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Job changes and wage dynamics

by

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JOB CHANGES AND WAGE DYNAMICS
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Abstract

In this paper we investigate the relation between wage growth and labour mobility on a panel of Italian dependent workers observed between 1986 and 1991. We use an employer-employee linked panel of 30167 workers, built from Italian Social Security (INPS) administrative sources.

In order to investigate the impact of individual vs. firm characteristics on wage dynamics, we decompose individual wage change 1986-91 in two parts: the mean wage growth observed across firms of origin and firms of destination (the two coincide for the stayers), and the wage premium gained over the mean wage change by movers attributable to their own personal characteristics.

Our main findings may be summarized as follows:
1   In general, movers do better than stayers at young age (20-30), but the difference tends to vanish as age progresses;

2   mover-stayer differentials are larger among white-collars than blue-collars, in line with the higher variance of earnings of the former;

3   total wage growth is driven by the wage - firm size positive correlation only for the blue-collars: job-switches from small to large firms often yield substantial pay improvements relative to stayers; job switches from large to small size often end up in wage cuts. For the white-collars, however, job changes in either direction tend to improve one's position relative to stayers;

4   there is a quasi-reverse pattern on the individual premiums of the blue-collars (switches from small to large carry negative premiums, from large to small positive). This is likely to be a consequence of firm-based wage policies, the impact of which by far exceeds that attributable to individual characteristics

5   personal characteristics contribute, instead, to determine the white-collars' individual premiums. Job changes of adult and mature workers, presumably endowed with skills and experience, result in sizeable wage gains;

6   all workers employed at firms that either close down or go through drastic employment cuts during the observation period suffer wage losses;

7   prolonged unemployment spells have somewhat of a negative impact on the wage growth of white-collar employees (up to 5 p.p.), almost none on the blue-collars;

8   a certain amount of job-switching has a positive effect on the wage growth of the younger white-collars. If job changes become too frequent, however, its positive impact vanishes;

9   we find a rather strong effect of initial conditions on the wage profile of blue-collar employees, and almost none on the white-collars';

10   there is evidence of a trade-off between job security and pay in concomitance with a job-to-job switch. When adverse shocks are in sight - as was the beginning of the Nineties - it is reasonable that people may leave their current position, if it is perceived at risk, giving up some pay for longer expected tenure, or may choose to accept a higher pay with a less reliable (i.e. more exposed to short-term fluctuations) employer.

1. INTRODUCTION

In this paper we investigate the relation between wage growth and labour mobility on a panel of Italian dependent workers observed between 1986 and 1991. We use an employer-employee linked panel of 30167 workers, built from Italian Social Security (INPS) administrative sources.

Data relate to full-time male employees of all industries of the private sector, at work both in 1986 and 1991. For the time being we exclude women, in order to have better control over individual characteristics, and the construction sector, in view of its seasonal characteristics which interfere in the study of mobility

We move from a stylized fact about working conditions, tenure and pay at various firm-types. Ranking firms by size, the following emerges clearly:
(i)   large firms pay better wages than small ones;
(ii)   mean tenure at large firms is higher than at small enterprises;

	Gross yearly earnings 1995 (million Lit.)		Mean duration of employment spells (years)
firm size	white collars	blue collars	All
< 20	29.6	25.6	2.0
20-200	38.9	27.7	3.4
200-500	44.6	29.6	5.3
> 500	50.4	31.7	7.7

Source: B. Contini, C. Malpede, L. Pacelli, F. Rapiti (1996)

The former indication is in line with predictions from efficiency wage theory; the latter with two well known facts: (1) small firms are often short lived compared to the large ones; (2) job hierarchies are longer and more articulated in large businesses, where mobility often takes place along internal lines[1].

This study aims at establishing the impact of mobility on wage growth from various perspectives:

1   Are there sizeable differentials between stayers and movers ?
2   Does firm size affect wage growth for movers (across firms of different size) as much as it determines cross-sectional wage level differentials
3   Does age matter, i.e. is the impact of job changes and firm size on wage growth the same between young and old workers
4   Are there significant differences between what we identify as voluntary and involuntary job changes? [2]
4   Are frequent movers better or worse off than one-time movers ?
5   Is there a trade-off between pay and expected job-security in the decision to move across jobs and firms, especially in time of recession ?

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[1] Cfr. B. Contini and R. Revelli (1997)

[2] As will be explained, we proxy voluntary and involuntary movements by the employment pattern of the firms where job changes originate, as we have no direct elements to identify quits or layoffs. Where a large decline in firm size takes place in the observation period, or where a close-out takes place, we presume that worker separations pre-empt a likely layoff in the near future, and therefore take them as involuntary movements.

Our work has some similarities with other studies on wage growth: Hartog and Van Ophem (1994), for example, analyse wage growth of certain groups of employees discriminating between mobile and non-mobile employees, and between voluntary and non-voluntary job changes; C. Flinn (1986) analyses the intertemporal structure of wages for young workers separately for movers and stayers. He presents evidence that unobserved worker-firm heterogeneity is an important component in the wage growth of young workers. Farber (1993 and 1997) analyse the characteristics and the cost of job losses, finding that job losses adversely affects workers' earnings in many ways. Employment probabilities are reduced and an increased probability of working part-time yields lower earnings both through shorter hours and lower wage rates. The decline in real weekly earnings between the pre displacement job and the post displacement job averages about 13% for all reemployed displaced workers and about 9% for workers displaced from full-time job who are reemployed on full time job. In our study we focus only on workers employed full-time both in 1986 and in 1991, thus we are not able o point out the wage loss due to a switch from full to part time. However it is important to remind that the share of part time work on total employment was less than 2% in 1986 and less than 5% in 1991, involving mostly (80%) female workers, who are excluded from our analysis.

The main contribution of our study, over much of the existing literature, derives from the linkage between workers and firms, that makes it possible to investigate in considerable detail the effects of mobility on wage growth.

2. DESCRIPTIVE STATISTICS ON STAYERS AND MOVERS

2.1. How many stayers and movers ?

Our analysis is made on individual data from the Administrative Social Security (INPS) archives. We used a panel of workers matched to their firm of affiliation of approximately 100,000 workers each year from 1985 to 1991. From this panel we select a sample of 30167 <u>full time workers</u>, employed <u>both</u> in 1986 and in 1991 in the manufacturing and service sectors, and aged 20-50 in 1986. We find two groups:

(i)   20526 stayers (68%), employed at the same firm at the beginning and at the end of the observation period   (not necessarily uninterrupted spells)
(ii)   9641 movers (32%), who make one or more job-changes during the 1986-91 period. 64% of all movers go through only one job-switch, 36% undertake more than two[3].

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[3] Mobility in this panel is not comparable to the separation and association rates estimated for the Italian economy at large (Contini et al., 1996): our current database consists of a closed panel of individuals employed as dependent workers both in 1986 and in 1991, as opposed to open panels which include all exits from and entry to employment. The mean annual separation rates observed from open panels from the same administrative source are in the order of 34% of dependent employment in the private sector. Not surprisingly, the overall separation rate is many times higher than the frequency of job changes observed in this closed panel.

