Nominal wage flexibility and institutions: micro-evidence from the Europanel.[¤]

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Abstract

This paper analyses wage dynamics at individual level using the European Community Household Panel data. We compare yearly wage changes of full-time employees staying in the same ...rm for twelve European countries during the 1994-2000 time-period. For all the European countries we ...nd evidence of nominal wage rigidity. The percentage of employees receiving no wage changes is di¤erent across countries, with Germany and Ireland ranking at the top and the bottom respectively. At the same time, nominal wage cuts are not rare. In this paper we consider the impact of the bargaining structure and institutions in the European labor markets on the extent of nominal wage flexibility observed.

Keywords: nominal wage rigidity, centralisation, coverage, employment protection legislation.

JEL Codes: J3 and J51

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1 Introduction

It is commonly recognized that the extent of nominal wage flexibility is an important determinant of how the economy responds to nominal demand shocks. Nonetheless, very little is known about the empirical causes of nominal wage flexibility. The objective of this paper is thus twofold. First we measure the extent of nominal wage flexibility at individual level in twelve EU countries: UK, Italy, France, Germany, Denmark, Netherlands, Belgium, Luxemburg, Ireland, Greece, Spain and Portugal. Second, we carry out comparisons across countries using country-specific institutional variables for explaining the extent of the observed frequencies of wage cuts.

While the existing microeconometric studies on nominal wage flexibility, carried out initially for the US and recently for some European countries, focus on the relationship between inflation and wage flexibility[1], there is no attempt of systematic comparisons of nominal wage changes distributions across countries, nor any empirical evaluation of how nominal wage flexibility is affected by labor market institutions. On the other hand, the existing literature about the relationship between macroeconomic performance and collective bargaining is mainly focused on the impact of institutional variables on the rate of unemployment[2], failing to address the effects on individual wage changes.

In this paper we try to link these two approaches, analyzing the relationship between nominal wage flexibility and institutions using for the first time data at individual level. In the first part of our analysis we adopt a framework similar to that of previous microeconometric studies on wage flexibility. For each country we construct nominal wage changes distributions for stayers full-time, and then we compare, across countries, the extent of downward wage flexibility, defined as the frequency of wage cuts, and the extent of wage rigidity, defined as the frequency of zero wage changes. The data set used is the recently released 1994-1996 waves of the European Community Household Panel (ECHP). A unique feature of this data-set is that the same questionnaire is asked in all the countries involved in the survey, making cross-country comparisons particularly easy and reliable.

In the second part of the paper the frequencies of wage cuts are stacked by

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[1]See Kramarz (2001) for a survey.

[2]See Flanagan (1999) for a comprehensive survey about collective bargaining and macroeconomic performance; and Nickell and Layard (1999) for a survey about labor market institutions and unemplyment.

country into a single variable and regressed on a set of institutional variables typically used in the macroeconomic performance literature[3], thus trying to explain nominal wage flexibility with country-specific institutional characteristics.

The rest of this section, after surveying the related microeconometric literature, briefly summarizes our main findings and, finally, outlines the structure of the paper.

Related literature

The interest in analyzing individual panel data in order to assess whether wages are rigid or flexible dates back to McLaughlin (1994)'s paper. From that date on, a number of similar analyses have been carried out both for the US and some European Countries. There is no agreement among researchers about the extent of downward wage rigidity even for the US, where most of the analyses have been carried out using the same data-set, the Panel Survey of Income Dynamics (PSID). Intercountry comparisons are difficult because surveys are collected according to different criteria, and therefore the information available both for defining the subsample and the variable of interest may differ across countries.

The existing evidence from individual surveys seems to support the idea that wages are rigid in nominal, and not in real terms. But it is not clear the extent of downward nominal wage rigidity at individual level. Using data from the PSID, McLaughlin (1994) finds that on average over 1976-86 there were 17% stayers experiencing wage cuts and 7% had zero nominal pay growth. He uses two measures for wages: *earnings* and *hourly earnings* concluding that wages in the US are quite flexible.

Instead of pooling together periods of high and low inflation, subsequent studies have focused on yearly wage changes, finding evidence of a spike at zero in the distribution of nominal wage changes. This spike is taken as evidence of nominal wage rigidity. But, although being quite asymmetric around zero, wage changes distributions are not completely downwardly rigid. Kahn (1997) distinguishes between 10.6% wage cuts for *wage* earners and 24.3% cuts for *salary* earners, finding also a strong evidence of 8% nominal wage rigidity during 1971-88. Also, according to Card and Hyslop (1997), despite many individuals in the PSID report wage cuts, there is clear evidence of nominal wage rigidity. In particular, they find that the spike at zero *hourly*

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[3]Sources are: OECD (1997), OECD(1999), Nickell and Layard (1999); Boeri, Brugiavini, Calmfors et al. (2001) and Cesifo (2002).

wage changes spans from 7% in a 10% inflation environment to 15% when inflation fell to 5%, both for salary and wage earners. Therefore, the spike at zero nominal wage changes is highly sensitive to the rate of inflation.

Data at firm level (Altonji and Devereux (2000)'s personnel file of a large firm, Bewley (1998)'s interview study that involves 300 business people) show much higher levels of wage rigidity, measured as *hourly* wage, and basically no wage cuts. Using different methodologies, McLaughlin (1994), and Card and Hyslop (1997) argue that measurement errors can not explain all the percentages of wage cuts observed in individual survey's data, whereas by estimating an econometric model Altonji and Devereux (2000) explain all the wage cuts observed in the PSID with measurement error. Therefore, in the PSID, measurement errors apparently reduce the observed percentage of nominal wage rigidity and increase the percentage of wage cuts.

Similar analyses carried out in some European countries seem to give different results. Goux (1997) compares two different sources of data available for France: the 1976-92 Déclarations Annuelles de Donnèe Sociales (DADS), an administrative, potentially error-free data-set, and the 1990-96 French Labor Force Survey (LFS). Using *annual earnings* as a measure of wages, and therefore not controlling for the number of hours, she finds that the amount of wage cuts is similar in the two data-sets and affects approximately 25% of stayers employed full-time[4].

Smith (1999) and Nickell and Quintini (2001) examine the UK using different data sources. Smith (2000) analyses the British Household Panel Survey (BHPS). She uses *weekly earnings* as a measure for wages and stayers who do not change the number of hours worked as the sample of interest. She finds that the percentage of employees whose wage is constant from one year to the next is 9% during 1991-6 and the percentage of wage cuts is on average 23%. Using the unique feature of the BHPS, that allows to consider the subsample of people whose payslip has been checked by the interviewer, Smith (1999) focuses on the employees whose reported earnings are error-free, and who do not receive bonuses or overtime pay, finding that only 1% of them had zero pay growth and 18% received wage cuts. Therefore, contrary to what has been found for the US, measurement errors seem to be the main source of wage rigidity, increasing the percentage of nominal

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[4]Interestingly, a good percentage of wage cuts for the stayers can be explained with one of the following: 1) better working conditions, 2) decrease in annual bonus, and 3) 4-digit change in occupation.

wage rigidity observed in survey data. As a consequence wages appear much more flexible in the UK than in the US. Using the UK New Earnings Survey (NES) from 1997 to 1999, Nickell and Quintini (2001) find on average lower percentages of both no change in wage and wage cuts than Smith (2000) for the same 1991-96 period, but they use a different measure of wage. In the NES data are provided by employers and come directly from payroll records, which ensures a high degree of accuracy. The measure of the nominal *hourly wage* rate used is the weekly pay of those whose pay is unaffected by absence, excluding overtime pay, divided by weekly hours excluding overtime hours. Again, only full-time employees not changing job are considered.

Fehr and Goette (1999) analyze *earnings per working hour* of stayers in the Swiss LFS during the period of very low inflation 1991-96. They find 12% of rigid wages and 25% of wage cuts. Allowing for measurement errors they estimate Altonji and Devereux (2000)'s econometric model obtaining results similar to those found for the US: measurement errors can explain most of the observed wag cuts, that actually turn in no wage changes.

