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Abstract

The retrospectively recalled calendar of activities in the European Community Household Panel is a prime resource for cross country analysis of unemployment experience. We investigate the reliability of these data and find that 26% of unemployed respondents misreported retrospectively their unemployment status in the subsequent interview. We observe large differences across countries: While the conditional probability of a successful recall is 96% in the UK, it is just 51% in Greece for a comparable individual. These evident data problems likely affect the results of cross country comparisons.

Keywords: Recall error, unemployment, ECHP

JEL codes: C81, C83, J64

Tiivistelmä

Eurooppalaisen elinolotutkimuksen (ECHP) kalenteria edellisvuoden työmarkkinatiloista on usein käytetty tietolähteenä kansainvälisissä työttömyysvertailuissa. Tutkimuksessa arvioidaan näiden tietojen luotettavuutta. Tulosten mukaan 26 % vastaushetken työttömistä ei muistanut olleensa työttömänä seuraavana vuonna kysyttäessä. Maiden väliset erot todennäköisyydessä muistaa edellisvuoden työttömyysjakso olivat suuret. Iso-Britanniassa todennäköisyys oli 96 %, kun se Kreikassa oli ainoastaan 51 %. Näin suuret laadulliset erot kyselyaineiston luotettavuudessa voivat hankaloittaa kansainvälisiä vertailuja.

Asiasanat: Muistivirhe, työttömyys, ECHP

JEL-luokittelu: C81, C83, J64

1 Introduction

Being a core topic in labor economics there is a wealth of empirical analysis of individual unemployment experiences. This research often uses survey data with a rich set of variables. The length of unemployment periods can be studied if individuals' labor market states can be tracked over time. As a high frequency of repeated panel interviews (monthly or weekly) are costly and may lead to attrition due to a high response burden, many panel surveys rely on yearly interviews. As information on the individual activities at the time of the interview leave considerable gaps regarding the labor market history in the data, many surveys contain retrospective longitudinal information about the main economic activity status between the interviews. This information is collected by asking the respondents to report their labor market history over a relatively long period (e.g. the last calendar year). The use of retrospective information reduces data collection costs but it comes at the expense of having *recall* errors in the data. Such errors occur if respondents forget past events, misplace them in time, or consciously or unconsciously reinterpret the past (e.g. due to social desirability). As measurement error can lead to misleading conclusions and biased inference, the reliability of retrospective information is a question of particular importance for empirical labor market research.

If the retrospective calendar of past activities is long enough to cover the time of the previous interview, the accuracy of retrospective information can be assessed without additional data. Namely, by comparing the retrospective information about the past activity at the time of the previous interview reported in the present wave with the information on the current activity provided in the previous wave it is possible to construct probabilities of successful recalls. This approach has been taken in Paull (2002) for the British Household Panel Survey (BHPS) and Jürges (2007) for the German Socio Economic Panel (GSOEP). In some other studies retrospective information has been compared with validation data from other surveys (Morgenstern & Barrett, 1974; Horvarth, 1982; Akerlof & Yellen, 1985; Levine, 1993) or from register data (Mathiowitz & Duncan, 1988; Pyy-Martikainen & Rendtel, 2009). All these studies have found a considerable amount of recall errors in the reported past unemployment experiences.

According to Morgenstern & Barrett (1974), Horvarth (1982) and Levine (1993), the Work Experience Survey answered by the March samples of the US Current Population Survey clearly underestimated previous year's unemployment level. Mathiowitz & Duncan (1988) found that as much as two-thirds of unemployment spells were not reported in the Panel Study of Income Dynamics. Paull (2002) found large amounts of under-reporting in the BHPS, whereas Jürges (2007) found that one-fifth of unemployment experiences were not recalled in the next year's wave of the GSOEP. Furthermore, the recall errors in unemployment information are not random. Unemployment experiences are recalled more likely at times of high unemployment (Akerlof & Yellen, 1985; Levine, 1993). Individuals fail to remember short spells of unemployment in particular (Mathiowitz & Duncan, 1988; Levine, 1993), and men are under-reporting less than women (Morgenstern & Barrett, 1974; Akerlof & Yellen, 1985; Levine, 1993; Jürges, 2007). The longer the recall period, the less likely unemployment is reported retrospectively (Horvarth, 1982; Paull, 2002;

Jürges, 2007). More painful spells of unemployment, as measured by self-reported life satisfaction at the time of unemployment, are more likely reported (Jürges, 2007).