Tab. 1 Stayers and movers by individual and firm characteristics (percentages)

		Movers	Stayers
ALL		32.0	68.0
Stayers and movers by age and skill level			
Age 20-30	Blue	45.3	54.7
	White	38.4	61.6
Age 30-40	Blue	28.5	71.5
	White	26.3	73.7
Age 40-50	Blue	24.7	75.3
	White	22.7	77.3
Stayers and movers by industry			
	Energy, gas, water	12.6	87.5
	Iron and steel, mining	32.6	67.4
	Metalworking and mechanical industries	35.0	65.0
	Food, textiles, paper	38.4	61.6
	Wholesale and retail trade	41.1	58.9
	Transport and communication	16.4	83.6
	Finance	15.6	84.4
Stayers and movers by firm size			
	0-20	44.3	55.7
	20-200	32.6	67.4
	>200	20.6	79.4

Moves are more frequent among young workers, and decrease with ageing of the working force. Moves are also more frequent among blue-collars than white-collars. Almost half of the employed blue-collars aged 20-30 experience at least one job change in the 1986-91 period. This is not unexpected: in those years youth were hired under 2-year "training-and-work" contracts (CFL), not subject to renewal. At the end of the contract period, either the contract was changed into a regular one, or a job-change was necessary.

Discriminating by sector of industry movers are more concentrated in the trade sector, and in food, textiles, and other traditional manufacturing. Few movers are found in the public utilities (energy, gas and water).

Not surprisingly, the frequency of job-to-job switches is inversely proportional to firm-size: 44% of workers in our closed panel employed at small firms in 1986 change jobs in the observation period; the same frequency falls to 33% for workers employed at mid-size firms, and to 21% for workers of large firms. This reflects three partially independent facts: (i) the high turnover of small-size businesses; (ii) the fact that high turnover is perceived by many workers as a threat to employment stability, and hence many employees of small firms would we willing to move to a larger establishment, although working conditions may be less pleasant than in the firm of origin; (iii) pay increases with firm size.

2.2. Characteristics of job changes

Focusing on movers we find that most of the changes takes place inside sectors: only few workers (less than 5%) moves from manufacturing to services, slightly more from services to manufacturing.

Tab. 2 Frequency of job changes 1986-91 across different sector (percentages)

	1991		
1986	Manufacturing	Services	Total
Manufacturing	95.4	4.6	100.0
Services	7.9	92.1	100.0

Looking at changes across firm size we can notice than many job shifts happen across firms of equivalent size[4]. Moves towards larger firms are more frequent than moves in the reverse direction. The pattern is clearly visible in manufacturing, less so in the service industries.

Tab. 3 Frequency of job changes 1986-91 across firms of different size (percentages)

Manufacturing			
	Small	medium	large
small (< 20)	56.2	33.7	10.1
medium (20- 500)	20.8	59.0	20.2
large (> 500)	3.0	22.8	74.2
Services			
	Small	medium	large
small (< 20)	69.2	23.8	7.1
medium (20- 500)	22.7	45.0	32.3
large (> 500)	5.1	37.6	57.3

Only 14% of movers move to firms located in a different province, and less than 5% change also macro geographical area (there are 5 in Italy).

Tab. 4 Frequency of movers that undertake geographical mobility

	N° in our panel	% of movers
Movers who change province between 1986-1991	1363	14.1
Movers who change macro area between 1986-1991	461	4.8

Our data provide some information on occupational upgrading: (i) from blue-collar contract to white-collar status; (ii) from white-collar to manager contracts.

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[4] We observe here only three size-classes, which somewhat reduces the information of the two following tables

Tab. 5 Frequency of occupational upgrading

	Age 20-30		Age 30-40		Age 40-50	
	Blue	White	Blue	White	Blue	White
Movers	12.97	1.12	7.82	5.48	6.60	4.75
Stayers	7.12	0.52	5.79	1.99	3.83	2.23

Upgrading is quite frequent at young age for blue-collars who leave a manual job for a white-collar position. Later in life it denotes promotions, often on-the-job, from blue-collar to white-collar status. Upgrading is a less frequent occurrence for the white-collars who get promoted to a manager position (never at young age, more often in concomitance with a job-change).

2.3. Wage levels and growth rates among movers and stayers

An important question relates to the causes of job-change: is it voluntary or is it forced by the events ? Is it the final outcome of a process of job-search in which both workers and firms become involved, or is it – as it were - "imposed" on the workers by outside forces ? The latter is not at all an unlikely event: in the course of many recent episodes of industrial restructuring, large employment reductions are negotiated between management and unions. The outcome of the bargaining table is often an agreement to help the re-deployment of a consistent fraction of the work-force to other firms, only at times belonging to the same financial group. In such a case, the most able workers may refuse re-deployment and do the job-shopping on their own, but many will take whatever is offered to them.
We do not, unfortunately, have this type of information in our data. Nor do we know when job-changes are associated with voluntary quits or when they are consequent to firings. The latter may be "collective" if they originate from medium-large firms in the process of restructuring.

We proceed by looking at the five-year trend of employment in the firms from which the job-changes originate. The idea is that, if a job-change originates in a business that has either closed down, or experienced a drastic employment cut in 1986-91, there are good reasons to suppose that such a movement is not voluntary. All those workers who fear the risk of losing their post in the near future for whatever reason, will, whenever possible, engage in early job-shopping in order to pre-empt a likely layoff. For these workers we predict that the pay levels in 1991 ought to be quite modest[5]. On the other hand, a job-changer who leaves a rapidly growing firm is more likely to be a voluntary job-seeker: a comparatively high 1991-pay would confirm this hunch.

We therefore classify firms in five groups on the basis of the employment trend observed between 1986 and 1991:
1. Expansion, if between 1986 and 1991 the firm has increased its workforce;
2. Constant if no significant variation has happened in the firm employment;
3. Decline if in the 86-91 period the firm has reduced employment from 10 to 40%;

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[5] See H. Farber (1997)

4. Strong decline if the decline is by more than 40%;
5. Closeout if the firms has closed in the period. In this case workers are necessarily movers.

Table 6 Movers and stayers by firm of origin trend

	Expanding	Constant	Declining	Strong decline	Closing	Total
Movers	24.7	9.6	13.1	15.9	36.7	100
Stayers	52.9	23.5	20.2	3.3	0	100

Tables 7 contains means and standard deviations of monthly wages in 1986 and 1991, and of the wage growth rate 1986-91, separately for movers and stayers. Moreover it reports the same statistics for movers and stayers classified by the trend in their firm of origin.