Our findings are the following:

- although nominal wage changes distributions from the ECHP have different shapes across the European countries, in each country a spike is observed at zero nominal wage changes, and wages are not completely downwardly rigid;

- the extent of the spike at zero is different across countries, with Germany and Ireland ranking at the top and the bottom respectively;

- nominal wage flexibility has a U-shaped relationship with some measures of centralization and coordination of bargaining, and positive correlation with coverage.

The structure of the paper is the following: in Section 2 we describe the ECHP data and the information available about employees and wages. Section 3 contains the results of our analysis. In Section 4 we use institutional variables for explaining the extent of nominal wage flexibility observed. Section 5 summarizes our conclusions.

2 Data

The European Community Household Panel (ECHP) is a recent large-scale longitudinal study set up and funded by the European Union. The great advantage of the ECHP is that it is a survey in which information is given not only at household, but also at individual level. Moreover, the same questionnaire is asked to a sample of about 60,000 nationally representative households - i.e. approximately 129,000 adults aged 16 years and over - in 12 European countries (UK, Italy, France, Germany, Denmark, Netherlands, Belgium, Luxemburg, Ireland, Greece, Spain and Portugal). This procedure allows us to compare directly data from different countries, reducing the problems of harmonizing different countries information. In this paper we use the first three waves recently released by Eurostat, that cover the years 1994-1996[5]. In 1995 Austria joined the project and in 1996 Finland too, therefore the number of Member States raised to 14.

The user-friendly, anonymised version of the ECHP, sold by Eurostat, is called User Data Base (UDB). In the UDB data have been anonymised and checked as thoroughly as possible, and some imputations have been carried out. This version of the data-set turns out to be very 'clean', but it contains less information than the original data, the so-called Production Data Base (PDB)[6].

To facilitate comparisons with previous studies we concentrate on employees, excluding self-employed from our analysis. Employees are detected in the ECHP as people reporting wages. The sample we are interested in is composed of *stayers*, i.e. employees who do not change job and firm[7]. Unfortunately we can not distinguish employees paid by the hour from those paid weekly. But we have quite detailed information about the type of the employment contract. In particular, we know whether the employee is working part-time or full-time[8]. In Tab. 1 we give the composition of stayers in

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[5]The fourth and fifth waves will be available soon.

[6]See Peracchi (2000) for a detailed description of the ECHP data.

[7]This can be easily done in the ECHP by constructing a 'job tenure' variable from the information available about the year and month of start of the current job. We classify as *stayers* all the employees who do not change the date of start of the current job, obviously with respect to the date of the interview. We checked stayers' monthly spells for determining if they stayed with the same firm.

[8]From 1995 on, we also know the type of contract (permanent, fixed-term or short-term, casual with no contract, other working arrangements) and, for temporary contracts, the length of the contract.

the ECHP by contract characteristics. We consider only the sub-sample of *stayers full-time.* As we can see, they are the majority in our sample.

Although most of the previous analyses in this field of research focused on the private sector, we consider the public and private sectors together, as wages in the two sectors turn out to be highly correlated in all the European countries.

Even though in the original questionnaire both net and gross wages were asked, in the UDB version we find only information about net wages[9]. The only exception is France where, because of the tax system, wage data have been collected as gross. This is not a serious problem for our analysis, since we are interested in percentage changes.

In the ECHP hourly wages are not reported, but two measures of net nominal earnings are available: 1) "current net wage and salary earnings" (i.e. earnings received in the month of the interview); and 2) "total net wage and salary earnings" (referred to the year before the interview). We decided to take the first one as the most reliable measure of wages as the number of months which the second is referred to is not reported.

Since the number of "weekly hours worked in the main job" (always in the month in which the interview was taken) are known, it is also possible to calculate "hourly current earnings". Another way of getting closer to a measure of the increase in basic wages, adopted also in Smith (2000), is to study pay growth when there are no hours changes[10].

In section 3, when presenting our results, we will compare therefore three measures of current wage changes: 1) earnings, 2) hourly wages, and 3) earnings for employees who do not change the number of hours worked.

Since all the above measures are referred to the month in which the interview was taken, we eliminate from the sample people who report a positive "number of days of absence from current job during the past 4 weeks"[11].

For the same reason, we checked that comparing two different months of

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[9]Gross wages can be calculated using a net/gross ratio, estimated using a simple statistical orcedure on the basis of reported ratios for income from current and previous year's employment, for both of which net as well as gross amounts are solicited. Althogh "the estimated net/gross ratios are a rather simplistic solution to a complex problem,...the procedure appears robust in so far as the estimated conversion factors are found to have a rather small variance *within countries*". (Eurostat, *ECHP UDB manual*).

[10]Clearly in this case both total and hourly earnings changes coincide.

[11]This question is not available for the Netherlands in the first wave, therefore we do not correct for the days of absence from work in this country. However, for all the other countries, this correction did not change qualitatively the results.

the year does not bias our results. In the Appendix we restrict the sample to people whose interview was taken in no more than two months difference in the two years period considered. Due to the characteristics of the survey, in some countries the number of observations drops dramatically, but the qualitative results do not change at all. In order no to loose many observations, we decided to keep in the sample people who reported their wages in different months for consecutive interviews.

3 Results

For each of the European countries considered we calculate the distributions of one-year nominal wage changes. We approximate the percentage wage change by taking the differences in logs for each individual as follows:

$$\log w_{t+1} - \log w_t$$

We define *nominal wage rigidity* as the percentage of observations such that:

$$\log w_{t+1} - \log w_t = 0$$

Taking the differences in logs allows us to compare nominal with real wage rigidity very easily. In fact, we can define *real wage rigidity* as the percentage of observations such that:

$$\log \left(\frac{w_{t+1}}{p_{t+1}} \right) - \log \left(\frac{w_t}{p_t} \right) = 0$$

i.e.:

$$\log w_{t+1} - \log p_{t+1} - \log w_t + \log p_t = 0$$
$$\log w_{t+1} - \log w_t = \log p_{t+1} - \log p_t$$

Therefore we can see the extent of real wage rigidity at the rate of inflation (calculated as the difference in logs of price levels in two consecutive years) of the distribution of nominal wage changes.

Tab. 2, 3 and 4 report for each country extensive descriptive statistics respectively for distributions of current nominal earnings changes, hours changes and current hourly earnings changes in logs.

In Fig.1a and 2a we plot the histograms of the differences in logs of nominal current earnings for *stayers full-time*. A vertical line has been inserted at the annual rate of inflation[12]. The frequency of the histograms at zero gives us the extent of nominal wage rigidity whereas the frequency at the rate of inflation tells us the extent of real wage rigidity. For scale reasons, and in order to be able to see the centre of the distribution clearly, a roughly equal fraction of workers of 5% at either end of the distribution have been excluded[13].

The histograms show that in all the European countries nominal wage changes have a prominent spike at zero. We also observe a sharp drop for little wage changes in stayers' distributions, with higher positive changes of wages more likely to occur. Moreover, there is clear evidence of some downward nominal wage rigidity as the distributions are asymmetric, but not for all the countries. At the same time, wages are not completely downwardly rigid across the European countries: the percentages of wage cuts reported are quite high. In none of the countries we observe a spike at the rate of inflation: real wage cuts are much more frequent than nominal wage cuts. Nevertheless, for some countries and some years we observe a second spike at/close to the rate of inflation, smaller than the one at zero.

The percentage of employees with no nominal wage changes varies across countries, and graphs in each figure are presented in decreasing-spike order. But it is important to notice that the bar showing the spike is constructed around zero, therefore includes small positive and negative wage changes. We discuss inter-countries differences referring to figures from Table 5, which gives: in the first column the number of *stayers full-time* in the sample for each country, then the percentage of employees reporting cuts, no changes and rises respectively in earnings, hours and hourly wages. In the last column the sample is restricted to the fraction of workers who do not change the number of hours. Their numbers, and changes in earnings are given.

