981 Census classification, which in turn is compatible with Nace standards. Since 1996 the most recent 1991 Census classification has been recorded. Since classification matters for social security purposes, some check is made by local Inps offices when the firm registers; chances of random misclassification are thereby reduced.

### **The longitudinal sample**

For each calendar year 1985-96, firms were selected from Inps archives of the employees born on the 10th of March, June, September and December of any year. In this way, a sequence of (roughly, 1:90) systematic samples of the population is formed. Each yearly sample includes approximately 100,000 workers. Using available identifiers (fiscal and social security codes), individual longitudinal data are generated for each sampled worker relative to all period 1985-1996, so that the various events of the individual working career are reconstructed.

The firm’s longitudinal records are then accessed. The social security code of the firm ensures linkage between workers and firms, whose history and attributes can then be attached to each worker in the sample. This unique and valuable firm-worker connection is not provided by any other Italian source (statistical or administrative).

There is no attrition in this archives, if we exclude updating problems, i.e. delays in the acquisition of information from the firms. If the worker and the firm belong to the universe covered, it is compulsory to provide the relative forms to the social security administration. If the worker is not in the archive, then, it means that s/he belongs to a different category, such as self-employment, unemployment or public sector.

As regards updating problems, it is possible to calculate correct sampling ratios making reference to Inps *Observatory on firms, employment and earnings*, in which updated data are contained relating to the universe of firms that feed into the longitudinal archives, broken down by location. Information on workers stock composition, then, are correct, while there may be problems with the measurement of flows: the presence of years in which the panel is under-sampled actually implicates the recording of false engagements (separations) relative to tenures already (still) in existence, but which for administrative delays were not yet inserted in the archives. This possibility however is easily handled with, since the false movements can occur only in January (engagements) and December (separations).

### **Measurement issues on job changes**

When an individual has two consecutive job spells in private dependent employment, all the above mentioned worker and firm characteristics are observable for both jobs, including the tenure of the old job – left truncated at 1985 – and the tenure of the new job – right truncated at 1996.

A most relevant information is the time elapsed between the two jobs. What does it measures? By definition it is the re-entry time into dependent employment in private business. Since not all industries and jobs are covered, the re-entry times that we observe do not necessarily coincide with periods spent in unemployment: we simply know that, in the time span between a separation and the next engagement, the individual is not employed in the private sector. In principle, four different events could take place: (i) The individual becomes unemployed; (ii) S/he temporary leaves the labour force; (iii) S/he moves into self-employment; (iv) S/he is hired in the public or agriculture sector. However, not all of these are equally likely: we know (iii) to occur in less than 10% of all separations (see Contini, Malpede and Villosio, 1996), while (iv) – conditional to the fact that the worker comes back in the private sector – is very unlikely in Italy, where employment in the public sector is usually a lifetime event.

Even though the re-entry time does not coincide with unemployment, if it is sufficiently long it is likely to reflect a period of social hardship for the people involved (save rare cases of young people who alternate periods of work with periods of school or re-training). A person having entered self-employment, would seldom decide to go back to dependent work unless his present experience were very unsatisfactory.

Of particular interest are the re-entry times within one month, to which we refer as job-to-job movements. The concept of job-to-job movement actually presents some arbitrary margins, due in part to the different statistical sources used in the literature for their estimation. In most Labour Force Surveys the longitudinal information is retrospective, and can typically help individuate only the movements that happened within a year, without the detail on the time span between two consecutive job spells. In our archives this information is present, but the longer the interval is, the greater the possibility that the individuals have undertaken a working activity not covered by the archive. To exclude this possibility, we indicate (with a somewhat restrictive criterion)

as job-to-job moves all those job changes in which there elapses at most a month between separation and new engagement. In general, these flows reflect voluntary movements of workers, but job-to-job movement and quits are not necessarily the same concept.

