Job mobility and wage mobility at the beginning of the working career

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ABSTRACT

This piece of work is aimed at studying the rewards to job mobility and whether it is a proper tool to experience wage growth and escaping situations of low-paid jobs. The data-base used will be the European Community Household Panel Survey, from which a sample of young people (under 30 in 1994) from thirteen different countries has been drawn. The selected technique will be a fixed-effects model where job mobility endogenous nature is taken into account and where the marginal wage increase for movers is approached. Results show that, on average, young workers who move across employers (being initially worse paid than the stable ones) achieve a positive increase in their wages vis-à-vis those who remain with the same employer. This would mean that job mobility has a compensatory role on the income of youngsters affected by job turnover. However, this advantage in the wage dynamics is not homogeneous across all types of young workers, being negative for certain groups: particularly for those who experience involuntary movements and those who change form job to job through an unemployment spell. Quartile regressions have been performed in order to check to which extent mobility is more harmful or rewarding along the distribution of wages, and rewards show to be indirect proportional to initial wages.

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0. Introduction

Job mobility is one of the most relevant features of the first years in the employment career. It has been studied from different theoretical perspectives such as the job-matching theory (in the tradition set by Jovanovic) or the career mobility model (Sicherman and Galor). Both theories share the view that job mobility is a voluntary decision; workers will decide to move from one employer to another because that will help them to maximise the future income flows along their working lives. Hence, in much of the initial literature on the topic, job mobility is referred to as "job shopping". Nevertheless, in fact, young people do not always change voluntarily their jobs: they are fired or, very often, their temporary contracts are not renewed. What's more, an excessive job turnover at the beginning of employment careers may seriously damage labour market outcomes in the mid or long term.

This piece of work is aimed at studying the rewards to job mobility and whether it is a proper tool to experience wage growth and, eventually, escaping situations of low-paid jobs. The data-base used will be the European Household Panel Survey (complete, from 1994 to 2001), from which a sample of young people (under 30 in 1994) from thirteen different countries has been drawn. The selected technique will be a fixed-effects model where job mobility endogenous nature is taken into account and where the marginal increase of movers is not only determined but also split into different explanatory factors.

Results show that, on average, young workers who move from one employer to another achieve a positive increase in their wages against those who remain with the same employer. This would mean that job mobility has a compensatory role on the income of youngsters affected by job turnover (since their wages are initially lower than those of stable young workers). However, this advantage in the wage dynamics is not homogeneous among all young workers, being even negative for certain groups. Finally, this wage premium is far more important for those initially in very low-paid jobs than for the rest, given that involuntary movements and even movements through unemployment will not have the typical stigmatising effect that may be observed in other groups.

The contents of the paper are displayed as follows: Section 1 reviews the main theoretical approaches to the relation between job mobility and wage dynamics. After that, the data base will be presented; Section 3 is devoted to some basic descriptive statistics on the link between job mobility, wages and wage dynamics. Section 4 displays the econometric model specification. Section 5 shows the main results from all the multivariable models and finally some conclusions are drawn from those results.

1. Job mobility and wage mobility, which was first?

When tackling with the effect of job mobility on wage dynamics it seems unavoidable to find references on the same link in two opposite directions: wage mobility is often seen as a result of decisions on job mobility, whereas at the same time workers decide to move when they notice that their wages do not improve with tenure; They use job mobility to cause drastic change in their careers. Therefore, it is very difficult to think about the relation between job mobility and income mobility in the early career as unidirectional.

Following Le Grand and Tåhlin (1999), there are several alternative theories aimed at explaining the link between job mobility and income dynamics. According to the human capital theory, wages grow with the accumulation of specific human capital (Becker, 1983). If wages pay for the worker's productivity, job mobility is not a crucial explanatory factor on wage dynamics, whereas empirical evidence points on the opposite direction.

Another approach for the study of job mobility is focused on the quality of the job-worker match: workers move across jobs in order to find a good match which pays for their aptitudes and meets their expectations. In the models of Burdett (1978) and Jovanovic[1] (1979) individuals invest on learning about their own productivity and take jobs as "experience goods". Once they have experienced them they are able to know whether they are worth or not and decide to move if a better match can be found. In this model, wages grow through jobs as a reward to the search for better matches, even regardless the argument of the accumulation of specific human capital.

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[1] Jovanovic (1979) reaches the conclusion that the worse the quality of a matching, the shorter it is. If wages reflect average productivity, then badly matched workers will find that their human capital is badly paid, so that there will be more better paid employment opportunities in the market, which generates a higher level of voluntary mobility among workers. Besides, employers will also have incentives to dismiss those workers who are not properly matched with their posts.

For some other authors the sign of the net expected effect of job mobility on wages is ambiguous. It depends on the (in)voluntary nature of mobility. Orthodox theories (job turnover model, search models and career mobility model) rest on the assumption that mobility between employers is voluntary. Job mobility contributes to wages growth precisely because it is an strategy for achieving it. However, internal labour markets models and the theory of segmentation take into account that, the fact that a large part of job mobility is far from being voluntary: the job-to-job mobility in the secondary segment or across temporary jobs, which do not provide specific human capital, do not contribute to the progression in wages either. Occupational job mobility related to the primary segment does it, though; therefore in the primary segment mobility is voluntary and worthy or profitable, whereas the opposite holds true for the secondary segment.

In this vein, if we consider workers in low-paid jobs as a representative group of the secondary segment, given that these workers find difficulties or barriers to exit secondary segment jobs, we might even expect job mobility to be more profitable among those who are neither very well paid nor in the lowest part of the earnings distribution.

Job matching models may be classified as "behavioural models": workers decide to perform job-to-job transitions given the incentives to do so they find in the market. Nevertheless, some authors (Altonji and Shakotko, 1987) are very sceptical about this assumption and they think that the relation between tenure, wage dynamics and mobility does not respond to a rational approach but an econometric problem: there may be unobserved heterogeneity due to the fact that "mobile" and "stable" workers have different tendency to leave their jobs (therefore, it is a self-selection problem). If "stable" workers have the chance of investing in specific human capital whereas "mobile" workers do not, then wages in the same job may increase even faster than between jobs.

None of these extreme job turnover models may fully describe the link between mobility and wage dynamics but, except in extreme circumstances, they are observationally equivalent as regards the duration of workers-jobs matches. This suggests that the researcher needs to have additional information on the quality of the match or the productivity of the worker in that job compared to others if she wants to distinguish between both approaches. Needless to say, this kind of information is hardly ever available.

Empirical evidence on the relation between job mobility and income dynamics usually takes this bi-directional relation into account. For instance, Flinn (1986) develops a version of Jovanovic's job-match model in discrete time. His results point the need for considering simultaneously job turnover processes and wage growth in the study of labour market experiences of young people.

One of the most well-known empirical contributions on job mobility and individual wage growth among young workers is Topel and Ward (1992), who analyse both the effect of past job mobility on current wages and past wages growth on current decisions of job mobility. Job mobility, when non conditioned to wages or wage increases in the past, diminishes with tenure and experience. When job-to-job mobility decisions are conditioned to the wage received, the pattern changes, though: holding wage constant, the probability of leaving a job should increase with seniority or, at least, the relation between seniority and the tendency to leave a job should vanish. They find it does not.

Contini and Villosio (2000) explore the relation between job mobility and wage increases in Italy and split wage increases into the factors related to employers characteristics and the ones related to employees'. Workers who change from one employer to another experience higher wage increases than those who do not, but this is only true among young workers. Besides, the wage increase between jobs decreases when workers experience unemployment between both jobs and, the longer the unemployment experience is, the less profitable job mobility is. Finally, although job mobility pays, and excessive job turnover may cancel the initially positive result of mobility on wages.

Not all empirical evidence on job mobility and wage growth corroborates these results. Widerstedt (1998) studies the impact of mobility on wage increases among young Swedish workers. She finds that "stayers" wages are flatter with experience than movers'. This contradicts the usual conclusion about "stayers" registering steeper wage curves as a consequence of their higher investment in specific human capital.

In turn, Le Grand and Tåhlin (1999) present job-to-job transitions as a mechanism to maximise the flow of income throughout working life. They study the evolution of wages among 26 through 35 year-old workers and they find that both internal and external mobility generate different trajectories, but in both cases they have positive effects on the year-on-year rate of wage growth.

2. The data base: the European Community Household Panel (ECHP).

In order to gain evidence on both determinants of and rewards to job mobility, the data-base used here will be the European Community Household Panel (hereinafter, ECHP). This survey gathers information on several socio-economic aspects in the European Union, being labour market one of the most important fields considered in the survey. This data-base, produced by *Eurostat*, has two very important features which make it particularly interesting and useful for the study of labour market dynamics in the European Union: it is not only strictly comparable (being designed with that aim) but also longitudinal. The countries included in the study are Germany, Denmark, Netherlands, Belgium, France, United Kingdom, Ireland, Italy, Greece, Spain, Portugal, Austria, and Finland: all the EU-15 except Sweden and Luxembourg. Sweden has been left out because of certain difficulties for following the sample due to the implementation of the survey in that country and Luxembourg has also been excluded because of the small size of the sample.