The countries with the highest percentages of zero wage changes are Germany and Belgium, followed by Luxemburg and Italy. Portugal and Denmark have a slightly smaller percentage of wage rigidity, followed by the UK, Netherlands, Greece and France. The countries with the most flexible wages turn out to be Spain and Ireland. We can see that the results are not dif-

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[12]The annual rate of inflation is calculated as the difference in logs of the CPI, taken from Eurostat's publications.

[13]This has no qualitative consequences on our results, and replicates the methods used in previous similar analyses.

ferent in the two time-periods considered, except for the UK, Germany and Portugal, where the percentage of wage rigidity decreases considerably in the second time-period.

Comparing different measures for wages, we notice that the ranking of the countries does not change if we consider earnings for all stayers versus earnings of those who do not change the number of hours. Hourly earnings instead are much more flexible than earnings, even though the ranking of the countries according to this measure is not very different. The above results seem to suggest an effect of change in the hours worked on our results. Therefore, also changes in hours are reported.

Comparisons with previous work

In general, we can say that wage changes distributions from the ECHP have the same features of the distributions constructed from similar panel data in the US. On average the percentages of rigid wages and wage cuts in Europe are not far away from those observed in the US for similar rates of inflation, but there are enormous differences across countries.

The numbers for the UK in the ECHP are different from Smith (2000)'s results from the BHPS. For the same periods 1994-95 and 1995-96, before controlling for the payslips and therefore correcting rounding errors, Smith (2000) finds respectively 9.4% and 7.8% wages unchanged and 22.5% and 23.4% wage cuts. Wage dynamics for the UK from the ECHP are quite strange: in Tab. 5 we observe a sharp drop both in the percentage of rigid wage (from 15.23% to 5.67%) and in the frequency of wage cuts (from 21.65% to 19.05%). Although we have to bear in mind that in the ECHP we observe net wages whereas Smith (2000) analyses gross wages dynamics, we are not aware of any particular institutional change in the UK in that period which can explain such a strange result[14]. At the same time,we notice that the percentages of rigid hourly earnings, 6.61% and 2.23% are very close to the ones found by Nickell and Quintini (2001). For the same time-periods, Nickell and Quintini (2001) find respectively 5.48% and 1.32% rigid hourly wages and 19.47% and 18.20% nominal hourly wage cuts. The fact that our wage cuts are higher, 31.51% and 23.00%, can be a consequence of the fact that we can not eliminate the part of earnings related to overtime hours and bonuses. Nevertheless, it is interesting to notice that the drop in the spike at

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[14]Note that in the UK in the second time-period there was a drop in the productivity growth rate from 2.5% to 1.8%.

zero of 4% hourly wages from 1994-95 to 1995-96 is found also in the NES, administrative data.

Comparisons with Goux (1997) for France can be done from the first column of Tab.5, where we do not control for the number of hours. She considers gross earnings for full-time workers in the LFS for the same period finding respectively, in 1994-95 and 1995-96, 11.5% and 12% full-time workers whose earnings did not change and 27% and 28% wage cuts. Our results for France give slightly higher percentages of wage cuts (+3%) and lower percentages of rigid wages (-2%).

Conclusions from results

The spike at zero nominal wage changes seems to be a characteristic of all the distributions of nominal wage changes constructed from survey-data. Two kinds of errors can affect the extent of the percentage of no change in the wage reported by individuals: 1) reporting/rounding errors and 2) measurement errors. The first kind of errors are due to the fact that individuals can be imprecise when reporting their earnings. Usually this kind of error is dealt with by using administrative data. Measurement errors instead come from the lack of information about the structure of earnings in surveys, and often also in administrative data. It is usually difficult to isolate the contracted hourly wages from total earnings.

As we said in the introduction, it is not clear which is the direction of the above biases on the extent of the spike at zero, and using the ECHP data we do not have any source of information that can help us in identifying the measure of any of the above kind of errors. Nevertheless, since the survey is carried out according to the same criteria across countries, we can concentrate on intercountry comparisons at this stage.

The differences in the shape of wage changes distributions across countries are really interesting. It is quite clear (and it is confirmed from the few validation studies for the UK and France coming from administrative data) that nominal wages are not completely downwardly rigid. The extent of downward flexibility of wages is different across countries. In the next section we try to explain downward wage flexibility with institutional characteristics of the European labor markets.

4 Explaining wage cuts

The detailed, descriptive analysis of the previous section allows us to construct a panel data-set of the frequencies of wage cuts, no wage changes and wage rises across countries. The important empirical result that deserves an explanation is the difference in the frequencies of wage cuts for stayers full-time across countries. The ranking of the European countries that emerges from our figures suggests an explanation of differences in wage changes across countries based on country-characteristics of wage bargaining and labor market institutions.

In this section we try to explain the degree of flexibility of wages observed across the European countries by regressing the percentages of wage cuts observed on a number of "institutional" variables, taken from different sources and summarized in Tab. 6. In the literature there are many measures of centralization, coordination of bargaining, coverage, and employment protection legislation according to which the European countries are characterized and ranked.

Centralization describes the locus of the formal structure of wage bargaining. Typically three levels of bargaining are considered:1) centralized or national bargaining, which may cover the whole economy; 2) intermediate bargaining, where unions and employers' associations negotiations cover particular industries or crafts; and 3) decentralized or firm-level bargaining between unions and management. The ranking of the European countries according to centralization of wage bargaining from the three sources considered (OECD (1997) for the CENTR variable, Boeri, Brugiavini and Calmfors (2001) for CENTRCD, Nickell and Layard (1999) for the CENTRLN variable) are so different that I try them separately in my regressions. The variable labelled COORD indicates the degree of coordination, and is based on the degree of consensus between the collective bargaining partners. The ranking of the countries according to COORD is taken from OECD (1997). As we can see from Tab. 6, for the percentage of employees covered by collective agreement the two sources considered (OECD (1997), and Cesifo Forum (2001)), give very similar measures, summarized in the variable labelled PCOV1, that we use for our regressions. The strictness of employment protection legislation, captured by the variable EPL, is taken from OECD (1999). We do not consider the percentage of employees belonging to the union in each country as esplicative variable, because it is well known from the literature that coverage matters much more than union density in deter-

mining wages.

First of all, we regress one by one different measures of wage cuts taken from Tab. 5 on each institutional variable, controlling for inflation, growth, change in unemployment and unemployment in the starting period. Only the institutional variables turn out to be significant. Inflation, unemployment and growth rates do not seem to play a role in explaining cross-countries nominal wage flexibility, probably because these measures are highly correlated across countries. The measure of wages more correlated to institutional variables turns out to be the percentage of *hourly earnings* cuts (*wcuts*).

Since in the theoretical literature a U-shaped relationship between performance and centralization/coordination of bargaining is sometimes implied[15], we consider the following general specification for our baseline equation:

$$wcuts = \beta_1 + \beta_2 centralization + \beta_3 (centralization)^2 + \beta_4 coord + \\ \beta_5 (coord)^2 + epl + pcov1 + \varepsilon$$

allowing for squared terms of both centralization and coordination. Holden (2001) analyses the relationship between downward wage rigidity and *epl* and *coverage* predicting a negative sign for both. Considering all the institutional variables together, we loose Luxemburg and Greece, because a measure of coordination is not available for these two countries. Since for Austria we have only one observation, the number of observations we work with is 19.