### ***Main findings on inter-sectoral mobility***

The availability of the linked employer-employee longitudinal panel described in last section has in last years helped changing some common notions about Italian labour market mobility (see for instance Contini and Revelli, 1997; Contini, 2002). As regards workers and jobs flows, the two most synthetic indicator of mobility, used in all international comparisons, are the “Gross Worker Turnover” (Gwt) – the ratio between the flow of associations and separations observed per unit of time (in general, one year) and the employed stock – and the “Gross Job Turnover” (Gjt) – flow of job creations and destructions per unit time / stock of firms.

Among the most important empirical results of those investigations, is that both measures give a portrait of Italian labour market much more flexible than believed, with workers and job flows in line with those registered for other Oecd countries. In Europe, US and Canada, the Gjt is between 18-25% annual: That is, each year one job out of four or five is either created or destroyed. Italy has a higher turnover than many other European countries (United Kingdom, Germany, Spain, Belgium) and is similar to the United States. Job reallocation is surprisingly similar across countries that have very different employment protection legislations, and that have experienced highly different growth periods.

Also the Gwt is higher in Italy than in many other member-states of the European Union, and not much lower than the United States, in spite of its completely deregulated labour market. On average every year, for each 100 active workers, there are about 30 associations and the same number of separations, for a Gwt over the period 1986-96 at 61% (Leombruni and Quaranta, 2002).

Clearly, these gross flows do not translate directly into the questions we are addressing. The gross flows being equal, there can be no net flows between sectors, and the labour market can result completely rigid with respect to changes in specialization and/or sectoral shocks. The net flows being positive, moreover, it is re-entry time that influence the frictional unemployment resulting from a shock.

In the following, we first report some evidence on re entry times. We then turn to inter sectoral flows.

### **Re-entry times**

Here we consider the re-entry time into dependent work, measured by the time elapsed between a separation and the first engagement that follows it. We start by considering the frequency of re-entry times that take place within one month of separation, to which we refer as job-to-job movements.

Greatly summarising the situation, as one can see in table I, on average – over the entire observed period – out of 100 separations about 31 see the worker re-enter into



dependent employment within one month, 38 within 3 months, and 51 within 12 months.

Table I. Re-entry within the first year – 1985/1995.

<b>Re-entries</b>	<b>within 1 month</b>	<b>within 3 months</b>	<b>within 6 months</b>	<b>within 12 months</b>
<i>1985-1995</i>	31.0	38.0	44.0	51.0

Source: Our calculations based on Inps data.

The level of job-to-job movements grew slightly between the beginning and the end of the period, going from 30% to 32% (table II). Variations of greater magnitude are seen for workers in firms of 20 to 1000 employees, for young workers with apprenticeship contracts, and for workers in the North East. For all of these categories, a clear improvement in the chance of moving from one job directly to another is observed over the course of these 12 years.

The age groups which see the fewer job-to-job movements are the workers closer to retirement, and the under 25. The frequency of these movements among young workers is 28-30%, while the level rises to around 37% for workers between 35 and 44, an age in which full professional maturity is reached. A certain difference between men and women is noted, even if the difference has been diminishing over the years.

As for skill level, job-to-job movements are less frequent among manual workers and apprentices – at the end of the period being 28% and 31% respectively – compared to white collar workers and executives. For these categories of relatively high qualification, the level rises to 37-39% of the cases, confirming the relationship between job-to-job movement and professional maturity.

As regards firms' attributes, there is a slight correlation between the size of the firm of origin and the frequency of job-to-job moves: this may hide a composition effect attributable to the prevalence of young workers at small firms. Relatively few job-to-job moves can be observed in the building industry; wholesale and retail trade; food, textile and wood products; and energy supply.

Let us extend the time span considered for re-entry into employment. Figure 1 displays the cumulated frequency of re-entry times by worker age, measured in months from the time of exit. To avoid right-hand truncation bias, we did not consider the separations observed in the final years of the panel (from 1993 to 1996).