As for the type of information we will need in our analysis, the ECHP is provided with information on characteristics of jobs such as occupation, industry, size of the firm, public or private employer, monthly (both gross and net) wage and length of working week, among many others. It is also possible to estimate tenure at the moment of the interview from the distance between the date of the interview and the beginning of the relation with the employer; and hourly gross wage can be imputed from the working week and the monthly salary. Unfortunately, there are some differences in the final implementation of the survey[2] that hinder, anyway, the use of all the variables potentially interesting explanatory variables, with satisfaction and job search being of the most relevant ones, since they are not available for Germany and the UK and, at a lesser extent, Ireland. Given that we wanted to gather as many countries as possible we have not used these variables, which will be, nevertheless, tested for the countries for which they are available in future versions of the paper.

The ECHP micro-data has been completed with several pieces of information that entail to provide with national-wide (and even regional-wide) institutional and business cycle differences. For such purpose we have been able to collect, from various

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[2] Due to budget constraints, the ECHP was not directly implemented in Germany and UK from 1998 onwards. Instead, a harmonised version of BHPS and GSOEP, the British and German households panel surveys, is available for ECHP users.

statistical sources (European Commission, OECD, Eurydice) relevant information on the evolution of prices, overall business labour productivity, unitary labour costs, compensation to employees, tax wedges on wages, unemployment, employment (rates and growth of levels), regional per capita income, trade union density, enrolment rates for different groups of age and gender, among others. We will comment along the text the role of each of those national-wide and time-varying covariates.

As for our main explanatory variable, there is no explicit question in the survey to inform us if the worker has changed across employers during the period of observation. Therefore, job mobility is detected when an individual who was initially employed, reports tenure lower than one year in the following interview. Tenure is computed from the date of the beginning of the relationship with the current employer. Should an interviewee sign several contracts in a row with the same employer s/he would report the date when the labour relationship began and therefore no job change will be found. Every employed person will report as well whether s/he experienced unemployment before accessing the current job and why s/he left the previous one. This information for job movers will derive in more complete variables combining movements across jobs with willingness in job mobility and unemployment spells between jobs. All those combinations will be used in the empirical analysis and have shown to be relevant when looking at job mobility.

3. Some first evidence on wages and job mobility

In the next paragraphs we intend to provide a quick but exhaustive picture of both job mobility patterns and the link between wages, wage growth and job mobility. We have pooled all the waves of the ECHP for computing the descriptive values. They are, therefore, average values along the observation period.

Table 1.A (in the appendix) shows the average job-to-job transitions rate during the period of interest. We expect the profile of job mobility in a country to affect the relative rewards to job mobility in that particular country. Some differences arise from it: employment is more stable in Belgium and Germany than other countries, followed by France, Portugal and Austria. Spain registers, by far, the lowest stability in employment, followed by Denmark and UK, Ireland and Finland. As for mobility patterns, direct job-to-job movements are commoner in UK, Ireland and Denmark than in the rest of the countries, whereas transitions from unemployment are particularly

common in Spain. Finland, Greece an Ireland, and the highest incidence of long term unemployment is in Spain. As for the reasons for moving, voluntary movements for accessing better jobs are more common in the UK and Ireland than in any other country, whereas dismissals or other job separations imposed by the employer are slightly more common in Denmark and UK than in other countries, with separations due to no renewals of temporary contracts are far more frequent in Spain and in Finland then anywhere else. And regarding the combination of willingness and presence of unemployment, job-to-job across shorter than one year unemployment spells are more usual in Finland and Spain and, to a lesser extent, in Ireland and Denmark, whereas direct job-to-job movements are particularly concentrated in Ireland and the UK.

The next indicators will deal directly with the apparent effect of wages on job mobility, and of job mobility on wages and on wage growth. Figure 1 is the compound of several figures (namely, 1A, 1B, 1C and 1D): the average wages in the observation period are shown for those who will experience certain transitions and those who have already experienced them. The aim of these charts is observing whether past transitions may be related to wages or whether current wages may have relation with future transitions. We have distinguished, for those whose wage is observed for the first time, between those who come from non employment or from a different job in the previous year and, in that case, whether they have moved to their new job across unemployment or not. Those are compared to the ones who are always working for the same employer. The hourly wage has been computed from monthly current wages and from normal working week length, which implies the assumption that this working week is stable throughout the year.

The figure is divided in four charts to provide a clear picture of the main trends in wages and job mobility: it shows average wages for different types of movers (versus stayers) before and after several types of mobility. In all countries (except in Spain, though with a slight difference) wages of those who will end up in unemployment in the following interview are lower than in the rest. The second lower wage is for those who will move into a new job across an unemployment spell, and the maximum initial wage, without exception, is for those who will remain with their current employer. Interestingly enough, those who will experience an involuntary job separation are, in average, worsly paid than the rest and, again, stayers register initially the highest average wages, which are nevertheless quite closed to the ones of those who will willingly move to another employer to get a better job.

When looking "backwards", we may notice that current wages are highest for stayers and, in some countries, wages for those who have just come directly from a different job are even higher! That is the case in Belgium, Denmark, Italy, Austria, Finland, although the relative "premium" for direct job-to-job movers is almost negligible. As expected, the lowest current wages correspond to those who come from unemployment, particularly those who come from a long spell (more than one year) of unemployment. Should we look at current wages according to the willingness in latest transitions, those who have left their prior jobs willingly register even higher wages than stayers do in Denmark, the UK and Austria. Stayers and voluntary job-to-job movers register very low wage differentials in Ireland, Spain, Germany, Netherlands, Finland, Portugal, Greece and France, which may give an idea of up to which extent job-to-job mobility, when voluntary, may help to "catch up" with the expected wage-profile.

It seems, therefore, that although mobility is linked to lower wages, it has a compensatory effect on these initially worse working conditions, and contributes to the reduction of differences between movers and stayers. Besides, it is particularly interesting for those who really do "job shopping", that is, move voluntarily across jobs, whereas that is not the case in other types of movers.

Some conclusions we may reach from Figures A1 to 1D is that those who will experience involuntary job separations and unemployment are initially worse paid than the rest and the difference seems to widen when we look to this group afterwards, unemployment and temporary jobs or dismissals may really scar their wages. The opposite holds true for a certain type of youths who find better matches in the labour market, part from initially not badly paid jobs and construct directly and without the scar of unemployment and dismissals their career. Are we facing a "dual" pattern of wage dynamics?

Figure 2 gathers information on year-in-year hourly gross wage growth and it has also been divided in four charts (2A, 2B, 2C, 2D): it has been computed from two consecutive wages observations when individuals were observed as employees in two consecutive interviews[3]. The information here is basically complementary to the one in figures 1: figures 2A and 2B gather wage increase in percentage points compared to

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[3] This is important to be mentioned since, should we widen the amount of time between observations for allowing for longer elapsed duration on non-employment spells between jobs, differences could be even wider. This is precisely one of the immediate extensions of the paper.

wage in the previous year whereas figures 2C and 2D compute the relative increase of different kinds of movers compared to stayers. We will call this ratio a "wage growth prima" for mobility. Should it be above 1, it would mean that wage mobility contributes to a larger year-in-year wage growth than one year of further tenure with current employer.

Figure 2A and 2B show that, in most cases (with the interesting exception of France), job mobility is related to steeper wage curves and direct and voluntary mobility are, broadly speaking, more rewarding than indirect (through unemployment) or involuntary job movements. In some countries mobility through unemployment hardly affect wage growth, it does not seem to cause any damage to the success of the mobility. This is the case in Spain, Italy, Greece, Belgium and, at a lesser extent, Portugal, Ireland and the Netherlands. It is willingness in movements which makes a more pronounced difference: in all countries with the exception of Germany and UK, wage growth is much more linked to voluntary movements than to involuntary ones.

The "wage growth prima" in figures 2C and 2D show a similar picture: transitions through unemployment seem to damage wages particularly in France and are hardly ever rewarding in relative terms in other countries. Voluntary job changes, even if through an unemployment spell, are always more rewarding than the rest. Again we notice the striking exceptions of Denmark, Germany and Belgium as regards rewards to involuntary separations.

Given that our data-set is international, we think that institutional frameworks and the evolution of prices and economic cycle might help to explain part of the differences in wages and wage dynamics. We are provided with a wide range of variables linked to institutions, although not always are the ones we would expect to have the most direct relationship with wages. A selection of institutional and economic framework variables are displayed in table 2A. The correlations between gross hourly wages (both levels and year-in-year increase) and these variables for each country shows that even for the same factors wages react in a different way in every country. That is the case, for instance, of trade union density[4], which seems to be negatively correlated with wage increases in France and Austria, whereas positively in most of the

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[4] The combination of trade union density and collective bargaining coverage would supply a more accurate measure of the impact of trade unions and collective bargain. Unfortunately, information about collective bargain coverage for the period of observation has not been found yet for almost half of the countries in our sample.

rest of the countries. These differences should be taken in mind when interpreting results of multivariate regressions.