Table 7 Monthly wages in 1986 and 1991 and wage growth rate 86-91 for movers and stayers by different firm trends

		Movers			Stayers		
All		**N**	**Mean**	**Dev.std**	**N**	**Mean**	**Dev.std**
	Wage 86	9641	1731.2	548.2	20526	1906.7	604.2
	Wage 91	9641	2805.2	1138.3	20526	3042.3	1184.5
	Wage growth rate	9641	1.6	0.4	20526	1.6	0.3
By trend in the firm of origin							
Expansion	Wage 86	2227	1753.8	576.8	10858	1941.2	618.8
	Wage 91	2227	2937.7	1261.3	10858	3146.7	1218.5
	Wage growth rate	2227	1.68	0.42	10858	1.62	0.29
Constant	Wage 86	870	1689.6	502.0	4831	1902.7	611.1
	Wage 91	870	2799.2	1131.6	4831	3010.5	1202.3
	Wage growth rate	870	1.66	0.42	4831	1.57	0.28
Decline	Wage 86	1183	1713.4	521.0	4142	1837.2	533.1
	Wage 91	1183	2780.6	1107.8	4142	2846.8	1022.3
	Wage growth rate	1183	1.64	0.41	4142	1.55	0.28
Strong decline	Wage 86	1439	1739.1	582.7	681	1811.4	675.7
	Wage 91	1439	2768.1	1061.2	681	2802.5	1227.9
	Wage growth rate	1439	1.61	0.36	681	1.55	0.33
Closeout	Wage 86	3312	1742.5	541.4			
	Wage 91	3312	2775.1	1121.8			
	Wage growth rate	3312	1.60	0.37			

Some patterns come out clearly:

(i)   the mean wage level (1986) of the stayers is more than 10 p.p. higher than that of the movers (before moving) in all groups;

(ii)   the mean wage level (1991) of the stayers is about 5% higher than that of the movers (after moving) in the group of expanding or constant-employment firms. It is marginally higher among the declining firms;

(iii)   the movers' wage growth rate is always higher than the stayers' in all groups of firms;

(iv)   the standard deviation of the movers' growth rate is much higher than the stayers';

(v)   for both movers and stayers employed at expanding firms the mean wage 1986 and 1991 is notably higher than in all other groups of firms.

All these descriptive statistics confirm shared knowledge: workers with lower wages find encouragement in job searching and subsequent change; the wage growth of movers is higher than that of the stayers (especially at young age and for white-collars), but variability is also higher. On average, however, the mean wage of the stayers at the end of the observation period, is still above that of the movers.
Workers who change employer between 1986 and 1991 have in general, a higher wage growth rate, but discriminating by age and occupation (table 7) we can find that for white collars the wage growth rate of the movers is always higher than that of stayers; for blue collars, whose earning careers are flatter, this happen only among young workers (aged 20-30)

Table 8 Wage growth for different occupational status and age groups

AGE	OCCUPATION	STAYER	MOVERS
20-30	BLUE	1.56	1.6
	WHITE	1.77	1.9
30-40	BLUE	1.53	1.52
	WHITE	1.71	1.78
40-50	BLUE	1.51	1.51
	WHITE	1.64	1.67

3. THE MODEL

Let W(i;jk) be the wage change (1986-91) for the i-th individual who has moved from firm-type j (in 1986) to firm-type k (in 1991). If he/she is a stayer, then j=k. Firm-types refer here to size and industry.

If, as we assume here, firm characteristics have a large impact on wage differentials, the following decomposition is of interest:

$$W(i; jk) = \left(\frac{w_{91}(i;k)}{w_{86}(i;j)}\right) + \left(\frac{\overline{w}_{91}(k)}{\overline{w}_{86}(j)}\right) - \left(\frac{\overline{w}_{91}(k)}{\overline{w}_{86}(j)}\right) - 1 \qquad [\text{I}]$$

where

$$\frac{\overline{w}_{91}(k)}{\overline{w}_{86}(j)} = \hat{w}(jk) = \text{mean wage growth 1986-91 observed across firm-type}$$

j (origin) in 1986 and firm-type k (destination) in 1991 has been added and subtracted to the expression for the wage change. The decomposition then reads as follows:

$$W(i; jk) = \left[\left(\frac{\overline{w}_{91}(k)}{\overline{w}_{86}(j)}\right) - 1\right] + \left[\left(\frac{w_{91}(i;k)}{w_{86}(i;j)}\right) - \left(\frac{\overline{w}_{91}(k)}{\overline{w}_{86}(j)}\right)\right] = \hat{w}(jk) + w'(i; jk) \qquad [\text{II}]$$

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where :

$\hat{w}(jk)$ is the mean wage growth 1986-91 observed across firm-type j (origin) in 1986 and firm-type k (destination) in 1991;

$w'(jk)$ = wage premium (or loss) accruing to the i-th individual in moving from firm-type j to firm-type k, i.e. the extra-pay that individuals with certain characteristics are able to gain (or lose) over the mean wage change $\hat{w}(jk)$.

That is to say:

"total" individual wage growth 1986-91 = W(i; jk) $= \hat{w}(jk) + w'(i; jk) =$
        =mean wage growth across firms of origin and destination (attributable to firm characteristics) + wage individual premium

The total wage growth associated to a move from firm-type j to firm-type k is given, in first place, by the mean pay differential between the firm of origin in 1986 and that of destination in 1991. It can be assumed that this does not depend on the workers' individual characteristics (only at very small firm size, 2 - 3 employees, this may not be the case). In second place, by an individual premium that reflects various characteristics of the match, i.e. determined by the interaction of both workers' and firm's attributes.

The w'(jk) component may be retrieved from the databases (from average pay in 1986 and 1991 for different skill levels - blue and white collars - and firm-types, however defined). By difference w(i;jk) - w^(jk), we then obtain w'(i;jk).

w'(i;jk) may be expressed as a linear function of X exogenous regressors of various types and residuals:
[1]   w'(i;jk) = $B^I X^I + B^F X^F + B^Z X^Z$ + u
where the superscripts I, F, Z denote regressors associated respectively with individual characteristics, firm characteristics, and general macro-indicators.

Likewise, with no loss of generality, we may think w^(jk) as written as another linear function of the same X regressors and residuals:

[2]   w^(jk) = $b^I X^I + b^F X^F + b^Z X^Z$ + w

where all the b^I (reflecting purely individual characteristics) will be equal to zero.

"Total" individual wage growth is written as the sum of two linear functions of the same regressors:

[3]   w(i;jk) = $(B^I + b^I) X^I + (B^F + b^F) X^F + (b^Z + B^Z) X^Z$ + (u + w)

We perform separate estimation of both [1] and [3]. From the estimates of the three sets of (B + b) and B, we shall then obtain indirect estimates of b. The latter provide additional conditions for identification. In particular, we

expect the estimates of $(B^I + b^I)$ to be approximately equal to B^I, implying $b^I = 0$.

Notice that we use a closed panel observed from 1986 to 1991 to construct the data-set, and that estimation is done on only one observation for each individual in the panel. Thus, while there is no room for panel estimation with unobservable, time-invariant, individual effects in equations 1 and 3, we cannot simply do away with initial conditions that could influence the wage growth in the five-year period 1986-91. Our choice for a proxy of initial conditions is the i-th individual's <u>relative</u> wage in 1986, i.e. the ratio between $w(i,86)$ and the average wage 1986 of all individuals belonging to the same cell (age x industry x skill level). To the extent that one's relative initial wage reflects also individual characteristics, this approach ought to yield satisfactory results[6]. To these results, and to the consequences of possible endogeneity of our proxy, we will return in the presentation of the estimates.

3.1. Estimation

The equations object of estimation are [1] and [3], whose residuals are correlated. In fact:
$E[u (u+w)] = E(u^2) = var (u)$
if u and w are orthogonal, as can be safely assumed.
In principle, therefore, we have a case of seemingly unrelated regressions, The two equations have, by construction, identical regressors: thus OLS will yield the same estimates as SURE.

3.2. Identification

We made the point that by separately estimating equations [1] and [3], we have conditions for identification: the coefficients b' associated to individual characteristics X^I ought to be zero in equation [2], explanatory of the wage growth attributable to firm effects only. Thus, we expect the estimates of $(B^I + b^I)$ to be approximately equal to B^I, implying $b^I = 0$.

