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The distribution of adult training among European unemployed: Evidence from recent surveys

Mircea BADESCU[*], Christelle GARROUSTE[*] & Massimo LOI[†]

Abstract

The importance of a highly skilled workforce has become increasingly relevant in the context of the European Union's new strategy for smart, sustainable and inclusive growth — 'Europe 2020'. Policies encouraging wide participation in continuing training are therefore an important component of lifelong learning strategies. This paper aims to investigate the determinants of adult education for the unemployed compared to workers using the two main European surveys on training, namely the Adult Education Survey (AES) and the Labour Force Survey (LFS). Our work demonstrates a significant difference in the capability of these two surveys to capture the participation in adult education programmes in Europe. After having estimated a probit model on both datasets, we find that, overall, unemployed adults in Europe tend to participate less in training than workers, especially in non-formal training. However, this result is statistically significant only for the estimates from the AES. Furthermore, both surveys highlight the key role played by country-specific institutional settings in determining the participation to adult training. Overall, this work shows that the AES is the more reliable data source for policy making in the field of adult participation to education and training.

Introduction

Active Labour Market Policies (ALMP) — including measures such as job assistance, labour market training, wage subsidies to the private sector, and direct job creation in the public sector — are a central element of Europe's strategy to combat unemployment. The importance of ALMP within Europe is reflected by the money that is being spent on these measures. Overall, the 27 European Member States (EU27) spent 2.2% of their 2009 GDP on labour market policies, of which 0.5% on active measures.

This paper deals with a specific ALMP programme type, namely labour market training, that covers measures like formal and non-formal training, all aiming at enhancing human capital by increasing skills. Formal training covers learning activities that are provided by formal education and training institutions and that lead to a formal accreditation (degree, certificate, and the like). Non-formal training covers learning activities aiming at acquiring specific vocational skills (e.g., advanced computer courses or courses providing technical and manufacturing skills) that do not lead to a formal accreditation (Kluve, 2010).

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According to Eurostat, the statistical office of the European Union, training absorbs the largest share of the amount spent on ALMP (above 43% in 2009; Eurostat – online data – code: tps00077).

Card, Kluve, & Weber (2009) analyzed 199 programme estimates drawn from 97 studies conducted between 1995 and 2007. They concluded that formal and non-formal training programmes exhibited insignificant or negative impacts on the reduction of unemployment in the short-term (after one year from completion) but have significantly positive effects in the medium-term (after two or three years). One possible explanation of the short-term negative effect of training programmes could be that these programmes are typically used to renew the eligibility to unemployment benefits; thus, discouraging unemployed to look for possible occupation (Sianesi, 2008).

Newton, Hurstfield, Miller, Akroyd, & Gifford (2005) studied more closely the determinants of the participation in training programmes among unemployed and inactive people and identified four factors affecting the training decision, using the 2004 UK Labour Force Survey (LFS). They found a negative correlation between age and the likelihood of engaging in training. After having controlled for other factors, the likelihood of an unemployed person aged above 55 participating in training is 50% lower than for a person aged between 35 and 44. They also found that the probability of engaging in training is higher for people with higher qualifications. The likelihood to engage in training activities is 75% lower for a person with no qualification than someone with a degree. Moreover, recent training is a predictor for training participation; that is, the likelihood to receive training is higher for the unemployed that have attained their higher qualification(s) more recently (two years before the survey). Finally, after having controlled for other factors, Newton et al. (2005) find ethnic differences in participation in training activities. Unemployed from black, black British and mixed backgrounds were 16% more likely to be involved in training activities than other groups.

Heckman & Smith (2003), after having analyzed the determinants of participation in the American Job Training Partnership Act (JTPA, a programme providing training to individuals facing serious barriers to employment), found wide variations in participation rates conditional on eligibility across groups defined by race, age, education, fluency in English, recent labour force status and family income. Furthermore, recent unemployment histories condition the likelihood to participate in a training programme among eligible persons. Eligible persons who have recently lost a job, or re-entered the labour force, have relatively higher probabilities of applying to the JTPA than persons in the midst of a stable spell out of the labour force. Overall, the variables identified by Newton et al. (2005) and Heckman, LaLonde, & Smith (1999) as drivers for participation in training programmes among unemployed constitute the set of core variables used to control for selection biases in studies estimating the impact of ALMP on individual labour market histories (i.e. Brodaty, Crépon, & Fougère, 2000; Fitzenberger, Osikominu, & Völter, 2006; Gerfin & Lechner, 2000; Kluve, Lehmann, & Schmidt, 1999; Ridder, 1986; Rinne, Schneider & Uhlendorff, 2007; Sianesi, 2008).

Moving from these country-specific studies, this paper aims at investigating the determinants of adult education for the unemployed compared to other workers at the European level. In doing so, it compares the results of a set of probit estimates carried out using two different European datasets, namely the Labour Force Survey (LFS) and the Adult Education Survey (AES), to test if the main drivers for adult education differ according to the

dataset considered. Thus, our work complements and broadens the recent analysis performed by Hefler et al. (2011).