Testing for a U-shaped relationship between wage cuts and the degree of centralization and coordination of bargaining boils down to testing whether the derivatives of the model above have the correct sign. The first derivative for *wcuts* with respect to *centralization* is equal to $\beta_2 + 2\beta_3 (centralization)$ and the second derivative is $2\beta_3$. For *wcuts* to be U-shaped in *centralization*, we need the second derivative to be positive and the first derivative to be negative for smaller values and positive for larger values of *centralization*. This corresponds to having β_3 positive and β_2 negative. Analogously, in order to observe a U-shaped relationship between *wcuts* and *coordination*, we need β_5 positive and β_4 negative.

As we can see from Tab.7, when we use the measure of centralization taken from Nickell and Layard (1999) the signs of β_3 and β_5 are positive, whereas β_2 and β_4 are negative, therefore we find a U-shaped relationship between

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[15]Consider Calmfors and Driffil (1988) for a U-shaped relationship between centralisation and performance; and Groth an Johansson (2001) for a U-shaped relationship between contract length and centralisation.

the percentage of wage cuts and both *centralization* and *coordination*. This relationship suggests that nominal hourly earnings are more flexible both in very centralized and decentralized economies than in economies where the level of wage bargaining is intermediate. The U-shaped relationship between centralization and wage cuts is robust also to the measure for centralization taken from Boeri, Brugiavini and Calmfors (2001), but in this case the coefficient of coordination becomes not significant. In contrast the third measure of centralization, the one taken from OECD (1997), does not seem to have any explanatory power.

The coefficient on the percentage of employees covered by collective agreement is significant parameter in the first and third regression, but its sign is positive, contrary to what predicted by Holden (2001). Therefore, the highest is the coverage of collective agreement, the highest is the frequency of wage cuts.

The strictness of employment protection legislation instead does not seem to be correlated with wage cuts, although the negative sign would be the one predicted by Holden (2001).

In the last columns of Tab. 7 we report the results of the same regressions when the dependent variable is hours cuts and not hourly earnings cuts. Since we do not observe hourly wages but earnings divided by the number of hours, it is interesting to investigate the impact of institutions also on hours flexibility. As we can see, whereas the relationship between coordination and hours cuts is U-shaped, the relationship between centralization and hours cuts becomes hump-shaped. The coefficients on EPL and PCOV1 are not significant. Therefore, in both decentralized and centralized economies hourly earnings are flexible, but hours are rigid whereas in countries where the level of bargaining is intermediate hourly earnings are rigid but the number of hours worked are more likely to decrease.

5   Conclusions

In this paper we investigated wage dynamics at individual level using the 1994-96 data from the ECHP survey. The particular feature of this new panel data set is that the same questionnaire is asked in all the countries involved in the survey. This allowed us to compare nominal wage changes distributions for stayers full-time in twelve European countries. Moreover, since the ECHP is for many aspects similar to the PSID survey, we could

include in our comparisons also the US, where a number of similar works have been carried out using the PSID.

Although in all the countries considered we found on average a quite high degree of nominal wage rigidity, wage cuts are frequent in all the European countries. Moreover, we found interesting differences across countries in the extent of the spike at zero wage changes and the percentages of wage cuts. These differences seem to reflect differences in institutional settings across the European countries.

We analyzed the relationship between nominal wage cuts, the structure of bargaining and other labor market institutions in Europe, finding that the percentage of employees covered by trade unions collective agreements has a positive impact on wage changes, whereas centralization and coordination of bargaining have a U-shaped relationship with wage cuts. Therefore wages are more flexible in countries where bargaining is centralized and decentralized then in countries where the level of bargaining is intermediate.

The contributions of the paper to the literature are the following:

- we extend the existing empirical evidence on wage changes distributions at micro-level to 12 European countries, giving a detailed description of the above distributions from a new data-set

- for the first time, we are able to compare clearly wage changes distributions across countries

- we construct a panel data on wage changes at individual level that allows comparisons across countries

- whereas most of the existing literature focuses on the impact of inflation on wage rigidity, we consider the role of institutions on the extent of nominal wage flexibility observed in the European countries, giving possible explanations for the frequencies of wage cuts observed.

Although a detailed, descriptive analysis is necessary when working with a new data-set such as the ECHP, this is only a first step in studying the extent of wage rigidity across the European countries. After describing and comparing wage changes distributions across countries, our further research is going in the direction of estimating the extent of nominal wage rigidity taking into account measurement errors in our survey-data. The starting

point will be Altonji and Deveroux (2000)'s structural model, used for very similar types of data.

The results of the descriptive analysis given in this paper suggest that, if for the US and Switzerland it was possible to ignore the role of trade unions when estimating Altonji and Deveroux (2000)'s model, we clearly have to take into account the role of the institutions on the labor market when working with European data.

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6 Appendix

It might be argued that considering a change in current earnings as the base-measure for wage, the results presented in our paper can be biased by the month in which the interview was taken. In this Appendix, we replicate the data set constructed in Section 3, Tab. 5, comparing employees whose interview was taken in different months of the year to employees who were interviewed in no more than two months difference in the two years period considered.

We do not eliminate from the sample employees whose number of days of absence from work was different from zero, therefore the number of stayers full-time who took the interview in different months of the year is slightly bigger than in the tables given in Section 3. The comparison between the tables in Section 3 and the ones in this Section is therefore useful in order to see the impact of correcting for the days of absence from work on our data-set.

Tab. 8 shows the composition of stayers for contract characteristics in two subsamples of employees changing or not changing the month of the interview. As we can see, the percentage of stayers full-time does not change. Tables 9, 10 and 11 compare different measure of wages for the above subsamples showing that, except for Luxemburg in which the number of observations drops dramatically, the qualitative results do not change at all. The frequencies change only slightly. Therefore, there is no loss of information in considering the more numerous sample for constructing our data set.

Tab. 1 Composition of stayers by contract characteristics

Countries	1994-95					1995-96				
	Total	FF	PP	FP	PF	Total	FF	PP	FP	PF
UK	1873	85.74	12.25	0.93	1.09	1927	86.61	11.57	0.93	0.88
Bel	1758	88.45	8.19	1.37	1.99	1758	89.53	8.64	1.03	0.80
Den	1701	91.12	6.94	0.82	1.12	1700	91.35	6.71	0.76	1.18
Fra	3819	89.11	5.76	1.31	3.82	3729	92.81	5.07	1.05	1.07
Germ	2973	88.36	9.12	1.11	1.41	2907	88.75	9.22	0.86	1.17
Gre	1570	89.55	1.46	0.76	8.22	1575	96.13	0.76	1.71	1.40
Ire	1501	88.27	5.53	1.00	5.20	1489	92.21	5.10	1.68	1.01
Ita	3603	88.09	2.64	0.44	8.83	3605	92.34	2.27	4.49	0.89
Lux	635	90.81	7.66	0.46	1.07	666	91.44	7.06	0.75	0.75
Neth	2646	83.30	13.87	1.17	1.66	2664	83.26	14.23	1.28	1.24
Port	2603	95.74	2.38	0.77	1.11	2576	96.51	2.41	0.35	0.74
Spa	2419	95.12	2.60	0.79	1.49	2448	96.00	2.33	0.74	0.94
Aust	-	-	-	-	-	2143	90.01	6.81	1.77	1.40

FF=Full-time in both waves; PP=Part-time in both waves

FP=change contract from full-time to part-time

PF=change contract from part-time to full-time

Source: ECHP 1994-96

Tab. **2 Changes in logs of Current Nominal Earnings Stayers Full - time**.

