Earnings Mobility in Italy, 1985-1996

by

Andrea Borgarello, Francesco Devicienti and Claudia Villosio

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Abstract:

Using a panel of administrative Italian data (source: INPS), this paper provides new empirical evidence on the earnings mobility in Italy over a relatively long time period (1985-1996). Transition matrices have been used to document the extent to which Italian employees change their position in the earnings ladder from one year to the next. Separate computations for the population as a whole and for various subgroups have helped to shed light on the underlying causes of the observed patterns.

1 Introduction

In the previous chapter we have analysed the Italian wage distribution and, in particular, what happened to its level of inequality over the sample period. We have concluded that, though to a lesser extent than in Anglo Saxon countries, wage inequality in Italy has significantly risen during the 1980s and the 1990s, at least when measured by the most commonly used distributional indicators. However, our cross-sectional study of wage inequality provides a series of snapshot pictures – each at a given point in time – of the relative economic positions of our employee sample, but does not shed light on how individuals' fortunes change from one year to the next. How likely is it that someone who earns very little this year will be better-off next year or in ten-year time? Put differently, is low-income, or high income, a persistent or a transitory state?

To answer these questions we now turn to the field of earnings mobility and empirically assess its presence in Italy during the 1980s and the 1990s. The importance of embarking on a similar enterprise need not be emphasised. On the one hand, the study of earnings mobility constitutes an integral part of a study of the labour market, providing information on how earnings change for different profiles of workers and occupations. In some jobs, earnings may grow faster because training opportunities are better, experience is gained faster or there is a favourable trend at the firm or sector level. Improvements in one's pay may also be accompanied by a job change, in which case the transferability of the skills accumulated on previous jobs is crucial. Shedding light on these issues may be important for discussions on the policy intervention schemes to be implemented in the labour market.

On the other hand, the study of earnings mobility assumes relevance for a correct assessment of trends in earnings inequality. For if individuals tend to change their positions in the earnings ladder from one year to the next, earnings inequality within a single year may look different than 'lifetime' inequality, where incomes are instead measured over a much longer accounting period – at the limit the whole individual's lifetime. Indeed, it has been shown that 'lifetime' inequality is necessarily lower than cross-section inequality if there is income mobility.[*] This is because short-run fluctuations get smoothed out when we measure income over an extended accounting period.

As a consequence, even if cross-sectional inequality shows an increasing pattern over time, lifetime inequality may be raising by less if the intervening economic and institutional changes are also making the earnings structure more 'fluid' or 'mobile', thereby making it easier than in the past for individuals to move about the earnings distribution.

While it may appear intuitively clear that earnings mobility has to do with the extent to which individuals see their income – and their relative positions – change over time, various conceptual difficulties emerge when judging whether mobility is a desirable feature in a developed society. It is not even clear whether comparisons of alternative societies, based on distributional indicators such as social welfare/inequality measures computed over their cross-sectional distributions of individual well-being, need be supplemented by measures of income mobility at all. Indeed, one may argue that - to express a judgement about the institutional and economic structures of two alternative societies - computing their distributions of 'permanent incomes', or any other appropriate measure of well-being over the individual's entire lifetime, is all what is needed. Such measures already embeds both information about the individual's characteristics (endowments, preferences) which might determine his/her initial position in the distribution, as well as information about the dynamic processes (the individual's economic decisions and the stochastic environment whereby they take place and produce their outcomes) responsible for any subsequent re-ranking of the individual's position. A society may be regarded as "mobile" – or as one of

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[*] As Shorrocks (1978) proves, if inequality is measured using a convex function of earnings (expressed relative to the mean), inequality of lifetime earnings (i.e. earnings measured over T years) is less than the average of each year's inequality weighted by that year's share in lifetime earnings, unless each cross-section distribution is identical to the others and there is no re-ranking.

"open-opportunities " – when individuals are not hindered to achieve a better economic position than the one that merely happened to occupy at their births. Similarly, the institutional and economic structures of this kind of society would not raise insurmountable obstacles for the individuals to realize their desired plans (of career, consumption, investment) and, ultimately, would guarantee the achievement of individual freedom. At the other extreme, another society might be seen as "corporative" when its institutional arrangements are such that it is difficult, if not impossible, for individuals to change their initial position and climb the earnings ladder through their decisions (e.g., working harder, changing jobs, obtain further qualifications) or even merely through chance. Those who have been lucky enough to fall into categories with guaranteed high-welfare profiles would probably defend this second type of society, ex-post. Ex-ante, however, whether one society should be preferred to the other appears to be a matter of value judgements, and in particular of attitude towards risk. In effect, from the standpoint of an hypothetical not-yet born individual, the choice between the two societal arrangements is much alike the choice between two random lotteries, with the initial position of this individual, as well as his/her probabilities of subsequent changes of that position for better or worse ones, being revealed only after the choice is made. The personal attitude to risk-taking seems then to be a crucial determinant of that choice in this sort of "original position". If so, then, different degrees of mobility might well be differently desirable according to whether one is a risk lover or is risk adverse. In one case or the other, though, one may argue that the final verdict may be based only upon a comparison of the distributions of lifetime individual well-being that the two societies produce, with no much role left for the study of the year-to-year dynamics.

However, there are at least two reasons why the more traditional approach that studies the patterns of changes in individual incomes from one year to the other - as we do in this paper - remains an important, if not indispensable, piece of information in distributional analyses. On the one hand, this may be the only feasible option, as the calculation of measures of individuals' permanent incomes are often made difficult by the lack of suitable panel datasets. In particular, detailed longitudinal information on individual's consumption is almost never not available, impeding the estimation of permanent incomes. On the other hand, even when such measures could accurately be estimated, not all problems would be solved anyway. In effect, whether one should look at lifetime or cross-sectional inequality is open to question and likely to depend on the prevailing economic and institutional environment. For example, individual's lifetime incomes – the expected values of their income stream over their entire life – may be less appropriate than current income for fully assessing the individual's economic circumstances if there are market imperfections that prevent the individuals to borrow or save as desired.

While discussions on conceptual issues about earnings mobility may easily take us too far, the ambitions of the present paper are much more limited. In the following pages we will only provide descriptive evidence on the amount of earnings mobility existing in our data, without being able to fully explain the observed outcomes nor to provide any verdict on its the desirability from a social welfare point of view. In recent years research on earnings mobility has seen a surge of interest among academics and policymakers. The increasing availability of new panel data sets - both at a country and cross-country level - has certainly contributed to this trend. A certain number of studies have empirically assessed mobility for countries where these data exist, and in some cases cross-country comparisons have been carried out too (e.g., OECD, 1996). In Italy research on earnings mobility has been mainly undertaken using previous releases of the INPS panel, comprising a five-year time horizon, from 1986 to 1991 (see Contini et al, 1998). In the present chapter we update their analysis in two main ways. Firstly, we extend the covered time period to include each year from 1985 up to 1996. The possibility of studying earnings mobility over longer time periods constitutes a research opportunity, if not a privilege, that cannot be missed. The availability of long panel databases is, in fact, still a rare item in both developed and undeveloped countries, and Italy is no exception. Secondly, we also supplement earlier analyses with various subgroup decompositions of the sample, so as to shed some light on the underlying causes of the observed mobility patterns and trends, as done in the previous chapter.

2   Methodology

Contrary to the analysis of earnings inequality and its trends, which only required a series of cross-sectional distributions, the longitudinal nature of our data becomes essential for the estimation of earnings mobility. In this case, in fact, to decide whether a person has experienced some 'mobility' in his/her earnings it is required that the person be observed in at least two points in time, which constitute the basic feature of panel data.

According to an intuitive and generally accepted view, earnings mobility has to do with whether, and to what extent, the ranking of the individuals in the distribution alters from one period to the next. However, when one comes to the business of empirically assessing this phenomenon things get a bit blurrier. The measurement of earnings mobility, in effect, has not received as much theoretical attention as has the measurement of earnings inequality, and there is no real consensus on what is the most appropriate measure.[†] Of the alternative approaches that have been proposed and employed to summarize and compare earnings mobility, we focus on *transition* matrices, a conveniently easy-to-use tool, which provides a lot of descriptive information on the patterns of mobility.[‡]

Basically, this approach requires first that the overall earnings range be divided into a given number of earnings classes. In most of the analysis presented in this paper, earnings are calculated as annual remuneration divided by the number of days the employee is reported to have worked during the year. As explained in Box 1, chapter X, the resulting daily wage is then multiplied by an average month of 26 days so as to obtain monthly earnings. Sensitivity analysis considering the implications of having annual earnings as the object of our mobility investigation has mainly been carried out with reference to regional differences, in section 6. Until then, however, we will only focus on monthly-earnings mobility.

For our calculations, we have formed five earnings bands defined as follow:

band 1 : earnings from 0 to 65% of the distribution median;
band 2: earnings included between just above 65% and 95% of the median;
band 3: earnings included between just above 95% and 125% of the median;
band 4: earnings included between just above 125% and 155% of the median;
band 5: earnings above 155% of the median.[§]

The earnings cut-off that defines "low-pay" is often chosen at 65 per cent of the median earnings, and we comply with this practice too.[**] Band 1 therefore identifies the "working poor", which labour market analyses are naturally particularly concerned on.

