

**UNEMPLOYMENT DURATION  
AND THE RELATIVE CHANGE IN  
INDIVIDUAL EARNINGS:  
EVIDENCE FROM AUSTRIAN PANEL DATA**

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## **Abstract**

Using Austrian Social Insurance Records data, this paper analyses relative wage changes associated with spells of unemployment on an individual level. In particular, we investigate the effects of previous job duration, moves between industries, and unemployment duration on post unemployment earnings. In the estimation we take account of the simultaneity between unemployment duration and accepted wages and attempt to correct for the sample selectivity bias arising from wages being unobservable for those who leave the labor force. Our main findings are that (i) unemployment duration had a significant negative impact on subsequent wages both in the short run and over a medium term perspective with regard to changes in annual earnings; (ii) a move between industries resulted in the short run in substantial relative wage losses, but this effect disappeared over a horizon of one or two years; and (iii) we could not find a clear-cut impact of tenure on the previous job on earnings after unemployment.

## **Zusammenfassung**

Mit Paneldaten aus der österreichischen Sozialversicherung untersucht die vorliegende Arbeit relative Lohnveränderungen in Zusammenhang mit individuellen Episoden der Arbeitslosigkeit. Insbesondere untersuchen wir die Effekte von früherer Beschäftigungsdauer, dem Wechsel der Wirtschaftsklasse und der Dauer der Arbeitslosigkeit auf den Lohn nach Arbeitslosigkeit. In der Schätzung berücksichtigen wir die simultane Wechselwirkung zwischen der Dauer der und dem Lohn nach Arbeitslosigkeit, und versuchen, für den Sample Selection Bias zu kontrollieren, der aus der Unbeobachtbarkeit der Löhne jener Personen resultiert, die aus dem Arbeitsmarkt ausscheiden. Unsere Hauptergebnisse zeigen, (i) daß die Dauer der Arbeitslosigkeit einen signifikant negativen Einfluß sowohl kurzfristig auf die späteren Löhne, wie auch mittelfristig auf das jährliche Einkommen ausübte; (ii) daß ein Wechsel der Wirtschaftsklasse kurzfristig zu einer relativen Lohnsenkung führte, dieser Effekt aber innerhalb von zwei Jahren verschwand und (iii) daß kein eindeutiger Effekt der Dauer der vorherigen Beschäftigung auf das Einkommen nach Arbeitslosigkeit festgestellt werden konnte.



## 1. Introduction

While a lot of research efforts have been directed to the analysis of unemployment and wage flexibility using aggregate data (see e.g. Coe (1990) for a cross-country perspective and Pichelmann (1990) for Austria), relatively little is known about the wage consequences of unemployment on an individual level. Theoretical considerations suggest that post-unemployment wages may be significantly lower than the individual wages prior to unemployment. In a job-search framework, this may reflect the gradual downward revision of reservation wages as more information about the individual wage offer distribution is gathered and/or individual wealth diminishes; additionally, in countries where unemployment benefit entitlements are eventually phased-out, pressure to accept lower wages may increase over time. When specific human capital is an important element of the employment relation, the optimal "waiting" period for re-employment will be longer, but finally, the risk of having to accept may increase wage losses significantly as firm-specific skills cannot easily be transferred from one job to another; accordingly, moves between jobs with an intervening spell of unemployment may be associated with significantly lower wages in the new job. Other possible explanations for these earnings declines refer to the loss of seniority bonuses in internal labour markets, efficiency wages, or simply separations from a "good match". Finally, unemployment itself the longer it endures may lead to a deterioration of human capital and, thereby, reduce the earnings potential of those affected.

This paper exploits information contained in a longitudinal data set drawn from Austrian Social Insurance records to investigate into the determinants of the relative change in wages associated with individual employment-unemployment-new job transitions in 1985. In particular, we analyse the effects of previous job duration as a proxy of specific skills, of moves between as opposed to within industries, and of unemployment duration on post-unemployment wages in a simple human capital framework. In the estimation we take account of the simultaneity between unemployment duration and accepted wages; we also attempt to correct for the sample selectivity bias arising from post-unemployment wages being unobservable for those who leave the labour force.