The remainder of the paper proceeds as follows. The next section presents the data sources and discusses comparability issues. While section 3 displays the estimation method, the variables used and the samples' descriptive statistics, section 4 presents the results. Finally, section 5 summarizes the main results and concludes the paper.

Data sources and comparability issues

In the last decade, several European initiatives coordinated by Eurostat have been implemented to collect harmonized data on the training activities of the adult workforce. The two main initiatives are the LFS and the AES. In both cases, the data are collected by national statistical offices and are afterwards reported in standardized format. Despite their common goal of collecting internationally comparable data, these two initiatives differ in terms of specific definitions of training activity, the sampled population, the countries involved and the time period covered.

The first dataset (the LFS) covers people aged 15 and over in all 27 Members states of the European Union (EU27), the European Free Trade Association (Iceland, Lichtenstein, Norway and Switzerland) – except Liechtenstein – and Candidate Countries (Croatia, the Former Yugoslav Republic of Macedonia, and Turkey). The LFS has been a quarterly survey since 1983 with a sample size of about 1.5 million people every quarter (the sampling rate in each country varies between 0.2 % and 3.3 %). The main objective of that survey is to divide the population of working age (15 years and above) into three mutually exclusive and exhaustive groups — persons in employment, in unemployment, and inactive — and to provide descriptive and explanatory data on each of these categories. For this reason, the LFS also collects information on the respondent's background (e.g., socio-economic status, gender, age, nationality, level and type of education, marital status and current participation in formal and non-formal training). This paper uses the 2007 wave of the Labour Force Survey, which is based on data collected between 2005 and 2007.

The second dataset (the AES) covers people aged 25 to 64 in European Member States (all EU27 except Denmark, Ireland, Luxembourg, Malta, Portugal and Romania), the European Free Trade Association, and Candidate Countries. This survey was carried out between 2004 and 2008. It covers the participation in formal, non-formal and informal training (broken down by field of education/learning and, for the formal and non-formal training, also by volume of hours and by source of financing — i.e. the employer or the respondent), non-participation and obstacles to participation in training, self-reported skills in information and communication technologies, and a module on social/cultural participation. In the AES, informal education includes activities undertaken by an individual with the intention to improve his/her knowledge, skills, and competences. The AES also collects information about household and respondent background characteristics.

Despite some efforts of harmonization at the cross-country level (within surveys) but also to some extent across surveys, the LFS and AES capture information on different types of adult training in significantly different ways. First of all, the LFS survey asks about the (formal or non-formal) training activities over the prior four weeks, while the AES survey asks about the (formal, non-formal or informal) training activities over the prior 12 months. Hence, the two surveys differ in terms of reference period (four weeks vs. 12 months) and in

terms of nature of training (with the informal training only collected through the AES survey). The length of the reference period plays an important role in particular with regard to participation in non-formal training since these activities are normally characterized by short spells and distributed over time (Ronsenbladt, 2010). Moreover, while the minimum duration of formal education in the LFS is one semester (i.e. 6 months) of full-time studies, there is no such minimum duration in the AES. Hence, the AES captures a comparatively higher share of short-term formal education spells than the LFS. Such heterogeneity in training questions induces a systematic inflation in the participation rates in adult education in the AES survey (Eurostat, 2011; Eurydice, 2011), which is important to take into account when comparing with results from the LFS survey.

Most of the recent literature reviewed in the introduction section is based on panel data, which enable the capture of any change in status, occupation, type of contract, health status over a long period of time, that may affect the decision of an individual to attend adult training. Unfortunately, neither of the two European surveys used in this paper have a longitudinal dimension. Their cross-sectional nature enables users only to get a snapshot of the stock of workers and unemployed in training, respectively in the 12 months preceding the survey (for the AES) and in the four weeks preceding the survey (for the LFS).

Despite these limitations, because of its cross-country harmonized nature, this information constitutes the basis for many policy measures across European countries. Concrete examples of such measures are the target values fixed by the European Commission in the field of education and training to be reached by the EU27 countries by the year 2020, based on the LFS and AES surveys (ET2020 Benchmark indicators; Eurostat, 2012):

- The share of early leavers from education and training should be less than 10% (Benchmark on early leavers from education and training: LFS survey)
- By 2020, the share of employed graduates (20-34 year olds) having left education and training no more than three years before the reference year should be at least 82% (Benchmark on employment rate of recent graduates: LFS survey);
- The share of 30-34 year olds with tertiary education attainment should be at least 40% (Benchmark on tertiary education attainment: LFS survey); and
- An average of at least 15 % of adults should participate in lifelong learning (Benchmark on lifelong learning participation: LFS and AES surveys).