4. The econometric strategy

A first approach: the fixed-effects model

The model used here follows the idea of those who study, for instance, the scarring effect of unemployment on wages[5], such as Arulampalam (2001) and Gregory and Roberts (2001). When either wages or wage growth are estimated, there are two relevant possible econometric problems: unobserved heterogeneity and selection bias or self-selection. Besides, the objective of the model is to measure the effect of a decision (job mobility) which may be considered endogenous to the model (since it also depends on the observed dynamics in wages), and this endogeneity needs to be controlled for as well.

We therefore start with the problem of unobserved heterogeneity: there may be characteristics that are unobservable for the researcher but influence both job mobility decisions and wage growth; Examples of such variables are the prospects of promotions, the ability of the worker and the quality of the relationship between the employee and their counterparts or their superior officers. Should this occur, ordinary least square (OLS) estimations on cross-sectional data will generate biased estimators of the returns to education or experience and tenure on wages or wage growth.

In order to take into account unobserved heterogeneity, the related features are depicted in a single variable which receives the same value along the time but a different one for every individual. This peculiarity is known as fixed-effects control in estimations with panel data. The initial equation will be, therefore, the following one:

$$Y_{it} = X_{it}'\beta + (C_{it}Z_{it})'\gamma + \alpha_i + u_{it,}$$

Where $i = 1, \ldots, $ n and $t = 1, \ldots, $ T. In this equation Y_{it} is the hourly gross wage. X_{it} is a vector of observable variables referred to the worker, the job and the business cycle. They can change both along the time and between individuals. C_{it} is a dummy variable expressing whether the worker has moved between two employers in the period t, t+1 (between the two interviews) when the increase in wages is measured; Z_{it} is a

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[5] The election of a fixed-effects model for panel data has been decided from the arguments developed in Heckman *et alli* (1999). The methodology followed here is an application of the so called *before-after*

vector of observable variables referred to individual characteristics, both regarding trajectories and initial income. For instance, it includes variables defining willingness in job-to-job movements and the presence of unemployment spells between jobs, as well as the position of the worker in the previous year's income distribution. α_i is the part of the error term which is constant along time, it varies across individuals, and it depicts the unobserved heterogeneity, in other words, those features of the worker, the job or the job-worker match that are unobserved for the researcher but determine the variables we aim at studying. At last, u_i is the random part of the error in the equation.

The eventual correlation between observable and unobservable characteristics must be taken into account through the estimation of the vector of parameters β and γ. The prior model has been estimated using intra-groups estimators, that is, fixed-effects, which is equivalent to an OLS estimation where the variables are defined as deviations around the individual means[6]. This method is a generalisation of the "differences in differences" estimation (Heckman *et al.*, 1999), that allows the researcher to observe the effect of the change between employers net of unobservable common features to individuals, such as the economic cycle, inflation and changes in institutional aspects that necessarily condition gross and net wages, such as tax wedges on labour. Given the nature of the dependent variable, this procedure requires, at least, two observations of wages (in consecutive interviews) in every individual of the sample. This restriction is the second econometric problem referred at the beginning of the Section: the eventual sample bias.

Randomness in the sample of individuals classified as wage earners in two consecutive interviews[7] is quite unlikely. In order to control for the eventual selection bias that the non-randomness of the sample selection could cause, we will use the standard methodology introduced by Heckman (1979): in a first step, a random-effects *probit* model will be used to define the profiles of those who belong to the sample

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estimator, which is a technique used to evaluate the impact of active labour market policies on individual wages or income.

[6] In fact, following Baltagui (1995) when resolving a fixed-effects model, the mean values of the variables for the given period must be substracted from the expression $y_{it} = \alpha + \beta x_{it} + \mu_i + \nu_{it}$, so that the constant part of the error vanishes and finally, the estimation does not correspond to the dependent variable itself but to the distance between the dependent variable and its mean, and the coefficient β of explanatory variables refers also to the distance between the value of the explanatory variables in every moment and their means.

[7] The type of estimation I am performing here (the fixed effects regression on wages) only requires at least two observations of wages for each individual and, of course they do not need to happen in consecutive waves, although having consecutive interviews ease the computation on year-in-year wage growth. In next versions of the paper this shortcoming should be solved.

(individuals for whom the increase in wages may be estimated). In a second step, the inverse of Mills ratio is deployed in the model of determination of wage increases as an additional explanatory variable, so that it will control for the selection bias. If the coefficient linked to this new variable were significant, then we would be able to affirm that there was a selection bias problem in the estimation.

The dependent variable in the *probit* selection model is a dummy variable, which takes value 1 if the young individual is a wage earner during, at least, two consecutive interviews and 0 otherwise. The vector of explanatory variables is made up by the relation with the head of the household, whether the individual devotes part of her time looking after other people (either children of adults), gender, educational attainment and potential experience in the labour market[8]. As for institutional variables, we have included national enrolment rates for age groups and gender and national temporality rates for age groups. And the business cycle is controlled for through youth employment rate in the first interview of each individual and increase in youth unemployment rate from the first interview to the following year. Country dummies have been added, given that it is a random-effects regression, to control for all the differences that may remain once institutions and economic cycle are controlled for.

As regards the equation of wage growth, the explanatory variables are referred to the characteristics of the job and the worker which are those constant along the time (gender and country of residence) are dropped out of the model and the remaining ones are occupational attainment, tenure and experience in the labour market, public or private employer and size of the firm if private employer, length of working week, whether some formal education was supplied before the current job begun and type of contract. In a second specification, in order to save degrees of freedom and given that occupational dummies showed hardly significant coefficients, the occupation has been approached through the socio-economic status index ISEI[9] (*International Socio-Economic Index of Occupational Status*) as a proxy of occupational attainment in order to measure the effect of marginal changes across occupations towards more valued ones. Given that this index measures, to a certain extent, qualification required for the

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[8] Potential experience in the labour market is computed as the distance between the age at the moment of the interview and the age the interviewee had when she achieved her first job.

[9] The status indicator ISEI was designed for the ISCO-88 occupations classification system in 1996 (Ganzeboom and Treiman, 1996) and it measures the attributes of an occupation that may be translated into income. The scale was elaborated through wage equations so that occupations are ordered according to the wages they generate. The index is valid for occupations in many different countries and it is stable

job, no more human capital indicators have been used in the specification of wage increases equations. The inclusion of ISEI allows us as to add controls for industry[10], although quite aggregated (one digit).

The business cycle is observed through two variables: initial employment rates and increase in unemployment across the two observations needed to compute wage increase. Regional income[11] intends to measure both quality of life and average income expectations, and finally the initial relative wage is controlled for through a variable expressing the quartile of the national-wide distribution for initial wages. As for other national-wide features that may influence wages and wage dynamics, we have selected the following ones: trade union density from administrative registers as % of total employees in the country (computed from LFS data), Average Annual Hours Worked (increase from previous year), Labour productivity in the business sector (increase from previous year), total tax wedge on labour (share of total income tax and employer and employee social contributions in gross wage earnings), harmonised consumer price index, nominal compensation per employee (increase from previous year) and nominal unit labour costs (increase from previous year).

As regards the key variable of the model, job mobility, four complementary specifications have been tested: the first is the simplest and it consists on a mere dummy reflecting whether the individual has moved across jobs since during the last year. In the second one, C_{it} takes value 1 if the individual has moved directly from one employer to another, 2 if the individual has moved between employers through a spell of unemployment and 0 if the interviewee remains with her initial employer. in the third one, C_{it} also introduces the voluntary nature of the separation between employer and employee: it takes value 0 if the individual remains with the same employer, 1 if she left the former employer because she wanted a better job, 2 if she was dismissed, 3 if the temporary contract she had was not renewed, 4 if she left the former employer due to

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along the time. The values of the index oscillate between 16 (for cleaning services and non qualified primary sector workers) and 90 (for doctors, lawyers and judges).

[10] Industry is a relevant variable to control for characteristics of jobs, one of the most relevant one could be labour productivity. In the near future I will be provided with detailed information on labour productivity per industry, which should be a better proxy for wage differentials than the mere dummies for industry. This variable is expected to contribute to improve our results (according to European Commission, 2004, inter-industry labour productivity and prices may encounter up to 80% of across-countries wages differences)

[11] It has been measured by real purchase parity power expressed as a percentage of per capita GDP, using data from the REGIO data-set, aggregated at NUTS2 level.

personal or family reasons, and 5 if she left due to "other reasons"[12]. A fourth specification combines willingness or unwillingness to move and whether there was an unemployment spell in between.

All these specifications also have been combined with initial relative income, first as a ratio of initial income over the average wage for the same occupation and industry and then as the quartile of the youth wage distribution in the interview before the current wage is observed. In doing so, we expect to control for the relative rewards to mobility from different points in the income distribution. "Job shopping" is supposed to be more profitable for those who are not in a high point of the distribution, and they are less prone to move anyway, but for very low wage earners job mobility does not necessarily mean a proportionally better situation if we thought that they are strictly related to dead-end, secondary segment jobs.