F-tests of the above null hypothesis are performed on the coefficients of all the X^I variables (10 in all) estimated in equations [1] and [3], in six different specifications (3 age-groups x 2 occupational categories). Only in one, of sixty replications of the test, is the null rejected; in three cases acceptance is at the margin of significance. We deem this to be a good test of identification[7].

4. MODEL SPECIFICATION

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[6] Another approach to the problem is that of Stewart, Swaffield (1998). To solve the problem of sample selection bias due to correlation across time between the unobservable, they use extra variables as instruments for the selection probability into the initial state.
[7] A complete set of results is available on request.

We must take an additional step in order to have a model specification coherent with the quality of the data at hand.

In principle X^I and X^F reflect individual and firm characteristics. Are our data adequate to yield a satisfactory representation of X^I and X^F ?

(X^I): education is not observable. As already pointed out[8], we do not believe this to be a major problem, with the possible exception for young workers. We find indirect confirmation of this hunch later on.

(X^F): our firm data are rich in some respects (industrial classification, geography, employment and earnings history by skill level and size, firm age, entry and exit flags), and weak in others. In particular, we have no data on performance, market power, financial structure.

In the estimation of the individual premium [3], we take out firm effects from total wage growth w(i;jk) by subtracting $\left[\dfrac{w91(k)}{w86(j)}\right]$. The ratio $\left[\dfrac{w91(k)}{w86(j)}\right]$ is constructed controlling for: 1-digit industry, firm size, geography, skill category. We are unable, however, to control for performance and market related variables. Thus, their impact cannot be removed from the individual premium w' (i;jk). This affects also w^(j,k), calculated as difference, which denotes the firm effect. Given the structure of our data, it is probably safer to refer to the latter simply as "residual effect", rather than "firm-specific effect" as would be appropriate with ideal data[9].

Let us now turn to the specification that we intend to estimate. Estimation of [1] and [3] is performed separately on 3 age groups (20-30; 30-40; 40-50) and 2 skill groups (Blue and White collars). The regressors are as follows (all the * are 0-1 dummies) :

X^I regressors (14)
Activated for movers and stayers

INEQ86	initial (1986) relative wage (proxy for initial conditions)
AGE	Age
UN-MOV	unemployment spell between jobs (in months), movers
UN-STA	unemployment spell between jobs (in months), stayers
MOV-2 (*)	2 job changes in the observation period
MOV-3 (*)	3 job changes in the observation period
MOV-4 (*)	more than 3 job changes in the observation period
DAV (*)	occupational upgrading (from blue to white collars and from white to

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[8] Bonjour Pacelli (1998) tested on Swiss data the size and the direction of the bias that happen when age is used as a proxy for education and experience. They find that using age leads to a small bias for male and full time working female. The bias is bigger for all female (who are excluded from our analysis) due to the effect of part time female. Hartog and Van Ophem (1994) find that education has little or no effect on wage growth in relation to mobility.

[9] The problem may be seen as follows. Let F be a vector of firm performance and market related variables that affect w^(j,k). The system [1] - [3] is then written for short:

[1']   w'(i;j,k) = B X + u
[2']   w^(j.k) = b X + c F + w
[3']   w (i;j,k) = (B + b) X + c F + (u + w)

If F is not available, it will be omitted from [3'], and the OLS estimate of (B + b) will be biased, converging to (B + b) + c [cov (X, F) / var (X)]. Thus the firm effect b, retrieved from [1'] and [3'], will be itself biased, unless X and F are uncorrelated.

	manager occupation)
DZO (*)	geographical mobility
DZO*DOWN (*)	geographical mobility for workers belonging to firms in group 4 or 5 (see par. 2)
SET01 (*)	intersectoral mobility (from manufacturing to services)
SET10 (*)	intersectoral mobility (from services to manufacturing)
SET01*DOWN (*)	intersectoral mobility (from manufacturing to services) for workers belonging to firms in group 4 or 5 (see par. 2)
SET10*DOWN (*)	intersectoral mobility (from services to manufacturing) for workers belonging to firms in group 4 or 5 (see par. 2)

(DOWN is a 0-1 dummy activated if the firm of origin has had a strong decline in employment or has closed in the 86-91 period - firm belonging to group 4 or 5 as described in §2 -)

X^F regressors (49)

Activated for movers and stayers (12) :

R1 --> R8 (*)	industrial sector
SMALL - LARGE (*)	firm size 1986
NOV-NES-SUD-ISO (*)	4 geographical dummies (firm location)

Activated only for stayers (1):

DOWN-STA (*)	Firm has had a strong decline in employment in the period (firm in group 4)

Activated only for movers (36):

DM1 --> DM9 (*)	job-change across firm size (manufacturing)
DS1 --> DS9 (*)	job-change across firm size (services)
DM1 --> DM9 * DOWN	job-change across firm size (manufacturing) for workers belonging to firms in group 4 or 5
DS1 --> DS9 * DOWN	job-change across firm size (services) for workers belonging to firms in group 4 or 5

Most of the above variables are self-explanatory.
For each branch 9 dummies are associated with job-changes involving movements across firms classified by size (DM1 - DM9 for manufacturing; DS1- DS9 for services).   We distinguish small firms (< 20 employees), medium firms (20 -200 employees) and large firms (> 200 employees). Thus we have 3 x 3= 9 "types" of job-change. The associated variables are activated as follows:

$$D (i; jk) = \begin{cases} 1 & \text{i-th individual moves from firm-type j to firm-type k} \quad (j, k = 1,2,3) \\ 0 & \text{otherwise} \end{cases}$$

If the i-th individual is a "stayer" in the observation period, none of the D dummies are activated.
In addition, we use the grouping of firms proposed in par. 2 in order to catch the effect of a closeout or drastic downsizing of the firm of origin on job-changes. All the D variables above are interacted with a dummy activated if the firm of origin has either closed down or drastically reduced its work-force in the 1986-91 period. When DOWN is activated, we treat job changes as involuntary, i.e. workers are - as it were - forced by the events to move to a different job.

Additional controls are provided by MOV-2 through MOV-4, which we place among the X(I) regressors: frequent job changes may reflect a positive attitude towards job search, and have a positive impact on wages. There could be, however, decreasing returns beyond a certain amount of job-switching, which our specification allows to catch.

Spells of unemployment (UN-MOV; UN-STA) may be observed for movers between successive jobs, and for stayers if their tenure is interrupted. The longer the spell, the higher the reduction of one's earning potential as a consequence of loss of visibility in the job market and/or loss of working ability.[10]

In principle DAV, which reflects career advancement, should be treated as endogenous. However, the majority of DAV events reflect the institutional nature of certain contracts. Such upgradings - for instance, the conversion of two-year training-and-work contracts (CFL) into regular, unlimited time contracts, take place almost independently of the individual's conduct at work, and may be regarded as exogenous and firm-related, rather than reflecting individual characteristics.

5. THE RESULTS

We report here the main result divided by group of variables. The full set of results are available upon request. Estimation is performed separately for each age-group. Age turns out to be a useful control, as the coefficients that explain wage dynamics across firms of different size are quite sensitive to age[11].

5.1. Job switches across firm size

It is convenient to start discussing together the impact of age and firm-size on wage change.