Secondly, each individual is classified as belonging to one of these classes in year t. Finally, the earnings class for the same person at year $t+k$, with k positive integer, is traced from the panel

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[†] See, for example, Atkinson, Bourguignon and Morrison (1992).

[‡] Another commonly used indicator is the correlation coefficient for earnings in two years, a summary measure of the degree of persistence in individual earnings. However, its main disadvantage, shared with any "aggregate" indicator, is that it 'squeezes' all the information contained in a transition matrix into one number only.

[§] An alternative would be to define transition matrices on the basis of a quintile partition of the earnings distribution. In this case, the various bands may well have different width, depending on the shape of the distribution. When the ranges are instead defined as proportions of the median, the classes have the same width (with the exception of the first and last classes). See Revelli (1997) and OECD (1996) for further explanations.

[**] This amounts at defining low-pay as a *relative* concept, where the focus is on the position of each individual relative to the earnings distribution. An alternative would be to look at low-pay in terms of a minimum acceptable standard of living, thereby complying with an *absolute* definition of low-pay. See the introduction to the book of Sloane and Theodossiou (1998) for further comments on the two positions.

data.[††] The probability that an individual in class i in period t moves into class h in period $t+k$ can be written as P_{ih}, and is estimated by the proportion of employees who are observed to follow such a pattern. The matrix P with elements p_{ih} such that $\sum_h p_{ih}=1$ is the transition matrix. This simply means that, by construction, the sum of the elements in each row of a transition matrix is equal to one. Figure 1 below represents a typical example of the transition matrices we have computed for our analysis. Probabilities are multiplied by 100 so as to improve readability.

Figure 1: Transition matrices

(a) Employees who are in the panel in both year t and $t+k$ ("closed panel")

Earnings band in year $t+k$

	1	2	3	4	5	
1	p_{11}	p_{12}	p_{13}	p_{14}	p_{15}	100
2	p_{21}	p_{22}	p_{23}	p_{24}	p_{25}	100
3	p_{31}	p_{32}	p_{33}	p_{34}	p_{35}	100
4	p_{41}	p_{42}	p_{43}	p_{44}	p_{45}	100
5	p_{51}	p_{52}	p_{53}	p_{54}	p_{55}	100

Earnings band in year t (rows labelled 1–5)

(b) Employees who are in the panel in year t and who may be or may not be present in year $t+k$ ("open panel")

Earnings band in year $t+k$

	1	2	3	4	5	Out	
1	p_{11}	p_{12}	p_{13}	p_{14}	p_{15}	p_{1out}	100
2	p_{21}	p_{22}	p_{23}	p_{24}	p_{25}	p_{2out}	100
3	p_{31}	p_{32}	p_{33}	p_{34}	p_{35}	p_{3out}	100
4	p_{41}	p_{42}	p_{43}	p_{44}	p_{45}	p_{4out}	100
5	p_{51}	p_{52}	p_{53}	p_{54}	p_{55}	p_{5out}	100

Earnings band in year t (rows labelled 1–5)

The first matrix (figure 1a) is calculated in reference to the group of workers present in the panel both at the starting year, t, and at the end-point year, $t+k$. In this case each worker, starting from a specific earnings class in the starting year t, may: (*i*) persist in the same class in $t+k$; (*ii*) move upwards, when the worker passes into a higher class in the year $t+k$; (*iii*) move downwards, where the end-point class is lower than the starting class.

In Figure 1(b), on the contrary, the matrix is calculated starting from the set of workers present in year t who, k years later, are either still present in the panel (in the same or a different earnings class) or have left the panel -- an event we indicate as "out". As we have already explained (see chapter W.) the panel may be left for various reasons (unemployment, change to self-employment or to sectors not subject to payment of INPS) and, in any case, this means that the new earnings status of the worker cannot be observed. In other words, while the probabilities illustrated in the first type of matrix are conditional on the contemporary presence of the worker in the two years to which the matrix refers, in the second type of matrix this condition is lacking. In this latter case, for the line totals still to be equal to one it is necessary to include the "out" column, containing

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[††] Note that, to define the earnings classes in year t and $t+k$, the medians of the distributions in year t and in year $t+k$ are used, respectively.

the probability that the worker, starting from the *j*-th class in year *t*, has left the sample in *t+k* , p$_{j\text{out}}$.

In our discussion below we will often find it convenient to summarize the information contained in a transition matrix with an appropriate summary statistics table. Particularly relevant to our aims are 'measures of persistence' and - complementary to the first - 'measures of mobility', derived from a transition matrix. Moreover, we will also examine how the class occupied by the individual in the initial year influences the probability of leaving the panel.

Persistence probabilities are to be found on the principal diagonal of a square transition matrix, like the one shown in Figure 1(a). In particular, we will focus on the behaviour of two such indicators. The first - which we denote with p(1,1) instead of p$_{11}$ in the interest of readability - is an estimate of the probability of remaining 'trapped' in the lowest earnings class in the two observation years. The second – which we indicate with p(4,4) - represents the frequency of workers who are in a relatively high earnings class -- the fourth -- and who have remained in the same class at the end of the period: they have maintained a high gross earnings level in both periods *t* and *t+k*.

A second group of indicators, this time relating to the degree of earnings mobility, considers the probability of changing earnings band in the period *t+k* compared to the initial period *t*. The upwards mobility is analysed by studying the cells that, in the matrix in Figure 1(a), lie above the principal diagonal. In particular, we will observe some individual probabilities of upward mobility, for example p(1,3), p(4,5) and some sum values, such as p(2,+) and p(3,+), which represent the sum of the probabilities lying above the principal diagonal calculated respectively for lines two and three in Table 1(a).[‡‡] The downward mobility includes the elements in the matrix in Table 1(a) that lie below the principal diagonal. In this case, too, we will examine some specific transition probabilities and some aggregate values, such as p(3,-), p(4,-) and p(5,-), which in their turn are the sum of the probabilities that lie below the principal diagonal, calculated for lines 3, 4 and 5.[§§]

From the matrix of the second type, Figure 1(b), we will chiefly use some elements of the "out" column, in particular cells p(1,out) and p(4,out), to study whether, and to what extent, leaving the panel occurs in a random fashion, or whether it is in some way linked with the original earnings class[***].

Our investigation on earnings mobility in Italy will be based upon the computation of transition matrices for different time intervals, for the population as a whole as well as for various subgroups. First, we select individuals that are observed in two consecutive years – year *t* and year *t+1* – and examine how far those who belonged to an earnings class in *t* continue to stay in the same class in *t+1* or move to another class. This type of transition matrices should mainly capture short-run mobility. Next, we extend the time lag and consider the sub-sample of employees who are observed in *t* and year *t+5* and repeat the same exercise. Finally, we have also explored the consequences of expanding the distance between the two points in time to 10 years, with the aim of summarizing long-run mobility.

The Appendix to this Chapter (Table 16), for the two years 1985 and 1996, the start and end of our observation window, reports the numbers of workers in the initial five earnings bands on the basis of the INPS panel. It is as well to bear these figures in mind when analysing the transition probabilities that will be presented, above all in those cases where the small number of workers present in a specific initial earnings band might limit the significance of the transition probability figures.

[‡‡] For example p(2,+) = p(2,3) + p(2,4) + p(2,5).
[§§] For example p(3,-) = p(3,1) + p(3,2).
[***] The probabilities in Table 1(b) are less easily interpretable than those in Table 1(a). For example, of those starting in the first earnings band some will leave the panel, p(1,out). However, "out" may well mean in low pay, as long as it is in sectors other than those covered by our INPS data.

Some final comments are in order before embarking upon the enterprise of putting the Italian earnings mobility under the microscope. Our first consideration arises from our use of a heterogeneous sample, in which employees with different characteristics coexist. To the extent that mobility differ across groups, a change in the sample composition by characteristics may give the impression that mobility is changing too over time, even in the absence of any significant alteration of the within-group dynamic features. Multivariate techniques are generally regarded as likely to provide more accurate descriptions of the observed transition probabilities and earnings dynamics, as they are able to control for composition effects potentially hidden in the simpler cross-tabulations by population subgroups we present in this chapter. These techniques are more advanced and less readily conveyed to the non-technical reader, though it is likely that the evidence derived from the two approaches be largely consistent with one another (see, for instance, Contini et al., 1998). For these reasons they have not been used in the present work.[†††]

Our final remark is to stress once more that - given the peculiarity of our sample, i.e. employees in the "regular" economy - the mobility we find in our data is likely to understate the mobility we would have found were the sample to include traditionally more volatile segments of the labour market, such as the self-employed, or more precarious workers such as those with jobs in the "hidden" economy.

3   <u>Main findings on Earnings Mobility</u>

Before looking specifically at the results we have obtained, we will briefly sum up some of the points on which we will concentrate and for which we will attempt to provide an explanation. Despite the different measurement methods for mobility and the different groups of workers considered, some important regularities that are common among the different countries have been identified (Atkinson et al., 1992; OECD, 1996).

(1)   Mobility increases with the length of the time-interval considered.
(2)   Mobility is higher for young people who are at the beginning of their working career.
(3)   The cross-sectional variance of annual gross earnings reflects persistent differences in relative wages better than it does transitory differences.[‡‡‡]
(4)   Upwards mobility is greater than downwards mobility
(5)   The probability of persisting in low earnings bands is very high if measured at intervals of one year, then drops rapidly, whereas the probability of persisting in higher earnings bands is also high after one year but drops much less rapidly.