Our main findings may be summarised as follows. First, our empirical analysis indicates that the duration of the intervening spell of unemployment exerts a significantly negative impact on post-unemployment wages. This holds both for the short-run impact effect on relative wage changes and over a medium term perspective with regard to relative changes in annual earnings. Thus, contrary to the results of Chowdhury and Nickell (1985) for the US, we find no evidence for a catching-up process of earnings after unemployment in our data.

Second, a move between industries entails, *ceteris paribus*, quite negative short-run wage consequences. According to our estimates a change in industry in the employment-unemployment-new job transition lowers wages in the new job in the range of 5 to 7 per cent. However, we are also able to show that this negative impact effect tends to disappear over a horizon of one or two years.

Third, tenure on the previous job has no clear-cut impact on earnings after unemployment. While the wage in the post-unemployment job *ceteris paribus* seems to be positively affected by longer tenure on the previous job, this effect turns negative or insignificant when annual earnings before and after unemployment are compared.

Finally, our model of the selection mechanism suggests that employment-unemployment-new job transitions are associated with relatively higher earnings than those predicted for individuals with transitions to and from inactivity.

The remainder of the paper is organised as follows. In section 2 we set the stage for the analysis and present a brief review of the existing literature. In section 3 we describe our data and the statistical model used in the empirical estimation. Section 4 presents our findings on the determinants of relative wage changes associated with employment-unemployment-new job transitions in Austria, and section 5 draws some tentative conclusions.

## **2. Unemployment and Relative Wage Change: A Brief Review**

### **2.1. Theoretical arguments**

Economic theory suggests ways in which a spell of unemployment may affect the wage achieved in a subsequent job. Apart from the unemployment context, most wage estimations using individual data are performed in view of the human capital theory. This theory abandons the assumption of constant productivity labor. Instead it is assumed, that every worker can amend the quality of the labor he offers by additional schooling or training. Furthermore, workers are learning on the job and thus collect working experience. Both schooling and work experience enlarge the stock of individual human capital and increase productivity which results in higher observed wages. Since experience keeps growing, albeit perhaps at a diminishing rate, as long as a worker stays on a job this effect may explain the observed pattern of wage tenure profiles, i.e. monotonically increasing wages with declining slope.

When a worker undertakes some training he will find his newly gained insights useful in at least his actual job. The training may prove useful in many firms besides those providing it. If this is true the term "general training" is used. In contrast to that, "completely specific training can be defined as training that has no effect on the productivity of trainees that would be useful in other firms" (Becker 1975). If workers are paid according to their productivity, and they experience a spell of unemployment, their amount of general and specific training will be reflected in the observed wage changes.

By definition, remunerations for specific training cannot be transferred to a new job. General training on the other hand is likely to be remunerated in the new job as well. Wage cuts as a result of a job change

therefore may be interpreted as pointing to the presence of specific training which has become useless in the new job. Moves between two similar firms then are likely to be accompanied by smaller wage losses compared to moves between less closely related firms, say for instance, firms working in different industries. Wage losses originating from lost specific training therefore can be expected to be virtually non-existent when the worker returns to the previous job, as it is the case for persons on temporary layoff or for seasonal workers. Some empirical analyses therefore prefer samples containing only permanently but not temporarily displaced workers.

As soon as unemployment is involved a new problem arises: The analogy of human capital to physical capital is so extensive that theorists assume human capital, if left idle, to undergo a process of depreciation. This depreciation may be due to several phenomena, the most obvious one being simply the forgetting of occupational knowledge. But nowadays another aspect of depreciation is getting increasingly meaningful: Non-working persons do not participate in advances in occupational knowledge and newly developed techniques. Both effects result in a decreasing value of schooling and experience during spells of unemployment. Though a decrease in returns to human capital is in conformity with the data and can easily be explained on an intuitive basis, this interpretation is not completely without problems, as the observation as well could stem merely from employers assuming such a depreciation and offering wages accordingly even if there was no actual base for it. Another mechanism which could result in the same pattern of interrupted wage growth relies on seniority rights which are lost at the event of a permanent separation.

Another prominent strand of literature linking unemployment duration and wage changes is based on job search theory. The motivation for jobless workers to keep searching instead of accepting the very first job offer lies in the possibility of achieving a higher wage offer for given job and personal characteristics. Job search theorists assume that workers have no information about the offered wage level prior to the actual application for the job. In order to find out whether the offer exceeds the reservation wage the searcher has to engage in search activities which cost time and foregone income.