Here below four summary tables (A.1 -A.4) are displayed: each contains three matrices of OLS regression estimates of the <u>coefficients associated to job-switches across firms by size</u> (activated only for movers; the stayers constitute the benchmark). The top matrix (denominated "total") reports the (B + b) coefficients of the 9 dummies related to the switches across firm size, estimated on [3]. The middle matrix (denominated "premium") reports the same 9 B coefficients estimated on [1]. The bottom matrix (denominated "firm (residual)") reports the 9 b coefficients retrieved as differences of the two above, only when both are significant. Elsewhere, only the signs of the difference are shown.

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[10] In principle, we could observe a humped-shape effect of its length on wage growth: the longer the search period, the higher the chance of finding a good match, up to a point where the loss of visibility / working ability overtakes the effect of the search effort. This would require a squared term as an additional regressor, which we have not, however, included in the estimation reported here.

[11] We estimated the same specification for all age-groups together, and find results that are quite similar, but not as neat as those reported here. Age and age square turn out very significant, but the upward concave curvature of wage growth is extremely slight.

Moreover the middle matrix shows, in parenthesis, the individual premium net of the "down effect", that is to say the individual premium for workers leaving a firm belonging to group 4 or 5 (drastic reduction or closure). When missing, the relative DOWN variable is non significantly different from zero. In several cases the individual premium is not reported (meaning that the coefficient is about zero), but the DOWN coefficient is.

Each matrix has three rows, corresponding to separate estimates for three age-groups: age 1 (20-30), age 2 (30-40), and age 3 (40-50).
Significance of the coefficient are indicated in this way:
***   significant at 99%
**   significant at 95%
*   significant at 90%
         not significant

Moving **across the columns** of each 3x3 table (from left to right) denotes the effect of a job switch ending in firms of increasing dimension. Moving **across the rows** (from high to low) catches a job switch originating from firms of increasing dimension. Thus in the North-East corner above the diagonal we have job-switches from small to large; in the South-West corner from large to small.

The four following tables show the coefficient for:
A.1 = blue collars / manufacturing
A.2= white collars / manufacturing
A.3 = blue collars / service industries
A.4 = white collars / service industries

We emphasize the following :

(i)   a very general remark: there are more significant coefficients in the regressions of white-collars (A.2 - A.4) than of blue-collars (A.1 - A.3). This simply means that mover-stayer differentials are larger among white-collars: this is in line with the higher variance of earnings commonly found with white-collars;

(ii)   age matters when it comes to stay vs. move decisions: the estimated coefficients differ considerably among age-groups, although, as will be seen, few clear patterns emerge;

(iii)   <u>total wage growth</u> (top matrix): job-switches from small to large firms (NE corner) have positive coefficients; when job-switches occur in the reverse direction (SW corner), the coefficients are negative. This is very clear in A.1 and A.3 (blue-collars / manufacturing and services), a straight consequence of the strong correlation between earnings and firm size, and of the predictably modest career profiles of blue-collar workers.
If we turn to white-collars (A.2 and A.4) job-switches in either direction often yield positive differentials relative to stayers in all age-groups;

(iv)   <u>individual premiums</u> (middle matrix): here there is a visible, almost reverse, pattern only among the blue-collars of manufacturing (A.1): sparce negative coefficients in the NE-corner; positive in the SW-corner.   Wage growth (or loss) for these workers appears to be a consequence of firm-based wage policies, rather than individual characteristics.
Individual characteristics matter, instead, for all the white-collars. To these we return shortly;

(v)   it is worth emphasizing the magnitude of individual premiums for the white-collars who move from larger to smaller firms: between 60% to 70% in manufacturing (cell 3,1, tab. A.2); between 40% to 132% in the services (cells 2,1 and 3,1, tab. A.4).   Substantial wage gains by able young individuals (age 20-30) are not surprising: they often occur when temporary, two-year "training-and-work" contracts are converted into regular contracts. It is more interesting, instead, to find such gains with more mature workers (ages 30-40 and 40-50). As explained before, these moves do not appear to be "forced by events", but rather the result of voluntary job-seeking by individuals endowed with valuable skills and experience;

(vi)   let us now turn to the interaction on the switches with the DOWN dummy variables: these variables are activated when the firms of origin have either closed down or drastically reduced their work-force in the 1986-91 period. All the DOWN dummies are interacted with the job-change $D(i;k,j)$ variables for the movers. In addition, we introduce DOWN-STAY associated to stayers. Thus the estimated coefficients denote the wage loss that people suffer, whether moving or staying, attributable to the fact that they are on payroll at ailing firms, belonging to the "down" group. As already explained our hypothesis is that, when DOWN is activated, workers are - as it were - forced by the events to either move or stay. The estimates strongly support this hypothesis: all coefficients are negatively signed, often very significantly

(with very few exceptions). The individual premium, net of DOWN effect, is shown in parenthesis in tab. A.1- A.4. The effect of DOWN on the switch coefficient is shown in parenthesis in tab. A.1- A.4.

The DOWN effect is very often present in tab. A.1 and A.2 (manufacturing, more among manual workers than white-collars), but also in A.3 and A.4 (services). It is especially noticeable among the young and the old: middle aged blue-collars appear to be less affected by the large restructuring processes that prelude down-sizing and closure in the manufacturing industries. Middle aged white collars are, instead, severely hit in the services. The magnitude of the DOWN effect is striking: in tab. A.3 the individual premium of young blue-collars switching from a small firm to a large one (cell 1,3) falls from + 66% to -7%; if the switch is from large to large (cell 3,3) the premium drops from +52% to -14%. In tab. A.4 the premium accruing to prime-age white-collars moving out of small firms falls from +42% to 13% if the worker moves from a small to a small firm and from 76% to-10% if he moves from a small to medium firms. All this strongly suggests that job-switches associated with DOWN events are all but voluntary quits.

(vii)   in contrast to the above, can we make inference on the successful job-seekers ? Take the workers for whom the individual premium is high and exceeds the total wage growth. The decomposition [II] indicates that, in such cases, the firm effect is negative[12] and that any wage gain should be attributed mainly to individual factors (skill, experience, etc.)[13]. Those of interest here are the age groups 2 and 3, where genuine experience may be found, especially when the job-switch originates from a large firm that has not been affected by downsizing events.   Indeed, we find large individual premiums, between 40% and 75%, among the white-collars in cells (2,1) and (3,1) - tab. A.2 and A.4 -   without the devastating effect of DOWN that casts doubts on the voluntary nature of the moves. These are, with all likelihood, voluntary moves of able workers who have done good job-hunting while on-the-job, free from the threat of being dismissed or transferred in years of recession;

(viii)   the magnitude of the firm effect, obtained as difference between the total effect and the individual premium and renamed "residual", cannot be judged independently from the significance of its components.   We, therefore, display figures only when both are significant.   When either fails to reach significance, we show only the sign of the estimated firm effect.   The signs show a remarkable pattern, common to all four tables of firm effects and age-groups: all are positive above the main diagonal (N-W corner); all are negative below (S-E corner). The F-test on the joint significance of these signs above and below the diagonal passes with flying colors. This result is not unexpected: the wage growth attributed only to firm effects is positive when job changes take place from smaller to larger firms, controlling for 1-digit industry and geographical location; it is negative when the direction of job change is reversed. Once again, the wage - size positive correlation overshadows all other effects.

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[12] We have already pointed out some of the problems that affect the significance of the firm effect.