We contribute to this literature by analyzing recall errors in the unemployment records of the European Community Household Panel (ECHP). The ECHP is a standardized survey aimed at providing comparable data for 15 European Union member states. The retrospective unemployment information in the ECHP has been commonly used for cross country comparisons. Resulting empirical figures have been published by international bodies (such as OECD, 2002) and in leading international journals in Economics and Social Sciences such as in *Journal of the European Economic Association*, *Labour Economics* and *American Sociological Review*. Whereby some studies model unemployment duration (e.g. Pellizari, 2006; Tatsiramos, 2009), others use unemployment duration as an explanatory variable (e.g. Gangl, 2006). Cross country differences in recall errors are of particular interest, because they affect comparability of data and hence the reliability of cross country comparisons. In this paper we perform a cross country analysis of recall errors in retrospective unemployment information in the ECHP.

2 European Community Household Panel

The ECHP targets at all private households across all participating countries. Although the ECHP was designed and coordinated by Eurostat, the actual data were collected by national statistical institutes or research centers, which followed their normal data collection practices. In most countries the ECHP was conducted as a distinct survey, but in Belgium, Germany and the UK it was partly or fully derived from national household surveys.¹ The survey was conducted annually over the period 1994-2001 (8 waves). Because several countries joined the survey in 1995 or 1996, we restrict our sample to the period 1996-2001. Moreover, we exclude the Netherlands and Luxembourg because of incomplete or missing information on the date of the interviews, and Sweden because it joined the survey after 1996. This leaves us with 12 countries.

At the time of the interview the respondents were asked about their current main economic activity status. In addition, they were asked to complete a month-by-month calendar of main activity during the preceding year. The respondent was able to choose among 10 options for the main activity status. According to the instructions, employment should be preferred over other options if the respondent occupied various labor market states during the month. Moreover, if the respondent's working hours were 15 or more, one of employment-related options should be chosen. Those not working were asked to choose their main activity status according to their own subjective opinion on the basis of most time spent. In particular, no precise definition of unemployment was given by Eurostat (Pyy-Martikainen et al., 2004, p. 17). Although the current and recalled activity are mainly self-defined information by the respondent, there are a few differences across countries. For

¹For more information on these data see Eurostat (2010) and for a review and a discussion of various methodological and practical issues see Peracchi (2002).

Germany and the UK the actual interview question differed somewhat from the authentic ECHP question due to the fact that data was derived from national surveys. Some countries may also have added own instructions regarding to the unemployment status. In Finland, for example, unemployment was a valid choice only if the respondent was without a job, available for work and actively looking for work. In Germany the respondent was classified as unemployed only if he/she was officially registered as unemployed at the employment agency.

In the empirical analysis, we consider individuals who were unemployed at the time of the interview, and analyze the probability of successfully recalling this unemployment experience in the next interview. That is, we compare the self-reported main activity status at the month of the interview with the recalled status for the same month that was reported retrospectively in the next wave's interview. The underlying assumption is that the main activity status at the time of the interview is true, whereas the recalled status may be subject to some error. Both of these variables are often used in empirical research, but the retrospective activity calendar is the only source of information to construct monthly unemployment duration from these data. For our analysis we construct a dummy variable for a successful recall of the past unemployment experience. It equals one if the recalled information for the month of the preceding interview is unemployment and hence matches the information on the main activity status reported at the time of the interview in the previous wave. Otherwise it is zero, indicating that the respondent failed to recall his/her past unemployment experience.