Countries	N. Obs.	Min.	Max	Median	Mean	St. Dev.	Var.	Skewness	Kurtosis	N. Obs.	Min	Max	Median	Mean	St. Dev.	Var.	Skewness	Kurtosis
				1994-1995									1995-1996					
Germany	1830	-.154	.292	0	.027	.074	.005	.900	4.455	1839	-.243	.798	0	.042	.136	.018	1.944	9.565
Belgium	1107	-.143	.246	0	.022	.059	.003	.633	4.626	1037	-.165	.184	0	.016	.059	.003	.107	4.160
Luxemburg	415	-.106	.264	.012	.033	.061	.003	.973	4.487	446	-.138	.287	.020	.034	.072	.005	.694	4.253
Austria	-	-	-	-	-	-	-	-	-	706	-.284	.337	0	-.025	.121	.014	.317	2.987
Italy	2462	-.182	.287	0	.033	.091	.008	.356	3.342	2507	-.223	.271	.032	.037	.087	.007	-.078	3.638
Portugal	2016	-.172	.336	.045	.057	.087	.007	.535	3.936	1979	-.133	.305	.062	.078	.078	.006	.807	3.965
Denmark	1009	-.182	.255	.021	.029	.080	.006	.220	3.112	949	-.182	.263	.017	.029	.079	.006	.182	3.397
UK	1044	-.203	.367	.033	.047	.097	.009	.593	3.745	987	-.207	.324	.053	.060	.096	.009	.059	3.498
Netherlands	2092	-.182	.262	.033	.038	.076	.005	.174	3.871	2060	-.154	.236	.023	.029	.066	.004	.274	3.902
Greece	1095	-.223	.470	.105	.111	.141	.019	.191	2.779	1247	-.336	.310	.057	.043	.137	.018	-.557	2.958
France	2524	-.392	.304	.021	.019	.118	.014	-.545	3.955	2571	-.257	.287	.018	.025	.099	.009	-.021	3.395
Spain	1709	-.223	.424	.096	.102	.131	.017	.085	2.705	1749	-.272	.373	.047	.049	.134	.018	-.021	2.737
Ireland	975	-.251	.444	.052	.076	.124	.015	.425	3.370	1033	-.287	.332	.039	.042	.115	.013	-.098	3.510

Source: ECHP (1994-96).

Tab. 3 Changes in logs of Current Number of Hours in the main job for Stayers Full-time.

Countries	N. Obs.	Min.	Max	Median	Mean	St. Dev.	Var.	Skewness	Kurtosis	N. Obs.	Min	Max	Median	Mean	St. Dev.	Var.	Skewness	Kurtosis
				1994-1995									1995-1996					
Germany	1830	-10	9	0	-.792	3.22	10.397	-.745	4.817	1839	-10	8	0	-.432	2.899	8.406	-.943	6.308
Belgium	1107	-10	10	0	-.065	3.50	12.261	.025	4.884	1037	-10	7	0	-.379	3.002	9.015	-.829	5.072
Luxemburg	415	-8	5	0	-.397	1.924	3.703	-1.279	7.352	446	-5	5	0	.044	1.188	1.413	.563	14.720
Austria	-	-	-	-	-	-	-	-	-	706	-10	10	0	-.011	3.311	10.967	-.054	6.115
Italy	2462	-8	10	0	.235	2.961	8.769	.607	5.688	2507	-8	8	0	-.065	2.598	6.750	-.113	5.198
Portugal	2016	-10	10	0	-.079	3.091	9.556	-.159	5.634	1979	-6	5	0	-.198	1.969	3.877	-.122	5.323
Denmark	1009	-10	5	0	-.795	2.472	6.115	-1.572	6.599	949	-6	5	0	-.042	1.724	2.975	-.256	6.648
UK	1044	-10	10	0	.032	3.932	15.467	.012	3.974	987	-10	9	0	-.292	3.44	11.892	-.454	4.106
Netherlands	2092	-8	10	0	.195	2.719	7.397	.998	6.978	2060	-8	7	0	-.09	2.198	4.835	-.236	5.845
Greece	1095	-10	11	0	-.065	4.022	16.180	.018	4.069	1247	-12	10	0	-.424	3.759	14.130	-.290	5.095
France	2524	-10	9	0	-.171	2.882	8.307	-.553	6.212	2571	-8	9	0	.012	2.399	5.758	.070	6.001
Spain	1709	-10	10	0	-.004	4.060	16.489	.012	4.123	1749	-10	10	0	-.029	4.128	17.04	.094	4.086
Ireland	975	-12	10	0	-.216	4.028	16.231	-.043	4.506	1033	-10	10	0	-.003	3.613	13.054	-.0001	5.195

Source: ECHP (1994-96).

Tab. 4 Changes in logs of Current Hourly Earnings for Stayers Full-time.

Countries	N.Obs.	Min.	Max	Median	Mean	St. Dev.	Var.	Skewness	Kurtosis	N.Obs.	Min	Max	Median	Mean	St. Dev.	Var.	Skewness	Kurtosis
				1994-1995										1995-1996				
Germany	1830	-.277	.446	.025	.044	.101	.010	.521	3.792	1839	-.410	.824	.026	.052	.147	.021	1.463	7.605
Belgium	1107	-.299	.393	.009	.023	.098	.009	.092	3.847	1037	-.287	.418	.012	.024	.089	.007	.313	4.098
Luxemburg	415	-.207	.281	.027	.042	.071	.005	.533	3.573	446	-.138	.287	.020	.032	.074	.005	.574	3.941
Austria	-									706	-.507	.495	-.010	-.025	.137	.019	.152	3.471
Italy	2462	-.412	.442	.015	.028	.116	.013	.008	3.792	2507	-.392	.430	.035	.039	.107	.011	-.076	3.805
Portugal	2016	-.333	.575	.048	.059	.115	.013	.409	4.049	1979	-.256	.425	.047	.067	.093	.008	.531	4.168
Denmark	1009	-.223	.405	.040	.048	.095	.009	.435	3.294	949	-.260	.384	.021	.030	.089	.007	.128	3.440
UK	1044	-.353	.559	.036	.046	.123	.015	.344	3.760	987	-.318	.478	.061	.065	.113	.012	.011	3.918
Netherlands	2092	-.315	.358	.033	.034	.096	.009	-.066	3.966	2060	-.264	.350	.025	.031	.080	.006	.203	3.903
Greece	1095	-.445	.652	.105	.112	.169	.028	.062	3.230	1247	-.599	.673	.064	.054	.169	.028	-.288	3.566
France	2524	-.529	.550	.022	.023	.134	.018	-.271	3.893	2571	-.433	.512	.019	.025	.114	.013	.058	3.757
Spain	1709	-.470	.620	.101	.102	.161	.025	-.037	3.046	1749	-.519	.609	.047	.049	.162	.026	-.113	3.295
Ireland	975	-.367	.693	.067	.081	.151	.022	.359	3.516	1033	-.470	.549	.040	.042	.142	.020	-.049	3.716

Source: ECHP (1994-96).