[13] As pointed out in (v), the large wage premiums that may accrue to young workers (age 20-30) is explained by institutional factors (training-and-work 2-year contracts converted into regular contracts).

Table A1 Blue collars - manufacturing

Total

Age group			
1	0.10 *	0.10 **	0.07
2	-0.02	0.04	0.18
3	0.41 ***	0.23 *	0.64 **
1	-0.09 **	0.02	0.15 ***
2	-0.13 **	0.01	-0.02
3	0.11 *	0.02	0.00
1	-0.16 *	-0.11 **	0.04
2	-0.21 **	-0.02	0.00
3	-0.27 **	-0.05	0.01

Premium

Age group			
1	0.14 *** -(0.01)	-0.04	-0.23 **
2	0.01	-0.13 *	-0.19
3	0.36 *** (0.05)	0.02	0.29
1	0.08 **	0.00	-0.01 -(0.14)
2	0.07	0.02	-0.21 ***
3	0.24 ***	0.02	-0.16 ***
1	0.16	0.05	0.06
2	0.15	0.17 ***	-0.01
3	0.07	0.13 **	0.01

Firm residual

Age group			
1	-0.04	+	+
2	-	+	+
3	0.05	+	+
1	-0.17	+	+
2	-	-	+
3	-0.13	+	+
1	-	-	-
2	-	-	+
3	-	-	-

Table A2 White collars - manufacturing

Age group	Total		
1	0.10	0.34 **	0.89 **
2	-0.03	0.38 **	0.03
3	0.08	0.47 *	-0.10
1	-0.06	0.13 **	0.28 ***
2	-0.20 **	0.17 ***	0.05
3	0.03	0.07	-0.03
1	0.31	0.31 ***	0.24 ***
2	0.40 ***	0.22 ***	0.11 **
3	0.34 *	0.03	0.03

Age group	Premium		
1	0.30	0.14	0.47
2	-0.06	0.15 -(0.30)	-0.31 **
3	0.11	0.24	-0.44
1	0.28 ***	0.15 ***	0.16 *
2	0.09 (0.33)	0.19 *** (0.07)	0.01
3	0.12	0.12 **	-0.15 *
1	0.65 **	0.41 ***	0.20 ***
2	0.74 ***	0.33 *** (0.10)	0.12 ** -(0.04)
3	0.63 ***	0.20 ***	0.03

Age group	Firm residual		
1	-	+	+
2	+	+	+
3	-	+	+
1	-	-0.02	0.13
2	-	-0.02	+
3	-	-	+
1	-	-0.10	0.04
2	-0.34	-0.11	-0.01
3	-0.29	-	+

Table A3 Blue collars - services

Age group	Total		
1	0.05	-0.04	1.03 ***
2	-0.04	0.35 ***	0.27 **
3	-0.01	-0.16	0.29
1	-0.01	0.05	0.10
2	-0.10	-0.04	-0.03
3	0.01	-0.19 *	0.06
1	-0.30	-0.39 *	0.50 **
2	-0.46 **	-0.30 ***	-0.15 ***
3	0.02	-0.21	0.02

Age group	Premium		
1	0.09	-0.13	0.66 ** -(0.07)
2	0.02	0.18	-0.07
3	0.06	-0.31	-0.26
1	0.18 ***	0.08	-0.17
2	0.15 **	0.01	-0.19
3	0.23	0.14	-0.20 *
1	0.02	-0.19	0.52 ** -(0.15)
2	-0.07	-0.07	-0.18 ***
3	0.42	-0.01	-0.06

Age group	Firm residual		
1	-	+	0.37
2	-	+	+
3	-	+	+
1	-	-	+
2	-	-	+
3	-	-	+
1	-	-	-0.01
2	-	-	0.03
3	-	-	+

Table A4 White collars - services

Total

Age group			
1	-0.13	0.11	0.33
2	0.28 *	0.46 **	0.28
3	-0.01	0.37 **	0.10

Age group			
1	0.00	0.26 ***	-0.02
2	0.16	0.18 **	0.09
3	0.13	-0.07	0.25 ***

Age group			
1	0.79 ***	0.11	0.08
2	-0.01	0.05	0.12
3	-0.63 **	0.12	0.23 **

Premium

Age group					
1	0.04		-0.21		-0.03
2	0.42 ***	(0.13)	0.76 ***	-(0.10)	-0.10
3	0.21 ***		0.08		-0.32

Age group					
1	0.41 ***		0.22 ***		-0.15	
2	0.57 ***	(0.31)	0.19 **		0.00	
3	0.59 ***		-0.03		0.11	-(0.08)

Age group			
1	1.33 ***	0.13	0.08
2	0.53 ***	0.15 **	0.10
3	-0.16	0.28 ***	0.19

Firm residual

Age group			
1	-	+	+
2	-0.14	-0.30	+
3	-	+	+

Age group			
1	-	0.04	+
2	-	-0.01	+
3	-	-	+

Age group			
1	-0.54	-	+
2	-	-	+
3	-	-	+

In what follows we will briefly present the results related to the other regressors, focusing mainly on total wage growth[14].

5.2. Geographical Location

There is a modest geographical effect on wage growth. Central Italy is the benchmark: we observe a slight advantage for the blue-collars of Northern Italy, more marked for young workers. On the other hand, the white-collars of Southern Italy and Islands are at some disadvantage compared to their colleagues of the North and Centre.

Table 9 The impact of geographical location on total wage growth (standard errors in parenthesis)

	North-west	North-east	Centre	South	Islands
AGE 1 BLUE C.	0.057 ***	0.053 ***	Benchm.	-0.004	-0.004
	(0.010)	(0.011)		(0.013)	(0.017)
AGE 2 BLUE C.	0.018 **	0.027 ***	Benchm.	0.005	-0.022
	(0.009)	(0.010)		(0.011)	(0.015)
AGE 3 BLUE C.	0.021 **	0.028 **	Benchm.	0.019	-0.018
	(0.010)	(0.011)		(0.013)	(0.019)
AGE 1 WHITE C.	0.019	0.024	Benchm.	-0.063 **	-0.007
	(0.019)	(0.022)		(0.030)	(0.039)
AGE 2 WHITE C.	0.008	0.012	Benchm.	-0.026	-0.078 ***
	(0.014)	(0.017)		(0.021)	(0.028)
AGE 3 WHITE C.	0.02	0.019	Benchm.	0.002	-0.051 *
	(0.014)	(0.018)		(0.021)	(0.028)

5.3. Unemployment spells

The absence of certain individuals from the panel between successive jobs indicates - with high probability - periods spent in unemployment [15]. The length of such spells has a slight, but nonetheless significant, impact on total wage growth. The reduction of wage growth at the end of the observation period is only 1% for young (age-group 1) and "old" (age-group 3) blue-collars. The very skilled manual workers have always been in high demand, regardless of the cycle: many have been forced into early retirement by restructuring businesses, but few ever move into unemployment. For the unskilled, instead, there is never any real skill obsolescence due to unemployment.

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[14] The coefficients of the industry dummies, not reported here, show the expected signs: workers in the food, textile and paper sector, white collars in the commerce and transport sector, have a wage growth rate lower than those in the metalmachinery sector; while working in the energy, gas and water sector and in finance increase wage growth. The estimated models discussed so far include 8 industry dummies (1-digit classification). We have also replicated the estimation with 2-digit classification (45 dummies) to improve the overall fit as numerous industries turn out highly significant. All the other coefficients, however, remain unchanged.