Estimation method and sample description

We estimate the probability of participating in adult training using the following probit model:

$$y^* = \alpha_c + \sum \mathbf{X}\beta + \varepsilon, \quad \varepsilon \sim N(0,1) \qquad (1)$$

$$\text{if } y^* \geq 0,\ y = 1$$

$$\text{if } y^* < 0,\ y = 0$$

where y^* is measured in three different ways: first, it is defined as the likelihood of participating in *adult training*, that is, either formal or non-formal (or a combination of the two); second, it is defined as the likelihood of participating in *non-formal training*; third, as the likelihood of participating in *formal training*. Because the participation in informal training is only captured in the AES survey, we exclude it from this analysis. For each of the outcome variables *y*, we define a set of explanatory variables X, retaining only variables that are comparable across the AES and the LFS surveys and that are theoretically grounded in

the literature (gender, age, educational attainment, degree of urbanization). The nature of these variables is presented in Table 1.

As explained earlier, the participation in education and training is defined differently in the AES and in the LFS, in terms of reference times (time span reported and duration of programmes). Hence, by running the model separately on the AES and the LFS data, we aim at testing the sensitivity of the determinants to adult participation to the reported time span (12 months vs. four weeks) and to the different programme specifications (minimum of six months of full-time education for the formal training in the LFS vs. no minimum duration in the AES), as an effort to assess the actual robustness of the two measures.

Each of the models controls for country fixed effects through the inclusion of country dummies α_c, and includes a normally distributed error term ε to capture the effect of omitted parameters.

Each model is run first including a dummy variable taking value 1 if unemployed and 0 if employed (thereby excluding the inactive population) to capture the effect of being unemployed on the participation in adult education in comparison to being employed, *ceteris paribus*. However, because of the potential endogeneity bias caused by the selection into unemployment, we then re-run the models separately for the unemployed sample and the employed sample to estimate more exactly which parameters influence most significantly the probability of engaging in training for each group.

Table 1: Variables specification

OUTCOME VARIABLES	Dichotomous variable =1 if respondent participated in:
Adult education	Adult education is defined as any education and training activity, either formal or non-formal, or a combination of the two.
Formal education	Education provided in the system of schools/colleges/universities or other formal educational institutions that normally constitutes a continuous 'ladder' of full-time education for children and young people.
Non-formal education	Any organised and sustained educational activities that do not correspond exactly to the above definition of formal education. It may take place both within and outside educational institutions and cater to persons of all ages. Depending on country contexts, it may cover educational programmes to impart adult literacy, basic education for out of school-children, life-skills, work-skills, and general culture.
EXPLANATORY VARIABLES (COMMON TO THE LFS AND AES SURVEYS)	
PERSONAL CHARACTERISTICS	
Unemployed	Dummy =1 if the respondent's main status is unemployed and = 0 if worker. We exclude respondents that declare themselves unemployed both at the time of the survey and one year before the survey (in t-1).
Female	Dummy =1 if respondent is a female and = 0 if male
Cohort dummies	Age group =1 if respondent belongs to the 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59 or 60-64 age cohort.
Family status	Dependency =1 if the size of the household of the respondent is at least equal to 3 (AES data). Married=1 if individual is married and 0 otherwise (LFS data).

EDUCATIONAL ATTAINMENT	
Low education	Dummy =1 if respondent has no education, or a lower-secondary level (ISCED 0-2, including ISCED 3c short)
Medium education	Dummy =1 if respondent has attained upper-secondary or post-secondary non-tertiary level of education (ISCED 3-4)
High education	Dummy =1 if respondent has attained tertiary education (ISCED 5-6) (ISCED stands for International Standard Classification of Education: for details on coding, see http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:ISCED)
DEGREE OF URBANIZATION	
Urban	Dummy =1 if living in densely-populated (urban) area (more than 500 habitants per square kilometre)
Semi-urban	Dummy =1 if living in semi-urban area (between 100 and 500 habitants per square kilometre)
Rural	Dummy =1 if living in rural area (less than 100 habitants per square kilometre)

In this paper, we report results for the newly unemployed individuals, i.e. those who declared themselves unemployed at the time of the survey and in employment one year before. The exclusion of the long-term unemployed from this analysis was necessary to control for the type of job experience that our sample had accumulated before entering the survey. Since both the AES and LFS only report the current work status and the current work status in the year preceding the survey, we had to exclude all individuals that declared themselves unemployed at date *t* and at date *t*-1. Although this filter enabled us to capture information on the previous type of occupation and contract of the unemployed, it created a bias in term of the nature of the motivation these newly unemployed may have to attend training. Indeed, as hypothesized by Sianesi (2008), newly unemployed individuals often have to attend a minimum amount of training to acquire eligibility to full unemployment benefits. The training accumulated the first year of unemployment may therefore not necessarily aim at reintegrating quickly the labour market, but may instead aim at taking full benefits from the unemployment public pension system.