YEARLY NOMINAL WAGE CHANGES
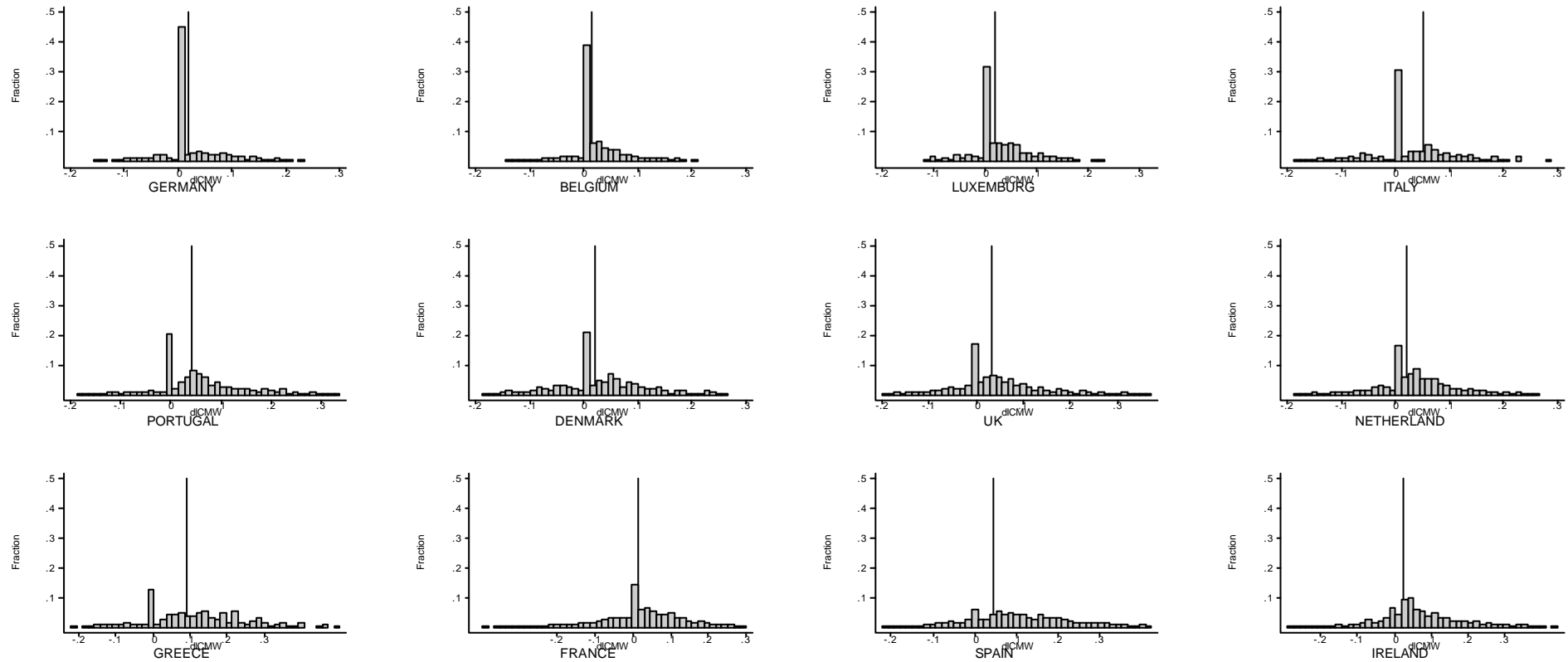
FIG.1a: Stayers Full-time 1994-95

YEARLY NOMINAL WAGE CHANGES
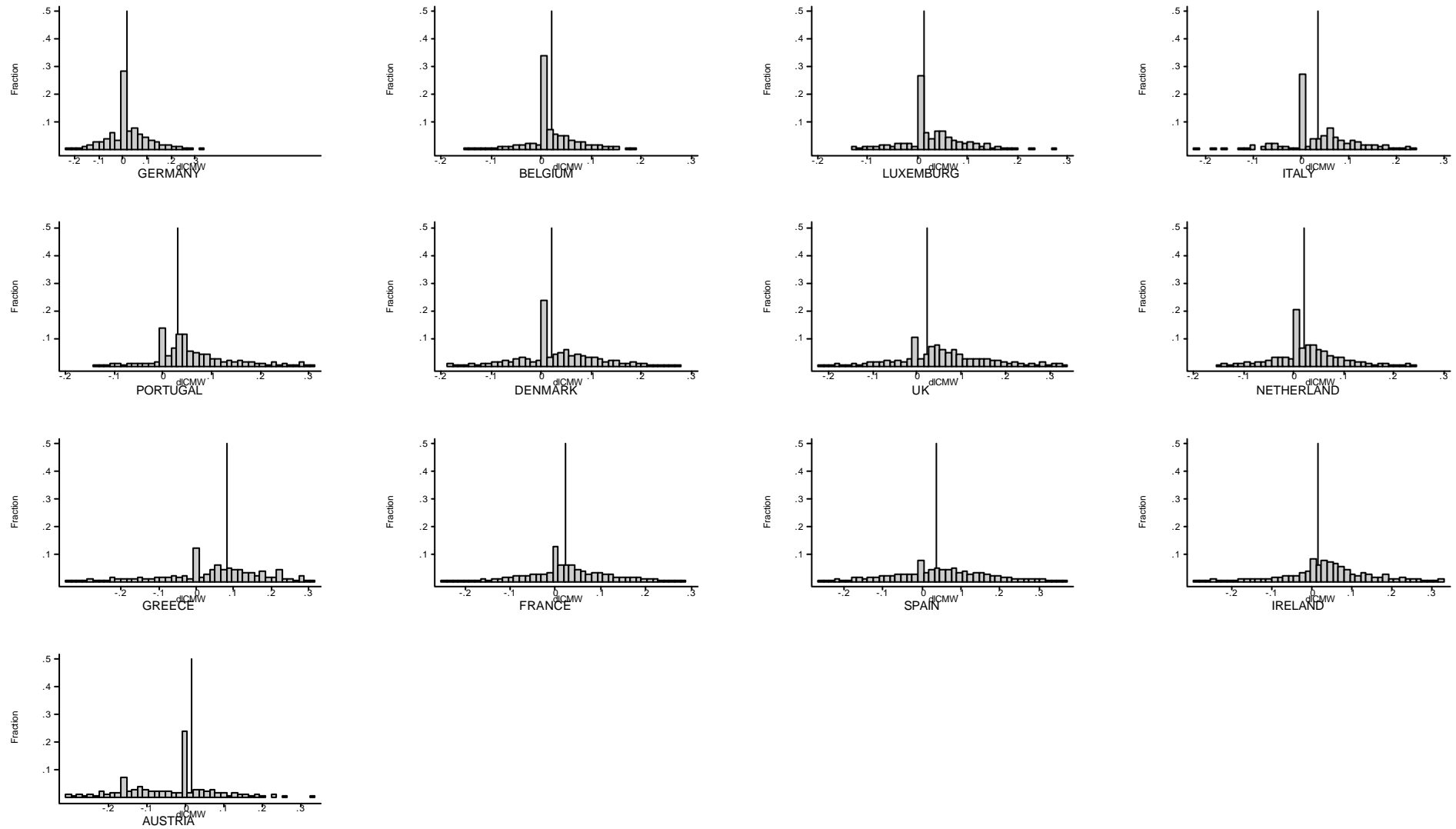
FIG.2a: Stayers Full-time 1995-96

Tab.5 CURRENT Nominal log-changes of Earnings Stayers Full - time.

1994-1995 Countries	N. Obs.	CHANGES IN EARNINGS			CHANGES IN HOURS			CHANGES IN HOURLY EARNINGS			N. Obs	CHANGES IN EARNINGS WITH CONSTANT h		
		$\Delta e < 0$	$\Delta e = 0$	$\Delta e > 0$	$\Delta h < 0$	$\Delta h = 0$	$\Delta h > 0$	$\Delta w_h < 0$	$\Delta w_h = 0$	$\Delta w_h > 0$		$\Delta e_{\bar{h}} < 0$	$\Delta e_{\bar{h}} = 0$	$\Delta e_{\bar{h}} > 0$
Ger	1830	17.49	42.84	39.67	35.08	43.33	21.58	24.86	18.85	56.28	793	15.89	42.88	41.24
Bel	1107	15.27	37.13	47.61	27.28	46.52	26.20	30.35	17.43	52.21	515	16.12	37.09	46.80
Lux	415	13.73	32.77	53.49	13.73	79.76	6.51	16.14	23.61	60.24	331	13.60	29.31	57.10
Aust	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ita	2462	21.81	28.68	49.51	16.98	63.48	19.54	28.76	19.46	51.79	1563	19.58	30.13	50.29
Port	2016	11.11	19.54	69.35	20.73	60.12	19.15	20.59	11.56	67.86	1212	10.89	18.98	70.13
Den	1009	26.86	17.94	55.20	24.98	66.90	8.13	25.77	11.50	62.74	675	24.00	17.04	58.96
UK	1044	21.65	15.23	63.12	29.02	40.13	30.84	31.51	6.61	61.88	419	20.53	15.99	63.48
Neth	2092	19.65	13.67	66.68	19.46	60.95	19.60	26.86	8.56	64.58	1275	18.27	13.96	67.76
Gre	1095	13.97	13.33	72.69	28.13	46.21	25.66	20.09	8.04	71.87	506	14.62	16.21	69.17
Fra	2524	31.66	11.53	56.81	22.31	57.01	20.68	36.05	6.66	57.29	1439	31.20	11.67	57.12
Sp	1709	19.60	3.80	76.59	24.17	50.91	24.93	24.11	2.28	73.61	870	18.85	4.37	76.78
Ire	975	21.44	2.15	76.41	31.49	42.56	25.95	25.54	1.13	73.33	415	21.20	2.41	76.39

Source: ECHP (1994-96).