[†††] Nor have we used, for the same motives, those approaches that allow the researcher to distinguish between the permanent and the transitory components of earnings. The 'permanent' component – which evolves slowly and predictably – reflects individual's education, skills, age and the 'premium' attached by the market to such characteristics at each point in time. The 'transitory' component – arising from unpredictable shocks that generally exhaust their effects after a relatively short period - may instead arise from shocks that hit the macroeconomic environment, a specific sector or firm, or even a single individual. The mobility we observe in our data, as well as its trends, may then be due to mobility arising from both sources. Formal techniques exist that allow to estimate the contribution of the permanent and transitory components in the cross sectional variance of earnings (Lillard and Willis, Card, Cappellari (199x). These or other multivariate techniques may be then used to estimate the probability of being in the earnings class j in $t+k$, given that the original class was h, *conditional* to observable and unobservable individual characteristics (Lillard and Willis, Devicienti).
[‡‡‡] For instance, OECD (1996) reports that about two thirds of the earnings variance in a given year can be attributed to the variance of the permanent component of earnings, the remaining part been explained by the variance of the transitory component.

From the study of the Italian case, further peculiarities emerge that we will concentrate on in the following sections. In particular, Section 4 will illustrate and quantify in detail earnings mobility in Italy with reference to the overall population of employees; Section 5 will look at the characteristics of mobility in specific subgroups of employees; Section six will point up important regional differences emerging from the study of mobility in Italy through annual earnings, rather than through daily earnings referred to one month. A final section will outline the overall picture of the results documented in this chapter and will offer some final reflections.

4   Earnings Mobility in Italy: Aggregate Findings

In this paragraph we will begin our analysis of earnings mobility in Italy. Table 1 groups the most significant probabilities of persistence, mobility and exit from the INPS panel for all employees without distinction of gender, age or occupation. These probabilities are calculated as the means of values corresponding to the various matrices that, keeping the time interval constant, can be calculated as t varies. For example, the value of P(1,1) reported in column 2 has been obtained by calculating all the possible matrices at annual intervals (t, $t+1$) - that is the matrices 1985-86, 1986-87, 1987-88, etc. - and then calculating the mean of the various values for p(1,1) corresponding to each of them. The underlying one-year transition matrices are not shown in the interest of brevity.

In Table 1 the following trends may be observed: the probability of persistence (section A) in the low-pay earnings band -- band one -- is in all cases lower than persistence in the higher earnings bands -- for example the fourth. The persistance is high for matrices at only one year at intervals (above 50%) whereas it progressively decreases as the time interval is extended to 5 and 10 years. In particular, p(1,1) drops very rapidly, going from 54% (annual intervals) to 6% (ten-year interval). For the same intervals, p(4,4) drops much more slowly, from 66% to 25%.

Table 1   **Selected transition probabilities from year t to year (t+n)**
                     (all employees)

transition probability	over 1 year (mean)	over 5 years (mean)	over 10 years 1986-96
(A) some persistence			
p(1,1)	54.28	11.30	6.13
p(4,4)	66.00	43.24	24.84
(B) upwards mobility			
p(1,+)	45.72	88.7	93.87
p(1,3)	5.29	18.35	28.29
p(2,+)	19.28	37.6	54.67
p(2,4)	1.23	4.67	9.9
p(3,+)	12.73	26.17	40.32
p(3,5)	1.58	5.53	14.89
(C) downwards mobility			
p(3,-)	14.30	17.34	16.49
p(3,1)	0.79	1	0.96
p(4,-)	18.38	21.73	17.38
p(4,2)	2.39	4.08	4.33
p(5,-)	12.39	14.41	14.24
p(5,3)	2.24	3.97	4.6
(D) leaving panel			
average[*]	16.31	35.36	50.74
p(1,out)	26.98	45.69	56.93
p(4,out)	11.33	29.16	44.96

Note: Each probability is computed as the average value over all possible transition matrices that can be computed over the interval (t, $t+k$) as t varies. [*] This average probability is obtained by averaging the five values p(j,out), j=1,..,5.

The probabilities of upward and downward mobility reported in sections B and C of Table 1 are the mirror images of the probability of persistence; they will therefore be higher for those starting in the lower-earnings bands, where persistence is weak, and lower in the higher bands where persistence is stronger.

Analysis of the mobility indicators reported first and foremost confirms one of the regularities listed in the above paragraph: upward mobility is in general higher than the corresponding measure of downward mobility, that is workers who move from one earning band to another more frequently find themselves in a better position than they started from rather than a worse one. For example, let us consider the probability, during a period of 10 years, of moving from band 3 to band 5, and vice versa. The last column in Table 1 shows the probability of upward mobility p(3,5) to be 15%, while the corresponding downward mobility, p(5,3), is only 5%. In the same way, we see that the probability of rising to any of the classes above class 3, p(3,+), is 40%, whereas it is much less probable to descend to a lower class, the probability p(3,-) being only 16%. A similar conclusion may be reached by examining the other probabilities illustrated in Table 1, and also from an examination of the cells of the single transition matrices from which the mean data reported in this Table have been derived. This empirical regularity reflects the predetermination in the pay structure in the Italian *regular* labour market and the strong link between wages and seniority.

Further confirmation of this marked inertia in the earnings ladder for those remaining employed for long periods of time may be found by comparing upward mobility indicators for the different timeframes (section B): independent of the starting band, the probability of rising within the earnings distribution increases as the time interval increases.

Transition to lower earnings bands (section C) is, consequent on what we have just seen, an occurrence that, on average, affects a small number of workers. Comparison of the downward mobility indicators for different time intervals shows some noteworthy aspects. The probability of descending the earnings ladder increases as the time interval is extended from 1 to 5 years, to decrease (or remain constant) at 10 years. For example, the probability of moving from band 4 to a lower band, p(4,-), goes from 18% on an annual basis to 22% over five years and 17% over the ten year period.

Lastly, section D of Table 1 reports the frequency with which workers leave the regular employment labour market, by initial earnings class. These percentages are very high: over the 10 year period, on average 50% of those initially employed leaves employment[§§§]. The probability of leaving the panel after 10 years, starting from band one, is however higher than this average, being approximately 57%. Over the same period of time, those leaving the panel from band four are fewer, approximately 44%.

It therefore does not appear that employment is left at random[****]. On the contrary, it is probable that groups of workers with starting characteristics and earnings typical of band one are more probably destined to leave the guaranteed world of employment to enter onto more difficult and uncertain roads, such as unemployment.

Movements from dependent work to self-employment are likely to be hidden here: the annual probability of such event, however, is very low: in chapter 4 (-Marco-) it has been estimated to be about 1.5%[††††]. Moreover such moves usually require a certain amount of initial investment, not within the reach of those in the low tail of the earnings distribution.

Contini and Villosio (1999), using transition matrices provided by OECD for the period 1986-1991 show that the observed pattern "is surprisingly similar across countries: for the first four

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[§§§] See chapter XX (Data) an explanation of the possible outcomes for those leaving the panel.

[****] The other probabilities of leaving the panel after ten years - p(2,out), p(3,out) and p(5,out) -are 49%, 49% and 54% (values not shown in Table 1).

[††††] Using ISTAT data from LFS.

quintiles, the higher the earnings (i.e. the quintiles of origin), the lower the probability of leaving dependent work. In all countries, the probability of exiting from the panel for workers in the first quintile of the distribution is between 60% higher to over twice as high than that of workers in the fourth quintile.

On the other hand, if the quintile of origin is the fifth (i.e. if the individuals are near the top of the earning distribution in 1986), the probability of leaving dependent work turns upwards. The vast majority of movements out of dependent work (with the obvious exception of the retirees) appears to have a negative connotation, whether or not the state of destination is unemployment. People who earn a decent pay are less likely to move out of employment than people at the bottom of the earning distribution."

It is important to keep clearly in mind that the results presented in Table 1 are aggregate results. It is highly probable that composition and selection effects contribute to determining the differences in the values and trendsof these probabilities for the different earnings bands. Suffice it to consider the fact that, in the lower earnings classes, young workers at the beginning of their professional career are more frequently found; these are clearly characterised by different income dynamics than those of the groups that most probably make up the higher income classes, that it is older workers. Considerations of this type may help us to understand, for example, why p(1,1) drops more rapidly than p(4,4) as the interval over which these matrices are computed is extended. The younger workers -- frequent in band one -- generally have a higher probability of increasing their income than the workers typical of band 4, who are now at more advanced stages of their professional career, and who are thus generally characterised by more stable income profiles. As the time interval considered is extended, an ever greater number of young people succeed in climbing the earnings ladder, whereas this is less frequent for older workers. As a result, the persistence in the two earnings classes might well display the differential time pattern mentioned above. Section 5 will go into these aspects of composition and selection in greater depth.

For this purpose, we will divide the sample into uniform subgroups in terms of certain characteristics, and we will recalculate the transition matrices for each of these[‡‡‡‡]. From these we will then extract the information held to the most significant, again in the form of selected probabilities, degree of persistence and degree of upward and downward mobility. The sample will be subdivided by personal characteristics of the worker: gender, age and occupation. Regional differences will be examined in a separate section.