The longer the time the worker can spend searching the more job offers arrive and the more likely is it that at least one of them exceeds the reservation wage. This relation would imply a positive correlation of unemployment duration and the wage level achieved subsequently.

Since job search is costly, many unemployed may not be in a position to afford a long search period because of financial restrictions. Unsuccessful searchers therefore may feel constrained to reduce the reservation wage as they get closer to their financial time limit. This process increases the chance of leaving unemployment (and reduces the expected unemployment duration) at the cost of a lower post unemployment wage. Thus the time spent searching cannot be treated as given when estimating post unemployment wages. If, however, a sufficiently high wage offer arrives early in the period designated for job search a rational searcher will stop searching for a job. Therefore also the duration of job search

(i.e. the duration of unemployment) cannot be expected to be independent of the reservation wage. A simultaneous estimation of both variables, unemployment duration and post unemployment wage level, turns out to be more appropriate than an isolated determination of each, taking the other as given.

## 2.2. Recent empirical literature

Several researchers have investigated wage losses due to unemployment in the recent past. Most analyses evaluate U.S. data and concentrate on unemployment resulting from plants being closed down or from layoffs rather than from quits (e.g. Addison, Portugal 1989, Jacobson, LaLonde, Sullivan 1992, Podgursky, Swaim 1987, Ong, Mar 1992, Topel 1990). This limitation is mainly caused by data restrictions; most researchers use either the Displaced Workers Survey (a supplement to the Current Population Survey) or the Panel Study of Income Dynamics. But sometimes this limitation is motivated by the conjecture that earnings losses are larger for displaced workers compared to voluntary job changers. This conjecture need not always be true: In case of plant closures pay cuts might occur even prior to the actual displacement, thus reducing the short term wage loss if this is defined as "wage after unemployment minus wage immediately before unemployment". Jacobson et al. (1992) report wage reductions up to three years before the actual separation. They also report that the accumulated long term wage loss may well be large in spite of the low short term wage loss. In addition, characteristics of layoffs may apply to voluntary separations if the layoff has been anticipated by the worker. Nord and Ting (1991) for instance report that advance notice reduces the experienced wage loss if notice is given at least two months before the plant is actually closed down.

One of the stable findings for wage losses of displaced workers is the negative relationship between post displacement earnings and duration of the intervening spell of unemployment. However, the magnitude of this effect varies with covariables used and with estimation methods applied. Addison and Portugal (1989) report the elasticity of wages with respect to unemployment duration to vary between  $-0.02$  and  $-0.23$ . An elasticity of about  $-0.02$  is reported by Ackum (1991), one of the very few researchers evaluating European data on post unemployment wages. Using Swedish data on youth unemployment, she finds the negative unemployment effect to become insignificant when unobserved heterogeneity is corrected for.

US workers who start a new job in an industry different from the pre-unemployment industry are likely to suffer larger earnings losses than workers who find a job in the same industry as before (Addison, Portugal 1989; Ong, Mar 1992; Podgursky, Swaim 1987). This relation holds in cross industry analyses as well as in an investigation of unemployed coming from the Californian semi-conductor industry. For the latter case, Ong and Mar (1992) find substantial wage losses, presumably due to losses in specific human capital, for persons reemployed in the high tech sector but not in the semi-conductor industry. Reemployment by the former employer, on the other hand, turns out to affect post displacement wages positively which is not very surprising in the light of the human capital argument.

The general picture emerging from present literature could be interpreted in two ways: Firstly as corroborating the hypothesis that specific human capital cannot (fully) be transferred between jobs, and secondly that longer duration of unemployment, *ceteris paribus*, tends to reduce post-unemployment wages.

### 3. Data and Methodology

Our data set consists of a random sample of individuals who were registered as unemployed by the Labour Offices in Austria in the course of the year 1985. The number of workers experiencing a (registered) spell of unemployment amounted to about 450 000 in 1985, about 16 per cent of the Austrian labour force; the average rate of unemployment stood at 4.5 per cent. The sample covers 2499 individuals, approximately 0.5 per cent of the total population under consideration. Various comparisons with official data indicate that the sample properly reflects the socio-economic composition of the registered unemployed in 1985.