3 Analysis of recall errors

In Table 1 and Figure 1 we see that 74% of the respondents recalled correctly having been unemployed at the time of the preceding interview. Among those with incorrect recall many claimed that they were working (10%) or doing housework, looking after children or other persons (6%). Cross country differences are striking. In the UK and Ireland the recall errors are rare and amount to 10% or less. Germany, Belgium and France perform almost equally well, but in Spain and Greece only six in ten remembered their unemployment experience whereas one in four misclassified themselves as having been in paid employment or doing housekeeping.

As the next step we analyze by means of a Probit regression model whether the probability of a successful recall of unemployment has a statistical association with a variety of observed variables. Table 2 reports the estimated marginal effects. In our first model, we only include dummies for the country and the interview wave. We find large and statistically significant differences across countries. Compared to Germany, the recall errors are less frequent in the UK and Ireland, and more frequent in all other countries except in France. The conditional probability for a correct recall is 87% in the UK while it is more than 40 percentage points lower in Greece and Spain. The recall errors increase slightly over the waves.

In our second model we add a number of individual level control variables to account of the different composition of individuals across countries. Although most countries improve relative to Germany - with the UK now having a 16 percentage points higher recall probability and Spain and Greece now having only 23 and 29

percentage points lower recall probabilities respectively - the main result pattern remain unchanged. The conditional probability of a correct recall is 96% in the UK, while it is just 51%, 56% and 65% in Greece, Spain and Italy, respectively. The estimated sign of the effect of many of the background variables is in accordance with existing evidence for other surveys in Horvarth (1982), Mathiowetz & Duncan (1988), Levine (1993), Paull (2002) and Jürges (2007). We also report estimated marginal effects for country specific regressions in Table 3. In the following discussion we mainly refer to the estimates from the pooled country data but we also point to important country specific effects. In accordance with previous findings married women have a lower probability of a successful recall than single women and men. As seen in Table 3, this effect is driven by four countries: Italy, Spain, Portugal and Austria, in which women's labor market attachment is rather weak by European standards. Taken together with the large overall amounts of recall errors in Spain and Portugal, this observation suggests that retrospective information on unemployment of married women in these two countries is highly unreliable. Apart from Italy and Austria, there is no difference between (single) women and men.

Not surprisingly, longer recall periods are associated with more recall errors. Being at good health makes a successful recall more likely. Unlike some previous studies, we find that replies from older individuals are more reliable than from younger individuals. This result is driven by Germany, France and Finland, all of which provide extended entitlement periods of unemployment benefits to older people. In Table 2 the probability of a successful recall does not vary over educational levels but it is strongly dependent on the main economic activity at the time of the recall. Respondents who were unemployed also at the time of the recall have a 33 percentage points higher probability of recalling their past unemployment experience than their non-unemployed counterparts. This pattern can be observed for all countries.

Our model contains a few variables which characterize the past unemployment experience. Individuals who were satisfied with their life while being unemployed have a lower probability of recalling their past unemployment experience (cf. Jürges, 2007). The unemployed who were claiming unemployment benefits have a 11 percentage points higher probability of a successful recall than non-recipients. Those who expected to find a new job quickly are associated with a lower successful recall rate (except in two countries). This could be consistent with the previous findings that short spells of unemployment are more often unreported retrospectively (cf. Mathiowetz & Duncan, 1988; Levine, 1993). Our country specific regressions also include a variable indicating whether the past unemployment experience would be classified as unemployment by the ILO.² For most countries we find that ILO unemployment is better recalled (up to 10 percentage points).

Without reporting detailed results here, we emphasize that there is also a considerable amount of over-reporting in the recalled unemployment status. Only 75% of all respondents who recalled having been unemployed at the time of the previous interview actually were unemployed at that time according to the activity status information in the preceding wave. While in France and Ireland 93% of the recalled

²The data provider has constructed this variable on the basis of the self-defined unemployment status and some other variables regarding job search and availability to take up a new job. This variable was not used in the pooled country model because it is not available for the UK.

unemployment experiences are consistent with the information given in the previous wave, this number is only 61% for Greece and Spain. These results suggest that there is not only considerably under-reporting in the Southern European countries but also substantial over-reporting in the recalled unemployment experiences.