5   Earnings Mobility and Persistence by Subgroups

5.1 Persistence and exit

The differences between groups of workers in terms of earnings mobility becomes more important and causes more concern the more certain categories of workers appear to be "stuck" in the position they occupy on the earnings ladder. From this standpoint, a very long persistence in the lower paid classes would appear to be particularly serious. This situation might herald a segmentation of the labour market, in which certain workers are condemned to low-quality jobs that are precarious and badly paid, access to jobs guaranteeing better prospects for employment and better pay only apparently being open to some categories.

For the purpose of providing more information on this point, we will concentrate our analysis in particular on the differences among groups in the probability of persistence in the first income class, e.g. p(1,1). As in the above section, we will flank this with the probability of persistence in a high-income band (band 4).

Since we showed above that leaving the panel was not independent of the original income class, we will also document which categories of workers have greater probabilities of leaving the

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[‡‡‡‡] Obviously, the relative position of each worker, in the two years to which each transition matrix relates, remains that calculated on the basis of the entire distribution.

labour market, by initial earnings band. In this connection we will give the probability of leaving employment for workers starting from earnings class one, p(1,out), and from class four p(4,out). We will start by analysing these probabilities separately for men and women (Table 2).

Table 2
Persistence and exit from the panel by gender

	1 year	*5 years*	*10 years*
Female			
P(1,1)	50.5	11.95	6.29
P(4,4)	65.37	42.55	21.43
P(1,out)	25.09	47.38	60.14
P(4,out)	13.74	28.71	40.53
Male			
P(1,1)	57.33	10.69	5.99
P(4,4)	66.17	43.39	25.51
p(1,out)	28.59	44.21	53.75
p(4,out)	10.86	29.27	45.76

The probability of persisting in band one, calculated as previously as the average of the probabilities over that period, does not appear to show any important differences between the genders: the risk of remaining trapped in low-paid jobs does not appear to depend on the workers' sex. Secondly, this probability follows the same trend both for men and for women: in both cases, p(1,1) drops as the interval of time considered increases, from 51% to 6% for women and from 57% to 6% for men.

The probabilities of persistence reported above are the averages of the values calculated on the matrices for the different time periods. As such, these averages do not enable us to see time-based dynamics in the probability of persistence in low-paid jobs.

Looking at the values of p(1,1) for women and men in the individual five-year matrices, $(t,t+5)$, we may clearly see that there is a decreasing trend for women: persistence in the first income band is reduced from 15% to 10% from the first to the last of the five year profiles (Table 2b). On the contrary, p(1,1) does not appear to change significantly over time for men, remaining fairly constant at around 10%. These trends confirm what we have already observed in connection with inequality: in relative terms the income position for women has improved compared to that for men.

Table 2b
Trend of p(1,1) over time by gender – five-year intervals

	85-90	86-91	87-92	88-93	89-94	90-95	91-96
- ◆ - Female	15	13.81	11.05	12.74	10.54	10.85	9.68
■ Male	10.87	11.24	10.32	10.21	10.91	11.09	10.17
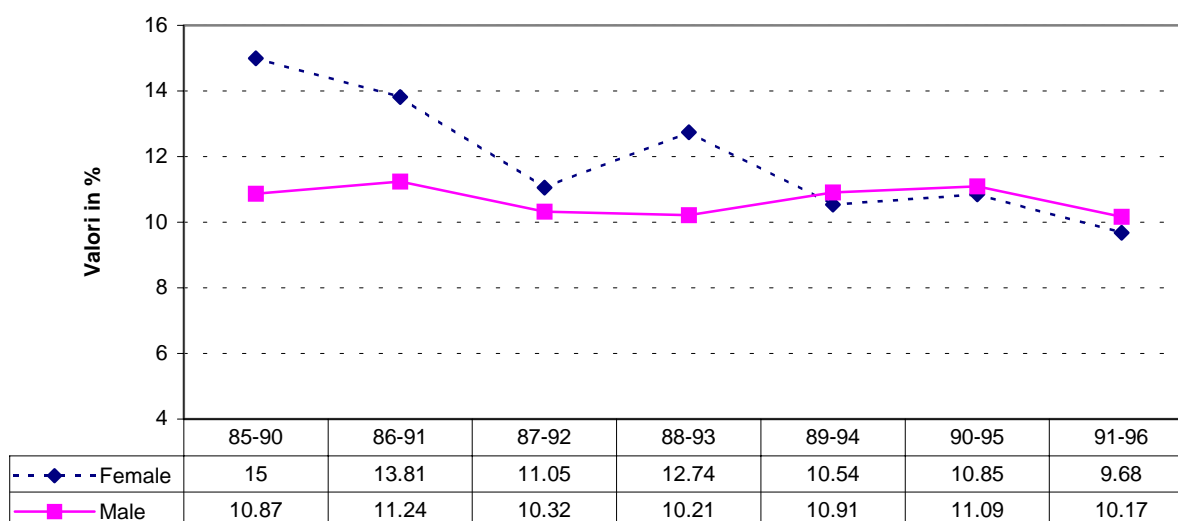
The persistence in high earnings bands p(4,4) shows no substantial difference between women and men (Table 2). In this case, furthermore, we do not even find any indications of differences relating to gender if we analyse the trend of these probabilities over time this: as we will see in more detail in later sections, once women reach relatively high earnings levels penalisation against them disappears.

The frequency of leaving the panel for those employed at low earnings levels is on the contrary higher for women than for men, above all over the long term (10 years), whereas it is slightly less so in the short term (one year). The proportion of workers who, starting from a badly paid job, are still in employment after ten years is 40% for women against 46% for men.

The probability of leaving the panel after starting in earnings band four is overturned: it is slightly higher for women at one year, whereas it is commoner among men if the interval is extended to 10 years.

These results shows that women face different scenarios than men, depending on the starting earnings level. In the case of occupations with low pay, we might hypothesize that leaving the labour market on the part of women is the fruit of a meditated decision, in which the alternative of full-time occupation running the family and children is preferred to an ungratifying job with low economic returns and bad career prospects. For those who succeed in reaching relatively well-paid occupations, it would appear that they are more strongly attached to the world of employment than are men[§§§§].

Table 3 evaluates indicators of persistence and exit from the panel, subdividing the sample into four age-groups.

Table 3
Persistence and exit from the panel by age groups

	1 year	5 years	10 years
Age 15-24			
p(1,1)	56.66	6.62	3.51
p(4,4)	50.54	30.07	17.26
p(1,out)	23.52	39.26	49.74
p(4,out)	22.20	30.47	38.76
Age 25-34			

[§§§§] On this point see also: S. Burgess, L. Pacelli and H. Rees (1997) "Job Tenure and Labour Market Regulation: a Comparison of Britain and Italy Using Microdata". *CEPR Discussion Paper no. 1712,* 1997.

p(1,1)	41.96	18.06	9.70
p(4,4)	63.18	36.87	19.41
p(1,out)	33.15	53.20	57.64
p(4,out)	10.45	20.75	24.46
Age 35-49			
p(1,1)	53.18	24.36	12.92
p(4,4)	69.36	48.19	29.20
p(1,out)	29.68	52.46	63.60
p(4,out)	7.03	19.82	39.31
Age 50-64			
p(1,1)	60.44	39.51	25.00
p(4,4)	65.86	46.35	33.83
p(1,out)	39.88	76.08	94.57
p(4,out)	20.75	66.62	94.09

The probability of persisting in the first earnings group, p(1,1), decreases as the time interval increases in all four age groups. On the contrary, p(1,1) increases as we move towards older age groups in the two longer intervals of time considered: for example, it goes from 7% for employees aged 15-24 to 40% for those aged 50-64 over the five year interval, and from 4% in the younger group to 25% for the older group over the 10 year interval. With reference to transitions at one year and persistence in the lowest earnings band, the trend is slightly different: the older age group (50-64 years) has the highest probability, followed by the youngest workers (15-24 years) and lastly the two intermediate age-groups (respectively 35-49 and 25-34 years).

These trends may be explained by the fact that younger persons begin their working career in the lower earnings bands, improving their earnings position subsequently by accumulating experience. After one year this experience is not yet particularly significant, but it becomes important after five or ten years. Those who, at an older age, find themselves in very low earnings bands, have on the contrary been "judged" by the market and their possibility of advancing in their career or increasing their income are the worse the older they become.

The contrary is true in the case of persistence in the higher earnings bands: this state of affairs is much less frequent among younger persons than among older ones. As we will see in more detail below, for young people in high salary positions the probability that this is a transition, and that they will find themselves with lower earnings in subsequent years, is very high.

As expected, due to the incidence of retirement, the probability of leaving employment is closely connected with age, whatever the starting earnings band. So it is not surprising to find that, in Table 3, 95% of workers who were aged between 50 and 64, independent of their earnings level, had left the employment market after ten years. It is more worrying to note that the probability of leaving for workers aged between 35 and 49 is highly diversified by high or low earnings class, even if the time interval is extended. The percentage of those who, in age group 35-49, leave employment after one year is four times higher for those in the lowest earnings group than for those in the fourth group (p(4,out)=7%; p(1,out)=29.7%); the difference is still two and a half times after five years (p(4,out)=19.8%; p(1,out)=52.5%), and it is still marked after ten years (p(4,out)=39.3%; p(1,out)=63.6%). This is the age range that is hardest hit by the phenomena and of "young in, old out": young people enter (including through work-training contracts) and those above 40 are expelled in the form of early retirement, incentives to leave, as well as the so-called "CIG straordinaria" redundancy scheme[*****]. We can probably add that this phenomenon and has had a more marked effect on lower-paid workers.