Combining the unemployment data with Social Insurance Records data allows to construct a longitudinal data set covering not only individual employment and unemployment patterns with a broad variety of single spell characteristics but also various states out of the labour force such as maternity, sickness, pension and a few others of minor importance. The observation period dates back till 1972, January, and ends in 1988, June.

The further analysis focusses on the relative change in individual wages associated with transitions from employment (Job 1) to a new job at a different employer (Job 2) with an intervening spell of unemployment in 1985, but not necessarily starting or ending in that year. Additionally, we analyse the development of annual earnings over a two-year follow-up period.

If an individual experienced more than one spell of unemployment in 1985, one of the spells was randomly selected. Following administrative procedures, interruptions of unemployment due to sickness, work on a daily basis etc. that lasted no longer than 28 days have been ignored.

Since each firm is issued an identification number, which is recorded for every spell of employment, temporary separations and transitions to and from inactivity can be identified. The measurement design is as follows: starting from the unemployment spell under consideration the previous and the subsequent spells of employment and their characteristics were determined. We allow for a period of up to 28 days between the termination of Job 1 and entry into unemployment and for an equivalent period of time between exit from unemployment and take-up of Job 2. Longer time intervals between the employment and unemployment spells are considered as a spell of inactivity in line with the situation when no jobs were recorded previous and/or subsequent to the spell of unemployment. Temporary layoff unemployment then is simply defined as the situation where Job 1 and Job 2 occur in a firm with

the same identification number. For the reasons discussed above, transitions of this type have been excluded from the following analysis.

Due to the administrative nature of the data base, the wage measure had to be constructed as follows. For the jobs under consideration the annual salary relevant for the calculation of social security contributions is recorded on a calendar year basis. As this definition corresponds, by and large, with gross wage income, wages in Job  $i$  are obtained by simply multiplying the recorded annual incomes with the fraction of the calendar year spent with the employer of Job  $i$ . Annual earnings in the years before and after unemployment are defined as cumulated salaries in the respective one-year periods. The full details regarding the sample design and measurement procedures are spelled out in Beidl et al. (1990).

The basic methodological framework of our analysis is derived from human capital considerations. The common type of human capital earnings functions applied to micro data expresses the logarithm of earnings as a function  $F$  of schooling ( $S$ ) and labour market experience ( $X$ ); for an overview see Willis (1986). Suppressing other regressors and individual subscripts for ease of exposition, a prototype model of individual log earnings may be written as

$$(1) \log w_t = F(S, X) + u + e_t,$$

with the notion of unobserved heterogeneity among workers and jobs being captured by  $u$  and  $e_t$ , denoting a fixed worker-specific effect and a time-varying random component of measured earnings respectively.

Clearly, straightforward estimation of equation (1) will produce biased results when  $E(u+e|S, X)$  is different from zero, e.g. due to self-selection mechanisms. However, as our interest here is in the determinants of relative wage changes, we can follow the usual procedure to integrate out the unobservables by taking differences between  $\log w_2$ , the post-unemployment wage, and  $\log w_1$ , the pre-unemployment wage. Then

$$(2) \log w_2 - \log w_1 = \Delta F(S, X) + \Delta e.$$

and we can reduce the set of variables in  $F$  to those that varied between the two jobs. Given our previous theoretical considerations and the limitations of the data set, this leaves us, in principle, with only two regressors, namely the log of the duration of unemployment ( $\log DUR$ ) and a dummy variable ( $MOVE$ ) indicating whether Job 2 is in a different industry than Job 1 (coding of  $MOVE$  is based on a 1-digit industry classification of the two jobs). However, as we want to allow for the fact that on-the-job experience may, at least partly, be transferred to a new employer, we have included tenure on Job 1 ( $TEN 1$ ) as an additional explanatory variable.