A second approach: the inclusion of job mobility with instrumental variables

In order to explore in deeper detail the endogeneity of the "job-mobility" variable, we have tried to take this into account through a two-step estimation, using instrumental variables to approach the likelihood that an individual moves across jobs instead of introducing job mobility directly.

The study of wage growth differentials between two groups of workers through an Generalised Least Squares equation on wage growth including a dummy variable related to the group the individual belongs to is not right when the groups of workers are defined from variables that are related to the dependent variable[13], which means that there are either observable or unobservable characteristics influencing both the probability of being in each group and the wage dynamics. In that case, the GLS coefficients will be biased and it will be necessary to tackle the problem with a somehow more accurate methodology. A possible solution to that problem consists on setting out two equations of wage increases by GLS, one for each group. However, once more, when the fact of being in either group is not an exogenous matter, the estimations in both equations will be biased. In order to tackle this problem, a very spread solution would consist on estimating a dummy variable through a non linear (i.e., a *logit*) model

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[12] "Other reasons" include illness and coming back to study, among other possible answers, but we are not able to distinguish among them.

[13] Examples of such variables are working for the public or the private sector, being a temporary worker against holding a permanent position, among many others.

and "plug" the predicted values on the second step of a two-stage least square procedure. That might not be a proper strategy unless the fit of probability were really accurate and precise, which is really difficult to achieve. As pointed in Angrist and Krueger (Angrist and Krueger, 2001), in doing so, researchers risk specification error.

A smart alternative to this two-step procedure combining linear and non linear functions is the use of instrumental variables or two-step least squares (G2SLS) model (See Baltagi (2001) for an introduction to panel-data models with endogenous covariates). They take into account the endogeneity of the defining variable of the groups considered. Balestra and Varadharajan-Krishnakumar G2SLS implementation has been used since is computationally less expensive. The expression of this second specification would be as follows:

$$Y_{it} = X_{it}'\beta + (JM_{it})'\gamma + \alpha_i + u_{it,}$$

$$Where \ C_{it} = f(JM_{it})$$

Where we do not need to specify the functional shape of "f". JM_{it} is a set of variables that are used instead of the dummy indicating job mobility. It intends to cover the profile of those who have a higher probability of moving between employers, and it is made up by national-wide youth employment rate, national-wide temporality rate at the age group and strictness in employment protection legislation using the OECD index, which ranks from 1 to 5. These variables have shown to be very relevant when estimating the probability of moving across jobs in previous versions of the paper (Davia, 2003).

Once the model has been estimated for movers and stayers, the resulting wage increase from the two equations has been used to compute a prima for movers against stayers.

5. *Results of the multivariate estimations*

Table 1 shows the results for the selection model to define the sample for the study of wage mobility: as expected, women are less prone to be in the sample than men are, and that more qualified youths will register also a higher persistence in the sample. Those who devote some time daily for looking after other people will have a lower probability of belonging to the sample, and the ones who are heads of their households

or spouses will register a higher probability of being employed in two consecutive interviews. Spanish and Greek youngsters are significantly less prone to be part of the sample than the rest. Youths living in a country where enrolment rates are high for their age are less prone to be part of the sample, as well as those who leave in countries where employment rates are low or unemployment rates for youths are increasing during the period of observation.

The fixed-effects wage estimation has twelve complementary specifications. The difference between them is the inclusion of industry and the substitution of occupation by the ISEI index and, moreover, the way job mobility is taken into account. In the two first ones, direct job-to-job changes are distinguished from movements across unemployment spells, whereas the second pair it is combined with the quartile distribution of income, in the third pair controls for the eventual reasons for moving are included, while in the fourth set willingness of movements are combined with the quartile distribution of initial income. The fifth pair of estimations combine willingness of movements and the experience of unemployment between jobs, and the sixth one combines the former with the position in the initial wage distribution.

For the sake of brevity, we will comment results for the whole arrange of explanatory variables in the first specification. Given that the coefficients of controls different from job mobility indicators remain mostly unchanged across specifications, Table 3 displays only the values for the coefficients of interest. Table 2 shows the wide-known link between wages, tenure and experience, and they also respond positively to qualification, which is approached here through occupation and occupational status, and formal training before the current job is also rewarded. Public sector workers and those holding permanent contracts register, in average, higher wages but a more stagnant year-in-year wage growth than private sector employees, and workers who go to a larger firm also experience a higher increase in their wages. Interestingly enough, working less than forty hours a week is related to higher hourly increase of wages whereas increasing working week beyond 40 hours damages gross wages. The sample selection coefficients are significant and positive, meaning there is a correlation between the observed features that make and individual more prone to be employed and earn higher wages. As for institutional and cycle-related variables, increases in unemployment hardly ever influence wage growth, whereas changes in tax wedges on labour may affect negatively at the wage reported by the worker and measures of global productivity and

competitiveness in the country, such as increase in overall labour productivity in the business sector, are related to higher wages. On the other hand, increases in nominal unit labour costs also are related to higher income perceived by the worker. The inflation index registers a negative sign because the wages we are using, in order to allow for comparability across countries, are estimated using purchase parity power indicators. Then, inflationary processes derive into a loss of purchase capacity, even if nominal wages were kept untouched. Some of the institutional variables we are provided with do either not register the expected sign or are difficult to interpret. Further effort in the search for more suitable indicators needs to be done.

Last but not least, the key variable in the model: job mobility. Initially (Table 2) moving between employers is profitable, but in table 3 we will notice that this global effect is fare from being homogeneous for different kinds of job movers.

We will now turn to table 3 to show the different effects of job mobility on wages: Moving to a new employer is significantly and positively rewarded, only if this change has been direct, that is, without going through unemployment. The experience of unemployment seems to have a negative effect on wages in the initial specification, and turns not to be relevant when dummies for industry are considered. Although direct job mobility is, in average, profitable, it is much more profitable for those whose wages were initially under the median of the distribution and seems to be even negative for the best paid workers. As expected, compared to remaining with the same employer, those who left freely their jobs in order to get a better one were rewarded in the expected way, while those who did so because of personal or family reasons, even for "other reasons" (where illnesses and coming back to studies are included as possible answers) are not scarred in any way. Interestingly enough, wages of those who left previous jobs obliged by the employer are not particularly damaged unless they were working in dead-end, temporary or short-time contracts. Again, voluntary movements are only relevant for those with lower income and even for those initially in the third quartile of the distribution in one of the specifications, and involuntary movements are only really damaging wages of those who were really well paid, being initially in the top quartile. Even involuntary movements from very low initial income may be positive for wages along the observation period and for intermediate positions in the income ranking no clear conclusion may be reached, it turns from negative and significant to non significant when changes across industries are controlled for.

When we combine willingness and unemployment spells we observed the expected reinforcement effect between both circumstances: across voluntary movers, the ones for which job mobility really pays are the ones who do not experience unemployment, and even if movements are involuntary, they really scar wages if young workers experience unemployment in between both jobs. Otherwise, should they be able to anticipate the end of the job even if it was not decided by them (i.e., if they held a temporary contract), their wages are not negatively affected. Finally, when all this is combined with initial position in the wage distribution, the effects are, again, reinforced: those who initially are paid under the median of the distribution get higher rewards to mobility, but only if movements are direct, regardless who (the employer or the worker) had the initiative of separation. As for those who earn over the median of the initial distribution, only movements involving unemployment are the ones which actually scar wages if initially in the third quartile.

Summarising, it seems that whenever youths are able to anticipate their job separation so that they do not go through unemployment until they find another job, their income will not experience serious damages. Temporary jobs, which are very often combined with periods in unemployment are more related to wage losses than other sources of job mobility. Wage growth reacts positively to job mobility in low income earners, but the fact that this is conditioned to non unemployment experiences or voluntary movements, when they are somehow exceptional cases, should draw our attention in the majority of workers from secondary segment, badly paid jobs who do not do "job shopping", as it is labelled in job search literature, but they suffer from job rotation.

We have repeated the estimations for each country, reducing as much as possible the explanatory variables so that interesting inference could be still mad from small national samples and only the coefficients linked to direct, indirect, voluntary and involuntary movements will be showed in table 4. The pattern, thought similar across the countries, has two relevant exceptions: any type of mobility seems to be profitable in Belgium, and neither in Austria, France or Denmark involuntary movements really scar wages.

When endogeneity in job mobility is taken into account, apparently no differences arise (table 2): In a very first approach, we have tried to substitute a dummy variable expressing job mobility through three instruments. Given that we wanted to avoid correlation between the final dependent variables, that is, wages, and the

instruments, the typical variables to be used when defining the probability of moving, such as previous wages and tenure, are not available here, since they are very highly correlated with current wages and current tenure. Therefore, we have used three institutional variables related to job mobility which, at least directly, do not necessarily affect wages: they are temporality rates for youths in the year when potential movements across jobs are observed, increase in youths unemployment rates between the moment when movements are observed and the current interview and strictness in employment protection legislation. The results show that the new variable, when instrumented, is still positive and significant.