Our final sample of active 25-64 years old composed 884,440 observations from the LFS survey and 56,524 observations from the AES survey. Table 2 and Table 3 present some descriptive statistics for the samples drawn from the LFS and from the AES, respectively.

Already from the descriptive statistics, we see that the share of active population engaged in any adult education and training activity (either formal or non-formal) is 8% in the LFS survey (Table 2) against 40% in the AES survey (Table 3). As explained before, this difference is due to the time-span for reporting which is only four weeks for the LFS but 12 months for the AES. This time-span difference also influences the share of those engaged in adult education that reported participation in non-formal activities, 76% in the LFS survey (Table 2) against 94% in the AES survey (Table 3). On the other hand, the share of those engaged in adult education that reported participation in formal activities is higher in the LFS than in the AES survey (27% vs. 12%).

With regard to reporting the activity status (employed or unemployed), the two surveys are reasonably similar with 2.5% unemployed in the LFS sample vs. 3% in the AES sample. The age distributions are also similar in both surveys. What is worth highlighting, though, is the higher share of active women in the AES survey than in the LFS survey (49% vs. 45%) and the differences in educational attainment. Although the share of respondents with an educational level comprised between ISCED 0 (no degree) and ISCED 2 (i.e. lower secondary degree) is equivalent across surveys (between 23% and 25%), the share of highly

skilled respondents (i.e. with a degree at ISCED level 5 or 6) is lower in the LFS than in the AES survey (24% vs. 29%). Given the empirically demonstrated correlation between level of educational attainment and participation in adult education programmes (Bassanini, Booth, Brunello, De Paola, & Leuven, 2005), this difference in educational distributions may constitute an additional explanation for the higher share of participants reported in the AES than in the LFS.

Moreover, the distribution of the samples in terms of degree of urbanization is also significantly different across the two surveys, with a much higher share of respondents from urban areas in the AES survey than in the LFS survey. Contrary to the AES, the LFS has applied a homogeneous geographic sampling procedure. Again, this difference can explain the higher share of participants in adult learning reported in the AES.

The lower share of respondents with family status in the AES, 60.5% vs. 73.6% in the LFS, is probably simply due to measurement differences. While family status is defined in terms of marital status in the LFS survey (dummy equals 1 if married and 0 otherwise), it is defined in terms of household size in the AES survey (with the dummy taking value 1 if the household size is at least equal to 3 persons).

Table 2: LFS sample descriptive statistics – mean percentage values

	Participation in formal or non-formal education			Participation in non-formal education			Participation in formal education		
	FULL SAMPLE (8.3)	UNEMPL. (7.6)	WORKERS (8.3)	FULL SAMPLE (76.0)	UNEMPL. (72.2)	WORKERS (76.1)	FULL SAMPLE (26.9)	UNEMPL. (31.1)	WORKERS (26.8)
Unemployed	2.4			2.2			2.2		
Female	45.0	47.0	44.9	54.4	60.1	54.3	54.4	60.1	54.3
Married	73.6	63.3	73.9	63.9	50.0	64.2	63.9	50.0	64.2
Education:									
low	22.6	35.8	22.3	7.9	19.8	7.7	7.9	19.8	7.7
medium	53.7	50.6	53.8	46.4	51.4	46.3	46.4	51.4	46.3
high	23.6	13.5	23.9	45.7	28.8	46.1	45.7	28.8	46.1
Age group:									
25-29	12.8	20.5	12.6	18.1	26.6	17.9	18.1	26.6	17.9
30-34	14.5	16.9	14.5	16.9	21.2	16.8	16.9	21.2	16.8
35-39	15.6	15.0	15.7	16.1	15.5	16.1	16.1	15.5	16.1
40-44	16.0	14.0	16.0	15.8	13.0	15.9	15.8	13.0	15.9
45-49	15.3	12.3	15.3	13.7	10.5	13.8	13.7	10.5	13.8
50-54	13.7	11.2	13.7	10.6	6.1	10.7	10.6	6.1	10.7
55-59	9.1	8.0	9.1	6.6	5.3	6.6	6.6	5.3	6.6
60-64	2.9	2.2	3.0	2.3	1.7	2.3	2.3	1.7	2.3
Degree of urbanisation:									
urban	33.6	33.4	33.6	39.6	40.0	39.6	39.6	40.0	39.6
semi-urban	32.9	28.5	33.0	28.8	25.0	28.8	28.8	25.0	28.8
rural	33.5	38.0	33.4	31.6	35.0	31.5	31.6	35.0	31.5
Obs.	884,440	21,073	863,367	73,432	1,596	71,826	73,432	1,596	71,826

Note: weighted sample.