Two further issues of a more technical nature should be mentioned at this point. First, sample-selection effects are likely to be still present in equation (2); in particular, if low levels of  $\Delta e$  tend to be associated with transitions to and from inactivity, then these values will systematically be underrepresented in the sample of individuals for whom wages are observed. In order to correct for potential selectivity bias the conventional two-step selectivity adjustment procedure suggested by Heckman (1979) is used in the actual estimation. Second, with respect to the process under consideration the duration of unemployment is clearly an endogenous variable. Post-unemployment wages are related to duration via its impact on reservation and offered wages but the latter will simultaneously affect the duration of unemployment. In order to account for the joint determination of duration and post-unemployment wages a simultaneous equation model with selectivity-adjustment (see Lee, Maddala, Trost 1980) has been used in the estimation. It should be kept in mind, however, that exercises of this type inevitably raise quite complicated identification problems; as post-unemployment wage, duration of the unemployment spell, and sample-selection process are all likely to be governed by the same set of explanatory variables, identification of the model is usually achieved by somewhat arbitrary exclusion restrictions.

Table 1

SAMPLE CHARACTERISTICS  
MEANS OF VARIABLES

	TRANSITIONS FROM / TO EMPLOYMENT	TRANSITIONS FROM / TO INACTIVITY	TOTAL
NUMBER OF CASES	760	932	1692
$\log(W_2 / W_1)$	0.064	-	-
$\log(Y_{1A} / Y_{1B})$	0.187	-	-
$\log(Y_{2A} / Y_{1B})$	0.179	-	-
DUR (days)	128	147	139
TEN 1 (years)	1.21	1.09	1.14
MOVE (yes)	0.53	-	-
ES 1 (percentages)	65.4	42.8	52.7
ES 2 (percentages)	76.2	43.6	58.0
SEX (female)	0.39	0.44	0.42
AGE (years)	30.4	30.9	30.7
MARRIED (yes)	0.42	0.39	0.40
HARD TO PLACE (yes)	0.17	0.25	0.21
CHILDREN (yes)	0.39	0.38	0.38
SCHOOL (only compulsory level)	0.29	0.24	0.26
APPRENTICESHIP TRAINING (yes)	0.12	0.14	0.13

Notes: DUR refers to the duration in unemployment; TEN 1 to tenure on the previous job. ES 1 and ES 2 refer to the fraction spent in employment in the first and second year before unemployment, respectively. HARD TO PLACE refers to the official classification of placement restrictions as used by labour exchange.  $Y_{1A}$ ,  $Y_{2A}$ , and  $Y_{1B}$  refer to cumulated annual earnings in the first year after, second year after and first year before unemployment, respectively.

#### 4. Empirical results

The main findings of our empirical analysis are reported in Tables 2 and 3. Table 2 summarises the results with respect to the change in the wage obtained in the new job relative to the wage in the job prior to unemployment. Table 3 presents the findings with respect to the relative change in annual earnings. We will now turn to discuss these results in some detail.

DETERMINANTS OF INDIVIDUAL RELATIVE WAGE CHANGES  
Dependent Variable:  $\Delta \log W$

Table 2

	OLS (1)	SELECTIVITY ADJUSTED OLS (2)	SELECTIVITY ADJUSTED SIMULTANEOUS EQUATION (3)
TEN1 (years)	0.018 (2.7)	0.025 (3.6)	0.026 (2.8)
MOVE (yes)	- 0.067 (2.3)	- 0.069 (2.4)	- 0.053 (1.3)
log DUR	- 0.040 (3.1)	- 0.041 (3.1)	- 0.195 (2.7)
LAMBDA	-	0.195 (4.0)	0.201 (3.0)
SE	0.4066	0.4013	0.5499

Notes: Column (1) contains the results of ordinary least squares estimation. Column (2) refers to OLS-estimation with selectivity adjustment using Heckman's two-step estimator; LAMBDA is derived from a probit equation for the selectivity mechanism; see annex. Column (3) refers to the results of estimation of a selectivity adjusted simultaneous equation system for  $\Delta \log w$  and log DUR; for the corresponding duration equation see annex. All models are estimated with an additional constant term included. Values in parentheses are t-ratios. SE denotes the regression standard error.

As a starting point and to provide a benchmark case, column (1) in Table 2 provides the results of estimating the job-wage-difference equation by ordinary least squares. The first interesting finding is the significantly positive coefficient of tenure on the previous job, clearly at variance with theoretical expectations. The other notable findings are the strongly negative effects of changes in industry and the duration of the unemployment spell on the relative change in individual wages. Taking up a new job in another industry results according to these estimates in a relative wage loss of about 7 per cent. With respect to durations effects, a 10 per cent increase in spell length is estimated to lower post-unemployment wages by 0.4 per cent.