4 Concluding remarks

The present study produces a number of results. First, we find a large average amount of recall errors in 12 European countries: One in four of the unemployed respondents did not recall having been unemployed one year later. Second, we provide evidence for a huge variation of data quality across countries, the retrospective information being particularly unreliable for most Southern European countries. The probability of a successful recall for a comparable individual is 31-45 percentage points lower in Greece, Spain and Italy than in the UK. The data are even much more unreliable for several groups such as married women in these countries. These quality differences across countries and groups may arise from different recall behavior associated with different labor market conditions, differences in the labor market attachment of certain groups and/or cultural differences affecting social desirability of unemployment. They may also reflect some quality differences in the data collection procedures (due to interviewing techniques and plausibility checks etc.) or differences in the unemployment definition (e.g. requirement for job search or registration at the employment agency) across countries. Irrespective of the underlying reasons, the quality differences in the retrospective data likely affect the results of cross country comparisons.

Finally, we obtain evidence that the recall errors are related to the receipt of unemployment compensation and the prospects of finding a new job and hence to the length of an unemployment spell. Our results therefore suggest that the data problems are correlated with important determinants of unemployment duration; a finding which renders the statistical analysis even more difficult.

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Table 1: Recalled status for those who were unemployed, %

	All	Germany	Denmark	Belgium	France	UK	Ireland	Italy	Greece	Spain	Portugal	Austria	Finland
Paid employment	10.2	6.37	12.92	3.57	8.72	4.34	5.31	8.74	13.37	15.74	11.73	14.55	11.24
Paid apprenticeship or training	0.52	0.51	1.72	0.58	0	0	0.84	0.8	0.47	0.39	0.3	1.17	0.41
Self-employment	1.31	0.18	0.25	0.22	0.16	0.35	0.34	2.19	2.93	2.22	1.51	0.39	0.64
Unpaid work in family enterprise	0.52	0.03	0.12	0.07	0.07	0	0.25	0.75	2.02	0.76	0.4	0	0.14
In education or training	3.68	0.36	5.66	1.31	4.72	1.04	1.43	4.33	5.74	5.07	3.02	2.47	4.34
Unemployed	73.95	86.39	67.16	83.88	84.94	93.67	89.71	71.65	58.35	61.12	67.59	74.03	76.79
Retired	1.29	2.03	3.81	2.48	0.13	0	0.34	0.69	1.23	0.7	2.01	3.25	3.02
Doing housework, looking after													
...children or other persons	5.76	3.26	2.34	4.96	0.07	0	0.51	7.87	11.19	10.07	8.4	2.86	1.96
In community or military service	0.49	0.09	0	0	0.07	0	0	0.68	2.77	0.23	0.3	0.52	0.37
Other economically inactive	2.28	0.78	6.03	2.92	1.14	0.61	1.26	2.31	1.94	3.71	4.73	0.78	1.1
# observations	29,319	3,344	813	1,371	3,075	1,153	1,186	5,757	2,528	5,146	1,987	770	2,189

Table 2: Marginal effects on the probability for correctly recalling unemployment