The next step has consisted on checking to which extent we were approaching real values, that is, assessing the quality of our estimations comparing estimated values and real values. We have done so for each country and for both estimated wages and computed wage year-in-year wage growth from those wages. We have, therefore, estimated not only the wage growth that would result of our initial wage regressions, but also the prima these new wages would have implied for different kinds of movers compared to non-movers. Results are quite uneven across countries and are shown in Figures 3A and 3B. Figure 3A displays the ratio between the estimated wages for movers and stayers and the real wages for the same groups, both when when endogeneity of movements is taken into account and when the original variable is used as if it were exogenous. Results for models where endogeneity for mobility variables is taken into account or not are quite similar and, in general, do not differ too much from real values for stayers each country, with the striking exception of France, and the lower difference with Portugal and The Netherlands. Results for the movers when mobility is substituted by instruments are far from being satisfactory. Failure to predict wages correctly generate much more stressed incoherence for wage growth prima (as Figure 3B shows). There seems, therefore, that through the instruments we have not achieved a right approximation to real wages, with estimations of wage growth prima for movers being really erratic and much higher than the observed ones. We will stop the analysis here and our next step will be improving the treatment of endogeneity in mobility.

6. Conclusions and further research agenda

The aim of the paper was to discern whether job mobility helps to significantly improve wages and whether the wage growth bonus resulting from job mobility is higher for those workers in low quality (measured through wages) jobs or, on the contrary, they remain trapped in badly paid jobs even despite job mobility.

The analysis has been developed through two complementary methodologies: with the first one, a fixed-effects estimation, unobserved heterogeneity has been tackled and we have been able to confirm that the net effect of job mobility is positive only if the change between both employers is voluntary and/or direct (without going through an unemployment spell). In order to go into the nature of wage rewards to mobility taking into account endogeneity of movements across employers, a two-step least squares method (IV) has been implemented on the former fixed effects estimations. We have estimated a marginal or differential bonus for several types of movers in order to see which are, potentially, the more benefited collectives from job mobility.

Results point that job mobility helps to offset initial wage differentials and contributes to optimise future labour income. Although movers do never access to equivalent or higher wages than stayers, job mobility plays, in average, a compensative role on wage differences and contribute to the construction of ordered occupational careers [14].

Nevertheless, despite the fact that job mobility may positive for those who are in the lowest part of the income distribution even when mobility is not initially decided by the employee, we must keep in mind that job to job direct movements are not a common trend across low-wage earners, which are much more affected by the risk of unemployment. The scarring impact of unemployment experiences (more than the one for involuntary movements), which is clear amongst those who get relative high wages

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[14] The concept of ordered careers has been taken from Spilerman (1977), in the tradition of the concept of mobility chains developed by Piore. Spilerman defines career lines or labour trajectories as "relatively stable structures in the labour market through which workers move". These trajectories do not only depend on the personal features but also on the occupation, sector and firm where the individual starts her career. The basic characteristics in a career line are entry ports, number of positions, disposability for moving from a trajectory to a different one and attainment (measured through wages, status and labour satisfaction) according to the age of the individual or the stage in the labour trajectory. Spilerman classifies trajectories in three groups: ordered careers, characterised by progression in wages and status in an internal labour market, occupational careers, where continuity in a career is guaranteed but stability in employment is not, and chaotic careers, where there is no linear progression, but individuals "circulate" across jobs in the secondary segment of the labour market, hierarchies of according seniority do not exist and there is an intensive rotation between employment and unemployment spells. This approach is framed in the segmented labour market theory; for Spilerman the segments in the dual labour market theory correspond with trajectories or career lines.

according to their national standards, may be even more worrying in the case of the low-paid, which will find, as a result, more difficulties to get over their disadvantage.

When endogeneity in job movements is taken into account, it hardly looses significance as an explanatory variable on wage increases, but the low reliability of the estimated results obtained for movers calls for further research on the construction of better instruments or different strategies for achieving control for endogeneity.

As for the future research agenda, several shortcomings found in the current version of the paper deserve more attention: first of all, interruptions of employment or of information about wages for more than one interview will be included, so that scarring effects of long-term unemployment will be clearly detected and effects on wages should encounter for a higher arrange of disruptions along the initial years in working life. Secondly, cross-country wage differences should be tackled with a more suitable set of institutional or business cycle-related variables, together with indicators of labour productivity per industry that will encounter for a better estimation of wages.

And finally a better way of tacking endogeneity in job mobility decisions should definitely improve results and derive in a more accurate estimation of wage growth prima from different types of mobility. It is not only mobility itself but voluntarily in job mobility and whether it is combined with unemployment spells that should be approached. Prior results show that willingness of mobility is not quite difficult to be predicted, whereas unemployment spells between jobs are a tougher subject.

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Table A1: Job mobility patterns for youths (under 30 in 1994) across the EU (1994-2001)

	GER	DK	NL	BEL	FR	UK	IRE	IT	GR	ES	PT	AT	FIN
Mobility patterns (from situation one year before) for those who are currently employed													
Stayer	80.73	64.89	79.44	84.24	77.18	63.24	64.29	74.49	67.78	58.65	76.20	76.60	64.01
comes from long-term unemp	3.69	10.27	6.08	5.06	11.15	7.36	13.38	9.47	13.16	15.72	8.99	7.37	14.85
comes from a job through unempl.	1.46	3.76	1.64	1.71	1.03	1.50	3.06	3.33	2.91	6.39	2.75	2.56	2.25
comes directly from another job	4.55	10.80	6.60	4.19	1.65	18.50	10.92	4.14	6.45	7.58	6.88	6.61	7.16
Is not employed any more	9.57	10.29	6.24	4.79	8.99	9.40	8.34	8.57	9.70	11.66	5.18	6.86	11.72
Mobility patterns across those who are employed or used to be employed													
Stayer	85.64	67.47	84.54	87.36	82.23	72.53	69.16	82.03	78.47	65.08	81.22	80.36	66.80
Moved cause found a better job	0.58	6.84	4.62	3.60	4.87	9.89	8.85	4.10	4.80	7.09	4.99	5.28	6.29
moved obliged by the employer	3.34	4.73	1.18	2.73	2.31	4.29	2.66	3.09	5.67	3.18	1.95	3.07	2.50
moved due to end of temporary contr	3.75	5.49	3.06	3.78	7.99	2.91	4.69	5.94	5.06	18.89	5.44	1.68	13.01
moved due to "family reasons"	0.53	1.30	1.43	0.55	0.64	2.47	1.54	0.94	1.69	1.21	0.97	2.68	3.07
moved due to other personal reasons	6.17	14.16	5.16	2.00	1.96	7.91	13.10	3.89	4.31	4.55	5.44	6.92	8.33
Mobility patterns across those who are employed or used to be employed													
Stayer	85.64	67.49	84.54	87.37	88.24	72.53	69.18	82.07	78.47	65.09	81.22	80.36	66.80
moved in voluntarily through long-term unemployment	0.10	1.27	0.80	0.67	0.88	1.44	2.03	1.35	1.08	3.04	1.00	1.32	1.96
moved in INvoluntarily through long-term unemployment	0.03	0.15	0.10	0.10	0.06	0.44	0.41	0.54	0.32	1.05	0.47	0.77	0.16
moved in voluntarily across a short spell of unemployment	2.07	6.94	2.18	2.10	6.31	3.12	7.00	3.81	5.31	8.67	3.78	3.30	10.60
moved in INvoluntarily across a short spell of unemployment	1.28	3.71	1.51	1.52	1.07	0.93	2.78	2.56	1.92	5.39	2.26	1.84	2.16
moved in voluntarily directly from another job	0.45	5.47	3.57	2.87	0.88	7.05	6.79	2.66	3.52	3.93	3.97	3.87	4.14
moved in INvoluntarily directly from another job	2.94	5.54	2.96	1.35	0.95	6.94	4.56	1.61	2.77	3.73	2.94	2.81	3.22
ends up voluntarily in non employment	0.04	0.11	0.25	0.06	0.01	1.40	0.02	0.06	0.19	0.12	0.01	0.10	0.19
ends up INvoluntarily in non employment	7.48	9.49	4.19	4.06	1.65	6.60	7.62	5.88	6.73	10.03	4.81	6.40	10.93