Table 3: AES sample descriptive statistics – mean percentage values

	Participation in formal or non-formal education			Participation in non-formal education			Participation in formal education		
	FULL SAMPLE (39.9)	UNEMPL. (27.4)	WORKERS (40.3)	FULL SAMPLE (93.7)	UNEMPL. (86.5)	WORKERS (93.8)	FULL SAMPLE (12.3)	UNEMPL. (18.4)	WORKERS (12.2)
Unemployed	3.3			2.3			2.3		
Female	48.9	51.6	48.8	52.2	55.0	52.1	52.2	55.0	52.1
Dependency	60.5	58.9	60.5	60.3	57.6	60.3	60.3	57.6	60.3
Education:									
low	25.2	44.1	24.6	14.4	30.0	14.1	14.4	30.0	14.1
medium	45.7	39.3	45.9	41.5	39.3	41.5	41.5	39.3	41.5
high	29.1	16.7	29.5	44.1	30.7	44.4	44.1	30.7	44.4
Age group:									
25-29	11.6	15.9	11.4	13.7	23.0	13.6	13.7	23.0	13.6
30-34	14.9	17.1	14.8	16.5	21.2	16.4	16.5	21.2	16.4
35-39	15.2	15.3	15.2	15.8	14.3	15.9	15.8	14.3	15.9
40-44	15.8	14.0	15.9	15.8	11.9	15.9	15.8	11.9	15.9
45-49	15.5	14.4	15.5	14.9	12.8	14.9	14.9	12.8	14.9
50-54	13.8	11.4	13.9	12.2	8.4	12.3	12.2	8.4	12.3
55-59	9.9	8.7	10.0	8.4	6.4	8.4	8.4	6.4	8.4
60-64	3.3	3.1	3.3	2.6	2.0	2.6	2.6	2.0	2.6
Degree of urbanisation:									
urban	47.0	47.8	47.0	50.3	53.2	50.2	50.3	53.2	50.2
semi-urban	22.1	21.5	22.2	24.3	26.0	24.3	24.3	26.0	24.3
rural	30.8	30.7	30.8	25.4	20.8	25.5	25.4	20.8	25.5
Obs.	56,524	1,877	54,645	22,529	453	22,015	22,529	453	22,015

Note: weighted sample.

When looking specifically at the composition of the unemployed samples and of the workers samples (second column in Table 2 and Table 3), both surveys report a higher share of unemployed women than working women. Still, it is worth noticing that in the LFS, only 45% of women are workers and 47% unemployed (which means that the majority of the unemployed population is composed of men). In the AES, 49% of women report being employed (which means a quasi-perfect parity with men) and a high 52% declare being unemployed. Hence, according to the AES survey, the group the most affected by unemployment is the females, which is exactly the contrary of what is reported by the LFS survey.

In addition, the distribution of the educational attainment turns out to be very different among the unemployed and among the workers in both surveys. The main difference is the share of the lower educated that is much higher among the unemployed than among the workers. Inversely, the share of the higher educated is lower. Finally, in terms of age distributions, the LFS counts more unemployed among the youngest cohort, namely the 25-29 years old, than the AES (20.5% against 16%).

When looking at the composition of the samples by type of training activity, namely non-formal education (columns 4-6) and formal education (columns 7-9) exclusively, all

parameters are distributed equally within each survey. The share of unemployed respondents is also equal across surveys; that is, 2% (Tables 2 and 3).

Results

Tables 4 and 5 report the results of our probit estimates using the LFS and the AES samples, respectively. Overall, when looking at the first column of both tables, we find that the probability of having attended an adult education programme of any type is significantly lower for the unemployed compared to the employed when considering a twelve-months time lag (AES estimates), but not significantly different when considering a four-weeks time lag (LFS estimates).

While the non-significance of the estimate computed using the LFS is somehow reassuring because it rejects the hypothesis of a discriminative access of adult training in favour of workers, it however contradicts the evidence collected in the previous literature using longitudinal data. From this first observation, it seems that the sample generated from the AES survey is somehow more representative of the behaviours of participants to adult education than the one generated from the LFS survey.

After disaggregating by employment status (columns 2 and 3), we find that in both surveys, the probability of training among the newly unemployed and the workers is significantly higher for individuals with similar characteristics, namely young with high educational attainment. The main differences lay in the fact that, in the LFS survey, being a female plays a positive significant role in participating in adult education, while in the AES survey gender does not make any statistical difference. In the LFS, being a woman plays an even more positively significant role for the unemployed than for the workers.

Moreover, within each survey, the correlation between age and participation is not as linear for the unemployed as it is for the employed (see columns 2 and 3). Age is linearly and negatively correlated with adult education in the latter case, while in the former case the effect of age is only significant for a few age cohorts in comparison to the 25-29 cohort. More specifically, in the LFS sample, the unemployed aged 30-34, 40-44 and 45-49 years old have a similar likelihood of participation in training as the 25-29 years old, keeping everything else equal. The same reasoning applies to the unemployed aged 30-34, 40-44 and 55-59 years old in the AES sample.