Secondly, it is plausible to expect it to be easier for young people employed in provisional or precarious jobs with lower salaries to end up in a sort of a vicious circle of low-pay/unemployment in which badly qualified and poorly paid work is alternated with spells of

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[*****] See Contini, Rapiti (1998); Malpede, Villosio (1999)

unemployment or inactivity[†††††]. It is more difficult for this to happen happen to older workers, for whom the loss of a badly-paid job is more frequently linked to leaving the regular employment market for good. This explains why p(1,out) increases with age.

Lastly, in Table 4 we distinguish employees on the basis of their occupation at the beginning of the observation period. The persistence of blue-collar workerss in the lowest earnings band is markedly higher than that of white-collars, in particular over the long-term, confirming the flattened blue-collar earnings profile. After five years, the vast majority of those who began their career as white-collar workers and who have not left the panel have risen to higher earnings bands: in this connection, suffice it to observe that the complement to one of p(1,1) for white collars is 92%. For blue-collar workers, over the same time-frame the probability is only 58%. After ten years, however badly they may have started, i.e. on the lower rungs of the earnings ladder, less than 2% of white collars remain in band 1, whereas the proportion is around 12% for the blue collars.

The persistence in earnings band four is also higher for blue-collar than for white-collar workers. If we combine this figure with the information on upward and downward mobility, analysed in detail in the next sections, we see that the greater probability of workers persisting in high earnings bands occurs to the disadvantage of further earnings increases. Once they have reached a high earnings level, in most cases blue-collars remain in that earnings band, the alternative being a descent to lower rungs of the ladder.

The probability of leaving the panel, whether starting from band one or from band four, is higher for blue-collar than for white-collar workers, indicating that the former more frequently find themselves in a precarious working situation than the latter.

Table 4
Persistence and exit from the panel by occupation

	1 year	*5 years*	*10 years*
Blue Collars			
p(1,1)	49.53	21.56	12.15
p(4,4)	63.85	46.68	35.31
p(1,out)	35.47	58.04	66.58
p(4,out)	13.91	33.91	52.50
White Collars			
p(1,1)	33.03	8.01	1.63
p(4,4)	68.52	39.73	15.81
p(1,out)	27.28	48.15	57.51
p(4,out)	8.23	23.18	36.08

In this case, too, analysis of the trend over time of the probability of persisting in low earnings bands during a five-year interval shows significant differences between the two groups: at the end of the period, blue collars have increased p(1,1) by one point, from 20.4% to 21.4%; white collars, on the contrary, have reduced it by seven percentage points, from 11.8% to 4.7%[‡‡‡‡‡]. To what extent these trends may be attributed to processes modernising the production organisation (that can implicate greater mobility), to greater efficiency in the encounter between labour demand and supply, or to selection processes relating to professional qualifications, is an open question, which does however appear consistent with the evidence presented here.

[†††††] This vicious circle between low-pay and unemployment has been documented for other countries too (see, Stewart 199x for the Uk, Cappellari for Italy, etc)

[‡‡‡‡‡] The weight of the two categories on the enetire distribution also changes: blue-collars are reduced from 66% to 61%, whereas white-collars increase by 6 percentage points from 26% to 32%.

Table 4 b
Trend over time of p(1,1) by occupation – five year intervals

	85-90	86-91	87-92	88-93	89-94	90-95	91-96
Blue collars	20.41	21.79	19.54	20.71	23.07	23.96	21.45
White collars	11.85	8.32	7.22	8.04	9.06	6.90	4.67
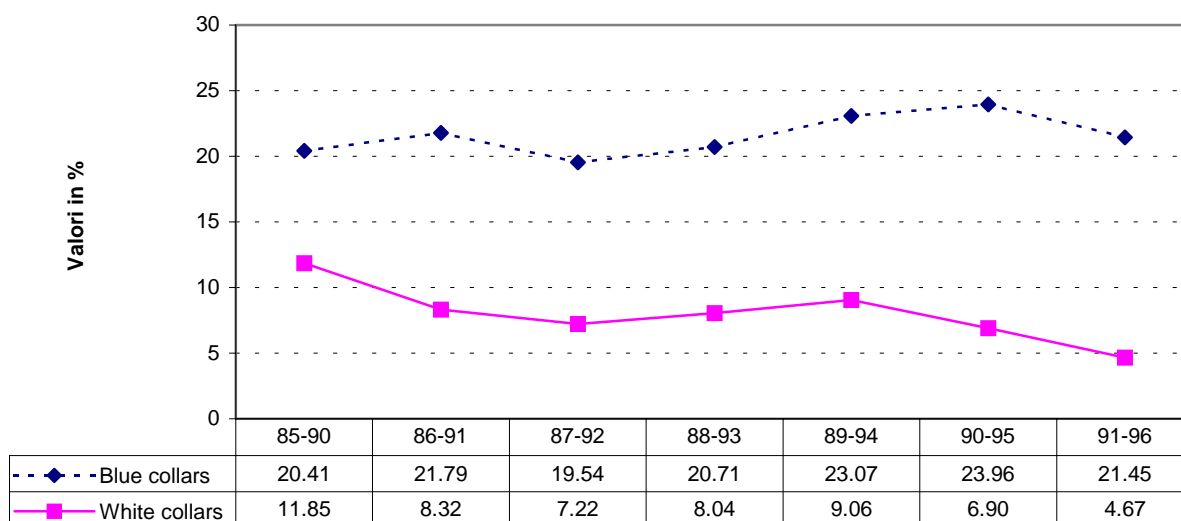
5.2   Upwards Mobility

In this section we will analyse in greater detail the upward earnings mobility for different groups of workers. For clarity we will only report some particularly significant cells of the transition matrices computed for the various time-intervals. We have chosen $p(1,3)$ since it denotes the transition from the least satisfactory position to a median position, and $p(4,5)$ since it reflects the progression of persons embarked upon a decidedly rewarding career.

We will also report some probabilities of upward mobility as such, i.e. independent of the class of arrival. For example, $p(2,+)$ indicates the probability of transition from the second class to any of the higher earnings bands.

Table 5 reports the breakdown by gender.

Table 5
Upwards Mobility,
by Gender

	1 year	*5 years*	*10 years*
female			
p(1,3)	4.94	13.13	21.27
p(2,+)	14.56	27.61	41.17
p(3,+)	10.53	21.47	34
p(4,5)	15.70	37.08	64.55
male			
p(1,3)	5.66	22.68	34.27
p(2,+)	22.94	44.82	63.62
p(3,+)	13.4	27.53	42.07
p(4,5)	15.59	34.62	56.44

A first important aspect is that for men upward mobility is higher, whatever the initial earnings class, and for all intervals of time. For women it is presumably more complicated to embark upon a professional career offering an increasing earnings profile such as those of men. A second important aspect is that the probability of progressing up the earnings ladder is particularly

difficult for women who start from the lower rungs. It is here that the biggest differences compared to men are found. On the contrary, once women have overcome the difficulty of the lower earnings bands, they are able to align themselves with men's earnings patterns: at 10 years, p(3,+) is about 42% for men and 41% for women. If we consider the probability of rising from band four to band five,women actually pass the men in each of the 3 timeframes considered.

Once they have overcome the severe adverse selection operated by labour demand and reached the higher earnings bands (in 1985, for example, only 6% of women were in band four, versus 16% of men [§§§§§]), it appears that women succeed in consolidating their earnings status more effectively. This phenomenon is not only explained by considerations linked to the selection mechanisms, but also by the sectorial composition of women's employment: women are particularly concentrated in some protected sectors (for example the banking sector) in which the earnings progression is almost automatic and the incentive not to change profession is particularly high.

We will now examine to what extent upward mobility differs in the different age groups (Table 6). The age-group in which mobility is highest is that between 25 and 34 years. The indicators considered are higher in this group for practically all time intervals and in all earnings bands. We have already noted the strong link between career, age, and earnings profile, in particular for young workers who remain employed for long periods of time. Thus, not surprisingly, we also note that it is these persons who reap the most benefit from lengthening the time interval, above all if they are in the lower earnings bands. For example, p(1,3) for workers aged 15-24 goes from 3% if calculated at one year to 28% at 10 years; in the older categories, the probability goes from 7% to 19%. Upward mobility starting from the median band, p(3,+), is lower for the younger age-group, on the contrary, if it is measured at one year, whereas when the reference interval is extended to 10 years, it is the oldest group who is in last place.

Table 6
Upwards Mobility,
by Age Groups

	1 year	5 years	10 years
Age 15-24			
p(1,3)	3.14	17.46	28.22
p(2,+)	16.25	37.58	55.45
p(3,+)	10.34	24.64	37.26
p(4,5)	10.74	28.55	43.56
Age 25-34			
p(1,3)	10.79	22.57	29.73
p(2,+)	20.64	39.48	56.21
p(3,+)	13.69	30.12	43.92
p(4,5)	17.61	42.28	64.02
Age 35-49			
p(1,3)	9.18	19.57	27.53
p(2,+)	20.43	35.12	51.11
p(3,+)	12.36	23.79	38.38
p(4,5)	14.73	32.38	55.28
Age 50-64			
p(1,3)	7.37	14.06	19.44
p(2,+)	23.6	36.8	49.48
p(3,+)	13.39	23.05	28.20
p(4,5)	16.13	27.62	40.61

[§§§§§] See Table 16 in the Appendix.