Retirement from the labour force clearly shapes the curves for the older age brackets. Young workers have a lower probability of moving rapidly from one job to another. As time goes on, however, the probability of re-entry of the youngest increases more sharply than for all other workers, reaching 71% of all those who lost jobs after 3 years since the last separation.

The re-entry times by position (fig. 2) provide other interesting hints. As for young workers, it takes a while for blue collars to reach a share of re-entry similar to that of white collars. The frequencies become similar from 15 months on. Managers have a distinct pattern: many move rapidly from one position to a new one (about 45% in two months); many disappear from our field of observation. The latter stands partly on an age composition effect – managers are, on average, older – but gives also a hint that they might move more successfully into self-employment.

Table II. Share of job-to-job changer by firm and workers attributes – three periods.

	<b>Job-to-job movements</b>		
	<b>% of separations</b>		
	<b>85 - 90</b>	<b>91 - 93</b>	<b>94 – 96</b>
<b>All</b>	29.95	30.55	32.24
<i>Gender</i>			
<b>F</b>	26.06	26.53	29.86
<b>M</b>	31.46	32.17	33.27
<i>Age</i>			
<b>15-24</b>	27.00	28.34	29.28
<b>25-34</b>	34.10	33.66	36.13
<b>35-44</b>	37.54	36.33	37.49
<b>45-54</b>	30.53	30.08	30.81
<b>&gt;54</b>	11.46	14.16	13.23
<i>Skill level</i>			
<b>Apprentice</b>	23.25	25.81	28.24
<b>Manual</b>	28.87	28.76	30.93
<b>Non manual</b>	36.64	37.38	37.36
<b>Manager</b>	40.45	41.47	38.65
<i>Geographical area</i>			
<b>North West</b>	35.21	34.47	37.11
<b>North East</b>	36.09	37.34	41.27
<b>Centre</b>	27.35	28.61	28.16
<b>South and Islands</b>	18.98	19.69	17.78
<i>Industry</i>			
<b>Energy, gas, water</b>	19.84	33.15	21.48
<b>Mining industries</b>	34.23	30.90	36.68
<b>Metal products</b>	38.56	37.01	41.68
<b>Textile and clothing</b>	27.57	27.07	30.97
<b>Constructions</b>	28.07	30.05	25.15
<b>Commerce</b>	26.65	28.02	29.57
<b>Transport, communications</b>	28.74	32.36	33.51
<b>Banking and insurance</b>	33.63	34.21	35.36
<i>Firm size</i>			
<b>&lt;10</b>	26.70	28.06	26.82
<b>10-19</b>	32.79	32.17	35.04
<b>20-199</b>	32.87	32.68	36.93
<b>200-999</b>	32.26	32.94	39.08
<b>≥1000</b>	31.89	30.70	30.00

Source: Our calculations based on Inps data.