	Marginal Effect	Std. Err.	Marginal Effect	Std. Err.	Sample Mean
Denmark	-0.242	0.022	-0.158	0.024	0.028
Belgium	-0.037	0.018	-0.081	0.020	0.047
France	-0.021	0.014	0.001	0.015	0.105
UK	0.116	0.015	0.157	0.010	0.039
Ireland	0.046	0.017	0.056	0.017	0.040
Italy	-0.181	0.014	-0.158	0.015	0.196
Greece	-0.328	0.016	-0.286	0.019	0.086
Spain	-0.294	0.014	-0.230	0.016	0.176
Portugal	-0.233	0.017	-0.146	0.018	0.068
Austria	-0.162	0.025	-0.128	0.026	0.026
Finland	-0.130	0.016	-0.117	0.018	0.075
Satisfied with own life ¹⁾			-0.035	0.009	0.113
Claiming unemployment compensation ¹⁾			0.108	0.006	0.313
Good job-finding prospects ¹⁾			-0.043	0.011	0.089
Unemployed at time of recall			0.329	0.005	0.506
Wave 1998	-0.029	0.007	-0.004	0.007	0.229
Wave 1999	-0.023	0.008	-0.012	0.008	0.199
Wave 2000	-0.040	0.008	-0.027	0.008	0.170
Wave 2001	-0.039	0.009	-0.027	0.009	0.151
Female			-0.008	0.007	0.513
Married			0.007	0.009	0.438
Female x married			-0.065	0.012	0.240
Younger than 26			-0.008	0.007	0.265
Older than 50			0.019	0.008	0.189
Good health			0.019	0.006	0.691
Tertiary degree			-0.002	0.008	0.135
Secondary degree			0.005	0.006	0.347
Education missing			-0.026	0.034	0.010
Recall period < 7 months			-0.025	0.026	0.011
Recall period 13-18 months			-0.012	0.006	0.276
Recall period > 18 months			-0.087	0.025	0.019
Predicted probability at sample mean	0.75		0.79		
Log likelihood	-15,868.6		-13,380.2		
Pseudo R^2	0.057		0.204		
# observations	29,319		29,319		

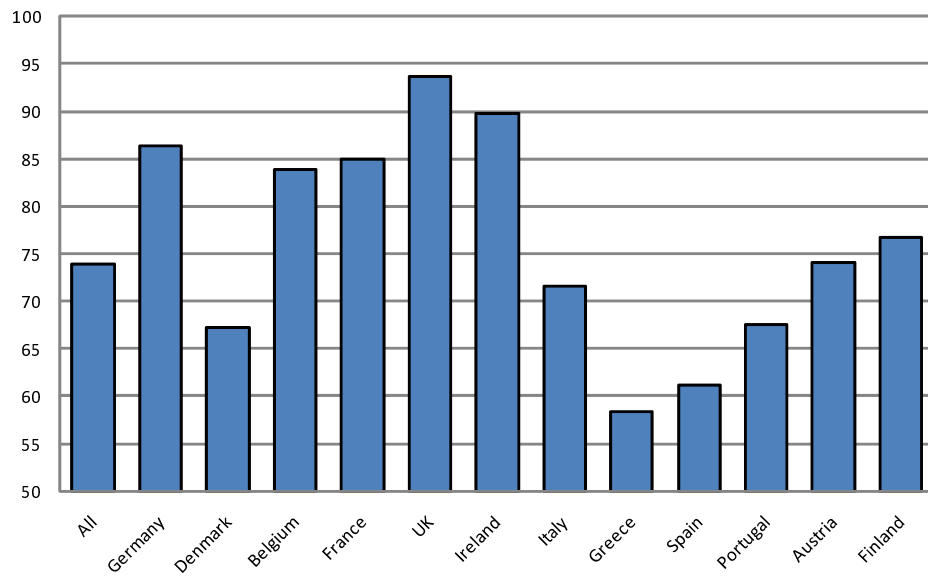
Notes: Standard errors are heteroskedasticity robust and clustered at individual level. Statistically significant marginal effects in **bold** (5% level) or *italics* (10% level). The marginal effect is the change in the predicted probability due to a change in a regressor with all other variables at the sample mean. 1) Measured at the time of past unemployment.