Tab.5 (continued) CURRENT Nominal log-changes of Earnings Stayers Full - time.

1995-1996 Countries	N. Obs.	CHANGES IN EARNINGS			CHANGES IN HOURS			CHANGES IN HOURLY ERARNINGS			N. Obs	CHANGES IN EARNINGS WITH CONSTANT h		
		$Ae < 0$	$Ae = 0$	$Ae > 0$	$Ah < 0$	$Ah = 0$	$Ah > 0$	$Aw_h < 0$	$Aw_h = 0$	$Aw_h > 0$		$Ae_{\bar{h}} < 0$	$Ae_{\bar{h}} = 0$	$Ae_{\bar{h}} > 0$
Ger	1839	25.45	26.10	48.45	29.91	50.08	20.01	28.55	13.76	57.69	921	22.91	27.25	49.84
Bel	1037	20.73	31.92	47.35	28.83	47.06	24.11	30.28	15.91	53.81	488	19.26	33.40	47.34
Lux	446	18.61	21.97	59.42	5.38	89.01	5.61	20.85	19.51	59.64	397	19.14	21.66	59.19
Aust	706	48.02	19.41	32.58	23.09	50.85	26.06	51.98	9.92	38.10	359	47.35	18.94	33.70
Ita	2507	17.11	27.32	55.56	18.27	64.14	17.59	23.53	18.87	57.60	1608	15.86	28.79	55.35
Port	1979	9.15	11.47	79.38	19.71	68.37	11.93	13.74	8.19	78.07	1353	7.91	11.97	80.12
Den	949	23.15	22.59	54.25	12.22	75.55	12.22	27.71	17.07	55.22	717	23.15	22.59	54.25
UK	987	19.05	5.67	75.28	28.98	44.88	26.14	23.00	2.23	74.77	443	16.25	4.97	78.78
Neth	2060	21.84	17.04	61.12	20.05	63.16	16.80	27.48	11.07	61.46	1301	21.75	17.29	60.95
Gre	1247	26.38	10.91	62.71	24.06	57.26	18.68	29.27	6.98	63.75	714	24.79	11.90	63.31
Fra	2571	31.19	10.19	58.62	19.84	60.48	19.68	35.20	6.57	58.23	1555	32.35	10.74	56.91
Sp	1749	31.96	4.23	63.81	25.84	51.11	23.04	34.13	2.57	63.29	894	29.75	4.59	65.66
Ire	1033	28.56	2.71	68.73	25.27	49.47	25.27	33.79	1.16	65.05	511	28.38	2.35	69.28

Source: ECHP (1994-96).

Tab.6 RANKING OF THE EUROPEAN COUNTRIES

Countries	CENTR.			COORD.	COVERAGE			E. P. L.
	CENTR[1]	CENTRCD[2]	CENTRLN[3]	COORD[4]	COV[5]	COV1[6]	PCOV1[7]	EPL[8]
Ger	2	2	12	3	92	92	.92	2.5
Bel	2.5	4	10	2	90	90	.9	2.1
Lux	-	-	-	-	-	-	-	-
Aust	2.5	5	17	3	98	99	.99	2.2
Ita	2	3	5	2.5	82	82	.82	3.3
Port	2	2	7	2	71	71	.71	3.7
Den	2	3	14	2.3	69	69	.69	1.2
UK	1.5	1	6	1	47	40	.4	.5
Neth	2	3	11	2	81	85	.85	2.1
Gre	-	-	-	-	-	-	-	3.6
Fra	2	1	7	2	95	95	.95	3
Sp	2	3	7	2	78	78	.78	3.1
Ire	-	6	6	-	-	>70	.75	.9

1 Source OECD (1997), Table 3.3, Centralisation, column 17 (1994).

2 Source Boeri Briguavini Calmfors (2001).

3 Source Nickell and Layard (1999), Table 7, column (5).

4 Source OECD (1997), Table 3.3, Co-ordination, column 23 (1994).

5 Source OECD (1997), Table 3.3, Bargaining coverage, percentages, column 11(1994).

6 Source Cesifo Forum (2001), Collective bargaining coverage, percentages, (1995).

7 Our elaboration from COV and COV1.

8 Source OECD (1999), Table 2.5 Overall EPL strictness, version1 (average of indicators for regular contracts and temporary contracts), late 1990s.

Tab.7 Regressions

Dependent variable: %hourly earnings cuts (from Tab.5)			Dependent variable: %hours cuts (from Tab.5)		
	coeff.	p-value		coeff.	p-value
centrln	-8.17	.000	*centrln*	5.64	.001
$(centrln)^2$	.426	.000	$(centrln)^2$	-.26	.001
coord	-29.4	.024	*coord*	-49.69	.033
$(coord)^2$	4.35	.078	$(coord)^2$	11.43	.021
epl	-2.36	.350	*epl*	.673	.716
*pcov*1	58.85	.000	*pcov*1	10.22	.394
const	63.79	.000	*const*	38.76	.008
$R^2 = 0.817$			$R^2 = 0.664$		
centrcd	-17.72	.004	*centrcd*	13.42	.069
$(centrcd)^2$	3.507	.001	$(centrcd)^2$	-2.348	.062
coord	5.884	.728	*coord*	-75.82	.042
$(coord)^2$	-1.026	.759	$(coord)^2$	15.80	.034
epl	-1.89	.304	*epl*	-.444	.844
*pcov*1	16.42	.234	*pcov*1	39.55	.072
const	30.76	.021	*const*	62.84	.002
$R^2 = 0.739$			$R^2 = 0.570$		
centr	-382.7	.255	*centr*	521.2	.010
$(centr)^2$	86.99	.248	$(centr)^2$	-115	.012
coord	51.21	.520	*coord*	-163.5	.004
$(coord)^2$	-10.20	.537	$(coord)^2$	33.8	.004
epl	-1.84	.222	*epl*	-.959	.658
*pcov*1	51.73	.008	*pcov*1	-1.30	.917
const	344.8	.204	*const*	-302.5	.023
$R^2 = 0.544$			$R^2 = 0.547$		
Number of observations 19					

Centrln, centrcd, centr, coord, epl and pcov1 are from Tab. 6.