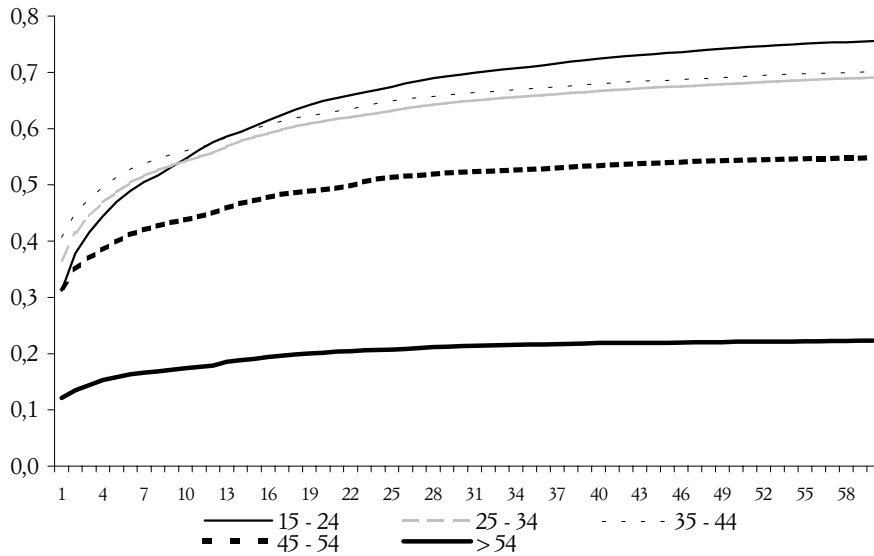


Figure 1. Cumulated frequency of re-entry times by age brackets.  
Source: Our calculations based on Inps data.

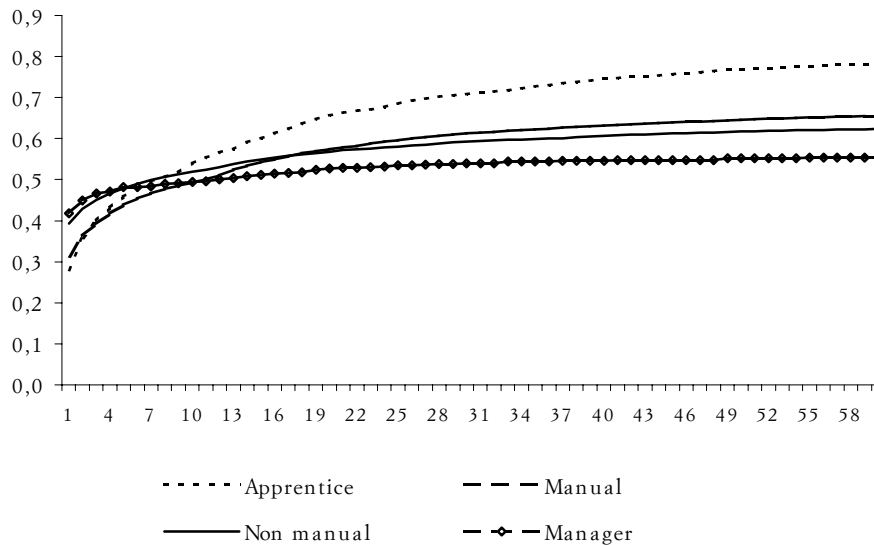


Figure 2. Cumulated frequency of re-entry times by skill level.  
Source: Our calculations based on Inps data.

### Inter-sectoral flows

When compared to the number of job changes, the inter-sectoral mobility is relatively limited. In table III the worker flows are broken down by sector of origin and of destination. The flows within sector are quite varied: out of 100 workers, each year 13 change firms in the manufacturing sector, over 15 in the tertiary sector, almost 30 in the building sector. On the other hand, the movement between these broad economic repartitions are minimal. The only flow of a certain entity is observed from building to manufacturing. The flows broken down by gender are presented in the same table. No

large differences between men and women are noticeable, but in building industry. Here, the (few) women employed seem to carry fewer sector-specific skills than the men.

Table III. Inter-sectoral flows (flow from i to j in relation to stock of i), average 1985-96.

	<i>Constructions</i>	<i>Manufacturing</i>	<i>Services</i>	<i>Total</i>
<b><i>Constructions</i></b>	29.84	6.15	3.3	39.29
% of total	75.95	15.65	8.40	100
<i>F</i>	5.56	3.81	5.85	15.22
<i>M</i>	31.16	6.28	3.16	40.6
<b><i>Manufacturing</i></b>	1.1	13.09	2.57	16.76
% of total	6.56	78.10	15.33	100
<i>F</i>	0.13	12.96	3.01	16.09
<i>M</i>	1.53	13.15	2.37	17.06
<b><i>Services</i></b>	0.88	3.9	15.55	20.32
% of total	4.33	19.19	76.53	100
<i>F</i>	0.22	3.62	17.78	21.62
<i>M</i>	1.27	4.07	14.21	19.55

Source: Our calculations based on Inps data.