Source: ECHP, waves 1-8, Eursostat

Figures 1.A, 1B, 1C and 1D: wages and job mobility (source: ECHP, waves 1-8, Eurostat)
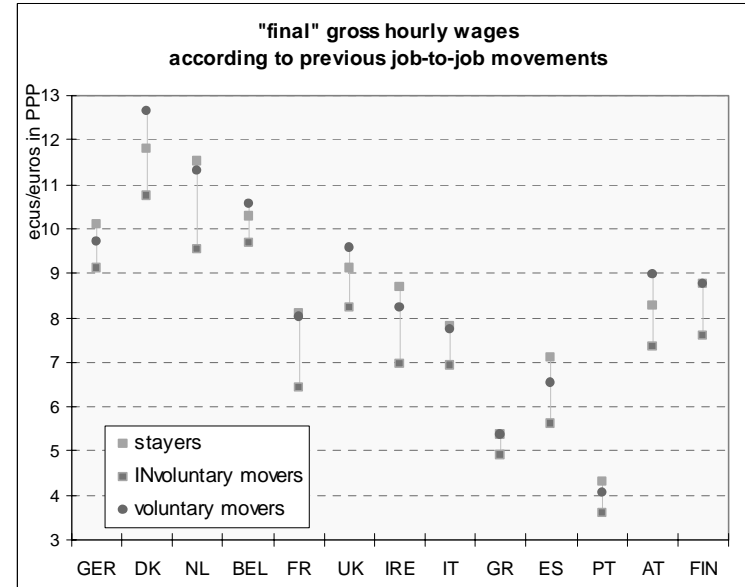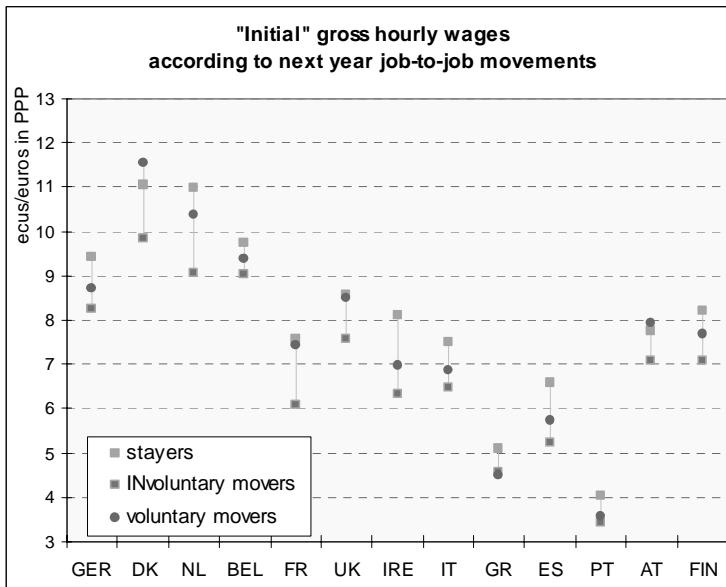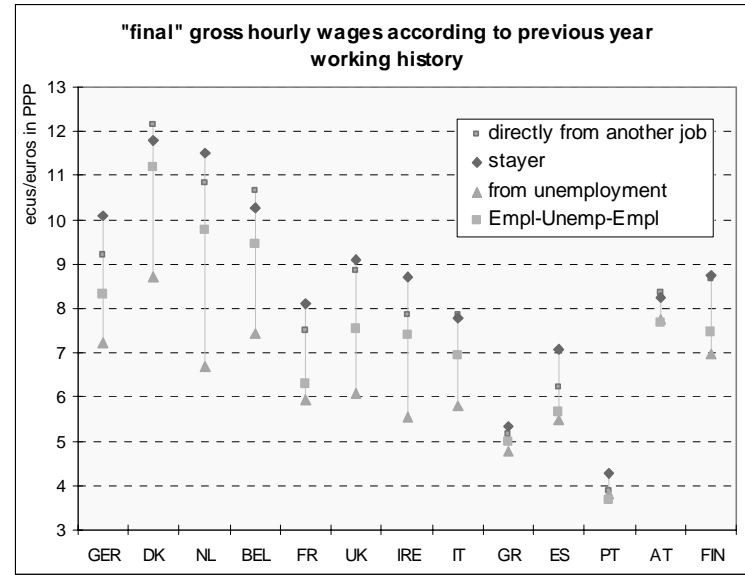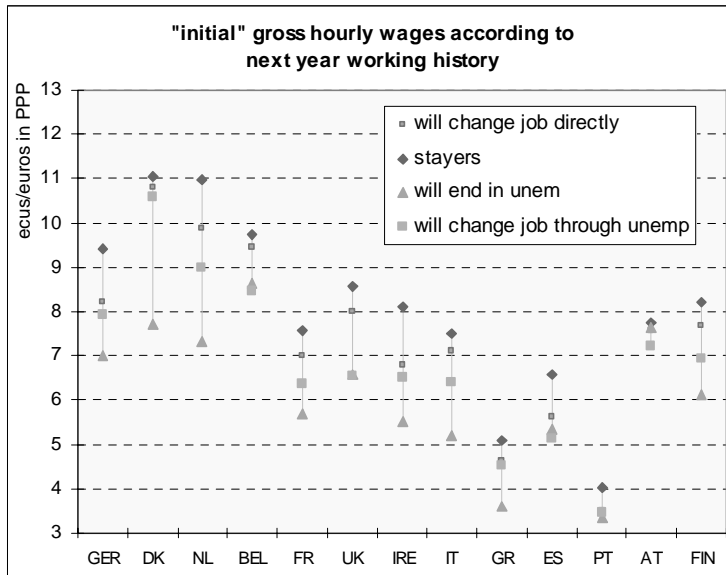
Figures 2A. 2B, 2C, 2D: wage growth and job mobility (source: ECHP, waves 1-8, Eurostat)

hourly gross wage year-in-year increase (%) according to job movements

empl-empl — empl-unemp-empl — stayers

hourly gross wage year-in-year increase (%) according to job movements

voluntary movers — INvoluntary movers — stayers

relative growth premia compared to stayers for different kinds of movers

voluntary with unemployment / voluntary direct movers / involuntary with unemployment / involuntary direct movers

relative growth premia compared to stayers for different kinds of movers

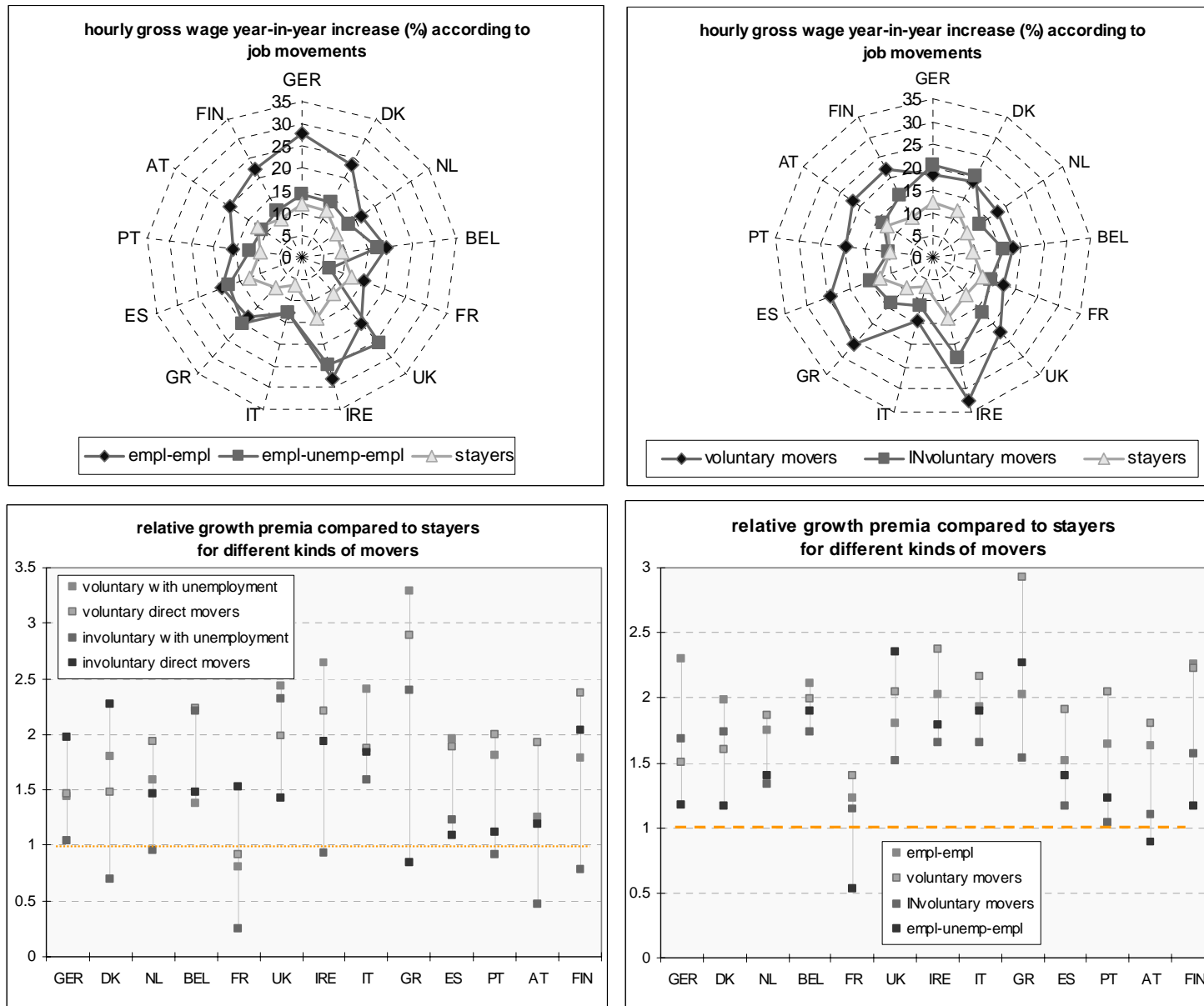empl-empl / voluntary movers / INvoluntary movers / empl-unemp-empl