In column (2) of Table 2 we report the results of re-estimating the job-wage-difference equation using Heckman's two-step selectivity adjustment procedure. The corresponding probit equation for the

likelihood to observe an employment–unemployment–new job transition in the sample appears in the annex, but for the convenience of the reader we briefly report the main results of this exercise here. The probability of continuous labour force attachment is found to depend positively mainly on previous employment records, while for females, and both the young and the older workers inactivity periods are more likely. However, a comparison of column (2) with column (1) shows that this adjustment for selectivity changes the estimated coefficients surprisingly little. An obvious interpretation would be that the selection mechanism is purely random, but the significant coefficient on Heckman's LAMBDA suggests that the wage outcomes predicted for those who left the labour force would be significantly lower than the observed wages in employment transitions.

Finally, column (3) of Table 2 contains the results of estimating a selectivity adjusted simultaneous equation model with joint determination of the relative job–wage difference and the duration of unemployment. The probit equation for the selection mechanism is the same as before, and the duration equation can also be found in the annex. While, in general, unemployment duration does not seem to be very precisely estimated, two points should be mentioned. First, older workers are estimated to face, *ceteris paribus*, shorter periods of unemployment; but note from the selectivity equation that they are also more prone to withdraw from the labour force. Second, the coefficient of relative wages has a negative sign implying that higher wages before unemployment are likely to raise the length of the unemployment spell, and lower wages after unemployment are likely to reduce unemployment duration. However, the coefficient on wages is rather poorly determined suggesting that the dominant causation runs from longer durations to lower wages. In fact, as column (3) indicates the main effect of treating duration as endogenous is a pronounced increase of the coefficient of unemployment duration in the wage–difference equation. According to the estimates, now a 10 per cent rise in spell length is associated with a reduction of relative wages of nearly 2 per cent. The size of the other coefficients in the equation remains hardly affected, but the effect of a change in industry turns insignificant.

We now turn to discuss the earnings developments over a somewhat longer time horizon. Table 3 contains the results of estimating individual earnings–difference equations by OLS, with and without selectivity correction. The dependent variable now is the relative change in cumulated annual earnings, where the relevant time periods are the first and second year after unemployment as compared to the year before the unemployment spell ( $\log(Y_{1A} / Y_{1B})$  and  $\log(Y_{2A} / Y_{1B})$ , respectively). The main results of this exercise are as follows:

## RELATIVE CHANGE IN ANNUAL EARNINGS

	log ( $Y_{1A} / Y_{1B}$ )		log ( $Y_{2A} / Y_{1B}$ )	
	(1)	(2)	(3)	(4)
TEN1 (years)	- 0.047 (3.8)	- 0.006 (0.4)	- 0.035 (2.5)	0.006 (0.4)
MOVE (yes)	- 0.034 (0.6)	- 0.046 (0.9)	0.056 (0.9)	0.065 (1.1)
log DUR	- 0.075 (3.1)	- 0.080 (3.5)	- 0.082 (2.9)	- 0.083 (3.1)
LAMBDA	-	1.068 (11.5)	-	1.050 (10.0)
SE	0.7586	0.6816	0.8351	0.7671

Notes: Estimation method for columns (1) and (3) is OLS. Columns (2) and (4) refer to OLS-estimation with selectivity adjustment using Heckman's two-step estimator; LAMBDA is derived from a probit equation for the selection mechanism; see annex. All models are estimated with an additional constant included. Values in parentheses are t-ratios. SE denotes the regression standard error.

First, and now in line with theoretical considerations, tenure on the previous job is found to have a negative impact on the relative change in annual earnings. However, the effect turns insignificant when sample selectivity is controlled for. This might be due to some seasonally unemployed persons still in the sample for whom rather short tenure on the previous job and no wage reductions caused by unemployment are well compatible. Second, the negative impact of a move between industries appearing in the job-wage-difference equations does not show up when the relative change in annual earnings is looked at. Third, unemployment duration exerts a significantly negative influence on post-unemployment earnings across specifications. Moreover, the results do not point towards some sort of catching-up process as the coefficient on unemployment duration seems to be quite robust with respect to the time periods under consideration. Finally, as in the case of the job-wage-difference equations, the coefficients on the selectivity variable are significantly positive, but notably larger in magnitude.