On the whole, between 76% and 78% of job changes occur within the same sector. Comparing the in- and out-flows, moreover, it is apparent that net flows have been negligible. In the period we are considering, a huge development in the services occurred, following the physiological patterns of industrialised countries: The increase in employment recorded between 1986 and 1996 – about 710,000 jobs, for a share of dependent employment that rose from 31% to 38% – was to a large extent met by the massive entrance into the workforce of young people and women, and to a very small extent by the movement of workers from the declining sectors.

Increasing the level of detail, the picture remains qualitatively similar. The proportion of workers that remain in the same sector (3 digit Ateco code) is slightly less than 50%; for adults over 45 it reaches 60%, while for the under 25 it is 42% (see Leombruni and Quaranta, 2002).

Thus, there are some industry specific skills that are acquired on the job, which are enhanced by processes of mobility. Add to this the fact that each worker knows better the labour market and sector situation in which s/he is placed, has more opportunity to be informed of possible job vacancies in nearby firms, and he knows better the formal mechanisms through which one gains access to such job opportunities.

Specific skills and asymmetric information, however, function most significantly in the short run. If the job search does not succeed in the short run, one sees higher inter-sectoral mobility. In table IV there are the shares of individuals, out of total job moves, who change industry under two hypotheses: When the job search ends within six months, and when it requires between six months and a year. As one can see, this percentage increases in five sectors out of seven, in some cases significantly. In the banking-insurance activities, when more than six months are necessary to find a new

position, almost six out of ten workers change sector. The main “attractor” is commerce, which during the whole period absorbed workers coming from all other sectors. The buildings industry is a case by itself, in which the share of within sector movements is higher, and is not reduced by increasing re-entry times.

Table IV. Movements between sectors at 1-6 months and 7-12 months from the separation, average 1985-1996.

	Month	Energy, gas, water	Mining industries	Metal products	Textile and clothing	Building	Commerce	Transport, communications	Banking and insurance	Sector outflows
<b>Energy, gas,</b>	1-6	<b>32.57</b>	18.17	5.49	13.21	8.39	8.10	7.00	7.07	67.43
	7-12	<b>12.97</b>	0.00	18.87	12.35	18.16	19.16	6.12	12.36	87.03
<b>Mining industries</b>	1-6	1.27	<b>44.38</b>	15.38	13.55	10.95	8.84	2.77	2.86	55.62
	7-12	0.82	<b>36.27</b>	14.92	15.82	13.55	10.34	4.24	4.04	63.73
<b>Metal products</b>	1-6	0.51	4.82	<b>58.98</b>	11.60	8.78	10.00	2.15	3.18	41.02
	7-12	0.21	4.70	<b>48.90</b>	14.62	11.83	13.05	2.65	4.04	51.10
<b>Textile and clothing</b>	1-6	0.28	3.61	11.74	<b>63.56</b>	4.25	11.81	2.00	2.76	36.44
	7-12	0.49	2.93	8.30	<b>60.40</b>	7.44	13.90	2.34	4.21	39.60
<b>Building</b>	1-6	0.45	3.49	9.05	4.04	<b>75.13</b>	4.44	2.07	1.33	24.87
	7-12	0.38	3.02	6.68	6.12	<b>76.06</b>	4.17	2.12	1.45	23.94
<b>Commerce</b>	1-6	0.24	2.75	8.74	9.99	3.75	<b>66.62</b>	3.05	4.87	33.38
	7-12	0.20	2.46	8.22	11.29	5.14	<b>64.44</b>	3.91	4.35	35.56
<b>Transport, communications</b>	1-6	0.54	3.70	6.59	8.59	10.25	14.61	<b>51.17</b>	4.55	48.83
	7-12	0.00	2.98	5.88	9.39	9.18	13.36	<b>54.50</b>	4.71	45.50
<b>Banking and insurance</b>	1-6	0.43	1.76	9.97	8.44	3.58	15.90	3.24	<b>56.67</b>	43.33
	7-12	0.57	1.98	14.00	11.90	6.18	21.15	3.15	<b>41.06</b>	58.94

Source: Our calculations based on Inps data.