Whereas in the LFS survey, living in a rural area is what most affects the probability of participation in training (negatively), in the AES survey, living in a semi-urban area increases the chances of participation compared to living in an urban area. These differences in the sign and significance level of the degree of urbanization is probably driven by the sample composition, with slightly more high-skilled female respondents living in urban areas in the AES sample than in the LFS sample.

Table 4: Probit estimation results on the LFS sample by type of adult education

	Participation in formal or non-formal education			Participation in non-formal education			Participation in formal education		
	FULL SAMPLE	UNEMPL.	WORKERS	FULL SAMPLE	UNEMPL.	WORKERS	FULL SAMPLE	UNEMPL	WORKERS
Unemployed	0.0592			0.0638			-0.0887		
Female	0.108***	0.201***	0.106***	-0.0191	-0.136	-0.0144	0.0344**	0.138	0.0305*
Married	-0.0769**	-0.256**	-0.0720**	0.122**	-0.16	0.133**	-0.135**	0.0654	-0.144**
Education (reference category: low):									
medium	0.396***	0.368***	0.399***	-0.342**	-0.273**	-0.337**	0.309**	0.309*	0.302**
high	0.761***	0.635***	0.766***	-0.163	-0.612***	-0.145	0.167	0.643***	0.15
Age group (reference category: 25-29 years old):									
30-34	-0.111***	0.00688	-0.116***	0.322***	0.186	0.327***	-0.357***	-0.137	-0.365***
35-39	-0.178***	-0.180*	-0.179***	0.525***	0.576*	0.524***	-0.569***	-0.544**	-0.572***
40-44	-0.213***	-0.0491	-0.219***	0.668***	0.415	0.674***	-0.693***	-0.365	-0.701***
45-49	-0.204**	-0.0933	-0.208***	0.771***	0.818**	0.769***	-0.824***	-0.742**	-0.827***
50-54	-0.303***	-0.679***	-0.300***	1.040***	1.580***	1.034***	-1.074***	-1.658***	-1.071***
55-59	-0.426***	-0.369*	-0.429***	1.184***	0.644*	1.188***	-1.256***	-0.501	-1.268***
60-64	-0.522***	-0.651**	-0.523***	1.331***	0.766***	1.334***	-1.414***	-0.757***	-1.420***
Degree of urbanisation (reference category: high):									
medium	-0.0364	0.036	-0.0391	0.096	0.364	0.0863	-0.0960*	-0.375*	-0.0865*
low	-0.0826***	0.163	-0.0903***	0.0458	0.364	0.0335	-0.0615	-0.311	-0.0519
Country fixed effects (reference country: Austria):									
Belgium	-0.402***	-0.291***	-0.406***	-0.297***	-1.038***	-0.273***	0.224***	0.842***	0.204***
Cyprus	-0.280***	-0.672***	-0.274***	-0.271***	-1.359***	-0.256***	0.184***	1.193***	0.171***
Estonia	-0.396***	-0.629***	-0.393***	-0.131***	-0.682***	-0.123***	0.0956***	0.564***	0.0885***
Finland	0.552***	0.370***	0.555***	0.226***	0.151***	0.230***	-0.168***	-0.0937*	-0.172***
France	-0.414***	-0.375***	-0.416***	-0.910***	-1.067***	-0.914***	0.882***	0.838***	0.889***
Greece	-0.0470*	0.116*	-0.0557**	-0.106**	-0.121*	-0.109**	0.053	-0.0311	0.058
Croatia	-0.291***	-0.440***	-0.288***	0.586***	0.317***	0.592***	-0.699***	-0.535***	-0.704***
Hungary	-1.014***	-0.944***	-1.019***	-0.984***	-0.967***	-0.994***	0.887***	0.842***	0.896***
Lithuania	-0.679***	-0.601***	-0.685***	-1.255***	-0.602***	-1.295***	1.164***	0.397***	1.207***
Netherlands	-0.393***	-0.697***	-0.388***	-0.595***	-1.399***	-0.579***	0.554***	1.317***	0.539***
Norway	-0.502***	-0.396***	-0.507***	-1.343***	-1.157***	-1.359***	1.297***	1.162***	1.309***
Poland	-0.360***	-0.978***	-0.355***	0.935***	.	0.938***	-0.973***	.	-0.974***
Portugal	-0.339***	-0.382***	-0.340***	-1.183***	-0.723***	-1.202***	1.154***	0.553***	1.178***
Romania	0.141***	-0.249***	0.142***	-0.871***	-0.200*	-0.871***	0.738***	0.569***	0.737***
Slovenia	-0.446***	-0.625***	-0.443***	-1.108***	-1.102***	-1.115***	1.043***	0.924***	1.051***
Slovakia	-0.497***	-0.417***	-0.503***	-1.548***	-1.868***	-1.540***	1.462***	1.932***	1.443***
Constant	-1.314***	-1.234***	-1.315***	0.814***	1.338***	0.796***	-0.613***	-1.147***	-0.593***
Obs.	884,440	21,073	863,367	73,432	1,596	71,826	73,432	1,596	71,826
Pseudo R-squared	0.102	0.113	0.103	0.223	0.239	0.225	0.22	0.246	0.222