Thus, our results seem to suggest that an initial negative impact from industry shifts on post-unemployment wages may tend to disappear over a medium term horizon. The negative earnings consequences arising from longer unemployment duration, however, seem to be of a persistent nature. In particular, as our earnings measure compounds wage and employment effects, our findings do not support a hypothesis of workers trading lower post-unemployment wages for higher employment stability.

## 5. Some tentative conclusions

Using Austrian panel data the purpose of this paper has been to analyze the determinants of the relative change in individual wages and annual earnings related to job mobility with an intervening spell of unemployment. Controlling for heterogeneity arising from transitions to inactivity and the endogeneity of unemployment duration with respect to the wage obtained in the post-unemployment job, we have been able to establish that longer duration of unemployment resulted *ceteris paribus* in significantly lower post-unemployment wages and annual earnings. Our evidence clearly points against an explanation of unemployment duration in terms of productive search, both in the short run and over a medium term horizon. We have also found some evidence that wage and earnings outcomes for those who left the labour force would have been worse than the actual realisations for individuals with continuous labour force attachment.

However, except for the quite clear-cut effect of unemployment duration, our results do not lend support to very strong conclusions. We embarked with a view that put some emphasis on specific skills or industry-specific wage premia acting as an important impediment to labour reallocation involving unemployment. Specific human capital, in particular, may imply long "waiting" periods for re-employment; and when the loss of specific skills and the associated wage premium eventually has to be accepted, specific capital no longer provides a buffer between productivity and the value of non-employment; therefore, inactivity gets less costly and turnover from new jobs, probably associated with recurrent unemployment, may be rapid. In our data, however, the supportive evidence for this view seems to be close to zero. It is difficult to tell at the present stage of analysis what may account for this negative result; imperfectly controlling for sample selectivity may figure prominently among possible explanations, but obviously more work needs to be done before firm conclusions can be drawn in that respect.

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## 7. Annex

Table 4

PROBIT EQUATION FOR THE SELECTION MECHANISM  
 Dependent Variable:  
 Employment–Unemployment–New job Transition

	<i>Coefficient</i>	<i>t-value</i>
CONSTANT	0.054	(0.1)
DUR (years)	0.003	(0.1)
ES 1 (percentages)	0.017	(14.1)
ES 2 (percentages)	0.002	(1.7)
SEX (female)	- 0.248	(3.5)
AGE (years)	- 0.048	(2.3)
AGE 25 (trend starting at age 25)	0.043	(1.8)
AGE 45 (trend starting at age 45)	- 0.056	(3.1)
MARRIED (yes)	- 0.105	(1.3)
HARD TO PLACE (yes)	- 0.094	(1.1)
CHILDREN (yes)	0.002	(0.0)
SCHOOL (only compulsory level)	0.106	(1.4)
APPRENTICESHIP TRAINING (yes)	- 0.119	(1.1)
Log Likelihood	- 969.5	
Restricted Log Likelihood	- 1164.0	
Number of Cases	1692	
Overall Percentage Correctly Classified	69.5%	

SELECTIVITY-ADJUSTED SIMULTANEOUS DURATION EQUATION  
JOINTLY ESTIMATED WITH  $\Delta \log W$   
Dependent Variable:  $\log DUR$

	<i>Coefficient</i>	<i>t-value</i>
CONSTANT	3.182	(2.8)
TEN 1 (years)	0.043	(0.7)
SEX (female)	0.50	(0.4)
AGE (years)	0.32	(0.6)
AGE 25 (trend starting at age 25)	- 0.016	(0.3)
AGE 45 (trend starting at age 45)	- 0.86	(2.4)
MARRIED (yes)	- 0.034	(0.3)
HARD TO PLACE (yes)	0.316	(2.3)
CHILDREN (yes)	0.101	(0.5)
$\Delta \log W$	- 1.608	(1.1)
LAMBDA	0.410	(1.0)
SE	1.3974	

Notes: LAMBDA is derived from the probit equation for the selection mechanism. SE denotes the regression standard error.