Table A.2. Correlation between hourly wages and institutional and cycle variables (merging all the waves of the ECHP, 1994-2001)

	EU(13)	GER	DK	NET	BEL	FR	UK	IRE	IT	GR	ES	PT	AT	FI
DENSITY	21.80	-26.76	-38.97	-21.27	26.20	-31.68	-24.90	-17.49	-24.62	-20.18	-20.10	-21.20	-20.03	-20.11
AAHW	0.40	-10.92	-18.02	1.80	-14.62	14.56	-23.45	-3.21	-12.72	9.08	-3.31	-8.32	-6.17	-9.60
LABPRD	-12.77	-22.52	-19.71	-6.21	1.48	-10.79	-14.55	5.59	-19.69	8.57	-13.45	-12.01	-2.72	-2.43
WWEDGE	25.56	21.01	-27.01	-4.00	3.66	-20.76	-24.57	-17.51	-20.12	14.75	-15.51	-14.46	12.47	-19.85
HCPI	-28.35	-20.77	12.59	10.68	4.18	-12.81	-21.67	11.33	-21.29	-19.78	-8.48	-12.92	-20.27	16.99
NCPE	-28.74	-15.74	32.14	13.42	1.96	1.10	20.70	17.58	-13.40	-15.70	-4.26	6.30	-2.16	5.65
NULC	-22.69	-3.97	26.63	20.42	2.58	6.75	18.75	10.24	-5.50	-17.73	8.71	11.46	-0.98	7.55
PPPPCR	35.84	35.15	-0.50	19.32	12.36	18.19	24.93	17.36	18.13	17.67	25.68	25.51	15.01	4.56

Correlation between hourly wage growth and institutional and cycle variables (merging all the waves of the ECHP, 1994-2001)

	EU(13)	GER	DK	NET	BEL	FR	UK	IRE	IT	GR	ES	PT	AT	FI
DENSITY	0.86	4.92	8.07	8.32	-0.93	-15.97	-3.30	1.03	0.46	8.37	0.38	-1.86	-11.36	-1.90
AAHW	-0.05	5.88	1.51	0.88	1.08	2.58	-4.51	5.47	1.32	0.79	4.28	1.47	-7.64	-0.03
LABPRD	-0.81	5.03	-0.65	-6.68	-1.15	-16.33	-4.92	1.37	-3.70	-8.33	-1.22	-0.68	1.92	-6.06
WWEDGE	-2.78	-5.07	6.69	-5.95	-5.68	-3.48	-2.69	0.85	3.82	-1.78	0.72	-1.11	9.09	-4.77
HCPI	-0.87	3.91	-4.52	-7.50	4.37	-0.90	-0.75	1.07	-0.25	9.45	-0.34	-5.05	-11.29	-0.72
NCPE	0.04	4.22	-3.49	-11.30	-1.89	11.79	3.02	0.15	-0.11	6.52	-1.96	5.36	-2.63	-7.38
NULC	0.47	1.76	-1.25	-9.03	-3.38	14.83	4.31	-1.02	1.41	9.66	-0.63	5.04	-3.55	-1.62
PPPPCR	0.30	-1.61	-0.77	-8.82	-0.76	4.29	3.00	0.66	-2.10	-3.68	1.38	2.77	4.29	-1.43

Source: European Commission (2004) Employment in Europe 2003 and OECD.

DENSITY: trade union density from administrative registers as % of total employees in the country (computed from LFS data)

AAHW: Average Annual Hours Worked (increase from previous year)

LABPRD: Labour productivity in the business sector (increase from previous year)

WWEDGE: total tax wedge on labour (share of total income tax and employer and employee social contributions in gross wage earnings)

HCPI: harmonised consumer price index

NCPE: nominal compensation per employee (increase from previous year)

NULC: nominal unit labour costs (increase from previous year)

PPPPCR: regional per capita income (GDP) expressed in ecus and PPP.

Table 1. Sample selection model: probability of being interviewed as a wage earner during, at least, two consecutive interviews *(r.e.probit)*

	Coeff.	Mean values
Belonging to the initial sample		0.446
Female	-0.106***	0.496
	(4.420)	
Higher education graduate	0.864***	0.159
	(39.426)	
Secondary education graduate	0.288***	0.389
	(18.017)	
Takes care of somebody else	-0.442***	0.219
	(26.699)	
Head of the household	0.402***	0.247
	(12.330)	
Spouse or partner of the HOH	0.280***	0.199
	(8.035)	
Child of the HOH	-0.131***	0.514
	(4.153)	
Enrolment rate for age and gender	-0.004***	28.957
	(6.111)	(26.778)
Employment rate for age and gender	0.036***	56.403
	(37.964)	(22.702)
Increase in unemployment rate next year	-0.049***	-1.648
	(30.829)	(3.458)
Temporality rate for age and gender	-0.004***	23.133
	(6.477)	(19.191)
Germany	0.410***	0.115
	(8.871)	
Denmark	0.746***	0.033
	(11.387)	
Netherlands	1.198***	0.059
	(20.996)	
Belgium	0.354***	0.037
	(5.618)	
France	0.385***	0.093
	(8.068)	
UK	0.724***	0.084
	(13.555)	
Ireland	0.635***	0.054
	(11.180)	
Italy	-0.059	0.143
	(1.228)	
Greece	-0.500***	0.080
	(9.446)	
Portugal	0.807***	0.092
	(17.119)	
Austria	0.899***	0.046
	-15.991	
Finland	0.03	0.039
	-0.507	
Intercept	-2.821***	
	-31.528	
Observations	220922	220922
Log likelihood	-27543.999	
Wald chi2(23)	5289.68	
[Prob > chi2]	[0.000]	

Absolute value of z statistics in parentheses for the probit model and standard deviations for continuous variables; * significant at 10%; ** at 5%; *** at 1%, Source: ECHP, waves 1-8. Reference: Spanish male with only compulsory education or above, who has a different kinship with the head of the household than spouse or child.

Table 2: Fixed effects wage regressions: exogenous (A) and endogeneus (A + IV) job mobility

	A	A+IV	(cont)	A	A+IV
mobile worker	0.011***	0.667***	Public employer - Public Administration	0.069***	0.069***
	(2.652)	(10.718)		(8.836)	(6.206)
initial relative wage (as % of mean for industry and occupation)	0.041***	0.042***	Private, 5-19 employees	0.029***	0.018**
	(9.236)	(6.543)		(5.190)	(2.216)
Tenure with employer	0.007***	0.054***	Private, 20-49 employees	0.041***	0.038***
	(7.936)	(11.750)		(6.522)	(4.263)
Previous LM potential experience	0.005***	0.002**	Private, 50-99 employees	0.063***	0.054***
	(8.389)	(2.474)		(8.803)	(5.224)
Legis-mang-officials	0.093***	0.091***	Private, 100-499 employees	0.083***	0.086***
	(8.219)	(5.637)		(11.797)	(8.488)
Professionals	0.079***	0.082***	Private, 500+ employees	0.096***	0.117***
	(7.699)	(5.580)		(12.127)	(10.117)
Technicians	0.054***	0.058***	Trade Union Density	-0.027***	-0.023***
	(6.237)	(4.676)		(33.282)	(18.541)
Clercks	0.027***	0.032**	Increase in AAHW	0.001*	0.003**
	(3.123)	(2.568)		(1.692)	(2.571)
Service-shop	-0.015*	-0.015	Increase in labour productivity	0.220***	0.280***
	(1.750)	(1.232)		(6.250)	(5.517)
Skilled agriculture	-0.029	-0.037	Tax wedge on labour	-0.011***	-0.010***
	(1.439)	(1.290)		(9.463)	(5.533)
Craft & related	0.036***	0.023**	Harmonised Consumption Price Index	-0.001	0.006***
	(4.509)	(2.012)		(0.650)	(2.794)
Plant workers	0.034***	0.034***	Nominal Compensation per Employee (increase in)	-0.213***	-0.271***
	(4.150)	(2.936)		(6.226)	(5.484)
Recieved formal training before starting current job	0.010***	0.013**	Nominal Labout Costs (increase in)	0.220***	0.278***
	(2.618)	(2.497)		(6.313)	(5.524)
Permanent contract	0.050***	0.127***	Regional income in PPP	0.000***	0.000***
	(11.838)	(13.410)		(7.192)	(3.906)
15-24 hours/week	0.159***	0.148***	Sample selection coeff.	0.228***	0.195***
	(18.975)	(12.283)		(20.117)	(11.770)
24-39 hours/week	0.042***	0.043***	Constant	3.051***	2.505***
	(11.347)	(8.043)		(58.773)	(27.619)
41+ hours/week	-0.104***	-0.097***			
	(29.515)	(19.000)			
Observations	42659	42659			
R-squared (within)	0.298	.	sigma_u	0.743	0.696
R2 between	0.0445	0.0241	sigma_e	0.168	0.242
R2 overall	0.0469	0.0224	rho	0.951	0.892
F	327.46	0.000	F test u_i=0	5.60	2.72
Prob > F	0.000		prob>F	0.000	0.000
Chi (2)		2.89e+06	corr(u_i, Xb)	-0.7940	-0.7208

Absolute value of t statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%
Source: ECHP, waves 2-8. Eurostat.
Reference: non qualified worker with no specific formal training before the current job, who works under a 40 weekly hours basis in a small (less than 5 employees) private firm. (when industry is controlled for, the reference is primary sector).)