The composition of the workforce in the various sectors, however, is quite varied. As we saw, job to job transitions and re entry times are highly dependent on workers skill level and age, and the distribution of both is highly different across industries. Controlling for this composition effects, which are the flows we can observe? Which are the main worker and firm characteristics they are influenced by?

In table V there are the odds ratio estimates of the logit probabilities to change 2 digit industry, as a function of various worker and firm characteristics. The benchmark individual is male, prime age (31-45), white collar, ending a job spell held for more than two years in a firm of size 20-199, centre of Italy, metal products industry. We conditioned on the subset of separations that ended in a job change, and the benchmark re-entry time is one month. The ranking between industries of table IV is roughly confirmed, with workers in the building industry hardly changing sector, and the opposite in the mining. Low skill workers appear to have lower probabilities to change sector, even though the classification we used allow but just a raw ranking of workers. Low inter-sectoral flows are observed also for females, for individuals employed in

large firms, and in the southern regions of Italy. As expected, the longer the previous job spell the lower the probability of changing sector.

As regards the re-entry time, there seems to be a non linear relationship with the inter-sectoral flows. Compared with the benchmark of job-to-job movers, a re-entry time of 2-3 months implies a 16% higher probability to change sector, rising to a maximum of 22% for individuals getting a job after 4-6 months. Then the probabilities decrease, and for workers re entering in the dependent employment after a year or more we observe more industry stayers than for job-to-job movers. This pattern may derive from a sort of self selection: Those individuals that can offer their skills in other industries have a larger labour market where to search for a new match, and higher probabilities to re enter in a short time. But the causal chain can be the opposite: Either the worker succeeds in finding a new job within few months, either her/his generic human capital will deteriorate and/or will not be recognized by the market.

The evidence on wage dynamics and on the transitions between skills level seems to point in this direction.

Let us consider the workers skill level dynamics. The raw ranking that we considered goes from apprentice, to manual workers, non manual workers, and managers. Since in the period considered apprenticeships could start only for workers under 19, the only transitions to lower skill levels that we can observe are from non manual workers to manual ones, and from managers downward. Clearly, not all the passages from non manual to manual can be considered as a worsening in status, but they can be considered as a good proxy of it. In table VI there are the logit estimates of the probability of a downward change, jointly conditioned on the re-entry time and a change in 2 digit industry. For job to job moves, the probability is about 7%. For longer re-entry times the situation changes dramatically. One out of five workers re-entering in dependent employment in two to six months accepts a position with lower skill, while we do not observe a joint correlation with sector change. The latter matters when the spell gets longer: One out of four workers who finds a new job changing 2 digit sector, accepts a lower qualification position.

As regards the wage change, standard job matching theory predicts that job movers should benefit a higher – though more dispersed – wage growth. When the separation from the employer is not voluntary, however, and/or laid off workers face stressed market conditions, the story can be quite different. We compared nominal wage dynamics, controlling for sector changes and re-entry times, on a sub sample of individuals having job spells at least one year long. We considered both stayers wage dynamics, and that of movers within and between 2 digit industry. For the latter, we considered only re-entry times within a year, to focus on short run, year-to-year wage changes.

Table V. Odds ratio estimates of the logit probabilities to change 2 digit industry.