[15] Unemployment cannot be recorded with certainty in our data-base. The likelihood of moving into self-employment is a little over 5% of all separations; that of entering the irregular economy, unknown, may be high expecially in the South, but mainly for those who have never been regularly employed before (which is not the case with a closed panel like ours).

Not unexpectedly, the negative impact of prolonged unemployment spells is somewhat higher for the white-collars, climbing to 5% and 4% respectively for young and old workers. For the latter, skill obsolescence and / or loss of visibility in the labour market appears to be somewhat of a problem.

This result confirms the hypothesis that the careers of those who remain blue collars all their life -basically low skilled manual workers- are flat and therefore unaffected by spells of unemployment, provided they are back on the job by the end of the observation period. A career interrupted by periods spent in unemployment does, instead, seriously hinder the earning projects of the white collars.

Table 10 The impact of intervening unemployment spells on total wage growth (unemployment duration in months)

	1 month		6 months	
	Movers	**Stayers**	**Movers**	**Stayers**
AGE 1 BLUE C.	-0.001 ***	-0.001	-0.006	-0.006
	(0.000)	(0.001)		
AGE 2 BLUE C.	0.000	-0.001	n.s.	n.s
	(0.001)	(0.001)		
AGE 3 BLUE C.	-0.001 *	-0.001 **	-0.006	-0.006
	(0.001)	(0.001)		
AGE 1 WHITE C.	-0.004 ***	0.002	-0.024	n.s.
	(0.001)	(0.001)		
AGE 2 WHITE C.	-0.003 ***	0.000	-0.018	n.s.
	(0.001)	(0.001)		
AGE 3 WHITE C.	-0.003 ***	-0.001	-0.018	n.s.
	(0.001)	(0.001)		

5.4.   Frequency of job changes

Frequent job switching could be a signal of intense search behaviour, and therefore associated with higher wage growth. On the other hand, too many job-changes could reflect the precariousness of certain positions of low-skill contents, or characterised by a great deal of uncertainty.
Estimation provides interesting insight: in the blue-collar positions there is no visible impact. Among the white-collars, instead, a certain amount of job-switching has positive effect on wage growth, but only among people in age-groups 1 and 2 (i.e. less than 40 yrs. old): two moves do better than one; three do better than two; but four (or more) flattens the wage profile back to the level of the stayers.

Frequency of job changes: impact on wage growth

	BLUE-COLLARS	2 MOVES	3 MOVES	4 > MOVES
age 20 - 30		0	0	0
age 30 - 40		0	0	0
age 40 - 50		0	0	0
WHITE-COLLARS				
age 20 - 30		0.08 **	0.167 ***	0
age 30 - 40		0.108 ***	0.115 **	0
age 40 - 50		0.061 *	0	0

5.5. Initial conditions

Wage growth in the period 1986-91 may be influenced by unobservable, individual effects like intellectual endowment, entrepreneurial attitudes, risk propensity, and the like.

In this study we cannot perform panel estimation that would help to reduce the bias attributable to unobservable, time-invariant, individual effects in equations 1 and 3. We proxy initial conditions by the i-th individual's <u>relative</u> wage in 1986 (INEQ86), i.e. the ratio between w(i,86) and the average wage 1986 of individuals belonging to the same cell (age x industry x skill level).   In principle, one's relative initial wage ought to reflect the relevant individual characteristics.[16]

There could be a problem of endogeneity of this proxy: 1986 seldom coincides with the beginning of one's working career (safe for very few young workers). Thus, endowed individuals may have a higher initial relative wage, and INEQ86 may be correlated with the residuals.   Estimation via instrumental variables could be an appropriate strategy.

An alternative strategy, which we follow here, consists of estimating two versions of equations [1] and   [3]: one including INEQ86 among the regressors, the other excluding it.   Consider the following outcome: (1) the coefficient estimates are very similar in the two versions ; (2) the overall fitness improves only marginally when INEQ86 is included among the regressors; (3) the residuals are nearly identical. If (1), (2) and (3) are verified together, the implication is that initial conditions do not matter, and that simultaneity bias is not much of a problem here.

The following table displays the outcome of this exercise. Recall that a negative coefficient for INEQ86 is expected by construction as w(i,86) is the denominator of the dependent variable:

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[16] Farber and Gibbons (1991), among others, find a strong correlation through time between wages and proxies of ability.

Total

	Mean	#	TSS	Coeff. INEQ	Std. Err.	R^2 with INEQ	R^2 without INEQ
Age1/B	1.58	7533	813	-0.659	0.018	0.227	.068
Age1/W	1.82	2785	423	-0.236	0.032	0.144	.102
Age2/B	1.53	7000	537	-0.355	0.016	0.132	.053
Age2/W	1.73	4018	465	-0.042	0.02	0.142	.086
Age3/B	1.51	5882	443	-0.323	0.016	0.111	.039
Age3/W	1.65	2949	250	-0.075	0.019	0.114	.047

Premium

	Mean	#	TSS	Coeff. INEQ	Std. Err.	R^2 with INEQ	R^2 without INEQ
Age1/B	0.022	7533	827	-0.689	0.018	0.252	.106
Age1/W	0.009	2785	519	-0.315	0.032	0.297	.193
Age2/B	0.010	7000	663	-0.407	0.016	0.284	.189
Age2/W	-0.006	4018	601	-0.089	0.02	0.313	.151
Age3/B	0.012	5882	540	-0.375	0.016	0.26	.163
Age3/W	-0.002	2949	341	-0.113	0.019	0.308	.185

Correlation between residuals of OLS regressions estimated with and without proxy for initial conditions (INEQ86)

	total wage growth	individual premium
AGE 1 - BLUE C.	0.920	0.920
AGE 2 - BLUE C.	0.961	0.958
AGE 3 - BLUE C.	0.970	0.959
AGE 1 - WHITE C.	0.991	0.977
AGE 2 - WHITE C.	0.999	0.999
AGE 3- WHITE C.	0.999	0.999

- the INEQ86 coefficient is significant in all the estimated equations, much larger (in absolute value) in the blue-collars' equations than in the white-collars'. The wage growth of white-collar workers is weakly conditioned by initial pay, while that of the blue-collars is strongly conditioned. A different, legitimate, interpretation is that INEQ86 fails to catch the "right" individual characteristics of people initially hired in white-collar positions;

- there are interesting differences across age groups: among young workers (20-30, age-group 1) the INEQ86 coefficient is over twice as large as among older workers, for both white and blue-collars;

- the overall fit, measured by R2, is practically unaffected by the introduction of INEQ86 in all the white-collars' equations. Among the blue-collars, instead, R2 increases especially in age-groups 1 and 2;

- all the coefficient estimates are almost identical in the two versions of the white-collars' equations. Among the blue-collars some differences are found in the coefficients of industry dummies and firm-size. They are, instead, very slight for the dummies that catch the effect of mobility;

- we have computed the correlation of residuals with and without INEQ86 for all the estimated equations: the order of magnitude is 0.92-0.97 in the blue-collars' equations, and 0.98 and over in the white-collars' [17].