Lastly, with regard to the difference in occupation, it is confirmed that upward mobility is greater among white-collar than among blue-collar workers (Table 7).

Table 7
Upwards Mobility,
by Occupation

	1 year	*5 years*	*10 years*
blue collars			
p(1,3)	7.99	18.87	24.31
p(2,+)	18.5	34.40	50.70
p(3,+)	10.68	20.65	31.60
p(4,5)	10.57	20.64	33.78
white collars			
p(1,3)	13.35	28.02	36.23
p(2,+)	24.24	51.17	69.97
p(3,+)	18.15	40.96	61.92
p(4,5)	21.14	50.34	78.56

5.3 Downwards Mobility

Downward mobility is the subject of this section. The descent towards lower earnings bands may be due to at least two reasons: firstly, market penalization of a worker who is considered not to be very productive; secondly, the result of a negative shock on labour demand, especially if it obliges a worker to leave his or her job and seek another in an adverse economic climate. Downward mobility is, overall, lower than upward mobility, but in any case it remains significant, in particular for some categories of workers. We will therefore look at its chief characteristics.

In this section too we will analyse the phenomenon by subdividing the group on the basis of worker characteristics. The indicators we will use are $p(3,-)$, $p(4,-)$ and $p(5,-)$, which indicate downward mobility respectively from the third, fourth and fifth earnings bands, independent of the band of arrival.

Table 8
Downwards Mobility,
by Gender

	1 year	*5 years*	*10 years*
female			
p(3,-)	18.83	23.27	23.37
p(4,-)	18.93	20.37	14.02
p(5,-)	20.39	21.6	20.71
male			
p(3,-)	12.9	15.64	14.59
P(4,-)	18.24	21.99	18.05
P(5,-)	11.13	13.36	13.47

Table 8 confirms the general disadvantage of women over men: their downward earnings mobility is higher. There is however an important exception, represented by $p(4,-)$. Women in this earnings band, in fact, lose their position less easily: $p(4,-)$ is 18%

for men whereas it is only 14% for women. We have already remarked in the previous sections that for women in the middle-to-high earnings class persistence and upward mobility are more frequent than for men; what we have here is simply the mirror image of those data. In the highest earnings band (band 5), the frequency with which employees descend to lower earnings bands is again higher for women than for men.

If we break the figures down by age-group (Table 9) we note the following irregularities. Downward mobility in the youngest age-group is higher than it is for workers aged 50-64 years. However, the lowest mobility is that of the 35-49 age group.

The younger workers who earn very high salaries (in relative terms) are exposed to much greater volatility than all the others. The higher the initial earnings band, the greater the frequency with which the youngest age-group (15-24) lose their relative positions. This is a demonstration of the importance of the transitory component that distinguishes young people's earnings, and realignment occurs almost immediately. The frequency of downward mobility is practically identical at 1, 5 and 10 years.

In all age-groups, downward mobility becomes more frequent at a distance of five years. The differences are slight, indicating that the earnings structure for employees is fairly well protected against negative salary shocks. Furthermore, downward mobility appears to drop if the interval is extended to 10 years. This might be explained by the fact that, in the cases of mismatching between company and employee, or between the employee and his pay class, are generally resolved -- in the form of salary and/or contractual repositioning -- within a few years. Over the longer period, however, workers' selection has by now perfected the encounter between skills required and those possessed, and thus makes it less probable that subsequent downward earnings adjustments will occur.

Table 9
Downwards Mobility
by Age Groups

	1 year	5 years	10 years
Age 15-24			
p(3,-)	25.9	27.29	23.14
p(4,-)	38.72	41.38	39.18
p(5,-)	65.16	70.87	70.59
Age 25-34			
p(3,-)	14.62	16.65	15.42
p(4,-)	19.21	20.85	16.57
p(5,-)	18.95	18.58	16.33
Age 35-49			
p(3,-)	10.90	14.25	14.74
p(4,-)	15.91	19.43	15.52
p(5,-)	9.76	11.58	11.59
Age 50-64			
p(3,-)	12.23	16.99	20.68
p(4,-)	18.01	26.03	25.56
p(5,-)	9.15	11.88	12.50

Table 10 illustrates downward mobility for blue and white collar workers. The difference between the two categories reinforces the conclusions drawn above. Just as blue collars tend to have little upward mobility, to this is added their greater exposure to the risk of downward mobility, the more so when the time interval is a longer one and if initially they are at a higher earnings level.

Table 10
Downwards Mobility
by Occupation

	1 year	5 years	10 years
blue collars			
p(3,-)	15.85	20.06	20.28
p(4,-)	25.58	32.68	30.91
p(5,-)	29.7	39.75	42.84
white collars			
p(3,-)	9.73	9.60	6.76
p(4,-)	10.34	9.93	5.63
p(5,-)	7.98	7.50	6.08

6   <u>Regional Differences</u>

In this section territorial differences on wage mobility are analysed. This analysis needs to be carried carefully, and we devote a whole section to it: regional differences are modest if earnings mobility is calculated (as we have done so far) on monthly pay, but very important differences emerge, however, if mobility refers to annual wage income. This is still a rather unexplored issue from an empirical point of view, as data on annual wage income have become available only recently. There is wide consensus on the idea that earnings mobility could be very different depending on what is being measured: annual wage income is the product of hourly (or daily) pay times hours (or days) worked. Both have their own sources of variability. Even if hourly pay were identical in the same industry across regions, annual wage income could be very different if working hours or days were sufficiently distant. This turns out to be the case in Italy between North and South, with Central regions roughly in between, as we now turn to show.

6.1 *Persistence in low pay and attrition*

The first issue is on persistence in low pay p(1,1), and on the probability of leaving the panel p(1,out). For simplicity, we display here the contrast between the two extremes, North and South.

Table 11
Persistence and exit from the panel by region
A) Monthly wages

	1 year	5 years	10 years
North			
p(1,1)	53.74	9.65	4.84
p(1,out)	21.89	38.06	49.82
p(4,out)	10.00	28.34	44.65
South			
p(1,1)	53.77	12.73	6.60
p(1,out)	39.00	60.8	67.99
p(4,out)	15.34	32.42	47.37

B) Annual wages

	1 year	5 years	10 years
North			
p(1,1)	60.19	21.92	23.71
p(1,out)	32.27	33.47	54.32
p(4,out)	4.95	24.94	43.36
South			
p(1,1)	71.43	36.53	45.72
p(1,out)	40.06	41.04	67.88
p(4,out)	6.53	26.57	40.80

Let us, for the time being, devote attention to earnings mobility calculated on monthly pay (Table 11, panel A). While the differences in p(1,1) are modest - persistence in low pay is only slightly higher in the South - those in p(1,out) are impressively large: 21.89 in the North at 1-year distance, against 39.0 in the South. P(1,out) increases rapidly at longer intervals in both areas, while the difference stays roughly constant. In Northern regions, after 10 years only 50% of those starting their career in the lowest earnings band are still found in the panel; in the South their share drops down to 30%. It is well known that firm volatility, job turnover and overall precariousness is much higher in the South, and this explains why P(1,out) is so much higher.

Interestingly, the probability of exiting the panel from the fourth earnings band - p(4, out) - is only slightly higher in the South: if one's pay is already substantially above the median in 1986, there is a good chance that his/her employer is well established, probably not a small firm, and that, unless the latter goes out of business, his/her career will continue with the same employer until and beyond 1996. This holds in the North and in the South as well.

Let's now turn our attention to annual earnings, illustrated in panel B in Table 11. In this case differences in p(1,1) are stunning, with the probability in the South being nearly twice as much that in the North for the ten-year interval. Differences are still notable for the one-year and five-year intervals. As annual earnings result from both daily pay and the number of days worked in a year, it seems plausible to attribute these differences to the higher risks that workers in the South face of getting jobs with a lower number of worked days than in the North.

6.2   Upwards mobility

As already mentioned, the probability of upwards mobility increases with the time distance at which mobility is calculated. Often, i.e. for a fairly large number of people, this simply reflects the fact that as tenure with the same employer gets longer, his relative wage will increase in parallel. For many there will be job changes between the beginning and the end of the observation years: but this is still consistent with the above explanation, as movers are often those with skills on high demand.

In the South at 1-year distance, upwards mobility is slightly higher than at North; at 5 and 10-year distance, however, the North overtakes the South. For instance, p(1,3) at 1-year distance is 4.88 in the North against 6.84 in the South. But, after 10 years, p(1,3) is 30.34 in the North, and 27.31 in the South. Upwards mobility from median pay is also higher in the North: p(3, +) after 10 years is 42.90 at North, and only 32.52 at South.