Table 3: Selected coefficients. Different ways of job mobility for different kinds of workers

	1A	1B	2A	2B	3A	3B	4A	4B	5A	5B	6A	6B
Moved + unempl	-0.016**	-0.009										
Moved directly	0.012***	0.013***										
Moved through unemp. from 1st qt			0.013	0.017								
Moved through unemp. from 2nd qt			-0.019	-0.011								
Moved through unemp. from 3rd qt			-0.027**	-0.022								
Moved through unemp. from 4th qt			-0.04***	-0.027*								
Job-to-job directly from 1st quartile			0.058***	0.057***								
Job-to-job directly from 2nd quartile			0.017**	0.019**								
Job-to-job directly from 3rd quartile			0.005	0.008								
Job-to-job directly from 4th quartile			-0.03***	-0.03***								
Moved because obtained better job					0.032***	0.037***						
Moved because obliged to stop by employer					-0.010	-0.003						
Moved because end of temporary contract					-0.03***	-0.02***						
Moved because family reasons					0.021	0.017						
Moved because other reasons					0.002	0.005						
Moved voluntarily from 1st quartile of wage distribution							0.099***	0.104***				
Moved voluntarily from 2nd quartile of wage distribution							0.045***	0.051***				
Moved voluntarily from 3rd quartile of wage distribution							0.013	0.021**				
Moved voluntarily from 4th quartile of wage distribution							-0.016	-0.011				
Moved involuntarily from 1st quartile of wage distribution							0.024**	0.025**				
Moved involuntarily from 2nd quartile of wage distribution							-0.019**	-0.011				
Moved involuntarily from 3rd quartile of wage distribution							-0.018*	-0.014				
Moved involuntarily from 4th quartile of wage distribution							-0.03***	-0.028**				
Voluntary movement though unemployment									0.013	0.024		
Voluntary direct job-to-job change									0.032***	0.037***		
Involuntary movement though unemployment									-0.02***	-0.012		
Involuntary direct job-to-job change									-0.005	-0.004		
Voluntary movement though unemployment from 1st quartile of distribution											0.037	0.047*
Voluntary direct job-to-job change from 1st quartile of distribution											0.108***	0.111***
Involuntary movement though unemployment from 1st quartile of distribution											0.018	0.026*
Involuntary direct job-to-job change from 1st quartile of distribution											0.028**	0.024*
Voluntary movement though unemployment from 2nd quartile of distribution											0.053	0.058*
Voluntary direct job-to-job change from 2nd quartile of distribution											0.042***	0.049***
Involuntary movement though unemployment from 2nd quartile of distribution											-0.032**	-0.023*
Involuntary direct job-to-job change from 2nd quartile of distribution											-0.008	-0.001
Voluntary movement though unemployment from 3rd quartile of wage distribution											0.030	0.040
Voluntary direct job-to-job change from 3rd quartile of wage distribution											0.010	0.018*
Involuntary movement though unemployment from 3rd quartile of wage distribution											-0.04***	-0.033**
Involuntary direct job-to-job change from 3rd quartile of wage distribution											-0.006	-0.003
Voluntary movement though unemployment from 4th quartile of wage distribution											-0.086**	-0.071**
Voluntary direct job-to-job change from 4th quartile of wage distribution											-0.011	-0.007
Involuntary movement though unemployment from 4th quartile of wage distribution											-0.020	-0.010
Involuntary direct job-to-job change from 4th quartile of wage distribution											-0.04***	-0.04***
Constant	3.064***	2.652***	3.063***	2.632***	3.051***	2.645***	3.056***	2.632***	3.053***	2.646***	3.056***	2.629***
Observations	43404	41992	43442	42030	42659	41308	42696	41345	42567	41216	42604	41253
Nb of groups	18163	17742	18170	17749	17942	17538	17948	17544	17885	17481	17891	17487
R-squared	0.299	0.270	0.300	0.268	0.300	0.269	0.300	0.267	0.300	0.269	0.301	0.268
R2 between	0.045	0.027	0.047	0.024	0.045	0.028	0.046	0.024	0.045	0.027	0.046	0.024
R2 overall	0.046	0.035	0.0408	0.032	0.047	0.034	0.049	0.029	0.047	0.033	0.049	0.030
sigma_u	0.745	0.487	0.760	0.492	0.744	0.486	0.759	0.492	0.744	0.487	0.760	0.492
sigma_e	0.169	0.173	0.169	0.173	0.168	0.172	0.168	0.172	0.168	0.172	0.168	0.172
rho	0.951	0.888	0.953	0.889	0.951	0.888	0.953	0.891	0.951	0.889	0.953	0.891
F	316.82	255.48	257.28	205.94	285.34	230.12	252.52	201.66	292.82	235.88	212.33	170.05
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
F test u_i=0	5.57	5.42	5.49	5.49	5.61	5.45	5.5	5.55	5.62	5.46	5.5	5.55
prob>F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
corr u_1, xb	-0.795	-0.377	-0.804	-0.395	-0.795	-0.374	-0.804	-0.395	-0.795	-0.375	-0.805	-0.395

Note: * significant at 10%; ** significant at 5%; *** significant at 1%; Source: ECHP, waves 2-8

Note: Common variables to both specifications: tenure (in years), former potential experience in the labour market (in years), public/private employer, received formal training before entering the current job, permanent type of contract, working week in stretches, size of the working place, increase in youth unemployment from previous observation, trade union density, increase in average amount of worked hours, increase in overall labour productivity in the business sector, tax wedge on wages, harmonised consumers price index, nominal increase in compensation per employee, average income in the region of residence, increase in nominal unit labour costs, sample selection coefficient.

Specification A gathers occupations aggregated at one digit, whereas specification B substitutes occupation with ISEI (international socio economic index) and adds dummy variables for industry (also aggregated to one digit).

Table 4 Coefficients linked to relevant variables, for each country, in country-specific fixed- effects wage estimations.

	Indirect mobility	Direct mobility	Voluntary mobility	Involuntary mobility
Germany	-0,030	0,021	0,031	0,023
	(0.98)	(1.21)	(0.84)	(1.28)
Denmark	0,015	0,039	0,052	0,019
	(0.77)	(3.35)	(3.59)	(1.41)
Netherlands	-0,043	0,083	0,111	0,003
	(0.55)	(2.75)	(3.09)	(0.08)
Belgium	0,040	0,039	0,042	0,040
	(1.39)	(2.20)	(2.11)	(1.79)
France	-0,078	-0,035	-0,004	-0,040
	(1.89)	(1.28)	(0.12)	(1.43)
UK	-0,029	-0,009	-0,005	-0,021
	(1.23)	(1.08)	(0.47)	(1.69)
Ireland	-0,031	0,030	0,040	-0,011
	(1.37)	(2.12)	(2.54)	(0.650
Italy	-0,001	0,054	0,057	0,015
	(0.05)	(3.82)	(3.69)	(0.94)
Greece	0,018	0,019	0,046	0,009
	(0.91)	(1.27)	(2.56)	(0.46)
Spain	-0,015	0,033	0,051	0,003
	(0.95)	(2.50)	(3.21)	(0.19)
Portugal	0,013	0,045	0,066	0,022
	(0.68)	(3.62)	(4.57)	(1.40)
Austria	-0,026	0,020	0,041	-0,041
	(1.58)	(1.76)	(3.32)	(2.98)
Finland	-0,020	0,013	0,041	-0,041
	(0.55)	(0.67)	(1.83)	(1.59)

Source: ECHP (waves 2 to 8), Eurostat. Absolute value of t statistics in parentheses,
Other controls include in the estimations have been: tenure (in years), former
Potential experience in the labour market, former potential experience in the
Labour market (in years), public/private employer and size of the firm if
private, formal previous training, working week in stretches, type of contract,
recent increase in youth unemployment rate, harmonised consumer price index,
ISEI (International socio-economic status), sample selection coefficient.

Figures 3A and 3B: Checking adjustment between estimations and real values (ECHP)

**Estimated values for stayers and movers
with and without control for endogeneity**

- ■ estimation/actual, exog mobility, movers
- ■ estimation/actual, endog mobility, movers
- ■ estimation/actual, exog mobility, stayers
- ■ estimation/actual, endog mobility, stayers

**Estimated values for stayers and movers
with and without control for endogeneity**

prima for France
reaches value 19

- ■ prima with endogenous movement
- ■ real observed prima
- ■ prima with exogenous movement