Source: Authors' estimations based on LFS 2007

Note: * p<0.05, ** p<0.01, *** p<0.001; Standard errors are clustered at the country level. All results are weighted by the variable *coeff*

Table 5: Probit estimation results on the AES sample by type of adult education

	Participation in formal or non-formal education			Participation in non-formal education			Participation in formal education		
	FULL SAMPLE	UNEMPL.	WORKERS	FULL SAMPLE	UNEMPL.	WORKERS	FULL SAMPLE	UNEMPL	WORKERS
Unemployed	-0.255***			-0.250***			0.166*		
Female	0.0223	0.101	0.0198	-0.0666	-0.297***	-0.0609	0.052	0.229**	0.047
Dependency	0.024	0.0668	0.0232	0.105*	-0.15	0.115*	-0.143*	0.202*	-0.154**
Education (reference category: medium):									
low	-0.442***	-0.369***	-0.444***	0.0257	0.253	0.0172	-0.142	-0.551***	-0.128
high	0.497***	0.459***	0.500***	-0.0557	0.288	-0.0658	0.152*	-0.232	0.160*
Age group (reference category: 25-29 years old):									
30-34	-0.0626*	-0.104	-0.0584*	0.154**	0.375**	0.143*	-0.187***	-0.314**	-0.180***
35-39	-0.114***	-0.249***	-0.106***	0.289***	0.350*	0.284***	-0.398***	-0.494**	-0.393***
40-44	-0.106***	-0.113	-0.104**	0.452***	0.797***	0.442***	-0.436***	-1.039***	-0.423***
45-49	-0.131***	-0.183*	-0.126**	0.559***	0.806**	0.552***	-0.609***	-1.107***	-0.597***
50-54	-0.182***	-0.291**	-0.176***	0.580***	0.953***	0.571***	-0.715***	-0.986**	-0.711***
55-59	-0.294***	-0.189	-0.293***	0.728***	0.543***	0.738***	-0.894***	-0.810***	-0.900***
60-64	-0.447***	-0.487**	-0.441***	0.663**	-0.55	0.704***	-0.983***	0.26	-1.014***
Degree of urbanisation (reference category: high):									
medium	0.0618*	-0.0412	0.0654*	0.123**	0.044	0.124*	-0.0564	0.0509	-0.0571
low	-0.0042	-0.287**	0.00617	0.146*	0.262	0.139*	-0.113*	-0.0712	-0.112*
Country fixed effects (reference country: Austria):									
Belgium	0.0371***	0.264***	0.0322**	-0.837***	-0.690***	-0.840***	0.897***	0.918***	0.895***
Bulgaria	0.101***	-0.888***	0.141***	0.183***	.	0.154***	-0.163***	-1.032***	-0.151***
Cyprus	0.00437	-0.431***	0.017	0.426***	0.580***	0.429***	-0.160***	-0.793***	-0.150***
Estonia	-0.0640***	-0.485***	-0.0531***	-0.00159	.	-0.0208	0.207***	-0.512***	0.214***
Spain	-0.286***	-0.540***	-0.281***	-0.596***	-0.132***	-0.609***	0.502***	0.290***	0.499***
Finland	0.368***	-0.394***	0.395***	-0.118***	1.075***	-0.140***	0.423***	-0.777***	0.435***
France	-0.133***	-0.474***	-0.124***	0.356***	0.697***	0.350***	-0.513***	-0.884***	-0.510***
Croatia	-0.478***	-1.301***	-0.452***	-0.684***	.	-0.710***	0.582***	.	0.600***
Hungary	-1.199***	-1.186***	-1.196***	-1.128***	-0.548***	-1.147***	0.822***	0.166	0.832***
Latvia	-0.292***	-0.650***	-0.281***	-0.469***	.	-0.507***	0.594***	.	0.624***
Netherlands	0.109***	.	0.121***	-0.0645	.	-0.0760*	0.334***	.	0.335***
Portugal	-0.161***	-0.641***	-0.146***	-0.621***	-0.313**	-0.630***	0.624***	0.778***	0.616***
Romania	-1.241***	-1.254***	-1.234***	-1.503***	-0.491**	-1.520***	1.309***	0.24	1.318***
Slovakia	0.109***	-0.643***	0.128***	-0.301***	-0.218***	-0.309***	0.385***	0.165*	0.390***
Constant	0.0348	0.152**	0.0189	1.559***	0.873***	1.575***	-1.096***	-0.618**	-1.101***
Obs.	56,524	1,877	54,645	22529	453	22015	22529	453	22015
Pseudo R-squared	0.121	0.096	0.122	0.155	0.131	0.156	0.147	0.194	0.147