Table 12
Upwards mobility by region

A) Monthly wages

	1 year	5 years	10 years

	1 year	5 years	10 years
North			
p(1,3)	4.88	18.10	30.24
p(2, +)	19.38	38.91	57.08
p(3, +)	12.34	26.76	42.90
South			
p(1,3)	6.84	21.03	27.31
p(2, +)	20.40	36.66	51.24
p(3, +)	13.42	23.88	32.52

B) Annual wages

	1 year	5 years	10 years
North			
p(1,3)	10.91	20.05	31.22
p(2, +)	25.29	42.58	57.02
p(3, +)	12.80	22.54	43.38
South			
p(1,3)	5.92	10.19	18.62
p(2, +)	18.82	29.17	38.51
p(3, +)	11.48	17.87	31.30

If we turn to annual wage income, the probability of upwards mobility at North is not very different from what we see in the same area on the basis of monthly wages. It is, instead, slightly lower in the South if measured over annual wage income, especially if the starting position is in bands 1 and 2 (the low tail of the distribution).

Where the differences really emerge is the regional contrast: not surprisingly, upwards mobility, in terms of annual wage income, is much higher in the North than in the South, especially at 5 and 10 years intervals: 42.58 vs. 29.17 at 5-year distance, and 57.02 vs. 38.51 at 10-year distance for p(2, +); 22.54 vs. 17.87 at 5-year distance, and 43.38 vs. 31.30 at 10-year distance for p(3, +).

6.3 Downwards mobility

Table 13
Downwards mobility by region

A) Monthly wages

	1 year	5 years	10 years
North			
p(3, -)	13.56	15.64	13.96
p(5, -)	11.50	13.35	12.40
South			
p(3, -)	15.42	20.09	20.58
p(5, -)	16.76	19.54	21.88

B) Annual wages

	1 year	5 years	10 years
North			
p(3, -)	16.32	30.46	17.79
p(5, -)	10.96	28.91	11.70
South			
p(3, -)	22.88	39.54	27.54

p(5, -)	11.75	31.00	11.98

We restrict attention to downwards mobility from median positions - p(3, -) - and from the highest earnings band - p(5, -). Overall, downwards mobility is somewhat higher, but not dramatically higher, in the South, whether measuring on monthly pay or on annual wage income. We have some surprises, however, if we look at the pattern as the time-distance increases: the probability of downward mobility is humped, with an inverted U-shape, very slight if transitions are calculated over monthly pay, much more evident if measured over annual wage income. It is lowest at 1-year distance, it peaks at 5-years distance, and then it turns down again after 10 years. While we know that the panel gets thinner as time passes, due to exits from the panel for to different reasons (including exit towards retirement for those who are in the early fifties at the beginning of the observation period), there seems to be no obvious reason why should an inverted U-shape emerge. Controlling for age and industry would probably help to understand: this exploration will have to be postponed to a later date.

While, generally speaking again, downwards mobility is a more likely event in the South, the interesting exception is p(5, -): here the likelihood of having one's annual wage income reduced is identical in both regions. Not surprisingly: the fortunate ones who have pretty good jobs and pay (say in banks or large automotive industries) are covered by the same union contract all over the country, and - age constant- face the same chances of career downturn.

7   Some results for other countries

In the introduction we mentioned that there is some diversity between countries in the degree of rigidity of the salary structure. On the contrary, from the standpoint of which workers have fewer advantages in salary mobility, the different studies are in substantial agreement.

The features that increase the probability of remaining in the bottom part of the wage distribution are almost the same in all countries: typically women, workers with low skills, workers in small firms or in industries like construction and retail are not only more likely to be in low pay in any one period, but are also more likely to persist in low pay. Young workers, instead, are more likely to be in low pay in one period, but they are at less of a disadvantage in escaping from low paid jobs than older ones.

The following table reports an overview of the main analyses on this subject.

Table 14 Studies on the determinants of earnings mobility

Study	Country, period	Methodology	Main results
P.J. Sloane and I. Theodossiou (1996) "Earnings mobility, family income and low pay" *The Economic Journal* May, 106	Britain 1991-1993 (BHPS) Low-paid threshold: third decile of the earnings distribution	Multinomial logistic regression	Higher probability of persisting in low-pay for: women, employed in firms with less then 500 employees, do not have training to increase skills in current job, being a council tenant, having a permanent job, being in the construction or the distribution industry.
P.J. Sloane and I. Theodossiou (1998) "An Econometric Analysis of low pay and earnings mobility in Britain" in Asplund et al. (1998)	Britain 1991-1993 (BHPS) Low-paid threshold: less than 66% of the median	Nested bivariate model	Higher probability of persisting in low-pay for: professional, full-time job, temporary jobs, short tenure, being employed in Wales.
M. B. Stewart and M. K. Swaffield (1997) "Low pay dymamics and transition probabilities" *mimeo*	Britain 1991-1994 (BHPS) Low-paid threshold: a) half the median; b) half the mean; c) two-thirds the median	1. Probit model assuming indipendent disturbance terms	1. Higher probability of persisting in low-pay for: those with low years of education completed, those without training in the 12 months prior t-1, those not covered by a union, workers in plant with less than 25 employees, women.

		2. Bivariate probit model with endogenous selection	2. The estimated marginal effects on the conditional probability of remaining low paid are much reduced when taking into account endogenous selection. However factors such as training, plant size, union coverage and gender retain their influence on he probability of persisting in low pay (particularly for higher threshold).
A. McKnight (1997) "Low wage mobility in a working-life perspective" in Asplund et al. (1998)	Britain (Family and Working Life Survey 1994/95) Low-paid threshold: 68% of mean gross wage	Logistic regression on the probability of a spell of low wage employment ending	Persistence is higher for: younger males in the lowest social class, for males in the older age cohorts, as the episode of low wage employment increases
T. Eriksson (1997) "Long-term earnings mobility of low-paid workers" *CLS working paper* N. 97-16	Finland 1970-1990 (Finnish Quinquennial Population Census) Low-paid threshold: bottom quintile	Transition matrices	Increasing persistence for women, for workers aged 35-49, for old workers
R. Asplund, P. Bingley, N. Westgård-Nielsen (1997) "Wage mobility in the Danish and Finnish private sectors, 1980-1994" *mimeo*	Denmark 1980-91 (Statistic Denmark Administrative Records) Finland 1080-94 (Finnish Confederation of Industry Employee records) Low-paid threshold: bottom quintile	Simultaneous ordered model which take into account attrition biases, selectivity issues, unobservable heterogeneity	Persistence in low pay is decreasing in Denmark and increasing in Finland. The impact of individual characteristics on low-pay mobility is in general not substantial and very similar across the two countries.
C. Lucifora (1998) "Working poor? An analysis of low wage employment in Italy" in Asplund et al. (1998)	Italy 1975-93 (INPS data) Low-paid threshold: two-third of the median	Transition probabilities	Young workers have higher transition rates out of low pay; females have higher persistence in low pay.
B. Contini, M. Filippi, C. Villosio (1998) "Earnings mobility in the Italian economy" in Asplund et al. (1998)	Italy 1986-91 (INPS data) Low-paid threshold: third decile	Bivariate logit regression	Higher probability of persisting in low-pay for: blue collars, women, workers in small firms, older workers, stayers.
R. Van Opstel, R. Waaijers, G. Wiggers (1998) "Wage mobility of low-skilled workers in Netherlands" *mimeo*	Netherlands 1986-89 (Social and Economic Panel) and 1994 (Wage Survey)	Individual wage growth equation for low and high skilled workers	low skilled workers have low prospect of upward earnings profile. General training rather than firm-specific training is the main contributor to individual's earnings growth
M. Keese, A. Puymoyen, P. Swaim (1998) "The incidence and dynmics of low-paid employment in OECD countries" in Asplund et al. (1998)	15 OECD Countries 1986-91 Low-paid threshold: two-third of the median	Transition matrices	Higher probability of persisting in low-pay for: women, older workers

Source: Contini Villosio (1999)

Another similarity that holds across countries is the higher probability of exit from dependent employment the lower the earnings band of origin. We have already mentioned it on the aggregate. This pattern holds also when account is taken for gender and age as is shown in the following table.

Tables 15 Selected studies on P(out/wage quintile)

Study	Country, period	Main results
P.J. Sloane and I. Theodossiou (1998) "An econometric analysis of low pay and earnings mobility in	Britain 1991-1993 (BHPS) Low-paid threshold: less than 66% of the median	Lower probability of remaining in employment if started out as a low paid for: younger, males, professionals, full-time job, those who have a

Britain" in Asplund et al. (1998)		degree or equivalent qualification
M. B. Stewart and M. K. Swaffield (1997) "Low pay dymamics and transition probabilities" *mimeo*	Britain 1991-1994 (BHPS) Low-paid threshold: a) half the median; b) half the mean; c) two-thirds the median	About 16, 15% or 13% (according to the different threshold definitions) of those low paid in year t-1 are out of employment (self-employed, unemployed or out of the labour force). Stronger for women than for men.
Gosling et al. (1997) "The dynamics of low pay and unemployment in early 1990s in Britain" Institute for Fiscal Studies.	British Household Panel Study (BHPS)	Men in the bottom quartile of the earnings distribution are almost three times as likely to move out of work in the 12 months following the first-wave interview as men in the top quartile. The same effect, although less strong, is found for women.
T. Eriksson (1997) "Long-term earnings mobility of low-paid workers" *CLS working paper* N. 97-16	Finland 1970-1990 (Finnish Quinquennial Population Census) Low-paid threshold: bottom quintile	Low paid are more likely to exit into non-employment than those further up in the earnings distribution. Stronger for women and older workers (over 35 years).
ISFOL (1998) "Il lavoro in Italia: profili, percorsi, politiche" Franco Angeli, Milano	Italy 1986-92 (INPS data) Low-paid threshold: two-thirds the median	Probability of being out of employment is higher for low paid, women, older workers, workers in the south and in small firms.
Contini, Pacelli, Villosio (1999) "Short employment spells in Italy, Germany and Great Britain: testing the "port-of entry" hypothesis" CEP Discussion Paper N. 426,	Italy 1986-92 (INPS data) Britain 1991-94 (BHPS) Germany 1986-92 (GSOEP)	Workers with short employment spells (SS) in year t are much more likely to exit employment between year t and t+3 than other workers.