Table 3: Marginal effects on the probability for correctly recalling unemployment by country

	Germany	Denmark	Belgium	France	UK	Ireland	Italy	Greece	Spain	Portugal	Austria	Finland
Satisfied with own life ¹⁾		-0.040	-0.019	-0.052		-0.088	-0.022	-0.069	-0.030	-0.047	-0.030	-0.044
Claiming unempl. compensation ¹⁾	0.281	0.176	0.109	0.060	0.005	0.097	-0.043	0.003	0.160	0.204	0.071	0.149
Good job-finding prospects ¹⁾	-0.086	-0.116	-0.102	-0.054	-0.012	0.002	0.145	0.152	-0.035	-0.039	-0.037	-0.120
Unemployed at time of recall	0.232	0.270	0.348	0.104	0.006	0.181	0.551	0.428	0.444	0.493	0.350	0.242
Wave 1998	0.016	-0.058	-0.012	-0.060	-0.013	0.187	0.023	-0.091	-0.022	0.046	<i>0.118</i>	0.040
Wave 1999	0.087	-0.181	0.019	0.008	-0.015	0.105	0.018	-0.016	-0.095	0.053	-0.067	-0.045
Wave 2000	<i>0.070</i>	-0.198	0.008	-0.005	-0.246	0.065	0.009	<i>0.072</i>	-0.116	0.024	0.021	0.004
Wave 2001	0.107	-0.291	-0.010	-0.106	0.002	<i>-0.124</i>	-0.022	0.206	-0.138	<i>0.080</i>	-0.184	-0.016
Female	-0.026	0.0245	-0.028	-0.001	-0.001	-0.006	-0.055	-0.007	-0.003	0.037	<i>0.111</i>	0.027
Married	0.007	0.004	-0.043	-0.001	<i>0.006</i>	0.016	-0.013	-0.028	0.029	0.150	0.143	-0.031
Female x married	0.001	0.018	-0.010	0.029	-0.005	0.014	-0.145	<i>-0.061</i>	-0.138	-0.131	-0.184	-0.029
Younger than 26	0.014	-0.041	-0.199	0.013	-0.021	<i>-0.105</i>	-0.010	-0.048	-0.013	0.047	-0.023	-0.083
Older than 50	0.172	0.049	-0.093	0.128	-0.005	-0.053	-0.055	0.008	0.005	-0.052	0.045	0.102
Good health	0.027	-0.042	0.018	-0.040	-0.001	0.027	<i>0.036</i>	0.127	0.010	-0.014	0.007	0.017
Tertiary degree	-0.097	<i>0.093</i>	0.040	-0.117	-0.004	0.008	-0.032	-0.064	0.073	0.086	0.066	<i>-0.067</i>
Secondary degree	<i>-0.053</i>	0.048	-0.026	-0.011	-0.004	-0.036	<i>0.034</i>	-0.040	0.013	<i>0.067</i>	0.034	-0.035
Education missing	-0.088	-0.188	-0.102	0.014	-0.013	-0.118	-0.029	-0.058	-0.174	-0.170	0.069	
Recall period < 7 months	-0.310	-0.090	-0.056	-0.098	-0.054	-0.288	-0.221	-0.027	0.045			0.050
Recall period 13-18 months	0.054	-0.095	-0.042	<i>-0.049</i>	0.005	0.095	-0.040	0.102	-0.004	-0.033	0.042	<i>-0.067</i>
Recall period > 18 months	-0.132	-0.241				-0.177	-0.160	0.267		0.041		-0.176
ILO unemployed ¹⁾	0.100	0.066	0.069	0.093		-0.048	0.076	<i>0.039</i>	<i>0.032</i>	0.071	-0.015	0.099
Log likelihood	-1136.8	-446.8	-455.0	-1184.2	-185.6	-318.5	-2304.0	-1429.2	-2740.5	-1008.2	-374.8	-1038.1
Pseudo R ²	0.145	0.132	0.249	0.091	0.316	0.189	0.329	0.168	0.203	0.193	0.150	0.125
# observations	3344	813	1371	3075	1143	1186	5757	2528	5146	1981	770	2189

Notes: Standard errors are heteroskedasticity robust and clustered at individual level. Statistically significant marginal effects in **bold** (5% level) or *italics* (10% level). The marginal effect is the change in the predicted probability for the reference individual (all regressors equal zero) due to a change in a regressor. 1) Measured at the time of past unemployment.

Figure 1: Correctly recalled status for those who were unemployed, %



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