Source: Authors' estimations based on AES 2007

Note: * p<0.05, ** p<0.01, *** p<0.001; Standard errors are clustered at the country level. All results are weighted by the variable *coefindw*

When looking at the probability of participating in non-formal education (NFE) for those who declared having participated in adult education in the four preceding weeks (LFS sample) or in the 12 preceding months (AES sample), we find that being unemployed only plays a negative role for the AES sample and no statistically significant role for the LFS sample (columns 4-6 in Tables 4 and 5). Being a woman constitutes a significant (and negative) factor only for the unemployed AES sample. The educational attainment level is strongly significant for the LFS sample, especially for the unemployed (the higher the level of attainment the lower the probability of participation in NFE) but not statistically significant for the AES sample. In both surveys, the correlation between the age and the participation in NFE is positive and significant, especially for the workers. The degree of urbanization plays a statistical role only for the AES sample where the chances to engage in non-formal programmes is higher than when the degree of urbanization decreases. These results could be due to a substitution effect between formal and non-formal programmes in remote areas that, in Europe, are traditionally not well served by formal education and training institutions.

Finally, contrary to the overall results (columns 1-3) and to the results from the estimation of the probability of participating in NFE (columns 4-6), we find that being unemployed plays a positive and significant role in the probability of participation in formal education (FED) (columns 7-9) for the AES sample. Again, the two surveys differentiate themselves in terms of the role played by gender. While being a woman increases the chances of participation in FED for the LFS sample (especially among workers), it only plays a positive role among unemployed for the AES sample. The relationship between age and FED is negative, with decreasing chances of participation the higher the age is.

Each of these results is nevertheless very sensitive to country specific institutional contexts. These unobserved national institutions are captured in the country dummies included in each regression, *ceteris paribus*.

Summary and conclusions

Our analysis of the two main European surveys on adult learning shows that comparing national participation rates as a whole is problematic because the two surveys use different methodologies, time reference periods, and range of relevant learning experiences. As documented in the paper, these differences produce a systematically higher rate of participation in training activities in the AES than in the LFS in almost all countries, especially for non-formal training. On this point, the length of the reference period plays an important role especially with regard to the participation in non-formal training since these activities are normally characterized by rather short duration and distributed over time (for more details see Rosenbladt, 2010). Consequently, the AES reflects the level of participation in non-formal training relatively better than the LFS.

Overall, we find that the expected lower probability of participation in adult training by unemployed adults compared to workers is statistically significant only for the AES sample. The lack of significant statistical difference between unemployed and workers in the LFS sample confirms a potential lack of reliability of that survey to capture the determinants of training participation among active adults.

From the AES survey, we find that although being unemployed negatively affects the chances of engaging in non-formal education, it increases the chances of participation in

formal education, especially for women. This difference of sign could be explained by the fact that a large part of the non-formal learning takes place on-the-job and is financed (at least partly) by the employer. For instance, as demonstrated in Badescu, Garrouste, & Loi (2011), for our estimated sample, the average annual private investment in non-formal education is 49.3% higher for the unemployed than for the workers (537.22 Euros vs. 359.71 Euros). Reciprocally, the unemployed have an average private investment in formal education that is 20% lower than the one for workers, partly due to the existence of study grants specifically targeted at the unemployed population in most EU countries. These incentives aim at upgrading the formal skills of the unemployed to improve their employability.

Still, the fact that the unemployed have a lower access to non-formal education programmes should be considered as one of the issues to be solved by governments if they expect a quick and efficient reintegration of that cohort into the labour market. Indeed, non-formal skills are faster to acquire than formal degrees and their immediate applicability and relevance to a potential future employer are higher. While this type of training is currently mainly provided on-the-job, some public incentives could be developed to ensure its provision by training institutions outside the workplace. As reflected in our analysis through the significant role played by country-specific characteristics in explaining differences in training participation probabilities, such measures already exist in some European countries, especially in the industrial sector, but not in all. Hence, they would deserve to be expanded to all sectors of activities and to all Member States.

Another important policy outcome of this analysis is the demonstration of a significant difference in the capacity of the LFS and AES surveys to capture the participation in adult education programmes in Europe. Despite its well balanced sampling method in terms of age, levels of educational attainment and degrees of urbanization, the LFS fails in collecting spells of education and training beyond the four weeks preceding the interview. This measurement bias needs to be addressed by the European Member States before using this survey for benchmarking lifelong learning participation.

On the other hand, the unbalanced distribution of certain key parameters in the sample issued from the AES survey, such as the educational attainment levels and the degree of urbanization, contribute to inflating the reported share of participation in adult education programmes. This sampling bias should also be addressed by the European Member States in order to make a more efficient use of the AES survey for policy making at the European level.

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