Source ECHP (1994-96)

Tab. 8 Composition of STAYERS (change month of the interview)

Countries	1994-95				1995-96			
	FF	PP	FP	PF	FF	PP	FP	PF
UK	85.74	12.25	0.93	1.09	86.61	11.57	0.93	0.88
Bel	88.45	8.19	1.37	1.99	89.53	8.64	1.03	0.80
Den	91.12	6.94	0.82	1.12	91.35	6.71	0.76	1.18
Fra	89.11	5.76	1.31	3.82	92.81	5.07	1.05	1.07
Germ	88.36	9.12	1.11	1.41	88.75	9.22	0.86	1.17
Gre	89.55	1.46	0.76	8.22	96.13	0.76	1.71	1.40
Ire	88.27	5.53	1.00	5.20	92.21	5.10	1.68	1.01
Ita	88.09	2.64	0.44	8.83	92.34	2.27	4.49	0.89
Lux	90.81	7.66	0.46	1.07	91.44	7.06	0.75	0.75
Neth	83.30	13.87	1.17	1.66	83.26	14.23	1.28	1.24
Port	95.74	2.38	0.77	1.11	96.51	2.41	0.35	0.74
Sp	95.12	2.60	0.79	1.49	96.00	2.33	0.74	0.94
Aust	-	-	-	-	90.01	6.81	1.77	1.40

(no change month of the interview)

Countries	1994-95				1995-96			
	FF	PP	FP	PF	FF	PP	FP	PF
UK	85.60	12.36	0.94	1.10	86.61	11.64	0.90	0.85
Bel	89.90	8.66	0.82	1.43	89.61	8.68	0.82	0.89
Den	90.31	7.53	0.54	1.61	91.52	6.55	0.73	1.20
Fra	89.10	5.73	1.24	3.93	92.32	4.95	1.65	1.07
Germ	88.36	9.12	1.11	1.41	88.75	9.22	0.86	1.17
Gre	89.49	1.47	0.77	8.27	95.35	0.40	3.03	1.21
Ire	88.89	5.20	0.88	5.04	91.93	5.28	1.79	1.01
Ita	88.20	2.26	0.40	9.14	92.44	2.14	4.53	0.89
Lux	86.49	10.81	-	2.70	90.80	7.40	0.80	1.00
Neth	83.64	13.48	1.06	1.82	85.45	12.73	-	1.82
Port	95.53	2.79	0.63	1.05	96.14	2.31	0.46	1.08
Sp	95.41	2.61	0.68	1.31	95.99	2.31	0.74	0.95
Aust	-	-	-	-	89.88	6.86	1.72	1.54

FF= Full-time in both years; PP= Part time in both years

FP= changing contract from full-time to part-time;PF=changing contract from part-time to full-time.

Source: ECHP (1994-96)

Tab. 9 CURRENT Nominal Earnings changes in logs of Stayers Full-time.

	1994-1995					
	change in month interview			no change in month interview		
Countries	N. Obs.	% Rigid	% Cuts	N. Obs.	%.Rigid	% Cuts
Ger	2627	42.98	17.40	1053	42.36	16.14
Bel	1555	36.66	16.14	874	37.87	15.22
Lux	593	32.38	15.18	32	50.00	6.25
Ita	3174	28.83	21.87	1265	28.37	22.33
Port	2492	19.30	12.76	1816	20.93	11.73
Den	1550	18.45	25.61	1007	18.47	25.32
UK	1575	15.05	21.84	1551	14.96	21.99
Neth	2204	14.02	19.65	1657	13.82	19.92
Gre	1406	12.73	14.01	1396	12.68	13.90
Fra	3403	10.40	33.47	3081	10.16	33.56
Sp	2301	4.00	19.82	2120	3.73	19.67
Ire	1325	2.42	23.32	1112	2.61	22.48

	1995-1996					
	change in month interview			no change in month interview		
Countries	N. Obs.	% Rigid	% Cuts	N. Obs.	% Rigid	% Cuts
Bel	1565	30.73	21.02	1208	30.55	20.03
Ita	3329	26.64	18.38	3019	26.70	18.52
Ger	2580	26.28	25.93	2580	26.28	25.93
Lux	609	21.84	19.54	454	18.94	18.50
Aust	1929	21.88	49.30	1572	20.48	49.62
Den	1553	21.96	24.40	1370	21.02	24.82
Neth	2218	16.82	22.14	94	17.02	19.15
Port	2486	12.43	9.94	1247	13.63	11.39
Gre	1514	11.36	26.88	472	13.98	30.51
Fra	3461	9.39	32.42	3442	9.36	32.48
UK	1669	5.39	21.63	1637	5.44	21.50
Sp	2350	4.43	31.70	2324	4.48	31.71
Ire	1373	2.40	28.84	1184	2.45	28.89

Source: ECHP (1994-96)

Tab. 10 CURRENT HOURLY Nominal Earnings changes in logs of Stayers Full-time

	1994-1995					
	change in month interview			no change in month interview		
Countries	N. Obs.	% Rigid	% Cuts	N. Obs.	% Rigid	% Cuts
Ger	2627	17.21	27.22	2627	17.21	27.22
Bel	1555	16.21	31.06	874	16.82	29.75
Lux	593	22.09	18.89	32	31.25	9.38
Ita	3174	18.90	28.48	2615	18.78	28.45
Port	2492	10.83	21.43	1816	11.73	22.25
Den	1550	11.23	26.00	1007	11.52	26.02
UK	1575	5.97	33.02	1551	6.00	33.08
Neth	2204	8.12	27.40	1657	8.27	27.82
Gre	1406	6.97	21.98	1396	7.02	21.85
Fra	3403	5.58	37.11	3081	5.32	37.13
Sp	2301	2.22	25.25	2120	2.03	25.14
Ire	1325	0.91	27.55	1112	0.99	26.98

	1995-1996					
	change in month interview			no change in month interview		
Countries	N. Obs.	% Rigid	% Cuts	N. Obs.	% Rigid	% Cuts
Bel	1565	13.42	32.97	1208	12.67	32.78
Ita	3329	17.36	25.92	3019	17.46	25.84
Ger	2580	13.45	30.97	2580	13.45	30.97
Lux	609	16.58	23.32	454	13.88	22.03
Aust	1929	10.89	55.78	1572	9.54	56.36
Den	1553	16.23	28.72	1370	15.40	29.34
Neth	2218	10.28	28.85	94	8.51	30.85
Port	2486	7.80	16.13	1247	8.58	16.12
Gre	1514	6.47	30.25	472	8.05	33.05
Fra	3461	5.72	36.72	3442	5.75	36.69
UK	1669	1.86	27.80	1637	1.83	27.49
Sp	2350	2.47	34.43	2324	2.50	34.51
Ire	1373	0.87	33.94	1184	1.01	33.87

Source: ECHP (1994-96)

Tab.11 CURRENT Nominal Earnings changes in logs of Stayers Full time who do not change the number of hours worked.

1994-1995					
	change in month interview			no change in month interview		
Countries	N. Obs.	% Rigid	% Cuts	N. Obs.	% Rigid	% Cuts
Ger	1053	42.36	16.14	1053	42.36	16.14
Bel	674	37.09	16.62	380	38.42	16.58
Ita	1943	30.42	19.56	1601	30.17	19.68
Lux	450	28.89	15.33	23	43.48	8.70
Port	1400	18.93	11.29	1007	20.85	10.53
Den	981	17.64	23.34	646	17.96	23.37
UK	594	15.49	22.90	586	15.53	23.04
Gre	602	14.62	15.28	599	14.69	15.19
Neth	1275	13.96	18.27	979	13.89	19.31
Fra	1813	10.42	32.27	1632	9.99	32.54
Spa	1086	4.60	19.24	1000	4.20	19.30
Ire	541	2.03	22.55	465	2.37	21.94

1995-1996					
	change in month interview			no change in month interview		
Countries	N. Obs.	% Rigid	% Cuts	N. Obs.	% Rigid	% Cuts
Bel	668	31.14	20.51	504	30.16	20.04
Ger	1197	28.57	22.72	1197	28.57	22.72
Ita	2017	27.96	16.16	1822	28.21	16.14
Den	1093	23.06	22.96	1370	21.02	24.82
Aust	933	21.97	49.30	743	19.52	50.20
Lux	501	19.96	19.96	369	16.80	18.97
Neth	1301	17.29	21.75	51	15.69	19.61
Port	1554	12.48	8.24	747	14.32	8.97
Gre	800	11.75	25.00	250	14.40	29.20
Fra	1944	10.03	33.44	1936	10.07	33.37
Spa	1105	4.89	29.77	1094	4.94	29.80
UK	676	4.59	18.34	660	4.55	17.88
Ire	639	1.88	27.54	556	2.16	27.70

Source: ECHP (1994-96)