Effect	Point Estimate	95% Wald Confidence Limits	
reEntry2_3	1.166	1.158	1.173
reEntry4_6	1.223	1.215	1.232
reEntry7_12	1.118	1.111	1.125
reEntry13_	0.750	0.745	0.756
Apprentiship	0.585	0.580	0.590
Blue_collar	0.585	0.581	0.588
Manager	0.986	0.960	1.013
North_West	1.453	1.444	1.462
North_East	1.260	1.252	1.268
SouthAndIslands	0.788	0.782	0.793
Size1_9	0.969	0.964	0.974
Size10_19	0.976	0.970	0.982
Size200_999	1.004	0.995	1.012
Size1000_	0.585	0.579	0.591
Mining	0.972	0.962	0.981
Buildings	0.223	0.222	0.225
Retail	0.563	0.559	0.566
Banking	0.621	0.614	0.628
Communications	0.753	0.745	0.762
FoodTextiles	0.726	0.721	0.731
Electric	1.392	1.343	1.443
jobDuration1_6	1.279	1.272	1.285
jobDuration7_12	1.156	1.149	1.164
jobDuration13_24	1.132	1.125	1.139
Young	1.636	1.628	1.644
Mature	0.677	0.672	0.682
Female	0.686	0.683	0.690
year_87	0.916	0.908	0.923
year_88	1.045	1.036	1.054
year_89	1.078	1.069	1.087
year_90	0.972	0.964	0.980
year_91	1.046	1.038	1.055
year_92	0.941	0.933	0.950
year_93	0.930	0.922	0.938

Source: Our calculations based on Inps data.

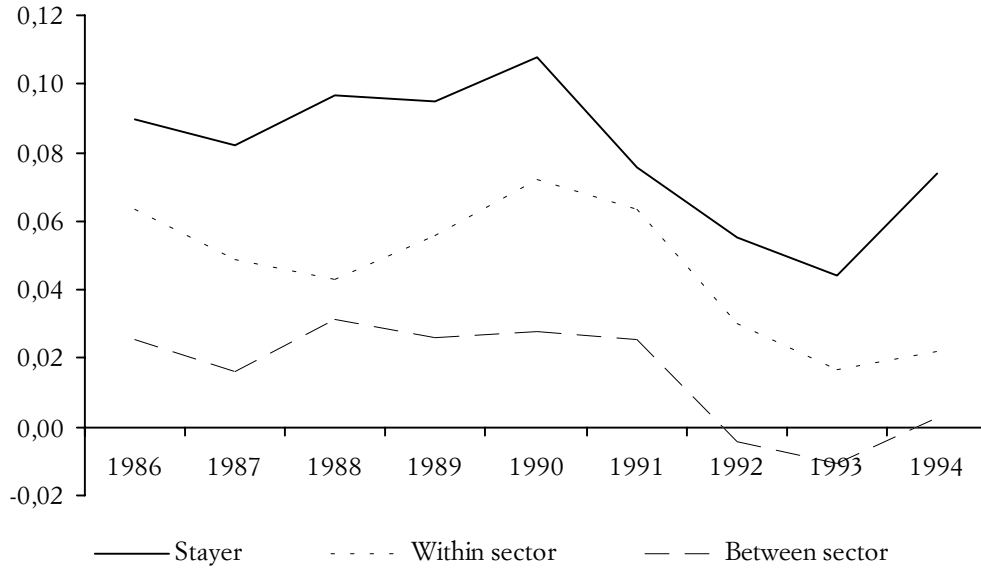
Table VI. Logit estimates of the probability of a downward change in the skill level, by type of job change.

Job to Job	0.07
Re entry 2-6, change sector	0.23
Re entry 2-6, no change sector	0.20
Re entry 7, change sector	0.29
Re entry 7, no change sector	0.17

Source: Our calculations based on Inps data.

At an aggregate level, the ranking among these three categories is clear cut (figure 3). During all the decade under analysis the best performance is that of stayers, whose wage growth rate is on average 2-3 percentage points higher than that of movers who do not change sector. A similar gap separates the latter group from workers who do change sector. The job losses due to a waste of industry specific human capital are apparent in the data, both when compared to other workers and in absolute terms: Sector movers show negative nominal wage growth during the bottom of the recession phase in the first Nineties.