Source: Contini Villosio (1999)

8   Conclusions

The wage structure for employment is characterised by career ladders in which to a great extent steps occur in a semi-automatic fashion, especially for those who are employed long-term by the same company, continuing up to retirement age. The automatic mechanisms began to some extent to be attenuated in 1993, with the abolition of the sliding-scale system. A comparative analysis among some European countries (introduction) shows that this inertia is stronger in Italy than in other EU member states. This "stickiness" of the wage structure, together with the relative weight of workers with "long careers" (employees with seniority of more than seven years and fully paid-up social security contributions, account for over 4 million out of a total of 8.5 million workers) makes it normal that upward earnings mobility, from whatever position it is observed, is greater than downward mobility. In theoretical terms, upward and downward mobility could only be equal in a situation in which income from employment were absolutely dominated by transitory components versus permanent ones. Luckily (for the workers) that does not occur in any country in the world, least of all in Italy.

It also follows that, in general, the longer the interval of time over which individual earnings mobility is measured, the higher is the probability of finding upward mobility, and that this reaches its highest values for young persons at the start of their career. Among this latter group, persistence in a very low earnings band may remain high in the first years of activity (suffice it to consider the apprenticeship contract that has a duration of five years) but it is then natural that it reduces rapidly as the years pass, if the young person continues in regular employment. In the case in point -- in the 15-24 age-group -- the probability of persisting in "low-pay" $p(1,1)$ is approximately 57%, measured at one year; it drops to 7% at five years and to 4% at 10 years.

Among young people, it appears evident that the transitory component in earnings is much more significant than among older groups: if at a distance of one year upward mobility in the 15-24 age-group is lower than in other age-groups -- it is not surprising that it takes more than one year to make known and promote ones skills -- the comparison with age-groups 35-49 and 50+ is overturned if mobility is measured at 5 or at 10 years. On the other hand, just as upward mobility is higher, the same is true for downward mobility at the beginning of one's career. In particular, for the few young people who are

lucky to start from particularly well-paid positions, the probability of falling to much lower levels within a few years is very high.

Another important characteristic is the probability of leaving the panel. These exits very probably mark a negative event in the life of the worker. In the great majority of cases they mark the entrance into unemployment (which, unfortunately, we are not able to measure explicitly) or in any case the exit from "regular" employment. The probability of entering self-employment is low: on the basis of ISTAT data (Chapter X) this probability may be estimated at around 1.5% per year; in the past it was estimated at around 10% of all separations detected in the panel (Contini, et al. 1996). It is possible that leaving the panel coincides with starting work in the public administration, but this too is certainly a very rare event. That it is a negative event emerges from the fact that it is inversly correlated with the initial earnings position: the lower the starting-point, the higher is the probability of leaving the panel. The vicious circle "unemployment -- low pay – unemployment" would give rise to similar findings.

The probability of leaving the panel definitively[******] among the younger age-group (15-24) is slight at one year, but rapidly rises to reach 50% after 10 years. Among the older workers (50+) it is above 50% at one year and reaches 75% after five years. This gives the impression that for all those destined to leave regular employment, this event occurs within relatively short times. Adverse selection acts quickly: poorly qualified workers, and to a less lesser extent women, are the most badly affected categories.

Of great interest are gender comparisons: men, who "historically" have the advantage of cultural background in modern societies, show a markedly higher upward mobility than do women. However, once they have overcome the gender selection barrier and achieved a relatively high position on the earnings ladder, women maintain their position better than their male colleagues. The probability of downward mobility from band four, $p(4-)$, measured at five years, is 20% for women and 22% for men; at 10 years it drops to 14% for women and 18% for men. It is probable that this phenomenon may be explained partly by the sectorial composition: starting from the 1980s, women often entered into careers in traditionally highly-protected sectors such as banking. It is also possible that the self-selection processes to which women are obliged to subject themselves later act to consolidate their position once they have reached it. It should however be said that the hypothesis that sectorial composition is important is reinforced by the factor that the same phenomenon of consolidation in favour of women is not present if the starting-point is the highest band of earnings.

Comparison between occupations shows that the higher upward mobility of white-collars versus blue-collars is counteracted by a greater probability of the latter to descend the earnings scale. Thus not only are the prospects for career advancement and increased earnings decidedly lower for blue-collar occupations, but these positions appear to go hand-in-hand with greater risks and a more precarious situation.

With reference to regional characteristics, it was seen that the difference between North and South is surprisingly slight when mobility is measured with reference to mean daily or monthly earnings. When annual earnings are analysed, however, regional differences and the risk of persistence in lower earnings bands emerge with all their dramatic characteristics. If we look closely, this may be explained by the fact that

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[******] Definitive leaving of the panel is defined in relation to the characteristics of our longitudinal sample, observable for 11 consecutive years (1985-96): clearly there is nothing to stop a person reentering "regular" employment 15 years after leaving it. For now such an event cannot be observed in our data.

comparisons are normally made between unit earnings (daily, or referred to one month in a standard formula: one month = 26 days). Since the population we are observing comprises employees for whom social security contributions are fully paid-up, minimum contributions are respected. But companies can hide a significant proportion of irregular work while respecting minimum contributions, and declaring a number of paid days fewer than those actually worked (INPS is not in a position to check this).[††††††] This habit would appear to be much more common in the South than in the rest of the country, further confirming the fragility of the economy of Southern Italy.

[††††††] For a more extensive discussion of this problem, see B. Contini, M. Filippi, C. Malpele, "Safari nella giungla dei salari: al Sud si lavora di meno ?", Lavoro e Relazioni Industriali, vol. 1, 2001.

9   Appendix

Table 16 Distribution of observations in the INPS panel by earnings band

1985	Sample frequencies						Row percentages				
	f1	f2	f3	f4	f5	all	f1	f2	f3	f4	f5
All	7886	25552	27881	10368	6942	78629	10.0%	32.5%	35.5%	13.2%	8.8%
Males	3898	14588	21564	8900	6124	55074	7.1%	26.5%	39.2%	16.2%	11.1%
Females	3986	10961	6313	1466	818	23544	16.9%	46.6%	26.8%	6.2%	3.5%
Blue collars	4048	18744	21339	6177	1934	52242	7.7%	35.9%	40.8%	11.8%	3.7%
White collars	1143	4477	6251	4130	4656	20657	5.5%	21.7%	30.3%	20.0%	22.5%
Age 15-24	4327	10482	4532	743	228	20312	21.3%	51.6%	22.3%	3.7%	1.1%
Age 25-34	1535	7031	9004	3066	1414	22050	7.0%	31.9%	40.8%	13.9%	6.4%
Age 39-49	1366	5644	9963	4579	3756	25308	5.4%	22.3%	39.4%	18.1%	14.8%
Age 50-64	658	2395	4382	1980	1544	10959	6.0%	21.9%	40.0%	18.1%	14.1%
North	3912	16426	17323	6403	4435	48499	8.1%	33.9%	35.7%	13.2%	9.1%
Center	1479	4704	4867	1963	1315	14328	10.3%	32.8%	34.0%	13.7%	9.2%
South	2488	4417	5689	2002	1191	15787	15.8%	28.0%	36.0%	12.7%	7.5%

1996	Sample frequences						Row percentages				
	f1	f2	f3	f4	f5	all	f1	f2	f3	f4	f5
All	5195	38245	29627	12563	14595	100225	5.2%	38.2%	29.6%	12.5%	14.6%
Males	2988	21248	21319	9885	11880	67320	4.4%	31.6%	31.7%	14.7%	17.6%
Females	2205	16989	8303	2677	2715	32889	6.7%	51.7%	25.2%	8.1%	8.3%
Blue collars	2409	28659	20752	6531	3147	61498	3.9%	46.6%	33.7%	10.6%	5.1%
White collars	320	7590	8689	5915	9232	31746	1.0%	23.9%	27.4%	18.6%	29.1%
Age 15-24	3036	10624	3032	484	254	17430	17.4%	61.0%	17.4%	2.8%	1.5%
Age 25-34	1053	15595	11624	4165	2849	35286	3.0%	44.2%	32.9%	11.8%	8.1%
Age 39-49	816	9142	11097	5876	7968	34899	2.3%	26.2%	31.8%	16.8%	22.8%
Age 50-64	288	2876	3869	2037	3524	12594	2.3%	22.8%	30.7%	16.2%	28.0%
North	3120	23608	19245	8022	9200	63195	4.9%	37.4%	30.5%	12.7%	14.6%
Center	949	7090	4683	2140	3049	17911	5.3%	39.6%	26.1%	11.9%	17.0%
South	1126	7534	5687	2401	2343	19091	5.9%	39.5%	29.8%	12.6%	12.3%

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