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[17] We have also tested the contemporary correlation between the errors and the regressors performing the OV (omitted variable) version of the Hausmann test. This version of the Hausmann test suggest to test if a set of instrument for X (call it W) and the OLS residual are uncorrelated. This can be done by running the regression $Y=X\beta+W\theta + \varepsilon$ and testing $\theta=0$ with

On the basis of the above, we can say that initial conditions have almost no impact on the wage profiles of the white-collars. They do, instead, have a modest impact on the blue-collars' profiles. In either case, the influence of initial conditions is slightly higher at young age[18].

If initial conditions reflect individual endowments (including educational attainment), then one might expect them to show up especially among white-collars, whose careers have more prospects and variability than those of people confined to manual jobs most of their life. This is not the Italian case, and the reasons are mainly institutional: (1) the jobs that we observe are all "regular" working positions, for which social security contributions are paid in full by the employers; (2) the vast majority, if not all, of these contracts are subject to collective bargaining agreements.

This means that a university graduate in chemical engineering with high honours will be hired at the same conditions as an individual who has barely made it through college in whatever discipline. Their careers will obviously begin to diverge at some point, but a five-year horizon is probably not long enough to comprise this point.[19] Our story does not imply that the initial employment probabilities will be the same for the two characters: in Italy as elsewhere, a chemical engineer has better chances than a generalist. But our study is on transitions of people already in employment, not on transitions from school to work.[20]

On the contrary, a young man with good vocational training will be hired as a qualified blue-collar at a higher level ("livello di inquadramento") than an unskilled individual. Thus, initial conditions do matter for him, and his 1986-relative pay indeed reflects them. This is in line with what is known about the career profiles of manual workers in Italy, highly predetermined by collective bargaining agreements.[21]

6. A utility-equalizing trade-off between job security and pay?

In Italy the 1986-91 period was characterised by a slow worsening of general economic prospects, which led into the 1990-91 recession.

It is tempting to hypothesise a utility equalising trade-off between job security and pay. with some workers leaving their current position if it is perceived at risk, giving up some pay for longer expected tenure, and others accepting a higher pay with an employer more exposed to short-term fluctuations.

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an F test. We used the measure of the value added in the province as an instrumental variable. The F test refuses the H_0 hypothesis in almost all cases.

[18] We are unable, for the time being, to detect the influence of initial conditions on those who achieve a career advancement (from a blue-collar to a white-collar position) in the five-year period under observation.

[19] In the near future we shall be able to replicate estimation on a ten-year observation period (1986-96), where it is reasonable to expect significant improvements over the results already at hand.

[20] This is another reason explaining why also in other studies of Italy's labour market education appears to have a modest impact on the working careers of young workers.

[21] B. Contini and C. Villosio (1999)

A job change from large to small is most likely to carry a price in terms of expected tenure: there is evidence of a trade-off when such moves are accompanied by a considerable wage (individual) premium. This pattern is often present among white-collars of both manufacturing and services, almost never among blue-collars (N-E corner of tab. A1-A4)

The trade-off operates in opposite direction when the job change takes place originating from a small firm and ending up in a large one, at the price of a substantial cut of the wage premium. We find this occurrence only in manufacturing industries, touching upon both white and blue-collars (S-W corner of tab. A1-A4).

Not all movers move along the trade-off. For some we observe an improvement on both counts (expected tenure and pay): these are individuals who move from small to large - young workers, white-collars in manufacturing, and blue-collars in the service industries; adults, white-collars in the services. For none, with the notable exception of workers leaving a downsizing firm (those for whom the DOWN variable is active), do we observe a worsening on both counts.

If one could distinguish between quits and layoffs, empirical analysis would be easier. Unfortunately this is almost never the case: many quits simply pre-empt a likely layoff. The distinction is nice in principle, almost useless in practice: quits are seldom revealed even in the course of in-depth interviews.

7. Concluding remarks

This study aims at establishing how mobility affected individual wages in the five-year period 1986-91, characterized by a slow worsening of Italy's economic position, leading into the 1990-91 recession.

We decompose individual wage change 1986-91 in two parts: the mean wage growth observed across firms of origin and firms of destination (the two coincide for the stayers), and the wage premium gained over the mean wage change by movers attributable to their own personal characteristics.

Our analysis is a preliminary attempt to investigate factors that influence wage growth. While individual and firm specific characteristics yield results that are in line with other findings, the introduction of variables related to mobility patterns allows to focus how job changes affect wage growth.

It should be emphasized that all the evidence gathered in this study applies to workers, whose history has been observed from 1986 to 1991, and are reported at work in 1991. For instance, workers in their 40's who left an establishment during downsizing or for whatever reason, and are no longer in the panel in 1991, may have become self-employed and be quite well off (a rough estimate puts this number at 10% of all separations - cfr. Contini et al. 1996). More likely, they are long term-unemployed and much worse off than their "observable" colleagues, still in the panel in 1991.

The importance of being in a closed panel, as opposed to an open panel, may be assessed by the probability of attrition (OUT = leaving the panel, and

not having re-entered by 1994), conditional to jobs of given duration held in 1991 for male workers, less than 45 yrs. of age, estimated as follows[22] :

Prob [OUT (94) / (job length < 3 months in 1991)] = 0.50
Prob [OUT (94) / (job length between 6 and 11 months in 1991)] = 0.15

The attrition probability at (t + T) is very much dependent on the length of one's employment spell at (t) - in our exercise T = 3 years.
The vast majority of those who are out in 1994 are, unless retired, in bad economic conditions compared to those who are still in the panel.

Given these premises, here is a summary of our main findings:
(i)   In general, movers do better than stayers at young age (20-30), but the difference tends to vanish, especially for manual workers as age progresses;
(ii)   mover-stayer differentials are larger among white-collars than blue-collars, in line with the higher variance of earnings of the former;
(iii)   total wage growth is driven by the wage - firm size positive correlation only for the blue-collars: job-switches from small to large firms often yield substantial pay improvements relative to stayers; job switches from large to small size often end up in wage cuts. For the white-collars, however, job changes in either direction tend to improve one's position relative to stayers;
(iv)   there is a quasi-reverse pattern on the individual premiums of the blue-collars (switches from small to large carry negative coefficients, from large to small positive). This is likely to be a consequence of firm-based wage policies, the impact of which by far exceeds that attributable to individual characteristics
(v)   personal characteristics contribute, instead, to determine the white-collars' individual premiums. Job changes of adult and mature workers, presumably endowed with skills and experience, result in sizeable wage gains;
(vi)   all workers employed at firms that go through drastic employment cuts, or exit the market altogether in the period 1986-91, suffer severe wage losses by 1991;
(vii)   prolonged unemployment spells have somewhat of a negative impact on the wage growth of white-collar employees (up to 5 p.p.), almost none on the blue-collars;
(viii) a certain amount of job-switching has a positive effect on the wage growth of the younger white-collars. If job changes become too frequent, however, its positive impact vanishes;
(ix)   we find a rather strong effect of initial conditions on the wage profile of blue-collar employees, and almost none on the white-collars';
(x)   there is evidence of a trade-off between job security and pay in concomitance with a job-to-job switch. When adverse shocks are in sight - as was the beginning of the Nineties - it is reasonable that people may leave their current position, if it is perceived at risk, giving up some pay for longer expected tenure, or may choose to accept a higher pay with a less reliable (i.e. more exposed to short-term fluctuations) employer.

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[22] B. Contini, L. Pacelli, C. Villosio, 1999

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