Figure 3. Wage nominal growth rate by movers-stayers, years 1986-1994.

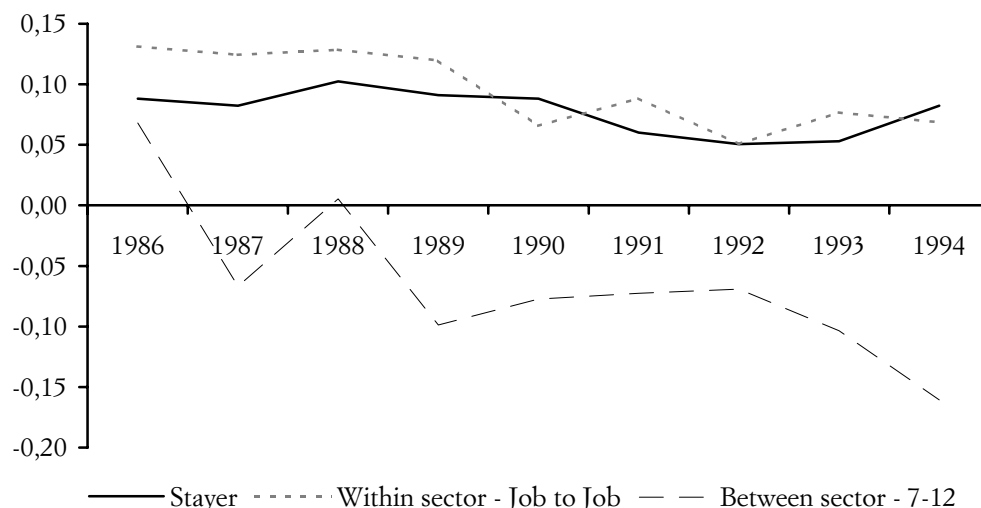


Source: Our calculations based on Inps data.

Also in this case composition effects are to be considered, because of the large differences in the (presumed) share of voluntary changes between geographical areas and age brackets, and in the performances of the various industries. As a case study, we report in figure 4 the wage growth rates for prime age workers in North-East manufacturing industry. We considered just within sector movers who made a job to job change – that we may expect to be voluntary in most cases – and between sector changes that took among 7 and 12 month – probably involuntary moves. This time, the prior that the voluntary search for a new job match can grant a positive effect on the wage dynamics is confirmed. At the same time, the wage loss for workers re-entering late into dependent employment thanks to a change in industry is quite huge.



Figure 4. Wage nominal growth rate by movers-stayers.  
 Prime age workers, North-East, manufacturing industry, years 1986-1994.



Source: Our calculations based on Inps data.

### ***Concluding remarks***

Gross and net flows between three broad economic repartitions, constructions manufacturing and services, have been small in Italy during the years 1985-1996, both in relation to gross flows and to the long run change in the productive specialisation. Also at a three digit classification of economic activity, about 50% of flows occur within industry. Behind this aggregate figures, there is a sharp difference between job changes occurring within one month (job to job changes), and those for which the re-entry time observed is longer. The lengthening of the re-entry time has various effects depending on the sector and category of workers observed: The first choice of workers – mostly for prime age and mature adults – appears to be to remain in the industry of their previous job. The longer it takes to find a new occupation, however, the more they will be available to a change. When we observe a change in industry, the probability that a worker occurs in a worsening in the skill level required in the new position is higher, and increases if we take into account also the re-entry time. The average wage growth shows a similar path: the worst performance is associated with cross industry job changes occurring several months away from the separation.

There are several aspects worth of further exploration. The relation between re-entry times and various other features of workers' career – inter-sectoral mobility, wage dynamics, changes in the skill level offered – appears to be non linear. Wage profiles are highly different for job/industry stayers and movers, and the different performances are not always easily set in what the theory suggests. Some hints in this direction could come extending the focus to the long run impact of job/industry changes, and to a broader analysis of wage growth / wage level determinants.

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